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Assignment - C1

Title :- Scheduling problem

Problem statements :-

Write a Java program (using OOP features) to implement following scheduling algorithm FCFS, SJF (premptive, Non premptive), Priority (Non premptive) & Round Robin (premptive)

Objective :-

i) Process scheduling in multitasking & multiuser OS.

ii) Implementation of scheduling algorithms.

S/W & H/W :-

C++ editors & compilers for linux OS, keyboard, mouse, etc.

Outcomes :-

The student will be able to

i) Compare the scheduling algorithms

ii) Implement FCFS, SJF, RR scheduling algorithms.

Theory :-

1] FCFS scheduling :-

The process requests are schedules in the order of their arrival time. The pending request are in a queue. The first request in the queue is scheduled first. The coming requests are added to the end of queue.

Algorithm :-

1] Input the process along burst time
2] Input arrival time for all process
3] Sort according to their arrival time along with indices
4] Perform process in sorted order
5] stop.

2] Shortest Job First :-

SJF is a scheduling policy that selects the waiting process with the smallest execution time to execute next.

Shortest Job first has the advantage of having a

a) Minimum average waiting time among all algorithms
b) It is greedy algorithm.

Algorithm :-

i) Sort all the process according to their arrival time.
ii) Then select that process which has minimum arrival time & minimum burst time
iii) After completion of process make a pool of process which after till the completion of process & select that process among the pool which is having minimum burst time

3] Round Robin scheduling :-
schedules using the time slicing. The amount of CPU time a process may use when allocated is limited. The process is time-empted. If the process requires more time or if process requires I/O operation before the time slice. It makes weighted turnaround time approximately equal & all time but throughput may not be well as all processes are treated equally

Algorithm :-

1] Get the input for process with arrival time & burst time. take quantum.
2] Sort processes according to arrival time.
3] Process till all processes are done
4] End.

4] Priority based scheduling :-
It is nonpremptive algorithm & one of the common scheduling algorithm in batch system Each process is assigned a priority & process with highest priority is executed first & so on. Processes with same priority are executed on FCFS basis.

Algorithm :-

1] Get Input for process including arrival time, burst time & priority.
2] Sort process according to arrival time
3] If process have same arrival time, sort them by priority.
4] Print process according to index

Conclusion :-

We have learnt & successfully implemented the scheduling algorithms.