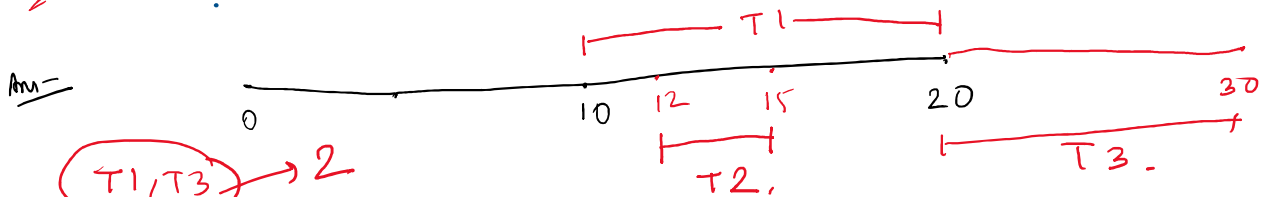


Activity selection problem / maximum disjoint interval

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.

Task	Start Time	End Time
1	10	20
2	12	15
3	20	30

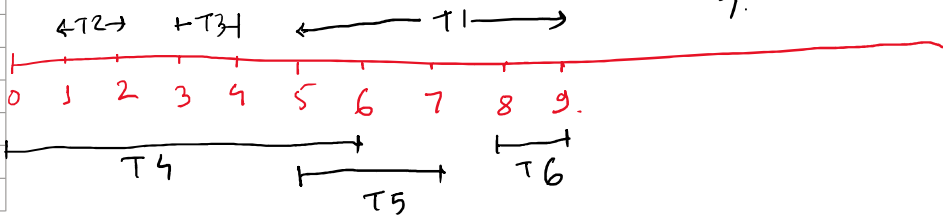
8-9 → DSA.
8:30-9:30 - ML.



$T1, T3 \rightarrow 2$
 $T2, T3 \rightarrow 2$

$T2, T3, T1$
 $T4, T6$
 $T2, T3, T5, T6$

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



previous-task-end time $<=$ next-task-start time.

Algorithm -

Algorithm:

- Sort all activities based on their finish time.
- Choosing the first activity from the sorted list.
- 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.
- 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:

- Sort all activities based on their finish time.

$T2, T3, T1 \rightarrow 2 \leq$

Answer:

- Sort all activities based on their finish time.

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

TC $\rightarrow n \log n$

