Unlock the Power
Within your Data

IDEA 10

CI202 IDEA Data Analysis Workbook

IDEA
Data Analysis Software

CI202
IDEA Data Analysis
Workbook

IDEA Version Ten

CI202 IDEA Data Analysis Workbook

Version: CI202_LTR_10.1_01

Contents

Preface

Welcome to the IDEA Workbook. IDEA is a comprehensive file interrogation tool for auditors, accountants, and investigators. With IDEA, you can:

- Analyze complex data

- Extract unusual items

- Create audit samples

- Identify duplicate transactions

- Carry out many other functions that are easy to perform using the specially designed, intuitive Windows interface

This Workbook has been produced as a comprehensive tutorial for new IDEA users in North America who are unable to attend a scheduled training course in their area. It goes into more depth than the Getting Started Tutorial in the user guide provided with IDEA and illustrates some common audit tests. Step-by-step instructions with solutions are provided to explain how to perform three separate audits/investigations as follows:

- Accounts Receivable Audit

- Accounts Payable Audit and Fraud Investigation

- Inventory Analysis

Each of these audits/investigations increases in complexity in using IDEA's functions and tests, building on the experience learned in earlier sections. Therefore, it is recommended that the sections be completed in sequence. However, you may also wish to review a particular section before conducting a similar audit, investigation, or analysis.

Each section within an audit/investigation has an audit objective as well as an IDEA lesson objective explaining the particular features of IDEA to be learned during the exercise.

The data files for each audit/investigation have been provided on the accompanying CD. The data files have been created in a variety of file formats to provide experience in importing data from a number of difference sources. The numbers of records and fields within each data file have been restricted for speed and practicality.

We hope you enjoy using IDEA.

We wish to acknowledge the assistance provided by Efrim Boritz and Malik Datardina and the University of Waterloo Centre for Information System Assurance (http://accounting.uwaterloo.ca/uwcisa/).

Introduction to the IDEA Workbook

Setting the Scene   For the purposes of this Workbook, you are an audit manager with a firm of Chartered Accountants, Dynamic Accountants, based in Ontario, Canada.

Your client portfolio includes a number of medium-sized companies, family-owned businesses and retailers. In order to prosper in the ever-increasing competitive market you have identified the need to:

- Improve the efficiency of audits

- Improve the quality of audits and business advice given to clients

- Provide added-value services to clients

- Win new clients by offering exciting new services

You have seen demonstrations and read articles on how the IDEA Data Analysis Software will enable you to meet these needs and you have recently purchased IDEA.

You have selected your premiere client, **Bright IDEAs Inc.,** a rapidly expanding retailer of innovative promotional material, to pilot your use of IDEA. Both you and the Chief Financial Officer, Mr. Cuthbert, are concerned that the levels of controls have not increased to meet the growth in the business and after consultation with your client you decide to use IDEA on the Accounts Receivable area of the audit. Additionally, the client asks that you investigate a suspected case of fraud and to assist with a problem they have identifying obsolete stock and the subsequent calculation of inventory provisions. All audits and investigations were highly successful and have identified problems and weaknesses, which would have been extremely difficult to accomplish without the use of IDEA. As a result of your testing and recommendations that the client has implemented, his business has won the "Business of the Year" award and the Chief Financial Officer has publicly praised your services resulting in many new clients.

How this Workbook is Organized

This Workbook provides an overview of the process of auditing using IDEA and provides step-by-step instructions for carrying out the following audits/investigations that you conduct for **Bright IDEAs Inc.**:

- Accounts Receivable Audit

- Accounts Payable Audit and Fraud Investigation

- Inventory Analysis

Each audit/investigation is provided in a separate section of the Workbook. An overview to each section explains the objectives of the audit/investigation, how to plan for the testing, and how to request the required data.

A wide range of data file formats have been used to provide you with experience at importing different file types.

Instructions are provided for preparing for the exercises, including copying the relevant data files.

The exercises have been designed to cover most tests and options within IDEA and both the audit objectives and the exercise details are stated for each test carried out. Each section increases in complexity. Therefore, it is advised that the exercises are completed in order. However, you may wish to repeat or review sections, particularly before conducting a similar live audit. Solutions are provided for each exercise and many images of menu or toolbar button selections, completed dialog boxes, resultant databases, and reports are included for clarity.

Note: You can customize many options, including toolbars, within IDEA. This Workbook provides instructions and images using the default toolbars and settings.

Please read the following section that outlines the use of IDEA before commencing the exercises.

Overview of the Use of IDEA

The Stages of Using IDEA

The exact process of using IDEA varies with circumstances, but the main steps are set out in the following chart.

The first three stages are planning stages and are key to getting the most out of IDEA.

Consider Audit Objectives

Determine how IDEA is appropirate for the audit

Specify the data required

Arrange download of the data

Utilize IDEA

Review and Housekeeping
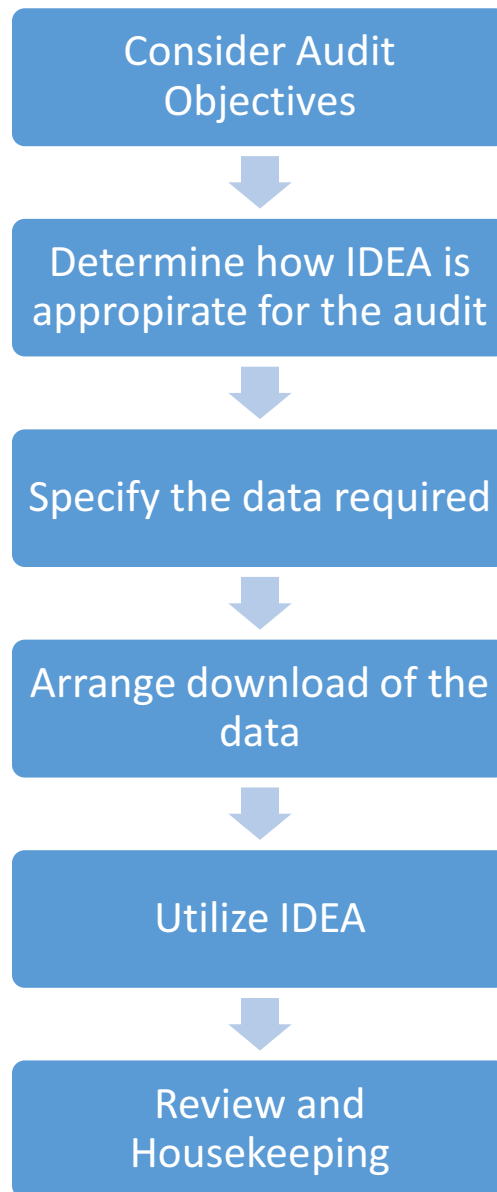
Determine How IDEA is Best Utilized

In order to decide how to use IDEA on an audit, a brief evaluation of the following topics should be completed with an assessment of whether the benefits outweigh the costs:

- Key audit objectives and problems

- Volume and depth of information held on computer

- Ease of downloading data

Objectives and Problems

IDEA is most useful when there is a problem to solve on an audit. It may be assessing the extent of bad loans, debts, or inventory provisions, looking at performance in collecting cash or simply speeding up the time to prove calculations. Whatever the reason, there should be a core purpose which drives the use and benefits of IDEA.

IDEA is generally used for substantive testing. When there is a need to determine if items are in error, a problem needs to be quantified, or certain items identified, then IDEA should be used. IDEA can also help with checking procedures. An indirect way of checking procedures is to draw an inference about the effectiveness of procedures based on the results of substantive tests; e.g., it may be inferred that if there are no errors then the procedures must be working. Conversely, if there are errors then it may be inferred that procedures are being applied incorrectly and that controls are not effective. IDEA can also be used when checking computer-based controls by re-performing edit checks, matching and other computer-based procedures.

Refer to subsequent sections in this Workbook or the online Help available from the **Help** menu in IDEA to learn more about the uses of IDEA and its tests.

Volume

Classically, data analysis techniques are appropriate with a large volume of small value transactions. Generally, this is true with IDEA; therefore, the greater the volume of data the more useful IDEA will be for the investigation. If there are fewer than a few hundred records, then IDEA is unlikely to provide much benefit over manual work.

For large files, say over 100,000 records, then a calculation of the required disk size should be made (i.e., number of records multiplied by the approximate space each record takes). IDEA can be used on files with several million records, but a fast computer with a large amount of disk space will be essential.

The amount of data available for each item also makes a difference to the potential benefit of using IDEA. Items with a full history and comprehensive detail will allow a wide variety of tests. IDEA will be restrained to some simple calculations, analysis, and sampling if only the sparest information is available.

Typically, IDEA will be useful when a client has:

- Accounts Receivable: more than 200 balances and 1,000 transactions
- Fixed Assets: more than 1,000 items
- Inventories: more than 1,000 stock lines
- Purchases: more than 2,500 transactions

Ease of Download

If there is a major cost in using IDEA then it is likely to be incurred when downloading the data. The data has to be transferred from the "host" (source) computer to the computer running IDEA or onto a network location accessible by the auditor/analyst's computer. This may be quite simple and only take a few minutes or it may be more complex and involve a query or report being written. It may also require the use of equipment to convert data or to read a particular tape or cartridge format. If a bureau or agency is used, they may charge for their services. Some technical assistance may be required and technical assistants may charge for their services as well.

In most cases, the client will supply you the accounting files, or a printout of the files, via CDs or email messages.

Once a downloading method has been set up and used for a particular system or computer, subsequent downloads are usually straightforward and the costs (if any) will be known. However, for the first time, an estimate of time and costs will need to be made.

When to Use IDEA

The likely benefits from using IDEA can be assessed from the audit objectives and expected problems, as well as the volume and width of data. Additional consideration should be given to the usefulness of additional analysis over what is currently provided by the system and whether any special factors apply, such as fraud detection and investigation, and special investigations.

Costs are largely determined by the effort involved in obtaining and downloading data. There is some time in actually performing the IDEA tests, although this is not normally significant. It is also usual that far more "exceptional" items and queries will be identified when using IDEA than with other methods, and these may require follow-up time. Alternatively, these items may be given to management for follow-up.

The use of IDEA often replaces other tests and provides overall time savings. Alternatively, the reason for using IDEA may be to add to the scope, in which case the extra costs should be defined. Clearly the cost of using IDEA must be balanced against the benefits.

In summary, IDEA should be used in audits where:

- There is a core purpose or reason

- There are a reasonable number of records

- There is a depth of information on the items

- The data transfer is technically feasible at a reasonable cost and volumes can be accommodated on computers or networks

Audit Objectives

In routine audits, IDEA can be used to meet the following objectives:

Mechanical Accuracy and Valuation

One of the first things IDEA should be used for is to total the records in the file and to prove the accuracy of any calculations. Add up the records in the file by using the **Field Statistics** property. Calculations can be checked either by appending a new field (in the **Field Manipulation** dialog box), using the **Criteria** link in the **Properties** window to create a calculation of the item, or by performing an exception test of miscalculations using one of the **Extractions** tasks.

The accuracy of any management reports may involve a wider use of functions to achieve the result of reproducing the report. In these cases, performing a series of joins and/or summarizations or running the **Aging** task, in the case of aged debt analysis, may be necessary.

Analysis

IDEA can help with the preparation of figures for an analytical review. In particular, IDEA can generate analyses that would not otherwise be available. The **Stratification** task (from the **Analysis** tab on the IDEA Ribbon) generates a profile of the population in value bands, groups of codes, or dates. This is particularly useful when auditing assets such as Accounts Receivable, inventories, loans, or for a breakdown of transactions. Additionally, the information can be summarized by particular codes or sub-codes. Figures can also be compared against previous years to determine trends. A chart can be produced if required.

Existence and Validity

A number of tests are available for proving validity:

- **Exception testing** can be used to identify unusual or strange items. These may be simply large items or where the relationship between two pieces of information on an item does not correlate (e.g., rate of pay and pay grade). Many fields of information can also be checked for allowable values (e.g., standard fees).

- **Statistical sampling** is commonly used to test for validity in a manner that allows for evaluation across a population. The more sophisticated methods, such as **Monetary Unit Sampling**, are difficult to implement manually. Wherever tests need to refer to physical documentation or assets rather than computer records, an appropriate statistical sampling technique should be used.

- **Duplicates testing** can be very effective in certain circumstances, such as testing payments or looking for double input of ticket numbers during inventory counts.

It may be necessary to join (using the **Join Databases** task) two databases together first in order to perform a validity test (i.e., transaction file to a master file).

Completeness

The two main tests for completeness are **Gap Detection** and matches:

- Gap Detection (under the Analysis on the IDEA Ribbon) identifies missing numbers or days. There obviously must be a sequential number/date on source documentation for this to work. Receivables and sales files can be tested for missing invoice numbers. It may also be appropriate to test for gaps on a series of check numbers and for completeness of inventory ticket numbers.

- Matching cross-checks between a master file (e.g., maintenance contracts) and transactions (e.g., invoices) and can be performed to see if there are any items on the master file for which a transaction has not been recorded.

Cut-off

Year-end ledger, inventory files, or transaction files can be tested for cut-off by testing for items with dates or sequence numbers above or below the year-end cut-off.

Other Audit Objectives

IDEA can often provide useful information in complex areas such as provisions and valuations by producing a number of "views" based on a series of different parameters.

Taking inventory as an example, you can:

- Identify which items have not moved in 3, 6, 9, and 12 month bands
- Match items against post year-end sales to see what has not sold
- Test net realizable value on items that have sold
- Check items that were in inventory last year against what items have not sold this year

Any audit, which has a need for analysis of data, computational work, or exception testing, will benefit through using IDEA.

Many of the more interesting uses are fraud related such as cross-matching address files between payroll and accounts payable ledgers, identifying duplicate supplier invoices, and matching bank accounts on payroll with supplier master files.

Determine Data Requirements

Once it has been determined that IDEA will be used and the objectives have been defined, it is necessary to identify the data required. This is often a two-way process in that the tests to be carried out are limited to the data that is available. Data may be required from more than one file or computer system.

To take inventories for example, the main master file would be requested. This might contain quantities, costs, and details of each item. To test for slow moving items, it may be necessary to request a history file with details of all movements. Similarly, in order to check if any costs are higher than selling price, a separate file of sales prices from the sales system might be required.

There are two main sources of finding out what data is stored:

- IT staff that support the system (possibly third party)
- Users, who input, review and own the data

It is also worthwhile to review the standard reports available as these can be imported as an alternate source for the data.

Systems documentation describes, in theory, what should be held; but in practice, fields may be used for a different purpose or not at all. For example, it is no use designing a test based on date of birth only to find that the users do not bother entering dates of birth! Hence, a discussion on what data is held is always recommended.

Areas to Consider

In deciding what data is required it may be worthwhile examining:

- **Addresses**: These can be used for performing "fuzzy matching", such as checking if any supplier addresses are the same as employee addresses. They may be needed for confirmation purposes. However, addresses take up a considerable amount of space. It may be possible only to include the first portion of an address.

- **References**: All fields with reference numbers should be picked up. These are likely to be needed for any joins to other files and are good for gap and duplicate tests.

- **Flags and codes**: It is important to understand what the flags and codes mean. Often additional items are needed based on the codes. They rarely take up much space and should be included.

- **Dates**: Dates are particularly useful. Care must be taken to understand how dates are used by a system and what they actually represent.

- **Descriptions**: Long descriptions can be truncated if space is short, but it is often useful to have a short description on the final output.

The need for other fields depends on the audit tests. If in doubt, include a field but at the end of an audit, as part of the review process, it is worthwhile noting what has been useful and what was not. In subsequent audits only the necessary fields need to be imported.

Accounts Receivable Audit

Introduction What are the risks associated with Accounts Receivable that could be addressed by computer assisted audit procedures? And what tests can help address those risks? This section summarizes the business and audit risks that arise in the context of Accounts Receivable and the potential tests that can be used to address those risks.

Potential Risks

The following table identifies the key risks, explains the business and audit implication of each risk and the audit objectives that could be addressed by audit tests.

RISK	IMPLICATIONS	AUDIT OBJECTIVES
The file is incorrectly consolidated or summed.	Items could be omitted, or the listed items may not be included in the totals reported in the financial statements. The Accounts Receivable could be overstated or understated depending on the direction of the error.	Completeness Accuracy
Foreign currency transactions are not translated correctly	Management may not be aware of the impact of transactions in foreign currency and may fail to take steps to manage currency risks. The Accounts Receivable could be overstated or understated depending on the direction of error.	Accuracy
Credit is granted to customers that are likely to default.	The business will sell goods to parties from which they will not be able to collect cash. This has potential implications on liquidity and bad debt expenses.	Valuation
Customers are double	Double billing can negatively affect customer satisfactions. Also, revenues and receivables would be overstated	Existence, Validity, Valuation
Accounts Receivable are invalid or incorrectly stated.	Accounts could be entirely or partly invalid. Partially invalid accounts may be the result of delays in processing transactions or errors in applying credits and payments to accounts. Fictitious accounts could be due to fraud.	Existence, Validity, Accuracy

RISK	IMPLICATIONS	AUDIT OBJECTIVES
Improper allocation of credits and payments.	As mentioned earlier, improper allocation of payments to accounts could affect the aging of the Accounts Receivable and this would affect management's ability to determine an effective course of action for handling the customer's account. For example, sales to customers could be blocked or the customer may be sent to a collection agency, even though the customer is current on their accounts. Improper allocation of payments to accounts could also be an indicator of fraud.	Existence, Validity, Accuracy
Accounts Receivable is not properly aged.	If the aging of the Accounts Receivable is not correct, then management may fail to take action on overdue accounts in a timely manner and permit sales to poor credit risks. Also, the calculation of the allowance for doubtful accounts and bad debts expense would be affected.	Valuation
A significant percentage of the receivables is concentrated in a few customers.	The business could be exposed to a combination of credit and liquidity risks if these large customers do not pay their debts in a timely fashion. Also, the company may be deemed to be economically dependent on the identified customers, and this may need to be noted in the financial statements.	Presentation
Improper classification of amounts.	If a credit balance is classified as an Accounts Receivable (AR) instead of an Accounts Payable (AP), then it could distort the current ratio which could be part of a debt covenant.	Presentation

Potential Tests

The following audit tests are suggested when auditing an Accounts Receivable system. However, the exact tests carried out for a particular client will depend upon the system used and the data available. Common tests include:

Mechanical Accuracy and Valuation

- Total the file. It often pays to separate out debits and credits.

- Revalue foreign debts, if applicable.

- Check transaction totals to the balance on each account.

Analysis

- Profile debtors using a numeric stratification to see the number of large debts and what proportion of value is in the larger items.

- Produce an aged debt analysis. Consider how to deal with unallocated cash and credit notes. IDEA, by default, ages these on their date rather than allocating against the oldest item or any other treatment. It is often worthwhile splitting the file into invoices, unallocated cash, etc. using multiple extractions, and then aging the individual files.

Exception Tests – Existence and Valuation

- Identify old items (i.e., greater than three months old).

- Identify large balances either in their own right or compared to turnover.

- Select accounts for which no movements have been recorded in a set time.

- Report credit balances.

- Identify unmatched cash or credits.

- Compare balances with credit limits and report exceptions (i.e., accounts with balances in excess of their credit limits or accounts with no credit limits etc.).

- Test for items with invoice dates or numbers outside the expected range.

- Identify partial payments of debts.

- Identify invalid transaction types.

- Identify customer addresses that are "care of" or flagged not to be sent out.

Gaps and Duplicates

- Test for duplicate invoices (both invoice number and customer/value).

- Use duplicate exception testing for less obvious input errors, such as the same vendor ID assigned to two different vendor names, the same vendor name assigned to two different vendor IDs, payment of the same invoice number and amount to two different vendors, etc.

Matching and Comparison Tests

- Compare the balance on an account with its turnover.

- Match the sales transactions to the Customer Master information to identify sales to new or unauthorized customers and those with exceeded credit limits.

- Compare to Accounts Payable for possible contra accounts.

Sampling

- Select samples (random or specific) for functional testing and confirmation (and produce confirmation letters).

Case Scenario: Accounts Receivable

As part of the year-end audit of Bright IDEAs Inc., the audit manager of Dynamic Accountants has decided to use IDEA on the Accounts Receivable audit in order to:

- Improve the quality of the audit

- Improve efficiency

- Provide value added services

This section covers the types of tests that can be carried out using IDEA with some practical examples of obtaining the data, importing, and performing tests.

When auditing Accounts Receivable, the main objective is to form an opinion on the validity of the debt. Items of particular concern are old invoices, unmatched cash, and large balances, particularly where customers are in difficulty. These can all be identified using exception tests.

One of the key tests is to perform a confirmation by choosing the required balances and sending out letters. This requires customer master information such as addresses and credit details (usually held in a master file) as well as the transactions.

Accounts Receivable data is often obtained by requesting statements as a print report file that can be imported into IDEA. Care must be taken to ensure statements have been produced for all accounts by totaling all items and checking that this agrees to the General Ledger control account.

Obtaining the Data Having thought about the possible audit tests the audit manager decides the following data files will be needed for the audit:

- Accounts Receivable database containing data at March 31, 2015

- Customer Master File

Note: One of the simplest format data files to import into IDEA is a Microsoft Access file. Another simple way to import data is to obtain printouts that are "printed" (or spooled) to file rather than the printer and then use the **Report Reader** tool for IDEA to read the required data into IDEA for testing.

Further discussions with the IT staff have determined that the Accounts Receivable data can be provided in Microsoft Access format.

A suitable printout of the data required from the Customer database exists; therefore this will be requested in electronic format (i.e., a print report file).

Request for Data Files for Audit Purposes

Please supply the following data from the Accounts Receivable system in Access format and supplied on USB or CD using compression utilities, if necessary.

Outstanding Transactions Between January 1, 2015 and March 31 2015.

FIELD	FORMAT
Account Number	C 10
Invoice Number	C 10
Transaction type	C 1
Gross amount	N 10,2
Goods & Services Tax – GST	N 10,2
Provincial Sales Tax – PST	N 10,2
Indicator if paid	C 1
Date paid	D YYYYMMDD
Customer Reference	C 12

Note: In the record definitions, **C** refers to Character, **N** to Numeric and **D** to Date. **C 10** means a character field of length 10. **N 10, 2** denotes a 10-digit number with 2 decimal places.

Please supply the following Customer Master data as available on report AR-1 as an electronic report file:

FIELD	FORMAT
Account Number	C 10
Customer Name	C 30
Customer Address 1	C 25
Customer Address 2	C 25
Customer Address 3	C 25
Zip Code	C 8
Credit Limit	N 8,2

Data is required for the following period: Year-end March 31, 2015.

Please also supply the following control totals for reconciliation purposes:

- Outstanding balances at year-end March 31, 2015

- Number of transactions supplied

- Number of customers

Audit Program   From the available or possible tests, the audit manager decides on the appropriate tests and prepares the following audit program for you to complete.

Audit Objective:

To ensure that Accounts Receivable shown in the Financial Statement are free from material misstatement.

	AUDITING PROCEDURES	ASSERTIONS	WORK DONE BY (INITIALS)	EXTENT OF TESTING
1	Obtain the data files from the client and load onto the PC. Load IDEA and create a **Managed Project** for Accounts Receivable for **Bright IDEAs Inc.**			
2	Verify Accounts Receivable totals agree: a) Import the Accounts Receivable details, b) Check the total, c) Compute field statistics, and d) Reconcile control totals to the trial balance.	C C C V		
3	Select a sample for detailed testing and confirmation.	E O		
4.	Prepare an age accounts analysis to review the profile of debtors	V		
5.	Identify old and large accounts for detailed testing.	E V		
6	Identify all credit notes	V		
7	Prove calculation: a)Calculations of net value and b) Totals by account	V		
8	Identify accounts exceeding their credit limit: a) Import the Customer Master File and b) Extract balances over their approved limit.	V		

Key to Assertions: **C**ompleteness, **E**xistence, **O**wnership, **V**aluation, **P**resentation

Audit Setup

Objective:

To be able to load data, run IDEA and create a new **Managed Project**.

Exercise Description:

This exercise covers copying data into a folder, loading IDEA and creating a new **Managed Project**.

IDEA Functionality Covered:

- Create a new **Managed Project**
- Specify the Project Properties

The following data files have been provided with this Workbook:

- ACC_REC2015.ACCDB - Accounts Receivable at March 31, 2015
- CUSTOMER.TXT - Customers Report in Text Format

Accessing IDEA

From the Windows Start screen, click the arrow in the bottom-left corner.

Alternatively, In the Apps view, scroll to the **IDEA** group and click **IDEA**.

Create a New Project

To facilitate housekeeping, it is recommended that a separate **Project** be used for each audit or investigation. All information relating to the audit, including data files, equations, views or report definitions, import definitions, etc. may be stored in the **Project**.

This exercise will explain how to create a **Project** and enter client information that will be printed on all reports. Note that once a **Project** is set, it remains the active folder until changed.

If you have used previous versions of IDEA you will have been used to using **Working Folders**, this has changed in V9 of IDEA. IDEA now uses **Projects** and a **Library** to store the files created by IDEA. The **Projects** concept within IDEA allows for better segregation of files. There are two alternatives when creating a new **Project: Managed Project** and **External Project**.

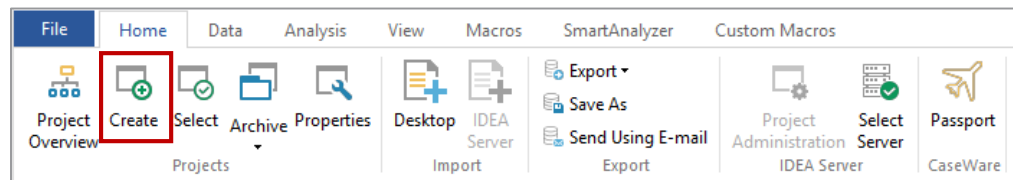**Managed Projects** are stored in the following location on your computer:

C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects

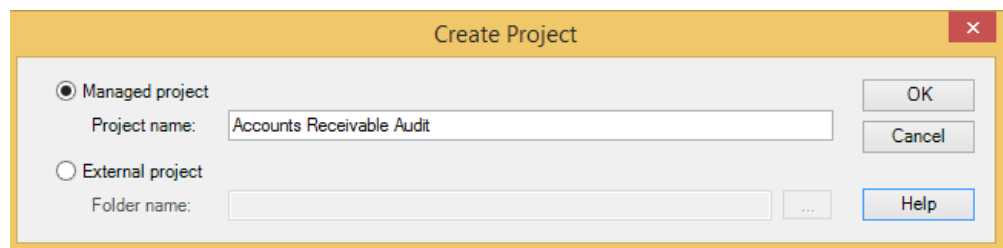**External Projects** can be stored at other locations on your computer.

After creating a **Project** you will see that IDEA was created the following project structure:
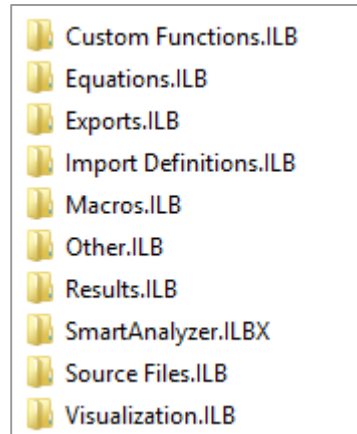
1. From the IDEA Ribbon, make sure the **Home** tab has been selected and then click **Create**.
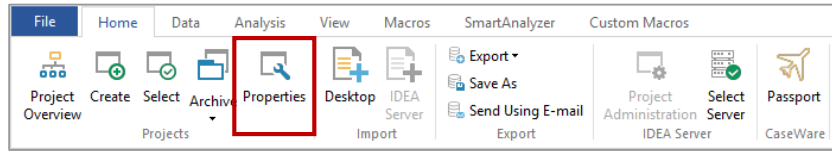

2. Select the **Managed project** option and **enter Accounts Receivable Audit** as the **Project Name**.
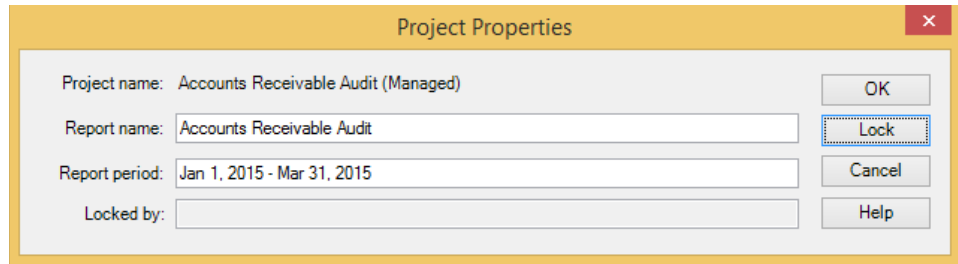

Once you click on **OK,** IDEA will create a new folder called:
C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects\Accounts Receivable Audit

3. From the **Home** tab, in the **Projects** group, click **Properties** to change the **Project Properties**.

4. In the **Project Properties** dialog enter the following information:

Report name: Accounts Receivable Audit
Report period: Jan 1, 2015 - Mar 31, 2015

Click on **OK** to accept the changes.

Load Data

1. Copy the following data files that came with the Workbook:

- ACC_REC2015.ACCDB - Accounts Receivable at March 31, 2015

- CUSTOMER.TXT - Customers Report in Text Format

to

C:\Users\[UserID]\My IDEA Documents\IDEA Projects\Accounts Receivable Audit\Source Files.ILB

This is the default location within a Project to store any source files.

Import the Accounts Receivable Transactions File

Objective:

To import the data file for testing.

Exercise Description:

The Accounts Receivable Transactions file, **Acc_rec2015.accdb**, is a Microsoft Access file that IDEA will import directly. This is carried out using the **Import Assistant** that determines the file type. Once imported, the file is examined and totalled.
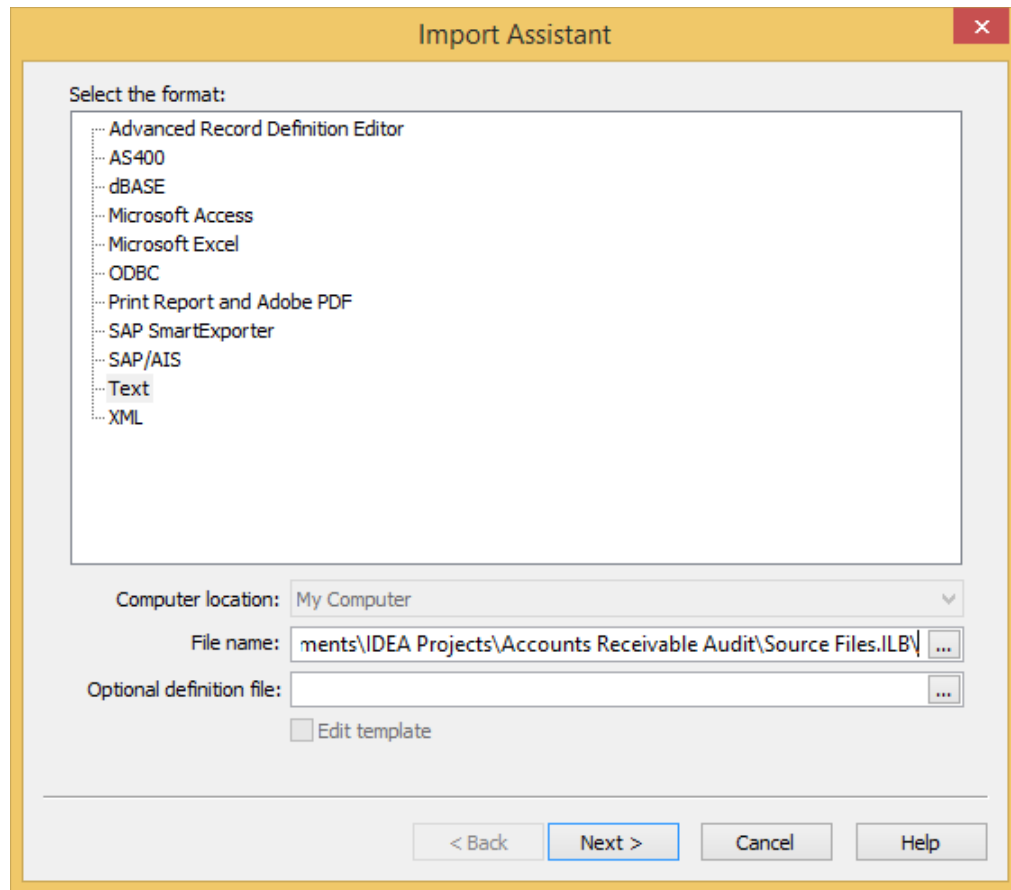
IDEA Functionality Covered

- Import a Microsoft Access database
- Use the Database window

Determine the number of records in the database

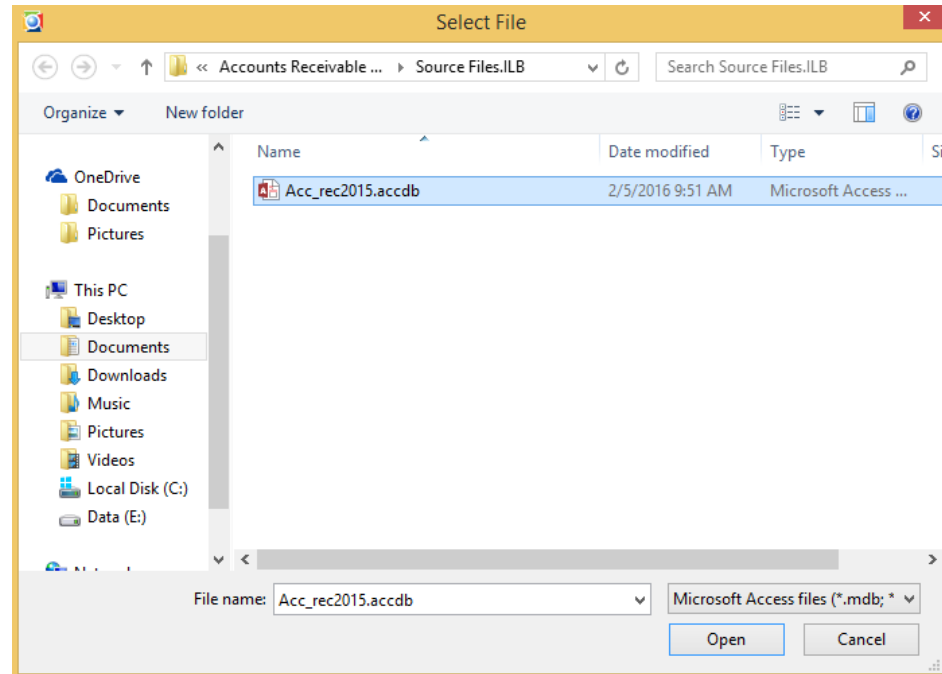1. From the **Home** tab, in the Import group, click **Desktop**.
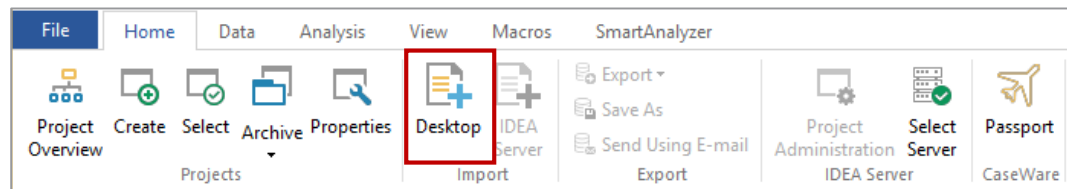
The **Import Assistant** dialog box appears.

2. Select **Microsoft Access** from the list of available formats.

3. Select the file to import by clicking the **Browse** button then navigate to and select the following file:

    C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects\Accounts Receivable Audit\Source Files.ILB\Acc_rec2015.accdb


4. Click **Open**.

5. Click **Next**.

    The **Microsoft Access** dialog box appears. IDEA automatically checks the box of the first table to be imported.

6. Select the **Scan records for field length** option.

    For this exercise we will select the **Scan all** record option, but note you can also select the **Scan only** number option that allows you to specify the number of records to be scanned.
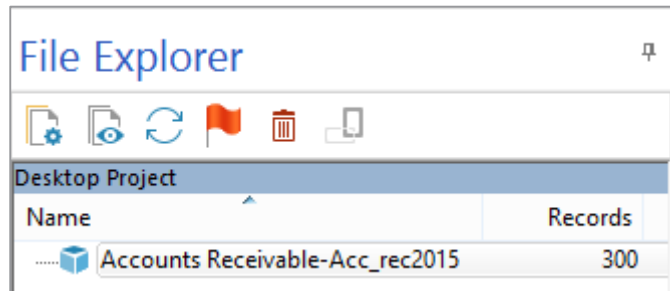
7. Do not select the **Create a record number field** option for this exercise.

8. In the **Output file name** field, enter **Accounts Receivable**.
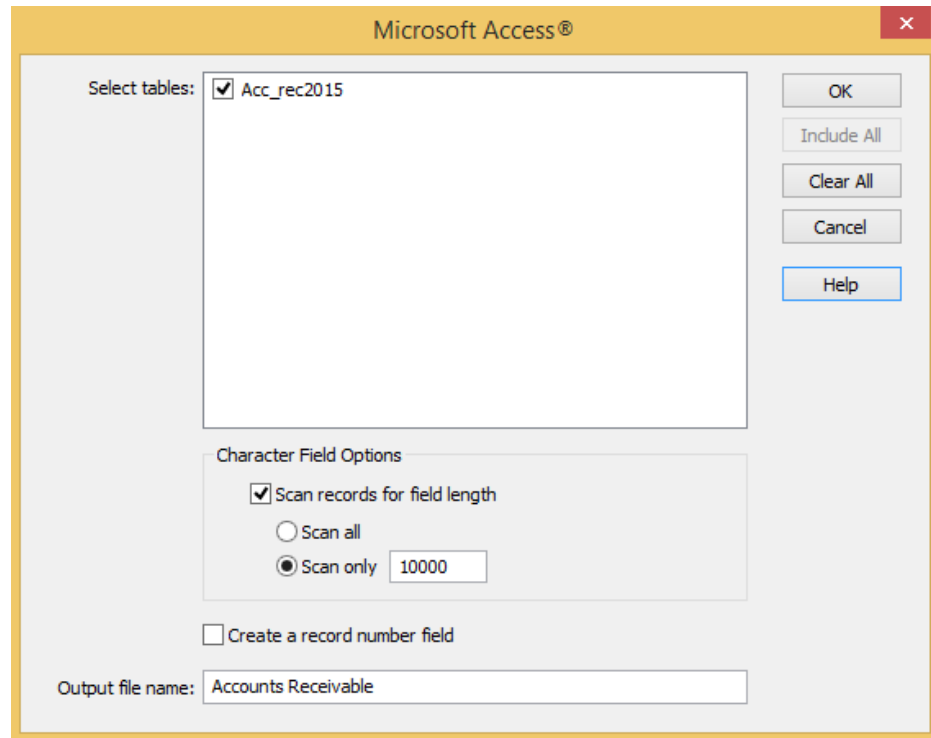
9. Click **OK**.

The **Accounts Receivable - Acc_rec2015** database will be imported, opened, and selected as the active database. When the database is created, the table name is added as a suffix to the output file name.

Note: About the Microsoft Access dialog box:

- **Tables** - IDEA can import multiple tables from the Microsoft Access file. To import multiple tables select the tables to be imported by clicking the associated check boxes. To select or deselect all tables, click Include All or Clear All, respectively. When selecting multiple tables, the options selected are applied to all selected tables. Each table is imported as a separate database. In the creation of the tables in Microsoft Access, if the field type is Date/Time, IDEA will create a separate field for the Time. To avoid this, change the field type in Access Table Design to Text. Once in IDEA, the field type can be changed back to a Date field. Also note, that the Time field can be deleted through Field Manipulation.

- **Output File Name** - The total length of the full path name which includes the output file name, cannot be greater than 256 characters. The output file name cannot include any of the following characters: / \ < > * " ? [ ] | :

We want to change the database name to **Accounts Receivable**. To do this we must first close the database.

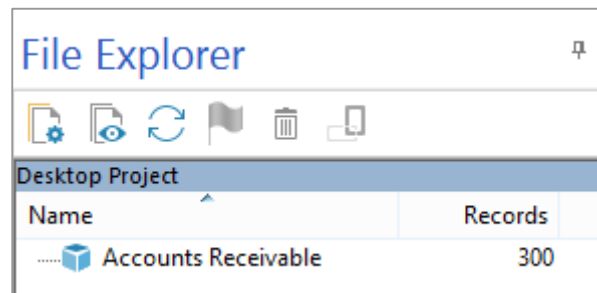10.	From the **File** tab, click **Close Database**.

11.	From the **File Explorer** window, right-click on the database name and click **Rename**.

	The database name is highlighted.

12.	Delete **"- Acc_rec2015**" from the database name.

13.	Press **Enter**.

	The new database name is displayed in the **File Explorer** window.

14.	In the **File Explorer** window, double-click **Accounts Receivable**.

	The database is now open and selected as the active database in the Database window.

Selecting a Control Total Field

Objective:

To prove the data has been imported correctly.

Exercise Description:

By examining the **Accounts Receivable** database, you will become familiar with the data and what is on the IDEA screen, as well as learn to specify a **Control Total** field and determire the number of records in the database.

IDEA Functionality Covered:

Select a Control Total field.

1. The **Accounts Receivable** database appears in the Database window. Maximize the Database window

2. Scroll through the data using the scroll buttons and bar on the right side of the window until you get to the bottom of the file. Also scroll left and right using the horizontal bar at the bottom of the Database window.

    Note: The file contains invoices, credit notes, and cash that are still in the **Accounts Receivable** database at the year-end. Also note the number of records on the **Status Bar** at the bottom right of the screen (i.e., 300). The available disk space on the **Project** drive will also be displayed on the **Status Bar**.

3. Scroll back to the top of the file.

    When displaying a database, the field (column) widths are optimized to the width of the data or the field names, whichever is wider. Field widths may be adjusted by moving the field name separators or optimized by double-clicking the field name separators.

4. From the **Properties** window, click **Control Total**.
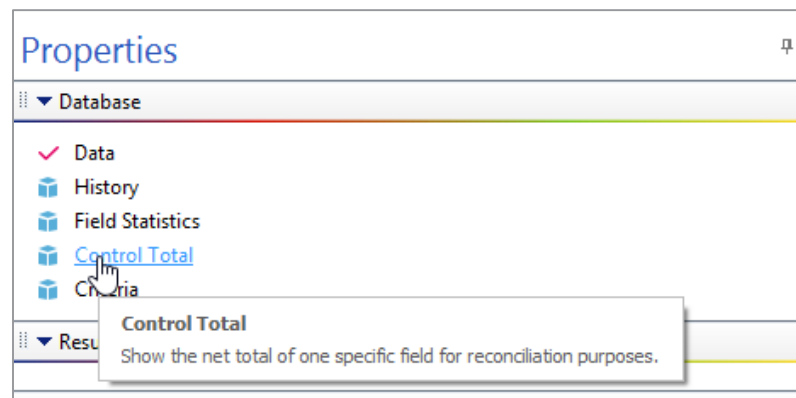
5. In the Select Control Total dialog box, click the **GROSS_AMT** field and click **OK.**
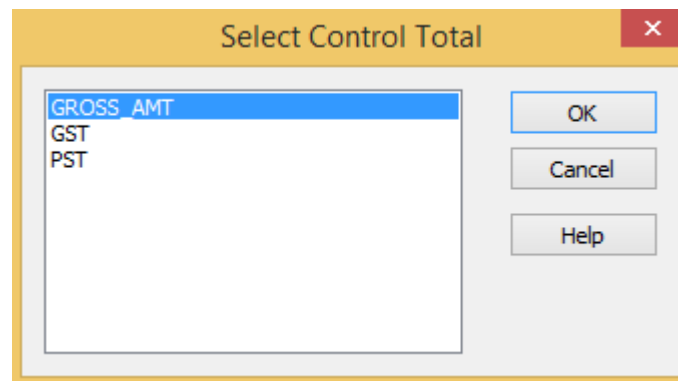
6.   If prompted to calculate the Control Total, click **Yes**.

The control total of **435,864.85** appears in the **Properties** window.
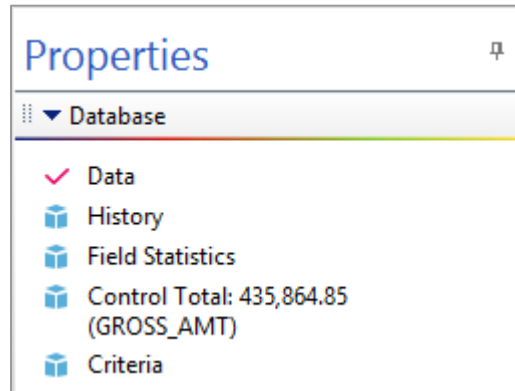
You are now ready to verify that the data has been imported correctly and to commence audit testing.

Field Statistics

Objective:

To verify that the correct data has been supplied and that it has been imported correctly before commencing testing.

Exercise Description:

View the **Field Statistics** for the **Numeric** and **Date** fields in the **Accounts Receivable** database.

The statistics will be used for:

- Agreeing totals
- Gaining a general understanding of the ranges of values in the database
- Testing for date cut-off, (i.e., the date range)
- Highlighting potential errors/areas of weakness to focus subsequent investigations

IDEA Functionality Covered:

- Field Statistics
- Printing Field Statistics

1. From the **Properties** window, click **Field Statistics**.
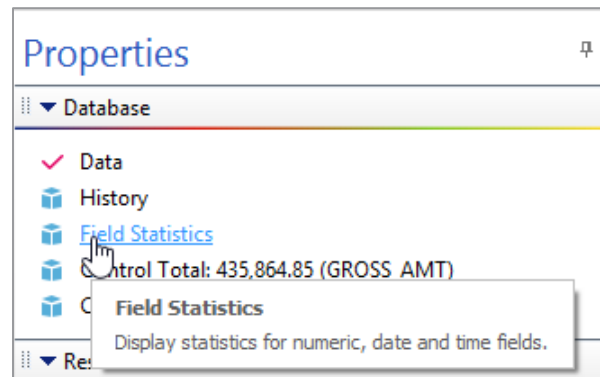
2. If prompted, click **Yes** to create statistics.

   Field Statistics are displayed for the **GROSS_AMT**, **GST**, and **PST** fields.

3. Study the Field Statistics Results for the **GROSS_AMT**, **GST**, and **PST** fields. Note in particular the **Net Value**, **Average Value**, **Minimum Value**, and **Maximum Value** statistics.

   Note: The values displayed in blue are drill down values. Selecting these values allows you to see the items included in that statistics category.

4.   In the **Field Type** box, click **Date** and study the statistics. Note in particular the **Earliest Date** and **Latest Date** statistics, which are useful for determining the period of the database. Note that the totals per client have been provided with the software for reconciliation purposes:

FIELD	CONTROL TOTAL PER CLIENT	CONTROL TOTAL IN DATABASE
GROSS_AMT	369,255.13	435,864.85
GST	25,193.36	29,511.00
PST	28,525.83	33,408.94

FIELD	EARLIEST DATE	LATEST DATE
DATE	2014/11/04	2015/04/01

Verify your results from **Field Statistics** to the above. Can you suggest why the database statistics do not agree with the control totals? The answer is provided in the next exercise.

5.   If your computer is attached to a printer, print the **Field Statistics**.

   a.   Select the four fields: **GROSS_AMT**, **GST**, **PST** and **DATE**.

   b.   From the **Field Statistics** toolbar, click the **Print** button.

   c.   From the Print dialog box, click **OK**.

         The **Field Statistics** report for each selected field will be printed two per page.

6.   Click **Data** in the **Properties** window to return to the database.

Note: Although the Field Statistics may be viewed at any time, once generated, it is recommended that a printout be kept in the audit file along with any reconciliation reports provided.

Also note that your data or the **History** of your database can be published to a PDF or a Microsoft Word document.

7.   To Publish to a PDF or Microsoft Word document:

   a.   Ensure the correct database is active.

   b.   From the **File** tab, click **Export** and then **Publish to PDF (or Microsoft Word)**.

         Windows **Save As** dialog box appears.

   c.   Enter the file name.

   d.   Navigate to the location you want to save the file in.

   e.   Click **Save**.

Reconcile the Database

Objective:

To reconcile the **Accounts Receivable** database to the totals provided.

Exercise Description:

This exercise will identify some of the reasons why databases do not reconcile to totals provided. It will also explain the following:

- How to perform an extraction
- Rules for entering equations
- How to view and read the history log
- How to annotate the history log

IDEA Functionality Covered:

- Extractions
- Equation Editor
- Database window
- History Logs (View)
- Insert Comments
- Delete Comments

In the previous exercise, we ascertained that the database did not reconcile to the totals provided. This may be due to:

- Errors on importing the database (although this is not generally a problem with Access files)
- Cut-off problems, (i.e., transactions before or after the stated period of the database - after March 31, 2015)
- Or a number of other reasons

In fact, there are two problems with this database:

- An after-date transaction as shown in the **Field Statistics**.
- A number of invoices have been paid (i.e., the **PAID_FLAG** field contains **P**). This is a common feature. Paid invoices remain on the system for a period, although marked as paid, so that they can be included on customer statements for information.

It will be necessary to exclude all paid invoices and after-date transactions to reconcile the data to the totals provided. However, the original data file cannot be edited within IDEA, since the integrity of the data is always assured. Therefore, the required data will be extracted into a new database using the Direct Extraction task and entering the following equation:

PAID_FLAG <> "P" .AND. DATE_DATE < "20150401"

This formula identifies those items which are unpaid and before April 1, 2015.

Note the following when entering equations:

- When entering text, the text must be enclosed in quotes ("").
- IDEA is case sensitive.
- Dates must be entered in the format **YYYYMMDD** (without any separating characters such as "/") and enclosed in quotes ("").
- The symbol **<>** is used for not equal to.

To perform the extraction:

1. From the **Analysis** tab, in the **Extract** group, click **Direct**.
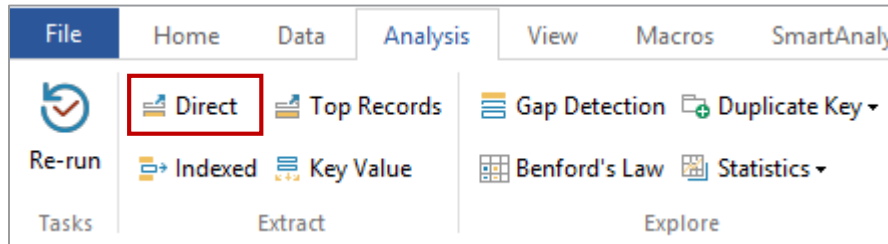
2. Change the default **File Name** provided from EXTRACTION1 to **Acc Rec March 31 2015**.
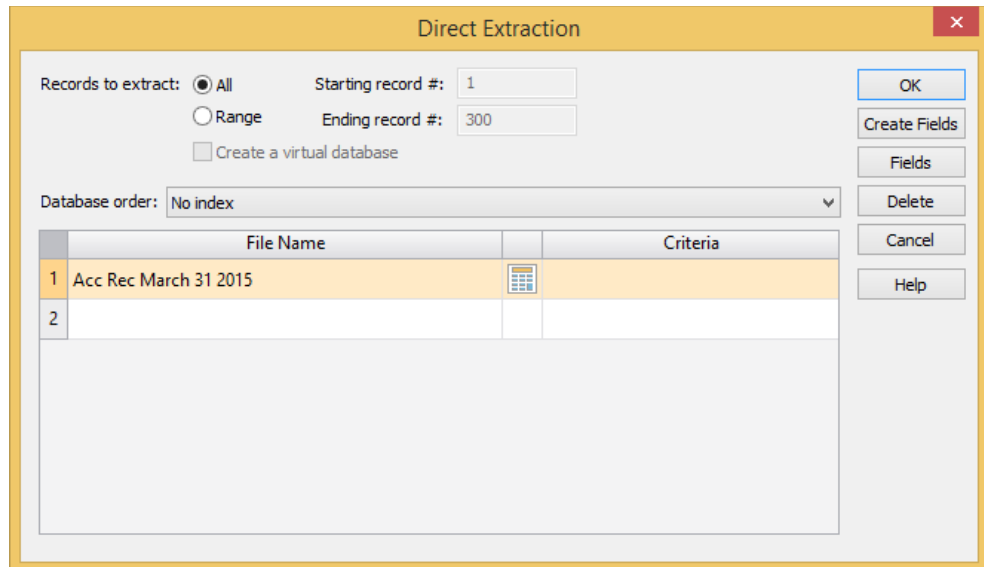
3. To enter the equation, click the **Equation Editor** button. **The Equation Editor** will appear and is used to enter the required equation.

4. Enter the required equation as follows:

    a. Double-click the field name **PAID_FLAG** to insert it into the **Equation** box.

    b. Click the **<>** (not equal to) button.

    c. Click the **""** button and note that the cursor is inserted between the quotes.

    d. Type the letter **P** (upper case).

    e. Move the cursor outside to the right of the quotes.

    f. Click the **AND** button (it inserts **.AND.**).

    g. Double-click the field name **DATE_DATE** to insert it into the **Equation** box.

    h. Click the **<** (less than) button.

    i. Click the **Calendar** button and select the date of **April 1, 2015** from the calendar. Notice that the date is automatically encapsulated in **""** and input in the proper format.

5. Once the equation has been entered, check the syntax by clicking the **Validate** button.
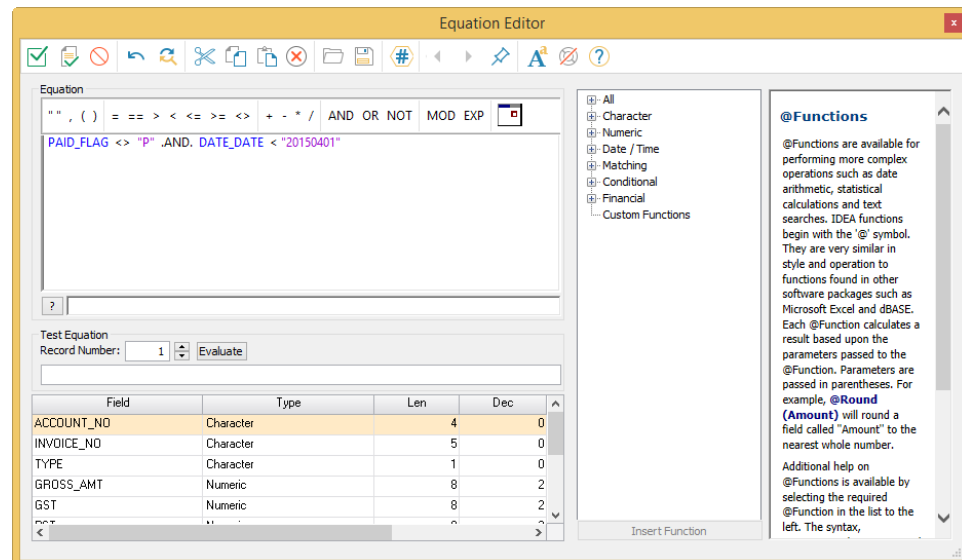
6. If a syntax error occurs in your equation, correct the expression and recheck the syntax. The equation should be as shown in the above screen. Click the **Validate and Exit** button.

7. Click **OK** to run the extraction. The resultant database **Acc Rec March 31 2015** will be displayed.

   Note that the **Control Total** for the **GROSS_AMT** field, **369,255.13**, as displayed in the **Properties** window now reconciles to the total provided.

8. View the **Field Statistics** for this database by clicking **Field Statistics** in the **Properties** window. If you get the message, *"Statistics are not available for all fields. Do you wish to create statistics for all fields without statistics?"* – click **Yes**. Notice the **Net Value** totals for the **GST** and **PST** fields also reconcile to the totals provided.

9. View the statistics for the **DATE** field and note the Earliest Date is **2014/11/04** and the Latest Date is **2015/03/31**.

10. Print and file the **Field Statistics** reports for each field as explained in the previous exercise.

11. Click **Data** in the **Properties** window to return to the database.

12. The **Acc Rec March 31 2015** database is now displayed as a "child" of the parent database, **Accounts Receivable**, in the **File Explorer**.
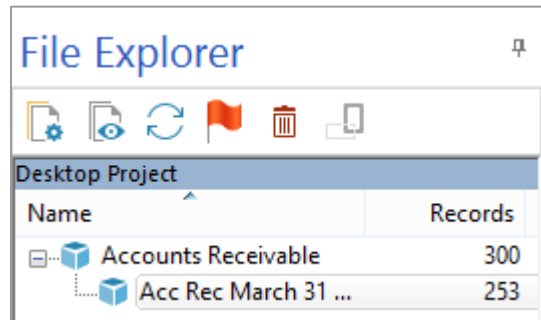
History Log

IDEA maintains a hierarchial **History** log of how each database has been created. These logs cannot be modified and should be printed out at the end of the audit, reviewed and filed along with all other audit documentation. Alternatively, if you use electronic working papers the **History** log may be exported to a text file.

To view the **History** log:

1. From the **Properties** window, click **History**. Note that the details of the file import, selection of the **Control Total** field and the extraction have been recorded. Notice that the **History** is displayed as a series of collapsed nodes.
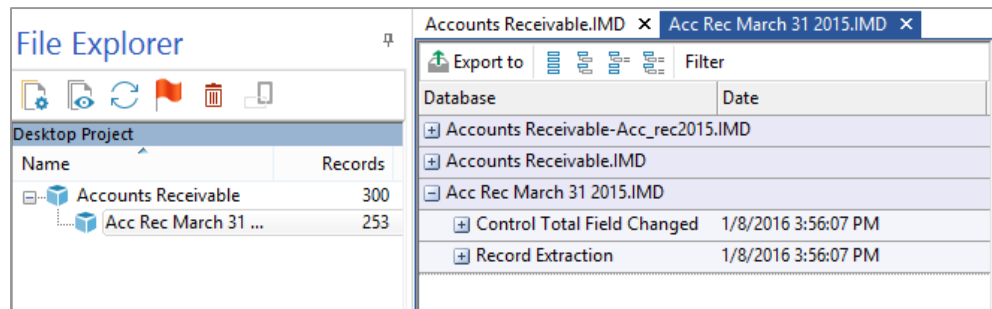
2. Expand each node by clicking on its + button. Alternatively, expand all the nodes by clicking the **Expand All Details** button on the **History** toolbar. The IDEAScript code that can be used for re-running the audit at a later date is included in the **History** log.

Add a Comment

IDEA allows you to add comments to an active database. Comments are used to explain the findings of a database and can also be used to display warning messages.

1.   Annotate the database by clicking the **Add comment** link in the **Comments** area of the **Properties** window.
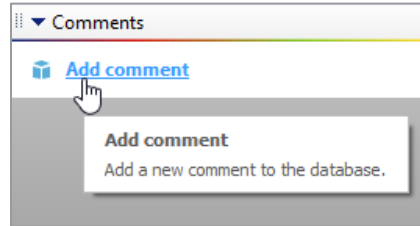
2.   Enter the following comment:

Database Reconciliation – Database reconciles to totals provided by client.

3. Click the **Link** column, then the ellipse button to select **Acc Rec March 31 2015**.
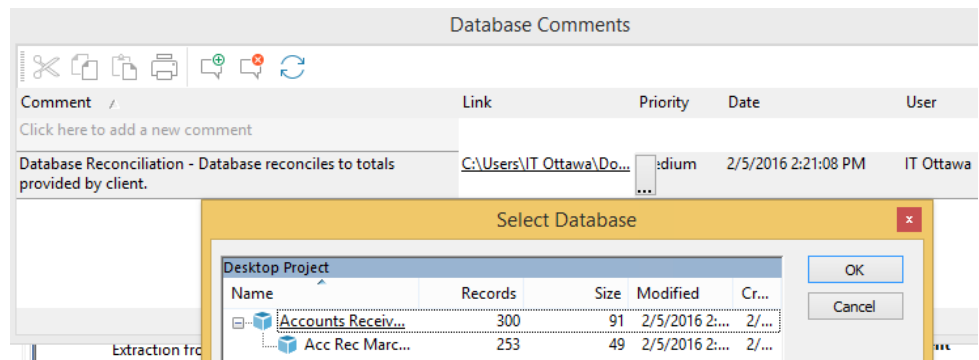
4. Click **OK**.

5. Close the **Database Comments** dialog box.

6. Return to the database by clicking the **Data** link in the **Properties** window.

To delete a comment:

Right-click the required comment link in the **Comments** area of the **Properties** window and then click **Delete Comment**.

Random Record Sampling

Objective:

To choose a sample of items for confirmation and determine any other testing to prove validity.

Exercise Description:

This exercise uses random sampling that is the standard sampling technique used by Dynamic Accountants.

IDEA Functionality Covered:

- Extract a random sample of items
- Close an active database

Ensure **Acc Rec March 31 2015** is the active database with the Database View selected.

1. From the **Analysis** tab, in the **Sample** group, click **Random**.
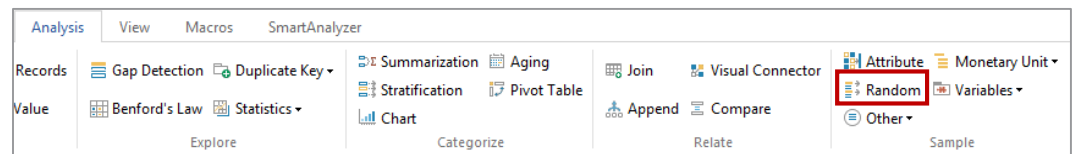
The **Random Record Sampling** dialog box appears.
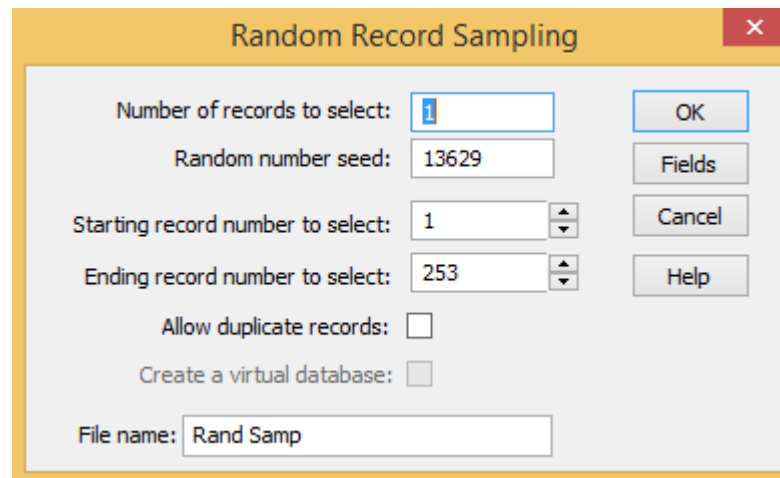
2. Enter **20** as the **Number of records to select**.

3. Accept the random number seed provided by IDEA. This is used to start the algorithm for calculating the random numbers. If a sample needs to be extended then entering the same random number seed but entering a larger number of records to select will produce the same original records with the required additional records.

4. Accept the default range from which the sample will be selected. By default, the range is the first and last records (i.e., 1 - 253).

5. Leave the **Allow Duplicate Records** option unselected in order to prevent IDEA from selecting the same record more than once.

6. In the **File name** box, enter **Sample of Acc Rec Transactions**.

7. Click **OK** to run the sample extraction.

8. View the resultant database and note the additional field, **SAM_RECNO**, added to the database as the right-most column. This additional field contains the corresponding record numbers from the original database.

9. From the **File** tab, click **Close Database** to close the **Sample of Acc Rec Transactions** database.
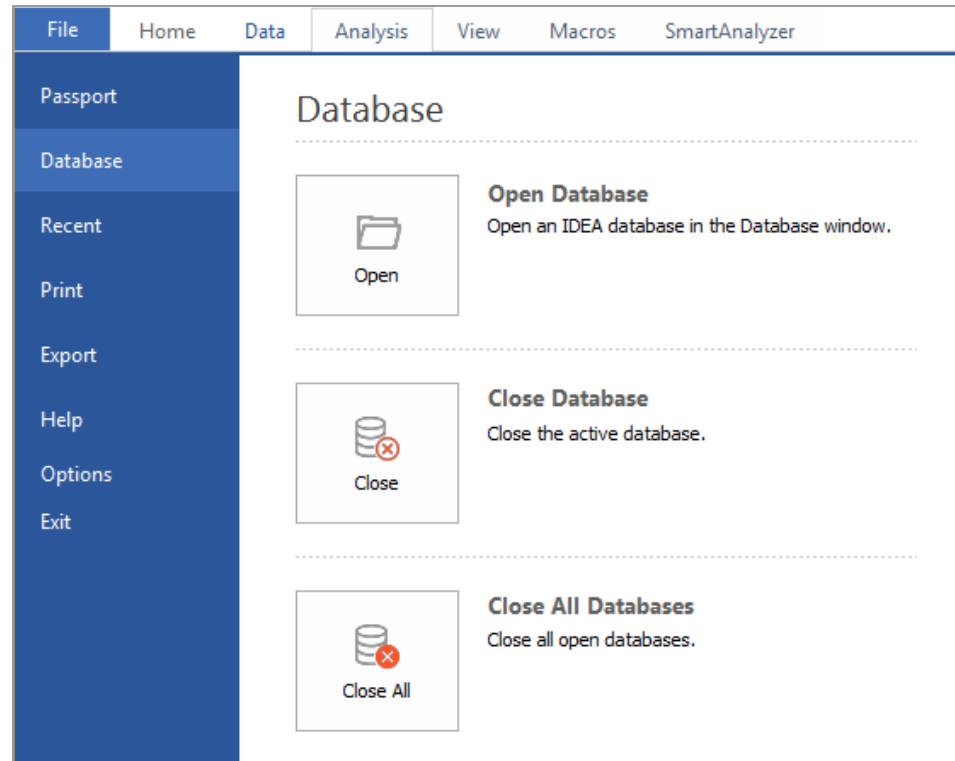
Note: A sample of transactions was extracted in the above exercise. However, you may wish to extract a sample based on account numbers and then extract the transactions relating to the selected account numbers.

This would be performed by the following procedure:

1. Summarize the outstanding balances by account number.

2. Extract the required sample of account numbers.

3. Optionally, join the sample of account numbers to the transactions database using the account number fields in each database as the match keys and selecting the **Matches only** option in the **Join Databases** task to provide the detail behind each transaction.

This procedure is not used in this exercise, as it requires a number of the more complex functions within IDEA that will be covered in later exercises.

Age Analysis   *Objective:*

To produce an age analysis of outstanding invoices at year-end in order to identify the number and value of old debts and to make the necessary provisions in the final accounts for potential write-offs.

Exercise Description:

This exercise will teach you how to perform an age analysis, view the **Aging Results**, understand the **Aging Results** toolbar options, export the results to a report, and print the report.

IDEA Functionality Covered:

- Aging
- Aging Results View

1.   Ensure **Acc Rec March 31 2015** is the active database.

2.   From the **Analysis** tab, in the **Categorize** group, click **Aging**.
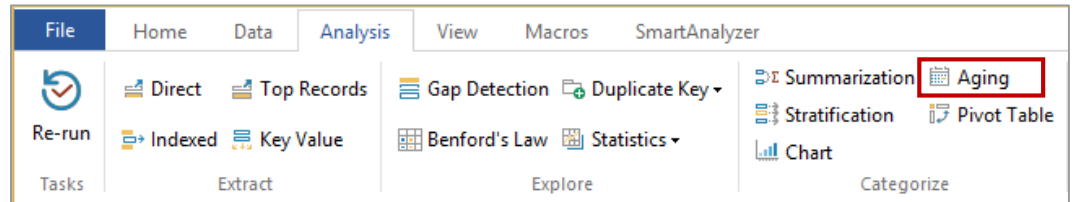
3.   Using the calendar control, accessed by clicking on the **Calendar** button, change the date in the **Aging date** box (which currently displays the computer's system date) to **2015/04/01**.

   Note: The aging date must be entered as one day after the year-end or period-end dates from which you wish to age the data.
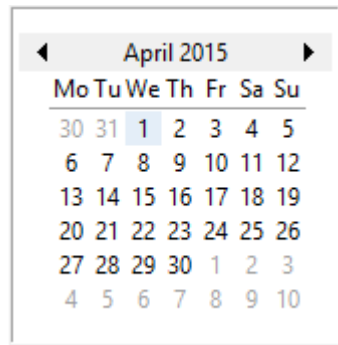
4.   Do not specify criteria for the test. A criterion would limit the test to only those records satisfying the specified criterion.

5.   In the **Aging field to use** box, accept the **DATE_DATE** field.

6.   In the **Amount field to total** box, accept **GROSS_AMT** as the amount field to total for each interval.

7.   In the **Aging interval** in box, accept **Days**.

8. Change the **Aging interval days** to: **31**, **59**, **91**, and **121**. Only 4 intervals are required, therefore enter **0** for the 5th interval. The 6th interval will also be excluded from the analysis.

9. Do not select the **Generate detailed aging database** option.

10. Do not select the **Generate Key summary database** option.

11. Enter **Age Analysis Report** as the name for the **Results** output.

12. Click **OK** to generate the **Results** output named **Age Analysis Report**.

13. The **Aging Analysis Report** is displayed in a new **Results** output view of the Database window. Note the new link in the **Results** area of the **Properties** window.

The **Aging Analysis Report** produces the following summary information for each age interval:

- **# Records**: The number of records in a specified interval

- **% Records**: The percentage of the total number of records

- **Debits**: The debit value for the records in the specified interval

- **% Debits**: The percentage of the total debit value

- **Credits**: The credit value for the records in the specified interval

- **% Credits**: The percentage of the total credit value

- **Net Value**: The net value of the records in the specified interval

- **% Net Value**: The percentage of the total net value

Note: Any credit notes and/ or unallocated cash have been aged on their own date and not offset against oldest items.

A summary record is created in the **Aging Analysis Report** for each interval specified. Additionally, it produces a summary for:

- **Interval Ø**: Items dated on or after the aging date, in this case 2015/04/01

- **Interval 121+:** Items older than the final period specified

- **ERR**: Items with invalid or missing dates

- **Totals**: Totals for all intervals

Note that there are 3 old debts (i.e., older than 90 days). These will be identified in the following exercise.

14.   Click on the **View the result graph** button on the **Aging Results** toolbar. View the graph.
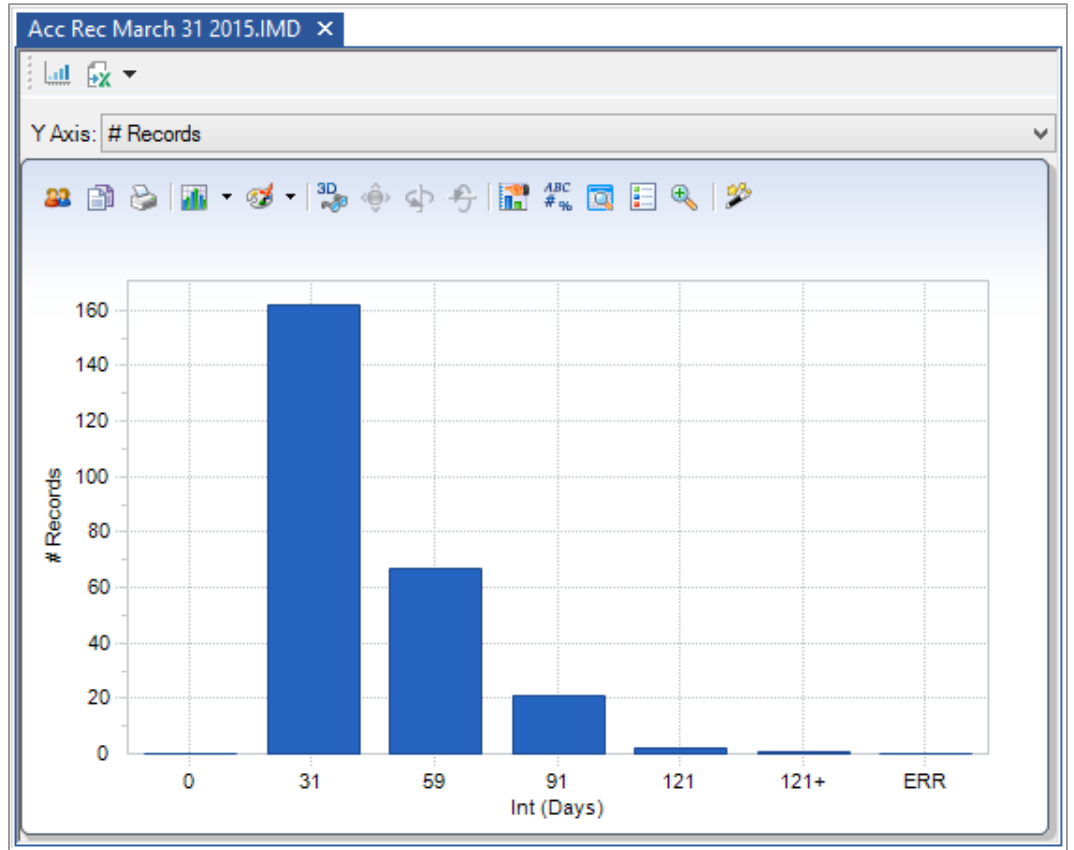
15. Right-click the chart and click **Properties**. From the **General** tab, select the **3D** option to change the graph from 2-dimensional to 3-dimensional. Click **OK**.
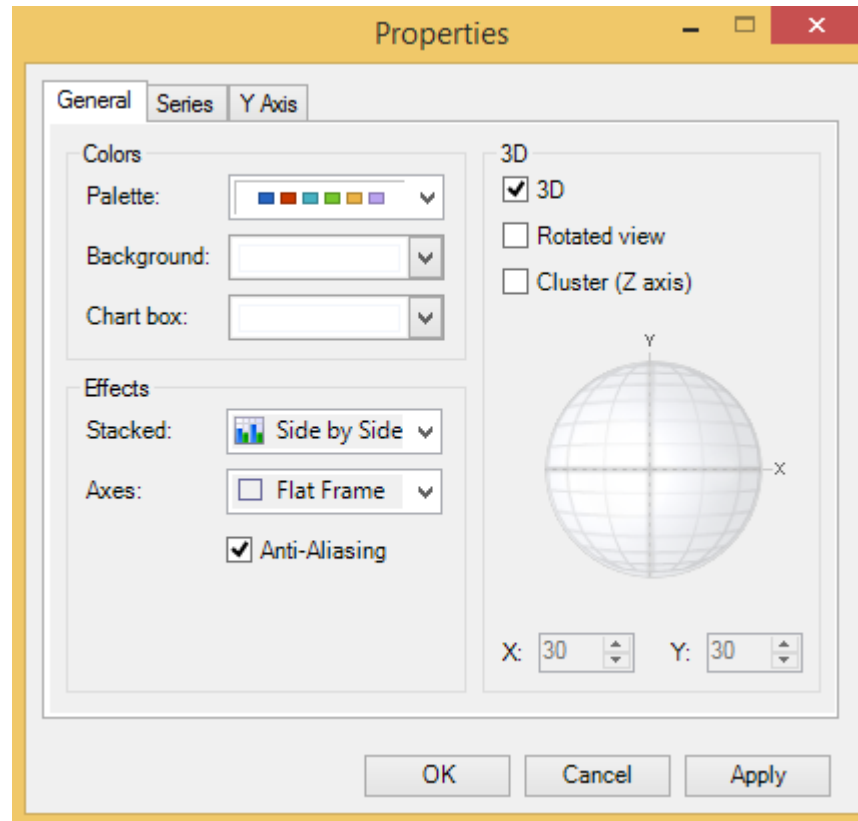
16. Right-click the chart and then click **Edit title**. An edit box will appear at the top of the chart. Enter the title: **Aging at April 1, 2015**.

17. Use the **Y Axis** list box at the top of the graph to change the y-axis to **Net Value**.

18. If your computer is attached to a printer, click **Print** on the **Operations** toolbar.

19. Click the **View the result grid** button to return to the **Aging Results** output in the Database window.

20. Return to viewing the database by clicking on the **Data** link in the **Properties** window.

    Note: Only a Results output was generated in this exercise, the additional optional databases were not selected. Please read the IDEA Help system for further information on the optional databases. If the amount of free disk space is a concern (particularly with large databases), careful consideration should be given as to whether optional databases are required.

Understanding the Database Window

The Database window is IDEA's main window. Each database is opened into a separate tab in the Database window.

The Database window has a number of properties which can be accessed through links in the **Properties** window, including:

- Database
- History
- Field Statistics
- Results

To change properties, click the relevant link in the **Properties** window. Scroll buttons are available for navigating through the property views.

Data

When a database is opened, the data is displayed in the **Data** property in the Database window. The **Data** property has a spreadsheet-like appearance with the record numbers displayed in the first column. Views (i.e., changes to the display format of the data) may be saved and re-opened as required. Changes to the display of data in the **Data** property are saved with the database and will be re-applied when the database is opened.

History

The **History** property of the Database window maintains an audit trail or log of all operations carried out on a database, including its import and each audit test. It produces a linear log so that the process of how the file was created can be traced. The **History** log is contained within the IDEA database (filename.imd).

Field Statistics

The **Field Statistics** property provides statistical information on the values of **Numeric**, **Date** and **Time** fields within the database, such as net, maximum, minimum, and average values; numbers of debit, credit, and zero value items; and date statistics, such as the earliest and latest date. The **Field Statistics** property gives a valuable initial analysis of the database by helping the auditor to gain an understanding of the data and perhaps even identify problems to be investigated further, such as negative inventory items, zero-value check payments, or after date transactions.

Results

The following tests in IDEA produce Results output displayed in the Database window.

- Gap Detection
- Benford's Law
- Aging
- Stratification
- Summarization (optional)
- Pivot Table
- Generate Random Numbers
- Chart Data
- Correlation
- Trend Analysis
- Time Series

The **Results** may be accessed by clicking the relevant link in the **Results** area in the **Properties** window. Any number of **Results** may be created for a database and each will be given an appropriate name.

The **Results** remain in the IDEA database and may be viewed or printed at any time. The description of the Results tab may be changed to a more meaningful name. **Results** may also be deleted if required.

Extract High Value and Old Items

Objective:

To identify high value items and old items.

Exercise Description:

This exercise uses extractions to identify high value invoices (i.e., > $10,000) and old invoices (i.e. before 31 December 2014) found in the **Acc Rec March 31 2015** database. This exercise will teach you how to extract data from the database, perform multiple extractions, and understand the benefits of multiple extractions.

IDEA Functionality Covered:

- Extractions
- Multiple Extractions

1. Ensure that **Acc Rec March 31 2015** database is selected as the active database and the **Data** property is selected in the **Properties** window.

2. From the **Analysis** tab, in the **Extract** group, click **Direct**.

   The **Direct Extraction** dialog box appears.

3. A default **File Name** is provided. Change this to: **High Value Amounts** as shown below.

4. Click the **Equation Editor** button.

5. Enter the expression **GROSS_AMT > 10000**.

   Note: Do not enter the currency symbol or thousands separators when entering numbers.

6. Once the equation has been entered, check the syntax and close the **Equation Editor** window by clicking the **Validate and Exit** button.

7.   Click the second row of the **Direct Extraction** dialog box and notice that a default file name is provided.

8.   Enter the file name: **Old Invoices**.

9.   Click the **Equation Editor** button.

      The **Equation Editor** appears and is used to enter the required equation.

10.   Enter **DATE_DATE <= "20141231"** using the **Calendar** button to select the date.

11.   Once the equation has been entered, check the syntax and close the **Equation Editor** window by clicking the **Validate and Exit** button.

12.   In the **Records to Extract** area, accept the default selection of the **All** option to extract the records from the whole database.
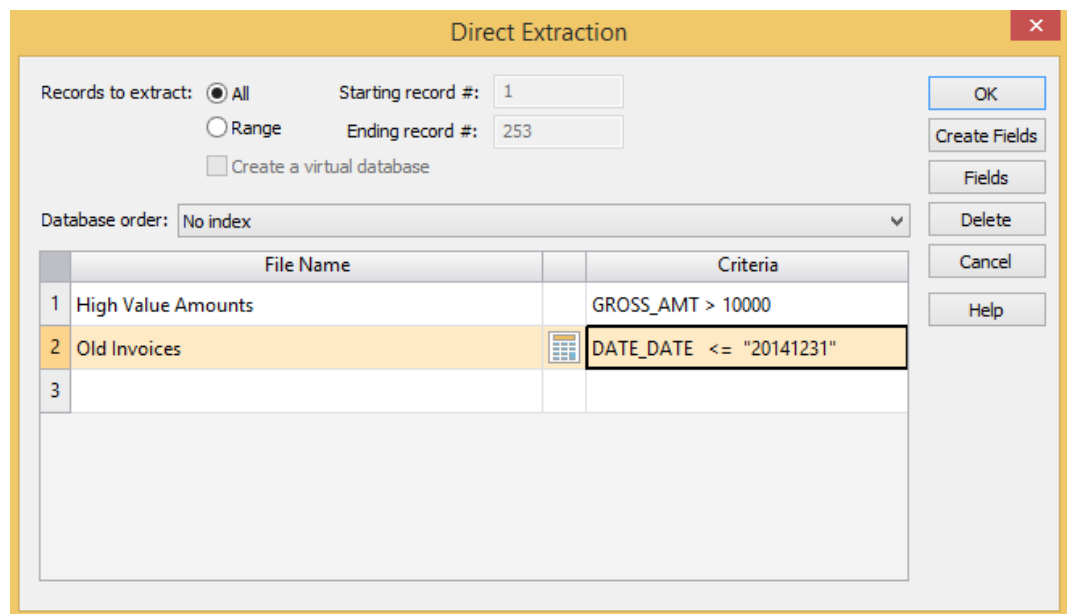
13.   Click **OK** to run the extractions.

14.   Two new databases have been created as shown in the **File Explorer** window. **High Value Amounts** will be the active database. View this database, record the results, and view the **History** log. Open the **Old Invoices** database. View this database, record the results, and view the **History** log.

      - **High Value Amounts**: There are **10** records totaling **$139,479.86**.

      - **Old Invoices**: There are **3** records totaling **$5,465.29**.

15.   From the **File** tab, click **Close All Databases** to close all databases.

Advantages of Performing Multiple Extractions

The extractions are performed with a single pass through the database, saving considerable time when testing large files. Up to 50 extractions may be carried out at one time.

Identify and Review All Credit Notes

Objective:

To identify all credit notes.

Exercise Description:

This exercise will identify all credit notes (i.e., where **TYPE = "C"**) using the **Criteria** property. The differences between the **Extraction** and **Criteria** will also be explained.

IDEA Functionality Covered:

Criteria.

1. Open the **Acc Rec March 31 2015** database.

2. Click the **Criteria** link in the **Properties** window to load the **Equation Editor**.
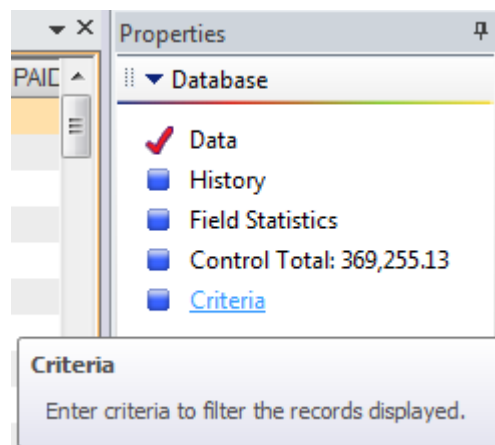
3. Enter the following equation: **TYPE = "C".**

4. Click the **Validate and Exit** button on the **Equation Editor** toolbar to check the syntax and exit the **Equation Editor**.

The criterion will appear beside the **Criteria l**ink in the **Properties** window and will be applied to the database. Note the **Status** bar, at the bottom right of the application window, indicates that 34 of the 253 records meet the criterion. Note also that the **Control Total** for the database has changed and is calculated for the 34 records.

5.   Right-click the **Criteria** link in the **Properties** window and click **Clear** to return to viewing the whole database.

6.   Apply the following new criterion to the database: **GROSS_AMT < 0**. There are 44 items including 10 unallocated payments (**TYPE = "P"**).

7.   Clear the criterion to view all records.

Differences Between Extractions and Criteria

The **Criteria** property is similar to the **Extractions** tasks in that it is used to identify items satisfying a given equation.

However, the **Criteria** property does not generate an output database, it simply displays, in the Database window, only those records satisfying the criterion. Additionally, nothing is written to the **History** log when using the **Criteria** property.

When running tasks where entering criteria is optional, **Criteria** may be simple or complex. Any criteria used remains available in the **Criteria** link for that database, and can be selected and applied as required. Right-click on **Criteria** to access the list of **Criteria** used.

Equations can also be saved and reapplied through the **Equation Editor** for use in extractions and **Virtual** fields.

IDEA lists, and allows you to gain access to, the eight most recently opened **Criteria** for the current database. When a **Criteria** is longer than 50 characters, the menu will display only the first 47 characters followed by an ellipses.

Note the recent **Criteria** list is not passed down to child databases.

Conclusion

There are several unallocated payments on account that should be brought to the client's attention. The number of credits is also high.

Calculate the Net Transaction Amount

Objective:

To prove the accuracy of the calculation of the net amount.

Exercise Description:

Calculate the net amount from the **GROSS_AMT**, **PST**, and **GST** fields. This involves appending a **Virtual** (or Calculated) field to the database and entering the appropriate field equation.

IDEA Functionality Covered:

- Field Manipulation
- Appending virtual fields
- Displaying the format of the database
- Changing field names in a database

1. Ensure the **Acc Rec March 31 2015** is the active database and **Data** property is selected in the **Properties** window.

2. From the **Data** tab, select the **Field Manipulation** task by selecting the button at the corner of the **Define Action Field** button.
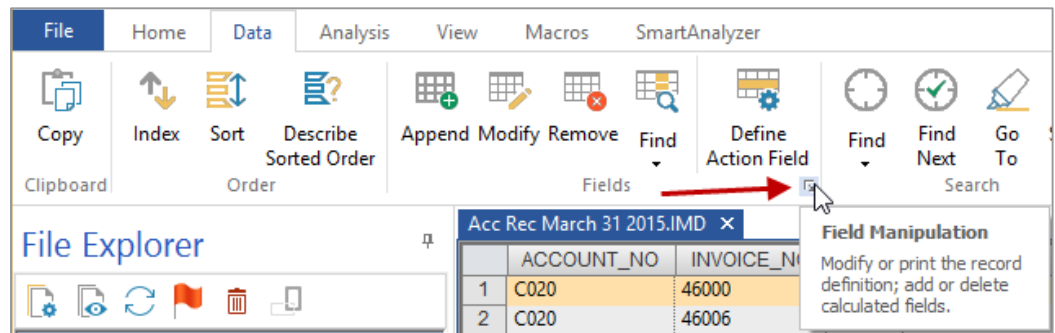
Alternatively, you can double click within the data grid to bring up the **Field Manipulation**.

3. Click **Append** on the **Field Manipulation** dialog box and enter the following details:

- **Field Name**: NET
- **Field Type**: Virtual Numeric
- **Field Length**: Do not enter
- **Decimals**: 2
- **Description**: Net Amount
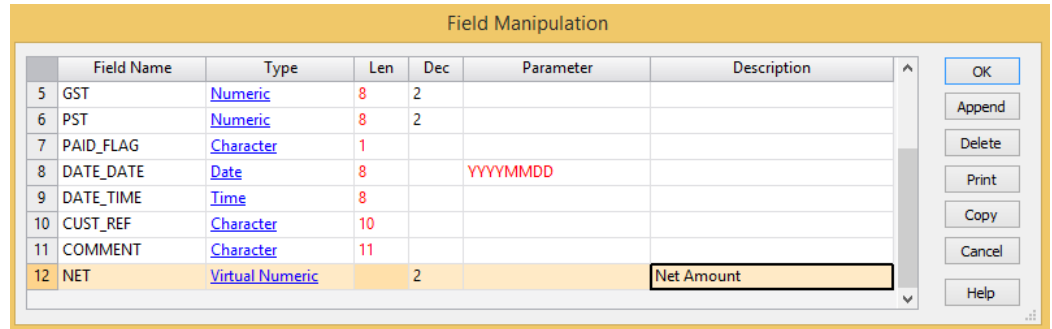
4. Click the **Parameter** box to load the **Equation Editor** for building the equation. Enter **GROSS_AMT - (GST+PST)**
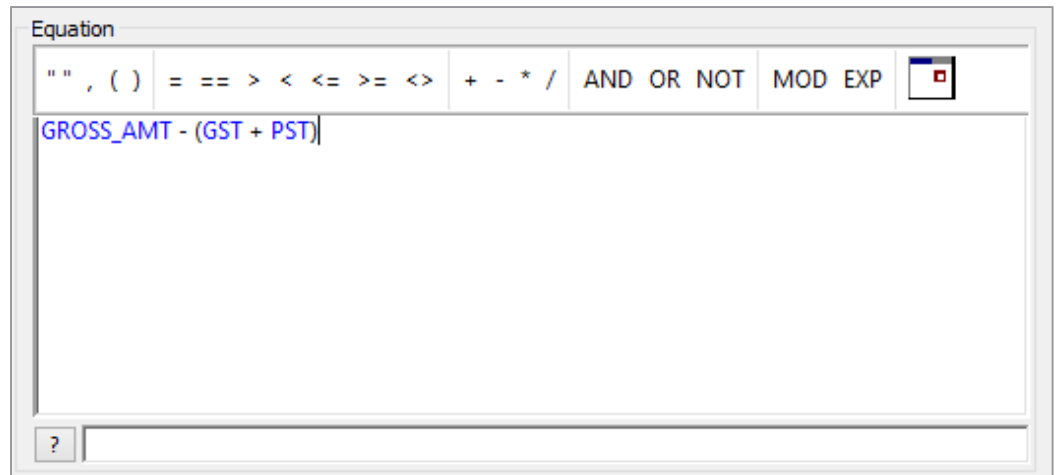
5. Once the equation has been entered, check the syntax by clicking the **Validate and Exit** button.
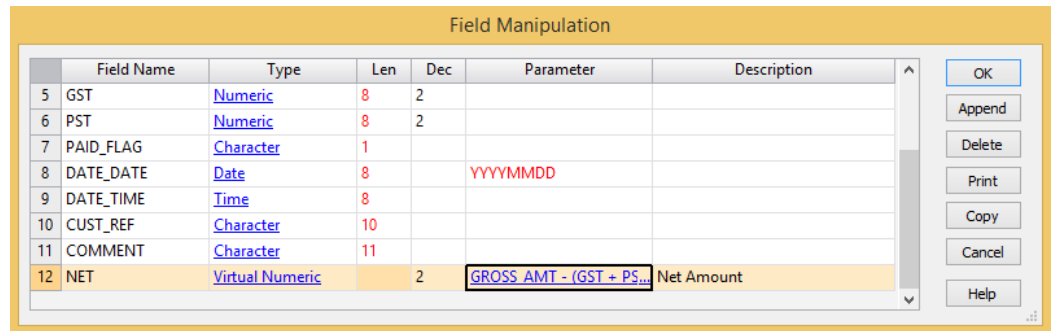
6. Click **OK**.

7. Click **Yes** to continue and to append the field to the database.

8. Scroll right and view the resultant field that is added as the right-most field of the database. Note that the values in this field are displayed in the color teal. This distinguishes a **Virtual** field from an original imported field.

9. Place the cursor over one of the **Virtual** field values and note the equation in the tool tip that is displayed.
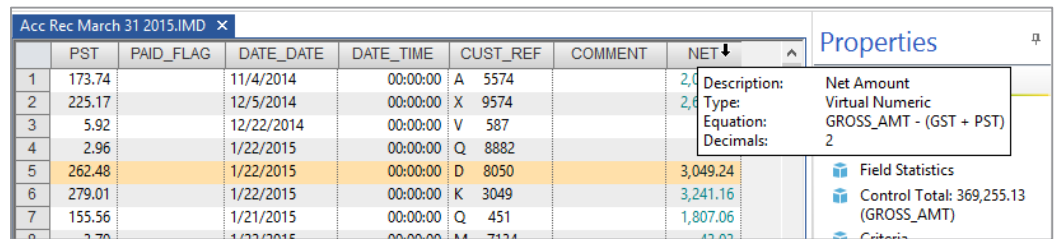
10. View the **History** of the database and note the recording of the **Virtual** field equation.

11. Return to the **Data** property.

   Note: The Virtual field will not be editable in any child database created from the parent database.

Analyze the Balances and Taxes by Account

Objective:

To total the Accounts Receivable and taxes by customer to prove customer balances. Identify the top ten debtors.

Exercise Description:

Use the **Summarization** task to total the Accounts Receivable and taxes by customer account number.

- Summarize (i.e., total) data by a key
- See the differences between the Summarization options
- Create a list of unique items in a database

IDEA Functionality Covered:

- Using Quick Summarization
- Indexing databases with a single key (Quick Index)

Note: In this exercise, the **Quick Summarization** option can be used as there is only one field in the key i.e., **ACCOUNT_NO**.

1. Ensure **Acc Rec March 31 2015** is the active database and the **Data** property is selected in the **Properties** window.

2. From the **Analysis** tab, in the **Categorize** group, click **Summarization**.
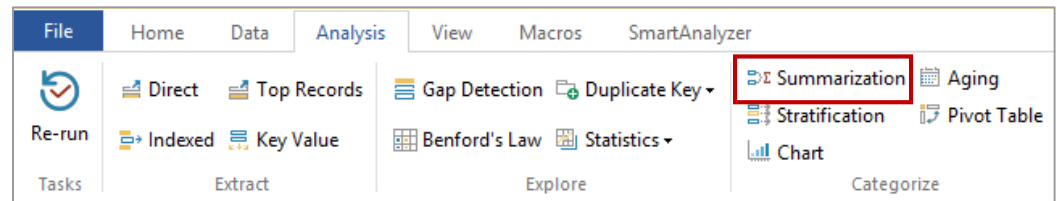
3. Select or enter the following:

- **Fields to Summarize**: ACCOUNT_NO
- **Numeric Fields to Total**: GROSS_AMT, GST, PST, NET

4. Click the **Fields** button and note that no fields are selected. This stops unnecessary information being included in the summarized database. Click **OK** to return to the **Summarization** dialog box.

5. Select the **Use Quick Summarization** option.

6. Accept the **Create database** option. This creates a database of the resultant account records. This database will be joined to the **Customer Master** database in a later exercise.

7. Do not select the **Create result** option. This would write the results to a new **Results** output with drill-down and graphic capabilities. **Criteria** can be specified for a summarization. If asked to include transactions before a specific date, the **Criteria** option would be used. For this exercise, the **Criteria** option will not be used.

8. In the **File name** field, enter **Balances by Customer**.

9. Click **OK**.

10. View the resultant database, adjust column widths if necessary, and note the following fields:

- **ACCOUNT_NO**: List of all customer accounts for which there has been transactions

- **NO_OF_RECS**: Number of records (i.e., invoices, credits) per account

- **GROSS_AMT_SUM**: Gross balance by account

- **GST_SUM**: Total GST by account

- **PST_SUM**: Total PST by account

- **NET_SUM**: Total net balance by account

In addition to providing totals for the selected Numeric fields, the **Balances by Customer** database shows **51** customers with balances.

11. In order to identify the top ten debtors, sequence the records in descending **GROSS_AMT_SUM** value by creating an index. If there is a single field in the key (i.e., **GROSS_AMT_SUM**), the "quick" index option can be used as follows:

    a. Double-click the field name **GROSS_AMT_SUM**. This will index the database on the **GROSS_AMT_SUM** field in ascending order.

    b. Double-click the field name a second time to index in descending order.

       Note that the **Indices** area of the **Properties** window displays the index **GROSS_AMT_SUM/D**.

    The largest balance is **$45,736.81** for account **W025** (with 11 transactions).

12. Close all databases by clicking the **File** tab and then **Close All Databases**.

Check Debtors Against Authorized Credit Risk

Bright IDEAs Inc. services must be paid for in advance unless a credit check has been performed for the customer and an entry made on the authorized customer credit list.

Objective:

To test that all transactions, such as invoices, credit notes, and payments are recorded for valid customers. To identify where credit limits have been exceeded for any customer.

Exercise Description:

Import the Customer Master file that has been supplied as an electronic report file using the Report Reader module.

The **Balances by Customer** database will be matched (joined) to the **Customer Master** database. Accounts where the credit limit has been exceeded will be identified.

IDEA Functionality Covered:

- How to import a print report file using the Report Reader module within IDEA
- The need to plan for the field types, if the database is to be joined, matched, or compared with another database
- Join or match data in different databases
- The different join options
- Identify the number of mismatches on key fields
- Perform an extraction
- Find all records containing specific data

The Customer Master file has been supplied as a **Print Report** in text format. **Report Reader** is used to extract data from **Print Report** files, importing it into **IDEA**.

Print report file: **CUSTOMER**

Import the Print Report file
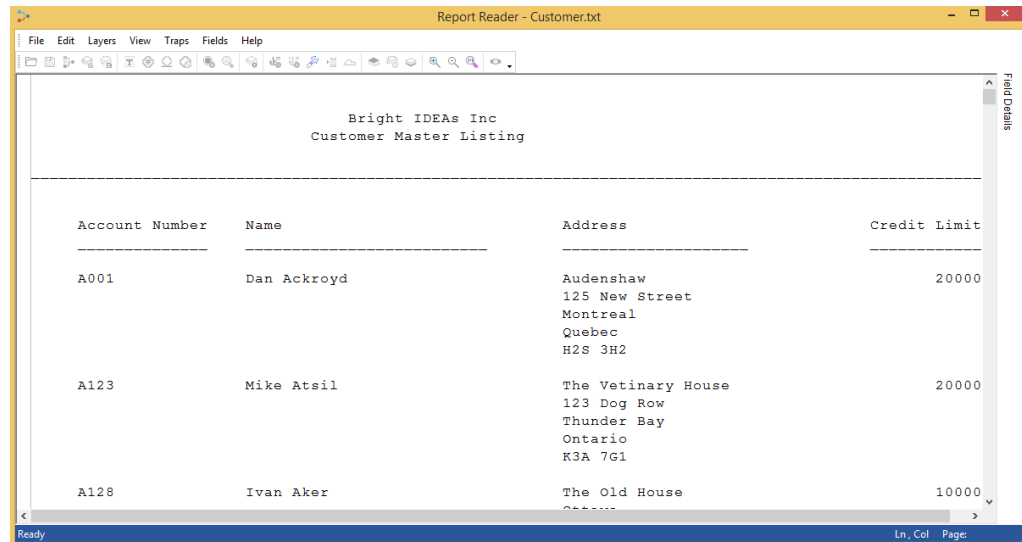
1. From the **Home** tab, in the **Import** group, click **Desktop** to access the **Import Assistant**.

   The **Import Assistant** dialog box appears.

2. Select **Print Report and Adobe PDF**.

3. Click the **Browse** button to navigate to and select the required file.

4.   Select **Customer.txt** and then click **Open**. Notice the various types of Print Report files IDEA can import.
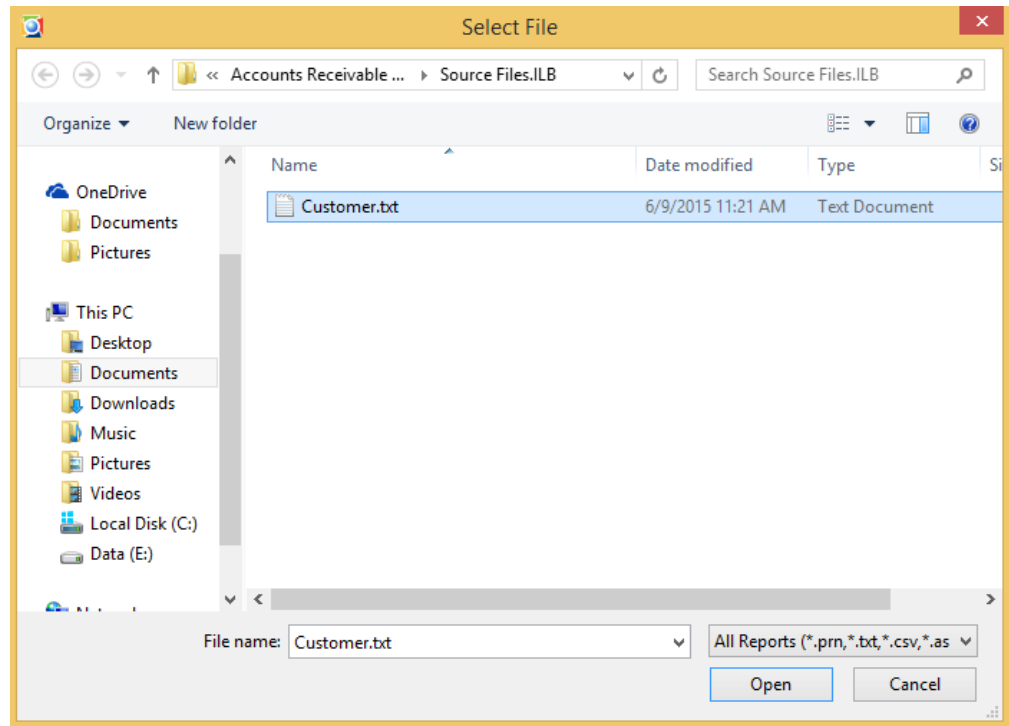
5.   Click **Next** to open the **Report Reader**.

6. Maximize the **Report Reader** window. Scroll through the report and notice the information that is included in the report:

- Account Number
- Name
- Address
- Credit Limit

Note: The Report Reader uses a set of layers to define the data to be imported into IDEA. The first step is to identify the Base Layer. The Base Layer is the line(s) that contains the lowest level of detail information in the report. It is very important to select the line from the first record in the report, even if that line contains spaces instead of having every column filled with data.

Once the Base Layer is defined, Append Layers that provide related information to the Base Layer can also be defined. The Base Layer and Append Layers are identified by Traps.

Traps can be Text, Numeric, Space, Non-Blank, Floating, or actual words that uniquely identify each occurrence of the record in the report. Keep the **Traps** as simple as possible. Do not overlook the possibility that spaces or spaces combined with numbers or text could be the best **Traps**.

Define a Base Layer

1. Scroll through the report and identify the line(s) that contain the lowest level of detailed information and highlight the lines with the cursor (click and drag). Since the address information is a multiple line field, the **Base Layer** will contain 5 lines.

2. Select **Create a standard layer** and then click **Yes**.
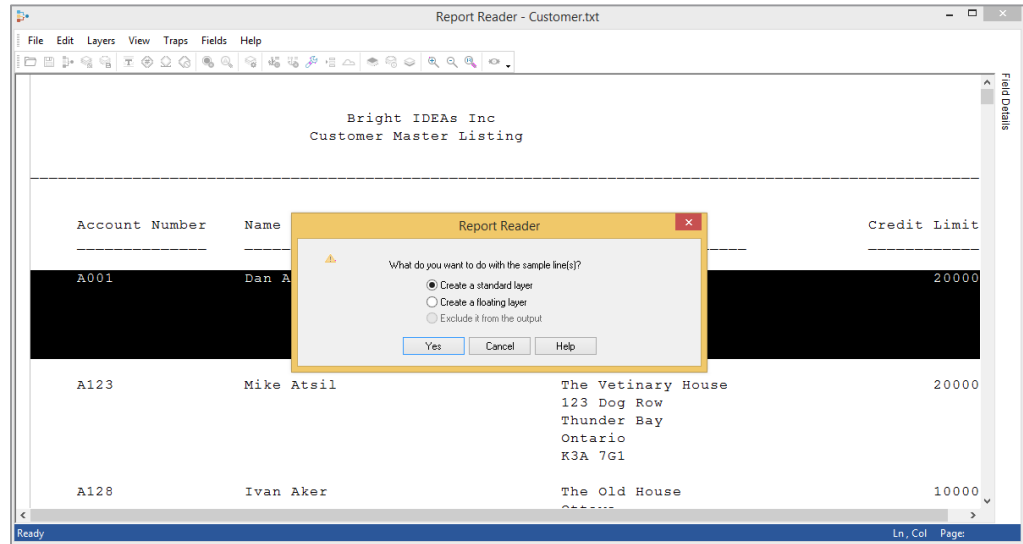
The **Report Reader** will display a **Field Editor** (the section between the two yellow lines) where the fields that need to be included in the database are defined. Scroll through the report and notice each section of data begins with an account number. The best **Trap** for the **Base Layer** is a combination of text and numbers, based on the account number (**TNNN**).

3. Place the cursor in the **Anchor Editor** area above the account number in the **Field Editor**. On the **Report Reader** toolbar, click **Text Trap** once and click **Numeric Trap** three times.
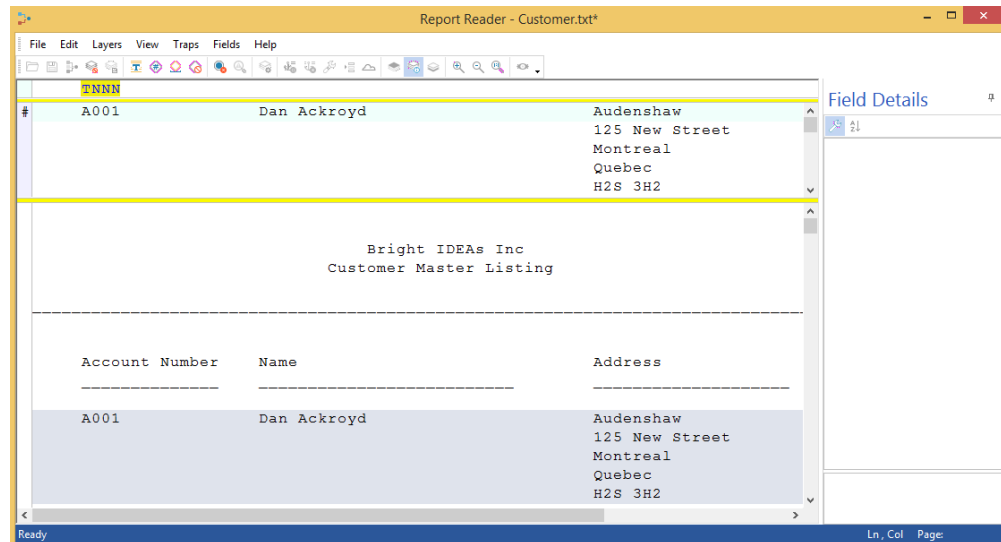
Notice each section of data that begins with an account number is highlighted.

4. Scroll through the report to make sure all the information is highlighted.

Identify Field Anchors

Selecting the information that will become the data fields in the database is done by identifying **Field Anchors**. Using the cursor, you will highlight each **Field Anchor** contained in the **Base Layer**. Make sure the widths are large enough to include information that may be slightly off position or extremely long. Watch for items that appear as spaces in the **Base Layer** line, but contain values in other lines

1. In the **Field Editor** (the row with the pound sign (#)), highlight the account number information.

   Note: If a mistake is made while highlighting the field, click the **Remove Field Anchor** button on the toolbar to remove the **Field Anchor** or right-click the **Field Anchor** to display a shortcut menu. Both actions remove the **Field Anchor** that is active and highlighted.

2. The color of the selected field will be orange and all the account number fields of the detail lines in the report will be highlighted.

   Now that the **Field Anchor** in the **Base Layer** has been highlighted, it is necessary to name and detail each field. This is done using the **Field Details** window.

3. In the **Field Details** window, enter the following details:

    - **Layer Name**: Layer-1

    - **Name**: ACCOUNT_NO

    - **Type**: Character

    - **Offset**: 5

    - **Actual Width**: 4
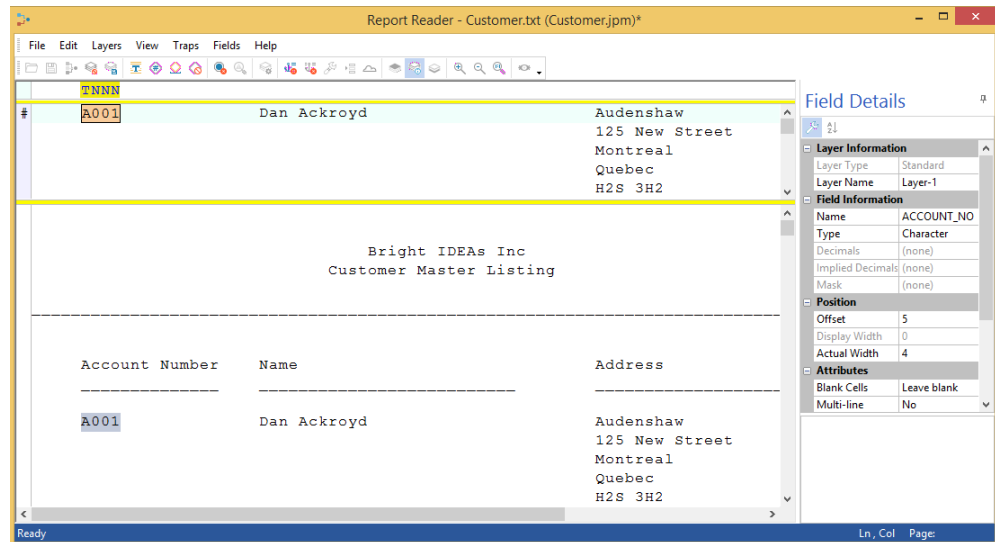
4. In the **Field Editor**, highlight the customer name information, leaving enough room for the larger data.

5. In the **Field Details** window, enter the following details:

    - **Name**: CUST_NAME

    - **Type**: Character

    - **Offset**: 23

    - **Actual Width**: 28

6. In the **Field Editor**, highlight the address information, leaving enough room for the larger data.

7. In the **Field Details** window, enter the following details:

    - **Name**: ADDRESS

    - **Type**: Character

    - **Offset**: 57

    - **Actual Width**: 33

    - **Multi-line**: Yes

8. 8. In the **Field Editor**, highlight the credit limit information, leaving enough room for the larger data.

9. In the **Field Details** window, enter the following details:

- **Name**: CREDIT_LIM

- **Type**: Numeric

- **Offset**: 95

- **Actual Width**: 7

10. When you are done the fields should match the following table:

NAME	TYPE	OFFSET	ACTUAL WIDTH
ACCOUNT_NO	Character	5	4
CUST_NAME	Character	23	28
ADDRESS	Character	57	33
CREDIT_LIM	Numeric	95	7
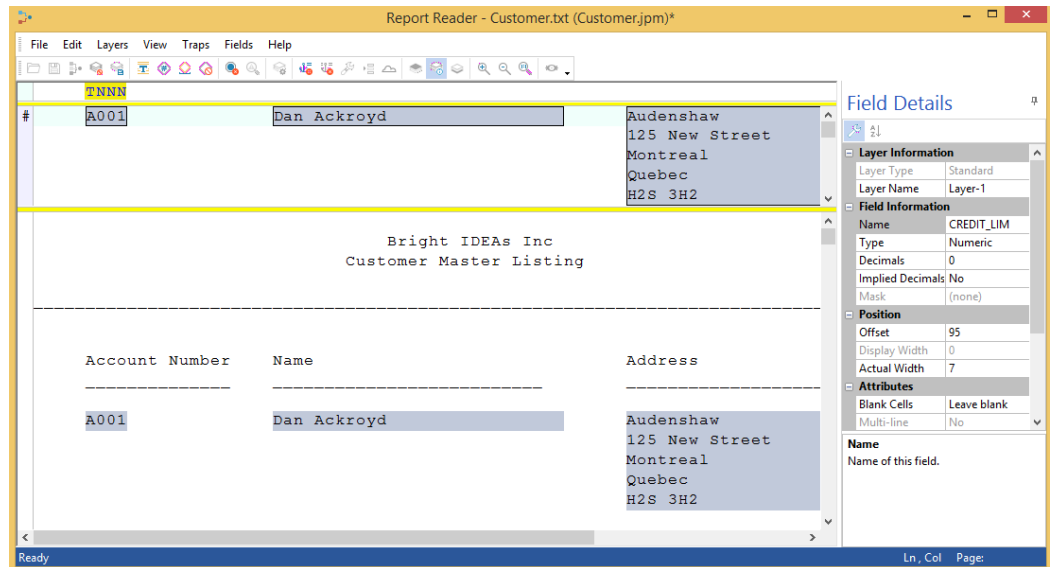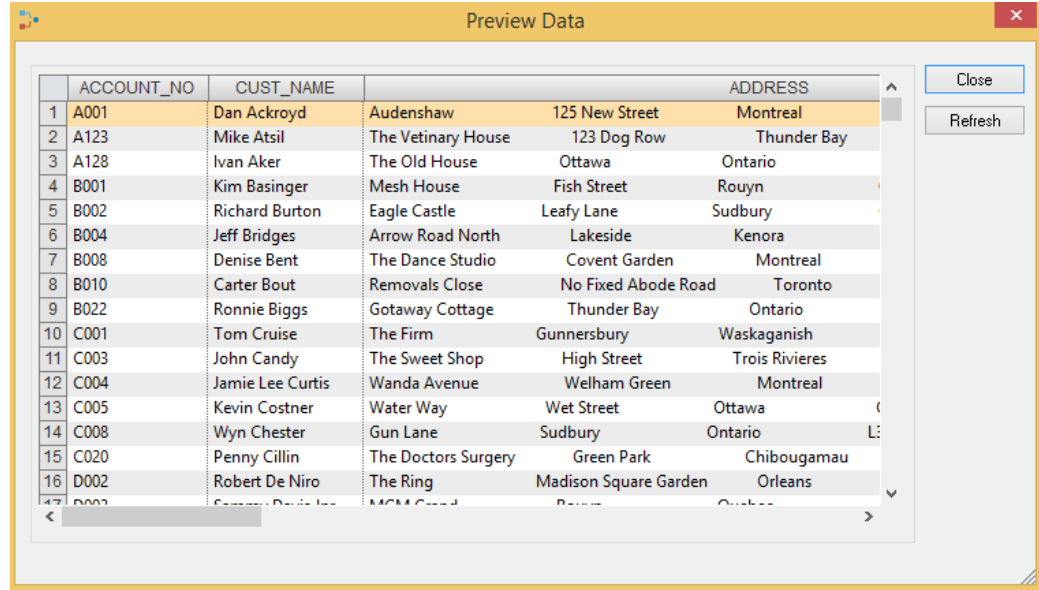
Since all the required information can be defined in the **Base Layer**, **Append Layers** will not be defined for this exercise.

11. Click the **Save Layer** button on the toolbar.

Importing into IDEA

1.   Before importing the file into IDEA, it is recommended to preview the entire database. Once the **Base Layer** has been defined, click **Save Layer**. Once the layer has been saved, the IDEA database can be previewed at any time by clicking **Preview Database** on the toolbar. The preview should look like the following example.

2. Before importing the file into IDEA, it is also recommended that one use the **Scan for Errors** task. **Scan for Errors** identifies any items that may not import properly such as fields where the length is too short and fields that are not in alignment with the preceding fields. Click the **Scan for Errors** button on the toolbar.
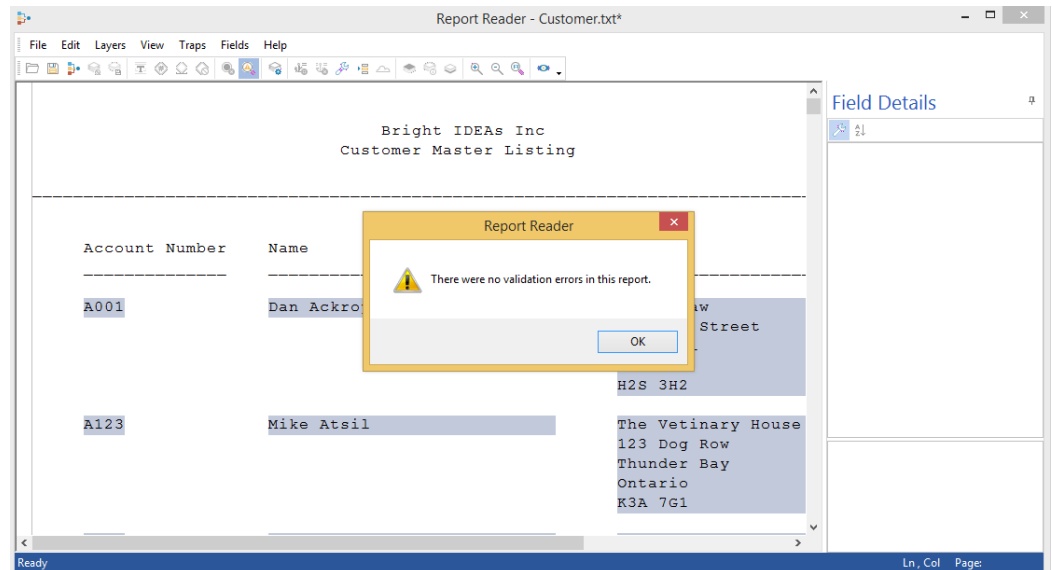
3. Once the **Scan for Errors** validation is complete, save the **Report Reader** template for future use with similar reports. Click **File > Save Template As**. Give the template a name and save it to the **Project Folder**. For this exercise, we will name the template **Customer Master**. The **Project Folder** is the preferred location unless the templates are shared items and need to be stored elsewhere.

4. Click the **Import into IDEA** button on the toolbar.

5. Click **Yes** to proceed with the import.

6. Select the **Generate field statistics** option

7. Name the database **Customer Master** and then click **Finish**.

Set the Control Total Field

Select the **CREDIT_LIM** field as the control amount field for the database by clicking on the **Control Total** link in the **Properties** window.

- The control amount of **1,595,000** is displayed.
- There are **87** records, i.e., **87** customers

Join the Balances

IDEA enables multiple databases to be viewed at one time. This is particularly useful when joining or matching databases as it enables you to identify the common key by which the databases will be matched.

1. Open the **Balances by Customer** database (leaving the **Customer Master** database open).

2. From the **View** tab, in the **Tabs** group, and click **Horizontal**.
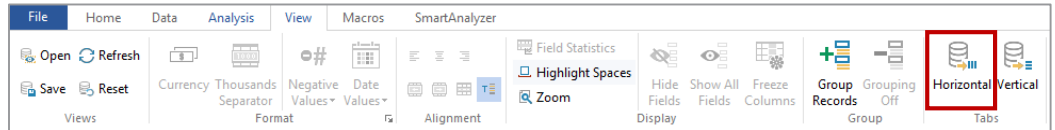
3. Identify the field that is the common field by which the two databases are to be joined. In this case, the common field is **ACCOUNT_NO**.
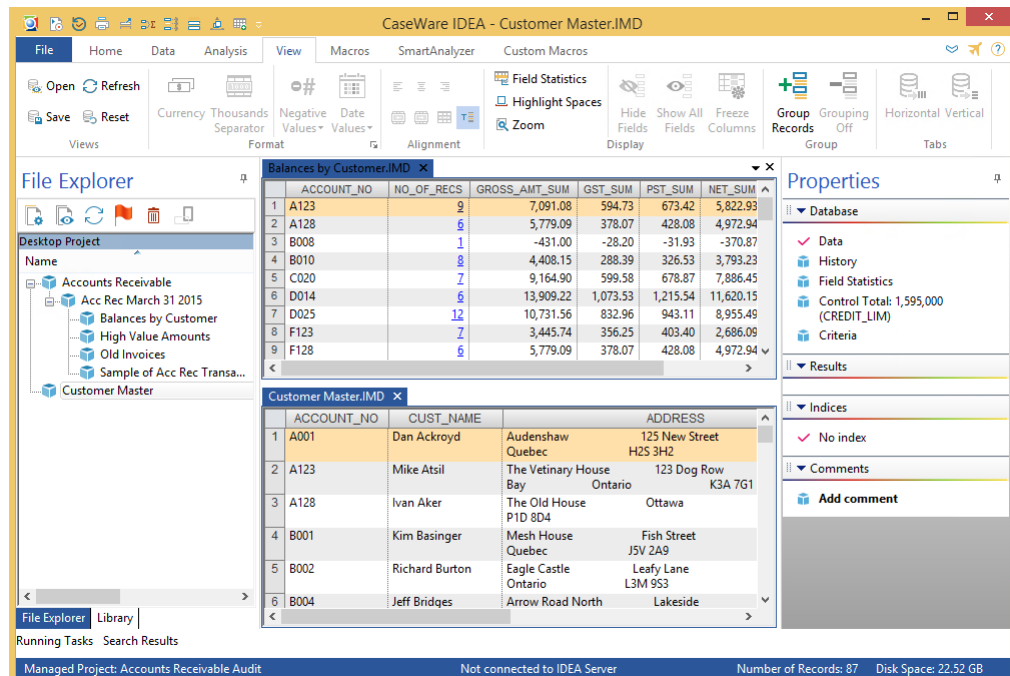
Note: An alternative way to create or change tab groups is by right-clicking on the database tab and selecting either **New Horizontal Tab Group** or **New Vertical Tab Group**. Notice you can also arrange the databases in a vertical format.

4. Access the **Field Manipulation** task by either double-clicking over the Database window.

5. Confirm that the common field is the same format (i.e., Character) in both databases. (Having checked one file, click on the window for the other file and repeat the exercise). **Note**: The window with the blue title bar is the active window.

6. Close the **Customer Master** database and maximize the remaining window.

7. Ensure that **Balances by Customer** is selected as the active database (this is known as the primary database for the join).

8. From the **Analysis** tab, in the **Relate** group, click **Join**.
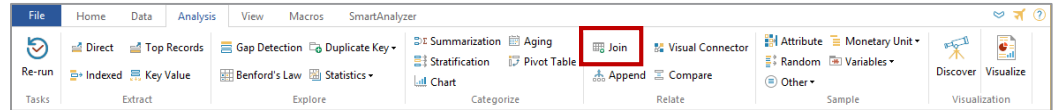
9. Click the **Select** button to choose the **Customer Master** database as the **Secondary database**.
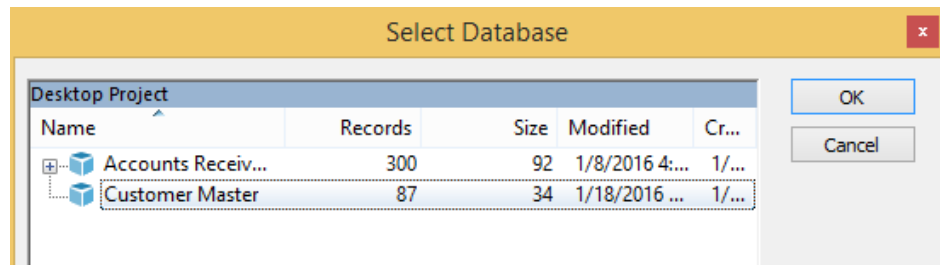
Notice the **Primary** and **Secondary** database details in the **Join Databases** dialog box.

10. Specify the common match key by clicking the **Match** button to display the **Match Key Fields** dialog box:

    a. Click the **Primary** text box and select **ACCOUNT_NO** from the list of fields.

    b. Note the **Order** text box and accept the default, **Ascending**.

    c. Click the **Secondary** text box and select **ACCOUNT_NO** from the list of fields and then click **OK**.
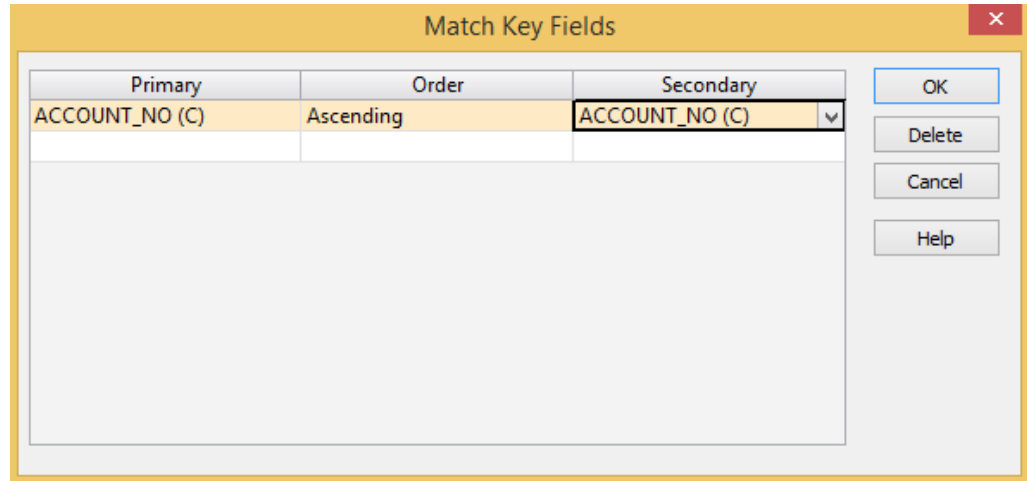
There are 5 join options at the bottom of the **Join** dialog box. These cover whether only matched items are required, non-matches and so on.

MATCH OPTIONS	DESCRIPTIONS
Matches only	Extracts records with matches in both databases.
Records with no secondary match	Extracts records from the primary database with no matches in the secondary database.
Records with no primary match	Extracts records from secondary database with no matches in the primary database.
All records in primary file	Extracts records from primary database with or without matches in secondary database.
All records in both files	Extracts all records from both databases.

11. Select the **All records in both files** option.

12.   In the **File name** box, enter **Customer Balances and Limits**. The **Join Databases** dialog
      box should appear as in the image below.

13.   Click **OK** to join the selected databases. View the resultant database and notice the "gaps"
      in the data where there have not been matches on the keys.

14.   Click the **History** link in the **Properties** window and then locate and expand the section for the **Join Databases** task.

There are **101** records in the **Customer Balances and Limits** database (87 primary records + 14 unmatched primary records as discussed below).

There are **14 unmatched primary records**. These are balances for customers that are not on the **Customer Master** database. To identify these unmatched primary records, return to the **Data** property and run the **Direct Extraction** task using **@Isblank(ACCOUNT_NO1)**, where **ACCOUNT_NO1** is the account number field from the **Customer Master** database.

Equation

" " , ( )   = == > < <= >= <>   + - * /   AND OR NOT   MOD EXP

@IsBlank(ACCOUNT_NO1)

? @IsBlank(**<str> String**)
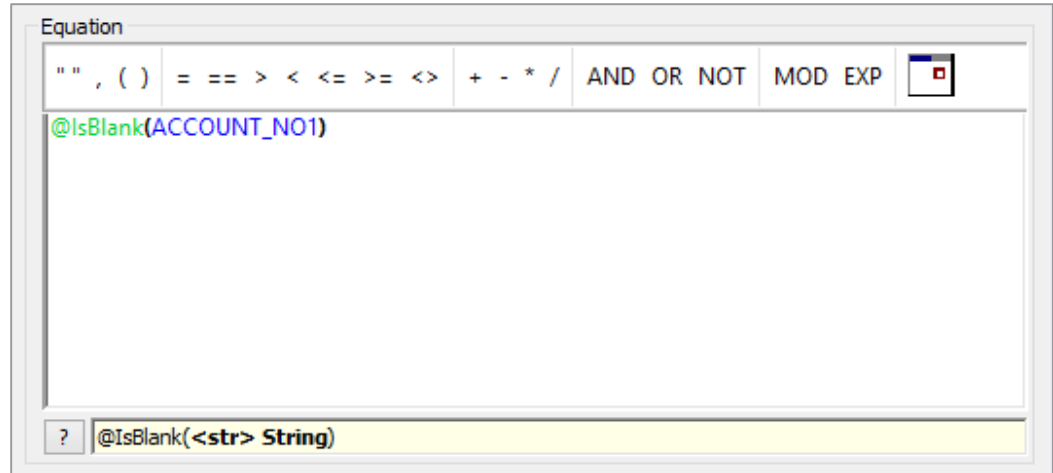
There are 50 unmatched secondary records. These are customers for whom there have been no transactions. These may be either new or dormant customers.

To identify the unmatched secondary records, run the **Direct Extraction** task on the **Customer Balances and Limits** database using **@IsBlank(ACCOUNT_NO)**, where **ACCOUNT_NO** is the account number field from the **Balance by Customer** database.
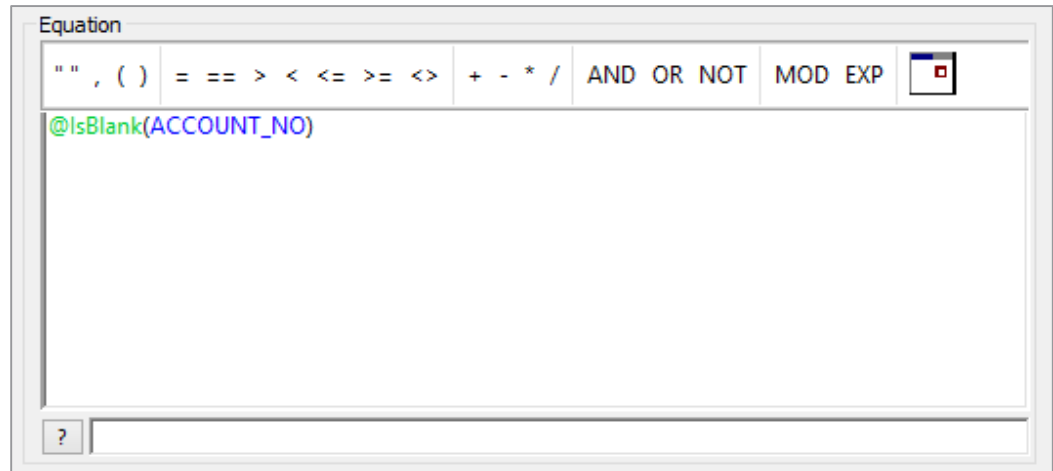
Alternative Method to Identify the Unmatched Items

1. Ensure the **Customer Balances and Limits** database is active.

2. Locate one instance of an unmatched item (i.e., record number 26) and select the **ACCOUNT_NO1** field that is "empty" (character fields are filled with spaces).

3. Right-click over the field and click **Display All Records Containing "".**

Append Field...
Modify Field...
Remove Field(s)...
Field Manipulation...
Create Report...
Views ▶
Display All Records Containing ""
Show Field Stats...
Highlight Spaces
Zoom...
Define Action Field...
Save as Selected...
Close Database Ctrl+D
Close All Databases
Delete Database
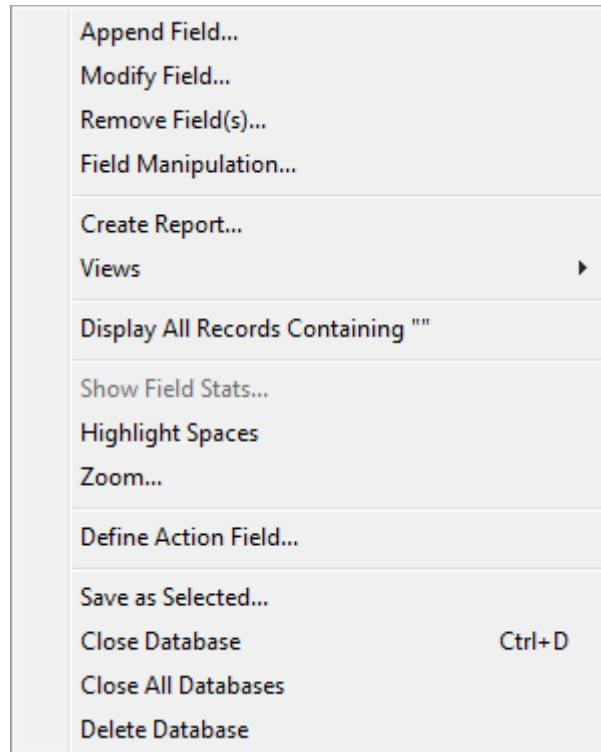
All records satisfying the criterion will be displayed. To return to the whole database, right-click the **Criteria** link in the **Properties** window and click **Clear**. Repeat the process for **ACCOUNT_NO = ""**, using the first record.

Credit Limits Exceeded - Extraction

Extract all customers where the credit limit has been exceeded.

1. Ensure the **Customer Balances and Limits** is the active database and the Data property is selected.

2. From the **Analysis** tab, in the **Extract** group, click **Direct**.

3. In the **File Name** field, enter **Credit limits exceeded**.

4. Click the **Equation Editor** button.

5. Enter **GROSS_AMT_SUM > CREDIT_LIM**.
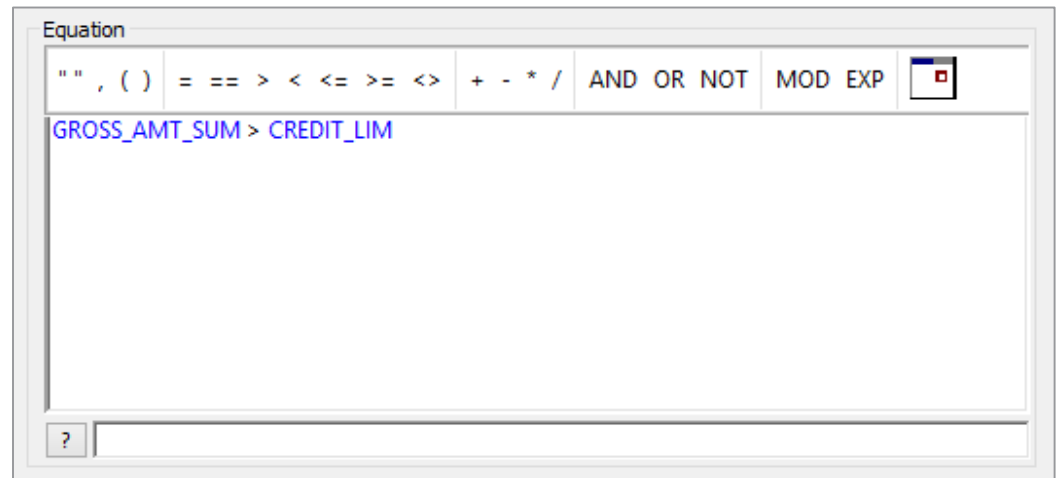
6. Once the equation has been entered, check the syntax and exit the Equation Editor by clicking the **Validate and Exit** button.

7. In the **Records to extract** area, accept the default selection of the **All** option to extract the records from the whole database, and then click **OK**.

8. View the resultant database, record the results, and view the **Field Statistics**.

Numeric Statistics	NO_OF_RECS	GROSS_AMT_...
Net Value	78	161,345.68
Absolute Value	78	161,345.68
# of Records	16	16
# of Zero Items	0	0
Positive Value	78	161,345.68
Negative Value	0	0.00
# of Positive Records	16	16
# of Negative Records	0	0
# of Data Errors	0	0
# of Valid Values	16	16
Average Value	4.88	10,084.11
Minimum Value	1	146.41
Maximum Value	12	45,736.81
Record # of Min	5	6
Record # of Max	9	16
Sample Std Dev	3.69	12,371.79
Sample Variance	13.58	153,061,261.57
Pop Std Dev	3.57	11,978.94
Pop Variance	12.73	143,494,932.72
Pop Skewness	0.506731	1.807357
Pop Kurtosis	-0.947640	2.524018

Field Type: Numeric, Date, Time

Numeric Fields:
- ✓ NO_OF_RECS
- ✓ GROSS_AMT_SUM
- ✓ GST_SUM
- ✓ PST_SUM
- ✓ NET_SUM
- ✓ CREDIT_LIM

Tabs: Balances by Customer.IMD × Customer Balances and Limits.IMD × Credit Limits Exc

- There are **16** records totalling **$161,345.68**
- Fourteen are unmatched primary records where there is no matching account number in the **Customer Master** database.
- Two customers, **R025** and **W025**, have exceeded their credit limits.

9. From the **File** tab click **Close All Databases** to close all databases.

Conclusion

Matching to the authorized customer list found 14 debtors not permitted to have credit and 2 in excess of their limits.

Audit Findings The following audit findings were reported to the client:

- The profile of accounts showed most debt to be current with only $5,465 more than 3 months old. Ten items represent 38% of the total debt.

- There are a significant number (see list) of credit items and several unallocated payments received which need to be resolved.

- Credit has been given to 14 customers without this being authorized and two customers are over their credit limit.

Accounts Payable Audit and Fraud Investigation

Introduction What are the risks associated with Accounts Payable that could be addressed by computer-assisted audit procedures? And what tests can help address those risks? This section summarizes the business and audit risks that arise in the context of Accounts Payable and the potential tests that can be used to address those risks.

Potential Risks

The following table identifies the key risks, explains the business and audit implication of each risk and the audit objectives that could be addressed by audit tests.

	RISK	IMPLICATIONS	AUDIT OBJECTIVES
1	Payments are made to unauthorized suppliers.	Unauthorized suppliers could represent former suppliers that supplied goods or services of unacceptable quality and should have been removed from the list of suppliers; or they could be fictitious suppliers set up by dishonest personnel to receive automated payments. Payments made to unauthorized suppliers could therefore represent either error or fraud.	Existence, Validity
2	Payments are made to individuals or employees.	Payments made to individuals or employees could represent a diversion of company payments, indicating fraud.	Existence, Validity
3	Unauthorized premiums are given to suppliers.	Unauthorized premiums may represent overpayments to suppliers in return for kickbacks.	Existence, Validity
4	Invoices are paid late.	Delays in processing Accounts Payable approvals can result in a loss of available discounts for timely remittances and understatement of liabilities in a particular period.	Cut-off, Completeness

	RISK	IMPLICATIONS	AUDIT OBJECTIVES
5	Invoices are paid on irregular dates.	Irregular payments may reflect processing errors or fraud.	Existence, Validity
6	Invoices are processed twice.	Duplicate payments can result from the failure to cancel documents to prevent re-use or processing errors in Accounts Payable such as restoring a backup file twice.	Existence, Validity
7	Payments are made in a way to be undetected by audits.	Perpetrators of fraud may arrange payments to avoid detection. For example, large amounts may be split into several smaller payments to coincide with a perpetrator's transaction approval limits or avoid limit checks on large payments.	Existence, Validity
8	Items (e.g., purchase orders, checks) are missing.	Since Accounts Payable are often not authorized for payment until there is a three-way match of purchase order, receiving document and supplier invoice, missing documents could result in Accounts Payable being understated.	Completeness

Potential Tests

The following audit tests are suggested when auditing an Accounts Payable system. However the exact tests carried out for a particular client will depend upon the system used and the data available. Common tests include:

Mechanical Accuracy and Valuation

- Total the file. It often pays to separate debits and credits.
- Revalue foreign payables, if applicable.
- Check transaction totals to the balance on each account.

Analysis

- Stratify the size of payments and extract any exceptionally high payments.
- Analyze payment days and identify suppliers with favorable payment terms.
- If the computer system captures the approving authority for a transaction, examine the value distribution for each manager.

Exception Tests - Existence and Validity

- Identify payments to unauthorized suppliers by matching the payments and authorized suppliers list.

- Search payments file for payees without "Inc", "Ltd", or "Co" in their name to identify payments to individuals.

- Test for large discounts.

- Test for duplicated invoices using value and supplier code as the key fields for one test and purchase order number for another. The second processing of invoices can be used to establish a value on the Profit/Loss (P/L) to make a fraudulent payment. (This will also pick up accidental duplication.)

- Identify payments made on Sundays or other days/dates that are not valid.

- Examine to see if amounts are being approved at or just below break points in authority level by a value distribution across the whole ledger. If approval authority is not directly available, perform subsidiary analysis by types of supplier or approving department (i.e., marketing).

- Look for split invoices to enable approval to be kept by an individual. Extract all invoices within 90% of an approved limit (preferably for a suspected manager or department) and search for all invoices from that supplier. Sort by approving manager, department and date to identify possible split invoices or summarize payments by invoice number to determine how many partial payments have been made for each invoice.

- Tests for total payments in year exceeding previous years by more than 25%.

- Test for large one-off payments to suppliers.

- Using the first five or six characters of the name, match supplier names against a list of employee surnames from a payroll or personnel file.

- Test for duplicate sounding supplier names.

- Test for incomplete or unusual supplier details.

Gaps and Duplicates

- Test for missing items or gaps in the check number sequence.

Case Scenario:
Accounts Payable

The Chief Financial Officer of **Bright IDEAs Inc**. is concerned that a particular member of the Accounts Payable Department is living beyond his means and that the pattern of payments does not correlate to that of previous years. He has asked **Dynamic Accountants** to perform a special review of the Accounts Payable system to test for any irregularities.

Purchase/payments fraud is probably the most common type of fraud in an organization. It may be the simple submission of a dummy invoice, the reuse of another valid invoice, withholding of a credit note, or a more complex arrangement.

Many frauds involve the manipulation of the payments information on accounts within the Accounts Payable ledger. Examples include the creation in the ledger of a fictitious supplier, or branch of a genuine supplier, or reactivating a dormant account. Particularly vulnerable are miscellaneous accounts, but the fraud perpetuated on a genuine supplier's account (with or without the supplier's collusion) must not be overlooked. The cost must be charged somewhere and there are often general accounts that are more loosely controlled than others and accounts with high levels of transactions (i.e., purchase of material) where a fictitious item can be buried.

Many purchasing systems now are complex with automatic re-ordering so that once a supplier has been set up and/or a requisition input, payment will be processed automatically.

Staff may also be in collusion with suppliers to commit fraud by receiving gifts or kickbacks for planning business, or by paying invoices on more favorable terms than other suppliers, or as per the organization's policy on payments. Also, ordering and payment authorization levels may be exceeded by splitting invoices to payments below authorization thresholds.

IDEA can be used on a number of files: supplier master, purchase ledger, payments history or purchase invoices. It depends on the system, the available data, and the nature of possible frauds as to which test is best.

Obtaining the Data The following data files will be used for this exercise:

- Accounts Payable History for the year **Jan 1, 2015 – Dec 31, 2015**

- Supplier Master File

Note: When conducting fraud investigations it is important to obtain the data without alerting the person(s) or departments under suspicion. Therefore, although our general advice is to always request the data from the client and to avoid accessing the client's computer system to obtain data, it may be necessary to take a copy of the data files (or system) or to extract data yourself or with the assistance of the software suppliers. Alternatively, if the data you wish to investigate is available on a standard printout, arrange for the printout to be "printed" or spooled to file and use the **Report Reader** module in IDEA to read the required data into IDEA for testing.

In this instance, the Accounts Payable system was an Oracle database system running under UNIX. Assistance was available to determine what data was available and to write an SQL query to extract the payments history in ASCII Delimited format, a simple format to import into IDEA.

The Authorized Suppliers information is available on a Microsoft Excel worksheet. Therefore, this is also requested. The following data request was submitted:

Request for Data Files for Audit Purposes

Please supply the following data from the Accounts Payable system in ASCII Delimited format and supplied on USB or CD using compression utilities, if necessary:

FIELD	FORMAT
Supplier Number	C 8
Payee	C 20
Invoice Number	C 12
Invoice Date	D YYYYMMDD
Amount	N 8,2
Check Number	N 8,2
Payment Date	D YYYYMMDD
Payment Authorization Initials	C 5

Note: In the record definitions, **C** refers to Character, **N** to Numeric and **D** to Date. **C 4** means a character field of length 4. **N 8,2** is an 8-digit number with 2 decimal places.

Please supply the following Authorized Suppliers data as available in **Microsoft Excel** as **SUPPLIERS.XLS** in electronic format:

FIELD	FORMAT
Supplier Number	C 4
Supplier Name	C 30
Supplier Address 1	C 25
Supplier Address 2	C 25
Supplier Address 3	C 25
Zip Code	C 8
Previous Year's Total Payments	N 8,2

Data is required for the following period: Jan 1, 2015 – Dec 31, 2015.

Please supply a record layout for the ASCII Delimited file.

Please also supply the following control totals for reconciliation purposes:

- Total payments for the year 2015.
- Total discount for the year 2015.
- Number of payment transactions for the year 2015.
- Number of authorized suppliers.

Audit Program From the available/possible tests, the audit manager decides on the appropriate tests and prepares the following Audit Program for you to complete.

Audit Objective:

To identify payments which are suspicious or may be invalid.

	AUDITING PROCEDURES	ASSERTIONS	WORK DONE BY (INITIALS)	EXTENT OF TESTING
1	Obtain the data files from the client and load onto the PC. Load IDEA and create a **Project** for Accounts Payable for **Bright IDEAs Inc**.			
2	Import the data and agree the total of Accounts Payable: a) Import the Accounts Payable transactions, b) Import the Authorized Suppliers details, c) Compute field statistics to verify that the data has been imported correctly, and d) Select a control total field for each database.	C C		
3	Analyze the profile of the number and value of payments by numeric band to identify any unusual trends and to determine high value amounts for extractions.			
4	Identify high and unusual amounts.			
5	Identify further unusual payments as a result of analyses including: a) "CASH" in Payee name, b) Round sum amounts, c) Payments authorized by HMV, and d) Payments made on a Sunday.			
6	Test for duplicate payments.			
7	Test for completeness by testing for gaps in the check number sequence.			
8	Identify working days on which no payments were processed.			
9	Analyze payment terms and ensure that the payment policy for **Bright IDEAs Inc.** has been followed.			
10	Test the validity of payments to authorized suppliers.			
11	Analyze payments by supplier to identify significant changes from the previous year's total.			

Key to Assertions: Completeness, **Ex**istence, **O**wnership, **V**aluation, **P**resentation

Investigation Set-up

Objective:

To be able to load data, run IDEA and create a **Project** for the investigation audit within IDEA.

Exercise Description:

This exercise covers copying data into a folder, loading IDEA, creating a **Project**, and entering client properties that will be printed on all reports.

IDEA Functionality Covered:

- Creating a **Project**
- Entering Client Properties

The following data files have been provided on the CD supplied with this Workbook:

ACCPAY2015.TXT	Accounts Payable History file
SUPPLIER.XLS	Authorized Suppliers Microsoft Excel worksheet

Accessing IDEA

From the Windows **Start** screen, click the arrow in the bottom-left corner.

Alternatively, In the **Apps** view, scroll to the I**DEA** group and click **IDEA**.

Create a Project and Enter Project Information

To facilitate housekeeping, it is recommended that a separate **Project** be used for each audit/ investigation.

All information relating to the audit, including data files, equations, views/report definitions, templates, etc. may be stored as part of the **Project**.

This exercise will explain how to create a **Project** and enter project information that will be printed on all reports. Note that once a **Project** is set, it remains the active until changed.

1. To create a **Project**, click the **Home** tab, and then from the **Projects** group click **Create**.
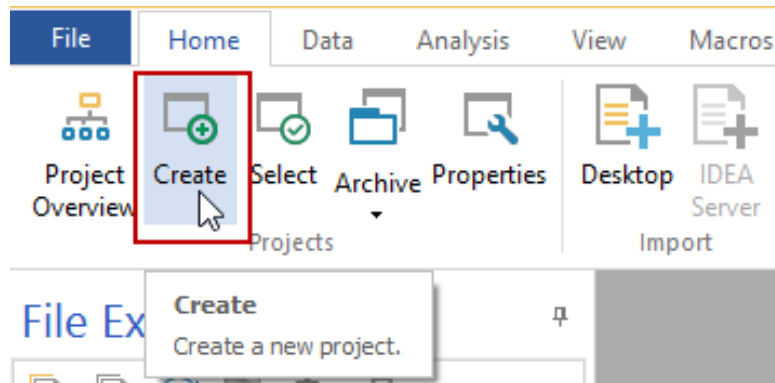
2. Create a **Managed Project** called **Accounts Payable** and then click **OK**:
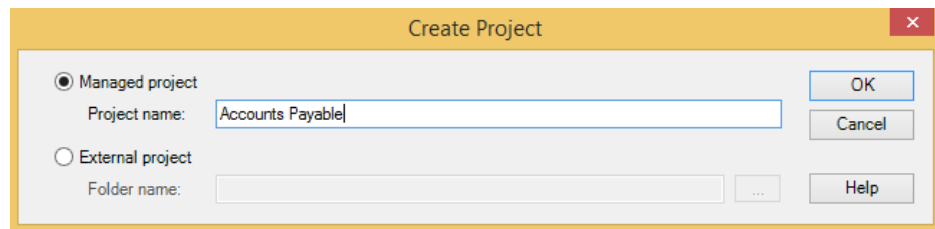
3. Click **OK**. **Accounts Payable** becomes the active project, closing any **previously active projects**.

4. From the **Home** tab, in the **Projects** group, click **Properties** to change the **Project** properties.
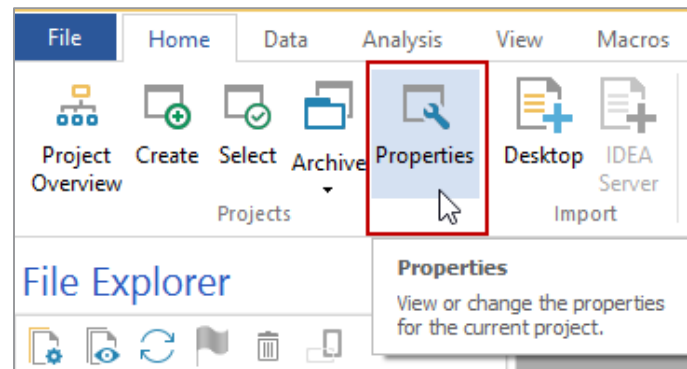
5. When the **Project Properties** dialog appears, enter the following:

- **Report name**: Accounts Payable Investigation
- **Report period**: Jan 1, 2015 - Dec 31, 2015

The project properties will be stored in a file called **Client.inf** in the **Project Folder**.

6. Copy the following data files that came with the Workbook:

- ACCPAY2015.TXT - Accounts Payable History file
- SUPPLIER.XLS - Authorized Suppliers Microsoft Excel worksheet

to

C:\Users\[UserID]\My IDEA Documents\IDEA Projects\Accounts Payable\Source Files.ILB

This is the default location within a **Project** to store any source files.

Import the Accounts Payable and Authorized Suppliers Data Files

Objective:

To import the data files for testing.

Exercise Description:

The Accounts Payable Transactions file, **ACCPAY2015.TXT**, is an ASCII Delimited format file that must be defined and imported into IDEA. This can be carried out using the **Import Assistant** that will determine the file type (if unknown).

The Authorized Suppliers data is provided as a Microsoft Excel worksheet. This will be imported directly into IDEA.

IDEA Functionality Covered:

- Import an ASCII Delimited file
- Import a Microsoft Excel worksheet

Import the Accounts Payable Data

You have been provided with an ASCII Delimited file: **ACCPAY2015.TXT**

Review the following record definition for **ACCPAY2015.TXT**.

FIELD NAME	TYPE	START	LEN	DEC	DESCRIPTION
SUPPNO	C	1	9		Supplier Number
PAYEE	C	10	17		Payee
INVOICE	C	27	12		Invoice Number
INV_DATE	D	39	8		Invoice Date
AMOUNT	N	47	15	2	Amount
CHECK	N	71	6	0	Check Number
PAY_DATE	D	77	8		Payment Date
AUTH	C	85	7		Payment Authorization Initials

1.   From the **Home** tab, in the **Import** group, click **Desktop** to access the **Import Assistant**.
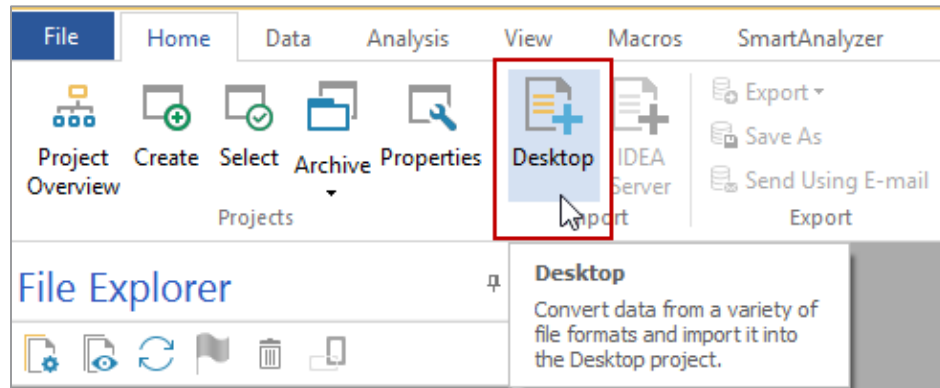
Once loaded, the **Import Assistant** guides you through the process of importing the data.

2. Select **Text** and click the **Browse** button to navigate to and select the file **ACCPAY2015.TXT** from the **Source Files** folder within the **Project Folder**.
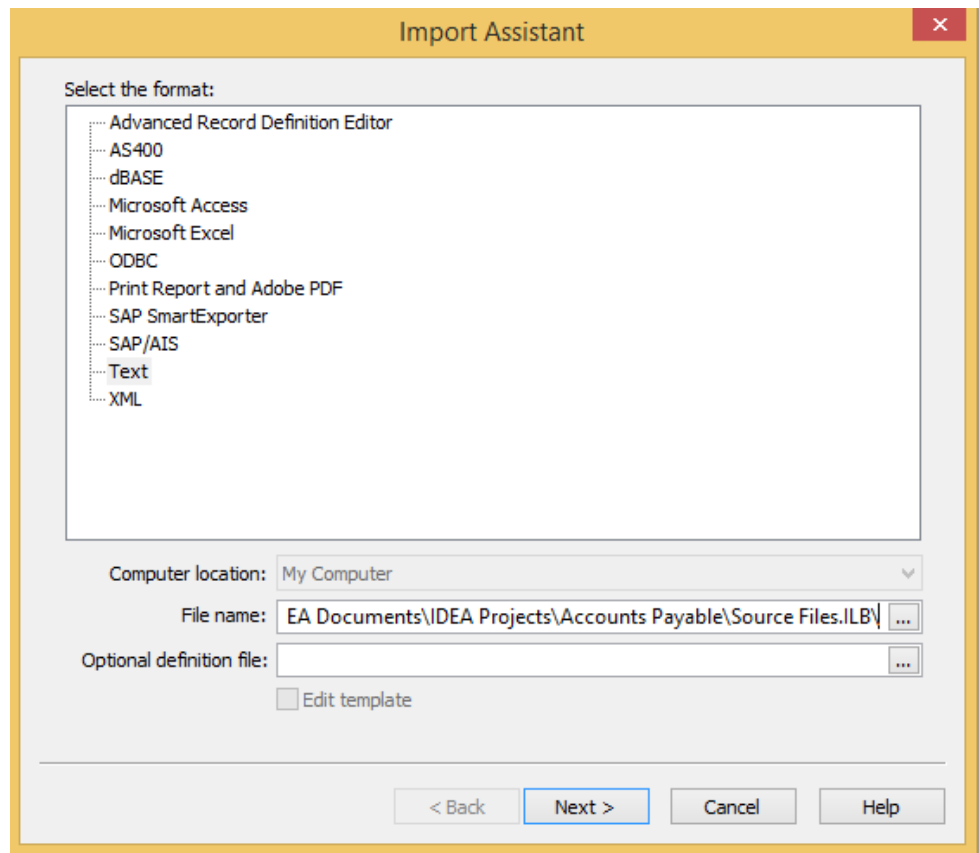
Note: When selecting a file, the Files of type box may need to be changed.

3. Click **Open** on the **Select File** dialog box.

4. Click **Next**

5. Once the data file has been selected, the **Import Assistant** will try to determine the data file type. The following screen will be displayed. The **Delimited** format is correctly identified. Click **Next** to proceed.
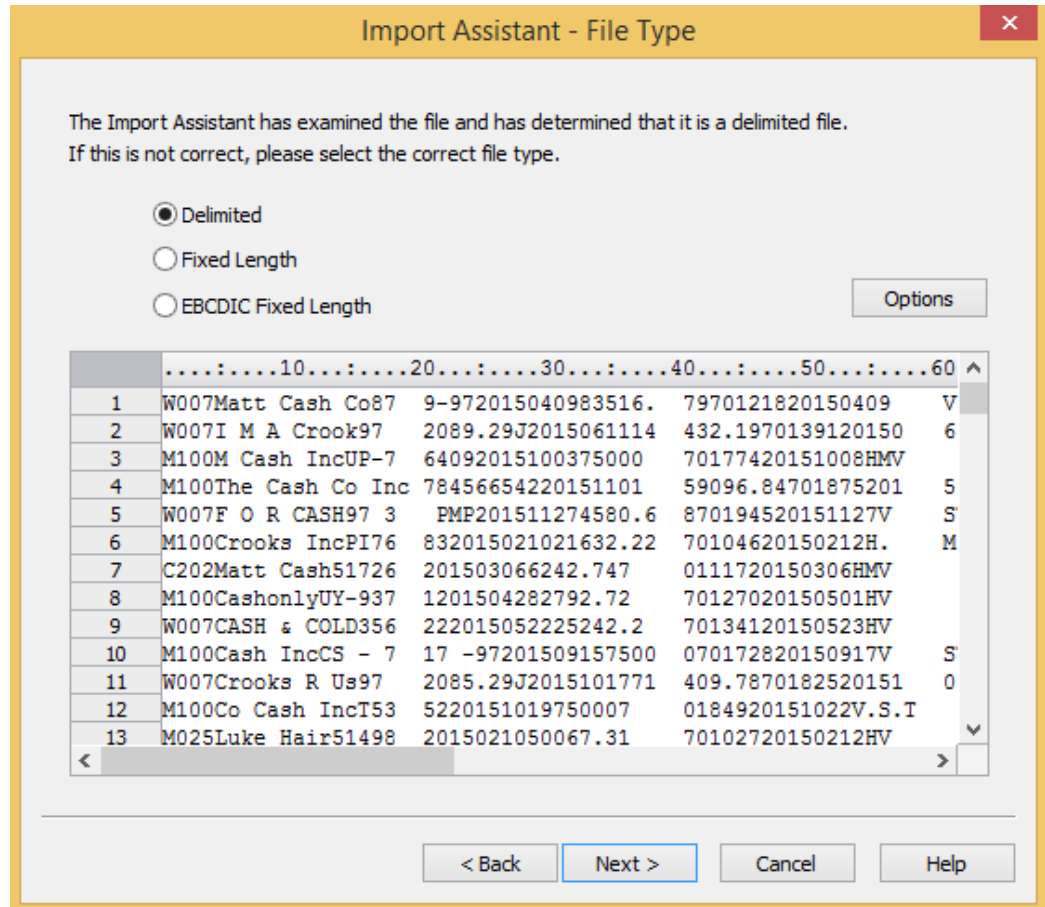
Import Assistant - File Type

The Import Assistant has examined the file and has determined that it is a delimited file.
If this is not correct, please select the correct file type.

(●) Delimited

(○) Fixed Length

(○) EBCDIC Fixed Length   [Options]

```
      ....:....10...:....20...:....30...:....40...:....50...:....60 ^
 1    W007Matt Cash Co87  9-972015040983516.   7970121820150409     V
 2    W007I M A Crook97   2089.29J2015061114   432.1970139120150    6
 3    M100M Cash IncUP-7  64092015100375000    70177420151008HMV
 4    M100The Cash Co Inc 78456654220151101    59096.84701875201    5
 5    W007F O R CASH97 3   PMP201511274580.6   870194520151127V     S
 6    M100Crooks IncPI76  832015021021632.22   701046201502l2H.     M
 7    C202Matt Cash51726  201503066242.747     0111720150306HMV
 8    M100CashonlyUY-937  1201504282792.72     70127020150501HV
 9    W007CASH & COLD356  222015052225242.2    70134120150523HV
10    M100Cash IncCS - 7  17 -97201509157500   070172820150917V     S
11    W007Crooks R Us97   2085.29J2015101771   409.7870182520151    0
12    M100Co Cash IncT53  5220151019750007     0184920151022V.S.T
13    M025Luke Hair51498  2015021050067.31     70102720150212HV
```

[< Back]   [Next >]   [Cancel]   [Help]

6. The **Import Assistant** will try to determine the field separators and text encapsulators (if any) for the file. Accept the defaults and click **Next** to proceed.

7. The **Import Assistant - Field Details** screen is used to define each field's name and details in turn, including identifying which fields or areas should not be included.

FIELD NAME	TYPE	START	LEN	DEC	DESCRIPTION
SUPPNO	C	1	9		Supplier Number
PAYEE	C	10	17		Payee
INVOICE	C	27	12		Invoice Number
INV_DATE	D	39	8		Invoice Date
AMOUNT	N	47	15	2	Amount
CHECK	N	71	6	0	Check Number
PAY_DATE	D	77	8		Payment Date
AUTH	C	85	7		Payment Authorization Initials

Note: In the above definition, **C** means Character, **N** means Numeric, and **D** means Date.

8. Identify each field, checking your selections against the record layout as follows:

    a. Select the field in the data area. The active column will be highlighted.

    b. Define each **Field name**, **Type**, **Number of decimals** and optionally **Description**, according to the record definition.

        For the **INV_DATE** and **PAY_DATE** fields you must also supply a **Date Mask**. The mask represents the actual format of the ASCII source data. You specify the source data format using the letters **Y**, **M**, and **D** and type any spaces or special characters to exactly mimic the source date format of **YYYYMMDD**.

    c. For sixth field select the **Do not import this field** option.

9. Click **Next** to continue.

   The **Import Assistant - Create Fields** dialog box will be displayed. **Create Fields** allows you to add **Virtual**, **Editable**, or **Multistate** fields to the imported file. This can be done during the import or at any time while using IDEA. For this exercise, no fields will be added.

10. Click **Next**.

11. The **Import Assistant** allows you to create an equation to specify the data that is imported. For this exercise, click **Next**.

    The final step is to specify the import options, save the record definition created using the **Import Assistant** for re-use in future audits, and to specify the resultant file name.

12. Specify the import options:

    a. Leave the option to **Import** the database (rather than linking to the database) as IDEA will run faster when a file is imported rather than linked.

    b. Select **Generate field statistics** on import.

    c. Save the record definition. Click the **Browse** button and accept the default folder and definition name: **C:\Documents and Settings\[UserID]\My Documents\IDEA\Accounts Payable\Import Definitions.ILB\ ACCPAY2015.rdf**.
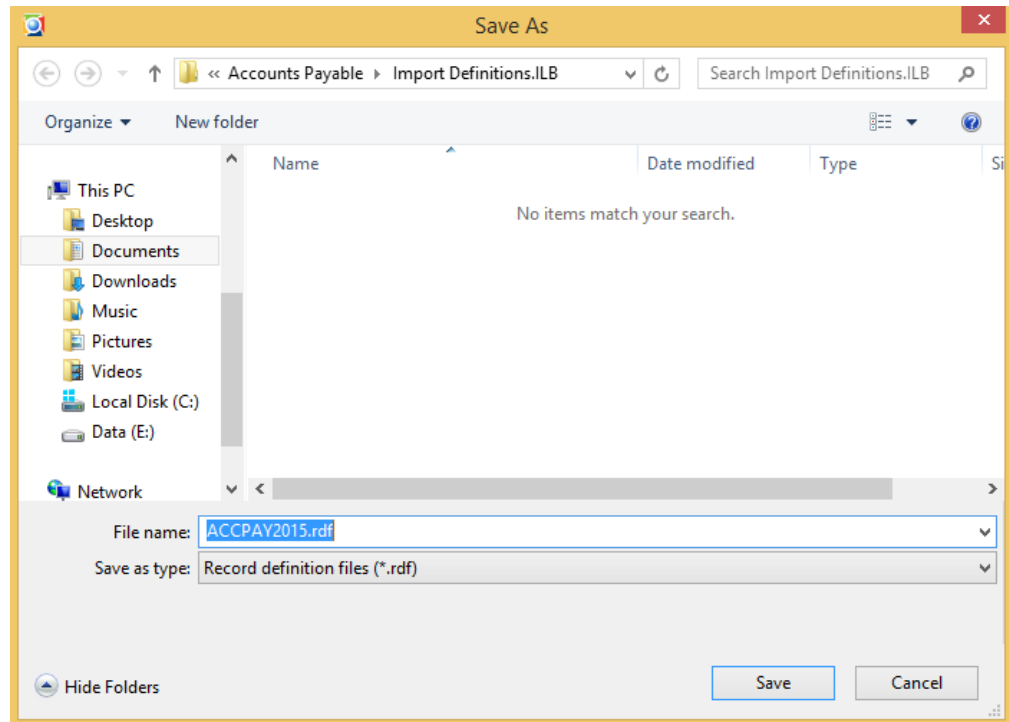
    d. Click **Save** to continue (the definition will be saved with an **.rdf** file extension).

13. In the **Database name** box, enter **Accounts Payable**, click **Finish**.

The data will be imported into the **Project**, opened, and displayed in the Database window.

Differences Between Importing and Linking to a Data File

Each IDEA import or link results in an IDEA maser database, *filename.imd*, being created in the **Project Folder**.

However, in both cases, a file (*filename.imd*) is created that stores all the information about the database. **Importing** results in a copy of the data being included in the *filename.imd* file.

If the option to **Link** to the database is selected, the original data is not included in the *filename.imd* file. The advantage of linking is that it can save disk space since the IMD file is smaller than it would be if the source data had been copied. However, both the source data file and the *filename.imd* file must be stored because IDEA must have access to the source data file to obtain the data needed to perform analytical functions.

Testing will be faster on imported data files.

Housekeeping is simplified when a data is imported as there is only one file to backup/restore/copy/move, and it is stored in the **Project Folder**.

It is recommended that the **Import** option be used provided you have sufficient disk space.

Import the Authorized Suppliers Microsoft Excel Worksheet

The Authorized supplier's information is provided as a Microsoft Excel worksheet: **Supplier.xls**. IDEA will directly import a Microsoft Excel worksheet.

Note: IDEA imports multiple worksheets at one time, producing a separate IDEA database for each.

To import the Microsoft Excel file:

1. From the **Home** tab, in the **Import** group, click **Desktop**.
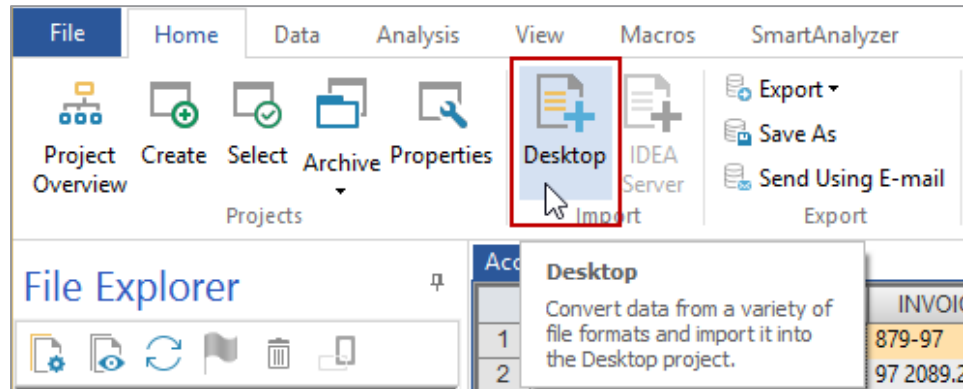
2. Select **Microsoft Excel** and click the **Browse** button to navigate to and select the file.

3. Select **C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects\Accounts Payable\Source Files.ILB\Supplier.xls.** Click **Open**.
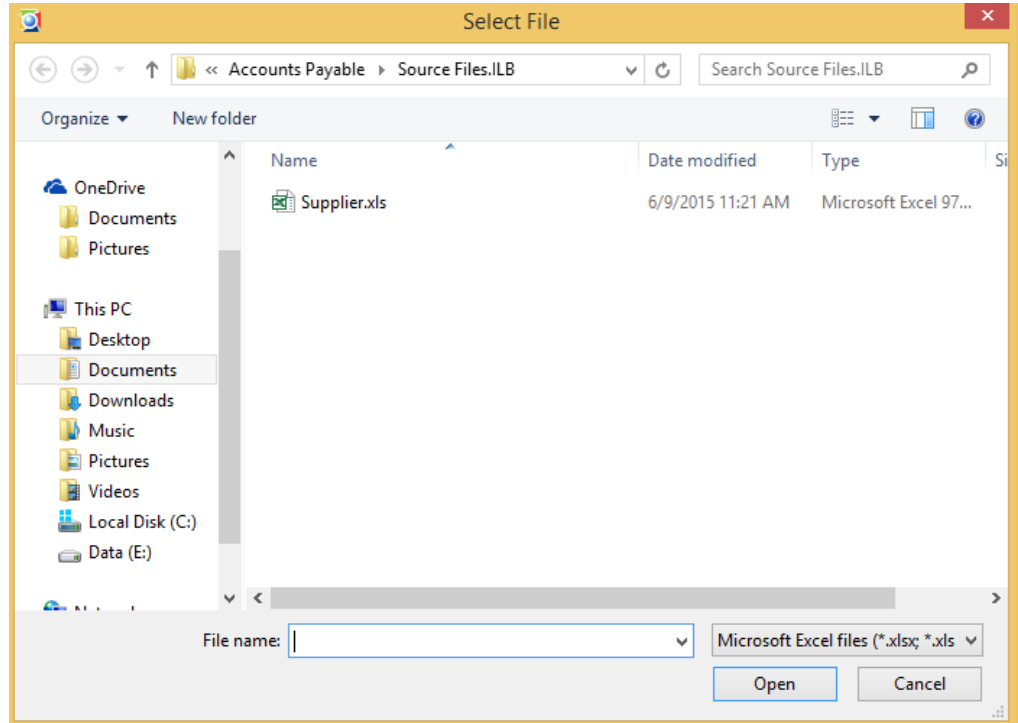
4. Click **Next**.

5. The **Import Assistant** will display a preview of the data and a list of any worksheets defined within the file. Select the **Address** worksheet in the **Select sheets to import** box.

6.   Select the **First row is field names** option. In the **Output file name** box, delete the default name and enter **Authorized Supplier**.
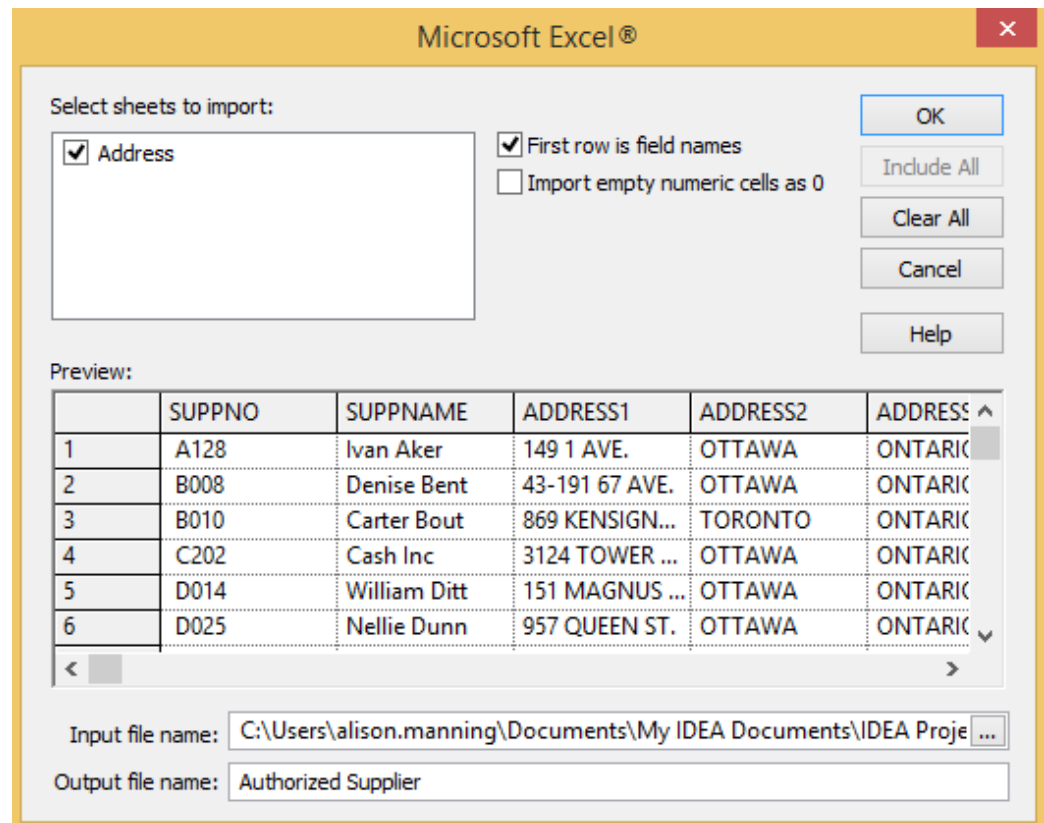
7.   Click **OK**

       Note: IDEA will name the new database with the prefix that has been supplied during the import followed by the name of the worksheet. For this example, the new database will be called **Authorized Supplier- Address**.

The **Authorized Supplier - Address** database will be imported, opened, and selected as the active database.

Verify that the Data Files Have Been Correctly Imported

Objective:

Ensure that the data is complete and agrees to the supplied control totals.

Exercise Description:

View the **Field Statistics** for the numeric fields in the **Accounts Payable** and **Authorized Suppliers-Address** databases.

The statistics will be used for:
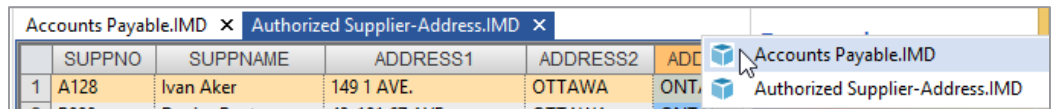
- Agreeing totals

- Getting a general understanding of the ranges of values in the database

- Testing the period of the file for completeness and cut-off

- Highlighting potential errors/areas of weakness to focus subsequent investigations

IDEA Functionality Covered:

- Field Statistics for both Numeric and Date fields

- Control Totals

Generate Field Statistics

1. Select the **Accounts Payable** database as the active database either by double-clicking on the file name in the **File Explorer** or selecting the open file list from the drop-down icon on the data sheet.

2.   Click the **Field Statistics** link in the **Properties** window. **Field Statistics** will be displayed. Note that the following totals are automatically provided for reconciliation purposes. Ensure that your database totals agree.

Numeric Statistics	AMOUNT	CHECK
▶ Net Value	34,145,300.89	700,797,628
Absolute Value	34,145,300.89	700,797,628
# of Records	999	999
# of Zero Items	2	0
Positive Value	34,145,300.89	700,797,628
Negative Value	0.00	0
# of Positive Records	997	999
# of Negative Records	0	0
# of Data Errors	0	0
# of Valid Values	999	999
Average Value	34,179.48	701,499.13
Minimum Value	0.00	701,001
Maximum Value	193,487.22	702,001
Record # of Min	223	821
Record # of Max	386	655
Sample Std Dev	29,205.27	288.30
Sample Variance	852,947,835.69	83,114.56
Pop Std Dev	29,190.65	288.15
Pop Variance	852,094,034.05	83,031.37
Pop Skewness	0.858981	0.002004
Pop Kurtosis	0.616718	-1.478402

3. Click **Date** in the **Field Type** box and study the information. Note in particular the **Earliest Date** and **Latest Date** statistics.

Date Statistics	INV_DATE	PAY_DATE
▶ # of Valid Values	999	999
# of Zero Items	0	0
# of Records	999	999
# of Data Errors	0	0
Earliest Date	1/4/2015	1/12/2015
Latest Date	12/6/2015	12/29/2015
Record # of Earliest	500	191
Record # of Latest	992	655
Most Common Day	Friday	Tuesday
Most Common Month	July	August
Items in January	100	2
Items in February	87	101
Items in March	76	92
Items in April	83	74
Items in May	87	87
Items in June	107	93
Items in July	133	119
Items in August	84	120
Items in September	103	76
Items in October	90	112
Items in November	48	82
Items in December	1	41
Items on Sunday	73	77
Items on Monday	233	91
Items on Tuesday	132	252
Items on Wednesday	25	6

Field: AMOUNT

STATISTIC	VALUE	COMMENT
Net Value	34,145,300.89	Total payments
Average Value	34,179,48	
Minimum Value	0.00	
Maximum Value	193,487.22	
# of Records	999	
# of Zero Items	2	These are unexpected and should be extracted and investigated.
# of Positive Records	997	
# of Negative Records	0	

Field: CHECK

STATISTIC	VALUE	COMMENT
# of Zero Items	0	No missing check numbers
Minimum Value	701,001	First check number in sequence
Maximum Value	702,001	Last check number in sequence

Field: INV_DATE

STATISTIC	VALUE	COMMENT
# of Zero Items	0	No missing invoice dates
Earliest Date	2015/01/04	
Latest Date	2015/12/06	

Field: PAY_DATE

STATISTIC	VALUE	COMMENT
# of Zero Items	0	No missing payment dates or unpaid invoices in the database
Earliest Date	2015/01/12	
Latest Date	2015/12/29	

4. If your computer is attached to a printer, print the field statistics for the **AMOUNT**, **CHECK**, **INV_DATE**, and **PAY_DATE** fields to keep for proof of reconciliation. Use the **Print** button on the **Field Statistics** toolbar.

5. Click the **Data** link in the **Properties** window to return to viewing the data.

6. Select **Authorized Suppliers-Address** as the active database by double clicking on **Authorized Suppliers-Address** in the **File Explorer**.

7. View the Field Statistics for the **TOT_PREV_YR** (previous year's total) field in the **Authorized Suppliers-Address** database. Note that the following totals have been provided with the data file for reconciliation purposes. Ensure that your totals agree.

Field: TOT_PREV_YR

STATISTIC	VALUE
Net Value	30,202,660.57
Average Value	629,222.10
Minimum Value	0.00
Maximum Value	1,397,587.06
# of Records	48
# of Zero Items	2
# of Positive Records	46
# of Negative Records	0

8. If you are attached to a printer, print the **Field Statistics** to keep for proof of reconciliation.

9. Click the **Data** view in the **Properties** window to return to viewing the data.

Set the Control Amount for Each Data File

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.

2. Select the **AMOUNT** field as the control amount field for the database by clicking on the **Control Total** link in the **Properties** window.
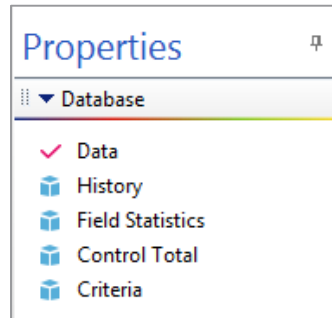
3. Select the **AMOUNT** field from the dialog box.

4. Click **OK**.

   The control total amount of **34,145,300.89** should be displayed.
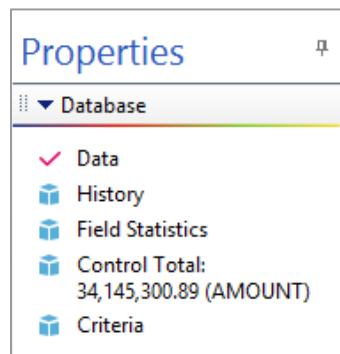
5. Select the **Authorized Supplier-Address** database as the active database.

6. Select the **TOT_PREV_YR** field as the control amount field.

7. Click **OK**.

   A total of **30,202,660.57** should be displayed.

8. Close the **Authorized Supplier-Address** database.

Conclusion

We have proved the footings for the client's data files.

Analyze the Profile of Payments

Objective:

Gain a profile of the number and value of payments by numeric bands to identify any unusual trends and to determine the high-value amount for extractions.

Exercise Description:

In this exercise, you will stratify the payment amounts in suitable bands from the minimum to the maximum payment amounts.

- Examine the resultant stratification report
- Identify potential invoice and payment splitting below authorization levels
- Chart the data and then print or save the chart
- Drill-down through any chart sector to display its composite payments

IDEA Functionality Covered:

- Plan for running a **Stratification** task
- Enter the parameters for the **Stratification** task
- Chart the results view analysis
- Drill-down on result and chart sectors
- Print a chart

Stratify the Payment Amounts

1. Ensure **Accounts Payable** is the active database and the **Data** link is selected in the **Properties** window.

2. View the **Field Statistics** for the **AMOUNT** field to determine the minimum and maximum values of the population.

3. Click the **Data** link in the **Properties** window to return to viewing the data.

4. From the **Analysis** tab, in the **Categorize** group, click **Stratification**.
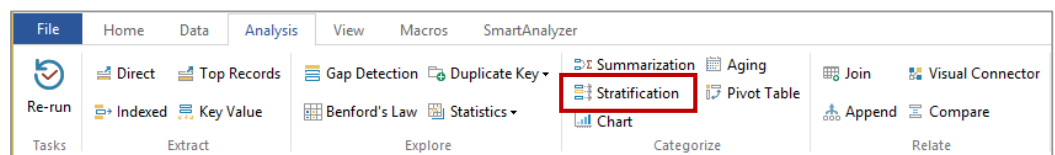
5. In the **Fields to stratify**, select **AMOUNT**.

6. In the **Fields to total on** box, select **AMOUNT**.

7. Confirm the increment is set to **$10,000** (this may be changed when required).

8. Click the first row of the spreadsheet area which will fill with 0 - 10000. Click and drag down to row 10. The bands will automatically fill with the increment.

9. Change the increment to $50,000 and complete the final 2 bands listed as below.

>= LOWER LIMIT	< UPPER LIMIT	COMMENTS
0	10,000	
10,000	20,000	
20,000	30,000	
40,000	50,000	
50,000	60,000	
60,000	70,000	
70,000	80,000	
80,000	90,000	
90,000	100,000	
100,000	150,000	Note change to 50,000 bands
150,000	200,000	

10.   Do not check the **Create Database** option.

11.   Click **OK**.

12. The results of the **Stratification** are displayed in a new **Stratification Results** output of the Database window. Inspect the **Stratification Results** output for the **AMOUNT** field.

Accounts Payable.IMD ✕						
Totalled on: AMOUNT						⌄
Stratum #	>= L Limit	< U Limit	# Records	(%) # Records	AMOUNT	(%) AMOUNT
1	0.00	10,000.00	280	28.03	1,200,650.85	3.52
2	10,000.00	20,000.00	149	14.91	2,257,164.61	6.61
3	20,000.00	30,000.00	116	11.61	2,912,354.72	8.53
4	30,000.00	40,000.00	82	8.21	2,881,028.82	8.44
5	40,000.00	50,000.00	78	7.81	3,521,137.79	10.31
6	50,000.00	60,000.00	72	7.21	3,913,479.17	11.46
7	60,000.00	70,000.00	61	6.11	3,926,579.42	11.50
8	70,000.00	80,000.00	84	8.41	6,363,260.83	18.64
9	80,000.00	90,000.00	36	3.60	3,069,755.59	8.99
10	90,000.00	100,000.00	38	3.80	3,612,217.66	10.58
11	100,000.00	150,000.00	1	0.10	104,112.83	0.30
12	150,000.00	200,000.00	2	0.20	383,558.60	1.12
		Lower limit except...	0	0.00	0.00	0.00
		Upper limit except...	0	0.00	0.00	0.00
		Totals:	999	100.00	34,145,300....	100.00

13. To preview the **Stratification** report, click the **Print Preview** button on the **Operations** toolbar. Close the **Print Preview** screen by clicking the **Close** button in the top right corner to return to the **Results** output.

Wednesday, January 20, 2016   CaseWare IDEA

Stratification

| Prepared by: | | Report name: | Accounts Payable Investigation |
| Input file name: | Accounts Payable | Period: | Jan 1, 2015 - Dec 31, 2015 |

Stratified on: AMOUNT   Number of stratum: 12

Stratum #	>= Lower Limit	< Upper Limit	# Records	%	AMOUNT	%
1	0.00	10,000.00	280	28.03	1,200,650.85	3.52
2	10,000.00	20,000.00	149	14.91	2,257,164.61	6.61
3	20,000.00	30,000.00	116	11.61	2,912,354.72	8.53
4	30,000.00	40,000.00	82	8.21	2,881,028.82	8.44
5	40,000.00	50,000.00	78	7.81	3,521,137.79	10.31
6	50,000.00	60,000.00	72	7.21	3,913,479.17	11.46
7	60,000.00	70,000.00	61	6.11	3,926,579.42	11.50
8	70,000.00	80,000.00	84	8.41	6,363,260.83	18.64
9	80,000.00	90,000.00	36	3.60	3,069,755.59	8.99
10	90,000.00	100,000.00	38	3.80	3,612,217.66	10.58
11	100,000.00	150,000.00	1	0.10	104,112.83	0.30
12	150,000.00	200,000.00	2	0.20	383,558.60	1.12
		Lower Limit Exceptions:	0	0.00	0.00	0.00
		Upper Limit Exceptions:	0	0.00	0.00	0.00
		Totals:	**999**	**100.00**	**34,145,300.89**	**100.00**

To see the **Stratification** results in a graphical format, click the **View the result chart** button. You can use the graphing toolbar to adjust the graph properties including the type of graph, the colors of the graph objects, as well as the graph labels and legends. The graph can be displayed in 2-dimensions or 3-dimensions. Select **3D/2D** to select the preferred view. To return to the **Results** output, click the **View the result chart** button again.
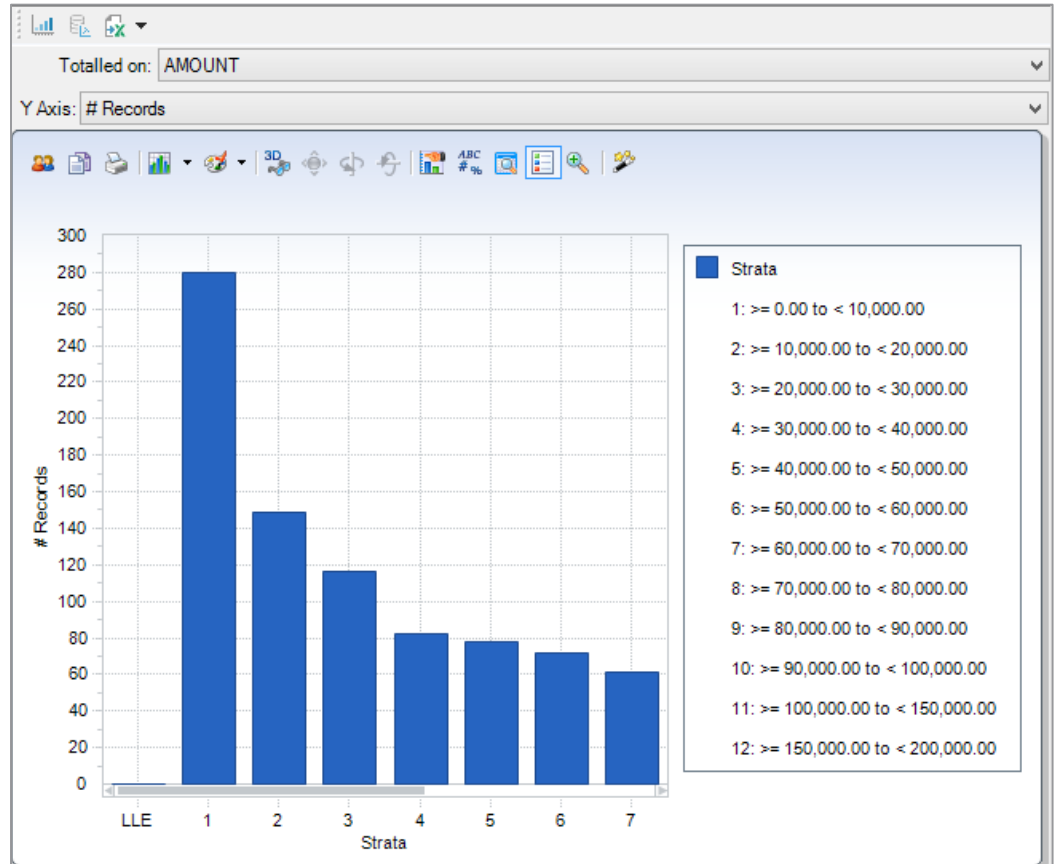
Field statistic information is available for each stratum in the result. To view the **Field Statistics** for a particular strata, left-click on the strata to highlight it. Then select **Display Field Statistics**.
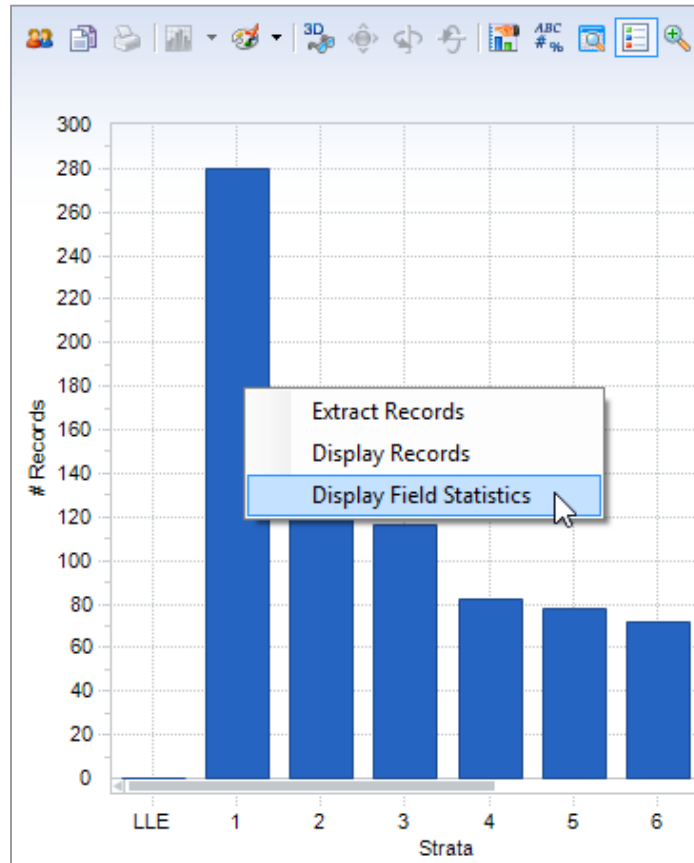
Display Field Statistics

Field Type
Numeric
Date
Time
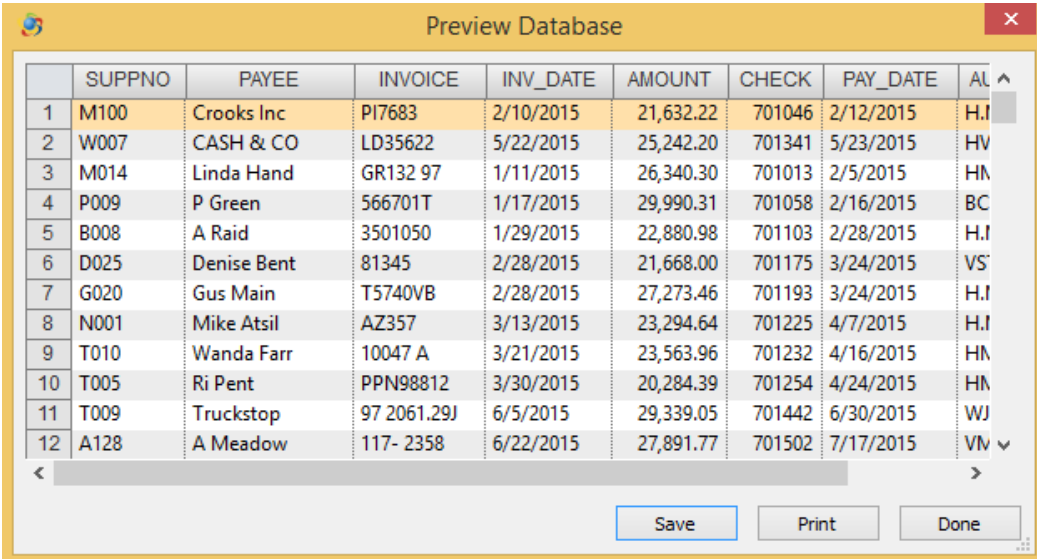
Numeric Fields
☑ AMOUNT
☑ CHECK

Numeric Statistics	AMOUNT	CHECK
▶ Net Value	2,912,354.72	81,373,955
Absolute Value	2,912,354.72	81,373,955
# of Records	116	116
# of Zero Items	0	0
Positive Value	2,912,354.72	81,373,955
Negative Value	0.00	0
# of Positive Records	116	116
# of Negative Records	0	0
# of Data Errors	0	0
# of Valid Values	116	116
Average Value	25,106.51	701,499.61
Minimum Value	20,110.83	701,013
Maximum Value	29,990.31	701,973
Record # of Min	27	3
Record # of Max	4	71
Sample Std Dev	2,975.53	278.25
Sample Variance	8,853,772.33	77,420.64
Pop Std Dev	2,962.68	277.04
Pop Variance	8,777,446.70	76,753.22
Pop Skewness	0.048812	-0.059668
Pop Kurtosis	-1.248175	-1.139626

You can also "drilldown" to see the detail records that comprise any Strata. Click any Strata in the chart to highlight it, anc then select **Display Records**.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AL
1	M100	Crooks Inc	PI7683	2/10/2015	21,632.22	701046	2/12/2015	H.I
2	W007	CASH & CO	LD35622	5/22/2015	25,242.20	701341	5/23/2015	HV
3	M014	Linda Hand	GR132 97	1/11/2015	26,340.30	701013	2/5/2015	HN
4	P009	P Green	566701T	1/17/2015	29,990.31	701058	2/16/2015	BC
5	B008	A Raid	3501050	1/29/2015	22,880.98	701103	2/28/2015	H.I
6	D025	Denise Bent	81345	2/28/2015	21,668.00	701175	3/24/2015	VS
7	G020	Gus Main	T5740VB	2/28/2015	27,273.46	701193	3/24/2015	H.I
8	N001	Mike Atsil	AZ357	3/13/2015	23,294.64	701225	4/7/2015	H.I
9	T010	Wanda Farr	10047 A	3/21/2015	23,563.96	701232	4/16/2015	HN
10	T005	Ri Pent	PPN98812	3/30/2015	20,284.39	701254	4/24/2015	HN
11	T009	Truckstop	97 2061.29J	6/5/2015	29,339.05	701442	6/30/2015	WJ
12	A128	A Meadow	117- 2358	6/22/2015	27,891.77	701502	7/17/2015	VN

Any of the above mentioned **Results** outputs can be printed by clicking the **Print** button in the appropriate dialog box. Note that the results may also be saved as a new IDEA database.

Note: As we would expect there are a large number of low value payments, tapering off to a small number of high value payments. However, there are an exceptionally high number (and hence value) of payments in the $70,000 - $80,000 band.

As the Chief Financial Officer has informed you that the maximum payment value that can be authorized without his approval is $80,000, this is likely to indicate that invoices and/or payments are being split to circumvent this limit.

Payments in the $70,000 to $80,000 band will require further investigation, in addition to the staff authorizing the purchases and payments.

If you want to redo your **Stratification** task, perhaps to change some of the stratum ranges, you do not have to start the **Stratification** task over again. As long as the **Results** output is active and you have not done any other analysis on the database, you can re-run the last result simply by clicking **Re-Run Task** on the **Analysis** tab. This will re-open the analysis dialog box that created the current **Results** output. In this case, it will re-open the **Stratification** dialog box with all of the previously used settings still in place.

14.   Return to the **Results** output by clicking the **Cancel** button.

Conclusion

There are a significant number of payments just below the $80,000 authorization level that require investigation.

Identify High and Unusual Payments

Objective:

- To identify all high value items for testing.
- To identify items which do not appear to match the profile for payments.

Exercise Description:

As a result of the **Stratification** analysis, we identified that there were an unusually high number of payments between $70,000 - $80,000 and also that there were 3 payments greater than $100,000. These will be extracted for investigation.

IDEA Functionality Covered:

- Extract data with a specified criterion
- Use the **Equation Editor**

Using the **Accounts Payable** database, extract all high and unusual payments as follows:

1. Select the **Accounts Payable** database as the active database with the **Data** property selected in the **Properties** window.

2. Select the **Direct Extraction** task by clicking on the relevant button on the **Analysis** tab.
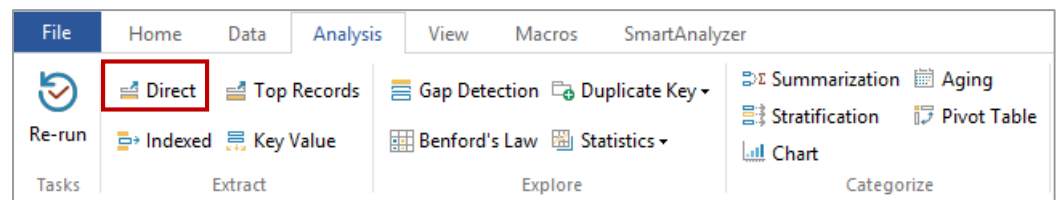
   The **Direct Extraction** dialog box appears.

3. In the **File Name** field, enter **Unusual and High Payments**.

4. Click the **Equation Editor** button.

   The **Equation Editor** will appear and is used to enter the required equation:
   AMOUNT >= 70000 .AND. AMOUNT < 80000 .OR. AMOUNT > 100000

   Note:

   - **AMOUNT >= 70000 .AND. AMOUNT < 80000** will identify the unusually large number of payments between $70,000 - $80,000.
   - **AMOUNT > 100000** will identify high value payments.

5. Once the equation has been entered, check the syntax by clicking the **Validate** button.

6. Click the **Validate and Exit** button.

7. In the **Records to extract** area, accept the default selection for the **All** option to extract the records from the whole database.

8. Click **OK** to run the extraction.

There should be **87** records totaling **$6,850,932.26**.

Note: There are a number of large value, round sum payments to Supplier M100. Note the different variants of the payee name, especially the occurrence of "Cash" within the name.

Many of the payments were authorized by HMV. However, on further investigation it is determined that HMV may only authorize payments up to $20,000.

9. Close the **Unusual and High Payments** database.

Identify Exceptional Transactions

Objective:

To identify any unusual transactions.

Exercise Description:

As a result of the previous test, further investigation will be required and the following extractions will be carried out:

- All payments with the **PAYEE** name containing "CASH"
- All round sum payments
- All payments authorized by HMV
- All payments made on a Sunday

In addition, a digital analysis of the amount field will be performed using the **Benford's Law** task.

IDEA Functionality Covered:

- Performing multiple extractions with a single pass through the database
- Using a number of **@Functions** in equations
- Finding help on the syntax of **@Functions**
- Using the **Benford's Law** task

Payments with "CASH" in the Payee Name

1. Using the **Accounts Payable** database, from the **Analysis** tab, in the **Extract** group, click **Direct**.

2. Change the file name to **CASH in PAYEE name**.

3. Click the **Equation Editor** button. **@Functions** may be accessed through the list of **@Functions**. The required equation is built using the following **@Functions**:

@Isini("text", field)	Used to search for text within a Character field. This @Function is **NOT** case sensitive.
@Strip(field)	Used to remove punctuation and spaces from the text

4.   The following equation will be used for the extraction:

@Isini("CASH",@Strip(PAYEE)).

Note: This activity can also be done using the IDEA Search task.

When you select the required **@Function**, IDEA inserts the **@Function** name and brackets (i.e**., @Isini()**) with the cursor inserted within the brackets.

5.   Once you have entered the equation, check the syntax and exit the **Equation Editor** by clicking the **Validate and Exit** button. Do not run the extraction yet.
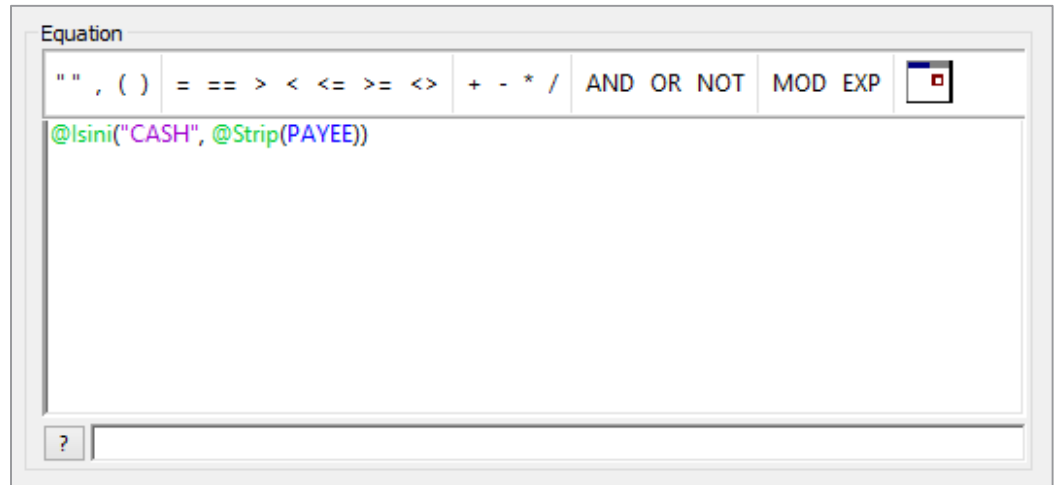
Round Sum Payments

1.   Click on the second extraction line in the **Direct Extraction** dialog box and note that a default name is supplied for a second extraction.

2.   Change the file name to **Round Sum Amounts**.

3.   Click the **Equation Editor** button.

4.   Extract all round sum 1000s in the **AMOUNT** field using the following equation:

AMOUNT % 1000 = 0.

Select the **MOD** button to insert the% symbol in the equation. This equation will result in items where the remainder when dividing by 1000 is 0 (zero).

Note: % is used in IDEA, as with many other programming languages, as the modulus symbol, not the percentage symbol.

5.   Once the equation has been entered, check the syntax and exit by clicking the **Validate and Exit** button. Again, do not run the extraction yet.

Payments Authorized by Manager HMV

1. Click on the third extraction line in the dialog box and note that the default name is supplied for a third extraction.

2. Change the file name to **Authorized by HMV**.

3. Click the **Equation Editor** button.

4. Extract all payments authorized by HMV using the following equation:

   @Upper(@Strip(AUTH)) = "HMV".

   Note:

   - **@Upper(field)** converts the contents of a Character field to uppercase.

   - **@Strip(field)** removes spaces and punctuation from the field.

5. Once the equation has been entered, check the syntax and exit by clicking the **Validate and Exit** button. Again, do not run the extractions yet.

Test for Payments Processed on a Sunday

1. Click on the fourth extraction line in the dialog box and note that a default name is supplied for a fourth extraction.

2. Change the file name to **Sunday Payments**.

3. Click the **Equation Editor** button.

4. Enter the equation using the **Equation Editor**. The following **@Function** will be used:

@Dow(cate field)	Used to return the day of the week where :
	1 = Sunday
	2 = Monday etc.

The following equation will be used for the extraction: **@Dow(PAY_DATE) = 1**.

5. Once the equation has been entered, check the syntax and exit by clicking the **Validate and Exit** button.

6. Click **OK** to run all 4 extractions with a single pass through the database, potentially saving considerable time on large databases.

View the resultant databases in turn, recording and checking your results against the solution provided.

Note that the **CASH in PAYEE name** database is the active database. Other databases must be opened from the **File Explorer**.
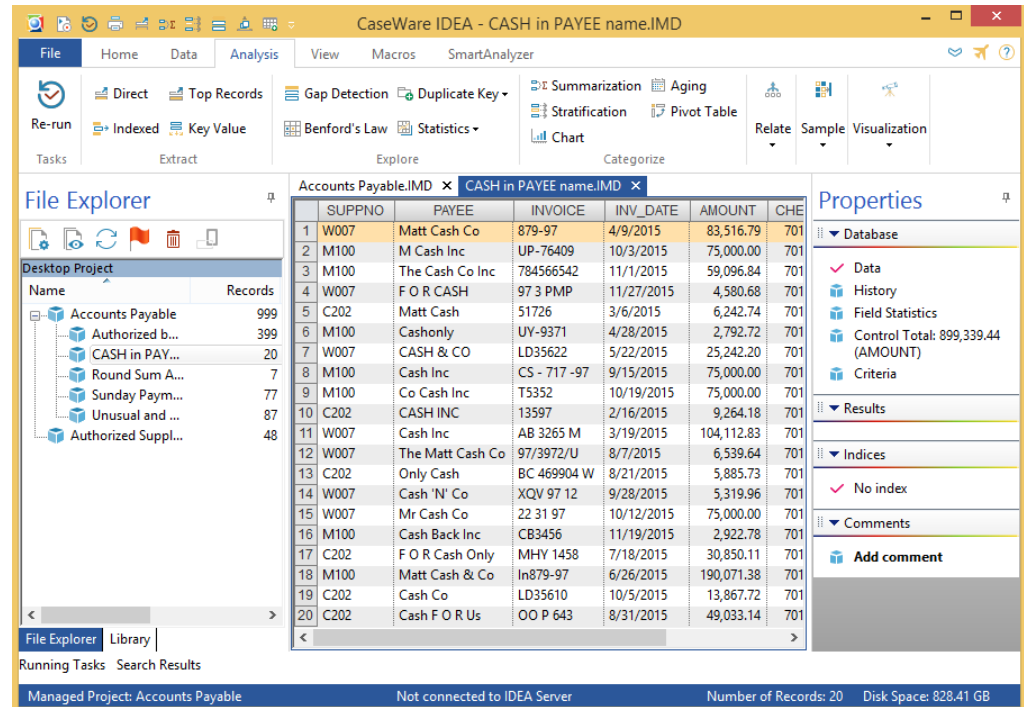
EXTRACTION	# OF RECORDS	AMOUNT	COMMENT
CASH in PAYEE name	20	899,339.44	Many are authorized by HMV and VST Also note that the Payee name is not consistent with the Supplier Number
Round Sum Amounts	7	375,000.00	Includes zero-value checks
Authorized by HMV	399	13,826,403.35	Many greater than the maximum authorization limit of $20,000 for HMV
Sunday Payments	77	3,330,645.60	25 are authorized by HMV

7.   From the **File** tab click **Close All Databases**.

Applying Benford's Law to Identify Exceptional Items

What is Benford's Law?

Frank Benford was a physicist at GE Research Laboratories in the 1920's. He noted that the first parts of the log table books were more worn than the back parts. The first pages contain logs of numbers with low first digits. The first digit is the left-most digit in a number.

Benford collected data from 20 lists of numbers totaling 20,229 observations. He found that the first digit of 1 occurred 31 percent of the time. Using integral calculus, he calculated the expected digit frequencies that are now known as "Benford's Law." It took Frank Benford six years to perform his analysis and develop his law of expected digit frequencies.

The **Benford's Law** task in IDEA can provide a valuable reasonableness test for large data sets. IDEA only tests items with numbers over 10.00. Number sets with less than 4 digits tend to have more skewed distributions and do not conform as well to **Benford's Law**. Positive and negative numbers are analyzed separately. This is due to the fact that abnormal behavior patterns for positive numbers are very different from those for negative numbers.

To run a **Benford's Law** analysis on the **Accounts Payable** database:

1.   From the **Analysis** tab, in the **Explore** group, click **Benford's Law**.
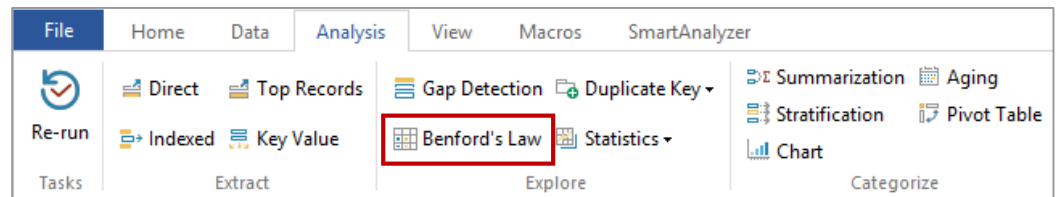
2. In the **Benford's Law** dialog box, select the **Amount** field as the field to analyze. Accept the other default options to **Include Values** that are positive, **Show Boundaries**, **Mean Absolute Distribution** and perform all seven **Analysis Types** (First Digit, First Two Digits, First Three Digits, Second Digit, Last Two Digits, Second Order and Summation). Uncheck the **Suspicious** tick boxes.
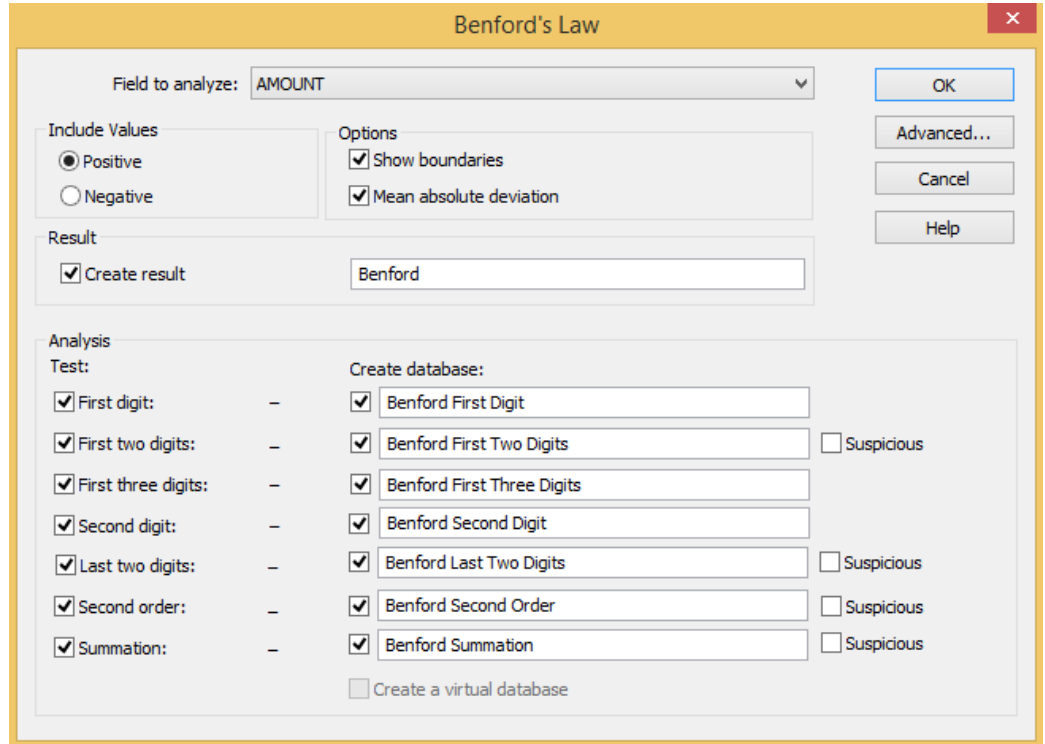
3. Click **OK** to perform the analyses.

    The **Benford** results becomes active. Other databases must be opened from the **File Explorer** window. Open the **Benford First Digit.imd** from the **File Explorer**.

4. From the **Analysis** tab, in the **Categorize** group, click **Chart** to graph the data.
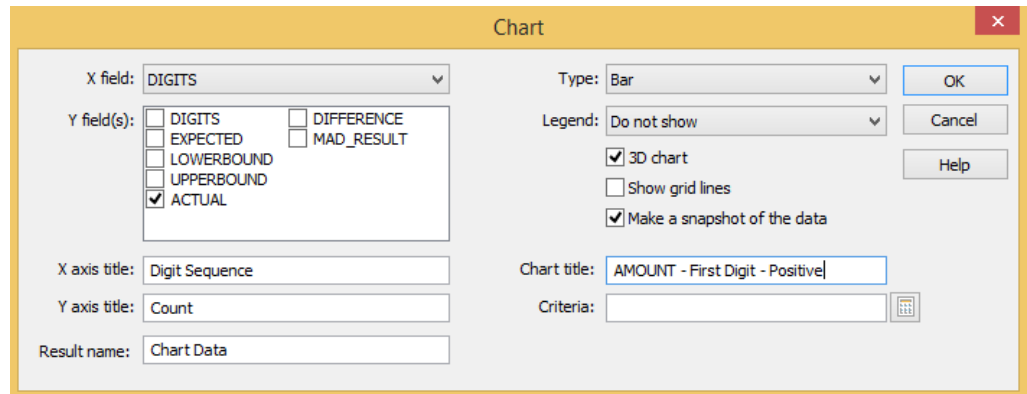
5. In the **Y field(s**) list box, select **ACTUAL**.

6. In the **X axis title** field, enter **Digit Sequence**.

7. In the **Y axis title** field, enter **Count**.

8. In the **Chart title** field, enter **AMOUNT - First Digit - Positive**.

9. Click **OK**.

   The **Chart Data Results** output becomes active.

   The first digit graph shows a spike in the digit 7 results.
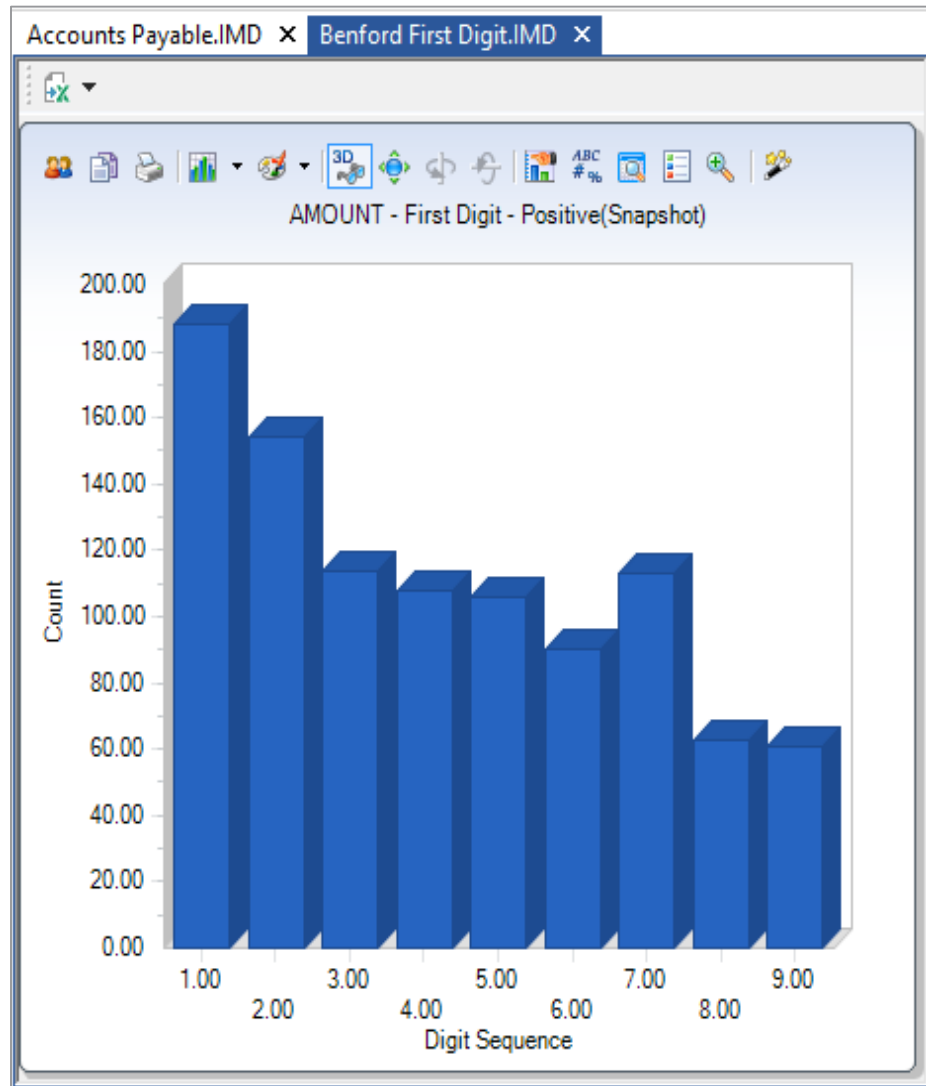
Note: The **First Digit** test is the test of first digit proportions. The first digit of a number is the left-most digit in the number. Zero can never be a first digit. This is a high level test. Analysts will not usually spot anything unusual unless it is blatant. This is a test of goodness-of-fit to see if the first digit actual proportions conform to **Benford's Law**. The **First Digit** test is an overall test of reasonableness. The upper and lower bounds are merely guidelines for the auditor. The **First Digit** graph could show a high level of conformity but the data set could still contain errors or biases.

10. Click the **Data** link in the **Properties** window to return to the **Benford's First Digit** database that was created as part of this analysis. The **DIFFERENCE** field shows the difference between the expected occurrences of the digits and the actual occurrences of the digits. When the **DIFFERENCE** field is indexed in descending order, the digit 7 results show the largest positive difference (positive spike).

	DIGITS	EXPECTED	LOWERBOUND	UPPERBOUND	ACTUAL	DIFFERENCE ▼
1	7	57.82	48.48	67.15	113	55.18
2	5	78.94	68.19	89.70	106	27.06
3	6	66.75	56.78	76.71	90	23.25
4	9	45.62	37.25	53.99	61	15.38
5	8	51.00	42.19	59.81	63	12.00
6	4	96.62	84.86	108.38	108	11.38
7	3	124.56	111.44	137.69	114	-10.56
8	2	175.56	160.48	190.65	154	-21.56
9	1	300.13	282.00	318.25	188	-112.13

This result warrants further investigation as the Chief Financial Officer has indicated that any items in excess of $80,000.00 require additional approval. This spike could be indicating an abnormal level of items being processed just below the additional approval level.

11. Close the **Benford First Digit** database.

To view the **Benford's Law** analysis result again, open the **Accounts Payable** database and select **Benford** in the **Results** area of the **Properties** window. To view the **First Two Digit** graph, click on the button on the **Results** toolbar. The 79, 76, and 75 two-digit combination spikes are clearly visible in this graph.
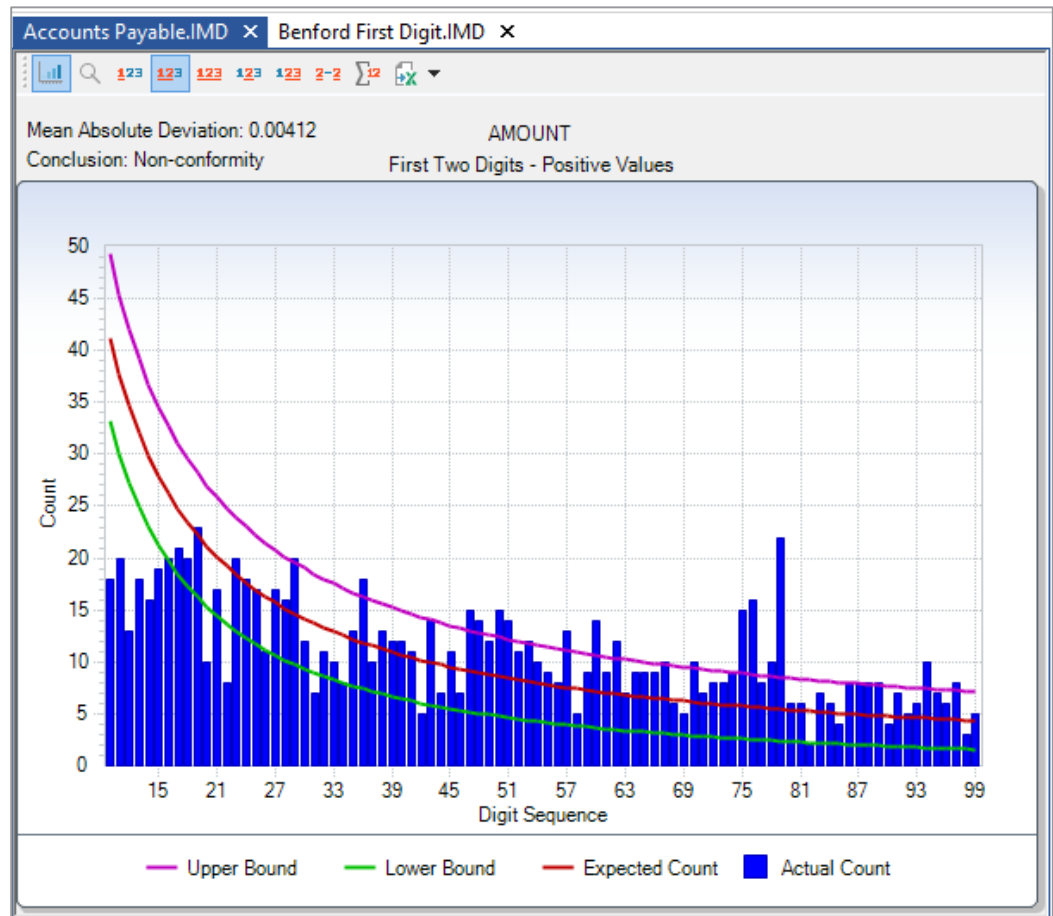
The **First Two Digit** test is a more focused test. The first two digit numbers are the left-most two digits. There are 90 possible two-digit combinations ranging from 10 to 99. This test is performed to find anomalies in the data that are not readily apparent from either the **First Digit** test or the **Second Digit** test when viewed on their own. A spike occurs where the actual proportion exceeds the expected proportion as predicted by **Benford's Law**. Positive spikes (above the Benford's curve) represent excessive duplication. One of the objectives of this test is to look for spikes that conform to internal thresholds, such as authorization limits.

Look at the transactions that comprise the 79 two-digit combination by clicking on the graph and selecting **Display Records** to drill down to the transactions. Notice the number of transactions just under the $80,000 approval limit.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AUTH
1	C202	Cary S Matic	CS - 589 -97	3/24/2015	79,217.47	701241	4/18/2015	H.M.V.
2	M025	Luke Hair	51505	1/26/2015	79,500.00	701073	2/19/2015	H.M.V.
3	F128	Ern Payed	82 95 1	2/17/2015	79,826.53	701148	3/15/2015	WJT
4	P007	Nellie Dunn	000511CJW	2/28/2015	7,988.72	701179	3/28/2015	WJT
5	T004	Richmond	IN/1151/97	3/9/2015	79,839.54	701207	4/3/2015	WJT
6	N001	Mike Atsil	AZ362	4/24/2015	79,910.95	701346	5/19/2015	HV
7	R007	Philip Upp Garage	1421/21	7/3/2015	79,365.72	701558	7/30/2015	HMV
8	M020	Linda Hand	GR223 97	7/6/2015	79,002.68	701572	8/1/2015	HMV
9	R008	Philip Upp Garage	1464/21	10/18/2015	7,973.99	701910	11/14/2015	BC
10	H025	Ivan Aker	WNZ28C	1/4/2015	79,571.88	701002	2/2/2015	BC
11	T006	Round Table	BUR1355-G	3/29/2015	79,839.65	701260	4/27/2015	H.M.V.
12	K001	Jackie Tupp	917356	3/24/2015	79,990.86	701262	4/21/2015	H.M.V.
13	N005	Miles Long	FR-1026 82	7/2/2015	79,306.51	701547	7/30/2015	HMV
14	M014	Kurt N Upp	123513	7/18/2015	79,902.90	701628	8/15/2015	HMV
15	M014	Kurt N Upp	123522	8/21/2015	79,765.18	701732	9/18/2015	WJT
16	B008	A Raid	3501101	8/9/2015	7,948.57	701586	8/7/2015	WJT
17	R020	Polly Gunn	L-1347/73	9/4/2015	79,458.30	701765	10/2/2015	WJT
18	P009	P Green	566698T	1/6/2015	79,237.49	701012	2/5/2015	BC
19	Z001	Miles Long	FR-969 39	1/19/2015	795.59	701064	2/17/2015	HMV
20	T005	Ri Pent	PPN98831	4/9/2015	79,086.25	701300	5/8/2015	BC
21	R007	Peter Rabbitt	KG0385	9/18/2015	79,901.01	701820	10/17/2015	BC
22	N005	Miles Long	FR-1073 140	10/27/2015	7,962.64	701943	11/27/2015	HMV

Preview Database

Save   Print   Done

Of the 22 transactions that make up the 79 two-digit combination, 17 are between 79,000 and 80,000. Each of the payables clerks authorized some of the 17 transactions, but HMV was responsible for the bulk of these transactions having authorized 8 out of 17.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT ▼	CHECK	PAY_DATE	AUTH
1	K001	Jackie Tupp	917356	3/24/2015	79,990.86	701262	4/21/2015	H.M.V.
2	N001	Mike Atsil	AZ362	4/24/2015	79,910.95	701346	5/19/2015	HV
3	M014	Kurt N Upp	123513	7/18/2015	79,902.90	701628	8/15/2015	HMV
4	R007	Peter Rabbitt	KG0385	9/18/2015	79,901.01	701820	10/17/2015	BC
5	T006	Round Table	BUR1355-G	3/29/2015	79,839.65	701260	4/27/2015	H.M.V.
6	T004	Richmond	IN/1151/97	3/9/2015	79,839.54	701207	4/3/2015	WJT
7	F128	Ern Payed	82 95 1	2/17/2015	79,826.53	701148	3/15/2015	WJT
8	M014	Kurt N Upp	123522	8/21/2015	79,765.18	701732	9/18/2015	WJT
9	H025	Ivan Aker	WNZ28C	1/4/2015	79,571.88	701002	2/2/2015	BC
10	M025	Luke Hair	51505	1/26/2015	79,500.00	701073	2/19/2015	H.M.V.
11	R020	Polly Gunn	L-1347/73	9/4/2015	79,458.30	701765	10/2/2015	WJT
12	R007	Philip Upp Garage	1421/21	7/3/2015	79,365.72	701558	7/30/2015	HMV
13	N005	Miles Long	FR-1026 82	7/2/2015	79,306.51	701547	7/30/2015	HMV
14	P009	P Green	566698T	1/6/2015	79,237.49	701012	2/5/2015	BC
15	C202	Cary S Matic	CS - 589 -97	3/24/2015	79,217.47	701241	4/18/2015	H.M.V.
16	T005	Ri Pent	PPN98831	4/9/2015	79,086.25	701300	5/8/2015	BC
17	M020	Linda Hand	GR223 97	7/6/2015	79,002.68	701572	8/1/2015	HMV
18	P007	Nellie Dunn	000511CJW	2/28/2015	7,988.72	701179	3/28/2015	WJT
19	R008	Philip Upp Garage	1464/21	10/18/2015	7,973.99	701910	11/14/2015	BC
20	N005	Miles Long	FR-1073 140	10/27/2015	7,962.64	701943	11/27/2015	HMV
21	B008	A Raid	3501101	8/9/2015	7,948.57	701586	8/7/2015	WJT
22	Z001	Miles Long	FR-969 39	1/19/2015	795.59	701064	2/17/2015	HMV

Of the 16 transactions that make up the 76 two-digit combination, 10 are between 76,000 and 77,000. Of these 10 transactions, HMV authorized 7 transactions.

Of the 15 transactions in the 75 two-digit combination, 13 are between 75,000 and 76,000. Like before HMV authorized 6 of the 13 transactions. In addition, there are 5 transactions for exactly 75,000. Out of these 5 transactions, 4 were payments to companies with "Cash" in the payee name. Each of these 4 transactions was paid within a few days of their invoice date, clearly a violation of company policy.

Open the **Benford First Two Digits** database that was created as part of the analysis. Index the **DIFFERENCE** field in descending order. Notice the large positive differences (positive spikes) in the first two digit combinations of 79, 76, and 75. These were the underlying cause of the spike in digit 7 results in the **First Digit** graph.

	DIGITS	EXPECTED	LOWERBOUND	UPPERBOUND	ACTUAL	DIFFERENCE ▼
1	79	5.45	2.37	8.53	22	16.55
2	76	5.66	2.52	8.80	16	10.34
3	75	5.74	2.58	8.89	15	9.26
4	60	7.16	3.66	10.66	14	6.84
5	50	8.57	4.77	12.38	15	6.43
6	36	11.86	7.43	16.30	18	6.14
7	47	9.12	5.20	13.04	15	5.88
8	51	8.41	4.63	12.18	14	5.59
9	57	7.53	3.95	11.11	13	5.47
10	94	4.58	1.74	7.42	10	5.42
11	29	14.68	9.77	19.59	20	5.32
12	62	6.93	3.48	10.37	12	5.07
13	48	8.93	5.05	12.81	14	5.07
14	78	5.52	2.42	8.61	10	4.48
15	43	9.95	5.87	14.04	14	4.05
16	53	8.09	4.39	11.80	12	3.91
17	70	6.14	2.88	9.40	10	3.86
18	67	6.41	3.09	9.74	10	3.59
19	97	4.44	1.64	7.24	8	3.56
20	49	8.75	4.90	12.59	12	3.25
21	74	5.81	2.64	8.99	9	3.19
22	89	4.84	1.92	7.75	8	3.16
23	88	4.89	1.96	7.82	8	3.11
24	87	4.95	2.00	7.89	8	3.05
25	86	5.01	2.04	7.97	8	2.99
26	52	8.25	4.51	11.99	11	2.75
27	66	6.51	3.16	9.86	9	2.49

Because of the size of this data set, a number of transactions were identified for further investigation using just the **First Digit** and **First Two Digit** analysis. In larger data sets, a finer filter of transactions is necessary.

Note: Where there are 90 possible two-digit combinations, there are 900 possible three-digit combinations from 100 to 999. The **First Three Digits** test is a highly focused test that will give the analyst relatively smaller sections due to abnormal duplication and allow for a more narrowly focused analysis. This test is also valuable to look for spikes just below internal and psychological thresholds such as authorization limits. To make the most effective use of this test, the source data set should normally exceed 10,000 records.

Open the **Benford First Three Digits** database that was created as part of the analysis. Index the **DIFFERENCE** field in descending order.

	DIGITS	EXPECTED	LOWERBOUND	UPPERBOUND	ACTUAL	DIFFERENCE
1	750	0.58	0.00	1.72	6	5.42
2	807	0.54	0.00	1.64	5	4.46
3	769	0.56	0.00	1.69	5	4.44
4	511	0.85	0.00	2.18	5	4.15
5	187	2.31	0.23	4.39	6	3.69
6	962	0.45	0.00	1.48	4	3.55
7	799	0.54	0.00	1.65	4	3.46
8	798	0.54	0.00	1.65	4	3.46
9	533	0.81	0.00	2.13	4	3.19
10	492	0.88	0.00	2.24	4	3.12
11	469	0.92	0.00	2.31	4	3.08
12	377	1.15	0.00	2.67	4	2.85
13	186	2.32	0.24	4.40	5	2.68
14	299	1.45	0.00	3.13	4	2.55
15	940	0.46	0.00	1.50	3	2.54
16	296	1.46	0.00	3.15	4	2.54
17	922	0.47	0.00	1.52	3	2.53
18	295	1.47	0.00	3.16	4	2.53
19	899	0.48	0.00	1.54	3	2.52
20	841	0.51	0.00	1.60	3	2.49
21	795	0.54	0.00	1.66	3	2.46
22	278	1.55	0.00	3.30	4	2.45
23	762	0.57	0.00	1.70	3	2.43
24	275	1.57	0.00	3.32	4	2.43
25	749	0.58	0.00	1.72	3	2.42
26	739	0.59	0.00	1.73	3	2.41
27	660	0.66	0.00	1.86	3	2.34

The 750 digit combination has the largest negative difference (positive spike).

From the **File** tab, click **Close All Databases**.

Data-based Conditions for Benford's Law

Geometrical Series

The mathematical pre-condition for the examination of a data supply based on Benford's Law is that the data supply is based on a geometrical series (thus, that it is presented as Benford Set). In reality this condition is rarely met. Experience shows however, that data must only partially meet this condition, i.e., the constant increase, percentage-wise of an element compared to the predecessor must only be met partially. Otherwise, this would mean that no number may occur twice which is quite improbable in the case of business data supplies, however, the pre-condition is that there is at least a 'geometrical tendency.'

Description of the Same Object

The data must describe the same phenomenon. Examples are:

- The population of cities
- The surface of lakes
- The height of mountains
- The market value of companies quoted on the New York Stock Exchange
- The daily sales volume of companies quoted on the New York Stock Exchange
- The sales figures of companies

Unlimited Data Space (Non-Existence of Minima and Maxima)

The data must not be limited by artificial minima and maxima. A limitation to exclusively positive numbers (excluding 0) is permissible as long as the figures to be analyzed do not move within a certain, limited range. This applies, for example, to price data (e.g., the price of a case of beer will generally always range between 15 and 20 dollars) or fluctuations in temperature between night and day.

No Systematic Data Structure

The data must not consist of numbers following a pre-defined system, such as account numbers, telephone numbers and social security numbers. Such numbers show numerical patterns that refer to the intentions of the producer of the number system rather than to the actual object size, represented by the number (e.g., a telephone number starting with a 9 does not mean that this person possesses a bigger telephone).

Basically, data complies best with Benford's Law if it meets the rules mentioned above, namely that the data consists of large numbers with up to 4 digits and the analysis is based on a sufficiently large data supply. A large data supply is necessary in order to come as close to the expected numerical frequencies as possible. For example, the expected frequency of the digit 9 in any data supply is 0.0457. If the data supply consists of only 100 numbers, the numbers which have a 9 as their first digit may be 5% of the data supply. Thus, in the case of a small data supply, there may be an over-proportional deviation from Benford's Law. In large data supplies, the numerical distribution is increasingly closer to the expected frequencies.

If the data supply has, or just roughly has, the characteristics mentioned above it can be analyzed based on Benford's Law. However, the results of the Benford analyses are not interpretable on the basis of Benford's Law. As stated before, the expected frequencies according to Benford's Law often represent, in the practical use, nothing more than a type of benchmark for the observed frequencies. Since the observed frequencies will only be compared with the legality discovered by Benford, not interpreted accordingly, it is not necessary that all conditions mentioned above be met.

In fact, the analysis results will help the auditor interpret the personal expectation of the auditor, without including the reference value according to Benford in the argumentation. If, for example, the personal expectation of the user is that the starting digit 4 must occur twice as often in the analyzed data than the starting digit 2, the results of the analyzed values must not be compared with the expected frequencies according to Benford but with the individual expectation of the user.

The application of Digital Analysis and the Benford Module is also permissible in the framework of Data Mining when certain distinctive facts in a data supply are measured against the personal expectations of the user and interpreted according to them. In this case it is not necessary for the data that is to be analyzed, to create a Benford Set in a strict sense. In fact, it is permissible under these circumstances to analyze the numerical distribution of the leading digits of each data quantity and to interpret it independent of Benford's Law.

Test for Duplicate Payments

Objective:

To test for duplicate payments.

Exercise Description:

The Chief Financial Officer, Mr. Cuthbert is concerned that there are many more payments to certain suppliers compared to previous years. He is concerned that certain suppliers may be paid more than once for invoices, or that invoices are being resubmitted. He has asked you to test for duplicate payments.

IDEA Functionality Covered:

- Select fields to test for duplicates
- Specify a key (or sequence order)
- Test for duplicates
- Use **Duplicate Key Detection** task to check for supplier numbers with multiple payee names

To test for duplicate transactions:

1. Open the **Accounts Payable** database.

2. From the **Analysis** tab, click **Duplicate Key** and then **Detection**.
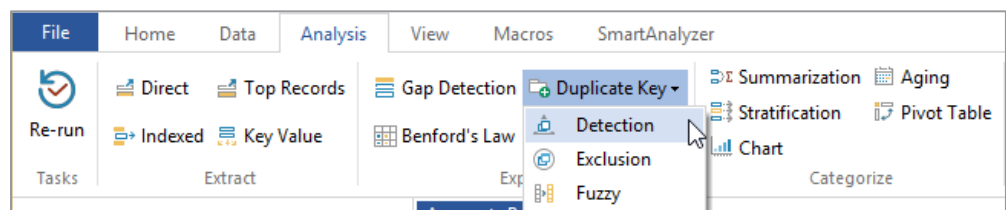
3. There are two options for duplicate testing: **Output duplicate records** or **Output records without duplicates**. For this test, select **Output duplicate records** to get a database containing any records that are duplicated.

4. Consider which field or fields should be tested for duplication (a maximum of 8 fields may be selected). In this case, duplicate payments are likely to be identified by payments of the same amount to the same supplier; therefore these fields will be specified in the key. Click the **Key** button and select the following fields:

- SUPPNO — Ascending

- AMOUNT — Descending
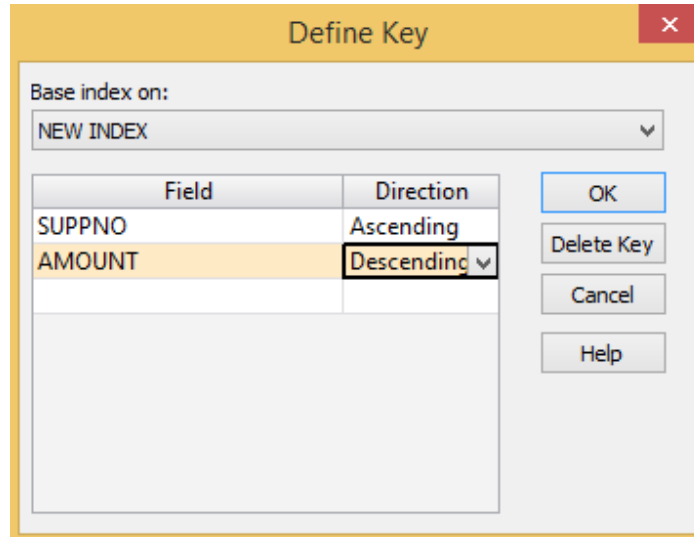
5. Click **OK** in the **Define Key** dialog box.

6. Do not specify a criteria (i.e., only payments for a specified range of dates) for the test.

7. Enter the resultant **File name** as **Duplicate Payments**.

8. Click **OK** in the **Duplicate Key Detection** dialog box to run the test.

9. View the resultant database of duplicates payments.

There are 5 duplicate records shown, including:

- **3** payments of **$75,000** to supplier **M100**
- **2** payments of **$145.50** to supplier **P007**

Note: Although the supplier number and amount are the same, other information in the record is different. These will all require follow-up to determine whether or not they are genuine duplicates.

In particular, note the different invoice number patterns and that all payments to supplier M100 are made within a few days of the invoice date.

Other possible tests include testing for:

- Duplicate supplier invoice numbers (i.e., test for the same supplier number and invoice number)
- Duplicate purchase order numbers (unless this is validated in the system)

10. Close the **Duplicate Payments** database.

To test for supplier numbers with multiple payee names:

1. 1. Open the **Accounts Payable** database.

2. 2. From the **Analysis** tab, click **Duplicate Key** and then **Exclusion**.

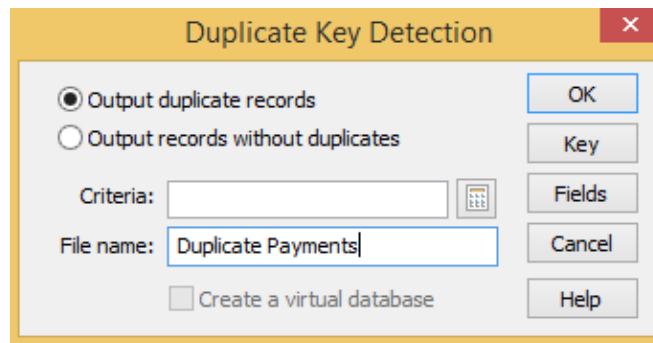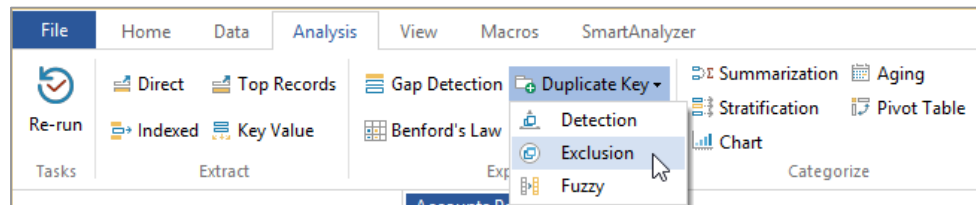3. In the **Duplicate Key Exclusion** dialog box, enter the following settings:

    - **Fields to match**: SUPPNO

    - **Field that must be different**: PAYEE

    - **File name**: Suppno Multiple Payees
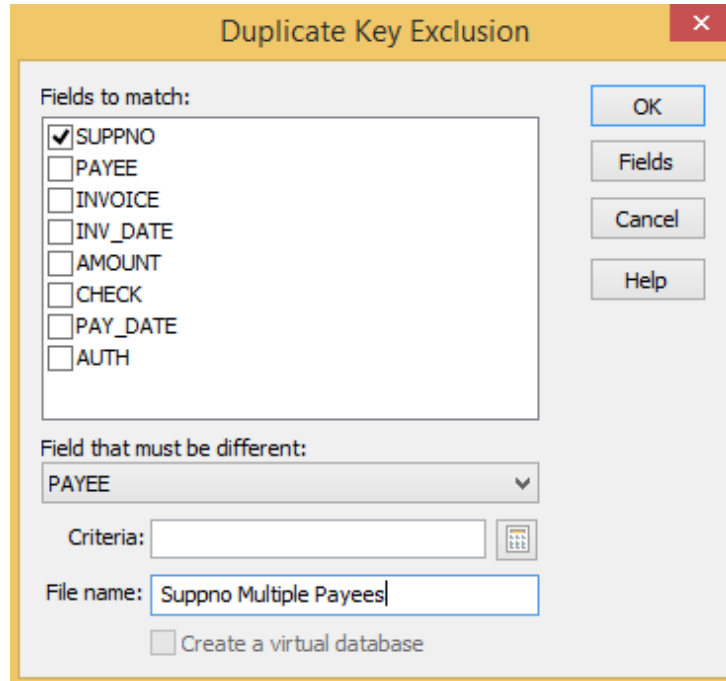
4. Click **OK** to perform the test.

There are **120** records where the same supplier number has different payee names. These records total **$4,524,529.75**.

This task indicates that there is a weakness in the company's internal controls involving the maintenance of supplier information.

5.   Close the **Suppno Multiple Payees** database.

Searching for Gaps in the Check Number Sequence

Objective:

Test for completeness.

Exercise Description:

An auditor looking at the Bank Reconciliation is concerned that not all the checks have been recorded on the system. Test for missing check numbers in the sequence.

The **Gap Detection** task is used to test for missing items in a numeric list.

IDEA Functionality Covered:

- Rules for testing for missing items
- **Gap Detection** task
- Where to view the results
- How to export or print results

1.   Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.

   The field **CHECK** contains the check number.

2.   It is possible to test for gaps in Numeric or Date fields or in a numeric sequence within a Character field. To view the format of the database, double-click over the Database window to display the **Field Manipulation** dialog box.

3.   View the format of the **CHECK** field and note that its type is Numeric. Close the **Field Manipulation** dialog box by clicking **Cancel**.

4.   From the **Operations** toolbar, click the **Gap Detection** button.
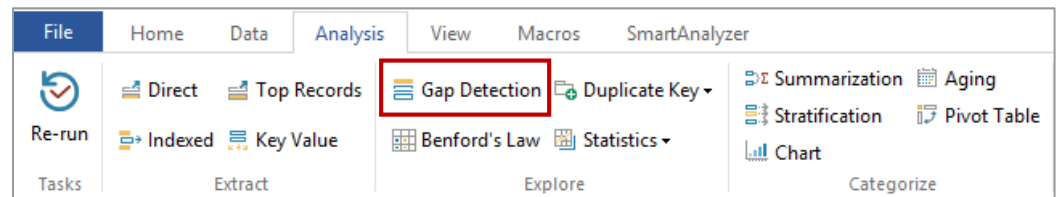
5. From the **Field to use** drop-down list, select **CHECK** to test for gaps.

Note that it is possible, but do not specify a **Criteria** for the test (i.e., only checks issued for a date range).

6. Test the whole range of check numbers by accepting the default selection of the **All** option.

    Note: The value in the Starting key value and Ending key value boxes are provided from the minimum and maximum values held in the Field Statistics.

7. Accept the **Gap Increment** of **1** but note that this could be changed if required.

8. Click **OK**.

9. The **Gap Detection Results** output of the Database window becomes active and displays the results. To view missing checks, click on the + sign located on the left side of the check sequence.

	From: CHECK	To: CHECK	Number
−	**701,805**	**701,805**	**1**
	701,805		
−	**701,997**	**702,000**	**4**
	701,997		
	701,998		
	701,999		
	702,000		
		Total number of items detected	5
		Total number of gaps detected	2

Accounts Payable.IMD

There are **2** gaps in the sequence. However there are **5** missing checks as can be seen from the inclusive ranges, i.e., **701805, 701997, 701998, 701999, 702000**.

The results are saved with the database in its .IMD file.

10. The results may be printed by clicking on the **Print** button on the **Operations** toolbar (or through the **Print Preview** task) or exported to a specified destination and format.

11. From the **Operations** toolbar, click the **Print Preview** button to view the report.
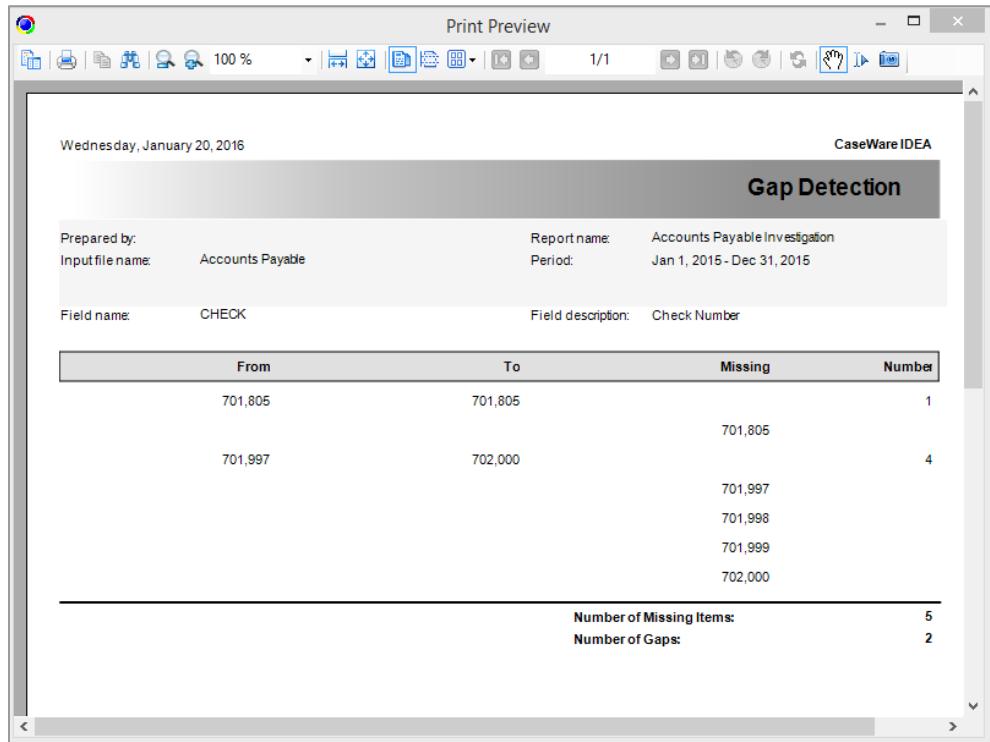
12. Close the Print Preview window by clicking the "X" in the top right corner.

13. Click the **Export** button. Notice the numerous format options and destinations available. Name the result **Accounts Payable** and save it as a Microsoft Excel file in the **Project Folder (C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects\Accounts Payable\Results.ILB)**
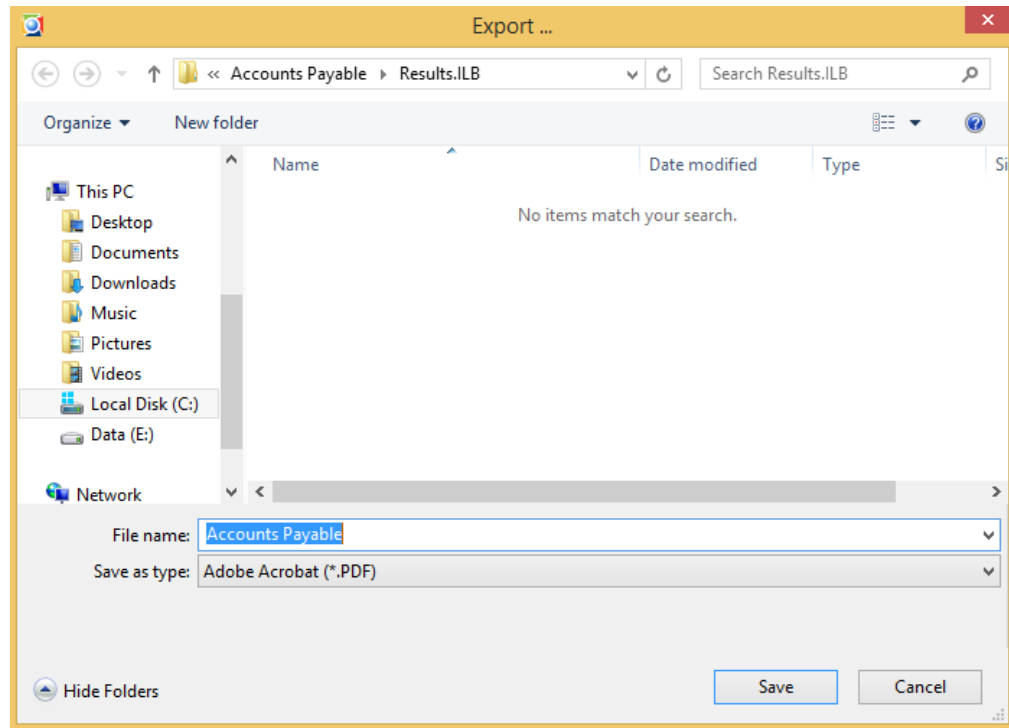
14. Return to viewing the database by clicking the **Data** link in the **Properties** window.

Searching for Gaps in the Check Date Sequence

Objective:

Test for days on which there have been no payments.

Exercise Description:

The auditors have been informed that a check payment run is processed each day. Therefore, a test should be performed to identify days on which no payments are made.

The **Gap Detection** task is used to test for missing items in a date range.

IDEA Functionality Covered:

- **Gap Detection** task
- Entering holiday dates for exclusion
- Where to view the results
- How to export or print results

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.

   The field **PAY_DATE** contains the check payment date.

2. From the Operations toolbar, click the **Gap Detection** button.
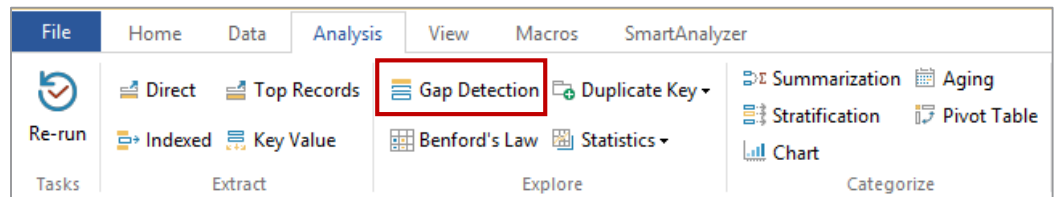
3. Select the **PAY_DATE** field to test for gaps.

4. Select the **Ignore weekends** option.

5. Select the **Ignore Holidays** option.

6. Set the holiday dates to be ignored by clicking the **Set Holidays** button.

7. To add a new date, click the **New** button on the toolbar followed by the **Browse** button to access the calendar control. Navigate to and select the required holiday dates to add to the list.

    The following dates are suggested:

    -   **January 1, 2015**

    -   **December 25, 2015**

    However, please enter additional dates or modify these dates if preferred.

8. Click **OK** to return to the **Gap Detection** dialog box.

9.   In the **Result name** box, enter **Pay Date Gaps**.

10.   Note that it is possible, but do not specify **Criteria** for the test (i.e., only checks issued for a date range).

11.   Test the whole range of check payment dates by accepting the default **All**.

      Note: The values in the **Starting date value** and **Ending date value** boxes are provided from the Earliest date and Latest date held in the field statistics.

12. Click **OK**.

The **Gap Detection Results** output of the Database window becomes active and displays the results.

	From: PAY_DATE	To: PAY_DATE	Number
+	1/13/2015	1/14/2015	2
+	1/16/2015	1/30/2015	11
+	2/4/2015	2/4/2015	1
+	2/11/2015	2/11/2015	1
+	2/13/2015	2/13/2015	1
+	2/18/2015	2/18/2015	1
+	2/20/2015	2/20/2015	1
+	2/25/2015	2/25/2015	1
+	2/27/2015	2/27/2015	1
+	3/2/2015	3/2/2015	1
+	3/4/2015	3/4/2015	1
+	3/11/2015	3/11/2015	1
+	3/16/2015	3/16/2015	1
+	3/18/2015	3/18/2015	1
+	3/30/2015	3/30/2015	1
+	4/1/2015	4/1/2015	1
+	4/13/2015	4/13/2015	1
+	4/15/2015	4/15/2015	1
+	4/20/2015	4/20/2015	1
+	4/22/2015	4/22/2015	1
+	4/29/2015	4/29/2015	1
+	5/4/2015	5/4/2015	1
+	5/6/2015	5/6/2015	1
+	5/11/2015	5/11/2015	1
+	5/13/2015	5/13/2015	1
+	5/18/2015	5/18/2015	1
+	5/20/2015	5/20/2015	1

Accounts Payable.IMD

13. Save the result as a .**PDF** file by clicking the **Export** button and name the file **Date Gap**.
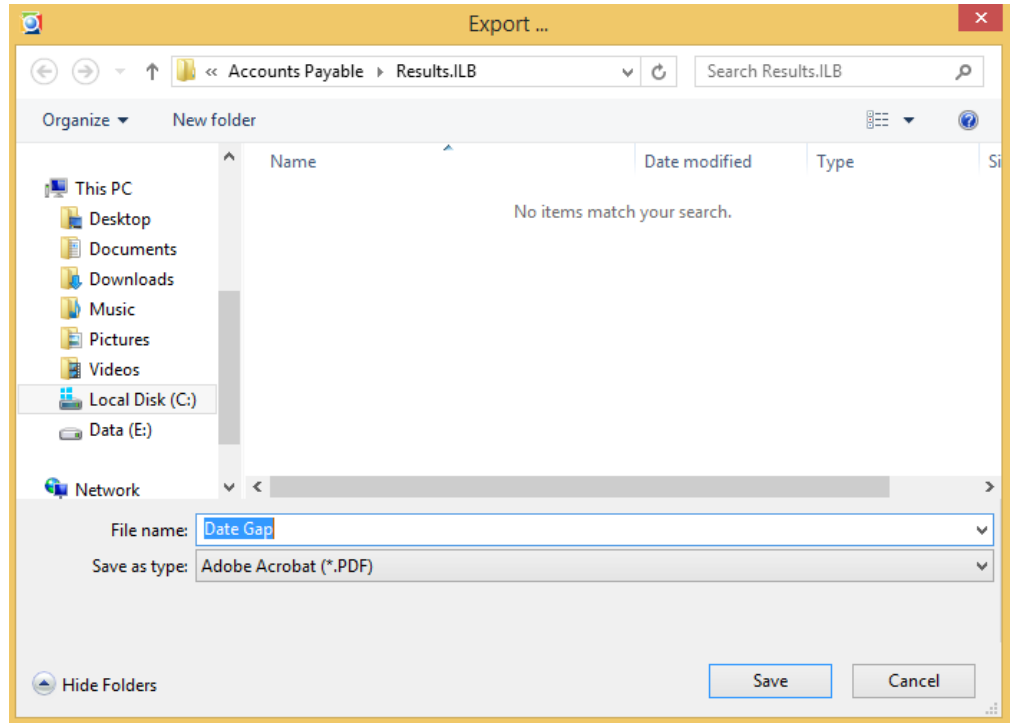
The **Date Gap.PDF** file can be viewed, printed, or e-mailed. The **Date Gap.PDF** file can be opened through the Windows File Explorer and looks like the following example.

Note that there are **62** gaps in the sequence. However there are **85** days on which no payments have been made.

The results are saved with the database in its .IMD file.

The results may be printed either by clicking the **Print** button on the **Operations** toolbar or through the **Print Preview** option.

14.   Click the **Print Preview** button on the **Operations** toolbar and view the report.

15.   Close the Print Preview window and return to the database by clicking the **Data** link in the **Properties** window.

Analyze Payment Days to Identify Favorable Terms to Suppliers

Objective:

To analyze payment terms and ensure that **Bright IDEAs Inc.'s** policy on payment is being strictly adhered to.

Exercise Description:

It is suspected that certain suppliers are rewarding staff for prompt payment of invoices. The number of days between payment and invoice will be calculated and then analyzed.

IDEA Functionality Covered:

- Appending a Virtual (or Calculated) field:
- Using the **@Age** function to calculate the number of days between dates
- Using the **@Between** function to test for a number between a range
- Indexing a database

Calculate the Number of Days for Payment

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.

2. Double-click over the Database window to load the **Field Manipulation** dialog box.

3. Click the **Append** button to add the following Virtual field:

   - **Field Name**: PAY_DAYS
   - **Field Type**: Virtual Numeric
   - **Field Length**: Do not enter
   - **Decimals**: 0
   - **Description**: Number of days to pay invoice

4. Click in the **Parameter** cell to load the **Equation Editor** and enter the following equation: **@Age(PAY_DATE , INV_DATE)**.

Note: **@Age(Date1,Date2)** calculates the number of days between the specified dates (fields or date constants). Enter the later date first to report a positive number of days as a difference.
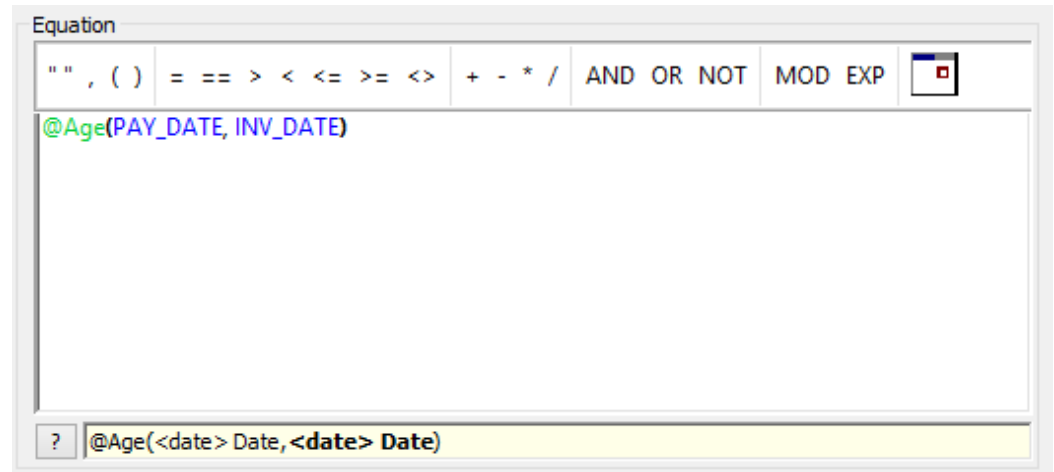
5. Click the **Validate and Exit** button, returning to the **Field Manipulation** dialog box.
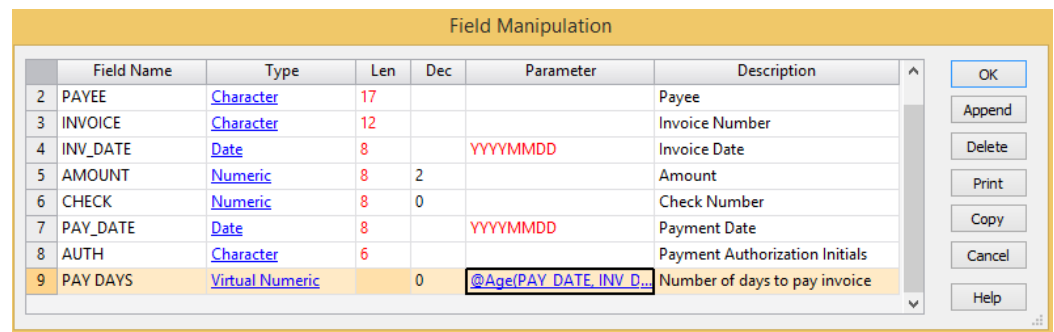
6. Click **OK** to append the **Virtual** field.

7. Click **Yes** to continue.

8. View the results in the new **PAY_DAYS** field. It will be the right-most column in the database.

    Note the color of this field (Teal if the defaults have not been changed) indicates that the field is a calculated field and not an original imported field.

9. Click the **Field Statistics** link in the **Properties** window to view the statistics for the **PAY_DAYS** field. When prompted, calculate the statistics for all fields.
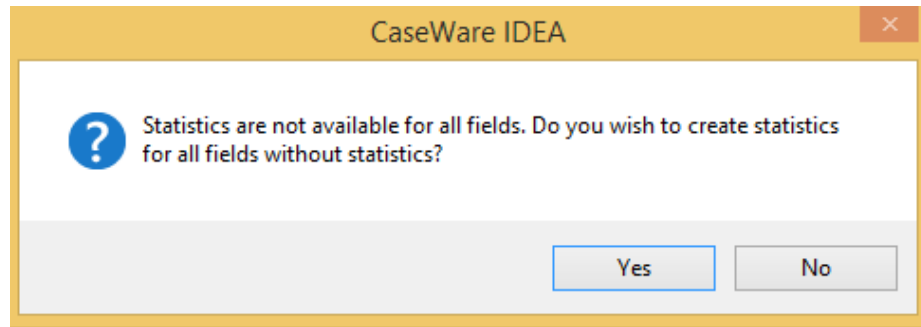
Note: The Company's policy is to pay all suppliers within 25 - 35 days of receipt of the invoice.

- The minimum number of days is **-6**, and there are 6 negative records, i.e., payments made before the stated invoice date!

- There are 6 payments with value **0**, i.e., orders being paid on the invoice date.

- The maximum is **59** days, well over the standard terms.

- The average is **27** days showing most invoices are paid within policy.

Accounts Payable.IMD ✕

Field Type

Numeric
Date
Time

Numeric Fields

☐ AMOUNT
☐ CHECK
☑ PAY_DAYS

Numeric Statistics	PAY_DAYS
Net Value	26,966
Absolute Value	27,004
# of Records	999
# of Zero Items	6
Positive Value	26,985
Negative Value	-19
# of Positive Records	987
# of Negative Records	6
# of Data Errors	0
# of Valid Values	999
Average Value	26.99
Minimum Value	-6
Maximum Value	59
Record # of Min	115
Record # of Max	849
Sample Std Dev	5.93
Sample Variance	35.14
Pop Std Dev	5.92
Pop Variance	35.10
Pop Skewness	-2.030312
Pop Kurtosis	14.674867

10.   Return to the database by clicking the **Data** link in the **Properties** window.

Extract all Payments Outside the Policy Range

Extract all payments made outside the company's stated policy of 25 - 35 days.

1.   From the **Analysis** tab, in the **Extract** group, click **Direct**.
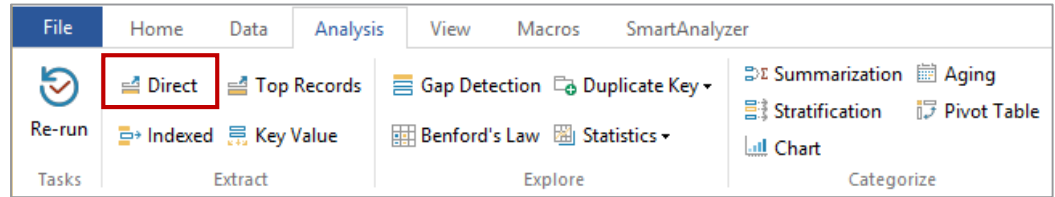
2.   In the **File name** field, enter **Payment days outside policy range**.

3.   Click the **Equation Editor** button.

The **Equation Editor** appears and is used to enter the required equation.

4.   Enter the expression **.NOT. @Between(PAY_DAYS,25,35)**.

Note:

- **@Between(VALUE,MIN,MAX)** - tests for VALUE between (and including) MIN and MAX.

- **.NOT.** - reverses an expression, items where VALUE is not between MIN and MAX.

5.   Once the equation has been entered, check the syntax and exit the **Equation Editor** by clicking the **Validate and Exit** button.

6.   In the **Records to extract** area, accept the default selection of the **All** option to extract the records from the whole database.

7.   Click **OK** to run the extraction.

8.   Double-click on the **PAY_DAYS** field name to sequence in ascending order. Double-click again to index in descending order. The index order will be displayed in the **Indices** area on the **Properties** window. Alternatively, from the **Data** tab, in the **Order** group, click **Index**.
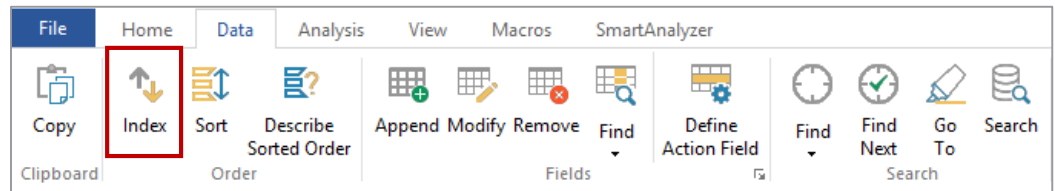
9. Specify the index order as **PAY_DAYS /Descending**.
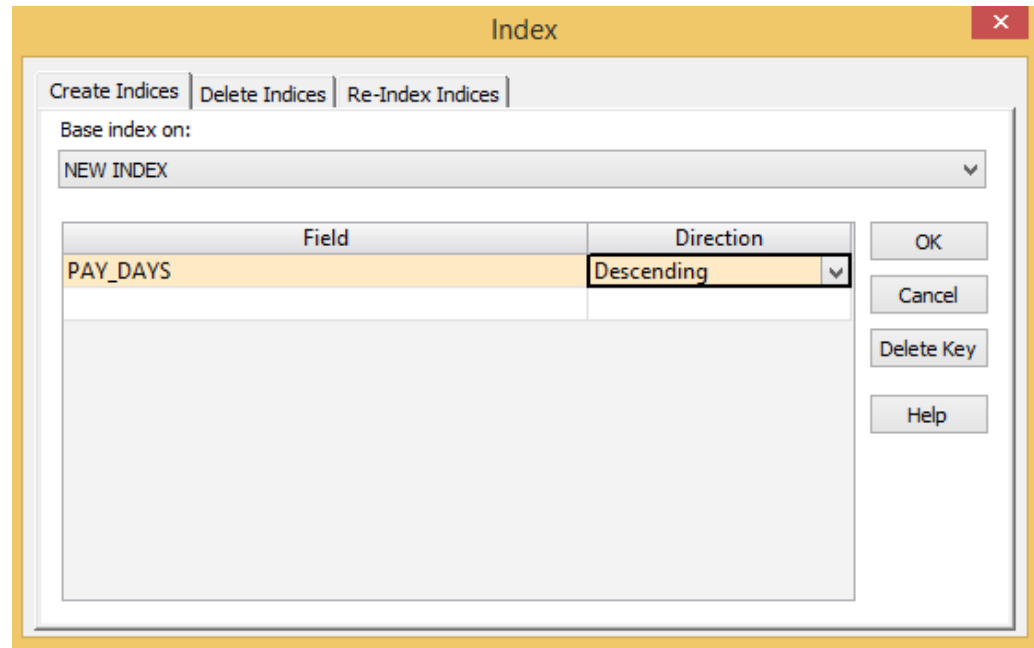
- There are **85** payments totaling **$3,010,687.40**.
- There are **68** payments made before **25** days.
- There are **17** payments delayed more than **35** days.

10. Close the **Payment days outside policy range** database.

Conclusion

A number of early payments have been authorized by **HMV** and **VST** to suppliers **M100, C202** and **W007**. The relationship between authorizers **HMV** and **VST** and these suppliers should be investigated. Late payments may also be investigated.

Payments to Unauthorized Suppliers

Objective:

To test the validity of payments to authorized suppliers.

Exercise Description:

It is suspected that there are payments to unauthorized suppliers.

The transactions will be matched to the **Authorized Supplier-Address** database using the **Join Databases** task in IDEA. The **History** log will specify the number of unmatched records (i.e., a payment for which there is no match in the supplier's database).

IDEA Functionality Covered:

- Matching databases using the **Join Databases** task
- Selecting the correct primary database for joining
- Determining the number of matched or unmatched transactions
- Using the **@IsBlank()** function

The common key by which the databases are to be joined is the **SUPPNO** field in each database. Verify that the field is the same type in each database.

**Verify a Common Key**

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.

2. Double-click over the Database window to open the **Field Manipulation** dialog box and to display the field layout.

	Field Name	Type	Len	Dec	Parameter	Description
1	SUPPNO	Character	4			Supplier Number
2	PAYEE	Character	17			Payee
3	INVOICE	Character	12			Invoice Number
4	INV_DATE	Date	8		YYYYMMDD	Invoice Date
5	AMOUNT	Numeric	8	2		Amount
6	CHECK	Numeric	8	0		Check Number
7	PAY_DATE	Date	8		YYYYMMDD	Payment Date
8	AUTH	Character	6			Payment Authorization Initials
9	PAY_DAYS	Virtual Numeric		0	@Age(PAY_DATE, INV_D...	Number of days to pay invoice

Note that the field **SUPPNO** is a **Character** field.

3. Click **Cancel**.

4. Open the **Authorized Supplier-Address** database.

5. Double-click over the Database window to open the **Field Manipulation** dialog and to display the field layout.
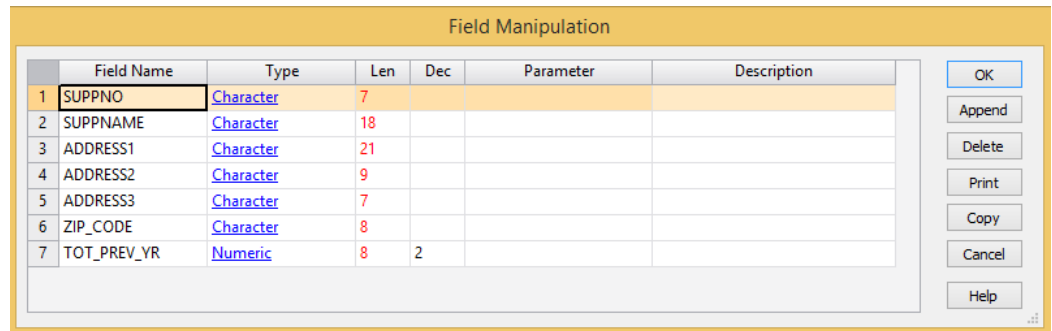
Note that the field **SUPPNO** is a **Character** field.

6. Click **Cancel**.

Join the Databases

1. Make the **Accounts Payable** database the active database.

2. From the **Analysis** tab, in the **Relate** group, click **Join**.
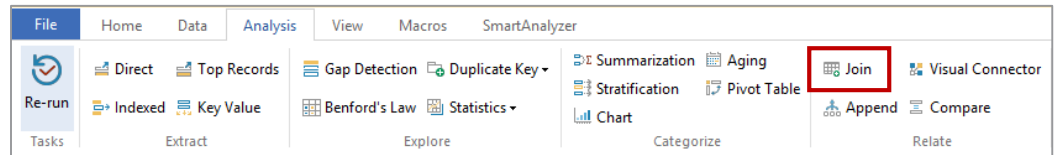
3. The **Join Databases** dialog box appears with the details of the **Primary database** in the top section.

Note: It is possible to enter **Criteria** for the **Primary database** (i.e., only a range of suppliers), if required. Do not enter criteria for this test.

4. Specify the **Secondary database** as follows: click **Select**. The **Select Database** dialog box appears. Select the **Authorized Suppliers-Address** database and then click **OK**.

5. Change the **File name** in the lower section of the **Join databases** dialog box to **Supplier Verification**.

6. Specify the common match key by clicking on **Match** to display the **Match Key Fields** dialog box.

7. Click the **Primary** text box and select **SUPPNO** from the list of fields. Note the **Order** text box and accept the default, **Ascending**. Click the **Secondary** text box and select **SUPPNO** from the list of fields. Click **OK**.

8. There are 5 join options at the bottom of the screen. Select the option: **All records in primary file**.

   Note: All records in Primary file is selected as:

   - There are multiple payments for each supplier.

   - The risk is that payments are to unauthorized suppliers so we are not interested in suppliers with no payments (the **All records in both files** option).

   The Join Databases dialog box should appear as in the screen below.

9. Click the **OK** button to join the selected databases. View the resultant database.

10. Click the **History** link in the **Properties** window, and then locate and expand the section for the **Join Databases** task.

Note that there are **999** records in the file and that there are **8** Unmatched Primary records - these are payments to unauthorized suppliers.

Reconcile the control totals for **AMOUNT** and **TOT_PREV_YR**. For the **AMOUNT** field, we have already reconciled based on the above history. However, to perform this reconciliation for the **TOT_PREV_YR** we will have to summarize on **SUPPNO**.

11. From the **Analysis** tab, in the **Categorize** group, click **Summarization**.

12. Select **SUPPNO** on **Fields to summarize**.

13. Do not select any fields under **Numeric field to total**. Click **Fields** and select **TOT_PREV_YR** as a field to be included. Name the database **Supplier Analysis - Control Total** and then click **OK** to run the task.
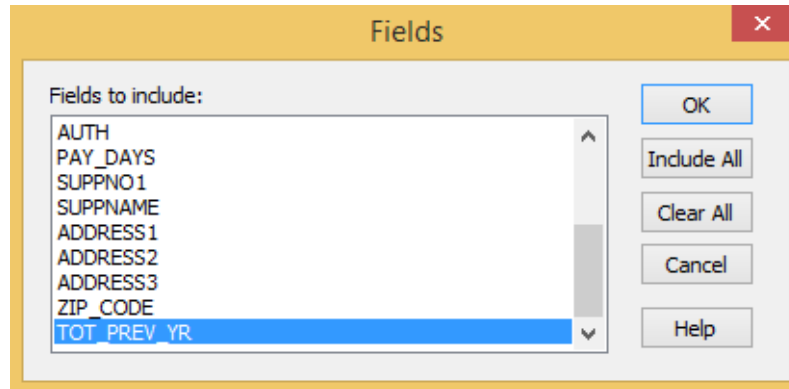
The control total is 29,720,396.11. This does not reconcile to the original control total of 30,202,660.57. The difference between the two is 482,264.46. Analysis is required to determine why we have this difference.

14. Make the **Authorized Supplier - Address** database the active database.

15. From the **Analysis** tab, in the **Explore** group, click **Duplicate Key** and then **Detection**.

16. Accept the default selection of the **Output Duplicate Records** option and enter the file name **Authorized Supplier Duplicate Key**.
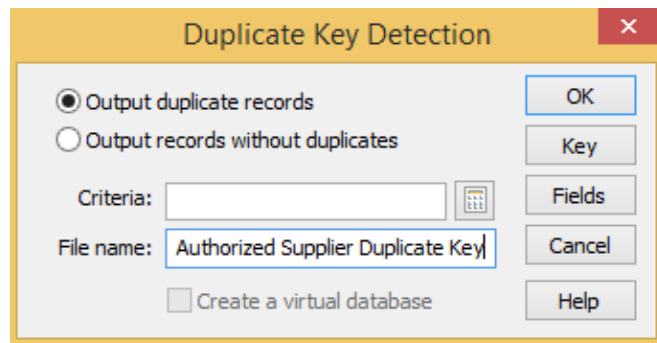
17. Click **Key** and use the **SUPPNO** field, as this was the field used during the **Join Databases** task. Click **OK**.

18. Click **OK** to run the **Duplicate Key Detection** task.

   Two suppliers have been assigned the **Supplier Number** of **W007**; the **SUPPNO** was not a unique key. One of these suppliers has an amount of 482,264.46, which reconciles to the difference identified above. As the key was not unique, IDEA dropped this supplier during the join. Inquiries should be submitted to the management **of Bright IDEAs** as to which supplier is the correct one. We should communicate this weakness in managing supplier numbers to the client; as the supplier number should be unique.

   The client has informed the audit team that the Witch Products supplier had a balance in previous years, but in the current year they do not have a balance, as they are no longer in business. Therefore, the Witch Products account should be ignored for this and other analyses. However, the auditor will need follow-up to corroborate the client's explanation.

19. From the **File** tab, click **Close All Databases**.

20. Open the **Supplier Verification** database.

21. Extract all unmatched records using methods explained in earlier exercises and using the following equation: **@IsBlank(SUPPNO1).**

22. Name the extraction database file, **Payments to Unauthorized Suppliers**.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AUTH	PAY_DAYS	SUPPNO1
1	M100	M Cash Inc	UP-76409	10/3/2015	75,000.00	701774	10/8/2015	HMV	5	
2	M100	The Cash Co Inc	784566542	11/1/2015	59,096.84	701875	11/1/2015	V.S.T	0	
3	M100	Crooks Inc	PI7683	2/10/2015	21,632.22	701046	2/12/2015	H.M.V.	2	
4	M100	Cashonly	UY-9371	4/28/2015	2,792.72	701270	5/1/2015	HV	3	
5	M100	Cash Inc	CS - 717 -97	9/15/2015	75,000.00	701728	9/17/2015	VST	2	
6	M100	Co Cash Inc	T5352	10/19/2015	75,000.00	701849	10/22/2015	V.S.T	3	
7	M100	Cash Back Inc	CB3456	11/19/2015	2,922.78	701927	11/20/2015	H.M.V.	1	
8	M100	Matt Cash & Co	In879-97	6/26/2015	190,071.38	701443	6/30/2015	HMV	4	

All such payments are to supplier **M100** and total **$501,515.94**.

23. Close the **Payments to Unauthorized Suppliers** database.

Analyze the Payments by Supplier

Objective:

To analyze payments by supplier to identify large movements.

Exercise Description:

Using the **Supplier Verification** database, summarize (or total) the **AMOUNT** field for each Supplier (i.e., **SUPPNO**). Then identify suppliers where the total payments have either increased or decreased by over 25% in the past year. Create Editable fields to mark items for investigation and to add comments.

IDEA Functionality Covered:

- Summarizing data
- Using the **@Abs()** function
- Adding and using editable fields

1. Ensure the **Supplier Verification** is the active database and the **Data** property is selected in the **Properties** window.

2. From the **Analysis** tab, in the **Categorize** group, click **Summarization**

3. Consider whether **Quick Summarization** should be used.

   The **Use Quick Summarization** option can be used as there is only one field in the key (i.e., **SUPPNO**). For this exercise we will not use this option.

4. In the **Fields to summarize** area, select the **SUPPNO** field.

5. In the **Numeric fields to total** box, select the **AMOUNT** field. Do **not** select the **TOT_PREV_YR** field to total; this will be selected as additional information.

6. Click **Fields** and select the following additional fields to be included: **PAYEE**, **SUPPNAME**, **TOT_PREV_YR.**

7. Click **OK** on the Fields dialog box.

8. Accept the option to **Create database**, but do **not** check **Create result** (i.e., report). Note, do not enter any **Criteria** for the test.

9. Enter the **File name** for the output database as **Payments by Supplier** and then click **OK**.

10. View the resultant database and note the **NO_OF_RECS** field (i.e., number of payments per supplier).

11. Sequence the database in descending **AMOUNT_SUM** order. Increase the column width if necessary by dragging the column title delimiter.

	SUPPNO	NO_OF_RECS	AMOUNT_SUM ▼	PAYEE	SUPPNAME	TOT_PREV_YR
1	M025	52	2,134,298.41	Luke Hair	A Meadow	1,217,309.35
2	F130	41	1,264,972.82	Farmer	Farmer	704,603.56
3	K001	25	1,192,028.35	Joyce Tick	O Kay Yahs	998,678.23
4	M014	25	1,074,984.65	Linda Hand	Cary S Matic	695,843.17
5	M020	26	1,005,562.50	Luke Hair	Miles Long	718,320.63
6	T005	32	1,004,562.91	Read I.M.	Honor Toze	455,140.82
7	W007	24	956,356.92	Matt Cash Co	The Matt Cash Co	1,397,587.06
8	P007	30	955,858.59	Nellie Dunn	Mandy Pumps	800,765.76
9	R008	32	940,403.86	Phillippa Pail	IM Right	473,958.65
10	P010	19	920,543.59	Penny Cillin	Ri Pent	913,856.71
11	C202	27	914,605.16	Matt Cash	Cash Inc	926,888.88
12	W005	17	878,038.02	Will Scarlet	Williams Inc	0.00
13	G020	25	874,293.88	Gus Main	P Green	719,875.68
14	P009	21	844,789.61	P Green	Philip Upp Garages	834,789.32
15	Z001	29	805,689.67	Miles Long	Edward Zoff	900,000.00
16	F123	24	761,424.36	Dick Tate	Wanda Farr	234,102.71
17	T004	16	749,361.58	Richmond	Dick Tate	878,625.59
18	M128	21	742,304.15	Maurice Mynah	Gus Main	800,678.87
19	H025	25	735,018.63	Ivan Aker	Luke Hair	644,588.82
20	F128	25	721,287.68	Ern Payed	Fixes	690,799.89
21	P008	22	714,223.63	Noah Lott	Ern Payed	741,171.15
22	R020	16	708,994.88	Polly Gunn	Round Table	689,593.63
23	D025	24	698,893.56	Denise Bent	Nellie Dunn	674,092.45
24	G010	25	670,697.82	Fixes	Polly Gunn	0.00
25	H014	25	659,862.17	Honor Toze	Linda Hand	609,855.94
26	R011	16	628,125.43	Pole Tacks	Richmond	587,962.78
27	T006	16	604,942.11	Round Table	Pole Tacks	506,912.39
28	M130	17	602,187.22	Microcomputers	Maurice Mynah	992,725.50

There should be **48** records totaling **$34,145,300.89**

12. Extract all suppliers where the total payments have increased or decreased by over 25% during the past year. Select the **Direct Extractions** task and change the file name to **Large Movements**. Use the following extraction equation: **@Abs(AMOUNT_SUM - TOT_PREV_YR) * 100 / TOT_PREV_YR > 25**.
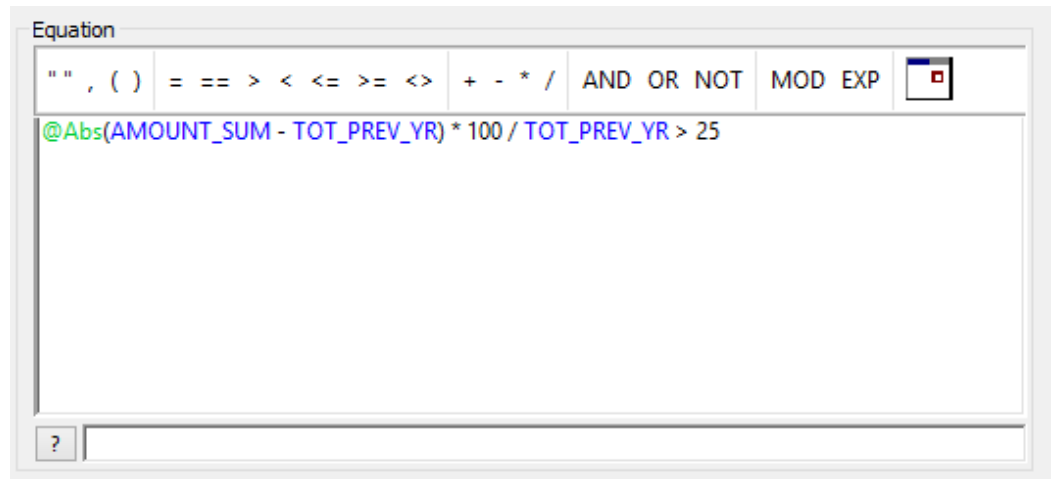
13. Click the **Validate and Exit** button.

Note: **@Abs()** ignores the negative sign. Therefore, **@Abs(expression) > 25** will identify both increase and decrease greater than 25%.

When testing items, it is often useful to manually mark items as correct/incorrect or to add comments to the database. Although the original data cannot be modified, it is possible to append **Editable** fields to the database.

14. In the Direct Extraction dialog box, click **Create Fields**. Add the following fields:

NAME	TYPE	LEN	DEC	PARAMETER	DESCRIPTION
TEST	Multistate	1		-1	Yes, No, N/A
COMMENT	Editable character	100		" "	Additional Comments
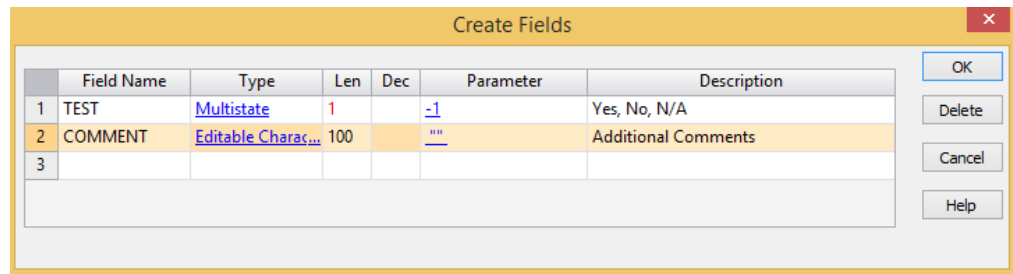
15. Click **OK** in the Create Fields dialog box. Click **OK** in the Direct Extraction dialog box.

	SUPPNO	NO_OF_RECS	AMOUNT_SUM	PAYEE	SUPPNAME	TOT_PREV_YR	TEST	COMMENT
1	F123	24	761,424.36	Dick Tate	Wanda Farr	234,102.71	☐	
2	F130	41	1,264,972.82	Farmer	Farmer	704,603.56	☐	
3	M014	25	1,074,984.65	Linda Hand	Cary S Matic	695,843.17	☐	
4	M020	26	1,005,562.50	Luke Hair	Miles Long	718,320.63	☐	
5	M025	52	2,134,298.41	Luke Hair	A Meadow	1,217,309.35	☐	
6	M130	17	602,187.22	Microcomputers	Maurice Mynah	992,725.50	☐	
7	N001	17	488,891.02	Mike Atsil	Noah Lott	898,954.20	☐	
8	R008	32	940,403.86	Phillippa Pail	IM Right	473,958.65	☐	
9	R010	16	583,172.77	Phillippa Pail	Ronnie Biggs	451,188.84	☐	
10	R025	16	586,829.24	Ray	Ray	823,889.61	☐	
11	T005	32	1,004,562.91	Read I.M.	Honor Toze	455,140.82	☐	
12	T010	16	443,156.54	Wanda Farr	Truckstop	758,325.88	☐	
13	W007	24	956,356.92	Matt Cash Co	The Matt Cash Co	1,397,587.06	☐	
14	W020	12	283,957.46	Witch Products	Wite Wash	603,677.11	☐	

- There should be **14** suppliers totaling **$12,130,760.68** whose turnover is **more than 25%** different to the previous year.

- Note that the **TEST** and **COMMENT** fields are empty. However, these are Editable fields.

- Further to investigation, it is discovered that the following suppliers may need investigation: **F123** and **F130**.

The following do not require further investigation: **M025, R025, and W007**.

16. Click in the **TEST** field for each of these suppliers and note how the entry changes from empty, to a check mark to an "x" to finally a question mark.

17. For suppliers **F123** and **F130**, enter **Investigate reason for large increase in payments** as a comment.

	SUPPNO	NO_OF_RECS	AMOUNT_SUM	PAYEE	SUPPNAME	TOT_PREV_YR	TEST	COMMENT
1	F123	24	761,424.36	Dick Tate	Wanda Farr	234,102.71	✕	Investigate reason for large increases in payments
2	F130	41	1,264,972.82	Farmer	Farmer	704,603.56	✕	Investigate reason for large increase in payments
3	M014	25	1,074,984.65	Linda Hand	Cary S Matic	695,843.17	☐	
4	M020	26	1,005,562.50	Luke Hair	Miles Long	718,320.63	☐	
5	M025	52	2,134,298.41	Luke Hair	A Meadow	1,217,309.35	✓	
6	M130	17	602,187.22	Microcomputers	Maurice Mynah	992,725.50	☐	
7	N001	17	488,891.02	Mike Atsil	Noah Lott	898,954.20	☐	
8	R008	32	940,403.86	Phillippa Pail	IM Right	473,958.65	☐	
9	R010	16	583,172.77	Phillippa Pail	Ronnie Biggs	451,188.84	☐	
10	R025	16	586,829.24	Ray	Ray	823,889.61	✓	
11	T005	32	1,004,562.91	Read I.M.	Honor Toze	455,140.82	☐	
12	T010	16	443,156.54	Wanda Farr	Truckstop	758,325.88	☐	
13	W007	24	956,356.92	Matt Cash Co	The Matt Cash Co	1,397,587.06	✓	
14	W020	12	283,957.46	Witch Products	Wite Wash	603,677.11	☐	

18. View the **History** log and note that all modifications are recorded.

19. Close all databases.

Audit Findings The following audit findings should be reported to the client.

The analysis of payment values showed a significant number of items just below the $80,000 authorization level. Further investigation found:

- 20 payments with CASH in the name
- 5 round sum payments of $75,000, with 3 being potential duplicates
- Zero-value payments
- 399 payments authorized by HMV, many above the $20,000 limit applicable in this case
- 77 payments were made on a Sunday and again are mainly authorized by HMV
- There are 5 missing checks: 701805, 701997, 701998, 701999, and 702000.
- There are 85 days on which no payments were processed:
- 63 payments were made within 25 days of the invoice date, which is quicker than the company policy
- 17 payments were delayed more than 35 days
- 6 payments were made before the invoices were entered on the system
- Payments were made to a supplier not on the authorized supplier list.
- Supplier numbers should be managed to ensure proper referential integrity.

Inventory Analysis

Introduction   What are the risks associated with Inventory that could be addressed by computer assisted audit procedures? And what tests can help address those risks? This section summarizes the business and audit risks that arise in the context of Inventory and the potential tests that can be used to address those risks.

Potential Risks

The following table identifies the key risks, explains the business and audit implication of each risk and the audit objectives that could be addressed by audit tests.

	RISK	IMPLICATIONS	AUDIT OBJECTIVES
1	Inventory is not correctly recorded.	Management will not have accurate information to manage inventory (i.e., ordering) effectively. Inventory could be materially misstated on the financial statements	Accuracy, Existence, Validity
2	Inventory management reports have inadequate supporting information.	Management may identify issues, but may not be able to "drill down" and identify the root cause of issues. This, in turn, hampers management's ability to make effective decisions.	Existence, Validity, Valuation
3	Quantity of inventory is not maintained within the specified range.	If too much inventory is maintained then there is an increased risk of obsolescence and additional storage costs (i.e., for keeping the inventory). If too little inventory is maintained, then the company will not be able to meet the customer demand.	Valuation
4	Obsolete inventory items are not identified	Management will not be able to make proper decisions on getting rid of obsolete items. From an audit point of view, obsolete items may need to be revalued if the market price is less than their cost.	Valuation
5	Differences between the physical inventory and the inventory on the system are not identified.	Management will not have reliable information to make inventory management decisions. Also, it may have a problem in terms of identifying shrinkage. From an audit perspective, the inventory could be materially misstated on the financial statements.	Existence, Validity
6	Items are not recorded in the correct period.	Financial statements, i.e., inventory and cost of goods sold, could be materially misstated.	Cut-off
7	Gaps in sequentially numbered documents are not accounted for.	Inventory tags, transaction numbers and other information may be missing and not accounted for. This would undermine the control that is provided by inventory tags.	Completeness

Potential Tests

The following tests are suggested when analyzing an inventory system. However the exact tests carried out for a particular client will depend upon the system used and the data available. Common tests include:

Mechanical Accuracy and Valuation

- Total the file, providing sub-totals of the categories of inventory.
- Re-perform any calculations involved in arriving at the final stock quantities and values.
- Re-perform material and labor cost calculations on assembled items.

Analysis

- Age inventory by date of receipt.
- Compute the number of months each inventory item is held based on either sales or purchases. Produce a summary of this information.
- Stratify balances by value bands.
- Analyze gross profit.
- Analyze price adjustment transactions.

Exception Tests - Existence and Valuation

- Identify and total inventory held in excess of maximum and minimum inventory levels.
- Identify and total obsolete or damaged inventory (identified as such in the database).
- Identify balances in excess of a reasonable usage period that are probably obsolete.
- Identify items past their shelf life (if a sell by date or bought date is present on the system).
- Identify any items with excessive or negligible selling or cost prices.
- Identify differences arising from physical stock counts.
- Test for movements with dates or reference numbers not in the correct period (cut-off).
- Identify balances that include unusual items (i.e., adjustments).
- Identify work in progress that has been open for an unreasonable period.
- Identify inventory acquired from group companies.

Gaps and Duplicates

- Test for missing inventory ticket numbers.
- Test for missing transaction numbers.
- Identify duplicate inventory items.

Matching and Comparison Tests

- Compare files at two dates to identify new or deleted inventory lines or to identify significant fluctuations in cost or selling price.
- Compare cost and selling price and identify items where cost exceeds net realizable value.
- Compare holdings and inventory turnover per product between stores.

Case Scenario: Inventory

The Chief Financial Officer of Bright IDEAs Inc. has called to say he has identified some problems with the inventory system and would like you to help analyze the extent of these problems. In particular, although only 36 items are identified as obsolete on the system, he thinks there are considerably more obsolete lines that need clearing out. They are also suffering from frequent stockouts and he is convinced that their margin analysis is not accurate and that re-order levels are incorrect.

He supplies you with the following information:

- There are 767 product lines in the database.
- **Bright IDEAs Inc.** has three depots based in Ottawa, Toronto and Quebec.
- The file is as of December 31, 2015.

You agree on the following:

- To check the system calculation of the obsolescence provision, to prepare an analysis of inventory and usage, and to suggest an appropriate provision.
- To identify items with apparent incorrect re-order levels.
- To perform an analysis of profit margins on different lines.

Note: There is normally a master or balances file that contains details of inventory holdings at a particular date. Costs may be held in a separate file. The transaction history can be particularly useful although file sizes are often quite large. Selling prices normally have to be picked up from a separate file.

Retailers often have point-of-sale systems that may collect large volumes of useful data that IDEA can analyze.

Obtaining the Data

The data file used for this exercise will be: **Inventory on hand at December 31, 2015**.

Explanation of the ASCII Delimited File Format

ASCII delimited files are a common format of variable length file where each field is only long enough to contain the data stored within it. This is an advantage with text fields such as names, addresses, narratives, etc.

In order for software to use such data files, there is a separator (a special character) at the end of each field within the record. Additionally text fields may be enclosed (encapsulated) with another character, typically quotation marks (" ").

The separator is often a comma (,) and such files are known as **comma separated value (CSV)**. However, the separator could be another ASCII character, for example a colon (:) or a semi-colon (;). These files are referred to as **ASCII Delimited** (comma separated files are also often referred to as **ASCII Delimited**).

There must also be a record delimiter at the end of each record, typically the carriage return (<CR>) and line feed (<LF>) characters, or sometimes only the line feed character.

When this type of file is imported, a fixed length database is created within IDEA.

Example of an ASCII Delimited - CSV:

"6776",1865,1,190,"04-02-2006" <CR><LF>

"6714",1865,1,97,"04-02-2006"<CR><LF>

"11905",2366,10,9,"25-02-2006"<CR><LF>

"7555",4352,1,79,"03-03-2006"<CR><LF>

"4547",4815,5,17,"03-03-2006"<CR><LF>

"6344",4815,1,7,"03-03-2006"<CR><LF>

"151",2366,1,3,"29-03-2006"<CR><LF>

"145",2366,1,1,"05-08-2006"<CR><LF>

"206",2366,1,2,"29-03-2006"<CR><LF>

"207",2366,1,3,"29-03-2006"<CR><LF>

Request for Data Files for Analysis Purposes

Please supply the following data from the Inventory system in **ASCII Delimited** format:

FIELD NAME	TYPE	DEC	DESCRIPTION
PRODCODE	N	0	Product Code
DEPOT	C		Depot name
QTY	N	0	Quantity on hand
AV_COST	N	3	Average cost for item
TOTALCOST	N	3	QTY*AV_COST
OBSOLETE	C		Obsolete = "Y"
MAX	N	0	Maximum inventory level on hand
MIN	N	0	Minimum inventory level on hand
DELQTY	N	0	Last delivery quantity
ORDERNO	N	0	Last delivery order number
DELDATED	D		Date of last delivery YYYYMMDD
CURSELLPRI	N	2	Current selling price
CUREFFDATE	D		Date selling price effective YYYYMMDD
PREVSELPRI	N	2	Previous selling price
USAGE	N	0	Sales quantity in current year
PREVCOST	N	3	Unit cost of last purchase

Data is required for the following period: December 31, 2015

Please also supply the following control totals for reconciliation purposes:

- Total cost of inventory on hand at December 31, 2015.
- Number of transactions supplied, i.e., product lines.
- Record definition to support the data file provided.

Work Plan   From the available/possible tests the audit manager decides on the appropriate tests and prepares the following Work Plan for you to complete.

Objective:

To check the system calculation of obsolesce provision, to prepare an analysis of inventory and usage, and to suggest an appropriate provision.

	AUDIT PROCEDURES	WORK DONE BY (INITIALS)	EXTENT OF TESTING
1	Obtain the data files from the client and load into the PC. Load IDEA and set a **Working Folder** for the Inventory Audit for **Bright IDEAs Inc**.		
2	Agree the total value of inventory: a) Import the inventory data; b) Check the total; c) Compute field statistics; and d) Reconcile control totals.		
3	Consider the adequacy and accuracy of inventory provisions: a) Test the accuracy of the provisioning report; b) Compute the usage figures and ratios for all stock lines and calculate an alternative provision; and c) Analyze the provision by depot.		
4	Consider the accuracy of the re-ordering system and test for items that are not being ordered frequently enough.		
5	Analyze profit margins and pricing by sales bands and identify items with inappropriate or questionable pricing: a) Items with no selling price; and b) Major pricing movements.		

Project Setup *Objective:*

To be able to start an assignment including loading data, running IDEA and creating a **Project** for the client within IDEA.

Exercise Description:

This exercise covers copying data into a folder, loading IDEA and creating a new **Project** for the client.

IDEA Functionality Covered:

- Creating a **Project**
- Entering project properties

The following data files have been provided on the CD supplied with this Workbook:

- Inventory 2015.ASC – Inventory on hand at December 31, 2015

Accessing IDEA

From the Windows Start menu, select **Programs > IDEA > IDEA**.

Alternatively, click the IDEA shortcut icon on the desktop, if available. IDEA will load.

Create a Project and Enter Project Information

To facilitate housekeeping, it is recommended that a separate **Project** be used for each audit, investigation or analysis.

All information relating to this analysis, including data files, equations, views or report definitions, import definitions, etc. may be stored in the **Project**.

This exercise will explain how to create a **Project** and enter project information that will be printed on all reports.

Note that once a **Project** is set, it remains the active folder until changed.

1. To create a new **Project**, from the **Home** tab, in the **Projects** group, click **Create**.

   The **Create Project** dialog box appears.

2. Select **Managed Project** and enter **Inventory Audit** as the directory name, this will create a new folder:

   C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects\Inventory Audit

3. Click **OK**.

   Inventory Audit will become the **Project**, closing the previously active **Project**.

4. From the **Home** tab, in the **Projects** group, click **Properties**.

   The **Project Properties** dialog box appears.

5. Enter the following:

- **Report name**: Inventory Audit

- **Report period**: Jan 1, 2015 to Dec 31, 2015

The project properties will be stored in a file called **Client.inf** in the **Project Folder**.

6. The following data files have been provided on the CD supplied with this Workbook:

- Inventory 2015.ASC – Inventory on hand at December 31, 2015

7. Copy the above data file into the folder using Window File Explorer. The folder is:

C:\Users\[UserID]\Documents\My IDEA Documents\IDEA Projects\Inventory Audit\Source Files.ILB

Import the Inventory File

Objective:

To import the data file for testing.

Exercise Description:

The year-end inventory file has been provided in a format known as ASCII Delimited.

In order to load this file it is necessary to define its format to IDEA. The Import Assistant will guide you through the steps to define and import the file for testing.

IDEA Functionality Covered:

- Access the **Import Assistant**

- Build a record definition for an **ASCII Delimited** file

- Save the definition

- Import the database into IDEA

- Select a numeric control amount field for the database

You have been provided with an ASCII Delimited file:

- **Inventory 2015.asc** – the Inventory file as at December 31, 2015.

1. From the **Home** tab, in the **Import** group, click **Desktop**.

2. Select **Text** from the list. Click the **Browse** button and the **Select File** dialog box will be displayed. Navigate to and select the **Inventory 2015.asc** file from the **Project Import Folder**. Click **Open** and then click **Next**.

3. The **Import Assistant - File Type** screen will be displayed. Ensure **Delimited** is selected as the correct file type.
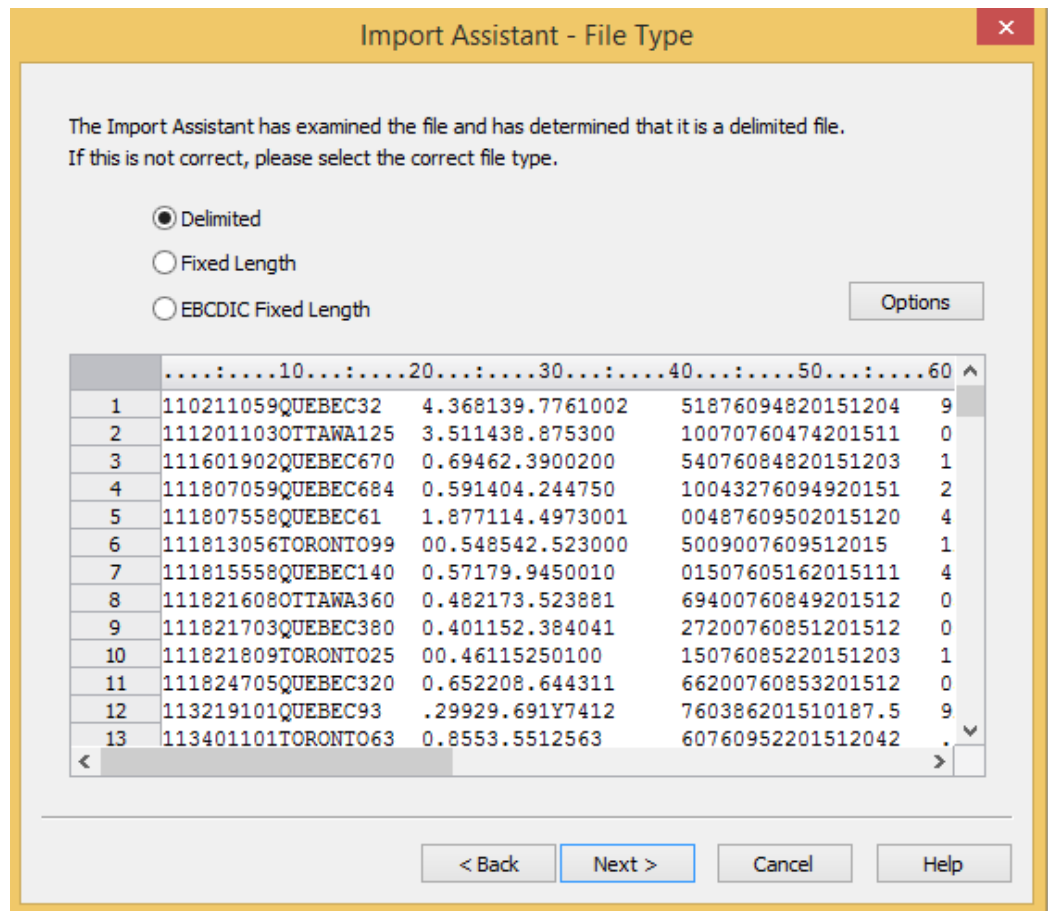
4. View the data and determine the field separator and the record delimiter.

5. Click **Next**.

6.   The **Import Assistant** will try to determine the **Field Separators** and **Text Encapsulators** (if any) for the file. Accept the defaults and click **Next** to proceed.

Note: Some (but not this) ASCII Delimited files have field names as the first row of the file. To use these as field names, select the First visible row is field names option.

The **Import Assistant - Field Details** step will be displayed.

7. Click on each field heading in turn and using the record definition, define the field details.

FIELD NAME	TYPE	DEC	DESCRIPTION
PRODCODE	N	0	Product Code
DEPOT	C		Depot name
QTY	N	0	Quantity on hand
AV_COST	N	3	Average cost for item
TOTALCOST	N	3	QTY*AV_COST
OBSOLETE	C		Obsolete = "Y"
MAX	N	0	Maximum inventory level on hand
MIN	N	0	Minimum inventory level on hand
DELQTY	N	0	Last delivery quantity
ORDERNO	N	0	Last delivery order number
DELDATED	D		Date of last delivery YYYYMMDD
CURSELLPRI	N	2	Current selling price
CUREFFDATE	D		Date selling price effective YYYYMMDD
PREVSELPRI	N	2	Previous selling price
USAGE	N	0	Sales quantity in current year
PREVCOST	N	3	Unit cost of last purchase

8. Enter the correct field name in the **Field name** box. The **Import Assistant** suggests the file type for that field in the **Type** box. If this is incorrect then change it to the file type specified in the record definition.

9. Enter the description of the field in the **Description** box.

10. If the field is a Numeric field with decimals, it is necessary to specify whether or not the decimals are implied. However, in this database if there are decimals, the decimal place is stored in the number, therefore the **Implied decimals** box must **not** be selected. Specify the number of decimals in the **Number of decimals** box.

11.   Define the Date fields as type **Date**, i.e., change the **Character** to **Date** in the **Type** box. A
      mask must be defined for the Date fields. Click the **Date Mask** box and enter the
      appropriate date format i.e., **YYYYMMDD**.

12.   Click **Next**.

13. The **Import Assistant – Create Fields** dialog box appears. **Create Fields** allows you to add fields in the imported file. This can be done during the import or at any time while using IDEA. For this exercise, no fields will be added.

14.   Click **Next**.

      The **Import Assistant - Import Criteria** screen appears. We will not be entering criteria for this example.
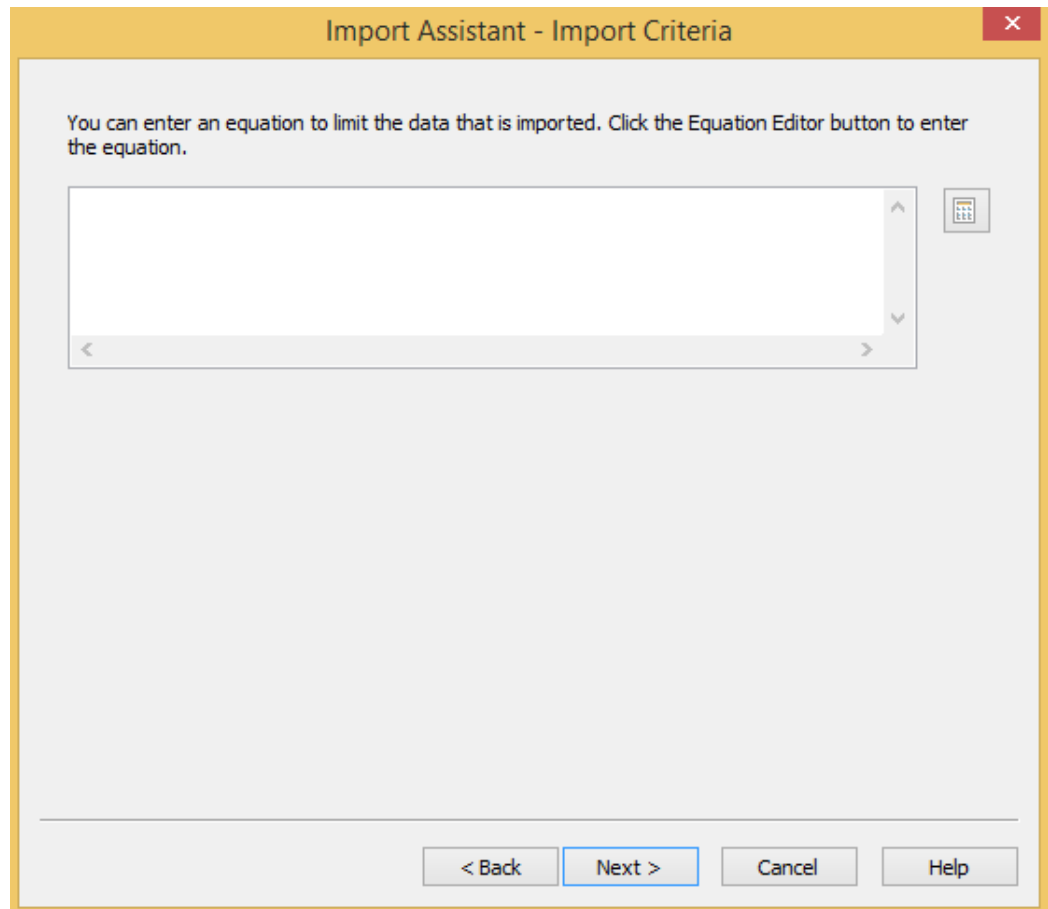
15.   Click **Next**.

16.   The definition will automatically be saved in the **Project Import Definitions.ILB**. IDEA will give the definition the same name as the source file. Click the **Browse** button adjacent to the **Save record definition as** box if you want to change the name to something other than **Inventory2015.rdf**.

17.   Select the **Generate field statistics** option and enter **Inventory at Dec 31 2015** in the **Database name** box.

18.   Click **Finish** to import the file into IDEA.

19. Click the **Control Total** link in the **Properties** window and select the **TOTALCOST** field and then click **OK**.

The control total of **626,963.915** will appear beside the **Control Total** link in the **Properties** window.

There are **767** records as can be seen on the status bar at the bottom of the screen.

You are now ready to verify that the data has been imported correctly and to commence testing.

Verify that the Database Has Been Correctly Imported

Objective:

To prove that data has been imported correctly and that the inventory report is correctly footed.

Exercise Description:

View the Field Statistics for the Numeric fields in the Inventory at Dec 31 2015 database.

The numeric statistics will be used for:

- Agreeing totals

- Getting a general understanding of the ranges of values in the database

- Highlighting potential errors/areas of weakness for focusing on subsequent investigations

IDEA Functionality Covered:

- Viewing **Field Statistics**

- Printing **Field Statistics**

1. Click the **Field Statistics** link in the **Properties** window.

Field Statistics are displayed for the Numeric fields in the database.

Note: The Field Statistics are available instantly as they were generated when the database was imported. Field Statistics are also available for Date fields. These will be reviewed in the following exercise.

2.   Study the **Field Statistics** for all Numeric fields, but especially, the **QTY** and **TOTALCOST** fields. Notice in particular the **Net Value**, **Minimum Value, Maximum Value**, **# of Zero Items** and **# of Negative Records** field statistics.

Please check your results against the figures below.

Field: QTY

STATISTIC	VALUE	COMMENT
Net Value	214,954	
Absolute Value	214,984	
# of Records	767	
# of Zero Items	68	
Positive Value	214,969	
Negative Value	-15	
# of Positive Records	696	
# of Negative Records	3	These should be identified
# of Data Errors	0	
# of Valid Values	767	
Average Value	280.25	
Minimum Value	-8	Should not be any negative quantities
Maximum Value	10,800	
Record # of Min	202	
Record # of Max	576	
Sample Std Dev	653.53	
Sample Variance	427,098.71	

Field : TOTALCOST

STATISTIC	VALUE	COMMENT
Net Value	626,963.915	
Absolute Value	627,159.615	
# of Records	767	
# of Zero Items	69	Different number for zero-quantity
Positive Value	627,061.765	
Negative Value	-97.850	
# of Positive Records	695	
# of Negative Records	3	
# of Data Errors	0	
# of Valid Values	767	
Average Value	817.424	
Minimum Value	-67.000	
Maximum Value	70,555.641	
Record # of Min	90	
Record # of Max	384	
Sample Std Dev	3,863.12	
Sample Variance	14,923,698.38	

3. If your computer is attached to a printer, print the **Field Statistics** for the **QTY** and **TOTALCOST** fields by clicking the **Print** button on the **Field Statistics** toolbar and selecting each field.

4. The **Field Statistics** reports should be filed with the audit documentation as proof of reconciliation.

5. Return to viewing the database by clicking the **Data** link in the **Properties** window.

Conclusion

The file has been imported correctly and the client's reports reconcile correctly. However there are some negative items and we should identify these and report them to the client.

Identify Obsolete Inventory Items

Objective:

- To check the client's calculation of the obsolescence report.
- To identify obsolete inventory and calculate potential provisions.
- To identify any items with negative quantities or costs.

Exercise Description:

Note that there are obsolete inventory items on the database, denoted by a "Y" in the OBSOLETE field.

- View the Date Field Statistics for the last delivery date to determine the age of inventory items.
- Confirm the client's calculation of obsolete items by reference to the items marked as obsolete. At the same time identify the negative value and quantity items.
- Extract items with inventory on hand and perform a calculation of usage.
- Analyze the inventory by usage and then calculate a provision based on this.
- Analyze the provision by depot.
- Identify any major items for detailed investigation.

IDEA Functionality Covered:

- View and analyze Date **Field Statistics**
- Perform calculations by appending Virtual fields
- Perform multiple extractions
- Copy, paste, and edit similar extraction equations
- Perform summarizations

The first test is to view the Field Statistics for the DELDATED (date of last delivery) field to determine the age of the oldest stock items.

1. Click the **Field Statistics** link in the **Properties** window.

2. In the **Field Type** box, select **Date**.

3. Notice the **Earliest Date**, **Latest Date**, and **# of Zero Items** (i.e., missing dates) statistics for **DELDATED**.

   Please check your results against the figures below.

   Field: DELDATED

STATISTIC	VALUE	COMMENT
# OF Zero Items	0	Items with no delivery date
Earliest Date	9/21/2001	Old indentory items to be investigated
Latest Date	12/18/2015	

   The next test to carry out is to prove the client's obsolescence provision report.

4. Return to viewing the database by clicking on the **Data** link in the **Properties** window.

5. From the **Analysis** tab, in the **Extract** group, click **Direct**.

6. Change the file name to **Obsolete Inventory Items**.

7. To enter the equation, click the **Equation Editor** button. The **Equation Editor** appears and is used to enter the required equation to identify items flagged as obsolete.

8. Enter the expression: **OBSOLETE = "Y"** as follows:

   - Insert **OBSOLETE** into the equation by double-clicking the field name
   - Click the **=** button
   - Click the **""** button
   - Type in **Y** (note the upper case) within the quotes as below

   Once the equation has been entered, check the syntax by clicking the **Validate** button. If a syntax error occurs in your equation, correct the expression and recheck the syntax. The equation should be as in the above screen. Click the **Validate and Exit** button but do **not** run the extraction yet.

9. Multiple extractions (up to 50) can be carried out with a single pass through the database. We will use this feature to report the negative items. Click on the next row in the spreadsheet area of the **Direct Extraction** dialog box. Enter the **File name: Negative Quantities**.

10. Click the **Equation Editor** button and enter the following equation: **QTY < 0**.

    - Insert **QTY** into the equation by double-clicking the field name.
    - Type in **<**.
    - Type in **0**.
    - Click the **Validate and Exit** button but do **not** run the extractions yet.

Note: If equations are similar, they can be copied, pasted and edited to save time.

- Double-click to select **QTY < 0** from the **Direct Extraction** box.

- Press **CTRL + C** (to copy to the clipboard).

- Click on the **Equation** text box for the third equation.

- Press **CTRL + V** (to paste from the clipboard).

- Click on the **Equation Editor** button to edit the equation.

- Replace the **QTY** field with **TOTALCOST.**

- Click the **Validate Equation** button to check the syntax (if a syntax error occurs in your equation, correct the equation and recheck the syntax).

- Click the **Validate and Exit** button.

- Change the file name to **Negative Cost Items.**

11. Click **OK** to run all 3 extractions with a single pass through the database.

- The resultant databases will be created and the **Obsolete Inventory Items** database will be displayed.

- There should be **34** items totaling **$7,644.270** that you note agrees to the client's report.

- Open the **Negative Cost Items** database from the **File Explorer**. It should contain **3** items totaling **$-97.850**.

- Open and inspect the **Negative Quantities** database. There should be **3** items totaling **$-30.850**.

12.   Close all databases by clicking the **File** tab and then **Close All Databases**.

Conclusion

The client's report is mathematically accurate in footing those items flagged as obsolete. Whether other items should be flagged as obsolete will be tested next. The negative items have now been identified and can be given to the client for correction.

Calculate Usage Ratios and Suggest Obsolescence Provision

Objectives:

To analyze inventory usage and calculate provision.

Exercise Description:

- Calculate the month's worth of inventory on hand, based on the usage over the past 12 months using a Virtual (Calculated) field.
- View the **Field Statistics** of the calculated fields.
- Analyze the inventory into bands of six months using **Stratification**.
- Produce a report, including a chart of the **Stratification** results and optionally email results to the Chief Financial Officer.

IDEA Functionality Covered:

- Add a Virtual field to calculate the number of months of inventory
- Use the following **@Functions**:
  - **@Age**
  - **@If**
- Save an equation
- View **Field Statistics**
- Perform a **Stratification**, including creating a detailed stratification database
- View an extraction preview of exceptions
- Create a report, including a graph of the **Stratification** results
- Export the results to a file or send via e-mail

Calculate Months of Inventory

1. Open **Inventory at Dec 31 2015** as the active database.

    Performing a calculation and storing the result in a new column is called **Append a Virtual Field** and is carried out through the **Field Manipulation** task.

2. Double-click over the Database window to open the **Field Manipulation** dialog.

3. On the **Field Manipulation** dialog box, click **Append** and enter the following details:

    -   **Field Name**: MONTHS

    -   **Field Type**: Virtual numeric

    -   **Field Length**: Do not enter

    -   **Decimals**: 2

    -   **Description**: Months of inventory on hand

4. Click in the **Parameter** cell to load the **Equation Editor** and enter the following equation:

    @If(USAGE = 0, @Age("20151231",DELDATED)/30 , QTY/(USAGE/12))

    -   In the **@Functions** area, expand the **Conditional** category. This displays the two conditional **@Functions**, **@Compif** and **@If**.

    -   Click **@If** and read the help and example in the information area.

    -   Double-click to select **@If**, inserting it into the **Equation** area, or click **Insert Function**.

    -   Select the field **USAGE** by double-clicking the field name.

    -   Continue selecting and typing the relevant items to build the equation. Ensure parentheses are in the correct position.

    -   The equation should appear as in the screen below.
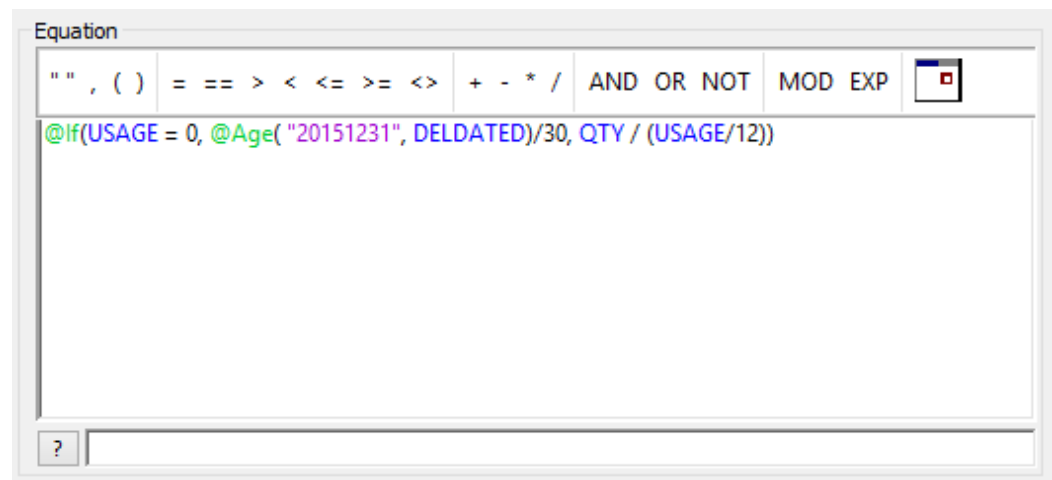
The following **@Functions** are used in this equation:

- **@Age**: This computes the number of days between two dates, in this case, the number of days between the delivery date and the year-end. An assumption has been made that there are 30 days to a month to give an approximate number of months figure.

- **@If**: This performs a test, in this case whether there is any usage. If the equation USAGE = 0 is true then the value after the first comma is used, otherwise the value after the second comma is used.

For more help on the **@Functions**, review the associated information for the specific @Function in the Equation Editor.

In the above equation:

- If inventory usage is 0 (i.e., the true condition in @If), the number of months of inventory is calculated as the number of months since the last delivery date, i.e., @Age ("20151231",DELDATED)/30.

- If there has been usage (i.e., USAGE <> 0), the months of inventory on hand is calculated as a ratio of the quantity on hand to the monthly usage, i.e., QTY/(USAGE/12).

As this is a complex equation that may be used again or may require editing, it should be saved. Equations may be saved in any folder however it is recommended that all files relating to the Inventory Audit are stored in the **Project Folder** under the **Equations.ILB** folder.

5. Click the **Save Equation** button on the **Equation Editor** toolbar. When the **Save As** dialog box appears, enter the **File name: Months of Inventory on Hand**.
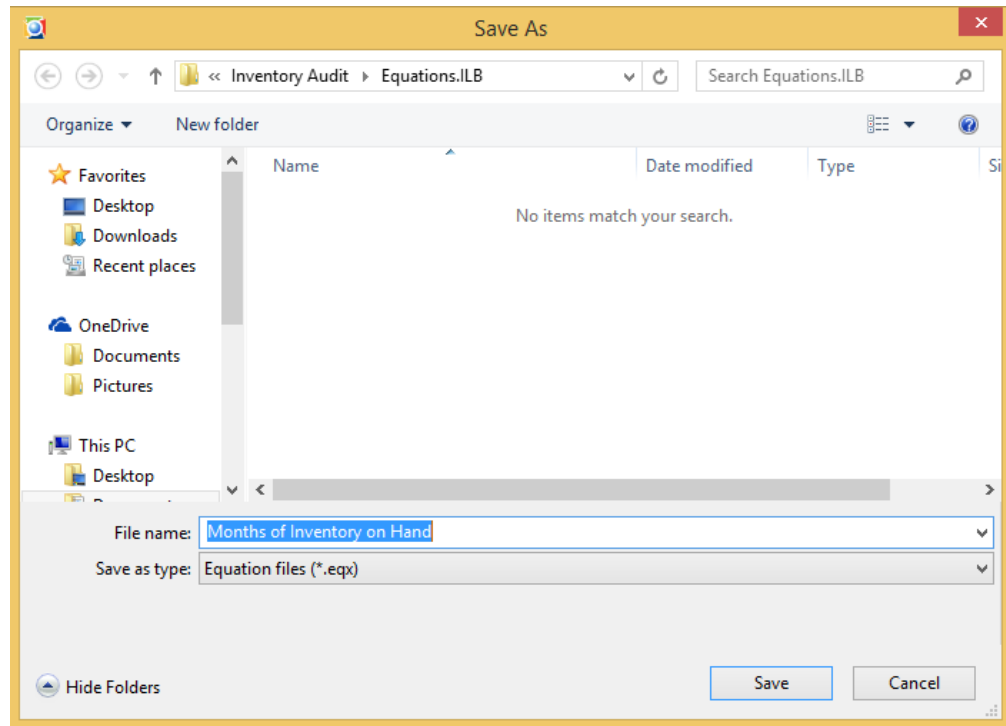
6. Click **Save**. All equations are save with the **.eqx** file name extension.

7. Click the **Validate and Exit** button, returning to the **Field Manipulation** dialog box.

8. Click **OK** and then **Yes** to append the field to the database.

9. View the resultant field by scrolling to the right of the display. The new field is added to the end (last field) of the database. Note the teal color of this field indicating that it is a calculated field and not an original imported field.

    In discussion with the client, it becomes apparent that the shelf life of most **Bright IDEA's** products is only a few months and anything in excess of six months' use is likely to be obsolete

10. To view equations that have been saved IDEA keeps all the information in a library. You can access the library by clicking the **Library** tab at the bottom of the **File Explorer**
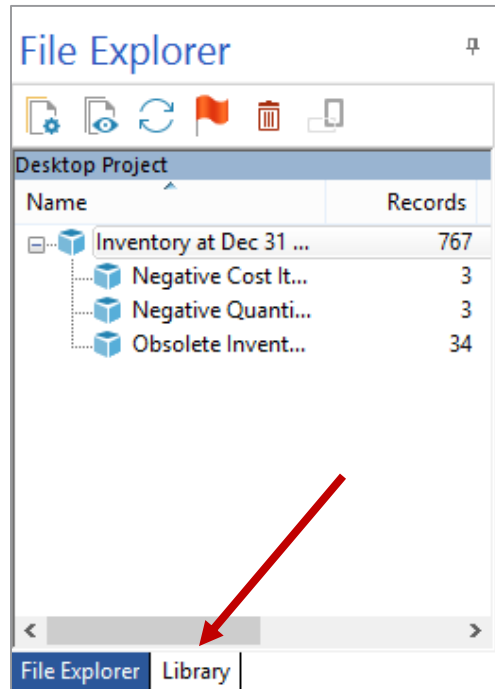
11.   The **Library** tab contains a list of all the directories in which IDEA stores different type of information, such as equations, macros, exported documents, record definitions, custom functions, import definitions and source files. When the equation was saved it was saved automatically to the **Equations** folder under the **Current Project Library**:
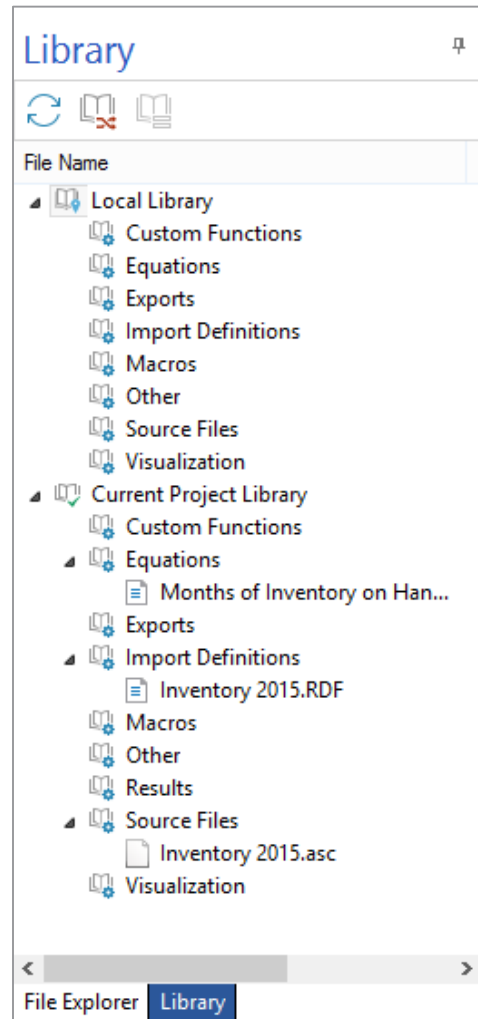
12.   If you wish to have any item in the **Current Project Library** available to all projects you can right click on the item and select **Copy to** the **Local Library**. You can also copy the item to another project in the same manner by copying to **Another Project**.

Generate Field Statistics

To produce the **Field Statistics** for the MONTHS field:

1. Click on the **Field Statistics** link in the **Properties** window.

   A message dialog box appears that asks whether you want to create statistics for all fields without statistics.

2. Click **Yes**.

   Field Statistics will be recalculated for all invalid or new fields. View the statistics for the **MONTHS** field.

3. Notice the **Average Value, Minimum Value**, and **Maximum Value**.

STATISTIC	VALUE	COMMENT
Average Value	9.13	
Minimum Value	-1.55	Negative Items
Maximum Value	737.14	

   Note: The average may be misleading as it may be skewed by a few very high values of usage. Hence, it is often better to perform the Stratification task to profile the data. This is carried out in the next exercise.

4. Return to viewing the database by clicking on the **Data** link in the **Properties** window.

Stratify the Inventory into Bands

1. Ensure **Inventory at Dec 31 2015** is the active database and the **Data** link is selected in the **Properties** window.

2. From the **Analysis** tab, in the **Categorize** group, click **Stratification**.

   The Stratification dialog box appears.

3. Select **MONTHS** in both the **Field to stratify** and **Fields to total on** list boxes.

   - Click on the **Increment** text box and enter **6** (6.00 will be displayed).

   - Click on the first row of the spreadsheet area – the **Lower Limit** box will automatically fill with the lowest value in the field to be stratified.

   - Double-click on the **Lower Limit** box in the first row; the value will be highlighted so you can type over it to change it. Change the value to **0** (0.00 will be displayed).

   - Click in the **Upper Limit** box on the first row of the spreadsheet area which will fill in your first increment.

   - Highlight the next 5 rows of the spreadsheet area and note how they fill with the increment, this should take the range up to 36.

4. Select the **Create database** option.

5. Select the **Include stratum intervals** option.

6. Change the File name to **Inventory Usage Aging**.

7. Click **Fields** and select only **PRODCODE**, **DEPOT**, **TOTALCOST**, and **MONTHS**.

    To select or deselect a field, click the field name.

8. Click **OK** in the **Fields** dialog box.

9. Click **OK** in the **Stratification** dialog box.

10. Note the number of records in each stratum and also that there are **Upper limit exceptions**, i.e., items with greater than or equal to **36** months inventory in hand.

11. View the items with greater than or equal to **36** months inventory in hand by double-clicking over the **Upper limit exceptions** results and selecting **Display Records**.

    Note that these items may be viewed, saved to a database, or printed. Once you have inspected the records, click **Done** to return to the **Results** output.

12. Create and print a report of the **Stratification Results**, including a graph.

13. On the **Stratification Results** output toolbar, click the **Chart Data** icon on the **Results** toolbar. Select **3D/2D** button on the chart toolbar.

14. If your computer is attached to a printer, click **Print** on the **Results** toolbar.

15. Return to viewing the **Stratification** analysis by clicking the **Chart Data** icon on the **Results** toolbar.

16. Return to viewing the database by clicking on the **Data** Ink of the **Properties** window.

17. Open the **Inventory Usage Aging** database created as part of this exercise. View this database and note the three additional fields added to the database (i.e., **STRATUM, STRAT_LOW, STRAT_HIGH**).

    The last two fields were added as a result of checking **Include stratum intervals** on the **Stratification** dialog box.

18. Close all databases by clicking the **File** tab and then **Close All Databases**.

Conclusion

There are 611 (or 79.66) of the product lines that have less than 6 months usage. However, 4.43% (34 lines) have more than 3 years usage and these are a cause for concern.

There are also 3 items with negative usage, these should be identified and investigated.

Calculate the Total Provisions for Inventory by Depot

Objective:

- To provide an analysis of the total cost of the obsolete inventory.
- To identify old items for checking.
- To analyze the data by depot.

Exercise Description:

Total the value of obsolete inventory by depot. The Summarization task is used to provide totals of specified Numeric fields.

Additionally, this test will identify the number of obsolete inventory products as well as the total cost by depot.

IDEA Functionality Covered:

- How to summarize (i.e., total) data by a key
- The differences between the **Summarization** options

Discussion with the Chief Financial Officer on the results of the Stratification task indicate that items should have an obsolescence provision calculated on the following basis:

- 6-12 months: 50%
- Over 12 months usage in stock: 100%

The whole value of an item should be used for the provision calculation, not just the surplus over 6 or 12 months usage.

The following tests have been requested:

- Include the percentage provision for each age band
- Calculate the provision cost for each band for each depot
- Summarize to calculate the total provision for each depot

Include Provision in Database

1. Open and ensure that **Inventory Usage Aging** is selected as the active database.

2. Double-click over the Database window to load the **Field Manipulation** dialog box.

3. Click **Append** to add the following **Virtual** field:

   - **Field Name**: PROV_RATE
   - **Field Type**: Virtual numeric
   - **Field Length**: Do not enter
   - **Decimals**: 2
   - **Description**: Rate at which provision is to be calculated

4. Click in the **Parameter** box to load the **Equation Editor** and enter the following equation:
   @If(STRATUM <= 1, 0, @If(STRATUM = 2, 50, 100))

   Note: STRATUM 0 is lower limit exceptions. **STRATUM 1** is less than 6 months. **STRATUM 2** is 6 to 12 months.

5. Click the **Validate and Exit** button, returning to the **Field Manipulation** dialog box.

6. Do not click **OK** on the **Field Manipulation** dialog box, as a further calculated field will be added in the next step.

Calculate the Provision (Value) by Product

1. Click **Append** to add the following **Virtual** field:

   - **Field Name**: PROV_AMT

   - **Field Type**: Virtual numeric

   - **Field Length**: Do not enter

   - **Decimals**: 2

   - **Description**: Provision Amount

2. Click in the **Parameter** cell to load the **Equation Editor** and enter the following equation:

   TOTALCOST * PROV_RATE / 100.

3. Click the **Validate and Exit** button, returning to the **Field Manipulation** dialog box.

4. Click **OK** and then **Yes** to append the two fields to the database.

5. View the resultant fields by scrolling to the right of the display. The new fields are added to the end (last fields) of the database. Note that the data in both these fields is displayed in teal to distinguish them from original imported fields.

Calculate the Total Provision (Value) by Depot

Note: To summarize the database on more than one field in the key (i.e., by **STRATUM** within **DEPOT**) it is necessary to use the Summarization option.

1. Ensure **Inventory Usage Aging** is selected as the active database and the **Data** property is selected in the **Properties** window.

2. From the **Analysis** tab, in the **Categorize** group, click **Summarization**.

3. In the **Fields to summarize** area, select **DEPOT** and **STRATUM**.

4. Note that no fields are selected in the **Numeric fields to total** area. Select the **TOTALCOST** and **PROV_AMT** fields to total these amounts in the summarized file.

5. Select the **Create database** option, but do not select the **Create result** option.

6. Leave the **Criteria** box empty.

7. In the **File name** field, enter **Proposed Provision by Depot**.

8. Click **OK**.

9. View the resultant database and note the following fields:

- **Depot**: List of depots

- **Stratum**: Age band (months)

- **No_of_RECS**: Number of records band

- **TOTALCOST_SUM**: Cost of inventory per depot/age band

- **PROV_AMT_SUM**: Total provision per depot/age band

Notice that the **NO_OF_RECS** field is blue and underlined. This denotes an **Action Field**. Click the blue values to see the underlying records.

There are 4 depots listed in this database. London is not an approved depot. These records should be investigated.

10. Flag this database to indicate that it contains significant findings. Currently, it is situated two levels down in the tree view. To flag a file, highlight the database name to be flagged in the **File Explorer** and click the **Flag File** button on the **File Explorer** toolbar. The **File Explorer** may need to be resized in order to access the button. Alternatively, you can right-click on the database name in the **File Explorer** and select **Flag file**.

After the database is flagged, it will have a new icon and will be moved up in the tree hierarchy.

11. To remove the flag from a file, highlight the database name in the **File Explorer** window and click on the **Flag File** button again. Alternatively, you can right-click on the database name in the **File Explorer** and select **Flag file** again.

12. A report of the proposed obsolescence provision should now be created. Produce a report of the results with subtotals for each depot.

13. From the **File** tab, click **Print** and then **Create Report**. The **Report Assistant** will be displayed. Accept all options on the first step dialog box to create a horizontal report. Click **Next**.

14. **The Report Assistant – Headings** step.

    i. Modify the following field names by highlighting the field name in the list box on the left and typing your changes in the **Text** box on the bottom right.

    ii. TOTALCOST_SUM **modify to** TOTAL COST.

    iii. PROV_AMT_SUM **modify to** PROVISION AMOUNT

    iv. Click **Next**.

15. **Report Assistant – Define Breaks** step.

    i. Enter the report breaks index as shown below:

        - **DEPOT**: Ascending

        - **STRATUM**: Ascending

    ii. Click **Next**.

16. **Report Assistant – Report Breaks** step.

    i.   Enter or select the following options:

         • **Break Key field**: DEPOT

         • **Fields to Total**: NO_OF_RECS, TOTALCOST_SUM, PROV_AMT_SUM

    ii.   Specify a break spacing of 3 lines.

    iii.   Click **Next**.

17. **Report Assistant – Grand Totals** step.

    i.   In the Fields to Total list box, select the following fields:

         • NO_OF_RECS

         • TOTALCOST_SUM

         • PROV_AMT_SUM

    ii.   Click **Next**.

18. **Report Assistant – Header/Footer** step.

    i.   Do not print a cover page.

    ii.   Click **Finish**. When prompted, preview the report created.

    iii.   Click **Yes**. Zoom and navigate through the report.

19. Print the report by clicking on the **Print** button on the *Preview Window*.

20. Click **OK** to print the report.

21. Close all databases by clicking the **File** tab and then **Close All Databases**.

Note: **Summarization** is often used to produce a list of expected unique items for verification (e.g., depots in this exercise), as well as producing totals for selected Numeric fields.

Another way to display the proposed provisions by depot is to create a **Pivot Table**. **Pivot Tables** have been used in spreadsheet software for a long time. **Pivot Tables** can be created easily in IDEA. The created **Pivot Table** becomes a **Results** Output in the source database.

Create a **Pivot Table** to summarize provision and total cost amounts by depot.

1. Open the **Inventory Usage Aging** database.

2. From the **Analysis** tab, in the **Categorize** group, click **Pivot Table**.

3. A prompt will require labeling the **Pivot Table** results. Enter **Inventory Usage Pivot Table** and then click **OK**.

    An empty **Pivot Table** framework appears.

4. From the **Pivot Table Field List** dialog box, highlight the **DEPOT** field name and drag it to the **Drop Column Fields Here** area.

5. Highlight the **STRATUM** field name from the **Pivot Table Field List** dialog box and drag it to the **Drop Row Fields Here** area.

6. Highlight the **PROV_AMT** field from the **Pivot Table Field List** dialog box and drag it to the **Drop Data Items Here** area

7. Highlight the **TOTALCOST** field name and drag it to the **Drop Data Items Here** area to finish the **Pivot Table**.

8. Close the **Pivot Table Field List**.

9. Print the **Pivot Table** by clicking the **Print** button on the **Pivot Table** toolbar.

   Note: This exercise illustrates the interactive mode of using IDEA, i.e., the results of one test highlights problems and leads to further tests being carried out.

Conclusion

The client's provision for obsolete items of $9,360 is clearly inadequate as the Chief Financial Officer suspected. A figure of approximately $150,000 is more appropriate. In addition, the client may want to take action to dispose of excess inventories. Additional reports of high value items, or particularly old items by depot, may be useful to the client but are not part of this tutorial.

Test the Accuracy of the Automatic Reordering System

Objective:

To test the accuracy of the ordering system.

Exercise Description:

A new automatic re-ordering system has been implemented. However, it has been noted that orders are being lost due to unavailability of the required inventory.

The automatic re-ordering system has maximum and minimum ordering levels. However, these limits can be manually over-ridden. The level of obsolete inventory and unavailability of inventory point to the fact that either the limits require review or ordering levels are being incorrectly altered.

IDEA Functionality Covered:

- Use the **@Between** function
- Index a Database

1. Open and ensure the **Inventory at Dec 31 2015** database is selected as the active database.

2. From the **Analysis** tab, in the **Extract** group, click **Direct**.

3. Change the file name to **Re-Order Level Errors**.

4. To enter the equation, click the **Equation Editor** button. The **Equation Editor** will appear and is used to enter the required equation.

5.   Enter the expression: **.NOT. @Between(QTY , MIN , MAX)** as follows:

- Click the **NOT** button.

- In the **Functions** box, expand the **Matching** category.

- Locate and double-click the function name **@Between**.

- Double-click the **QTY** field from the lower portion of the **Equation Editor** dialog box.

- Type a comma.

- Double-click the **MIN** field from the lower portion of the **Equation Editor** dialog box.

- Type a comma.

- Double-click the **MAX** field from the lower portion of the **Equation Editor** dialog box.

Note: The **@Between()** function will be used to test for quantities outside the minimum and maximum order limits.

The **@Between** function has three parameters. The first is the field being tested. The second is a low limit for that field and the third is a high limit. **@Between** selects those items that are between the two limits. It is quite common to use **@Between** preceded with **.NOT.** to identify items that are outside the set limits.

Equation

```
" " , ( )    =  ==  >  <  <=  >=  <>    +  -  *  /    AND  OR  NOT    MOD  EXP
```

.NOT. @Between(QTY, MIN, MAX)

6. Once the equation has been entered, check the syntax by clicking the **Validate** button. If a syntax error occurs in your equation, correct the expression and recheck the syntax. The equation should be as in the above screen. Click the **Validate and Exit** button.

7. Click **OK** to run the extraction.

The resultant database will be created and the **Re-Order Level Errors** database will be displayed. It should contain **314** items with a total cost of **$378,182.783.**

This level of items outside the re-order levels confirms serious problems. There are too many items to investigate so we will prioritize by indexing.

8. Sequence the data into the most suitable order for follow-up.

9. From the **Data** tab, in the **Order** group, click **Index**.

10. Choose the following sequence:

    - **QTY**: Ascending
    - **MIN**: Descending
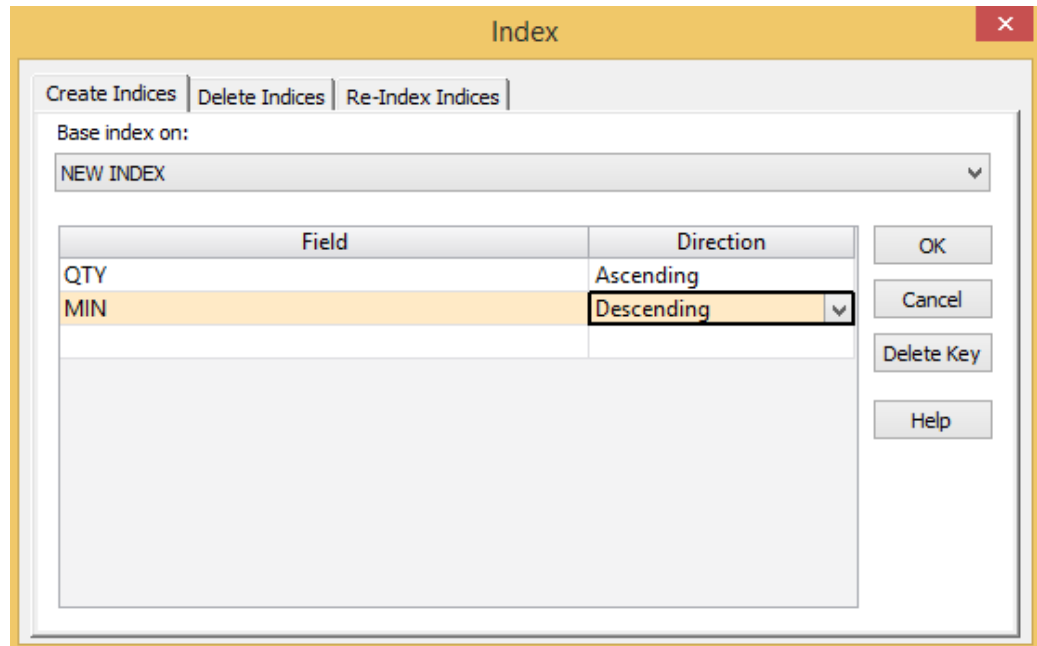
11. Click **OK** to create the index.

    The data is sequenced with the lowest quantity items with the highest minimum re-order level at the top for investigation.

    Briefly inspect the report. This will be given to the client for them to investigate.

12. Click **Close** by right-clicking on the **Re-Order Level Errors** database tab.

Analyze Selling Prices and Margins

Objectives:

To identify items with inappropriate profit margins.

Exercise Description:

- Identify items where no current selling price has been entered
- Analyze the variance in selling price over the year and identify unusually large or small changes
- Analyze profit margins and extract negative or small margins

IDEA Functionality Covered:

- Utilize the **Criteria** option rather than **Direct Extraction** to identify items
- **@If**
- **Stratification**

Identify Items Where No Selling Price Has Been Entered

1. Open the **Inventory at Dec 31 2015** database.

   In this exercise, the **Criteria** property in the **Properties** window will be used instead of performing a **Direct Extraction** to identify the items.

   This option is similar to the **Direct Extraction** option. It is used to identify records satisfying a given equation but it does not create a database.

2. Click the **Criteria** link in the **Properties** window to load the **Equation Editor**.

3. Enter the following equation to identify a missing current selling price:
   CURSELLPRI = 0.

4. Click the **Validate and Exit** button in the **Equation Editor** to complete the equation.

5. The **Equation Editor** is closed returning to the database with the criterion applied.

   Note the number of records selected (i.e., **1/767**) on the bottom right of the screen. This indicates that there is one item with no selling price in a database of 767 items.

   Note also that this item has a quantity in inventory. The cost of this item is **$24.102** as can be seen near the **Control Total** link in the **Properties** window.

6. Right-click the **Criteria** link and select **Clear** to remove the criterion.

Analyze Selling Price Movements

We decide to test whether prices are being increased or decreased and look for trends. We first calculate the percentage price movement and then perform an analysis.

1. Ensure **Inventory at Dec 31 2015** is selected as the active database and the **Data** property is selected in the **Properties** wIndow.

2. Double-click over the Database window to load the **Field Manipulation** dialog box.

3. Click **Append** to add the following **Virtual** field:

    - **Field Name**: PRICE_MOV

    - **Field Type**: Virtual numeric

    - **Field Length**: Do not enter

    - **Decimals**: 2

    - **Description**: Price Movement

4. Click in the **Parameter** text box to load the **Equation Editor** and enter the following equation:
   @If (PREVSELLPRI = 0, 100, (CURSELLPRI - PREVSELLPRI)*100 / PREVSELLPRI)

5. Click the **Validate and Exit** button, returning to the **Field Manipulation** dialog.

6. Click **OK** and then **Yes** to append the **PRICE_MOV** field to the database.

7. Click the **Field Statistics** link in the **Properties** window.

8. Calculate the statistics when prompted.

Numeric Statistics	PRICE_MOV
Net Value	34,391.30
Absolute Value	36,924.84
# of Records	767
# of Zero Items	0
Positive Value	35,658.07
Negative Value	-1,266.77
# of Positive Records	698
# of Negative Records	69
# of Data Errors	0
# of Valid Values	767
Average Value	44.84
Minimum Value	-53.00
Maximum Value	11,375.00
Record # of Min	210
Record # of Max	147
Sample Std Dev	411.73
Sample Variance	169,522.95
Pop Std Dev	411.46
Pop Variance	169,301.93
Pop Skewness	27.221786
Pop Kurtosis	746.592635

Record the Minimum, Maximum and Average values for the PRICE_MOV field.

STATISTIC	VALUE	COMMENT
Minimum	-53.00	At least one item has had major price cuts
Maximum	11,375.00	This is likely to be the correction for an error
Average	44.84	Client feels this is rather high

Again the average figure is skewed so we should prepare a profile.

9. Return to the database by clicking on the **Data** link in the **Properties** window.

10. Stratify the **PRICE_MOV** into bands as follows:

11. From the **Analysis** tab, in the **Categorize** group, click **Stratification**.

12. In the **Field to stratify** list box, select **PRICE_MOV**.

13. In the **Fields to total on,** select **PRICE_MOV**.

14. In the **Increment** box, delete the default value and enter **10**.

15. Enter the following stratification bands:

>=LOWER LIMIT	< UPPER LIMIT
(50.00)	(40.00)
(40.00)	(30.00)
(30.00)	(20.00)
(20.00)	(10.00)
(10.00)	0.00
0.00	10.00
10.00	20.00
20.00	30.00
30.00	40.00
40.00	50.00

16. Do not select the **Create Database** box.

17.   In the **Result name** box, enter **Price Move Stratification**.

18.   Click **OK** to perform the Stratification.

19. View the **Price Move Stratification Results** output.

Stratum #	>= L Limit	< U Limit	# Records	(%) # Records	PRICE_MOV	(%) PRICE_MOV
1	-50.00	-40.00	4	0.52	-195.21	-0.57
2	-40.00	-30.00	2	0.26	-66.83	-0.19
3	-30.00	-20.00	6	0.78	-137.05	-0.40
4	-20.00	-10.00	23	3.00	-300.28	-0.87
5	-10.00	0.00	26	3.39	-162.18	-0.47
6	0.00	10.00	239	31.16	1,551.20	4.51
7	10.00	20.00	236	30.77	2,920.28	8.49
8	20.00	30.00	23	3.00	515.77	1.50
9	30.00	40.00	5	0.65	159.55	0.46
10	40.00	50.00	2	0.26	83.01	0.24
		Lower limit exceptions:	8	1.04	-405.22	-1.18
		Upper limit exceptions:	193	25.16	30,428.26	88.48
		Totals:	767	100.00	34,391.30	100.00

The majority of items have had price increases in the range **0 - 20%.**

The **193** items in excess of 50% (i.e., the Upper limit exceptions) and those below 50%, require further investigation.

20. Return to the **Data** link of the **Inventory at Dec 31 2015** database.

21. Extract any high variances, excluding new items into a database named **Major Price Movements**. Enter the following extraction equation using the **Equation Editor**:

    @Abs(PRICE_MOV) > 50 .AND. PREVSELLPRI <> 0

22. Run the extraction.

    Note: @Abs(PRICE_MOV) > 50 identifies increases and decreases > 50%. **PREVSELLPRI <> 0** excludes new items.

    There should be **15** items of which **7** have usage.

23. Close the **Major Price Movements** database.

Conclusion

Most items have had modest price increases. Items should be referred to the client to ensure the prices are correct.

Analyze Profit Margins

1. Ensure **Inventory at Dec 31 2015** is selected as the active database and the **Data** property is selected in the **Properties** window.

2. Double-click over the Database window to load the **Field Manipulation** dialog box.

3. Click **Append** to add the following **Virtual** field:

    - **Field Name**: PROFIT

    - **Field Type**: Virtual numeric

    - **Field Length**: Do not enter

    - **Decimals**: 2

    - **Description**: % Profit

4. Click in the **Parameter** cell to load the **Equation Editor** and enter the following equation: **@If (CURSELLPRI = 0, 0, (CURSELLPRI - AV_COST)*100 / CURSELLPRI)** to calculate profit as a percentage of price.

5. Click the **Validate and Exit** button, returning to the **Field Manipulation** dialog box.

6. Click **OK** on the **Field Manipulation** dialog to append the **PROFIT** field to the database.

7. Click the **Field Statistics** link in the **Properties** window.

8. When prompted, click **Yes** to create statistics.

    Field: PROFIT

STATISTIC	VALUE	COMMENT
Minimum	-28.33	Loss leaders
Maximum	100.00	
Average	56.27	Client considers this correct

The average is meaningful here. However items with negative margins should be extracted. It is often expected that low volume items should have a high margin and high volume items should have a lower margin.

9. Return to the **Data** property of the **Inventory at Dec 31 2015** database.

10. From the **Analysis** tab, in the **Extract** group, click **Direct**.

11. Enter **File Name: Negative Profit Items**.

12. Click the **Equation Editor** button and enter the equation: **PROFIT < 0**.

13. Click the **Validate and Exit** button on the **Equation Editor**.

14. Click **OK** to extract the items satisfying the equation.

    Notice that the three items identified have no quantity or usage so they have not caused the client any problems, but the client should still be informed.

15. Close the **Negative Profit Items** database.

In order to analyze profit margins by the volume of sales we need the sales information. This is not available on the file but taking the annual usage figure and multiplying by the current selling price can make an approximation.

1. Ensure **Inventory at Dec 31 2015** is the active database and the **Data** property is selected in the **Properties** window.

2. Double-click over the database to load the **Field Manipulation** dialog and click the **Append** button to add the following **Virtual** field:

   - **Field Name**: SALES

   - **Field Type**: Virtual numeric

   - **Field Length**: Do not enter

   - **Decimals**: 0

   - **Description**: Estimate of Sales

3. Click in the **Parameter** cell to load the **Equation Editor** and enter the formula:

   USAGE * CURSELLPRI

4. Click the **Validate and Exit** button to accept the equation.

5. Click **OK** then **Yes** to append the **Virtual** field.

6. Analyze the items in turnover bands by clicking **Stratification** from the **Categorize** group on the **Analysis** tab.

7. In **Field to stratify** list box, select **SALES**.

8. In the **Fields to total on** list box, select **SALES**.

9. Enter the following stratification bands:

>= LOWER LIMIT	< UPPER LIMIT
0	10,000
10,000	100,000
100,000	1,000,000

10. Select the **Create Database** option and enter the File name: **Inventory with Turnover Band**.

11. Click **OK** to perform the Stratification.

12. Analyze the items in turnover bands by clicking **Stratification** from the **Categorize** group on the **Analysis** tab.

13. In the **Group by** drop-down list, select **STRATUM**.

14. In the **Field to stratify** list box, select **PROFIT**.

15. In the **Fields to total on** list box, select **PROFIT**.

16.   Enter the following stratification bands:

>= LOWER LIMIT	< UPPER LIMIT
(50,00)	0.00
0.00	10.00
10.00	20.00
20.00	30.00
30.00	40.00
40.00	50.00
50.00	75.00
75.00	100.00

17.   In the **Result name** box, enter **Profit Stratification**.

18.   Click the **OK** button to perform the Stratification.

19.   View the stratification report for the first key (i.e., **Stratum 1**) in the **Profit Stratification** output of the **Database** window.

20.   In the **STRATUM=** list box, select each stratum in turn and view the Stratification Reports to view a separate stratification of profitability for each strata of turnover.

21.   Close all databases by clicking the **File** tab and then **Close All Databases**.

Audit Findings   The following findings should be reported to the client:

- About 13% of the product lines have excessive quantities on stock and a provision of about $150,000 is suggested.

- The re-ordering system is not working correctly and items have been identified for investigation.

- Price increases and profit margins are, on the whole, reasonable but exceptional items have been identified for follow-up

Common Options

Introduction   This section of the Workbook provides instructions for options common to all audits, including:

- Changing the view of the data and designing reports
- Printing (including using the **Print Preview** option)
- Re-running a task
- Housekeeping
- Reviewing and documenting audits
- Managing the use of IDEA

Designing a Report   The view of the data may be changed for displaying on the screen and printing.

Options include specifying:

- The fields to view and in what order
- The display format of the fields including font, color, and data type specific parameters
- The width of the fields
- How to stack fields vertically, (i.e., addresses) if required
- Hiding Fields not required
- Freezing columns on the screen when scrolling
- The sequence of records
- Criteria (e.g., **AMOUNT > 1000**) as a filter on which records are displayed

Views can be changed, saved, and retrieved through the **View** menu as required. Views can also be applied to other databases of the same format, which is useful for organizational testing on a regular basis.

Further options are defined using the **Report Assistant**, including:

- Horizontal or vertical print

- Show record numbers on the report

- Display field headings and alignment

- Control breaks

- Sub-totals and totals

- Option to print a cover page for the report

All changes/settings will be stored with the last view and will remain current unless changed by opening a different view or resetting the view settings.

This exercise will show you how to change the view of your database for viewing on the screen and for printing. Instructions are given for the **Accounts Payable** database. However, the procedure may be applied to any database.

Modify the View of the Database

1. Open the **Accounts Payable** project by clicking the **Home** tab and then from the **Projects** group, clicking **Select**.

   Note: The project may be selected from the **Recent Projects** list where a list of the eight most recently accessed projects is available.

2. Open the **Accounts Payable** database and then select to display the fields in the following order:

   SUPPNO, PAYEE, PAY_DATE, CHECK, AMOUNT, AUTH.

   The order of fields may be changed by clicking on the field heading to highlight the entire column, release, then click and drag it to the required position. The field will drop to the right of the red line.

3. To hide fields, from the **View** tab, select the required fields, and then from the **Display** group, click **Hide Fields**.
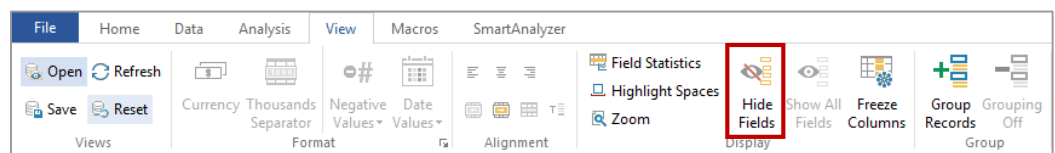
4. Modify the column settings for each field as outlined below. To select a field to modify, right click over a field header and then select **Column Settings**.

    Alternatively, from the **View** tab, in the **Format** group, click the **Column Settings** button.
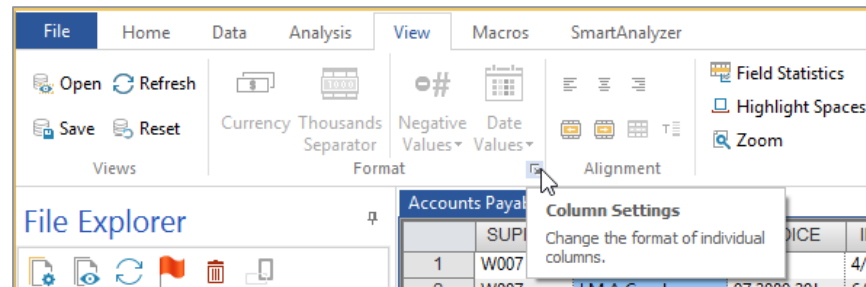
5. Modify the settings for the **SUPPNO** and **PAYEE** fields as follows:

    - **Alignment**: Left

    - **Font**: Bold

    - **Text Color**: Blue

    - **Background Color**: Light Grey

    Holding down the **Ctrl** key will allow you to select more than one field in the **Column Settings** dialog box.
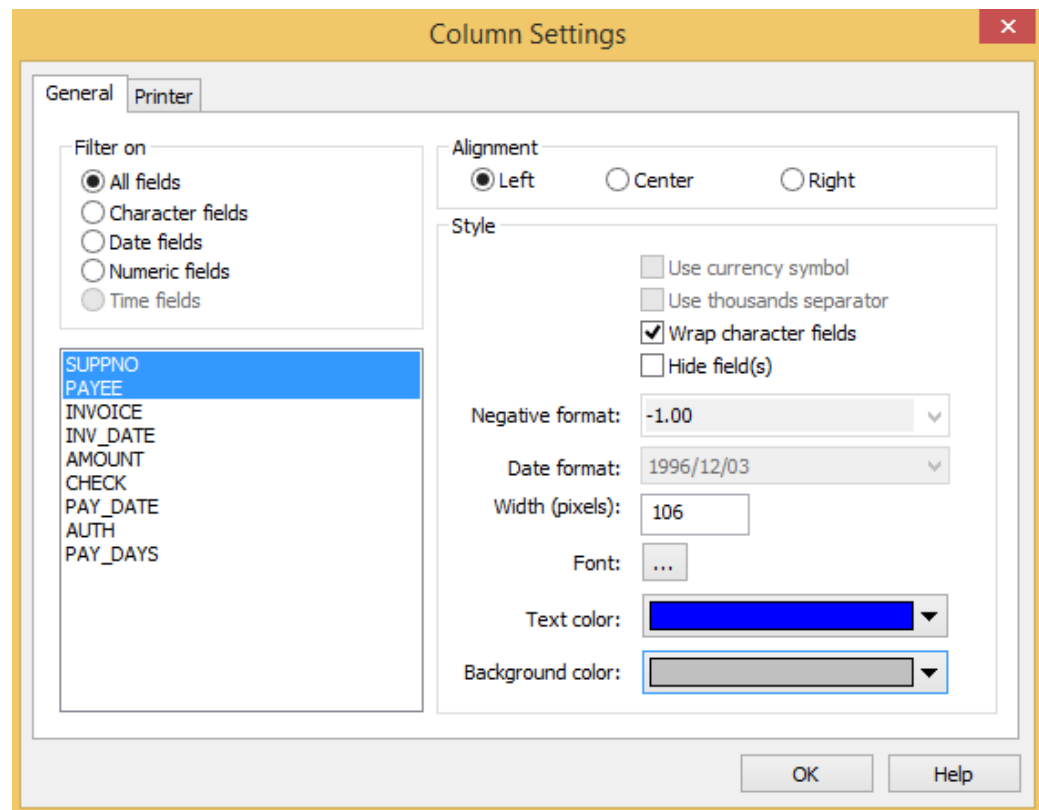
6.   Next, modify the **PAY_DATE** field as follows:

- **Alignment**: Left

- **Font**: Regular

- **Date Format**: Select an appropriate format for your country
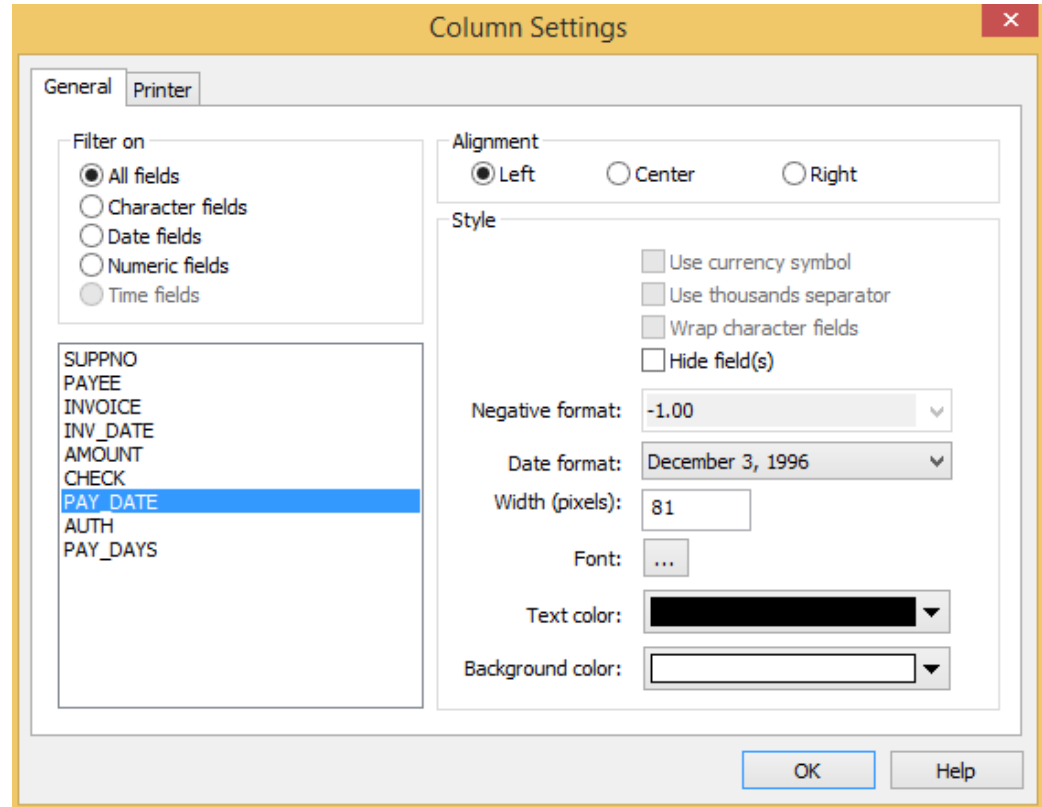
7.   Modify the **AMOUNT** field as follows:

- **Alignment**: Right

- **Use Currency Symbol**

- **Use Thousands Separator**

- **Negative Format**: (1.00) in red

- **Text Color**: Red

8.   When all column settings are changed, click **OK**. Adjust each column width to allow for the full text of the field names and data.

Saving the View

1. From the **View** tab, in the **Views** group, click **Save**.

2. Save the view as **Accounts Payable** in the **Other.ILB Folder**. Note that the file will have the file name extension .vw2.
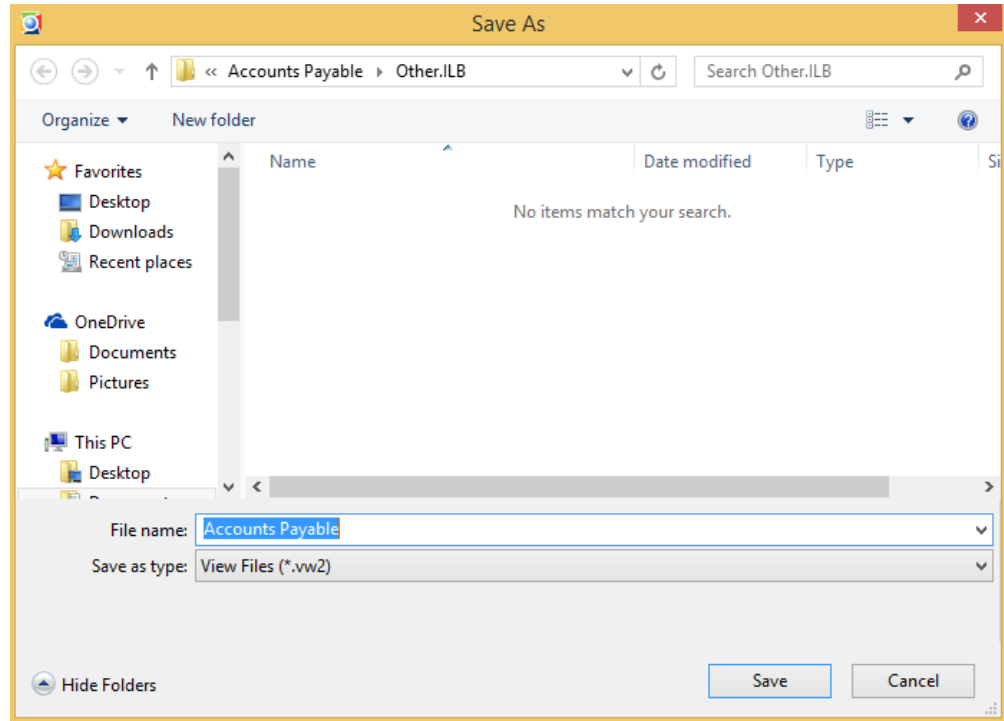
3. Click **Save** to save the settings and return to the Database window.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK
1	W007	Matt Cash Co	879-97	4/9/2015	$83,516.79	701218
2	W007	I M A Crook	97 2089.29J	6/11/2015	$14,432.19	701391
3	M100	M Cash Inc	UP-76409	10/3/2015	$75,000.00	701774
4	M100	The Cash Co Inc	784566542	11/1/2015	$59,096.84	701875
5	W007	F O R CASH	97 3 PMP	11/27/2015	$4,580.68	701945
6	M100	Crooks Inc	PI7683	2/10/2015	$21,632.22	701046
7	C202	Matt Cash	51726	3/6/2015	$6,242.74	701117
8	M100	Cashonly	UY-9371	4/28/2015	$2,792.72	701270
9	W007	CASH & CO	LD35622	5/22/2015	$25,242.20	701341
10	M100	Cash Inc	CS - 717 -97	9/15/2015	$75,000.00	701728
11	W007	Crooks R Us	97 2085.29J	10/17/2015	$71,409.78	701825
12	M100	Co Cash Inc	T5352	10/19/2015	$75,000.00	701849
13	M025	Luke Hair	51498	2/10/2015	$50,067.31	701027
14	C202	CASH INC	13597	2/16/2015	$9,264.18	701071
15	W007	Cash Inc	AB 3265 M	3/19/2015	$104,112.83	701166
16	W007	The Matt Cash Co	97/3972/U	8/7/2015	$6,539.64	701600
17	C202	Only Cash	BC 469904 W	8/21/2015	$5,885.73	701650
18	W007	Cash 'N' Co	XQV 97 12	9/28/2015	$5,319.96	701764
19	W007	Mr Cash Co	22 31 97	10/12/2015	$75,000.00	701803
20	M100	Cash Back Inc	CB3456	11/19/2015	$2,922.78	701927

Resetting the View

The view settings will remain current until changed, even if the database is closed and re-opened.

To reset the view to the defaults (as when imported), from the **View** tab, in the **Views** group, click **Reset**.

Opening a View

Apply the saved view by clicking **Open** from the **Views** group on the **View** tab. Navigate to (if necessary) and select the required view (**Accounts Payable.vw2**).

Page Setup

1. From the **File** tab, click **Print** and then **Page Setup** to specify the page setup including orientation and margins.

2. Specify **Portrait** orientation.

3. Adjust or accept the margins.

4. Click **OK**.

    Note: The current page setup is applied to all database views and reports. The setup is not saved in the view of the database.

Creating a Report

1. From the **File** tab, click **Print** and then **Create Report** to create a report using the view settings.
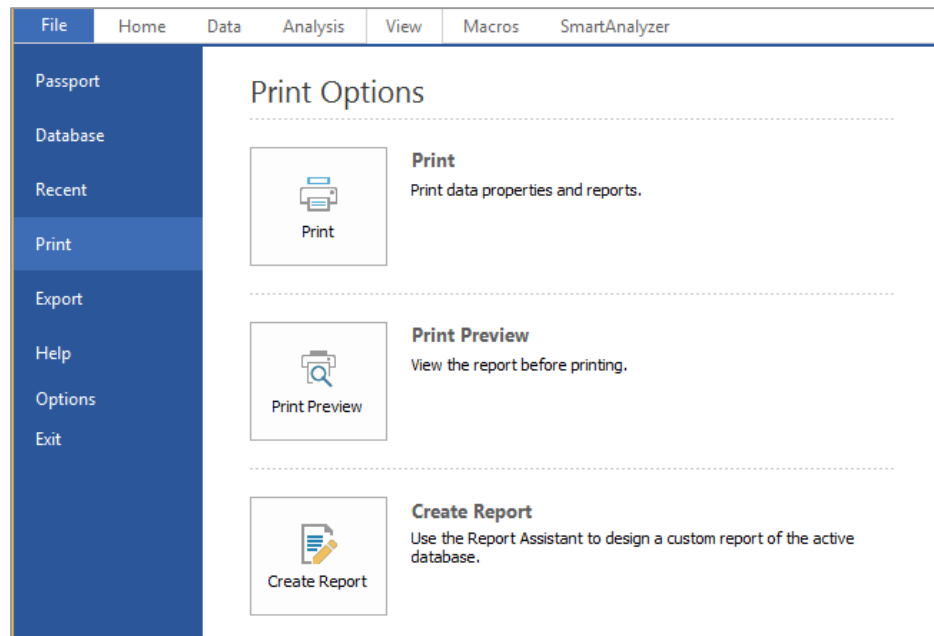
The **Report Assistant** appears.

2. Accept all defaults and click **Next**.

IDEA allows you to specify the font, alignment and name for each heading.

3. Modify the report headings as follows:

FIELD NAME	HEADING
SUPPNO	SUPPLIER NUMBER
PAYEE	PAYEE
PAY_DATE	PAYMENT DATE
CHECK	CHECK NUMBER
AMOUNT	PAYMENT AMOUNT
AUTH	AUTHORIZED BY

4. Click **Next**.

The following step is used for defining if and where control breaks (required for sub-totals in reports) are required.

There can be up to eight fields in an index/ sort order; therefore, up to eight break levels can be defined.

5. Sequence the database records in the following order:

- **SUPPNO**: Ascending
- **PAY_DATE**: Descending
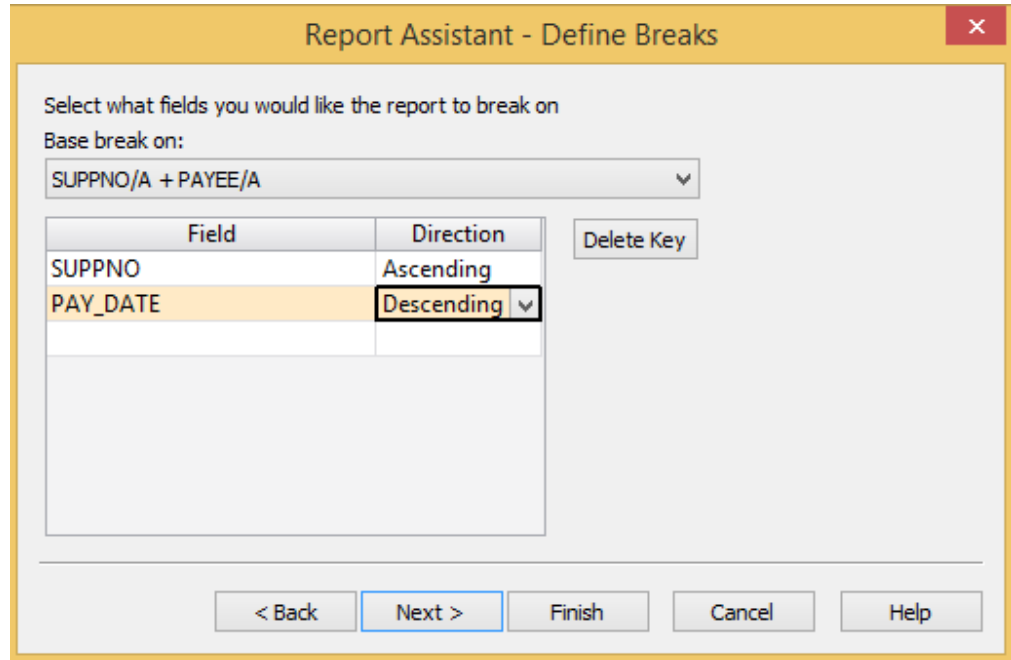
6. Click **Next**.

Note: The records will be displayed in the order of the index.

The index description will be displayed in the **Available Indices** box in the center of the **Database** toolbar.

The following step is only provided if at least one field was selected in the previous Define Breaks step.

7. Create a break and total the **AMOUNT** field for each supplier number. Complete the options as in the dialog box below. Click **Next**.

8. Create grand totals for the **AMOUNT** field and set the font to bold. Click **Next**.

Grand totals can be included whether or not break totals were requested or not. Note that you can alter the appearance of the totals and include currency symbols.

9. Select the **Print cover page** option and enter appropriate headings.

    - **Title**: Accounts Payable Report

    - **Comments**: Ordered by Supplier Number and Payment Date

    - **Prepared by**: Enter your initials (or accept the default user name)

    - **Header**: Enter your organization's name

    - **Date/Time**: Leave defaults unless you have particular preferences

10. Click **Finish**.

    Note: You will not see any changes on the screen. The options you have selected/changed affect how the view will be printed.

Print Preview and Print the Report

Print Preview

1. Once the report has been created using the **Report Assistant**, you will be prompted to preview the report created. Click **Yes**.
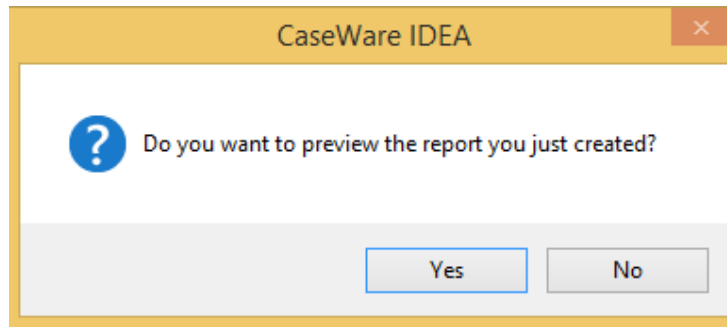
Alternatively, click **No** and click **Print Preview** from the **File** tab.
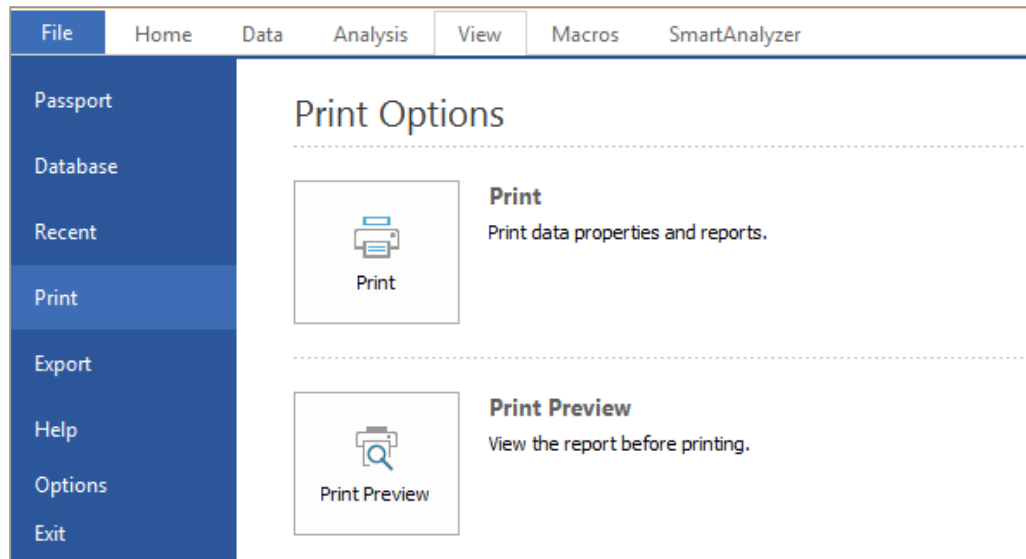
2. If prompted, reduce the font size to fit to page.

3. View the report, toggling between a single page and two pages.

4. Zoom in to view the report in detail.

5. Check that all settings, including field widths, are correct. Adjust any settings, if necessary.

    Note: If you wish to print the view, click the Print button on the Print Preview window.

6. Close the **Print Preview** Window.

7. From the **View** tab, in the **Views** group, click **Save** to save the view of the database. Select and save the view as **Accounts Payable.vw2**.

    Note: If column widths in the database report are too narrow, the field contents are displayed as follows:

    - **Character field**: Text is truncated from the right
    - **Numeric field**: Contents displayed as ##########
    - **Date field**: Dates are truncated from the right

Field widths can be adjusted in the **Data** property before printing, if necessary.

Printing the Report

Within IDEA, the data and the following reports can be printed and used for testing, reviewing, audit reports, or for audit working paper documentation.

- Database Window

- **Database View** — the data in the current format.

- **History View** — the History log (for review and documentation).

- **Field Statistics View** — the statistics for each Numeric and Date field in the database.

- **Results Views** — which holds the reports for the following tests:
    - Stratification
    - Summarization (optional)
    - Aging
    - Gap Detection
    - Sampling
    - Chart Data
    - Benford's Law
    - Pivot Table
    - Correlation
    - Trend Analysis
    - Time Series

- Macro Window

- IDEAScripts - the source code for any scripts.

IDEA uses standard Windows print routines and will recognize all printers and fonts installed through Microsoft Windows.

Many reports and views may also be printed through the **Print Preview** option, either through the **File** tab, **Report Assistant**, or if a **Print Preview** button is available on the view's toolbar.

Before selecting the print option, ensure the printer options have been correctly set through **Print Setup**.

Select the required **Database**, **History**, or **Results** output to be printed then click the **Print** button on the **Operations** toolbar, or select **File** toolbar and the **Print** button.

The **Print** dialog box will be displayed. Specify the print options required.

It is important when printing a report, to also print the **History** and attach it to the database report for review.

Re-Run a Task

The **Re-run Task** is used to re-run the last task (i.e., **Extraction**, **Stratification**, **Summarization**, etc.) with different parameters. This is particularly useful for correcting errors or for "what-if?" scenarios.

When running a task in IDEA, the dialog box settings are saved. When **Re-run Task** is selected, the dialog box is populated with the saved settings. A numeric suffix is added to the result or database names. Any or all parameters may then be modified as required to re-run the test.

A task may also be re-run from the **IDEAScript** code stored in the **History** log of the database.

To re-run a task, ensure the resultant (child) database created from the task is the active database then re-run the task on any parent database using the following steps:

From the **Analysis** tab, in the **Tasks** group, click **Re-run Task**.

The task dialog box with the parameters for the last test will be displayed. Modify any or all of the parameters as required and then click **OK** to re-run the task.

The **Re-Run Task** can also be used to re-do an import.

Housekeeping

IDEA creates databases from most tasks with the consequence that the list of databases builds up quickly. Therefore, housekeeping routines (including backing up data and deleting unwanted files) are important when working with IDEA.

Housekeeping functions such as deleting and renaming databases are carried out from within IDEA. However, functions such as backing up and restoring databases are carried out through the Windows File Explorer.

Managing Folders and Project Properties

All the files relating to one project/audit should be kept in a separate project folder. This makes it easier to locate and manage the files and reports relating to an audit and reduces the risk of overwriting files. It is also easier to back up all the files pertaining to each audit once it is complete.

The folder can be created using Microsoft Windows File Explorer or through the **File Explorer** window in IDEA. Also IDEA will automatically create a folder when the **Managed Projects** is selected

It is not necessary to store the original databases/files to be imported in this folder, but it is recommended that the files be stored under the **Source Files.ILB** folder. Any databases generated by IDEA will be stored in this **Project Folder**.

Once the **Project** has been created, it is necessary to enter project information within IDEA. This information will then be printed on all reports.

*Creating a Project Folder and Enter Project Properties*

Create the **Project**, as done in previous exercises of the Workbook.

Create the required project and enter the appropriate project information in the **Properties** dialog box.
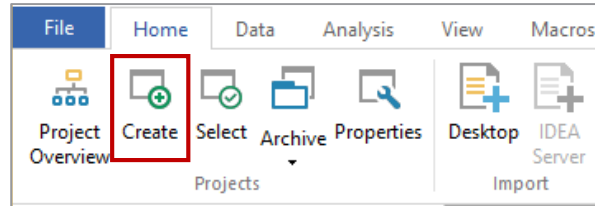

Change the Project Properties

To change the Project Properties, from the **Home** tab, in the **Projects** group, click **Properties**. Make any necessary changes and click **OK**.
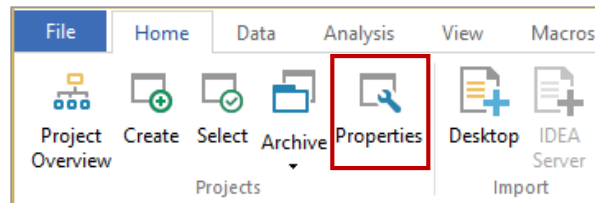

Change the Project

To change the **Project**, from the **Home** tab, in the **Projects** group, click **Select**. If any databases are open in the current folder, you will be asked if you wish to close these before opening the new project.
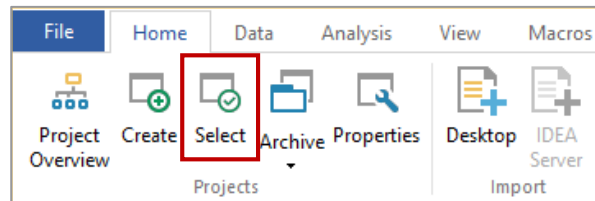
> **Note**: Once **Project Folder** is set, it remains the active folder until changed.

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Create a New Project Folder or Sub-folder

You can create a new folder to organize displayed databases in the **File Explorer** by clicking the **File Management** button.
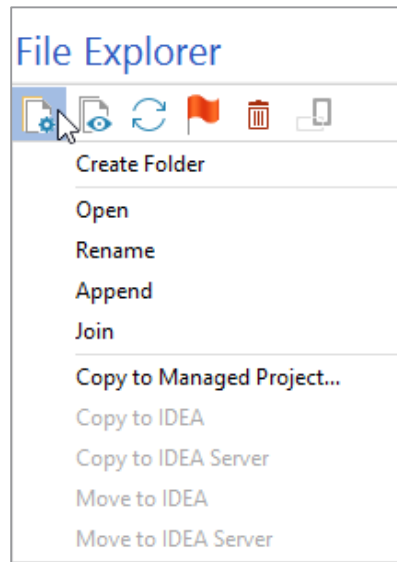
To create a new sub-folder within the current **Project Folder**:

1. Click the **File Management** button on the **File Explorer** toolbar, and then select **Create Folder**.

   The **Create New folder** window appears.

2. Enter a name for the new sub-folder, and then click **OK**

3. Drag databases displayed in the **File Explorer** into the new folder.

   IDEA displays the moved databases as sub-directories of the folder in both flat and tree views.

Backup/Restore Data Files

You may wish to backup files for a variety of reasons (i.e., to transfer files to another computer, to backup files according to risk/criticality of data, or because of disk space restrictions).

IDEA uses a single compound file with the filename extension .IMD to store all the information associated with a file, including the data, the schema, the **History** log, notes, indices, and test reports.

Each of these files will be stored in its **Project Folder** as specified from the **File** menu. However, the view files, equation files, definition files, and any text files created are not stored within the compound file. Files are stored as follows:

FILE	FOLDER	NAME
Data and related files	Project Folder	Filename.imd
Views	Other.ILB folder	Viewname.vw2
Equations	Equations.ILB folder	Equationname.eqx
Record definitions	Import Definitions.ILB folder	Filename.rdf
Print Report templates	Results.ILB folder	Filename.jpm
Project information	Project Folder	Client.inf
IDEAScript source code	Macros.ILB folder	Scriptname.iss

Use File Explorer or any other backup facility to backup the required files.

Note: Use compression utilities such as WinZip or PKZip to compress the file before backing it up to reduce the file size.

Deleting Data Files

If a database is no longer required, it can be deleted, provided that it is an active database.

To delete the active database, from the **File** tab click **Delete Database**. Confirm the deletion.

To delete all or selected databases:

1. Ensure all databases are closed.

2. Expand out all nodes on the **File Explorer** window to display all databases.

3. Select the databases to be deleted.

4. Click the **Delete** button on the **File Explorer** toolbar.
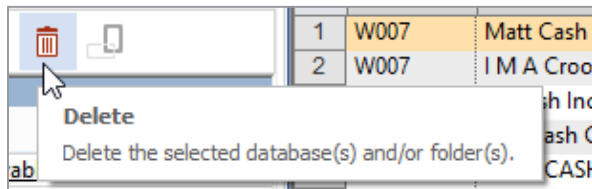
5. Confirm the deletion. If you wish to use the Recycle Bin when deleting files, ensure the option is selected in the **Options** dialog box selected from the **File** tab.
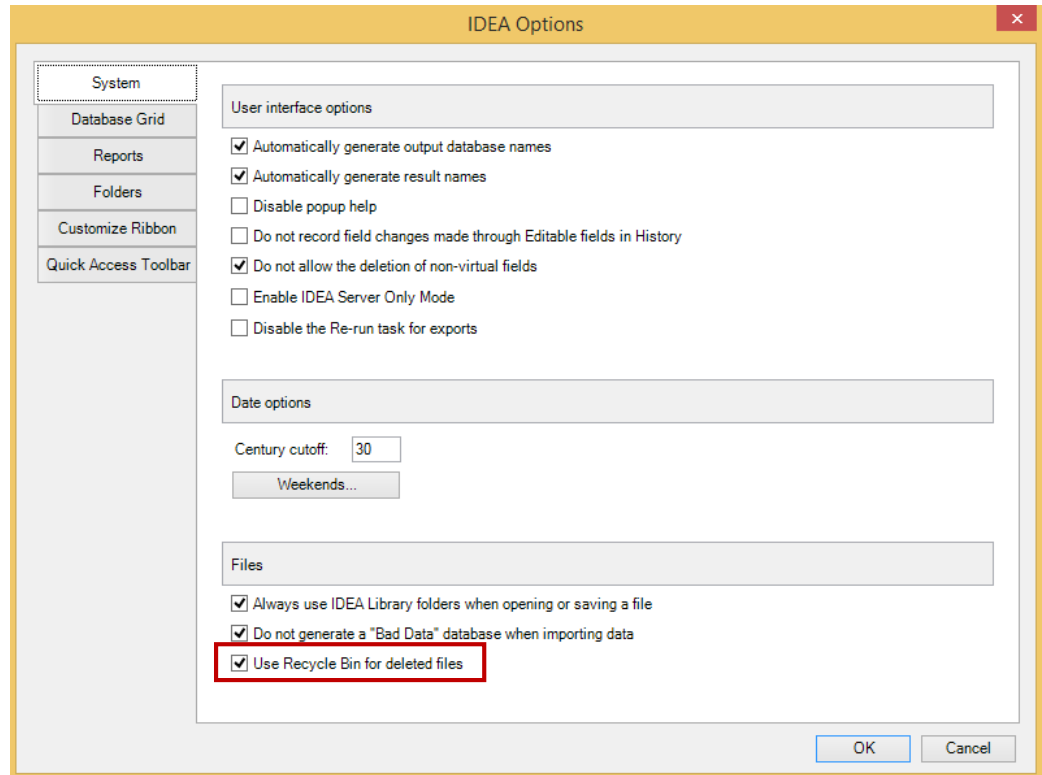
If the database does not reside on your local machine, but on a server, when deleting a database it is removed to the recycle bin.

Deleting Other Files

Use Windows File Explorer to delete other files, such as record definitions, view, equations, and masks.

Copy Data Files

It is sometimes necessary to have the same database in two different project folders. IDEA allows databases to be copied to multiple project folders. To copy one or more selected databases to another project folder:

1. Select the required databases in the **File Explorer** window.

2. Right-click over the **File Explorer**.

3. Select **Copy To**.
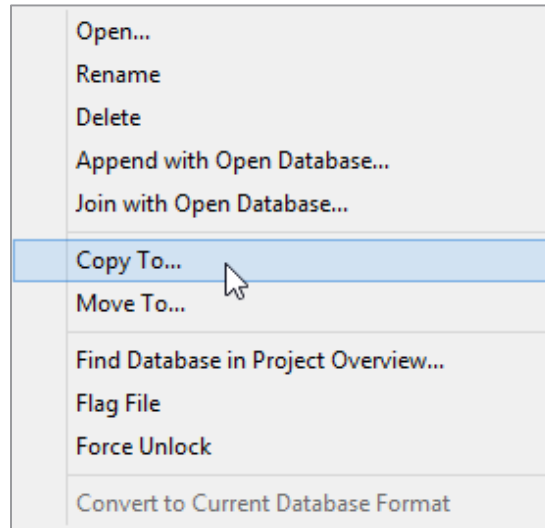
4. Navigate to the required folder.

5. Click **OK**.

Move Data Files

To move one or more selected databases to another project folder:

1. Select the required databases in the **File Explorer** window.

2. Right-click over the **File Explorer**.

3. Select **Move To**.

4. Navigate to the required folder.

5. Click **OK**.

Refresh the File Explorer

To update the IDEA **File Explorer**, select the **File Explorer** and click on the **Refresh List** button or press the **F5** key.
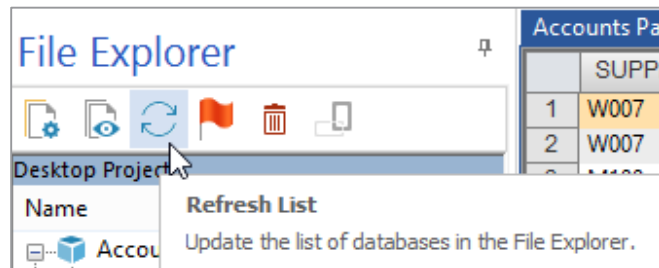
The File Explorer

Databases can be viewed and managed through the **File Explorer** window. The **File Explorer** window displays a list of available IDEA databases (filename.imd) in the **Working Folder**. This is a movable, dockable window and may be resized to display the following information about all IDEA databases in the current **Working Folder**:

- File name

- Number of records

- File size

- Date and time of last modification

- Date and time of creation

The order of the databases may be changed as follows:
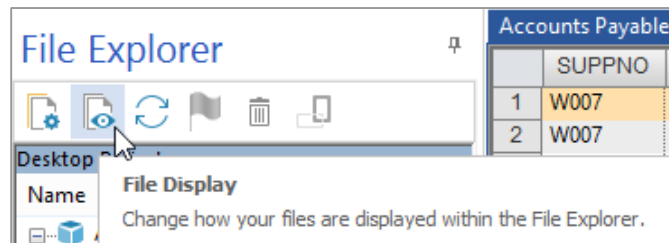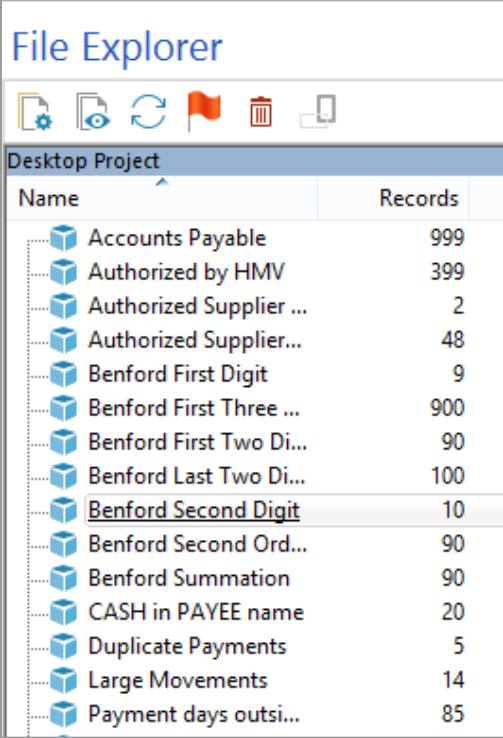
Show Hierarchy

Databases are normally displayed in a **Hierarchy**, showing the Parent - Child relationship between databases. Each parent database node may be expanded to show the child databases or collapsed to the parent level, as required. If the databases are not displayed as a **Hierarchy**, click the **File Display** button on the **File Explorer** toolbar. This will become more relevant once testing has commenced.

Sorted Order

When the **Show Hierarchy** is turned off, the databases may be sorted by any information parameter in the **File Explorer** window, such as by file name or file size.

Click the **Show Hierarchy** button. Double-click the heading bar of the parameter to sort the databases in the ascending order. Double-click the heading bar again to sort the databases in descending order.

Rename a Database

Database names may be changed and recorded in the **History** log.

To rename a database:

1. Make sure the database is closed.

2. Click on the database name in the **File Explorer** window.

3. Edit the database name as required when the editing option becomes available.

Alternatively, right-click on the selected database name in the **File Explorer** window and select **Rename**.

Review and Housekeeping

Standards should be set for the use of IDEA. These may vary from organization to organization depending on the usage of IDEA and the existing procedures, style, and culture of the organization. However, they should include:

- Objectives

- Required documentation

- Reconciliation/checks on files imported

- Review of work done

- Security

- Backup of work

- Housekeeping

The range of tests available within IDEA is so wide that a considerable amount of time and effort can be wasted on irrelevant tests if objectives are not set. It always pays to know what is to be achieved.

Documentation depends on an audit department's procedures but should cover all the points listed above, perhaps with standard schedules for reconciliation, file details, and review.

Most files can be agreed to known control totals. These may be record counts, totals of certain financial fields, or slightly more complex analysis of certain fields. In addition, it is usually a good idea to agree each field in a selection of records with screen enquiries or printouts to check that they have been imported correctly.

Mistakes can be made in using IDEA as with any technique. Hence, the work should be reviewed. Review procedures are often compliance based, checking that documentation is complete and that reconciliations have been carried out.

IDEA maintains a **History** log of all operations carried out on a database, including its import and each audit test. It produces a linear log so that the process of how the database was created can be traced. The **History** log cannot be modified or deleted.

The most common errors are:

- Incorrectly specified formula

- Joins with primary and secondary databases performed incorrectly

- Incorrect join method used (there are five join methods)

- Incorrect fields totaled on summarization

- On complex work involving several steps, performing joins, summarizations, and extractions completed in the wrong order

These can all be checked and "ticked" in true auditing fashion on a printed (or electronic) copy of the **History** log.

The **History** log is contained within the database's IDEA Merged Document (filename.imd).

View the History Log of a Database

1. Click the **History** link in the **Properties** window.

2. Each test or function is displayed in a collapsed node with its title, date and time, and the user name.

3. Expand out a node to view its details by clicking on the plus button.

4. Expand out all nodes by clicking the **Expand All Details** button on the **History** toolbar.

5. Collapse a single node by clicking on the minus button.

6. Collapse all nodes by clicking the **Collapse All** button on the **History** toolbar.

7. The **History** log can be printed by clicking on the **Print** button on the **Operations** toolbar or from the **File** menu. The **History** log will be printed as displayed, either collapsed or expanded.

Adding a Comment to the Database

The **Comments** option is used to add a comment to the active database. It may be used to:

- Annotate the audit steps, giving an explanation of the objective
- Explain results
- Add review points
- Attach any documentation that can be cut and pasted into the comment

To add a comment:

1. Click the **Add comment** link in the **Comments** area of the **Properties** window.

2. Enter your comment and then close the **Database Comments** dialog box.

3. View the comment in the **Comments** area of the **Properties** window.

To delete a comment:

1. Right-click the comment link in the **Comments** area of the **Properties** window.

2. Select **Delete comment**.

Accessing Project Overview

The History feature shows the actions taken to receive the database results. Project Overview is a graphical overview of the actions performed within a Project Folder, including the creation, deletion and modification of databases. Project Overview records all database interactions and shows the complete history of what has transpired within the Working Folder. In the graphical format of Project Overview, IDEA allows you to create a Visual Script or IDEA Script macro. A table view format is also available.

To access Project Overview:

From the **Home** tab, in the **Projects** group, click **Project Overview**.

Alternatively, right-click on the database in the **File Explorer** menu and select **Find database in Project Overview...**

Managing the Use of IDEA

To get the most out of IDEA it needs to be used for an appropriate purpose and its use kept to the objectives. There may be an initial cost in downloading data. The payback depends on the audit objectives and scope.

In managing the use of IDEA the following issues need to be considered:

- Check that the planning has identified a series of good objectives. These may be analysis work, exception tests, duplicates, matching or any of the tests that IDEA will perform.

- Check that work is not being duplicated. If IDEA is being used, then it is likely that some manual work or tests can be dropped (unless IDEA is being used for new or additional exercises).

- The time to be spent on using IDEA should be budgeted. The time to perform tests and create reports is relatively brief. What can take considerable time is follow-up on items in the reports.

- In addition to audit purposes, IDEA can generate a number of very useful reports for management. The auditee's needs should be considered and any extra value that can be obtained added.

Another consideration is compliance with all relevant legislation. Some countries have laws regarding the use of data, notably personal data, such as the province of Ontario's Freedom of Information and Protection of Privacy Act and Municipal Freedom of Information and Protection of Privacy Act. Therefore, care needs to be taken that no legislation is being breached.

Other Uses of IDEA

Introduction

The audit manager of **Dynamic Accountants** has completed the year-end audit. Both the audit manager and the Chief Financial Officer (CFO) of **Bright IDEAs Inc.** were satisfied with the work that was completed for the previous sections. The CFO was especially pleased with the computer assisted audit techniques used on the engagement.

The CFO is planning on engaging **Dynamic Accountants** to assist **Bright IDEAs Inc.** with implementing IDEA within their organization. However, before the CFO plans to pursue this strategy, he wanted to know what other tests can be completed within the organization.

This section summarizes other uses of IDEA that could be considered.

Case Scenario: Other Uses of IDEA

The CFO of **Bright IDEAs Inc.** wanted to know what other tests can be completed within the organization. Some areas that he is specifically interested in are:

- **Sales transactions**: **Bright IDEAs Inc.** recently implemented a new billing system that connects to the existing inventory system. The sales managers are concerned about the billing process. Based on their analysis of the financial statements, there seems to be a discrepancy between the increase in inventory and sales revenue.

- **Travel expenses**: Sales personnel can expense amounts related to travel for all trips made outside their designated areas. Travel expenses have been increasing and the CFO would like an explanation.

- **Payroll**: **Bright IDEAs Inc.** has rolled out a plan to offer early retirement to certain employees. The company is interested in costs savings and ensuring that the company retains sufficiently qualified personnel within their departments. The company is also concerned about complaints that they have received from their employees regarding their bonuses. The bonus is calculated based on seniority, number of days absent, and the employee's annual evaluation score.

- **Security**: As part of its monitoring of its security practices, management wishes to assess the company's controls over access to the system and related data.

The company has approached you for advice on tests that could be done using IDEA to address these issues.

Other Potential Tests

Sales Transactions

Mechanical Accuracy and Valuation

The following tests could be conducted:

- Total, sub-total by period, category, division, and so on.
- Check sales tax treatment.
- Check discounts offered for adherence to company policy.
- Check commission sales for compliance with company policy.

Analysis

The following analyses could be conducted:

- Summarize sales by period, category, division, and so on.
- Summarize sales returns by period, category, division, and so on.

Existence and Validity

The following tests could be conducted:

- **Exception testing**: Analyze sales transactions, isolating unusual transactions for review.
- **Statistical sampling**: Select a statistical sample for compliance testing of attributes such as approvals and supporting documents.
- **Duplicates testing**: Test for duplicate sales entries.

Completeness

The following tests could be conducted:

- **Gap detection**: Test the sales files for missing invoice numbers.
- **Matching**: Reconcile sales invoices, customer orders, and shipping notes.

Identify goods shipped, but not invoiced. This can be achieved by a 3-way match using the common key between the documents (e.g., purchase order number).

Cut-off

The following test could be conducted:

- Check sales cut-off by checking shipment date and/or input date.

Travel Expenses

Mechanical Accuracy and Valuation

The following test could be conducted:

- Total, sub-total by period, category, division, and so on.

Analysis

The following analysis could be conducted:

- Summarize expense claims by employee and determine if some employees have unusually high totals.

Existence and Validity

The following tests could be conducted:

- **Exception testing**: Identify receipts submitted exceeding the maximum rate (i.e., as per company policy). Identify sales personnel without any expense claims (they could be fictitious employees).

- **Statistical sampling**: Select sample of expense claims and ensure that they comply with company policies and are approved by the appropriate personnel.

- **Duplicates testing**: Identify duplicate expense claims.

Cut-off

The following test could be conducted:

- Check if there are expenses claimed by the employee after the date of termination.

Payroll

Mechanical Accuracy and Valuation

The following tests could be conducted:

- Re-perform calculation of net pay.

- Recalculate the allocation of shares to a company pension plan based on the prescribed formula.

- Recalculate investment income allocated to each employee.

Analysis

The following analyses could be conducted:

- Summarize payroll expenses (e.g., by distribution category).

- Perform month-to-month or year-to-year comparisons (e.g., number of employees, hours worked, and gross pay).

- Determine the impact of the early retirement program within given areas. For example, areas with a significant number of early retirees could face a severe shortage of resources to achieve specified goals.

- Identify hiring needs based on departures.

Existence and Validity

The following tests could be conducted:

- **Exception testing**:
  - Analyze the stream of payments and extract unusual items (e.g., excessive hours and rates).
  - Identify blank or invalid Social Insurance Numbers.
  - Identify employees without standard information (e.g., location, e-mail, and extension).
  - Identify employees without pay, negative pay, or without deductions.
- **Statistical sampling**: Select a statistical sample of payments for compliance and/or substantive verification against supporting documentation in personnel files.
- **Duplicates testing**: Identify duplicate Social Insurance Numbers.

Completeness

The following tests could be conducted:

- **Gap detection**: Identify gaps within sequence of employee numbers and obtain explanations for those gaps.
- **Matching**: Match gaps in employee numbers against list of terminated employees.

Cut-off

The following test could be conducted:

- Check for payments to employees after the date of termination and follow up to ensure the payments were justified.

Access Controls

The following analyses could be conducted to test the effectiveness of access controls:

Analysis

- Summarize access privileges by employee and determine whether employees have incompatible access privileges (to ensure that segregation of incompatible functions is enforced).
- Summarize employee access privileges and determine whether employees have greater access privileges than they need to perform their jobs (to ensure that the principle of least privilege is enforced).
- Summarize system accesses outside of normal business hours by employee and determine whether there is unusual activity that needs to be followed up.

Exception Testing

- Identify user accounts that deviate from the prescribed password policy.

- Identify user accounts that do not correspond to the normal naming conventions.

- Identify inactive or dormart accounts; i.e., access codes that have not been used within the past 3-6 months. Such accounts should be purged from the system to prevent their abuse.

Statistical Sampling

- Select sample of employees and check that they were properly screened prior to being given access to sensitive information.

- Select sample of accesses and trace to current employee file. Match user profiles and privileges documented in the employee file to the user profile maintained in the operating system (to ensure that only authorized personnel have access to the system and that the privileges in effect do not exceed those granted by the business unit).

Duplicates Testing

- Identify employees with multiple access codes and determine whether all of the codes are needed. (Extra/infrequently used codes represent a security risk).

Matching

- Reconcile vendors listed in master file to independent authorized list of vendors (to ensure that systems personnel have not bypassed normal master file authorization procedures).

- Summarize all users accessing the system and match users accessing the system to employee file.

Cut-off

- Check list of terminated employees against users accessing the system after the date of termination.

IDEA Functionality Covered in this Workbook

IDEA Functionality Covered in this Workbook

IDEA Functionality	A/R Audit	A/P Investigation Analysis	Inventory
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Import Data			
Microsoft Access database file	p. 32		
ASCII Delimited file		p. 102	p. 193
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IDEA Functionality	A/R Audit	A/P Investigation Analysis	Inventory
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Housekeeping			
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IDEA Functionality
Not Covered in
this Workbook

- Importing EBCDIC and ASCII Fixed Length Files
- Importing Lotus 1-2-3 Spreadsheets
- Importing Variable Length Files
- Bad Data Handling
- Appending Databases
- Comparing Databases
- Show Field Stats
- Customizing IDEA including Toolbars and Options
- Indexed Extraction
- Key Value Extraction
- Top Record Extraction
- Sorting Databases
- Describe Sorted Order
- Group Records
- Character Gap Detection
- Date and Character Stratification
- Sampling Techniques other than Random Record Sampling
- IDEAScript Programming Tool
- E-mailing Databases and Reports
- Exporting Data
- Correlation
- Trend Analysis
- Time Series
- Visual Connector
- Custom @Functions
- Project Overview
- Visual Script