
Friday
Vendredi
Viernes

Scheduling

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1- System Tasks

Schedule the following task set using rate-monotonic.

Task_Name {Periodicity, Execution Time, Deadline}

1- T1 {5ms , 2.5ms , 5ms }

2- T2 {15ms, 4.5ms , 15ms }

3- T3 {20ms, 3.5ms , 20ms }

2- Calculate the CPU Utilization.

- **CPU Utilization = (2.5/5) + (4.5/15) + (3.5 / 20) = 0.175 = 97.5%**
- **Urm = 3 *(2^ (1/3) -1) = 0.779 = 77.9%**
- CPU Utilization > Urm —> the system is not Schedulable.

3- Time Demand Analysis.

Equation: $$w_i(t) = e_i + \sum_{k=1}^{i-1} \left\lceil \frac{t}{p_k} \right\rceil e_k \quad for\ 0 < t \le p_i$$

W = Worst response time
E = Execution time
P = Periodicity
T = Time instance

- HyperPeriod (H) = LCM(Periodicity) → 60 ms

Task 1:

W (5) < Deadline —> So Task1 is Schedulable**.**

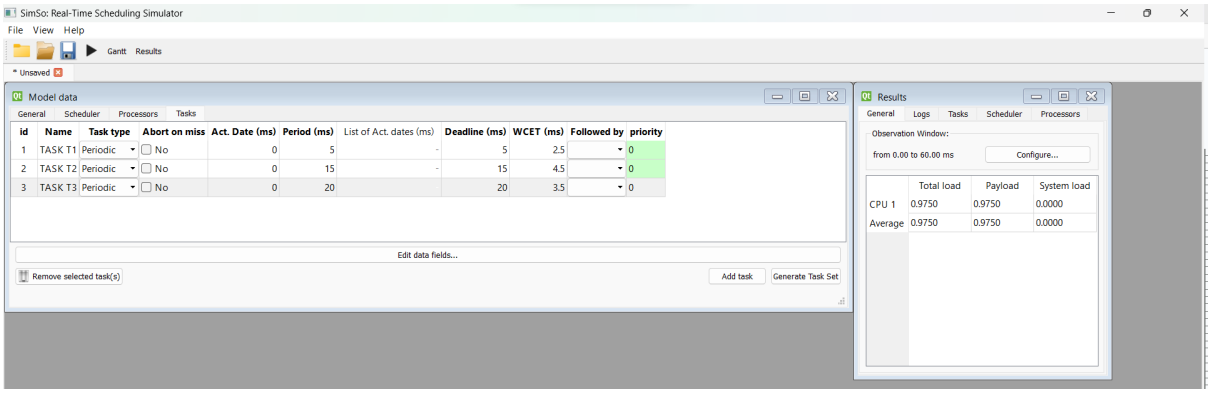
Task 2:

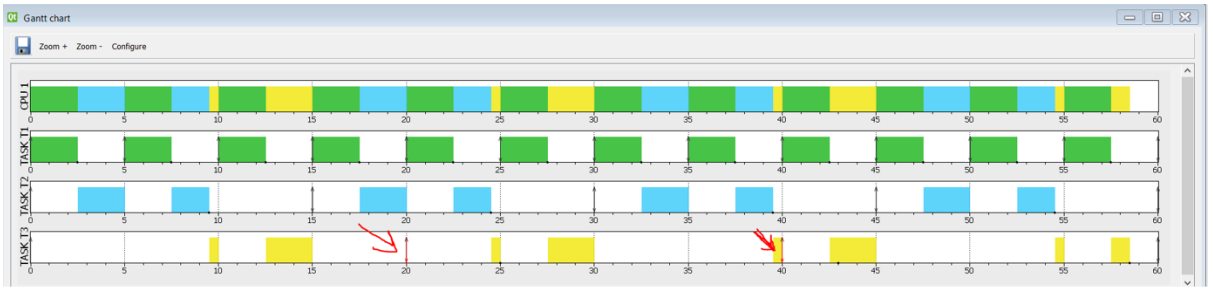
W (15) < Deadline —> So Task1 is Schedulable.

Task 3:

W (20) > Deadline —> So Task3 is not Schedulable.

4- System Design Analysis using Simso.





5- System Specs.

- The system is not schedulable.