Welcome to CS 101!

Introduction to Programming

Language: Java

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Previous Lectures to watch?

None!!!!

This is the first one!!!!

What this course is about

- This course is split into two major themes:

1) Computational Thinking and Computational Principles
   - How can you use computers to solve problems
   - Using programming as a tool

2) Learn Java
   - Basic to advance

Course Learning Objectives

- Computational Thinking
- Functionality/Behavior
- Control Structures
- Data Abstraction
- Code Quality

Course Learning Objectives

- **Computation Thinking:**

It is knowing how to break down and solve a problem in a way that a computer can do it

Course Learning Objectives

- **Functionality/Behavior:**

Write functionally correct Java programs that meet a provided specification and/or solve a specified problem

Course Learning Objectives

- **Control Structures:**

Select and apply control structures (e.g. methods, loops, conditionals) to manage the flow of control and information in programs

Course Learning Objectives

- **Data Abstraction:**

Select and apply basic data abstractions (e.g. variables, parameters, arrays, classes) to manage and manipulate data in programs

Course Learning Objectives

- **Code Quality:**

Define programs that are well-written, readable, maintainable, and conform to established standards

Why Study Computer Science?

- Increasingly useful for *all* fields of study and areas of employment
  - Art – computer-aided design, animation
  - Drama – lighting, sound, ticket sales, advertising
  - Lumberjacking – mapping, tracking size & # of forests

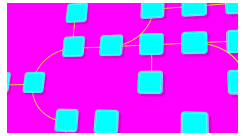
Why Study Computer Science?

- Massive impact on our lives and society as a whole


Commercial Drones


Intelligent Apps


Virtual Assistants

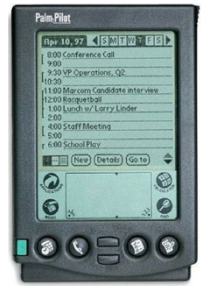

Blockchain


Autonomous Vehicles


VR / AR

The Hottest Tech 24 Years Ago (1997)

- Windows 95
- DVD Players
- Sharp MiniDisc Player
- Sony PlayStation
- Grand Theft Auto
- WebTV



Computing in Your Future

- Computing and its data are inescapable
  - You generate “digital footprints” all the time
- Computing is a regular part of *every* job
  - Use computers and computational tools
  - Generate and process data
  - Dealing with IT people
  - Understanding the computation portion of projects
- Our goal is to help you make sense of the “Digital Age” that we now all live in

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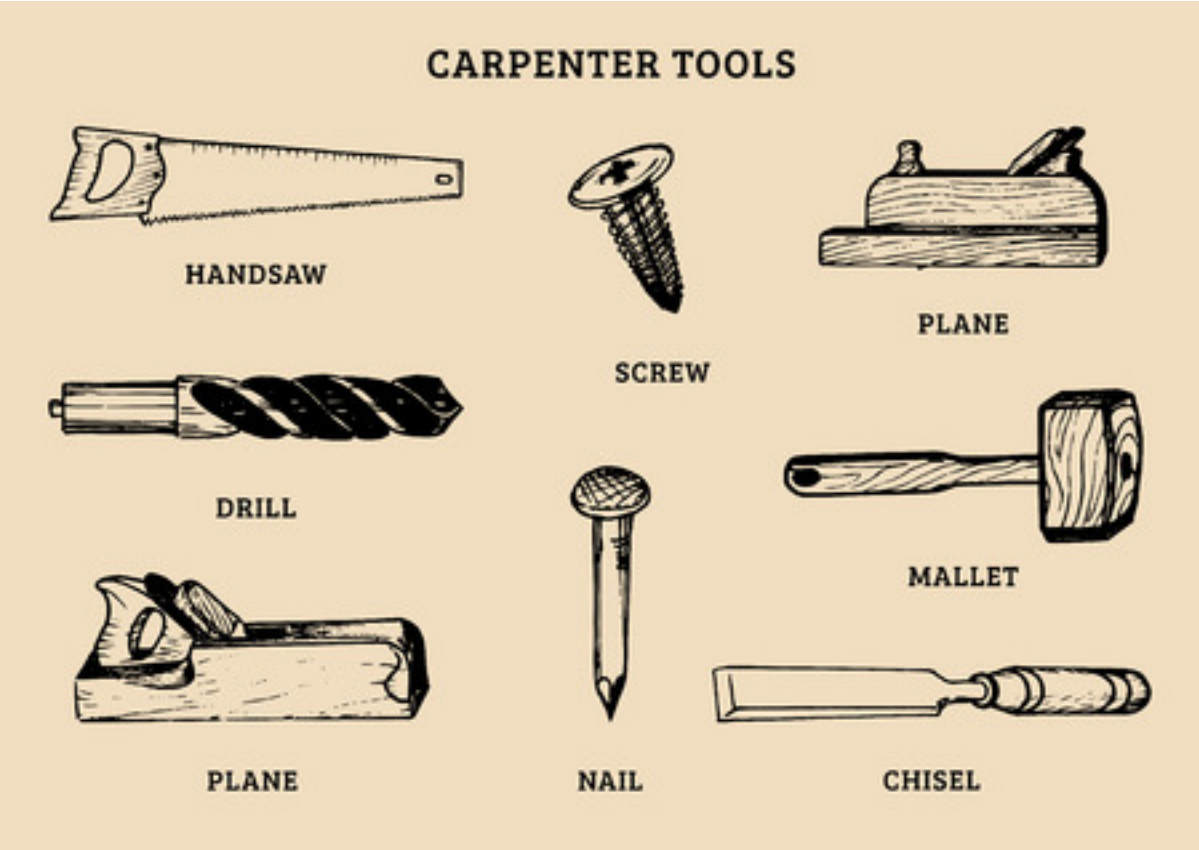
About Programming

- programming ≠ computational thinking
  - *Computational thinking* is knowing how to break down and solve a problem in a way that a computer can do it
  - *Programming* is the tool you use to execute your solution
  - We use programming in this course as a way of teaching computational thinking

About Programming

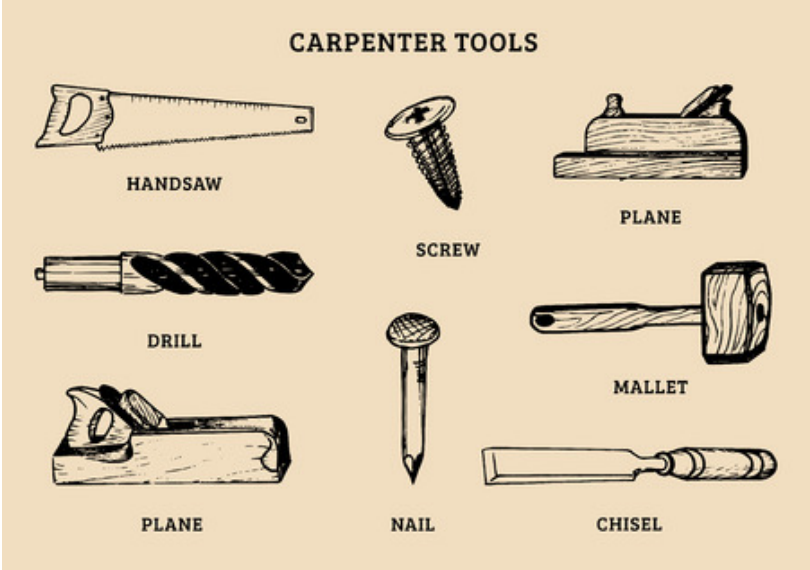
- Can be learned, just like any other skill
  - It’s not black magic; there’s no such thing as a “coding gene”
  - Yes, at first it may be challenging and mind-bending – just like learning your first non-native language
  - My hope is that you will think differently after this course

Carpenter: Tools



Carpenter: Tools

- Table or a bench
- Chair
- Cabinet
- Bookshelf
- Door
- Bunk bed



Programmer: Tools

- Statements
- Variables
- Loops
- Functions
- Conditions

Programmer: Tools

- Statements
  - Variables
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Programmer: Tools

- Statements
- **Variables**
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Programmer: Tools

- Statements
- Variables
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- Conditions

Programming in this course

- Use a language called Java
  - Object Oriented Programming
  - Easy to learn and market acceptance
  - At the end of the day, the language you use doesn't matter as long as you develop computational thinking skills

Why Java?


The Top Ten Best Jobs in the U.S. 2021
Position
Salary
1.Java Developer
$90,830
2.Data Scientist
$113,736
3.Product Manager
$121,107
4.Enterprise Architect
$131,361
5.Devops Engineer
$110,003
Source: Glassdoor Economic Research

Software

- JDK
- The Java Development Kit (JDK) includes the compiler that you will need for compiling and running Java programs.
- I am using **NetBeans** IDE, but you can use any other IDE like **Eclipse**, **IntelliJ**..

The End

- What to do? Install JDK….
- If you have questions/comments: Comment on Youtube Video.
- Please share with your friends and keep Learning!!! Bye!