A Finite Capacity M/G/1 Queue with Single
and Batch Services

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Abstract

A finite capacity M/G/1 queue rendering two types of service is considered here. The arriving units are served by a single server either one at a time or in batches according to a control limit policy. Specifically, if the number of units in the queue is not more than c, then the server serves a single customer at a time and if the number of units in the queue is more than c, he adopts batch service and serves them altogether in a batch. The stationary distribution and limiting distribution of the model is considered. A computationally tractable solution in suggested for the steady state probabilities and finally a numerical illustration is given.

Keywords: Single Server Queue, Finite Capacity, Single and Batch Service, Steady State Distribution, Limiting Distribution.