K24: System Programming

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Goal of the course

- Introduction to Unix
- Shell Programming
- Using system calls in C:
  - Error Handling
  - Dispatch/receipt of Signals
  - Low level I/O Operations
  - Creation and termination of processes
  - Interprocess Communication: pipes, sockets, queues, semaphores, shared memory segments
  - Multi-threaded programming
  - Security
  - Performance
- In addition to the actual course material the goal is to:
  - Teach you how to write applications that interface directly with an OS
    - Linux in our case
  - Teach you how to think, debug, pace yourself, and organize such complex applications

Grading

- One warm-up programming exam via eClass (on C/C++): 20%
  - Approximately within first month of semester
- Programming Assignments: 30%
  - 2 assignments- no oral exam (but we reserve the right to ask you to run and explain your code)
  - Must run on Department's Linux Lab
  - Late Policy: may submit up to 3 days late, with 5% penalty each day
- Final exam: 50%
- September exam: again 50%
  - You keep warm-up and assignment grades

Course logistics

- Web pages:
  - Odd IDs: http://bit.ly/k24-page-mema
  - Even IDs: http://bit.ly/k24-page-alex
- Additionally:
  - Here are full URLs just in case (same thing, just longer):
    - http://cgi.di.uoa.gr/~mema/courses/k24/k24.html
    - http://www.di.uoa.gr/~antoulas/k24
  - Please join and follow piazza: http://bit.ly/k24-piazza
    - full URL: https://piazza.com/uoa.gr/spring2023/k24/home
  - Please check regularly for announcements (although both sessions will be in-sync)
  - Slides and code will be available
  - **For project enrollment**: Just enroll in the K24 class at http://eclass.uoa.gr

Course Logistics

- Class textbook: M.J. Rochkind, *Advanced Unix Programming*, Prentice-Hall Software Series, Englewood Cliffs, NJ, 2004
- We will make videos available
- Some of the warm-up exams may happen during course time slots
- Slides are based on material from Alexis Delis, Antonis Deligiannakis, Yannis Smaragdakis and Takis Stamatopoulos (thank you!)

A few more things

- We are here to teach you and help you learn
  - Neither pass you, nor fail you. Teach you and help you learn
- Please, no lame excuses
  - I haven't passed data structures/I'm interested in theory/I'm getting married/I'm joining MasterChef/this is my last class/I'm joining the Marines/etc.
  - No deadline extensions
  - Same rules for everyone
    - No, you cannot skip projects because X,Y,Z
    - If there is some **really special case** please reach out, but please have a good reason

A few more things

- Please take care of your code and your project (this is part of your training)
  - Code needs to compile in department's Linux machines
    - Not windows, not your laptop, not your work's super cluster
    - Backup, it helps!
  - USB/email/pigeon/courier submissions are not accepted
  - You are welcome to (and expected to) discuss about code, approaches, solutions during the projects. Ideas are always useful.
  - Please *do not* cheat
  - Please, please *do not* cheat
  - Please, please, please *do not* cheat
  - You've been warned 3x
  - Safeguarding your code is your responsibility (e.g. no public git repo)
  - Cheating is not tolerated and you and everyone involved immediately fails the class. Period.
    - And if you do, please, no excuses.

A few more things

- Please stay connected with the class throughout the semester
  - System programming is not something you pull an all-nighter and study and hope to pass
  - You need to put in some effort
  - If you devote time to projects, your chances are very good for getting a passing grade (if that's your goal)

Thank you!

Questions?