Title of the Paper Being Reviewed: CPU Scheduling with a Round Robin Algorithm Based on an Effective Time Slice

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The authors of this article begin by stating the performance of the round-robin scheduling algorithm is contingent mostly on CPU utilization, throughput, turnaround time, waiting time, response time, and context switching. Within this algorithm, a minor fixed unit of time is utilized that’s been dubbed the time quantum or time slice. The CPU scheduler looks around the ready queue distributing the CPU to every process for a single time interval up to one-time quantum. If the CPU burst for a process surpasses the one-time quantum, the process terminates, and it's returned to the ready queue. When a new procedure comes, it's added to the end of the circular queue compared to other algorithms the round-robin algorithm improves performance in the instance of a time-sharing operating system. The authors of this article also mention that the uniqueness of this algorithm rests in the usage of a time quantum within a process through which it's received considerable abundant popularity they go on to explain what the time quantum is. They say that the time quantum is a fixed size time slice, and it's distributed to a task that has to be processed. A considerable amount of research experiments have defined the time quantum as a minute unit of time distributed to a process that’s in the ready queue, and it can be altered depending on the resource necessities of the procedure. If the procedure finishes executing in the required time, it won’t need additional processing space, and it should be removed from the ready queue. Further rounds of running processes are dependent on the time quantum. Prior research experiments have proposed a myriad of methods to enhance the distribution of the time slice for procedures that need execution. These methods, however, do suffer from particular drawbacks in terms of prohibiting the alteration of those procedures, which require a little more time than the distributed time quantum cycle. This experiment recommends the usage of a median technique, which provides enhanced efficiency for the round-robin algorithm by forming a relationship that is contingent on the selection of the time slice for procedures. The time slice for each process for each procedure is dynamically distributed for each run, which in turn improves processor performance. This algorithm is considered to be one of the most adept and productive CPU scheduling methods in the field of computing. It focuses on the processing time needed for a CPU to execute available jobs. Even though other CPU scheduling algorithms are centered on processing time, which utilizes distinct criteria, the round-robin algorithm has gained a lot of recognition because of its optimum time-sharing environment. The capability of this algorithm is contingent upon the selection of time quantum. This paper proposes a new productive round-robin CPU scheduling algorithm. The productiveness of this algorithm is contingent upon a dynamically distributed time quantum in each round. Its performance is compared with traditional as well as improved round-robin algorithms, and the discoveries display an enhanced performance regarding the average waiting time, average turnaround time, and context switching.

The round-robin algorithm is one of the simplest to start using, and it’s starvation-free; this algorithm has been the primary selection for CPU scheduling. Nevertheless, innumerable researchers have recommended changes and modifications for this algorithm to enhance its base performance, which has led to lots of theories being suggested and experiments conducted. One of the algorithms proposed distributes the CPU to every process only in the first round, and after that, it utilizes the SIF algorithm to select the next process. Another similar method that’s a little different is a recommended algorithm that uses two queues known as ARRIVE and REQUEST. This algorithm shows a performance enhancement compared to the previous algorithm discussed. A new recommended algorithm, known as AN, is centered on an original method known as the dynamic time quantum. The underlying concept of this approach is the operating system modifies the time quantum based on the burst time of the set of idle processes that are in the ready queue. The consequences of the simulations and experiments signify that this algorithm resolves the fixed-time quantum issue and raises the performance of the round-robin algorithm. To build a productive CPU scheduling that’s centered on the round-robin algorithm, two essential scheduling aspects time and memory distribution were utilized as control variables; this result dictates the effectiveness of the recommended algorithm.

To conclude, the impact of this article is it presented an improved round-robin algorithm that seeks to avoid the vulnerabilities of earlier experiments on effective and efficient CPU scheduling. The impact of this algorithm, in my opinion, is it’s an upgraded, more efficient version of the original round-robin algorithm that’s work’s better than the original one, and it should make processes and jobs more manageable and smoother for an operating system to receive and process in the future. Hordes of tests utilized the necessary processing time for a CPU execution to decide the optimum scheduling technique. As a result, these experiments indicate various CPU scheduling algorithms according to processing time, which is centered on a different criteria. These studies acknowledge the fact that the round-robin algorithm loves additional popularity than any other CPU scheduling algorithm based on its optimum time-shared environment.

Reference

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