TOPIC: Introduction to Python Programming I

Lesson Objectives

By the end of this lesson, students should be able to:

1. **Define Python and explain its uses**

2. **Identify and use basic data types (strings, numbers)**

3. **Declare variables and assign values**

4. **Use Python for basic input and output**

5. **Perform string concatenation in Python**

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1. What is Python?

Definition:

Python is a **high-level, general-purpose programming language** designed to be **easy to read, write, and understand**.

Features of Python:

Feature	Description
Simple Syntax	Python code looks like English sentences
Interpreted	Runs code **line by line** (no need to compile first)
Cross-platform	Works on **Windows, Mac, Linux, Android**
Open Source	Free to use and modify
Powerful & Flexible	Used in **web development, data science, AI, robotics, games**

History of Python

Created by: **Guido van Rossum**

Year Created: 1989

First Release: 1991

Why Learn Python?

- **Easy for beginners**

- Used by big companies like **Google, Facebook, NASA, Netflix**

- Helps in **web development, artificial intelligence, machine learning, automation**

- Python is in **high demand in the job market**

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2. Python Data Types

In Python, **data types** tell the computer **what kind of data** you are working with.

A) Strings

A **string** is a collection of **letters, numbers, and symbols** enclosed in:

- **Single quotes (' ')**

- **Double quotes (" ")**

Examples of Strings:

python

CopyEdit

"Hello, World!"

'Python is fun'

"12345" # Even though this looks like a number, it's still a string because it's in quotes.

String Operations:

Operation	Example
Concatenation (Joining)	"Hello" + " World" → "Hello World"
Repetition	"Hi " * 3 → "Hi Hi Hi "

B) Numbers

Python has different number types:

Type	Example
Integer (int)	5, -3, 100
Float (decimal)	3.14, -0.5, 0.0

Mathematical Operations with Numbers:

Operation	Python Example	Output
Addition	5 + 3	8
Subtraction	10 - 4	6
Multiplication	2 * 6	12
Division	8 / 2	4.0

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3. Variables and Assignment

What is a Variable?

A **variable** is like a **container or storage box** in your computer's memory. It holds **data (like text or numbers)** that can change during the program.

How to Declare a Variable:

python

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name = "Alice"

age = 15

Variable Name Value Stored

name   "Alice"

age   15

Rules for Naming Variables:

Rule	Example
Use letters, numbers, underscores	student_name
Must start with a **letter or underscore** ✅	score ❌ 2score
No spaces	Use **underscores** instead
Case-sensitive	Age ≠ age

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4. Input and Output in Python

A) Output with print()

The **print() function** is used to **display information** on the screen.

Example:

python

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print("Welcome to Python Programming!")

Output:
Welcome to Python Programming!

B) Input with input()

The **input() function** allows the user to **type information into the program**.

Example:

python

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```
name = input("Enter your name: ")

print("Hello, " + name)
```

Sample Interaction:

yaml

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```
Enter your name: John

Hello, John
```

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5. String Concatenation (Joining Strings Together)

Concatenation means combining strings using the **+ operator**.

Example:

python

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```
first_name = "Jane"

last_name = "Doe"

full_name = first_name + " " + last_name

print("Your full name is: " + full_name)
```

Output:
Your full name is: Jane Doe

Why is Concatenation Important?

- For **greeting users**

- For **building sentences**
- For **combining inputs**

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6. Sample Python Program

python

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A simple user interaction program

```
name = input("What is your name? ")

age = input("How old are you? ")

print("Hello " + name + ", you are " + age + " years old.")
```

Explanation of the Program:

1. Asks for the user's **name** and stores it in the variable name

2. Asks for the **age** and stores it in age

3. Uses **string concatenation** to display the message

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7. Real-life Analogy

Programming Concept Real-Life Example

Variable	A **school locker** that stores books
Input	Asking a friend for their name
Output	Telling the friend "Hello, [name]"
String Concatenation	Joining two sentences together

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8. Tools to Run Python

Tool	Description
Python IDLE	Comes with Python installation
Replit.com	Free online code editor
Google Colab	Online Python notebook
Mobile Apps	PyDroid (Android), Pythonista (iOS)

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9. Summary of Key Points

- **Python** is a **beginner-friendly programming language**
- **Strings** represent **text**, **Numbers** represent **quantities**
- **Variables** store data
- Use **input()** for user input
- Use **print()** for output
- **Concatenation** joins strings together