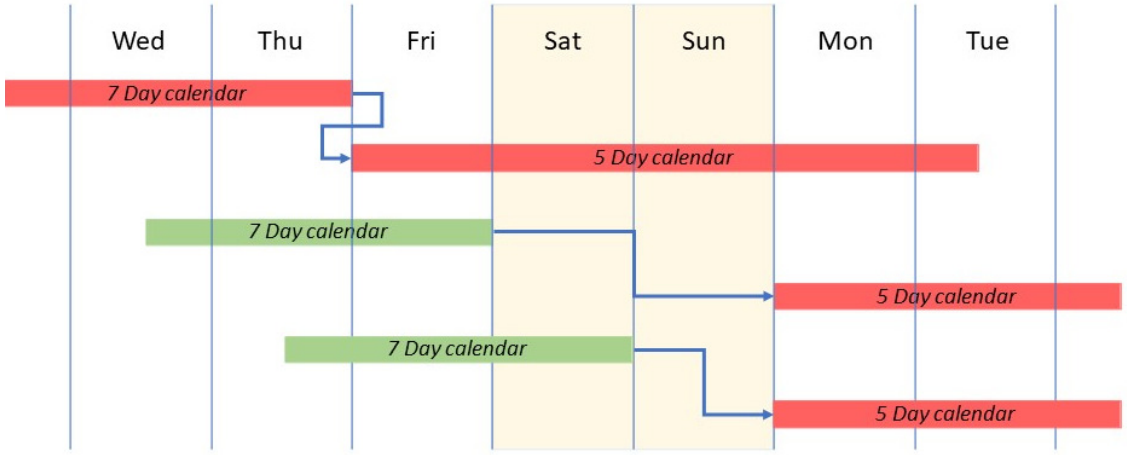
Calendars and the Critical Path

Using multiple calendars may cause different float values to appear in the same sequence of activities (or may not). This can be particularly confusing for activities on the critical path.

This brief article looks at the same two activities with the leading activity finishing on Thursday, Friday, or Saturday of the same week. The preceding activity is assigned a 7-day calendar, and the succeeding a 5-day calendar:

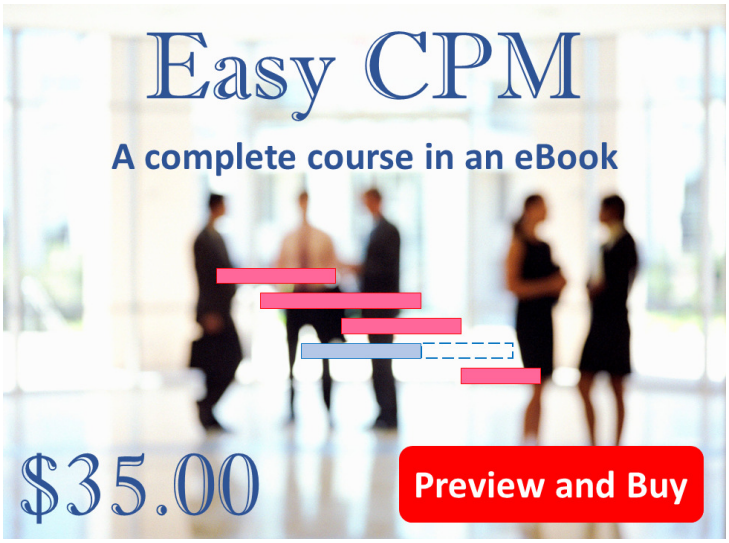


The first activity may represent a curing period (which continues 24 hours a day, 7 days a week) and the second, work that can commence once the curing process has finished. These activities are on the critical path which has zero float. However, what is shown in the project reports depending on when the 7-day activity completes:

- **In the top example**, both activities have zero float, but elapsed time to complete the 5-day activity is stretched by the 2 non-working days of the weekend.
- **In the middle example**, the work has been delayed by 1 day and the completion of the 5-day activity shifts back accordingly, causing a 1-day delay to the project completion. However, the 7-day activity now shows 2 days float, and this will flow through to **all** of its predecessors on the critical path! This is caused by the fact the 7-day activity can finish on Friday, Saturday, or Sunday without affecting the start of the succeeding activity on Monday morning. However, if any of the preceding activities with the 2-days float are accelerated by a day, the project completion moves forward, and all of the activities on the critical path revert to zero float.
- **In the lower example**, the work has been delayed by another day (2 days total delay). There is no change in the completion of the 5-day activity (or the overall project completion), but the free float on the 7-day activity and its predecessors is reduced to 1 day.

The consequence of multiple calendars means in the right circumstances it is possible to delay activities on the critical path and create float, and/or delay critical activities without causing a delay in the project completion. The scheduler needs to decide what is more important, accurately modelling factors such as curing time or having a simpler schedule based on a single 5-day working week calendar – there is no right answer to this question, the decision depends on circumstances.

This paper is an extract from *Easy CPM*, Section 4:



Preview ***Easy CPM*** at: https://mosaicprojects.com.au/shop-easy-cpm.php

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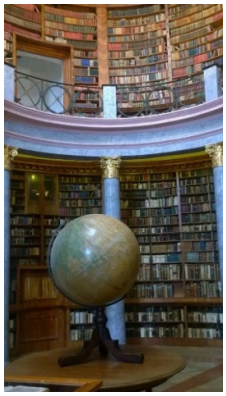

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