

CS111 Fall 2007

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Survey Says...

- What year are you?
- Who has used a computer regularly?
- Who has used the Internet regularly?
- Who has made a web page?
- Who has written a program?
- Why are you taking this course?
- What is computer science?

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Discussion: What is Computer Science?

- Know any famous computer scientists?

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What is Computer Science?

“Computer Science is no more about computers than astronomy is about telescopes.” --Edsger Dijkstra

- What is computable?
- How can we compute X most effectively/efficiently/accurately?
 - Optimize speed, space using optimum data structures, algorithms
 - Accurate modeling of “world”

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Computer Science Fields

Systems

- Architecture
- Operating systems
- Networks
- Distributed and parallel systems
- Databases
- ...

Software

- Compilers
- Graphics
- Software engineering
- Software testing and verification,
- ...

Theory

- Algorithms
- Theory of computation
- ...

Other

- Artificial intelligence
- Robotics
- Natural language processing
- Bioinformatics
- Visualization
- Numerical analysis
- ...

- Often research involves combinations of these fields
- Not just programming!
 - But programming is a foundation to do much, much more!

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What I do **not** do as a computer scientist

- Fix hardware
- Fix Microsoft Windows (or other operating systems) problems
- Fix Microsoft Office (or other desktop applications) problems

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What I do as a computer scientist

- Interests: Software testing, empirical studies, distributed systems
- Focus: Automated web application testing

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What I do as a computer scientist

Google Gmail Calendar Spreadsheets all my services »

Google Calendar BETA

Search My

Create Event

Quick Add

« August 2006 »

M	Tu	W	Th	F	Sa	Su
24	25	26	27	28	29	30
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Find the error(s)!

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Matt Welsh

- Assistant professor at **Harvard University**
- Research: distributed systems and networking
 - Sensor networks to monitor volcanoes
- Wrote *Running Linux*



Prof. Welsh at Volcán Reventador in Ecuador

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Jeannie Albrecht

- Assistant professor at **Williams College**
- Research: managing software that is running and communicating on computers around the world
- Hobbies: surfing, ultimate, rugby

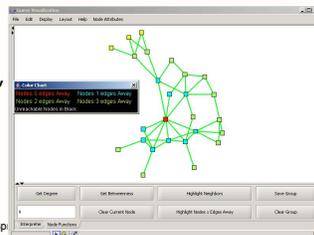


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Jeff Forbes

- Assistant professor of the practice at **Duke University**
- Research:
 - computer science education, intelligent control and robotics, reinforcement learning, and social networks
 - **HarambeeNet**: CS education via social networks

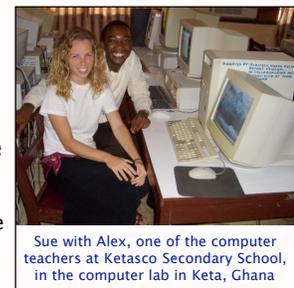


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Sue Lister

- Recent graduate of the **University of Delaware**
- Double major in CS and Psychology
- Interested in decreasing the division between the technological haves and have nots
 - Only 3% of Africans have Internet access
 - Cell phones are commonly used



Sue with Alex, one of the computer teachers at Ketasco Secondary School, in the computer lab in Keta, Ghana

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Nina Bhatti



- HP Labs Principal Scientist
- Leads design for novel mobile technologies
 - System for matching your foundation, using pictures from your cell phone

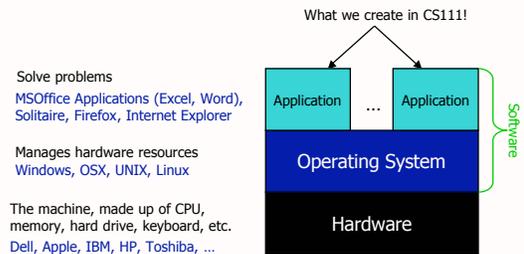


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Basic Computer Architecture



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Computational Problem Solving 101

- Computational Problem
 - A problem that can be solved by logic
- To solve the problem:
 - Create a **model** of the problem
 - Design an **algorithm** for solving the problem using the model
 - Write a **program** that implements the algorithm

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Computational Problem Solving 101

- Algorithm: a well-defined recipe for solving a problem
 - Has a finite number of steps
 - Completes in a finite amount of time
- Program
 - An algorithm written in a **programming language**
 - Also called code
- Application
 - Large programs, solving many problems

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What This Course Is About

- CS111
 - Introduction to problem solving
 - Algorithms, dealing with information
 - Introduction to programming (Python)
 - Introduction to UNIX/Linux
 - Introduction to broader issues in CS
- CS101
 - Survey of computer science topics: algorithms, circuits, low-level instructions, web/databases

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What to Expect from this Class

- First programming course
- Lots to learn!
 - Introductions to a lot of new ideas
- Different way of thinking
 - Similar yet different from math
 - May get stuck but ask me for help!

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Class Details

- Course web page
 - <http://www.cs.wlu.edu/~sprenkle/cs111>
 - Check frequently for updates
- Monday, Wednesday, Friday lectures
 - Slides posted after class, in handout, PDF format
 - Don't copy down slides verbatim
 - A lot isn't on the slides
 - Use slides later to review
- Tuesday labs
 - Programming projects due on Friday

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Class Details

- 3 Exams
 - 2 Midterms (see schedule online for dates)
 - Final
- Discussion of broader issues in CS
 - Articles about computer science's effect on *everything*
 - Write up on blog, due Fridays
 - Discussion on Fridays
 - Opportunities for extra credit for finding, reading, summarizing additional articles

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Instructor Responsibilities

- Keep your interest in CS
- Prompt, constructive feedback on assignments
- Office hours:
 - Wednesday: 3:30-4:30 p.m.
 - Thursday: 12:30-3:30 p.m.
 - Email for appointments
- Respond within 24 hours to emailed questions

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Student Responsibilities

- Check W&L email and course web page frequently for updates
 - Review entire syllabus online
- Attend and participate in class and lecture
 - Mandatory attendance
 - Be respectful to other students
- Arrive promptly to lecture/lab
- Turn off cell phone
- **Be patient, flexible, and learn from mistakes**

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Honor System

- You may discuss programming assignments informally with other students
 - Sharing a solution is an honor violation
- Students should know where to draw the line between getting legitimate outside assistance with course material and outright cheating
 - Students who obtain too much assistance without learning the material ultimately cheat themselves the most
- If you have any uncertainty about what this means, consult with me before you collaborate.
- All written assignments should be done individually.

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Your TODO List:

- Review the course web page
 - Midterm dates
- Read Chapter 1 of Text Book
 - Only skim 1.4
- Due next Friday
 - First CS issues reading/writeup
 - Tuesday's lab/assignment

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