

Operating Systems-2

Assignment 1

Report

Design:

We use discrete event simulation for schedule dispatcher. Scheduling is done using two algorithms namely Rate Monotonic and Earliest Deadline First.

Rate Monotonic:

In Rate Monotonic scheduling each process is given priority based upon shortest periods. It is a static scheduling based algorithms as the period will remain constant throughout the execution of the program.

Earliest Deadline First:

In EDF each process is given priority on the basis of earliest deadline. It is a dynamic scheduling based algorithm as the deadline will change after running every instance of the process.

Working:

First, the processes are sorted based upon which algorithm. For RMS sorting criteria is period and for EDF sorting criteria is deadline.

o RMS:

After that at every instant of time it is checked where there is a

process ready to run or not if not then cpu becomes idle.

Else, a

new process may start if the last has finished its execution or a

new process (if it has a greater priority) preempts the previous

one making the available for its own use. It can also be the case

the same process was running on the cpu then for this we increase its executed time. Every time a process is either completed we update the waiting time for the process.

While

running log is written along with execution and when all of the

processes complete average waiting time is computed and produced as an output file.

o EDF:

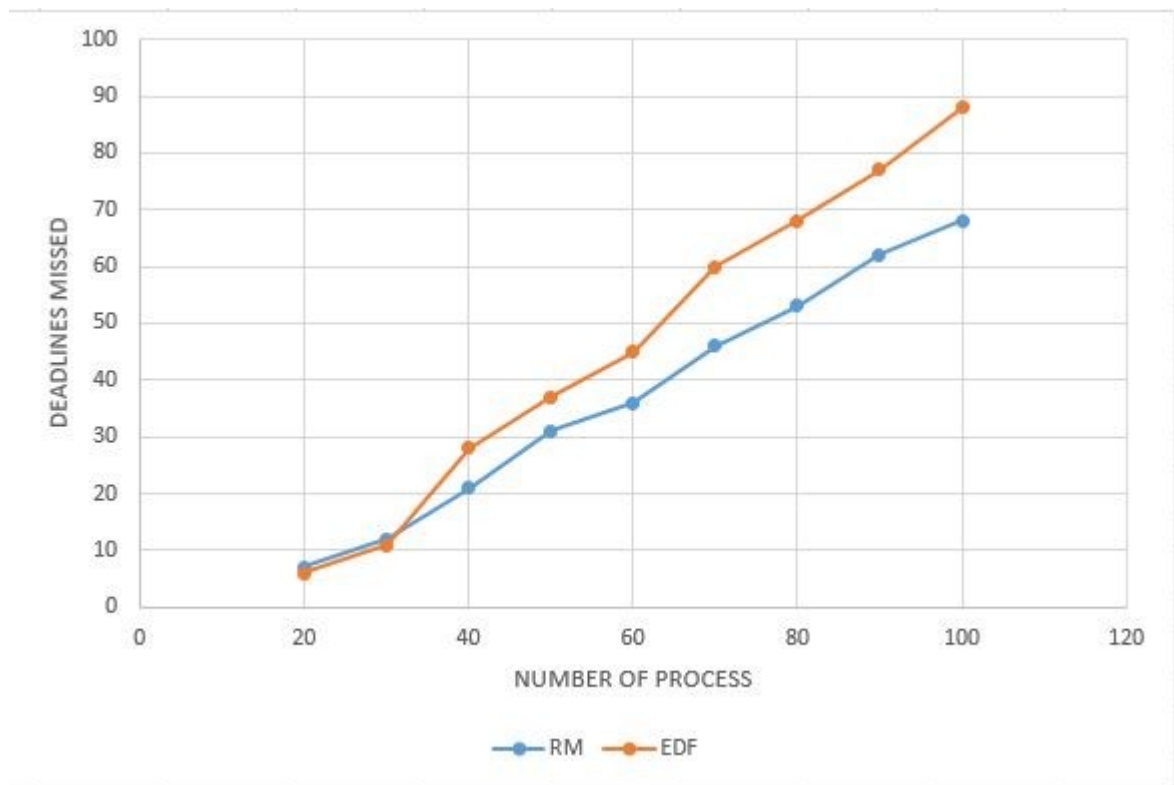
All the working is same but if a program misses its deadline or a

program finishes its execution then we sort the vector again as

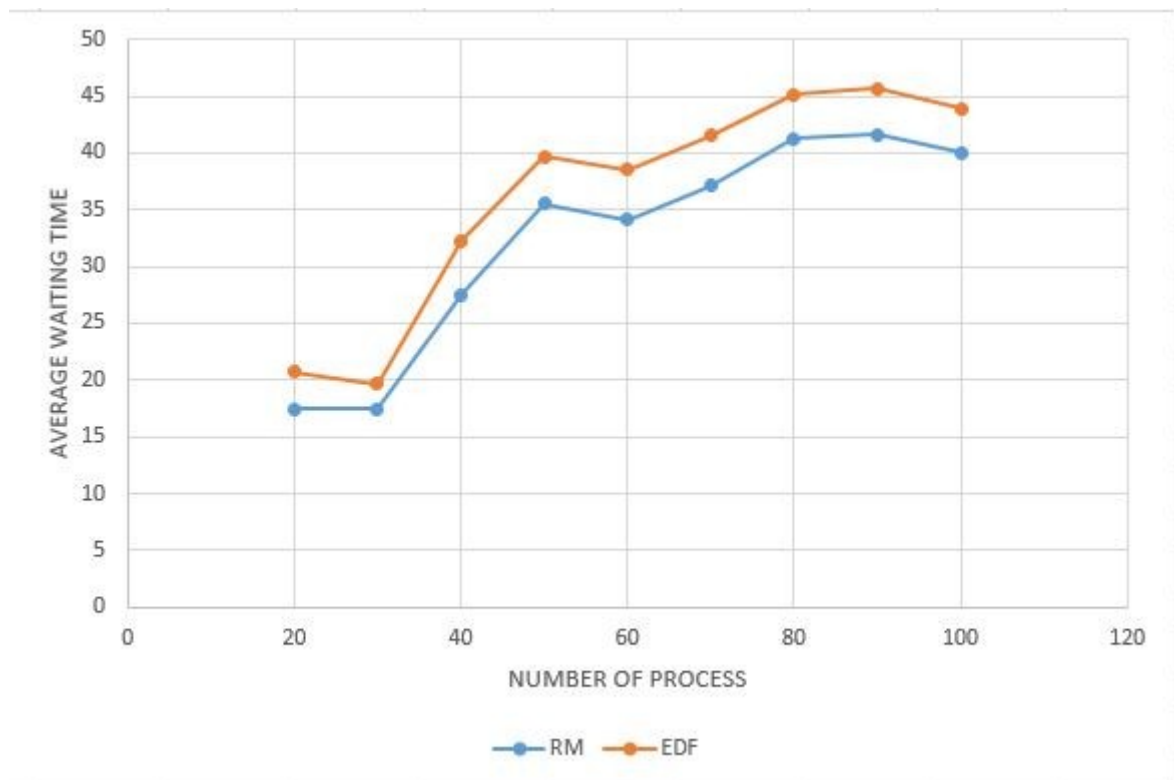
this kind of event leads to change in deadline.

Graphs:

1. Deadlines missed vs No. Of processes



2. Average waiting time vs No. of processes



As we can see, RM performs better both in terms of deadlines missed and average waiting time. It is because as the no. Of processes is high , EDF keeps on switching between the tasks instead of completing one.