CS 105
What Does A Computer Scientist Look Like?
What Do Computer Scientists really Look Like?
What Do Computer Scientists really Look Like?

No, this is not my boyfriend's computer.
Meet Martin
Meet Martin

Martin D. Hellwig != Martin F. Hellwig

Both are amazing (and German), but I’m the one on the left
Meet Computer Science
Computer Science

What is CS, exactly?

..... What do you think?
Computer Science

What is CS, exactly?

..... Is it a science?  Yes.
..... Does it involve a lot of Math?  Possibly.
..... Is it an art form?  Yes.
..... Does it involve psychology?  Yes.
..... Does it pay well?  Yes.
Computer Science

There's Theoretical CS
- Designing Algorithms
- Optimizing Runtimes
- Defining Standards
- and a whole lot more

And Applied CS
- Solving real world problems
- Cooperating with "domain scientists"
- Writing code / programming
## Average salaries by discipline for bachelor's degree graduates

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer and information sciences</td>
<td>$65,849</td>
<td>$65,000</td>
</tr>
<tr>
<td>Engineering</td>
<td>$61,819</td>
<td>$62,000</td>
</tr>
<tr>
<td>Liberal arts and sciences</td>
<td>$50,116</td>
<td>$45,000</td>
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<tr>
<td>Business</td>
<td>$49,536</td>
<td>$50,000</td>
</tr>
<tr>
<td>Social sciences</td>
<td>$39,931</td>
<td>$37,499</td>
</tr>
<tr>
<td>History</td>
<td>$37,957</td>
<td>$40,000</td>
</tr>
<tr>
<td>Visual and performing arts</td>
<td>$36,041</td>
<td>$35,000</td>
</tr>
<tr>
<td>Psychology</td>
<td>$35,108</td>
<td>$32,750</td>
</tr>
<tr>
<td>English</td>
<td>$34,702</td>
<td>$35,000</td>
</tr>
</tbody>
</table>

Source: *NACE Fall 2015 Salary Survey.*

Table from shrm.org
# Is CS for you?

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<thead>
<tr>
<th>Category</th>
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<th>Median</th>
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</thead>
<tbody>
<tr>
<td>Computer and information sciences</td>
<td>$79,614</td>
<td>$81,563</td>
</tr>
<tr>
<td>Engineering</td>
<td>$70,844</td>
<td>$71,620</td>
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<tr>
<td>Engineering technologies</td>
<td>$69,000</td>
<td>$59,250</td>
</tr>
<tr>
<td>Health professions</td>
<td>$63,159</td>
<td>$61,375</td>
</tr>
<tr>
<td>Business, management and marketing</td>
<td>$58,026</td>
<td>$55,000</td>
</tr>
<tr>
<td>Biological and biomedical science</td>
<td>$57,386</td>
<td>$53,407</td>
</tr>
<tr>
<td>Mathematics and statistics</td>
<td>$57,088</td>
<td>$57,500</td>
</tr>
<tr>
<td>Physical sciences</td>
<td>$53,740</td>
<td>$45,250</td>
</tr>
<tr>
<td>Communication and journalism</td>
<td>$52,705</td>
<td>$53,750</td>
</tr>
<tr>
<td>Psychology</td>
<td>$51,935</td>
<td>$52,500</td>
</tr>
</tbody>
</table>

Source: *NACE Fall 2015 Salary Survey.*
Is CS for you?

Average salaries by discipline for doctorate degree graduates

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<tr>
<th>Category</th>
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<th>Median</th>
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</thead>
<tbody>
<tr>
<td>Business, management and marketing</td>
<td>$131,461</td>
<td>$143,875</td>
</tr>
<tr>
<td>Health professions</td>
<td>$79,653</td>
<td>$88,250</td>
</tr>
<tr>
<td>Engineering</td>
<td>$79,242</td>
<td>$80,534</td>
</tr>
<tr>
<td>Computer and information sciences</td>
<td>$77,375</td>
<td>$63,500</td>
</tr>
<tr>
<td>Education</td>
<td>$74,134</td>
<td>$75,929</td>
</tr>
</tbody>
</table>

Source: *NACE Fall 2015 Salary Survey.*
What Employers Look For...

1. Ability to work in a team structure
2. Problem solving skills
3. Communication skills
4. Organization skills
5. Ability to obtain and process information
6. Ability to analyze quantitative data
7. Technical knowledge related to the job
8. Proficiency with computer software programs
9. Ability to create and/or edit written reports
10. Ability to sell and influence others
Meet CS@Illinois
So you want to study CS?

Good Choice!

But what school should you attend?

And why would you come here?
The best CS departments in the United States

1. Carnegie Mellon
1. MIT
1. Stanford
1. UC Berkeley
5. UIUC
8. Princeton
15. Columbia
18. Harvard University
20. Brown
20. Purdue
Meet Your Peers
Who Takes CS 105?

Students from all non technical backgrounds

Many from the Business disciplines

> 99% own or have access to smart phones or other mobile devices

> 70% have never touched a piece of code
Meet CS 105
Your Best Friend: 
The CS 105 Web Site

Just google or bing "cs105"

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Course Description
This course provides an introduction to basic concepts and applications in Computer Science. Emphasis on understanding how a computer "thinks" through algorithms, data manipulation, and simple programs. Application of computation-based tools such as spreadsheets. Intended

Course Policies
Academic Integrity
Cheating on a test, or any attempt to cheat - will be a violation of University, your department, or your college. Any work you submit for a course must be your own. Except for

Announcements
Jul 21: If you have never written a piece of code and have no idea how a computer actually works, then this course is for you!
Jul 20: Welcome to CS 105!

Schedule
Aug 22: Things you need to know
Aug 24: What is a computer, exactly?
Aug 29: How do computers work?
Aug 31: How does the internet work?

Grading
4 Exams 400 points
Homework (5 sets) 300 points
Group Project 200 points
Lab Participation 100 points
Total 1000 points
Things We Will Cover

Foundations of CS
Web Site Development (HTML, CSS)
Programming (JavaScript)
Data in Business (Microsoft Excel)
Computer and Data Security
Current Trends
<table>
<thead>
<tr>
<th>Exam</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations (Take home)</td>
<td>Sep 9th</td>
</tr>
<tr>
<td>Programming (In your lab)</td>
<td>Oct 24-26</td>
</tr>
<tr>
<td>Excel (In your lab)</td>
<td>Nov 13-15</td>
</tr>
<tr>
<td>Comprehensive Final</td>
<td>Dec 16</td>
</tr>
</tbody>
</table>
Let's get started!
What Is Computer?

Well, that's easy.

A computer is a device that uses algorithms to process data into information.
What Is Computer?

OK, so maybe it's not THAT easy....

Let's look at some of those terms first.
What Is An Algorithm?

Simply put, it's a recipe.

It provides abstract instructions on how to solve a problem.

You use algorithms every day
What Is An Algorithm?

For example....

How many students showed up for today's class?