

Lecture 11

- **CP|MISF (Critical Path|Most Immediate Successors First) scheduling algorithm**

How does the CP|MISF algorithm work?

- Compute the level for each job i , which represents the length of the longest path (in terms of processing time) from the node n_i to the end node.
- Sort jobs so the highest-level ones are processed first.
- Start assigning jobs to the machines as they become free.
- Only schedule a job when all its parents are done (respect dependencies).

Note: The difference between the CP|MISF algorithm and the HLFET algorithm is that, if two or more jobs have the same level, the CP|MISF algorithm processes the job with the most successors first.

Example:

Suppose you have the following jobs:

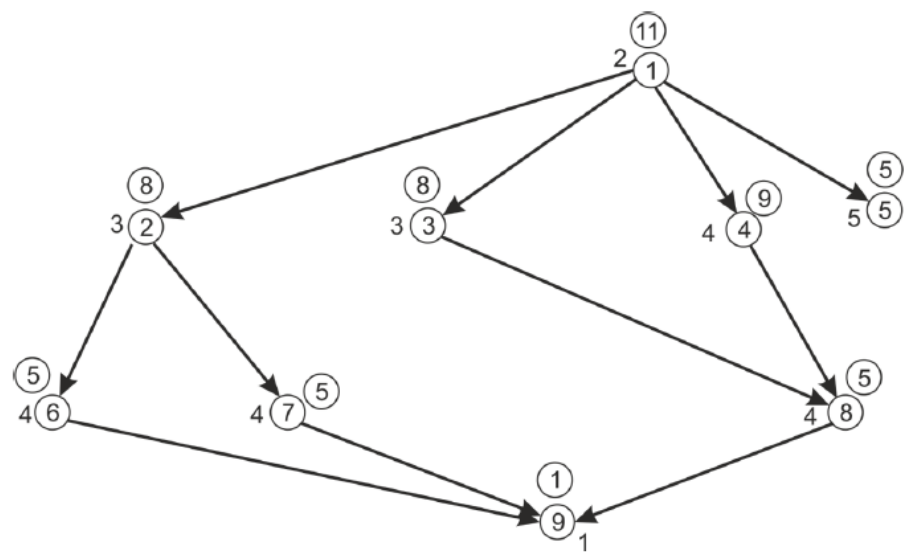
J_i	p_i
J_1	2
J_2	3
J_3	3
J_4	4
J_5	5
J_6	4
J_7	4
J_8	4
J_9	1

The relations among the jobs are defined in the following set:

$$\prec = \{(J_1, J_2), (J_1, J_3), (J_1, J_4), (J_1, J_5), (J_2, J_6), (J_2, J_7), (J_3, J_8), (J_4, J_8), (J_6, J_9), (J_7, J_9), (J_8, J_9)\}$$

Find the optimal scheduling for the problem $9|3||C_{max}$ above using the CP|MISF algorithm.

Solution:



M_1	J_1		J_4				J_8				J_9	idle			
M_2	idle	J_2				J_6					J_5				
M_3	idle	J_3				J_7					idle				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Thus the completion time will be $C_{\max} = 14$