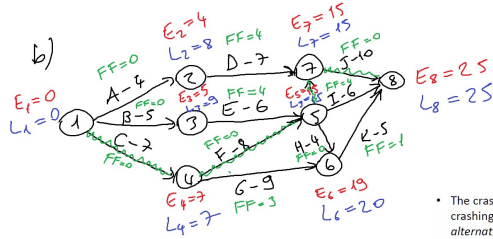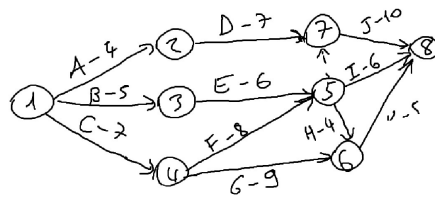**Example1:** Table on below gives the activities of a project, their predecessor(s), durations and costs.

a) Draw the network for the project.
b) Determine the critical path.
c) Construct the Time Schedule. → Exercise
d) Obtain programs with minimum costs. →

Activities	Predecessor(s)	Durations		Costs	
		Normal	Crashed	Normal	Crashed
A	---	4	2	100	160
B	---	5	5	200	200
C	---	7	4	250	310
D	A	7	5	180	210
E	B	6	6	120	120
F	C	8	4	150	250
G	C	9	6	200	320
H	E, F	4	3	160	220
I	E, F	6	5	240	300
J	E, F, D	10	5	150	350
K	H, G	5	5	250	250

UCC
30
—
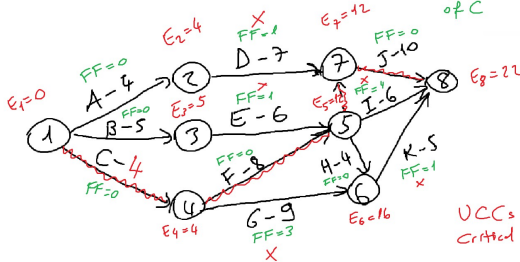20
15
—
25
40
60
60
40
—

a)

b)

Program Summary:
Critical Path: C–F–J
Total Duration: 25
Total Cost: 2000

- The crashing amount is determined by two factors: (1) maximal crashing amount of selected critical activities (2) Free floats of alternative noncritical paths.

Crashing amount of C = min {7–4, 0+4, 0+4} = 3
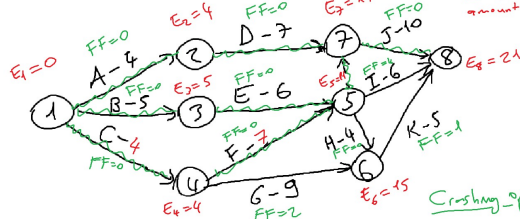FF values of AD, BE

Program Summary
Critical Path: C–F–J
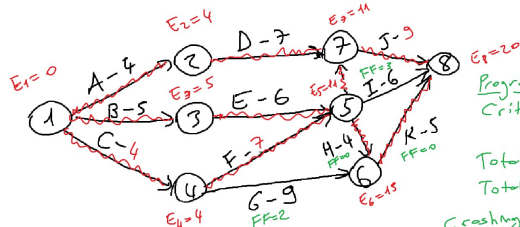Total Duration: 22
Total Cost: 2000 + 3·20 = 2060

UCCs of critical activities: C – F – J 20 25 40 ← should be crashed!

Crashing amount of F = min {8–4, 0+1, 0+1, 3+1} = 1
FF values of AD, BE, GK

Program Summary
Critical Paths: CFJ, BEJ, ADJ
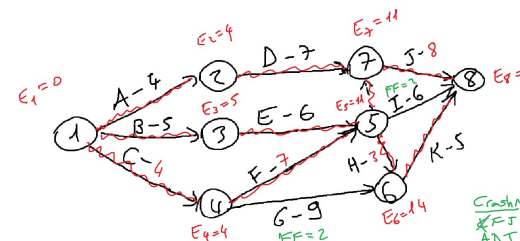Total Duration: 21
Total Cost: 2060 + 1·25 = 2085

Crashing options:
CFJ
BEJ
ADJ

Crashing amount of J = min {10–5, 4, 1, 3} = 1
I, HK, GK

Program Summary:
Critical Paths: CFJ, ADJ, BEJ
CFHK, BEHK, ADHK
Total Duration: 20
Total Cost: 2085 + 1·40 = 2125

Crashing options:
CFJ
ADJ
BEJ
CFHK
BEHK

Crashing amount of J and H simultaneously = min {9–5, 4–3, 2, 3} = 1
J, H, G, I

J and H should be crashed simultaneously

Program Summary:
CP: CFJ, ADJ, BEJ,
CFHK, BEHK
TD: 19
TC: 2125 + 1·40 + 1·60 = 2225

Crashing options:
CFJ
ADJ
BEJ
CFHK
BEHK

Alternative noncritical paths
- Start from the same or backward event with the selected critical activities
- Lead to the critical path(s).

Cost / Duration graph:
2225, 2125, 2085, 2060, 2000
19 20 21 22   25