
Python Fundamentals

Includes

- Introduction to programming
- Why programming?
- Installing Python
- Variables
- Data Types
- Indexing
- Strings
- List
- Tuple
- Dictionaries
- Sequences
- Control Flow
- Looping Techniques

Python Programming



Welcome To This World!!!

Some Background



- Created in 1991 by Guido van Rossum (now at Microsoft)
 - Named for Monty Python
 - When he began implementing Python, Guido van Rossum was also reading the published scripts from “Monty Python's Flying Circus”, a BBC comedy series from the 1970s
- Useful as a **scripting language**
 - **script**: A small program meant for one-time use

Why programming language?

- Basically to interact between human and electronic machines (not necessarily computers)
- Can think as mediator between natural languages (nepali, english) and machine language (binary (0's and 1's))
- What is programming?
 - a way to “instruct the computer to perform various tasks”

Why Python?

- Developed a large and active scientific computing and data analysis community
- Packages: Numpy, Pandas, Scipy, scikit-learn, statsmodels
- Most important language for
 - Web Development (Flask, Django)
 - Data Science
 - Machine Learning
 - General Software Development

Who all uses Python and how?

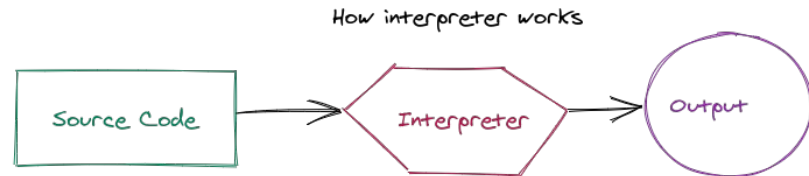
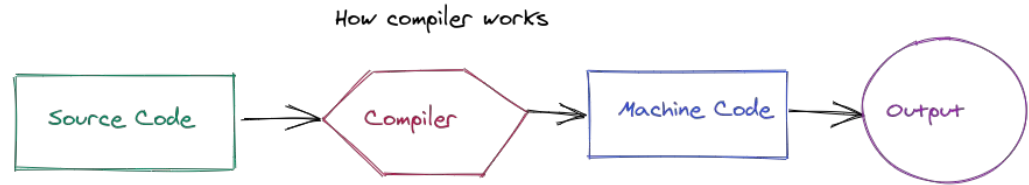
- Google - web crawling (web scraping), google photos (face recognition), Google Translate
- Instagram: Uses web framework django for its application
- Spotify: for data analysis and back end services
- Reddit
- YouTube
- Games: Battlefield 2, Bridge Commander

How to run Python code?

- **IPython**
 - Python can be run interactively
 - Mainly used in research
 - Used mainly for prototyping
- **Python Scripts**
 - If we want to run more than few line of code, scripts are used
 - File is saved in a .py extension.
 - For production

Interpreter vs Compiler

- Interpreter translates one statement at a time
- Compiler scans entire program and translates it as a whole into machine code



What does Compilation mean?

- Compilation involves translating human understandable code into machine understandable code, or machine code (base level form of instruction - directly executed by CPU)
- After compilation, code generates an executable file.
- Executing this file runs the operations present in the code step by step

Python as Interpreted language ??

- Python is written in a high level language 'C'.
- Interpreter is responsible for executing Python code (scripts)
- Works in REPL environment
 - **R**: Reading the command
 - **E**: Evaluating and executing the command
 - **P**: Printing the output
 - **L**: Looping back and repeating the entire process
- **Python is an interpreted language, not a compiled one. Although compilation is a**

Python internal working

