Python Coding Schools

1st lesson: HelloWorld

Seed Academy

Agenda

- wk1. Installing Python, HelloWorld

- wk2. Arithmetic Operators

- wk3. Data Types : Integer, Floating point, Boolean, String

- wk4. Data Structures: List

- wk5. Data Structures: Set, Tuples

- wk6. Data Structures: Dictionary

Agenda

- wk7. Control flows: IF statement

- wk8. Loops

- wk9. Function

- wk10. Class

- wk11. Data Visualization

Class materials

https://github.com/TaeheeJeong/seedacademy

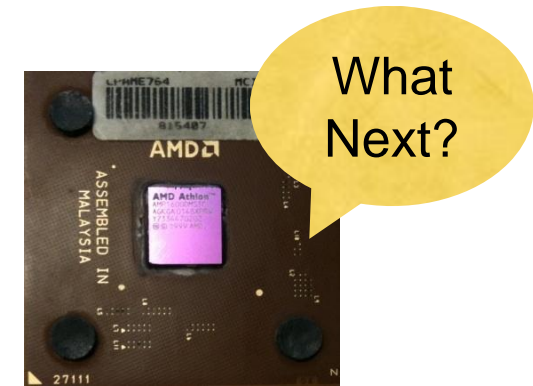https://github.com/TaeheeJeong/SummerCoding2023

Computers...

Computers are built for one purpose - to do things for us

But we need to speak their language to describe what we want done

Someone already put many different programs (instructions) into the computer and users just pick the ones they want to use
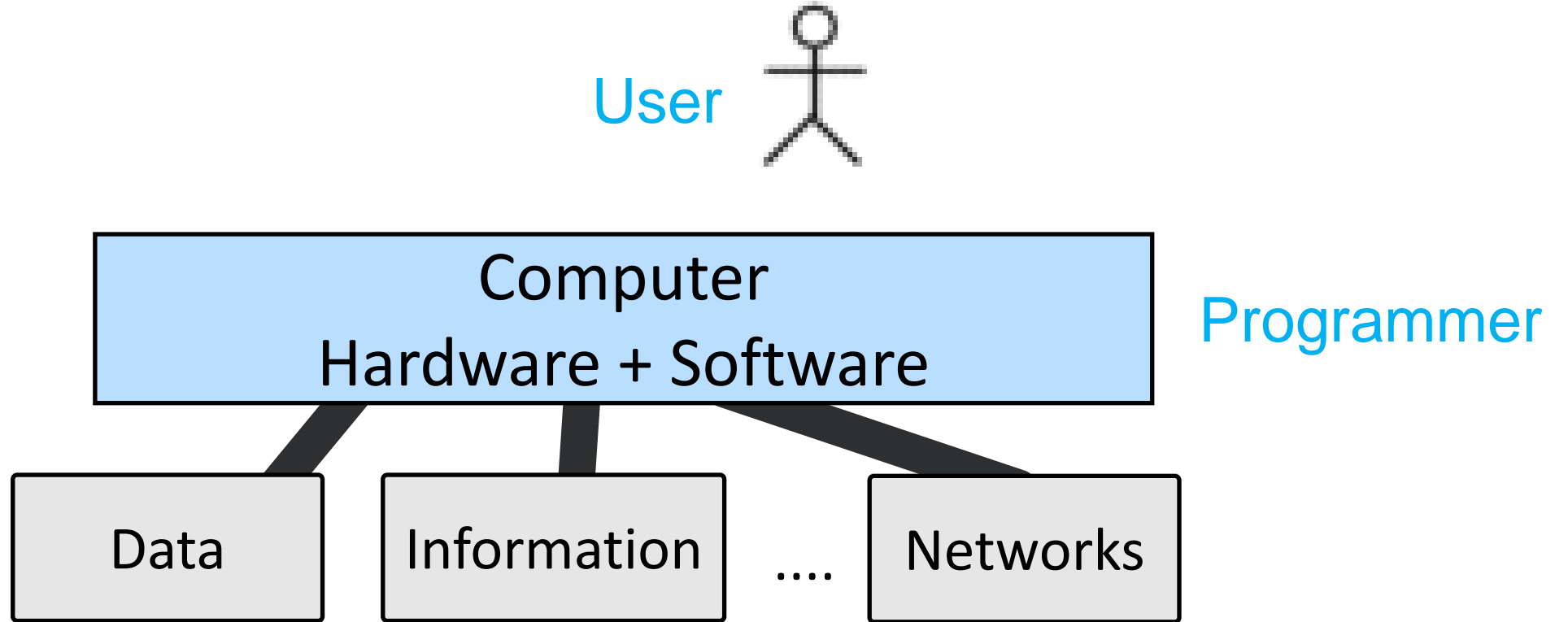
Users vs. Programmers

Users see computers as a set of tools - word processor, spreadsheet, map, to-do list, etc.

Programmers use computer languages to build new tools for lots of users to automate a task

Source: Python for Everybody, Charles Severance, University of Michigan School of Information

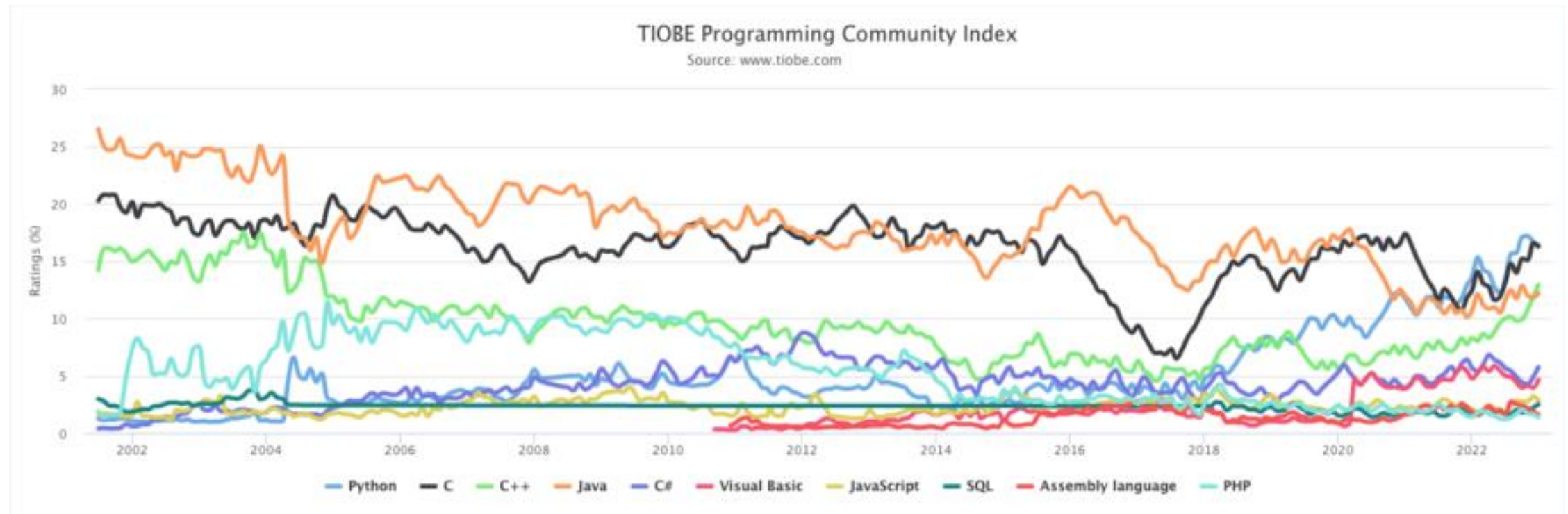# What is Code? Software? A Program?

- A sequence of stored instructions

    - It is a piece of our intelligence in the computer

- A piece of creative art

  - particularly when we do a good job

Python language

- Python was created by Guido Van Rossum, and released on February 20, 1991.
- Van Rossum's vision for Python:
  - To be an **easy** and **intuitive** language that is just as powerful as those of the major competitors
  - The ability for anyone to contribute to its development by being **open source**
  - For the language to be **easily understandable** as plain English
  - That the language be suitable for **everyday tasks** and allow for **short development time**

Python Popularity Over The Years

Python's rise in popularity because it is an intuitive, accessible, and versatile language.

TIOBE Programming Community Index
Source: www.tiobe.com

Why Is Python So Popular?

- Beginner-Friendly

- Versatility of Use

- Active and Supportive Community

- Libraries and Frameworks

- Python Works with Artificial Intelligence

Interactive versus Script

- Interactive

  - You type directly to Python one line at a time and it responds

  - Jupyter Notebook, Spyder

- Script

  - You enter a sequence of statements (lines) into a file using a text editor and tell Python to execute the statements in the file

  - As a convention, we add ".py" as the suffix on the end of these files to indicate they contain Python.

Installing Python

- Method1. Installing Anaconda

- Method2. Installing Miniconda

- Method3. Installing Python

- Method4. Google Colab

Installing Anaconda

- Installing on Windows

- https://docs.anaconda.com/free/anaconda/install/windows/

- Installing on MacOS

- https://docs.anaconda.com/free/anaconda/install/mac-os/

- Installing on Linux

- https://docs.anaconda.com/free/anaconda/install/linux/

Installing Miniconda

- Installing on Windows

- https://docs.conda.io/projects/conda/en/latest/user-guide/install/windows.html#

- Installing on MacOS

- https://docs.conda.io/projects/conda/en/latest/user-guide/install/macos.html

- Installing on Linux

- https://docs.conda.io/projects/conda/en/latest/user-guide/install/linux.html

Installing Python

- https://www.python.org/downloads/

- Need a text editor: notepad++

  - https://notepad-plus-plus.org/downloads/

- Jupyter notebook

  > pip install notebook

  > jupyter notebook

Text editors and Tabs

Atom automatically uses spaces for files with ".py" extension

Most text editors can turn tabs into spaces - make sure to enable this feature

- NotePad++: Settings -> Preferences -> Language Menu/Tab Settings

- TextWrangler: TextWrangler -> Preferences -> Editor Defaults

Python cares a *lot* about how far a line is indented. If you mix tabs and spaces, you may get "indentation errors" even if everything looks fine

Google Colab

- https://colab.research.google.com/

- Colab notebook

"Hello, World!"

Task:

Print "Hello, World!"

In Jupyter notebook

print('Hello, World!')

Using a text editor, make a file "hello.py"

In the terminal, $python hello.py