

TOPIC B

Define Task Relationships

Now that you've organized your tasks into a hierarchy, you can define more complex task relationships. Tasks aren't always just a list of things that need to be done in order. Sometimes, they must be done at the same time or need to have time left between them. In this topic, you will define relationships between tasks and describe task dependencies.

Task Predecessors

The **Predecessors** tab of the **Task Information** dialog box shows the task's predecessors. A *predecessor* is a task that must be started or finished before another task can begin.

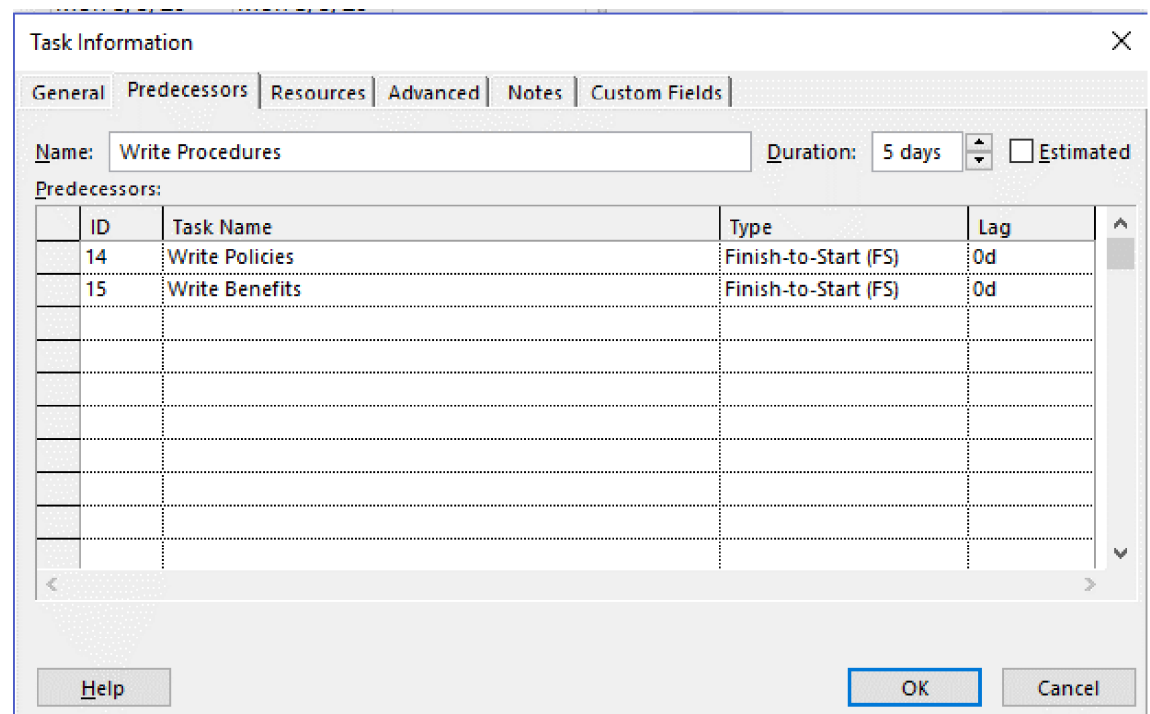
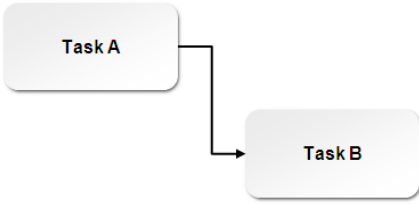
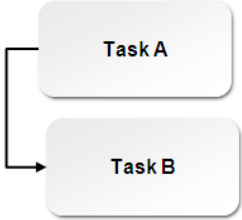
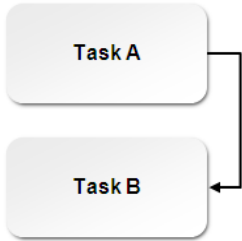
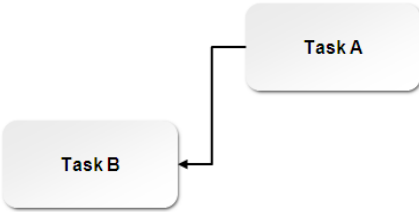


Figure 4–6: You can view a task's predecessors on the Predecessors tab of the Task Information dialog box.

Dependencies

A task relationship or a *dependency* occurs when the starting time of a particular task, called the *successor*, is dependent on whether another task, called the predecessor, is starting or is completed. There are four kinds of dependencies.

Dependency	Description	Example
<p>Finish-to-Start (FS)</p> 	<p>The predecessor must end before the successor task can begin. This is the default in Microsoft Project and the most commonly used dependency.</p>	<p>You must finish applying primer (Task A) before you can start applying paint (Task B).</p>
<p>Start-to-Start (SS)</p> 	<p>The predecessor must begin before the successor task can begin.</p>	<p>You must begin duplicating a report (Task A) before you can begin binding the report (Task B).</p>
<p>Finish-to-Finish (FF)</p> 	<p>The predecessor must end before the successor task can end.</p>	<p>You cannot finish detouring traffic (Task A) until you finish road work (Task B).</p>
<p>Start-to-Finish (SF)</p> 	<p>The predecessor must begin before the successor task can end. This is the most difficult type of dependency to understand. However, it will make more sense if you remember that the predecessor task is later in time than the successor task.</p>	<p>The start of a concert (Task A) ends ticket sales (Task B).</p>

Lag Time

Lag time is a delay between two dependent tasks. In a project plan, lag time adds waiting time between two tasks. Lag time is set between a maximum of two tasks and it must be set after a dependency is created between those tasks. Lag time can be entered on the **Predecessors** tab of the **Task Information** dialog box, either as a duration or as a percentage of the duration of the predecessor task. Lag time is always entered as a positive value.

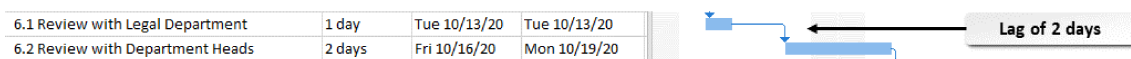


Figure 4-7: Lag time displayed in a Gantt chart.

Here's a simple example to help you understand lag. Pretend you are making a birthday cake. You must bake the cake before you can put frosting on the cake. So, there is an FS relationship between

baking the cake and frosting the cake. However, after you bake the cake, you must wait until the cake has cooled down before you can apply the frosting. The delay period is the lag time.

Lead Time

Lead time is the overlap between two tasks that are linked by a dependency. In a project, lead time is set for a task that can start when its predecessor task is partially finished. Lead time can be entered on the **Predecessors** tab of the **Task Information** dialog box, either as a duration or as a percentage of the duration of the predecessor task. Lead time is always entered as a negative value.

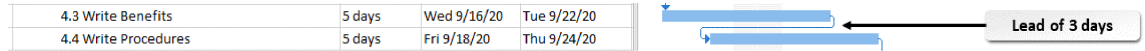


Figure 4-8: Lead time displayed in a Gantt chart.

Here's a simple example to help you understand lead. Let's return to the birthday cake scenario. You must mix the cake's ingredients before you bake the cake in the oven. So, there is an FS relationship between mixing the cake and baking the cake. However, you want the oven to preheat while you are mixing the cake so that the oven will be at the proper temperature for baking when you have finished mixing the cake. The preheating period is the lead time.



Access the Checklist tile on your **CHOICE** Course screen for reference information and job aids on **How to Define Task Relationships**.

ACTIVITY 4-2

Defining Task Relationships

Before You Begin


The **My HR Manual WBS.mpp** file is open.

Scenario

Now that you have outlined your tasks, you want to form relationships between the tasks.

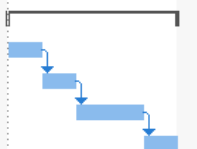
As you look at the linked tasks in your work breakdown structure, you see that the relationship between two of the tasks should be changed, because you do not want them in a Finish-to-Start relationship. You also realize that there should be a delay between two of the tasks, so you add lag time to the predecessor task.

1. Create Finish-to-Start relationships between the tasks in each project phase.

- a) In the **Task Name** column, select all four tasks in the **Research Phase**.
- b) On the **Task** tab, in the **Schedule** group, select the **Link the Selected Tasks** button. 

Verify that the four tasks have been linked, the duration of the **Research Phase** is 5 days, the Gantt bars are linked, and the start and finish times of the tasks have changed.

2 Research Phase	5 days	Mon 8/3/20	Fri 8/7/20
2.1 Review Existing HR Manual	1 day	Mon 8/3/20	Mon 8/3/20
2.2 Review Common Industry Practices	1 day	Tue 8/4/20	Tue 8/4/20
2.3 Review Government Regulations	2 days	Wed 8/5/20	Thu 8/6/20
2.4 Interview Department Heads	1 day	Fri 8/7/20	Fri 8/7/20



- c) In a similar fashion, link the tasks within each of the other phases.
- d) Link **8.2 Post to Extranet** to **9 Project Complete**.

2. Link nonadjacent tasks.

- a) In the **Task Name** column, select **1 Begin Project**, hold down **Ctrl**, and select **2.1 Review Existing HR Manual**.
- b) Use the **Link the Selected Tasks** button to link the two tasks.
- c) In a similar fashion, link **2.4 Interview Department Heads** to **3.1 Create Outline**.
- d) Continue to link the last subtask in each phase to the first subtask in the following phase. Scroll up, and verify that the duration of the **My HR Manual WBS** project summary task is 70 days.

3. Change the relationship between two tasks to Start-to-Start.

- a) Double-click **2.3 Review Government Regulations** to open its **Task Information** dialog box.
- b) On the **Predecessors** tab, in the **Type** column, select **Start-to-Start (SS)**.
- c) Select **OK**.

Verify that the dependency has been changed to a **Start-to-Start** relationship.

2.1 Review Existing HR Manual	1 day	Mon 8/3/20	Mon 8/3/20
2.2 Review Common Industry Practices	1 day	Tue 8/4/20	Tue 8/4/20
2.3 Review Government Regulations	2 days	Tue 8/4/20	Wed 8/5/20
2.4 Interview Department Heads	1 day	Thu 8/6/20	Thu 8/6/20



- d) Using Steps 2a and 2b, link **2.2 Review Common Industry Practices** to **2.4 Interview Department Heads**.

2.1 Review Existing HR Manual	1 day	Mon 8/3/20	Mon 8/3/20	
2.2 Review Common Industry Practices	1 day	Tue 8/4/20	Tue 8/4/20	
2.3 Review Government Regulations	2 days	Tue 8/4/20	Wed 8/5/20	
2.4 Interview Department Heads	1 day	Thu 8/6/20	Thu 8/6/20	

4. Add lag time between two tasks.

- Double-click **2.4 Interview Department Heads** to open its **Task Information** dialog box.
- On the **Predecessors** tab, in the **Lag** column for the **Review Government Regulations** task, use the **up arrow** to select **2d**.
- Select **OK**.
Verify that the duration of **2 Research Phase** is 6 days.

5. Save your changes and close the file.
