

Sarah Mohamed Salah

Scheduling Report

Given:

T1 {P: 5, E: 2.5, D: 5}, T2 {P: 15, E: 4.5, D: 15}, T3 {P: 20, E: 3.5, D: 20}

- We can get the Urm using the equation :

$$n(2^{\frac{1}{n}} - 1)$$

Where n : Number of tasks

Therefore : Urm = $3((2^{(1/3)})-1) = 0.779$

$$w_i(t) = e_i + \sum_{k=1}^{i-1} \left\lceil \frac{t}{p_k} \right\rceil e_k$$

- Using the equation :

Calculating the Time demand for T1 :

$$W(1) = 2.5 + 0 = 2.5$$

$$W(2) = 2.5 + 0 = 2.5$$

$$W(3) = 2.5 + 0 = 2.5$$

$$W(4) = 2.5 + 0 = 2.5$$

$$W(5) = 2.5 + 0 = 2.5$$

Since $W(5) < D$, Therefore T1 is **schedulable**

Calculating the Time demand for T2 :

$$W(1) = 4.5 + (1/5)*2.5 = 7$$

$$W(2) = 4.5 + (2/5)*2.5 = 7$$

$$W(3) = 4.5 + (3/5)*2.5 = 7$$

$$W(4) = 4.5 + (4/5)*2.5 = 7$$

$$W(5) = 4.5 + (5/5)*2.5 = 7$$

$$W(6) = 4.5 + (6/5)*2.5 = 9.5$$

$$W(7) = 4.5 + (7/5)*2.5 = 9.5$$

$$W(8) = 4.5 + (8/5)*2.5 = 9.5$$

$$W(9) = 4.5 + (9/5)*2.5 = 9.5$$

$$W(10) = 4.5 + (10/5)*2.5 = 9.5$$

$$W(11) = 4.5 + (11/5)*2.5 = 12$$

$$W(12) = 4.5 + (12/5)*2.5 = 12$$

$$W(13) = 4.5 + (13/5) * 2.5 = 12$$

$$W(14) = 4.5 + (14/5) * 2.5 = 12$$

$$W(15) = 4.5 + (15/5) * 2.5 = 12$$

$$W(16) = 4.5 + (16/5) * 2.5 = 14.5$$

Since $W(16) < D$, Therefore T2 is **schedulable**

Calculating the Time demand for T3 :

$$W(11) = 3.5 + (11/5) * 2.5 + (11/15) * 4.5 = 15.5$$

$$W(12) = 3.5 + (12/5) * 2.5 + (12/15) * 4.5 = 15.5$$

$$W(13) = 3.5 + (13/5) * 2.5 + (13/15) * 4.5 = 15.5$$

$$W(14) = 3.5 + (14/5) * 2.5 + (14/15) * 4.5 = 15.5$$

$$W(15) = 4.5 + (15/5) * 2.5 + (15/15) * 4.5 = 15.5$$

$$W(16) = 4.5 + (16/5) * 2.5 + (16/15) * 4.5 = 22.5$$

Since $W(16) > D$, Therefore T3 is **not schedulable**

SimSo Modeling :

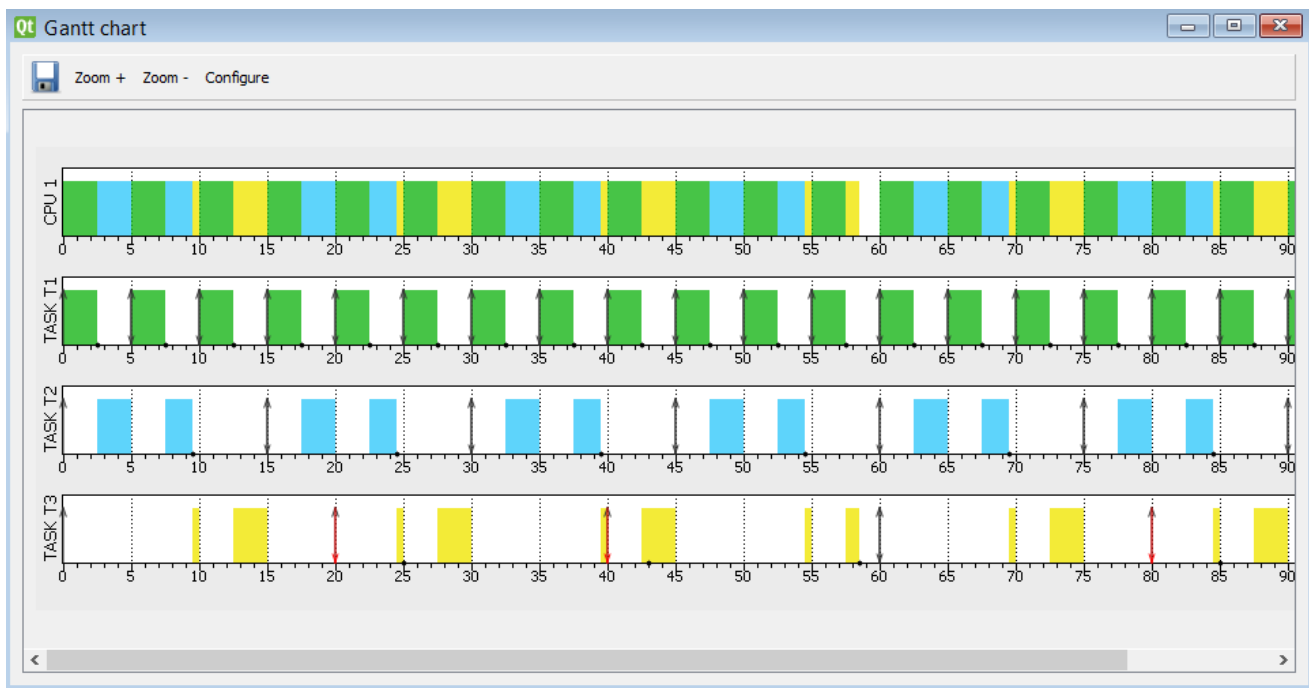
The screenshot shows the 'Qt Model data' window with the 'Tasks' tab selected. It contains a table with the following data:

id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by	priority
1	TASK T1	Periodic	<input type="checkbox"/> No	0	5	-	5	2.5	▼ 3	3
2	TASK T2	Periodic	<input type="checkbox"/> No	0	15	-	15	4.5	▼ 2	2
3	TASK T3	Periodic	<input type="checkbox"/> No	0	20	-	20	3.5	▼ 1	1

Below the table, there is an 'Edit data fields...' button, a 'Remove selected task(s)' button, and 'Add task' and 'Generate Task Set' buttons.

The screenshot shows the 'Qt Results' window with the 'General' tab selected. It displays an 'Observation Window' from 0.00 to 100.00 ms. Below this, there is a table with the following data:

	Total load	Payload	System load
CPU 1	0.9850	0.9850	0.0000
Average	0.9850	0.9850	0.0000



As we can see that Task T3 misses the deadline