CS2014
Systems Programming

Lectures:
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Room: WR3.4 (impossible to find!)

Teaching Assistant:
Christian Cabrera
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See Christian @ labs
My Favourite LOC

```c
#define malloc(__xxx__) \n    (rand()%100<=30?0:malloc((__xxx__)))
```
Administrivia (1)

• Lectures:
  - Tuesday, 1500-1550, RoomTBD
  - Wednesday, 1300-1350, RoomTBD

• Labs:
  - Thursday, 1200-1600, LG12
  - Labs are for you to do/get-help-with assignments (more on those in a second)
    • It is also just fine to work on the assignment on your own computing devices
  - There are more of you than there are seats in the lab, so...
Administrivia (2)

• Lab slots:
  - Group 1: 12.00-12.50: Students whose surname begins with a letter between "O" and "Z".
  - Group 2: 13.00-13.50: Students whose surname begins with a letter between "I" and "N"
  - Group 3: 14.00-14.50: Students whose surname begins with a letter between "D" and "H"
  - Group 4: 15.00-15.50: Students whose surname has a prefix between "A" and "C"
Administrivia (3)

- 2017 timing:
  - Lecture#1: September 26\textsuperscript{th}
  - Week of November 13\textsuperscript{th}: no lectures!!
    - TBD: Or maybe Christian takes those slots!!
  - Last lecture: December 13\textsuperscript{th}
  - Last lab: December 14\textsuperscript{th}
  - Last assignment due: Jan 15\textsuperscript{th} (start of 2\textsuperscript{nd} semester)
  - Exams: later (April/May)
Administrivia (4)

• Exam/Assignments: 80/20
  - That is: assignments are worth 20%
  - You MUST pass both independently

    ```
    int bummer=0; int pass;
    if (exam_mark < 0.4) {bummer=1;}
    if (assignment_mark < 0.4) {bummer=1;}
    if (!bummer) pass=1; else pass=0;
    ```

• There will be 6 marked assignments, each with a deadline
Administrivia (5, and the last!)

• Assignment deadlines:
  - Assignment1: deadline 2017-10-09
  - Assignment2: deadline 2017-10-16
  - Assignment3: deadline 2017-10-23
  - Assignment4: deadline 2017-11-13
  - Assignment5: deadline 2017-12-04
  - Assignment6: deadline 2018-01-15
Systems Programming: what’s that?

• As always, it depends who you ask:-)  
  – https://duckduckgo.com/html?q=systems%20programming

• Wikipedia definition#1 is most like this course, saying systems programming is lower level than application programming and can make assumptions about the system on which the code is run.  
  – Often related to how the OS/system interacts with higher level code/users.

• DevOps trend though maybe changes this some: A lot of “systems programming” in future may involved python, Rust, Go, PHP/Node.js and JS etc as the boundaries between applications and systems blur.

• For now though, we’ll stick with what Wikipedia says (today:-), on the basis that if you learn a couple of programming languages, the rest are mostly the same and you can learn them yourself later as needed (and fashions will change before you do that, probably;-)
Course Content

• Introduction
• A bit about using GNU/Linux
• Various bits of C programming
• Safety with dangerous implements
• A touch of C++ programming
• Something interesting for the end, that I’ve yet to decide upon

• And 6 programming assignments
What’s our goal here?

- You’ll learn C/C++ and a bit about the systems we use for doing assignments
- Real goal is that you can figure this stuff out for yourself when you later come across similar problems/challenges/opportunities:
  - On different systems
  - With different languages
  - Using different libraries
  - With or without handholding IDEs
- It is entirely fine that you have to look stuff up when you forget that, esp about libraries (I do that all the time)
  - Web search -> stackexchange etc. is almost entirely a fine thing
  - As always though, don’t believe all you read
#define malloc(__xxx__) \
   (rand()%100<=30?0:malloc((__xxx__)))

• Let’s shift from slideware to HTML:
  https://down.dsg.cs.tcd.ie/cs2014/examples/bm/README.html