Introduction to Computer Science I

Janyl Jumadinova
January 17, 2018
Keep in Touch

- Email
- Office hours
- Course website (http://cs.allegheny.edu/sites/jjumadinova/teaching/111)
- Teaching assistants (http://www.cs.allegheny.edu/teaching/teachingassistants/)
- Sakai (https://sakai.allegheny.edu/)
- Slack channel (more on this later) (https://cs111s2018.slack.com/)
- Github (more on this later) (https://github.org/)
What will we explore in this class?
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- Algorithms
- Software
- Programming Languages - Java
- Applications of computer science
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- Algorithms
- Software
- Programming Languages - Java
- Applications of computer science
  - DNA manipulation
  - Graphics
  - Robotics
  - Music
Computer Science Involves More than Programming!

- People
- Teams
- Writing
- Speaking
Highlights of this course

- Class Activities
Highlights of this course

- Class Activities
- Laboratory Sessions
Highlights of this course

- Class Activities
- Laboratory Sessions
- Practical Sessions (Fridays)
Highlights of this course

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- Laboratory Sessions
- Practical Sessions (Fridays)
- Challenging Programming
Highlights of this course

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- Practical Sessions (Fridays)
- Challenging Programming
- Group Projects
Highlights of this course

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- Challenging Programming
- Group Projects
- Fun Presentations
Highlights of this course

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- Laboratory Sessions
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- Challenging Programming
- Group Projects
- Fun Presentations
- Real-world Software Tools
Highlights of this course

- Class Activities
- Laboratory Sessions
- Practical Sessions (Fridays)
- Challenging Programming
- Group Projects
- Fun Presentations
- Real-world Software Tools
- New Friends and Colleagues
What is Computer Science?
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A quote from a famous computer scientist: “Computer Science is no more about computers than astronomy is about telescopes” Edsger Dijkstra (1930–2002)
A computation is a sequence of well-defined operations that lead from an initial starting point to a desired final outcome.
What is Computer Science?

- A computation is a sequence of well-defined operations that lead from an initial starting point to a desired final outcome.

Computer science is the study of computation.
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- computational solutions to problems in math, science, medicine, business, education, journalism, ...
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Computers play a key role
What field has ...?

- The best-rated job, and 5 of the top 10 highest paid, highest growth jobs?
- Shown strong job growth?
- A severe shortage in college graduates?
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- The best-rated job, and 5 of the top 10 highest paid, highest growth jobs?
- Shown strong job growth?
- A severe shortage in college graduates?

Computer Science!
Computer science is a top paying college degree and computer programming jobs are growing at 2X the national average.
The Job/Student Gap

Computer Science Students
- 2%
- All other math and science students 98%

Computing Jobs
- All other math and science jobs 40%
- Computing jobs 60%

Sources: College Board, Bureau of Labor Statistics, National Science Foundation
<table>
<thead>
<tr>
<th>Job Title</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software engineer</td>
<td>$93,000</td>
</tr>
<tr>
<td>Systems Engineer</td>
<td>$91,000</td>
</tr>
<tr>
<td>Software developer</td>
<td>$89,000</td>
</tr>
<tr>
<td>Java Developer</td>
<td>$98,000</td>
</tr>
<tr>
<td>Business analyst</td>
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</tr>
<tr>
<td>.Net developer</td>
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</tr>
<tr>
<td>Web developer</td>
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<tr>
<td>Systems administrator</td>
<td>$77,000</td>
</tr>
<tr>
<td>Project Manager</td>
<td>$93,000</td>
</tr>
<tr>
<td>Network engineer</td>
<td>$91,000</td>
</tr>
</tbody>
</table>

In USD as of Sep 17, 2012

35k | 70k | 105k
Applications of Computer Science

- No Lab this week
- Practical session on Friday
KEEP CALM
You're learning
Computer Science