# 213 CNE -Lab 3
# Microsoft Project

## Calendar Hierarchy

Project makes it possible to assign calendars at the Project, Resource, and Task level. Tasks using Auto Schedule mode will honor working and nonworking time according the following hierarchy of calendars:

1. **The Task Calendar**—If a task has a specific calendar, Project honors the Task Calendar unless a resource assigned to the task also has a specific Calendar; in this case, Project will attempt to honor *both* calendars. (It is also possible to check the Scheduling Ignores Resource Calendars box in the Task Information window, Advanced tab. In the event of a conflict, Project will display an error message, telling you that it will default to this setting to resolve the conflict.) If the task does not have a specific calendar....

2. **The Resource Calendar**—If a resource is assigned to a task and the resource has a specific calendar assigned to it, Project honors that calendar. If the resource does not have a calendar (which is common) and the Task does not have a calendar....

3. **The Project Calendar**—All tasks without specific calendars, lacking resources with specific calendars, will honor the Project Calendar.

This hierarchy is a very powerful scheduling feature. Unfortunately, in past versions of Project, it often led to confusion; Project Managers and schedulers found it difficult to understand exactly why some tasks were scheduled to occur when they were. With 2010, you can simply hover over the information column. The driving calendar will be clearly identified, unless it is the project calendar.

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## Modifying and Defining Base Calendars

Much of your calendar modifications will occur on the Change Working Time dialog box. To access it, click the Project tab, Change Working Time. Figure 5.9 shows the Change Working Time dialog box. The Change Working Time dialog box contains a For Calendar field to define which calendar you are viewing, a legend, a calendar, and two tab options (Exceptions and Work Week) to modify the calendar. When you open the Change Working Time dialog box, the current date is highlighted in bold on the calendar.

**Figure 5.9**
The Change Working Time dialog box is where you can modify and create base calendars.
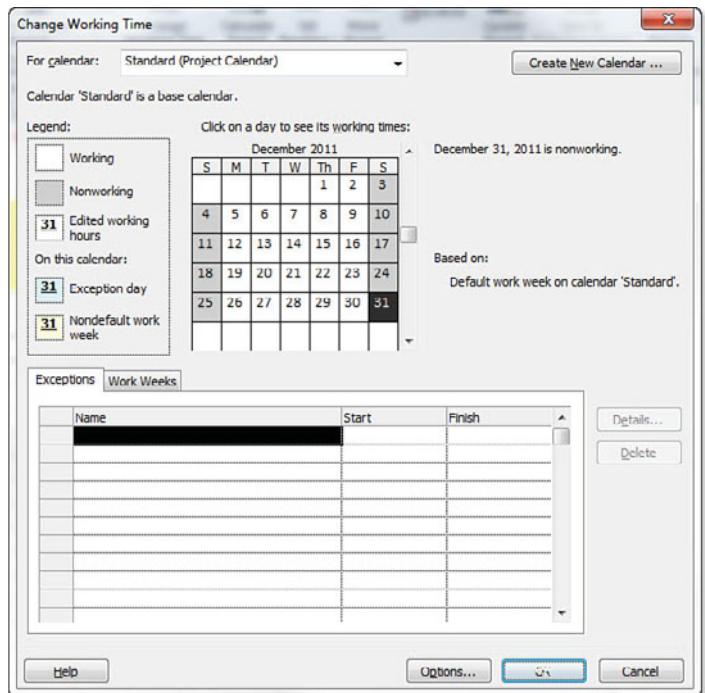


## Defining Exceptions

You can define exceptions individually, or you can define a recurrence exception along with its recurrence pattern, so each exception only has to be defined once.

For example, if Labor Day is always a nonworking day at your company, you can tell Project to define every Labor Day as an exception. To do this, follow these steps:

1. Open the Change Working Time dialog box (Project tab, Change Working Time).

2. Scroll to the month of September using the arrows on the right side of the calendar.

3. Click on Labor Day, the first Monday of every September. In 2011, Labor Day is September 5th.

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4. Under the Exceptions tab, type **Labor Day** in the Name column, and click Enter, or press the directional arrow to the right. The Start and Finish columns will display the date of the highlighted day in the calendar (in this case, 9-5-11).

5. Select the cell in the Start column next to the exception name (in this case, select the 9-5-11 cell in the Start column next to Labor Day) and click the Details button.

6. The Details dialog box will appear, as shown in Figure 5.10. If Labor Day is a nonworking holiday, leave the Nonworking option selected. If you want to define working hours (such as a half day), select Working Times and enter the hours of working times for Labor Day.

7. Under Recurrence Pattern, select Yearly, because Labor Day happens once a year. Figure 5.10 shows this selection.
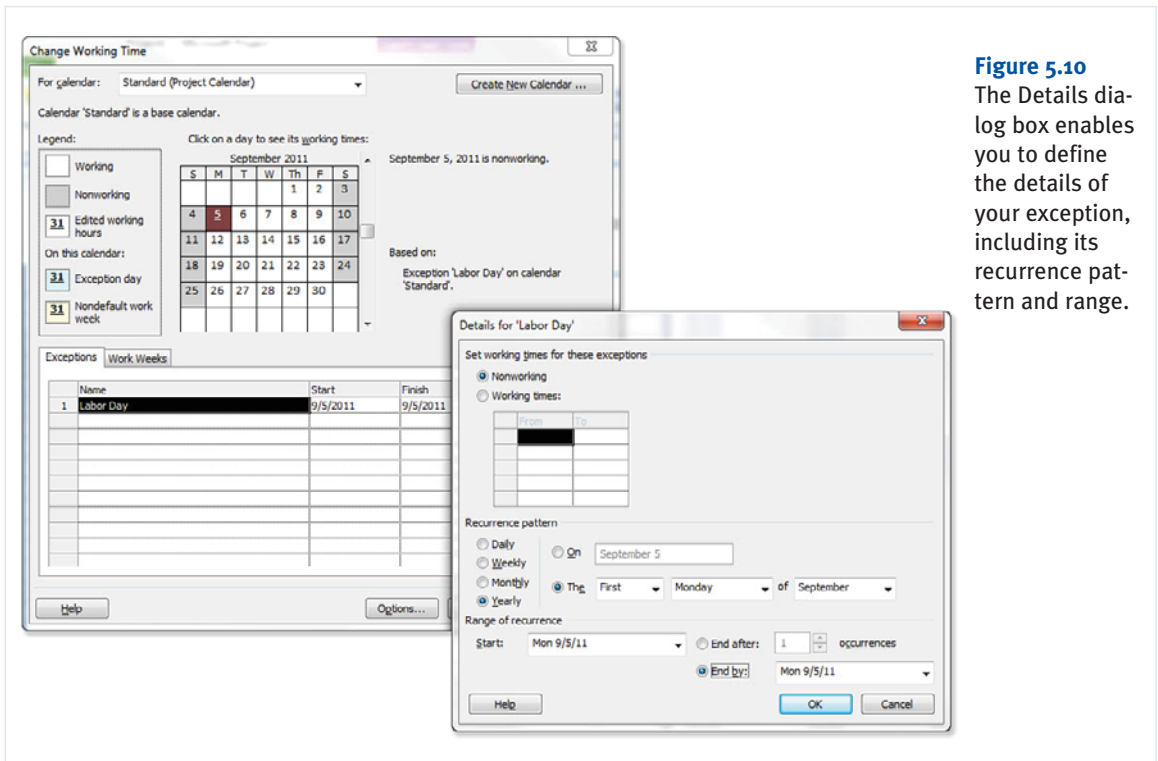


**Figure 5.10**
The Details dialog box enables you to define the details of your exception, including its recurrence pattern and range.

8. Because the date for Labor Day changes annually, select the The... option, and then the First Monday of September is filled in automatically. Because this is the appropriate description for Labor Day, you do not have to change anything else.

9. The Range of Recurrence automatically fills the selected date from the calendar in the Start field. Because this is the first Labor Day in your project, you do not have to change this field. If you wanted the exception to start on a different date, you can type in the date or use the drop-down list to choose from a calendar.

10. The final step is defining the end of the range of the exception. You can select End By and fill in a date (type it in or use the drop-down), or you could select End After and fill in the number of occurrences you want the exception to end after. Project supports information up until 12-31-2049, so the maximum number of occurrences you could enter is 39, because there are 39 Labor Days between 9-5-2011 and 12-31-2049.

11. Click OK. The date is now highlighted as an Exception Day (as defined in the legend), and if you scroll through every month of September, you will notice the same for every first Monday. Click OK again to close the Change Working Time dialog box, or continue modifying your calendar.

> ⚙ **tip**
>
> The Recurrence Pattern options are Daily, Weekly, Monthly, and Yearly. Click each option to familiarize yourself with defining in detail the recurrence pattern information for all four options. Information appears at the right of the options and varies depending on which one you choose.

Similarly, if you have a long meeting every Friday, you can simply click on the Friday of the first meeting and repeat the process. Define working hours around the meeting, select a Weekly recurrence pattern on Friday, and define the end of the exception.

You can also define longer exceptions, such as office closures for an extended period. For example, if your company shuts down starting on Christmas until the end of the year, you can define that entire time period as non-working time. To set this up so that it occurs each year, the changes must be made one day at a time:

> 🔍 **note**
>
> If you were defining a nonworking day that occurs each year on the same date, such as Christmas Eve, you would select the On option and type in the date.

1. Open the Change Working Time dialog box by selecting Tools, Change Working Time.

2. Scroll to the month of December using the arrows on the right side of the calendar.

3. Click on December 26th.

4. Under the Exceptions tab, type **Holiday** in the Name column, and click Enter, or press the directional arrow to the right. The Start and Finish columns will display the date range of the highlighted period in the calendar.

5. To set up the recurrence pattern for this date, click the Details button. Under Recurrence Pattern, select Yearly, and the On (December 26, in this case) option is automatically selected.

6. Under Range of Recurrence, you can either specify the number of years by selecting the End After option and then entering the number (of years, in this case) that this exception will apply to. Or you can also select the End by option and select the specific date (in this case, 12/26/2011) until which the exceptions will apply. The date you provide here is inclusive, so in this example, the last year the exception will be applied is 2011. Click OK.

Repeat this process for each day in the closure period, even if it falls on a weekend in the first year. This will enable you to make sure that all days between 12/26 and 12/31 are nonworking days, regardless of where they fall in the week. You can verify that the change is correct by reviewing the

number of occurrences shown in the dialog box in Figure 5.11. In this example, the number is "3" because the recurrence time period was established as three years.
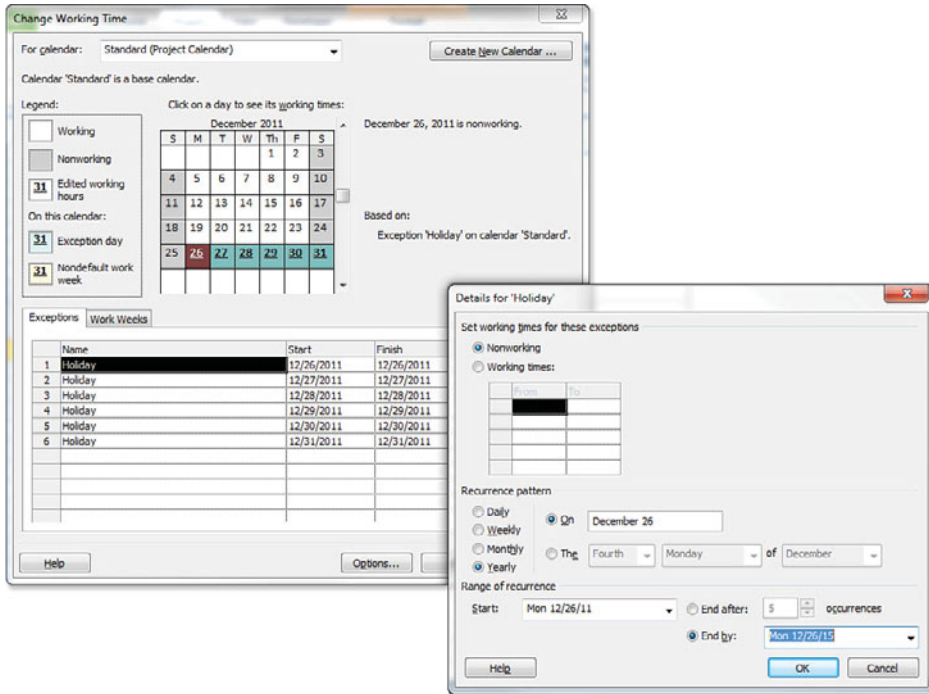
If you have successfully made an exception, the numbers on the dates of the exception will appear as defined in the legend.

## Creating New Base Calendars

It is helpful to make exceptions to your base calendar to account for small changes in working time. However, sometimes it is more efficient to simply create a new base calendar completely and apply that to your project. For example, assume that your resources work 40 hours a week, but only four days a week. Rather than going through and changing every Monday through Thursday to 10 hour days and making Friday a nonworking day, it is easier to just create a new base calendar that more accurately depicts your standard working time.

To do this, follow these steps:

1. Open the Change Working Time dialog box by selecting the Project tab, Change Working Time.

2. Click the Create New Calendar button at the top, which opens the Create New Base Calen-
dar box.

3. Type in a distinctive name in the Name field.

4. Select the Create New Base Calendar option if you want to start from scratch on the standard 40-hour workweek, or select the Make a Copy Of option if you want to use an existing base calendar as your template. Click OK.

   Notice that the For Calendar field at the top of the Change Working Time dialog box has defined the new base calendar with the name you gave it. Also, when you are finished creating the calendar, if you open your Project Information dialog box (Project, Project Information), you see the new base calendar listed as an option for the project base calendar in the Calendar drop-down list.

5. After you have defined your new base calendar, it is time to define your workweek. Click the Work Weeks tab, and click the Details button or double-click Default in the Name column. The Details dialog box appears, in which you define your workweek (see Figure 5.12).

**Figure 5.12**
Define your workweek when creating a base calendar in the Details dialog box.

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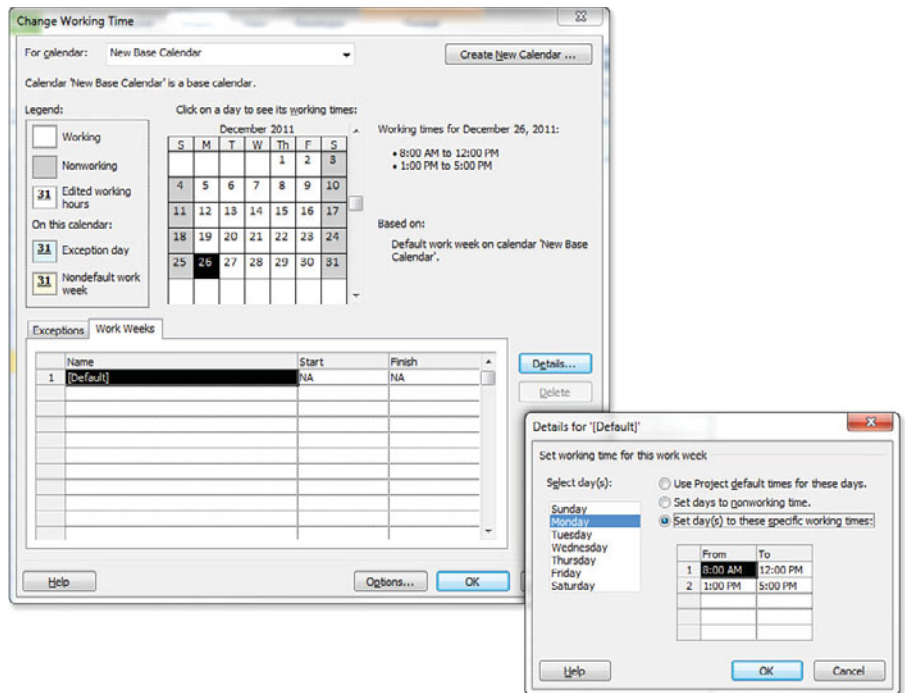
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6. To define a 40-hour, four-day workweek (Monday–Thursday, 10 hours a day), go through each day in the Details dialog box. Sunday is selected first. Because this is a nonworking day, you can select either Set Days to Nonworking Time or Use Project Default Times for These Days.

7. Next, highlight Monday. Select Set Day(s) to These Specific Times. In the From and To columns, set the appropriate working hours. Be sure to press Enter after each cell entry to save the information. For example, you could type **8:00 a.m.** in the From column, press Enter, and type **12:00 p.m.** in the To column and press Enter. Then for afternoon hours, type **1:00 p.m.** in the From column, press Enter, and type **7:00 p.m.** in the To column and press Enter. This will give you a 10-hour day with an hour off for lunch. If you are satisfied with this schedule, repeat the process for Tuesday, Wednesday, and Thursday.

8. Finally, highlight Friday and select Set Days to Nonworking Times. Do the same for Saturday, and press OK.

Notice how the new calendar is created, with all Fridays set as nonworking days, and the working times for Monday through Thursday reflect what you defined.

When you have finished, click OK to close the Change Working Time dialog box, or click Cancel to exit without saving.

## Setting Project and Resources Calendar

Start dates for tasks are generally determined by resource calendars, unless you create a task calendar, in which case the resource will operate based on the task calendar. Resource and task calendars begin as the base calendar for the project. You can modify the resource and task calendars without changing the base calendar. The previous sections talked about the base calendar; the next few sections will discuss resource and task calendars.

## Resource Calendars

Resources are the people and materials that work on tasks within the projects. This section focuses specifically on resource calendars.

For information about resources, see Chapter 8, "Defining Project Resources," p. 241.

By default, when you create a resource, the resource calendar is the same as the project calendar. You can modify the resource calendar specifically for the resource without changing the base calen-

**tip**

To enter time for multiple days simultaneously, hold down Shift and drag your mouse over the multiple days you want to change. Alternatively, hold down Ctrl and click each day individually.

**note**

You can enter time in 12-hour clock format or 24-hour clock format (military time). If you're using the 12-hour format, noon is 12:00 p.m. and midnight is 12:00 a.m. If the time is on the hour, you only have to enter the single number (5 p.m. for 5:00 p.m.). Be sure to define a.m. and p.m. Otherwise, Project may misinterpret your times.

Generally, only the first four working hours boxes are defined: the top two for morning hours and the bottom two for afternoon hours. Sometimes you will use the remaining boxes to account for multiple breaks or meals, or for other unusual work schedules. You must define the To and From fields as pairs, and the From field must come later than the To field.

dar to the project. To modify the working time of a resource, follow these steps:

1. Open the Resource Sheet view by selecting the Resource tab, View, Resource Sheet (this can be also done from the Task tab).

2. There are at least two ways to change the resource calendar, as follows:

    a. Double-click the resource row of the resource that needs a resource calendar.

    b. Select the resource row of the target resource and Click Information under the Resource Tab.

    Either of these methods will open the Resource Information dialog box (see Figure 5.13).

**Figure 5.13**
Click the Change Working Time button under the General tab of the Resource Information dialog box to make changes to a resource's schedule. In this case, the resource has a week-long vacation scheduled for the fourth week of January.
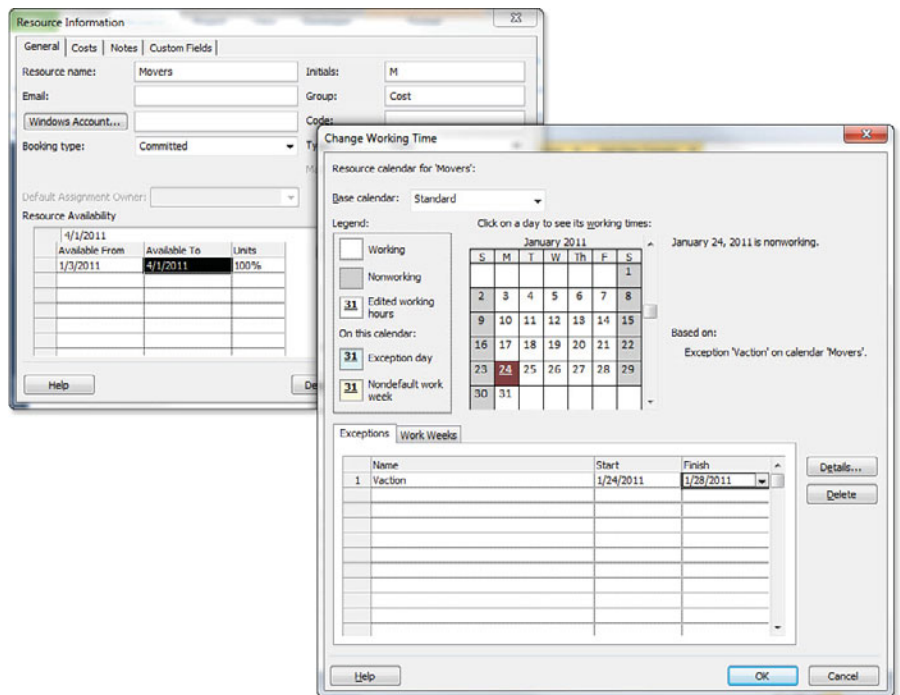


3. In the Resource Information dialog box, under the General tab, click the Change Working Time button.

4. The Change Working Time dialog box appears. To change the resource's base calendar, choose from the Base Calendar drop-down list at the top.

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5. To make additional modifications, use the same methodology discussed in the section "Defining Exceptions," earlier in this chapter.

6. When you are finished modifying the resource calendar, click OK to save the changes or Cancel to exit without making any changes.

The resource will now operate based on the base calendar plus the exceptions that are defined in his or her resource calendar. Referring back to the example of a four-day workweek, if a resource normally works those hours, but had a three-day vacation coming up, you could define that vacation and Project would schedule work for that resource around the vacation dates. Similarly, if a resource had a standing obligation every week outside of your project, you could define that exception and the appropriate recurrence range, and Project would not assign task work to the resource during that time. (See the section "Defining Exceptions" earlier in this chapter for instructions for defining exceptions to schedules.)

## Task Calendars

As mentioned previously, if you assign a resource to a task, the work on the task will follow the resource calendar. If the resource has no specific resource calendar, or if there are no resources assigned to the task, the task will follow the project (base) calendar.

However, you can create a calendar specifically for a task. To do this, create a base calendar specifically for the task by following the process described in the earlier section "Creating New Base Calendars."

After you create the base calendar, assign it to the task by following these steps:

1. In any view where you can see your tasks, such as the Gantt Chart view, select the task to which you want to assign the newly created base calendar.

2. With the task (or tasks) selected, select the Task tab, Information to open the Task Information dialog box. Alternatively, right-click on the task and select Task Information to open the Task Information dialog box.

3. Under the Advanced tab is a Calendar field (see Figure 5.14). Click the arrow to open the drop-down menu with the base calendars listed. If you successfully created a new base calendar, it will be on this list. Select it.

4. Next to the Calendar field is a check box labeled Scheduling Ignores Resource Calendars. If you want your task calendar to override the resource calendar for the resource assigned to the task, select this box. If you want Project to schedule based on the resource calendar *and* the task calendar, leave it blank.

5. Click OK to close the Task Information dialog box with the changes made, or click Cancel to close it without making any changes.

As the project manager, you must decide if assigning task calendars will be beneficial for your project. If you have multiple resources working on a task from different locations, it might be easier to schedule with the task calendar rather than the various resource calendars.

**Figure 5.14**
Assign calendars to tasks under the Advanced tab of the Task Information dialog box. In this case, the New Base Calendar is being assigned the "Drive the moving truck to the new location" task.
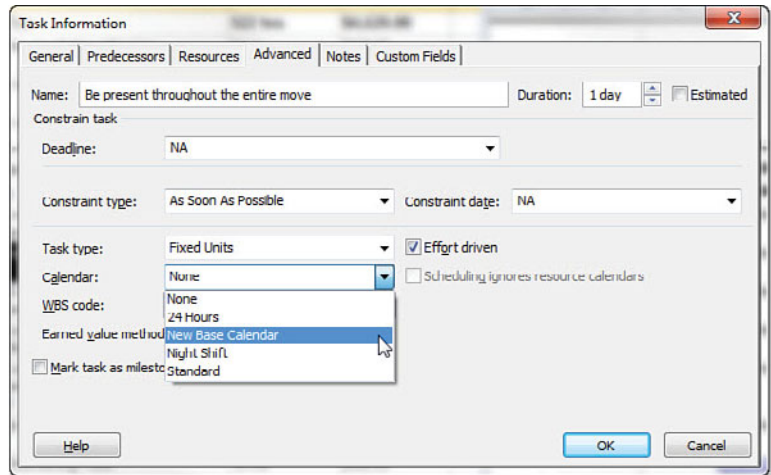


For example, if you run a newspaper printing facility, you will have tasks that do the actual printing. Often this happens overnight, so the task may cover multiple shifts. In addition to your human resources, you would include the machines used to print the newspaper as resources. Because these machines and people all operate under different schedules, it would be advantageous to schedule the task based on its own calendar, not the project's base calendar or the resource calendar. Likely you would use a version of the 24 Hour calendar, because the task is constantly being worked on by various resources at all hours of the day. However, your project of compiling the entire newspaper may have a standard base calendar, which would not be a good calendar to schedule this task by because there would be too many exceptions to enter. It is easier to simply customize a calendar for this specific task and schedule from that. Regardless of which resources work on the task, the task is completed on schedule.

# CNE 213

# Experiment report-2

**Student Id:**..........................................................

**Student Name:**........................................................

# Experiment no.2

**Software required: MS Project**

**Create Gantt chart and Network Diagram in Microsoft Project with following projects.**

- **ATM**
     **Or**
- **Car Design**
     **Or**
- **Mobile Design**

**Project start Date:**

**Projects finish Date:**

**Divide the project in at least 8 tasks, moreover; use of following must be shown in the project Plan:**

- **Project start Date**
- **Task Duration**
- **Predecessors**
- **Subtask**
- **Resources**

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