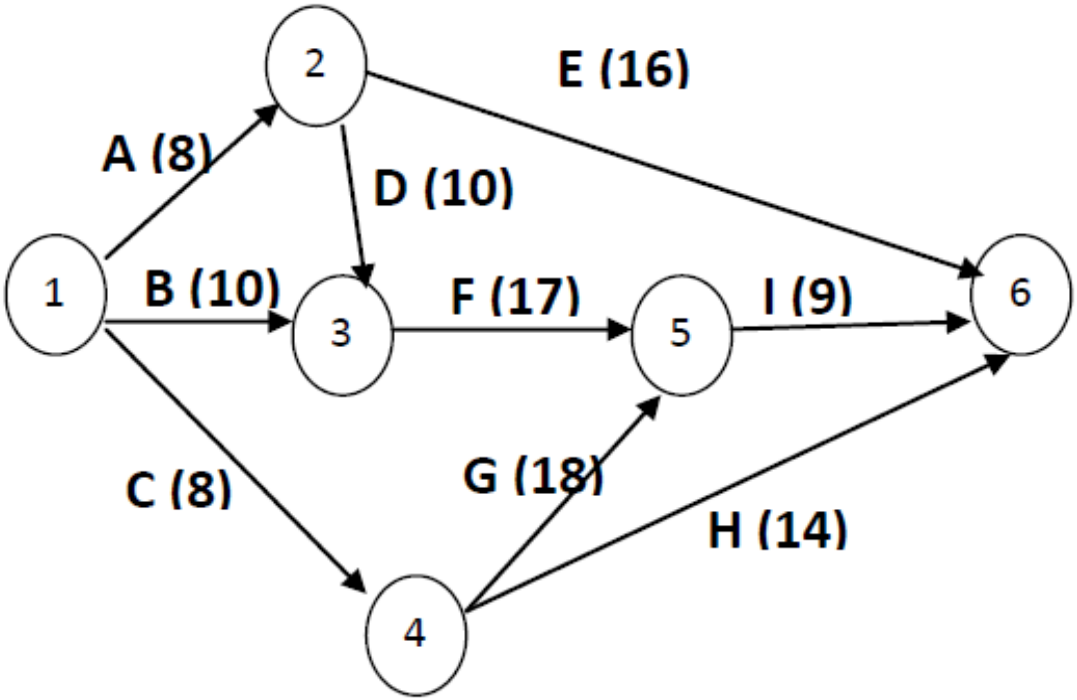
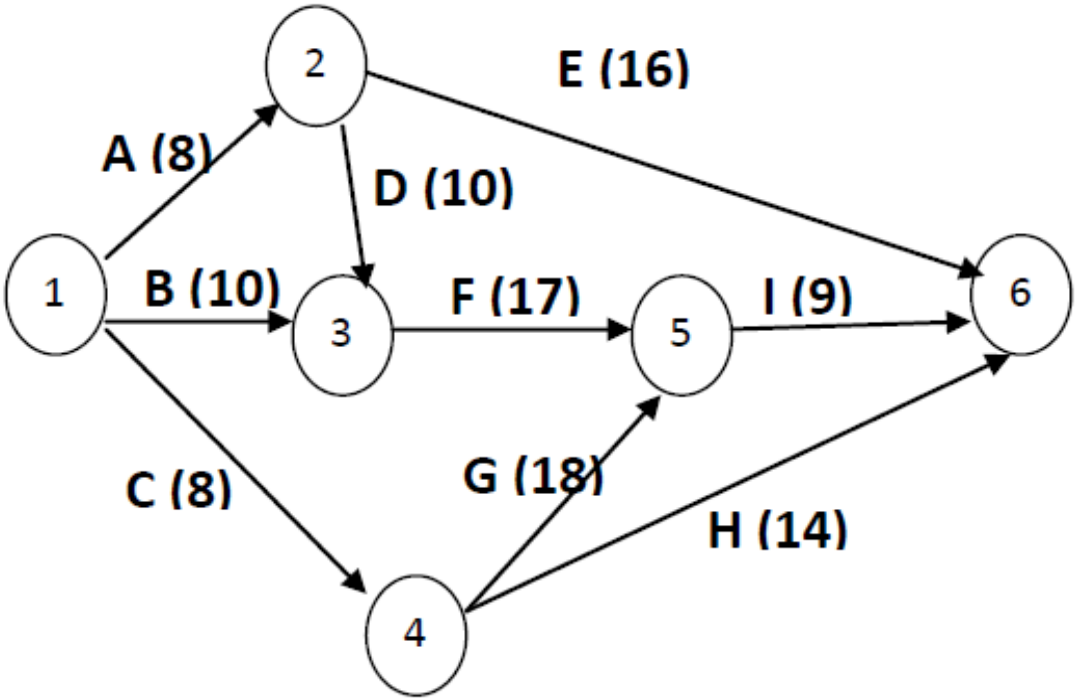
This is CPM(Critical Path Method) diagram.



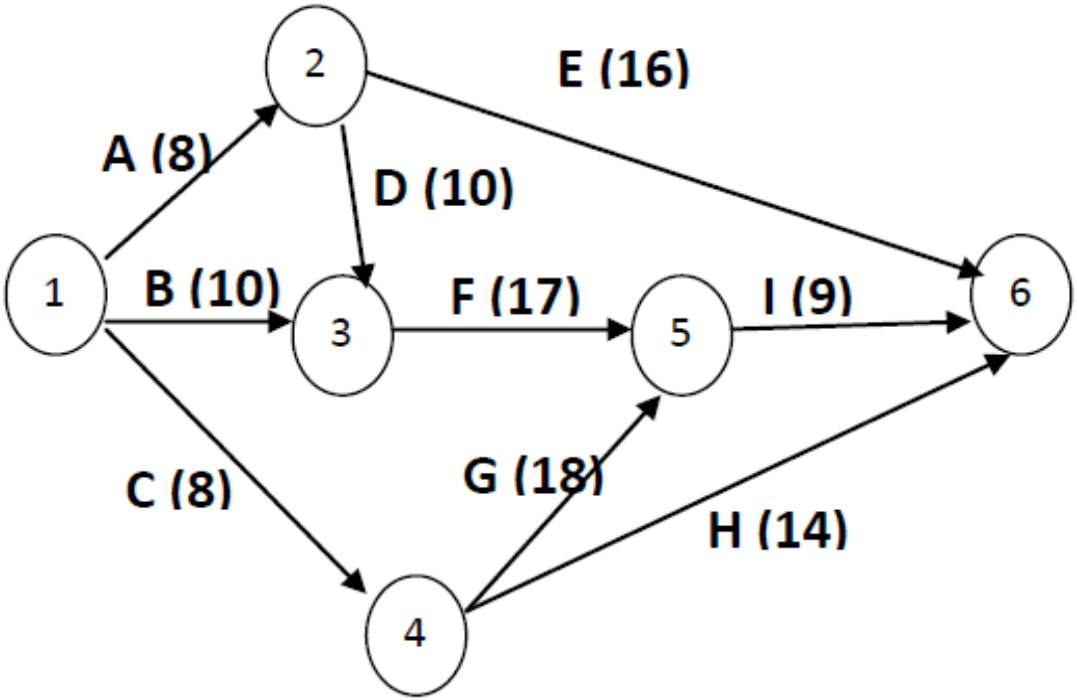
Circles: Event(Starting / Ending Points of Activity)

Edges: Activity

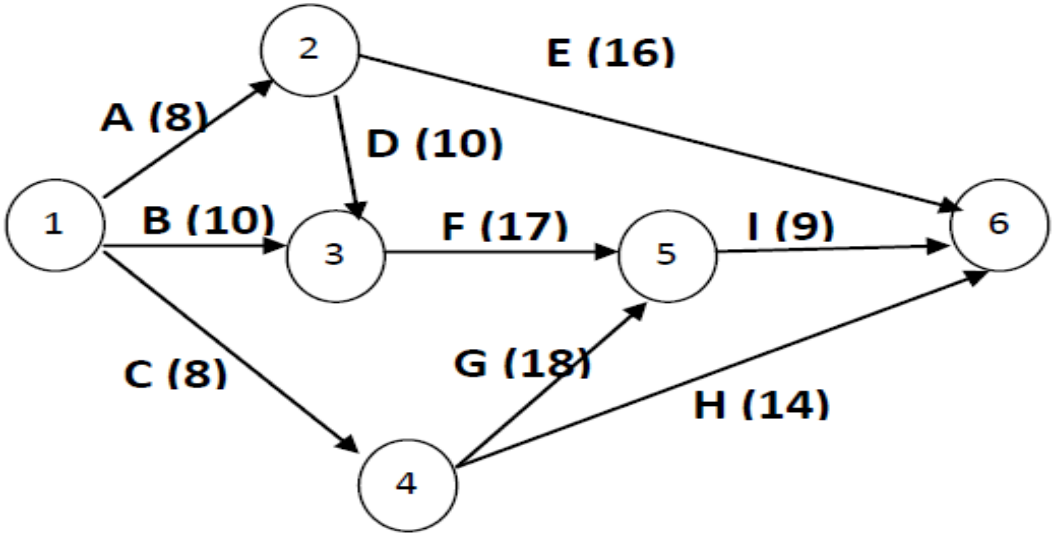


Activity	A	B	C	D	E	F	G	H	I
Duration (Days)	8	10	8	10	16	17	18	14	9

From diagram determine preceding activity

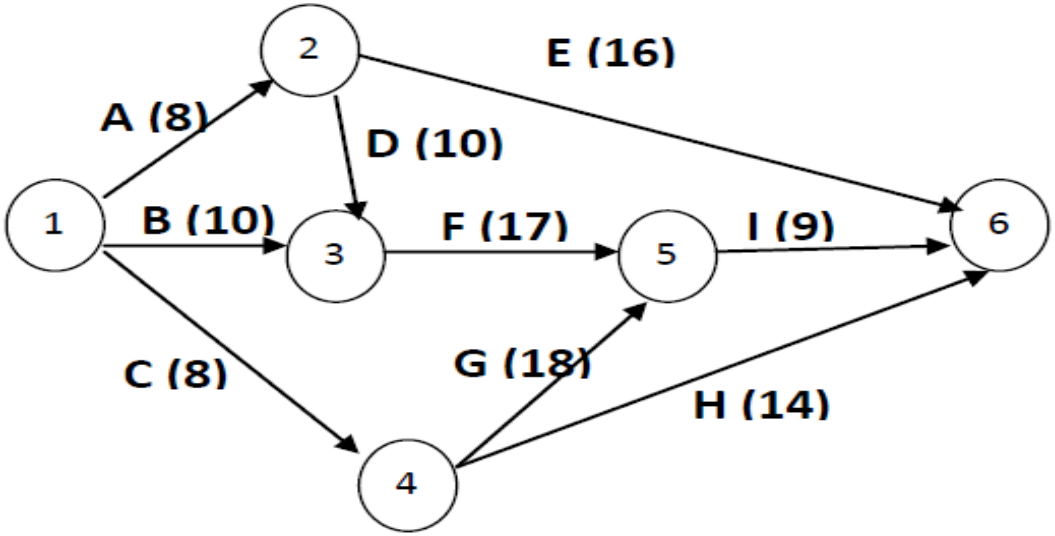


Activity	A	B	C	D	E	F	G	H	I
Duration (Days)	8	10	8	10	16	17	18	14	9
Precedence	-	-	-	A	A	B,D	C	C	F,G



Calculate Earliest Possible Time(Days) for Event

E1,E2,E3,E4,E5,E6



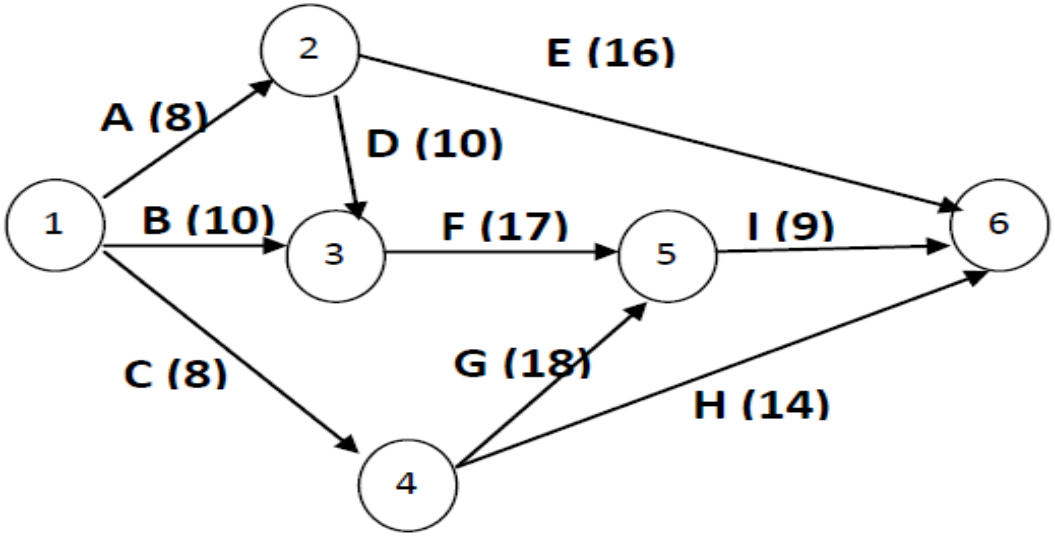
E1=0 , E2=E1+Duration of A=0+8=8

E3 is merged event because you see both of B and D end here. So we can write

E3=E1+Duration of B=0+10=10

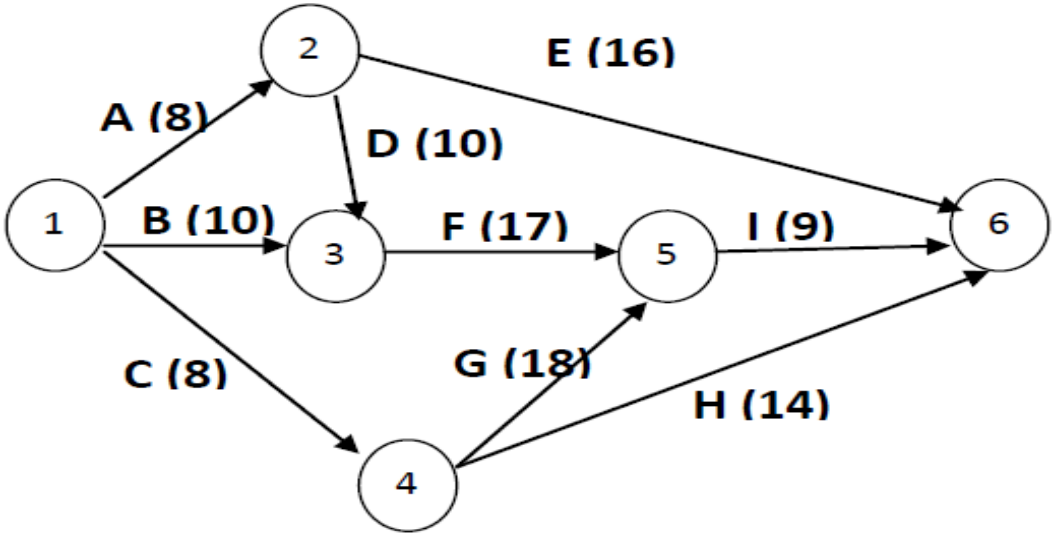
Or

E3=E2+Duration of D=8+10=18(Maximum)



But we select E3=E2+Duration of D=8+10=18
For Merged Event like E3,
E3=max(E1+Duration of B, E2+Duration of D)
=max(0+10,8+10)=18

E4=E1+Duration of C=0+8=8



Other Merged Events(except 3):

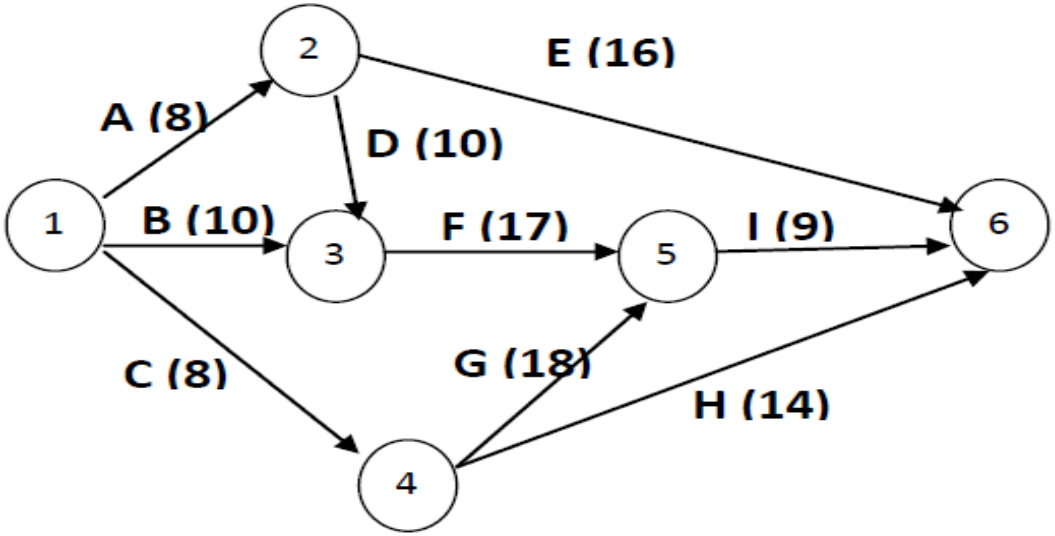
1) Event-5 (Activities G and F end here)

2) Event-6 (Activities E,I,H end here)

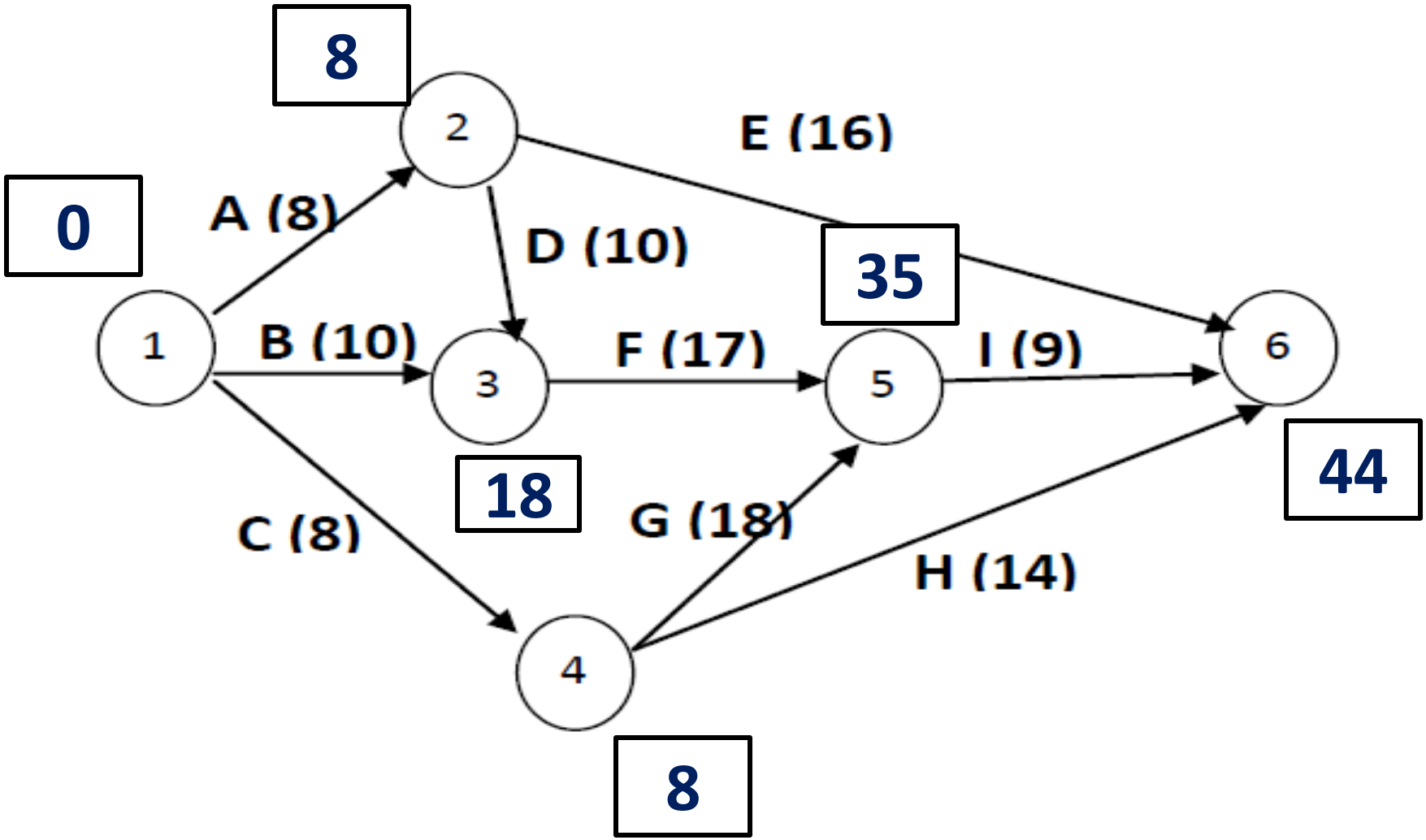
Applying same logic for the calculation of earliest possible time of E3 we find

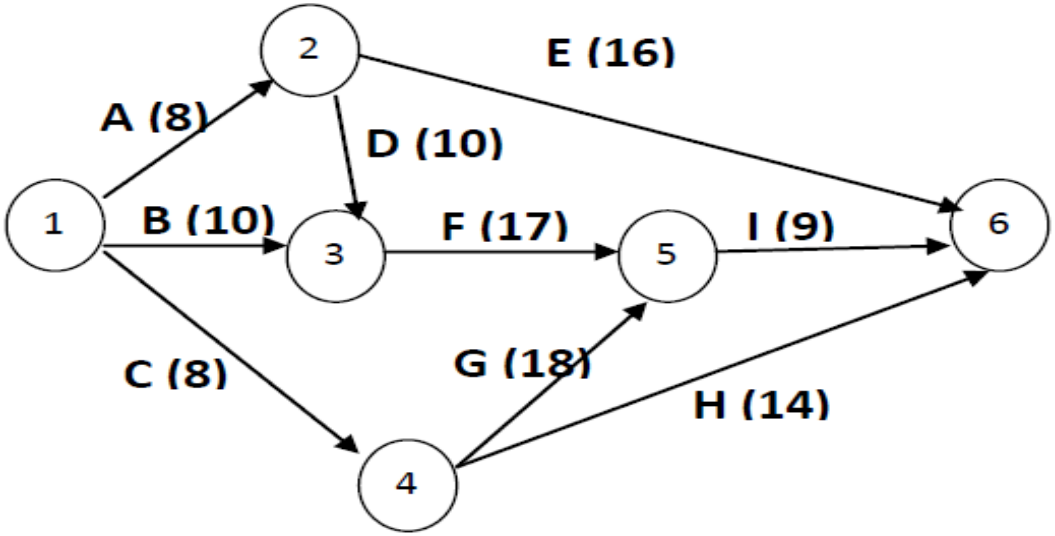
E5=max(E4+Duration of G,E3+Duration of F)

=max(8+18,18+17)=35



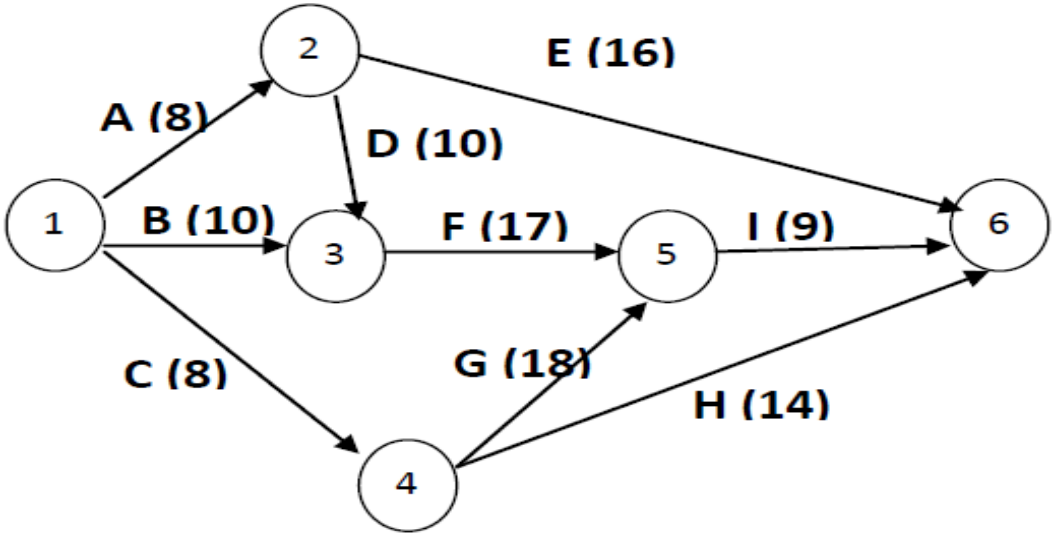
E6=max(E4+Duration of H,E2+Duration of E,E5+Duration of I)
=max(8+14,8+16,35+9)=44


8
2
E (16)
0
A (8)
D (10)
35
1
B (10)
3
F (17)
5
I (9)
6
18
44
C (8)
G (18)
H (14)
4
8



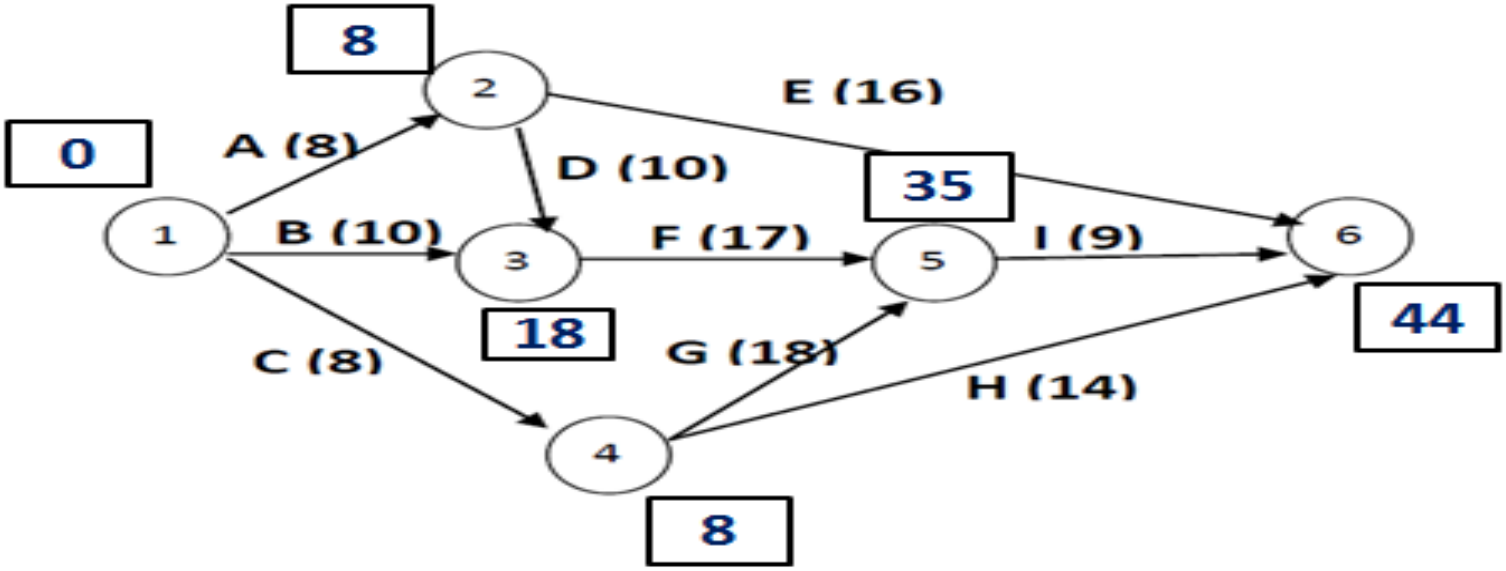
Calculate Latest Possible Time(Days) for Event

L1,L2,L3,L4,L5,L6



Find out burst events:

1) **Event-4: Activities G and H start from here.**
2) **Event-1: Activities A,B and C start from here.**
3) Event-2: Activities D,E start from here



L6=44

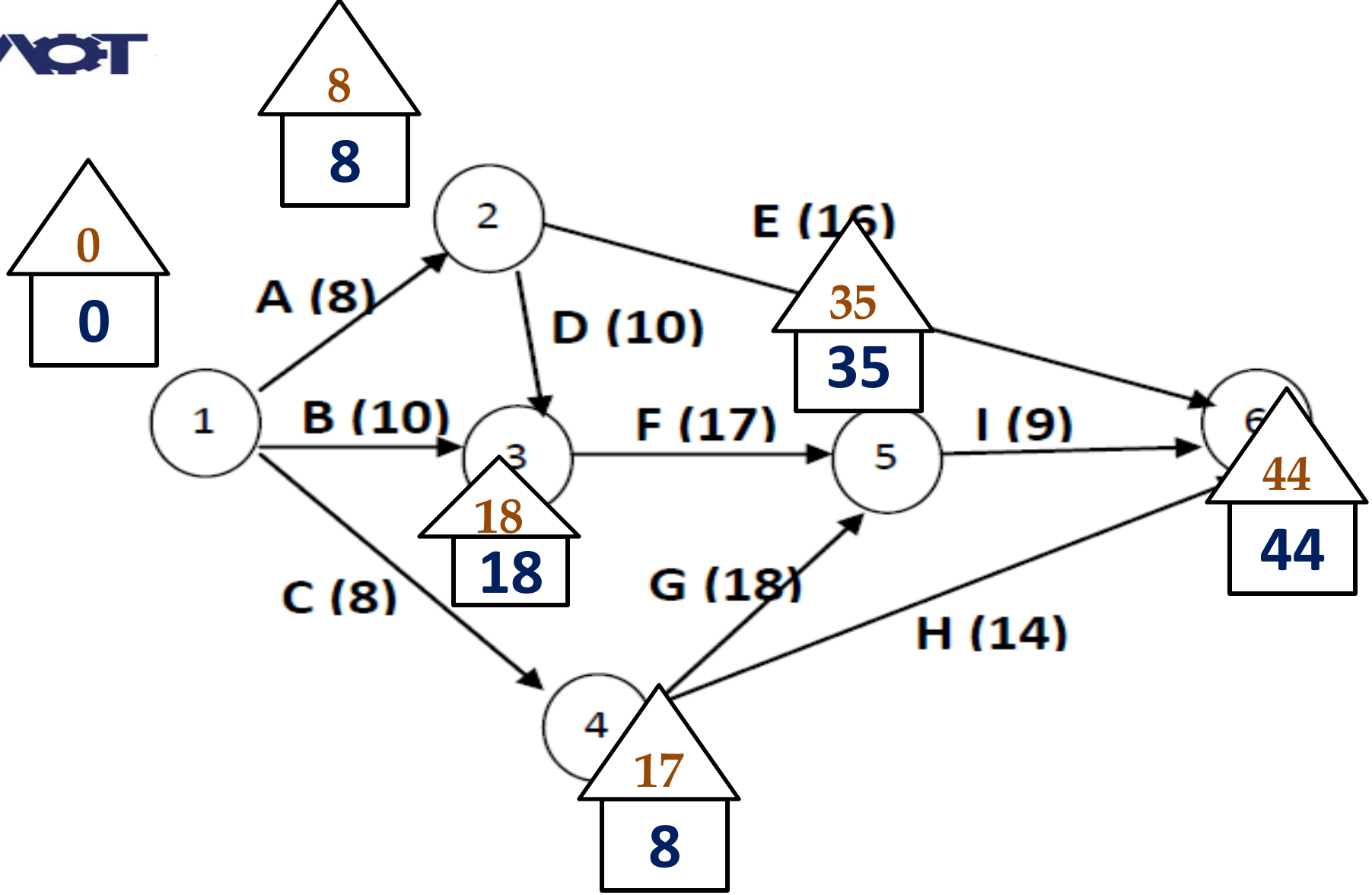
L5=L6 – Duration of I=35-9=44

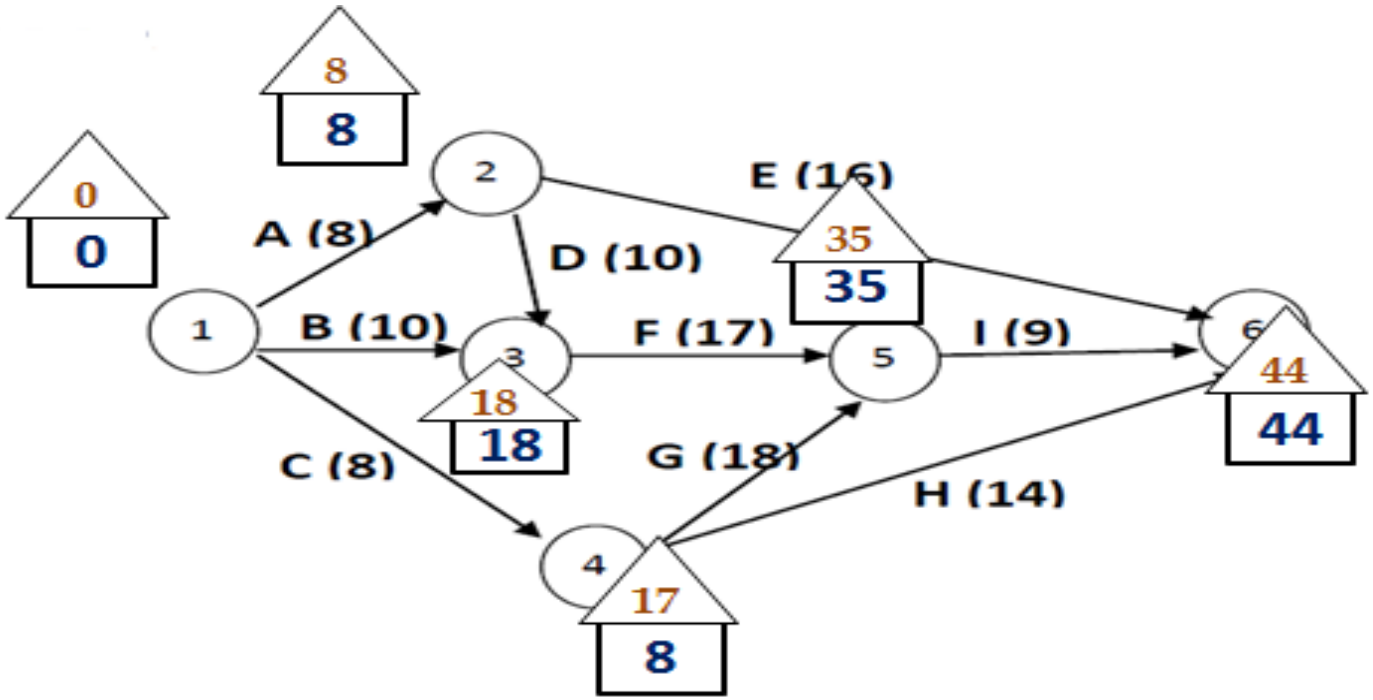
L4=min(L6-Duration of H,L5-Duration of G)
=min(44-14,35-18)=17

L3=L5-Duration of F=35-17=18

L2=min(L6-Duration of E,L3-Duration of D)=min(44-16,18-10)=8

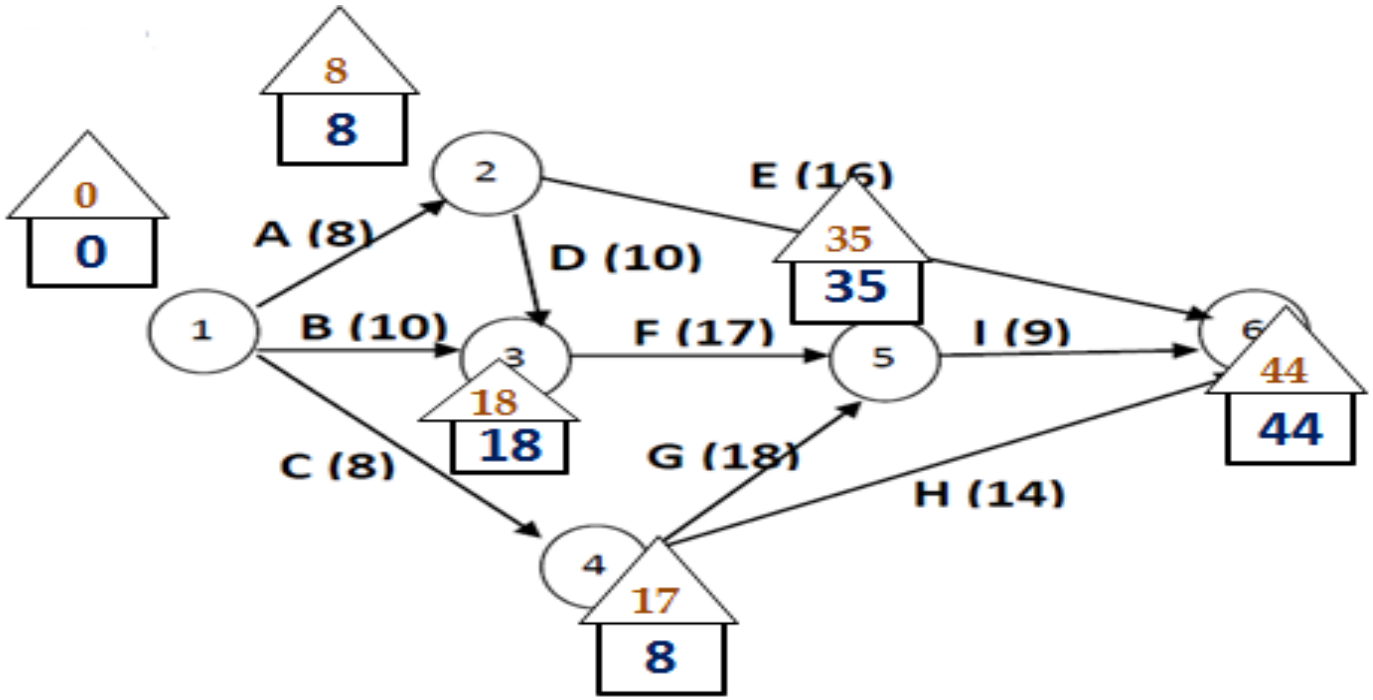
L1=min(L2-Duration of A,L3-Duration of B,L4-Duration of C)=min(8-8,18-10,17-8)=0


8
8
0
0
2
E (16)
A (8)
D (10)
35
35
1
B (10)
F (17)
I (9)
6
3
5
44
44
18
18
C (8)
G (18)
H (14)
4
17
8



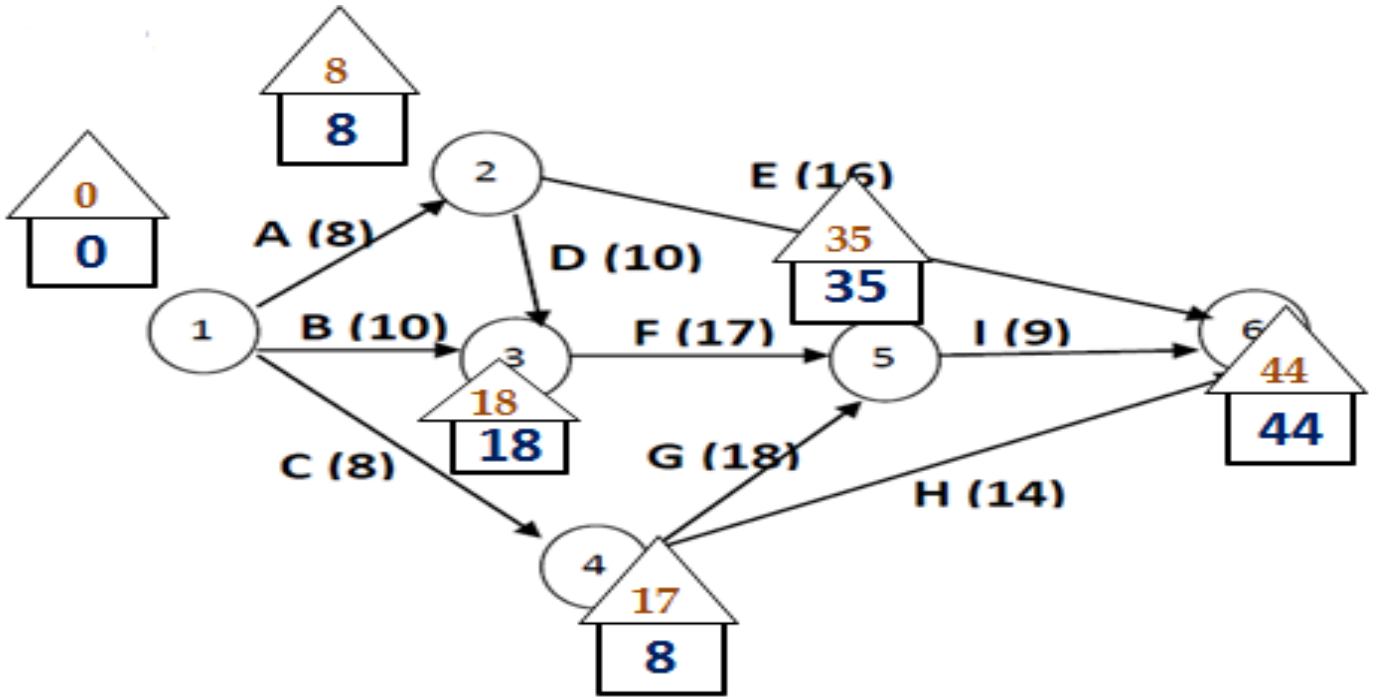
Consider an activity E:
This activity starts at Event-2 and ends at Event-6

Earliest Start Time for Event-2 is 8 days.
Latest Finish Time for Event-6 is 44 days.

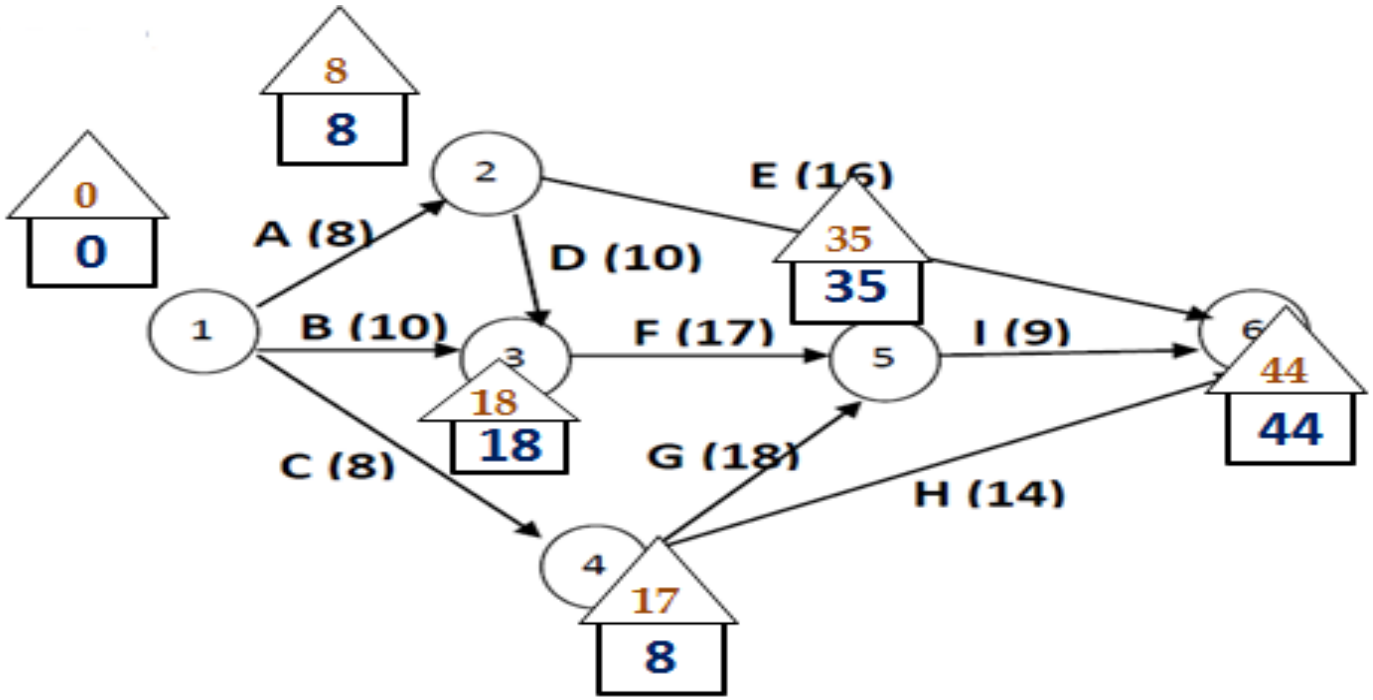


Earliest Start Time for E is Day-8.
Latest Finish Time for E is 44 Day-44.

Earliest Finish Time for E is (8+Duration of E)=Day 24.
Latest Finish Time for E is (44-Duration of E)=Day 28

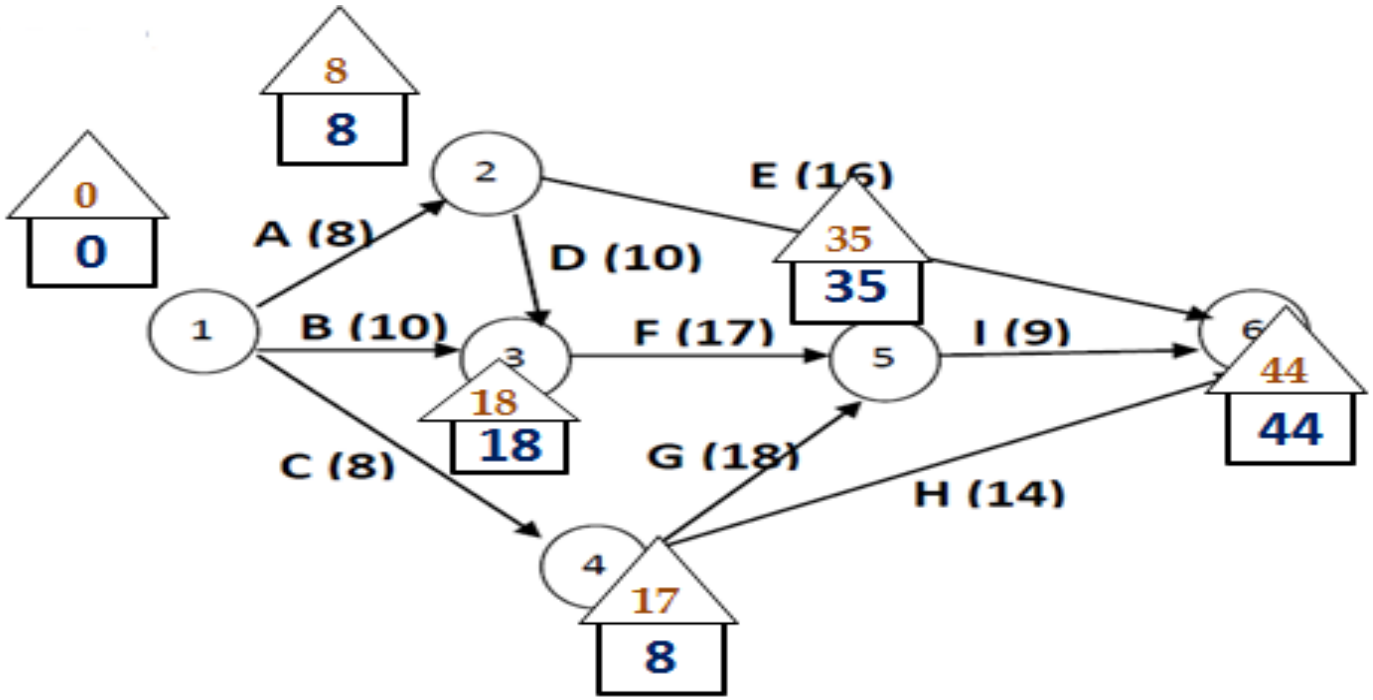


In this way we calculate ES(Earliest Start),EF(Earliest Finish),LS(Latest Start) and LF(Latest Finish) time for all activities.



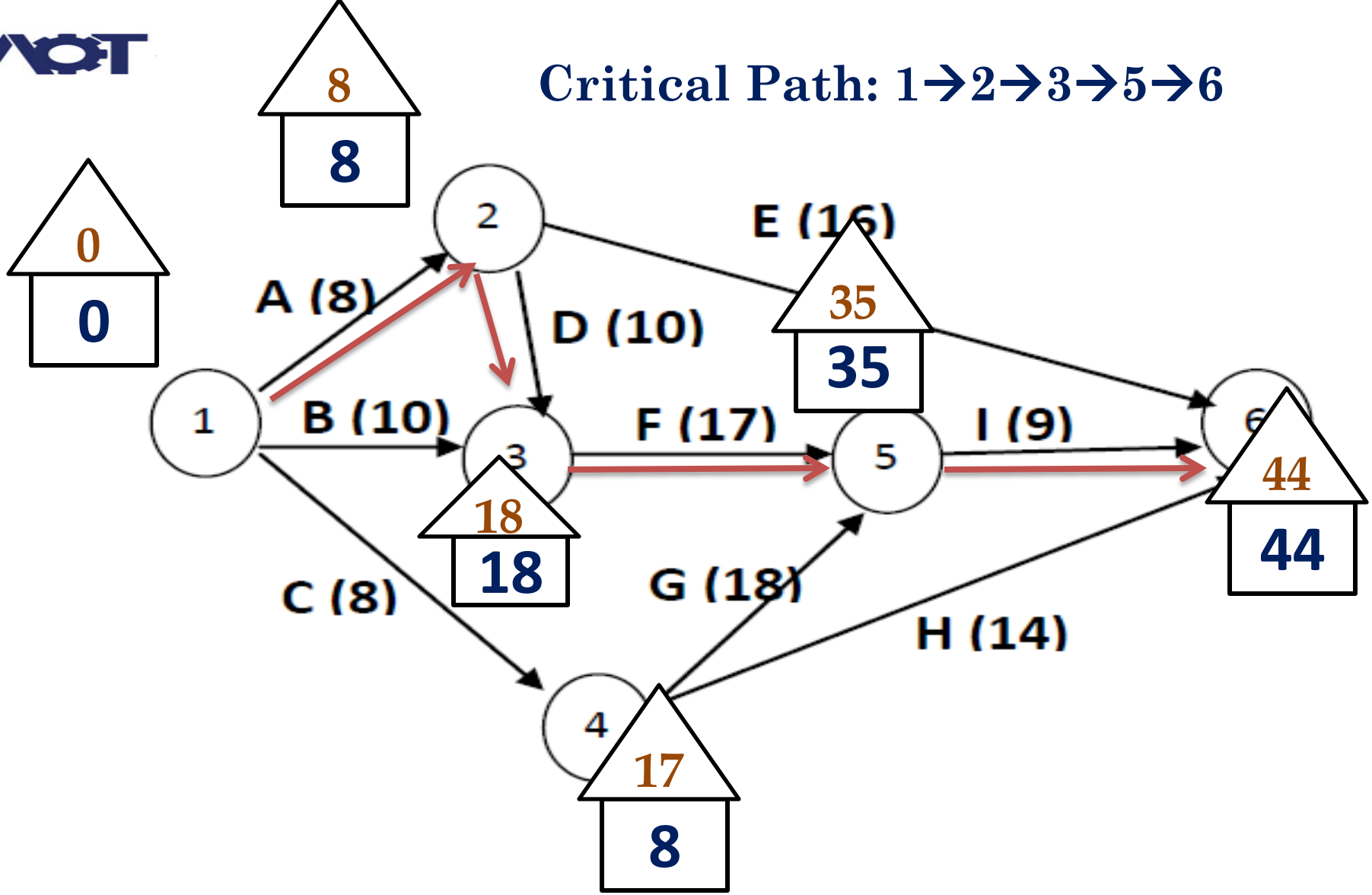
For an activity D,we find
ES=8,EF=ES+ Duration of D=8+10=18
LF=18,LS=LF-Duration of D=18-10=8

Now Total Float(TF) of D=(LS-ES) or (LF-EF)=(8-8) or (8-8)=0

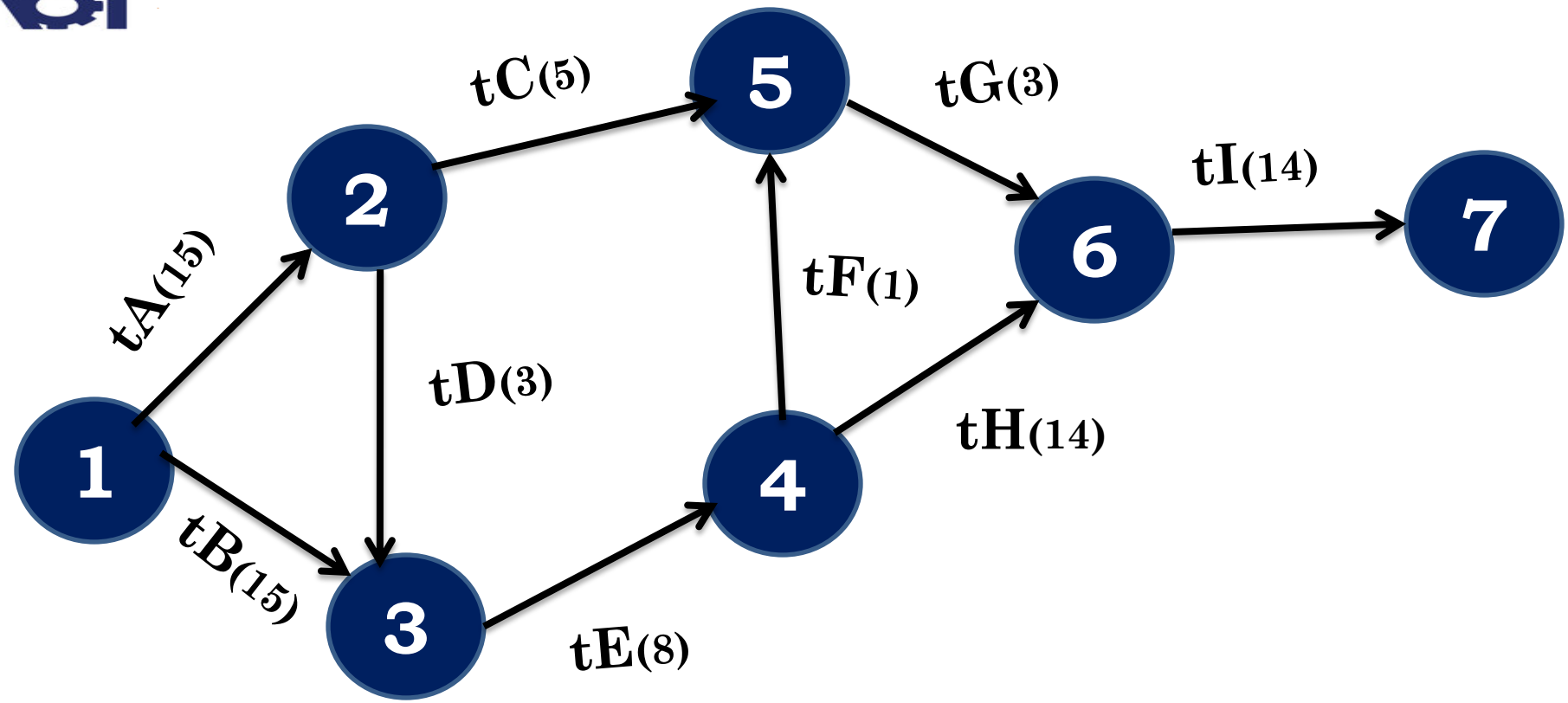


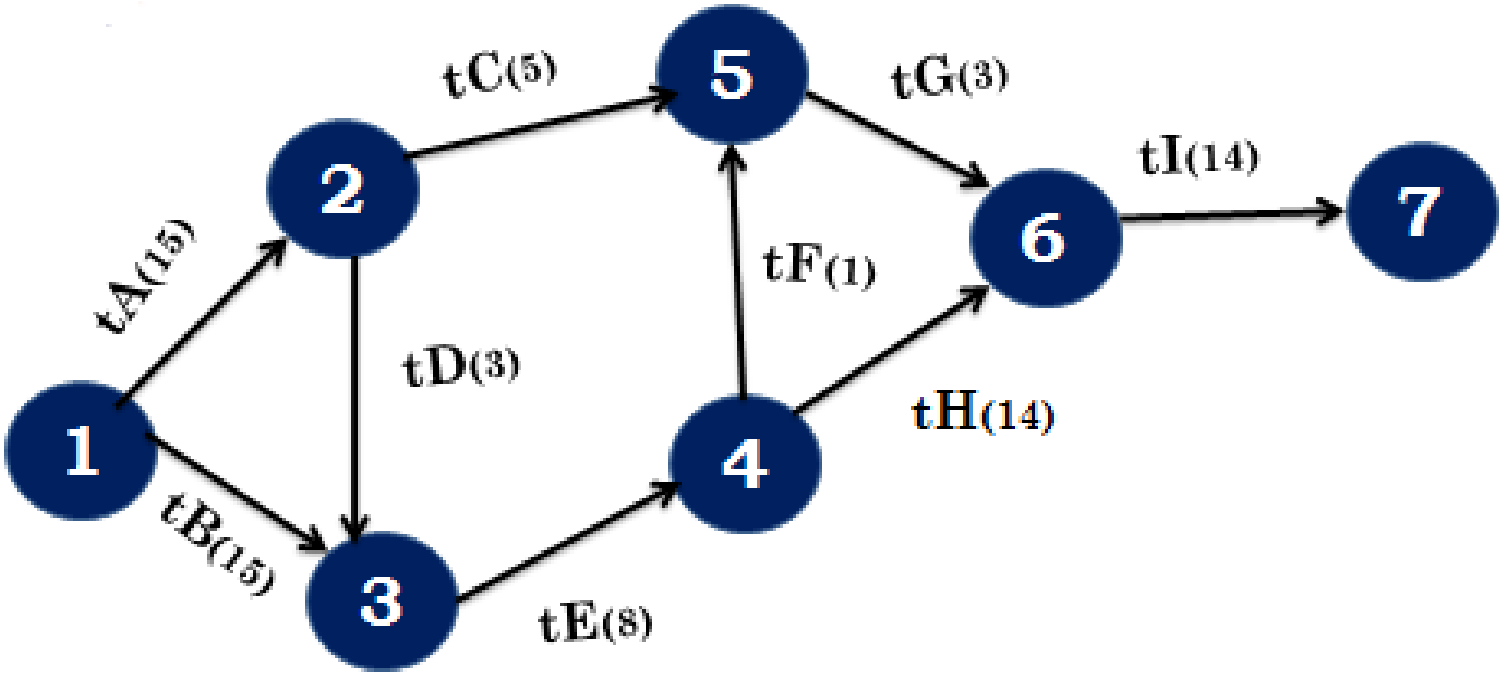
In this way, we find activities which have TF=0
A,D,F,I
Such activities are Critical Activities because each of them has TF=0.
Sequence of such activities forms Critical Path.

Critical Path: 1→2→3→5→6



Total Duration of Project=Duration of A+ Duration of A+ Duration of D + Duration of F + Duration of I=8+10+17+9=44 Days


1
2
3
4
5
6
7
tA(15)
tB(15)
tC(5)
tD(3)
tE(8)
tF(1)
tG(3)
tH(14)
tI(14)


1
2
3
4
5
6
7
tA(15)
tB(15)
tC(5)
tD(3)
tE(8)
tF(1)
tG(3)
tH(14)
tI(14)