Simulation assignment

- 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. Create the sporadic task in SimSo by selecting: ”generate task set” and then list of act. Dates to the release time
  1. What is the minimum/maximum/average response time of all tasks?

Response time:

Task	min	avg	max	std dev
Task 1	0.500	0.670	1.500	0.272
Task 2	1.500	1.679	2.000	0.240
Task 3	1.000	1.979	3.500	0.848
Task 4	29.000	29.000	29.000	0.000

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

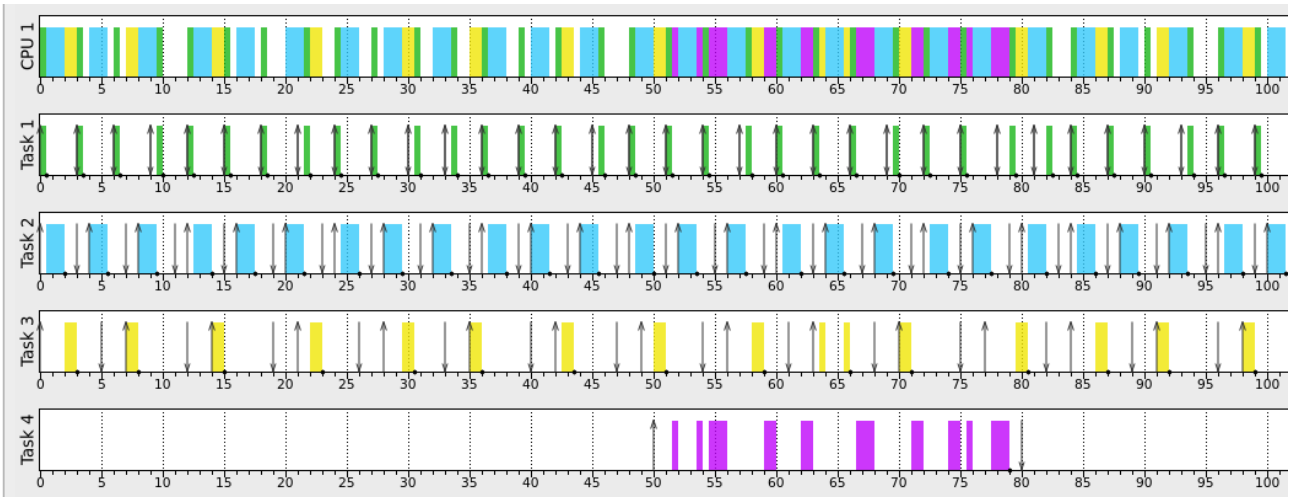
     =>All tasks meet deadline.

  3. Is the sporadic job meeting its deadline?

     =>Yes

  4. What is the response time for the sporadic job?

     =>29



- 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. Create the sporadic task in SimSo by selecting: ”generate task set” and then list of act. Dates to the release time

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

Task	min	avg	max	std dev	occupancy
Task 1	0.500	0.500	0.500	0.000	0.167
Task 2	1.500	1.500	1.500	0.000	0.375
Task 3	1.000	1.000	1.000	0.000	0.143

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

     =>Task 4 is missing the deadline at time 80.

General | Task 1 | Task 2 | Task 3 | Task 4

Activation	Start	End	Deadline	Comp. time	Resp. time
50.0000	50.0000	80.0000	80.0000	9.5000	30.0000

  3. Is the sporadic job meeting its deadline?

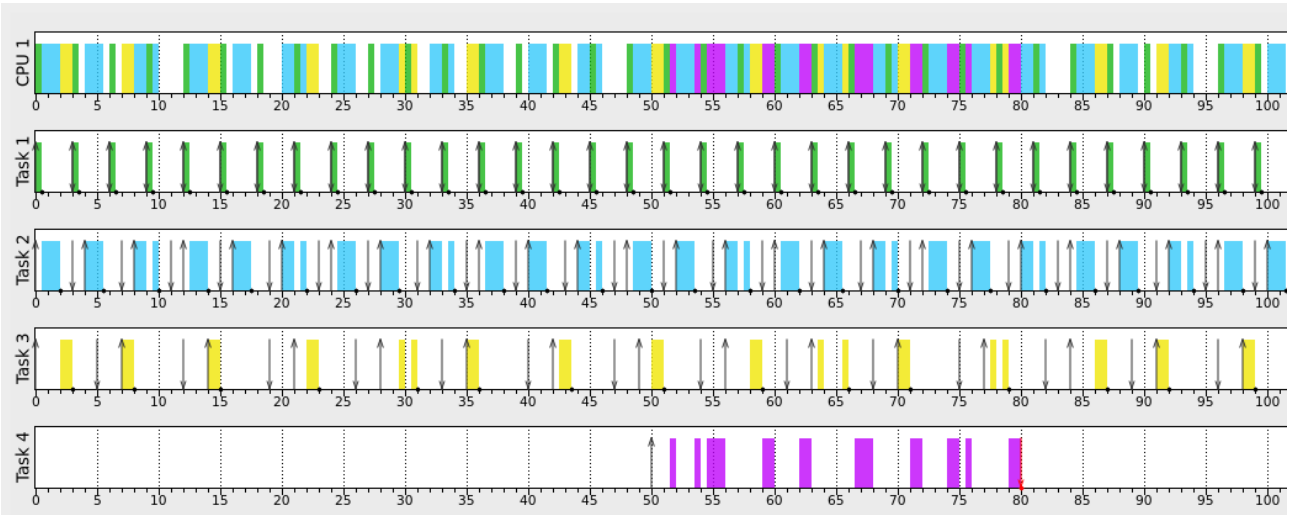
     =>No, it is missing deadline.

  4. What is the response time for the sporadic job?

     =>30, but the job is rejected.

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

     =>EDF, because all tasks aren't missing deadline by using this scheduler.



※note: Because I simulate it wit stm32 qemu tool, the performance of execution maybe slower.

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

  =>No, aperiodic tasks would be interrupt by matrix task.

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

  =>You can promote aperiodic task priority.

- What is the response time of the aperiodic task?

  =>If you set priority value to 4, its response time is about 10 seconds.

- Provide a screenshot of the running system