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On a Single Server Queue with Arrivals in Batches of Variable Size, Generalized Coxian-2 Service and Compulsory Server Vacations

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Abstract : We study the steady state behaviour of a batch arrival single server queue in which the first service with general service times is compulsory and the second service with general service times is optional. We term such a two phase service as generalized Coxian-2 service. Just after completion of a service the server must take a vacation of random length of time with general vacation times. We obtain steady state probability generating functions for the queue size as well as the steady state mean queue size at a random epoch of time in explicit and closed forms. Some particular cases of interest including some known results have been derived.

Keywords : batch arrivals, compound Poisson process, generalized Coxian-2 service, steady state
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