

The Critical Path Method

Project Planning and Control

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Slide 1

Project Planning

- Project planning techniques emerged during the 1950's
- Two almost identical techniques developed:
 - Critical Path Method (CPM): Developed by DuPont to manage plant shutdowns;
 - Program Evaluation & Review Technique (PERT): Developed by US Navy with Booz Allen Hamilton for the Polaris Submarine Project.

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The Critical Path Method

- Is a management tools that allows us to:
 - Plan
 - Establish a logical progression of work;
 - Establish timings (schedule);
 - Determine resource requirements;
 - Develop a budget;
 - Control
 - Control progress;
 - Control costs.

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New mini-plant commissioning

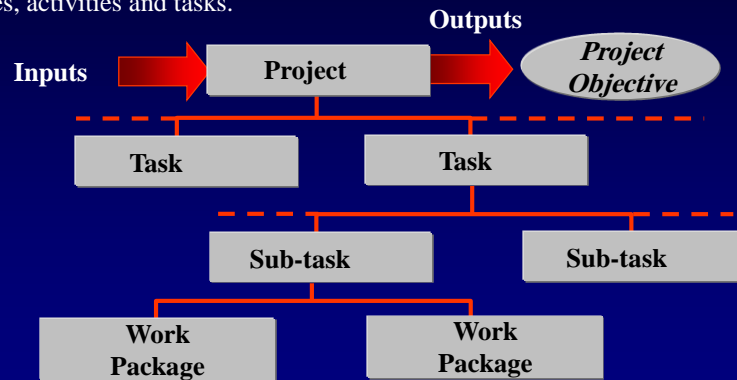
Task Description	Task Code	Analysis	Engineering Resources (No. of people)	Task Est Duration (Days)
Installation integrity check	A	Start	1	8
Instrument check/calibrations	B	Depends on A	1	4
Pressure testing and cleaning	C	Depends on A	1	4
Loop checks	D	Depends on B	1	2
Run up to operation conditions	E	Depends on C and D	1	3
Link into central control room	F	Depends on E	1	10
Documentation compile/update	G	Depends on A	1	5
Preparation of sign-off cert's.	H	Depends on E and G	1	2
Tie-in to existing plant header	I	Depends on E and G	1	6
Commissioning operating trails	J	Depends on F, H and I	1	10

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Work Breakdown Structures

Breaks down the project objective into increasingly detailed sub-objectives, activities and tasks.

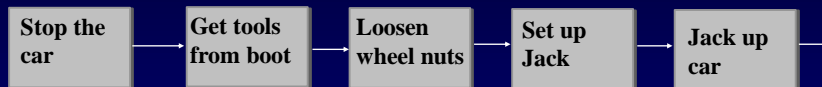


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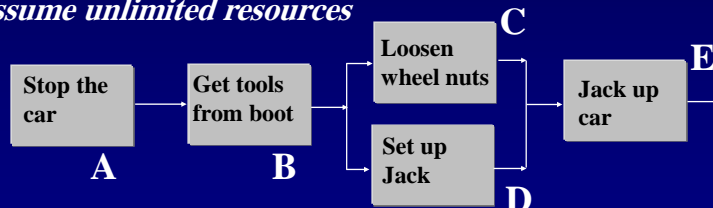
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Precedence Analysis *Changing a Tyre*

If you are on your own



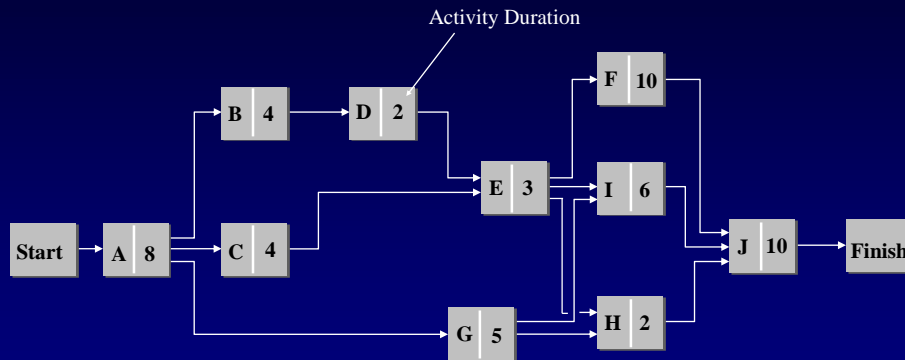
Assume unlimited resources



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The Network Diagram

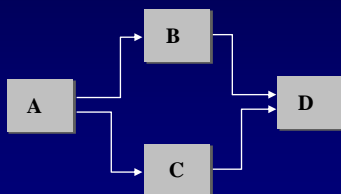


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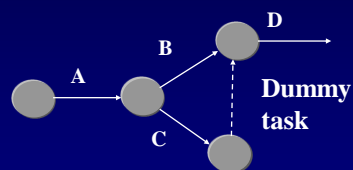
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Approaches to CPM Networks

Precedence Method
Activity-on-Arrow



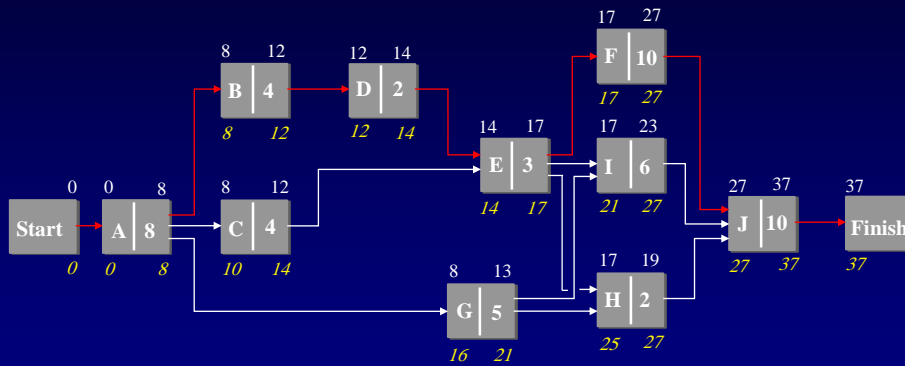
Activity-on-Arrow



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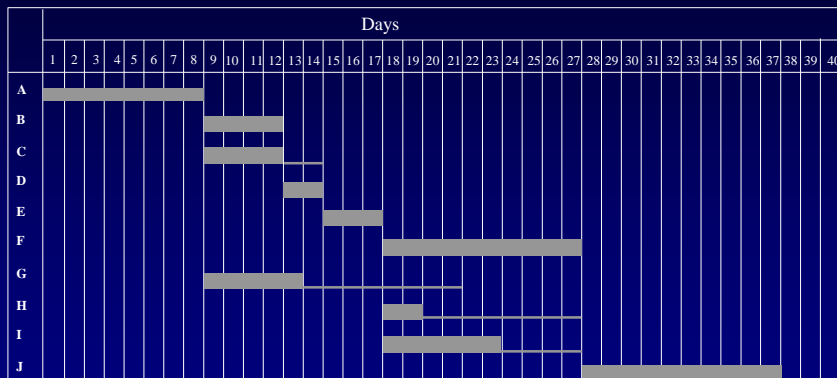
The Critical Path



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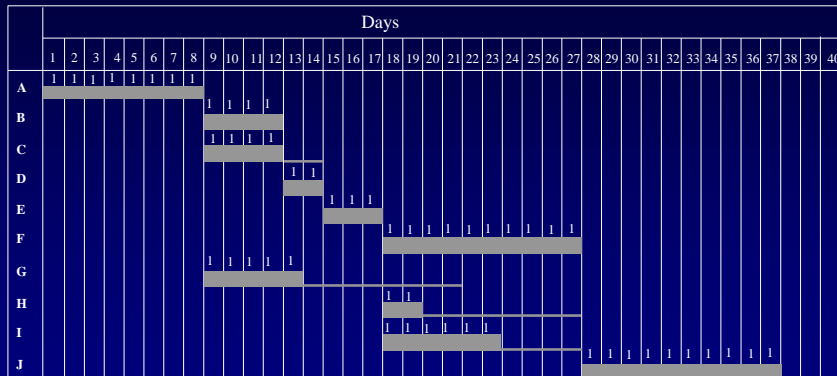
The Bar Chart Schedule (Gantt Chart)



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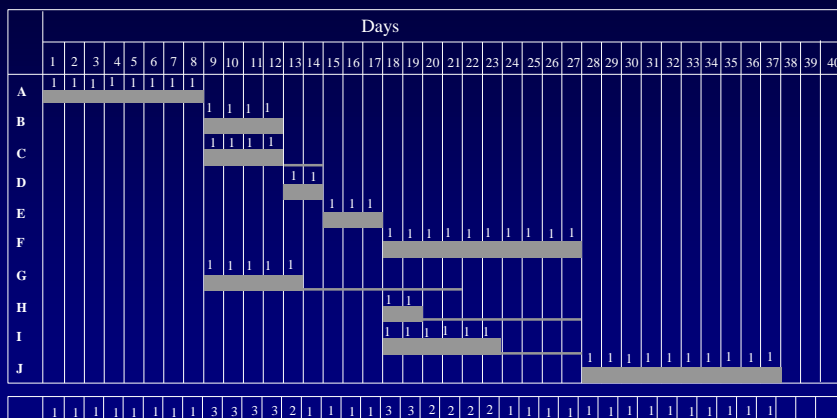
Add the resources required by each task per day



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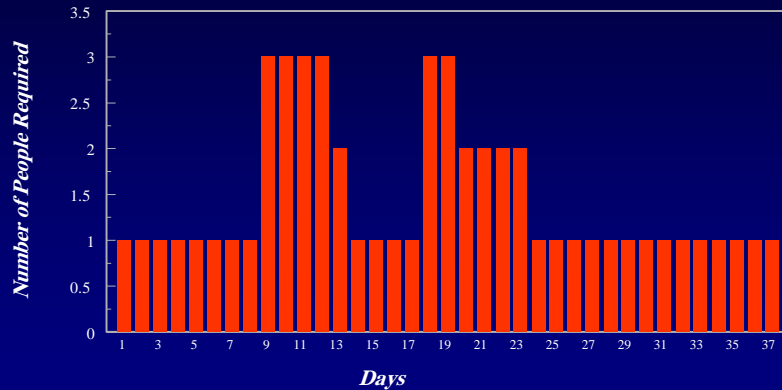
Calculate the resources required by the project per day



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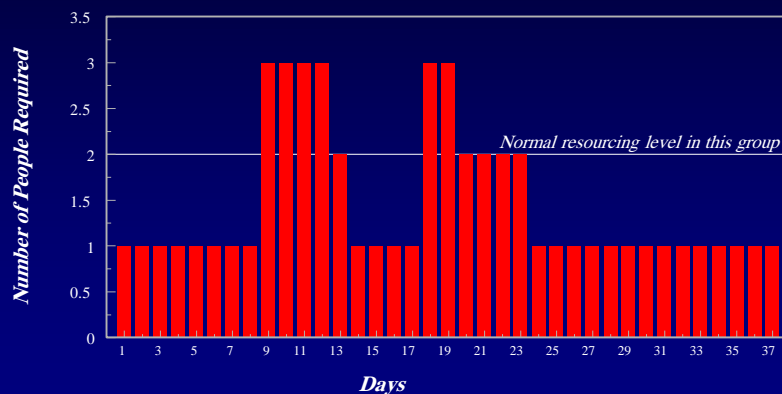
Transfer to a Labour Histogram



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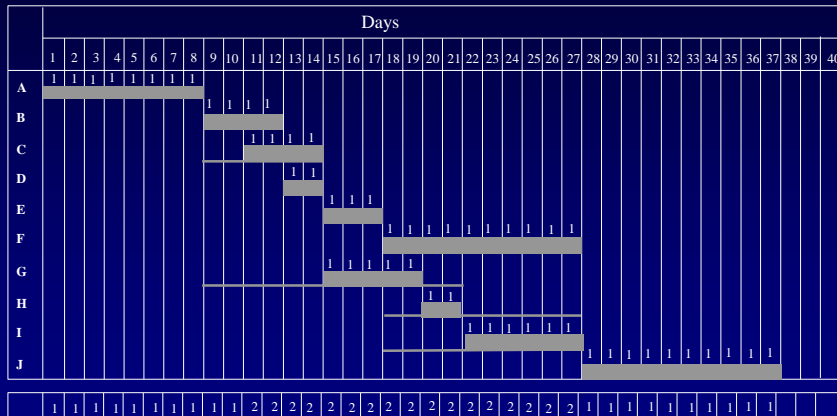
Assume resources initially allocated to this project is 2 people



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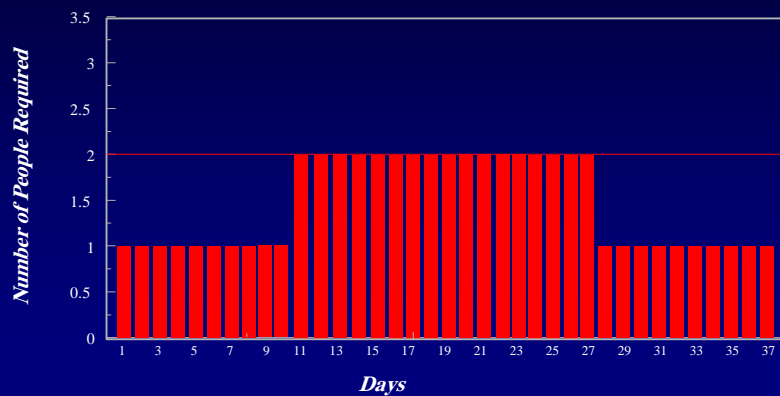
Revised Gantt Chart Schedule



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Revised Labour Histogram



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Short-Cut Approach to Planning

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