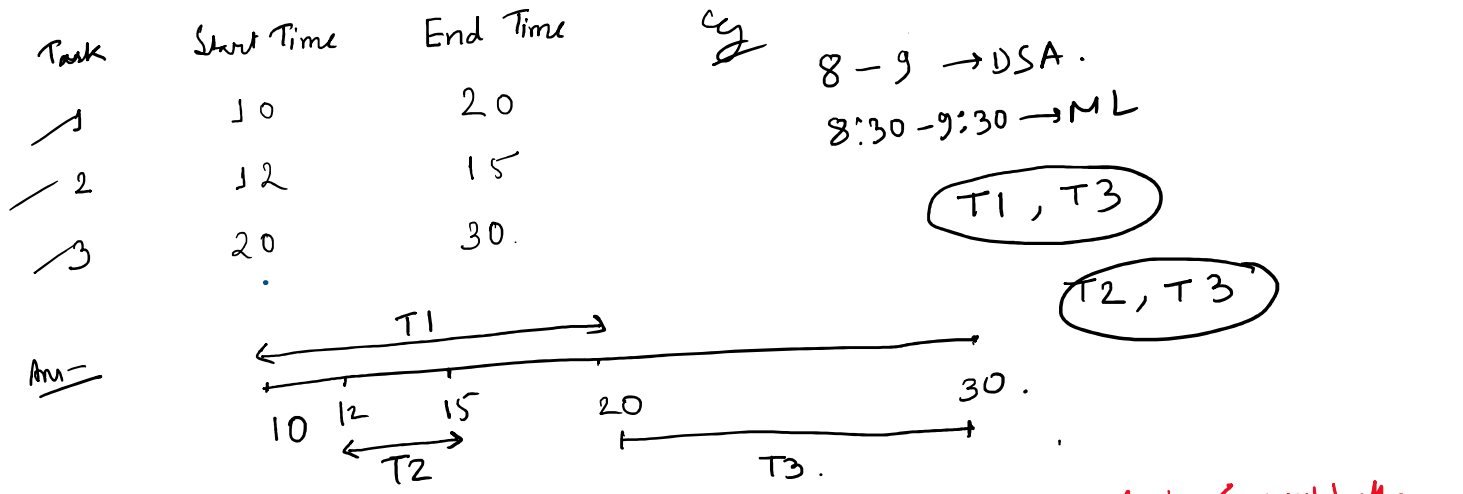
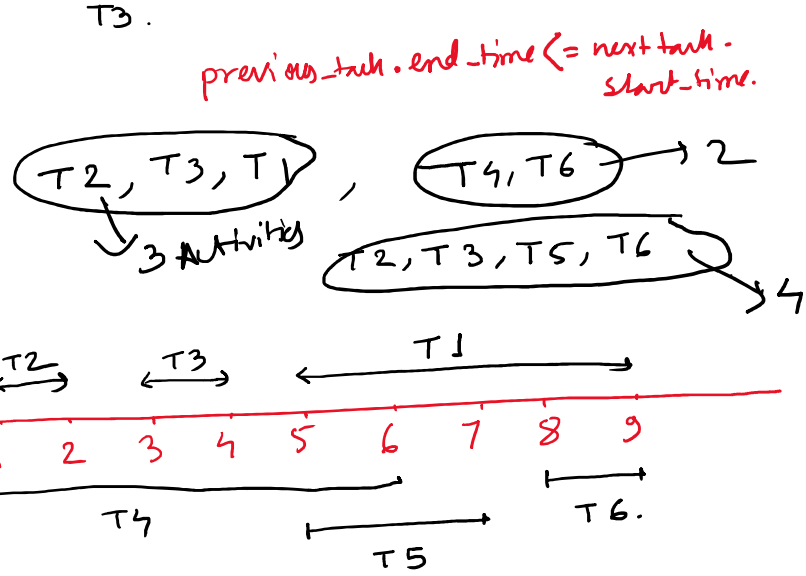
N

12 March 2025 15:25

Activity selection problem / maximum disjoint interval

You are given **n** activities with their start and finish times. Select the maximum number of activities that can be performed by a single person, assuming that a person can only work on a single activity at a time.





Start Time (s)	Finish Time (f)	Task Name
5	9	T1
1	2	T2
3	4	T3
0	6	T4
5	7	T5
8	9	T6

Algorithm:

1. Sort all activities based on their finish time.
2. Choosing the first activity from the sorted list.
3. Select the next activity from the sorted list only if its `start` time is greater than or equal to the `finish` time of the previously selected activity.
4. Repeat `Step 3` for all the remaining activities in the sorted list.

Question: Maximum tasks that can be performed without any overlapping

Start Time (s)	Finish Time (f)	Task Name
5	9	T1
1	2	T2
3	4	T3

0	6	T4
5	7	T5
8	9	T6

Answer:

1. Sort all activities based on their finish time.

>

Start Time (s)	Finish Time (f)	Task Name
		T
1	2	2 ✓
	4.	T
3		3 ✓
0	6	T ✗
5.	7.	4
		5 ✓
8	9.	T
5.	9	6. ✓
		T
		1 0

T2 → T3 → T5 → T6

4 activities.

prev task. end time <= next task. start time.

TC → Nlgn.