TECHNION
Azrieli Continuing Education and External Studies Division

Module 5.1.1: Module Introduction

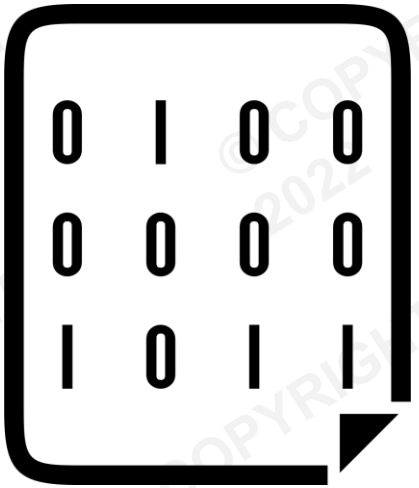
Introduction

- High and Low Programming Languages
- Compilation and Interpretation
- History of Python
- Installing PyCharm

Programming Languages

Machine Code - Binary

- This is the only language that the machine understands and runs.
- Ones and Zeros (Set/Unset || Lit / Unlit)
- Processor and Operating-System oriented.
- We won’t code in this. Barely used nowadays.



Assembly

- Readable
- Needs translation into machine code
- Processor oriented

```
MOV ax, 5
MOV bx, 17
ADD ax, bx
```

Low-Level Programming Language

- Machine Code and Assembly are the two main low-level programming languages.
- They are known as “low-level” because they are very close to how different hardware elements of a computer communicate with each other.

High-Level Programming Language (HLPL)

- High-level programming languages are a lot closer to the logic of human communication.
  - Easy to use
  - More flexible

High-Level:

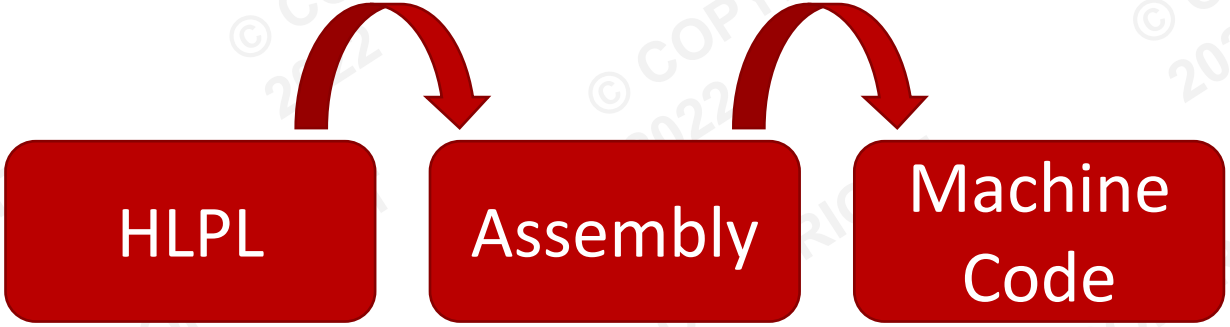
```
x = 17 + 5
>>> 22
```

Assembly:

```
MOV ax, 5
MOV bx, 17
ADD ax, bx
```

How do these high-level languages run?

- Compilation!



Compiled and Interpreted Languages

- In compilation, the whole script (code file) is translated from readable language to machine code.
  - This machine code outputs a compiled file that is ready for execution. (for example: .exe) The program still has not been run!
  - You can run this compiled file repeatedly. In interpretation, each line is translated into machine code and executed, one line after the other.
  - For each rerun, each line must be translated again and again.

Python

History of Python

- Python 2.0 was first released in 2000. Its latest version, 2.7, was released in 2010.
- Python 3.0 was released in 2008. Its latest version, 3.7, was released in 2018.
- Since January 1, 2020, Python 2.7 has "retired" and no longer be maintained.

Why Python?

- High level
- Interpreted
- Very readable and easy to use
- Used a lot in the field of cyber security
  - A lot of tools, exploits and POCs are written in python

PyCharm Installation

- Follow lab 5.1.1 to install PyCharm

Thank You!