NAME

Mg1() − Queue length probability function

SYNOPSIS

#include <**queuel.h**>

double ∗**Mg1(int x, double rho, double (**∗**D)(double));**

DESCRIPTION

delim $$ This function returns the queue length probabilities for the *M/G/1* queuing model.

Mg1() is a model for the *M/G/1* queuing system with Poisson arrivals, and the service time *S* of a customer has a general probability distribution function *B(x)* with *B(0)=0*. It is assumed that the server utilisation ${ rho = lambda E(S) }$ is smaller than 1. It is also assumed that *E(S)=1*.

ALGORITHM

M/G/1 queue length probabilities are calculated using the following recursive algorithm:

${p sub j} = {1 over {1 - lambda {a sub 0}}} ({lambda {a sub j-1} {p sub 0}} + lambda sum from {1<=k<=j-1} {a sub j-k}{p sub k}), j = 1,2,...$, where

${a sub n} = { int from 0 to inf {e sup {- lambda t}} {{(lambda t) sup n} over n!} {(1 - B(t))}dt, n = 0,1,...}$.

SEE ALSO

COST 224: Performance evaluation and design of multiservice networks