Introduction to Computer Science I

Summary and Applications

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Computer Science is

- is a process of computation,
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- more than programming,
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- applicable to many fields,
Computer Science is

- is a process of computation,
- is more than programming,
- is applicable to many fields,
- since technology is everywhere
What is Computer Science?
What is Computer Science?

Programming → Java
int temp;

int double char ...

temp = temp +10;

(double) temp = 10.5;
double new_temp = temp+10.5;
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temp = temp +10;

(double) temp = 10.5;
double new_temp = temp+10.5;

Existing classes:
Scanner, Random, Math, String, Iterators, ArrayList
Variables

Data Types

Expressions

Conversion

Existing classes:
Scanner, Random,
Math, String, Iterators,
ArrayList

Writing Algorithms:
Conditionals (if, if/else, switch)
Repetition (while, do/while, for)

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int double char ...
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Creating new classes, methods

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Programming – Java

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Data Types

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Expressions

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Conversion

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- Scanner, Random, Math, String, Iterators, ArrayList

Applications:
- Math
- Music
- Art
- Bioinformatics
- Management Systems

Creating new classes, methods

Writing Algorithms:
- Conditionals (if, if/else, switch)
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Programming → Java

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Data Types

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Applications:
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- Music
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- Management Systems

Tools:
- Slack
- GitHub
- Linux
- Script (GG)
- Travis

Creating new classes, methods

Writing Algorithms:
- Conditionals (if, if/else, switch)
- Repetition (while, do/while, for)
What is Computer Science?

- Team work
- Computational Thinking
- Programming \rightarrow Java
- Problem Solving
- Creativity
Using Computer Science you can:

- Develop technology
Using Computer Science you can:

- Develop technology
- Study the usability of technology
Using Computer Science you can:

- Develop technology
- Study the usability of technology
- Design IT infrastructure
Using Computer Science you can:

- Develop technology
- Study the usability of technology
- Design IT infrastructure
- Solve problems in other fields
1,000,000 more jobs than students by 2020

$500 billion opportunity

1.4 million computing jobs

400,000 computer science students

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

- Now, computing is becoming recognized as a new literacy
Computational Thinking

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- Programming helps to develop computational thinking skills
Computational Thinking

- Now, computing is becoming recognized as a new literacy
- Programming helps to develop computational thinking skills
- High-level (object-oriented) programming makes programming accessible
Programming helps with

- Problem solving skills
- Critical thinking skills
- Analysis
- Computational thinking
- Understanding underlying technologies
Java is Used in Many Companies/Industries

- Google (gmail)
- Facebook
- Ebay
- Kayak
- Amazon
- Netflix
- Linked In
- AT & T
- E-banking (Bank of America)
- Some blue-ray players
- etc.
Java Benefits

- Write once, run everywhere
- Network-centric
- Internationalization
- Performance
- Programmer Efficiency
There is more

- A lot more programming techniques than covered in this class
- A lot of other programming languages and tools
- Learning never ends