Distributed Systems

Course introduction

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Master of Science in Computer Science
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Aims of the course

- To enable students to explore advanced distributed systems topics and expose them to recent developments in DS research.

- It will provide a solid foundation for IT professionals/ academics interested in the theory and practice of administration of complex scenarios involving distributed operating systems.

- The course involves readings and lectures on classic and recent papers.

Content:

01: Introduction

02: Architectures

03: Processes

04: Communication

05: Naming

PART I: Theoretical part

50% of the grade

06: Synchronization

07: Consistency & Replication

08: Fault Tolerance

09: Distributed Object-Based Systems

10: Distributed File Systems

11: Distributed Web-Based Systems

PART II: Laboratory

12: Distributed Coordination-Based Systems

50% of the grade

13: Amazon Cloud Services

Learning Outcomes

A. Understand architectures, processes and communication in distributed systems.

B. Understand concepts of naming, synchronization, replication, fault-tolerance and security in distributed systems

C. Understand and develop distributed systems such as object-based, web-based or coordination-based systems.

D. Administrate scenarios with distributed systems.

Assessment Criteria

Methods of Assessment	Please identify the LAST item of assessment that a student sits with a tick	Grading Mode	Weighting %	Minimum Pass Mark	Word Length	Outline Details
Coursework			50	50%	4000	a) Group project Case study Covering Learning Outcomes: C,D
Examination	√		50	50%		Covering Learning Outcomes: A,B,C,D

Books and Resources

ISBN Number	Author	Date	Title	Publisher
978-0132392273	A. Tanenbaum M. Van Steen	2020	Distributed Systems: Principles and Paradigms (3rd Edition, 3.0.3)	Prentice Hall
978-0471694663	A.Silberschatz , P. Galvin, G. Gagne.	2018	Operating System Concepts, 10th Edition	Wiley
	Amazon Web Services, Inc.	2024	AWS Documentation	Amazon Web Services, Inc.
	Oracle Java Resources	2024	https://www.oracle.com/java/ https://www.oracle.com/java/technologies/java-ee-glance.html	Oracle

Examination

- Two sections A and B
  - Section A has 40 points: one or two questions
  - Section B has 3 questions: each 30 points
    - You have to select 2 of them that you know best

- Coursework/Project due
  - To be given in advance

Course webpage

- Course Material and announces at
    - http://www.marenglenbiba.net/distsys/

Good Luck and let us start