PERFORMANCE ANALYSIS OF A DISCRETE-TIME $GEO/G/1$ QUEUE WITH MULTIPLE ADAPTIVE VACATIONS AND VARIABLE INPUT RATE[0]

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Abstract. This paper considers a discrete-time $Geo/G/1$ queue with multiple adaptive vacations and variable input rate. The main purpose of this paper is to present a queue-length analysis of this system. Using a new analytic method, the late arrival system with delayed access (LAS-DA) and the early arrival system (EAS), have been examined. For both the cases, We derive the recursive solution for queue length distributions at different epochs. Furthermore, we also obtain various performance measures. It is hoped that the conclusions obtained in this paper may provide useful information to designers of telecommunication systems, practitioners, and others.

Keywords. Discrete-time queue, variable input rate, multiple adaptive vacations, queue length distribution, recursive solution.

AMS (MOS) subject classification: 60K25; 90B22

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