Ch-5 Getting Started With Python

Introduction to Python Programming

What is Python?

- Python is a **high-level**, **interpreted**, and **general-purpose** programming language.
- Created by **Guido van Rossum** and released in **1991**.
- It emphasizes **readability**, **simplicity**, and **ease of learning**.

Features of Python

Feature	Description
Simple & Easy	Python has clear, readable syntax
Interpreted	No need to compile, code runs line-by-line
Platform Independent	Works on Windows, Linux, Mac
Free & Open Source	Available to all without cost
Extensive Libraries	Includes built-in modules and third-party packages
Dynamic Typing	No need to declare variable types

Executing a Simple "Hello World" Program

```
print("Hello, World!")
```

Output:

```
Hello, World!
```

Python Execution Modes

Mode	Description
Interactive Mode	Commands are typed and executed one line at a time in Python shell
Script Mode	Multiple lines are saved in a .py file and run together

Example (Script Mode):

Save this in a file named hello.py:

```
print("Welcome to Python")
```

Run using command:

```
python hello.py
```

Python Character Set

Characters allowed in Python:

- **Letters:** A-Z, a-z
- **Digits:** 0-9
- **Special Symbols:** +, -, *, /, =, (,), etc.
- **Whitespace:** spaces, tabs, newline
- **Other:** Unicode characters (for non-English languages)

Python Tokens

Tokens are the **smallest units of code** in Python.

Token Type	Description
Keyword	Reserved words (e.g., if, else, for, while)
Identifier	Names given to variables, functions, etc.
Literal	Constant values (10, "Python", True)
Operator	Symbols for operations (+, -, *, ==)
Punctuator	Special symbols (,, :, (), {}, [])

Variables in Python

- A **variable** is a name used to store data in memory.
- Python is **dynamically typed**: no need to declare type.

```
x = 5        # integer
name = "Ram"  # string
```

L-Value and R-Value

Term	Meaning	Example
L-Value	The variable on the **left** of =	x = 10 → x
R-Value	The value on the **right** of =	x = 10 → 10

L-value must be a variable

 10 = x → Invalid

Comments in Python

- Used to **explain the code**
- Ignored during execution

Single-line comment:

```
# This is a comment
print("Hello")
```

Multi-line comment (using triple quotes):

```
"""
This is a
multi-line comment
"""
print("Hello")
```

Summary Table

Concept	Example
Hello World	print("Hello, World!")
Variable	name = "Ravi"
Keyword	if, else, def, return
Operator	+, -, *, ==, >=
Comment	# This is a comment
Execution Modes	Interactive shell or script file