

Decide how many tasks are needed

There will be 5 Tasks.

1. LCD Task
2. Blood Pressure Sensor Task
3. Heart Beat Sensor Task
4. Temperature Sensor Task
5. Activate Siren Task

Decide the task parameters (Priority – Periodicity – Deadline)

Assuming Deadlines are the same as Periodicity.

Giving priorities based on Rate-Monotonic scheduling and lower periodicity the task parameters are as follows..

1. LCD Task {P: 50, Pri: 2, E: 2, D: 50}
2. Blood Pressure Sensor Task {P: 25, Pri: 3, E: 3, D: 25}
3. Heart Beat Sensor Task {P: 100, Pri: 1, E: 1.5, D: 100}
4. Temperature Sensor Task {P: 10, Pri: 4, E: 2.5, D: 10}
5. Activate Siren Task {P: 5, Pri: 5, E: 1, D: 5}

Decide the system tick rate

Deciding the Tick rate as the lowest divisible periodicity on all tasks which is 5 ms.

Tick Rate is going to be 5 ms.

Hyperperiod

Deciding Hyperperiod as the LCM of all tasks which is 100 ms.

Hyperperiod is going to be 100 ms.

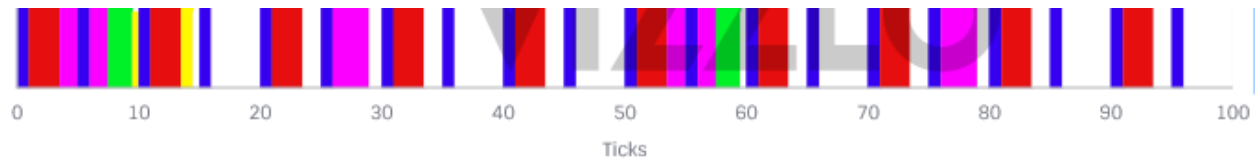
CPU load

$$U = (E1 + E2 + E3 + E4 + E5) / H$$

$$= ((2 * 2) + (3 * 4) + 1.5 + (2.5 * 10) + (1 * 20)) / 100 = 0.625 (62.5\%)$$

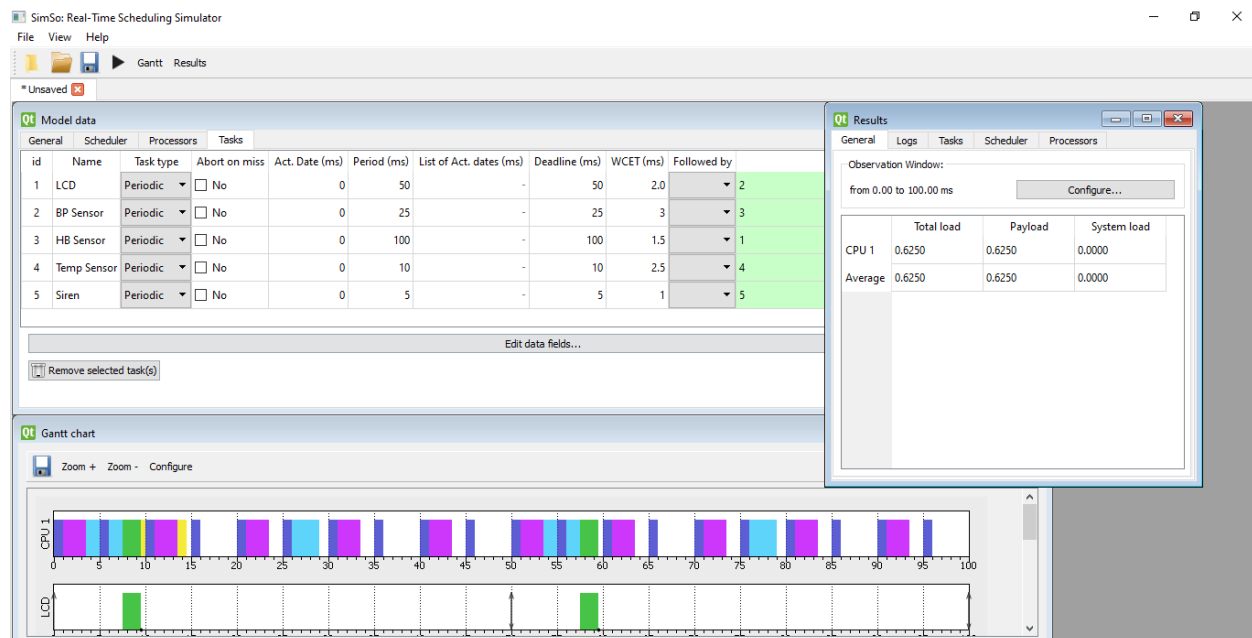
The system load is acceptable and additional tasks can be added if needed.

Draw the timeline manually and analyze system schedulability



The system is schedulable as no task violates its deadline.

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



The simso simulation verified all calculations are the same. And that the system is schedulable and not overloaded.