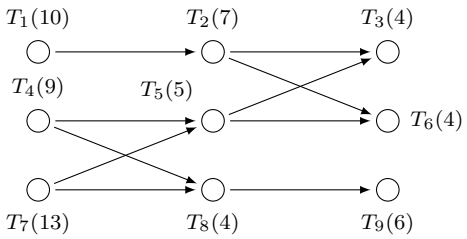
Worksheet 16 (Scheduling 2): Critical Path Algorithm

Group Names: _____

1. Consider the following digraph:



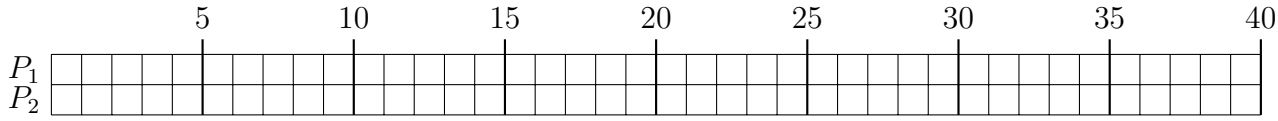
time	ready	done

(a) Use the backflow algorithm to label each vertex in the digraph.

(b) Construct a priority list using the Critical Path algorithm.

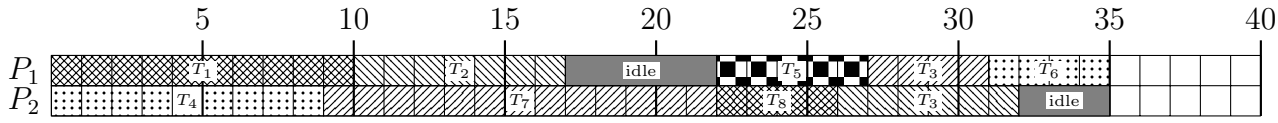
_____

(c) Construct a schedule that corresponds to the priority list you just found.

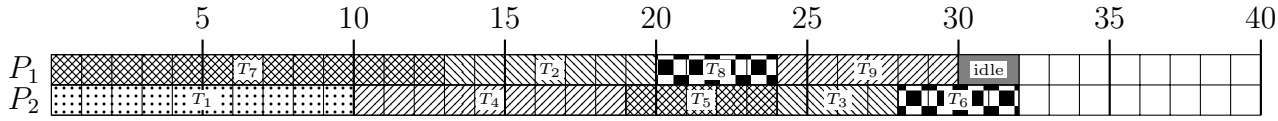


(d) The schedules that you found on the previous worksheet are shown below:

Priority List $T_1, T_2, T_3, T_4, T_5, T_6, T_7, T_8, T_9$



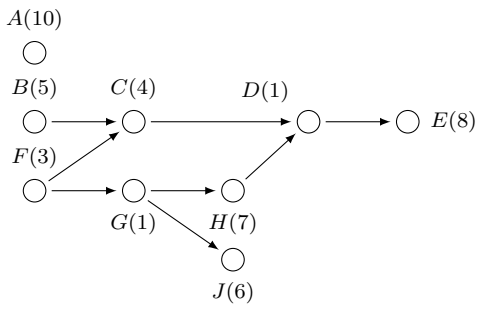
Priority list from the Decreasing Time Algorithm: $T_7, T_1, T_4, T_2, T_9, T_5, T_3, T_6, T_8$



(e) How can you identify the overall critical path given the labels you put on the digraph from the backflow algorithm?

(f) How does the schedule you found using the critical path priority list compare to the other schedules you found?

2. Typically the Critical Path algorithm produces a very good schedule, but it may or may not be optimal. Consider the following digraph:



(a) Label the graph using the backflow algorithm.

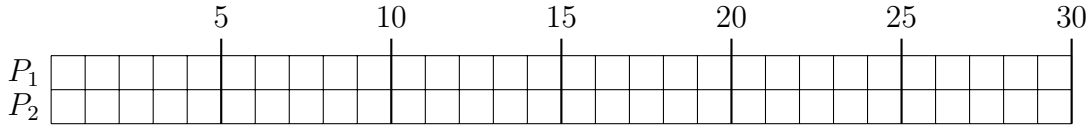
(b) Construct the priority list corresponding to the critical path algorithm.

_____

(c) Construct the priority list corresponding to the decreasing time algorithm.

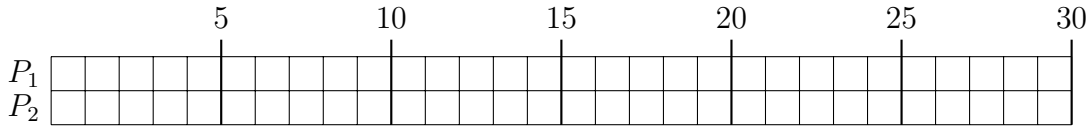
_____

(d) Construct the schedule using the critical path priority list.



time	ready	done

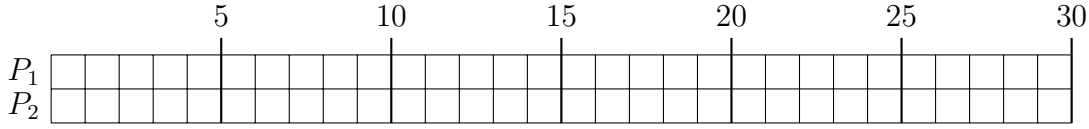
(e) Construct the schedule using the decreasing time priority list.



time	ready	done

(f) Construct a schedule using the priority list

$$F, B, G, C, H, J, D, A, E$$



time	ready	done

(g) How long would it take one processor to complete all the tasks? _____

(h) Explain why the schedule you constructed in (f) must be an optimal schedule for two processors.