Sistemas Operativos: Apresentação
Operating Systems: Introduction
2º MIEIC

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Staff

Instructors

- Prof. Pedro Ferreira do Souto

Objectives

Upon successful completion of this class you should be able to:

1. *Describe the role of an operating system (OS) and identify its main abstractions;*
2. *Enumerate the main components of an OS and how they can be assembled into an OS;*
3. *For each of these components, explain its functionality, the key issues in providing its functionality and the main algorithms used in its implementation*
4. *Develop programs that use the operating system API*
5. *Explain what are the main issues in concurrent programming and the mechanisms used to overcome these issues*
6. *Develop concurrent programs without race conditions*
7. *Develop device-drivers for the Linux OS*

Prerequisites

- *Programação 1 and Programação 2*
  - *In the lab classes you'll program a lot in C*
- *Computadores or Sistemas Baseados em Microprocessadores*
  - *The OS is the software layer that interacts directly with the HW*

Syllabus

Operating Systems

- Mechanisms and principles
- OS API
- Linux device drivers

Concurrent Programming

Method

Lecture classes

- Exposition of the key concepts and algorithms
- Hints for solving the lab exercises

Lab classes

Reinforce the concepts taught in the lectures

Small programming assignments

- With `gcc` in Linux

One project

- Development of a Linux device driver

Note The project should be done in groups of 2 students.

- Most of the development will occur after Queima

Academic Honesty

- UP, FEUP and I take academic honesty very seriously
  - Check out the Declaração de Princípios sobre a Integridade Académica na UP
- We will use special tools to detect copying of project code you submit
  - You are accountable for your partner, unless you clearly state which part of the code is yours.

Working Load

- SO has 6 ECTS, i.e. about 160 hours
  - Assuming 1 ECTS equal to 27 hours
  - Check out the European Credit Transfer and Accumulation System (ECTS)

Bibliography and Other Resources

- Book in Portuguese

  J.A. Marques, P. Ferreira, C. Ribeiro, L. Veiga, R. Rodrigues, *Sistemas Operativos, FCA*

- Other OS textbooks, such as:
  - **Andrew S. Tanenbaum**, *Modern Operating Systems, 3rd Ed.*, Prentice-Hal
  - **A. Silberschatz, P. Galvin and G. Gagne**, *Operating System Concepts*, 7th Ed.

  both available in the library.
  - Earlier editions of these books, or of similar books, are better than no book at all
- Online book,

  J. Corbet, A. Rubinin and G. Kroah-Hartman, *Linux Device Drivers, 3rd Ed., O'Reilly*

Grading

1. Final exam (F)
2. Programming test (PP) (scheduled to after Easter)
3. The project (Pr) must be demonstrated in the last class of the semester.
4. Class participation (PA)

Formula 0.5 F+ 0.2PP + 0.2 Pr + 0.10 PA

Thank You!

Questions?

Announcements

Classes

- Start 10 minutes after the hour, i.e. 13:40.
- We'll make a 5 minutes break around 14:30.

Labs

- Start next week, i.e. February 22nd and February 24th