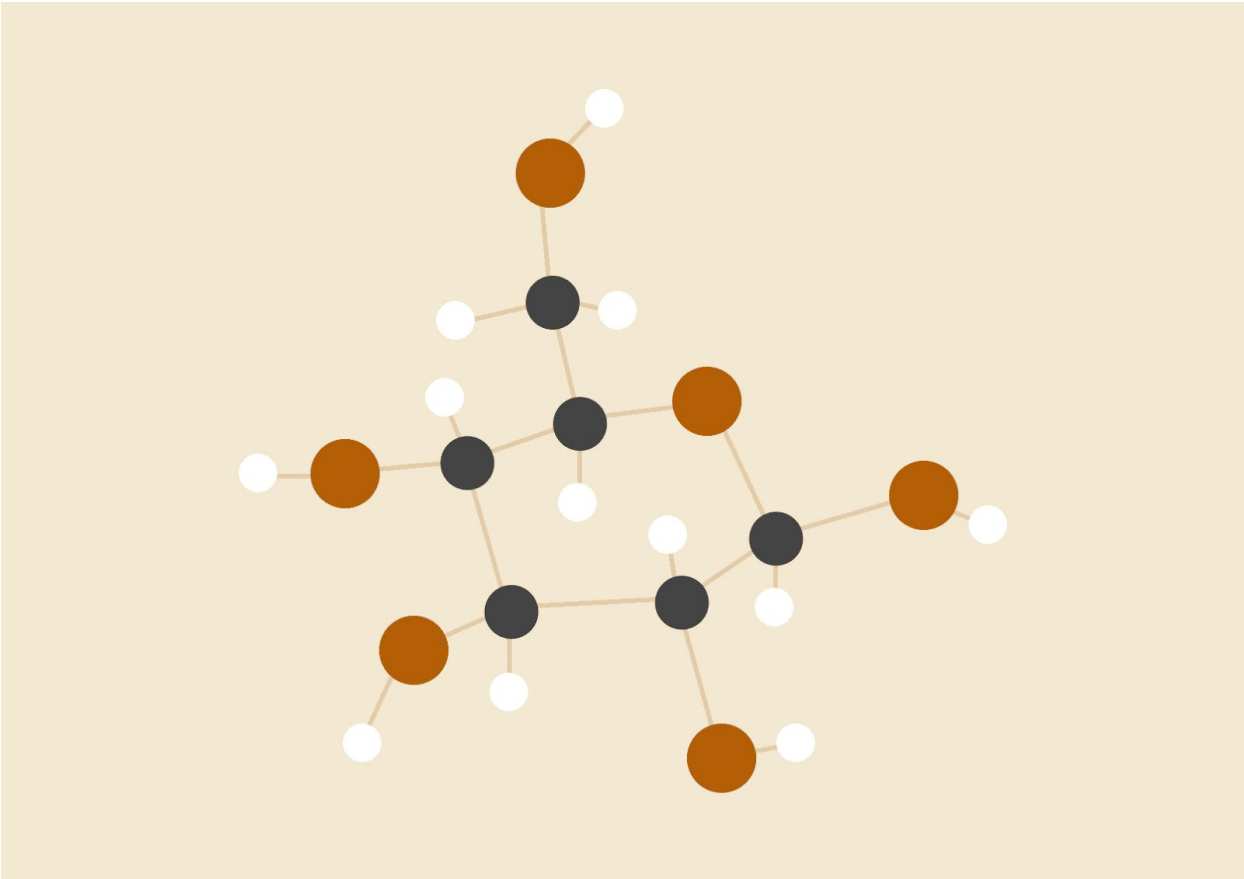
OS 2 Assignment 1

Rate-monotonic scheduling and Earliest deadline first scheduling



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CS17BTECH11018

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INTRODUCTION

In programs I have implemented Rate-monotonic scheduling and Earliest deadline scheduling algorithms used in CPU scheduling.

THEORY

RMS : Rate monotonic scheduling algorithm schedules periodic tasks using a static priority policy with preemption. If a lower-priority process is running and a higher priority process becomes available to run, it will preempt the lower-priority process. The priority is inversely proportional to their periods. The rationale rms scheduling algorithms is that to assign a higher priority tasks that require the CPU more often.

EDF : Earliest deadline first scheduling assigns priority dynamically according to deadline. The earlier the deadline, the higher the priority; the later the deadline , the lower the priority. Under EDF policy, when a process becomes runnable, it must its deadline requirement to the system.

IMPLEMENTATION

In Assign-CS17BTECH11018.cpp the rate-monotonic scheduling is implemented. It first takes all the information about the processes as Total no of processes, then attributes of all the processes such as processing time, period and no of times process will repeat.

After then we loop for all the process till the all the process are complete. It pushes all the processes in a vector. Then it checks if the its the time for the process to run, if its the time for the process to run then it checks if the process will be completed its processing before any other higher priority comes up. If no other higher priority process comes up while a process is running it keeps running otherwise it will preempt the higher priority process will start running.

In Assign-EDF-CS17BTECH11018.cpp the Earliest deadline scheduling is implemented. If first takes all the information same as in rate monotonic scheduling.

After then we loop for all the process till all the the process are complete. It pushes all the process in a vector. Then it checks if if the time running for process in CPU if in its

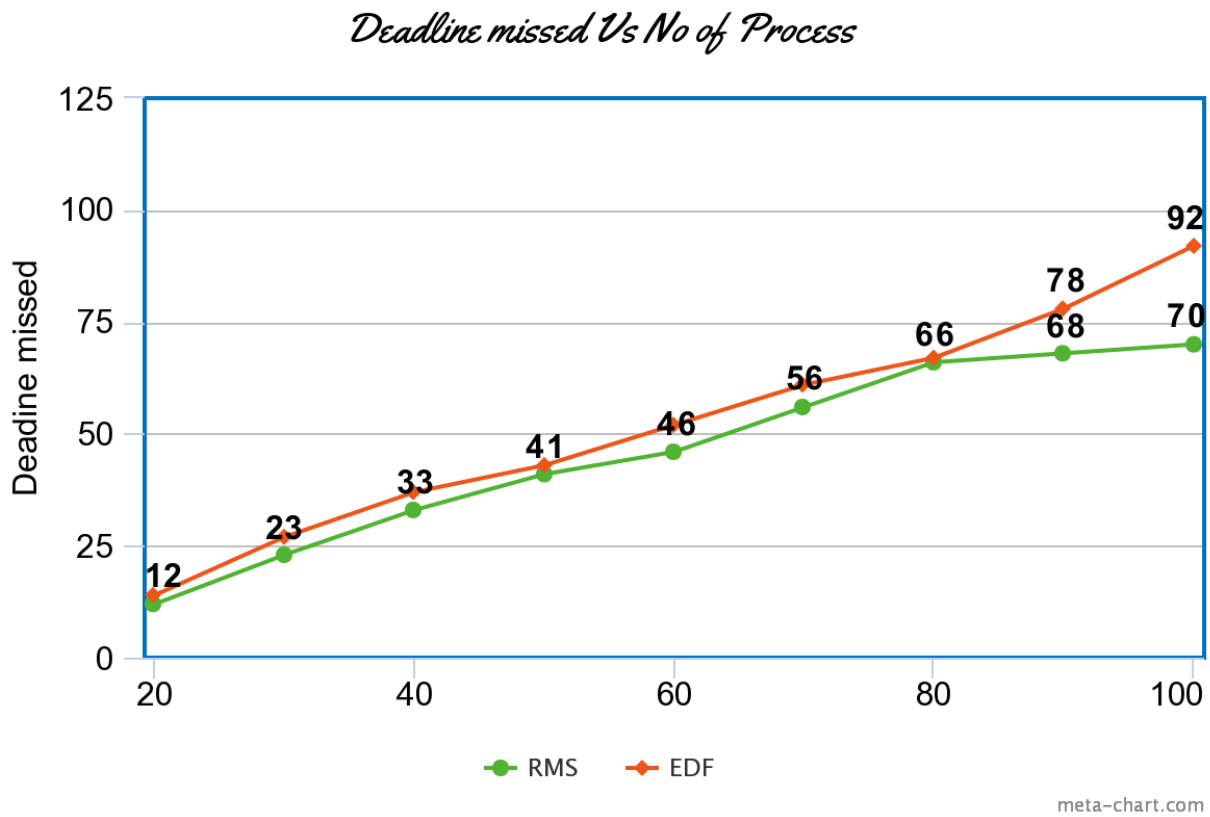
processing another processes whose deadline is approching and it gets higher priority then the process running in the CPU gets replaced with higher priority process.

Algorithms Analysis

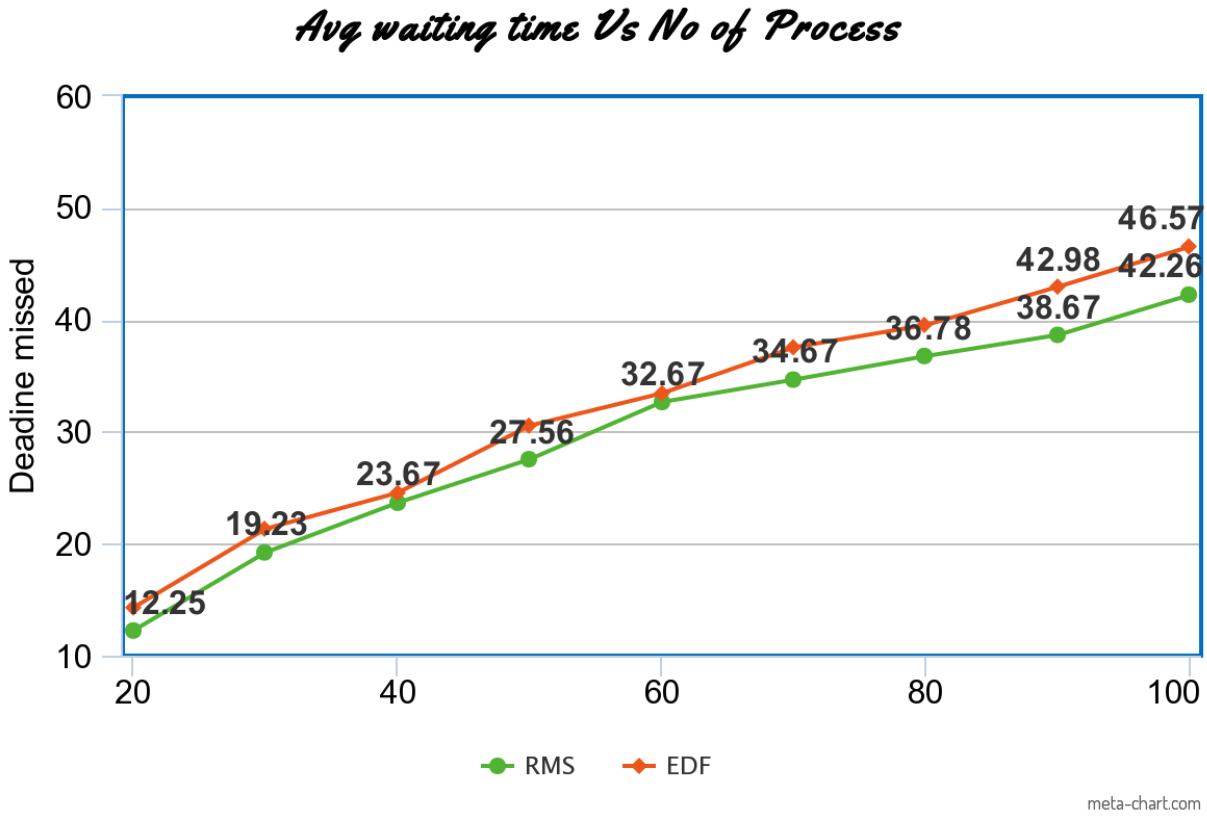
Algorithms analysis is done on no deadlines missed, waiting time, and turnaround time for the processes.

GRAPH

Graph for no of deadlines missed Vs no of process



Graph of average waiting time vs no of processs



CONCLUSION

Rate monotonic scheduling is better for scheduling CPU processes.