Assignment 3

Part1(Theoretical)

The following part of the assignment is a purely theoretical task that requires no additional tools. The task is to find the largest possible frame size for the cyclic structured scheduler by following requirements 1,2 and 3 for finding the largest frame size. The following three task sets should be used:

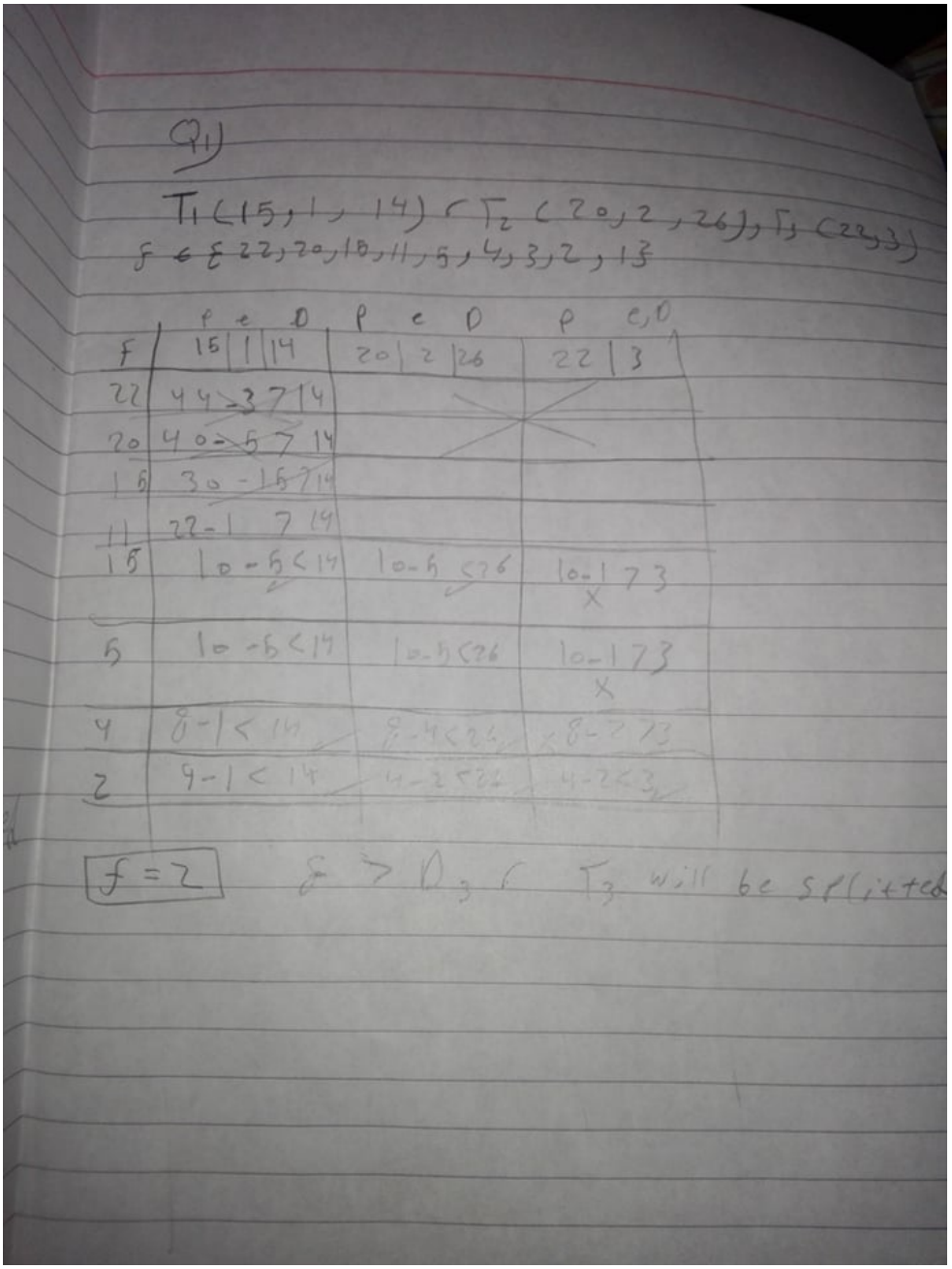
1. T1(15, 1, 14) T2(20, 2, 26) T3(22, 3)
2. T1(4, 1) T2(5, 2, 7) T3(20, 5)
3. T1(5, 0.1) T2(7, 1) T3(12, 6) T4(45, 9)

-Provide a written report which should contain:

- Calculations for each step for finding the frame size for each task set
- Resulting frame size for each task set

Find the largest possible frame size for the cyclic structured scheduler by following requirements 1,2 and 3 for finding the largest frame size. The following three task sets should be used:

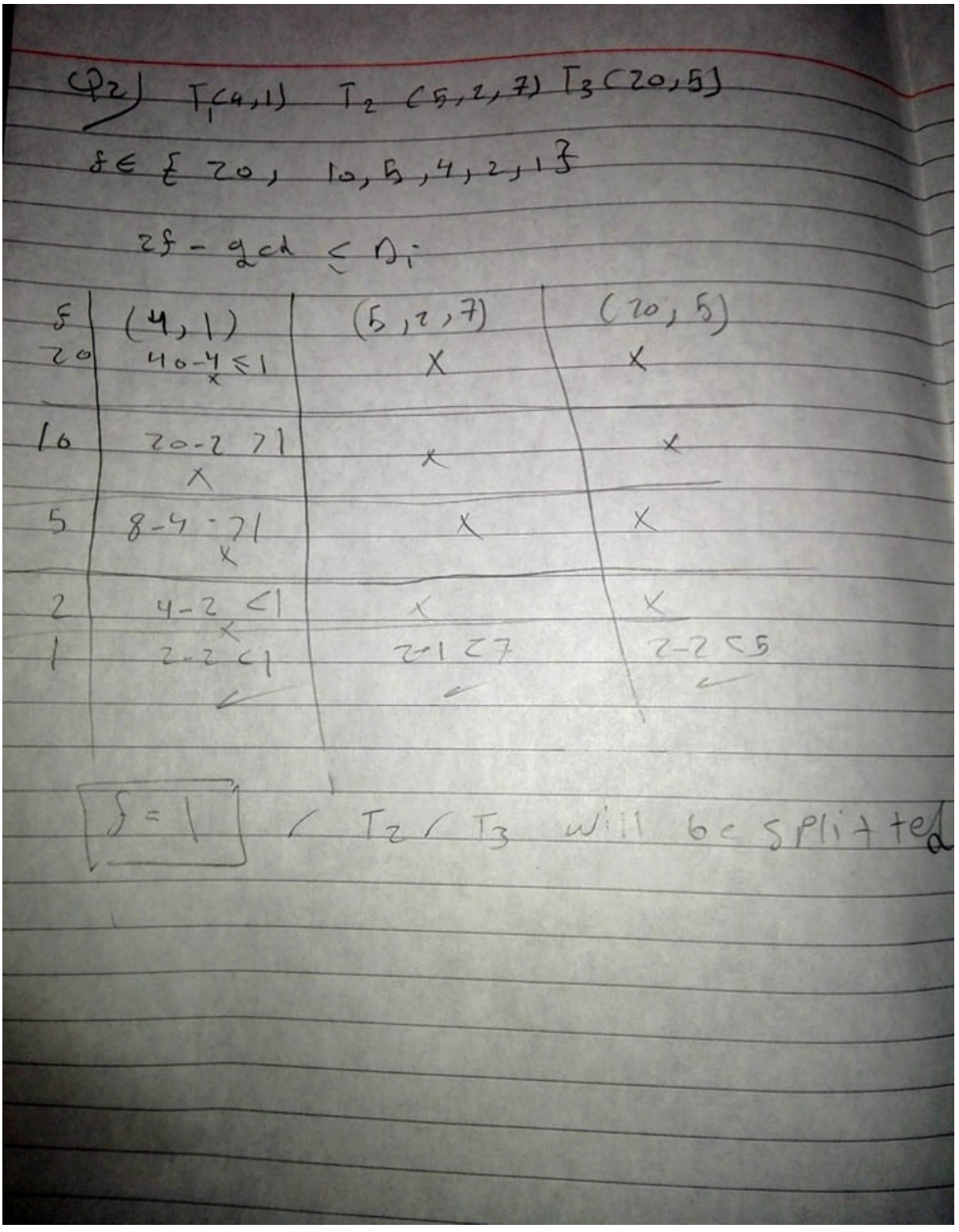
1. T1(15, 1, 14) T2(20, 2, 26) T3(22, 3)



F=2

T_3 will be splitted

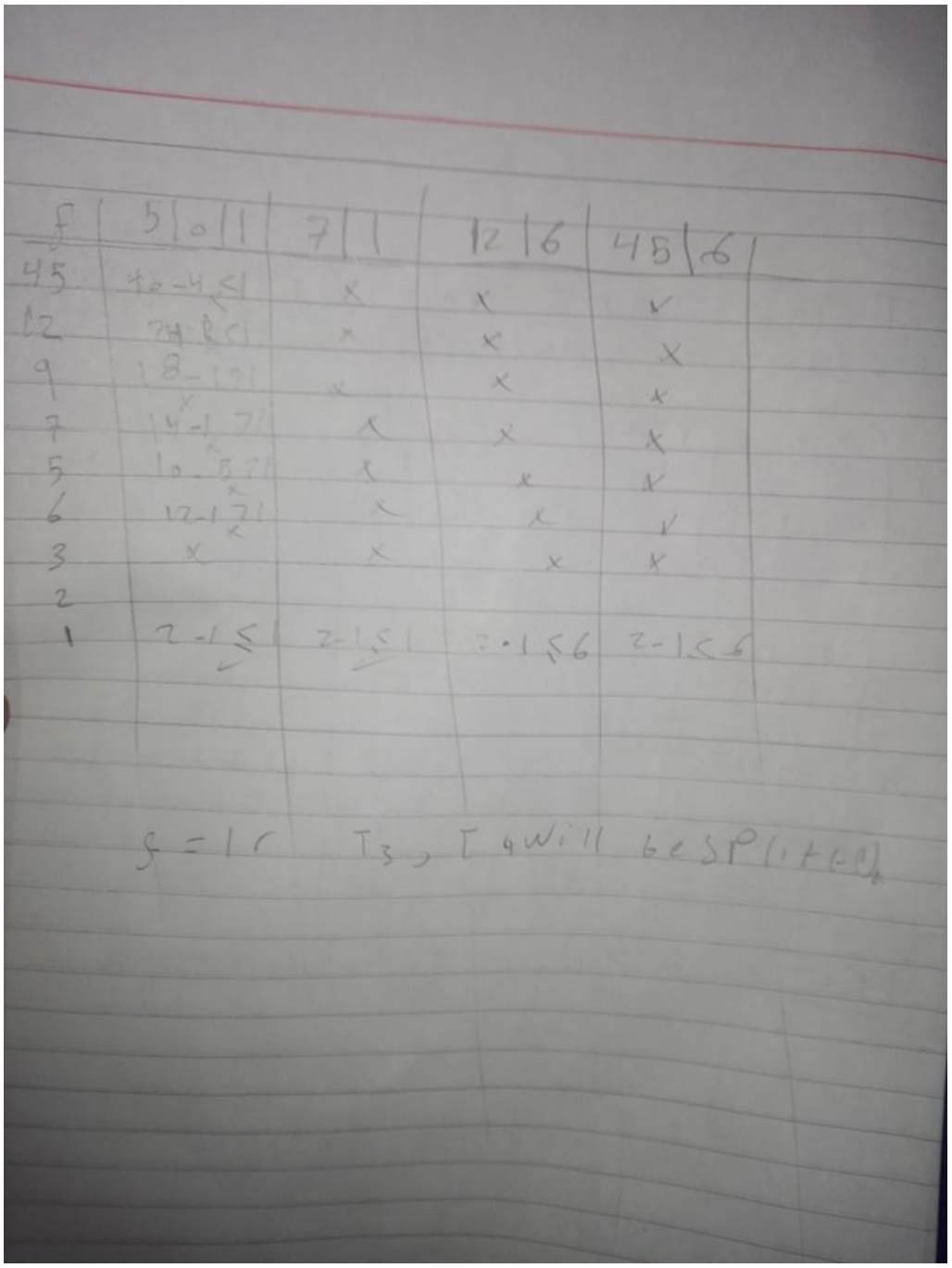
2. T1(4, 1) T2(5, 2, 7) T3(20, 5)



F=1

T_2 T_3 will be splitted

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



F=1

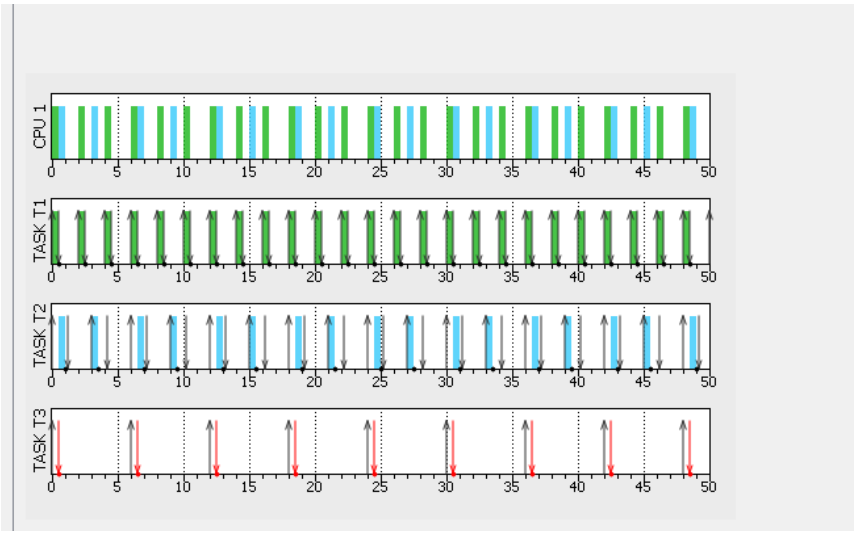
T_3 T_4 will be splitted

Part two (Simulation)

Q1

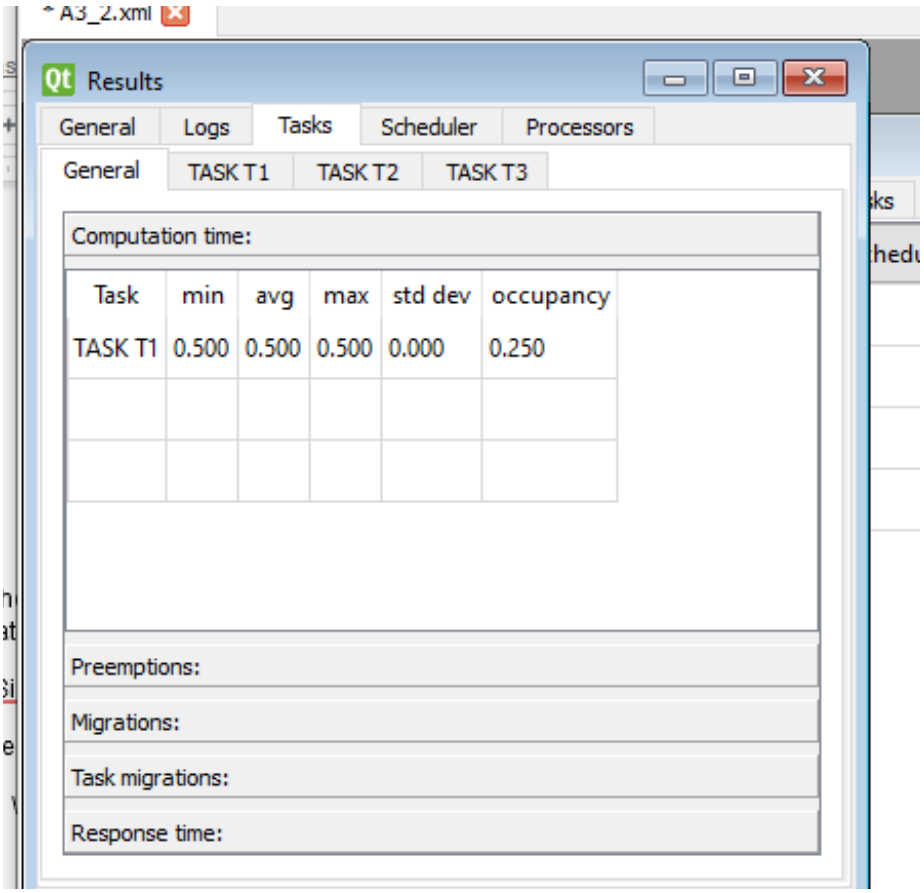
Input the tasks T1(2, 0.5), T2(3, 1.2), T3(6, 0.5) and the RM scheduler into the SimSo simulator

-Use SimSo to schedule the task set

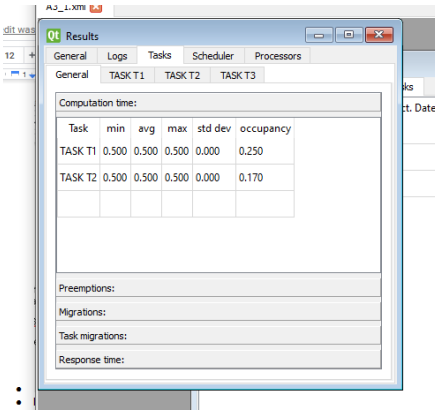


Provide a report answering the following questions:

- **What is the utilization factor of the system and what is the value for Urm(3)**
    - U=0.5866 (simulated)
    - U=0.75 (theoretical = (0.5/2 +1.⅔+0.⅚))
    - URM=0.7779
- What is the minimum/maximum/average response time of all tasks?



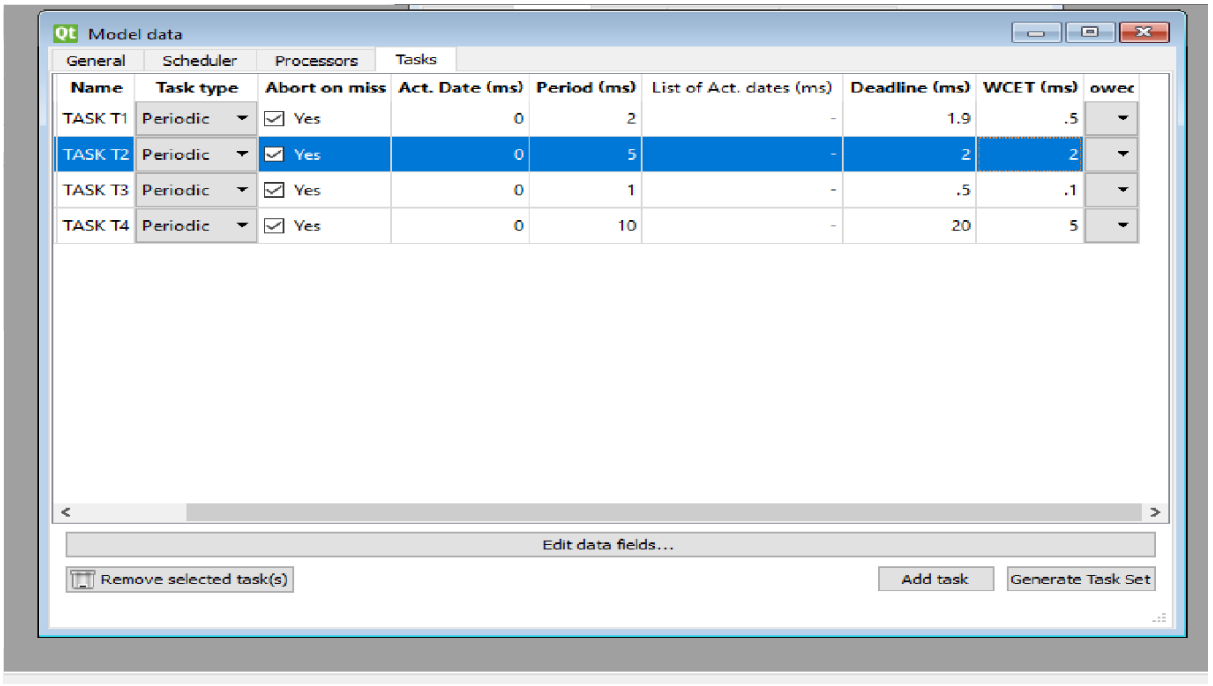
- Is any task missing the deadline? Which task? Where?
    - T3 at 0.5 ms , T2 at 1.2 ms
- If a deadline is missed, could it be avoided by changing the scheduler?
- Cant find suitable one tiil now but making WCT of T1 smaller makes things smoother

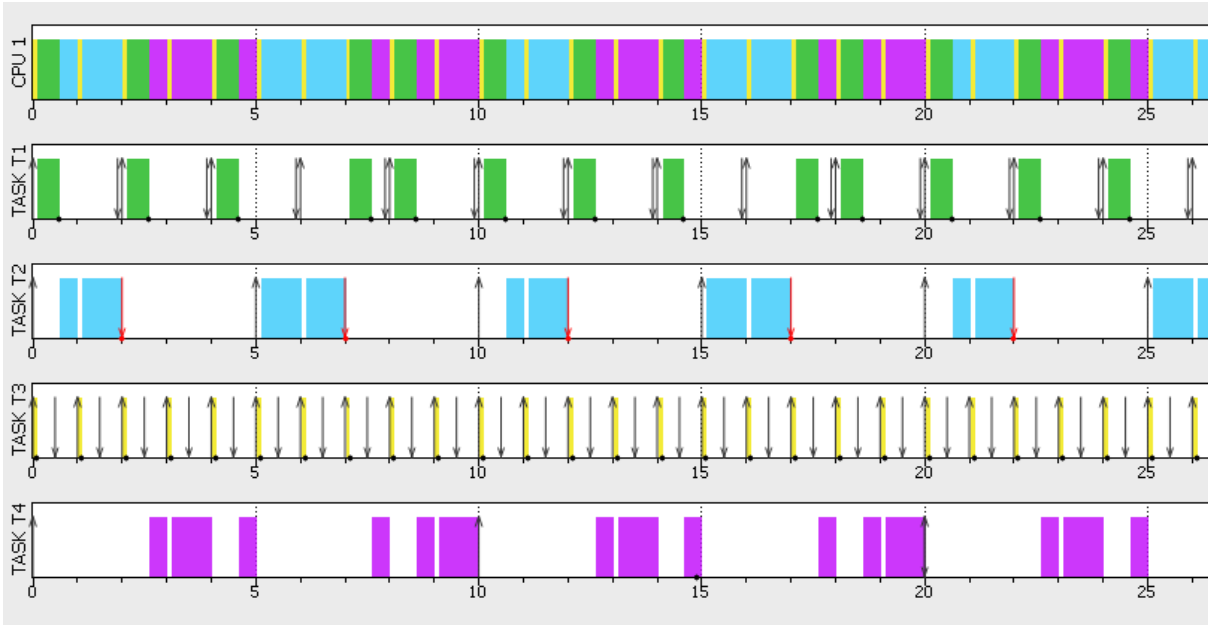


Q2

Input the tasks T1(2, 0.5, 1.9) T2(5, 2) T3(1, 0.1, 0.5) T4(10, 5, 20) and the EDF scheduler into the SimSo simulator

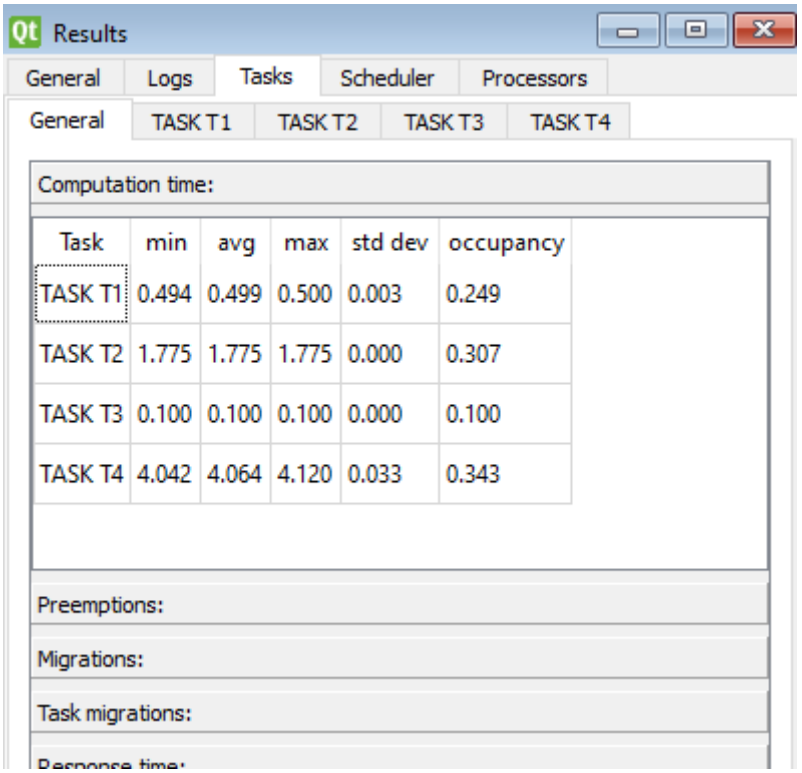
-Use SimSo to schedule the task set





Provide a report answering the following questions:

- **What is the utilization factor of the system and what is the value for Urm(4)**
  - U=1 from simulation
  - Urm(4)=0.756**(but URM used in RM scheduler only!!!)**
- **What is the minimum/maximum/average response time of all tasks?**



- **Is any task missing the deadline? Which task? Where?**
  - Job TASK T2_1 aborted! Ret:0.375 at 2000000 cycle and t= 2.0 ms, t=12 ms, 22ms
- **If a deadline is missed, could it be avoided by changing the scheduler?**
  - Maybe by changing the scheduler or by specifying more accurate WCT time for T2 as it passes at WCT=0.5