

1. Introduction to Python Theory:

❖ **Introduction to Python and its Features (simple, high-level, interpreted language).**

Introduction to Python

Python is a popular high-level, interpreted, object oriented, multipurpose programming language that is known for its simplicity and readability. It was created by Guido van Rossum and first version in February 20 1991.

Features of Python

1. Simple and Easy to Learn

- Python's syntax is clean and easy to understand.
- Programs written in Python are usually much shorter and simpler than in other languages like Java or C++.

2. High-Level Language

- As a high-level language, Python abstracts many low-level details, allowing developers to focus on logic and problem-solving.

3. Interpreted Language

- Python code is executed line-by-line by the interpreter.
- There is no need to compile the code, which makes testing and debugging easier.

❖ **History and evolution of Python.**

History in python

- Python is a popular high-level, interpreted, object oriented, multipurpose programming language that is known for its simplicity and readability. It was created by Guido van Rossum and first version in February 20 1991.

Evolution in python

- The language was finally released in 1991. When it was released, it used a lot fewer codes to express the concepts, when we compare it with [Java](#), [C++](#) & [C](#). Its design philosophy was quite good too. Its main objective is to provide code readability and advanced developer productivity. When it was released, it had more than enough capability to provide classes with inheritance, several core data types of exception handling and functions.

Python 3.12.1 is the latest stable version.

❖ **Advantages of using Python over other programming languages.**

Python is one of the most popular and powerful programming languages today. Here are the main reasons why many people prefer Python over other languages like C, C++, Java, or JavaScript.

1. Simple and Easy to Learn

2. Interpreted Language
3. Faster Development
4. Cross-Platform
5. Large Standard Library
6. Huge Collection of Libraries and Frameworks
7. Large Community Support
8. Dynamic Typing
9. Supports Multiple Programming Styles
10. Easily Integrates with Other Languages

❖ Installing Python and setting up the development environment (Anaconda, PyCharm, or VS Code).

1. Install Python (Core)

Steps:

1. Go to the official website: <https://www.python.org>
2. Click on “Download Python” (latest version).
3. Run the installer:
 - Check the box “Add Python to PATH”
 - Click Install Now

After installation, open Command Prompt and type:

```
python --version
```

This will show the installed Python version.

2. Install Anaconda

Steps:

1. Go to

<https://www.anaconda.com/products/distribution>

2. Download the Anaconda Installer for your Windows, macOS, Linux

3. Install it default settings are fine

After Installation:

- Open Anaconda Navigator or use Anaconda Prompt
- Create a new environment:

```
conda create -n myenv python=3.11
```

```
conda activate myenv
```

3. Install and Use PyCharm

Steps:

1. Go to <https://www.jetbrains.com/pycharm/>

2. Download PyCharm Community Edition

3. Install it

Setup:

- Open PyCharm → New Project
- Choose Python interpreter
- Start coding with syntax highlighting, auto-complete, and debugger

4. Install and Use Visual Studio Code

Steps:

1. Download from <https://code.visualstudio.com/>
2. Install it

Extensions to Install:

- Python extension by Microsoft

Setup:

- Open a folder in VS Code

- Create a .py file and start coding
- Select the Python interpreter

❖ Writing and executing your first Python program.

Using VS Code

1. Open VS Code and load your Python file
2. Click **Run** or press Ctrl + F5