

healthcare system

Tasks are needed :

- 1- Task1 : Temperature sensor
- 2- Task2 : Blood pressure sensor
- 3- Task3 : Heart beat detector
- 4- Task4 : Reading 4 bytes and processing the command
- 5- Task5 : Alert siren (On event Task)

Task parameters :

- 1- Task1 : {p:2 , P:10ms ,E:2.5ms ,D:10ms}
- 2- Task2 : {p:3, P10ms: ,E:3ms ,D:10ms}
- 3- Task3 : {p:4 , P:50ms ,E:1.5ms ,D:50ms}
- 4- Task4 : {p:5 , P:100ms ,E:2ms ,D100ms}
- 5- Task5 : {p:1 , P: None ,E:1ms ,D:None}

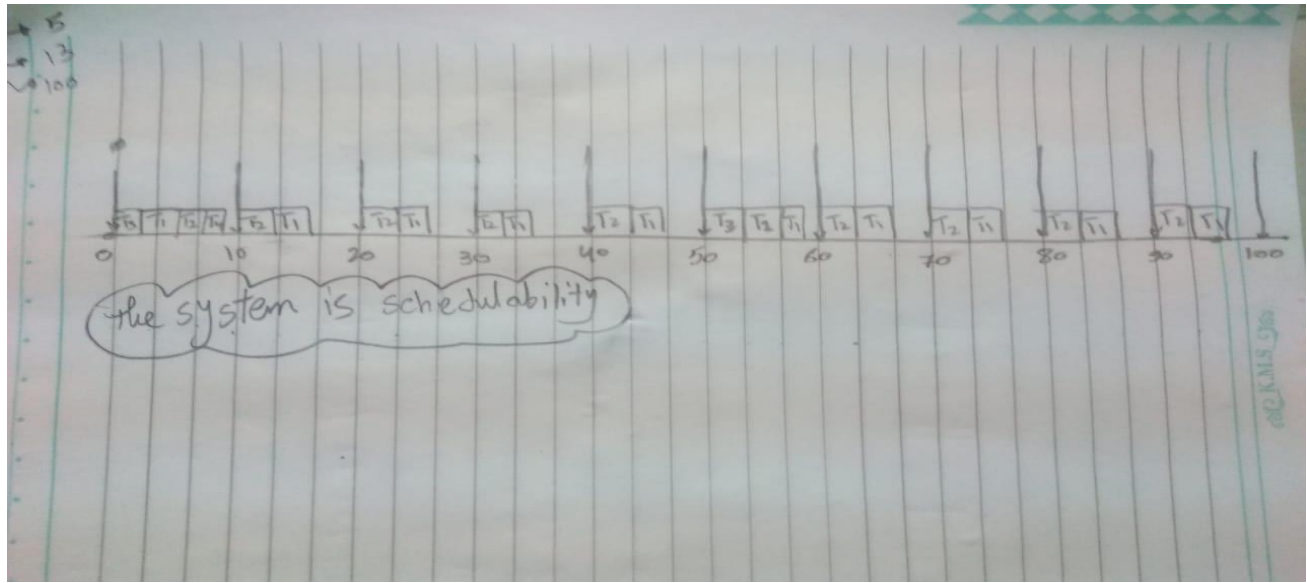
System tick rate :

- Sys Tick > $2.5+3+1.5+1+2 > 9$
- Then Sys Tick = 10ms

Calculation of hyperperiod and CPU LOAD :

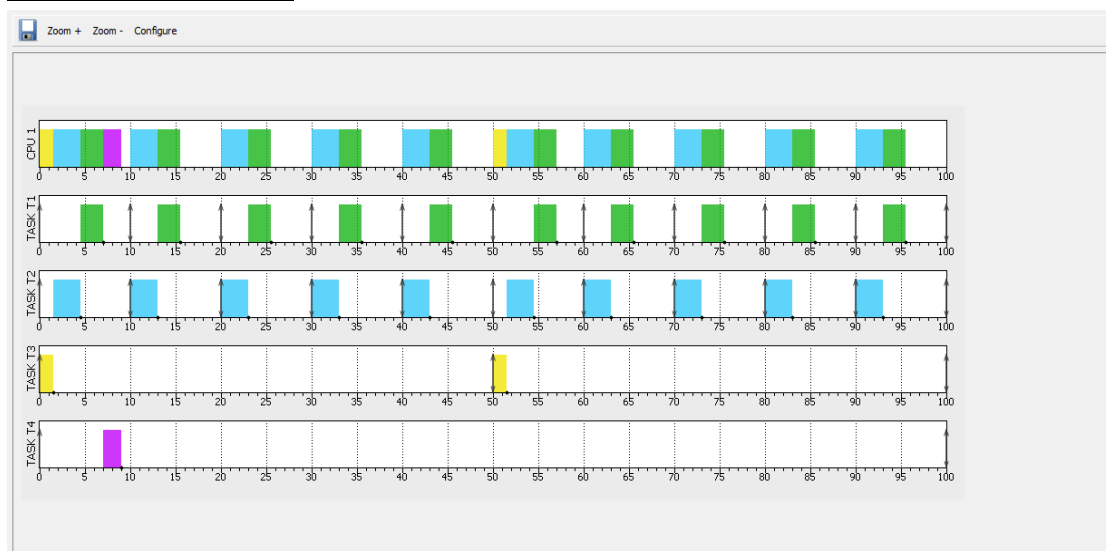
- Hyperperiod = 100ms
- CPU LOAD = 60 %

the timeline manually and analyze schedulability :

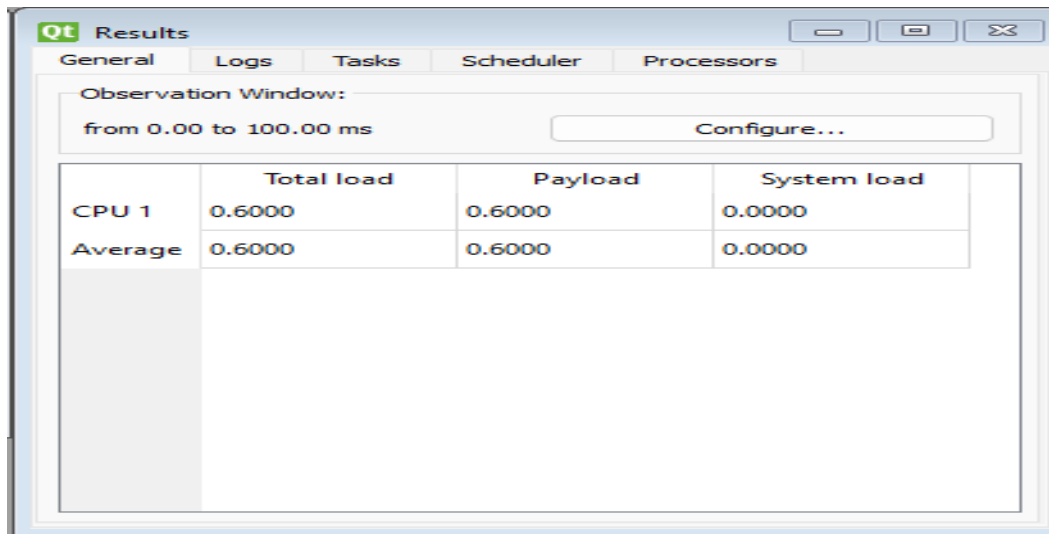


the system in Simso and verify that your design is schedulable :

- Gantt Chart :



- **Results :**



The image shows a screenshot of the 'Qt Results' window. It has tabs for 'General', 'Logs', 'Tasks', 'Scheduler', and 'Processors'. The 'General' tab is selected. Below the tabs, there is an 'Observation Window' section with a text field showing 'from 0.00 to 100.00 ms' and a 'Configure...' button. Below this is a table with the following data:

	Total load	Payload	System load
CPU 1	0.6000	0.6000	0.0000
Average	0.6000	0.6000	0.0000

- **Comment :**

- CPU load decrease when Task5 is converted from cyclic task to on event task (CPU (before) = 70% , CPU(After) = 60 %) , the over head of the system decrease
- Task1 is lower priority than Task2 although Task1 is higher periodicity than Task2 , because I do not make any double speed in Task1 then I want to make low delay before get the data from Task1 , otherwise another tasks of data are made double speed
- Task5 is highest priority because the system is critical , I want make high response if any data exceed the its threshold
- The system is schedulability because all tasks do not miss the deadline