INTRODUCTION TO GPSS

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A BRIEF OVERVIEW OF GPSS

GPSS (General Purpose Simulation System) is a simulation programming language whose use greatly eases the task of building computer models for discrete-event simulations. (A discrete-event simulation is one in which the state of the system being simulated changes at only a discrete, but possibly random, set of time points, called event times.) GPSS lends itself especially well to the modeling of queuing systems, but is generally applicable when it is of interest to determine how well a service organization will respond to the demands placed on it. For example, GPSS has been applied to the modeling of telephone companies, brokerage firms, computing centers, supermarkets, manufacturing shops, banks, steel mills, hotels, warehouse and distribution facilities, and general business (to examine the flow of information through a business, and assess its impact on operations performance).

GPSS is easier to learn than the statement-oriented simulation languages such as GASP [8] and SIMSCRIPT [9]. It is less flexible than the statement oriented languages, however, even though it can be interfaced with FORTRAN subroutines (for examples, see [2] and [6]), and PL/1 procedures. A thorough-going comparison of GPSS and SIMSCRIPT has been presented in [5].

FEATURES OF THE TUTORIAL

The GPSS tutorial will present a basic set of GPSS "building blocks," then illustrate their use in the context of a simple one-line, one-server queuing system. The statistical measures of system performance gathered automatically during a GPSS simulation will be reviewed. A series of problem situations in which GPSS is applicable will be surveyed. Time permitting, the internal logic followed by the GPSS processor to support a simulation will then be discussed.

HARDWARE IMPLEMENTATIONS

GPSS has been implemented on a wide variety of hardware systems, including the IBM 360/370 series (GPSS/360, GPSS V, GPSSTS, and GPSS/NORDEN); the PDP-10 (GPSS-10); the Burroughs 5700 and 6700 series (GPSS-Burroughs); the Control Data 6000 series (NGPSS/6000); and the Univac 1108 (GPSS/UCC). This list is suggestive, not exhaustive.

TEXTBOOK LITERATURE

There are several books devoted to GPSS [1], [3], [4], [10]. Brief introductions to GPSS can also be found in general simulation texts (for example, see [7]).

SHORT COURSES

Intensive short courses on GPSS are available from several sources. IBM offers four-day introductory and three-day advanced GPSS courses in its educational centers (contact IBM for details). Southern Simulation Service offers five-day GPSS courses periodically (contact Southern Simulation Service, PO Box 22621, Tampa, FL 33622). And a comprehensive one-week GPSS course is offered each summer in The University of Michigan's Engineering Summer Conferences (contact Thomas J. Schriber, Graduate School of Business, The University of Michigan, Ann Arbor, MI 48109).

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