A STUDY OF STEADY STATE ANALYSIS OF D/M/1 MODEL AND M/G/1 MODEL WITH MULTIPLE VACATION QUEUEING SYSTEMS

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Abstract: In this paper we have considered D/M/1 and M/G/1 queueing models with multiple vacation queueing system which consists of Type I and type II vacations. Type I vacation is taken when all the waiting customers gets served and type II vacation is availed after returning from first vacation and still finds an empty queue. In this paper, we calculate steady state for these two models when server is in working state, on type I and type II vacation. Further, we have investigated the results for the above discussed states by taking a problem of a four wheeler service centre from real world and analyze the steady state of the system. The results of analysis shows that after some time as the time increases, our system obtains the steady state i.e.; the system becomes independent of time. Steady state are shown graphically by MATLAB software of given data.

Keywords and Phrases: D/M/1 Model, M/G/1 Model, multiple vacation queueing system, steady state, waiting customers, service centre.

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1. Introduction

Vacation model is studied widelybecause of its various applications in diverse fields like manufacturing, communication and computer systems. Generally, we study the queueing models where server is always available even after the queue becomes empty on completion of queue. But in some situations it happens that the