EDF Scheduler

System's Hyper Period

Hyper Period is the LCM of all periodicities (50, 50, 100, 20, 10 and 100)

Hyper Period = 100

System's CPU Load

Tasks' Details:-

Task	Periodicity (ms)	Execution time (ms)
Button_1_Monitor	50	0.01
Button_2_Monitor	50	0.01
Periodic_Transmitter	100	0.02
UART_Receiver	20	0.01
Load_1_Simulation	10	5
Load_2_Simulation	100	12

CPU Load = $\sum \frac{Execution\ Times}{Periodicities}$

CPU Load = $\frac{0.01}{50} + \frac{0.01}{50} + \frac{0.02}{100} + \frac{0.01}{20} + \frac{5}{10} + \frac{12}{100}$ = 0.62 = 62%

System Schedulability

Using URM

CPU Load <= n ($2^{\frac{1}{n}}$ - 1), Where n is the number of tasks.

CPU = 62%, n = 6

Then:

6 ($2^{\frac{1}{6}}$ - 1) = 0.73 = 73%

And

62% <= 73%, Meaning **the System is Schedulable**

Using TD

Equation -> $w_i(t) = e_i + \sum_{k=1}^{i-1}(\frac{t}{P_k})e_k$

Where, **w** = worst response time **e** = execution time

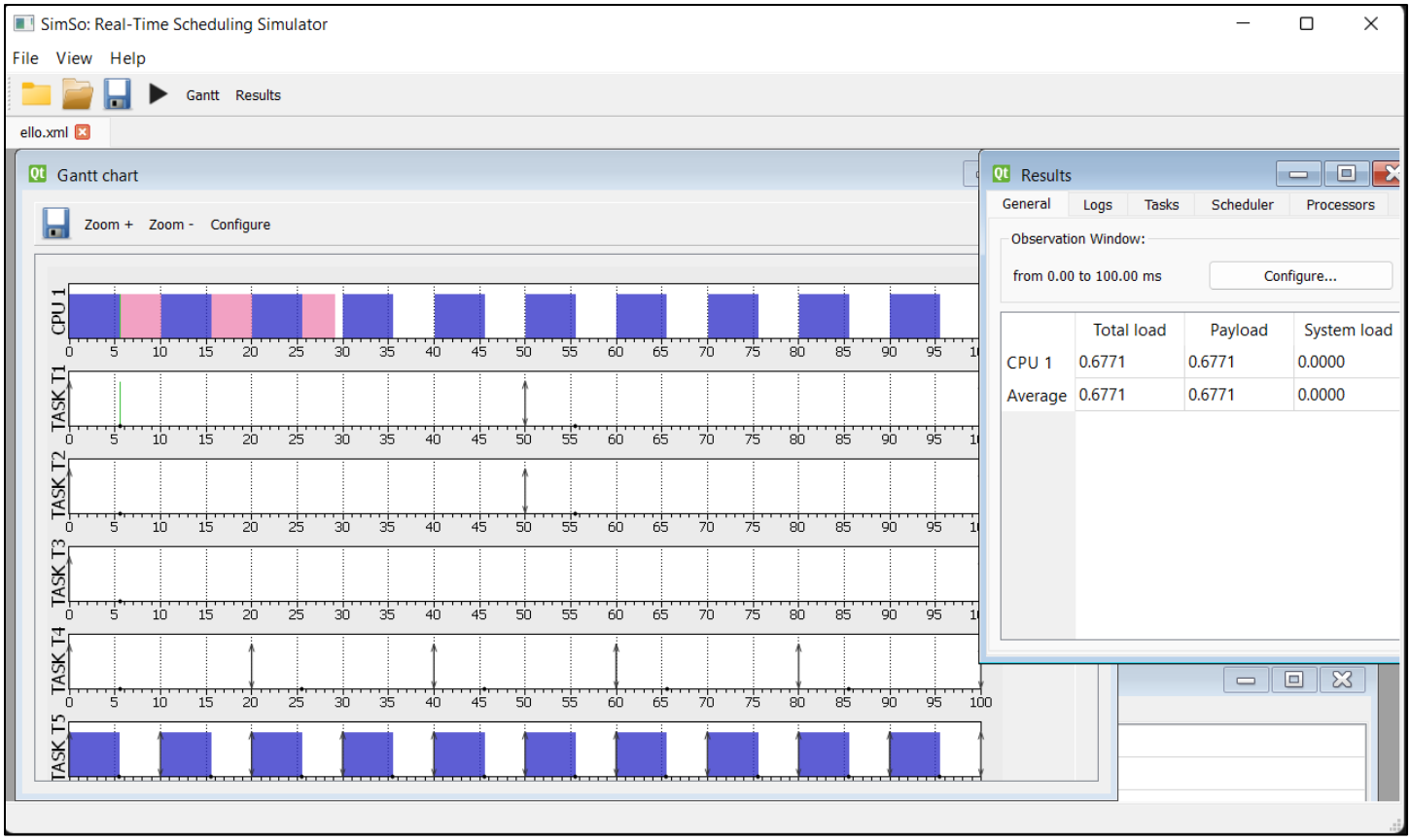
t = time instant **p** = periodicity

Time (t)	W_1	W_2	W_3	W_4	W_5	W_6
0	0.01	0.01	0.02	0.01	5.01	12
10	0.01	0.01	0.02	0.02	5.02	17.01
20	0.01	0.01	0.03	0.02	5.03	22.02
30	0.01	0.02	0.03	0.03	5.04	27.03
40	0.01	0.02	0.04	0.03	5.05	32.04
50	0.01	0.02	0.04	0.04	5.06	37.05
60	0.01	0.02	0.04	0.05	5.07	42.06
70	0.01	0.02	0.05	0.05	5.08	47.07
80	0.01	0.03	0.05	0.06	5.09	52.08
90	0.01	0.03	0.06	0.06	5.09	57.09
100	0.01	0.03	0.06	0.07	5.11	62.11

All time demands are less than Deadlines thus, **System is Schedulable**

Screenshots

Simso:



Comment: The system is schedulable as expected, tasks come in at the right priorities and indicate a successful implementation.