CHAPTER 8

ASSIGNING RESOURCES

INFOCUS

WPL_J407

Once you have entered tasks and resources into a project you can use the resources and assign them to the tasks. There are a number of benefits to assigning resources, particularly clarifying responsibility, knowing how long it will take to complete a task and knowing how much the task will cost.

Microsoft Project allows you to enter resources in a number of ways and using a number of techniques. For example, you can assign resources through a ***form*** view, a ***sheet*** view and even through a ***dialog box***. The technique you use is determined largely by your own personal preferences.

More than one resource can be assigned for any given task. However, as you will see, care needs to be exercised to ensure that you assign resources at the appropriate time and in the correct way, otherwise scheduling problems may ensue.

You can also assign resources on a part-time basis, perhaps to share the same resource across more than one task. Microsoft Project is also flexible enough to allow you to ***contour*** resource assignments.

In this session you will:

- ✓ learn how to create simple assignments using a split view
- ✓ learn how to assign part time resources
- ✓ gain an understanding of contouring resource usage
- ✓ learn how to specify resource usage
- ✓ learn how to apply a default contour
- ✓ learn how to modify usage hours along an existing contour
- ✓ learn how to enter work times for several resources
- ✓ learn how to resolve resourcing problems
- ✓ learn how to assign resources using ***Task Information***
- ✓ learn how to assign resources in a sheet
- ✓ learn how to assign resources that aren't in the pool
- ✓ gain an understanding of assigning resources in a wider range of tasks.

SIMPLE RESOURCE ASSIGNMENTS

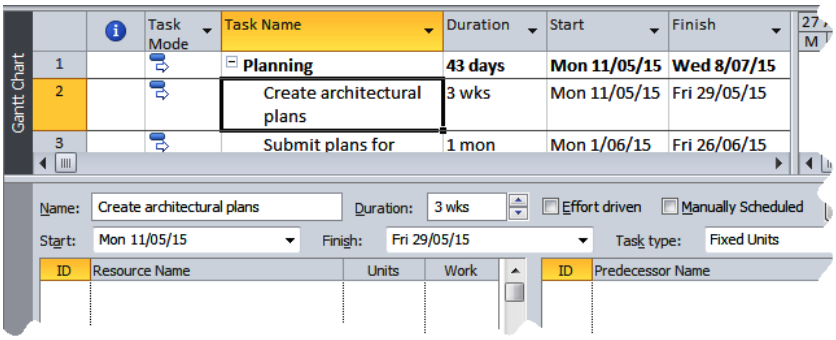
Split views where a ***Gantt Chart*** is displayed in the top pane and a task form in the lower pane are perfect for making resource assignments. The lower pane allows you to display the resources used in a task. With this view you can see the immediate effect on a Gantt bar of assigning resources.

Try This Yourself:

Open File

Before starting this exercise you MUST open the file J407 Assigning Resources_1.mpp...

1. Click on the ***View*** tab on the ***Ribbon*** and click on ***Gantt Chart*** in ***Task Views***
2. Click on ***Details*** in the ***Split View*** group to display a task form and drag the task form up towards the top of the screen
3. Click on ***Create architectural plans*** in the ***Gantt Chart***
4. Click on the ***Resource*** tab on the ***Ribbon*** and click on ***Assign Resources*** to see the ***Assign Resources*** dialog box
5. Click on ***Architect*** in the dialog box and click on **[Assign]** to assign one architect
6. Click in ***Units*** for ***Draftsperson*** in the dialog box, type **200%** and click on **[Assign]**
7. Click on ***Create architectural plans*** in the ***Gantt Chart*** and click on the ***Action Button***
8. Click on ***Increase total work…***



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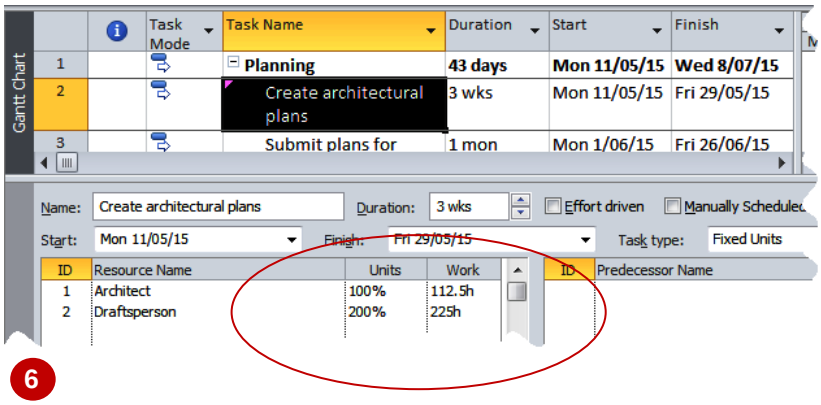
The Task Form (at the bottom of the split view) here shows Units and Work. If your form is different to the one shown here, click in the form, click on the Format tab on the Ribbon and click on Resources & Predecessors.



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One Architect working full-time for the 3 week duration will work 112.5 hours (37.5 x 3). Two Draftspersons working full-time for the 3 week duration will work 225 hours (37.5 x 3 x 200%)

For Your Reference…

To create ***simple resource assignments***:

1. Display a split view with a ***Gantt Chart*** in the top and a ***Task Form*** at the bottom
2. Display the ***Assign Resources*** dialog box (***Resource*** -> ***Assign Resources***)
3. Assign the desired resources

Handy to Know…

- If you are happy with the result of the ***Work***, ***Duration*** and ***Units*** after you've made an assignment you don't have to click on the ***Action Button*** to confirm what Project has done.

ASSIGNING PART TIME RESOURCES

Not all resources will be required to work full-time on a task. Quite often you will need to assign a resource on a ***part-time basis***. Assigning part-time involvement is done by specifying a percentage less than ***100%*** in ***Units***. For example in the *Create architectural plans* task we need some part time work done by the clerk.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_2.mpp...

1. Ensure that the ***Create architectural plans*** task is still selected in the ***Gantt Chart***
2. Click on ***Units*** for ***Building Clerk*** in the ***Assign Resources*** dialog box
3. Type **25%** and click on **[Assign]**
4. Click on ***Create architectural plans*** in the ***Gantt Chart*** and click on the ***Action Button*** 
5. Click on ***Increase total work…***
6. Click on **[Close]** to close the ***Assign Resources*** dialog box

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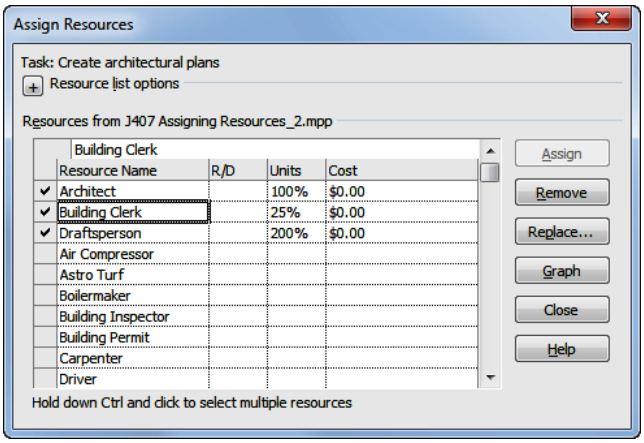

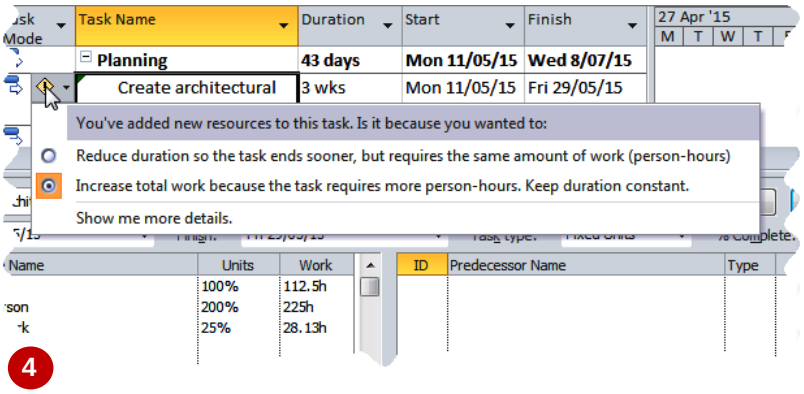

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The question really being asked here by Microsoft Project is do you want to make the calculation based on effort? For example, if you opt to reduce the duration Microsoft Project will perform an effort-based calculation as follows:

New Duration = (Existing hours / new number of resources) x Existing Duration

Thus the new duration would be calculated at 103.85 hours or 2.77 weeks, i.e. (112.5 / 3.25) x 3

For Your Reference…

To assign ***part-time resources***:

1. Click on ***Units*** for the resource in the ***Assign Resources*** dialog box
2. Type a percentage that represents the part time component (e.g. 25%) and click on **[Assign]**

Handy to Know…

- The advantage of clicking on the ***Action*** button, even if you just accept the default, is that it clears the triangle away.

UNDERSTANDING WORK CONTOURING

Each resource has a ***resource work pattern*** which is defined as the ***division of work*** by a resource over the ***duration*** of the task. Microsoft Project allows you to shape the work amounts by adjusting the hours which have been assigned. You can apply work amounts by manually adjusting the hours or by applying one of the built-in ***contours***.

The Resource Work Pattern

Microsoft Project normally assigns a ***flat*** work pattern for resources over the duration of a task. This simply means that an equal number of hours per day are assigned over the duration of a task.

If a plumber had to work for 20 hours over 5 days on a task Microsoft Project would calculate the resource work pattern as shown in the table.

Resource	Units	M	T	W	T	F	Total
Plumber	50%	4h	4h	4h	4h	4h	20h

Microsoft Project allows you to assign a ***contour*** type to the task that the resource is working on. Microsoft Project will then calculate the hours to assign daily based on the contour type. The contour types are shown in the following table.

Icon	Contour Type	Description
	**Back Loaded**	More hours toward end of task
	**Front Loaded**	More hours toward front of task
	**Double Peak**	Two peaks in the middle of the task
	**Early Peak**	An early peak in the task
	**Late Peak**	A late peak in the task
	**Bell**	More hours toward the centre of the task
	**Turtle**	A plateau of more hours toward the centre of the task

The table below shows an example of the resource work pattern with a front loaded contour type assigned.

Resource	Units	M	T	W	T	F	M	T	W	T	F	Total
Plumber	50%	4h	4h	3h	3h	2h	1h	1h	1h	1h	0h	20h

The really nice feature with contouring is that you can edit the hours entered by Microsoft Project and apportion them exactly as you need.

SPECIFYING RESOURCE USAGE

In our case study, the architect is required to submit plans for approval. While the task duration is currently 1 month, the architect is only required for 8 hours – 5 hours at the start to complete and submit the plans, then 3 hours at the end to collect the permits and approvals. We'll use a ***front loaded contour*** to see whether this will help us.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_3.mpp...

1. Click on ***Submit plans for approval***, click on the ***Task*** tab on the ***Ribbon*** and click on ***Scroll to Task*** in the ***Editing*** group

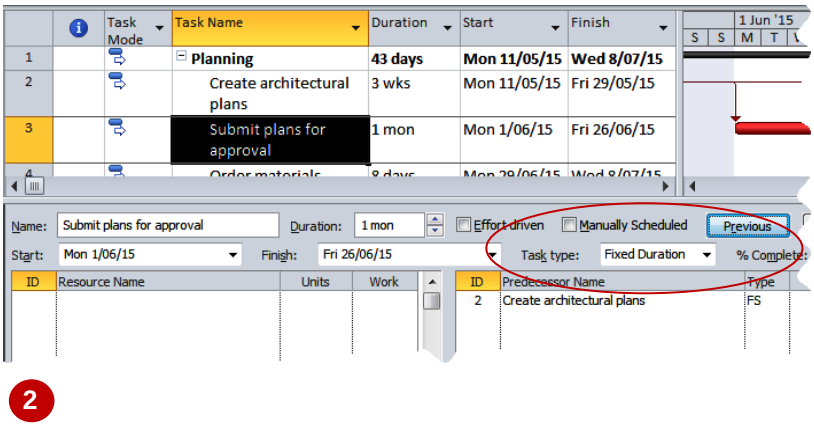
2. Click on the drop arrow in the ***Task Form*** for ***Task type*** and click on ***Fixed Duration***, then click on **[OK]**

   Since permit approvals are largely out of our control and we know that it will take a month, we should fix its duration...

3. Click in ***Resource Name***, then click on the drop arrow and select ***Architect***

4. Click in ***Work*** and type **8h**, then click on **[OK]**

   The Architect has only to complete some forms and take them to Council at the beginning of the task, then pick up the permits and approvals at the end of the task



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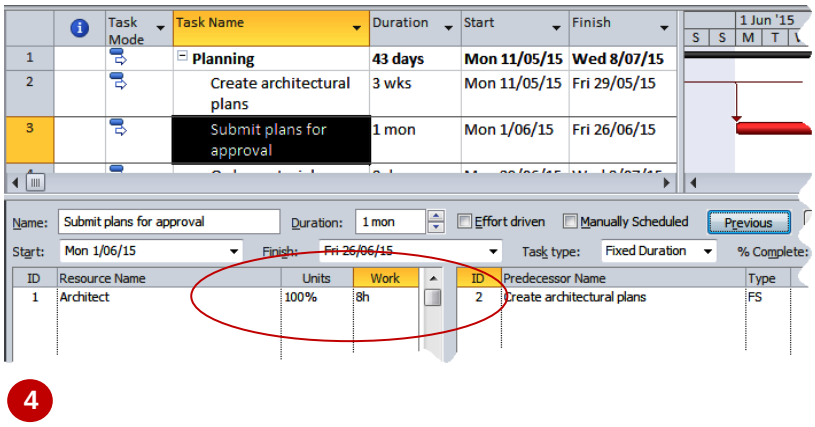

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For Your Reference…

To ***specify resource usage***:

1. Select the task
2. Fix the duration of the task
3. Enter an assignment and change the Work to the total hours the resource will work

Handy to Know…

- It is important to fix the duration of most tasks that you wish to contour. If you don't, the duration probably will be changed by Microsoft Project to something totally unexpected and weird.

CONTOURING WORK HOURS

If you want to contour a task in very precise measures you can by-pass automatic contouring and insert work hours directly into the ***Task Usage*** sheet. This can be done by editing the work amounts in the timesheet area or the ***Task Usage*** or ***Resource Usage*** view.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_4.mpp...

1. Click on ***Submit plans for approval***, click on the ***View*** tab on the ***Ribbon***, click on the drop arrow for ***Details*** in ***Split View*** and click on ***Task Usage***
2. Scroll the task timeline until you can see the work for the task
3. Double click on ***Architect*** in the ***Task Form*** to display the ***Assignment Information*** dialog box
4. Click on the drop arrow for ***Work contour*** and select ***Front Loaded***, then click on **[OK]**

   Project will now attempt to load more work hours at the beginning of the task. A Front Loaded icon will appear next to the resource name in the Task Usage view...
5. Click on the right scroll arrow of the timeline and notice how the hours do eventually diminish

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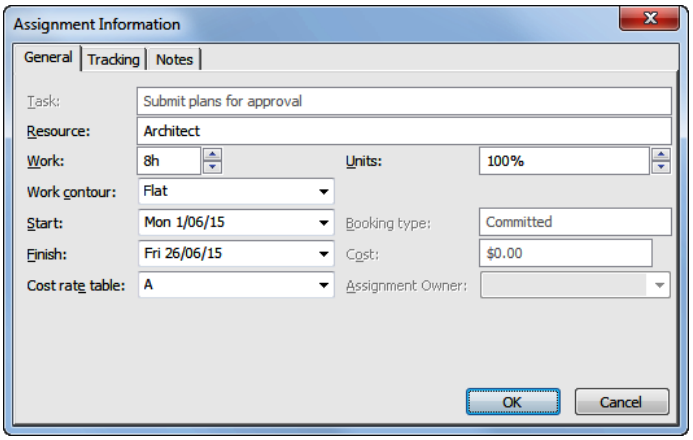

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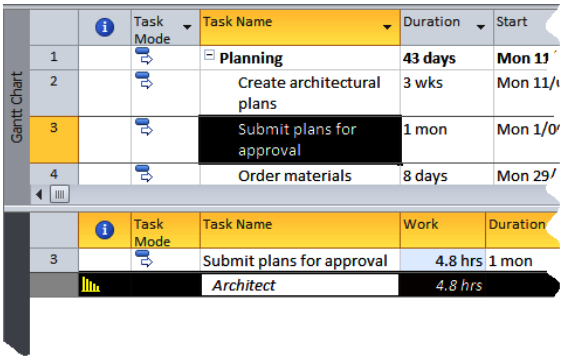

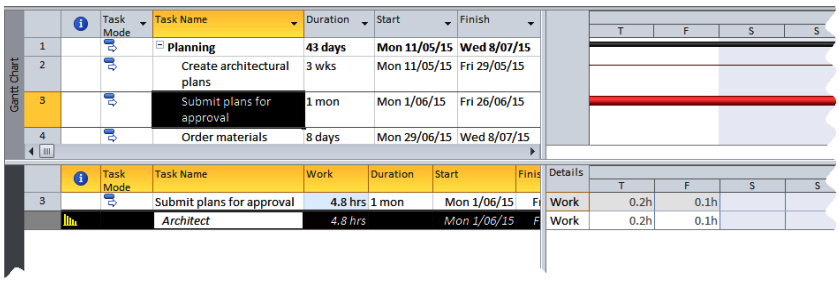

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The problem here is that Front Loading doesn't really reflect the way we want the hours to be. The Architect will spend 5 hours on the first day submitting the plans, then 3 hours on the last day collecting permits. We will therefore edit the values and adjust them to what we need.

For Your Reference…

To apply a ***default contour***:

1. Double click on a resource to display the ***Assignment Information*** dialog box
2. Click on the drop arrow for ***Work contour*** and select the desired contour
3. Click on **[OK]**

Handy to Know…

- As part of the contouring algorithm used in Microsoft Project the work hours will be recalculated so that the contouring can be accommodated – notice that our work hours have dropped from 8 hours to 4.8 hours!

ASSIGNING SPECIFIC WORK TIMES

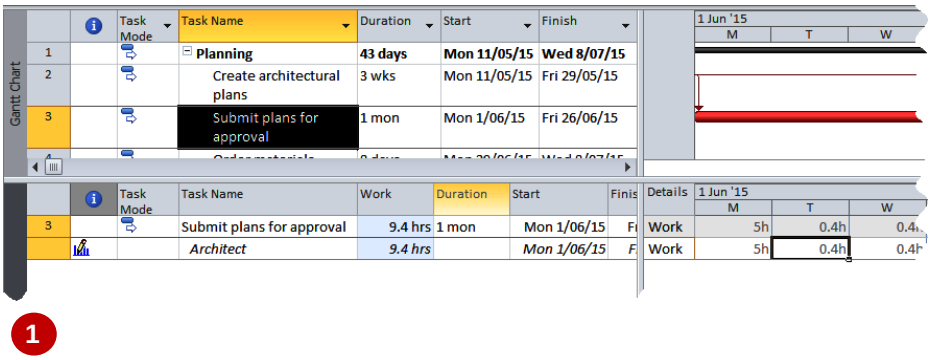
To take proper control of contouring you should enter your own times into the ***Task Usage*** sheet. Even though choosing a default contour from one of Microsoft Project's options it has done some pretty bizarre things with the hours. Using the contour shape as a guide we'll now insert hours as we feel they should be carried out.

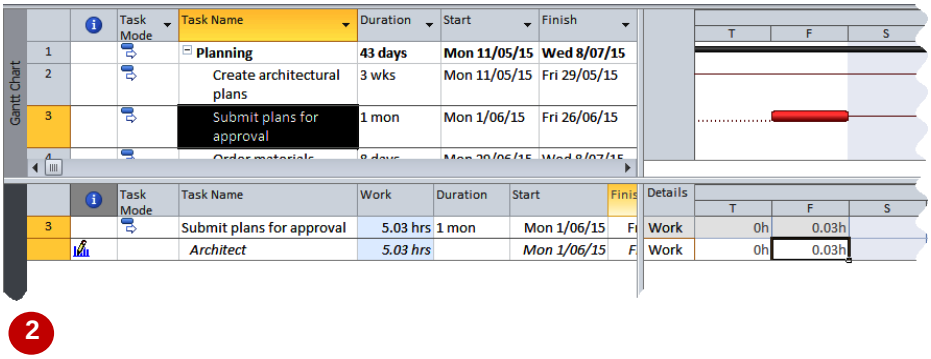
Try This Yourself:

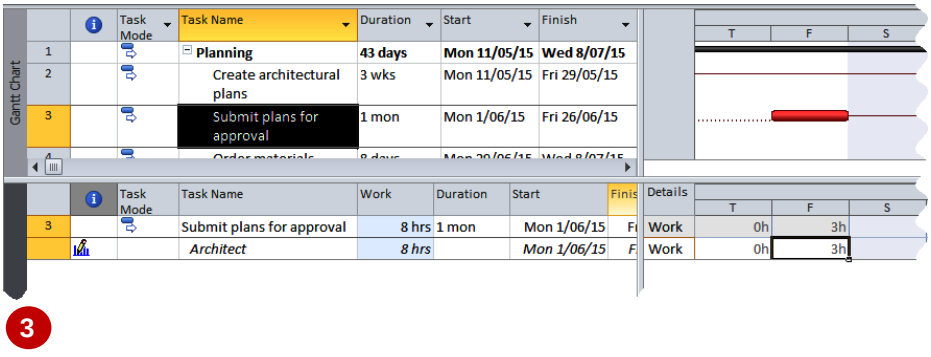
Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_5.mpp

1. Ensure that ***Submit plans for approval*** is selected in the top pane, click on ***0.4h*** for ***Monday***, ***June 1***, type **5h** and press Tab to jump to the next entry
2. Repeat step ***1*** and change all of the dates from ***Tuesday***, ***June 2***, to ***Thursday June 25*** to ***0***
3. Ensure that you are currently at ***0.03h*** for ***Friday***, ***26 June***, type **3h** and press Enter







For Your Reference…

To ***change specific usage*** hours:

1. Display the ***Work Usage*** timeline
2. Type the desired hours into the relevant dates to achieve the work usage you need

Handy to Know…

- Watch how the ***Work*** hours change as you modify the usage hours. You should ensure when you have finished that the adjusted usage hours total to the ***Work*** that you require to be done.

WORK TIMES FOR MULTIPLE ASSIGNMENTS

Sometimes one resource on a task needs to work at the start and another towards the end. In our case study the task of ***Ordering materials*** falls upon both the draftsperson and the building clerk.

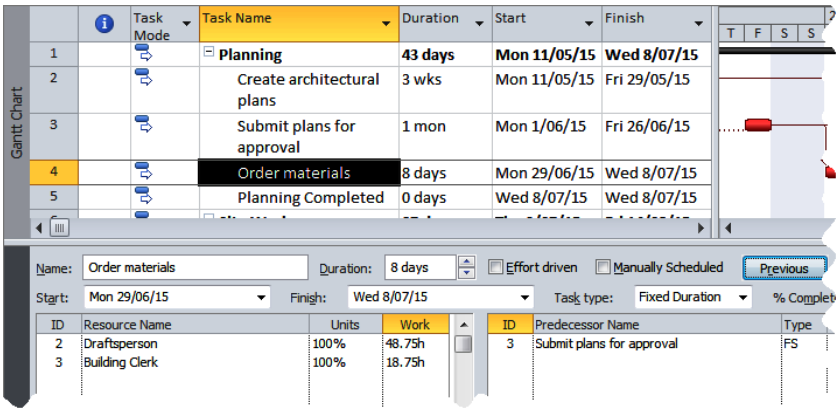
The draftsperson is required to create the original quantity specifications and the clerk is required to raise the orders based on these specifications.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_6.mpp...

1. Click on ***Order materials*** in the ***Gantt Chart***, click on the ***View*** tab on the ***Ribbon***, click on the drop arrow for ***Details*** in ***Split View*** and click on ***Task Form***
2. Click on the drop arrow for ***Task type***, click on ***Fixed Duration*** and click on **[OK]**
3. Click in ***Resource Name*** and enter a ***Draftsperson*** for ***48.75h*** of ***Work*** and a ***Building Clerk*** for ***18.75h Work*** – click on **[OK]** when these have been entered
4. Click on the ***View*** tab, click on the drop arrow for ***Details*** and click on ***Task Usage*** to see the usage again
5. Enter the hours for the two resources as shown



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		Draftsperson	Clerk
Mon	**29/6**	7.5h	0h
Tues	**30/6**	7.5h	0h
Wed	**1/7**	7.5h	0h
Thur	**2/7**	7.5h	0h
Fri	**3/7**	7.5h	0h
Mon	**6/7**	7.5h	3.75h
Tues	**7/7**	3.75h	7.5h
Wed	**8/7**	0h	7.5h

For Your Reference…

To enter work times for several resources:

1. Fix the duration of the task and enter the ***Work*** hours for relevant resources
2. Change the view to ***Task Usage*** and enter the work hours on the timeline

Handy to Know…

- A material resource can also have its work amounts manually contoured. This will give a better indication of the distribution of the quantity of materials over the duration of the task.

PROBLEM ASSIGNMENTS

Unfortunately life with Microsoft Project is not always easy – take your eye off the detail and you'll be amazed at what slips by! The fencing contractor in our case study uses labour who are members of the GBWU – this union has negotiated that they don't work on Fridays. So, what happens when we assign this resource to a task, which falls on a Friday?

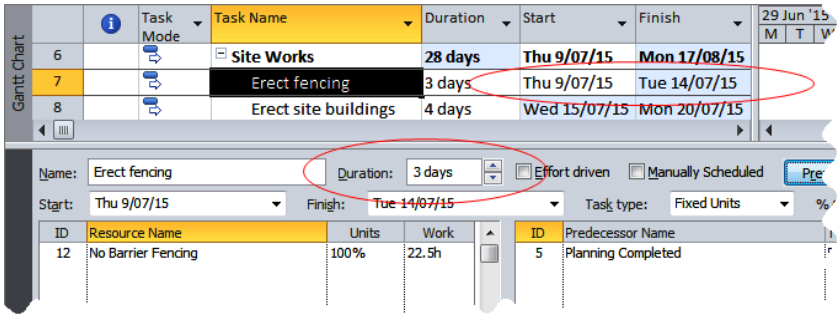
Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_7.mpp...

1. Click on the ***View*** tab on the ***Ribbon***, click on the drop arrow for ***Details***, and click on ***Task Form***
2. In the ***Gantt Chart*** scroll to and click on ***Erect fencing***
3. Click in ***Resource Name***, select ***No Barrier Fencing***, then click on **[OK]**
4. Double click on ***No Barrier Fencing***, click on the ***General*** tab, and click on **[Change Working Time]** to see the ***Change Working Time*** dialog box
5. Click in ***Name*** in ***Exceptions***, type **Additional work day** and change the ***Start*** and ***Finish*** days to ***10 July 2015***
6. Click on **[Details]** to see the ***Details*** dialog box, click on ***Working times*** and adjust the hours as shown
7. Click on **[OK]** in both open dialog boxes

   The task will now finish on Monday, 13 July



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The Gantt bar now stretches over 4 working days, whilst the duration still shows 3. The contractor requires 3 days (3 x 7.5h = 22.5h) to complete the task. But since the contractor doesn't work on Fridays it will take an extra day to complete the task.

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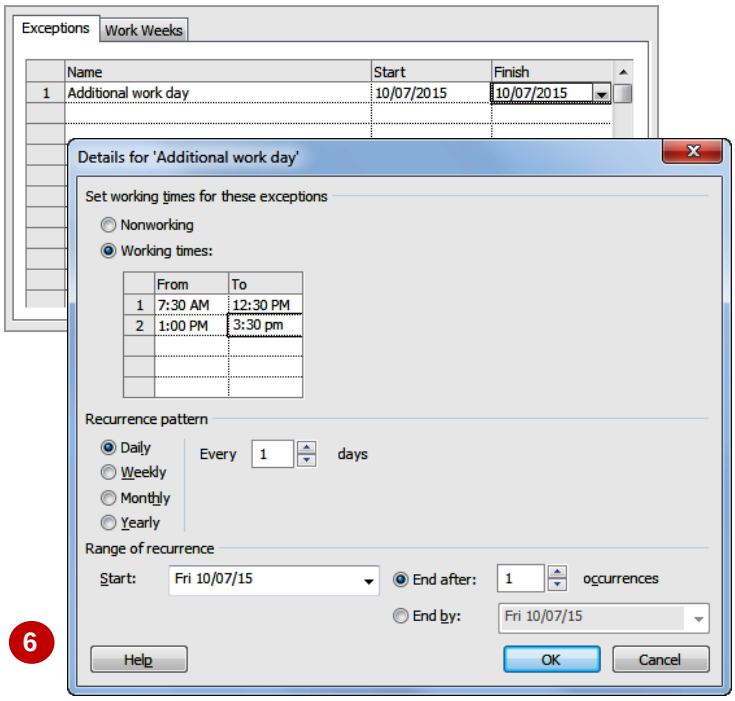

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Here we're effectively adjusting the resource calendar so that the fencing contractor will work on a Friday – but only Friday July 10.

For Your Reference…

To ***change resource working time***:

1. Double-click on the resource name, and click on **[Change Working Time]**
2. Make the necessary changes to the calendar and working time
3. Click on **[OK]**

Handy to Know…

- When a resource is created one of the pre-existing calendars in the project is assigned to it. The calendar belonging to the resource takes on a life of its own and becomes what is known as the ***resource calendar***. Any changes made here remain only with the resource in which the change was made.

ASSIGNING RESOURCES IN TASK INFORMATION

Project has an ***information*** dialog box for ***tasks*** and ***resources***. These boxes provide access to the various fields for either the task or the resource and present virtually a complete picture.

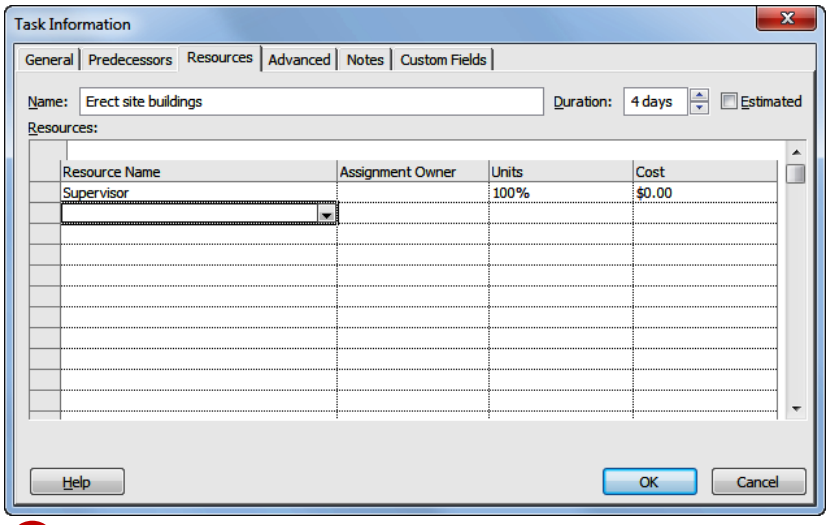
You can also use a ***Task Information*** dialog box as a means of entering resource assignments.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_8.mpp...

1. Double-click on ***Erect site buildings*** to display the ***Task Information*** dialog box, then click on the ***Resources*** tab
2. Click underneath ***Resource Name*** and click on the drop arrow. Click on ***Supervisor***, then click in the next line
3. Click on the drop arrow, then click on ***Carpenter***
4. Click in ***Units*** and type **400%**
5. Click on the line beneath ***Carpenter*** and click on the drop arrow, then click on ***Labourer***
6. Click in ***Units*** and type **800%**
7. Click on **[OK]** to record the assignments in the project



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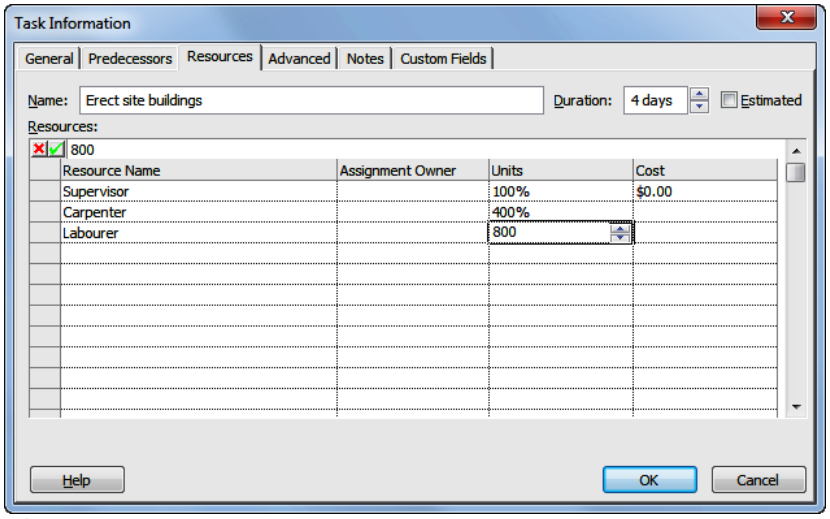

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For Your Reference…

To ***assign resources*** using ***Task Information***:

1. Double-click on the task, then click on the ***Resources*** tab
2. Select a resource from ***Resource Name***
3. Type the appropriate amount of units
4. Click on **[OK]**

Handy to Know…

- The ***Assign Resources*** box is handy for entering single resource assignments. However, each time you click **[Assign]** all of the scheduling is recalculated. With multiple assignments it is better to use the ***Task Information*** dialog box where the scheduling is updated only after **[OK]** is clicked.

ASSIGNING RESOURCES IN A SHEET

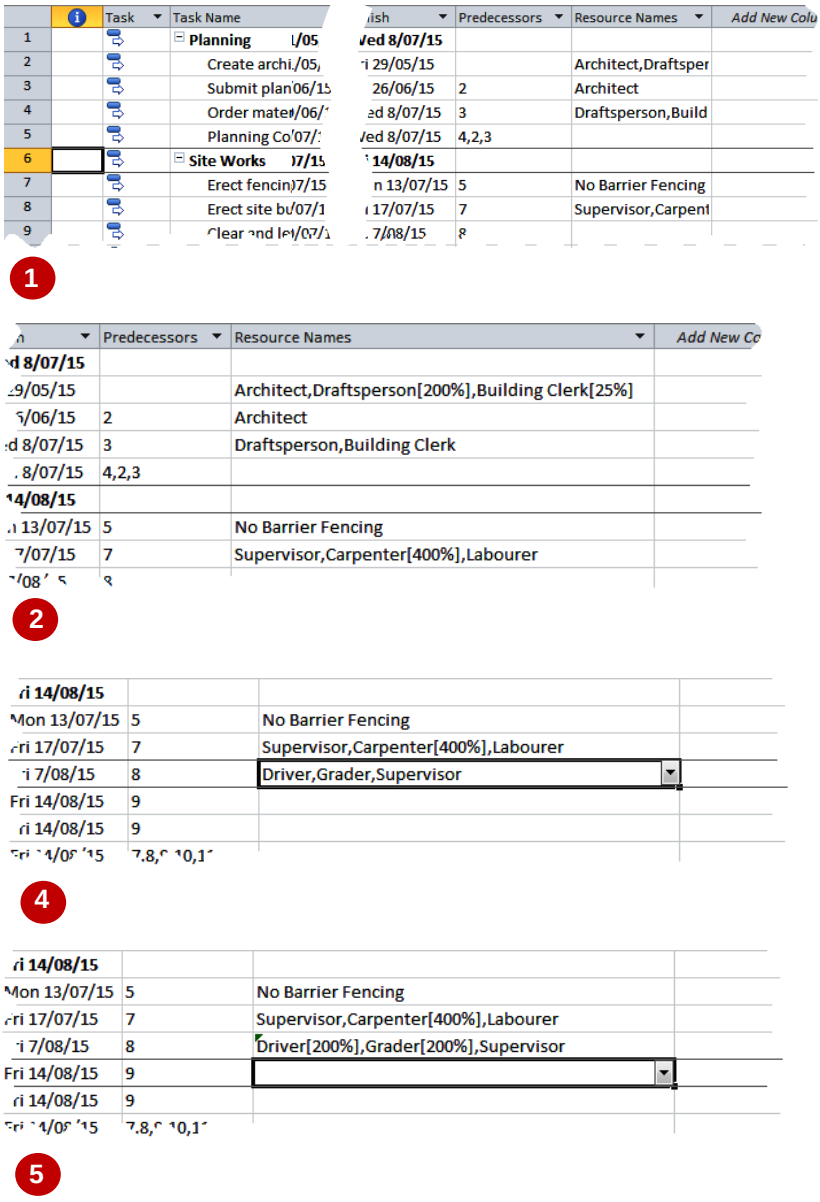
If you are familiar with spreadsheets you might find it easier to assign resources using the ***Task Sheet*** view. It can be a very quick way of assigning resources and provides a convenient way of seeing the assignments of more than one task at a time.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file J407 Assigning Resources_9.mpp...

1. If a split line appears double click on it to remove it and then change the view to a ***Task Sheet*** (***View*** > ***Other Views*** > ***Task Sheet***) with an ***Entry*** table (***View*** > ***Tables*** > ***Entry***)
2. Move the mouse pointer to the border between the ***Resource Names*** and ***Add New Column*** headings and double click to widen the resource column
3. Click in ***Resource Names*** for ***Clear and level site*** and click on the drop arrow to see the resource list
4. Click on ***Driver***, then ***Grader***, then ***Supervisor*** and press Enter
5. Click in the text until the edit cursor finally appears and edit the entries as shown. Press Enter to complete the edits



For Your Reference…

To assign resources in a sheet:

1. Display a ***Task Sheet*** with an ***Entry*** table
2. Click in the ***Resource Name*** cell and click on the drop arrow
3. Click on all of the required resources and press Enter

Handy to Know…

- You can actually type the resource names into the cell rather than use the drop arrow and selection method.

ASSIGNING RESOURCES YOU DO NOT HAVE

While we don't recommend it, there may be times when you need to add a new task and assign a resource that isn't in the pool. Microsoft Project allows you to add an unknown resource with a minimum of information so that you can continue assigning resources without needing to update the resource pool.

Try This Yourself:

Same File *Continue using the previous file with this exercise, or open the file J407 Assigning Resources_10.mpp...*

1. Click in the ***Resource Names*** cell for ***Prepare draining infrastructure***
2. Type **Supervisor [50%], Plumber [200%]** and press Enter
3. Type **Supervisor [50%], Electrician [300%]** in the ***Prepare cabling infrastructure*** task and press Enter
4. Click on the ***View*** tab on the ***Ribbon*** and click on ***Resource Sheet*** in the ***Resource Views*** group
5. Click in ***Max*** for ***Plumber***, type **200%** and press Enter

   As soon as you press Enter the bold red will disappear because there are enough resources in the pool to fulfil the commitment...
6. Type **300%** in ***Max*** for ***Electrician*** and press Enter

Site Works			
Erect fencing	/15	5	No Barrier Fencing
Erect site buildings		7	Supervisor,Carpenter[400%],Labourer
Clear and level site		8	Driver[200%],Grader[200%],Supervisor
Prepare drainage ir		9	Supervisor[50%],Plumber[200%]
Prepare cabling infr		9	Supervisor[50%],Electrician[300%]
Site Works Complete		7,8,9,10,11	

3 *There aren't any plumbers or electricians in the resource list, yet Project has allowed you to enter them without even a whimper, except for an over-allocation icon at the left of the task.*

4

22		Astro Turf	Material	Square Metre	Grass	Material
23		Paint	Material	Litre	Paint	Material
24		Building Permit	Cost		BPerm	Cost
25		End of Project Party	Cost		Party	Cost
26	⚠	Plumber	Work		P	
27	⚠	Electrician	Work		E	

An icon appears next to problem resources. This icon here indicates that some attention is required because there are more assignments for this resource than available units.

5

Material	Square Metre	Grass	Material		$0.00
Material	Litre	Paint	Material		$0.00
Cost		BPerm	Cost		
Cost		Party	Cost		
Work		P		200%	$0.00/hr
Work		E		100%	$0.00/hr

6

Astro Turf	Material	Square Metre	Grass	Material	
Paint	Material	Litre	Paint	Material	
Building Permit	Cost		BPerm	Cost	
End of Project Party	Cost		Party	Cost	
Plumber	Work		P		200%
Electrician	Work		E		300%

For Your Reference…

To ***assign resources*** you don't have:

1. Type the name of the resource into the appropriate location
2. Change to a ***Resource Sheet*** view
3. Update the units to at least match those required in the project

Handy to Know…

- The technique outlined here for adding resources that aren't in the pool works for any of the assignment methods. You simply type the name of the resource and the required units – however, you'll need to update the resource details at a later time.

THE CASE STUDY RESOURCES

Resource assignment requires care and attention to detail and the best way to learn this is through practise. Our case tasks still require a great deal more resource assignment. Using whichever of the assignment methods and techniques you prefer assign the resources to the remaining tasks as shown below.

Building Construction	
Pour foundations	Rock Solid Concrete
Erect steelwork	Supervisor [50%], Rigger [600%], Boilermaker [600%], Welder [500%], Labourer [600%], Driver [200%], High Jib Crane, Utility
Erect wall	Supervisor [50%], Carpenter [700%], Labourer [400%], Driver, Grader, Air Compressor, Electrician [75%], Plumber [25%]
Install roofing superstructure	Supervisor [50%], Rigger [500%], Boilermaker [500%], Welder [300%], Labourer [500%], Driver [200%], High Jib Crane, Utility, Air Compressor, Plumber [50%]
Install roof retracting mechanism	Supervisor [50%], Welder, Boilermaker [200%], Rigger [200%], Electrician [200%], Driver, High Jib Crane
Erect seating tiers	Supervisor [50%], Carpenter [800%], Welder [200%], Boilermaker [200%], Labourer [500%], Driver, Utility, Air Compressor
Fit Out	
Fit all windows and doors	Carpenter [500%], Labourer [200%]
Install electrical cabling	Electrician [300%], Labourer [200%]
Install electrical fittings and fixtures	Electrician [300%]
Install all plumbing	Plumber [200%], Labourer [200%]
Install plumbing fixtures and fittings	Plumber [200%]
Lay astro turf	Pure Grass Turf
Erect handrails and fencing	Welder [400%], Boilermaker [200%]
Paint rooms, fixtures, fittings, etc	Painter [500%]
Install PA system	Listen Ear Audio
Install video imaging equipment	In Focus Video
Fit out control room	Electrician [200%], Listen Ear Audio, In Focus Video
Commissioning	
Test roof mechanism	Supervisor, Electrician [200%], Rigger
Test PA system	Listen Ear Audio
Test video imaging equipment	In Focus Video
Test control room equipment	Supervisor, Listen Ear Audio [20%], In Focus Video [20%], Architect, Electrician [200%]
Obtain official occupancy certificates	Architect, Building Clerk, Supervisor
Obtain safety certification	

NOTES: