

# Introduction to Python

Course: Python Programming

Section: Python Basics

Topic: Introduction to Python

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## What You Will Learn

- What Python is
  - Difference between interpreted and compiled languages
  - Where Python is used
  - Why Python is popular
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## 1. Definition of Python

Python is a **high-level, interpreted programming language** designed to make programming **simple, readable, and efficient**.

Python allows programmers to write programs using fewer lines of code compared to many other programming languages. Its syntax closely resembles the English language, which makes it easy to read and understand.

Python helps programmers focus on **problem-solving** rather than complex syntax rules, making it an excellent choice for beginners as well as professionals.

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## 2. Interpreted vs Compiled Languages

Programming languages are classified based on how their code is executed.

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### Interpreted Languages (Python)

- Code is executed **line by line**
- No separate compilation step

- Errors are shown immediately during execution
  - Easier to debug and learn
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## ◆ Compiled Languages (C, C++)

- Entire program is compiled before execution
  - Generates a machine-level executable file
  - Errors are detected during compilation
  - Faster execution compared to interpreted languages
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### ✓ Key Point

Python is an **interpreted language**, which helps beginners quickly identify and fix errors.

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## 3. Use Cases of Python

Python is used in many real-world applications due to its flexibility and powerful libraries.

Common use cases include:

- Automation and scripting
- Web development
- Data analysis and data science
- Artificial intelligence and machine learning
- Cybersecurity and networking tools
- Game development

Python can be used for both **small scripts** and **large-scale applications**.

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## 4. Advantages of Python

Python offers several benefits that make it one of the most popular programming languages:

- ✓ Easy to learn and read
- ✓ Requires fewer lines of code
- ✓ Large community and documentation
- ✓ Cross-platform support (Windows, macOS, Linux)
- ✓ Extensive libraries and frameworks

Because of these advantages, Python is often recommended as the **first programming language** for beginners.

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## Summary

- Python is a high-level, interpreted language
- Code is executed line by line
- Used in many real-world domains
- Beginner-friendly and powerful