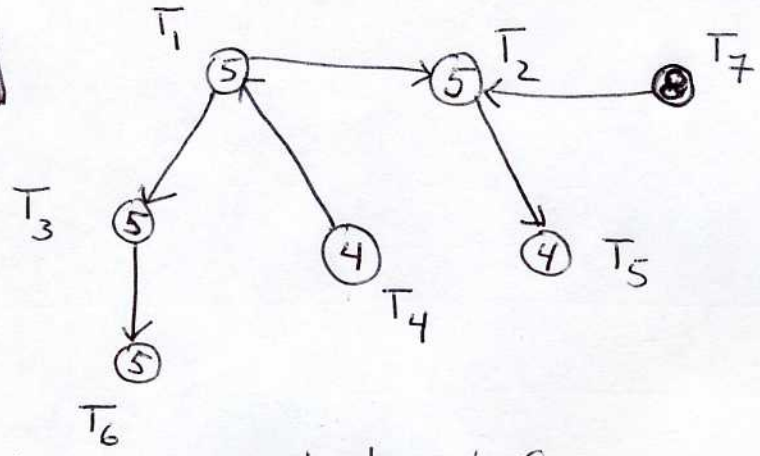
Ex



order requirement digraph for a job. Time in minutes.

a) what is the quickest time this job can be completed?

b) Use critical path scheduling to create a priority list for this job.

c) use the priority list from b) to schedule the job on 2 processors using the list processing algorithm. How long will the job take on two processors? Could the job be sped up on 3 processors?

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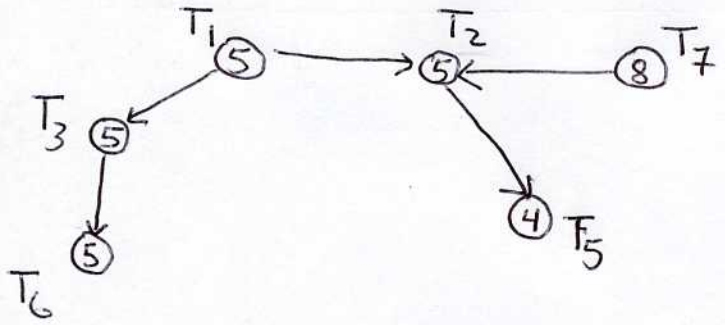
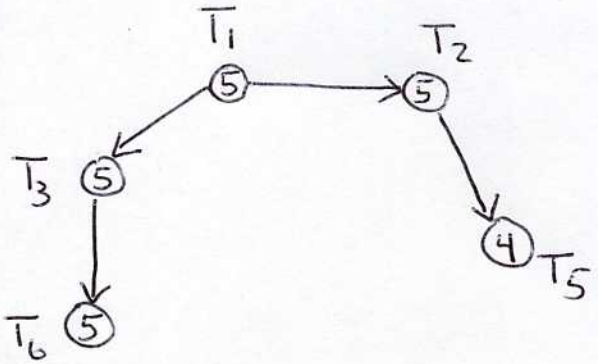
a) The critical path is $T_4 T_1 T_3 T_6$, with length 19. The quickest time this job could be completed is 19 minutes.

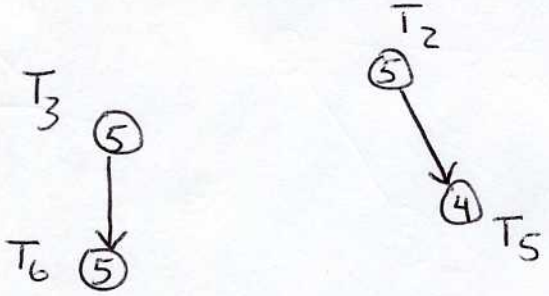
b) The task that starts the critical path goes in priority list. Priority list is T_4. Remove vertex T_4 to create a new digraph.



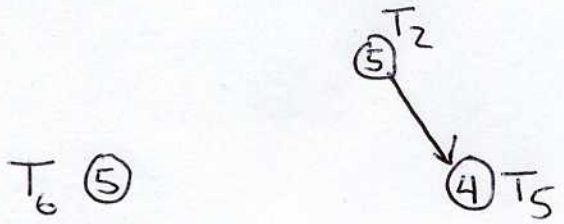
$T_7 T_2 T_5$ is critical path, length 17.
Priority list is $T_4 T_7$.



$T_1 T_3 T_6$ is critical path, length 15.
Priority list is $T_4 T_7 T_1$



T_3T_6 is critical path, length 10.
Priority list is $T_4T_7T_1T_3$



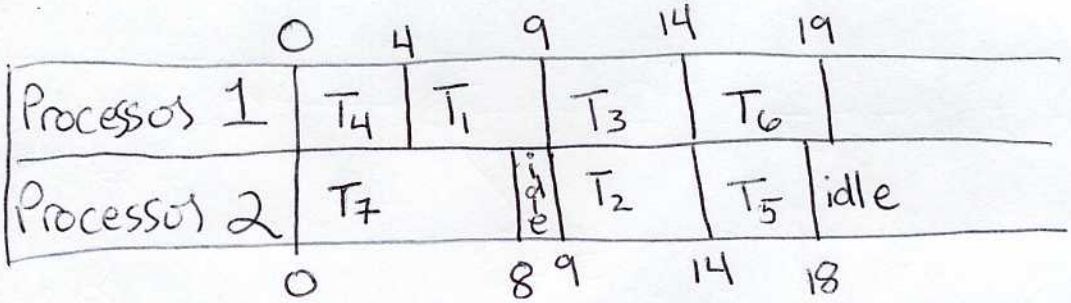
T_2T_5 is critical path, length 9.
Priority list is $T_4T_7T_1T_3T_2$

T_6 is critical path, length 5.
Priority list is $T_4T_7T_1T_3T_2T_6$

Add final vertex, T_5, to end of priority list:

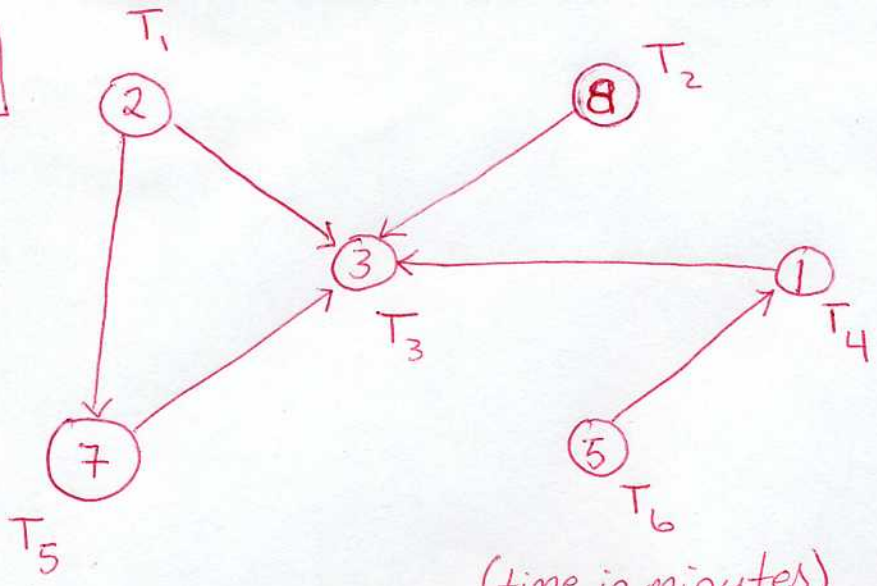
$$\boxed{T_4T_7T_1T_3T_2T_6T_5}$$

c) ~~$T_4T_7T_1T_3T_2T_6T_5$~~



The job will take 19 minutes. Since this is the length of the critical path, adding more processors will not speed up the job.

Ex



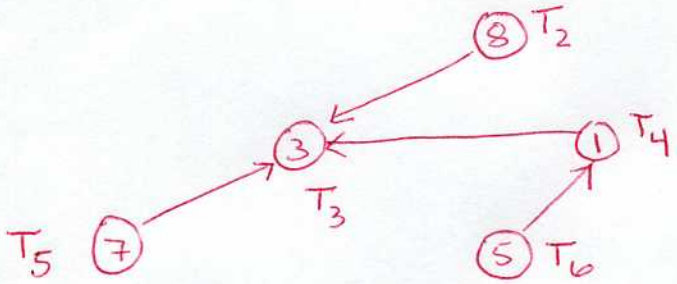
(time in minutes)

a) What is the quickest time the job represented by the order requirement digraph could be completed?

The length of the critical path ($T_1 T_5 T_3$) is 12, so this is the fastest the job could be completed.

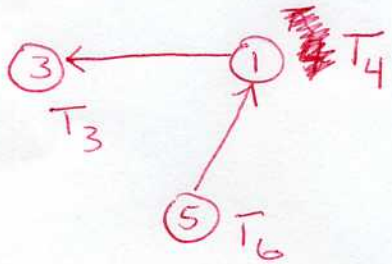
b) Use critical path scheduling to create a priority list for the above order requirement digraph.

Critical path is $T_1 T_5 T_3$, length 12. Put T_1 in the priority list, and remove T_1 from digraph:



$T_2 T_3$ is critical path, length 11.
Priority list is $T_1 T_2$

$T_5 T_3$ is critical path, length 10.
Priority list is $T_1 T_2 T_5$

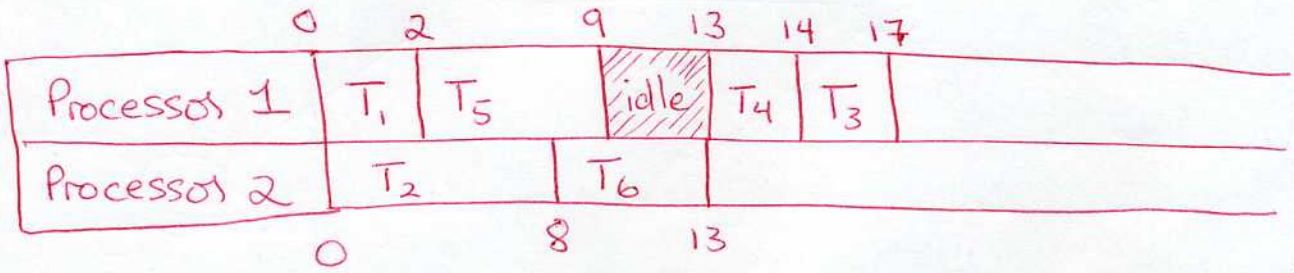


Only one path left. So add T_6, T_4, then T_3 to priority list.

Priority list from critical path schedule is $T_1 T_2 T_5 T_6 T_4 T_3$.

c) use the priority list from part b) to schedule the job on 2 processors. How long will the job take? Could the job be sped up on 3 processors?

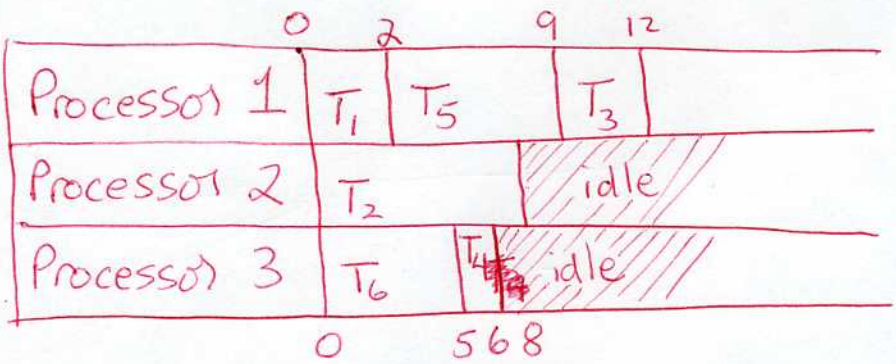
T_1 T_2 T_5 T_6 T_4 T_3



The job would take 17 minutes. Since this is longer than the length of the critical path, it would be sped up on 3 processors.

d) schedule the job on 3 processors.

T_1 T_2 T_5 T_6 T_4 T_3



The job would take 12 minutes.