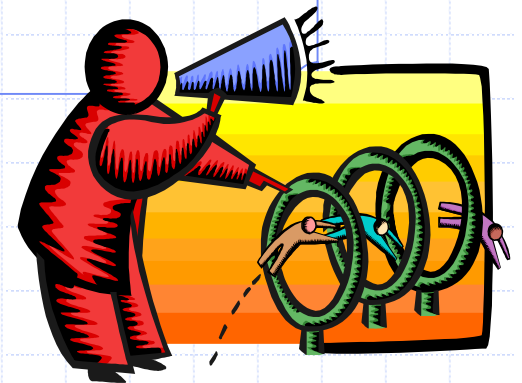


The Critical Path Method

Presented by **Antonio Prensa**,
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Chapter

June 20, 2002

San Juan, Puerto Rico



**"I believe that this nation should
commit itself to achieving a goal, before
this decade is out, of landing a man on
the moon..." - John F. Kennedy,
May 27, 1961**

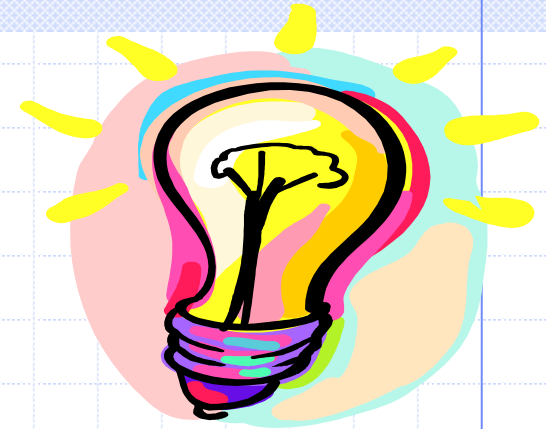
On July 20, 1969, just eight years after Kennedy's speech, Apollo 11 landed two men on the moon. This achievement was possible only with careful production planning that included the critical path method.

NASA used the critical path method to help determine an efficient schedule for the tasks that led to the moon landing.

Discussion Topics

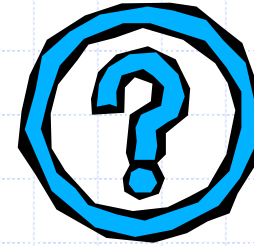
- ◆ Background
- ◆ Some questions about the project
- ◆ What is the Critical Path Method (CPM)?
- ◆ Why the CPM?
- ◆ How to use the CPM ?
- ◆ Questions and Answers

Background



- ◆ The critical path method (CPM) was invented by project managers in the early 1950's.
- ◆ The US Navy adapted and improved it to manage the Polaris missile project in the late 1950's

Some questions about the project

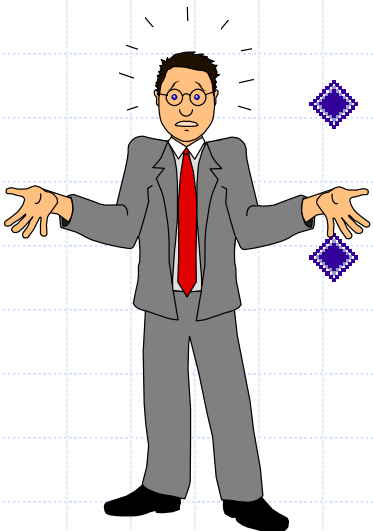


- ◆ How long will the entire project take to complete?
- ◆ Which activities determine total project time?
- ◆ Which activity times should be shortened, if possible, or in other words, how many resources should be allocated to each activity?

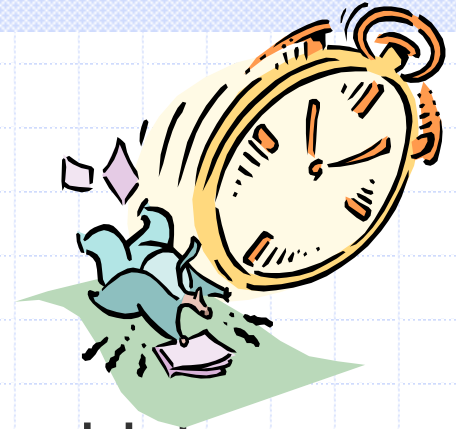
What is the CPM?



- ◆ **Critical Path Method (CPM)**, is a procedure for using network analysis to identify those tasks which are on the critical path: ie where any delay in the completion of these tasks will lengthen the project timescale, unless action is taken.
- ◆ For all tasks off the critical path, a degree of tolerance is possible (eg. late start, late completion, early start, etc.).
- ◆ Network charts and CPM analysis used to be carried out by hand.
- ◆ Software is now available which requires the user only to enter the tasks, duration of each task and dependencies upon other tasks; a network chart and CPM is then automatically created.



Why the CPM?



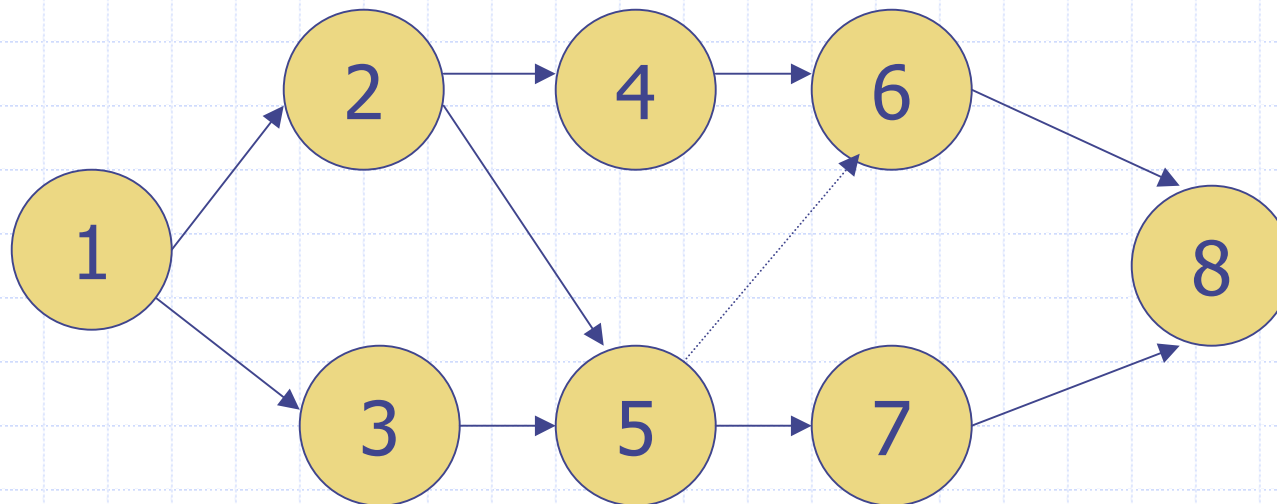
- ◆ The **CPM** formally identifies tasks which must be completed on time for the whole project to be completed on time
- ◆ Identifies which tasks can be delayed for a while if resource needs to be reallocated to catch up on missed tasks
- ◆ It helps you to identify the **minimum length** of time needed to complete a project
- ◆ The CPM determines both the **early start** and the **late start date** for each activity in the schedule.

How to use the CPM?

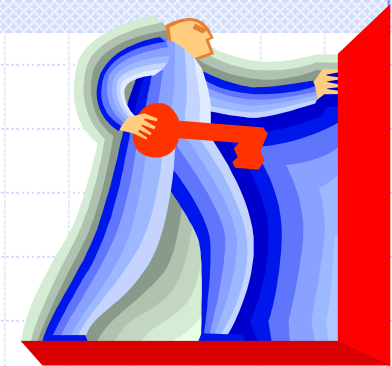


Project Network Diagram

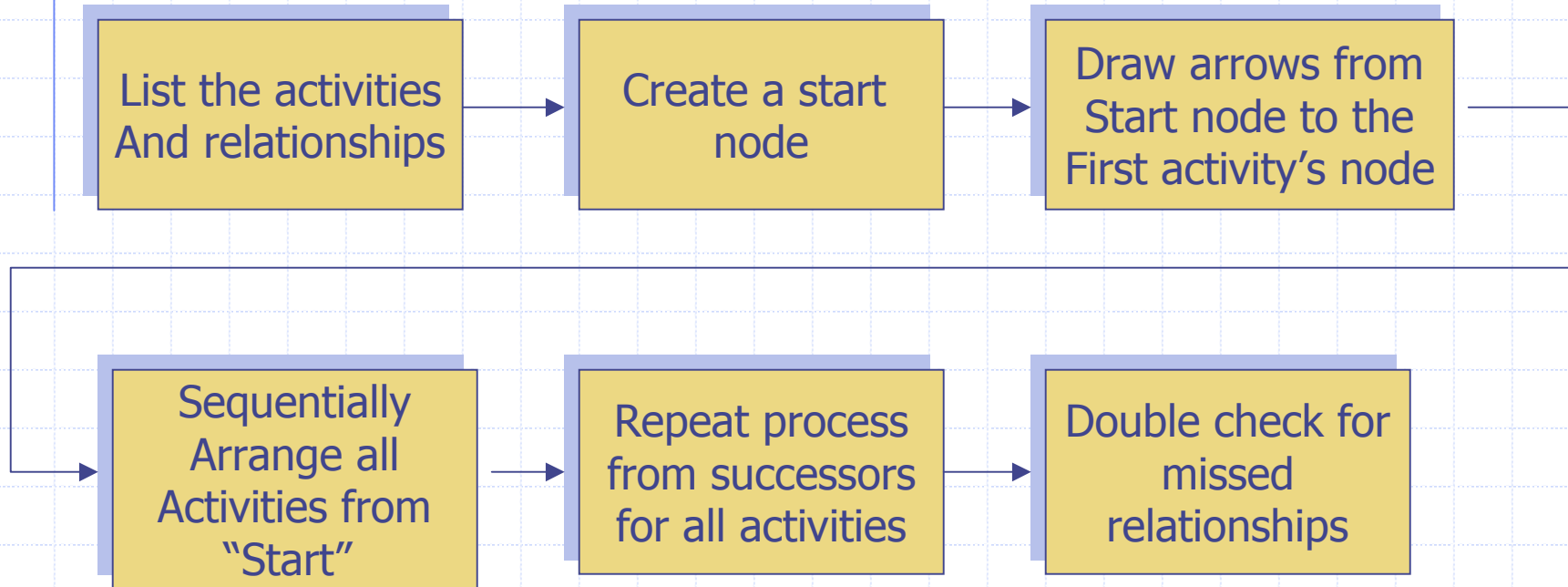
- Any schematic display of the logical relationships of project activities.



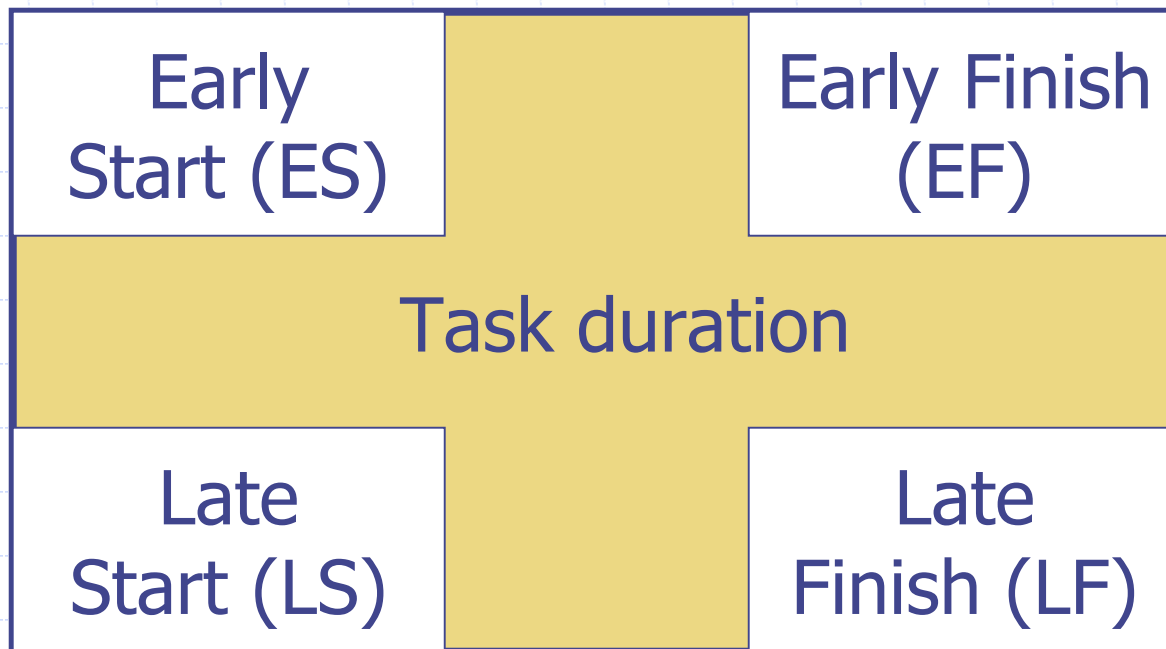
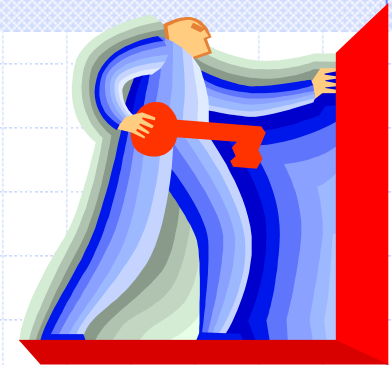
How to use the CPM?



Building a Precedence Diagram



How to use the CPM?



How to use the CPM?



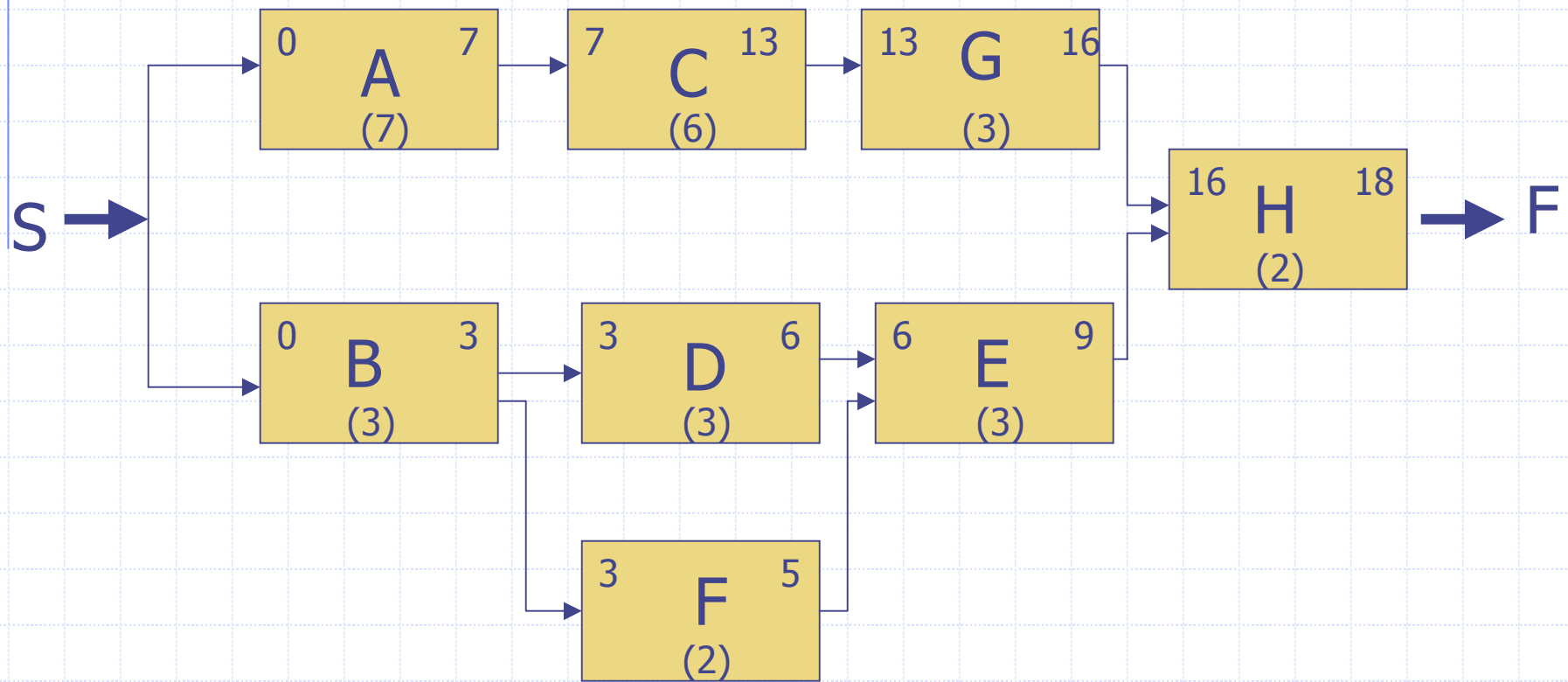
Sample

<i>Task ID</i>	<i>Duration</i>	<i>Dependency</i>
A	7	
B	3	
C	6	A
D	3	B
E	3	D,F
F	2	B
G	3	C
H	2	E,G



How to use the CPM?

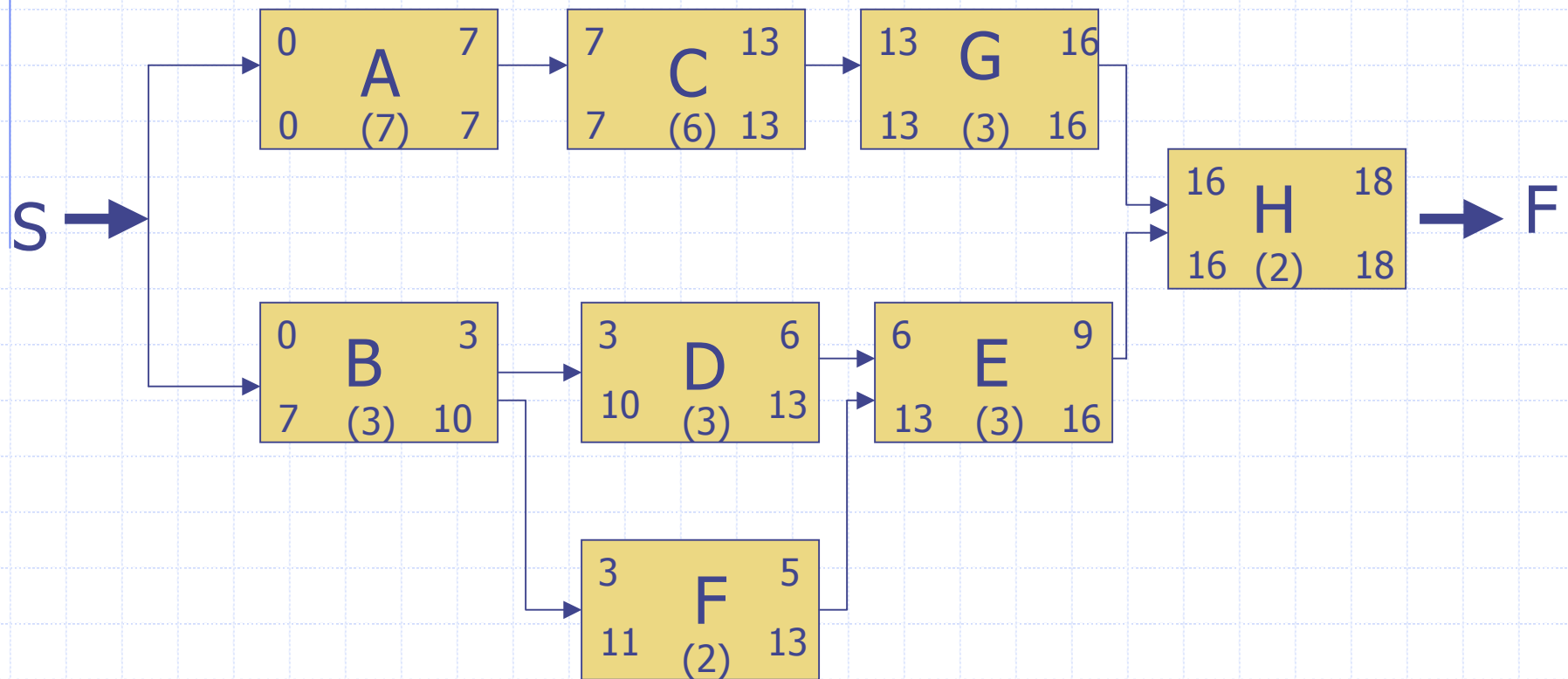
Calculating the Forward Pass

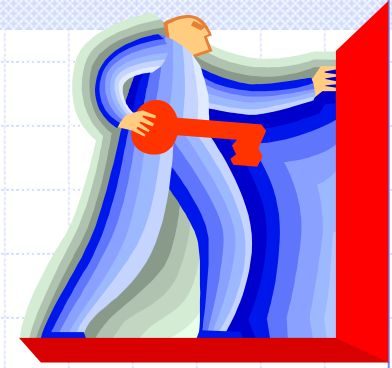




How to use the CPM?

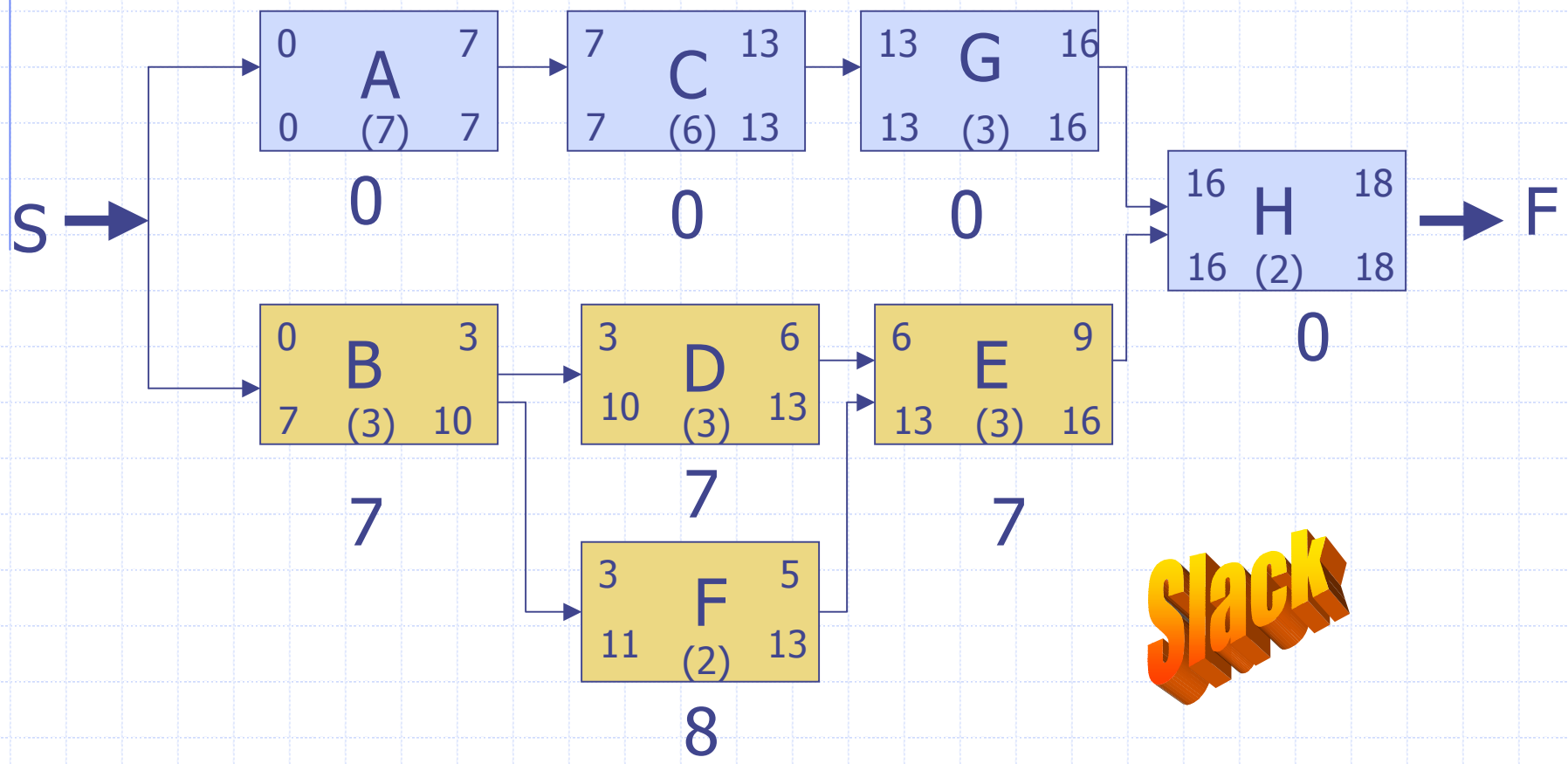
Calculating the Backward Pass





How to use the CPM?

Calculating the Float/Critical Path



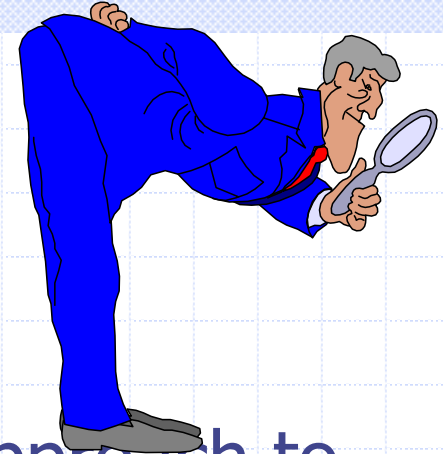
Summary



Critical Path Analysis is an effective and powerful method of assessing:

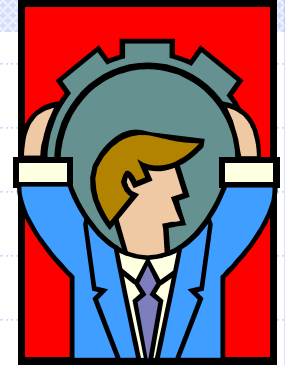
- ◆ Tasks which must be carried out
- ◆ Where parallel activity can be carried out
- ◆ The shortest time in which a project can be completed
- ◆ Resources needed to achieve a project
- ◆ The sequence of activities, scheduling, and timings involved
- ◆ Task priorities

Do you need more information?



- ◆ Project Management: A systems approach to Planning, Scheduling, and Controlling – Harold Kerzner, Six edition.
- ◆ Project Management: A Managerial Approach – Jack R. Meredith, Samuel J. Mantel, Fourth Edition.
- ◆ Web Search Engine – key word: The Critical Path Method or The CPM.

Contact me at:



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