

CS3523 assignment 3

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February 2022

- The file `basic.h` contains some structures and classes that are required for EDF and RMS scheduling algorithms. It also contains a common part of scheduling algorithm of EDF and RMS scheduling.
- Both EDF and RMS scheduling have different rules but the structure of their algorithms is similar.
The algorithms take input from `inp-params.txt` and store in an array called `input_data()`.
Then a scheduling algorithm which follows the rules of RMS and EDF schedules the processes into an array called `sched_set()`.
- The output is generated to "RMS-Log.txt" and "RMS-stats.txt" in case of RMS scheduling and "EDF-Log.txt" and "EDF-stats.txt" in case of EDF scheduling.
- Some problems that arose while writing algo's are
 - To calculate the waiting time initially I had to write a while loop that adds 1 to each process that is not running but this caused the time taken to run to increase significantly and processes that have completed running also had their waiting time increased.
There was a quick fix by having data of which process completed but it was not efficient.
So I added a variable to the `input_data` class and made changes so that the deadline time is increased after each process finishes execution.
 - Another problem was to include the context-switch time, for this I added a variable to the stimulation algorithm in `basic.h` that holds the value of context switch time. and also the problem where the default unit of time wasn't precise enough so I had to increase the precision by multiplying the time values by 100.
 - While writing preemption if the running queue is empty but all processes haven't completed processing because they haven't joined yet, the program was showing preemption even though it was not for this also I just added some code and eliminated it.

- Another similar issue was with calculating the number of missed deadlines. The problem was that a process that is not currently running can also miss deadline. So I had to add a for loop and a variable to prevent counting twice.

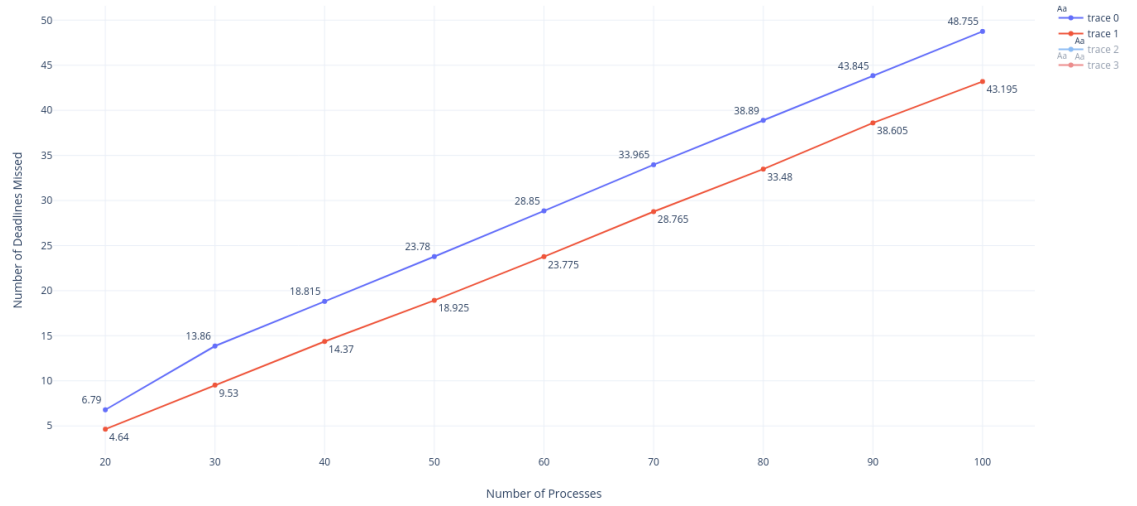


Figure 1: NO.OF Deadlines missed vs NO.OF Processes

The red lines/dots represent EDF scheduling.
The blue lines/points represent RMS scheduling.

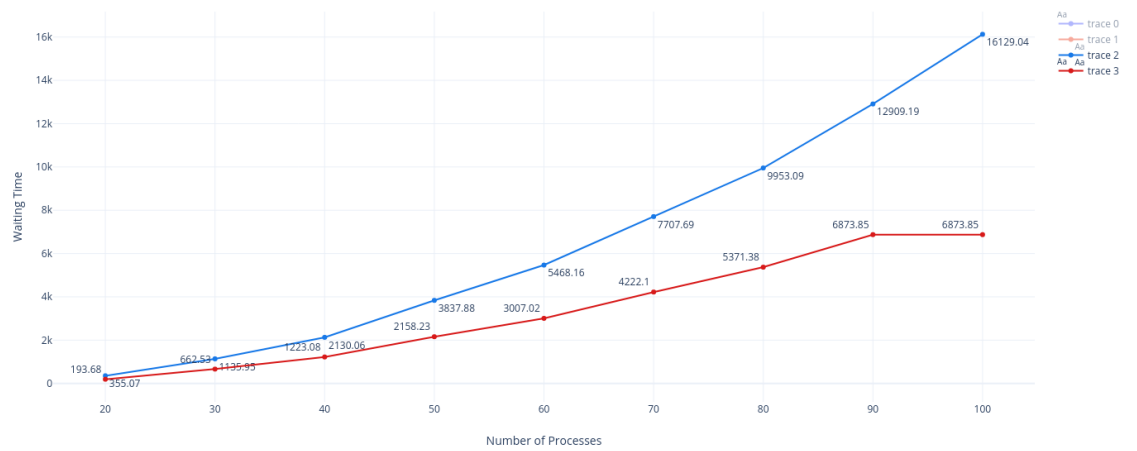


Figure 2: Waiting Time vs NO.OF Processes