

A Discrete-time Retrial Queueing System With Changes in the Service Times and Retrial Times

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Abstract

This paper investigates a discrete-time retrial queueing system wherein arriving customers can choose between adopting a Last-Come-First-Served (LCFS) discipline or joining the orbit. The potential variability in service times, which are considered to be general, is taken into account, and retrial times are governed by an arbitrary distribution. The underlying Markov chain of the queueing system in question has been analyzed. The generating function for the number of customers in both the orbit and the system, along with their respective expected values, has been derived. Recursive formulas for computing the steady-state distribution for the analyzed queueing system and its corresponding standard system are provided. Additionally, recursive formulas for determining the steady-state distribution of both the orbit and the system have been developed. Numerical examples are presented to illustrate the impact of the most significant parameters on the behaviour of key characteristics of the system. Finally, in the concluding section, the main research contributions of the paper are discussed.

References

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