

DTC-GITT-425 Distributed Systems

SEMESTER: Fall
CREDITS: 6 ECTS (4 hrs. per week. 3h Theory + 1h Lab)
LANGUAGE: Spanish
DEGREES: GITT

Course overview

This course is an introduction to distributed processing and data storage. The distributed processing section is focused on different process communication like sockets and Remote Methods Invocation. Data storage covers the issue related to distributed transactions and concurrency control in distributed environments.

Prerequisites

Prior Java programming language knowledge is required for attending this course.

Course contents

Theory:

1. Introduction to Distributed Processing.
2. Client-Server architecture.
3. Process Communication.
 - (UDP; TCP; Multicast IP)
 - (External data representation; Marshalling/Unmarshalling)
 - (Java RMI; CORBA;RPC)
4. Time and Global States.
5. Advanced architectures
6. Introduction to Distributed Database
7. Distributed Transactions.
8. Concurrency Control.
9. Distributed Database Systems

Laboratory:

- P1. Process Communication (UDP)
- P2. Process Communication (TCP)
- P3. Process Communication (Multicats IP)
- P4. RMI1 (Basic Service)

- P5.** RMI2 (Concurrency Control)
- P6.** RMI3 (Remote references as parameters - Callbacks)
- P7.** RMI4 (Remote references as return value)
- P8.** RMI5 (User-defined and Complex Classes)
- P9.** RMI6 (Dynamic Downloading Classes)
- P10.** RMI7 (Final Practise)

Textbook

- DISTRIBUTED SYSTEMS. Concepts and Design (Fifth Edition). Coulouris, George; Kindberg, Tim ; Dollimore, Jean;. PEARSON ADDISON-WESLEY, 2012.
- DISTRIBUTED SYSTEMS. Principles and Paradigms. Tanenbaum, Andrew S. PEARSON-PRENTICE HALL, 2006

Grading

- Final exam accounts for 50 % of the final grade.
- Laboratory reports and exercises. They account for 35% of the grade.
- Several small exams and tests during the course account for 15% in total.