UNIVERSITÄT SALZBURG

Department of Computer Sciences

HETEROGENEOUS FINITE-SOURCE RETRIAL QUEUES

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In this talk we investigate a single server retrial queue with a finite number of heterogeneous sources of calls. It is assumed when a given source is idle it will generate a primary call after an exponentially distributed time. If the server is free at the time of the request's arrival then the call starts to be served. The service time is also exponentially distributed. During the service time the source cannot generate a new primary call. After service the source moves into free state and can generate a new call again. If the server is busy at the time of the arrival of a primary call, then the source starts generating so called repeated calls with exponentially distributed times until it finds the server free. As before, after service the source becomes free and can generate a new primary call again. We assume that the primary calls, repeated attempts and service times are mutually independent. This queueing system and its variants could be used to model magnetic disk memory systems, local area networks with CSMA/CD protocols and collision avoidance local area networks.

The novelty of this model is the heterogeneity of the calls, which means that each call is characterized by its own arrival, repeated and service rates. The aim of the investigation is to give the usual steady-state performance measures of the system. To do so, an efficient software tool, MOSEL (Modeling, Specification and Evaluation Language) developed at the University of Erlangen, Germany, is used to formulate and solve the problem. Several sample numerical results illustrate the power of the tool showing the effect of different parameters on the system measures.

Where Jakob-Haringer-Straße 2, HS T02

When Thursday, 14. June 2007, 17 h (c.t.) **Host:** Prof. Zinterhof