BACHELOR'S DEGREE IN COMPUTER SCIENCE AND ENGINEERING

BACHELOR DEGREE IN APPLIED MATHMATICS AND COMPUTING

OPERATING SYSTEMS

Presentation

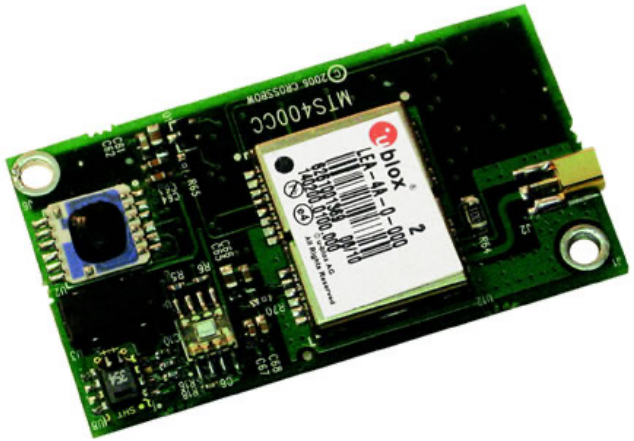
Contents

- **Motivation and objectives**
- Subject description
- Information sources
- Course organization
- Evaluation process

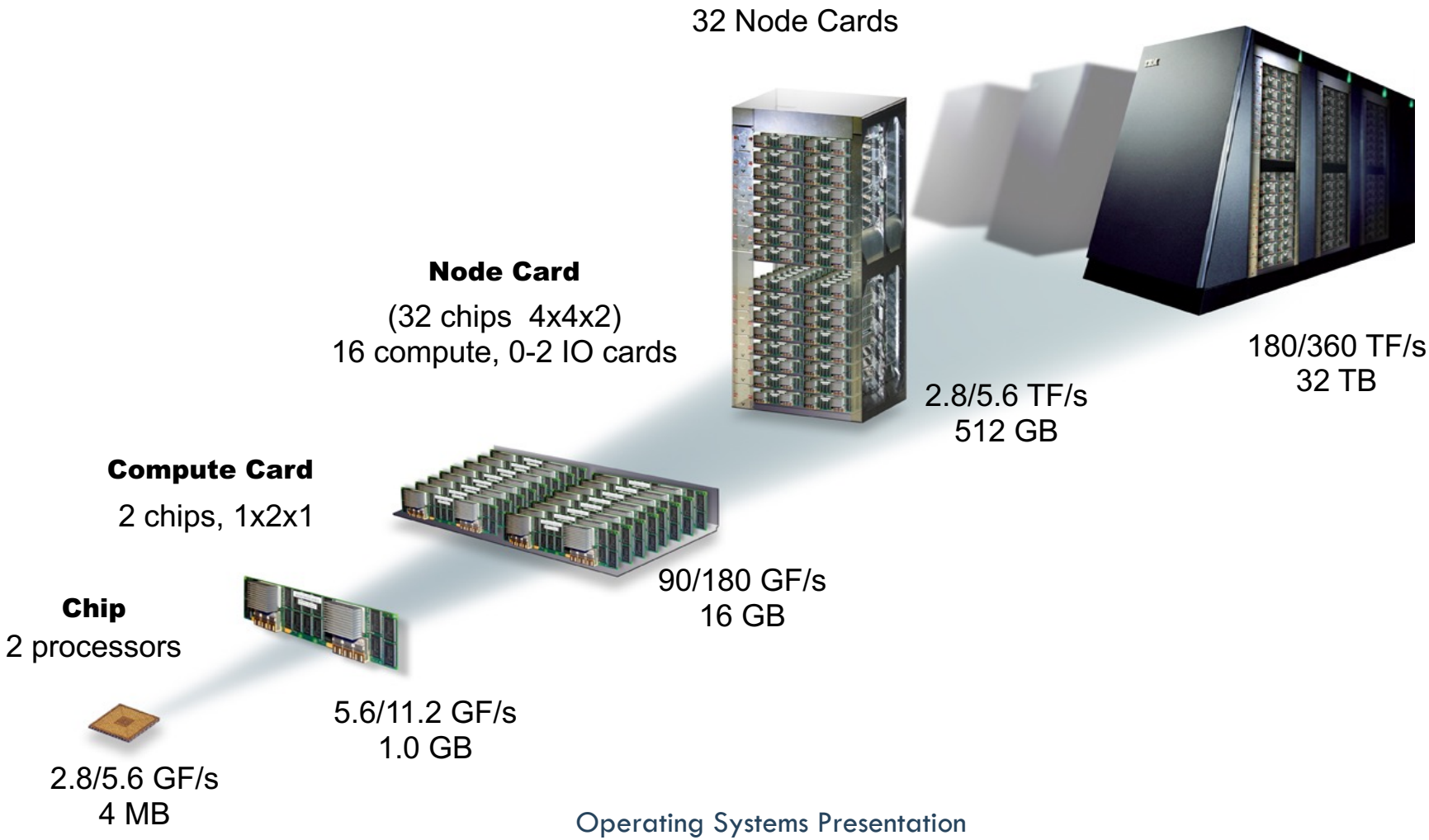
Motivation

- Why study operating systems?
  - Exist in almost any computer device
  - E.g. PCs, servers, mobiles, embedded computers
- It is the system interface seen by the application and system programmers.
  - Virtual machine vision
  - Hides the underlying hardware complexity
  - Knowledge necessary to exploit the system functionalities.
  - They are in constant evolution.

Some examples: small scale



Some examples: large scale



Objectives

- To understand the basic concepts related with OS.
  - What is an OS
  - What is this for?
  - How does it work?
- To know OS functionalities
  - What services do they offer?
  - How are OS related with the rest of the software and hardware?

Contents

- Motivation and objectives
- **Subject description**
- Information sources
- Course organization
- Evaluation process

Syllabus

Theoretical part

- Introduction to Operating Systems
- Processes
- Memory management
- Concurrency
- File systems

Practical part

1. System calls
2. Implementation of a command shell
3. Concurrent systems

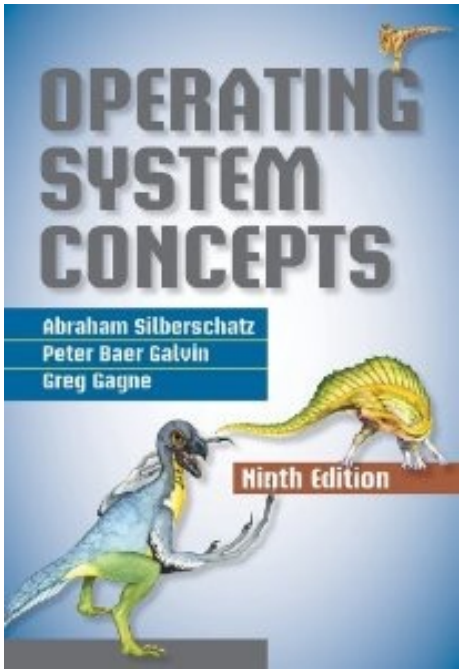
Exercises

- Autotest
- Exercises

Contents

- Motivation and objectives
- Subject description
- **Information sources**
- Course organization
- Evaluation process

Bibliography



- OPERATING SYSTEM CONCEPTS 9TH EDITION

  SILBERSCHATZ, PETER GALVIN, GAGNE, Wiley 2012

Complementary bibliography

- Operating Systems: Principles and Practice

  Thomas Anderson , Michael Dahlin
  Amazon Press. Kindle Edition. 2015.

- Modern Operating Systems.

  A. S. Tanenbaum
  Pearson Education, 2003 (2ª ed).

- Operating Systems (3ª ed).

  Gary J. Nutt,
  Pearson Education, 2003

- Operating Systems: Internals and Design Principles. (7th Ed),

  William Stallings,
  Prentice Hall, 2012

Other resources

- Aula Global
  - Official information source

- The slides are a mere guide for the teacher and students and are not designed to be the main material of the subject.

- The knowledge contained in the slides doesn't guarantee the students will acquire the subject objectives.

- It is highly recommended to use the basic and complementary resources that are available: books, articles, etc..

Contents

- Motivation and objectives
- Subject description
- Information sources
- **Course organization**
- Evaluation process

Class distribution

- 18 weeks
  - 14 weeks of theoretical and practical classes
    - 8 hours of student work per week
  - 1 week for extra classes and tutor time
  - 2 weeks for preparing the final exam
  - 1 week for exam

Detailed chronogram in Aula Global

Activities

- Theoretical classes
  - One per week (2 hours)
  - Theoretical concepts
- Practical classes
  - Practical examples
  - Exercises, lab practices, quizzes.
- Extra practical classes
  - Complementary lab practice. Virtual aula.

Student activities

- Tutor time
  - Resolve questions
- Student personal work
  - Theoretical contents
  - Exercises
  - Lab assignments
  - Complementary reading and exam preparation

Lab assignments

- Assignments (mandatory):
  - 3 lab assignments
  - Groups of three students

- Other activities
  - Required during the teaching time
  - Information search, additional problems and practical work.

Teachers

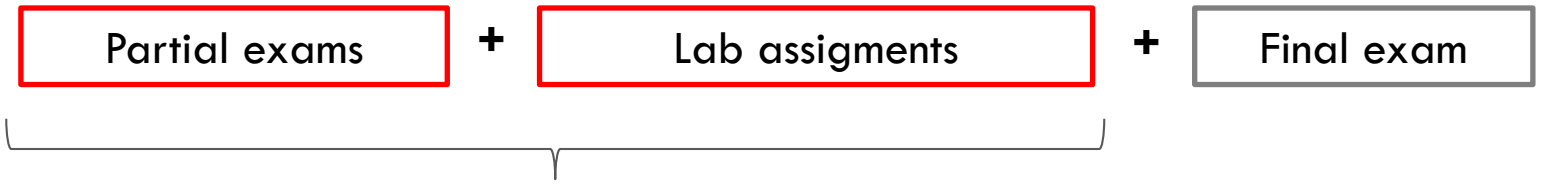
- Coordinator: Jesús Carretero Pérez
- **Groups 88,89**
  - MAG Carlos Tessier
  - SMALL Angel Hernández, Simón Esteban
- **Group 121**
  - MAG Carlos Tessier
  - SMALL Antonio Pérez, Simón Esteban
- **Tutor time: check Aula Global**

Contents

- Motivation and objectives
- Subject description
- Information sources
- Course organization
- **Evaluation process**

Student rules

- Continuous evaluation
- Based on:



Continous evaluation

- **A student follows the continuous evaluation if and only if he/she:**
  - has completed the partial exams.
  - AND has completed the three lab practices with a minimum grade.

Copying will be cause to loose the continuous evaluation grade

Rules

- Continuous evaluation (CE)
- Exams (60%)
  - Partial exams (20%).
    - Not all mandatory, but you loose the points if do´t do them. No minimum score.
  - Final exam (40%): includes all the subject contents.
    - **Important:** the exam grade must be >= 3.5 to consider CE
- Lab assignments (40%)
  - 3 assignments
  - Compulsory
  - **Important:** the final minimum grade per assignment must be >= 2 and the average grade must be > 4
  - Weight: (%): Lab 1 25, Lab2 40, Lab3 35

Without continuous evaluation

- Without continuous evaluation:
  - Final grade = 0,6 * Final exam grade
    - You need more than 8.33 out of 10.

UC3M rules

- Important:
  - Follow the continuous evaluation

Resit exam

- Resit exam

- Case1: Student has the continuous evaluation
  - Exam 35% and continuous evaluation 65%.
  - the resit exam grade must be >= 3.5

- Case 2: Student does not have the continuous evaluation
  - Exam 100%
  - It includes all the subject contents

The best case is always applied

Lab extra advices

- In your computer:
  - Install Linux physically
  - Install a virtual machine
    - Install first Virtualbox or VMWare tool
    - Install Ubuntu Linux image
      - https://www.linuxvmimages.com/images/ubuntu-1804/
    - https://vitux.com/how-to-install-vmware-workstation-on-ubuntu/
    - https://linuxhint.com/install_ubuntu_18-04_virtualbox/

To learn C

- Virtual portal to learn C
  - www.learn-c.org/
- C Course:
  - https://www.tutorialspoint.com/cprogramming/index.htm
- C for Python programmers: http://www.toves.org/books/cpy/