

Scheduling Computations for Precedence Networks

Tabular Format (Precedence Diagram)

- Can be carried out on the tabular form without reference to the diagram.
- Advantage: the time required to construct the diagram is eliminated.

Link Lag

A link lag is the difference between the early start date of an activity and the early finish date of the preceding activity

$$LAG_{ij} = ESD_j - EFD_i$$

Determining lag

Examples:

$$LAG_{5-10} = ESD_{10} - EFD_5 = 4 - 4 = 0$$

$$LAG_{15-25} = ESD_{25} - EFD_{15} = 12 - 7 = 5$$

$$LAG_{20-25} = ESD_{25} - EFD_{20} = 12 - 6 = 6$$

Determining the Free-Float

- Free Float is the minimum of the lag of the link that follows an activity.
- Look at the “Pre. column” to find the same number value of EF for terminal activity “not following act.”

$$FF_i = \text{Min}_{\forall j} - LAG_{ij}$$

$$FF_{35} = LFD_{35} - EFD_{35} = 20 - 20 = 0$$

Determining the Total Float “Backward”

$$TF_i = \text{Min} (lag_{ij} + TF_j)$$

- Take TF of the terminal activity = 0

$$\text{or } TF_{35} = LFD_{35} - EFD_{35} = 20 - 20 = 0$$

Determining the Total Float “Backward” (cont.)

$$TF_{30} = \text{Min} (\text{lag}_{30-35} + TF_{35}) =$$

$$\text{Min} (7 + 0) = 7$$

No other link

$$TF_{20} = \text{Min} \left\{ \begin{array}{l} \text{LAG}_{20-25} + TF_{25} \\ \text{LAG}_{20-30} + TF_{30} \end{array} \right\} = \text{Min} \left\{ \begin{array}{l} 6+0 \\ 1+7 \end{array} \right\} = 6$$

INTF Float

- $INTF = TF - FF$

- If the free float is zero - no INDF

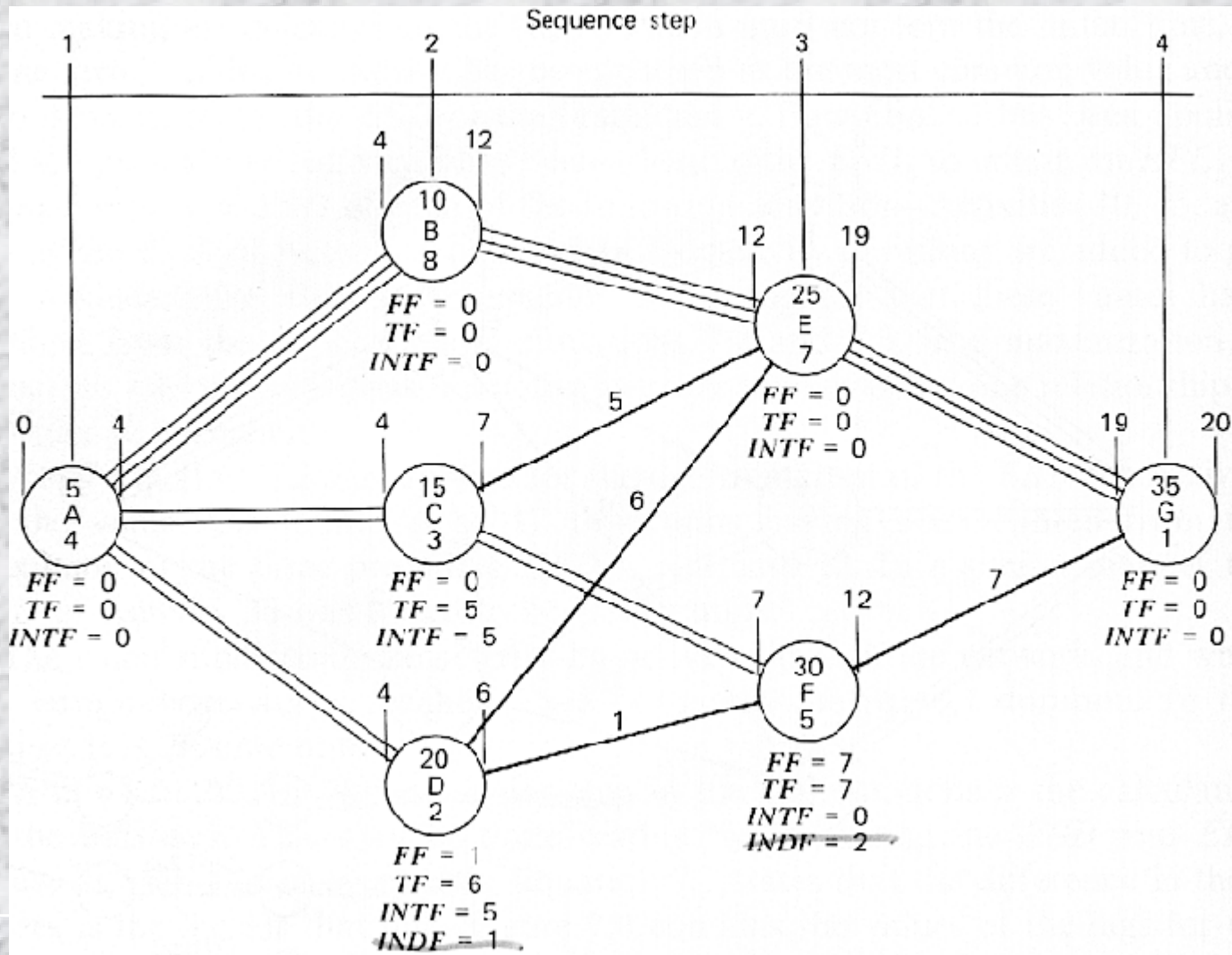
$$\text{INDF}_j = \text{FF}_j - \text{Max}_{-I} (\text{TF}_I - \text{LAG}_{IJ})$$

$$\begin{aligned} \text{INDF}_{20} &= \text{FF}_{20} - \text{Max} (\text{TF}_5 - \text{LAG}_{5-20}) \\ &= 1 - (0 - 0) = 1 \end{aligned}$$

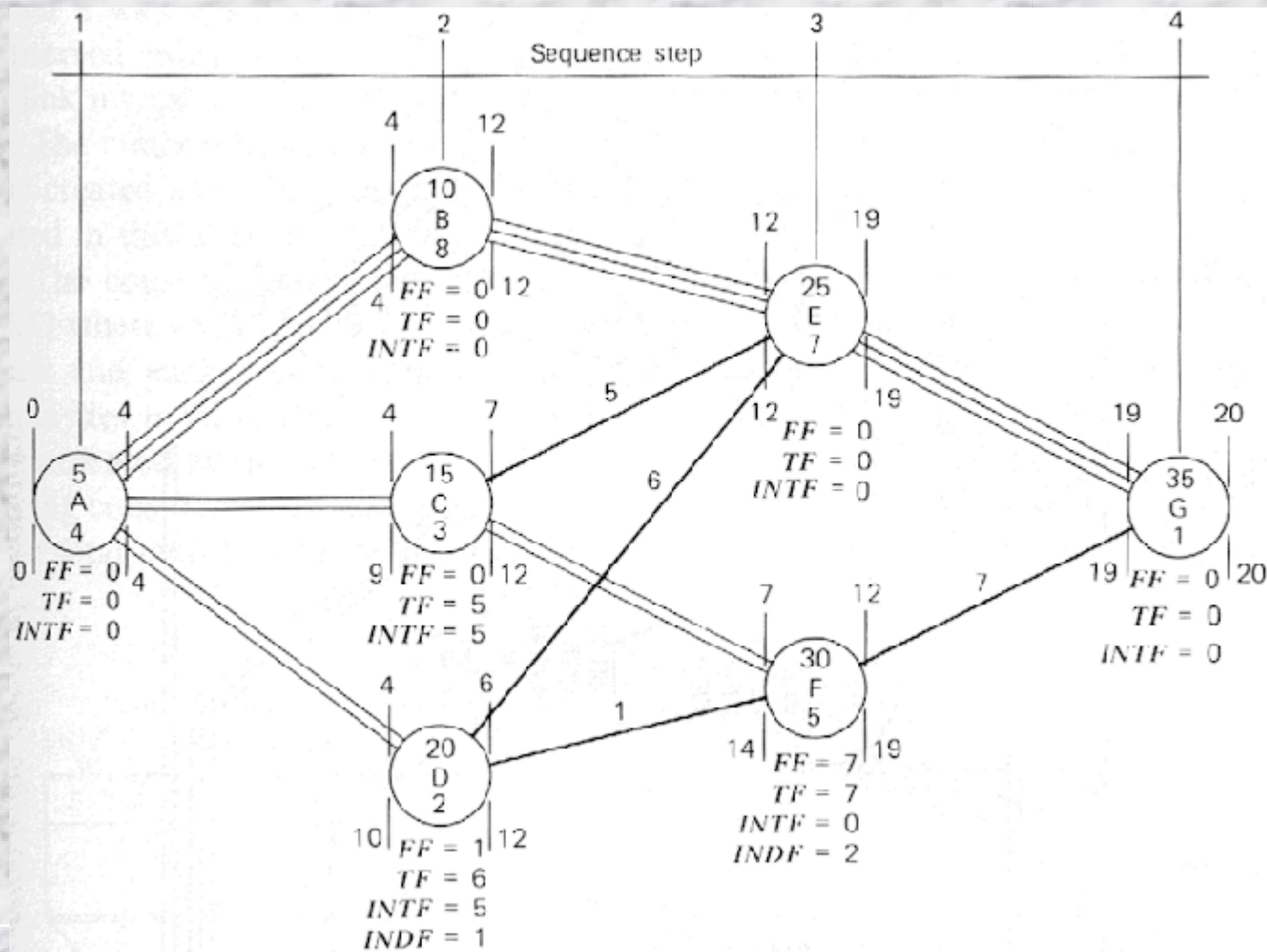
$$\text{INDF}_{30} = \text{FF}_{30} - \text{Max} \left\{ \begin{array}{l} \text{TF}_{15} - \text{LAG}_{15-30} \\ \text{TF}_{20} - \text{LAG}_{20-30} \end{array} \right\}$$

$$= 7 - \left\{ \begin{array}{l} 5 - 0 \\ 6 - 1 \end{array} \right\} = 2$$

Float Determination - Sample Precedence Network



Late Date Determination - Sample Precedence Network



Lag Determination - Sample Precedence Network

