

Aperiodic Task Scheduling Using Polling Server

ECE 5550G Final Project
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Implementation



Aperiodic Tasks

- xAperiodicTaskControlBlock
- xATCBQueue[]
- uxAperiodicTaskCounter

- prvGetNextAperiodicTask()
- prvFindEmptyElementIndexATCB()
- vSchedulerAperiodicTaskCreate()



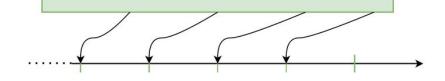
Polling Server

- prvPollingServerCreate()
- prvPollingServerFunction()

 Executes the task which was left behind on previous time slot.

Periodic Polling Server

Polling server periodically checks ATCB executes available aperiodic jobs



Periodic Tasks

After the polling server schedules the available aperiodic jobs, periodic jobs will be scheduled.



Response Time Calculation

Used xTaskGetTickCount() to get tick count

Start time is recorded from vSchedulerAperiodicTaskCreate()

End time is recorded from prvPollingServerFunction()

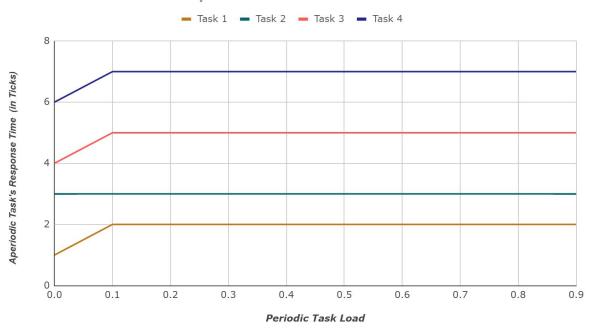




Results & Evaluation

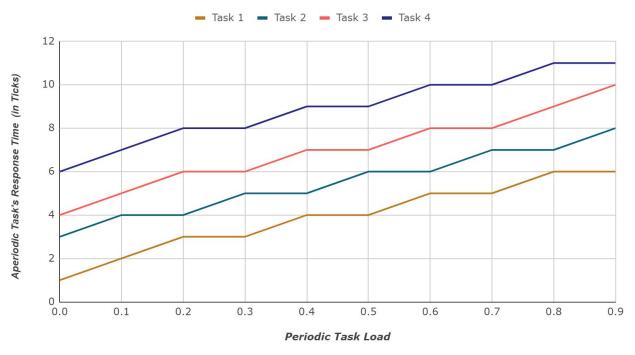


Results (Polling Server Period = 100 ms)



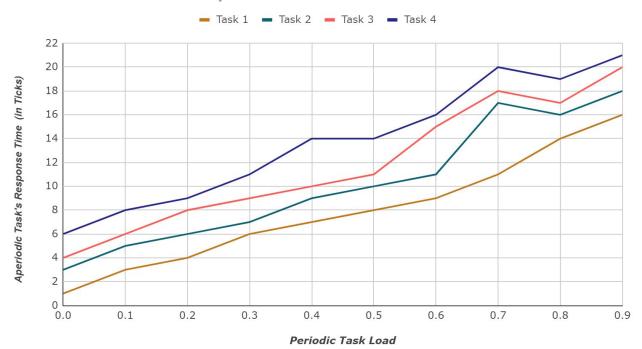


Results (Polling Server Period = 400 ms)



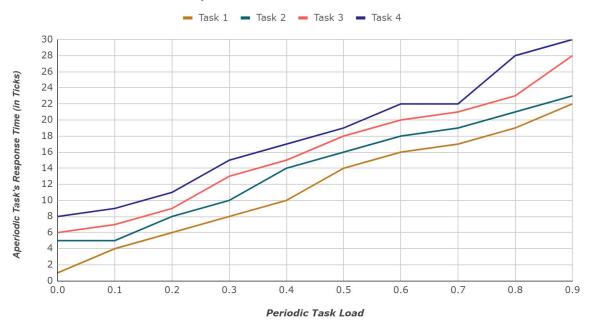


Results (Polling Server Period = 600 ms)





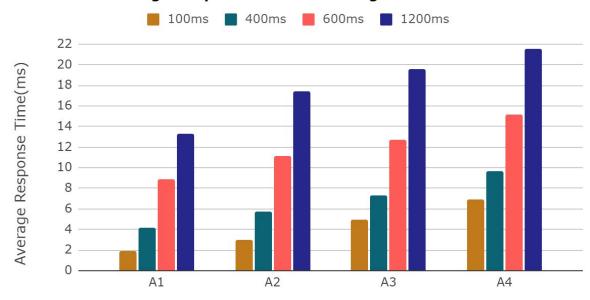
Results (Polling Server Period = 1200 ms)





Aperiodic RT for varying Polling Server Priority

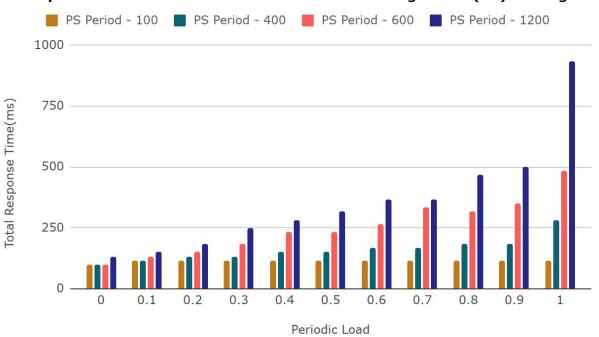
Average Response Time Vs Polling Server Period



Polling Server Period



Response Time Vs Periodic Load for various Polling Server(PS) Settings



Thank You!

