Computational Expression
Summary and Applications

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Computer Science is

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- is 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

int temp;

Expressions

int double char ...

temp = temp +10;

Conversion

(double) temp = 10.5;

double new_temp = temp+10.5;
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
Variables

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Existing classes:
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Writing Algorithms:
Conditionals (if, if/else, switch)
Repetition (while, do/while, for)
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int double char ...
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(double) temp = 10.5;
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**Existing classes:**
Scanner, Random, Math, String, Iterators, ArrayList

**Creating new classes, methods**

**Writing Algorithms:**
Conditionals (if, if/else, switch)
Repetition (while, do/while, for)
Programming → Java

- Variables
  - int temp;
  - int double char ...
  - temp = temp + 10;
  - (double) temp = 10.5;
  - double new_temp = temp + 10.5;

- Data Types

- Expressions

- Conversion

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

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

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

- Creating new classes, methods
Programming → Java

Variables

Data Types

Expressions

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)
Repetition (while, do/while, for)

(int) temp;

(int) double char ...

temp = temp + 10;

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

Tools:
Slack
GitHub
Linux
Script (GG)
Travis
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.
Now, computing is slowly becoming recognized as a new literacy
Computational Thinking

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- 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

**Hour of Code**