Python Notes – Day 1

Topics: Introduction, Data Types, Expressions, Statements, Comments

Notes by – Learn Neural

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1. Introduction to Python Programming

What is Python?

Python is a **high-level**, **interpreted**, and **object-oriented** programming language with **dynamic semantics**. It supports multiple programming paradigms, including procedural, functional, and object-oriented programming. Python emphasizes **code readability** with its clean and easy-to-learn syntax, making it ideal for **beginners** and **professionals** alike.

👨‍💻 Created by: **Guido van Rossum**
🗓️ First Released: **1991**
🧪 Current Version: Check on python.org

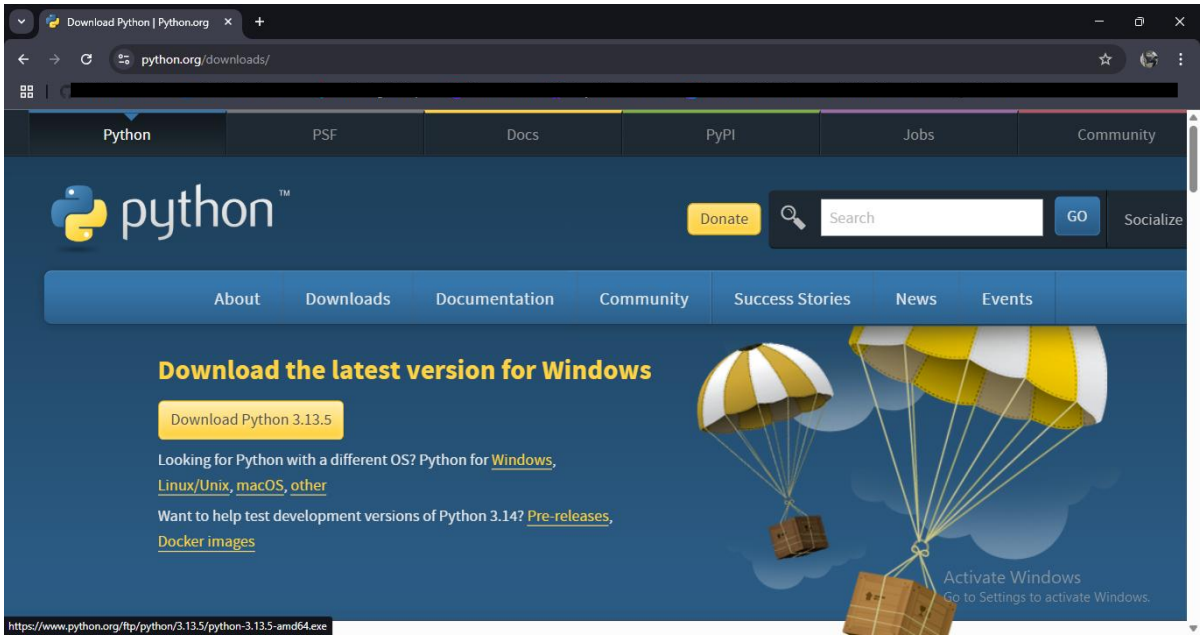
Key Features of Python:

Feature	Description
Simple Syntax	Python code resembles English, making it easier to read and write.
Interpreted	Code is executed line-by-line; no compilation needed.
Open Source	Free to download, use, and modify.
Cross-Platform	Runs on Windows, macOS, Linux, and more.
Extensive Libraries	Huge standard library + third-party packages (NumPy, Pandas, etc.).
Dynamic Typing	No need to declare data types explicitly.
Versatile	Used in Web Dev, Data Science, AI, Automation, Games, etc.

Python Installation Guide

Step-by-Step Instructions:

1. Visit the official website: **https://www.python.org**
2. Navigate to **Downloads** → Select your OS (Windows/macOS/Linux)
3. Download the latest **stable release** (e.g., Python 3.12.X)



4. Run the installer:
    - Check **"Add Python to PATH"**
    - Click **"Install Now"**
5. After installation, open **Command Prompt (CMD)**:
6. python --version

Output should show something like:

Python 3.12.0

Also install **IDEs** like VS Code, PyCharm, or use online editors like Replit, Google Colab.

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2. Python Data Types

Python automatically identifies the data type when you assign a value to a variable. This is known as **dynamic typing**.

1. int (Integer)

Represents whole numbers (positive, negative, or zero).

age = 21

2. float (Floating-point number)

Represents real numbers (with decimal points).

price = 99.99

3. bool (Boolean)

Stores either True or False – often used in conditions.

is_active = True

4. str (String)

Represents text or sequence of characters inside quotes (' ' or " ").

name = "Asmita"

5. list (List)

Stores an **ordered collection** of values (items can be of different types).

colors = ["red", "green", "blue"]

Use type() to Check Data Type:

print(type(price)) # Output: <class 'float'>

ℹ️ Python also supports more types like tuple, dict, set, complex, NoneType, etc.

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3. Variables, Expressions & Statements

Variables

Variables are **named memory locations** used to store values. In Python:

- No need to declare the type
- Variable names must start with a letter or underscore _

x = 10

y = "Hello"

Expressions

An expression is a **combination of variables, operators, and values** that produces a result.

result = (x + 5) * 2 # 30

✔ Returns a value
✔ Can be used inside other statements

Statements

A statement is a **complete line of instruction** to be executed by Python.

print("Welcome to Python!") # ← This is a statement

Types of Statements: (This will be thought in next class)*

- **Assignment** → x = 10
- **Conditional** → if, else, elif
- **Looping** → for, while
- **Function definition** → def greet():

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5. Comments in Python

Comments are used to **document code** and **make it easier to understand**. They are ignored by the Python interpreter.

Single-line Comment:

Begins with #

This is a single-line comment

Multi-line Comment:

Enclosed in triple quotes ''' or """

"""

This is a

multi-line comment

"""

Best Practices:

- Use comments to explain complex logic
- Avoid obvious comments like # print x above print(x)

Quick Summary Table

Concept	Example
Variable	x = 10
Expression	x + y
Statement	print("Hello")
Data Types	int, float, str, list
Boolean	is_active = True
Comment Syntax	# Single or """ Multi-line """

Keep Learning Developers... 💔