
Summary: Round Robin is a widely used scheduling policy, used primarily because it is intuitively fair, splitting the resources evenly among the jobs. Little is known, however, of its fairness with respect to completion times for the jobs, which is typically measured using the \( \ell_p \)-norm of the completion times of the jobs for small \( p \). This paper studies Round Robin’s performance for the \( \ell_p \)-norm of the completion times when scheduling \( n \) preemptive jobs on a single machine, for all integral \( p \geq 1 \). We show that if all jobs arrive at the same time Round Robin’s approximation ratio is exactly \( \sqrt{p+1} \). When jobs arrive over time, we show that Round Robin’s competitive ratio is at most 4 for any \( p \geq 1 \).

MSC: 90-XX Operations research, mathematical programming

Keywords: scheduling; completion time; potential function; \( \ell_k \)-norms

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paper as accurately as possible without claiming the completeness or perfect precision of the matching.