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ABSTRACT

PERCENTILE OF TANDEM QUEUE

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Quite often, there are tandem queue systems which the service facilities are serially linked. For example, such computer systems as consisting of two stages; the first is input-output device and the second is CPU, such banking systems as consisting of two stages; the first is cash dispenser terminal and the second is CPU, and so on.

As the customer-oriented measure of the system evaluation, the response time in a computer system is important. The response time is defined as the time interval between the instant when the input to the system is completed and the instant when its processing by the system is completed.

In the general cases, the total time spent in system corresponds to the response time.

So far the evaluation of the system by the mean time is familiar. However, the customers feel a great interest rather upper deviation of the time than the mean value as a service grade.

One of the evaluation measures for such deviation is a percentile. That is, p percentile is adapted as the upper limit of service time distribution. P percent of customers are included within this limits.

It enables to design a service system so that the customer service time is kept below the customer's tolerated percentile.

This study gives the computation method and the table to find p percentile corresponding to given p percent. Furthermore, the properties of percentile of tandem queue are studied from a point of view of system design.