Assignment 3 Report

1- Cyclic structured scheduler by following requirements 1,2 and 3 for finding the largest frame size:

First Tasks:

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

- Requirement 1:

  The task with the Maximum execution time is T3. Therefore, the Frame size is: (f) ≥ 3

- Requirement 2:

  The candidates divide the hyper period are:
  f = {22, 20, 15, 11, 10, 5, 4, 3, 2, 1}

- Requirement 3: $2f - gcd(Pi, f) \leq Di$

	T1	T2	T3
22	44-1	14	
20	40-5	14	
15	30-15	14	
10	20-5	14	
5	10-5<=14	10-5<= 26	10-1<= 22

- Results:

  the largest possible frame size is f= 5.

Second Tasks:

T1 (4; 1) T2 (5; 2; 7) T3(20; 5)

- Requirement 1:

  The task with the Maximum execution time is T3. Therefore, the Frame size is: (f) ≥ 5

- Requirement 2:

  The candidates that divide the hyper period are:

  f = {20, 10, 5, 4, 2, 1}

- **Requirement 3**:

$2f - gcd(Pi, f) \leq Di$

	T1	T2	T3
20	40 - 4≤4		
10	20 - 2 ≤4		
5	10 - 1 ≤ 44		
4	8 - 4 ≤ 4	8 -1≤7	8 - 4 ≤20

- Results:

  the largest possible frame size is f= 4

Third Tasks:

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

- Requirement 1:

  The task with the Maximum execution time is T3.
  Therefore, the Frame size is:

  $(f) \geq 9$

- Requirement 2:

The candidates that divide the hyper period are:

$f = \{45, 15, 12, 9, 7, 6, 5, 4, 3, 2, 1\}$

- Requirement 3:

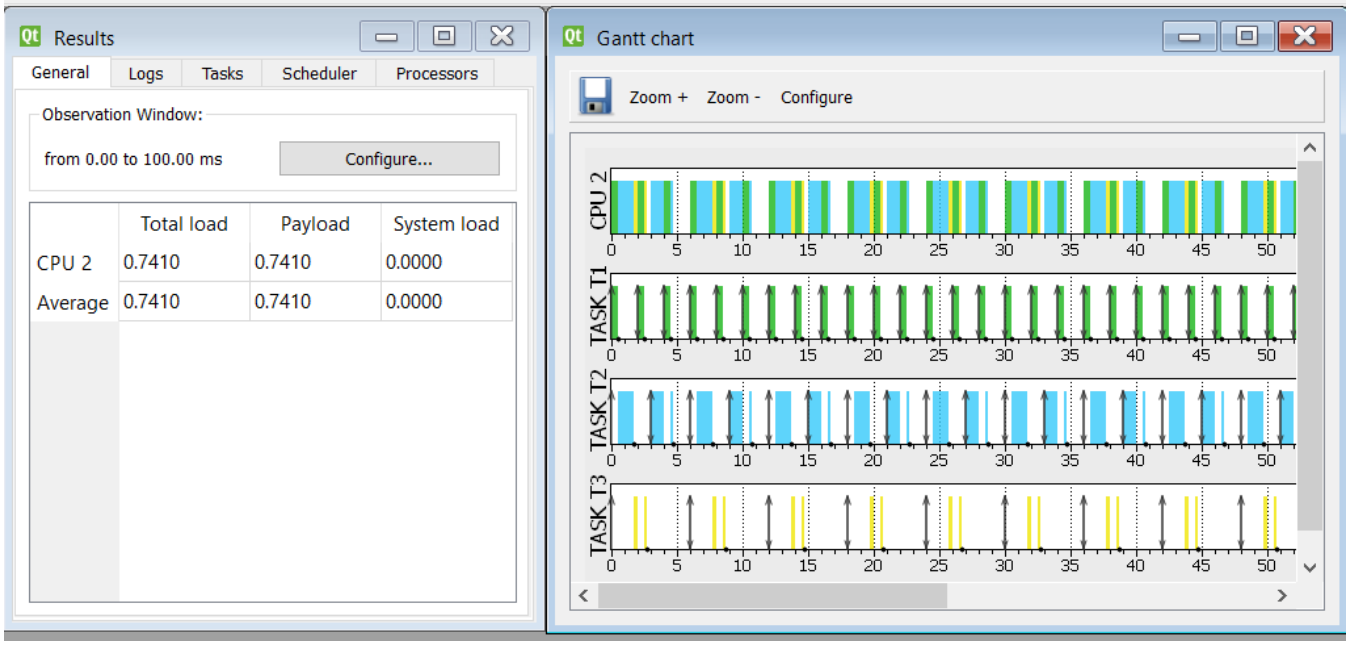
$2f - gcd(Pi, f) \leq Di$

	T1	T2	T3	T4
45	90 - 5≤5			
15	30 - 5≤5			
12	24 - 1≤5			
9	18 - 1≤5			
7	14 - 1≤5			
6	12 - 1≤5			
5	10 - 5≤5	10 - 1≤7		
4	8 - 1≤5			
3	6 - 1≤5	6 - 1≤7	6 - 3≤12	6 - 3≤45

- Results:

  the largest possible frame size is f= 3

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

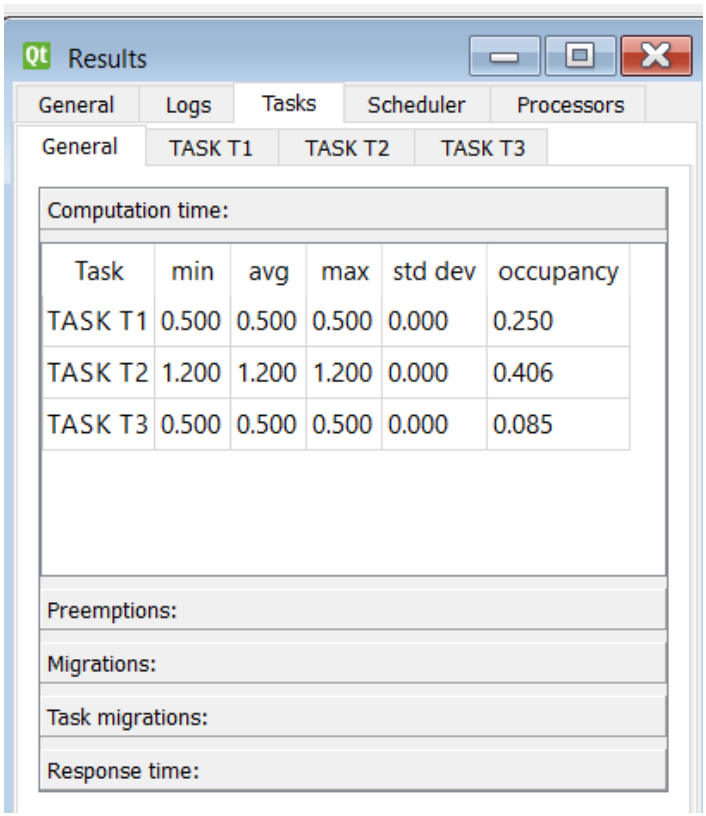


What is the utilization factor of the system and what is the value for Urm(3)?

utilization factor of the system: 0.5/2 + 1.2/3 +0.5\6 = 0.7333

Urm(3) : n[2^(1/n) – 1] = 3[2^(1/3) – 1] = 0.7798

What is the minimum/maximum/average response time of all tasks?



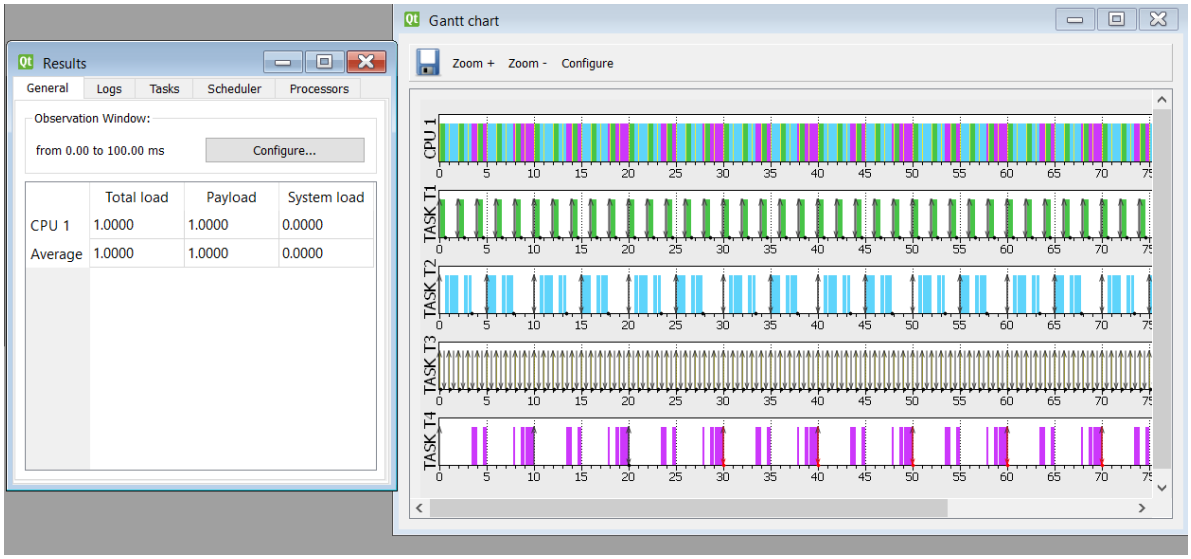
Is any task missing the deadline? Which task? Where?

No, There is no tasks missing the deadline

If a deadline is missed, could it be avoided by changing the scheduler?

Of course ,but There is no tasks missing the deadline

3- 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:

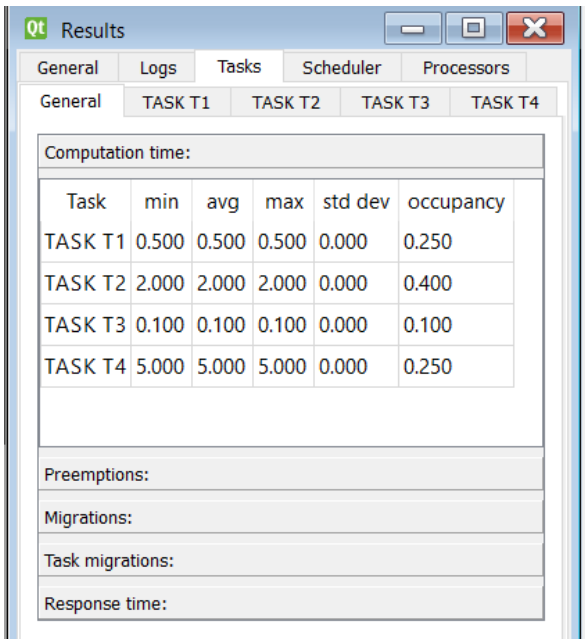


What is the utilization factor of the system and what is the value for Urm(4)?

utilization factor of the system: 0.5/2 + 2/5 +0.1\1 +5/10 = 1.25

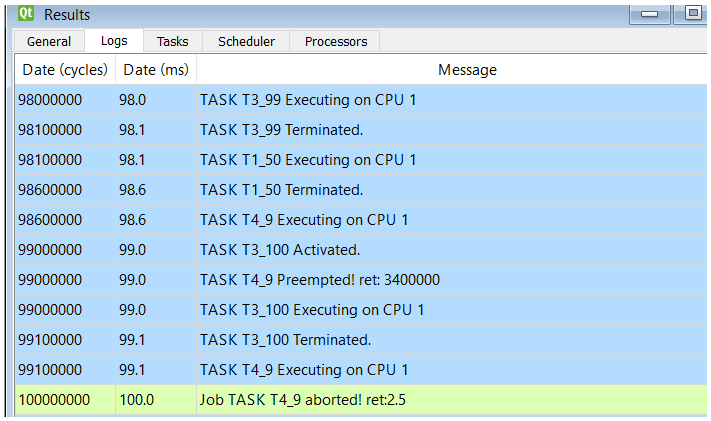
Urm(4) : n[2^(1/n) – 1] = 4[2^(1/4) – 1] = 0.7568

What is the minimum/maximum/average response time of all tasks?



Is any task missing the deadline? Which task? Where?

Yes, Task4 missed the deadline 9 times on time 30,40,50,60,70,80,90,100



If a deadline is missed, could it be avoided by changing the scheduler?

Of course , it can be avoided by changing the scheduler