Lab Submission(Week 4)

ESE 3025: EmbeddedReal Time Operating Systems

Lambton College in Toronto

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INTRODUCTION

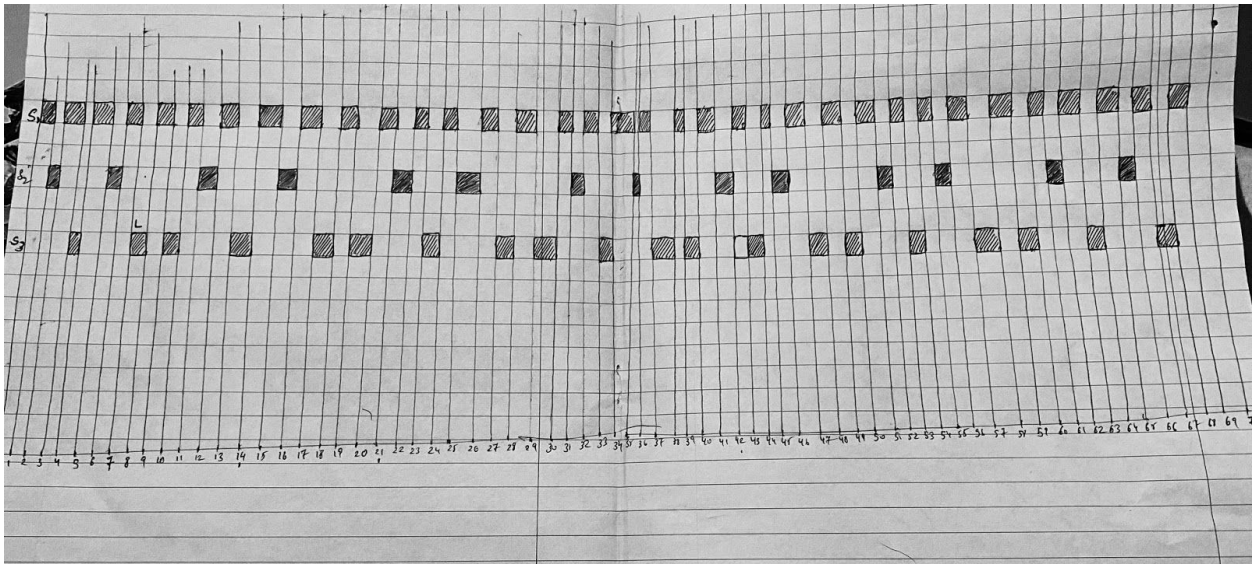
In this lab we are going to do timing diagrams for fixed priorities as well as dynamic priorities.
In fixed priorities there are two categories, one is rate monotonic and the other is deadline monotonic but both are optimal.
In Dynamic priorities it is categorized into three types. They are neuristic, earliest deadline first and RR timeslice.

DESCRIPTION

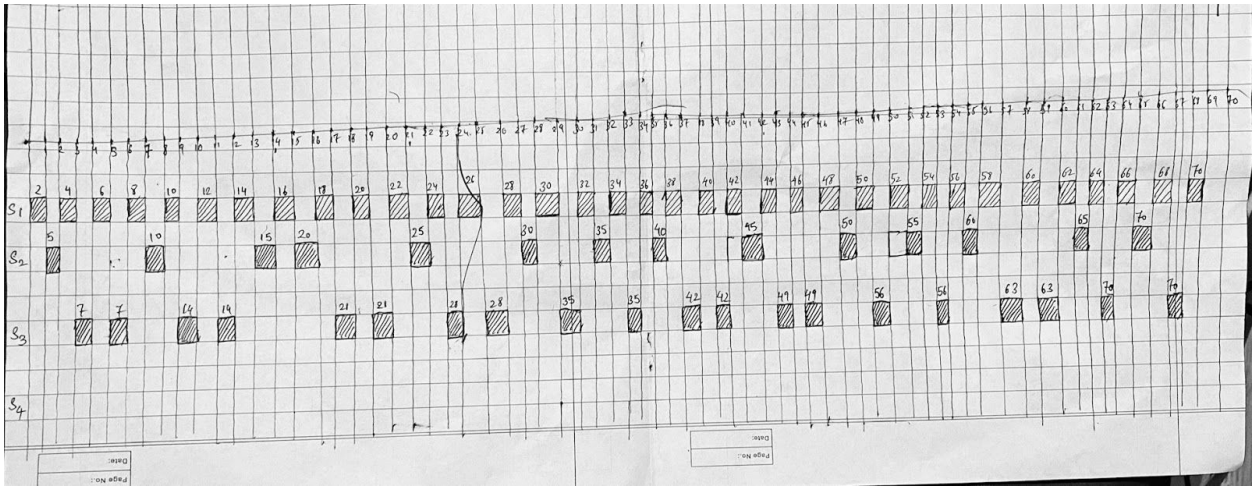
Here, at first we need to do fixed priority and in fixed priority the priorities are fixed once they are set and they cant be changed. Even if the tasks S2 or S3 misses a slot it will have to fill in the next cycle.
But in dynamic priority, priorities change in order to the earliest deadline at every dispatch.
Mostly fixed priority is in use than dynamic priority this is because there is a chance of missing lower priority tasks in fixed priority but in dynamic priority there is no information on which task is going to miss, this is the reason fixed RM scheduling policy is highly used.

RESULTS

Reproduce the three-task example from the notes, up to the LCM time of 70 time units, first using fixed-priority scheduling



Reproduce the three-task example from the notes, up to the LCM time of 70 time units, first using EDF dynamic-priority scheduling.



Where do the missed deadlines appear when you apply a fixed-priority RM scheduling policy?

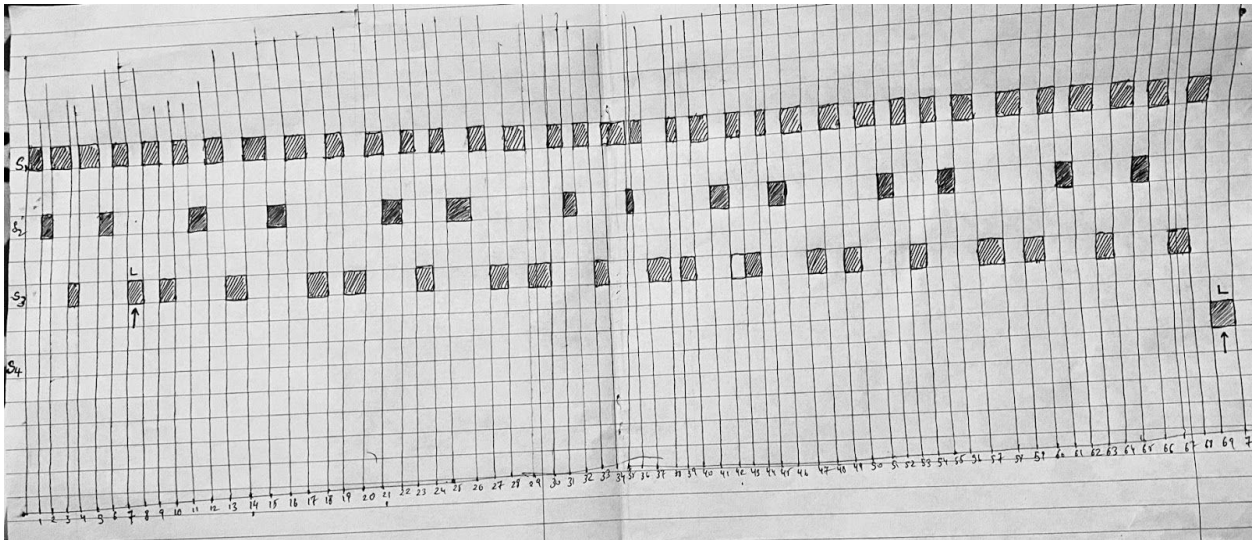
Yes, there is a missed deadline right to the 7 in S3 task in fixed priority.

When does the idle task occur, in both fixed- and dynamic-priority scenarios?

In both fixed priority and dynamic priority there is an idle task right after 69.

What happens if you attempt to accommodate a fourth task, S_4, with a period of T_4=10, and C_4=2, using either fixed-priority or dynamic priority schemes? Provide timing diagrams.

Here we choose fixed priority.



CONCLUSION

After doing the timings diagrams we came to know that in fixed priorities we have missed lower priority tasks once but in dynamic priority as the priority changes according to the deadlines we didn't miss any task. This is the reason why we use fixed priority over dynamic priority.