COMSOAL

"COmputer Method for Sequencing Operations for Assembly Lines"

This algorithm randomly generates a large number (e.g., 1000) of feasible solutions, and selects the one using the fewest stations.

As in the Kilbridge & Wester and the RPWM algorithms, a solution is constructed by assigning tasks to stations, starting with the first station.

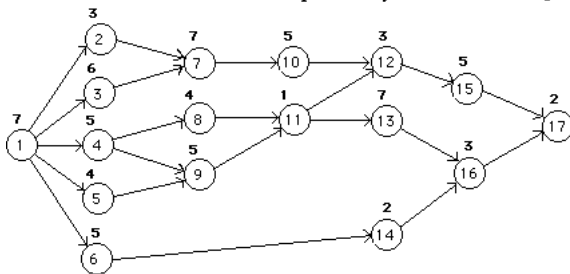The next task to be assigned is selected at random from those which are candidates i.e.,

- o performance time ≤ idle time remaining
- o all predecessors assigned already
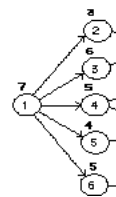
Example: Cycle time = 15

Trial 1
Station 1

Randomly select 1 from candidate list: 1

(task 1 is the only task which has no predecessor)

Randomly select 3 from candidate list: 2 3 4 5 6

tasks 2, 3, 4, 5, & 6 are the only tasks whose predecessors are already assigned, and whose times are less than the remaining idle time at station 1
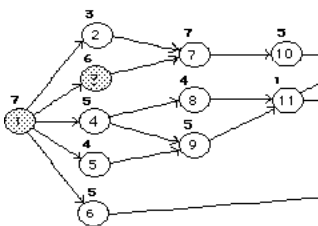
Station 2

Randomly select 2 from candidate list: 2 4 5 6

Randomly select 7 from candidate list: 4 5 6 7
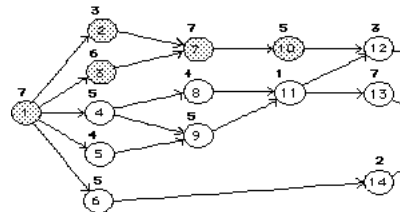
Randomly select 10 from candidate list: 4 5 6 10

Station 3

Randomly select 6 from candidate list: 4 5 6
Randomly select 5 from candidate list: 4 5 14
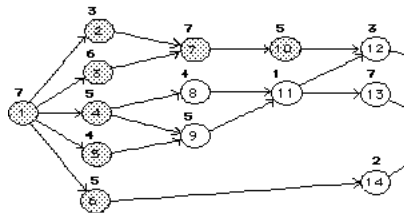Randomly select 4 from candidate list: 4 14

Station 4

Randomly select 8 from candidate list: 8 9 14
Randomly select 9 from candidate list: 9 14
Randomly select 11 from candidate list: 11 14
Randomly select 12 from candidate list: 12 14
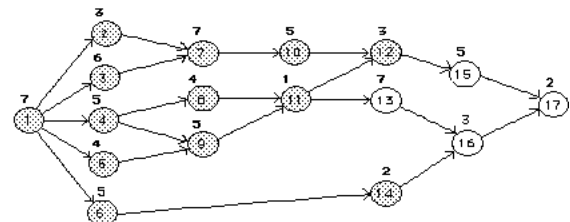Randomly select 14 from candidate list: 14

Station 5

Randomly select 13 from candidate list: 13 15
Randomly select 16 from candidate list: 15 16
Randomly select 15 from candidate list: 15

Station 6

Randomly select 17 from candidate list: 17

Solution

Number of Stations: 6

Station	Idle time	Tasks
1	2	1 3
2	0	2 7 10
3	1	4 5 6
4	0	8 9 11 12 14
5	0	13 15 16
6	13	17

Balance delay: 0.177778

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