DEGREE CURRICULUM

ADVANCED OPERATING SYSTEMS

Academic year 2013-14

2013-14

Subject's general information

Subject name	Advanced operating systems
Code	103053
Semester	1r Quadrimestre 2N Cicle Informàtica i Màster
Typology	Obligatòria
ECTS credits	6
Theoretical credits	0
Practical credits	0
Department	Informàtica i Enginyeria Industrial
Important information on data processing	Consult this link for more information.
Distribution of credits	Manuel Fernando Cores Prado 3 Francesc Solsona Tehas 3
Office and hour of attention	Fernando Cores: Dilluns 16h-17h (s3/14) Dijous 12h-13h (s3/14) Francesc Solsona Dilluns de 12:00 a 13:00

Manuel Fernando Cores Prado
Francesc Solsona Tehas

Learning objectives

The objectives of the course are very specific:

1. Understanding the implementation of a real operating system.

2. Provide the theoretical concepts to model an operating system to obtain the maximum system performance.

3. Study a case of advanced operating system: Android.

Competences

University of Lleida strategic competences

- Master Information and Communication Technologies.

Degree-specific competences

- Capacity to design and evaluate distributed computation-based operating systems and servers, applications and systems
- Capacity to draft, design, define architecture, introduce, manage, use, run and maintain computer applications, networks, systems, services and contents

Degree-transversal competences

- Capacity to plan and organize one's own personal work
- Capacity to draft, design and implement projects and/or give novel solutions, using engineering-related tools

Subject contents

Teoria:

1. An Operating System Kernel
2. Assigning Processes to Processors
3. Simulation Tools
4. Security Tools

Pràctica:

- Android

Treballs:

- OpenStack
- eyeOS
- Rocks
- Security in Linux
- CPLEX, lp-solve
- Simulators
- SGE

- Logwatch. Tripwire. FAM. Loging.

Methodology

There will be 3 main components:

Theory: in theory classes the issues presented in Contents will be explained. After each subject, a test that will assess the theoretical part will be asked.

Practical: throughout the course teachers will present the Android operating system. 2 Android practices will be done.

Individual research: you should do and expose a research work from a collection given by the professor. You could propose new too.

Development plan

Week	Activity	Home Work
1	Introduction to Android	Installing Android SDK
2	Work presentation	Work
3	An Operating System Kernel	Work
4	Android. Applications and Activties. Practice 1 Android	Work Android. Installation Android SDK Delivery Exer. 1 Tutorial Android.
5	Virtualitzation platform	Work Practice Android
6	Installing an Operating System Kernel into a Virtualization Platform	Treball Practice 1 Android Exercise 1: Installing an Operating System Kernel into a Virtualization Platform
7	Android. User Interface creation. Applications and Activities	Work Practice 1 Android Delivery Exer. 2 Tutorial Android. Exercise 1: Installing an Operating System Kernel into a Virtualization Platform
8	Exercice 1: Installing an Operating System Kernel into a Virtualization Platform	Work Practice 1 Android Exercise 1: Installing an Operating System Kernel into a Virtualization Platform
9	Android. Tries, Services, Processes and threads. Practice 2 Android	Treball Practice 2 Android Delivery Exer. 3 Tutorial Android.
10	Assignment of Process to Processors	Work Exercise 2: Assignment of Process to Processors Delivery 1st version Practice Android
11	Simulation Tools	Work Exercise 3: Simulation Tools

Week	Activity	Home Work
12	Android. File System, Database and Content Providers	Work Practice Android Delivery Exer. 4 Tutorial Android.
13	Security Tools	Work Exercise 4: Security Tools. Practice Android
14	Presentació Treballs	Work Practice Android
15-16	Work presentation	Work Practice Android Delivery Exer. 5 Tutorial Android.
17-18	Retrieval tests	
19	Delivery final version Practice Android	

Evaluation

The course will be overcome with a score greater than or equal to 5.

The theoretical part will be evaluated by performing four exercices.

There will be a written work that should be done throughout the semester and present it during the last weeks of class. The note of the work (report + presentation) weighted 25% of the final note.

There will also be a practical part. The practices will be evaluated with a note which will represent 35% of the final note for the course.

Table. Evaluation activities (modality with continuous assessment)

Evaluation Activity	Weight	Minim	Group	Mandatory
Exercise 1	20%	NO	NO	SI
Exercises 2,3 i 4	20%	NO	NO	SI
Work	25%	NO	SI	SI
Practices	35%	NO	NO	SI

Hi haurà un examen de recuperació pels qui no hagin superat l'assignatura.

Bibliography

1. Milan Milenkovic. Sistemas Operativos: Conceptos y Diseño. McGraw-Hill Interamericana S.A., 1994.
2. Virtual Box. https://www.virtualbox.org.
3. Rocks Cluster Distribution: Users Guide. http://www.rocksclusters.org/rocks-documentation/4.1/getting-started.html.
4. ExtendSim. http://www.extendsim.com.