Day 2 Training Report

24 June 2025

Introduction to Python — Variables, Data Types, Loops, Conditionals

Python is one of the most popular and beginner-friendly programming languages widely used in Artificial Intelligence, Data Science, Web Development, and Automation. Its simple syntax and readability make it ideal for learning programming concepts. On Day 2, the focus was on understanding the **fundamentals of Python**, including **variables**, **data types**, **loops**, and **conditional statements**, which form the building blocks of any Python program.

Variables and Data Types

A **variable** is used to store data values that can be referenced and manipulated throughout a program. In Python, variables are created by simply assigning a value using the = operator. Unlike many programming languages, Python does not require explicit declaration of data types; it **automatically infers the type** based on the assigned value.

Common Python data types include:

- **int** → Integer numbers (e.g., a = 10)
- **float** → Decimal numbers (e.g., b = 10.5)
- **str** → Strings or text (e.g., name = "Tanveer")
- **bool** → Boolean values (True or False)
- **list**, **tuple**, **set**, and **dict** → Collections for storing multiple items

Conditional Statements

Conditional statements allow programs to **make decisions** based on certain conditions. Python uses if, elif, and else to control program flow:

```
x = 20
if x > 10:
    print("x is greater than 10")
elif x == 10:
    print("x is equal to 10")
else:
    print("x is less than 10")
```

Loops

Loops are used to **execute a block of code repeatedly**. Python supports two main types of loops:

- **for loop** – used to iterate over a sequence (like a list or range):
- for i in range(5):
-     print(i)
- **while loop** – runs as long as a condition is true:
- count = 0

- while count < 5:
-    print(count)
-    count += 1

Conclusion

By the end of Day 2, we learned how to use **variables and data types** to store and process information, **conditional statements** to implement decision-making, and **loops** to automate repetitive tasks. These core programming concepts are essential for writing efficient Python programs and will be applied in upcoming hands-on exercises and AI applications.