

critical path

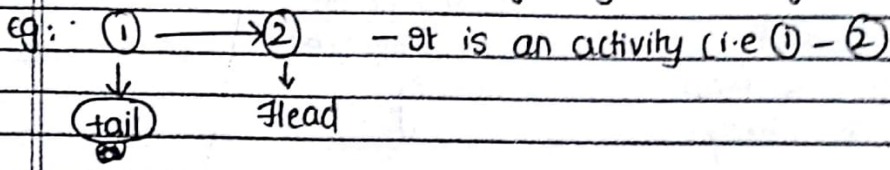
①

Critical path

- The key task in Network Analysis is to identify the longest path through the network.
- The longest path is the critical path, because it is the minimum time to complete the project

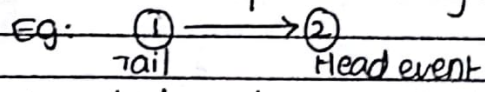
Activity

- It is a task (or) job in any portion of network/project
- It has a definite beginning & ending, represented by "→"



Event

- The beginning & ending point of activities are called events / Nodes / connectors
- An event is represented by graphically numbered circle.



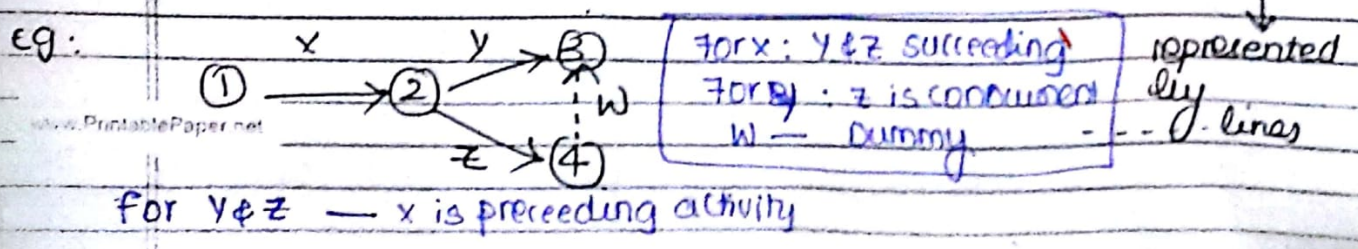
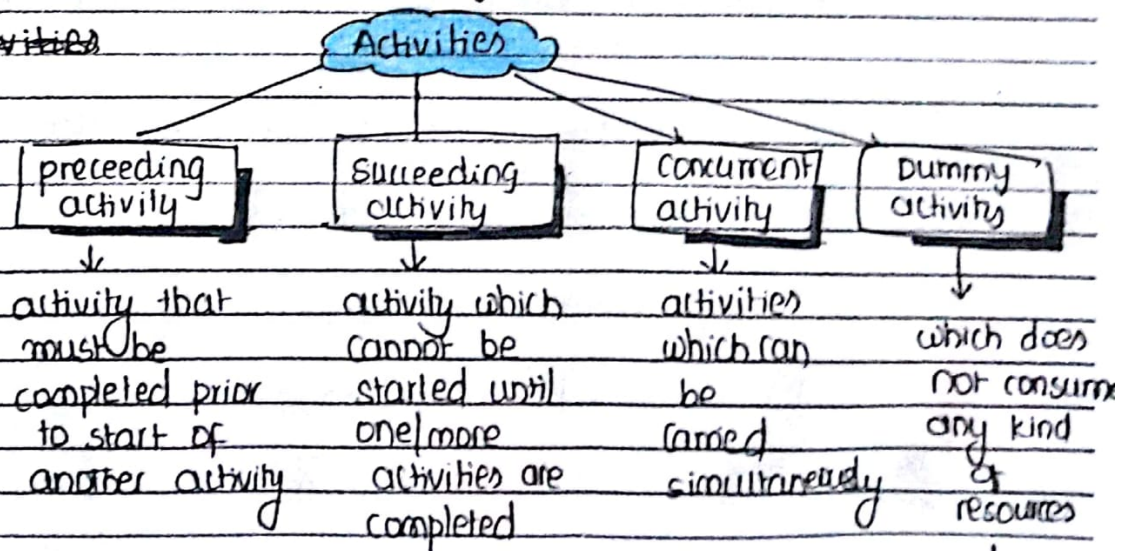
Head Event

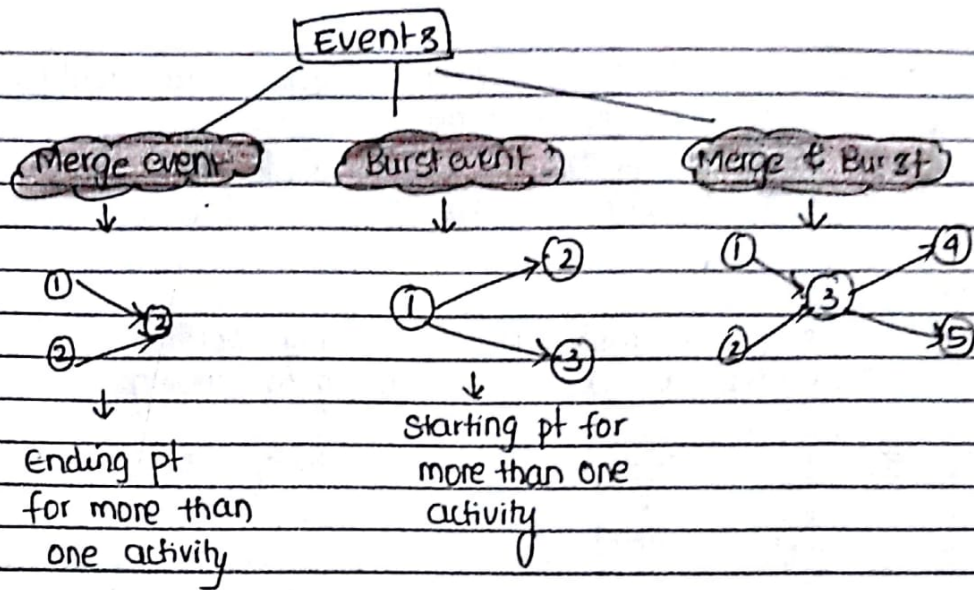
Event which ends an activity

Tail Event

Event which starts an activity

~~Activities~~





Scheduling computation

forward pass

Backward pass

* start to end

* End to start

* EST (earliest start time)

* LFT (latest finish time)

* for initial start point
EST = 0

* for the terminal / last event
LFT = EST

* EST of Head event = EST of tail
+ Duration

* LFT of tail event

LFT of Head event
(-)
Duration

* Merge event: EST

* LFT Burst event

1) EST of tail 1 + Duration

2) EST of tail 2 + Duration

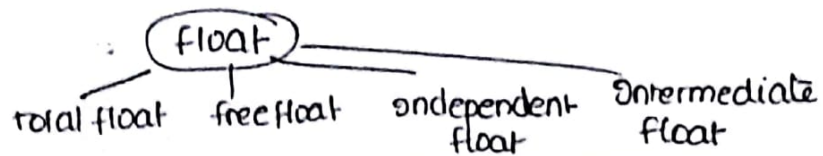
(1) LFT Head 1 - Duration

(2) LFT Head 2 - Duration

w.e. lower

critical path EST = LFT

for float critical path = total float = 0



float

Means amount of time by which completion of activity can be delayed without delaying the complete project completion time.



$$\text{Total float} = \text{LST} - \text{EST} \quad / \quad \text{LFT} - \text{EFT}$$

tail head



$$\text{Free float} = \text{Total float} - \text{Slack of Head event } (2) - (5)$$



$$\text{Independent float} = \text{Free float} - \text{Slack of tail event}$$



$$\text{Intermediate float} = \text{LFT of activity} - \text{EST of following activity}$$

→ If free float, independent float value is negative, then it should be taken as zero

While doing problems: Steps

- (1) Draw the network diagram (avoid bending, crisscross line)
- (2) calculate EST & EFT, LST & LFT
- (3) floats calculation of asked in Question.

→ When activity is given in A, B, C, D, E, F, then careful while drawing network diagram (see repetatives carefully)

Need for dummy activities: following situations

- (1) An activity is needed independently and in combination with other activity
Eg: $D \rightarrow (B)$; $E \rightarrow (B)$

- (2) An activity is needed in combination with two (or) more other activities

Activity

preceeding activity

E

(B)

F

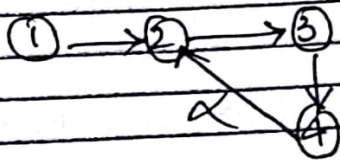
(D)

i.e B is needed in combination with E & D

Errors in N/w diagram

looping

arrow point from
left to right
↓
if not in logical
looping



dangling

↓ (loose ends)



② to ④ is the
dangling
activity

Redundancy

unnecessary
insertion of
dummy
activity



↓
Redundancy

@ pravalika