Computer system modeling and simulation

Course introduction

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Course objective

❑ Introducing basic concepts of computer system modeling and simulation

❑ Providing theoretical concept and practical experience about different modeling and simulation techniques

❑ Present methods for analyzing and improving model performance

Course outline

- ❑ Introduction
  - ▪ *What is simulation?*
  - ▪ *Application areas*
  - ▪ *Simulation models*
  - ▪ *Steps in simulation study*
- ❑ Discrete event modeling
  - ▪ *Event scheduling*
  - ▪ *Process interaction*
  - ▪ *Activity scanning*
  - ▪ *Three phase approach*
- ❑ Random number generation
  - ▪ *Random number generators*
  - ▪ *Seed selection*
  - ▪ *Test for random numbers*

- ❑ Random variable generators
  - ▪ *Inverse transform technique*
  - ▪ *Convolution method*
  - ▪ *Accept and reject*
- ❑ Queueing models
  - ▪ *Queueing theory*
  - ▪ *Queueing systems*
  - ▪ *M/M/1*
- ❑ Simulation output analysis
  - ▪ *Measure of performance*
  - ▪ *Output analysis*
- ❑ Verification and validation
  - ▪ *Model verification*
  - ▪ *Model validation and calibration*

Evaluation

❑ Project – system simulation and analysis

❑ Final exam