EDF scheduler Analysis

- **System Hyper Period**

Hyper period (H) = LCM (Pi)

Where Pi is all tasks periodicities so Hyper period = 100 ms.

- **CPU load**

Task 1 : Button_1_Monitor

Period = 50ms , Deadline =50ms , Execution Time = 13us

Task 2 : Button_2_Monitor

Period = 50ms , Deadline =50ms , Execution Time = 13us

Task 3 : Periodic Transmitter

Period : 100ms , Deadline =100ms , Execution Time = 18us

Task 4 : Uart_Receiver

Period = 20ms , Deadline = 20ms , Execution Time = 15us

Task 5 : Load_1_Simulation

Period = 10ms , Deadline = 10ms , Execution Time = 5ms

Task 6 : Load_2_Simulation

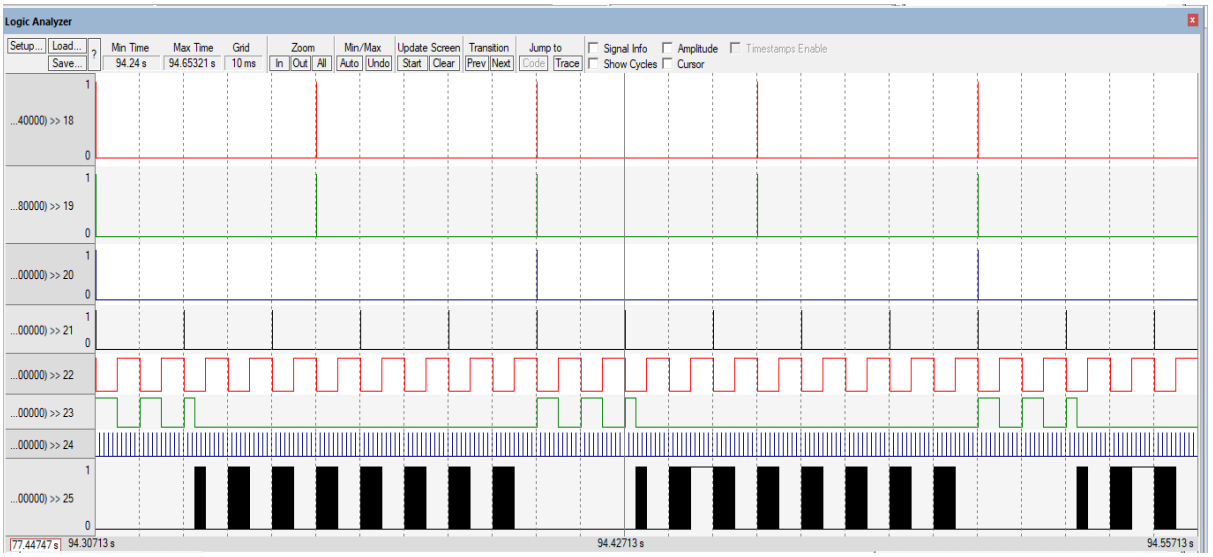
Period = 100ms , Deadline =100ms , Execution Time = 12ms

Utilization (U) = Total Execution Time / Hyper Period

U = (0.013*2 + 0.013*2 + 0.018*1 + 0.015*1 + 5*10 + 12*1) / 100

U = 0.62 = 62 %

Logic analyzer from Task1 to Task6 , Tick and Idle Hooks from up to down.



- **Schedulability**

U = 0.62 < 1 so system is scheduler (system schedulability condition)

- **System Schedulablility Using URM**

$$U = \sum_{i=1}^{n} \frac{C_i}{P_i} \leq n(2^{\frac{1}{n}} - 1)$$

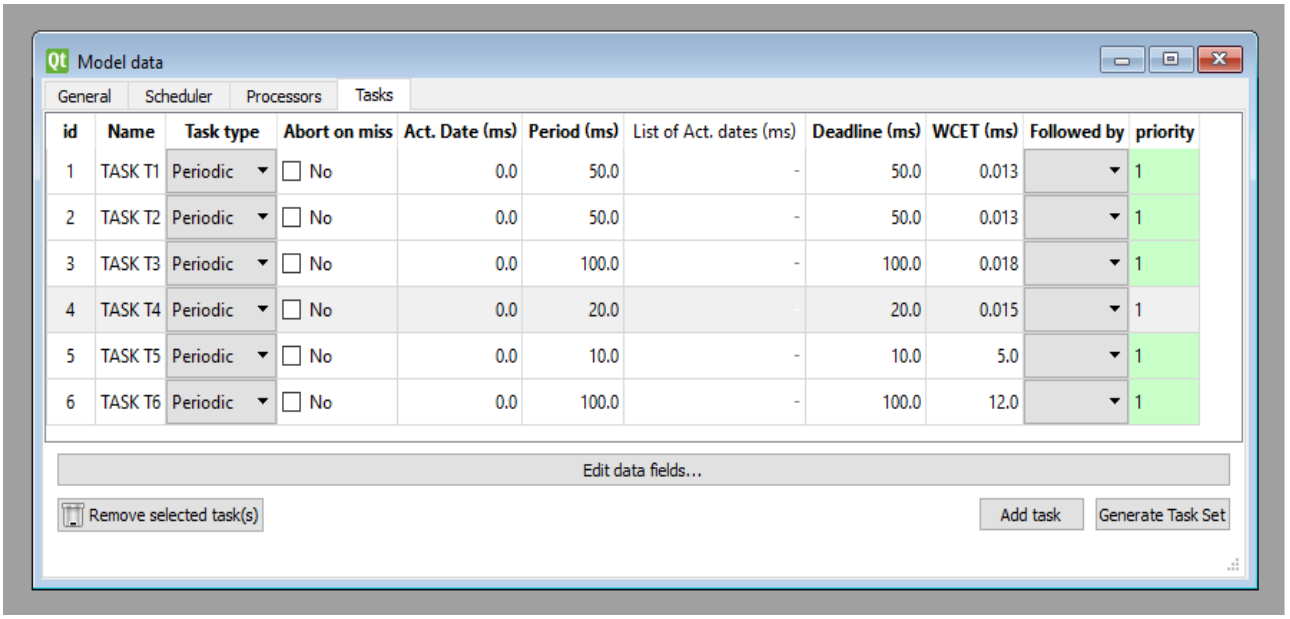
where U Total Utilization , C Execution Time, P periodicity, n Number of Tasks.

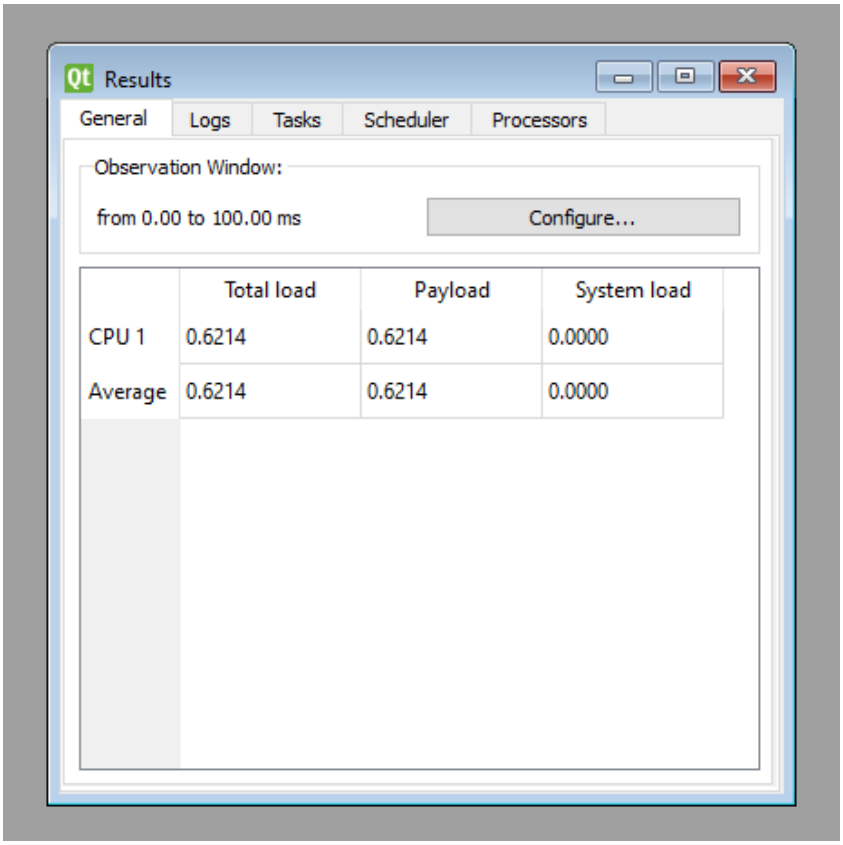
U = 13us/50 + 13us/50 +18us/100 + 15us/20 +5ms/10 + 12ms/100 = 0.62

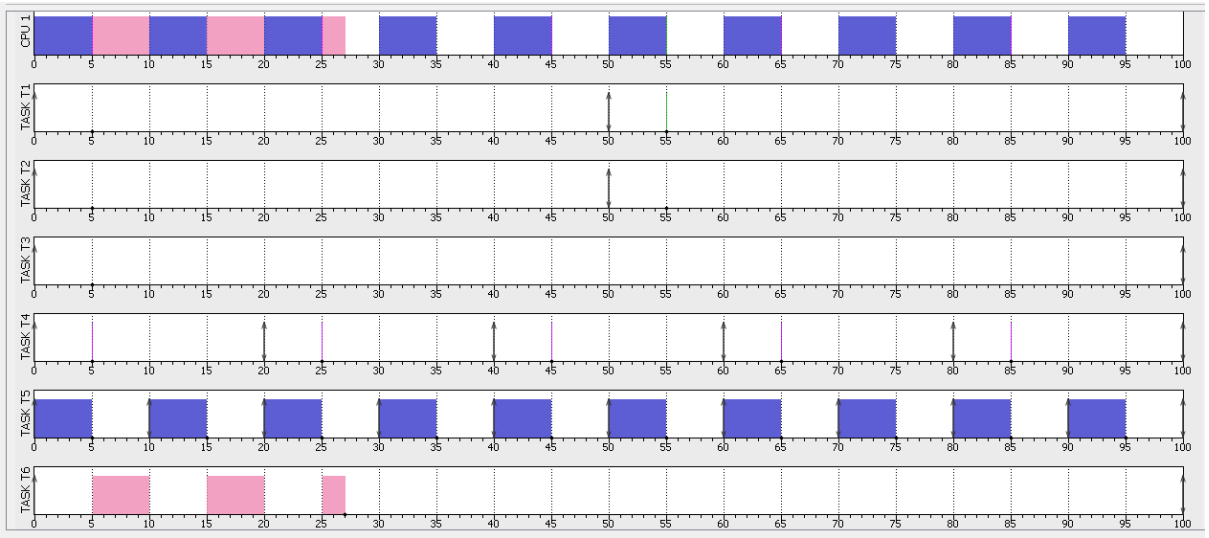
URM = 6*(2^$^{1/6}$ - 1) = 0.735

hence U is less than URM so the system may be scheduler .

- **Simso offline simulator**







From the mentioned above analysis, I see it indicates a successful implementation and the results as expected.