

# CMSC 412

## Operating Systems

Fall 2004

Professor Michael Hicks

## Welcome!

- **Read the Syllabus**
  - read the warning about the size of the project
  - make sure you get the 6<sup>th</sup> edition (or later) of the book
- **Discussion Sections (start Wednesday)**
  - focus on the project
  - meet only once a week
    - Probably we will have three times total per week; you can attend the section of your choice. See the web page.

## Projects

- **The best way to understand is by doing**
  - So, we will build an operating system that works on bare hardware by extending the GeekOS academic operating system. 6 projects total.
- **Project #0 Handout (posted August 31)**
  - It will be due late next week.
  - It will get you familiar with the simulator and the Cyclone programming language, which you can use to write some or all of the project.

What is Cyclone? Glad you asked ...

## Cyclone

- **Based on C**
  - Low-level control over memory management, data representation, and access to the machine
- **But type-safe!**
  - Rules out many hard-to-find bugs and security holes
    - Buffer overflows
    - Dangling pointers
  - These bugs have killed many projects

## Cyclone in this class

- You will be required to use it for project 0, to get familiar with it
- From then on it is optional
  - Could very well make your project more reliable, and prevent many bugs
  - But, it's a research compiler, and it will have bugs itself, and may have cryptic error messages
    - We will do our best to overcome these issues with you. If a major problem in the compiler inhibits a good-faith attempt to complete the project, you will not be penalized.

## Cyclone in this class

- Completing at least one project using Cyclone (from project 1 to 6) will net some extra credit
  - You must include a writeup of your experience, including what features you used, what difficulties you ran into, and suggestions for improvement.
- See <http://www.cs.umd.edu/projects/cyclone/>