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COMPUTER SCIENCE
Department

Introduction to Computer Science I

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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/>)



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What will we explore in this class?



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What will we explore in this class?

- ▶ Algorithms
- ▶ Software
- ▶ Programming Languages - Java
- ▶ Applications of computer science



What will we explore in this class?

- ▶ Algorithms
- ▶ Software
- ▶ Programming Languages - Java
- ▶ Applications of computer science
 - ▶ DNA manipulation
 - ▶ Graphics
 - ▶ Robotics
 - ▶ Music



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Computer Science Involves More than Programming!

- ▶ People
- ▶ Teams
- ▶ Writing
- ▶ Speaking



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Highlights of this course

- ▶ Class Activities



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Highlights of this course

- ▶ Class Activities
- ▶ Laboratory Sessions



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Highlights of this course

- ▶ Class Activities
- ▶ Laboratory Sessions
- ▶ Practical Sessions (Fridays)



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Highlights of this course

- ▶ Class Activities
- ▶ Laboratory Sessions
- ▶ Practical Sessions (Fridays)
- ▶ Challenging Programming



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Highlights of this course

- ▶ Class Activities
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- ▶ Challenging Programming
- ▶ Group Projects



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- ▶ Challenging Programming
- ▶ Group Projects
- ▶ Fun Presentations



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- ▶ Laboratory Sessions
- ▶ Practical Sessions (Fridays)
- ▶ 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



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What is Computer Science?



What is Computer Science?

A quote from a famous computer scientist: *"Computer Science is no more about computers than astronomy is about telescopes"* Edsger Dijkstra (1930 2002)





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



What is Computer Science?

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Computer science is the study of computation



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Computer science is the study of computation



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Computer science is the study of computation

- ▶ investigating problems that can be solved computationally



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Computer science is the study of computation

- ▶ investigating problems that can be solved computationally
- ▶ programming languages used to describe computations



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Computer science is the study of computation

- ▶ investigating problems that can be solved computationally
- ▶ programming languages used to describe computations
- ▶ machines that carry out computations



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- ▶ programming languages used to describe computations
- ▶ machines that carry out computations
- ▶ theoretical limits of computation (what is or is not computable)



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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?



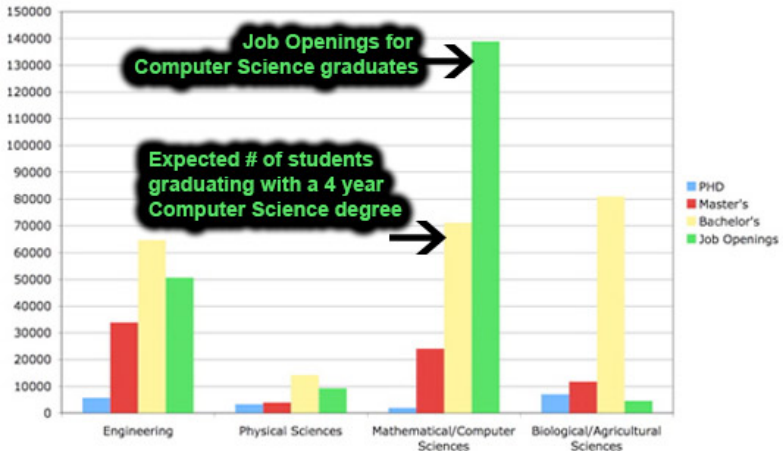
What field has ...?

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Computer Science!



Annual Degrees (2004) and Average Job Openings in Broad S&E Fields (2004-2014)



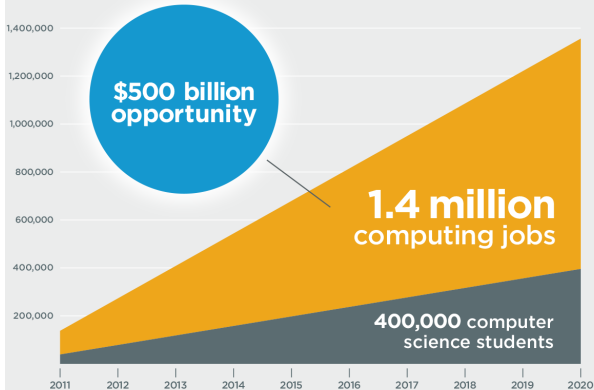


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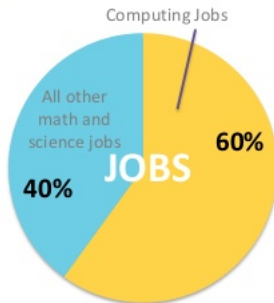
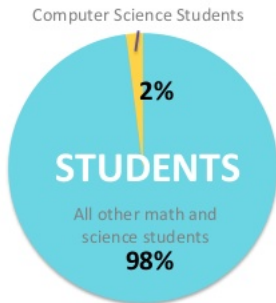
1,000,000 more jobs than students by 2020

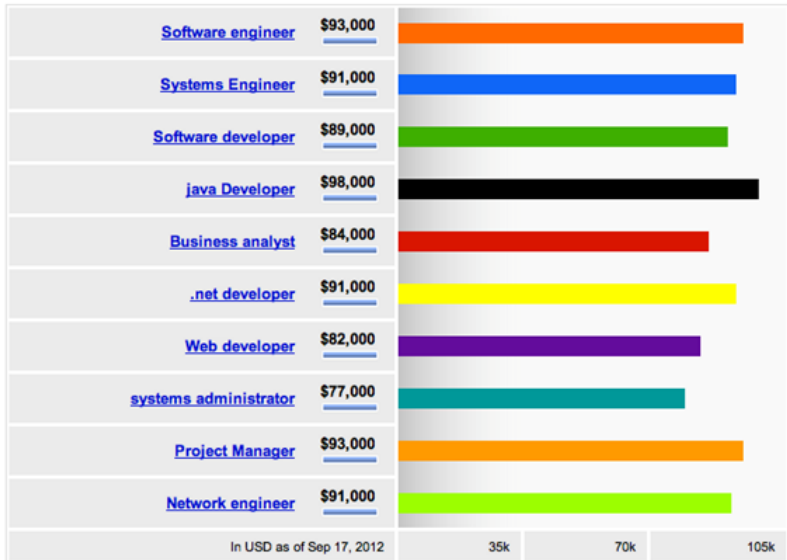


Computer science
**is a top paying
college degree**
and computer
programming
**jobs are growing
at 2X the
national average.**



The Job/Student Gap







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Applications of Computer Science

- ▶ No Lab this week
- ▶ Practical session on Friday



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KEEP
CALM

You're learning

Computer
Science