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WAITING TIME ANALYSIS OF M/M/1 INTERDEPENDENT QUEUEING MODEL WITH $(0, k)$ CONTROL POLICY

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Abstract

In many practical situations, interdependent queueing models are more appropriate where arrival process and departure process are correlated. Such queueing models are observed in communication network with integrated data, neuro physiological problems. K. Srinivasa Rao developed interdependent queueing model using bivariate Poisson distribution. In this paper we develop M/M/1 interdependent queueing model in which $(0, k)$ control policy is used and obtain waiting time distribution for the model. Kanwar Sen et al., have used lattice path technique for obtaining transient queue length distributions in different queueing models. Transient distributions of various performing characteristics of the system are more interesting in many real life situations than the steady state solutions. Here we use the same simpler technique of lattice path to obtain transient waiting time distribution. Since the model is developed using $(0, k)$ control policy two cases, when system is active on arrival of a customer and when system is idle on arrival of a customer are studied separately.

Key Words : *Lattice path combinatorics, Interdependent queueing model, Waiting time distribution.*

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