Analysis Of Task Scheduling Using Rate Monotonic Type scheduler

Tasks	Periodicity	Execution Time	Deadline	Priority
Task(1)	5	2.5	5	3 (Highest)
Task(1)	15	4.5	15	3
Task(1)	20	3.5	20	1 (Lowest)

*Note:-
- In rate monotonic type schedulers the task of lower periodicity is of the highest priority.
- Assuming that OS System Tick time is 1 unit time.
- Please note that the deadline is the same asthe periodicity for all tasks.
- Rate Monotonic Utilization Bound technique: **Total Utilization(CPU Load) $\leq$ n*((2^(1/n))-1)**
  Where n: is the number of system's tasks.
- Time-Demand Bound technique: **Provided Time(DeadLine) $\geq$ Demanded Time**

*Calculation of Utilization Rate Monotonic (Urm):-

Total utilization = summation(Task Execution / Task Periodicity)
$$= 2.5/5 + 4.5/15 + 3.5/20$$
$$= \underline{0.975}$$

Given that number of tasks is 3, Therefore system utilization shouldn't exceed 0.78 For the system to be schedulable.

Conclusion: System guaranted not schedulable.

*Calculation of Time-Demand Analysis:-

Task(1):-   Demand Time = 2.5   Provided Time = **5**
                    = **2.5**
⁂ Task(1) is **Schedulable.**

Task(2):-   Demand Time = 4.5 + ceiled(15/5) * 2.5   Provided Time = **15**
                    = **12**
⁂ Task(2) is **Schedulable.**

Task(3):-   Demand Time = 3.5 + ceiled(20/5) * 2.5 + ceiled(20/15) * 4.5   Provided Time = **20**
                    = **22.5**
⁂ Task(3) is **Not Schedulable.**

*Simso Simulation:-