Computational Expression
Summary and Applications

Janyl Jumadinova

December 2, 2019
Computer Science is

- is a process of computation,
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- is more than programming,
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- a process of computation,
- more than programming,
- 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
Variables

Data Types

Expressions

Conversion

int temp;

int double char ...

temp = temp +10;

(double) temp = 10.5;
double new_temp = temp+10.5;
```java
int temp;
int double char ...
temp = temp +10;
(double) temp = 10.5;
double new_temp = temp+10.5;
```

**Existing classes:**
Scanner, Random, Math, String, Iterators, ArrayList
int temp;

int double char ...

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**Existing classes:**
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**Writing Algorithms:**
Conditionals (if, if/else, switch)
Repetition (while, do/while, for)
Variables

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Existing classes:
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Creating new classes, methods

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

Variables
- int temp;

Data Types
- int double char ...

Expressions
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Conversion

Existing classes:
- 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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Existing classes:
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Creating new classes, methods

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

int temp;

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What is Computer Science?

- Team work
- Computational Thinking
- Programming → 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
Technology is changing our world.

Technology careers are lucrative and computing skills are in demand.

Diversity in computing is lacking.

Women, especially women of color, are essentially "absent" from technology innovation.

Change leadership is critical.

Ineffective strategic leadership allows underrepresentation in computing to persist.

By 2026, 3.5 million computing-related job openings are expected. At the current rate, only 17% of these jobs could be filled by U.S. computing bachelor’s degree recipients.

In 2017, 26% of the computing workforce were women, and less than 10% were women of color (5% were Asian, 3% were African-American, and 1% were Hispanic.)

Isolated efforts are not enough for sustained change. Organizations must take a comprehensive, systemic approach in order to increase gender diversity.

From NCWIT

Janyl Jumadinova

Computational Expression

December 2, 2019
Now, computing is slowly becoming recognized as a new literacy.
Computational Thinking

- Now, computing is slowly becoming recognized as a new literacy
- Programming helps to develop computational thinking skills
Computational Thinking

- Now, computing is slowly 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
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Hour of Code
Trinket
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**Hour of Code**

**Trinket**

Next courses for CS/Informatics:

- Data Abstraction (every semester)
- Discrete Structures (Fall 2020)
- Bioinformatics (Spring 2021)
- Data Analytics (Spring 2020)
- Web Development (Fall 2020)
- COMRT 529 (AIM Internship: every semester)