

# MS Project Tutorial for Senior Design

## Using Microsoft Project to manage projects

### Overview:

Project management is an important part of the senior design process. For the most part, teams manage projects in an informal way: they have a deadline to meet, and they monitor progress of the project as it moves along. However, computer resources are available for managing team projects more formally. This tutorial will introduce you to *Microsoft Project*, a software package that helps to plan and track projects. You will walk through instructions for project planning, and then for project tracking and finally communicating progress.

In managing projects, there are essentially two steps: project planning, and project tracking. Projects consist of several tasks, each of a certain duration, that are to be carried out in a certain sequence. Project planning happens at the start of a project; at this stage the team identifies the tasks involved, estimates task duration, and guesses at task sequence. As the project progresses, some of this may change: task sequences may have to be altered, and tasks may take longer or shorter than originally planned. Project tracking involves recording these various changes, and making appropriate changes to the proposed schedule; tracking must take place throughout the life of the project.

### Tutorial Objectives:

- Become familiar with features of MS project and project management
- Opening and saving files
- Linking tasks
- Defining tasks
- Organizing projects
- Tracking project completion
- Understanding milestones and comments
- Using MS project to communicate

### Initial Steps:

To launch *Project*, double-click on the *Microsoft Project* icon. When the Welcome! message box is displayed, click on the button next to **Start a New Project**.

The various parts of the *Project* screen are as follows:

- Below the menu bar is the tool bar. This contains a number of buttons that can be clicked to carry out certain common operations.
- Below the toolbar, to the left side of the screen is the **Task Table**. This looks like a spreadsheet, with information about each task in a row.
- To the right of the Task Table is the **Gantt Chart**. Using horizontal bars, the Gantt Chart graphically represents the task schedule.

## **Project Planning:**

Project planning involves identifying the tasks involved, their durations, and the relationships among the tasks. *Microsoft Project* then automatically computes the total project duration and other related information.

To enter information about a task, click on an empty cell in the Task Table, type in the name of the task, and press enter. The task name appears in the cell, and a default duration of one day is assigned. To change the default duration, click on the cell in question, type in the correct duration, and press enter.

1. Enter the list of tasks shown below together with their duration:

	<b>Task Name</b>	<b>Duration</b>
<b>1</b>	Identify site	10d
<b>2</b>	Meet residents	1d
<b>3</b>	Conduct survey	15d
<b>4</b>	Collect secondary data	10d
<b>5</b>	Analyze data	10d
<b>6</b>	Write proposal	20d





To insert a new task, select in the Task Table the row *above* which the new task is to be inserted. Choose the **Insert|Insert Task** menu item to insert a blank row in the **Task Table**. Type in the name of the new task and its duration.

2. Add two new tasks: **Project start** at the head of the list, and **Project finish** at the end of the list. Assign them both durations of **0** days.

A special kind of task is the *milestone*. This is usually has a duration of one or zero days, and is used to indicate an event rather than a task. To create a milestone, double-click on its cell in the **Task Table**. In the resulting **Task Information** dialog box, choose the **Advanced** tab and click on the box next to **Mark Task as Milestone**.

3. **Project start** and **Project finish** are milestones in the project we are working on. Mark them as such.

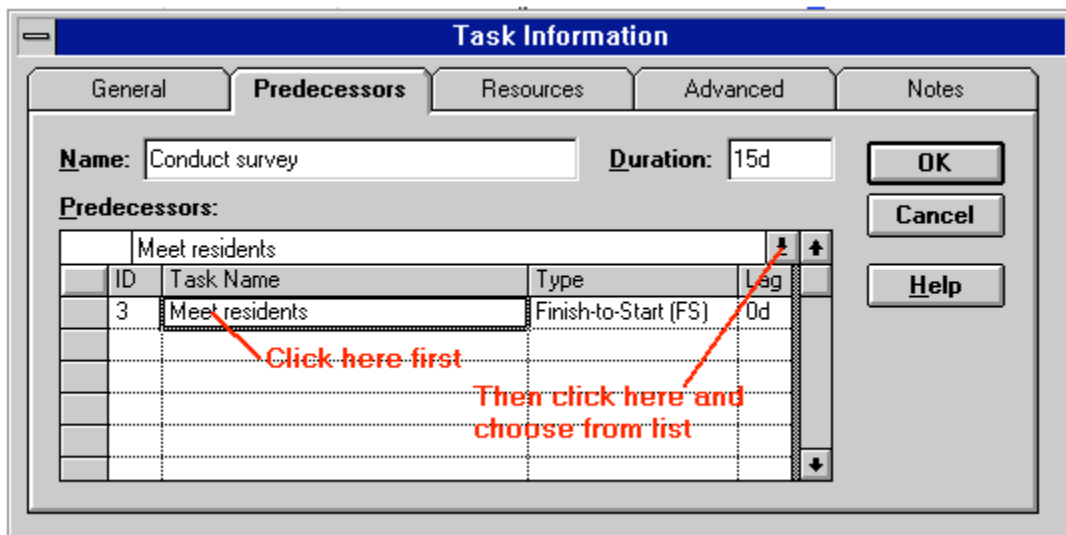
You can create hierarchies of tasks: main tasks and their subtasks. To create a hierarchy with a main task and its subtasks, list the subtasks immediately below the main task.

Highlight the subtasks, and click on the demote button, , in the toolbar. The highlighted subtasks are indented, and the main task is shown in bold. This action can be reversed by highlighting a subtask and clicking on the promote button, , in the toolbar. To hide the subtasks under a main task, click on the collapse button, , in the toolbar; reverse this action using the expand button, .

4. Insert a new task labeled **Study phase** above **Conduct survey** and make it the main task containing the subtasks **Conduct survey**, **Collect secondary data**, and **Analyze data**. The Task Table should look as follows:

Task Name	Duration
Project Start	0d
Identify site	10d
Meet residents	1d
<b>Study Phase</b>	<b>15d</b>
Conduct survey	15d
Collect secondary c	10d
Analyze data	10d
Write proposal	20d
Project Finish	0d

To identify the sequence of tasks, double-click on each task in turn, and designate predecessor tasks: those that logically precede the current task. In the **Task Information** dialog box, choose the **Predecessors** tab. As shown in the graphic below, first click on a blank cell under **Task Name**, then click on the drop button indicated, and from the drop list select the predecessor task. As links are created between tasks, the Gantt Chart will change to reflect these links.



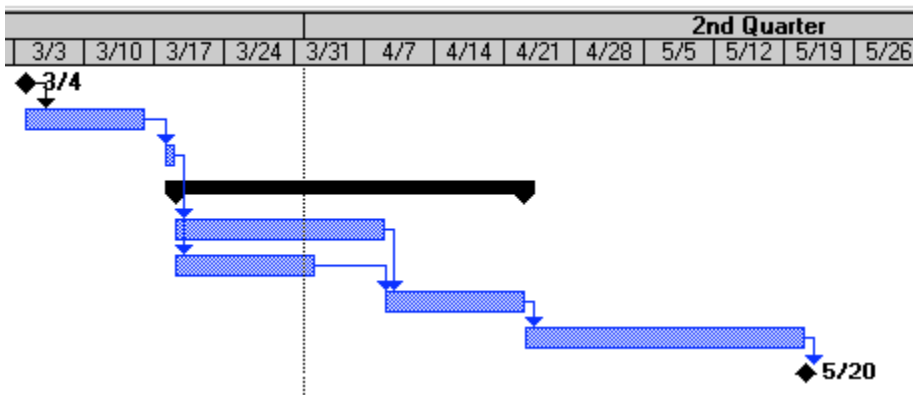
- Set the predecessors for each task as shown in the graphic below. (The number refers to the ID number of the predecessor task; for instance, task ID 1 is *Project Start*.)

Task Name	Predecessors
Project Start	
Identify site	1
Meet residents	2
<b>Study Phase</b>	
Conduct survey	3
Collect secondary c	3
Analyze data	5,6
Write proposal	7
Project Finish	8

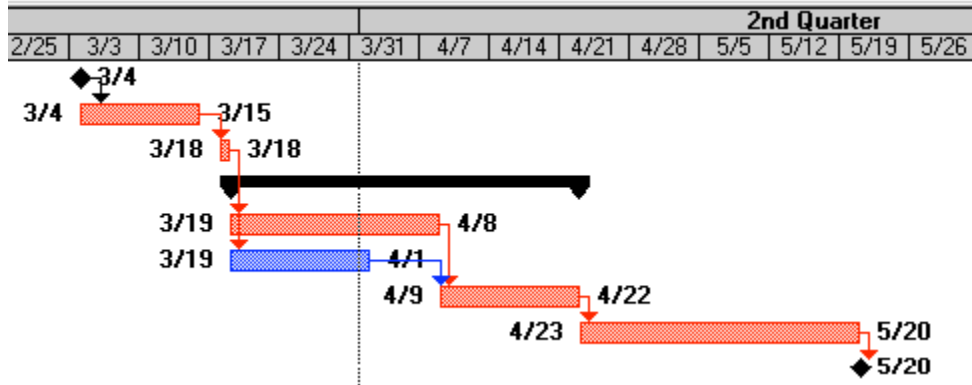
To change the timescale of the Gantt Chart, choose **Format|Timescale...** In the resulting **Timescale** dialog box, set the major and minor scale units as follows:



- The Gantt Chart should look as follows:



To change the appearance of the Gantt Chart, choose **Format|Gantt Chart Wizard...** To display critical tasks, for example: in Step 2, choose **Critical Path**, and click **Next**. In Step 9, choose **Dates**, and click **Next**. Keep clicking **Next** in the remaining steps, until you get to click on **Format It**. Click **Exit** to close the Wizard. The chart should appear as follows:



The red bars indicate that these tasks are critical: they must be completed on time *if the project is not to be delayed beyond the target date.*


The default relationship between a predecessor and a successor task is as follows: when the predecessor **Finishes** the successor **Starts** (FS). This may not be what is desired. Instead, for instance, five days after the predecessor **Starts**, you may wish to **Start** the successor (SS, with 5 days lag time).

To change the relationship between two linked tasks, double-click on the successor task in the **Task Table**. In the **Task Information** dialog box, choose the **Predecessors** tab. Click on **Type** cell of the target predecessor. Click on the button with the downward arrow that appears under **Predecessors**. From the list that drops down, choose the appropriate relationship. In the **Lag** cell of the predecessor, type in the desired lag time, and press enter. Lag time is the number of days between the finish or start of the predecessor and the finish or start of the successor task; it can be a positive number or a negative number.

7. Set *Write proposal* to start 5 days after *Analyze results* starts. Note how the duration of the entire project is reduced. The project has been fast-tracked.

Once the initial project schedule has been determined, it has to be recorded as the baseline plan; future adjustments to the schedule will be compared to this baseline. To do this, choose **Tools|Tracking|Save Baseline...** In the resulting dialog box, choose **Baseline** and **Entire Project**, and click the **OK** button. (In this dialog box, you can also save upto five different interim project schedules.)

The current view (whatever is on the screen) can be either printed (choose **File|Print Preview** and then print) or copied and pasted into a Microsoft Word document:

To copy the Chart, first highlight all the tasks that must be included in the picture to be copied. Then, click on the  button in the toolbar. In the resulting dialog box, choose **For Printer** for high-resolution pictures. You can now switch to the other application and paste the picture.

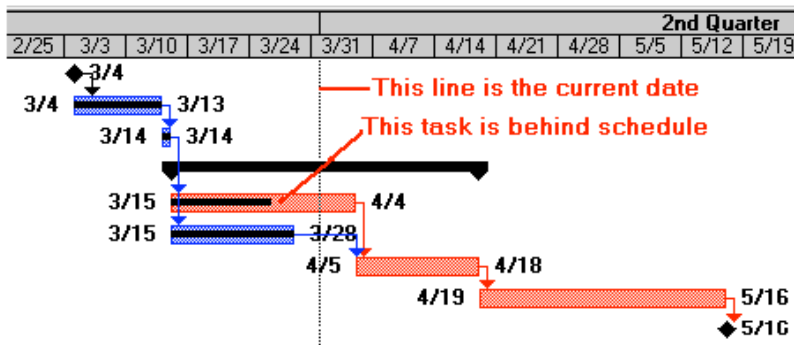
To save the project information, use **File|Save As** for the first time, and **File|Save** for later times. To exit Microsoft Project, use **File|Exit**.

## **Project Tracking:**

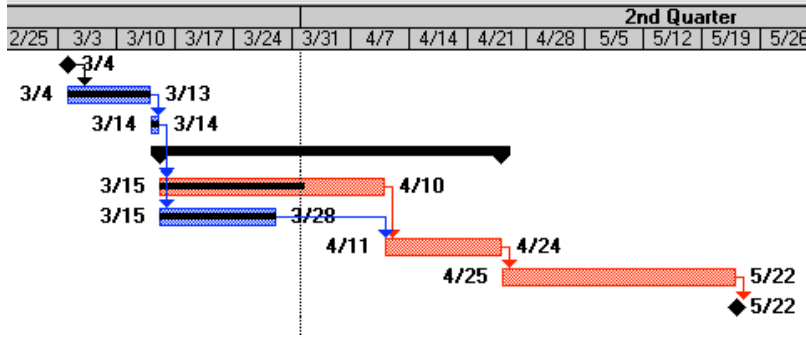
To track projects in Microsoft Project, a distinction is drawn between planned, actual, and scheduled information about tasks. Planned task dates (start, finish, duration) are those that are assigned in the initial schedule that is created. As the project progresses, actual dates are recorded; these may or may not be different from the planned dates. In response to changing circumstances, the project may have to be rescheduled; this new information is recorded as scheduled dates. The three different types of information make it possible to keep track of how a project is progressing with regard to the initial plan.

Enter the actual completion data for tasks that are already complete or under way. To do this, click on each task that is complete, and select **Tools|Tracking|Update Tasks...** In the **Update Task** dialog box, type the percentage of work completed or the actual finish date.

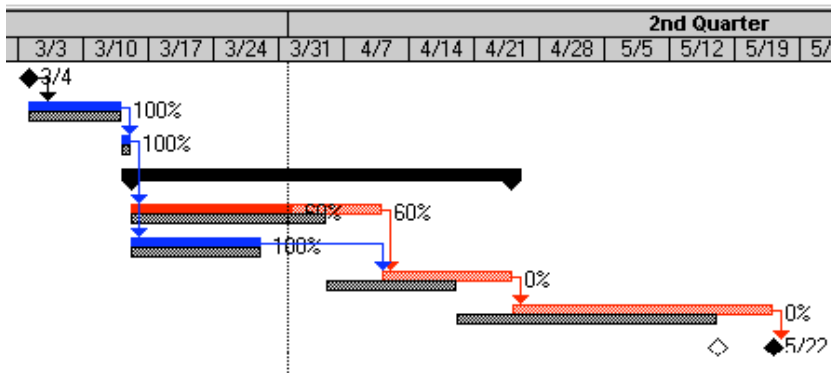
- For this exercise, *Identify site* finished on 3/13/03; *Meet Residents* and *Collect secondary data* are **100%** complete; *Conduct survey* is only **60%** complete.
- Note that there is a bar through each task showing how much is complete. If the project is on schedule, then all tasks finishing before today's date should have a bar extending their whole length. Tasks currently under way should have a bar extending till the current date. Clearly there is a problem with *Conduct survey*; it is behind schedule.



We must adjust our schedule to allow for the slippage. Here is how it can be done: Increase the time allotted to the task so that 60% of the task represents the number of days till today's date. Click on the task *Conduct survey*, and choose the **Tools|Tracking|Update Tasks...** menu item. In the **Update Task** dialog box, increase the **Remaining Duration** to **10**, and click **OK**. The task is now going to take longer, but the completion bar is still short of today's date. Choose the **Tools|Tracking|Update Tasks...** menu item again, and in the **Update Task** dialog box, change the **% Complete** back to **60%**. Now, the schedule is approximately as we want it:



Choose a different view to get a better sense of how the project has changed. Choose **View|More Views...** In the **More Views** dialog box, choose **Tracking Gantt Chart** (this is the last in the list), and click on **Apply**. (You will have to change the **Timescale** as described earlier.) The Gantt Chart now looks as follows:



The gray bars are the baseline schedule; the upper bars are the current schedule. The impact of the work slippage is now clearly visible.

### Communicating Progress:

Now that you can manage your schedule with MS project, you need to use it as a communication tool with your group members, customer and instructors. Preview the project before you print it with the print preview icon. You can edit the print view by clicking on **page setup** at the top menu in the print preview screen. Click the legend subheading and then click **none** to remove the legend and make more space on the page.

To print the document click the **Print** button in the preview screen, and adjust the dates for printing to 3/4/03 to 5/22/03. Print the project.

Other communication with MS project might include adding it to your web site. You can save the file as an HTML document from the save as command. You may also screen capture a portion of your project schedule to add to reports or presentations.

This ends the tutorial. Microsoft Project allows much more powerful planning and tracking of projects including the resources consumed in completing tasks. It also allows charts and reports to be very highly customized.