

Plan 244 Ing. de Telecomunicación

Asignatura 43823 COMPLEMENTOS DE TELEMÁTICA I

Grupo 1

Presentación

CTMI - Esta asignatura se impartirá en inglés
English will be the official language of the course

Programa Básico

Asignatura: Complementos de Telemática I
Titulación: Ingeniero de Telecomunicación

Descripción:

Se tratan los sistemas de procesamiento distribuido y middleware más relevantes. El alumno adquiere conocimientos sobre cómo se realiza la comunicación en este tipo de sistemas: procedimientos remotos, plataformas orientadas a objetos, a componentes y a servicios. De esta forma, el alumno tiene una visión global de las tecnologías de integración de aplicaciones heterogéneas y su aplicación.

Breve descripción del contenido:

Complementos de arquitectura de redes, sistemas y servicios.

Programa básico de la asignatura

- Concepto, motivación, requisitos y tipos de Sistemas Distribuidos
- Concepto y tipos de Middleware
- Middleware Orientado a Objetos
 - o Concepto y motivación
 - o Java/RMI
 - o CORBA
 - o COM/DCOM
- Middleware Orientado a Componentes
 - o Concepto y Motivación
 - o EJB/J2EE
 - o CCM/CORBA 3.0
 - o VOS/.NET
- Middleware Orientado a Servicios
 - o Concepto y Motivación
 - o Servicios Web (WS)

Objetivos

Introduction to currently most relevant distributed processing systems and middleware. It first begins with communication basic concepts using remote procedural calls (RPC, Java-RMI). Next, more complex solutions are presented: object-oriented distributed processing platforms (CORBA, DCOM) and component-oriented distributed processing platforms (J2EE/EJB, .NET/DCOM). Finally, Web Services and REST Web Services will be studied. The final objective is to offer the student a global vision of the technologies employed for the integration of heterogeneous applications and their usage.

Programa de Teoría

PART 1: INTRODUCTION

TOPIC 1: INTRODUCTION TO DISTRIBUTED SYSTEMS

Concept

Motivation, advantages and disadvantages

Requirements

Types:

Distributed Operating Systems

Distributed Applications

Data transport APIs

Middleware

Middleware:

Concept

Types

PART 2: OBJECT-ORIENTED MIDDLEWARE

TOPIC 2: OBJECT-ORIENTED MIDDLEWARE

Introduction

Foundation

Motivation

TOPIC 3: JAVA/RMI

Architecture

Available services

RMI-IIOP

Application development: example of use

TOPIC 4: CORBA

Architecture

IDL. Mapping of IDL to Java

Method invocation (static and dynamic)

Available services: naming service

Application development: example of use

PART 3: COMPONENT-ORIENTED MIDDLEWARE

TOPIC 5: COMPONENT-ORIENTED MIDDLEWARE

Introduction

Foundation

Motivation

PART 4: SERVICE-ORIENTED MIDDLEWARE

TOPIC 6: SERVICE-ORIENTED MIDDLEWARE

Introduction

Foundation

Motivation

TOPIC 7: REST WEB SERVICES

Resource Oriented Architecture

Designing REST Web Services

Application development: example of use

Programa Práctico

LAB WORK 1: Java/RMI, RMI-IIOP

Study of an example (HelloWorld) with Java/RMI, RMI-IIOP and CORBA. Development of a distributed programme employing these technologies and analysing their differences.

LAB WORK 2: REST Web Services

Study of an example (HelloWorld) with REST Web Services using the Restlet API. Development of the program posed in LAB WORK 1 using these technologies.

Evaluación

The evaluation will be done applying the following weights:

Theory (33%): written exam

Lab work 1 (33%): revision and written report

Lab work 2 (33%): revision and written report

Bibliografía

SISTEMAS DISTRIBUIDOS:

G. Coulouris, J. Dollimore, T. Kindberg, "Distributed Systems: Concepts and Design"
Addison-Wesley, 2000

A. S. Tannenbaum, "Sistemas Operativos Distribuidos"
Prentice Hall, 2ª Ed.

Doreen L. Galli, "Distributed Operating Systems. Concepts & Practice"
Prentice Hall 2000

MIDDLEWARE ORIENTADO A OBJETO:

J.Pritchard, "COM and CORBA Side by Side", Addison-Wesley, 1999

Henning, M., Vinoski, S. "Programación Avanzada en CORBA con C++"
Addison-Wesley Professional Computing Series, 2001

Orfali, R. Harkey, D. "Client/server Programming with Java and CORBA" 2nd Ed John Wiley & Sons, 1998

S. Vinoski. "CORBA: Integrating Diverse Applications Within Distributed Heterogeneous Environments"
IEEE Communications Magazine, Febrero 1997

W. Emmerich "Engineering Distributed Objects"
John Wiley & Sons

Z.Tari, O. Burkes "Fundamentals of Distributed Object Systems: the CORBA perspective"
John Wiley & Sons
