

Theory assignment

1. T1(15, 1, 14) T2(20, 2, 26) T3(22, 3)

- First requirement:

$$F \geq \max(e(i)) \Rightarrow F=3 \Rightarrow F=3$$

- Second requirement:

$$H = \text{LCM}(15, 20, 22) = 660 \Rightarrow F = \{22, 20, 15, 12, 11, 6, 5, 4, 3, 2, 1\}$$

- Third requirement:

$$2*f - \gcd(p(i), f) \leq D(i)$$

f	T1(15, 1, 14)	T2(20, 2, 26)	T3(22, 3)
22	$44 - \gcd(15, 22) = 44 - 1 = 43 \leq 14$ (x)		
... etc	(x)		
5	$10 - 5 \leq 14$	$10 - 5 \leq 26$	$10 - 1 \leq 22$

$$F = 5$$

2. T1(4, 1) T2(5, 2, 7) T3(20, 5)

- First requirement:

$$F \geq \max(e(i)) \Rightarrow F=7$$

- Second requirement:

$$H = \text{LCM}(4, 5, 20) = 20 \Rightarrow F = \{20, 10, 5, 4, 2, 1\}$$

- Third requirement:

$$2*f - \gcd(p(i), f) \leq D(i)$$

f	T1(4, 1)	T2(5, 2, 7)	T3(20, 5)
20	$40 - \gcd(4, 20) = 40 - 4 = 36 \leq 4$ (x)		
... etc	(x)		
4	$8 - 4 \leq 4$	$8 - 1 \leq 7$	$8 - 4 \leq 20$

F=4 T3 should be divided into parts T3.1 with e=4 and T3.2 with e=1

3. T1(5, 0.1) T2(7, 1) T3(12, 6) T4(45, 9)

- First requirement:

$$F \geq \max(e(i)) \Rightarrow F=9 \Rightarrow F=9$$

- Second requirement:

$$H = \text{LCM}(5, 7, 12, 45) = 315 \Rightarrow F = \{45, 35, 21, 15, 12, 7, 5, 3, 2, 1\}$$

- Third requirement:

$$2*f - \gcd(p(i), f) \leq D(i)$$

f	T1(5,0.1)	T2(7,1)	T3(12, 6)	T4(45, 9)
45	$90 - \gcd(45, 5) = 90 - 5 \leq 5$ (x)	(x)	(x)	(x)
... etc			
3	$6 - 4 \leq 5$	$6 - 1 \leq 7$	$6 - 3 \leq 12$	$6 - 1 \leq 45$

F=3 T3 should be divided into parts T3.1 with e=3 and T3.2

Also T4 should be divided into parts T4.1 with e=4 , T4.2 with e=3 and T4.3 with e=3

Simulation assignment

- Tasks T1(2, 0.5), T2(3, 1.2), T3(6, 0.5) and the RM scheduler

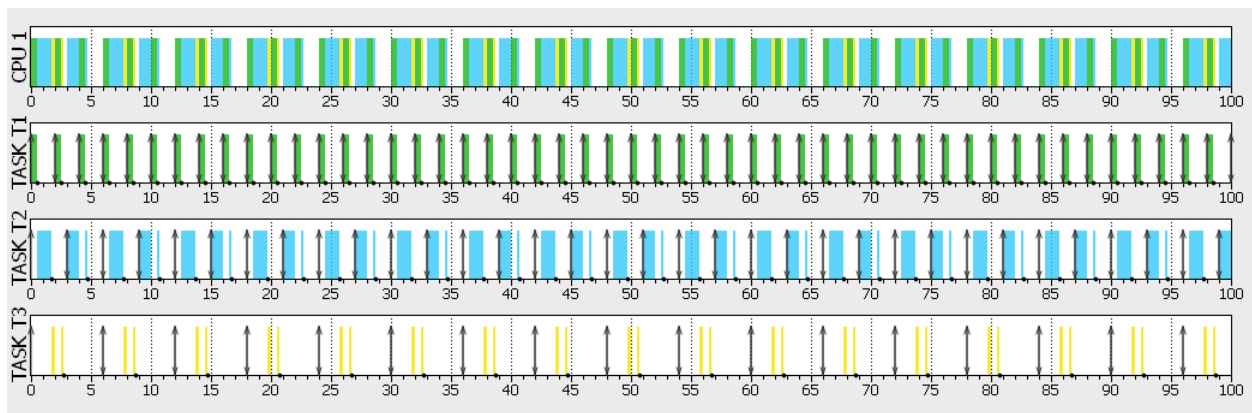
1. What is the utilization factor of the system and what is the value for $U_{rm}(3)$?

$U_{rm}(3) = 0.779$, $U=0.73333$ $U < U_{rm}(3)$ Then it's feasible

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

Task	min	avg	max	std dev	occupancy
TASK T1	0.500	0.500	0.500	0.000	0.250
TASK T2	1.200	1.200	1.200	0.000	0.406
TASK T3	0.500	0.500	0.500	0.000	0.085

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



No tasks has missed deadline

4. If a deadline is missed, could it be avoided by changing the scheduler?

No tasks has missed deadline

- **T1(2, 0.5, 1.9) T2(5, 2) T3(1, 0.1, 0.5) T4(10, 5, 20) and the EDF scheduler**

1. What is the utilization factor of the system and what is the value for $U_{rm}(4)$?

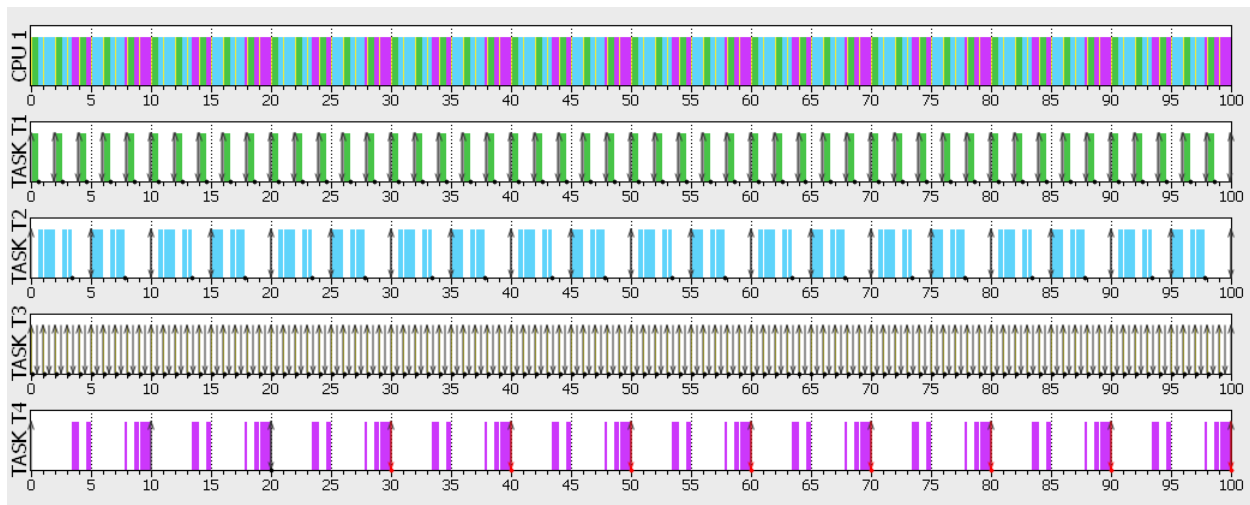
$U_{rm}(4) = 0.7568$, $U=1.25$ $U > U_{RM}(4)$ Then it's not feasible

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

Task	min	avg	max	std dev	occupancy
TASK T1	0.500	0.500	0.500	0.000	0.250
TASK T2	2.000	2.000	2.000	0.000	0.400
TASK T3	0.100	0.100	0.100	0.000	0.100
TASK T4	5.000	5.000	5.000	0.000	0.250

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

Yes task T4 missed the deadline at $t=\{30,40,50,60,70,80,90,100\}$



4. If a deadline is missed, could it be avoided by changing the scheduler?

No as $U > 1$ and system is not feasible