CS5239 Computer System Performance Evaluation

2004/05 – Semester 1

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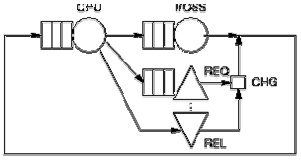
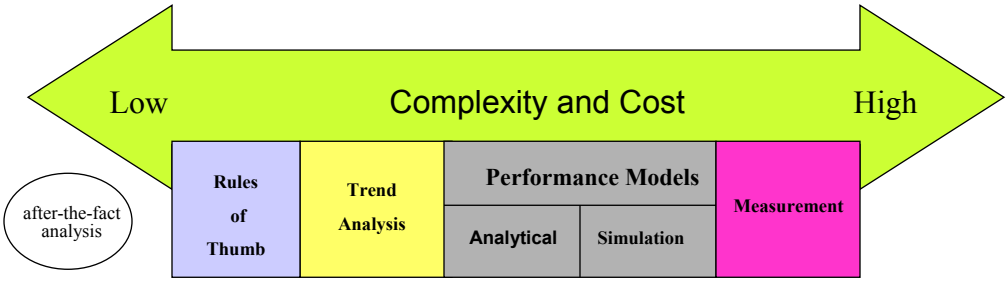
Three Fundamental Techniques

- **Measurements** of actual systems
- **Simulations** using software models
- **Mathematical modeling** using such techniques as queuing analysis



Performance Evaluation



Course Schedule

12 Aug L#01 - Introduction
19 Aug L#02 - Capacity Planning Methodology
Measurement Techniques and Tools
26 Aug L#03 - Workload - Selection, Characterization and Forecasting
2 Sep L#04 – Instrumentation and Representation of Measurement Data
Simulation
9 Sep L#05 – Basics of Computer Simulation

Analytic Modeling Techniques
16 Sep L#06 - Introduction to Queuing Theory
19-23 Sep *Semester Break*
30 Sep L#07 - Operational Analysis
7 Oct L#08 - Analysis of a Single Queue
14 Oct L#09 - Analysis of Queuing Networks
21 Oct L#10 – Analysis of Queuing Networks - Multiple Job Classes
28 Oct L#11 – Principles of Scalable Performance
Case Studies
4 Nov L#12 - Performance of Client-Server Architectures
11 Nov L#13 – Web Performance Modeling, Conclusion & Revision
12-18 Nov *Reading Week*
25 Nov, 7.30PM *Examination (tentative)*

Books

Main Textbooks

- The Art of Computer Systems Performance Analysis: Techniques for Experimental Design, Measurement, Simulation and Modeling, R. Jain, John-Wiley, 1991.
- Quantitative System Performance, E.D. Lazowska et al., Prentice-Hall, 1984, http://www.cs.washington.edu/homes/lazowska/qsp/.

Reference Books:

- Capacity Planning and Performance Modeling - From Mainframes to Client-Server Systems, Daniel A. Menasce, et al., Prentice-Hall.
- Simulation Modeling and Analysis, A.M. Law and W.D. Kelton, McGraw Hill, 3rd edition, 2000.
- Introduction to Parallel Computing, A. Grama, et al., Addison-Wesley, 2nd Edition, 2003.

Module Assessment

1. Continuous Assessment (60%)
   - Quiz (5%)
   - Assignment 1 (10%)
   - Assignment 2 (10%)
   - Project (15%)
   - Test (20%)
2. Open Book Exam (40%)
   - Reduced to 2 hrs

Everything should be made as simple as possible, but no simpler – attributed to Albert Einstein

Problems

- consultation hours, email, catch me after lectures ….