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On M/D/1 Queue with General Server Vacations

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Abstract

We study a single server vacation queue with Poisson arrivals, deterministic service of constant duration $b(>0)$ and general vacations and designate this model as $M/D/G/1$. After completion of each service, the server may take a vacation with probability p or may continue working in the system with probability $1-p$. We obtain time-dependent as well as steady state probability generation functions for the number in the system. For the steady state we obtain explicitly the mean number and the mean waiting time for the system and for the queue. Results for some special cases of interest including the known results of the $M/D/1$ queue are derived. Finally a numerical illustration is discussed.

Keywords: Modified Analytic Hierarchy Process, Multicriteria, Demand Estimation, Integrated Circuits (IC).