Lesson 2

PDM network representation and its issues,
Network Calculation

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PDM Network Representation
PDM Representation Issues

• Draw a PDM to Represent the Following Situation

Task 1. Excavating Trench (Duration = 12 Days).

Task 2. Laying of Pipe (Duration = 20 Days)
   (Can start 3 days after Task 1 Starts)

Task 3. Back Filling of Trench (Duration = 8 Days)
   (Can start 10 days after Task 2 Starts)

Any other information ..?
Solution: Alternative 1

FORWARD PASS

Start 0

Excavate trench 12

Lay pipe 20

Backfill 8

Finish 21

BACKWARD PASS

FORWARD PASS

SS03

SS10
Solution: Alternative 2

FORWARD PASS

Start 0 → Excavate trench 12 → Lay pipe 20

BACKWARD PASS

Backfill 8 → Finish

FF2: 17 17
FF3: 17 17
Solution: Alternative 3

FORWARD PASS

Start 0

Excavate trench 12

Lay pipe 20

SS3

Backfill 8

Finish

FF3

SS10

FF2

PDM can require multiple relationships between activities

These should not form a loop!
**Forward pass**

- \( ES_j = \text{Max} \) 
  - \( EF_i + FS_{ij} \) 
  - \( ES_i + SS_{ij} \) 
  - \( EF_i + FF_{ij} - D_j \) 
  - \( ES_i + SF_{ij} - D_j \)

- \( EF_j = \text{Max} \) \( ES_j + D_j \) \((1&2)\)

**Backward pass**

- \( LF_i = \text{Min} \) 
  - \( LS_j - FS_{ij} \) 
  - \( LF_j - FF_{ij} \) 
  - \( LS_j - SS_{ij} + D_i \) 
  - \( LF_j - SF_{ij} + D_i \)

- \( LS_i = LF_i - D_i \) \((1&2)\)

Assume activity has to be done continuously – Less flexibility