

Computer Project Exercises

In developing the exercises, trade-offs had to be made to enrich the learning experience. One of the major problems students initially encounter is data and detail overload. This reduces their ability to identify project and data problems and to compare alternatives. Although the project found in the exercises is real, it has been reduced and detail has been eliminated many times to concentrate on applying project management principles and understanding linkages. In addition, other simplifying assumptions have been made so that students and instructors can trace problems and discuss outcomes. These assumptions detract from reality, but they keep the focus on the objectives of the exercises and reduce student frustration with software intricacies. Moving from these exercises to real projects is primarily one of increasing detail. The simplifying assumptions are given below (make sure they are included in “default,” “preferences,” and/or “options” sections of the software used):

The POM+ Project*

Big Kola Company has been concerned that specialized fruit drinks have been eroding their cola market. The CEO mandates that “If you can’t beat them, join them.” Grape juice was the first product that was successful after an advertising blitz claiming the antitoxin benefits. Lately, competition is compressing grape juice margins and profits. Months of additional market surveys and focus groups have resulted in three potential high-margin drinks: cranberry, blueberry, and pomegranate. All these choices represent antitoxins. The decision is to produce the pomegranate drink that has many health claims. For example, the relative ability of these juices to eliminate harmful free radicals (antitoxins) is 71 percent for pomegranate, 33 percent for blueberry, and 20 percent for cranberry (Technion Institute of Technology). The market potential appears very attractive and should have a higher profit margin than the other potential juice products. Another appeal for pomegranate juice is its familiarity in the Middle East and Asia.

The Priority Matrix for the POM+ Project is:

	Time	Scope	Cost
Constrain			X
Enhance		X	
Accept	X		

* Cliff Gray, Erik Larson, & Pinyarat Sirisomboonsuk, doctoral candidate at Rawls College of Business, Texas Tech University.

Connor Gage, the project manager, has formed his project team and the members have come up with the following work breakdown structure.

- 1.0 POM+Project
 - 1.1 R&D product development
 - 1.1.1 Need survey
 - 1.1.2 Set product specs
 - 1.1.3 Shelf life report
 - 1.1.4 Nutrition report
 - 1.2 Secure fruit suppliers
 - 1.3 Initial Production
 - 1.3.1 Equipment rehab
 - 1.3.2 Production trials
 - 1.3.3 Quality trials
 - 1.3.4 Quality metrics
 - 1.3.5 Quality training
 - 1.4 Distribution
 - 1.4.1 Market testing
 - 1.4.2 Package design
 - 1.4.3 Select distributors
 - 1.5 Legal
 - 1.5.1 Complete FDA certification
 - 1.5.2 Register trademark
 - 1.6 Prepare product launch

Part 1

1. Develop the WBS outline using the software available (save your file).
2. Use this file and the information provided below to create a project schedule.
3. The following holidays are observed: January 1, Martin Luther King Day (third Monday in January), Memorial Day (last Monday in May), July 4th, Labor Day (first Monday in September), Thanksgiving Day (4th Thursday in November), December 25 and 26.
4. If a holiday falls on a Saturday then Friday will be given as an extra day off, and if it falls on a Sunday then Monday will be given off.
5. The project team works eight-hour days, Monday through Friday.
6. The project will begin on January 3, 2012.
7. Based on this schedule, submit a memo that answers the following questions:
 - a. When is the project estimated to be completed? How many working days will it take?
 - b. What is the critical path?
 - c. Which activity has the most total slack?
 - d. How sensitive is this network?
 - e. Identify two sensible milestones and explain your choice.

Include the following (one page) printouts:

- A Gantt chart.
- A network diagram highlighting the critical path.
- A schedule table reporting ES, LS, EF, LF, and slack for each activity.

Hints: Change the timescale to months and weeks. The estimated duration of the project is 135 days.

Remember: Save your files for future exercises!

The following information has been derived from the WBS. *Note* that the activity number is what appears in the software with the complete WBS entered.

#*	Activity	Duration	Predecessor(s)
3	Need survey	20	None
4	Set product specs	15	3
5	Shelf life report	10	4
6	Nutrition report	5	4
7	Select fruit suppliers	20	5, 6
9	Equipment rehab	30	4
10	Production trials	15	7, 9
11	Quality trials	20	10
12	Quality metrics	5	11
13	Quality training	15	12
15	Market testing	30	5, 6
16	Package design	15	15
17	Select distributors	25	5, 6
19	Complete FDA certification	15	7, 15
20	Register trademark	5	7, 15
21	Prepare product launch	15	13, 16, 17, 19FS + 25 days, 20FS + 15 days

FS = Finish to Start lag

Part 2

Remember the old saying, “A project plan is not a schedule until resources are committed.” This exercise illustrates this sometime subtle, but important point.

Using your files from Part 1, input resources and their costs if you have not already done so. All information is found in Tables A2.1 and A2.2.

Prepare a memo that addresses the following questions:

1. Which if any of the resources are overallocated?
2. Assume that the project is time constrained and try to resolve any overallocation problems by leveling within slack. What happens?
3. What is the impact of leveling within slack on the sensitivity of the network?

Include a Gantt chart with the schedule table after leveling within slack.

4. Assume the project is resource constrained and resolve any overallocation problems by leveling outside of slack. What happens?

TABLE A2.1
Resource Assignments

Activity	Resources
Need survey	MRKT (500%)
Set product specs	R&D (400%), MRKT (200%)
Shelf life report	R&D (300%)
Nutrition report	R&D (300%)
Select fruit suppliers	PURCH (100%)
Equipment rehab	ENG (1,000%), PROD (2,000%)
Production trials	PROD (1,500%), PURCH (100%), ENG (1,000%)
Quality trials	QUAL (300%), PROD (500%)
Quality metrics	QUAL (300%), PROD (100%)
Quality training	QUAL (300%), PROD (1,500%)
Market testing	MRKT (500%)
Package design	DESIGN (300%), MRKT (100%)
Select distributors	MRKT (500%)
Complete FDA certification	LEGAL (300%)
Register trademark	LEGAL (300%)
Prepare product launch	QUAL (300%), PURCH (200%), PROD (1,500%), MRKT (500%), ENG (500%), R&D (100%)

TABLE A2.2
Resources Availability
and Pay Rates

Resource	Abbrev	Available	Hourly rate
Marketing staff	MRKT	5	\$ 80/hr
R&D	R&D	5	\$ 80/hr
Engineering	ENG	10	\$100/hr
Purchasing	PURCH	2	\$ 60/hr
Quality engineers	QUAL	3	\$ 80/hr
Designers	DESIGN	3	\$ 60/hr
Legal staff	LEGAL	3	\$120/hr
Production	PROD	20	\$ 60/hr

Include a Gantt chart with the schedule table after leveling outside of slack.

Note: No splitting of activities is allowed.

Note: No partial assignments (i.e., 50 percent). All resources must be assigned 100 percent.

Part 3

Top management has accepted the July 19th completion schedule created at the end of Part 2. Prepare a brief memo that addresses the following questions:

1. How much will the project cost? What is the most expensive activity?
2. What does the cash flow statement tell you about how costs are distributed over the life span of the project?

Include a monthly cash flow for the project.

Once you are confident that you have the final schedule, save the file as a baseline. **Hint:** Save a backup file just in case without baseline!

TABLE A2.3
Status Report
March 31, 2012

Activity	Actual Start	Actual Finish	Actual Duration	Remaining Duration
Need survey	1/3/12	2/2/12	22	0
Set product specs	2/3/12	2/28/12	18	0
Shelf life report	2/29/12	3/13/12	10	0
Nutrition report	3/14/12	3/19/12	4	0
Equipment rehab	2/29/12		23	12

Part 4 A

Assume that today is March 31, 2012, and Table A2.3 contains the tracking information for the project up till now. Enter this information into your saved baseline file and prepare a status report for the first three months of the POM+ project.

Your status report should also address the following questions:

1. How is the project progressing in terms of cost and schedule?
2. What activities have gone well? What activities have not gone well?
3. What do the PCIB and PCIC indicate in terms of how much of the project has been accomplished to date?
4. What is the forecasted cost at completion (EAC_f)? What is the predicted VAC_f ?
5. Report and interpret the TCPI for the project at this point in time.
6. What is the estimated date of completion?
7. How well is the project doing in terms of its priorities?

Try to present the above information in a form worthy of consideration by top management.

Include an Earned Value table and a Tracking Gantt Chart.

Note: Insert March 31, 2012, as the status date in the Project Information box.

Part 4 B

Assume that today is May 31, 2012, and Table A2.4 contains the tracking information for the project up till now. Enter this information into your saved baseline file and prepare a status report for the POM+ project.

Your status report should address the following questions:

1. How is the project progressing in terms of cost and schedule?
2. What activities have gone well? What activities have not gone well?
3. What do the PCIB and PCIC indicate in terms of how much of the project has been accomplished to date?
4. What is the forecasted cost at completion (EAC_f)? What is the predicted VAC_f ?
5. Report and interpret the TCPI for the project at this point in time.
6. What is the estimated date of completion?
7. How well is the project doing in terms of its priorities?

Try to present the above information in a form worthy of consideration by top management.

Include an Earned Value table and a Tracking Gantt Chart.

Note: Insert May 31, 2012, as the status date in the Project Information box.

TABLE A2.4
Status Report
May 31, 2012

Activity	Actual Start	Actual Finish	Actual Duration	Remaining Duration
Need survey	1/3/12	2/2/12	22	0
Set product specs	2/3/12	2/28/12	18	0
Shelf life report	2/29/12	3/13/12	10	0
Nutrition report	3/14/12	3/19/12	4	0
Select fruit suppliers	4/3/12	4/30/12	20	0
Equipment rehab	2/29/12	4/11/12	31	0
Production trials	4/17/12	5/4/12	14	0
Quality trials	5/7/12	5/31/12	18	0
Market testing	4/4/12	5/9/12	26	0
Package design	5/10/12	5/25/12	12	0
Select distributors	5/28/12		4	18
Complete FDA certification	5/11/12	5/31/12	14	0

Blue Zuma Project

The ARC Company specializes in developing and selling a wide range of high-quality scooters. Sales representatives report that there is a growing demand for racing scooters. ARC's president, Robin Lane, is excited about the possibilities and predicts that one day these kinds of razor scooters will be featured in X-Game events. ARC is a small company and uses a strong matrix to optimally utilize limited manpower.

The Project Priority Matrix for the Blue Zuma Project is:

	Time	Scope	Cost
Constrain		X	
Enhance	X		
Accept			X

Part 1

You are a member of a project team assigned to develop the new razor scooter code named "Blue Zuma." Table A2.5 contains the information necessary to create a project schedule. For the purpose of this case assume the following:

1. The project begins January 2, 2008.
2. The following holidays are observed: January 1, Memorial Day (last Monday in May), July 4th, Labor Day (first Monday in September), Thanksgiving Day (4th Thursday in November), December 25 and 26.
3. If a holiday falls on a Saturday, then Friday will be given as an extra day off, and if it falls on a Sunday, then Monday will be given as a day off.
4. The project team works eight-hour days, Monday through Friday.

Construct a network schedule for this project and prepare a memo that answers the following questions:

1. When is the project estimated to be completed? How long will the project take?
2. What is the critical path for the project?

TABLE A2.5 Blue Zuma Project

ID	Task Name	Duration	Predecessors	Resources
1	Product development project			
2	Market analysis	25 days		Marketing (4)
3	Product design	40 days	2	Marketing (1) Design (4) Development (2) Industrial (1) Purchasing (1)
4	Manufacturing study	20 days	2	Industrial (4) Development (2)
5	Product design selection	10 days	3,4	Marketing (2) Design (3) Development (2) Industrial (2) Purchasing (.25)
6	Detailed marketing plan	15 days	5	Marketing (4)
7	Manufacturing process	30 days	5	Design (1) Development (2) Industrial (4)
8	Detailed product design	50 days	5	Marketing (2) Design (4) Development (2) Industrial (2) Purchasing (.25)
9	Test prototype	10 days	8	Design (3) Development (2)
10	Finalized product design	25 days	7,9	Marketing (2) Design (3) Development (3) Industrial (2)
11	Order components	7 days	10	Purchasing (1)
12	Order production equipment	14 days	10	Purchasing (1)
13	Install production equipment	35 days	11F-S + 20 days, 12F-S + 40 days	Development (3) Industrial (4) Design (1)
14	Celebrate	1 day	6,13	Development (4) Industrial (4) Design (4) Marketing (4) Purchasing (1)

- Which activity has the greatest amount of slack?
- How sensitive is this network?
- Identify two sensible milestones and explain your choices.
- Compare the advantages/disadvantages of displaying the schedule as a network versus a Gantt chart.

Include the following printouts:

- A Gantt chart.
- A network diagram highlighting the critical path.
- A schedule table reporting ES, LS, EF, LF, and slack for each activity.

Part 2

The following personnel have been assigned to the Blue Zuma project team:

- 4 marketing specialists
- 4 design engineers
- 4 development engineers
- 4 industrial engineers
- 1 purchasing agent

Use the file from Part 1 and the information contained in Tables A2.5 and A2.6 to assign resources to the project schedule.

TABLE A2.6
Blue Zuma Project
Resources

Resource	\$/hour	Number Available
Marketing specialist	\$60	4
Design engineer	\$90	4
Development engineer	\$80	4
Industrial engineer	\$70	4
Purchasing agent	\$50	1

Part A

Prepare a memo that addresses the following questions:

1. Which if any of the resources are overallocated?
2. Which activities involve overallocated resources?
3. Assume that the project is time constrained and try to resolve any overallocation problems by leveling within slack. What happens?
4. What is the impact of leveling within slack on the sensitivity of the network?

Include a Gantt chart with the schedule table after leveling within slack.

Part B

Prepare a memo that addresses the following questions:

1. Assume that the project is resource constrained and no additional personnel are available. How long will the project take given the resources assigned? (Hint: Undo leveling performed in Part A before answering this question.)

Note: No splitting of activities is allowed.

2. How does the new duration compare with the estimated completion date generated from Part 1? What does this tell you about the impact resources can have on a schedule?

Include a Gantt chart with a schedule table depicting the resource-constrained schedule.

Part 3

Top management is not happy with the resource-constrained schedule generated at the end of Part 2. Robin Lane, the president, has promised retailers that production of the new scooters would start on February 1, 2009.

1. What options are available to meet this new deadline if the project is not resource constrained?
2. What options are available to meet this deadline if the project is resource constrained?

Dewey Martin, director of product development, has managed to make the following personnel available to work on specific activities on the project. Since there is an acute shortage of personnel at ARC he requests that you only use additional manpower that will help meet the new deadline. Your objective is to develop a schedule which will satisfy the deadline with minimum additional resource usage. The available personnel and impact on activity duration are presented in Table A2.7.

TABLE A2.7
Blue Zuma Project
Crashing Options

Activity	Additional Resources	Revised Duration Estimates
Detailed marketing plan	Marketing (2)	10 days
Detailed product design	Design (1) Development (1)	42 days
Install production equipment	Industrial (1) Development (1)	27 days

Pay rates for additional personnel: Marketing, \$70/hour; Design, \$100/hour; Development, \$90/hour; and Industrial, \$80/hour.

Prepare a memo that addresses the following questions:

1. Which additional personnel assignments would you choose to complete the project before the February 1st deadline? Explain your choices as well as the reasons for not choosing other options.
2. How have these changes affected the sensitivity of the network?

Include a Gantt chart with a schedule table presenting the new schedule.

Note: You cannot go back and relevel resources. These new resources are only available for the stated specific tasks according to the schedule created at the end of Part 2.

Part 4

Robin Lane and top management have approved the schedule generated at the end of Part 3. Save the file containing this schedule as a baseline schedule.

Prepare a memo that addresses the following questions:

1. How much is the project estimated to cost?
2. What activity is estimated to cost the most to complete?
3. What resource commands the greatest total cost?
4. During which month of the project are the highest and lowest costs expected to occur? What are those costs?
5. What likely costs are not contained in this budget?

Include a table containing the estimated costs for each activity and a cash flow schedule for each month of the project.

Part 5

Today's date is August 16, 2008. Table A2.8 summarizes the information regarding activities accomplished to date.

Robin Lane has requested a written status report for the Blue Zuma project.

1. Your status report should include a table containing the PV, EV, AC, BAC, EAC, SV, CV, and CPI for each activity and the whole project. The report should also address the following questions:

TABLE A2.8
Blue Zuma Project
Update

Activity	Start Date	Finish Date	Actual Duration	Remaining Duration
Market analysis	1/2/08	2/1/08	23	
Product design	2/4/08	3/20/08	34	
Manufacturing study	3/21/08	4/22/08	23	
Product design selection	4/23/08	5/13/08	15	
Manufacturing process	8/1/08		11	25
Detailed product design	5/14/08	7/31/08	55	
Test prototype	8/1/08	8/15/08	11	

- a. How is the project progressing in terms of cost and schedule?
- b. What activities have gone well? What activities have not gone well?
- c. What do the PCIB and PCIC indicate in terms of how much of the project has been accomplished to date?
- d. What is the forecasted cost at completion (EAC_p)? What is the predicted VAC_f ?
- e. Report and interpret the TCPI for the project at this point in time.
- f. What is the estimated date of completion?
- g. How well is the project doing in terms of its priorities?

Try to present the above information in a form worthy of consideration by top management.

Include a tracking Gantt chart with your report.

Note: Enter August 15 as the status report date since you are preparing your report on the 16th.

2. While preparing your report you receive a phone call from Jim Keltner, a fellow project manager. He is calling to see if one of the industrial engineers assigned to your project would be available to work on his project from August 22 to 27, 2008. What would you tell him?

Part 6

Robin Lane has authorized using Management Reserves to expedite the shipping of components at an additional cost of \$50,000. She has asked you to update completion and cost estimates for the Blue Zuma project. Table A2.9 presents the revised estimates generated by the Blue Zuma project team.

Based on this new information prepare a memo that answers the following questions:

1. When will the project be completed? How does this compare with the baseline completion date?
2. What is the new estimated cost at completion (EAC)? What is the new VAC? How does this compare with VAC based on the EAC_f generated in Part 5? Which of the two VACs would you have the greatest confidence in and why?
3. How do you think Robin will react given the priorities for this project?

Include a tracking Gantt with a cost table for the estimated completion schedule.

TABLE A2.9
Blue Zuma Project
Revised Estimates to
Completion

Activity	Start Date	Finish Date	Actual Duration
Market analysis	1/2/08	2/1/08	23
Product design	2/4/08	3/20/08	34
Manufacturing study	3/21/08	4/22/08	23
Product design selection	4/23/08	5/13/08	15
Detailed marketing plan	10/28/08	11/24/08	20
Manufacturing process	8/1/08	9/18/06	34
Detailed product design	5/14/08	7/31/08	55
Test prototype	8/1/08	8/15/08	11
Finalized product design	9/19/08	10/16/08	20
Order components	10/31/08	11/6/08	5
Order production equipment *	10/17/08	11/3/08	12
Install production equipment	12/9/08	1/22/09	30
Celebrate	1/23/09	1/23/09	1

* Add \$50,000 expediting costs.

Conveyor Belt Project

Part 1

Project Description

The new computer-controlled conveyor belt is an exciting project that moves and positions items on the conveyor belt within <1 millimeter. The project will produce a new system for future installations, and for replacement of those in the field, at a low cost. The computer-controlled conveyor belt has the potential to be a critical unit in 30 percent of the systems installed in factories. The new system is also easier to update with future technologies.

The Project Priority Matrix for the Conveyor Belt Project (CBP) is:

	Time	Scope	Cost
Constrain	X		
Enhance		X	
Accept			X

Table A2.10 has been developed for you to use in completing the project exercises.

Assignment

Develop the WBS outline using the software available to you.

Question

Does this information (WBS) allow you to define any milestones of the project? Why or why not? What are they?

Remember: Save your file for future exercises!

TABLE A2.10
Conveyor Belt
Project; WBS

Conveyor Belt Project	
Hardware	Hardware specifications Hardware design Hardware documentation Prototypes Order circuit boards Assemble preproduction models
Operating system	Kernel specifications Drivers Disk drivers Serial I/O drivers Memory management Operating system documentation Network interface
Utilities	Utilities specifications Routine utilities Complex utilities Utilities documentation Shell
System integration	Architectural decisions Integration first phase System hard/software test Project documentation Integration acceptance testing

Part 2

Use your file from Part 1 and the information provided below to complete this exercise. (See Table A2.11.)

1. Each work package will represent an activity.
2. The project begins January 4, 2010.
3. The following holidays are observed: January 1, Memorial Day (last Monday in May), July 4th, Labor Day (first Monday in September), Thanksgiving Day (4th Thursday in November), December 25 and 26.
4. If a holiday falls on a Saturday then Friday will be given as an extra day off, and if it falls on a Sunday, then Monday will be given as a day off.
5. The project teams work eight-hour days, Monday through Friday.

Warning: Experience has taught students to frequently make separate backup files for each exercise. The software is never as friendly as users expect!

Construct a network schedule for the conveyor belt project and prepare a memo that addresses the following questions:

1. When is the project estimated to be completed? How long will the project take?
2. What is the critical path(s) for the project?
3. Which activity has the greatest amount of slack?
4. How sensitive is this network?
5. Identify two sensible milestones and explain your choices.
6. Compare the advantages/disadvantages of displaying the schedule as a network versus a Gantt chart.

TABLE A2.11 Conveyor Belt Project; Schedule

Activity	Description	Resource	Duration (days)	Preceding Activity
1	Architectural decisions	Design	25	—
2	Hardware specifications	Development, design	50	1
3	Kernel specifications	Design	20	1
4	Utilities specifications	Development, design	15	1
5	Hardware design	Design, development	70	2
6	Disk drivers	Assembly, development	100	3
7	Memory management	Development	90	3
8	Operating system documentation	Design, documentation	25	3
9	Routine utilities	Development	60	4
10	Complex utilities	Development	80	4
11	Utilities documentation	Documentation, design	20	4
12	Hardware documentation	Documentation, design	30	5
13	Integration first phase	Assembly, development	50	6,7,8,9,10,11,12
14	Prototypes	Assembly, development	80	13
15	Serial I/O drivers	Development	130	13
16	System hard/software test	Assembly	25	14,15
17	Order circuit boards	Purchasing	5	16
18	Network interface	Development	90	16
19	Shell	Development	60	16
20	Project documentation	Documentation, development	50	16
21	Assemble preproduction models	Assembly, development	30	17F-S, lag 50 days
22	Integrated acceptance testing	Assembly, development	60	18,19,20,21

Include the following printouts:

- A Gantt chart.
- A network diagram highlighting the critical path.
- A schedule table reporting ES, LS, EF, LF, and slack for each activity.

Hint: the project should be completed in 530 days.

Remember: Save your file for future exercises!

Part 3

Remember the old saying, “A project plan is not a schedule until resources are committed.” This exercise illustrates this subtle, but very important, difference.

Part A

Using your files from Part 2 input resources and their costs if you have not already done so. All information is found in Tables A2.11 and A2.12.

Prepare a memo that addresses the following questions:

1. Which if any of the resources are overallocated?
2. Assume that the project is time constrained and try to resolve any overallocation problems by leveling within slack. What happens?
3. What is the impact of leveling within slack on the sensitivity of the network?

Include a Gantt chart with the schedule table after leveling within slack.

4. Assume the project is resource constrained and resolve any overallocation problems by leveling outside of slack. What happens? What are the managerial implications?
5. What options are available at this point in time?

Include a Gantt chart with the schedule table after leveling outside of slack.

Note: No splitting of activities is allowed.

Note: No partial assignments (i.e., 50 percent). All resources must be assigned 100 percent.

Part B

When you show the resource-constrained network to top management, they are visibly shaken. After some explanation and negotiation they make the following compromise with you:

- The project must be completed no later than February 2, 2012 (530 days).
- You may assign two additional development teams.

TABLE A2.12
Organization
Resources

Name	Group	Cost (\$/hr)
Design	R&D (2 teams)	\$100
Development	R&D (2 teams)	70
Documentation	R&D (1 team)	60
Assembly/test	R&D (1 team)	70
Purchasing	Procurement (1 team)	40

- If this does not suffice, you may hire other development teams from the outside. Hire as few external teams as possible because they cost \$50 more per hour than your inside development people.

Internal Development

Add as many development units (teams) as needed to stay within the 530 days. If you need more than two internal development units, then hire as few external teams as necessary. Select the cheapest possibility! Change as few activities as possible. It is recommended you keep work packages which require cooperation of several organizational units inside your company. You decide how best to do this.

Hint: Undo leveling prior to adding new resources.

Once you have obtained a schedule that meets the time and resource constraints, prepare a memo that addresses the following questions:

1. What changes did you make and why?
2. How long will the project take?
3. How did these changes affect the sensitivity of the network?

Include a Gantt chart with a schedule table presenting the new schedule.

Part 4

Based on the file created at the end of Part 3, prepare a memo that addresses the following questions:

1. How much will the project cost?
2. What does the cash flow statement tell you about how costs are distributed over the life span of the project?

Include a monthly cash flow and a cost table for the project.

Once you are confident that you have the final schedule, save the file as a baseline.

Hint: Save a backup file just in case without baseline!

Part 5

Prepare status reports for each of the first four quarters of the project given the information provided here. This requires saving your resource schedule as a baseline and inserting the appropriate status report date in the program. Assume that no work has been completed on the day of the status report.

Your status report should include a table containing the PV, EV, AC, BAC, EAC, SV, CV, and CPI for each activity and the whole project. The report should also address the following questions:

1. How is the project progressing in terms of cost and schedule?
2. What activities have gone well? What activities have not gone well?
3. What do the PCIB and PCIC indicate in terms of how much of the project has been accomplished to date?
4. What is the forecasted cost at completion (EAC_f)? What is the predicted VAC_f ?
5. Report and interpret the TCPI for the project at this point in time.
6. What is the estimated date of completion?
7. How well is the project doing in terms of its priorities?

TABLE A2.13
April 1, 2010

Activity	Start Date	Finish Date	Actual Duration	Remaining Duration
Hardware specifications	2/9/10		37	8
Kernel specifications	2/8/10	3/12/10	25	0
Disk drivers	3/15/10		13	87
Memory management	3/15/10		13	77
Op. systems documentation	3/15/10		13	7
Utilities specifications	3/8/10	3/29/10	16	0
Complex utilities	3/30/10		2	85
Architectural decisions	1/4/10	2/5/10	25	0

Try to present the above information in a form worthy of consideration by top management.

Include a Tracking Gantt chart with each report.

First Quarter, April 1, 2010

Table A2.13 summarizes the information regarding activities accomplished to date.

Be sure to save your file after each quarterly report and use it to build the next report!

Second Quarter, July 1, 2010

Table A2.14 summarizes the information regarding activities accomplished since the last report.

Third Quarter, October 1, 2010

Table A2.15 summarizes the information regarding activities accomplished since the last report.

Fourth Quarter, January 1, 2011

Table A2.12 summarizes the information regarding activities accomplished since the last report.

TABLE A2.14
July 1, 2010

Activity	Start Date	Finish Date	Actual Duration	Remaining Duration
Hardware specifications	2/9/10	4/12/10	45	0
Hardware design	4/13/10		56	11
Kernel specifications	2/8/10	3/12/10	25	0
Disk drivers	3/15/10		77	33
Memory management	3/15/10		77	19
Op. systems documentation	3/15/10	4/16/10	25	0
Utilities specifications	3/8/10	3/29/10	16	0
Routine utilities*	4/26/10		47	18
Complex utilities	3/30/10		66	25
Utilities documentation	5/3/10	6/2/10	22	0
Architectural decisions	1/4/10	2/5/10	25	0

* The project manager for the external development team that was hired to perform routine utilities reported that due to commitments to other clients they would be able to start on that activity 4/26/10.

TABLE A2.15
October 1, 2010

Activity	Start Date	Finish Date	Actual Duration	Remaining Duration
Hardware specifications	2/9/10	4/12/10	45	0
Hardware design	4/13/10	7/16/10	67	0
Hardware documentation	7/19/10	8/24/10	27	0
Kernel specifications	2/8/10	3/12/10	25	0
Disk drivers	3/15/10	8/17/10	110	0
Memory management	3/15/10	7/30/10	98	0
Op. systems documentation	3/15/10	4/16/10	25	0
Utilities specifications	3/8/10	3/29/10	16	0
Routine utilities	4/26/10	7/27/10	65	0
Complex utilities	3/30/10	8/11/10	95	0
Utilities documentation	5/3/10	6/2/10	22	0
Architectural decisions	1/4/10	2/5/10	25	0
Integration 1st phase	8/25/10		26	24

TABLE A2.16
January 1, 2011

Activity	Start Date	Finish Date	Actual Duration	Remaining Duration
Hardware specifications	2/9/10	4/12/10	45	0
Hardware design	4/13/10	7/16/10	67	0
Hardware documentation	7/19/10	8/24/10	27	0
Prototypes	11/11/10		34	44
Kernel specifications	2/8/10	3/12/10	25	0
Disk drivers	3/15/10	8/17/10	110	0
Serial I/O drivers	11/11/10		34	119
Memory management	3/15/10	7/30/10	98	0
Op. systems documentation	3/15/10	4/16/10	25	0
Utilities specifications	3/8/10	3/29/10	16	0
Routine utilities	4/26/10	7/27/10	65	0
Complex utilities	3/30/10	8/11/10	95	0
Utilities documentation	5/3/10	6/2/10	22	0
Architectural decisions	1/4/10	2/5/10	25	0
Integration 1st phase	8/25/10	11/10/10	55	0

Part 6

You have received revised estimates for the remaining activities at the end of the fourth quarter:

- Prototypes will be completed on 3/8/11.
- Serial I/O drivers will be completed on 6/30/11.
- System hardware/software test will start on 7/1/11 and take 25 days.
- Order circuit boards will start on 8/8/11 and take 5 days.
- Assemble preproduction model will begin on 10/14/11 and take 18 days.
- Project documentation is expected to start on 8/8/11 and will take 55 days.
- Network interface is expected to start on 8/8/11 and will take 99 days.
- Shell is expected to start on 8/8/11 and will take 55 days.
- Integrated acceptance testing is expected to start on 12/29/11 and will take 54 days.

Prepare a memo that addresses the following questions:

1. What is the new EAC for the project? How long should the project take given these revised estimates?
2. How happy will top management be with these forecasts given the priorities of the project?
3. What recommendations would you make?

Include a revised schedule, a Tracking Gantt chart, and cost table with your memo.