Operating Systems 2 Assignment
Report

I-Design of the Program

I use Discrete Event Simulation(DES) to simulate the schedule dispatcher. The scheduler does real-time scheduling with two different algorithms i.e. Rate Monotonic (RM) and Earliest Deadline First (EDF) .

Process:

I made a class to store input values such as

{
process
period
running_time
k
deadline
executed_time
arrival_time
}

and made a bool operator to sort the class array according to period in Rate Monotonic Scheduling and according to Deadline in Earliest Deadline First Scheduling. Now according to the schedule , I gave the output corresponding to processing time , deadline , period , time at which the process joined the system , when a process starts , end , resumes or preempted by another process. It also depicts the total time when CPU is idle.

Rate-monotonic scheduling (RMS) is a priority assignment algorithm used in real-time operating systems (RTOS) with a static-priority **scheduling** class. The static priorities are assigned according to the cycle duration of the job, so a shorter cycle duration results in a higher job priority.

Earliest deadline first (EDF) or least time to go is a dynamic priority **scheduling algorithm** used in real-time operating systems to place processes in a priority queue. Whenever a **scheduling** event occurs (task finishes, new task released, etc.) the queue will be searched for the process closest to its **deadline**.

Comparison parameters :

We have the following metrics for comparing the performance of the two algorithms

1. Deadline Miss :

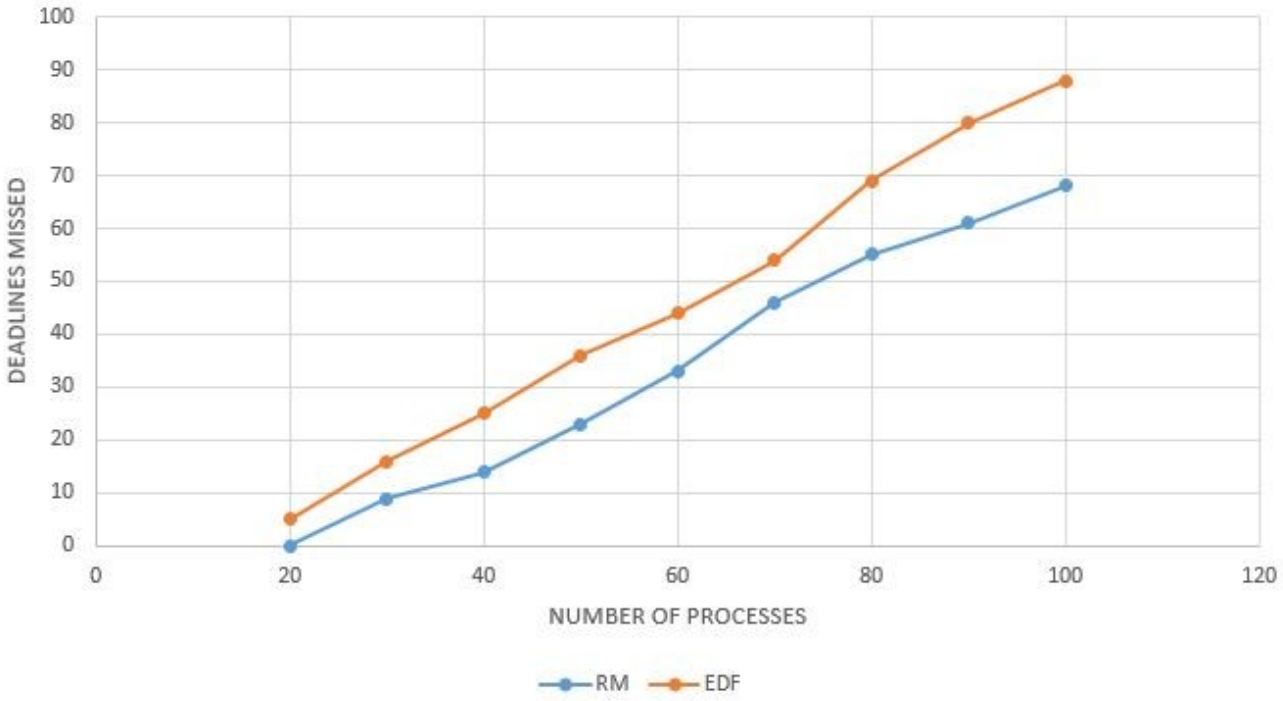
A process misses a deadline if before completion of execution of the process, the deadline expires .

2. Average waiting Time :

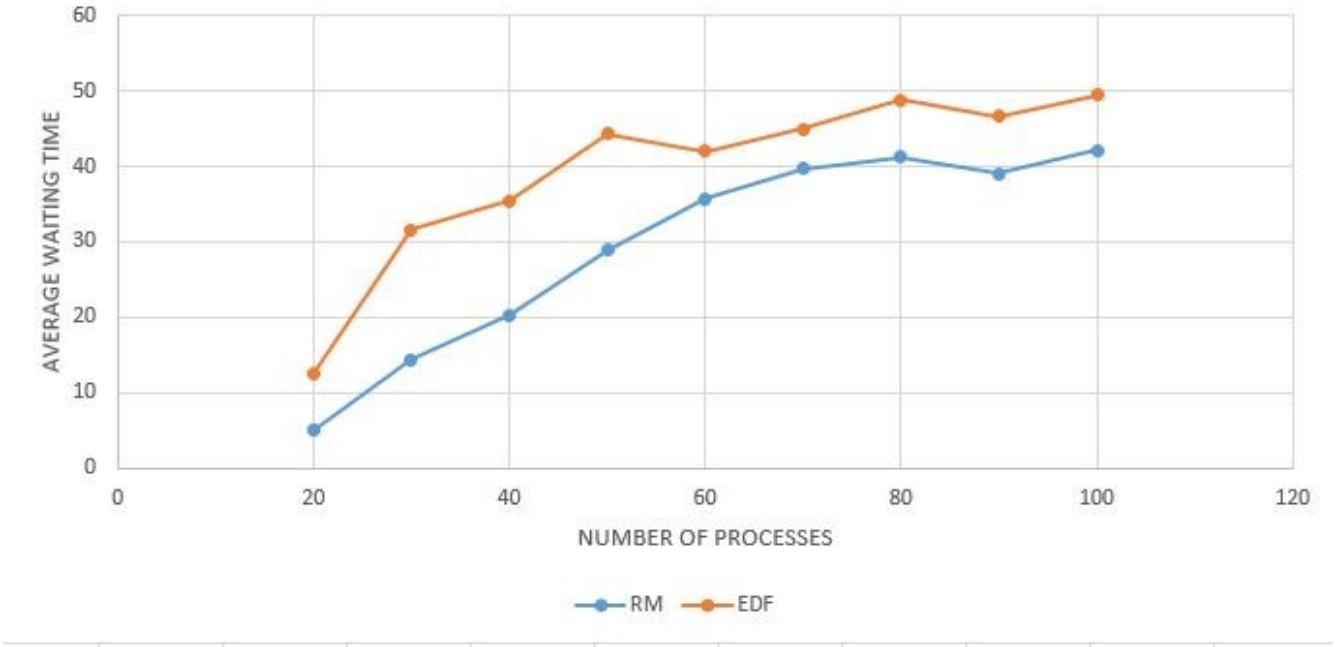
amount of time a process has been waiting in the ready queue.

Graphs:

Graph 1 : Deadline missed vs Number of Process



Graph 2 : Average Waiting Time vs Number of Process



The graph depicts that **Rate Monotonic Scheduling** gives better performance than **Earliest Deadline First** both in terms of average waiting time and number of processes that missed their deadline.