What is Computer Science?

It isn’t **building** computers, although we do do that.

It isn’t **writing** programs, although we do do that too.

Computer scientists are any of the following: scientists, engineers, mathematicians, psychologists, empathists, digital artists, . . .

What is Computer Science?
When Do You Use It?

Internet and networks
Financial and numerical calculations
Games and software
Microwaves and refrigerators
Cars (GPS)
Door locks – keycard access
Cell phones and digital clocks
Most influential this decade?
Are you interested?
Databases and Information Systems

How to efficiently store and organize huge data sets?
Can a computer run through a book, video, or website and pick out tags that accurately summarize its content?
How to make search engines faster and more efficient?
A GUIDE TO ART AT THE UNIVERSITY OF ILLINOIS

URBANA-CHAMPAIGN
ROBERT ALLERTON PARK
AND CHICAGO

DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Architecture
(Building Computers)

How can we design computers that are faster? More reliable? Consume less power? How to design computers that can do more than one thing at a time?
Video / Computer Games
How to model things like water, smoke, fabric, or skin realistically? Quickly?

How can you do it using only mathematical equations and procedures?
Robotics

http://web.mit.edu/museum/exhibitions/robots.html
Leonardo
Artificial Intelligence

How to make a machine that learns?
How can computers be made to understand human language?
How can they recognize the visual images we easily recognize?
Human-Computer Interaction (HCI)

In what new ways are humans and computers interacting? How can people use computers to communicate/collaborate with other people?
Job Variety

Senior Vice President

Lynn Reedy UIUC ’77 BS Math and CS

Sound effects software

Carla Scaletti UIUC ’88 MCS

Rear Admiral in Navy, Professor, Scientist

Grace Hopper Yale ’34 PhD Math
Jobs and Companies

Web Applications
- Amazon
- Yahoo!
- Google
- Facebook
- Microsoft
- Motorola
- IBM
- Intel
- HP
- VMware

Computer Software & Hardware Engineering
- Accenture
- Bank of America
- State Farm Insurance
- Allstate
- Pixar
- Bungie
- Lucasfilm
- Nintendo

Consulting & Insurance
- Morgan Stanley

Games & Movies
"chic tech"

Department of Computer Science
University of Illinois at Urbana-Champaign
Job Flexibility

- Telecommuting
- Casual dress code
- Flexible hours
- On-site luxuries
Job Availability

Annual Degrees and Job Openings in Broad S&E Fields

SOURCES: Tabulated by National Science Foundation/Division of Science Resources Statistics; degree data from Department of Education/National Center for Education Statistics: Integrated Postsecondary Education Data System Completions Survey; and NSF/SRS: Survey of Earned Doctorates; Projected Annual Average Job Openings derived from Department of Commerce (Office of Technology Policy) analysis of Bureau of Labor Statistics 2002-2012 projections.
<table>
<thead>
<tr>
<th>Engineering</th>
<th>UIUC</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>$54,675</td>
<td>$57,999</td>
</tr>
<tr>
<td>Chemical &amp; Biomolecular</td>
<td>$66,125</td>
<td>$63,616</td>
</tr>
<tr>
<td>Civil &amp; Environmental</td>
<td>$55,346</td>
<td>$50,940</td>
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<tr>
<td>Computer</td>
<td>$68,804</td>
<td>$59,962</td>
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<tr>
<td><strong>Computer Science</strong></td>
<td><strong>$70,114</strong></td>
<td><strong>$59,873</strong></td>
</tr>
<tr>
<td>Electrical</td>
<td>$61,099</td>
<td>$56,944</td>
</tr>
<tr>
<td>General</td>
<td>$57,481</td>
<td>$55,352</td>
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<tr>
<td>Industrial</td>
<td>$60,000</td>
<td>$58,252</td>
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<tr>
<td>Material Science &amp;</td>
<td>$60,409</td>
<td>$56,954</td>
</tr>
<tr>
<td>Mechanical</td>
<td>$60,331</td>
<td>$54,695</td>
</tr>
<tr>
<td>Nuclear</td>
<td>$58,966</td>
<td>$63,260</td>
</tr>
</tbody>
</table>

Source: National Association of Colleges and Employers
It’s Hard and innovative and exhilarating and exciting and powerful and satisfying and engaging . . .
YOU can change this!
The world cannot afford to have technology designed by only people who think alike!
Are you interested NOW?
curious?

What's that?

How do you know . . .

Can we make it better?

I wonder how . . .

What happens if we . . .
How would you design a car for an elephant?

Think outside the box!
With two ropes, which burn for 60 minutes each, and unlimited matches, how do you measure 45 minutes?
 communicators?
So, what can I do TODAY?

✓ Take as much math as possible
✓ Enroll in CS classes (if available)
✓ Participate in competitions
✓ Look for summer camps, workshops, or classes
Save the date

ALL HIGH SCHOOL STUDENTS!
On November 14, 2009 from 2PM to 4PM
join us at the Thomas M. Siebel Center for Computer Science
201 N Goodwin Ave, Urbana (corner of Mathews & Stoughton)

for a free interactive lecture on Voronoi diagrams
by Professor Jeff Erickson
He graduated from UC-Berkeley with a PhD in CS. His current research focuses on computational topology—all about algorithms involving graphs embedded on surfaces.

Light snacks will be provided. After all,

http://chictech.cs.uiuc.edu
Solve the two puzzles issued in the HighTECH Newsletter and get entered in a raffle!
Visit our website for details.
apply at www.ncwit.org/award

Calling all tech-savvy girls, coders, gamers, and web divas!
Technical Ambassadors Competition

Get real-life technical experience now!
You need:

✓ an all-girl team (2 or 3 people)
✓ an adult advisor (ie teacher, counselor, group leader)
✓ a non-profit group to help

You could win $300 each!

Registration Deadline: December 18, 2009

http://chictech.cs.uiuc.edu/
ChicTech TAC Retreat Weekend

April 24 – April 25, 2010
Thank you!
Survey Question #5

- **Flash** – often used to build simple online games; one way to create interactivity
- **Javascript** – another way: interactivity on a website
- **Java** – object-oriented programming with a safety
- **Visual basic** – stand-alone PC games; like Flash
- **PHP** – involves databases; for dynamic websites
- **QBasic** – best for learning programming concepts
- **CSS/ HTML** – for creating websites and making them look nice
- **Graphic/Web design** – is not computer science; these areas focus more on the art and design