

## Assignment 9

The following tasks are scheduled by the ukernel scheduler task (units are clock ticks):

Task	execution time	period	deadline
T1	2	10	4
T2	6	20	12
T3	5	10	10.

For questions 1-2, show a Gantt chart for first major schedule period as your proof.

1) Does Deadline-Monotonic scheduling work for these 3 tasks?

2) Does Rate-Monotonic scheduling work for these 3 tasks (assuming the deadline is the period instead)?

3) Is there a scheduling algorithm that exists which allows the scheduler task itself to be running on the same processor as these 3 tasks and meet all deadlines? Prove this point by calculating the total processor utilization for the above 3 tasks.

4) Using fixed utilization priority scheduling, prove without the Gantt chart why the above 3 tasks will not be schedulable with this algorithm.

For Question 5, the following tasks are scheduled by the ukernel scheduler task (units are clock ticks):

Task	execution time	period	deadline
T1	2	10	10
T2	4	14	14
T3	10	35	35

T1 is delayed by one clock tick every time there is a context switch from T3 to T1.

5) What is the processor and deadline utilization of these 3 tasks, and explain what that means for Rate-Monotonic scheduling or Deadline-Monotonic scheduling, respectively?