

Title:

"Dynamic CPU Scheduling: An Adaptive Algorithm Framework for Optimizing Process Management and Resource Efficiency"

Abstract:

In a modern computing environment, efficient CPU scheduling is the importance of improving performance, reducing process latency and maximizing resource efficiency. This paper presents a dynamic CPU scheduler that integrates most of the classical scheduling techniques, such as first-come-first-served (FCFS), shortest job first (SJF), shortest time first (SRTF), preemption (and not -preemptive) and round robin - in joint. The system plans to make on-the-fly algorithm selection according to the difference between the needs of the process and the needs of the job, thus increasing flexibility and efficiency. The framework allows in-depth analysis by visualizing Gantt charts and comparing waiting times and turn around times, and selects the best scheduling methods for different situations. It also provides a special change model where a change algorithm is proposed according to incoming processing, CPU utilization and key changes. This approach provides transparent, fair distribution and low energy consumption, making it suitable for real-time, cloud computing and big data applications.

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