

# Simulation Part

Consider the tasks T1(3, 0.5), T2(4, 1.5, 3), T3(7, 1.0, 5) and the EDF scheduler. A sporadic job arrives at t=50 having the execution time of 10 and a relative deadline of 30.

What is the minimum/maximum/average response time of all tasks?

Task #	Min response	Max response	Average response
1	0.5	1.5	0.294
2	1.5	2	0.245
3	1.967	3.5	0.921
4	29	29	29

Is any task missing the deadline? Which task? Where?

None.

Is the sporadic job meeting its deadline?

Yes, from the scheduled result, the sporadic job finishes at time 79ms, before the deadline time of 80ms. This is seen below.

General	TASK T1	TASK T2	TASK T3	TASK T4				
Activation	Start	End	Deadline	Comp. time	Resp. time	CPI	Preemptions	Migrations
50.0000	50.0000	79.0000	80.0000	10.0000	29.0000		10	0

What is the response time for the sporadic job?

29ms

Consider the tasks T1(3, 0.5), T2(4, 1.5, 3), T3(7, 1.0, 5) and the RM scheduler. A sporadic job arrives at  $t=50$  having the execution time of 10 and a relative deadline of 30.

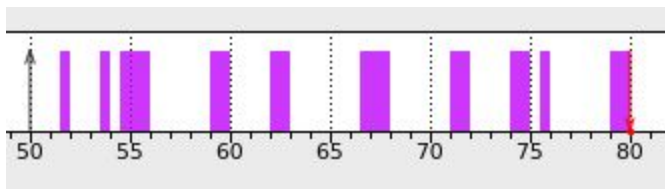
What is the minimum/maximum/average response time of all tasks?

Task #	Min response	Max response	Average response
1	0.5	0.5	0.5
2	1.5	2	1.84
3	1	3	1.9
4	NA	NA	NA

Is any task missing the deadline? Which task? Where?

No periodic task is missing deadline. Task 4 (sporadic task) is missing its deadline at time 80ms where it completed 9.5ms out of its designated 30ms of execution time. This can be seen below.

General	TASK T1	TASK T2	TASK T3	TASK T4					
Activation	Start	End	Deadline	Comp. time	Resp. time	CPI	Preemptions	Migrations	
50.0000	50.0000	80.0000	80.0000	9.5000	30.0000		9	0	



Is the sporadic job meeting its deadline?

No, it is missing its deadline as seen above.

What is the response time for the sporadic job?

N/A. It does not finish within the allowed time.

Which scheduler is better in this example; EDF or RM?

EDF is better suited in this case of creating a feasible schedule for all periodic and sporadic tasks.

## Programming Part

Is the system fast enough to handle all aperiodic tasks? Why?

The system fails to serve aperiodic task to completion because the priority of the matrix task is higher and the delay time (100ms) after 1 cycle of matrix task is not enough to allow a aperiodic task to finish.

If not, solve this problem without alter the functionality of any task

The priority of the handling the aperiodic task is increased to be higher than that of the matrix task so that the aperiodic task is handled responsively after its release time.

What is the response time of the aperiodic task?

Min: 2377ms, Max: 2386ms, Average: 2380ms

Provide a screenshot of the running system.

```
started timer
Timer Resolution for Run TimeStats is 100 ticks per second.
matrix task started!
matrix task started!
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2386
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2377
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2381
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2377
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2380
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2383
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2383
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2375
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2378
matrix task started!
Timer callback!
Aperiodic task started!
Aperiodic task done!
Aperiodic task response time: 2380
matrix task started!
matrix task started!
matrix task started!
matrix task started!
```