

# Chapter 12

## Network Scheduling Techniques

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## Scheduling Techniques

- ❖ Gantt or bar charts
- ❖ Milestone charts
- ❖ Line of balance
- ❖ Networks
  - Program Evaluation and Review Technique (PERT)
  - Arrow Diagram Method (ADM) [Sometimes called the Critical Path Method (CPM)]
  - Graphical Evaluation and Review Technique (GERT)
  - Precedence Diagram Method (PDM)

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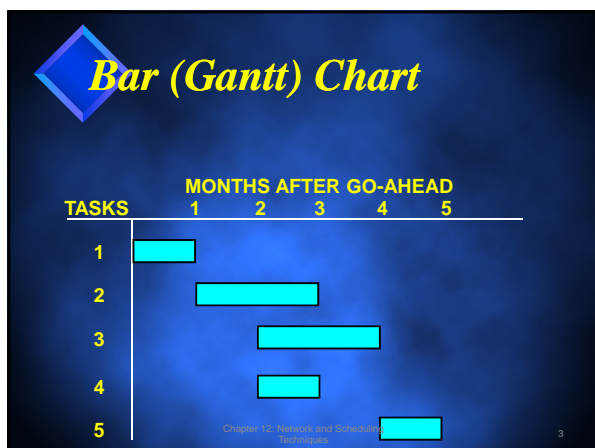
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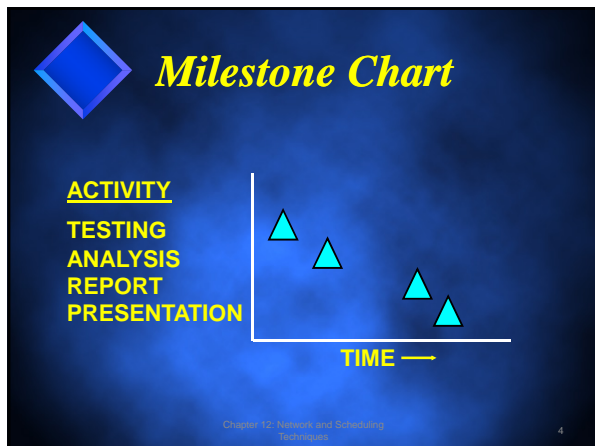
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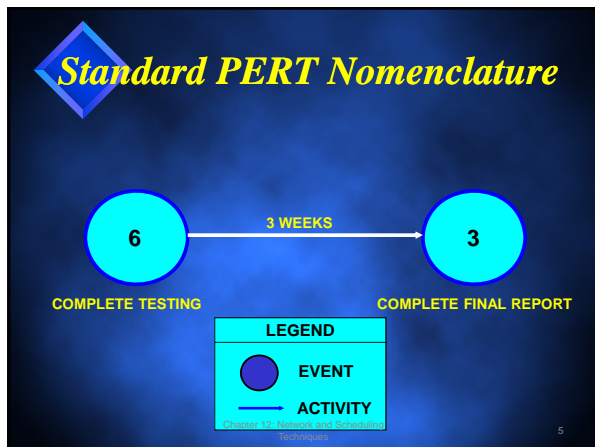
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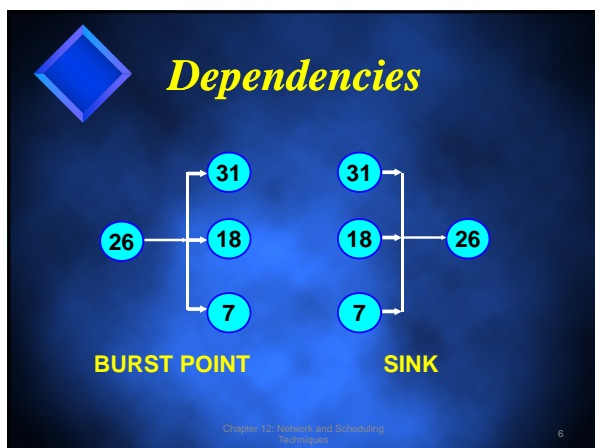
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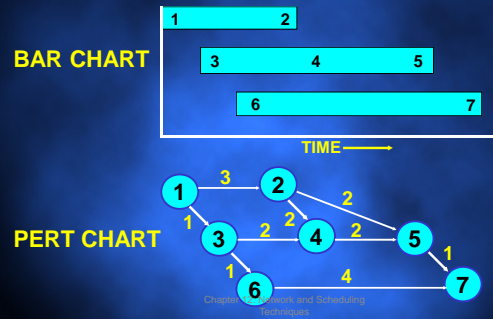
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## Conversion From Bar To PERT




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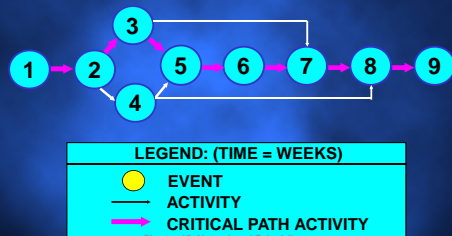
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## Simplified PERT Network




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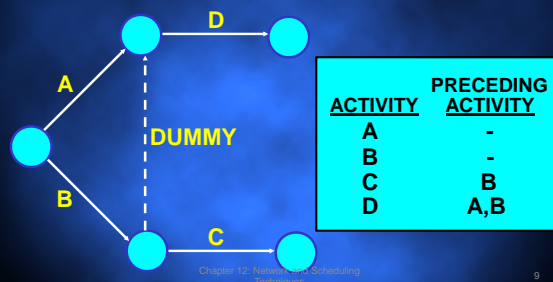
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## Dummy Activities




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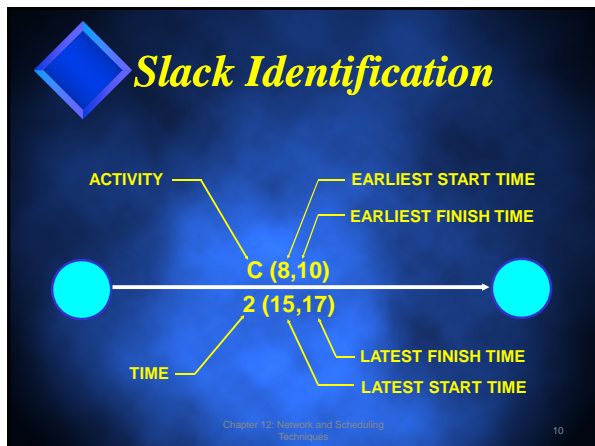
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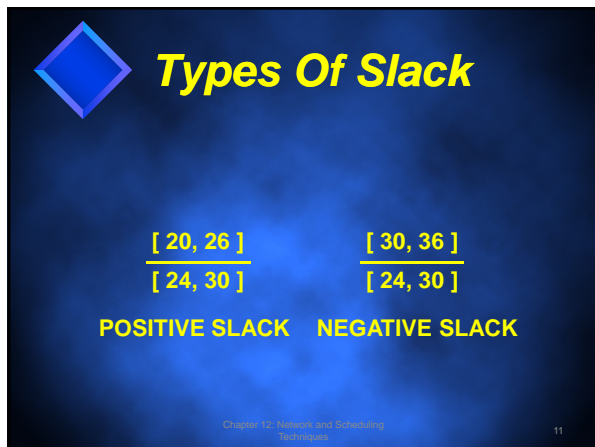
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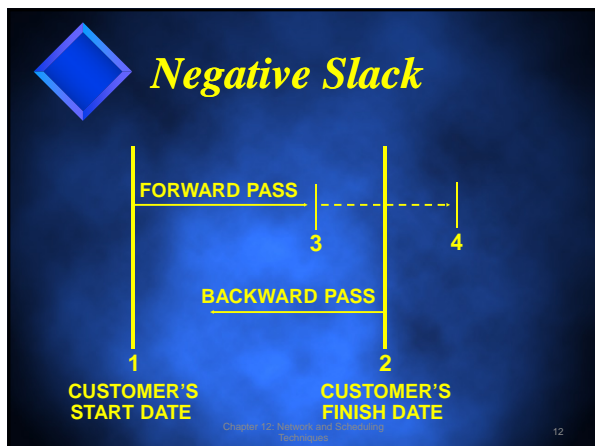
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## ***Schedule Compression***

- ❖ Elimination of some parts of the project
- ❖ Addition of more resources
- ❖ Substitution of less time-consuming components or activities
- ❖ Parallelization of activities
- ❖ Shortening critical path activities
- ❖ Shortening early activities
- ❖ Shortening longest activities

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## ***Schedule Compression*** (Continued)

- ❖ Shortening easiest activities
- ❖ Shortening activities that are least costly to speed up
- ❖ Shortening activities for which you have more resources
- ❖ Increasing the number of work hours per day

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## ***Resource Leveling***

- ❖ Resource leveling is an attempt to eliminate the manpower peaks and valleys by smoothing out the period-to-period resource requirements. The ideal situation is to do this without changing the end date. However, in reality, the end date moves out and additional costs are incurred.

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## **Resource Allocation**

- ❖ Resource allocation (or resource limited planning) is an attempt to find the shortest possible critical path based upon the available or fixed resources. The problem with this approach is that the employees may not be qualified technically to perform work on more than one activity in a network.

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## **Planning Objectives (Primary)**

- ❖ Best time
- ❖ Least cost
- ❖ Least risk

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## **Planning Objectives (Secondary)**

- ❖ Studying alternatives
- ❖ Optimum schedules
- ❖ Effective use of resources
- ❖ Communications
- ❖ Refinement of the estimating process
- ❖ Ease of project control
- ❖ Ease of time or cost revisions

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## Planning Objectives (Limitations)

- ❖ Calendar completion
- ❖ Cash or cash flow restrictions
- ❖ Limited resources
- ❖ Management approvals

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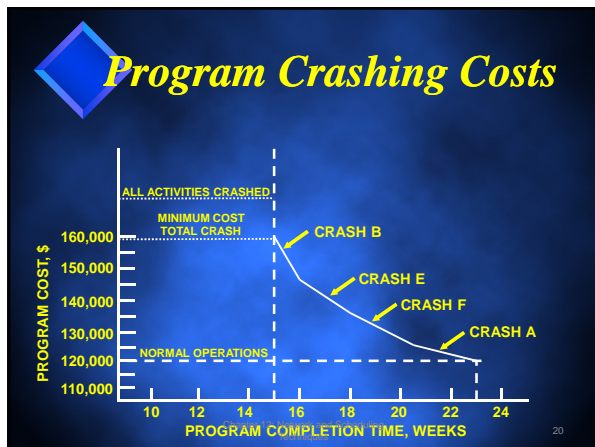
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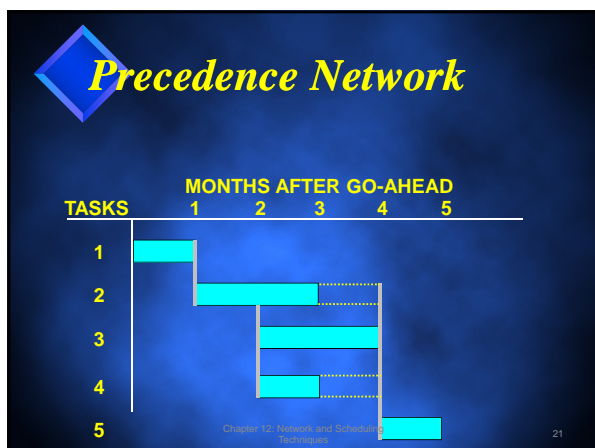
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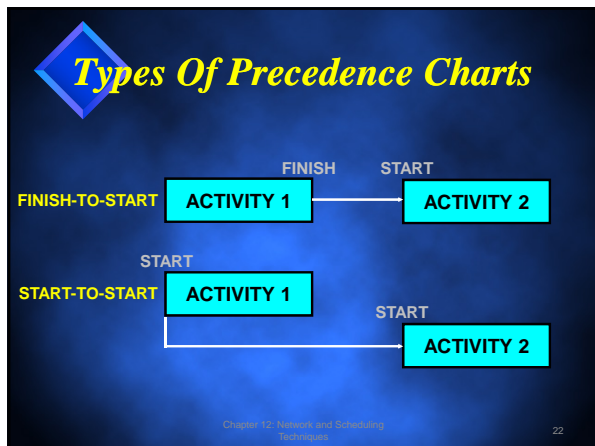
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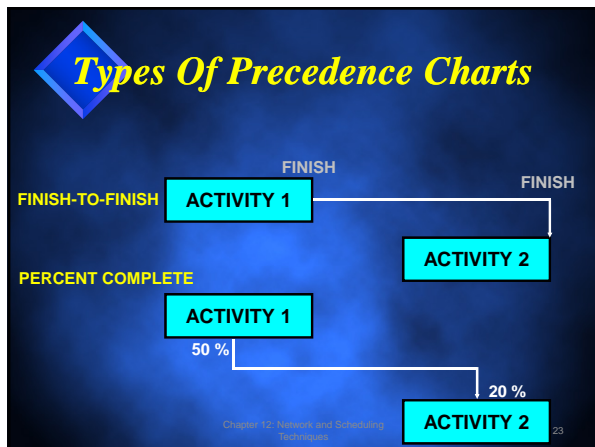
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### ACTIVITY INFORMATION

EARLY START 01/06/97	TIME DURATION 2 WORK-WEEKS	EARLY FINISH 14/06/97
ACTIVITY 4	TOTAL SLACK(TS)	\$250,000
	FREE SLACK (FS)	
LATE START 15/06/97	COST/PROFIT CENTER 2810	LATE FINISH 28/06/97

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