

Importance of Finish to Start Successors



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In addition to creating schedule logic the way workers ordinarily perform their business activities, it is important from a scheduling logic perspective to also include at least one Finish-To-Start successor to each task in a Microsoft Project schedule model.

Consider a program that has tasks as shown below in Figure 1:

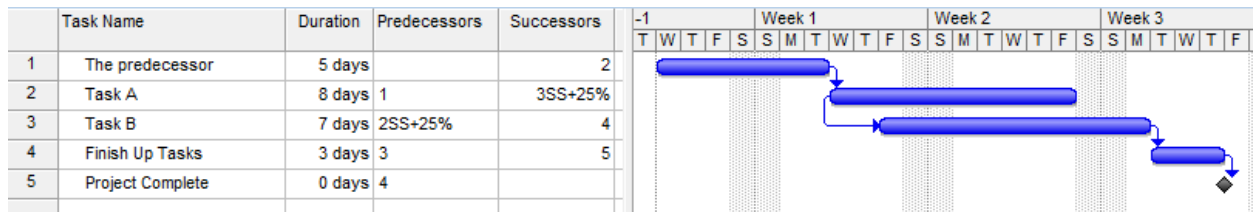


Figure 1 Notional Project

As setup, Task B is scheduled to start on Friday of Week 1 in the program. To illustrate the example, impacts to the schedule will be exaggerated for illustrative purposes. A real life example of this situation might be Task A represents an integration activity; Task B represents a testing activity that may commence sometime after the start of integration. Finally, when finishing up, a “Finish Up Task” is necessary representing the writing of a test report that cannot start until the testing is complete. This paper will focus on the relationship between Tasks A & B (Integration and Test).

Start to Start Relationship

The owner of Task B believes they have no drivers other than they may start when Task A claims they are 25% complete. The scenario is worsened if Task B starts a fixed number of days after Task A starts such as 2SS+2days. The owner of Task A believes they are not a program driver.

Once execution of Task A begins, the owner of Task A encounters a problem and believes their new task duration is 20 days (instead of 8 days). Notice how the lack of a finish to start successor on “Task A” fails to correctly push the Project Complete milestone to a correct date in Figure 2:

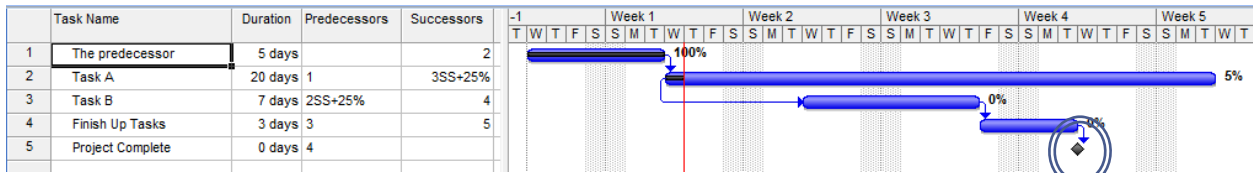


Figure 2 Task A Duration Increases

Although the increase in duration of Task A does drive the start of Task B to a later date (Wednesday of Week 2), the Project Complete milestone is still incorrect because it shows Wednesday of Week 4 instead of Thursday of Week 5, see Figure 2. The lag on the predecessor for Task B does move Task B to the right if its predecessor runs longer than anticipated; if the lag on the predecessor to Task B were a fixed amount, say 2SS+2days, then Project Complete milestone would not have moved at all, see Figure 3:

Project Completion Milestone location is not correct

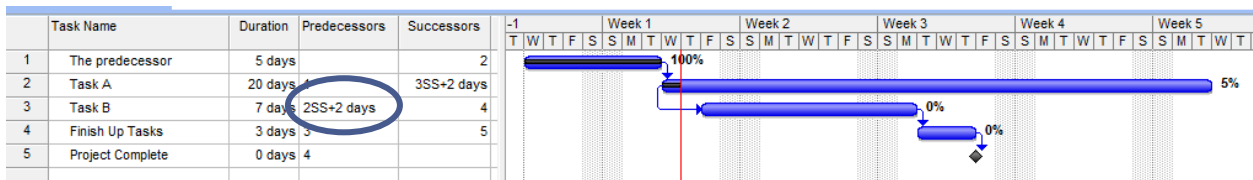


Figure 3 Task B with Fixed Duration Lag

The problem exacerbates if Task B has already started and the owner of Task A realizes their trouble later in the execution process, Figure 4. Essentially this situation becomes identical to a fixed lag on Task B since the existence of progress on Task B freezes its location.

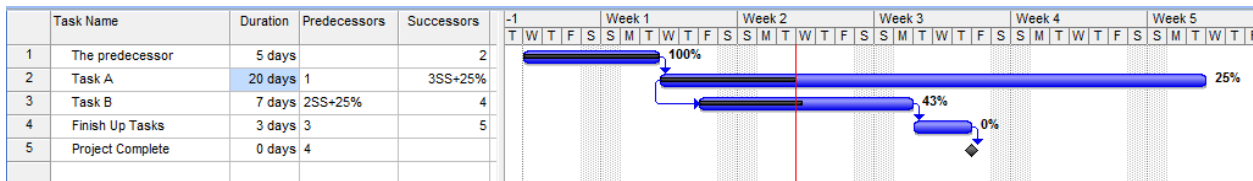


Figure 4 Task A Problem is Found After Start of Task B

The proper way to link this schedule is with a Finish-to-Start successor on Task A linking it to either the Project Complete milestone or the Finish Up Tasks in Figure 5. The original Start-To-Start relationship between Tasks A and B remains along with the new successor.

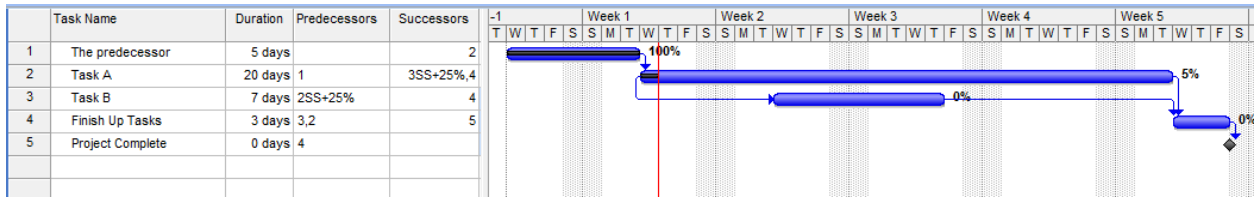


Figure 5 Changing Successors on Task A

The idea is that sooner or later, Task A could run so long that it will impact someone. Now, if “Task A” does not complete in a timely manner, the Project Complete milestone will push out accordingly.

An argument is if Task A increases in duration, Task B must also increase in duration: Test may start when integration is 25% complete and test will complete 5 days after the completion of integration. The task to test (Task B) becomes a Hammock Task with dates automatically driven by changes to Task A. [See the Appendix for how to create a Hammock Task.]

Since Microsoft Project does not allow a single task to drive both the start and finish of the same successor activity, two faux milestones are added after Task A indicating the start of Task B (test) and the expected completion of Task B. These are identified in Figure 6 as the two MS (milestone tasks). To make the completion of Task B contingent on the duration of Task A, create a Hammock task driven by the two milestones. The Hammock task (Task B) is created from the milestones to account for the lag in start and completion. The start and complete criteria for Task B are totally within the control of the user who specifies this information using the two milestones. Using the Hammock Task scenario, the new schedule appears in Figure 6:

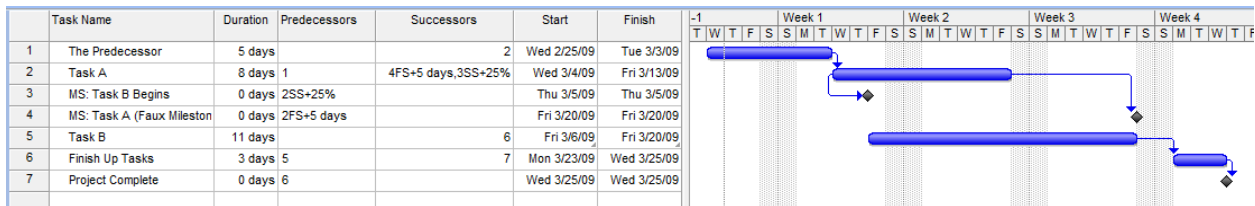


Figure 6 Use of Hammock Task for Task B

When the duration of Task A increases, the duration of Task B will follow suit without user intervention, see Figure 7 :

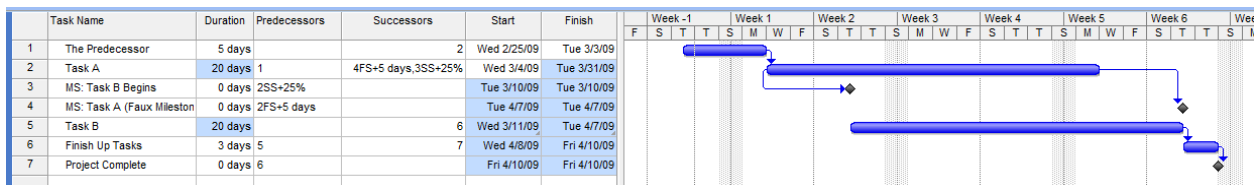


Figure 7 Task A Dates Drive Hammock Task B Dates

The finish date for Task B will still change even if Tasks A and B are in process.

Finish to Finish Relationship

Consider a Task B that may start at any time, but must finish concurrently with Task A plus 2 days, see Figure 8:

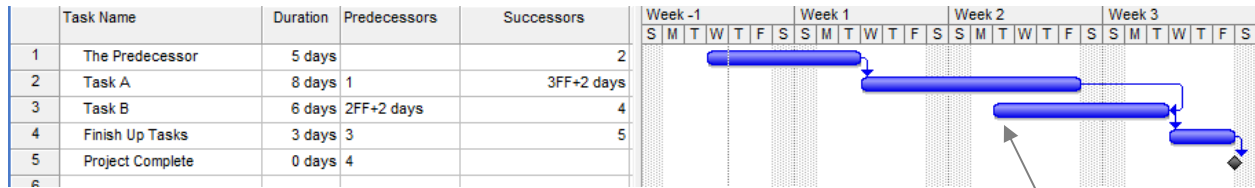


Figure 8 Task B with Finish-To-Finish Predecessor

If the owner of “Task B” decides an additional 10 days will be needed (making the duration of “Task B” 16 days), this drives the start date of Task B to the left. This does not appear to be a problem, unless this drives the start of “Task B” to before today. However, there will come a time when the duration of Task B becomes so long that it may start prior to the start of its predecessor (Task A); this does not make logical sense, a successor activity generally does not start prior to the commencement of the predecessor. In this example, Task B (Test) could certainly not start prior to Task A (Integration) without changing meaning of the terms. If there is no processor to drive the start of Task B, why cannot it start on day 1 of the project? Answering that question will establish a start constraint for Task B. Again, some task must drive the start of Task B, determining that task will create the needed FS predecessor to start Task B and a Hammock task can be created just like above.

What Drives My Start Date?

More than likely, the logic behind a FF predecessor is tasks will run in parallel: Testing will complete about two days after completion of integration. This drives the finish date to Task B and the project completion date in the example. We are handed the reciprocal problem – what will drive the start date?

Conclusion

When considering business rules, task relationship may be Start-To-Start or Finish-To-Finish. To preserve schedule logic it is also necessary to drive detail tasks with a Finish-To-Start successor.

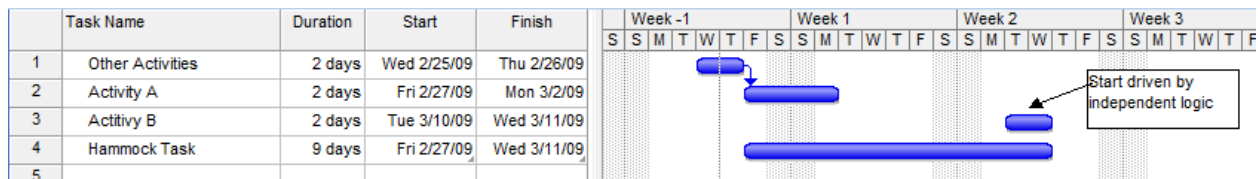
Appendix: Creating Hammock Tasks

Overview

Hammock tasks occur when the start of the Hammock is concurrent with the start (or finish) of another activity and continues until the completion of a third activity. One example would be the Level of Effort associated with a project manager assigned to manage a series of activities. The task commences with the Authority to Proceed (ATP) milestone, and completes with the “Project Complete” milestone.

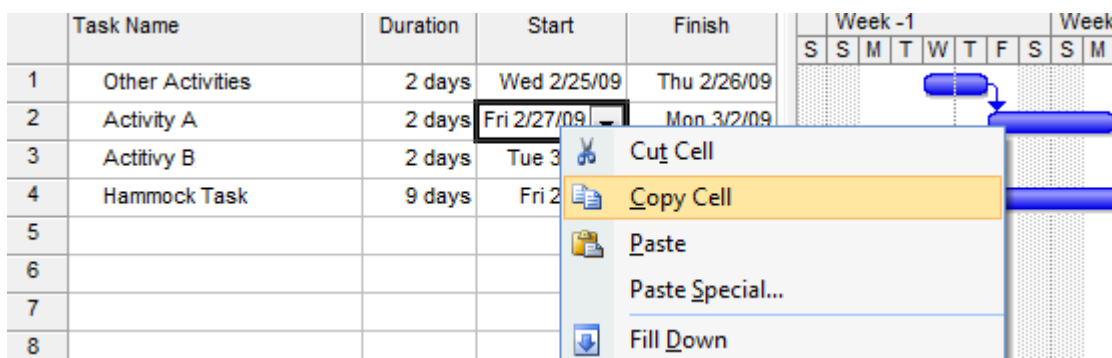
Since the ATP and Project Complete milestones are driven by other tasks and constraints, it is a good idea to use a Hammock task to account for the variable amount of time that may occur between the two dates. A Hammock Task will automatically account for situations such as the first milestone starts late, but the second will complete on time.

The figure below shows a Hammock Task that starts when Activity A starts, and completes when Activity B completes:



Procedure

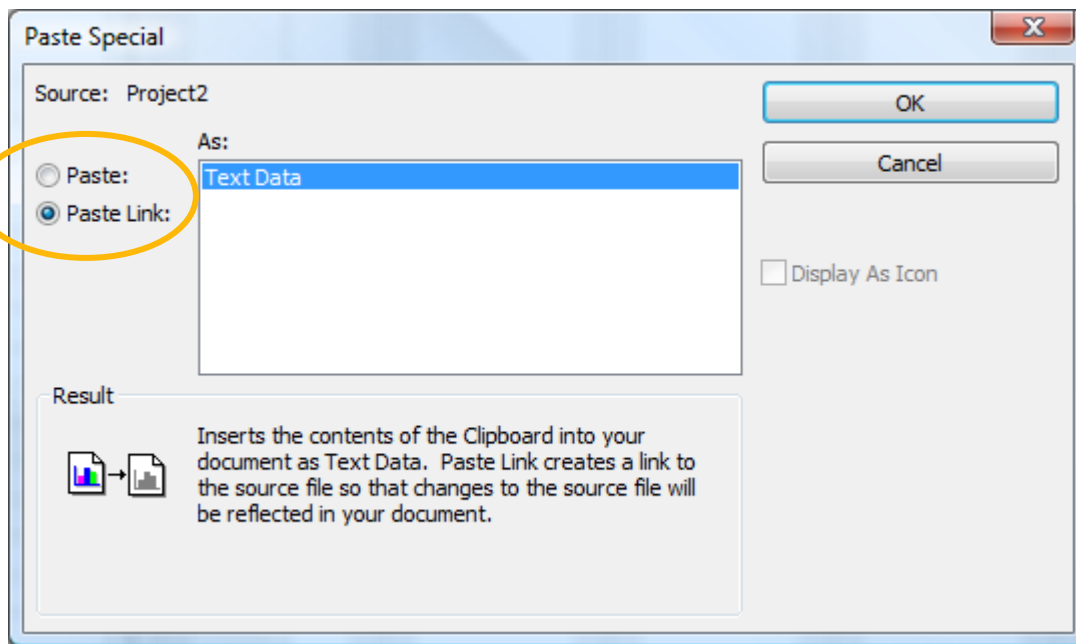
Copy the Start Date of the driving task (Activity A) to the clip board; an easy method is right click and select copy:



Select the Start date of the Hammock Task, right click and select Paste Special:

	Task Name	Duration	Start	Finish	Week -1								
					S	S	M	T	W	T	F	S	
1	Other Activities	2 days	Wed 2/25/09	Thu 2/26/09									
2	Activity A	2 days	Fri 2/27/09	Mon 3/2/09									
3	Activity B	2 days	Tue 3/10/09	Wed 3/11/09									
4	Hammock Task	9 days	Fri 2/27/09	Wed 3/11/09									

In the open dialog box, select "Paste Link" then OK.



Note the triangle in the lower right corner of the date indicating there is a link:

4	Hammock Task	9 days	Fri 2/27/09
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Repeat the same process to establish the Finish date.

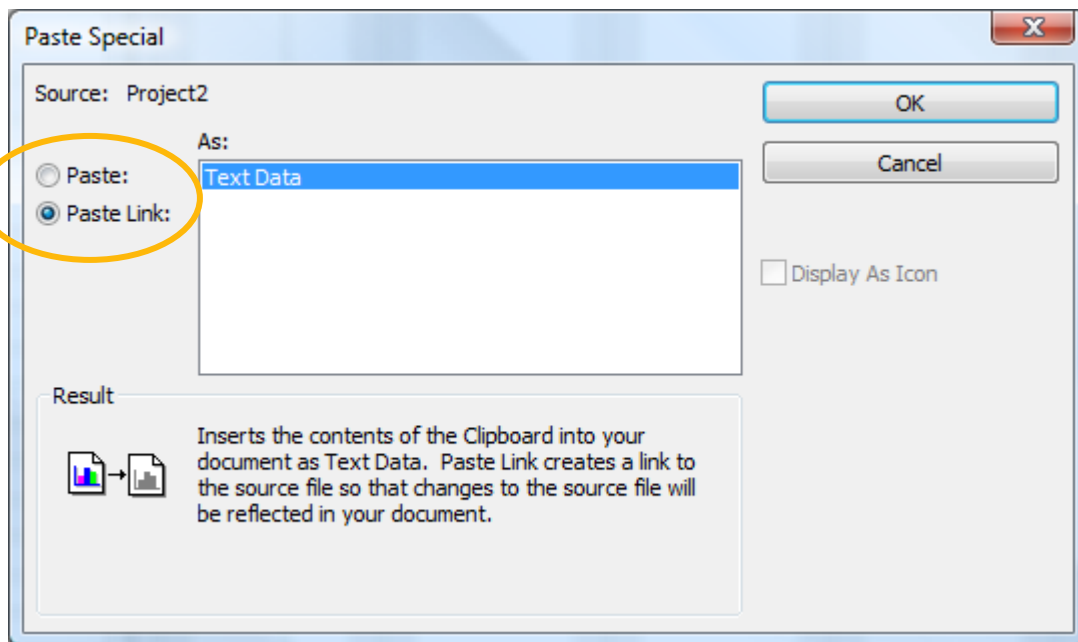
Right click on the Finish date of the task that will determine the completion date of the Hammock. In this case, the Finish will be the Finish date of Activity B:

	Task Name	Duration	Start	Finish
1	Other Activities	2 days	Wed 2/25/09	Thu 2/26/09
2	Activity A	2 days	Fri 2/27/09	Mon 3/2/09
3	Actitiv B	2 days	Tue 3/10/09	Wed 3/11/09
4	Hammock Task	9 days	Fri 2/27/09	Wed 3/11/09

The date is set to the Finish of the Hammock task using paste special:

	Task Name	Duration	Start	Finish
1	Other Activities	2 days	Wed 2/25/09	Thu 2/26/09
2	Activity A	2 days	Fri 2/27/09	Mon 3/2/09
3	Actitiv B	2 days	Tue 3/10/09	Wed 3/11/09
4	Hammock Task	9 days	Fri 2/27/09	Wed 3/11/09

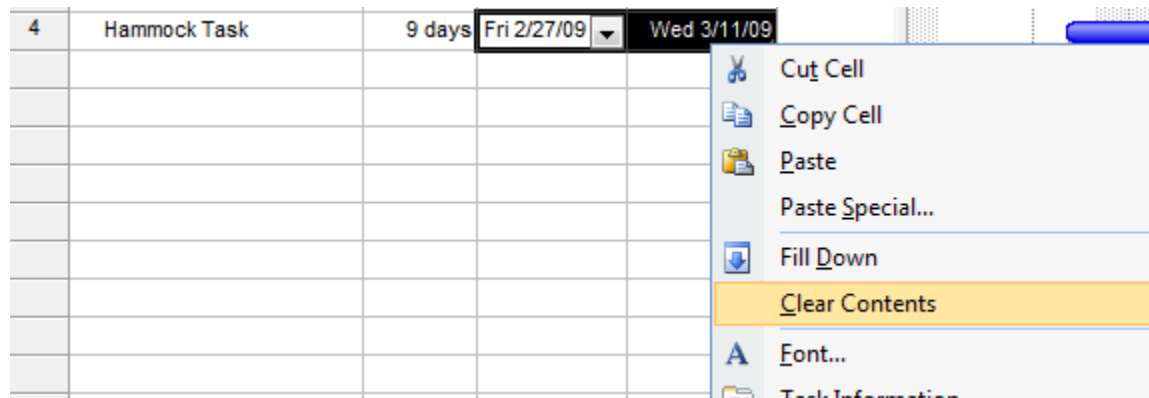
Select "Paste Link" as before:



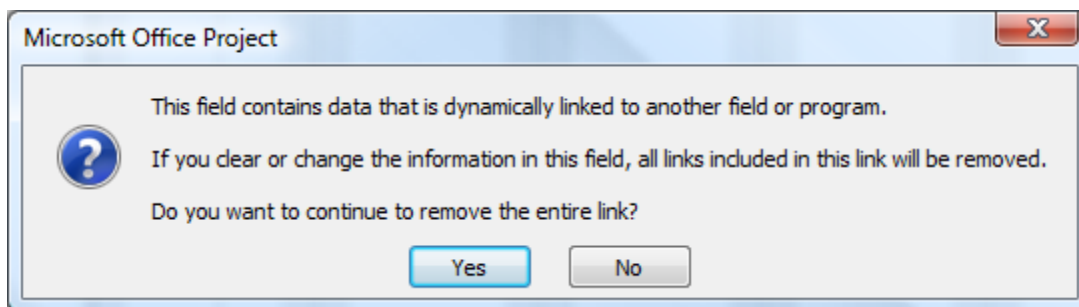
The Hammock Task is evident with the two gray triangles on the Start/Finish Dates:

4	Hammock Task	9 days	Fri 2/27/09	Wed 3/11/09
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Links on these dates may be cleared by selecting the two dates, right clicking and selecting “Clear Contents”



Answer “Yes” to clear the contents:



For additional information, please contact

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