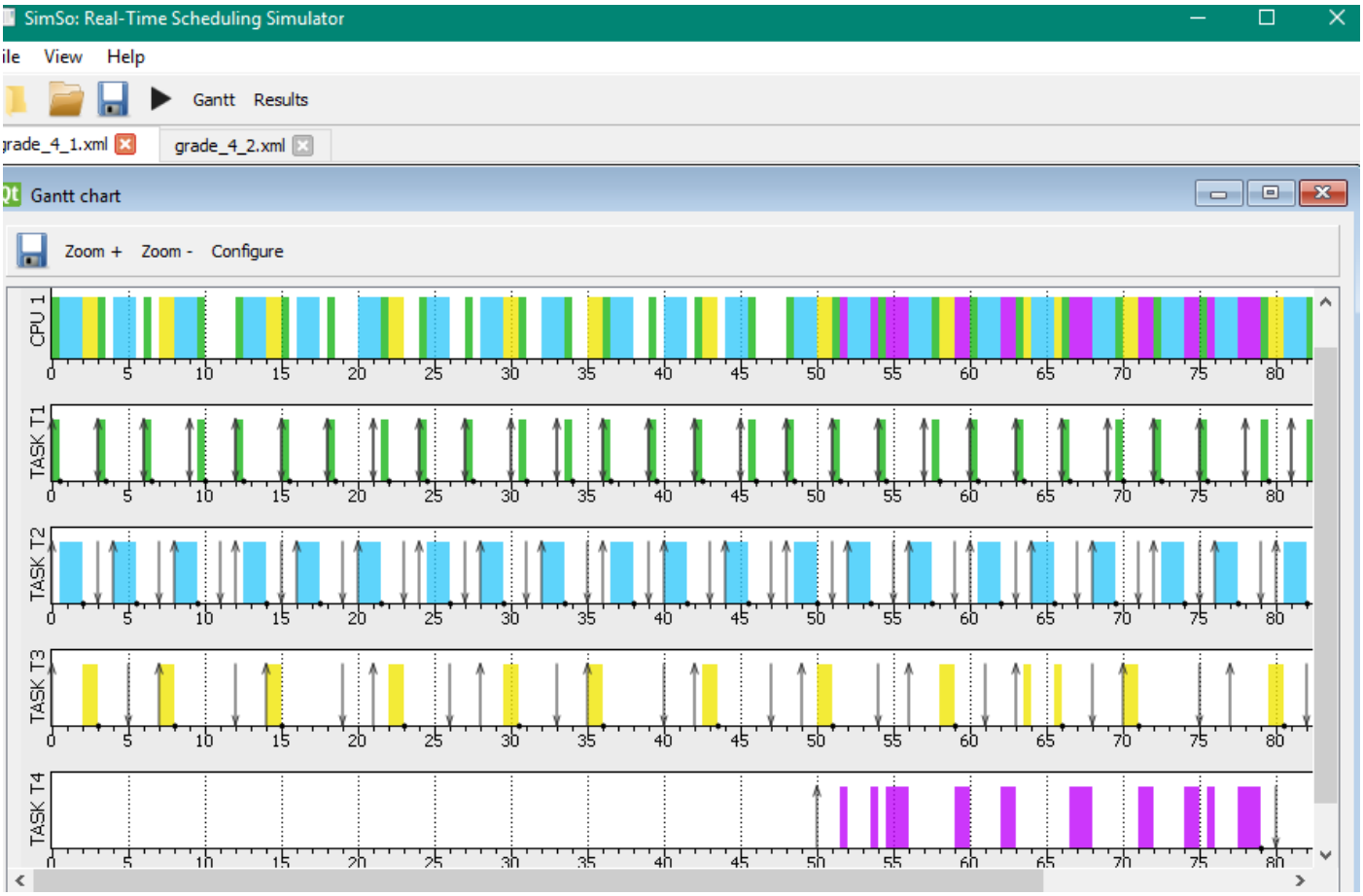
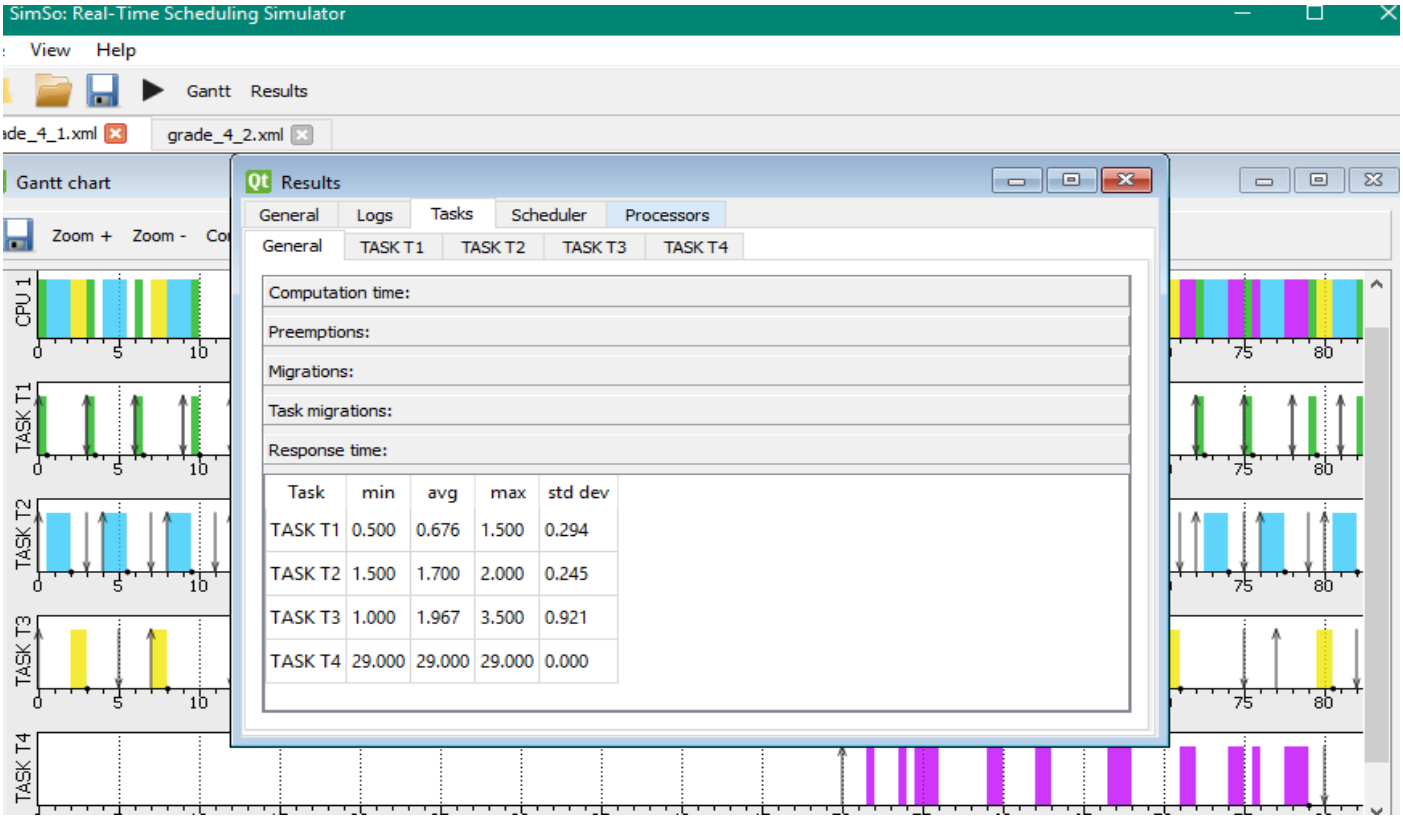
Assignment 4

Simulation 1:



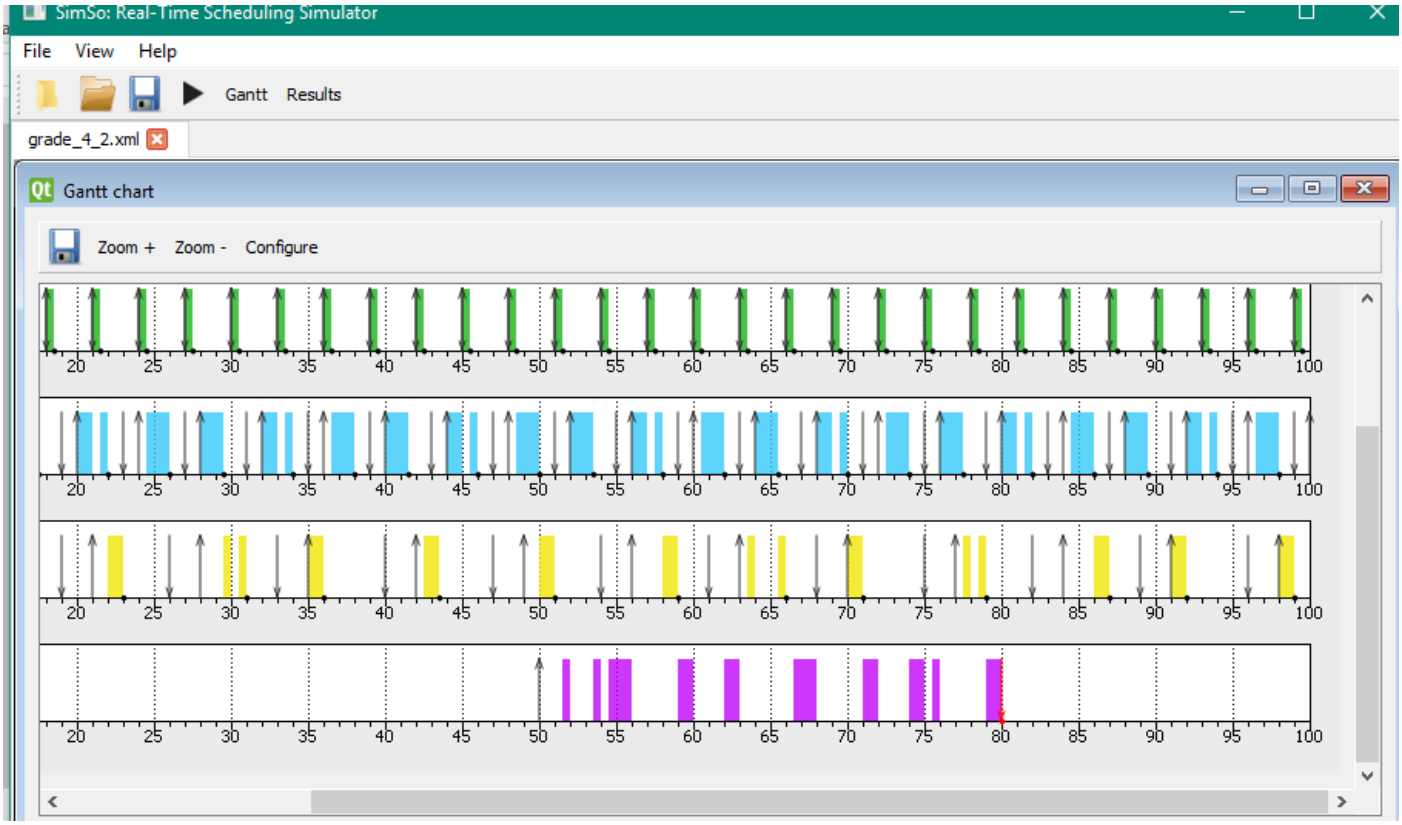
1. **What is the minimum/maximum/average response time of all tasks?**



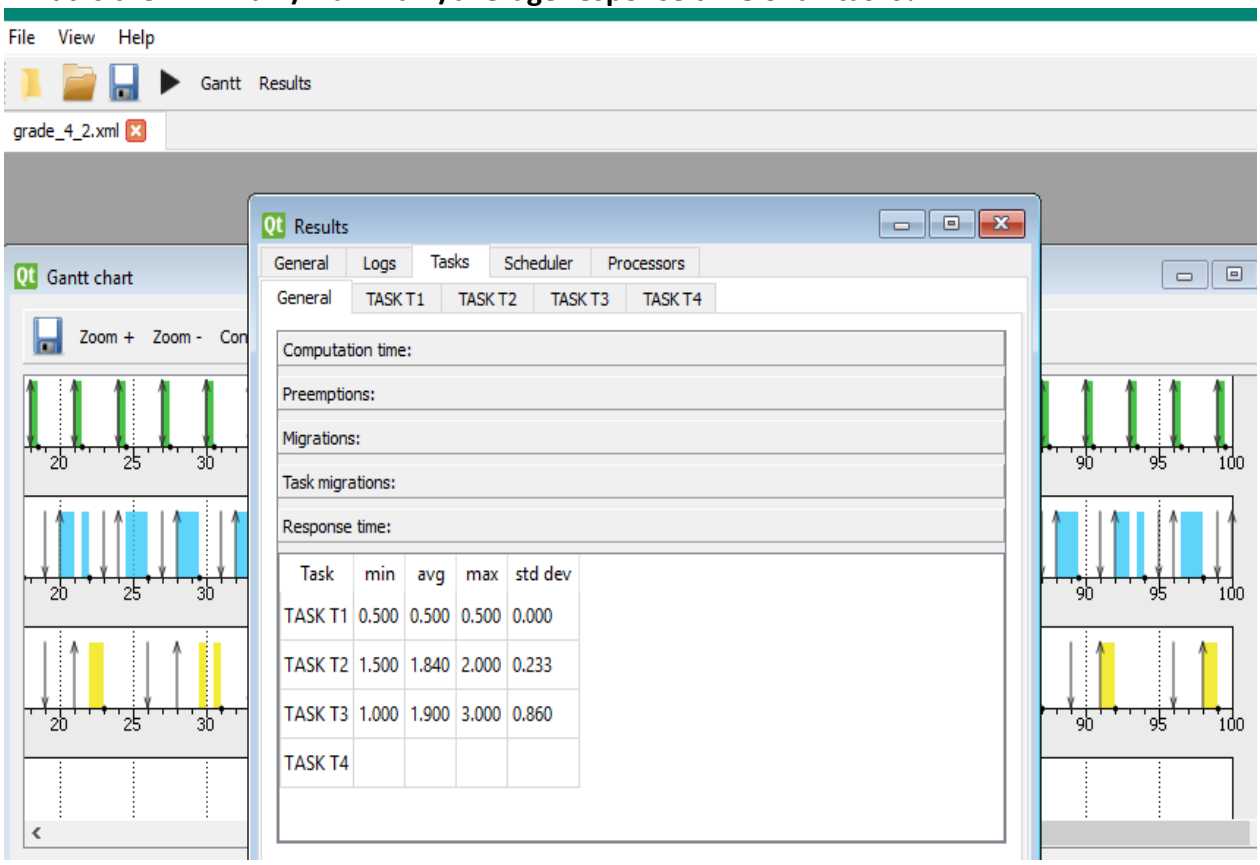
2. **Is any task missing the deadline? Which task? Where?**
   No.
3. **Is the sporadic job meeting its deadline?**
   No.
4. **What is the response time for the sporadic job?**
   29.0

SEE NEXT PAGE ALSO----------

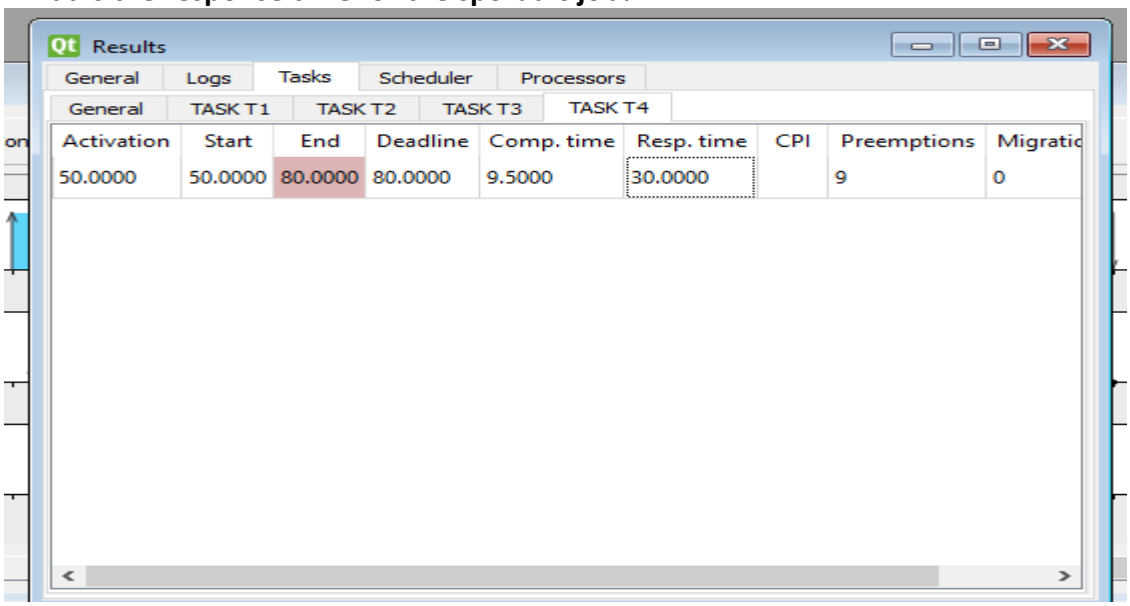
Simulation 2:



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



2. **Is any task missing the deadline? Which task? Where?**
   No.
3. **Is the sporadic job meeting its deadline?**
   Yes.
4. **What is the response time for the sporadic job?**



   But the deadline is missed. So we need to change the scheduler.

5. **Which scheduler is better is better in this example; EDF or RM?**
   EDF.

See next page also.

Programming Assignment:

Software timer in main() to trigger a software interrupt every 5 seconds

```
xAutoReloadTimer= xTimerCreate("periodic",
                               mainAUTO_RELOAD_TIMER_PERIOD,
                               pdTRUE,
                               0,
                               vTimerCallback);
```

1. **Is the system fast enough to handle all aperiodic tasks? Why?**
   No. The “matrixtask” is consuming most of the CPU time and the task created inside every timer callback has lower priority (2) than “matrixtask”.

2. **If not, solve this problem without alter the functionality of any task**
   The problem can be solved by increasing the priority of the “aperiodic task”. Here I have made the priority of this task equal to the priority of “matrixtask” i.e. 3.

3. **What is the response time of the aperiodic task?**
   As it can be seen in the screenshot the response time of “aperiodic task” is about 2.1 seconds. We can improve this response time by further increasing the priority, if “matrixtask” deadline is somewhat larger.

4. **Provide a screenshot of the running system**