Performance Modeling

Software Design

2DV608

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Summary

- **Part 1:**
  - Motivation for performance engineering
  - Ways to evaluate the performance of software systems
  - Motivation to use model-based methods for performance evaluation

- Part 2:
  - Introduction to the Queueing Networks modeling language

- Part 3:
  - Fundamental laws for performance evaluation

Part 1, some additional reading material

First, check that you are using the University network or that you are logged in. These are **online** resources accessible through the library or when you are within the LNU Internet Network.

- 2 first pages of “The future of Software Performance Engineering”. M. Woodside, G. Franks, D. C. Petriu. *Future of Software Engineering*
  - Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4221619
- Section 1 (1,5 pages) in “Software Performance Evaluation by Models”. M. Woodside. *Performance evaluation LNCS*
  - Link: https://link.springer.com/chapter/10.1007%2F3-540-46506-5_12
- First Chapter “What is Software Performance” (6 pages) in book “Model-Based Software Performance Analysis”. V.Cortellessa, A. Di Marco, P. Inverardi
- 2 first pages of "Capacity planning an essential tool for managing Web services,”. V. A. F. Almeida and D. A. Menasce. *IT Professional*,
  - Link: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1046642

Part 2 reading material

- Book ”Quantitative System Performance: Computer System Analysis Using Queueing Network Models”. Despite its age, this book remains as a reference for the explanation of Queueing Networks, and it is open (you can download chapters from anywhere).
  - Link to book: https://homes.cs.washington.edu/~lazowska/qsp/
  - Link to interesting chapters for this part:
    - Chapter 1: https://homes.cs.washington.edu/~lazowska/qsp/Images/Chap_01.pdf
    - Chapter 4: https://homes.cs.washington.edu/~lazowska/qsp/Images/Chap_04.pdf

Similar concepts in book:

- First part, called “Part I Introduction to Queueing” of book “Performance Modeling and Design of Computer Systems : Queueing Theory in Action” .
  - Link to the book https://ebookcentral.proquest.com/lib/linne-ebooks/detail.action?pq-origsite=primo&docID=1099911 . pages 1-28
  - Link pointing to the first part https://ebookcentral.proquest.com/lib/linne-ebooks/reader.action?docID=1099911&ppg=27

Part 3 reading material

- Chapter 3 in book ”Quantitative System Performance: Computer System Analysis Using Queueing Network Models”
  - Link to book: https://homes.cs.washington.edu/~lazowska/qsp/
  - Link to interesting chapters for this part:
    - Chapter 3: https://homes.cs.washington.edu/~lazowska/qsp/Images/Chap_03.pdf

Assignment

- The assignment will be a practical exercise where you need to apply the contents that you have studied.
- During Friday 26th February
- Estimated work time (if you have studied the contents before Feb 26th): <2h
- Submit before 23:59 CET (late submissions will be allowed during the weekend, until Sunday 26th 23:59 CET)