DEVELOPMENT OF THE GPSS-ENVIRONMENT
THROUGH THE OBJECT ORIENTED APPROACHES OF C++

ABSTRACT

Simulation is the technique of constructing and running a model of a real system in order to study the behaviour of that system, without disrupting the environment of the real system. Simulation is experimentation with models, typically models set up on a digital computer.

Developing a simulation program from scratch for each and every problem is tedious and time consuming work. Special purpose simulation languages like SLAM, DYNAMO, SIMSCRIPT, GASP, SIMAN, SIMULA, ACSL, NDTRAN, and GPSS help to reduce the burden of programming to develop a model considerably. The analyst need not get drowned in programming while trying to simulate a model. GPSS is one of the most popular simulation languages.

The Object Oriented approach is a new way of approaching the job of programming. The powerful ideas of structured programming are combined with new concepts like data abstraction, data encapsulation, inheritance and polymorphism to look at the task of programming in a new light.

The vagueness concerning the description of the semantic meaning of the events, phenomena or statements can be de-
scribed as fuzziness. The notion of a fuzzy set provides a convenient point of departure for the construction of a conceptual framework which parallels in many respects, the framework used in the case of ordinary sets, but is more general than the latter and proves to have much wider scope of applicability. Such a framework provides a natural way of dealing with problems in which the source of imprecision is the absence of sharply defined criteria of class membership.

The new blocks which helps to incorporate the concept of fuzzy set theory to the GPSS are termed as FUZZY BLOCKS. Making use of the Fuzzy blocks many systems could be modelled so that the model describes the problem more realistically especially in areas in which human judgment, evaluation, and decisions are important.

The main objectives of this work are

* To design and develop a system in C++ using the object oriented approach to provide the facilities available in GPSS.

* To incorporate new ideas which are not currently present in GPSS. The new ideas are represented as new blocks which in turn represent the fuzziness of the real system to be modelled. The blocks are ZENERATE and ZATE. ZENERATE gives fuzzy input to the model and ZATE handles fuzzy processing.

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Ten case studies have been solved using the GPSS software and the newly developed software. The results are presented.

It is established that the results obtained from the newly developed software compare with results obtained using GPSS. Even though the results are comparable, software developed in OOP is flexible and easily maintainable.