McGraw-Hill's Homework Manager

Instructor's Guide

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About McGraw-Hill's Homework Manager

Release 2.5

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System Requirements

The following is a list of the minimum system requirements for access to the EDU Campus system. System performance may vary based on the speed of your Internet connection.

Windows

- OS: Windows 98/ME/2000/NT4.0/XP
- Browser: Internet Explorer 5.5+, 6.x, Netscape 6.2.2
- 300MHz processor or better
- 64MB RAM or better

Macintosh

- Mac OS 9.1, running Internet Explorer 5.1, Netscape 6.2.2
- Mac OS/X, running Internet Explorer 5.2, Netscape 6.2.2
- 333Mhz G3 or better
- 64 MB RAM or better

Linux

- Red Hat Linux 7.1, 7.2, 7.3 running Netscape 6.2.2
- 300MHz processor or better
- 64MB RAM or better

Internet Access

- 56K Modem Dial-up Connection
- Broadband - Cable Modem or DSL - Internet connection is recommended for optimal performance.

Browser Settings

- Use your browser default settings. In particular, ensure that JavaScript and cookies are enabled.
- The browser must support Java, and Java support must be enabled.

McGraw-Hill's Homework Manager Overview

Important: To navigate in the EDU Campus system, use the system navigation buttons not your browser's Back and Forward buttons.

How the System Works

McGraw-Hill's Homework Manager (MHHM) uses question banks—for example, questions from class homework, test items, or other class problem material—as the basis to construct assignments.

As the instructor, you control the rules and policies for assignments, which can range from self-study and homework sessions to proctored exams. When you are satisfied with the questions and rules in your assignment, you publish it for use by students. When an assignment is published, you can control availability and due dates, set grading parameters, and record grades in the system Gradebook.

To use the system for homework management and online testing in your class, begin by registering and creating a unique class homepage. Once your Class Homepage is set up, you and your students start all system sessions at this address.

From their Class Homepage, instructors can:

- Use pre-existing question banks
- Create, publish, and manage assignments
- Manage student interactions
- Access the Gradebook, which records student work and assignment results

Students visiting your Class Homepage are allowed to register in your class, select assignments as you make them available, and review the results of their work on assignments they have completed.

Class proctors can also log in from your class homepage to validate a student's identity prior to administering a proctored exam.

Question Banks, Assignments, and Reports

The variety of question types (including sophisticated Math and Science questions), range of assignment modes, powerful tools, and reports the system can generate make MHHM an ideal productivity enhancement for instructors while giving students an individualized learning experience.

Question Banks

Using MHHM, you create and edit question banks. Question banks are the basis for self-scoring assignments. You can easily select questions from a variety of question banks for a single assignment.

Important: When creating and editing question banks, clicking **Finish** does not permanently *save* a copy of your work to a hard drive. You must save your question bank to your hard drive as a **`.qu`** plain-text source file or install the question bank on the Class Homepage hard drive.

Assignments

MHHM assignments automate common learning activities that involve questions and problems. You can create assignments for a range of purposes, including:

- Self-study practice
- Homework and Quizzes
- Proctored exams requiring student login and proctor validation

When an assignment is created, you specify assignment access, grading parameters, and the grade record format in the MHHM Gradebook. After determining the content (questions), rules, and policies, you *publish* an assignment to the Class Homepage for use by students. Students can review the results of any previously completed assignments.

Important: When creating and editing assignments, clicking **Finish** does not permanently *save* a copy of your work to a hard drive. You must back up your assignment on the Class Homepage.

Reports

After students complete an assignment, you can view the results in a Gradebook or create downloadable Microsoft® Excel performance reports.

With MHHM, you can generate comprehensive performance reports for individual students, individual class sections, or multiple class sections. You can also perform statistical item analysis of questions.

System Modules Overview

Assignment Editor	• Create and publish assignments • Set rules and policies
Question Bank Editor	• Edit and create your own question banks
Gradebook	• View individual and class results • Export to an external Gradebook • Upload class rosters
System Tools	• Change instructor password • Manage proctors • Lock registration for your class • Share your class contents with others • Upload and manage reference files used in questions and assignments

Getting Help

Click the **Help** icon from any page to access online help for instructors. Your students can get help for students by selecting the same icon.

MHHM Support from McGraw-Hill

This manual covers only the fundamentals of using the MHHM System. The online help available from within the system is more complete.

If you need further assistance with this product, beyond what is presented in this document or online, please contact the McGraw-Hill technical support team at techsup@mcgraw-hill.com
or call 1-800-331-5094, option 3 between the hours of 8:00 am to 5:00 pm CST, Monday-Friday.

Also, for full coverage of Advanced Authoring tools, techniques, and capabilities, visit: http://www.brownstone.net/support/edu/authoring

Getting Started

Registering a New Class

You begin using MHHM by creating a unique Class Homepage in the system. Your MHHM class has its own homepage URL that becomes the entry point for all system interaction for you, the instructor, for your students, and for proctors for your class. Your class contains question banks, resource files, and the class Gradebook, and also gives you access to several system tools. From within the Class Homepage, you can also create and administer assignments

Registering a New MHHM Class

Upon successful course registration, you will have full instructor access to the MHHM course content.

To Create a New Class Homepage:

1. Go to the Online Learning Center for your textbook.
2. From the Instructor Center portion of the OLC, click the McGraw-Hill's Homework Manager link, which will take you to the MHHM registration page.

Note: You will be required to enter a Registration Code, which is provided to you on the OLC page you just left.

3. In the drop-down box at the top of the course registration page, select your class by choosing the textbook you are using in your course. Then click **OK**.

4. Enter the Registration Code and click **OK**.
5. Follow the onscreen instructions, filling in all the fields. Detailed information about the fields is covered below. When you have filled in all the fields, click **Finish**.

Note: The registration process will prompt you for information that will be displayed on your Class Homepage. Starred items in the descriptive section below will appear on your Class Homepage.

6. You will be shown a screen announcing that your Class Homepage has been created, and which provides a hyperlink to you Class Homepage.
7. Click the link, and then bookmark the new page. It will be the entryway to your MHHM course for both you and your students.

Required Registration Information

The following information is required when you register a new class in the system. Starred items will appear on your Class Homepage.

Registration Code

The registration code is the alphanumeric password that authorizes you to create a copy of a the question and assignment template for your textbook. You obtain it from your main textbook Online Learning Center's Homework Manager page, as outlined above.

Class Name*

Select a unique name for your class, which is displayed as part of your Class Homepage. The class name should be between 5 and 50 characters long. It cannot contain the characters <, >, or **&**.

Instructor Name*

Enter your name. On this system, a name can only contain the alphabetic letters **A** through **Z**, together with "**-**" and " **'** ". The first character must be alphabetic. The middle initial can be empty or a single alphabetic character.

Email Address*

Enter your email address. This field is optional.

School Name*

Enter the name of your school. A school name must have between 5 and 50 characters. It cannot contain the characters <, >, or **&**.

Password

Select a password to access your Gradebook and create assignments. The password should be at least 5 and no more than 12 letters or numbers. Spaces are not allowed. For your security, the password does not display on the screen. To confirm the correct password, enter it twice.

Class Homepage URL

You must select a unique homepage URL for your class. The system informs you if you have chosen a duplicate URL. Select a short string of letters or numbers that will make an easy-to-remember home site for your class. You must use between 3 and 16 characters, but only **a** though **z**, **A** through **Z**, and **0** through **9** are allowed. No punctuation, spaces, or special characters can appear in a Class Homepage URL.

Your Class Homepage URL will take the format:

http://edu2.brownstone.net/mhhm/classes/***classname*** where ***classname*** is an identifyer chosen by the instructor.

The Class Homepage

Once you have registered and created your Class Homepage in the system, you can bookmark it and distribute your unique URL to your students. The Class Homepage is used by the instructor, students, and proctors involved in that particular class.

Rules and Guidelines for Choosing a Class Homepage URL

- Select a short string of letters or numbers that will make an easy-to-remember home site for your class.
- You must use between 3 and 16 characters, but only **a** though **z**, **A** through **Z**, and **0** through **9** are allowed.
- No punctuation, spaces, or special characters can appear in a Class Homepage URL.

The Instructor Login

As the instructor, you log into your Class Homepage using the password you created during registration. This allows you access to the Instructor Main Menu.

The Proctor Login

If you are a proctor for the class, click the **Proctor Login** link to access parts of the system related to exams and tests. Proctoring is used to confirm the identity of the student taking the test and that the test was taken under approved conditions. The class instructor creates proctored exams in the system.

For all proctored exams, a designated proctor must give authorization before the student can have the test graded. Instructors can also require that the proctor authorize the start of the exam session as well as the completion (to authorize grading).

The Proctor Login allows Web-based access for authorization. Proctors do not have to use the student's computer to authorize the start or grading of an exam. However, they must be able to confirm the student's identity. The class instructor or system administrator establishes the initial Proctor Login and Password.

The Student Menu

Students register, select assignments, and view their results from previously completed assignments in the Student Menu on the Class Homepage. The list of assignments that appear to students is exactly as displayed in the Assignment Editor Main Menu. Use the Assignment Editor to control:

- Sequence of assignments in this list
- Scheduling or availability of assignments in this list
- Hiding assignments from view in this list

Using the System in the Classroom

Possible Uses of MHHM for Online Homework and Testing

- Create self-scoring, Web-delivered tests and homework assignments from your time-tested problem files.
- Use MHHM formatted problem sets to create automated, self-grading homework or test assignments.
- Edit, modify, or expand existing question banks.
- Control the rules and policies surrounding your assignments, including time limitations, ability to retake assignments, feedback content, and results reporting.
- Publish assignments to your Class Homepage.
- Use the system Gradebook to monitor individual and class learning performance, and export data to leading course management systems like WebCT™ and Blackboard®. Content and student records in the system are built in XML and MathML. The system output is IMS QTI (IMS Question & Test Interoperability Specification) compliant, improving interoperability with other systems and enabling you to attach additional information to your content.

Security Issues to Consider

It is important to protect your Gradebook and test questions. For security suggestions referring to Instructor Passwords, Student Account Management, or Proctored Exams, click the appropriate topic in the system Help files.

Instructor Password

Change your password often.

- Never allow a student to see it. The instructor password grants access to all the grades in your class, and enables you to change grades. Use caution when entering it in front of students.
- Your password is stored on the server in plain text. This means that the system administrator can read it. Therefore, do not use a password that cannot be disclosed to a third party.
- When you log in, the location and time of your last login is displayed in the top right corner. Check this every time to determine if there are any unaccounted logins.

Student Account Management

Some students will log in to an assignment once or twice and click **Grade** without attempting any questions, to make a printout of the feedback. Using this feedback, they complete the assignment. There are three main solutions to this problem:

- Restrict the number of retakes allowed.
- Set the feedback level to score only rather than giving out answers or solutions. (This approach penalizes the good students, too.)
- If you are writing and using your own questions, you can edit the Comments fields and mask the correct answer.

Consider locking your class after an initial sign-up period to prevent registration of students not in the class and creation of fake accounts. You can also delete unwanted accounts.

Proctored Exams

Proctors can sign students in and out of assignments. You decision usually depends on class size and the number of teaching assistants available to act as proctors. However, this double-checking approach keeps the environment totally controlled.

Proctors can use the Proctor Tools page to avoid entering their password in front of students.

Using the Assignment Editor

The Assignment Editor allows you to create new assignments, edit the content, properties, or appearance of existing assignments, or delete assignments. If you began your class registration by selecting a template or a shared class (not an *empty class*), it may already be populated with a series of assignments based on testing materials, or other shared question banks. If not, you will initially see a blank list here.

Important: When creating and editing assignments, clicking **Finish** does not permanently save a copy of your work to a hard drive. You must *back up* your assignment on the Class Homepage.

The Assignment Editor organizes assignment creation into a four-step process.

- Naming your assignment
- Selecting questions
- Establishing rules and policies
- Reviewing, finishing, and publishing assignments to your class

Creating a New Assignment:

From the Instructor Main Menu, click the **Assignment Editor** link. The Assignment Editor Main Menu opens.

1. Click **Add**.
2. The Assignment Editor screen opens with the Choose Name tab active.
3. Follow Steps 1 through 4 in the tutorial given next.

Step 1- Select a Name for the Assignment

Select a name.

- Enter instructions to appear at the top of every page of the assignment.
- Enter text to appear after grading, along with the performance feedback report.

Step 2 - Select Questions for the Assignment

Select a testbank source for questions in your assignment.

- View questions by topic
- View and select questions in a list
- Preview questions
- Search for questions by information fields
- Add questions to your assignment
  - Add individual questions
  - Add questions as a group
  - Reorganize questions in your assignment
  - Set question weighting
  - Optional: Scramble question sequence upon delivery

Step 3 - Set Assignment Policies

Select the type of assignment

- Set assignment options
  - Printable assignments
  - Reworkable assignments
  - Proctor options
  - Master policies
- Control feedback upon grading
  - Limit answer display
  - Limit final grade display
  - Send email reports upon grading
- Set assignment properties
  - Passing score
  - Time limit
  - Number of questions on a page
  - Number of attempts allowed
- Control assignment scheduling
  - Start time
  - End time (deadline)
- Create rules between assignments
  - Limit number of attempts
  - Restrict access until after another assignment is completed or attempted

Step 4 - Review & Finish Assignment

- Review assignment content, rules, and policies
- Save your assignment

Important: The Assignment Editor does not save partially completed assignments until you click **Finish** in the Review & Finish tab. If you begin to create an assignment and then abandon it without completing clicking **Finish**, your additions and changes are lost.

Step 2: Setting Question Options and Adding Instructions

Configuring Question Weighting

By default, each new question in your assignment is added with a weight of 1 point per question. To change the weighting of individual questions, change the point value in the Points column for the question. The total points at the bottom of the column automatically adjust as you change individual question weights.

Note: The question score values you assign here apply only to Assessment-style assignments such as Homework or Quiz, Anonymous Practice, and Proctored Exam. Mastery and Study Session Assignments do not use these settings because they employ other pedagogical scoring models.

Scrambling Question Delivery

To automatically scramble the sequence of questions delivered each time a new assignment is presented to a student, select the **Scramble Questions** option within the Select Questions tab.

Note: In the Review & Finish tab, question scrambling is referred to as Versioning. This term is used because scrambling the sequence of question delivery produces multiple *versions* of assignments. Using algorithmically-generated questions within assignments creates multiple versions of questions as well.

Select Questions Matching Filter Criteria

You can select questions by searching the Information Field data attached to each question by defining question filters. The information field data is specified in the Question Bank Editor.

The system automatically places a check mark next to each question that matches the filter criteria you specify. Question filters can include multiple criteria.

To use the question selection filter:

1. In the Assignment Editor's Select Questions tab, select a source test bank from the Select Test Bank drop-down list.

2. If the test bank contains information fields, the Search by Information Fields box is displayed.
3. From the drop-down field:
   - Select the **Information Field Name** you want to search. The Information Field Value drop-down box is displayed.
   - Select the **Information Field Value** that you want to match.
4. Click **New Search** to initiate your search (based on the criteria you set earlier**.**). The Search History is displayed.
5. To add multiple search criteria, repeat step 3 and click **Refine Search**. The Search History is displayed with the additional criteria.
6. The system selects questions matching your criteria, and places a check mark in the question selection box to the left of the question to indicate that it meets your search criteria.

Question Annotations

Question Annotations (in the form of HTML or unformatted text) can be added to individual questions in assignments. Annotations can be used to provide:

- Additional instructions
- Explanations before grading
- Links to outside materials or reference objects
- Informational text between questions

Creating an Assignment Annotation

In the *right* frame of the **Select Questions** tab, select a question and click its associated link to launch the preview window.

1. Scroll down in the question preview window to find the Annotation Editor.
2. Enter annotation text (including HTML formatting) in the large text entry field.
3. Set options for displaying your annotation. From the Display This Text drop-down list, select from:
   - immediately above the question
   - immediately below the question
   - in the header of the page
   - in the footer of the page
4. Use the link editor at the bottom of the window to identify reference file sources, either image files or Web references, from your Class Homepage or outside Web addresses.
   URLs must be of the form:
   `http://www.website.com/referencefile.ext`
5. Enter any Link Text you want displayed identifying the reference object or Web address.
6. Use **Insert Link** to automatically paste the correct HTML code for a link reference or **Insert Image** to automatically paste the correct HTML code for an image reference into your annotation.
7. Click **OK**.

Assignment Types Overview

Assignment Type	Graded	Recorded in Gradebook	Student Login Required	Student Password Required	Student Registered in Class	Hints and Solution Available	Reworked for Credit
Anonymous Practice	yes	no	no	no	yes	no	not applicable
Homework/Quiz	yes	yes	yes	yes	yes	no	yes
Mastery	yes	yes	yes	yes	yes	no	no
Proctored Exams	yes	yes	yes	yes	yes	no	not applicable
Study Session	yes	no	no	no	no	yes	not applicable

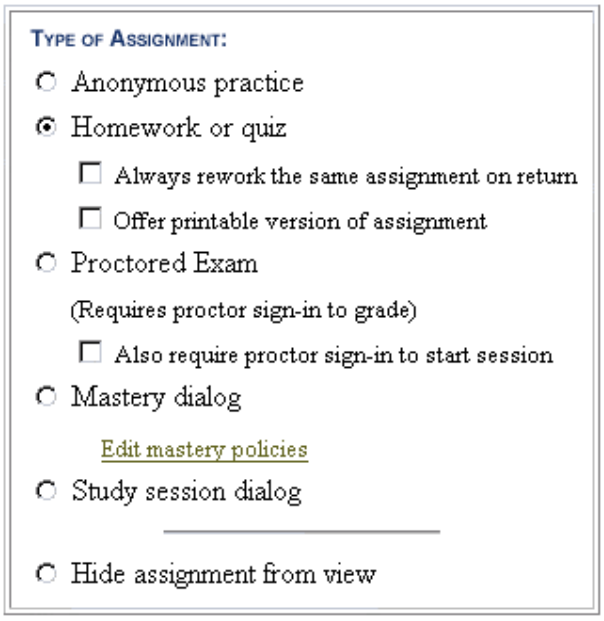
Assignments for Credit (Results Are Recorded)

To access the for-credit assignments, students must log in. Performance results of students sessions are recorded in your class Gradebook after students click **Grade**. For these categories of assignments, students can also return to view their assignment results (with exactly the same algorithmic data values) in the future. The default assignment type is Homework or Quiz. Other assignments for credit are Proctored Exam and Mastery.

Practice Assignment Types (Results Are not Recorded)

There are two assignment types that allow students to practice. Practice Assignments do not require a student login for access, and graded results are not recorded in the Gradebook. Students cannot return to view their results later.

Homework or Quiz is the system default assignment type. It delivers an assessment-style session that requires student login (but not proctored validation). It also records student session results in the class Gradebook.



To change the assignment mode, select one of the other options in the Type of Assignment box in the Set Policies tab of the Assignment Editor.

Homework or Quiz Assignments

In these assignments, students are presented with an assignment consisting of any number of instructor-selected questions. Students must be registered in the class and log in to begin a Homework or Quiz assignment.

Requirements

- Questions are delivered either in an instructor-specified or scrambled sequence.
- Student responses during sessions are recorded (but not graded) after every question, so assignment sessions can be interrupted and returned to upon next login.
- By default, homework or quiz assignments can be attempted multiple times for credit. If you want to limit the number of attempts a student can make on a particular assignment, you can set a limit in Step 3 - Set Assignment Policies.
- Results for every attempt at a Homework and Quiz assignment are recorded in the Gradebook for the class.

Rework the Same Assignment Option

To present an exact version of an assignment each attempt, select the **Always work the same assignment on return** check box in the Type of Assignment box.

- Individual students will always return to the exact version of the assignment they were initially presented with, even on repeated attempts—regardless of whether the question was authored with algorithms—for any attempt during the assignment's scheduled availability. If questions contain randomly generated variable data, the system instantiates the variables exactly one time.

To vary questions for each assignment attempt (Default Setting), leave the **Always work the same assignment on return** option cleared in the Type of Assignment box.

- Students rework the assignment with newly randomized variables inserted in questions each time they attempt the assignment. This enables instructors to create a *template* assignment and lets students rework it repeatedly, with each session generating a different version of the algorithmic variables within the assignment, but still covering the same skills.

Notes: The system records graded results for every repeated attempt, and instructors can control the grading policies, taking the best score, average score, or another option. You can view results from all sessions, including the unique randomized variable data for each assignment attempt a student makes.

The system records the student's best grade. The system still produces algorithmically varied versions of the assignment for different students, but each student sees only one version of the assignment regardless of repeated attempts.

Printable Assignments Option

To make your assignments printable, select the **Offer printable version of assignment** option in the Type of Assignment box.

- With this option selected, students log in and the system generates a new assignment (with algorithmically generated variable data where appropriate). At the next step, however, students are offered the option to generate a printable version of the test suitable for printing and working offline.
- Printable assignments operate like a homework session that was interrupted before grading. The student can log in again and enter responses for automatic system grading and recording scores in the Gradebook. Or, instructors may prefer to have students submit their completed assignments on paper for hand grading by instructors or teaching assistants.

Associated Assignment Properties

In Homework and Quiz assignments, you can set passing score and time limit properties. These properties are set in the Assignment Properties box of the Set Policies tab.

- If there is a time limit set for the test in the assignment definition, a pop-up window warns students as they approach the time limit. They are not allowed to answer additional questions once they exceed the time limit; however, they can submit their work up to that point for grading.

When the student has completed the assignment and submitted it for grading, the system displays a graded assignment report that includes the score (for example, 6 out of 8) as well as details on the grading of each question, along with comments or feedback for all of the questions. (The instructor can configure these options.)

Anonymous Practice Assignments

Anonymous Practice assignments are similar to Homework or Quiz assignments; however, students are not required to log in. Any number of questions can be included, and the assignment is delivered in an instructor-specified sequence (or scrambled).

Graded assignment reports are produced upon conclusion of the assignment, but results are not recorded in the Gradebook. Students can view their results at the end of the session; no permanent record is maintained. Results can be printed, but are only available for as long as a student displays them.

Proctored Exams

Proctored Exams are similar to Homework or Quiz assignments, but with an additional security measure to confirm the identity of the student taking the test.

- All Proctored Exams require a proctor to authorize students submitting their test for grading.
- You can require proctor authorization to validate student identity and grant assignment access at the start of a proctored exam. Select the **Also require proctor sign-in to start session** option in the Type of Assignment box of the Set Policies tab.
- Students must be registered in your class. They are required to provide their student login and password to access assignments in addition to proctor authorization.

Types of Proctors

There are two types of proctors: Global and Local.

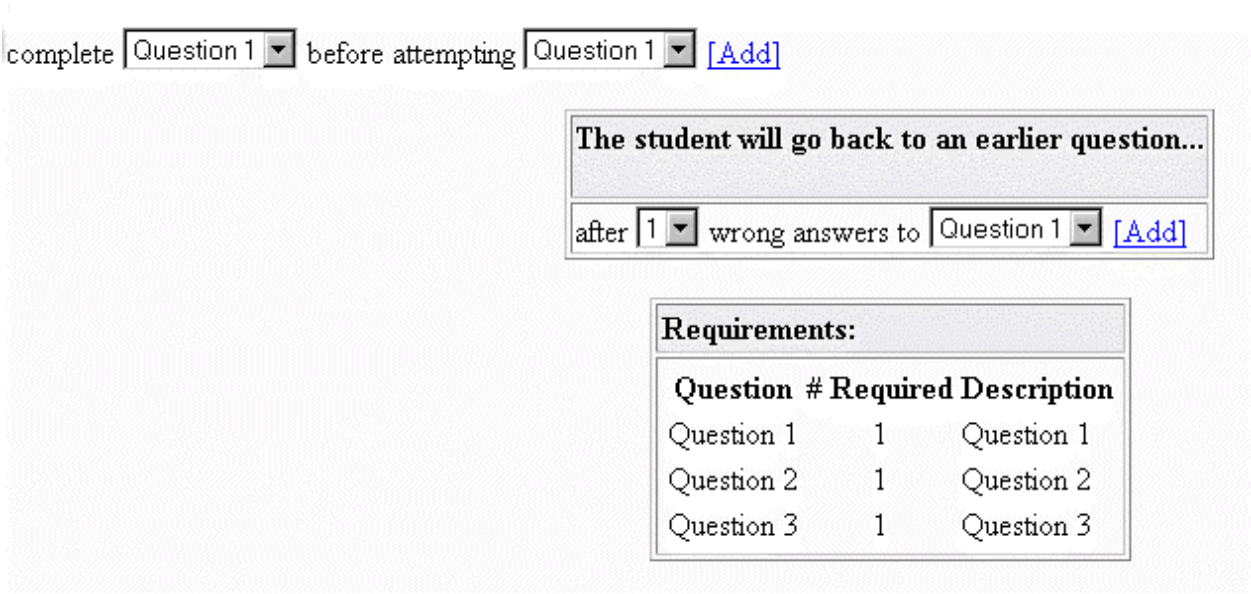
- Global proctors are defined by the *System Administrator* and can give authorization for any class.
- Local proctors are defined by the *Instructor* and can only give authorization for a particular class.

Mastery Assignments

For Mastery assignment types you first create an assignment by selecting questions (Step 2 – Select Questions) as with other for-credit assignments. However, when selecting questions for a mastery assignment you must give careful pedagogical consideration to structuring questions by learning objective.

Question groups can be especially important in the instructional design of Mastery assignments. In Step 3 - Set Assignment Policies, you create rules that establish the minimum number of questions in each learning objective that must be answered correctly before the student can move to the next learning objective.

For students, the graded results of their responses on individual questions at each level of learning objective determines their progression through the assignment. When students demonstrate the required level of mastery (by answering the minimum number of questions correctly), the system allows them to move ahead to the next learning objective's material.



If students demonstrate a lower level of mastery (through repeated incorrect responses), you can establish penalties so that the system moves the student backwards, to the previous learning objective, until minimal proficiency is again established.

Requirements

- Students can take a Mastery assignment only if they are registered for the class (Access requires login and password).
- Assignment results are recorded in the Gradebook for the class.
- Unlike Homework assignments, Mastery assignments *cannot* be reworked for credit. This means that a student can redo Mastery assignments for practice only (provided you have not limited the number of times the student can work through the assignment).
- As students work through a Mastery assignment, they are shown information about their progress along with the requirements for the learning objective and the assignment.

Study Session Assignments

Study Sessions (which do not require students to register or log in) draw from a bank of questions and serve repeated practice to students one question at a time. These assignments are principally a teaching tool, whereas other types of assignments might be considered testing tools (although all assignment types do both to some degree). This assignment type is ideal for anonymous, student-driven, self-paced review.

Although you can create a specific content structure for Study Session assignments, you can also allow the system to randomly select questions from a pool of questions. Consequently, Study Session assignments typically draw from Question Groups. Students work at their own pace on questions drawn from a pool of instructor-selected questions.

Where hints and solutions are part of the question content, students can use them during Study Sessions.

Grading

Questions are graded one at a time, and results are not recorded in the Gradebook. When the system grades the question, it does not tell students the correct answer, but simply whether they got the question correct. If they answered correctly, it proceeds to the next question. If they answered incorrectly, they can view the Hints and then return to make another attempt at the question, or they can view the solution and proceed to the next question. Students can also skip questions and leave the test at any time.

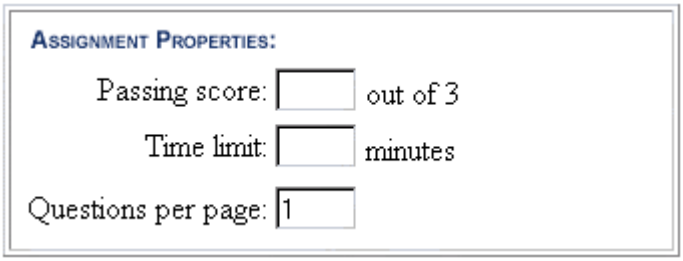
Hiding Assignments from View

Selecting the **Hide assignment from view** option temporarily excludes it from the list of assignments displayed to students on your Class Homepage. This gives you an alternative to deleting an assignment, which you should do only if you are prepared to lose all of the results for the assignment from the Gradebook. Alternatively, you can set the schedule for the assignment to exclude a particular period of time (which also restricts the assignment's availability to students).

Step 3: Setting Assignment Properties

Setting a Passing Score

If you select the Practice, Homework, or Proctored Exam assignment types, you can set a Passing score for the assignment. If you set a score, the system assesses each try at the assignment as either Pass or Fail, and records this information in the Gradebook automatically. The field shows the total available score for the assignment (for example, *out of 10*), which varies according to the composition of your assignment. If you choose to set a passing grade, you can have the system send you email notifications as students meet the passing criteria.



Setting a Time Limit

If you select Homework or Proctored Exam assignment types, you can set a time limit for the test. If you set a limit, the program shows the student the time remaining during the course of the test. If the time limit expires during the test, the system informs the student, and does not allow the student to answer any more questions.

Setting the Number of Questions per Page

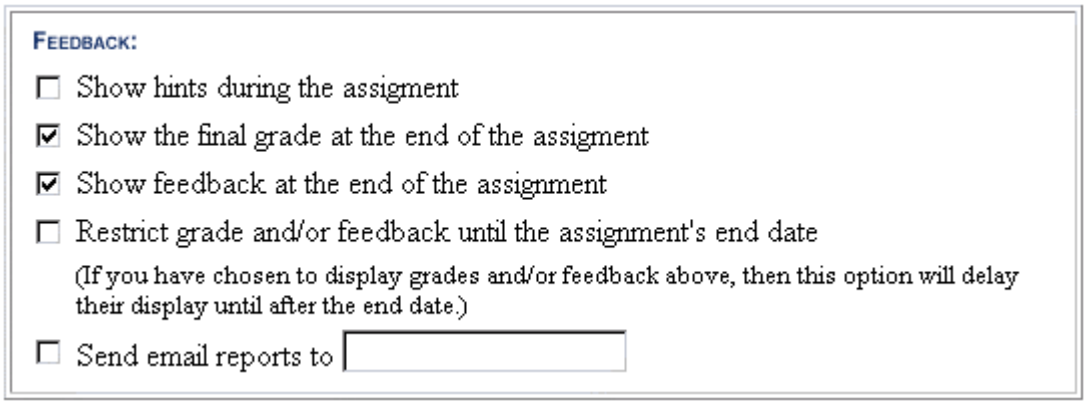
By default, the program displays one question per page when presenting an assignment to students. You can use this option to deliver more than one question per page. If you have used question annotations and set the annotations to display at the top or the bottom of the page in which the question is loaded, your annotations appear as a page-level header or footer (rather than immediately before or after the question).

Note: Mastery and Study Session assignments automatically serve one question at a time. This is part of their instructional design and this setting cannot be changed for these assignment types.

Tip: If you are concerned about students' ability to access complicated questions over a slower online connection, it is recommended that you accept the default setting for questions per page (which is one at a time). Loading one question at a time usually allows a student to move through the assignment effectively, but also saves each question response as it is completed.

Configuring Feedback Options

You can specify which feedback elements are displayed to students when they grade an assignment. The default system behavior is to show the final assignment grade as well as question feedback, but you can switch either of these elements on or off, control access to hints during assignment sessions (before grading), or withhold feedback until after the assignment due date has passed.



Hints and Feedback

You can allow access to question hints (if they exist) in any assignment type. Hints and Question Feedback (contained in the Comment field of a question) are not always present in the source question bank content. You can add hints or comments by using the Question Bank Editor and editing these fields for individual questions. If you choose to display hints and comments and your source questions lack them, the system ignores the display settings but otherwise provides a grading report to students.

In a grading report, the system displays question feedback from the Comment field if it exists, or if not, shows the correct answer value (as defined in the Answer field). While every question will have something displayed as *feedback* in the grading report, not every

question may have the type of extensive feedback, coaching, or external review references that you might provide in the comment for a question.

Sending Email

If you have set a Passing score for the assignment, the program can send you an email whenever a student completes the assignment in Practice, Homework, and Proctored mode, giving the name of the student and the result as Pass or Fail. If you want to receive email notification as students pass the assignment, select the **Send email reports to** check box and enter your email address.

Scheduling Assignments

Using the calendar function provided in the Set Policies tab, you can set Start and End times for each assignment. These times govern the availability of the assignment to students accessing your Class Homepage. Scheduled times refer to your system's time zone setting (indicated as noted in the illustration, and set by your System Administrator).

Before and after the indicated availability window, the assignment will not be displayed in the assignment list viewable by students on your Class Homepage; however, unavailable assignments appear in the list of assignments on Assignment Editor Main Menu page.

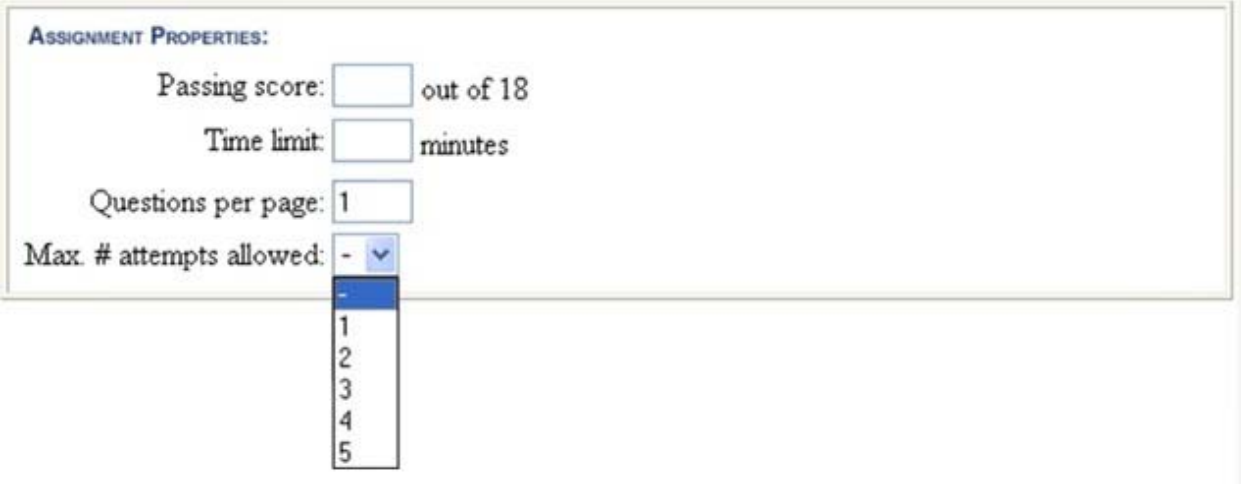
Note: You can also choose to withhold grades and feedback until after the assignment due date by setting these policies in the Feedback box of the Set Policies tab in the Assignment Editor. Students must complete their assignment sessions by submitting their work to be graded before the time and date specified in the assignment schedule.

You can also set time limits for assignment sessions. If there is a time limit set for the test in the assignment definition, a pop-up window warns students as they approach the time limit. They are not allowed to answer additional questions once they exceed the time limit; however, they can submit their work up to that point for grading.

Note: By default, the system does not establish a scheduled start or end time for assignments.

Set the Maximum Number of Attempts

You can easily set the maximum number of attempts allowed for an assignment by using the drop-down settings in Step 3 – Set Assignment Policies.



When you set a maximum here, students are allowed to have the assignment graded up to this maximum number of attempts. If they try to begin a new attempt at this assignment after they have exceeded this maximum, they receive a cautionary statement and are not allowed to proceed.

Step 4: Finishing and Saving an Assignment

Saving an assignment involves saving information in cached memory and in your class configuration. To accept and publish the assignment you have created or modified, click **Finish** in the Review & Finish tab.

Assignment 1			
Assignment Type:	Homework or quiz	Send email to:	No mailing set
Pass/Fail:	Not pass/fail	Time permitted:	No time limit
Display:	Show 1 question per page	Versioning:	Every version of the assignment asks the questions in the same order
Start:	No start time specified	End:	No ending time specified
Questions: Question Group 1: Question 1 Question 2 Question 3 Question Group 2: Question 1 Question 2			
Feedback: Show final grade and feedback on questions.			

- If you have scheduled it for immediate availability, your new assignment is available for students in the Student Menu.
- The system does *not* save partially completed assignments until you click **Finish** in the Review & Finish tab of the Assignment Editor. If you begin to create an assignment and then abandon it without clicking **Finish**, your additions and changes will be lost.

- If the server shuts down before you click the **Finish** button, your editing changes will be lost. When the server resumes, it will use the last saved version of your assignment data, and any unsaved changes you had made will be lost. To reduce the risk of this during long assignment editing sessions, you may want to periodically use the **Finish** button, then select your assignment from the main Assignment Editor list of assignments to start a new editing session.
- After clicking **Finish**, you are returned to the Assignment Editor list of assignments for your class, where your new assignment is displayed in the list of all class assignments. Additions or changes you have made during this session are also displayed.

Important: Clicking the **Finish** button saves your assignment in cached memory. To save changes made to the assignment and the class configuration, you must click the **Backup** button on the Assignment Editor Main Menu.

Shared Assignments: Saving Your Changes

When you complete changes (by clicking **Finish** in the **Review & Finish** tab) in a shared assignment and change the Assignment Name, your copy of the assignment automatically appears in the Assignment List of the Assignment Editor Main Menu. Your assignment appears under its new name at the top of the Assignment List. Note that the original assignment, inherited from the shared or template class, also appears in the list.

If you do not want the original assignment to appear, remove it from view.
In the Type of Assignment box of Set Policies tab, select the **Hide assignment from view** option.

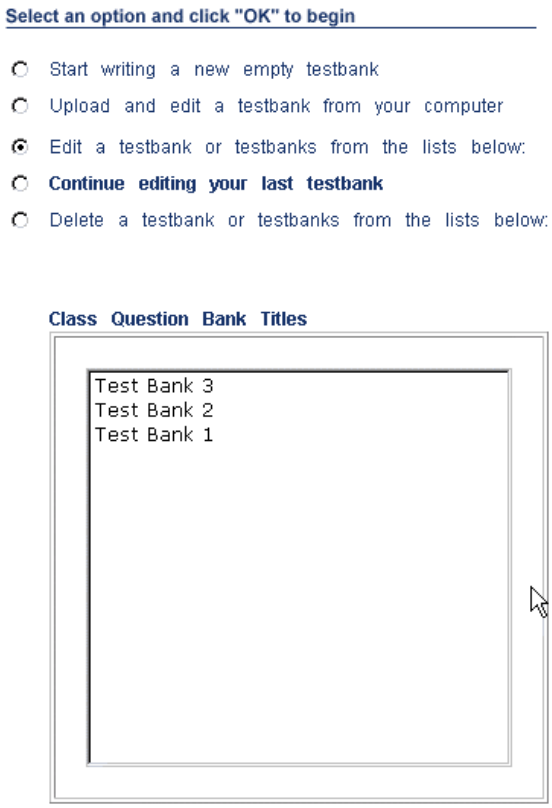
The Question Bank Editor

The Question Bank Editor (QBE) is the primary method to create and edit most types of questions in the system. Using the QBE you can include complex content like tables and other display formatting by using HTML in question files.

Navigating the Question Bank Editor

To open the Question Bank Editor:

1. From the Instructor Main Menu, click **Question Bank Editor**. The Question Bank Editor menu provides the following options.
   - Start a new question bank
   - Upload a question bank from your hard drive
   - Edit a question bank from the list of Class Question Bank Titles
   - Continue editing the question bank project you edited most recently
   - Delete a question bank from the list of Class Question Bank Titles



1. In the Question Bank Editor, you can:
   - Return to the Instructor Main Menu by using the **Home** button
   - Return to the previous screen by using the **Back** button
   - Exit your system session by using the **Exit** button

Using Topics

In a question bank, create topics and assign questions to topics in a logical, consistent manner.

- Topics appear in the left frame of the Question Bank Editor.
  - Topic one
  - Topic two
  - Topic three

  Select the right triangle icon to expand the corresponding topic folder and view its question contents.
- To define a new assignment in the Assignment Editor, you select a question bank and then questions from it. By providing accurate, descriptive topic names and a logical structure you can easily navigate question banks to find appropriate questions.

Previewing a Question

In the left frame of the Question Bank Editor, click the question name. The right frame displays the question, as it appears to the student. If the question includes hints or a worked solution, the system displays these below the question.
In Preview Mode, you can interact with the question as a student; for example, you can enter a response to the question in the input cells or use check boxes and radio buttons. To test the grading of the question, select **Grade**.

The appearance or behavior of the question may need to be edited. To change the definition of the question or to modify its elements (for example, comments or hints), click **Edit.**

Creating a New Question or Editing an Existing Question

To Create a Question:

Open an existing topic or create a new topic. The topic folder opens and displays the contained questions (by name) in the left panel.

1. Select **Add a question** to create a new question in a topic.
2. In the right panel, create the question. Follow the question-type specific instructions contained in the help files for each question type.

To Edit a Question:

1. Open an existing topic. The topic folder opens and displays the contained questions (by name) in the left panel.
2. Select an existing question by clicking its name in the left panel. The question loads in the right panel.
3. In the right panel, click the **Edit** button.
4. In the right panel, edit the question. You *cannot* change the question type. You can edit the:
   - Definition of the question
   - Question statement text
   - Answer
   - Other details as appropriate to the question type

Deleting Questions

To Delete a Question:

1. Open the topic from which you wish to delete the question. The topic folder opens and displays the contained questions (by name) in the left panel.
2. In the left panel, select **Delete** (located to the left of the appropriate question name). Confirm your choice.

Important: If you delete a question that is used in an assignment, the assignment generates an error when loading. The system informs the student to report the problem to the class instructor. You must use the Assignment Editor to delete the reference to the question (see Step 2 - Select Questions), and then save the assignment (see Step 4 - Review & Finish).

Duplicating Questions

To add a question that is similar to an existing question in the topic, you can save time by duplicating the existing question and then editing the copy.

To Duplicate a Question:

1. Open the topic in which you wish to duplicate a question. The topic folder opens and displays the contained questions (by name) in the left panel.
2. In the left panel, select **Copy** (located to the left of the source question name).
3. The system creates a copy of the question with the same name as the original, and adds the copy to the bottom of the list of questions for the topic. To view the duplicate question, click its name.

Redefining Question Types

In the Question Bank Editor, when creating a new question, you can change the question type any time *before* you click **Finish**. When you click **Finish**, the system adds the question to the question bank (but does not save the question bank to your hard drive or install the question bank on the Class Homepage).

To change the question type after you click **Finish**, you must edit the question source using the Edit Source facility, or save your question bank to your hard drive as a **`.qu`** plain-text source file and then edit the question in a text or HTML editor.

Important: It is not recommended that you change the question type for a finished question. If you introduce a syntax error when changing the question type, the question will be unusable.

Reorganizing the Order of Question Banks

You can use the **Move Up** and **Move Down** buttons to reorganize the sequence of the question banks listed in your class.

Revising Existing Question Banks

The question bank authoring process is iterative. In general, you will edit a question bank over many sessions. After a question bank is installed, you can use its questions in assignments. You can install later versions to update and expand the original question bank.

To retain a copy of the previous version of a question bank on your hard drive:

1. If open, save the revised version of the question bank to your hard drive.
2. From the Question Bank Editor main menu, select the previous version of the question bank. Click **OK**.
3. Save the previous version of the question bank to your hard drive.
4. From the Question Bank Composition menu, select **Start New** from the menu. Confirm opening a new question bank.

5. Upload the revised question bank.
6. Finish editing the revised question bank. Remember that the questions in the revised version will replace questions from the previous version in any existing assignments
7. Install the revised question bank, replacing the previous version.

Note: The system keeps a copy of every question bank version that you have installed. The system uses the most recent version when a student accesses an assignment, and records the version number. When you examine the details of an assignment, the system displays the questions that the student saw.

Testing the Grading of a Question

Preview the question.

1. Enter a response to the question (as if you were a student).
2. Click **Grade**.
3. The system grades the question and displays the result.
4. Click **OK** to return to the Display Question screen. If there is algorithmic variable data, the random values are regenerated when the question is redisplayed.
5. To check the form of the question with different algorithmic variable data values, in the left panel, click the question name repeatedly. Each time you click the name, the question is regenerated with new random values.

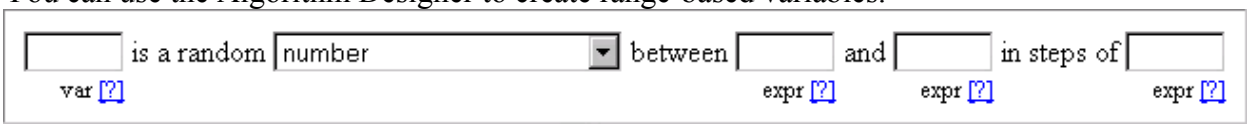
Using Algorithms: The Algorithm Designer

Use the Algorithm Designer to simplify adding algorithmic variables.

1. You can add any type of algorithmic statement. In the appropriate section of the Algorithm Designer, enter and select the required information in the template.
2. To add the statement to and refresh the values in the algorithm text box, click **OK**.
3. Repeat the above steps to add other statements.

Range-Based Variables

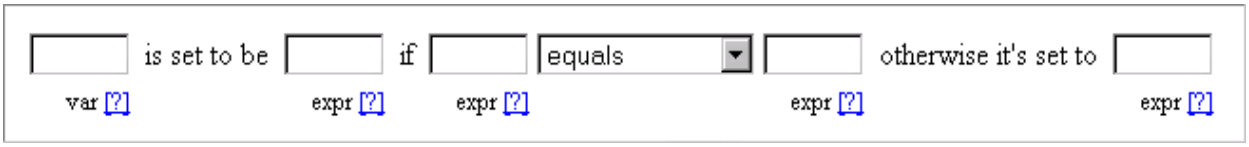
You can use the Algorithm Designer to create range-based variables.



1. Enter the variable name in the first cell. You do not need to use the **$** or **${}** notation.
2. Select the type of number to generate (whole number or decimal number generation with 1 to 8 decimal places).
3. Enter the minimum and maximum values for the range, and the increment (step).
4. To add the variable definition to the algorithm text box, click **OK**.
5. You can use the Algorithm Designer to generate multiple variables.

Condition-Based Variables

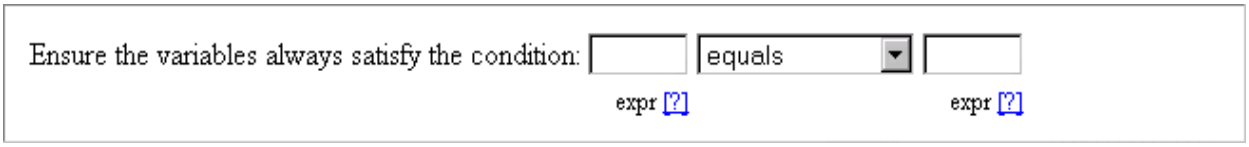
You can also set variable values based on conditions and relationships to other variables.



1. Enter the variable name in the first cell. You do not need to use the **$** or **${}** notation.
2. Enter the expression defining the variable if the condition *is* satisfied.
3. Enter the condition by:
   - Entering two expressions
   - Selecting the relation
4. Enter the expression defining the variable if the condition *is not* satisfied.
5. To add the variable definition to the algorithm text box, click **OK**.
6. You can use the Algorithm Designer to generate multiple variables.

Setting Conditions Between Variables

You can also use the Algorithm Designer to set conditions that must be met when the system generates variable values.



1. Enter the condition by:
   - Entering two expressions
   - Selecting the relation
2. To add the condition statement to the algorithm text box, click **OK**.
3. You can use the Algorithm Designer to define multiple condition statements.

Working with Question Banks

Starting a New Question Bank

At any time, in the Question Bank Editor, you can start a new question bank. Use one of the following two methods.

Method One

1. Click the **Home** button to return to the Instructor Main Menu.
2. Select **Question Bank Editor**.
3. Select **Start writing a new empty testbank.**

Method Two

1. From the Question Bank Editor main menu, click **Start New**.

The system displays a warning page that states:

> Are you sure you want to start a new question bank?
> Any unsaved changes to your previous testbank will be lost.

2. Confirm your choice to abandon your changes.

Opening a Saved Question Bank File

While editing a question bank, it is recommended that you back up your work on your hard drive. You can upload the saved question bank file (plain-text script file), and then continue editing or install it in your Class Homepage.

To open a question bank file that is saved on your hard drive:

1. From the Instructor Main Menu, select the **Question Bank Editor**.
2. From the Question Bank Editor menu, select **Upload and edit a testbank from your computer**.
3. Click the **Browse** button.
4. Navigate to the source file on your hard drive. Click **Open**.
5. Click **Load** to upload the question bank. The topics and questions of the uploaded question bank appear in the left panel.

Note: You can also *merge* the contents of a question bank file into another question bank file.

To Open an *Installed* Question Bank:

1. From the Instructor Main Menu, select the **Question Bank Editor**.
2. From the Question Bank Editor menu, select **Edit a testbank or testbanks from the lists below**.

What Happens when a Question Bank Is Loaded?

When you upload a question bank file into the system, it performs a set of validation routines to ensure that the questions will function. Occasionally you may encounter an error with a variable name or definition upon uploading. The following is a summary of the system's analysis of variables upon initial loading of a question bank file:

- For variables appearing in displayed within HTML text (e.g. in a question statement, in feedback, in hints, etc.), a problematic variable will not produce a data value generated from its definition, and instead its variable name is displayed, highlighted in red.
- For variables appearing in non-displayed field parameters (e.g. the answer to a question), the variables **$grade** and **$response** will default to 0. All others will simply have the variable name passed in.

Question Bank Versions

When you add or edit a question in an existing question bank and then *install* it using the same filename as the original, the system installs the updated question bank as a new *version* of the original, with a unique version number. It does not overwrite the previous version, which remains on the system.

When a student requests an assignment from the Class Homepage, the most recent version of the question bank is used to generate a new assignment. Upon completion, the system records the version number of the question bank that was used in each assignment session.

When you (or your students) use the Gradebook to view the details of a student's test, the system displays the test *as the student saw it, with the correct versions of questions and all algorithmically generated data*.

Installing a Question Bank

When working in the Question Bank Editor, the system does not save the changes to the Class Homepage until you click **Install Bank** from the Question Bank Editor main menu. After you install a question bank, it is available for assignment creation.

If you are reinstalling an updated version of a question bank, you can:

- Replace the previous version by using the same name. Assignments that reference the previous version are automatically edited to use the updated questions from the new version.
- Use a new name. Assignments that reference the previous version continue to use the previous versions of the questions. To use the new questions, create new assignments or edit old assignments to reference the updated question bank.

To Install a Question Bank that Has Been: opened and edited, uploaded, or created

1. If necessary, return to the Question Bank Editor main menu by clicking the **Back to Main** button.
2. Click **Install Bank**.
3. Enter a question bank name. (If this is an updated version of an existing question bank, consider the implications outlined above.)
4. If you are replacing a previously installed question bank, the system displays the message:

> A testbank with the title "TESTBANK TITLE", already exists. If you save your testbank under this title, any assignments that you have set up to use the testbank that's currently saved with this title will use the new testbank from now on. However records of assignments that students have already taken, will continue to show the questions from the old testbank. Click **OK** to continue, or **Cancel** to pick a different title.

To replace the superseded question bank with your new version, click **OK**.

Note: Saving a modified question bank with the same name as an inherited question bank from a shared parent class severs the relationship with the parent class version of the question bank. As a result, you will not automatically receive any changes made to the parent class version of the question bank. Click here for more information.

5. The system reports "Installation successfully completed."

Saving Work to Your Hard Drive

To save a copy of your question bank on the local hard drive on your computer as a script file (a text file which ends in a **`.qu`** extension):

1. From the Question Bank Editor main menu, click **Save Work**.
2. In the file download dialog box, select the file you want to to save to disk. Click **OK**. (The details of this process depend on your platform and Internet browser.)
3. In the Save As dialog box, specify a directory and filename. (It is recommended that you use a descriptive name instead of the default name **`testbank.qu`**) Click **Save**.

Why Save Your Question Banks to Files?

You may work on a question bank over several sessions. It is recommended that you save your question bank at the end of every session.

While working on a question bank, it is recommended that you regularly save it to a file on your computer. This reduces the amount of work you lose in the event of an unexpected shutdown of the server. Save the question bank after completing each topic, or more frequently if you are working on a topic with a large number of questions.

Important: Always save your question bank before you leave your computer *and* at the end of your editing sessions.

Saving to a File versus Reinstalling a Question Bank

Do not use the Install Bank feature to back up your question bank as you edit it. It is recommended that you use the Save Work feature to make backups and use Install Bank only after you are finished editing a question bank.

If you use Install Bank to make backups, there are side effects:

- The backup is used in assignments, including tests. The questions in the question bank replace older versions in current assignments. This is problematic if your questions are incomplete or incorrect.
- The backup is saved as an extra file on the server. Every time you use Install Bank, the system creates an additional copy of the question bank file on the server with a unique version number. In general, files are small (less than 100 KB), but if you frequently make backups (as is recommended), there will be many unused versions on the server. Because the system administrator cannot determine which versions have been accessed in student assignments, it is difficult to delete unused files.

Adding Topics

1. On the Question Bank Composition screen, click **Add Topic**.
2. Enter the new topic name. Click **OK**. The system adds the new topic below the pre-existing topics.

Whenever you add a topic, the system collapses any expanded topic and expands the new topic. To expand the previously expanded topic, click the triangle to the left of the topic name.

Note: You can have only one topic expanded at a time.

Deleting Topics

1. On the Question Bank Composition screen, expand the topic to be deleted.
2. Click the **Delete the topic** icon.
3. Confirm the deletion.

Important: Deleted topics, including the contained questions, cannot be recovered.

Importing Questions from Another Topic

When using a question bank that contains at least two topics, a tool for moving questions between topics is available. This editing tool is called Import From Another Topic.

To import questions from one topic to another:

1. On the Question Bank Composition screen, expand the destination topic folder (the topic into which you are importing).
2. Click the **Import from another topic** icon.
3. The system displays a list of the other topics in the question bank, with a radio button beside each topic. Select the radio button corresponding to the source topic (the topic from which you are importing). Click **OK**.
4. On the Details of Import screen, select questions by using one of the following methods.
    - Using a search string
        a. Enter the search string in the text field.
        b. Click **Select** to select the check boxes corresponding to questions that contain the specified text.
    - Direct selection
        c. Select the check boxes corresponding to questions.
5. Select the appropriate radio button (**Move questions** or **Copy questions**). **Move questions** deletes the questions from the source topic. **Copy questions** duplicates the question in the new topic.
6. Specify a prefix string for the imported question names. The default value is the source topic name.
7. To import the selected questions into the destination topic, click **OK**.

The system adds the imported questions at the bottom of the list of questions in the destination topic. You can reorder the questions.

Merging Question Banks

To merge two question banks, you must first save one of the question banks to your hard drive. The saved question bank is merged into the other.

To Merge:

Open a question bank in the Question Bank Editor, or upload a saved question bank file (`.qu`) from your hard drive. This is the question bank into which you will merge the other question bank.

1. Click **Upload**.
2. Click the **Browse** button.
3. Navigate to the source file on your hard drive. Click **Open**.
4. Click **Load** to upload the question bank. The topics of the uploaded question bank are appended to the list of pre-existing topics in the left panel.
5. Once the question banks have been merged, you can use **Move up** and **Move down** to reorganize the topics in the final question bank.

To backup the new question bank, click **Save Work** or **Install**.

Renaming Topics

1. On the Question Bank Composition screen, expand the topic to be renamed.
2. Click the **Rename the topic** icon.
3. Enter the new topic name. Click **OK**.

Reordering Topics in a Question Bank

To reorder topics in a question bank:

1. In the left panel of the Question Bank Editor, expand the topic to move by selecting the triangle ( ) button beside the topic name.
2. Use the *Move up* or *Move down* buttons to move the topic (including its questions) up or down one position in the sequence of topics. The system automatically renumbers the topics and questions in the question bank. If you save the question bank source file to your hard drive, the topic and question numbering matches your reordering.

Note: Your changes to a question bank are not saved until you *save* the question bank to your hard drive, or *install* it in your Class Homepage.

Reordering Questions in a Topic

You cannot reorder the questions in a topic directly. To reorder the questions in a topic, or order questions from multiple topics in a single topic of a question bank:

1. Create a new topic in the question bank.
2. Import the questions from the source topic(s) in the desired order.

Note: Your changes to a question bank are not saved until you *save* the question bank to your hard drive, or *install* it in your Class Homepage.

Uploading Images and Reference Files to the Class Homepage

1. From the Instructor Main Menu, select **System Tools**.
2. From the System Utilities menu, select **Web Site Editor**.
3. Navigate to the appropriate subfolder on the Web site or click the **new subfolder** icon to create a new subfolder.
4. Click the **upload file(s) to this point** icon.
5. To navigate to the file to upload, click **Browse**.
6. To upload a:
   - Single file:
     a. Select the **Single File** radio button.
     b. To specify a new name for the uploaded file on the Web site, enter it in the Save As text field. The default name is the filename on your computer.
     c. To upload the file, click **OK**.
   - Zip archive:
     d. Select the **Zip Archive** radio button.
     e. To extract the files from the selected Zip archive and upload them to the Web site, click **OK**. (This is the recommended method for uploading multiple files.) If the file is not a Zip archive, the system does *not* upload the file.
     f. The system returns to the Website Editor screen. The uploaded file(s) appear in the Website explorer.
7. To upload additional files, repeat steps 3 to 6.

Important: The maximum size of a file that can be uploaded is 5 MB.

Working with Questions

What Is a Question Bank?

MHHM works with databases of questions called "question banks." Question banks are organized into topics, which contain individual questions. You can use topics to organize questions, for example, to match the structure of your course. Topics can also indicate learning objectives, key topics, or other organizational schemes. Individual questions are defined according to the behavior you desire for presentation of the question and the student response mechanism, grading behavior, and other related characteristics like algorithmic variables, hints, feedback, etc. Using the questions in question banks, you can create assignments.

Types of Questions Available in the System

There are many different types of questions available in MHHM.

1. Multiple Choice (permuting and non-permuting)
2. Multiple Selection (permuting and non-permuting)
3. True/False (non-permuting)
4. Clickable Image
5. Matching
6. Ungraded Essay

7. Graded Free Response (or Fill-in-the-blank) - 4 varieties
8. Key Word or Phrase
9. Short Phrase
10. Mathematical & Scientific Free Response Question Types
    (14 varieties including various forms of symbolic formula questions, numeric questions, and mixed varieties)
11. Inline Questions (covered in detail in the section "Creating and Editing Inline Questions")
12. Multipart Questions (consisting of parts that are of any question type; can be nested)
13. Questions using a programmable palette of symbols for the entry of student responses (useful for Chemistry)
14. Questions with Applet, Shockwave, or Flash interaction
15. Questions using Web references / objects (including plots)

Note: A powerful and important question type is the Inline Question, which is covered in detail in the later section "Creating and Editing Inline Questions."

Rules for Grading Free Response Questions

By default, text-based free response question types—including List Questions, Blanks Questions, and Short Phrase questions—apply standard rules when grading student responses. Default grading behavior applies the Relaxed style of grader.

Relaxed Grader Rules

The process for evaluating student responses against the correct *answer* is as follows. With the student response *and* correct answer:

- Change upper-case Roman letters to lower-case Roman letters.
- Remove punctuation characters.
- Do not change lower-case Roman letters or numbers (0 - 9).
- Replace all other characters with the ASCII space character.
- Convert strings of spaces to a single space character.
- Compare the modified student response to the **answer** field string indicated in the question. Spaces in the response must correspond to spaces in the **answer** value.

For example, if the **answer** field value is **`"Abraham Lincoln"`**, then the following responses are graded correct.

- **`"Abraham Lincoln"`**
- **`"abraham lincoln"`**
- **`"a-braham L'incoln"`**

However

- **`"A b r a h a m L i n c o l n"`**

is incorrect (as is **`"Barney"`**, of course).

Exact Grader Rules

The optional Exact Grader style that can be specified in List Questions and Blanks Questions modifies the above rules to recognize and enforce capitalization, punctuation, and other characters but still applies the above algorithm for handling spaces.

Again, assuming the answer field value is "Abraham Lincoln", then the following answers are graded as correct:

- **`"Abraham Lincoln"`**

However,

- **`"aBraHam LincoLn" or "abraham lincoln" or "a-braham L'incoln"`**

will be graded as incorrect.

Palette Grader Rules

The Palette Question type is intended for use in Chemistry content areas, and applies a modified Exact Grader designed to recognize and enforce superscripts and subscripts as well as the order of certain super- and subscript operators.

Math Grader Rules

Each of the Formula question varieties, as well as the Numeric question type apply question-specific grading rules, and support methods for setting margin of error and tolerance, and equivalent unit dimensions at the level of the question.

Question Bank File Structure

Questions are stored with embedded HTML and MathML tags, in a text file called a *question bank* (**`.qu`** plain-text script file) that consists of a list of topics. In each topic is a list of questions.

Special Characters in Questions

The system supports the use of text, HTML, and MathML for the display of special characters and formatting in the following question fields.

- **topic**
- **name**
- **question**
- **choice**
- **hint**
- **solution**
- **comment**

For maximum compatibility, use only character tags from the HTML 4.0 specification. MathML tags are recommended for special scientific characters like the following.

- Algebraic symbols
- Greek letters (and other variable labels)
- Equation elements, including operators and arrows

The system uses a cross-platform MathML rendering technology to ensure that special characters rendered in MathML appear consistently on W3C®-compliant browsers.

To generate MathML tags that encode a specific character, use one of the following authoring methods.

- LaTeX Authoring

- MathType™ Version 5
- Symbolic Math Expression Editor

For other special characters (for example, non-English characters) you can use any acceptable HTML tags, employing the unicode expression for the character. Note that some platforms and browsers that are non-standard do not map unicode HTML expressions correctly, so results can be unpredictable. Therefore, it is recommended that you use MathML tags for all math and science content.

Information Fields

The **info** field allows you to add information subfields to a question to indicate subtopic, learning objective, level of difficulty, authorship, ownership, or other information.

The **info** field values:

- Allow sorting and filtering during assignment creation
- Facilitate performance reporting by information field category (for example, assignment results by learning objective)

The *name* Field: Using Question Descriptions

The **name** field is not required. However, it is recommended that you provide a description for each question. A descriptive title will help you identify individual questions from lists of questions shown in the Question Bank Editor and the Assignment Editor. The **name** field accepts HTML formatting.

Topic Structure within Question Banks

Each question bank consists of topics, with questions organized by topic. Questions consist of a series of related statements, all containing the same prefix indicating the topic and question numbers.

- Topics must be numbered in ascending order, starting at 1.
- Questions and topics must be numbered consecutively.

Creating and Editing Inline Questions

You can edit the textbook-based questions provided with MHHM, and you can also create your own multipart questions, called "Inline Questions," and add them to the existing question banks. To create or edit Inline Questions containing any number of response "blanks," you use a tool called the Visual Editor to author the question (including the answers), then specify the location of the answer blanks and apply grading behaviors formatting, and more.

Inline Questions provide a powerful and very flexible question container that can hold one or more Student Response Objects (SROs). SROs are graded answer regions—what you might consider "answer blanks" in a paper test. Multiple SROs with a variety of grading behaviors can be combined in a question, and SROs can appear anywhere within the question statement, or following the question (for a more traditional presentation). Because SROs (graded blanks) can be placed anywhere within the formatted HTML that defines the

question, Inline Questions can present graded cells inside tables, formatted text, bulleted lists, and can also include embedded images or media objects.

The Visual Editor tool launches automatically when you choose **Inline** from the Question Type drop-down box within the Question Bank Editor.

This section will cover the entire process of creating Inline Questions, starting with an introduction to the tool you'll use—the Visual Editor.

The Visual Editor

The Visual Editor provides you with an authoring environment as familiar as your word processor. Use the Visual Editor to create the text in your Inline Question, including the correct answers, wherever they should appear. You can apply character formats like boldface, italic, or underlining using toolbar buttons, menu commands, or familiar control-key combinations. When you are satisfied with the appearance of the question, you define the areas where you'd like to insert Student Reponse Objects, then apply grading and other behaviors in the SRO behavior fields at the bottom of the editor window.

More detailed information on SROs, how you create them, and the properties and behaviors you can apply to them, is given under the heading "SROs: Question Types, Behaviors, and Properties," later in this section.

Features of the Visual Editor

Inline Questions authored in the Visual Editor can contain:

- Any number of SROs. You can combine different types of student response objects in a single question. In this way, parts of your question can require text, numeric, or formula free-response answers while other parts require multiple choice, multiple selection, or even essay answers—all in a single MHHM question.
- Any standard HTML elements. You can include character formatting, HTML tables, even embedded images and media objects.
- Any number of MHHM algorithmic variables and inline math expressions, as required.

Alternatively, you can write your questions in an HTML editor of your choice and upload the files into the Visual Editor. Once imported, you can create and define properties for your SROs. See the later section "Uploading and Importing HTML Files" for more information.

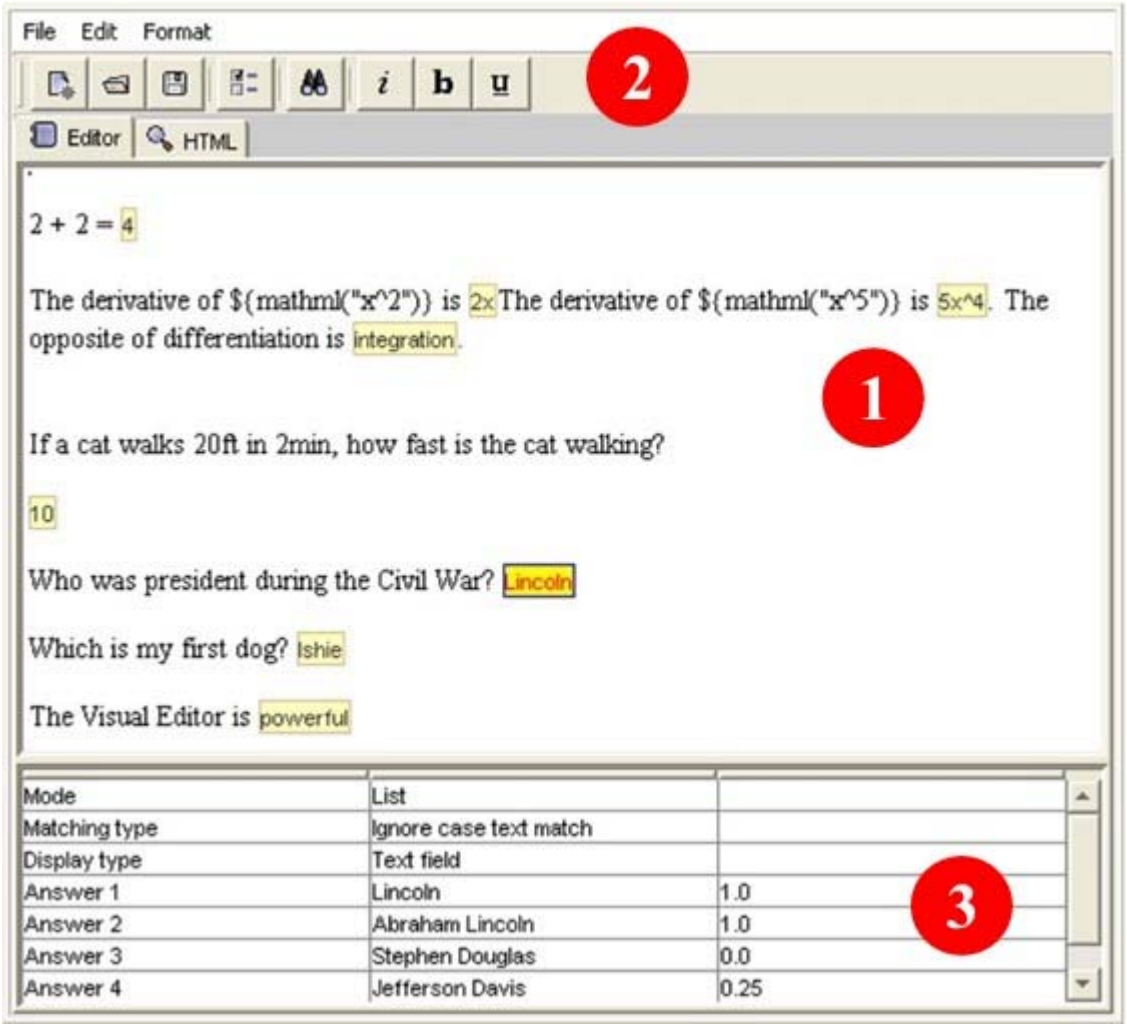
Getting Started with the Visual Editor

The Visual Editor tool launches automatically when you choose **Inline** from the Question Type drop-down box within the Question Bank Editor.

Using the Visual Editor, begin by typing the text of your question statement and answer in the Editor view. Next, apply character formatting like boldface, italic, or underlining using toolbar buttons, menu commands, or familiar control-key combinations. Your questions can contain any standard HTML elements, including character formatting, tables, even embedded images and media objects. In addition, you can insert MHHM algorithmic variables and inline math expressions, as required.

Understanding the Visual Editor Window

Inline Questions are written using the Visual Editor, which is the editing window that appears when you select the **Edit** button for an Inline Questions (see illustration below). The Visual Editor contains two views of your question: The first is a WYSIWYG (What You See Is What You Get) editor view, shown in Region 1 of the illustration and accessed through the Editor tab. The second is an HTML editor view, which is accessed through the HTML tab, for editing the HTML source code for the question (not shown).



At the top of the Visual Editor Window is the command menu and toolbar, including the unique **Make SRO** button and menu option that is used to activate the SROs defined in your question. This is shown in Region 2 of the illustration.

At the bottom of the Visual Editor Window is the SRO Properties Panel, which allows you to define the SRO mode, grading behaviors, display behaviors, and correct answers. You can define additional behaviors according to the individual question mode selected. See Region 3 of the illustration.

Authoring Inline Questions

The basic steps for creating Inline Questions are as follows. More information on key parts of these steps are given in the sections that follow.

1. Choose **Inline** from the Question Type box.
2. Write questions in the Visual Editor.
3. Format the text as desired.
4. Highlight the word or words that define the answer to your question.
5. Use the **Make SRO** button or menu command to activate the selected answers.
6. Define the SRO properties in the panel at the bottom of the editor window. Define the behaviors for each response cell:
    - Choose the type of question
    - Configure the grader to be applied
    - Define multiple correct, incorrect, or partially correct responses
    - Set question presentation styles
7. Repeat this process for other SROs within your question item.

SROs: Question Types, Behaviors, and Properties

Inline Questions can hold one or more SROs (Student Response Objects). For each SRO, you define the question mode, display style, grading behaviors, and correct (and incorrect) answers using the SRO Properties panel at the bottom of the Visual Editor window. SROs can appear anywhere within your question.

Question Types Supported in Inline Questions

The following question types (or modes) are available in Inline Questions. Each mode is discussed in further detail in "Setting Mode-Specific Properties," available in the Help files within the MHHM system.

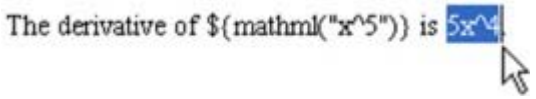
- **List Questions (Fill-in-the-blank)** List question SROs are used to define text-based response objects (fill-in-the-blank questions), and use a string-matching algorithm for grading. They can be defined to include multiple correct, incorrect, or partially correct responses.
- **Mathematical Formula Free Response** Formula question SROs provide full access to all the formula mode math grading behaviors, including configurable grading of equivalent symbolic algebraic and equation expressions.

- **Numeric Free Response** Numeric question SROs can be defined to require a number and a unit dimension or just a number as their answer. Grading tolerance and answer precision can be set by using one of four methods, covered in detail in the online Help files.
- **Multiple Choice and Multiple Selection** Multiple choice (one answer) and multiple selection (more than one answer) question SROs can be defined as either permuting (choices are shuffled) or non-permuting (order of choices is fixed as authored). In Inline Questions, these SROs are presented with the answer choices displayed horizontally.
- **Essay (Ungraded)** Essay question SROs can be defined anywhere; simply specify the size of the response box in rows and columns.

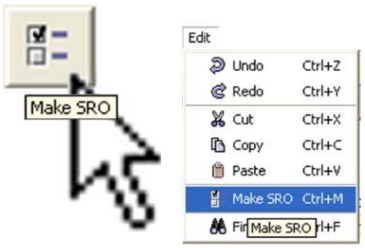
Make SRO

SROs are the areas of your question that hold the answer definitions. Within the Visual Editor, use the **Make SRO** button, menu command, or control-key combination (Ctrl-M) to activate and define SROs in your question.

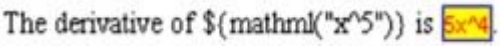
1. Define answer regions by highlighting the word or words that will become the "answer" to your question.



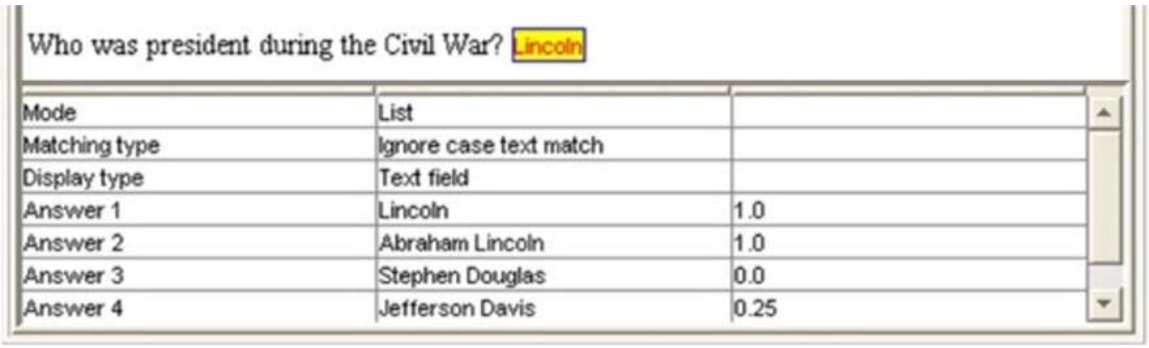
2. Next, use the **Make SRO** button to activate the highlighted region. You can also use **Edit-Make SRO** or **Ctrl-M** to activate highlighted regions as SROs.



3. When you have activated an SRO, the highlighted word or words you selected are set in red type, on yellow background.



4. After activating the selected text, go to the SRO Properties panel and select a question mode. Set SRO properties according to the mode you select. Next, define the SRO properties using the panel at the bottom of the Visual Editor window. The example shown above is a mathematical formula SRO, so we can select any of the system's formula graders by setting the Sub Mode. (Other types of SRO modes have other behaviors and options that can be set in the SRO Properties panel, as shown in the example below.)



5. When you have finished highlighting, activating, and defining the SROs in your question, choose **Finish** to save your edits and complete the question. When you finish the question, the Visual Editor automatically translates your work into a question definition that becomes part of your question bank. The finished question can be previewed in the Question Preview window.

SRO Properties Panel

To create a Student Response Object, first highlight the answer region, activate the SRO (using the **Make SRO** button or command), and then choose the question mode, define grading behaviors, set display styles, and configure answers and credit by setting the mode-specific field values in the SRO Properties panel.

When you define and activate a new SRO, the highlighted text is automatically captured in the answer definition field displayed in SRO Properties. If you examine the HTML tab for an Inline Question, you will notice that the SRO definition process creates Java objects that encapsulate the behaviors and the answer(s) set in the SRO Properties panel at the bottom of the editor window.

Inside your question, activated SROs appear as blocks of highlighted red text on a yellow background. When you point and click on the SRO, its properties appear in the SRO Properties panel automatically. You can set up or change SRO properties by clicking inside a properties field and changing the settings. Choose **Finish** to save your changes.

Visual Editor Formatting Tips

The Visual Editor makes it easy to apply formatting to your questions in many of the same ways you do with your word processor. There are a few limitations and requirements unique to the Visual Editor. These tips are offered to help you achieve the best results.

WYSIWYG Display in the Editor

What you see *may not* be quite what you get. Due to limitations of the Visual Editor's Java applet environment, the WYSIWYG question view in the editor is not always identical to the view of your question you will see in your browser window. In our testing, we have noted differences in the appearance of fonts of various sizes, and in the presentation of tables in the editor. Typically you can make adjustments by using the **Finish** button to save your edits, then viewing your question in the Question Preview window. Tweaks are then an iterative process. As with other web content, you may also observe differences in the display of your question between different operating systems and browsers.

Character Formatting

- Use the menu commands, toolbar buttons, or control-key combinations to apply character formatting.
- To undo character formatting once applied, you must use the HTML tab, find the text, and delete the tags surrounding it. (Toggling of character formatting using the toolbar buttons is coming soon.)

Math Expressions in Questions

- Insert inline MathML expressions using the `${mathml("expression")}` tag structure.
- Alternatively, you can edit the HTML of the question directly by using the HTML tab in the Visual Editor window, inserting MathML expressions directly into the question's HTML. If you use this approach, you'll see that the editor does not display your MathML expression inside the WYSIWYG view, but the expression itself is intact and appears correctly when you use **Finish** to save your edits.

Algorithmic Variables in Questions

- Insert variables by typing their name. Be sure to use the required "$" at the beginning of the variable name: `$variable`.

Displaying the $ Sign and the @ Symbol in Questions

- Insert the "$" sign by using the escape sequence "\\", as follows: `\\$`.
- Insert the "@" symbol by using the escape sequence "\\" as follows: `\\@`.

Additional Detailed Information

The MHHM online Help files contain additional information about the following topics:

- Visual Editor menu items and command keys
- The Visual Editor toolbar
- Uploading files from your PC to the system
- Downloading and saving files created in the Visual Editor
- Configuring Java Security Settings for full functionality of the Visual Editor

The Gradebook

The Gradebook has four primary functions.

- Viewing, analyzing, or reporting scores and statistics for students, assignments, and question items
- Reviewing student results for specific graded sessions
- Exporting grades to a third party gradebook or Excel file
- Administrative tasks, for example, changing passwords, managing rosters, and sending messages to students

Viewing Scores and Generating Reports

For assignments that require students to log in in order to complete and grade their work, the system automatically stores the session scores in the Gradebook. The Gradebook stores a variety of information for each student, such as the assignment start time, the time spent on the assignment, and the individual assignment question performance.

Use the Gradebook to create reports organized by student, by assignment, or by question item. View the reports online or download them to use offline in programs like Excel.

Creating Gradebook Reports

Reports are based on the data gathered by the system during student sessions, including statistical analysis of student and class performance. You start creating a report by selecting what information you want to include. The Gradebook makes it easy to get to the level of detail you need.

For example, you can begin with a report listing all student results on an assignment and click a student's name to display only that student's data. From the student record, you can then change a grade or view the student's answers for each question on an assignment.

You can download any Gradebook report to Excel, comma-delimited, or tab-delimited formats. In addition, you can use the Gradebook to manage student records, such as changing student passwords or uploading class rosters.

The Gradebook provides three different views of assignment data: by student, by assignment, and by assignment item or question. These views correspond to the first three tabs in the Gradebook.

- To view a list of students and their grades, click **Student Statistics**.
- To view summary statistics for each assignment, click **Assignment Statistics**.
- To view summary statistics for each question on an assignment, click **Item Statistics**.

Setting Assignment Weighting

After you generate your assignment grade report, you can set weighting for each assignment with respect to the cumulative grade for the class. Click the **% Weight** link to access the table of relative weightings for all assignments. From here you can set the appropriate relative assignment weights.

Note: The system notifies you if your total assignment weightings sum to more than 100%.

Steps to Create a Basic Gradebook Report

The Gradebook provides three different views of assignment data:

- To view a list of students and their grades, click **Student Statistics.**
- To view summary statistics for each assignment, click **Assignment Statistics**.
- To view summary statistics for each question on an assignment, click **Item Statistics**.

Generating Reports

To generate a report in the Gradebook:

1. Select the assignment(s) you want to include in the report.
    - To include more than one assignment, press the **CTRL** key and click the assignments you want.
    - To include all assignments, click **Select all**.
2. Select the data to include in the report.
3. Select **Printer-Friendly Table** to display the report in a separate window. Otherwise, the report displays below the **Get Report** button.
4. Click **Get Report**.

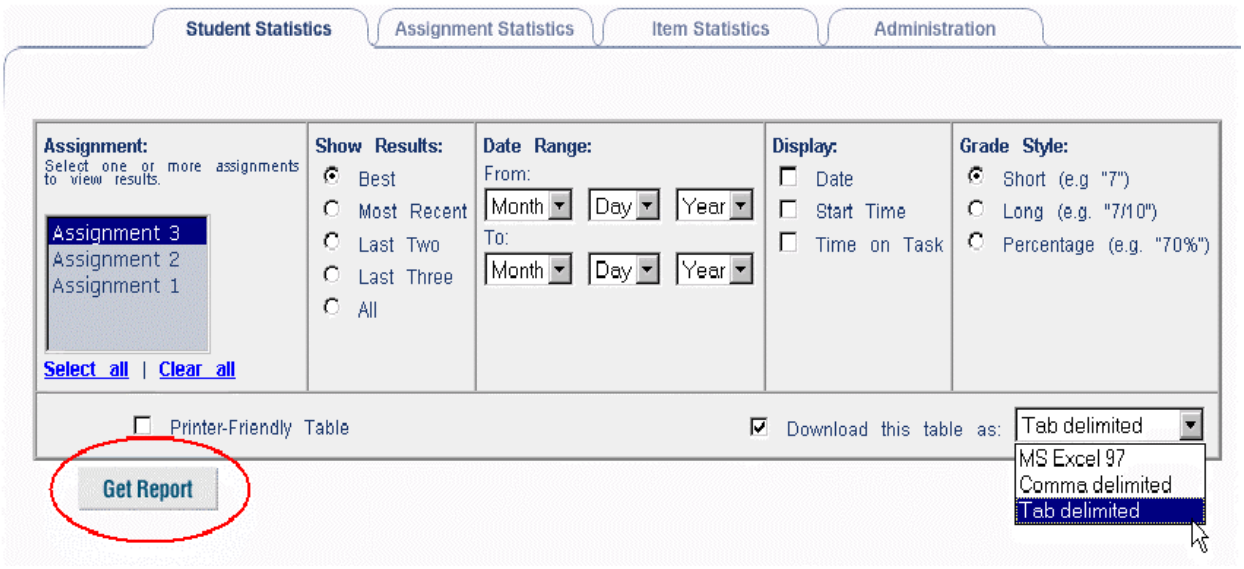
Setting Assignment Weighting

After you generate your assignment grade report, you can set weighting for each assignment with respect to the cumulative grade for the class.

1. Generate your assignment grade report by following the steps above for Generating Reports.
2. Click the **% Weight** link to access the weighting table for all assignments.
3. Set the appropriate relative assignment weights.
4. Click **OK**.

Exporting Reports and Performance Data

You can export data for any report you generate in the Gradebook. Exported performance data files can be opened in a variety of applications (for example, Excel and Word). The system can produce Excel 97, comma delimited, and tab delimited files that are easily imported into many third-party gradebook programs.



To export data:

1. From the Instructor Main Menu, select **Gradebook**.
2. Click the appropriate tab in the Gradebook that displays the data you want to export.
3. Set the options for your report.
4. Select the **Download** check box, then select your target file format.
5. Click **Get Report**.
6. Follow your browser's instructions for saving files.

All three file formats can be displayed in Excel. If you are using an application other than Excel, check which format you should select to display the data.

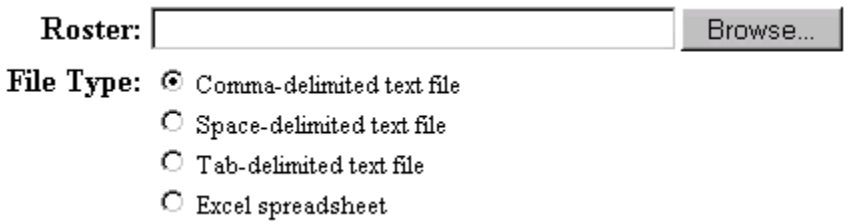
Class Administration

Changing Student Information

The Gradebook Administration tab displays a list of all students registered in the course, including their names and logins. You can edit student information for individual students.

Class Rosters

Before the Gradebook can begin tracking student performance, it must have a student roster. Your class roster will automatically be created by the system when your students register themselves for your course.



Deleting Student Records

To Delete One or More Student Records:

1. From the Instructor Main Menu, select **Gradebook**.
2. Click the Administration tab.
3. Select the check box by the student(s) whose records you want to delete. If you want to delete all the student records, select **Select all students**.
4. Click **Delete**.
5. Click **OK** on the message dialog.
6. The student's record is deleted from the Gradebook.

Important: The program does not delete the records permanently. It removes them from the list in the Administration tab. You can restore the records at any time by using the **Undo Delete and Merge** option, and the system will automatically restore the record for a student if the student signs in for a test.

Merging Student Records

If you have two student records for the same individual, you can merge them into a single record. No grade data will be lost. If necessary, you can *undo* the merge and separate the records.

To Merge Records:

1. From the Instructor Main Menu, select **Gradebook**.
2. Click the Administration tab.
3. Select the records you want to merge by selecting the check boxes beside the student names.
4. Click **Merge**.
5. Click the radio button by the record you want to maintain, and click **OK**. The record you do *not* select will be merged into the one that is selected.
6. The list of student records displays on the Administration tab without the merged record.

Important: The program does not delete the other records when you merge them with the selected record, but simply removes them from the list in the Administration tab. You can separate the records by using the **Undo Delete and Merge** option. The program will automatically separate them if the student signs in for an assignment with one of the merged login names. The system was not designed to move students from one class to another. It cannot be guaranteed that a student's old assignments will be maintained if this is attempted.

Undoing Merge or Deletion of Student Records

When you merge or delete records, the program does not delete the records permanently. It removes them from the displayed student list. You can restore the records at any time.

To Restore Records:

1. From the Instructor Main Menu, select **Gradebook**.
2. Click the Administration tab.
3. Click **Undo Delete and Merge**.
4. The program lists the deleted and merged records. Using the check boxes, select the records you want to restore.
5. Click **OK**.
6. The restored records are displayed in the list of students on the Administration tab.

Sending Messages to Students

You may want to make a class announcement about an assignment or communicate directly with a student about some assignment-related issue. MHHM allows you to send inter-system messages for these purposes.

Note: The inter-system messaging provided is not a full-featured Internet email program, so its functionality is limited but effective for specific system-related communications.

System Tools

Several utilities are available by selecting **System Tools** from the Instructor Main Menu. Using these tools, you can:

- Register and manage proctors for your course
- Manage System Administrator messages
- Change your class password
- Share your assignments and question banks with other instructors
- Work with files on your Class Homepage
- Work with Course Modules containing complete, installable packages of question banks, assignments, and question resources
- Download browser plug-ins that are required or recommended for more effective use of the system

Working with Proctors in Your Class

You can add a proctor to your class to ensure security in exam settings. Proctors can log in to their own account from your Class Homepage to perform their duties. The benefit of using a single proctor login is that the proctors only need to enter their password one time and do not need to type the password in front of students.

When a student attempts a test that is proctored, an Authorize screen is displayed. This screen indicates that the student requires authorization. Typically, a proctor is physically present in the same computer lab during testing sessions. For convenience, when notified by the student, proctors can authorize a student exam session from their own work station using the Proctor Tools screen, and then inform the student.

Inbox

System Administrator Messages to Instructors

The Inbox tool in the System Utilities screen *displays* messages from the System Administrator to the Instructor.

- You can read or delete these messages.
- You *cannot* send messages from the Inbox tool.

To send messages to students, see "Sending Messages to Students," earlier in this document.

Using Your Inbox

The System Administrator can send internal messages to the Instructor for each class. Email messages are listed in the System Utilities Inbox screen. You can read and delete messages from this list.

To View the List of Instructor Messages Sent by the System Administrator:

1. From the Instructor Main Menu, click **System Tools**. The System Utilities screen opens.
2. Click **Inbox**. The System Utilities Inbox screen opens.
3. Click the messages to read their contents.

Note: You do not have to use this option to see if you have received new messages. The system informs you of new messages as soon as they arrive if you are currently logged into the system, or at the start of your next login session.

Changing Your Instructor Password

To Change Your Instructor Password:

1. In the System Utilities screen, select **New Password**. The System Utilities Change Password screen opens.
2. Enter your old password.
3. Enter the new password twice for verification.

The Class Website Editor

In conjunction with your Class Homepage, your class also has a Website folder on the system that you can use to store images and other resource material used in your question banks. To work with files on your Class Homepage, select **Website Editor** from the System Tools main menu.

The Website Editor provides a list of the contents of the Website and gives you options for uploading, organizing, and deleting files.

When you have finished your work with resource files on your Class Homepage, click the **Home** button to return to the Instructor Main Menu.

In the Website Editor, you can:

- Reference resource files at your Class Homepage in questions
- Upload individual files
- Upload multiple files
- Work with subfolders
- View or delete files

Note: Your Class Homepage is also accessible directly from the Question Bank Editor when you author a Clickable Image question.

Shared Classes: Overview

Using the Share Class option from the main System Utilities menu, you can share your question banks, resources, and assignments with other instructors. Class sharing is an ideal way to manage multiple class sections of a large course using common question banks and assignments, ranging from practice sessions to exams. Shared classes can also contain unique question banks and assignments that are not part of the parent class.

Question banks and assignments inherited from a parent class are always identified in lists by the icon, which appears beside the assignments and question banks.

Shared Class Behaviors

- Changes, additions, and deletions made to question banks and assignments in the parent class are *automatically* distributed to child classes.
- If you edit a question bank that you inherited from a parent class, your changes populate any assignments *in your class* that use the edited questions; however, *you must save your question bank with a unique name* (using the Install option in the Question Bank Editor).
- If you edit an assignment that you inherited from the parent class, your changes are reflected in the assignment sessions taken by students in your class immediately after you save your changes.

Important: If you have not modified the inherited versions of your question banks, changes to question banks or assignments in the parent class automatically overwrite the copies of the content banks or assignments with the same name in child classes. Consequently, you are strongly encouraged save your edited copies of these materials using a unique name, or you will not receive automatic updates to inherited content from the parent class.

Course Modules

The system's Course Modules tools provide a way to share your class content with others, including related assignments and any Web resources (e.g., images) used by your questions and assignments.

- When you create a Course Module, the system packages the class elements you have identified, producing a single, installable Zip file that can be archived or

redistributed to other users of the system. Those users can have classes on the same server or on other MHHM servers.

- It is an ideal method for content management of entire classes full of related question banks, assignments, and Web references, and allows you to include all or only specific parts of those classes in the Course Module package.
- Using Course Modules is similar to the Share Class capability in that it allows you to share your class content, however once a Course Module is distributed and installed in a new class location, it does not maintain any synchronization with the original source class or its materials.
- Course Modules ensure transportability of content from one class to another, archiving of entire class contents, and even portability of entire classes from one MHHM server to another.
- When you create a Course Module, the Web reference URLs inside your question banks are converted to a portable format, so that when you install the Course Module in a new class, these can be set to the Class Homepage URL of that class—automatically, by the system as part of the installation process.

Creating a Course Module

To Create a New Course Module

1. Go to System Tools - Course Modules and click the **Create** button.
2. You will see a table displaying all the question banks, assignments, and Web folders holding resources (e.g. image files) for your class. Select the course components that you want to include in your new Course Module.
    - You may highlight multiple items in a list using SHIFT-click (for contiguous selections) or CTRL-click (for multiple individual selections).
    - Use the button to add your selections to the list of included elements for your new Course Module.
    - You may include any combination of question banks, assignments and Web folders in your selected list.
    - To select Web resources (e.g., images and other files that are referenced by your question banks and assignments), you must select the folder in which individual resources reside. You may select any folder or subfolder from your Class Homepage, but note that only the contents of that folder (no subfolders) will be included in your selection, so if you wish to select subfolders as well you must do so individually.
3. When you are satisfied that the list on the right contains all the elements you wish to include in your new course module, click **OK**.
4. On the next screen, you must specify a name for your course module. Optionally, you can enter descriptions for each course component. You can also select descriptive names for any Web folders you have selected. Question bank and assignment names cannot be changed.
5. Choose **OK** to create your Course Module according to the specifications you have indicated. You return to the Course Modules Main Menu, and your new Course

Module has been added to the bottom of the list of installed course modules for your class.

Note: Click **Cancel** at any time to return to the Course Modules Main Menu.

Browser Tuneup

You can download packages to make your browser more efficient.

1. From the Instructor Main Menu, click **System Tools**.
2. The Main Menu System Utilities screen opens.
3. Click **Browser Tuneup**.
4. A WebEQ Browser Controls Installation window opens.
5. Follow the instructions displayed in the window, or click **No Thanks** to close the window.