

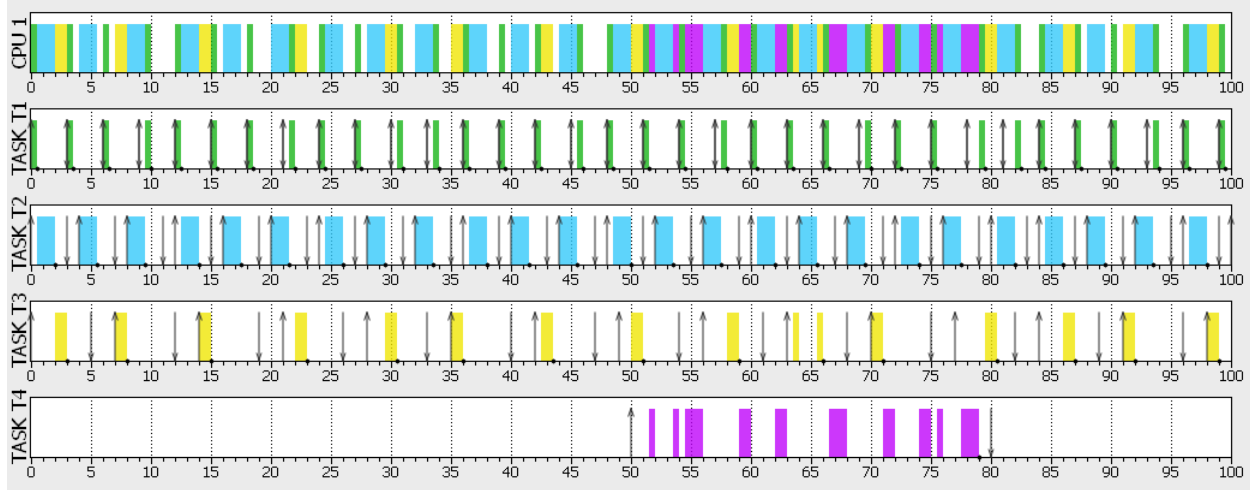
## Simulation assignment

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

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

Response time:				
Task	min	avg	max	std dev
TASK T1	0.500	0.676	1.500	0.294
TASK T2	1.500	1.700	2.000	0.245
TASK T3	1.000	1.967	3.500	0.921
TASK T4	29.000	29.000	29.000	0.000

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



No tasks has missed deadline

3. Is the sporadic job meeting its deadline?

No

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

Task S1 activated at  $t=50$  ended at  $t=79$ , Then response time = 29.0 ms

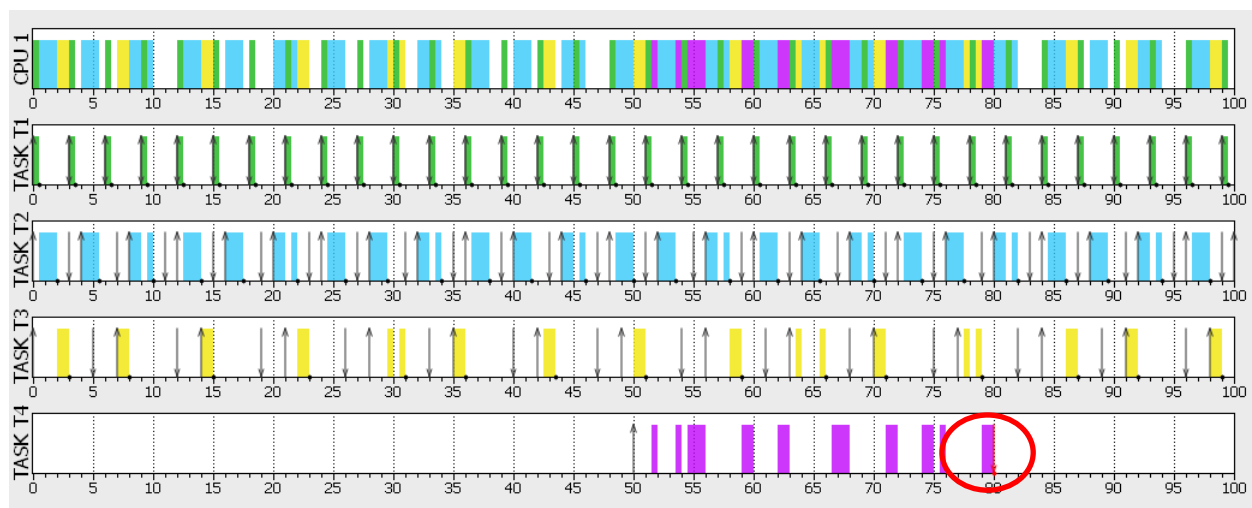
- Tasks T1(3, 0.5), T2(4, 1.5, 3), T3(7, 1.0, 5) and A sporadic job arrives at t=50 having the execution time of 10 and a relative deadline of 30 using RM scheduler

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

Response time:				
Task	min	avg	max	std dev
TASK T1	0.500	0.500	0.500	0.000
TASK T2	1.500	1.840	2.000	0.233
TASK T3	1.000	1.900	3.000	0.860
TASK T4				

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

Yes task T4 (The sporadic Task) missed the deadline at t=80



3. Is the sporadic job meeting its deadline?

NO

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

Task S1 activated at t=50 till t=80, Then response time = 30.0ms but was not finished as it only worked for 9.5ms and it needed 10ms to finish

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

EDF Scheduler is better because all tasks have met their deadlines

# Programming assignment

## 1. Questions

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

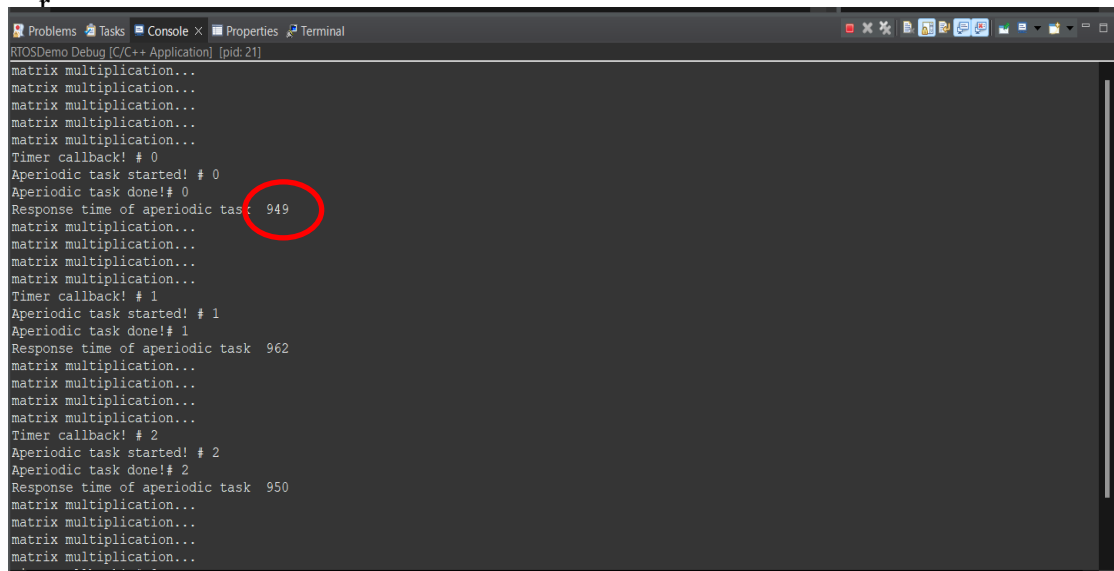
No, because the task “Matrixtask” is consuming the processor’s resources.

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

We may increase the priority of the Aperiodic task

screenshot below shows that response time is about 950ms after increased

p  
r



```
RTOSDemo Debug [C/C++ Application] [pid: 21]
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 0
Aperiodic task started! # 0
Aperiodic task done!# 0
Response time of aperiodic task: 949
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 1
Aperiodic task started! # 1
Aperiodic task done!# 1
Response time of aperiodic task 962
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 2
Aperiodic task started! # 2
Aperiodic task done!# 2
Response time of aperiodic task 950
matrix multiplication...
matrix multiplication...
matrix multiplication...
```

- What is the response time of the aperiodic task?

The response time changes depending on the state of the “Matrixtask” at this point

So it varied like shown in screenshots below from 3.723s to 12.552s

## 2. ScreenShots

```

Problems Tasks Console Properties Terminal
<terminated> (exit value: -1,073,741,819) RTOSDemo Debug [C/C++ Application] C:\Users\Computer Market\Desktop\FreeRTOSv10.0.1\FreeRTOS\Demo\
Timer callback! # 1
Aperiodic task started! # 1
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 2
Aperiodic task started! # 2
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 3
Aperiodic task started! # 3
matrix multiplication...
matrix multiplication...
matrix multiplication...
Aperiodic task done! # 0
Response time of aperiodic task 3723
matrix multiplication...
matrix multiplication...
Timer callback! # 4
Aperiodic task started! # 4
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 5
Aperiodic task started! # 5
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
matrix multiplication...
Timer callback! # 6

```

[illegible]