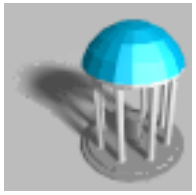
COMP089H: Everyday Computing (HONORS)

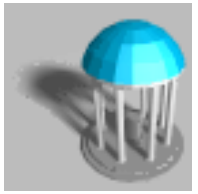


MWF 2:30am - 3:45pm (FB008)

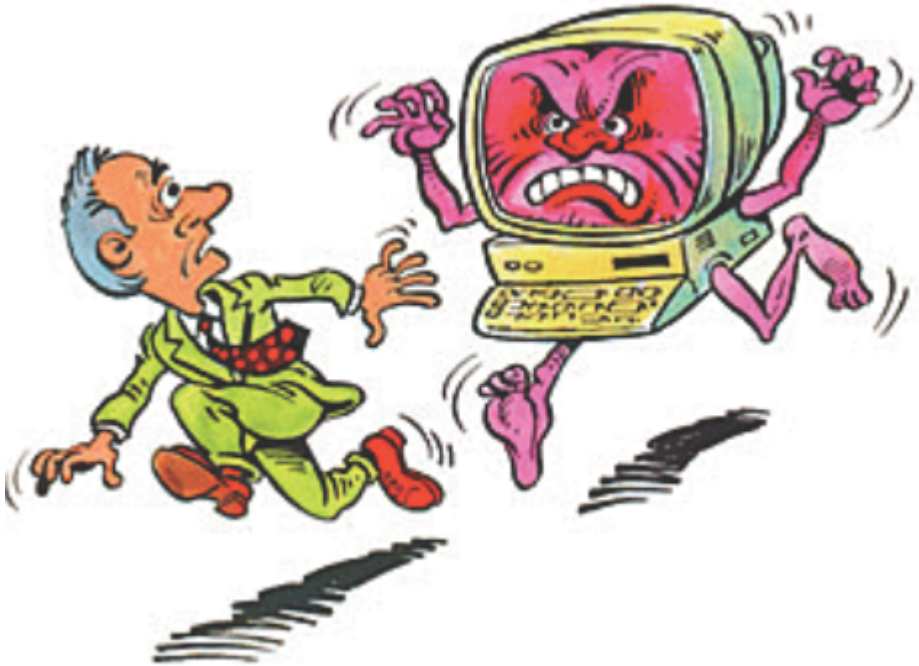
http://www.cs.unc.edu/~lin/COMP089H

Ming C. Lin
FB 254
lin@cs.unc.edu
Office Hours: Mon/Wed After Class
or by Appointment

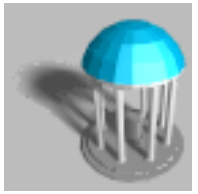
Is COMP089H for YOU?



- Computers are here to stay…
  How will you get along with them?



What's COMP089H?



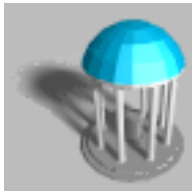
- **Computing for non-Geeks!**

If you were going to take 1 CS class, what do you want to know?
Everything from this class!

What Will We Be Doing

- Do a little 'dabbling'
- Create something cool
- Watch movies
- Play games
- Listen to music
- Dissect robots
- Shrink to mini-you
- Try out theme-park like ride

Hopefully then…



- Get to examine interesting problems in our everyday life
- Learn problem-solving techniques using computer technology
- Appreciate how computing solve real-world problems in many *applications*

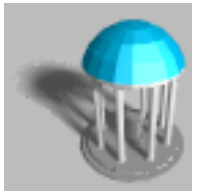
Some Applications

- Artistic & Creative Processes
- Assistive Technology
- Bioinformatics
- Computer Animation
- Computer Game Dynamics
- Digital Music & Audio Synthesis
- Image Analysis & Abnormality Detection

Some Applications

- Medical Simulation and Training
- Rapid Prototyping for Design
- Robotics and Automation
- Special Effects Generation
- Touch-Enabled Interfaces
- Virtual Environments

Goal 1: Demystify Computers

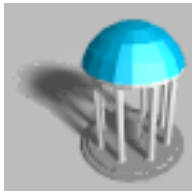


- Strangely, most people (even some computer scientists) are afraid of computers.
- We are only afraid of things we do not understand!

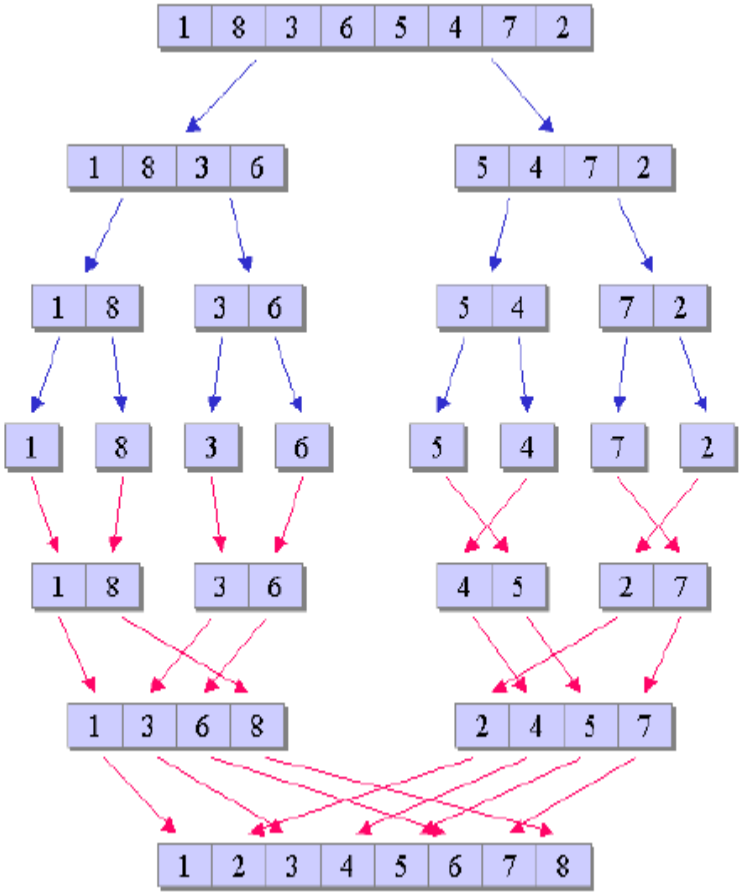
Goal 2: Limits of Computation

- Computers are powerful, fast, and getting faster everyday...
- BUT, they do have provable limits
- We know problems that
  - No known computer can solve
  - No known program could solve within our lifetime (or the lifeime of the universe...)

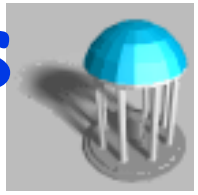
Goal 3: Algorithms Matter



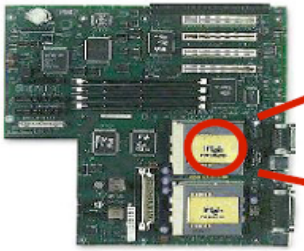
- A good algorithm on a slow computer will beat a bad one on a fast computer... eventually if the size of the problem grows
- Design matters!
- Algorithms are beautiful!
- Like art, you don't have to do it to appreciate it.



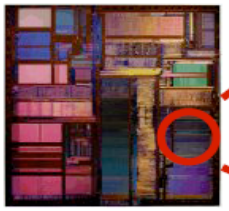
Goal 4: Understanding systems with >1G components



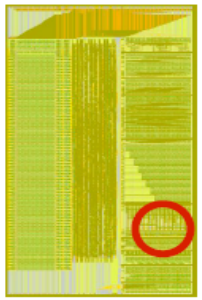
Personal Computer:
Hardware & Software



Circuit Board:
≈8 / system
1-2G devices

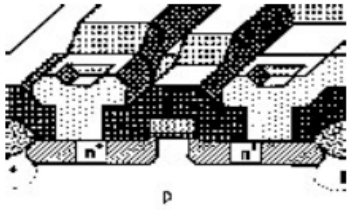


Integrated Circuit:
≈8-16 / PCB
.25M-16M devices

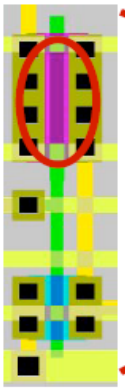


Module:
≈8-16 / IC
100K devices

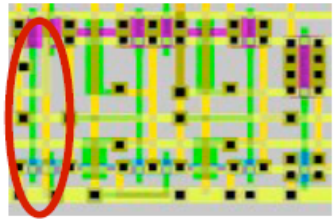
MOSFET



Scheme for
representing
information



Gate:
≈2-16 / Cell
8 devices

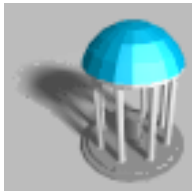


Cell:
≈1K-10K / Module
16-64 devices

Other Goals

- Understand the use of computing technology in our daily activities.
- Study various examples on how computing affects different aspects of our daily life

Course Work & Grades



- Homework: 30%
  (total of 3, one every month)
- Student Presentation: 20%
- Course Project: 40%
- Class Participation: 10%

Communication

- Visit instructor during office hours, by appointment, or email correspondence
- All lecture notes and most of handouts are posted at the course website:

  http://www.cs.unc.edu/~lin/COMP089H
- Major messages are notified by email alias

Basic Courtesy

- TYPE your assignments using a computer
- Please do not read newspaper & other materials in class
- Please do not surf on the web during the class
- Participate in the class discussion
- No whispers or private conversation

THANK YOU!!!