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Training Guide Microsoft® Project 98



February 1999

DFAIT

Microsoft Project 98, Level 1

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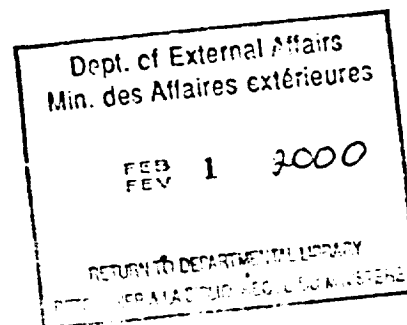
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How to Use This Guide

This Learning Guide is designed to act both as a classroom workbook during your training and as a valuable reference resource for you to use in your workplace. An Index is included to help familiarize you with the material.

Your instructor will lead you through each of the modules and accompanying exercises and provide ample time for questions and practice. The objectives listed at the beginning of each module provide guideposts for the important concepts or skills introduced in that module. This objective-oriented approach tells you at the outset exactly what skill is to be learned and what procedure you will employ to demonstrate your mastery of that skill.

Learning Guide exercises are designed to describe the action you are to perform, then give step-by-step instructions on how to perform it. This guide uses the following conventions.

Words that you are to type are indicated in bold:

Type Now is the *Type this text into the computer.*
time for

Keystrokes are indicated in bold small caps:

Press **ENTER** *Press the **ENTER** key on your
keyboard.*

Sometimes you will need to press two or more keys at the same time:

Press **CTRL+HOME** *Press and hold the **CTRL** key, press
the **HOME** key, and then release
both.*

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Module 1

Microsoft Project Essentials

- Identifying Project Management Concepts
- Getting Started with Microsoft Project
- Starting a Project Plan

Module Objectives

- **Identify project management concepts**

Before you start to build a project, it is important to understand the underlying concepts behind project management.

- **Get started with Microsoft Project**

Once Microsoft Project is started, understanding the components of the project window and Gantt Chart view will help you use Microsoft Project efficiently. The Office Assistant is a help tool that will assist you in using Microsoft Project.

- **Start a project plan**

Creating a project file and recording project information lay the ground rules by which the project will be governed. Creating a task list and entering task information lets you set the foundation of your project. After you create a project file, it is important to save it so that you can use it at a later time and protect your valuable information.

Identifying Project Management Concepts

Project management to some people means steering personnel forward until the project goal has been accomplished. To others, it means authorizing personnel to perform tasks, mediating disputes, and keeping the project team informed. Although a broad range of approaches exist, project management is the planning, coordination, and management of tasks and resources to accomplish a specific goal or set of goals within a budget and time constraint.

Many years ago, people thought that project management applied only to projects as large as building Toronto's CN Tower or building Las Vegas' Hoover Dam. Today, project management systems appear on a large percentage of desktops and manage many types of projects, ranging from producing a technical manual to building the underwater tunnel between England and France.

Before you can manage projects, it is important to understand project management elements and phases.

What is a Project?

In order for you to understand project management, you must first understand what a project is. A *project* is a set of activities (tasks) that must be completed by a certain number of individuals (resources) within time and cost constraints. The manner in which a project proceeds is represented by a project model. The phases of a project model might include defining the project, creating a project plan, tracking and updating the project plan and closing the project.

You define a project by setting project *goals*, defining the *scope* of the project, determining the *resources* required and any *scheduling factors*.

Project goals determine the purpose of the project and tell you what it is you want to accomplish. For example, the project goal might be to construct a new building. The scope of a project decides which and how many tasks are required to accomplish the project goal. For example, if you construct a building, you may decide to build two stories but leave out a second conference room.

Resources are the people and equipment required to accomplish the project goal. The scheduling factors include how much time you have to complete the project and any assumptions you think will come into play during a project. For example, an assumption you might make when you construct a building is that it will rain no more than 15 percent of the time.

Defining a Project Plan

The heart of every project is the project plan. A project plan describes all the project tasks, who's going to do each task, the task sequence, the estimated duration of each task, the estimated cost of each task, and the length of the overall project. A project plan makes everyone aware of deadlines and by comparing the project's progress to your original schedule, it lets you see deviations, anticipate problems and correct any delays before they become unmanageable.

You create a project plan in Microsoft Project by:

- creating a project file
- setting the project date
- listing the tasks that must be completed to reach the project goals
- determining the best sequence for your tasks
- estimating each task's length
- creating a list of resources
- determining the project's working times
- assigning resources to tasks
- assigning costs to resources or fixed costs to a task

Getting Started with Microsoft Project

To use Microsoft Project effectively, you need to know several basic skills and concepts, including how to start Microsoft Project, become familiar with the Microsoft Project window, and learn how to enter tasks.

Starting Microsoft Project

When you start Microsoft Project, the Welcome! dialog box appears, as shown in **Figure 1-1**. This dialog box lets you create a new project with step-by-step instructions, watch a preview of Microsoft Project's features, or navigate through Microsoft Project using a map. Once you are familiar with Microsoft Project, you might want to select the *Don't display this startup screen again* check box to avoid having the Welcome! dialog box open every time you start Microsoft Project.

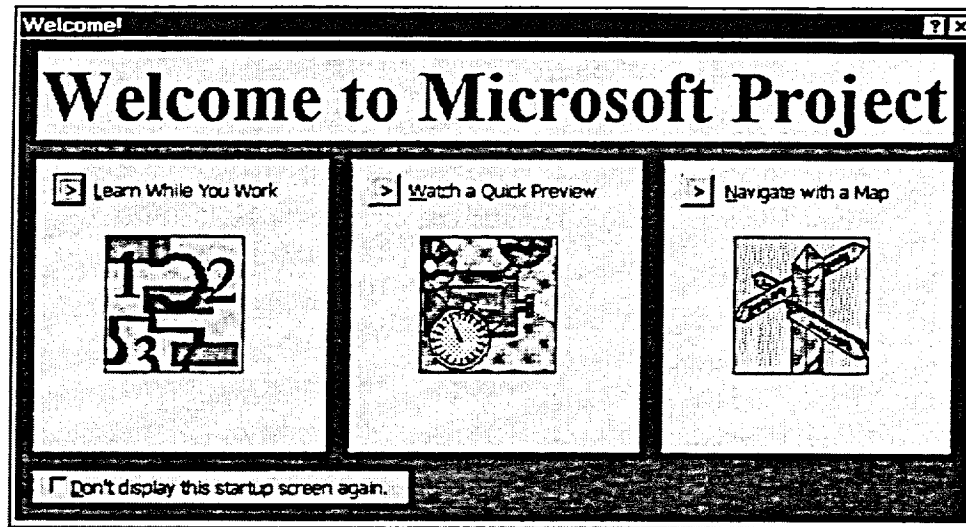


Figure 1-1: The Welcome! Dialog Box

Method

To start Microsoft Project

1. On the taskbar, click the Start button.
2. From the Start menu, point to Programs.
3. From the Programs menu, choose Microsoft Project.
4. If necessary, in the Welcome! dialog box, click the Close button.

Exercise

In the following exercise, you will start Microsoft Project.

- | | |
|--|--|
| 1. On the taskbar, click the Start button | <i>The Start menu appears.</i> |
| 2. Point to Programs | <i>The Programs menu appears.</i> |
| 3. Choose Microsoft Project | <i>Microsoft Project starts and the Welcome! dialog box appears.</i> |
| 4. In the Welcome dialog box, click the Close button | <i>The Welcome! dialog box closes.</i> |

Exploring the Microsoft Project Window

The bulk of the window, shown in Figure 1-2, is occupied by a *project view*. A Project view lets you view your information in a variety of formats. The default project view is the *Gantt Chart view*. The Gantt Chart view consists of a *sheet pane* and a *chart pane*. The *divider bar* separates the two panes and can be repositioned to display more of the sheet or more of the chart. The sheet consists of rows and columns. The chart graphically displays your schedule on a timescale. Surrounding the project view are several command interfaces, each of which lets you receive information about, or apply functions to, the data displayed in the view. Table 1-1 describes the various parts of the Microsoft Project window.

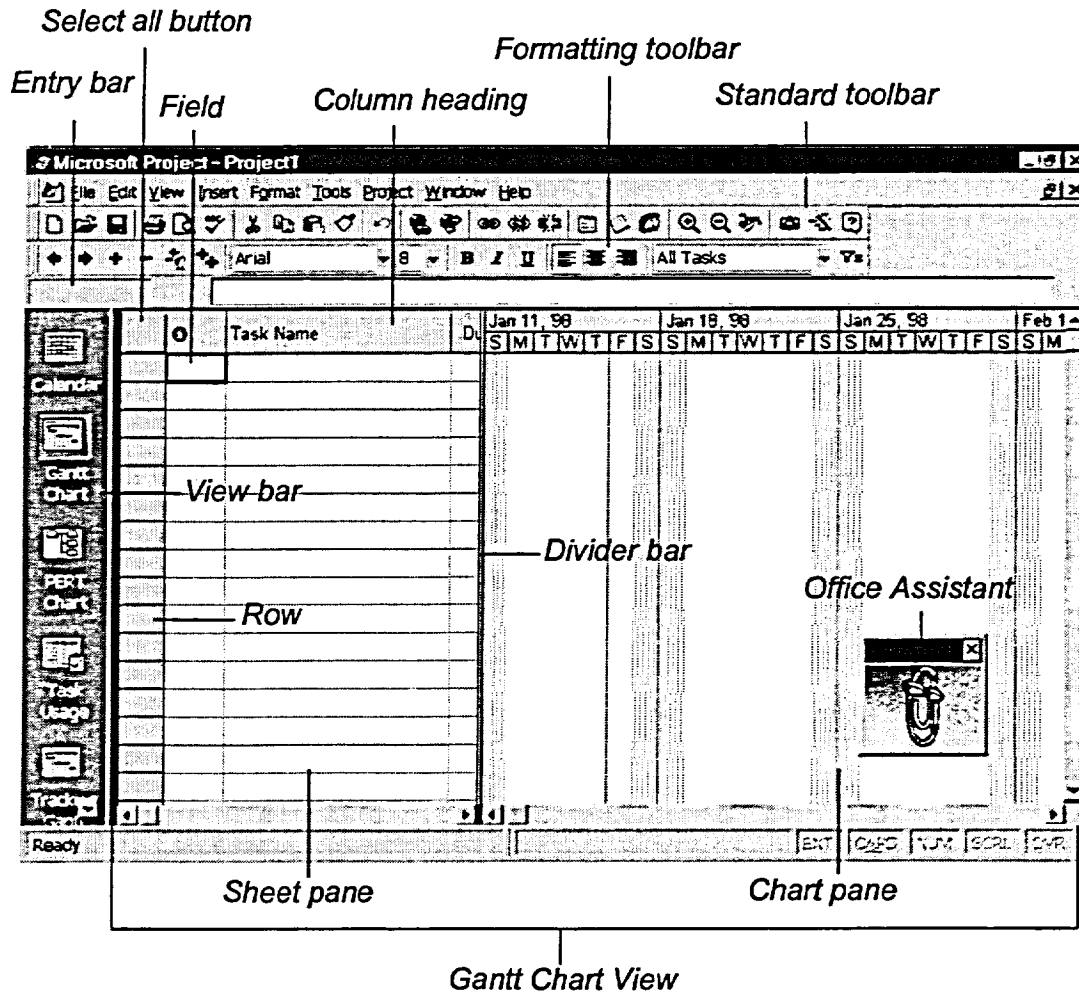


Figure 1-2: The Microsoft Project Window

Window Part	Description
Chart pane	Used to display project information graphically.
Column heading	Text at the top of each column that identifies it.
Divider bar	Used to separate and adjust the size of panes.
Entry bar	Used to enter and edit data in a sheet.
Field	An area in a sheet or chart that contains a specific kind of information. In a sheet, a field is the intersection between a column and a row.
Formatting Toolbar	Gives you quick access to commands. When you point at a toolbar button, its function or name is displayed. Click the button to activate the command.
Gantt Chart view	A view that displays a list of tasks and a graphical representation of those tasks.
Office Assistant	A help tool that appears when you start Microsoft Project and offers advice and tips when you begin a new activity.
Row	A horizontal arrangement of fields that runs from left to right.
Select all button	Used to select all the rows and columns of a sheet.
Sheet pane	Contains a list of tasks or resource information represented in rows and columns, similar to that of a spreadsheet. Each row defines a task. Each column defines a type of information.
Standard Toolbar	Gives you quick access to commands. When you point at a toolbar button, its function or name is displayed. Click the button to activate the command.
View bar	Includes icons that let you change a project view.

Table 1-1: The Parts of the Microsoft Project Window

Identifying the Toolbars

Microsoft Project toolbars give you quick access to frequently used commands and procedures. In this course, you will work only with the Standard and Formatting toolbars, but you should know that Microsoft Project has twelve predefined toolbars and lets you create your own. You choose which toolbars to view by choosing Toolbars from the View menu. To find out what a button does, simply point to it with the mouse and a ToolTip will appear.

By default when Microsoft Project first starts, two toolbars are displayed on the screen: the Standard toolbar (upper) and the Formatting toolbar (lower). The Standard toolbar, shown in Figure 1-3, contains the buttons most frequently used for file handling and printing. The Formatting toolbar, shown in Figure 1-4, contains the buttons used for formatting, setting alignment, and displaying or hiding task information in a view.

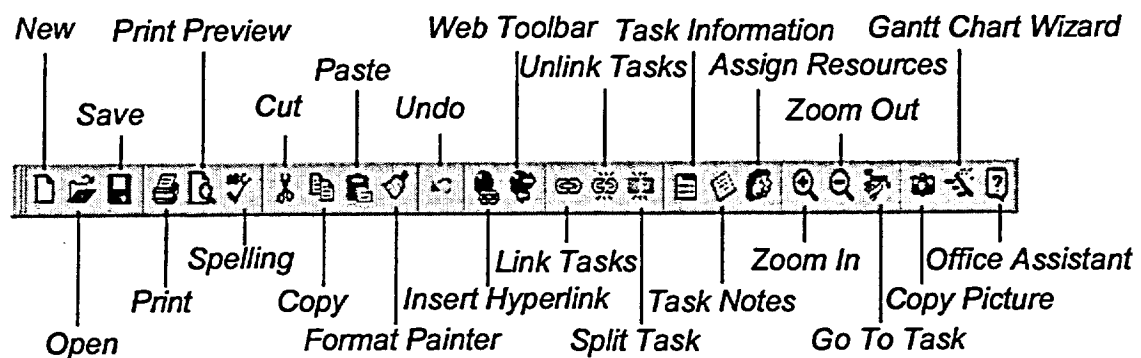


Figure 1-3: The Standard Toolbar

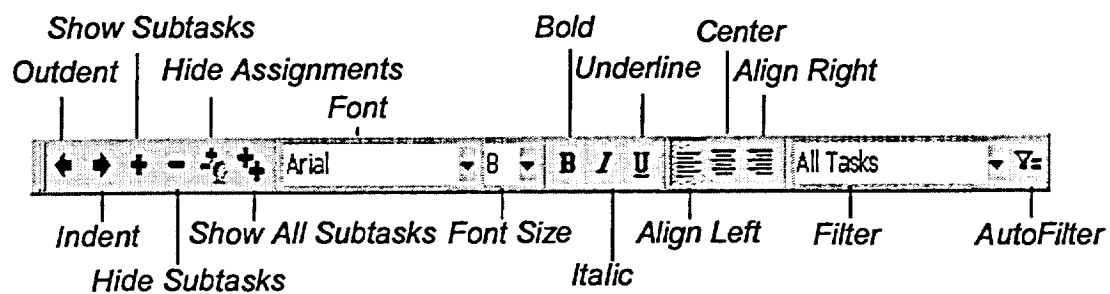


Figure 1-4: The Formatting Toolbar

Getting Help from the Office Assistant

The *Office Assistant* comes in many shapes and personalities. The default Office Assistant is a paper clip named Clippit, as shown in Figure 1-5. It appears when you start Microsoft Project and offers suggestions and tips on tasks and commands. Using Office Assistant's *bubble help*, you can ask questions or select from a variety of helpful options. If you like, you can change the personality of the Office Assistant. If you disable Office Assistant, be aware that these alterations will affect all of your Office programs, not just Microsoft Project.

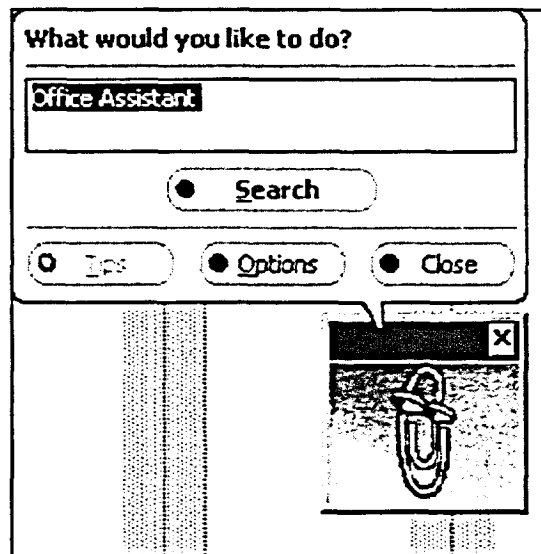


Figure 1-5: Clippit with Bubble Help

Method

To get help from the Office Assistant

1. On the Standard toolbar, click the Office Assistant button.
2. In the Office Assistant bubble help window, in the *What would you like to do?* text box, type a question or a phrase.
3. Choose Search.
4. Select one of the suggested topics.
or
4. Repeat steps 2 and 3 as needed.

To change Office Assistant options

1. On the Standard toolbar, click the Office Assistant button.
2. In the Office Assistant bubble help window, choose Options.
3. If necessary, select the Options tab.
4. On the Options page, select and deselect options.
5. Choose OK.

To change Office Assistant attributes

1. On the Standard toolbar, click the Office Assistant button.
2. In the Office Assistant bubble help window, choose Options.
3. In the Office Assistant dialog box, select the Gallery tab.
4. On the Gallery page, click the Back and Next buttons to view other Office Assistants.
5. Choose OK.

To hide Office Assistant

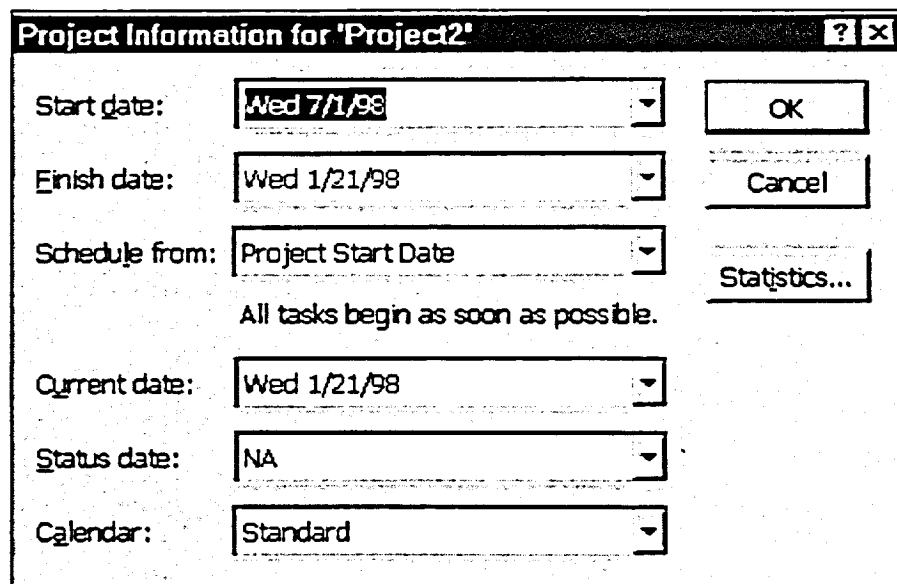
1. Click the Office Assistant Close button.

Starting a Project Plan

Once you have set the project goals, defined the scope, determined the resources required and any scheduling factors, you're ready to start your project plan. Before you can start a project plan in Microsoft Project, you need to create a new project file. A *project file* is the location where all the information related to your project is entered, calculated, edited and stored. Once you have created a project file, you then enter the project details such as the project goals and its scope. After you enter this information, it's a good idea to name and save the new project file.

Creating a New Project File

Microsoft Project automatically creates a schedule based on the information you enter using a scheduling *algorithm*. An algorithm is a mathematical or logical equation that solves a complex problem by breaking down the problem into simple steps. For this reason, you need to provide Microsoft Project with a reference point. Normally, this reference point is the project *start date*. The start date is the date on which you want the project to begin. You enter a start date in the Project Information dialog box, shown in **Figure 1-6**, when you want Microsoft Project to schedule tasks forward from this date. As you enter tasks, Microsoft Project will automatically calculate the finish date.



The screenshot shows the 'Project Information for 'Project2'' dialog box. It contains several fields and buttons:

- Start date:** Wed 7/1/98
- Finish date:** Wed 1/21/98
- Schedule from:** Project Start Date
- Current date:** Wed 1/21/98
- Status date:** NA
- Calendar:** Standard

Buttons on the right include 'OK', 'Cancel', and 'Statistics...'. Below the 'Schedule from' dropdown, the text 'All tasks begin as soon as possible.' is displayed.

Figure 1-6: The Project Information Dialog Box

Alternatively, as a reference point you can enter a *finish date*. The finish date is the latest date on which you want your project to end. If you enter a finish date as your reference point, Microsoft Project will schedule tasks backwards from this date.

As a rule, you enter a start or finish date, but not both. Entering a start date lets Microsoft Project schedule tasks with the greatest amount of flexibility. If you do not enter a start or finish date, Microsoft Project will automatically use the current date as the start date.

Method

To create a new project file

1. On the Standard toolbar, click the New button.
or
1. From the File menu, choose New.
2. In the Project Information dialog box, choose OK to accept the current date as the Start date.
or
2. In the Project Information dialog box, in the Start date combo box, enter a date and choose OK.
or
2. In the Project Information dialog box, from the Schedule from drop-down list, select Project Finish Date and then, in the Finish Date combo box, enter a date and choose OK.

Exercise

In the following exercise, you will create a new project file.

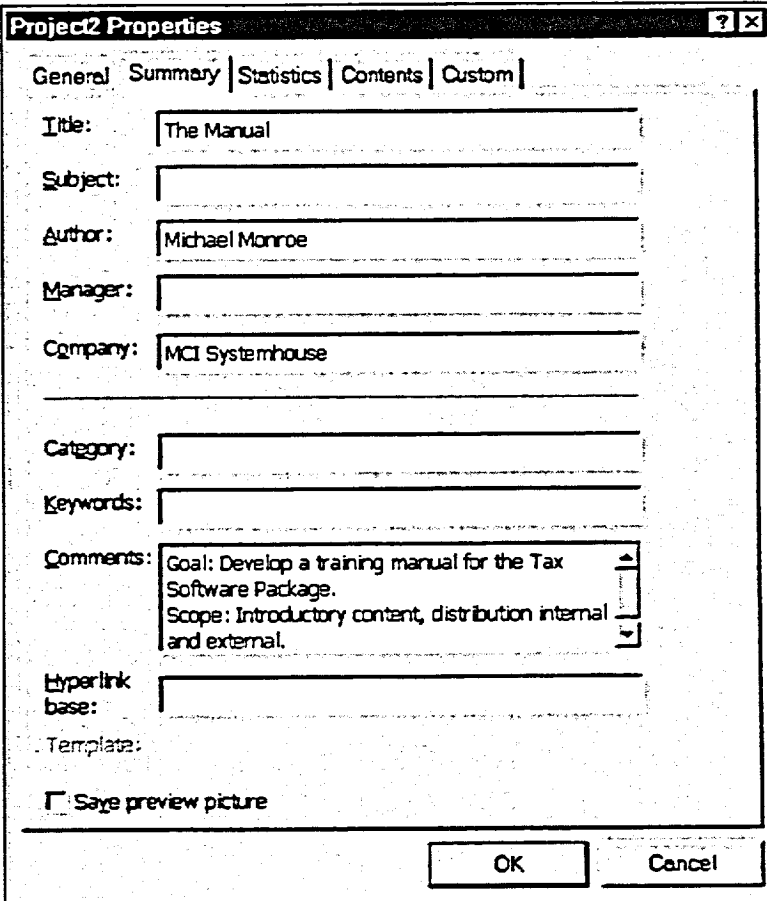
1. On the Standard toolbar, click the New button
2. In the Start date combo box, type **7/1/98**
3. Choose OK

The new project file opens and the Project Information dialog box appears.

The date is accepted as the project start date and the Project Information dialog box closes.

Recording Project Information

You can enter descriptive information about your project, such as the project goals and scope, directly into your project file by using the Properties dialog box, shown in **Figure 1-7**. Adding this information into your project file will help you and others to stay focused as the project plan develops. In addition, as your project progresses, you can refer back to the original goals and scope if it is necessary to reevaluate them.



The screenshot shows a dialog box titled "Project2 Properties" with a standard Windows-style title bar (minimize, maximize, close buttons). The dialog has several tabs: "General", "Summary", "Statistics", "Contents", and "Custom". The "General" tab is selected. It contains the following fields and controls:

- Title:** Text box containing "The Manual"
- Subject:** Empty text box
- Author:** Text box containing "Michael Monroe"
- Manager:** Empty text box
- Company:** Text box containing "MCI Systemhouse"
- Category:** Empty text box
- Keywords:** Empty text box
- Comments:** Text area containing:
Goal: Develop a training manual for the Tax Software Package.
Scope: Introductory content, distribution internal and external.
- Hyperlink base:** Empty text box
- Template:** Empty text box
- Save preview picture

At the bottom right of the dialog are two buttons: "OK" and "Cancel".

Figure 1-7: The Properties Dialog Box

Method

To record project information

1. From the File menu, choose Properties.
2. If necessary, select the Summary tab.
3. On the Summary page, in the Title, Subject, Author, Manager and Company text boxes, enter the appropriate information.
4. On the Summary page, in the Comments text box, type the project goals and scope.
5. Choose OK.

Exercise

In the following exercise, you will record project information.

1. From the File menu, choose Properties *The Properties dialog box appears.*
2. If necessary, select the Summary tab *The Summary page of options appears.*
3. In the Title text box, type **The Manual**
4. In the Author text box, type your name
5. In the Comments text box, type **Goal: Develop a training manual for the Tax Software Package.**
Scope: Introductory content, distribution internal and external.
6. Choose OK *The Properties dialog box closes.*

Changing the Default Settings

Microsoft Project has a number of default settings that can be set at the beginning of your project to suit your needs. For example, in the Options dialog box, shown in Figure 1-8, you can use the Calendar page to specify on which day a week starts. In some cases, you might be required to choose the Set as Default button to have the settings apply to all projects.

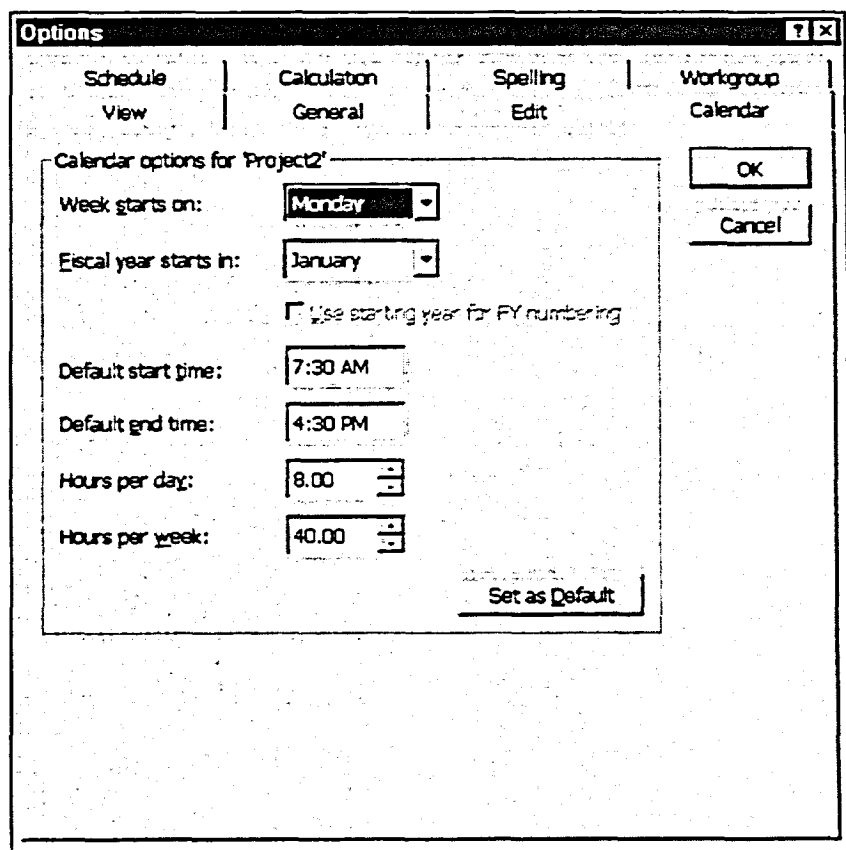


Figure 1-8: The Calendar Page of the Options Dialog Box

Method

To change the default settings

1. From the Tools menu, choose Options.
2. In the Options dialog box, select the appropriate tab.
3. On the page, select the desired options.
4. If necessary, choose Set as Default.
5. Choose OK.

Exercise

In the following exercise, you will change default settings.

1. From the Tools menu, choose Options *The Options dialog box appears.*
2. Select the Calendar tab *The Calendar page appears.*
3. In the Calendar options for 'Project2' area, from the *Week starts on* drop-down list, select Monday
4. In the Default start time text box, select the text, and type **7:30 AM** *The existing text is replaced with the new start time.*
5. In the Default end time text box, select the text, and type **4:30 PM** *The new end time replaces the existing text.*
6. Choose OK *The Options dialog box closes.*

Defining Tasks

Now that you have created your project file, the next step in developing a project plan is to create a list of all the tasks that must be completed to meet your goals. A *task* is a specific activity that must be completed to achieve the project goals. Most tasks have an identifiable start and end, require people or equipment to complete them, and are specific enough that their progression and their final result can be measured. Considering that tasks provide the foundation for the rest of your project plan and the basis for tracking the progress of your project, it is important that the task list be detailed and clear.

As you form your task list, you might want to include phases and milestones. A *phase* is a group of related tasks that completes a major step. A *milestone* is a task that requires no actual work and serves as a check point to help track the progress of important events in a project.

There are several ways to create a task list. For example, you can list all the tasks first, and then group the tasks into phases, or you can list all the major phases first, and then enter the tasks and milestones. The method you choose is dependent on the size of the project. For example, listing all the tasks first works best for smaller projects that involve only one department.

Method

To enter tasks and durations one field at a time

1. In the Task Name column, select the first available field and type the name of the task.
2. Press **TAB**
3. In the Duration column, type the value of the duration. If the duration is anything other than days, type **m** for minutes, **h** for hours, or **w** for weeks.
4. Press **ENTER**
5. Press **LEFT ARROW** to return to the Task Name column and repeat steps 1 through 4 as required.

To enter tasks and durations by selecting a range

1. Select the first field of the desired range.
2. Drag the mouse through the range of fields you want to include.
3. In the first field, type the desired information.
4. Press **TAB**
5. In the Duration column, type the appropriate information.
6. Repeat steps 4 and 5 as required.

Note: To specify an elapsed duration, precede the time unit with the letter **e**.

Note: Pressing **SHIFT+TAB** moves to the previous field without deselecting the range. Clicking your mouse inside or outside the range will deselect the range.

Exercise

In the following exercise, you will enter tasks and durations.

1. In the Task Name column, make sure the first available field is selected
2. Type **Design**
3. Press **TAB**
4. Type **1w**

The task is entered in the Task Name column and assigned the number 1. A default value of 1 day appears in the Duration column and a bar appears in the chart pane.

5. Press **ENTER**

The field in the second row of the Duration column is selected. The blue bar in the chart pane extends to five working days. Because the project begins July 1, 1998, the first task will start on that date as well. July 1, 1998 is a Wednesday; therefore, this task goes through a weekend, appearing as though it were seven days long. The elapsed time of the task is seven days whereas the actual duration is 5 days.

6. Press **LEFT ARROW**

The field in the second row of the Task Name column is active.

7. Select the field in the second row of the Task Name column and drag to the field in the tenth row of the Duration column

A range of fields is highlighted. The first field in the range is active.

8. Type **Chapter 1**

*The name of Task 2, **Chapter 1**, appears.*

9. Press **TAB**

10. Type **5**

11. Press **TAB**

***5 days** appears in the Duration column's field because days is the default duration type.*

12. Type **Chapter 2**

13. Press **TAB**

14. Type **3**

15. Press **TAB**

16. Type **Chapter 3**

17. Press **TAB**

18. Type **7**

19. Press **TAB**

20. Finish entering tasks and durations, as shown below:

Chapter 4	3
Chapter 5	5
Table of Contents	3h
Index	3
Edit	1w
End Manual	0

21. Click any field

The range is deselected. There are ten tasks, nine of which are displayed as blue bars and the last of which is displayed as a milestone.

Navigating in the Gantt Chart View

The sheet pane is a tabular view that consists of rows and columns, whose intersections are called *fields*. The column headings in the Gantt Chart view are Task Name, Duration, Start, Finish, Predecessors, and Resource Names. Initially, only the first two columns, Task Name and Duration, are visible. You can display additional columns, size columns, and move around from page to page or from field to field.

The chart pane displays your tasks on a timescale. Using a timescale, you can see graphically how long each task will take to complete. A *timescale* is an indicator of time periods that appears at the top of the Gantt chart. A timescale includes two components to indicate time periods: a major and, below it, a minor component. Each timescale component can be displayed in different units. For example, Figure 1-10 displays the major component of the timescale in units of weeks, while the minor component displays units of days.

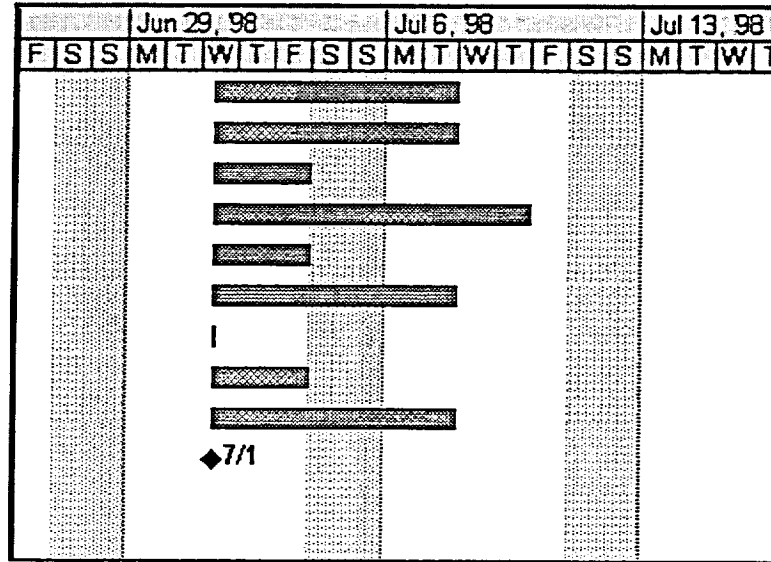


Figure 1-10: The Chart Pane

Table 1-2 summarizes how to move around the Gantt chart view using the keyboard or mouse.

Movement	Keys	Mouse
From field to field	Arrow keys or TAB to move right, SHIFT+TAB to move left	Click the field.
Page up or page down	PAGE UP or PAGE DOWN	On the vertical scroll bar, click the gray area above or below the scroll box.
To move one row down in the same column	ENTER	Click the desired field.
First or last field in row	HOME or END	N/A
First field of first row or Last field of last row	CTRL+HOME or CTRL+END	N/A
To scroll through columns	Arrow keys	On the Gantt sheet horizontal scroll bar, click the left or right arrow to move one column to the left or right, or click the gray area on the left or right of the scroll box to scroll left or right in increments.
To move the divider bar to the right or left	Press SHIFT+F6 followed by LEFT ARROW or RIGHT ARROW , and when the desired position is reached, press ENTER	Position the pointer on the divider bar. When the pointer turns into a double-headed arrow, drag the divider bar to the left or right.
To move to the beginning of the time line	Press ALT+HOME	N/A

Table 1-2: Navigating in the Gantt Chart View

Method

To navigate in the Gantt Chart view

1. Use the appropriate keystroke or mouse movement.

Exercise

In the following exercise, you will navigate in the Gantt sheet.

- | | |
|--|---|
| 1. Click the first field under Task Name | <i>The second column in the first row is active.</i> |
| 2. Press TAB twice | <i>The Start column is selected for the first row.</i> |
| 3. On the sheet pane horizontal scroll bar, click the left arrow once | <i>The two columns displayed are Task Name and Duration.</i> |
| 4. Position the pointer on the divider bar | <i>The pointer turns into a double-headed arrow.</i> |
| 5. Drag the divider bar to the right so that the size of the sheet pane is doubled | <i>An outline of the divider bar appears as you drag the mouse. More columns are displayed.</i> |
| 6. Press CTRL+HOME | <i>The first column in the first row is active.</i> |
| 7. Press END | <i>The last column in the first row, Resource Names, is active.</i> |
| 8. On the sheet pane horizontal scroll bar, click the gray area to the left of the scroll box | <i>The first column, Task Name, is now visible.</i> |
| 9. Press SHIFT+F6 | <i>The divider bar is active.</i> |
| 10. Press LEFT ARROW continually until the divider bar is positioned between the Duration and Start columns | |
| 11. Press ENTER | |
| 12. On the chart pane horizontal scroll bar, click the gray area to the right of the scroll box two times | <i>The chart scrolls to the right.</i> |
| 13. Press ALT+HOME | <i>The beginning of the time line appears.</i> |

Saving a Project

While you are working on your project, make sure that you save it to disk. It is good practice to save your project every fifteen minutes so that, if there is a power outage or power surge, you will lose only fifteen minutes of work at the most.

For a new project that you have not yet saved, you can choose either Save or Save As from the File menu. Once you have named your file, the Save command automatically saves the project under its existing filename. The Save As command can still be used if you want to give your project a new name, leaving the original file intact.

The first time you save a project, a *Planning Wizard* dialog box, shown in Figure 1-11 appears that asks, Would you like to save a baseline for [Project File Name]? A *baseline plan* is a copy of the schedule as it is now and is set once you are satisfied with the project schedule. The baseline lets you determine if your tasks are on schedule and if your costs are within the budget by comparing the actual schedule with updates and changes, to the original or baseline plan. You can set the baseline automatically every time you save your project, or you can set it manually. Manually setting the baseline is preferable because it gives you more control as to when you want it set. When you set a baseline, the task start and finish dates and resource and cost information are copied from the schedule to a baseline plan.

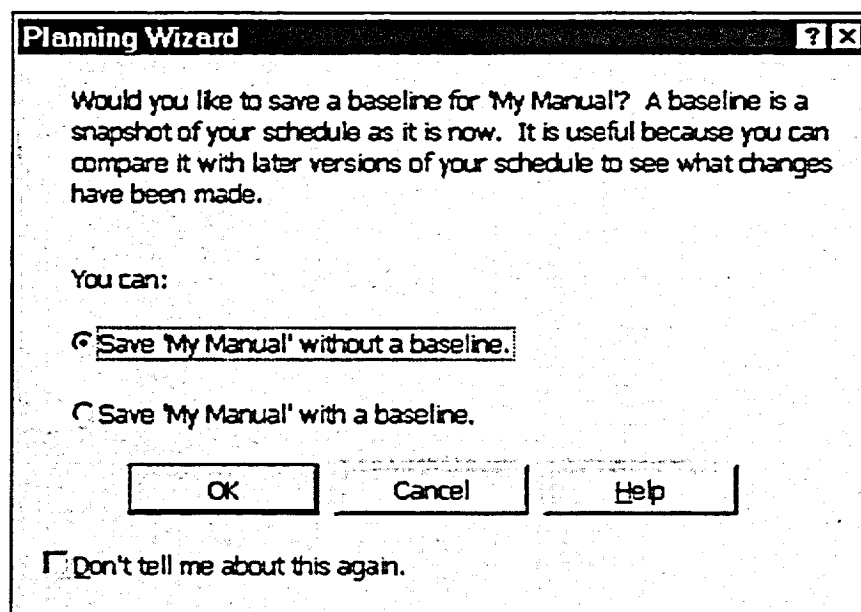


Figure 1-11: The Planning Wizard Dialog Box

Method

To save an unnamed project

1. From the File menu, choose Save As.
or
1. On the Standard toolbar, click the Save button.
2. In the File Save dialog box, from the Save in drop-down list, select a drive and/or folder.
3. In the File name combo box, type the project file name.
4. Choose Save.
5. If necessary, in the Planning Wizard dialog box, select the *Save Project without a baseline* option button and select the *Don't tell me about this again* check box.
6. Choose OK.

To save a named project

1. From the File menu, choose Save.
or
1. On the Standard toolbar, click the Save button.

Exercise

In the following exercise, you will save the project you are working on, close the project file and exit Microsoft Project.

- | | |
|---|---|
| 1. From the File menu, choose Save | <i>The File Save dialog box appears. The File name combo box is selected.</i> |
| 2. From the Save in drop-down list, select drive H: | <i>The contents of drive H: appear.</i> |
| 3. From the list of folders, double-click Doc | <i>The contents of the Doc folder appear.</i> |
| 4. In the File name combo box, type My Manual | |
| 5. Choose Save | <i>The Planning Wizard dialog box appears.</i> |
| 6. Make sure the <i>Save Project without a baseline</i> option button is selected | |
| 7. Select the <i>Don't tell me about this again</i> check box | |

8. Choose OK

*The Planning Wizard dialog box closes and the name **My Manual** appears on the title bar.*

9. Click the project file Close button

The project file closes.

10. Click the application Close button

Microsoft Project closes.

Summary

To start Microsoft Project

1. If necessary, start Windows 95.
2. On the taskbar, click the Start button.
3. From the Start menu, point to Programs.
4. From the Programs menu, choose Microsoft Project.
5. If necessary, in the Welcome! dialog box, click the Close button.

To get help from the Office Assistant

1. On the Standard toolbar, click the Office Assistant button.
2. In the Office Assistant bubble help window, in the *What would you like to do?* text box, type a question or a phrase.
3. Choose Search.
4. Select one of the suggested topics.
or
4. Repeat steps 2 and 3 as needed.

To change Office Assistant options

1. On the Standard toolbar, click the Office Assistant button.
2. In the Office Assistant bubble help window, choose Options.
3. If necessary, select the Options tab.
4. On the Options page, select and deselect options.
5. Choose OK.

To change Office Assistant attributes

1. On the Standard toolbar, click the Office Assistant button.
2. In the Office Assistant bubble help window, choose Options.
3. In the Office Assistant dialog box, select the Gallery tab.
4. On the Gallery page, click the Back and Next buttons to view other Office Assistants.
5. Choose OK.

To hide Office Assistant

1. Click the Office Assistant Close button.

To create a new project file

1. On the Standard toolbar, click the New button.
or
1. From the File menu, choose New.
2. In the Project Information dialog box, choose OK to accept the current date as the Start date.
or
2. In the Project Information dialog box, in the Start date combo box, enter a date and choose OK.
or
2. In the Project Information dialog box, from the Schedule from dropdown list, select Project Finish Date and then, in the Finish Date combo box, enter a date and choose OK.

To record project information

1. From the File menu, choose Properties.
2. If necessary, select the Summary tab.
3. On the Summary page, in the Title, Subject, Author, Manager and Company text boxes, enter the appropriate information.
4. On the Summary page, in the Comments text box, type the project goals and scope.
5. Choose OK.

To change the default settings

1. From the Tools menu, choose Options.
2. In the Options dialog box, select the appropriate tab.
3. On the page, select the desired options.
4. If necessary, choose Set as Default.
5. Choose OK.

To enter tasks and durations one field at a time

1. In the Task Name column, select the first available field and type the name of the task.
2. Press **TAB**
3. In the Duration column, type the value of the duration. If the duration is anything other than days, type **m** for minutes, **h** for hours, or **w** for weeks.
4. Press **ENTER**
5. Press **LEFT ARROW** to return to the Task Name column and repeat steps 1 through 4 as required.

To enter tasks and durations by selecting a range

1. Select the first field of the desired range.
2. Drag the mouse through the range of fields you want to include.
3. In the first field, type the desired information.
4. Press **TAB**
5. In the Duration column, type the appropriate information.
6. Repeat steps 4 and 5 as required.

To navigate in the Gantt Chart view

1. Use the appropriate keystroke or mouse movement.

To save an unnamed project

1. From the File menu, choose Save As.
or
1. On the Standard toolbar, click the Save button.
2. In the File Save dialog box, from the Save in drop-down list, select a drive and/or folder.
3. In the File name combo box, type the project file name.
4. Choose Save.
5. If necessary, in the Planning Wizard dialog box, select the *Save Project without a baseline* option button and select the *Don't tell me about this again* check box.
6. Choose OK.

To save a named project

1. From the File menu, choose Save.
or
1. On the Standard toolbar, click the Save button.

Self-Check Exercise

1. Start Microsoft Project.
2. In the Welcome dialog box, select the *Don't display this startup screen again* check box and close the Welcome dialog box.
3. Close the bubble help and the Office Assistant.
4. Create a new project file.
5. Give the project a start date of October 1, 1998.
6. Change the calendar options so the week starts on Monday with a start time of 7:30 AM and an end time of 4:30 PM.
7. Record the following project information: a title of **Office Move**, and your name as the manager for this project.
8. Enter the following tasks:

ID	Task Name	Duration
1	Meet Real Estate Agent	3h
2	Identify Office Needs	1w
3	Office Layout	1w
4	Budget	2d
5	Initial Approval	1d
6	Negotiate Lease	1w
7	Draft Subcontract	7d
8	Final Budget Approval	1d
9	Estimate for Construction	6w
10	Quotes for Construction	1w
11	Quotes for Move	1.5d
12	Pack Equipment	2d
13	General Packing	4d
14	Actual Move	1d
15	Unpack	3d
16	New Office Party	3h

9. Adjust the size of the sheet pane until the Duration column is displayed in its entirety.
10. Add a milestone at the end of the project and call it **End Move**.
11. Save the project in the **Doc** folder in the **H:** drive and name it **Office Move**. Your project should look like the project shown in **Figure 1-12**.

Module 2

Working with a Project

- Modifying a Project
- Organizing Tasks
- Scheduling Tasks

Module Objectives

■ Modify a project

Microsoft Project makes it easy to edit task fields, insert new tasks, and delete existing tasks. You can also modify a project by changing the default settings. Default settings lay the ground rules by which the project will be governed.

■ Organize tasks

Selecting and moving tasks lets you organize your task list in a logical order. Outlining helps you to view various levels of detail, which can be particularly useful when working with large projects.

■ Schedule tasks

By defining task dependencies and linking tasks, you can determine how long the project will take to complete.

Modifying a Project

Once you have entered data into a field, you might want to make changes to it. You can edit task fields, insert new task rows, or delete existing tasks. You can also change Microsoft Project's default settings to customize a project to suit your needs or your customer's needs.

Opening an Existing Project

You open an existing project using the File Open dialog box, shown in Figure 2-1. Besides specifying a project file to open, you can also tell Microsoft Project to search for a particular file based on a set of criteria, such as a word or property it contains. The File Open dialog box also contains several tools that let you change the view in the File Open dialog box. Most of these tools, similar to those used in Explorer, will be familiar to you already.

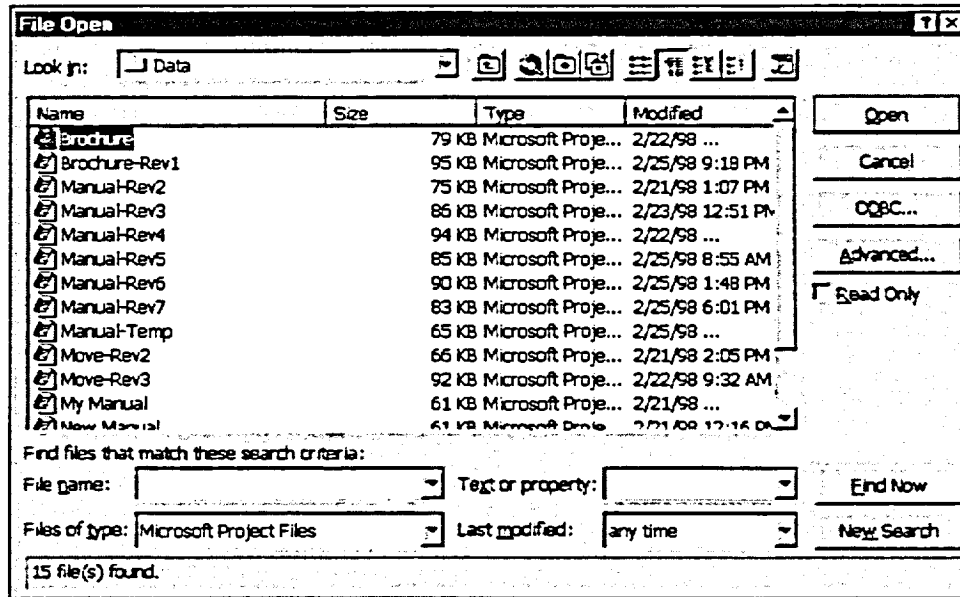


Figure 2-1: The File Open Dialog Box

Method

To open an existing project

1. From the File menu, choose Open.
or
1. On the Standard toolbar, click the Open button.
2. In the File Open dialog box, from the Look in drop-down list, select the desired drive.
3. In the File list box, double-click the desired folder.
4. In the File list box, select the desired file.
5. Choose Open.

Exercise

In the following exercise, you will open an existing project.

1. From the File menu, choose Open *The File Open dialog box appears.*
2. From the Look in drop-down list, select drive A:
3. In the File list box, select **New Manual**
4. Choose Open *The New Manual file opens.*

Working with Tasks and Durations

During a project, task information might need to change. You can change task or duration information by replacing or editing the data in the task or duration field. You can also insert additional tasks or delete tasks that are no longer necessary. When you select a field, the contents of the field appears in the entry box. When you click in the entry bar area, the Enter button and the Cancel button appear next to the entry box, as shown in **Figure 2-2**. Click the Enter button to accept changes to the entry, or click the Cancel button to retain the original entry.

When in edit mode, the same rules apply as in a word processor. Press **DELETE** to delete characters to the right of the insertion point, and press **BACKSPACE** to delete characters to the left of the insertion point. Use the arrow keys to position the insertion point. Use **HOME** to take you to the beginning of the line, and **END** to take you to the end of the line.

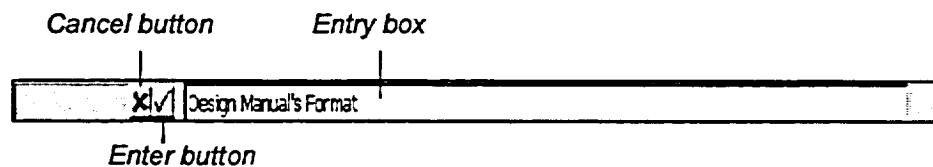


Figure 2-2: The Entry Bar

Method

To edit a task or duration

1. On the sheet pane, in the Task Name column or Duration column, select the field to be edited.
2. Press **F2** or click in the entry box.
3. In the entry box, edit the field contents.
4. Press **ENTER** or click the Enter button to accept the changed data.
or
4. Press **ESC** or click the Cancel button to leave the contents unchanged.

To insert a new task

1. In a column, select the field where you want the new task to be inserted.
2. Press **INSERT**
or
2. From the Insert menu, choose New Task.

To delete a task

1. In a column, select the field you want to delete.
2. Press **DELETE**
or
2. From the Edit menu, choose Delete Task.

Exercise

In the following exercise, you will work with tasks and durations.

1. In the Task Name column, select the *Design* task
2. Press **F2**
*The entry bar is activated. The insertion point appears at the end of the word **Design**.*
3. Press **SPACEBAR** and type **Manual's Format**
4. Press **ENTER**
The additional information appears in the field.
5. Select the duration for the *Chapter 2* task
6. Click in the Entry box, delete the number 3 and type 4
The entry bar is activated.
7. Press **ENTER**
The new information appears in the field.
8. In the Task Name column, select the *End Manual* task
9. Press **INSERT**
*A new blank row appears above **End Manual**.*
10. In the Task Name column, of the blank row, enter **Glossary**
11. In the Duration column, of the blank row, enter 3
*The new task **Glossary** appears with a three-day duration.*
12. In the Task Name column, select the *Table of Contents* task and the *Index* task
*The task names **Table of Contents** and **Index** are selected.*
13. Press **INSERT**
Two blank rows appear before the selected task.

14. Enter the following information into the two new rows:

Task Name	Duration
Chapter 6	4
Capture Screen Shots	1w

15. Select the *End Manual* task
16. Insert two new blank rows and enter the following information into the two new rows:

Task Name	Duration
Chapter 7	3
Corrections	3

17. In the Task Name column, select the *Chapter 7* task
18. Press DELETE
19. Save the project in the **Doc** folder on drive **H:** with the name **New Manual 1.mpp**

The Chapter 7 task is deleted.

Indenting and Outdenting Tasks

As you arrange tasks in the order you want them and group tasks into phases, it is difficult to differentiate between tasks that belong to a specific phase and where one phase ends and another begins. By creating an outline, you can position tasks at different levels to display hierarchical dependencies among them. You *demote* a task to a lower level in the outline by indenting it. If a task is not already at the highest outline level, you can *promote* it to a higher level by outdenting it.

An outline consists of summary tasks and subtasks. A *subtask* is a step in a summary task. A *summary task* is a group of subtasks that represent a project phase. When you indent a task, that task becomes a subtask. You create a summary task by indenting the tasks immediately following it. The preceding task appears bold, as shown in Figure 2-3, indicating that it has become a summary task.

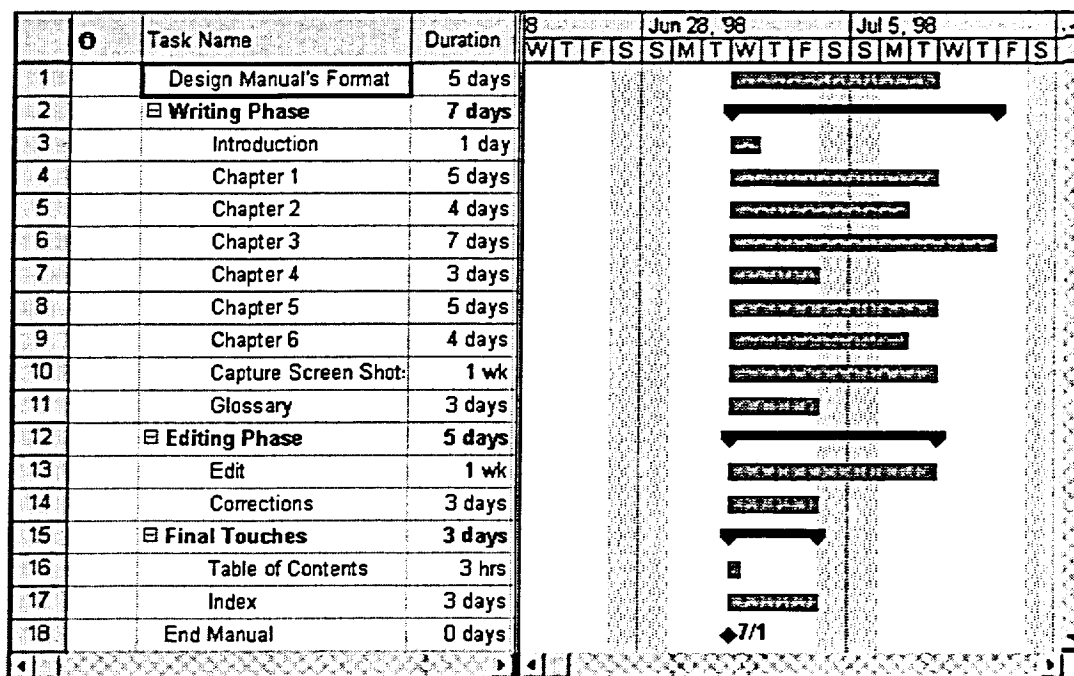


Figure 2-3: The Project in Outline Mode

Method

To indent a task

1. Select the task you want to indent.
2. On the Formatting toolbar, click the Indent button.

To outdent a task

1. Select the task you want to outdent.
2. On the Formatting toolbar, click the Outdent button.

Exercise

In the following exercise, you will indent and outdent tasks.

1. Insert a new row above the *Chapter 1* task
2. In the Task Name column, of the blank row, enter **Introduction**
A new task is entered with a duration of 1 day.
3. Insert a new row above the *Introduction* task
4. In the Task Name column, of the blank row, enter **Writing Phase**
A new task is entered with a duration of 1 day.
5. Select the *Introduction* through *Glossary* tasks
The tasks are highlighted.
6. On the Formatting toolbar, click the Indent button (the right arrow)
The tasks are indented on the sheet. These tasks are now subordinate to Writing Phase. The duration of the summary task, Writing Phase, is now 7 days, which is determined by information from the subtasks.
7. Insert a new row above the *Edit* task
A new blank row appears.
8. In the Task Name column, of the blank row, enter **Editing Phase**
A new task is entered with a duration of 1 day. The task is indented and is currently a subtask of Writing Phase.
9. Select the *Editing Phase* task
10. On the Formatting toolbar, click the Outdent button (the left arrow)
The task Editing Phase is now a first-level task.
11. Select the *Edit* and *Corrections* tasks
The tasks are highlighted.
12. On the Formatting toolbar, click the Indent button
13. Insert a new row above the *Table of Contents* task
A new blank row appears.

14. In the Task Name column, of the blank row, enter **Final Touches**
15. Select the *Final Touches* task
16. On the Formatting toolbar, click the Outdent button *The task Final Touches is now a first-level task.*
17. Select the *Table of Contents* and *Index* tasks *The tasks are highlighted.*
18. On the Formatting toolbar, click the Indent button *The tasks are subtasks to the summary task Final Touches.*
19. Save the project

Collapsing and Expanding Summary Tasks

A project of almost any size is destined to generate hundreds of pieces of information. *Collapsing* and *expanding* summary tasks in the sheet pane lets you display just the level(s) of information you need at any given time. Collapsed subtasks are hidden. You show hidden subtasks by expanding the summary task.

In addition, you can use the Zoom buttons on the Standard toolbar to increase or decrease the amount of information you view in the chart pane. When you change the view size, Microsoft Project automatically adjusts the timescale in which the information is displayed.

Method

To collapse a summary task

1. In the sheet pane, click the collapse outline symbol (-) next to the summary task to collapse it.
or
1. In the Task Name column, select the summary task to collapse and, on the Formatting toolbar, click the Hide Subtasks button.

To expand a summary task

1. In the sheet pane, click the expand outline symbol (+) next to the summary task to expand it.
or
1. In the Task Name column, select the summary task to expand and, on the Formatting toolbar, click the Show Subtasks button.

To collapse the entire outline

1. Select the Task Name column.
2. On the Formatting toolbar, click the Hide Subtasks button.

To expand the entire outline

1. On the Formatting toolbar, click the Show All Subtasks button.

To increase or decrease the information viewed in the chart pane

1. On the Standard toolbar, click the Zoom in or Zoom out button.
or
1. From View menu, choose Zoom.
2. In the Zoom dialog box, in the Zoom to area, select an option(s).
3. Choose OK.

Exercise

In the following exercise, you will expand and collapse summary tasks and use the Zoom buttons on the Standard toolbar.

- | | |
|--|--|
| 1. In the Task Name column, click the collapse outline symbol next to the Writing Phase summary task | <i>The subtasks for the Writing Phase summary task is collapsed.</i> |
| 2. On the Formatting toolbar, click the Show Subtasks button | <i>The Writing Phase summary task is expanded.</i> |
| 3. Select the Task Name column | <i>The Task Name field is selected.</i> |
| 4. On the Formatting toolbar, click the Hide Subtasks button | <i>The entire outline is collapsed.</i> |
| 5. On the Formatting toolbar, click the Show All Subtasks button | <i>The entire outline is expanded.</i> |
| 6. On the Standard toolbar, click the Zoom Out button until the End Manual milestone is visible | |
| 7. From the View menu, choose Zoom | <i>The Zoom dialog box appears.</i> |
| 8. Choose Reset and then OK | <i>The timescale is reset to the original units.</i> |
| 9. Press ALT+HOME | <i>The beginning of the timeline appears.</i> |

Scheduling Tasks

As a default Microsoft Project starts each task on the project start date. To use Microsoft Project to develop a useful schedule, you must determine any *dependencies* one task may have on another. For example, in most cases one task can not begin until the previous task is completed; however, tasks can start or finish at the same time. A *successor task* is a task whose start or finish depends on the start or finish of another task. A *predecessor task* is a task that a successor task depends on. For example, you must build walls (predecessor task) before you can paint them (successor task). You specify the logical connection or dependency between tasks by linking them together.

Identifying Task Dependencies

Microsoft Project provides four dependency rules, as described in **Table 2-1**. You use dependencies to create a flexible schedule that shows when each task should start or finish relative to the start or finish date of another task. By defining these task dependencies, Microsoft Project can determine how long the project will take to complete. The Finish-to-start dependency rule is the default.

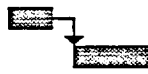
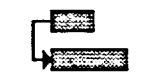

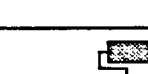
Dependencies	Description	Chart Pane Display
Finish-to-start (FS)	Task starts after its predecessor is completed.	
Start-to-start (SS)	Task starts at the same time as its predecessor starts.	
Finish-to-finish (FF)	Task is completed at the same time as its predecessor is completed.	
Start-to-finish (SF)	Task is completed after its predecessor starts.	

Table 2-1: Task Dependency Rules

Linking and Unlinking Tasks

Once you have determined the task dependencies, you *link* tasks and let Microsoft Project determine when the tasks are scheduled to start and end. If you have to change a task duration later, the system will recalculate all task information, including scheduled start and finish dates.

You can easily link tasks using the mouse. To link contiguous tasks, select the first task to be linked, and then drag to the last task to be linked. To link noncontiguous tasks, select the first task to be linked, and then press and hold **CTRL** while selecting all subsequent tasks to be linked. If necessary, you can also unlink tasks that are already linked to remove the dependency between those tasks.

When you use the Link Tasks button on the Standard toolbar, Microsoft Project automatically creates a Finish-to-start link between the selected tasks. To link tasks using any other dependency type or to change a task link, you use the Task Information dialog box, shown in **Figure 2-4**.

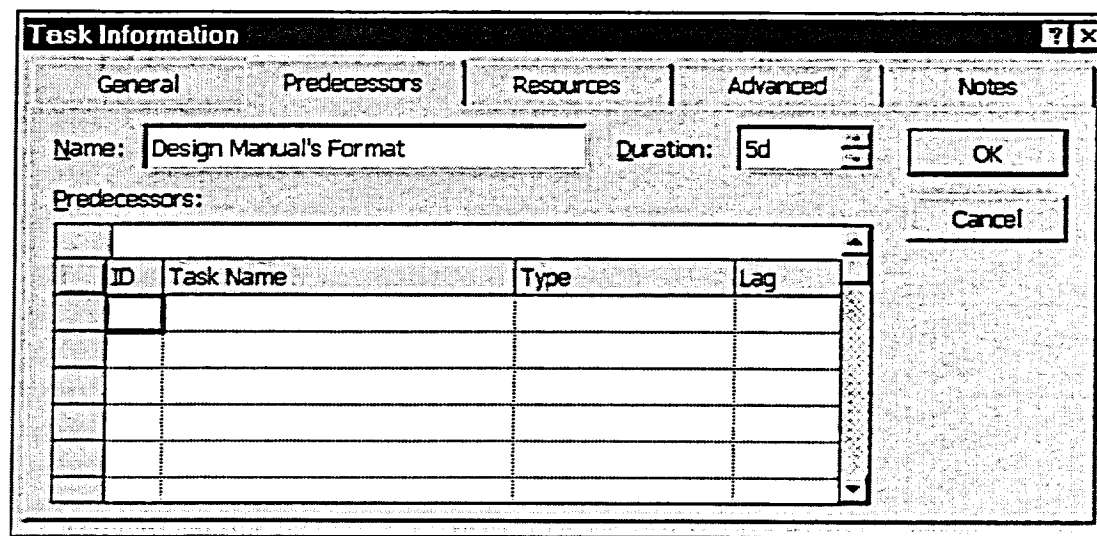


Figure 2-4: The Task Information Dialog Box

Method

To link tasks in a (FS) dependency

1. Select the tasks to be linked.
2. On the Standard toolbar, click the Link Tasks button.
or
2. From the Edit menu, choose Link Tasks.

To link tasks in a (SS), (FF), or (SF) dependency

1. In the Task Name column, double-click the task to be linked.
2. In the Task Information dialog box, select the Predecessors tab.
3. On the Predecessors page, in the ID column, type the row heading of the predecessor task.
4. In the Type column, from the Type field drop-down list, select the dependency type.
5. Choose OK.

To unlink tasks

1. Select the tasks to be unlinked.
2. On the Standard toolbar, click the Unlink Tasks button.
or
2. From the Edit menu, choose Unlink Tasks.

Note: You can select all tasks by selecting the Task Name column heading.

Exercise

In the following exercise, you will link and unlink tasks.

- | | |
|---|--|
| 1. If necessary, select the Task Name column heading | <i>The entire column is highlighted.</i> |
| 2. On the Standard toolbar, click the Link Tasks button | <i>All tasks are linked.</i> |
| 3. Examine the linked tasks by scrolling through the chart pane | |
| 4. Select Chapter 2 and Chapter 3 | |
| 5. On the Standard toolbar, click the Unlink Tasks button | <i>Chapter 3 is no longer dependent on Chapter 2. Chapter 3 starts at the same time as the Writing Phase summary task.</i> |
| 6. Select Chapter 1, press and hold CTRL and then, select Chapter 3 | <i>Chapters 1 and 3 are selected.</i> |
| 7. On the Standard toolbar, click the Link Tasks button | <i>Chapters 2 and 3 are now both dependent on Chapter 1.</i> |
| 8. Select Chapter 4 through Chapter 6 | <i>Chapters 4, 5, and 6 are selected.</i> |

9. From the Edit menu, choose Unlink Tasks
10. Discuss the results of the links with your instructor
11. Save the project in the **Doc** folder on the **H:** drive as **My Manual2.mpp** and close the project

Chapter 5 is no longer dependent on Chapter 4, and Chapter 6 is no longer dependent on Chapter 5.

Modifying Task Dependencies

Task dependencies is one of the variables that you can manipulate when trying to shorten the finish date of a project. Rather than having one task finish before another can start, it might be feasible to have both tasks start at the same time, as shown in Figure 2-5, or end at the same time. It might also be possible to have one task start before the predecessor task is finished. This is much more indicative of everyday life. For example, while one person completes Chapter 1 and progresses to Chapter 2, another person might be editing Chapter 1 at the same time.

Summary Task Information

General | **Predecessors** | Resources | Advanced | Notes

Name: Editing Phase Duration: 18d OK

Predecessors:

ID	Task Name	Type	Lag
<input checked="" type="checkbox"/>	Start-to-Start (SS)		
2	Writing Phase	Start-to-Start (SS)	0d
		Finish-to-Start (FS)	
		Start-to-Start (SS)	
		Finish-to-Finish (FF)	
		Start-to-Finish (SF)	
		(None)	

Cancel

Figure 2-5: Changing the Dependency Type

Method

To modify a task dependency

1. In the Task Name column, double-click the task whose predecessor you want to change.
2. In the Task Information dialog box, select the Predecessors tab.
3. On the Predecessor page, in the Predecessors area, in the Type column, from the Type field drop-down list, select a dependency.
4. Choose OK.

Exercise

In the following exercise, you will modify task dependencies.

1. Open **A:\Manual-Rev2**
2. In the chart pane, examine the project's start date, end date and dependencies
3. Double-click the *Editing Phase* summary task
4. Select the Predecessors tab

The Summary Task Information dialog box appears.

Predecessor information appears for the Editing Phase summary task. The Editing Phase is dependent on the Writing Phase summary task. The type of dependency is Finish-to-Start, which means that the Editing phase cannot begin until the Writing Phase is finished.

5. In the Predecessors area, in the Type column, from the Type field drop-down list, select Start-to-Start
6. Choose OK
7. Examine the dependency between the Writing Phase and Editing Phase summary tasks
8. Examine the project's end date
9. Link the following tasks with a Finish-to-Start dependency

Tasks 2 and 11 start at the same time.

Introduction	Edit Introduction
Chapter 1	Edit Chapter 1
Chapter 2	Edit Chapter 2
Chapter 3	Edit Chapter 3
Chapter 4	Edit Chapter 4
Chapter 5	Edit Chapter 5
Chapter 6	Edit Chapter 6

10. Examine the task dependencies and the project's end date
11. Save the project as **H:\Doc\Manual-Rev 2a.mpp**

Creating Leads and Lags

A *lag time* occurs when there is a delay between two tasks. For example, if you just painted your living room, you would have to wait at least two days before hanging the pictures on your wall. Therefore, there is a two-day lag between the task Paint Living Room (predecessor task) and the task Hang Pictures (successor task).

A *lead time* is an overlap between two tasks. Very often, you do not have to wait until a predecessor is entirely finished before the successor task can start. In fact, a partial completion would suffice.

Method

To create a lead or a lag

1. In the Task Name column, double-click the task whose predecessor you want to change.
2. If necessary, in the Task Information dialog box, select the Predecessors tab.
3. On the Predecessors page, in the Predecessors area, in the Lag column, select the Lag field for the predecessor task to which you want to add a lag time.
4. For a lag time, enter a positive value.
or
4. For a lead time, enter a negative value.
5. Choose OK.

Exercise

In the following exercise, you will create a lead.

1. Double-click Chapter 2 *The Task Information dialog box appears.*
2. If necessary, select the Predecessors tab *The Predecessors page appears.*
3. In the Predecessors area, in the Lag column of the Chapter 1 task, select the Lag field
4. Type -2d
5. Choose OK *The Task Information dialog box closes.*

6. Examine the dependency between Chapter 1 and Chapter 2

Chapter 2 can now begin two days before the finish of Chapter 1.

7. Save the project

Scheduling Recurring Tasks

Some tasks, such as status meetings, recur at specific intervals throughout a project. For example, status meetings could take place every Friday or every second Friday. Figure 2-6 displays a *recurring task* called Status Meeting that occurs every Friday for 1 hour for the length of the project.

Figure 2-6: The Recurring Task Information Dialog Box

The sheet pane displays a group of recurring tasks as a summary task whose duration is the length of time during which the tasks recur. A small icon is displayed in the indicator column representing information about the summary task or subtasks. The individual recurring tasks can be displayed as subtasks. A recurring task is displayed differently on the chart pane, where the actual numbers of subtasks are displayed as separate bars, as shown in Figure 2-7.

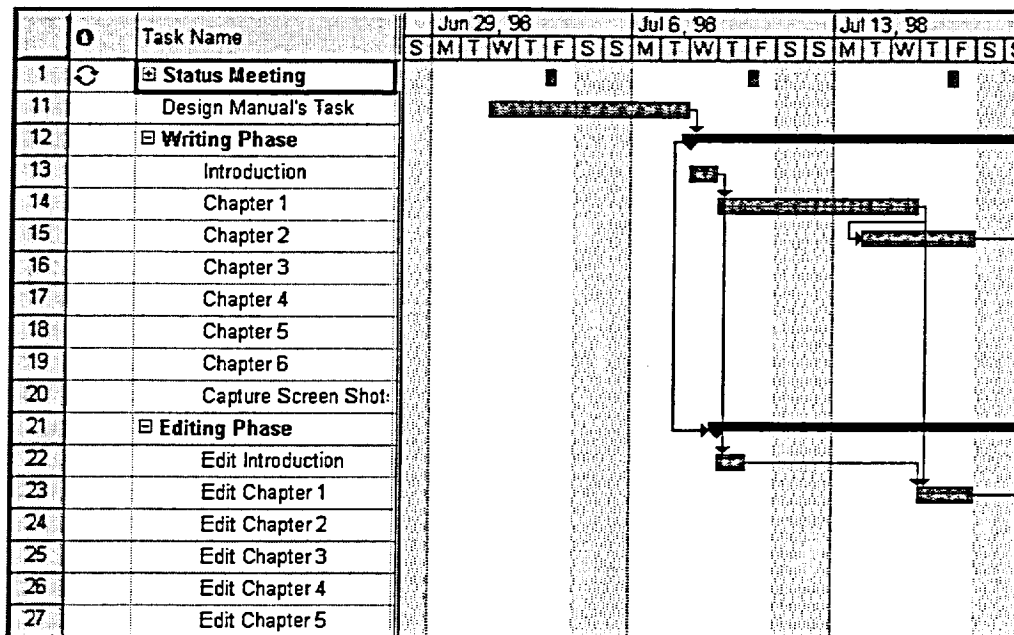


Figure 2-7: A Recurring Task Displayed

Method

To schedule a recurring task

1. In the Task Name column, select the row above which you want to insert the recurring task.
2. From the Insert menu, choose Recurring Task.
3. In the Recurring Task Information dialog box, in the Name text box, type the name of the recurring task.
4. In the Duration spin box, type a duration.
5. In the This occurs area, select an option button.
6. In the Daily, Weekly, Monthly, or Yearly area, select the task frequency options.
7. If necessary, in the Length area, in the From or To combo boxes, enter a date.
8. Choose OK.

Exercise

In the following exercise, you will schedule a recurring task.

1. Select the Design Manual's Format task
2. From the Insert menu, choose Recurring Task *The Recurring Task Information dialog box appears.*
3. In the Name text box, type **Status Meeting**
4. In the Duration spin box, type **1h**
5. In the Weekly area, select the Fri check box *The meeting will occur every Friday.*
6. Examine the Length area *The length of the recurring task begins when the project begins and ends when the project ends.*
7. Choose OK *The Recurring Task Information dialog box closes and the recurring task Status Meeting is shown on the chart pane as several tasks.*
8. If necessary, expand the Duration column to view the duration in its entirety
9. Expand the Status Meeting summary task *The summary recurring task expands so that you can see all sub tasks.*
10. Collapse the Status Meeting summary task *The summary recurring task collapses.*
11. Save and close the project

Applying Constraints

On occasion, you may want a task to begin or end on a specific date, despite how dates of other tasks may change. For example, you may want the date of a consultation with the customer to discuss the project's progress to remain fixed, whether the tasks are being completed late or early. A *constraint* is a restriction that you place on a task's start or finish date. There are several types of constraints that you can place on a task, as described in **Table 2-2**. By default all Microsoft Project tasks have the As Soon As Possible constraint applied to them.

Constraint	Description
As Soon As Possible (ASAP)	Task starts as soon as links and other factors in the schedule allow.
As Late as Possible (ALAP)	Task starts as late as possible, without delaying the project finish date.
Start No Earlier Than (SNET)	Task starts on or after the date you specify.
Finish No Earlier Than (FNET)	Task finishes on or after the date you specify.
Start No Later Than (SNLT)	Task starts on or before the date you specify.
Finish No Later Than (FNLTL)	Task finishes on or before the date you specify.
Must Start On (MSO)	Task starts on the date you specify.
Must Finish On (MFO)	Task finishes on the date you specify.

Table 2-2: The Constraint Types

Constraint types are either flexible or inflexible. Flexible constraints are constraints that let Microsoft Project calculate the start and finish dates for the task. For example, if you apply the *As Soon As Possible* constraint or the *As Late As Possible* constraint, Microsoft Project will calculate the earliest or latest possible start and finish dates for the task. These choices allow for automatic rescheduling if another task in the schedule changes.

Another example of a flexible constraint is the *Finish No Later Than* constraint that requires you to enter a date in the date column. For example, if you are renovating a house and the owners are moving in on August 31, 1998, the task can be finished before August 31, 1998, but no later than August 31, 1998. The *Finish No Later Than* constraint has some flexibility because the job can finish before that date, but cannot finish after

that date. In Figure 2-8, the constraint *Finish No Later Than August 31, 1998* has been placed on the task Touch Up and Clear Out. The task is scheduled to finish on August 14, 1998.

Task ID	Task Name	Duration	Start	Finish
1	Carpentry	1 day	Aug 3, 98	Aug 4, 98
2	Electrical	2 days	Aug 4, 98	Aug 6, 98
3	Plumbing	2 days	Aug 4, 98	Aug 6, 98
4	Drywall	1 day	Aug 6, 98	Aug 7, 98
5	Painting	3 days	Aug 7, 98	Aug 10, 98
6	Touch Up and Clear Out	1 day	Aug 10, 98	Aug 11, 98

Task Information

General | Predecessors | Resources | Advanced | Notes

Name: Touch Up and Clear Out Duration: 1d OK

Constrain task

Type: Finish No Later Than Mark task as milestone

Date: 08/31/98 WBS code: 6 Cancel

Task type: Fixed Units Effort driven

Figure 2-8: Using the Finish No Later Than Constraint

Inflexible constraints can effect Microsoft Project's recalculating abilities. For example, if the constraint *Must Finish On August 31, 1998* is applied to the Touch Up and Clear Out task, the scheduled finish date would change to August 31, 1998. This would cause a gap between the tasks Painting and Touch Up and Clear Out, as shown in Figure 2-9. Great care must be taken when assigning constraints to avoid causing conflicts between tasks or unnecessary gaps between tasks. In addition, any changes made to the schedule would require manual recalculation of all task constraints.

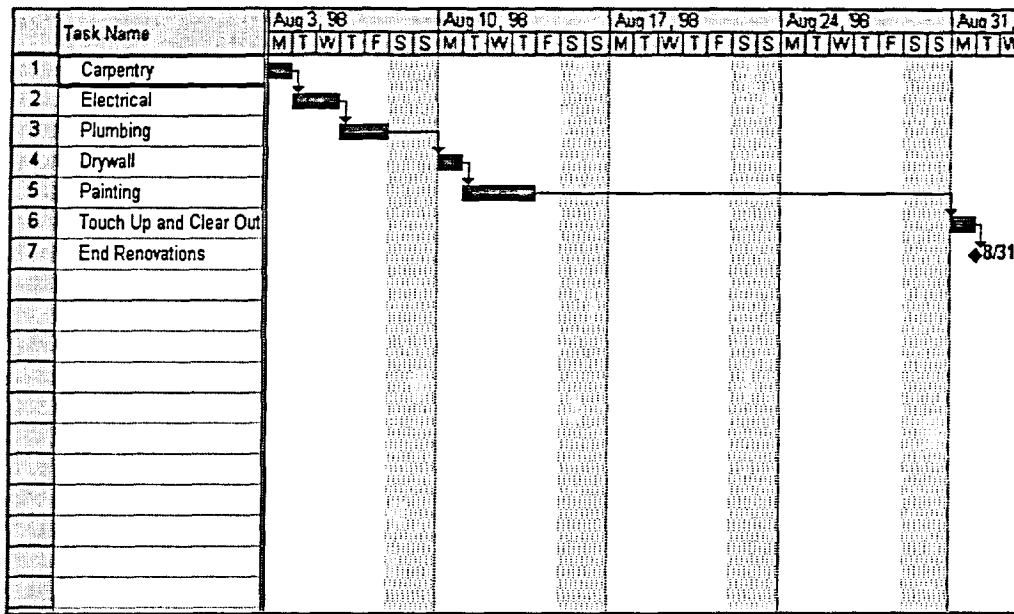


Figure 2-9: Using the Must Finish On Constraint

When a constraint is placed on a task that causes a conflict or has the potential of causing a conflict, the Planning Wizard appears with a warning and possible alternatives, as shown in Figure 2-10.

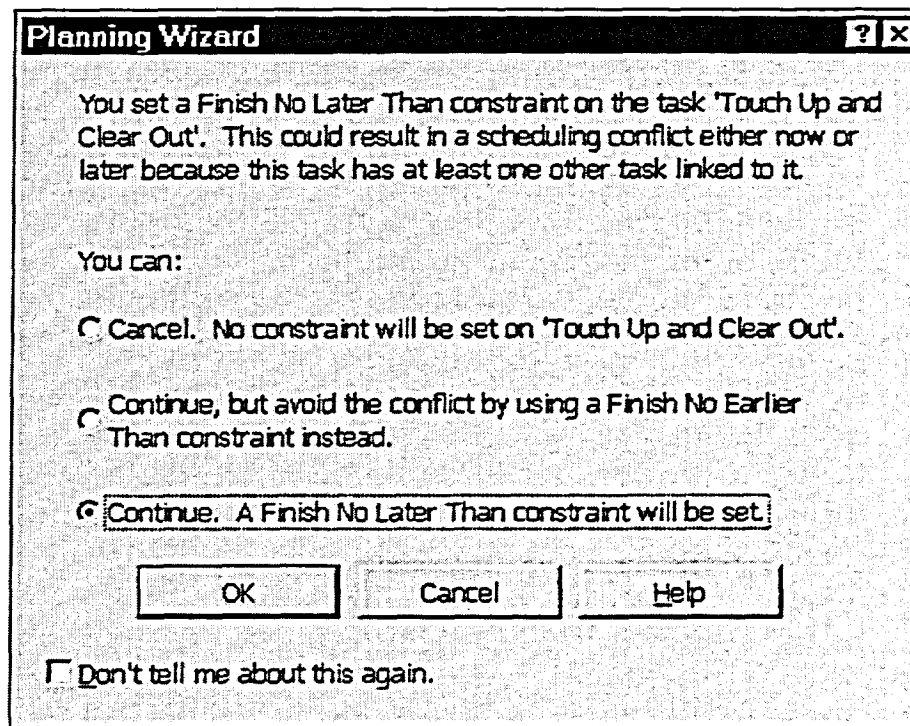


Figure 2-10: The Planning Wizard

Method

To apply a constraint

1. In the Task Name column, double-click the task to which you want to apply a constraint.
2. In the Task Information dialog box, select the Advanced tab.
3. On the Advanced page, in the Constrain task area, from the Type drop-down list, select a constraint type.
4. If necessary, in the Constrain task area, in the Date combo box, enter a date.
5. Choose OK.

Exercise

In the following exercise, you will apply constraints.

1. Open **A:\Renovate.mpp**
2. Examine the project's end date
3. Double-click the *Touch Up and Clear Out* task *The Task Information dialog box appears.*
4. On the Advanced page, in the Constrain task area, from the Type drop-down list, select **Finish No Later Than**
5. In the Constrain task area, in the Date combo box, type **08/31/98**
6. Choose OK
7. If the Planning Wizard appears, select the *Continue. A Finish No Later Than constraint will be set.* option button, and then choose OK
8. Examine the finish date of the task *The task is still scheduled to finish on August 14, 1998.*
9. Double-click the *Touch Up and Clear Out* task *The Task Information dialog box appears.*
10. Repeat steps 5 through 7 to set a **Must Finish On** constraint for **08/31/98**

11. In the chart pane, examine the finish date of the task

The task is scheduled to finish on August 31, 1998. There is a large gap between the last two tasks.

12. Save as **H:\doc\Renovate 2.mpp** and close the project

Summary

To open an existing project

1. From the File menu, choose Open.
or
1. On the Standard toolbar, click the Open button.
2. In the File Open dialog box, from the Look in drop-down list, select the desired drive.
3. In the File list box, double-click the desired folder.
4. In the File list box, select the desired file.
5. Choose Open.

To edit a task or duration

1. On the sheet pane, in the Task Name or Duration column, select the field to be edited.
2. Press F2 or click in the entry box.
3. In the entry box, edit the field contents.
4. Press ENTER or click the Enter button to accept the changed data.
or
4. Press ESC or click the Cancel button to leave the contents unchanged.

To insert a new task

1. In a column, select the field where you want the new task to be inserted.
2. Press INSERT
or
2. From the Insert menu, choose New Task.

To delete a task

1. In a column, select the field you want to delete.
2. Press DELETE
or
2. From the Edit menu, choose Delete Task.

To select a task

1. Click the row heading of the task you want to select.

To select a range of tasks

1. Drag the pointer through the range of row headings you wish to include.
or
2. Select the first row heading and then, press and hold SHIFT, and click the last row heading of the range.
3. Release SHIFT

To move a task (Mouse method)

1. Select the row heading(s) of the task(s) you want to move.
2. Point to the row heading and drag the selection to its new position.

To move a task (Cut and paste method)

1. Select the row heading(s) of the task(s) you want to move.
2. From the Edit menu, choose Cut Task.
or
2. On the Standard toolbar, click the Cut button.
3. In the Task Name column, select a field in the row where the task is to be moved.
4. From the Edit menu, choose Paste.
or
4. On the Standard toolbar, click the Paste button.

To indent a task

1. Select the task you want to indent.
2. On the Formatting toolbar, click the Indent button.

To outdent a task

1. Select the task you want to outdent.
2. On the Formatting toolbar, click the Outdent button.

To collapse a summary task

1. In the sheet pane, click the collapse outline symbol (-) next to the summary task to collapse it.
or
1. In the Task Name column, select the summary task to collapse and, on the Formatting toolbar, click the Hide Subtasks button.

To expand a summary task

1. In the sheet pane, click the expand outline symbol (+) next to the summary task to expand it.
or
1. In the Task Name column, select the summary task to expand and, on the Formatting toolbar, click the Show Subtasks button.

To collapse the entire outline

1. Select the Task Name column.
2. On the Formatting toolbar, click the Hide Subtasks button.

To expand the entire outline

1. On the Formatting toolbar, click the Show All Subtasks button.

To increase or decrease the information viewed in the chart pane

1. On the Standard toolbar, click the Zoom in or Zoom out button.
or
1. From View menu, choose Zoom.
2. In the Zoom dialog box, in the Zoom to area, select an option(s).
3. Choose OK.

To link tasks in a (FS) dependency

1. Select the tasks to be linked.
2. On the Standard toolbar, click the Link Tasks button.
or
2. From the Edit menu, choose Link Tasks.

To link tasks in a (SS), (FF), or (SF) dependency

1. In the Task Name column, double-click the task to be linked.
2. In the Task Information dialog box, select the Predecessors tab.
3. On the Predecessors page, in the ID column, type the row heading of the predecessor task.
4. In the Type column, from the Type field drop-down list, select the dependency type.
5. Choose OK.

To unlink tasks

1. Select the tasks to be unlinked.
2. On the Standard toolbar, click the Unlink Tasks button.
or
2. From the Edit menu, choose Unlink Tasks.

To modify a task dependency:

1. In the Task Name column, double-click the task whose predecessor you want to change.
2. In the Task Information dialog box, select the Predecessors tab.
3. On the Predecessor page, in the Predecessors area, in the Type column, from the Type field drop-down list, select a dependency.
4. Choose OK.

To create a lead or a lag

1. In the Task Name column, double-click the task whose predecessor you want to change.
2. If necessary, in the Task Information dialog box, select the Predecessors tab.
3. On the Predecessors page, in the Predecessors area, in the Lag column, select the Lag field for the predecessor task to which you want to add a lag time.
4. For a lag time, enter a positive value.
or
4. For a lead time, enter a negative value.
5. Choose OK.

To schedule a recurring task

1. In the Task Name column, select the row above which you want to insert the recurring task.
2. From the Insert menu, choose Recurring Task.
3. In the Recurring Task Information dialog box, in the Name text box, type the name of the recurring task.
4. In the Duration spin box, type a duration.
5. In the This occurs area, select an option button.
6. In the Daily, Weekly, Monthly, or Yearly area, select the task frequency options.
7. If necessary, in the Length area, in the From or To combo boxes, enter a date.
8. Choose OK.

To apply a constraint

1. In the Task Name column, double-click the task to which you want to apply a constraint.
2. In the Task Information dialog box, select the Advanced tab.
3. On the Advanced page, in the Constrain task area, from the Type drop-down list, select a constraint type.
4. If necessary, in the Constrain task area, in the Date combo box, enter a date.
5. Choose OK.

Self-Check Exercise

1. Open A:\Move-Rev2.mpp
2. Before *Actual Move*, add a new task of three days duration and call it **Wire New Office**.
3. After *Wire New Office*, add a new task of three days duration and call it **Install New Telephone Lines**.
4. After *Actual Move*, add a new task of two days duration and call it **Move and Install Electronic Equipment**.
5. Delete the *New Office Party* task.
6. Edit the task *Install New Telephone Lines* to read **Install Telephone Lines** and change the duration to one day.
7. Move the tasks *Quotes for Construction* and *Quotes for Move* and place them before the task *Final Budget Approval*.
8. Create a task called **Pack Old Office** after the task *Estimate for Construction of Office* and indent the following tasks under it:
 - Pack Electronic Equipment
 - General Packing
9. Create a task called **Wiring** after the task *General Packing* and outdent it. Then indent the following tasks under it:
 - Wire New Office
 - Install Telephone Lines
10. Collapse the *Pack Old Office* summary task.
11. Expand the *Pack Old Office* summary task.
12. Collapse the entire outline.
13. Expand the entire outline.

14. Save the project as H:\Doc\Move-Rev 2a.mpp. Your project should look similar to Figure 2-11.

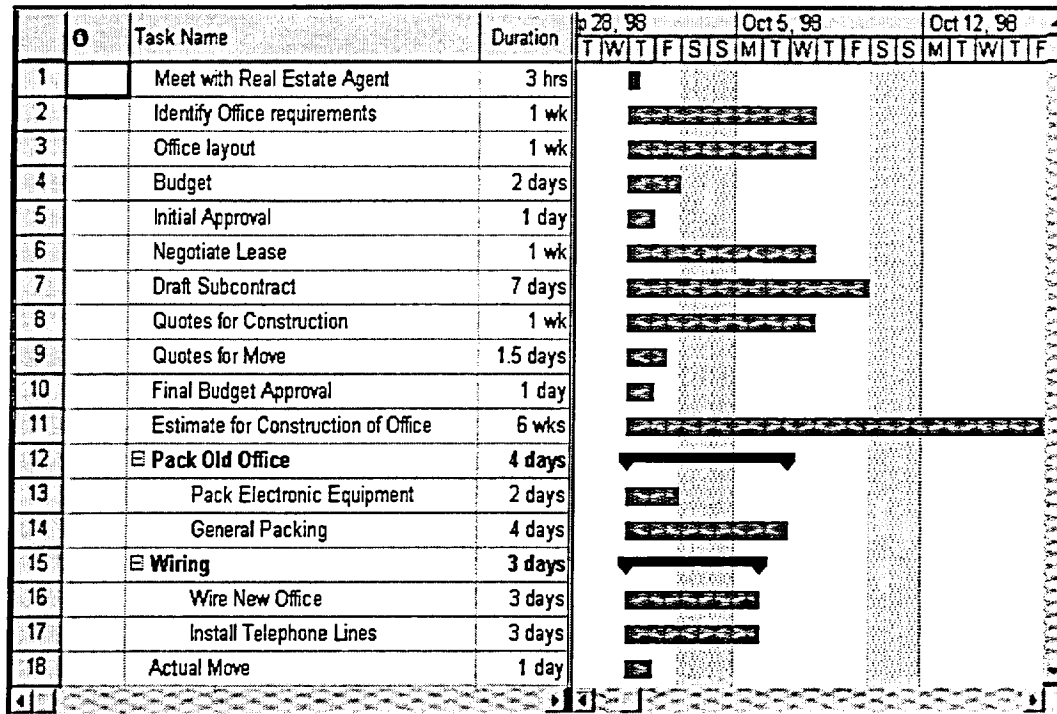


Figure 2-11: The Project After Saving

15. Link all the tasks in the project.
16. The *Quotes for Move* task is not truly dependent on *Quotes for Construction* but rather on *Initial Approval*. Make the necessary changes.
17. The summary task *Wiring* is not dependent on the summary task *Pack Old Office*. Rather, it is dependent on the completion of *Estimate for Construction of Office*. Make the necessary changes.
18. *Final Budget Approval* is not only dependent on *Quotes for Move* but is also dependent on *Quotes for Construction*. Make the necessary changes.
19. Edit the task *Estimate for Construction of Office* to read **Construction of Office**.
20. The tasks *Install Telephone Lines* and *Wire New Office* must finish at the same time. Make the necessary dependency change.

21. Both summary tasks *Pack Old Office* and *Wiring* can begin four days before the completion of *Construction of Office*. Create the necessary lead times.
22. Examine the project finish date.
23. Insert a recurring task at the beginning of the project and call it **Status Meeting**. The Status Meeting will occur every Thursday for one hour. The length of the recurring task is from the project's start date to its end date.
24. Zoom out until the entire project is visible in the chart pane, as shown in **Figure 2-12**.

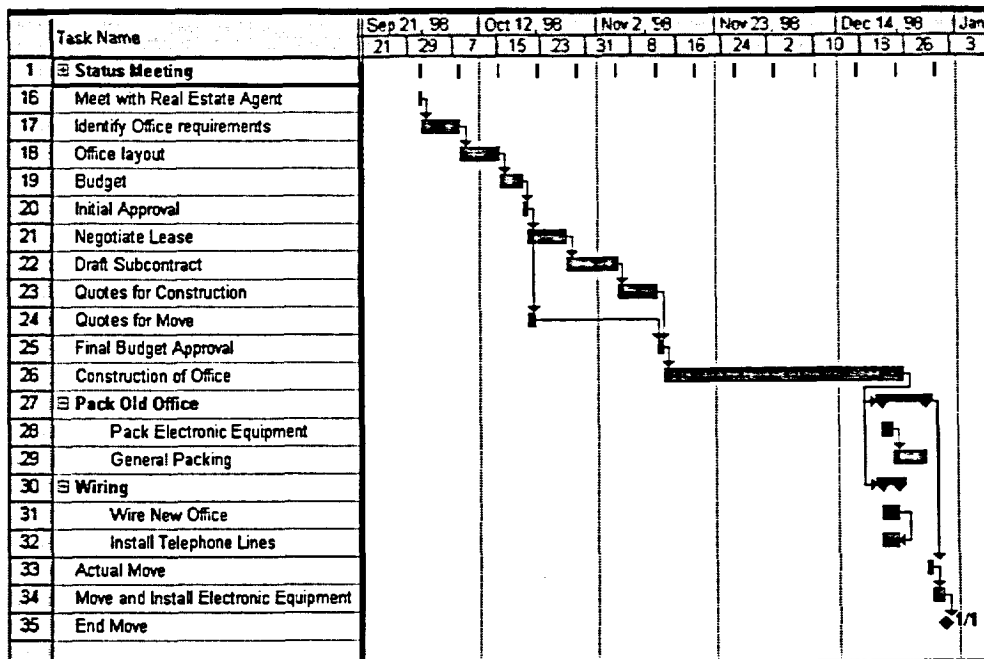


Figure 2-12: The Finished Project

25. Save and close the project.

Module 3

Working with Project Resources

- Defining Resource Needs
- Using the Working Times Calendars
- Working with Costs

Module Objectives

- **Define resource needs**

It is necessary to define and enter the resources that will be used in a project. You usually do this by using a resource sheet.

- **Use the working times calendars**

The working times calendars supply the necessary information that Microsoft Project requires to calculate a task's duration accurately.

- **Work with costs**

Most projects have costs associated with resources or tasks. By assigning costs to tasks and resources, you will be better able to factor costs into your key decisions.

Defining Resource Needs

Now that you have created your project plan, you have enough information to manage your project. Including resources in your project plan lets you establish who is working on which task and when; lets you keep the project scope, time and resources in balance; identifies resources who are overworked or underworked; and lets you track how much each resource is costing.

The first step in building a *resource list* is determining the resources required to accomplish the project tasks and goals. You can do this by identifying or having identified what skills and level of skills are required to accomplish the tasks, how many resources are needed to complete the project on time and whether resources can work on more than one task at a time. You can then match resource skills to task requirements.

Creating a Resource List

Although you can add resources to your project plan one at a time as you assign them to tasks, it takes less time if you create a resource list and then assign the tasks. To create a resource list, you enter the resource name and the maximum amount of time per day that a resource is available to work into a resource sheet. A resource sheet consists of rows and columns, similar to the Gantt sheet. Table 3-1 summarizes the information that you can store in the resource sheet.

The maximum amount of time per day that a resource is available to work is measured in *units*. A unit is the percentage of time a resource will spend working on a task. For example, a 25 percent unit represents a quarter of the resource's time to be spent on the task, while a 100 percent unit means that the resource is expected to work full time on the task. A 200 percent unit means that two resources are expected to work full time on the task.

Column	Description
Resource Name	The name given to a resource. It can be the name of an individual or a type of group.
Initials	The abbreviated name for the resource.
Group	Resources may be assigned to a group for reporting purposes.
Max. Units	The number of resource units available. This is applicable only if using a type of resource. For example, you might have three writers, but you can have only one resource named Kimberley Kale.
Std. Rate	The standard cost of the resource per hour, minute, week, or year.
Ovt. Cost	The overtime cost of the resource per hour, minute, week, or year.
Cost/Use	The cost of the resource every time it is used.
Accrue At	The time when costs are assigned to a resource. You can assign costs at the Start or End, or they can be prorated throughout the duration of a task.
Base Calendar	A calendar that specifies the working times of a resource.
Code	You can assign an alphanumeric code to each resource and use it for sorting, filtering, and reporting.

Table 3-1: The Columns in the Resource Sheet

When resources with the same skills are working together on the same task, you can group them into a resource set. For example, Electricians could represent two or more electricians. A resource group is any combination of individual resources and/or resource sets that can be logically grouped together for the purposes of tracking costs. For example, Painters, Electricians and Plumbers are resource sets that can be grouped into a resource group called Contractors.

Method

To create a resource list

1. On the View Bar, click the Resource Sheet icon.
2. On the resource sheet, in the Resource Name column, enter a resource name.
3. On the resource sheet, in the Group column, enter a group name to add the resource to a group.
4. On the resource sheet, in the Max. Units column, enter a number of resource units.
5. Repeat steps 2 through 4 until you have entered all the resources.
6. If desired, save the project.

Exercise

In the following exercise, you will create a resource list.

1. Open **A:\Manual-Rev3**
2. On the View Bar, click the Resource Sheet icon *The resource sheet view appears.*
3. In row 1 of the Resource Name column, enter **Designer** *Default information automatically appears for some fields in the first row.*
4. In the Group column of the *Designer* resource row, enter **Contractor**
5. In row 2 of the Resource Name column, enter **Sr Editor**
6. In the Group column of the *Sr Editor* resource row, enter **Editor**
7. Using the data shown in **Table 3-2** as a guide, enter the additional resources
8. Save the project as **H:\Doc\Manual-Rev 3a.mpp**

Resource Name	Group
M Monroe	Editor
Sr Writer	Writer
S O'Hara	Writer

Table 3-2: The Resource List Data

Assigning Resources to Tasks

Microsoft Project adjusts the duration of a task when you assign a resource to the task. The adjustment is based on the number of resources and the percentage of resource units assigned to the task. You can assign resources to tasks in the Gantt sheet by typing the resource name in the Resource Names column or by selecting the name from the Resource Names drop-down list. In addition, you can also use the Assign Resources dialog box, shown in Figure 3-1, to assign resources to tasks or assign a resource to work on two tasks concurrently. When you assign a resource to a task, the resource name appears next to the bar in the Gantt chart pane.

ID	Task Name	Duration	July							August								
			29	30	31	1	2	3	4	1	2	3	4	5	6	7	8	
1	☐ Status Meeting	40.13 days																
11	Design Manual's Task	1 wk																
12	☐ Writing Phase	41 days																
13	Introduction	1 day																
14	Chapter 1	5 days																
15	Chapter 2	4 days																
16	Chapter 3	7 days																
17	Chapter 4	3 days																
18	Chapter 5	5 days																
19	Chapter 6	4 days																
20	Capture Screen Shots	1 wk																
21	Technical Review	7 days																
22	☐ Editing Phase	30 days																
23	Edit Introduction	2 days																
24	Edit Chapter 1	2 days																
25	Edit Chapter 2	2 days																
26	Edit Chapter 3	2 days																
27	Edit Chapter 4	2 days																
28	Edit Chapter 5	2 days																
29	Edit Chapter 6	2 days																
30	☐ Final Touches	9.38 days																

Figure 3-1: The Assign Resources Dialog Box

Method

To assign a resource to a task

1. In the Gantt sheet, select the Resource Names column of the task to which you want to assign a resource.
2. In the Resource Names column, type the resource name.
or
2. In the Resource Names column, from the Resource Names field drop-down list, double-click the resource name.

To assign a resource to a task using the Assign Resources dialog box

1. In the Gantt sheet, in the Task Name column, select the task(s) to which you want to assign a resource(s).
2. On the Standard toolbar, click the Assign Resources button.
3. In the Assign Resources dialog box, in the Name column, select the resource you want to assign to the task(s).
4. If necessary, in the Units column, type a percentage unit.
5. Repeat steps 3 and 4 to assign multiple resources.
6. If desired, close the Assign Resources dialog box.

Exercise

In the following exercise, you will assign resources to tasks.

1. On the View bar, click the Gantt Chart icon *The Gantt Chart view appears.*
2. In the Gantt sheet pane, select the Resource Name column of the *Design Manual's Format* task
3. From the Resource Names field drop-down list, double-click Designer *Designer appears in the Resource Names field and next to the Design Manual's Format task bar in the chart pane.*
4. In the Task Name column, select the *Introduction* through to and including the *Capture Screen Shots* tasks
5. On the Standard toolbar, click the Assign Resources button *The Assign Resources dialog box appears.*
6. In the Name column, select S O'Hara *A resource name is selected.*
7. Choose Assign *S O'Hara is assigned as a resource to the task and a checkmark appears to the left of her name in the Assign Resources dialog box.*
8. If necessary, reposition the Assign Resources dialog box to view the task list
9. Select the *Technical Review* task
10. In the Assign Resources dialog box, in the Name column, select Sr Writer *A resource name is selected.*

11. Choose Assign
12. Assign resources to the remaining tasks as shown in **Table 3-3**
13. Close the Assign Resources dialog box *The Assign Resources dialog box closes.*
14. Examine the Index task's duration *Due to the amount of resources assigned to the task, the duration has decreased from 3 days to 1.5 days.*
15. Save the project

Task Name	Resource
Edit Introduction	M Monroe
Edit Chapter 1	M Monroe
Edit Chapter 2	M Monroe
Edit Chapter 3	M Monroe
Edit Chapter 4	M Monroe
Edit Chapter 5	M Monroe
Edit Chapter 6	M Monroe
Final Chapter Corrections	Sr Editor
Glossary	S O'Hara
Table of Contents	S O'Hara
Index	S O'Hara, Sr Writer

Table 3-3: The Resource Assignments

Removing a Resource from a Task

As you make modifications to a project, you might change your mind about a resource working on a particular task or the resource may leave the project or be reassigned to other tasks. You can easily remove a resource from a task.

Method

To remove a resource from a task

1. On the Gantt sheet, select the task for which you want to remove the resource.
2. On the Standard toolbar, click the Assign Resources button.
3. In the Assign Resources dialog box, in the Name column, select the resource you want to remove from the selected task.
4. Choose Remove.
5. If desired, close the Assign Resources dialog box.

Exercise

In the following exercise, you will remove a resource from a task.

- | | |
|---|---|
| 1. In the Task Name column, select the <i>Index</i> task | |
| 2. On the Standard toolbar, click the Assign Resources button | <i>The Assign Resources dialog box appears.</i> |
| 3. In the Name column, select Sr Writer | <i>The Sr Writer is selected.</i> |
| 4. Choose Remove | <i>Sr Writer no longer appears next to the task bar in the chart pane.</i> |
| 5. Close the Assign Resources dialog box | <i>The Assign Resources dialog box closes.</i> |
| 6. Examine the Index task duration | <i>Due to the amount of resources assigned to the task, the duration has increased from 1.5 days to 3 days.</i> |

Using the Working Times Calendars

Once you create a resource list and assign resources to tasks, Microsoft Project calculates the number of days it will take to complete the task. For Microsoft Project to calculate a task's duration accurately, it needs to know the working times for the assigned resource—for example, the number of hours in a full working day, vacations, holidays and other days off. A working times calendar supplies this information.

Microsoft Project provides two kinds of working times calendars: a *base calendar* and a *resource calendar*. A base calendar specifies the working and nonworking times of a group of resources. A resource calendar specifies the working and nonworking times of an individual resource.

Modifying the Project Calendar

For most projects and resources you won't need to create a working times calendar. You can use the default base calendar, referred to as standard, that Microsoft Project automatically attaches to your project plan. The standard calendar settings specify a full working day to be 8 hours long, lasting from 8:00 AM to 5:00 PM, with a one hour break from 12:00 PM to 1:00 PM. Each Monday through Friday is a working day and each Saturday and Sunday is a nonworking day. However, the standard calendar does not include holidays and vacations. You can use the Change Working Time dialog box, shown in Figure 3-2, to modify the *project calendar* to include vacations and holidays or designate Saturday and Sunday as working days. The settings in the standard calendar affect all the project resources.

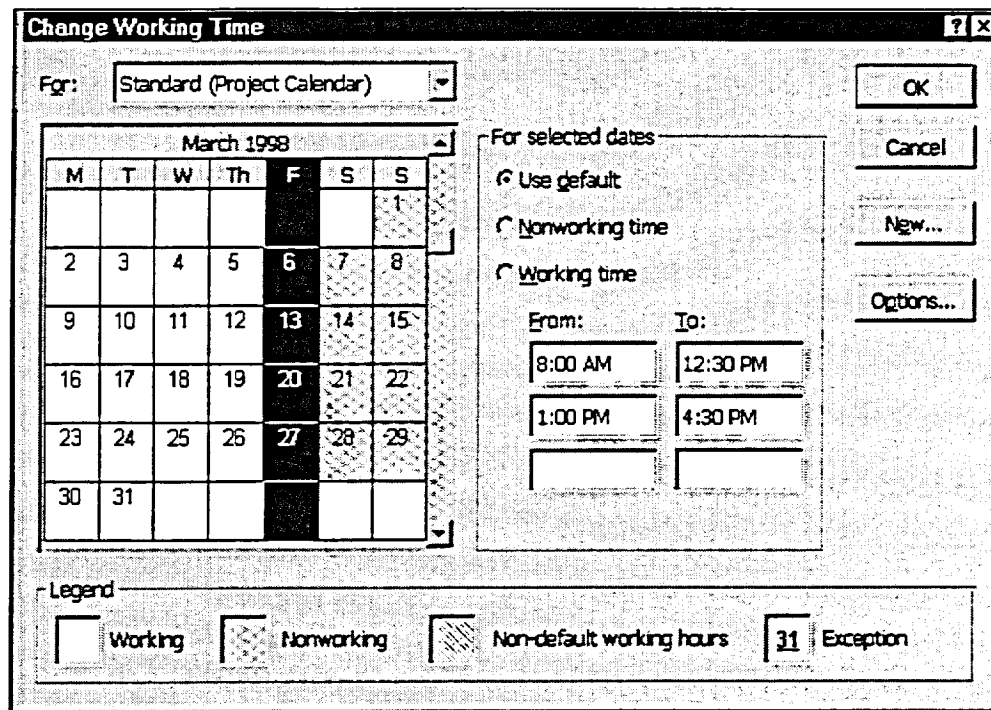


Figure 3-2: The Change Working Time Dialog Box

Method

To modify the project calendar

1. From the Tools menu, choose Change Working Time.
2. In the Change Working Time dialog box, in the Calendar area, select a date.
3. In the *For selected dates* area, select an option button.
or
3. In the *For selected dates* area, in the From text box, type the time you want work to start.
or
3. In the *For selected dates* area, in the To text box, type the time you want work to end.
4. Choose OK.

Note: To change a day of the week for the entire calendar, select the day at the top of the calendar.

Exercise

In the following exercise, you will modify the project calendar.

1. From the Tools menu, choose Change Working Time *The Change Working Time dialog box appears.*
2. In the Calendar area, use the scroll bars to display the month of September 1998 *The month of September is displayed.*
3. In the Calendar area, select the 7th (Labor Day- U.S.)
4. In the *For selected dates* area, select the Nonworking time option button *September 7th is marked as a nonworking day.*
5. In the Calendar area, use the scroll bars to display the month of July 1998 *The month of July is displayed.*
6. In the Calendar area, select Friday (the day of the week) *Friday is selected for the entire calendar.*
7. In the *For selected dates* area, in the second text box of the From column, type **12:30 PM**
8. In the *For selected dates* area, in the second text box of the To column, Type **4:30 PM**
9. Choose OK *The Change Working Time dialog box closes.*
10. Examine the project end date

Modifying a Resource Calendar

In most cases, resources on a project share the same working days, nonworking days, and holidays. However, if the working days or hours of one resource differs from others, Microsoft Project lets you modify a calendar for that individual resource.

Method

To modify a resource calendar

1. On the View Bar, click the Resource Sheet icon.
2. On the resource sheet, in the Resource Name column, select a resource name.
3. On the Standard toolbar, click the Resource Information button.
4. In the Resource Information dialog box, select the Working Time tab.
5. On the Working Time page, in the Calendar area, select a date.
6. In the *For selected dates* area, select an option button.
or
6. In the *For selected dates* area, in the From text box, type the time you want work to start.
or
6. In the *For selected dates* area, in the To text box, type the time you want work to end.
7. Choose OK.

Exercise

In the following exercise, you will modify a resource calendar.

1. Examine the current project end date
2. On the View bar, click the Resource Sheet icon *The resource sheet view appears.*
3. In the Resource Name column, select *S O'Hara*
4. On the Standard toolbar, click the Resource Information button *The Resource Information dialog box appears.*
5. Select the Working Time tab *The Working Time page appears.*

6. If necessary, in the Calendar area, use the scroll bars to display the month of July 1998
7. Select the 13th through the 17th
The resources vacation days are selected.
8. In the *For selected dates* area, select the Nonworking time option button
9. Choose OK
The Resource Information dialog box closes.
10. On the View bar, click the Gantt Chart icon
11. Examine the project's end date

Working with Costs

Now that you have assigned resources and modified the working times calendar, Microsoft Project has enough information to build an accurate project schedule. However, whenever there are resources assigned to tasks, there will be project *costs*. By estimating costs and assigning them to tasks and resources, you'll be better able to factor costs into your key decisions. For example, modifying the number of resources assigned to a task will modify the cost of the task, as well as, the overall project cost. When the budget is tight, you need to consider using lower cost resources without sacrificing expertise. For example, if an experienced Designer costs you \$100/hour for a total of eight hours, that task will cost \$800. If, however, you hire a less experienced Designer at \$80/hour, and it takes twelve hours to complete the same task, that task will cost \$960.

Assigning a Rate to a Resource

You can assign a rate to a resource or a fixed rate to a task. By default Microsoft Project enters rates in hours; however, rates can be entered in minutes, weeks or years. A standard hourly rate is the rate you pay a resource during normal working hours. You can assign an overtime rate to a resource who will be working longer than the normal working hours. A *fixed rate* is a cost that remains constant regardless of the duration of the task or the work performed by a resource. The Cost/Use column is used to assign a flat usage rate to a resource. For example, the fee for renting spray painting equipment might be \$100 per use. You can view the total project cost by viewing the *project statistics*. The Project Information dialog box displays information on the project start and finish dates, duration, and costs.

Method

To assign a rate to a resource

1. On the View bar, click the Resource Sheet icon.
2. In the Resource Name column, select a resource name.
3. Select the Std. Rate, Ovt. Rate, or Cost/Use column.
4. Enter a rate.

To view total project costs

1. From the Project menu, choose Project Information.
2. In the Project Information for [Project File] dialog box, choose Statistics.
3. In the Project Statistics for [Project File], choose Close.

Exercise

In the following exercise, you will assign rates to resources.

1. On the View Bar, click the Resource Sheet icon
2. In the Std. Rate column of the Sr Editor resource, enter 75 *The hourly rate for the Sr Editor is entered.*
3. Assign rates to the remaining resources as shown in **Figure 3-3**
4. From the Project menu, choose Project Information *The Project Information for 'Manual-Rev3' dialog box appears.*
5. Choose Statistics *The Project Statistics for 'Manual-Rev3' dialog box appears.*
6. Examine the Cost column
7. Choose Close *The Project Statistics for 'Manual-Rev3' dialog box closes.*
8. Save the project

Resource Name	Initials	Group	Max. Units	Std. Rate	Ovt. Rate
Designer	D	Contractor	100%	\$0.00/hr	\$0.00/hr
Sr Editor	S	Editor	100%	\$75.00/hr	\$0.00/hr
M Monroe	M	Editor	100%	\$25.00/hr	\$37.50/hr
Sr Writer	S	Writer	100%	\$75.00/hr	\$0.00/hr
S OHara	S	Writer	100%	\$25.00/hr	\$37.50/hr

Figure 3-3: The Rate Assignments

Specifying Default Rates

When you add resources to your project plan that are related to an existing resource, resource set, or resource group and these resources get paid the same hourly rate you can save time by specifying a default rate. Once you specify a default rate, Microsoft Project will automatically apply the rate to new resources that you add. Microsoft Project lets you specify a standard and overtime default rate.

Method

To specify default rates

1. From the Tools menu, choose Options.
2. In the Options dialog box, select the General tab.
3. On the General page, in the General options for [Project File], in the *Default standard rate* text box, type a new rate.
4. In the General options for [Project File] area, in the *Default overtime rate* text box, type a new rate.
5. If desired, choose Set as Default.
6. Choose OK.

Exercise

In the following exercise, you will specify a default standard and overtime rate.

- | | |
|--|--|
| 1. From the Tools menu, choose Options | <i>The Options dialog box appears.</i> |
| 2. Select the General tab | <i>The General page of options appear.</i> |
| 3. In the General options for Manual-Rev3a. area, in the Default standard rate text box, type 25.00 | |
| 4. In the General options for Manual-Rev3a. area, in the Default overtime rate text box, type 37.50 | |
| 5. Choose OK | <i>The Options dialog box closes.</i> |

6. Add **M Gates** as a new resource to the Writers group

The new resource is added, and Microsoft Project automatically enters a standard and overtime rate.

7. Save and close the project

Summary

To create a resource list

1. On the View Bar, click the Resource Sheet icon.
2. On the resource sheet, in the Resource Name column, enter a resource name.
3. On the resource sheet, in the Group column, enter a group name to add the resource to a group.
4. On the resource sheet, in the Max. Units column, enter a number of resource units.
5. Repeat steps 2 through 4 until you have entered all the resources.
6. If desired, save the project.

To assign a resource to a task

1. In the Gantt sheet, select the Resource Names column of the task to which you want to assign a resource.
2. In the Resource Names column, type the resource name.
or
2. In the Resource Names column, from the Resource Names field drop-down list, double-click the resource name.

To assign a resource to a task using the Assign Resources dialog box

1. In the Gantt sheet, in the Task Name column, select the task(s) to which you want to assign a resource(s).
2. On the Standard toolbar, click the Assign Resources button.
3. In the Assign Resources dialog box, in the Name column, select the resource you want to assign to the task(s).
4. If necessary, in the Units column, type a percentage unit.
5. Repeat steps 3 and 4 to assign multiple resources.
6. If desired, close the Assign Resources dialog box.

To remove a resource from a task

1. On the Gantt sheet, select the task for which you want to remove the resource.
2. On the Standard toolbar, click the Assign Resources button.
3. In the Assign Resources dialog box, in the Name column, select the resource you want to remove from the selected task.
4. Choose Remove.
5. If desired, close the Assign Resources dialog box.

To modify the project calendar

1. From the Tools menu, choose Change Working Time.
2. In the Change Working Time dialog box, in the Calendar area, select a date.
3. In the *For selected dates* area, select an option button.
or
3. In the *For selected dates* area, in the From text box, type the time you want work to start.
or
3. In the *For selected dates* area, in the To text box, type the time you want work to end.
4. Choose OK.

To modify a resource calendar

1. On the View Bar, click the Resource Sheet icon.
2. On the resource sheet, in the Resource Name column, select a resource name.
3. On the Standard toolbar, click the Resource Information button.
4. In the Resource Information dialog box, select the Working Time tab.
5. On the Working Time page, in the Calendar area, select a date.
6. In the *For selected dates* area, select an option button.
or
6. In the *For selected dates* area, in the From text box, type the time you want work to start.
or
6. In the *For selected dates* area, in the To text box, type the time you want work to end.
7. Choose OK.

To assign a rate to a resource

1. On the View bar, click the Resource Sheet icon.
2. In the Resource Name column, select a resource name.
3. Select the Std. Rate, Ovt. Rate, or Cost/Use column.
4. Enter a rate.

To view total project costs

1. From the Project menu, choose Project Information.
2. In the Project Information for [Project File] dialog box, choose Statistics.
3. In the Project Statistics for [Project File], choose Close.

To specify default rates

1. From the Tools menu, choose Options.
2. In the Options dialog box, select the General tab.
3. On the General page, in the General options for [Project File], in the *Default standard rate* text box, type a new rate.
4. In the General options for [Project File] area, in the *Default overtime rate* text box, type a new rate.
5. If desired, choose Set as Default.
6. Choose OK.

Self-Check Exercise

1. Open A:\Move-Rev3.
2. Using the resource sheet, add resources 6 through 8, as shown in **Figure 3-4**, so that your resource sheet resembles the one shown below.

Resource Name	Initials	Group	Max. Units
Manager	M	Management	100%
Office Mgr	O	Management	100%
Tech	T	Operations	300%
Admin	A	Office	200%
Truck	T	Equipment	200%
Agent	A	Contractor	100%
Bell Cdn	B	Contractor	100%
CNCP	C	Contractor	100%

Figure 3-4: The Resource List

3. Using the Resource Name column on the sheet pane of the Gantt Chart view, assign New Wave to the *Construction of Office* task.
4. Using the Assign Resources dialog box, add resources to the tasks, as shown in **Figure 3-5**. If the resources are not on the resource list, add them.

Task Name	Resource Names
<input checked="" type="checkbox"/> Status Meeting	
Meet with Real Estate Agent	Office Mgr
Identify Office requirements	Office Mgr
Office layout	Tech,Office Mgr
Budget	Admin
Initial Approval	Manager
Negotiate Lease	Admin
Draft Subcontract	Admin
Quotes for Construction	Admin
Quotes for Move	Admin
Final Budget Approval	Manager
Construction of Office	New Wave
<input type="checkbox"/> Pack Old Office	
Pack Electronic Equipment	Tech
General Packing	Admin
<input type="checkbox"/> Wiring	
Wire New Office	CNCP
Install Telephone Lines	Bell Cdn
Actual Move	Moonlight Movers,Truck
Move and Install Electronic Equipment	Tech
Unpack	Admin

Figure 3-5: The Assigned Resources

5. You have decided not to use New Wave for the *Construction of Office* task. Remove New Wave from the *Construction of Office* task and delete it from the resource sheet, and then add World-Wide.
6. Assign World-Wide to the *Construction of Office* task.
7. Modify the project calendar to include the following holidays as nonworking days:

October 12 - Columbus Day, November 11 - Veterans Days
December 25 - Christmas Day, January 1 - New Years Day
8. Modify the Agent's calendar to include the following vacation dates:

October 6, 1998 - October 9, 1998

9. Using Figure 3-6 as your guide, assign rates to resources.

Resource Name	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use
Manager	M	Management	100%	\$0.00/hr	\$0.00/hr	\$0.00
Office Mgr	O	Management	100%	\$50.00/hr	\$0.00/hr	\$0.00
Tech	T	Operations	300%	\$30.00/hr	\$0.00/hr	\$0.00
Admin	A	Office	200%	\$15.00/hr	\$22.50/hr	\$0.00
Truck	T	Equipment	200%	\$0.00/hr	\$0.00/hr	\$300.00
Agent	A	Contractor	100%	\$0.00/hr	\$0.00/hr	\$1,000.00
Bell Cdn	B	Contractor	100%	\$50.00/hr	\$0.00/hr	\$0.00
CNCP	C	Contractor	100%	\$50.00/hr	\$0.00/hr	\$0.00
Moonlight Movers	M		100%	\$40.00/hr	\$0.00/hr	\$0.00
World-Wide	W		100%	\$0.00/hr	\$0.00/hr	\$0.00

Figure 3-6: Resource Rate Assignments

10. Specify a Default standard rate of \$50.00 per hour for this project only.
11. Add **Clean Up Crew** as a new resource to the Contractor group.
12. View the total project costs.
13. Save as **H:\Doc\Manual-Rev 3b.mpp** and close the project.

Module 4

Managing a Project Plan

- Displaying Project Information
- Reviewing a Project Plan
- Printing Views

Module Objectives

■ Display project information

Microsoft Project comes with many views. Each of these views focuses on specific information about tasks or resources. You can apply tables to display different columns in a sheet view and change the size, add or delete and hide columns in a table. Form views display information about tasks and resources one at a time. Combination views let you display two views at the same time to maximize the amount of information displayed. Sorting lets you arrange project information in an order that suits your needs.

■ Review a project plan

When you review your project plan, you look for information that may be missing or inaccurate. You can then analyze resource allocations and adjust them automatically through a process called leveling, or you can do it manually. Although the manual method is more time-consuming, it is often preferable. When you manage a project, you control time and costs in an environment of limited resources.

■ Print views

Printing a hard copy of your project plan lets you share or present it to colleagues.

Displaying Project Information

A project plan may contain hundreds of separate pieces of information about tasks, resources and assignments. Typically, the entire project plan will not fit on your screen at the same time. As you work with your project plan, you may want to view a specific set of information. For example, you may want to view the costs of tasks that begin after a certain date or which resources have spare time to work on tasks that are taking longer than planned.

Microsoft Project provides twenty-six predefined views that let you display a specific set of task, resource or assignment information. Most views let you enter and edit information; however, there are some views that can only display information. Choosing a view not only lets you decide whether you want to work with task, resource, or assignment information, but also lets you determine the format in which the information is displayed. You can choose to view information as a sheet, chart, graph, form, or calendar. Table 4-1 describes these formats. In addition, Microsoft Project lets you sort or arrange your project information in any order that suits your needs.

View Format	Description
Sheet	Displays task, resource and assignment information in a table that is arranged in columns and rows.
Chart	Displays tasks and task dependencies in a graphical way.
Graph	Displays project information on a set of axes as a set of bars, curves or lines.
Form	Used to enter, edit or view detailed information.
Calendar	Displays project information as a calendar.

Table 4-1: The View Formats

Using Views

Task views focus on information relating to tasks, such as duration, start dates, and finish dates. *Resource views* focus on information about the resources that are assigned to tasks, such as the hourly rate, or accounting method. Assignment views focus on information relating to assignments, such as task and resource usage.

The *PERT Chart view*, shown in Figure 4-1, is a flow chart that displays tasks as *nodes* joined by lines that represent links, or dependencies, between the tasks. The PERT Chart is useful for looking at process-oriented projects. For example, in the manufacturing of a chemical compound, things have to

be done in a precise order, or an explosion could occur. It is important to be able to see the multiple paths that need to be taken to arrive at a goal or outcome.

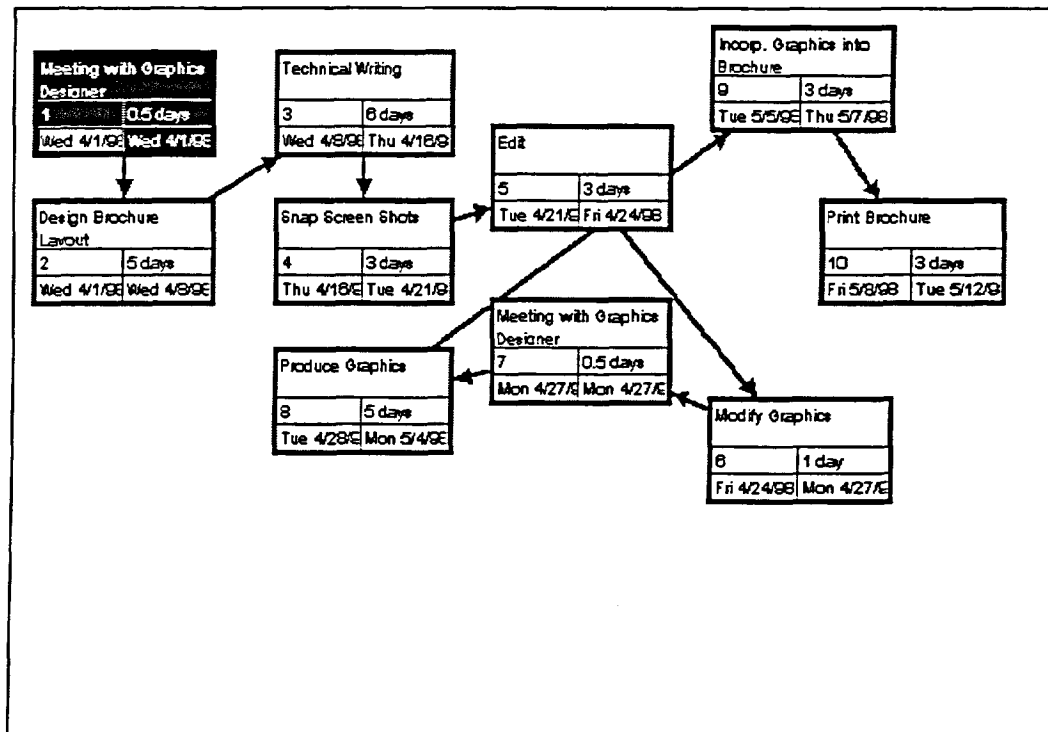


Figure 4-1: The PERT Chart View

The Calendar view displays tasks graphically in a calendar format designed to highlight durations during the weeks of the month, as shown in Figure 4-2.

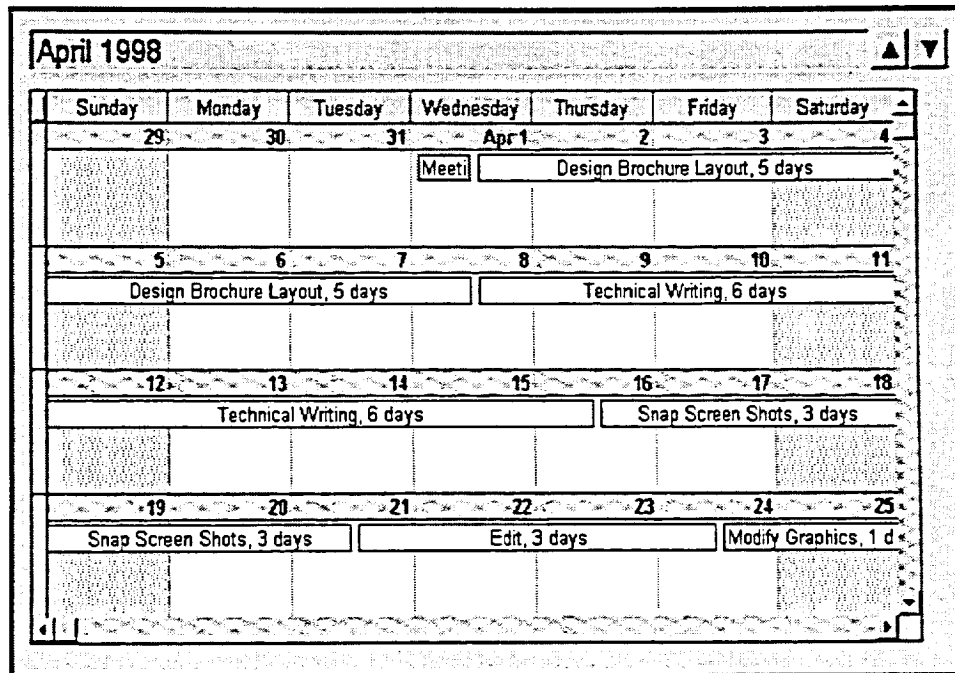


Figure 4-2: The Calendar View

The most common views for viewing resources are the Resource Sheet and *Resource Graph* views. The Resource Graph view, shown in Figure 4-3, displays resource allocation, work, or cost of a resource over a period of time in the form of a bar graph.

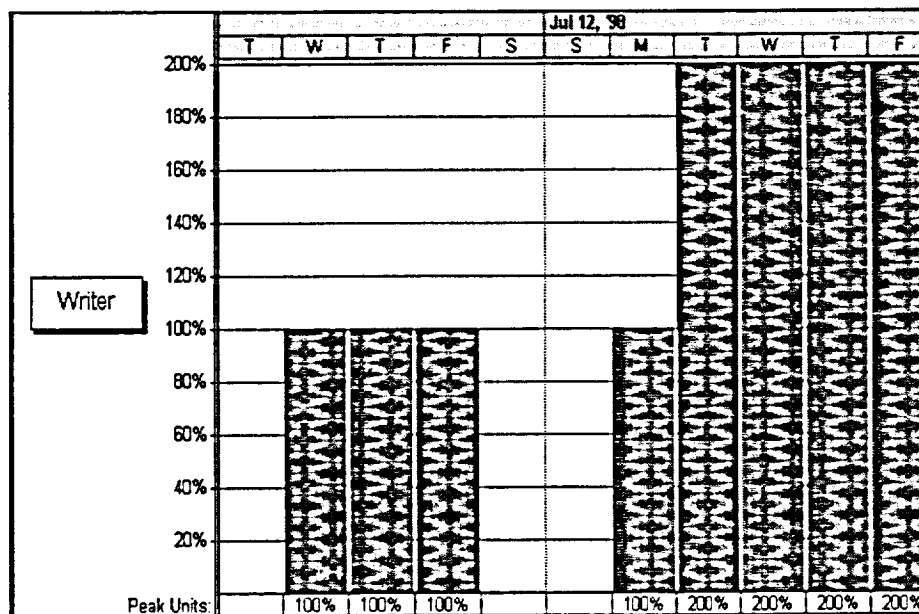


Figure 4-3: The Resource Graph View

Assignment views, such as the Resource Usage view, shown in Figure 4-4, and the Task Usage view, shown in Figure 4-5, are used to display work and cost allocation for each resource or task over time in a sheet format.

Resource Name	Details	Jul 6, '98						
		M	T	W	T	F	S	
<input type="checkbox"/> Unassigned	Work							
<i>End Manual</i>	Work							
<input type="checkbox"/> Designer	Work	8h	8h					
<i>Design Manual's Task</i>	Work	8h	8h					
<input type="checkbox"/> Sr Editor	Work							
<i>Final Chapter Corrections</i>	Work							
<input type="checkbox"/> M Monroe	Work					8h	8h	
<i>Edit Introduction</i>	Work					8h	8h	
<i>Edit Chapter 1</i>	Work							
<i>Edit Chapter 2</i>	Work							
<i>Edit Chapter 3</i>	Work							
<i>Edit Chapter 4</i>	Work							
<i>Edit Chapter 5</i>	Work							
<i>Edit Chapter 6</i>	Work							
<input type="checkbox"/> Sr Writer	Work							
<i>Technical Review</i>	Work							
<input type="checkbox"/> S O'Hara	Work				8h	8h	8h	
<i>Introduction</i>	Work				8h			
<i>Chapter 1</i>	Work					8h	8h	
<i>Chapter 2</i>	Work							

Figure 4-4: The Resource Usage View

Task Name	V	Details	Jul 6, '98						
			M	T	W	T	F	S	
<input type="checkbox"/> Design Manual's Task		Work	8h	8h					
<i>Designer</i>		Work	8h	8h					
<input type="checkbox"/> Writing Phase		Work			8h	8h	8h		
<input type="checkbox"/> Introduction		Work			8h				
<i>S O'Hara</i>		Work			8h				
<input type="checkbox"/> Chapter 1		Work				8h	8h		
<i>S O'Hara</i>		Work				8h	8h		
<input type="checkbox"/> Chapter 2		Work							
<i>S O'Hara</i>		Work							
<input type="checkbox"/> Chapter 3		Work							
<i>S O'Hara</i>		Work							
<input type="checkbox"/> Chapter 4		Work							
<i>S O'Hara</i>		Work							
<input type="checkbox"/> Chapter 5		Work							
<i>S O'Hara</i>		Work							
<input type="checkbox"/> Chapter 6		Work							
<i>S O'Hara</i>		Work							
<input type="checkbox"/> Capture Screen Shot:		Work							
<i>S O'Hara</i>		Work							
<input type="checkbox"/> Technical Review		Work							

Figure 4-5: The Task Usage View

A *Form view* displays information that is specific to a particular task or resource. The most commonly used form views are the Task Form view and the Resource Form view. The Task Form view, shown in **Figure 4-6**, displays information about the Technical Review task. It displays the resources that are working on that task and its predecessor. Use the Previous and Next buttons to display information about the preceding or following task.

Name: Technical Review		Duration: 7d		<input checked="" type="checkbox"/> Effort driven		Previous		Next	
Start: Tue 9/1/98		Finish: Wed 9/9/98		Task type: Fixed Units		% Complete: 0%			
ID	Resource Name	Units	Work	ID	Predecessor Name	Type	Lag		
4	Sr Writer	100%	56h	10	Capture Screen Shots	FS	0d		

Figure 4-6: The Task Form View

The Resource Form view, shown in **Figure 4-7**, displays information about the M Monroe resource. It displays the tasks assigned to the resource, the amount of Work and Delay hours, and the scheduled Start and Finish dates of the tasks. Use the Previous and Next buttons to display information about adjacent resources.

Name:	M Monroe	Initials:	M	Max units:	100%	Previous	Next
Costs		Std rate:	\$25.00/h	Per use:	\$0.00	Base cal: Standard	
Ovt rate:	\$37.50/h	Accrue at:	Prorated	Group:	Editor	Code:	
Project	ID	Task Name	Work	Leveling Delay	Delay	Start	Finish
Manual-Re	19	Edit Chapter 6	16h	0d	0d	Tue 8/25/98	Wed 8/26/98
Manual-Re	18	Edit Chapter 5	16h	0d	0d	Wed 8/19/98	Thu 8/20/98
Manual-Re	17	Edit Chapter 4	16h	0d	0d	Wed 8/12/98	Thu 8/13/98
Manual-Re	16	Edit Chapter 3	16h	0d	0d	Fri 8/7/98	Mon 8/10/98
Manual-Re	15	Edit Chapter 2	16h	0d	0d	Wed 7/29/98	Thu 7/30/98
Manual-Re	14	Edit Chapter 1	16h	0d	0d	Thu 7/23/98	Fri 7/24/98
Manual-Re	13	Edit Introduction	16h	0d	0d	Thu 7/9/98	Fri 7/10/98

Figure 4-7: The Resource Form View

Method

To use a view

1. On the View bar, click a View icon.

To use a view that is not on the View bar

1. On the View bar, click the More Views icon.
2. In the More Views dialog box, from the Views list, select a view.
3. Choose Apply.

Exercise

In the following exercise, you will use views.

1. Open A:\Brochure
2. On the View bar, click the PERT Chart icon *The project appears in a PERT Chart view.*
3. Examine the view and discuss it with your instructor
4. On the View bar, click the Calendar icon *The project appears in a Calendar view.*
5. Examine the view and discuss it with your instructor
6. Close the project

7. Open A:\Manual-Rev4
8. On the View bar, click the Resource Graph icon *The project appears in a Resource Graph view.*
9. Press **ALT+HOME** *The beginning of the time line appears.*
10. On the left pane scroll bar, click the right scroll arrow *The Sr Editor resource is displayed.*
11. On the right pane horizontal scroll bar, scroll to the week of September 7, 1998 *The usage information for the Sr Editor resource appears.*
12. Examine the view and discuss it with your instructor
13. On the View bar, click the Resource Usage icon *The project appears in a Resource Usage view.*
14. Select the right pane and press **ALT+HOME** *The beginning of the time line appears.*
15. Examine the view and discuss it with your instructor
16. On the View bar, click the Task Usage icon *The project appears in a Task Usage view.*
17. Select the right pane and press **ALT+HOME** *The beginning of the time line appears.*
18. Examine the view and discuss it with your instructor
19. On the View bar, click the More Views icon *The More Views dialog box appears.*
20. From the Views list, select Resource Form and choose Apply *The Resource Form view appears with the Designer resource displayed.*
21. Use the Next and Previous buttons to display adjacent resources
22. On the View bar, click the More Views icon *The More Views dialog box appears.*

23. From the Views list, select Task Form, and choose Apply

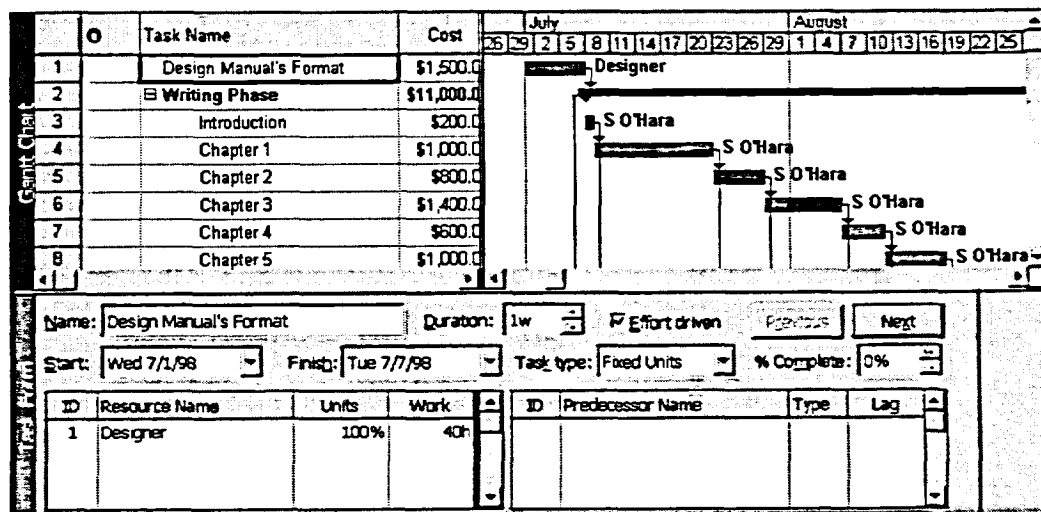
The Task Form view appears with the Design Manual's Format task displayed.

24. Use the Next and Previous buttons to display adjacent tasks

Using Combination Views

In spite of the fact that you can change the information that appears in a view, each view displays a limited amount of information at one time. A *combination view* contains a top and bottom pane. Using a combination view lets you display information in the top pane of the view that is different from the information you display in the bottom pane of the view. For example, you can display the Gantt Chart view in the top pane and the Resource Graph view in the bottom pane. You can replace the view in either pane at any time.

You can display a combination view by selecting a predefined combination view, such as the Task Entry view, shown in **Figure 4-8**. The horizontal split bar separates the two panes and the available menu selections always reflect the pane that is active. In a combination view, the bottom pane is automatically bound to the top pane. For example, in **Figure 4-8**, Design Manual's Format is the active task in the top pane. Information displayed in the bottom pane is specific to the Design Manual's Format task.



Horizontal split bar

Figure 4-8: The Task Entry View

Alternatively, you can split an existing view into panes and replace the information in one or both panes one at a time. In a *single-pane view*, the horizontal split bar is located below the down arrow on the vertical scroll bar, as shown in **Figure 4-9**. The horizontal split bar lets you switch between single and combination views.

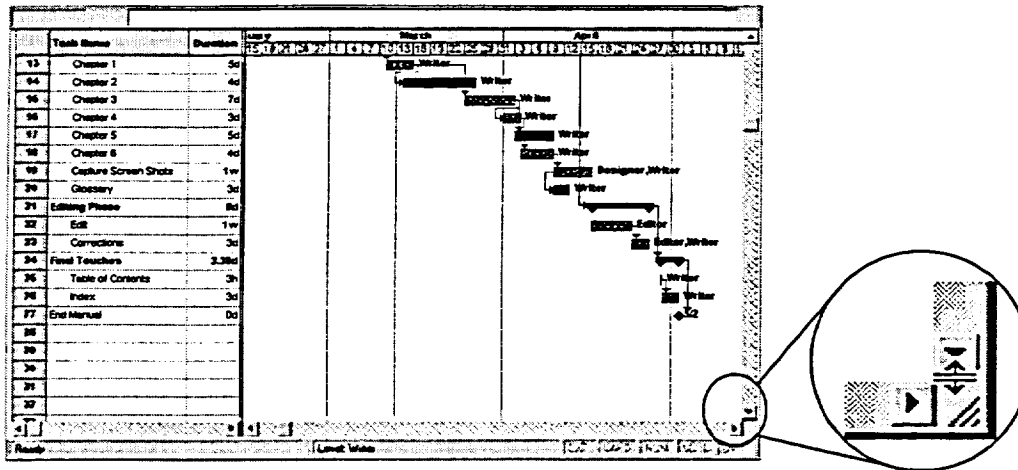


Figure 4-9: The Horizontal Split Bar in a Single-Pane View

Method

To use combination views

1. On the View bar, click the More Views icon.
2. From the More Views dialog box, from the Views list, select a combination view.
3. Choose Apply.

To switch between panes

1. Click the pane you want to make active.
- or
1. Press F6

To split an existing view

1. From the Window menu, choose Split.
- or
1. Drag the horizontal split bar up to the desired location in the existing view.

To change the view in a pane

1. Make sure the pane you want to change is active.
2. On the View bar, select a view to display.

To switch from a combination view to a single-pane view

1. From the Window menu, choose Remove Split.
- or
1. Double-click the horizontal split bar.

Exercise

In the following exercise, you will use a combination view.

- | | |
|--|--|
| 1. On the View bar, click the More Views icon | <i>The More Views dialog box appears.</i> |
| 2. From the Views list, select Task Entry | |
| 3. Choose Apply | <i>The Task Entry view appears.</i> |
| 4. Examine the view and determine the active pane | <i>Since the view bar appears in the top pane, the top pane is active.</i> |
| 5. In the top pane, select Chapter 4 | |
| 6. Examine the information displayed in the bottom pane | <i>The bottom pane displays resources and predecessors for Chapter 4.</i> |
| 7. Click the bottom pane | <i>The bottom pane becomes active.</i> |
| 8. Press F6 | <i>The top pane becomes active.</i> |
| 9. On the View bar, click the PERT Chart icon | <i>The PERT Chart appears in the top pane.</i> |
| 10. Press F6 | <i>The bottom pane is active.</i> |
| 11. On the View bar, click the Gantt Chart icon | <i>The Gantt Chart appears in the bottom pane.</i> |
| 12. On the View bar, click the More Views icon | <i>The More Views dialog box appears.</i> |
| 13. From the Views list, select Task Entry | |
| 14. Choose Apply | <i>The Task Entry view appears.</i> |
| 15. Double-click the horizontal split bar | <i>A single pane Gantt Chart appears.</i> |
| 16. Drag the horizontal split bar about halfway up the existing view | <i>A combination view appears with the Gantt Chart on the top pane and the Task Form on the bottom pane.</i> |
| 17. From the Window menu, choose Remove Split | <i>A single pane Gantt Chart takes over the entire screen.</i> |

Applying Tables

Each view that displays information in a sheet format includes a *table* portion. A table is predetermined fields arranged in columns and rows. Every sheet view has a default table applied to it. For example, the Gantt Chart sheet view's default table is the Entry table. By applying a different table to a sheet view, you can change the information displayed in the table portion. When you apply a table to a sheet view, the new table replaces the old table. When you open an existing project file, the sheet view will display the table that was applied to it when you last saved this file.

Method

To apply a table

1. Select the view to which you want to apply a table.
2. On the View menu, point to Table.
3. From the Table submenu, select a table.

Note: To apply a table that is not on the Table submenu, from the Table submenu, select More Tables.

Exercise

In the following exercise, you will apply tables.

1. On the View Bar, click the Gantt Chart icon *The Gantt Chart view appears.*
2. On the View menu, point to Table: Entry *The Table submenu appears.*
3. Choose Cost *The Cost table appears.*
4. In the Fixed Cost column of the *Design Manual's Format* task, type **1500** and press ENTER *\$1,500.00 appears in the Fixed Cost field.*
5. In the Fixed Cost Accrual column, from the Fixed Cost Accrual field drop-down list, select End and press ENTER
6. If necessary, scroll to the Total Cost column and examine the cost per task
7. On the View Bar, click the Resource Sheet icon *The Resource Sheet view appears.*

8. On the View menu, point to Table: Entry *The Table submenu appears.*
9. Choose Cost *The Cost table appears.*
10. Examine the cost per resource
11. Display the project statistics and examine the total project costs
12. In the Resource sheet view, return to the Entry table

Adjusting Column Widths

Sometimes a column in a table might not be wide enough to display its contents. To accommodate long strings of data or to make your table easier to read, you can adjust column widths. The most common method to adjust column width is to double-click the right border of the column heading. This automatically adjusts the column width to the width of the longest entry in the column. You can also adjust the column width manually. When you do, a width indicator appears on the status bar indicating the column width in number of characters as you drag the column border.

Method

To adjust column width (To fit the widest entry)

1. Double-click the right border of the column heading.

To adjust column width (To adjust column width manually)

1. Drag the right border of the column heading to the desired width.

Exercise

In the following exercise, you will adjust column widths.

1. On the View bar, click the Gantt Chart icon
2. Double-click the right border of the Task Name column
3. In the Gantt Chart view, apply the Entry table
4. Drag the right border of the Start column heading to make it approximately 12 characters in width
5. Double-click the right border of the Finish column

The column adjusts to accommodate the long text.

Hiding and Inserting Columns

If you have columns that you do not need to display or you want to conceal, you can hide them in the current view. After you hide columns, you can easily display the column again by using the Column Definition dialog box, shown in Figure 4-10. From here you can select a field name, specify an optional title, and change text alignment and column width.

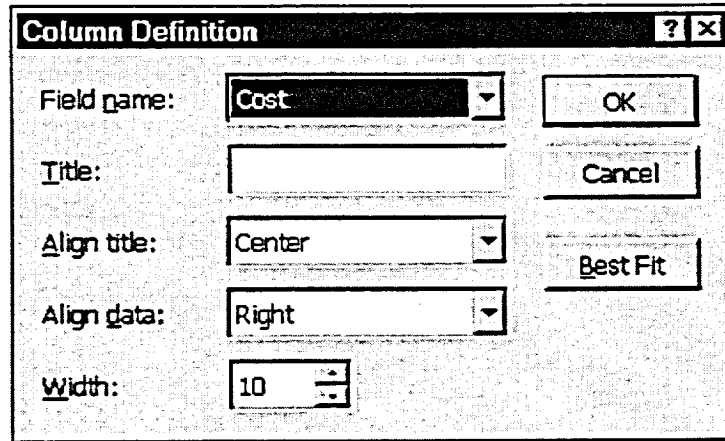


Figure 4-10: The Column Definition Dialog Box

Method

To hide a column

1. Select the column heading of the column to hide.
2. From the Edit or shortcut menu, choose Hide Column.
or
2. Press **DELETE**

To insert a column

1. Select the heading of the column to the right of the column to be inserted.
2. From the Insert or shortcut menu, choose Column.
or
2. Press **INSERT**
3. In the Column Definition dialog box, from the Field name drop-down list, select a column to insert.
4. Choose **OK**.

Exercise

In the following exercise, you will hide and insert columns.

1. On the View bar, click the Resource Sheet icon
2. Select the Initials column heading
3. From the Edit menu, choose Hide Column *The Initials column is hidden.*
4. From the Insert menu, choose Column *The Column Definition dialog box appears.*
5. From the Field name drop-down list, select Initials
6. Choose OK *The Initials column appears to the left of the Group column.*
7. On the View bar, click the Gantt Chart icon
8. In the sheet pane, select the Duration column
9. Press INSERT *The Column Definition dialog box appears.*
10. From the Field name drop-down list, select Cost
11. Choose OK *The Cost column appears to the left of the Duration column.*
12. Save as H:\Doc\Manual-Rev 4a.mpp

Sorting a View

By default Microsoft Project lists tasks and resources in ascending order by ID number. You can use the Sort options on the Project menu, shown in Figure 4-11, or the Sort dialog box, shown in Figure 4-12, to view tasks or resources in a different order. For example, if you want to decrease a project's length, you may want to sort tasks from the longest to the shortest duration so that you can reduce the longest durations first.

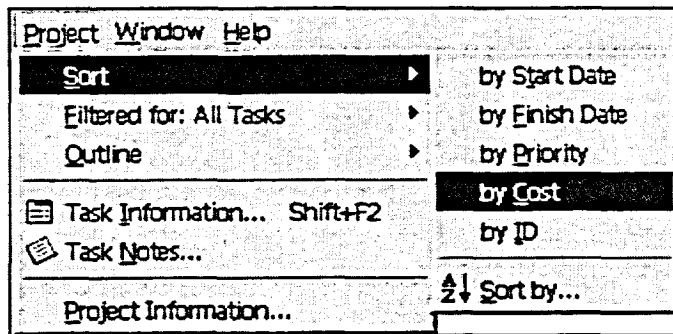


Figure 4-11: The Sort Options

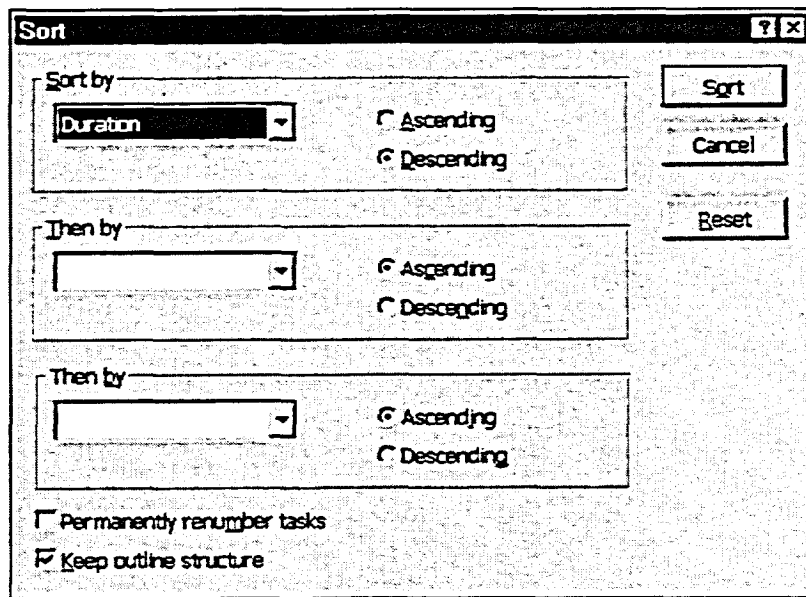


Figure 4-12: The Sort Dialog Box

Method

To sort a view

1. On the Project menu, point to Sort.
2. From the Sort submenu, choose a sort option.

To sort a view using the Sort dialog box

1. On the Project menu, point to Sort.
2. From the Sort submenu, choose Sort by.
3. In the Sort dialog box, in the Sort by area, from the Sort by drop-down list, select a column by which you want to sort.
4. In the Sort by area, select the Ascending or Descending check box.
5. If desired, in the first Then by area, from the Then by drop-down list, select a secondary column by which you want to sort.
6. In the first Then by area, select the Ascending or Descending check box.
7. If desired, in the second Then by area, from the Then by drop-down list, select a third column by which you want to sort.
8. In the second Then by area, select the Ascending or Descending check box.
9. Choose Sort.

Exercise

In the following exercise, you will sort a view.

- | | |
|--|---|
| 1. On the Project menu, point to Sort | <i>The Sort submenu appears.</i> |
| 2. Choose by Cost | <i>The view is sorted by the Cost column.</i> |
| 3. On the Project menu, point to Sort | <i>The Sort submenu appears.</i> |
| 4. Choose Sort by | <i>The Sort dialog box appears.</i> |
| 5. In the Sort by area, from the Sort by drop-down list, select Duration | |
| 6. In the Sort by area, select the Descending check box | |

7. Choose Sort

The Sort dialog box closes and the view is sorted by the Duration column in descending order.

8. Save and close the project

Reviewing a Project Plan

Now that you have created a project plan, the next step is to look for information that may be missing, unnecessary or inaccurate. In most cases, you will want to analyze and adjust the project's schedule. For example, you may discover a *resource overallocation*—a day when a resource has been assigned ten hours of work instead of the usual eight hours. On the other hand, you may discover a resource underallocation—a day when a resource has been assigned only four hours of work instead of the usual eight hours.

In addition, you may want to identify the project's *critical tasks* or adjust the *critical path*. Critical tasks are tasks that can delay the project if they are not completed on time. Typically, the critical path is the longest sequence of linked tasks in a project.

Analyzing the Project Schedule

Prior to adjusting a project's schedule, you need to consider the factors that affect how Microsoft Project calculates task start and finish dates, the length of the project, and the addition of resources to a task. For example, when you assign a resource to a task, Microsoft Project calculates the amount of work required to complete the task. If you specify a duration of three days, Microsoft Project calculates twenty-four hours of work. If you assign a second resource to the task, Microsoft Project calculates a new duration of one and a half days, but the number of hours of work remain the same. This calculation method is referred to as *effort-driven scheduling*. Table 4-2 describes additional factors and the effects on a project schedule.

Factor	Effect
Placement in task list	Moving a task to another part of the task list can change a task's schedule. For example, a task near the top, middle or bottom of the list occurs near the beginning, middle or end of the project.
Duration	The longer a duration, the later a task finishes. Increasing or decreasing the duration may change the task's finish date.
Links	By replacing one type of link with another, you can change a task's start and finish dates or the project's end date.
Lead or Lag time	Changing or removing lead or lag times may change the task's start date.
Assigned Resources	The more resources and resource units you assign to a task, the more you decrease it's duration.

Table 4-2: The Scheduling Factors

Identifying Resource Overallocations

A resource overallocation means that a resource is scheduled to perform two or more tasks at the same time or that two units of the same resource type are required to complete a task, but only one is available. The Resource Allocation view indicates which resources are overallocated, when they are overallocated, and which tasks are affected. Overallocated resources and the usage for these resources appear in red.

The top pane of the Resource Allocation view, shown in **Figure 4-13**, indicates that the Writer resource, on the week of July 13, 1998, is allocated to work sixteen hours on Tuesday through to Friday. Eight of these hours are overallocated hours.

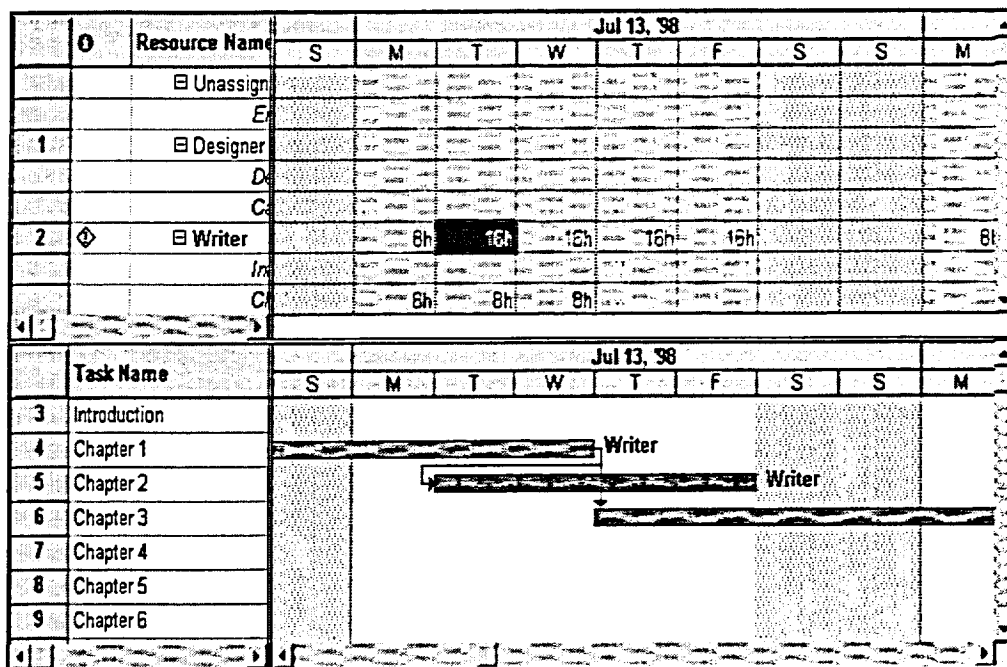


Figure 4-13: The Resource Allocation View

The bottom pane of the Resource Allocation view displays a Gantt Chart that indicates that the tasks Chapter 1, Chapter 2 and Chapter 3 are overlapping on the overallocated dates.

You can use the Resource Management toolbar, shown in **Figure 4-14**, to quickly access commands specific to resource management.

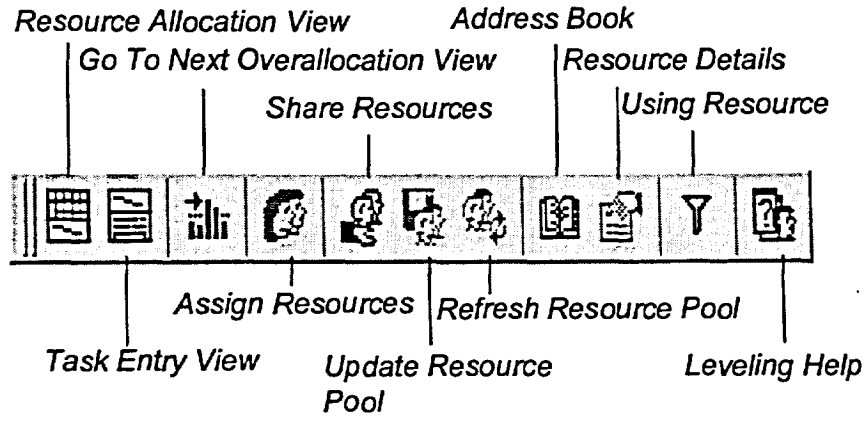


Figure 4-14: The Resource Management Toolbar

Resolving Resource Overallocations Manually

Resolving resource overallocations manually is a time-consuming task. Some of the options available to a project manager include delaying a task with an overallocated resource, substituting the overallocated resource, adding additional units to the resource, or changing the work schedule (that is, modify the resource calendar). Every option influences either the project cost or the length of the project. For example, if a resource has been scheduled to work on two tasks at the same time and the project manager decides to delay the second task, the project will take longer to complete. On the other hand, if the project manager adds an additional unit of the same resource, the project length is not affected, but the overall cost of the project increases.

When you are handling resource overallocation resolutions, you need to consider the impact of several issues, including cost, time, company politics, geography, and resource availability.

Method

To display the Resource Management toolbar

1. On the View menu, point to Toolbars.
2. From the Toolbars submenu, choose Resource Management.

To resolve resource overallocations manually

1. Display the Resource Management toolbar.
2. On the Resource Management toolbar, click the Resource Allocation View button.
3. On the Resource Management toolbar, click the Go To Next Overallocation button.
4. Make the necessary changes.
5. Repeat steps 3 and 4 for all resource overallocations.

Exercise

In the following exercise, you will resolve a resource overallocation manually.

1. Open A:\Manual-Rev5
2. On the View menu, point to Toolbars *The Toolbars submenu appears.*
3. Choose Resource Management

4. On the View menu, choose more views
5. Choose Resource Allocation *The Resource Allocation view appears.*
6. Click Apply
7. On the Resource Management toolbar, click the Go to Next Overallocation button *The first block of overallocations for the resource Writer appears.*
8. In the top pane, examine the timescale area to identify the days the Writer is overallocated during the week of July 13 *During the week of July 13, 1998, overallocations occur on Tuesday through Friday. The 16h means that the Writer is working a total of sixteen hours on each of those days.*
9. In the top pane, double-click the Writer resource *The Resource Information dialog box appears.*
10. If necessary, Go To the General tab
11. Select the contents of the Max units available spin box
12. Type 200 and choose OK *The Resource Information dialog box closes.*
13. Examine the Writer resource *The Writer is no longer overallocated because another unit of the resource was added to the pool.*
14. In the top pane, select the Editor resource
15. Find the overallocation for the Editor resource
16. Examine the dates on which the overallocations take place and the tasks involved *Thursday in the week of August 10, 1998, shows an overallocation for the tasks Edit and Corrections.*
17. From the View menu, select *More Views*
18. Select Task Entry and click Apply

19. On the top pane, select Corrections
20. In the bottom pane, right-click and select *Resource Schedule* from the Menu
21. Examine the duration of the task Corrections, the number of hours of work for each resource assigned to that task, and each resource's start and finish dates
The duration is three days. The Writer is working the full twenty-four hours on the task; the Editor is working only eight hours on the task.
22. In the bottom pane, for the Editor resource, select the field in the Delay column
23. Type 16h
24. Choose OK
25. Examine the schedule changes
The overallocation occurred because Microsoft Project always schedules the work hours at the beginning of the task. The eight hours that the Editor is spending on that task has been delayed by sixteen hours so that the Editor works on the task on the third day instead of the first day.
26. On the View menu, choose More Views
Resource Allocation view appears.
27. Choose Resource Allocation and click Apply
28. Examine the Resource Editor to see if it has any overallocations
There are no more overallocations for the Editor
29. Save as **H:\Doc\Manual-Rev 5a.mpp** and close it

Resolving Overallocations Using Resource Leveling

Resource leveling automatically resolves resource overallocations by delaying the start dates of certain tasks to which that resource is assigned. Leveling may not always be a good solution because this method can only delay tasks, which will extend the project finish date. Also, if your schedule is complex and includes constraints and complex dependencies, gaps will appear after you level, and you will have to manually reconfigure various components of your project. Leveling is best demonstrated with a simple project, as shown in **Figure 4-15**. This project consists of five tasks with no relationships between tasks. The Writer is scheduled to do the first three tasks at the same time and the Designer is scheduled to do the last two tasks at the same time.

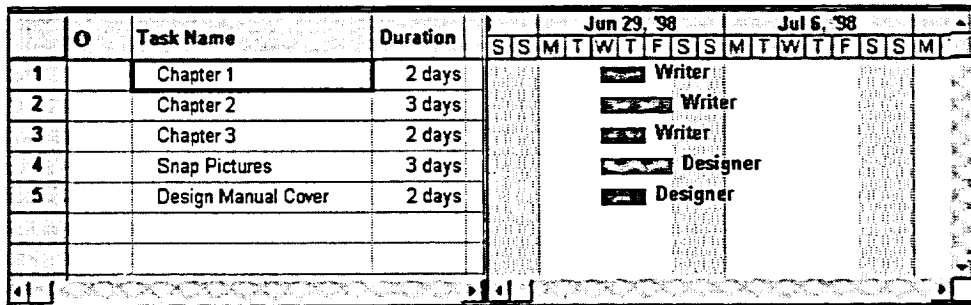


Figure 4-15: A Simple Project

You use the Resource Leveling dialog box, shown in Figure 4-16, to set the leveling parameters.

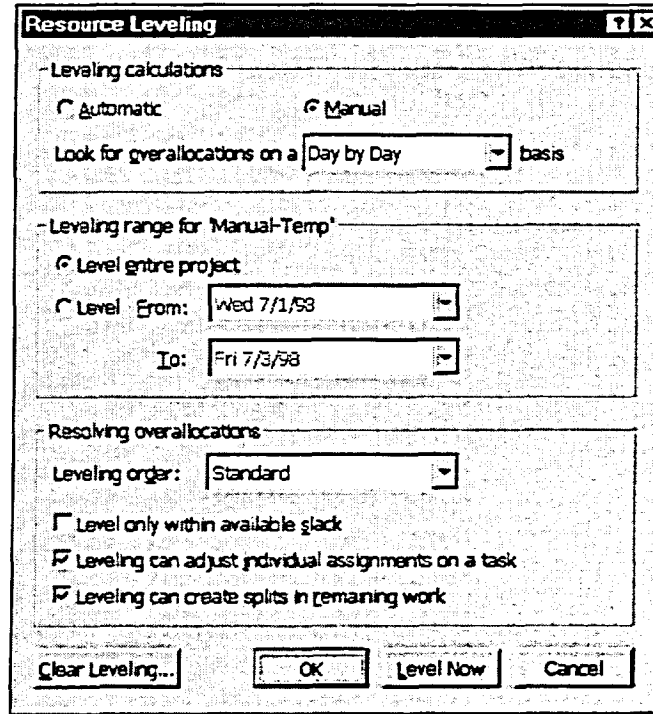


Figure 4-16: The Resource Leveling Dialog Box

Figure 4-17 shows how Microsoft Project spreads out the five tasks after leveling. All tasks occur without any conflict and it appears that there are dependencies between them. Leveling is not a substitute for setting task dependencies; however, Microsoft Project will adjust the tasks as needed. Leveling also assumes that the resource can work on the tasks in any order.

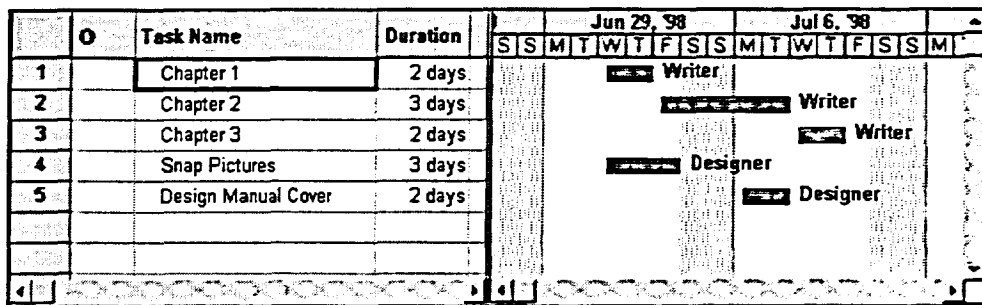


Figure 4-17: The Simple Project after Leveling

Resource leveling is effective only when overallocations occur across tasks, and not within tasks. For example, if two painters were assigned to a task and you have only one unit (that is, the Max Units of the resource is 100 percent), then leveling will not resolve the overallocation.

Another consideration is the view in which you perform leveling. If you do the leveling from a task view such as a Gantt Chart, Microsoft Project will level the entire project. If you do the leveling from a resource view such as the Resource Sheet, then Microsoft Project will give you the option to level just the selected resource. In this case, it is best to level with the Gantt Chart in the top pane and a resource view such as the Resource Sheet in the bottom pane.

Method

To resolve resource overallocations by using resource leveling

1. In the top pane of a combination view, display a task view.
2. In the bottom pane of a combination view, display a resource view.
3. In the top pane, select a task for which a resource that you want to level is assigned.
4. In the bottom pane, select the resource you want to level.
5. From the Tools menu, choose Resource Leveling.
6. In the Resource Leveling dialog box, choose Level Now.
7. In the Level Now dialog box, select the Selected resources option button.
8. Choose OK.
9. Repeat steps 3 to 8 for all resources you want to level.

Note: If you do not perform step 4, the Level Now dialog box in step 7 will not appear, and Project will level everything.

Exercise

In the following exercise, you will resolve resource overallocations by using resource leveling.

- | | |
|---|---|
| 1. Open A:\Manual-Temp | <i>The project file is opened in the Task Entry view.</i> |
| 2. Examine the resource assignments for the various tasks | <i>The Writer is assigned to Chapters 1 through 3, and the Designer is assigned to Snap Pictures and Design Manual Cover.</i> |
| 3. Select the bottom pane | |
| 4. On the View bar, click the Resource Sheet icon | <i>The Resource Sheet appears in the bottom pane.</i> |

5. In the top pane, make sure Chapter 1 is selected, and examine the contents of the bottom pane
Only the Writer appears in the bottom pane because only the Writer is assigned to the task Chapter 1.
6. In the bottom pane, make sure the resource name Writer is selected
7. From the Tools menu, choose Resource Leveling
The Resource Leveling dialog box appears.
8. Choose Level Now
The Level Now dialog box appears.
9. Select the Selected resources option button
10. Choose OK
All tasks that have the Writer assigned to them are leveled.
11. In the top pane, select Snap Pictures and examine the contents of the bottom pane
Only the Designer appears in the bottom pane because only the Designer is assigned to the task Snap Pictures.
12. In the bottom pane, make sure the resource name Designer is selected
13. From the Tools menu, choose Resource Leveling
The Resource Leveling dialog box appears.
14. Choose Level Now
The Level Now dialog box appears.
15. Make sure the Selected Resources option button is selected, and then choose OK
All tasks to which the Designer is assigned are leveled.
16. Save as H:\Doc\Manual-Temp 2.mpp and close the project

Identifying and Reducing the Critical Path

A project consists of a combination of critical and non-critical tasks. Critical tasks are tasks that, if delayed, can cause the entire project to be delayed. Critical tasks have no *slack time*. Slack time refers to the amount of time a task can slip before it delays another task or the project. Non-critical tasks are tasks that can be delayed or completed at any time before the project finish date. Non-critical tasks may have *Total slack time* and/or *Free slack time*. Free slack time is the amount of time the Edit Introduction task, shown in Figure 4-18, can be delayed before affecting the start time of the Edit Chapter 1 task. Total slack is the amount of time that the Edit Introduction task can be delayed before affecting the finish date of the project.

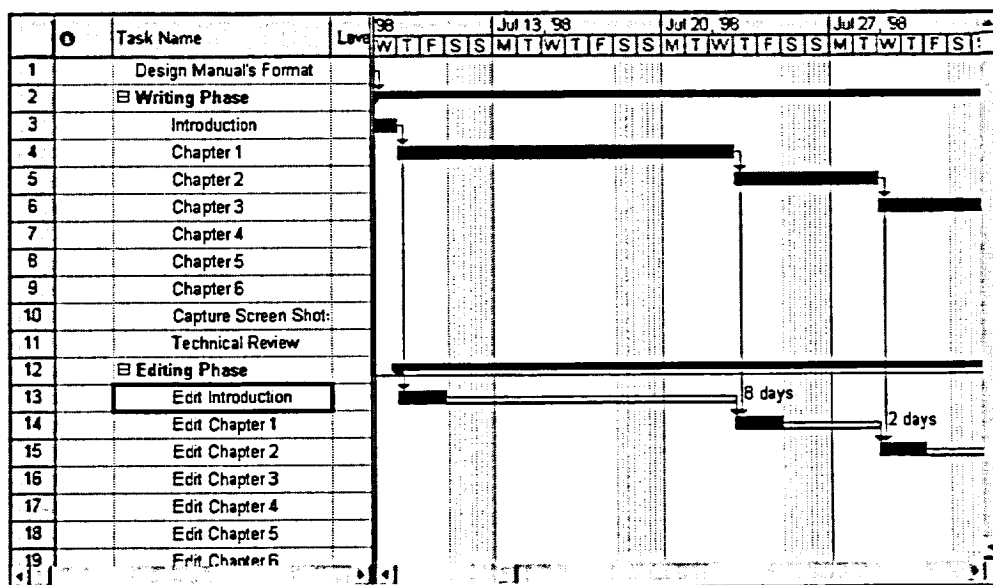


Figure 4-18: Free Slack Time Displayed

If you want to make changes to the schedule without affecting the project finish date, you can delay non-critical tasks. If your objective is to pull back the project finish date (or shorten the critical path), you may want to make adjustments to one or more critical tasks on the critical path.

There are several methods to shorten the critical path. You can shorten the duration of one or more critical tasks, add additional resources to the project, change task dependencies, or modify resource calendars so that certain individuals or groups of people work slightly longer hours. Some of the reasons for why you may want to shorten the critical path might include cost limitations, no authority to hire more resources, or the union not allowing an increase in work hours.

Method

To identify the critical path

1. On the View bar, click the More Views icon.
2. From the More Views dialog box, from the Views list, select a Detail Gantt.
or
2. From the More Views dialog box, from the Views list, select a Tracking Gantt.
3. Choose Apply.

To reduce the critical path

1. Identify and select the critical task you want to modify.
2. Make the necessary changes.

Exercise

In the following exercise, you will identify and reduce the critical path.

1. Open A:\Manual-Rev6 *The Chart view appears.*
2. On the View bar, click the More Views icon *The More Views dialog box appears.*
3. From the Views list, select Detail Gantt
4. Choose Apply *The Detail Gantt view appears.*
5. Press **ALT+HOME** and then, in the chart pane, examine the critical and noncritical tasks and their slack times
6. In the sheet pane, insert the Free Slack and Total Slack columns before the Successors column
7. Examine the Free and Total slack times of the noncritical tasks.
8. From the Project menu, choose Project Information *The Project Information dialog box appears.*
9. Choose Statistics *The Project Statistics dialog box appears.*
10. Examine the Current Finish Date and Current Duration field *The project is scheduled to finish on 9/23/98, and the duration is 60.38 days.*

11. Choose Close *The Project Statistics dialog box closes.*
12. Change the duration of the Writing Phase of the Chapter 3 task to 3
13. Double-click the Final Chapter Corrections task *The Task Information dialog box appears.*
14. On the Resources page, in the Resources area, change the Units of the Sr Editor resource to **200%**
15. Choose OK *The duration for the task Corrections is now 1.5 days.*
16. Display the Project Statistics
17. Examine the Current Finish Date and Current Duration fields *The project is scheduled to finish on 9/15/98, and the duration is 54.88 days.*
18. Close the Project Statistics dialog box
19. Select the Gantt Chart view
20. Save the project

Printing Views

Printing a view is as easy as clicking the Print button on the Standard toolbar. There are many reasons to print a view. A printout of project information can serve as a helpful reminder or a checklist. Since you may not be able to share project information electronically with some project participants, a printout can show project information that cannot be displayed on the screen at one time. The project information that you see on the screen is what will print, so it is a good idea to customize the view before printing.

Using the Print Dialog Box

The quickest way to print a view is to simply click the Print button on the Standard toolbar. However, if you want to vary the default settings to print a range of pages or project information that falls within a specific time period, you'll have to use the Print dialog box, shown in Figure 4-19.

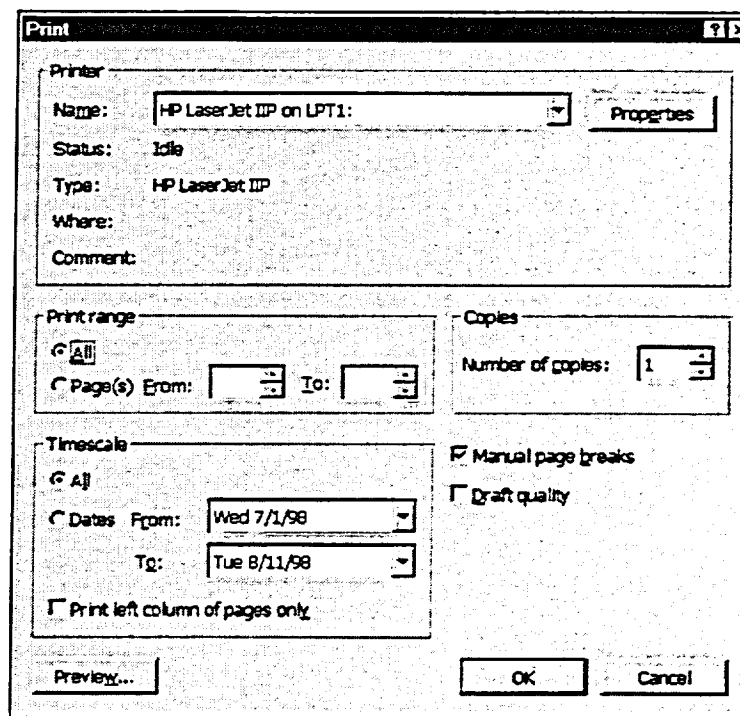


Figure 4-19: The Print Dialog Box

Method

To use the Print dialog box

1. From the File menu, choose Print.
2. In the Print dialog box, select options.
3. Choose OK.

Exercise

In the following exercise, you will print a view using the Print dialog box.

1. Zoom in until you can view the letters of the days of the week
2. From the File menu, choose Print
3. In the Timescale area, select the Dates option button
4. In the To combo box, enter **7/29/98**
5. Choose OK

The Print dialog box appears.

The Print dialog box closes and the timescale between the time period 7/1/98 and 7/29/98 are printed.

Using Print Preview

Print Preview is used to display the project as it will look when printed. You use the Print Preview window toolbar in the Print Preview window, shown in Figure 4-20, to scroll between pages, zoom, display one page at a time or view multiple pages.

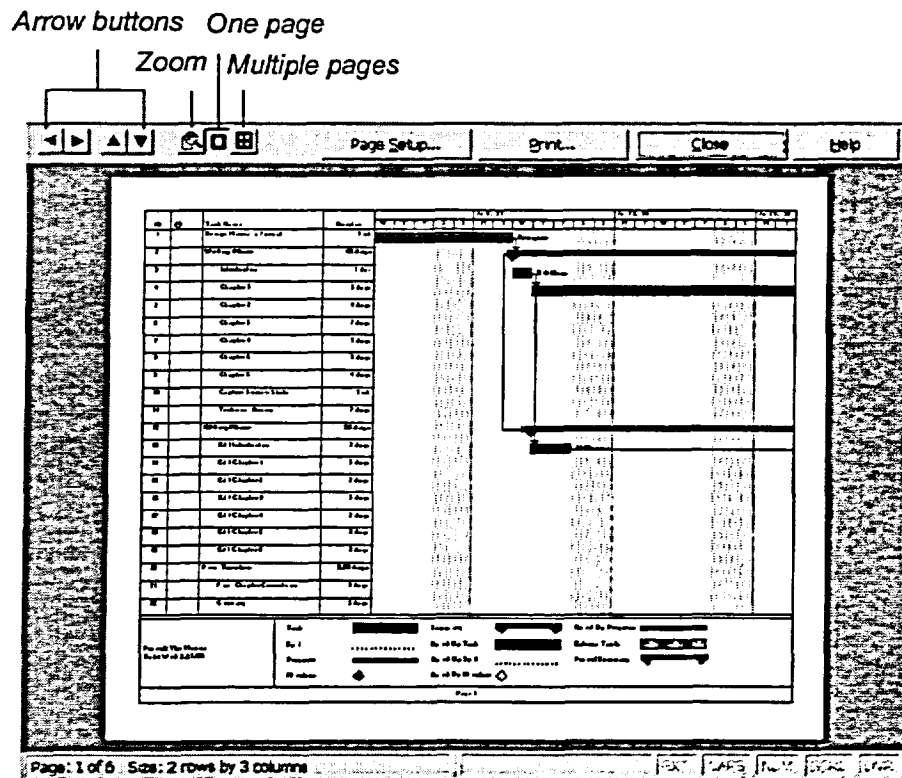


Figure 4-20: The Print Preview Window

Method

To use print preview

1. From the File menu, choose Print Preview.
- OR
1. On the Standard toolbar, click the Print Preview button.

To zoom in or out on an area of the previewed project

1. In the Print Preview window, click an area of the project.
2. If desired, scroll to view other areas of the project.
3. In the Print Preview window, click an area of the project again to restore the page size.

To move between pages of the previewed project

1. On the Preview window toolbar, click the appropriate arrow button.

Exercise

In the following exercise, you will preview your project in a Calendar view.

1. On the View bar, click the Calendar button
2. From the File menu, choose Print *The Print dialog box appears.*
3. Choose Preview *The Print Preview window appears.*
4. On the Print Preview window toolbar, click the Down arrow button *The second page appears.*
5. On the Print Preview window toolbar, click the Multiple pages button *Multiple pages are displayed in the Print Preview window.*
6. On the Print Preview window toolbar, click the One page button *Page 1 is displayed in the Print Preview window.*
7. In the Print Preview window, position the pointer over an area of the Calendar view *The pointer becomes the Zoom in pointer.*
8. In the Print Preview window, click an area of the Calendar view *The page area is magnified.*
9. In the Print Preview window, click the Calendar view again *The page returns to its original size.*
10. On the Print Preview window toolbar, click the Close button
11. Save the project

Changing Page Orientation and Scale

When a printed view is longer than one page, each consecutive page begins where the previous page leaves off. If your project is longer than one page, you can shrink it so that it prints on one page. If your project is only slightly longer than one page, you probably won't notice a difference. If, however, your project is quite large, when you shrink it to fit on one page, it will be printed in a very small point size.

In the Page Setup dialog box, shown in Figure 4-21, you can specify the number of pages you want for the project printout. You can also specify the amount you want Microsoft Project to shrink your project. Often, experimentation is the only way to find the settings you need.

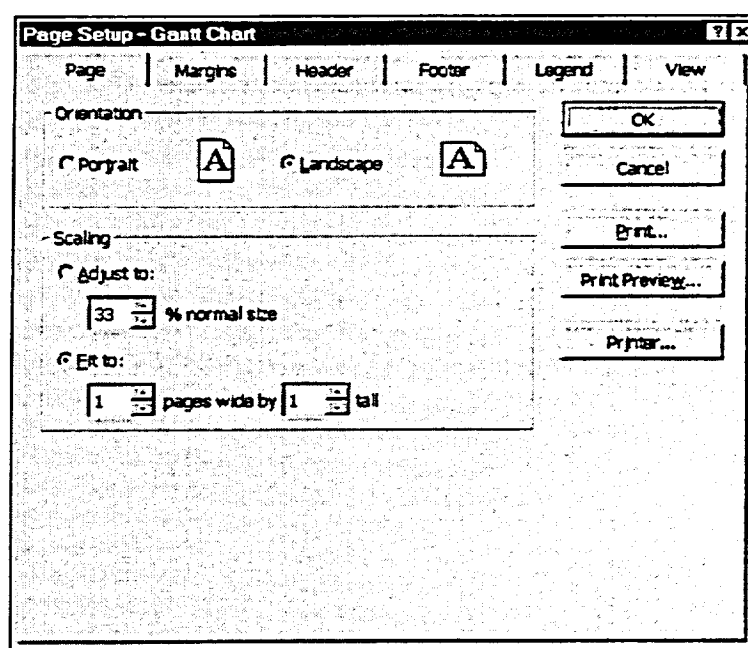


Figure 4-21: The Page page of the Page Setup Dialog Box

By default projects are printed in *landscape orientation*, as shown in Figure 4-22. That is, project information is printed across the long part of the paper—the part that measures eleven inches. Sometimes, however, you may want to print a table that is better suited to a *portrait orientation*, as shown in Figure 4-23.

ID	Task Name	Duration
1	Project Planning - Form of	1 day
2	Working Plan	6 days
3	Introduction	1 day
4	Chapter 1	1 day
5	Chapter 2	1 day
6	Chapter 3	1 day
7	Chapter 4	1 day
8	Chapter 5	1 day
9	Chapter 6	1 day
10	Chapter 7	1 day
11	Chapter 8	1 day
12	Chapter 9	1 day
13	Chapter 10	1 day
14	Chapter 11	1 day
15	Chapter 12	1 day
16	Chapter 13	1 day
17	Chapter 14	1 day
18	Chapter 15	1 day
19	Chapter 16	1 day
20	Chapter 17	1 day
21	Chapter 18	1 day
22	Chapter 19	1 day
23	Chapter 20	1 day
24	Chapter 21	1 day
25	Chapter 22	1 day
26	Chapter 23	1 day
27	Chapter 24	1 day
28	Chapter 25	1 day
29	Chapter 26	1 day
30	Chapter 27	1 day
31	Chapter 28	1 day
32	Chapter 29	1 day
33	Chapter 30	1 day
34	Chapter 31	1 day
35	Chapter 32	1 day
36	Chapter 33	1 day
37	Chapter 34	1 day
38	Chapter 35	1 day
39	Chapter 36	1 day
40	Chapter 37	1 day
41	Chapter 38	1 day
42	Chapter 39	1 day
43	Chapter 40	1 day
44	Chapter 41	1 day
45	Chapter 42	1 day
46	Chapter 43	1 day
47	Chapter 44	1 day
48	Chapter 45	1 day
49	Chapter 46	1 day
50	Chapter 47	1 day
51	Chapter 48	1 day
52	Chapter 49	1 day
53	Chapter 50	1 day
54	Chapter 51	1 day
55	Chapter 52	1 day
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80	Chapter 77	1 day
81	Chapter 78	1 day
82	Chapter 79	1 day
83	Chapter 80	1 day
84	Chapter 81	1 day
85	Chapter 82	1 day
86	Chapter 83	1 day
87	Chapter 84	1 day
88	Chapter 85	1 day
89	Chapter 86	1 day
90	Chapter 87	1 day
91	Chapter 88	1 day
92	Chapter 89	1 day
93	Chapter 90	1 day
94	Chapter 91	1 day
95	Chapter 92	1 day
96	Chapter 93	1 day
97	Chapter 94	1 day
98	Chapter 95	1 day
99	Chapter 96	1 day
100	Chapter 97	1 day
101	Chapter 98	1 day
102	Chapter 99	1 day
103	Chapter 100	1 day

Figure 4-22: Landscape Orientation

Figure 4-23: Portrait Orientation

Method

To change page orientation and scale

1. From the File menu, choose Page Setup.
2. If necessary, In the Page Setup dialog box, select the Page tab.
3. On the Page page, in the Orientation area, select the Portrait or Landscape option button.
4. If necessary, On the Page page, in the Scaling area, select the Adjust to: or Fit to: option button.
5. Using the spin boxes, make the changes.
6. Choose OK.

Exercise

In the following exercise, you will change the scale.

1. On the View bar, select the Gantt Chart view
2. From the File menu, choose Print *The Print dialog box appears.*
3. In the Timescale area, select the Dates Option button
4. In the To combo box, enter 7/29/98
5. Choose Preview *The Print Preview window appears.*
6. Use the scroll buttons to view the pages selected for printing and then, close the Print Preview window *The tasks that occur between the time period 7/1/98 and 7/29/98 are displayed.*
7. From the File menu, choose Page Setup *The Page Setup dialog box appears.*
8. On the Page page, in the Scaling area, select the Fit to: option button
9. Choose Print *The Print dialog box appears.*
10. Choose OK *The Print dialog box closes and the tasks that occur between the time period 7/1/98 and 7/29/98 are scaled to print on one page.*
11. Save and close the project

Summary

To use a view

1. On the View bar, click a View icon.

To use a view that is not on the View bar

1. On the View bar, click the More Views icon.
2. In the More Views dialog box, from the Views list, select a view.
3. Choose Apply.

To use combination views

1. On the View bar, click the More Views icon.
2. From the More Views dialog box, from the Views list, select a combination view.
3. Choose Apply.

To switch between panes

1. Click the pane you want to make active.
or
1. Press F6

To split an existing view

1. From the Window menu, choose Split.
or
1. Drag the horizontal split bar up to the desired location in the existing view.

To change the view in a pane

1. Make sure the pane you want to change is active.
2. On the View bar, select a view to display.

To switch from a combination view to a single-pane view

1. From the Window menu, choose Remove Split.
or
1. Double-click the horizontal split bar.

To apply a table

1. Select the view to which you want to apply a table.
2. On the View menu, point to Table.
3. From the Table submenu, select a table.

To adjust column width (To fit the widest entry)

1. Double-click the right border of the column heading.

To adjust column width (To adjust column width manually)

1. Drag the right border of the column heading to the desired width.

To hide a column

1. Select the column heading of the column to hide.
2. From the Edit or shortcut menu, choose Hide Column.
or
2. Press **DELETE**

To insert a column

1. Select the heading of the column to the right of the column to be inserted.
2. From the Insert or shortcut menu, choose Column.
or
2. Press **INSERT**
3. In the Column Definition dialog box, from the Field name drop-down list, select a field to insert.
4. Choose OK.

To sort a view using the Sort dialog box

1. On the Project menu, point to Sort.
2. From the Sort submenu, choose Sort by.
3. In the Sort dialog box, in the Sort by area, from the Sort by drop-down list, select a column by which you want to sort.
4. In the Sort by area, select the Ascending or Descending check box.
5. If desired, in the first Then by area, from the Then by drop-down list, select a secondary column by which you want to sort.
6. In the first Then by area, select the Ascending or Descending check box.
7. If desired, in the second Then by area, from the Then by drop-down list, select a third column by which you want to sort.
8. In the second Then by area, select the Ascending or Descending check box.
9. Choose Sort.

To sort a view

1. On the Project menu, point to Sort.
2. From the Sort submenu, choose a sort option.

To display the Resource Management toolbar

1. On the View menu, point to Toolbars.
2. From the Toolbars submenu, choose Resource Management.

To resolve resource overallocations manually

1. Display the Resource Management toolbar.
2. On the Resource Management toolbar, click the Resource Allocation View button.
3. On the Resource Management toolbar, click the Go To Next Overallocation button.
4. Make the necessary changes.
5. Repeat steps 3 and 4 for all resource overallocations.

To resolve resource overallocations by using resource leveling

1. In the top pane of a combination view, display a task view.
2. In the bottom pane of a combination view, display a resource view.
3. In the top pane, select a task for which a resource that you want to level is assigned.
4. In the bottom pane, select the resource you want to level.
5. From the Tools menu, choose Resource Leveling.
6. In the Resource Leveling dialog box, choose Level Now.
7. In the Level Now dialog box, select the Selected resources option button.
8. Choose OK.
9. Repeat steps 3 to 8 for all resources you want to level.

To identify the critical path

1. On the View bar, click the More Views icon.
2. From the More Views dialog box, from the Views list, select a Detail Gantt.
or
2. From the More Views dialog box, from the Views list, select a Tracking Gantt.
3. Choose Apply.

To reduce the critical path

1. Identify and select the critical task you want to modify.
2. Make the necessary changes.

To use the Print dialog box

1. From the File menu, choose Print.
2. In the Print dialog box, select options.
3. Choose OK.

To use print preview

1. From the File menu, choose Print Preview.
or
1. On the Standard toolbar, click the Print Preview button.

To zoom in or out on an area of the previewed project

1. In the Print Preview window, click an area of the project.
2. If desired, scroll to view other areas of the project.
3. In the Print Preview window, click an area of the project again to restore the page size.

To move between pages of the previewed project

1. On the Preview window toolbar, click the appropriate arrow button.

To change page orientation and scale

1. From the File menu, choose Page Setup.
2. If necessary, In the Page Setup dialog box, select the Page tab.
3. On the Page page, in the Orientation area, select the Portrait or Landscape option button.
4. If necessary, on the Page page, in the Scaling area, select the Adjust to: or Fit to: option button.
5. Using the spin boxes, make the changes.
6. Choose OK.

Self-Check Exercise

1. Open the project A:\Manual-Rev7.
2. Display the Calendar view.
3. Display the Resource Graph view and scroll through the adjacent resources.
4. Display the Resource Usage and the Task Usage views.
5. Display the Task Form and the Resource Form views.
6. Display the Task Entry view.
7. Switch between panes.
8. Switch to a single-pane view.
9. Use the horizontal split bar to split the window in half.
10. Use the Window menu to remove the split.
11. Apply the Cost table and examine each task's total cost.
12. Apply the Entry table and adjust column widths where necessary.
13. Hide the Predecessor column.
14. Sort the view by Duration in Descending order.
15. Make sure the Resource Management toolbar is displayed.
16. Using the Resource Allocation view, go to the first overallocated resource. Examine the cause of the overallocation.
17. To resolve some of the Writer resource's overallocation, change the Max units available to 200 percent in the Resource Information dialog box.
18. To resolve more of the Writer resource's overallocation, use the Task Entry view to enter a delay. Enter a one-week delay for this resource on the task Capture Screen Shots.
19. Use resource leveling to resolve the remaining overallocations for the entire pool of resources.

20. Check the Project Statistics of your project and enter the appropriate information in the table below.

Start Date	Finish Date	Duration	Work	Cost

21. Identify the critical path and examine the critical and noncritical tasks.
22. On the sheet pane, insert the Free Slack and Total Slack columns, and then examine the slack time.
23. Shorten the critical path by changing the duration of the Chapter 1 task to four days.
24. Shorten the critical path by increasing the units for the Writer to 200 percent. Do this for the task Corrections in the Task Information dialog box.
25. Check the Project Statistics of your project and enter the appropriate information in the table below. Compare with the table in step 20.

Start Date	Finish Date	Duration	Work	Cost

26. Apply the Cost table and enter a fixed cost of \$4000.00 for the task Writing Phase.
27. To reduce your project costs, remove the Designer from the Capture Screen Shots task using the Assign Resource dialog box.
28. Check the Project Statistics of your project and enter the appropriate information in the table below. Compare this table with the table in step 25 and the Project Statistics dialog box shown in Figure 4-24.

Start Date	Finish Date	Duration	Work	Cost

	Start	Finish
Current	Wed 7/1/98	Tue 8/11/98
Baseline	NA	NA
Actual	NA	NA
Variance	Dd	Dd

	Duration	Work	Cost
Current	29.38d	331h	\$25,075.00
Baseline	Dd	0h	\$0.00
Actual	Dd	0h	\$0.00
Remaining	29.38d	331h	\$25,075.00

Percent complete:
 Duration: 0% Work: 0%

Close

Figure 4-24: The Final Project Statistics

29. Print preview the project.
30. Print the project specifying a timescale between 7/1/98 and 7/29/98.
31. Using the page setup option, print the project file on one page.
32. Save as **H:\Doc\Manual-Rev 7a.mpp** and close the project.
33. If necessary, close all open projects.

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