In Round-Robin Scheduling, the quantum time is static and tasks are scheduled such that no process uses CPU time more than one slice time each cycle. If quantum time is too large, the response time of the processes will not be tolerated in an interactive environment. If quantum time is too small, unnecessary frequent context switch may occur. Consequently, overheads result in fewer throughputs. In this study, we propose a priority multi queues algorithm with dynamic quantum time. The algorithm uses multi queues with different quantum times for the processes. The quantum times for the processes are depending on the priorities which in turn depending on the burst times of the processes. The proposed algorithm has been compared with varying time quantum algorithm which already exist to improve the original round robin algorithm. With proposed algorithm, the simple Round-Robin algorithm has been improved by about 35%. By controlling quantum time, we experience fewer context switches and shorter waiting and turnaround times, thereby obtaining higher throughput.
Multi-queue CPU Process Prioritization using a Dynamic Quantum Time Algorithm Compared with Varying Time Quantum and Round-Robin Algorithms

References

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Index Terms

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Burst Time, Dynamic Quantum Time, Multi queue, Priority, Round Robin.