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}**

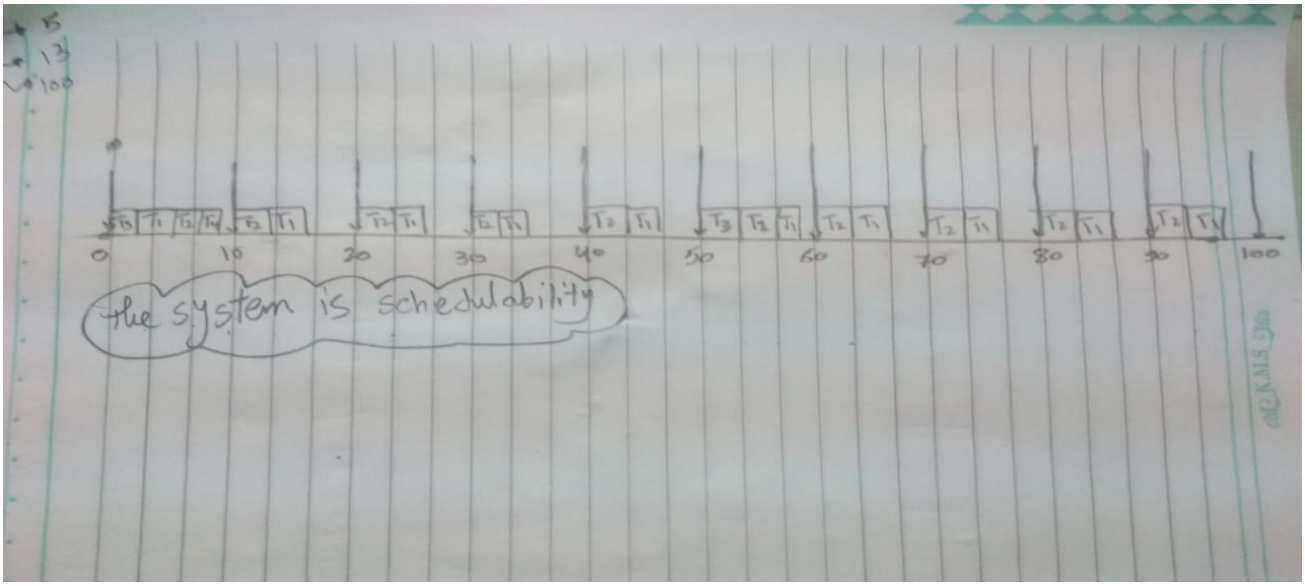
System tick rate :

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

Calculation of hyperperiod and CPU LOAD :

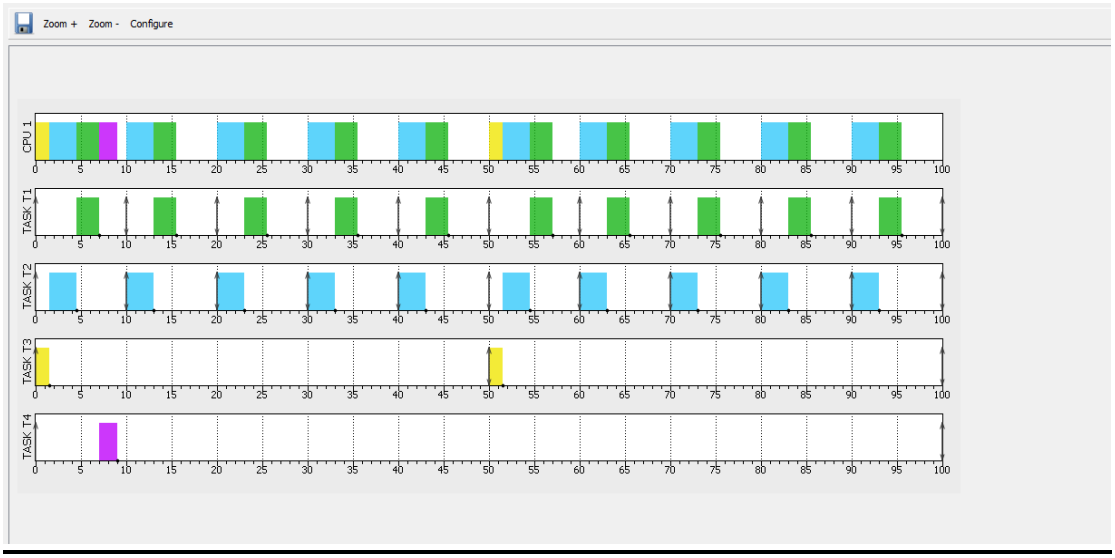
- **Hyperperiod = 100ms**
- **CPU LOAD = 60 %**

the timeline manually and analyze schedulability :

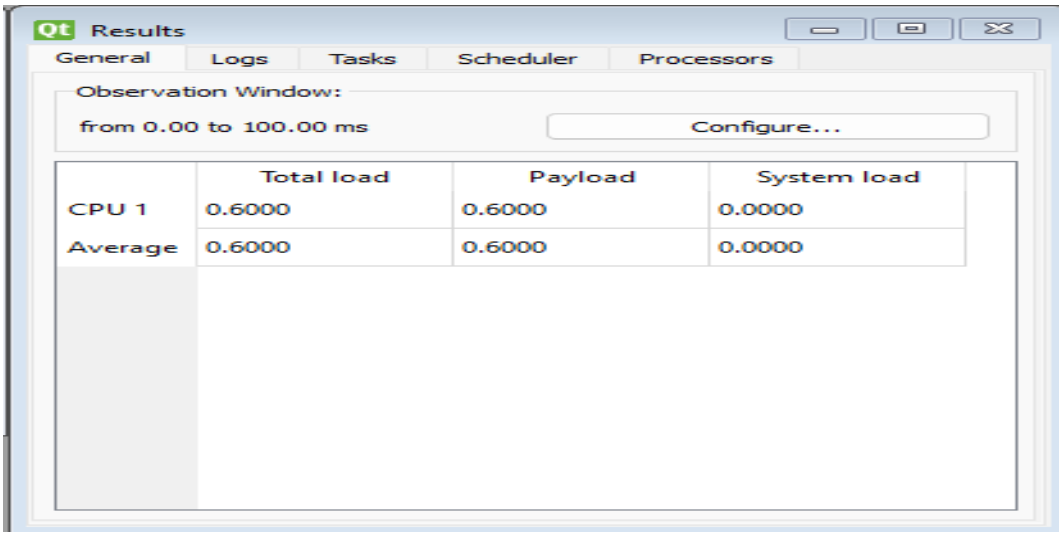


the system in Simso and verify that your design is schedulable :

- **Gentt Chart :**



- **Results :**



- **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**