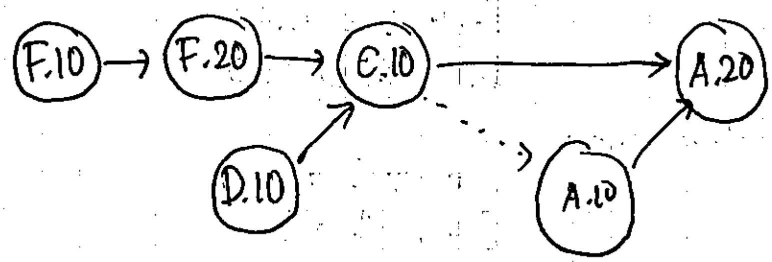
Operation Network



<u>Iteration 1</u> : $F = \{A.20\}$

4.1) Possible paths :
(F.10) → (F.20) → (C.10) → (A.20)
  2   3   1   2
(D.10) → (C.10) → (A.20)
  3   1   2
(A.10) → (A.20)
  5   2

4.2) Compute length : $2+3+1+2 = 8$
$3+1+2 = 6$
$5+2 = 7$

4.3) Choose the 2nd because it has the shortest length. (critical path)

4.4) Set Completion time (C_c) to :
(i) starting time of operation $d^{(c)}$ from the partial schedule, or → constraint 2.2
⇒ (ii) due date D_e if operation c is the last operation of the final assembly P_e → constraint 2.4

A.20 is the final product, so we proceed with (ii). Set $C_c = 14 = D_e$

4.5) 4.5.1) $S_c = 12$ (latest starting time)
4.5.2) If $S_c = C_c - t_c$, (S_c, C_c) is ideal.
Else, select $\max\{S_c\}$ such that $S_c < (C_c - t_c)$
and the machine is available during $(S_c, S_c + t_c)$
↳ revise $C_c = S_c + t_c$

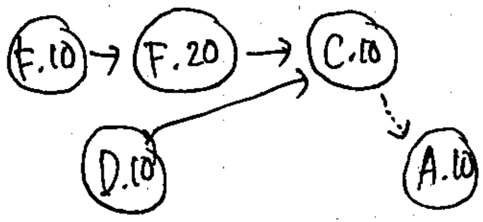
4.6) Schedule operation J_c in the corresponding machine

4.7) Remove Operation J_c from the operation network

4.8) Add all operations J_i such that $d^{(i)} = J_c$, to the feasible list.
↳ "child" operations

Repeat Step 4 for the new $F = \{C.10, A.10\}$

Iteration 2: $F = \{C.10, A.10\}$



4.1) Paths: A.10
F.10, F.20, C.10
D.10, C.10

4.2) Length: 5
$2+3+1 = 6$
$3+1 = 4$

4.3) Critical path: D10 – C.10 (4)

4.4) Set C_c of current job as S_c of previous/parent job, A.20. (Since C.10 is not final process)
$C_c = 12$ for C.10, since $S_c = 12$ for A.20

4.5) $S_c(C.10) = 11$

4.6) Schedule C.10 at WC #1.