Day 8 (3/9/25): String Formatting with str.format in Python

1. Introduction

String formatting allows you to **insert values into strings dynamically**.
The str.format() method is a **powerful way** to format strings in Python.

Syntax:

"string with placeholders {}".format(values)

- Placeholders are defined using **curly braces {}**.
- Values inside .format() are **inserted in order** or **by keyword**.

2. Positional Formatting

Values are inserted **based on their position** in .format().

name = "Alice"
age = 20
print("My name is {} and I am {} years old.".format(name, age))

Output:

My name is Alice and I am 20 years old.

3. Indexed Placeholders

You can use **index numbers** inside {} to control the order.

print("My name is {0} and I am {1} years old. {0} loves Python.".format(name, age))

Output:

My name is Alice and I am 20 years old. Alice loves Python.

4. Keyword Formatting

You can pass **keyword arguments** to .format().

print("My name is {n} and I am {a} years old.".format(n=name, a=age))

Output:

My name is Alice and I am 20 years old.

5. Formatting Numbers

You can format **integers, floats, and percentages**:

```
pi = 3.14159265
print("Value of pi: {:.2f}".format(pi))   # 2 decimal places
print("Value of pi: {:10.2f}".format(pi)) # width 10, 2 decimals
```

Output:

```
Value of pi: 3.14
Value of pi:       3.14
```

- {:.2f} → float with 2 decimal places
- {:10.2f} → float with width 10 and 2 decimals (right-aligned)

6. Example Program – str.format

```
# String Formatting Example
name = "Alice"
age = 20
score = 95.567

# Positional formatting
print("Hello, {}. You scored {} marks.".format(name, score))

# Indexed formatting
print("Name: {0}, Age: {1}, Name again: {0}".format(name, age))

# Keyword formatting
print("Student {n} is {a} years old.".format(n=name, a=age))

# Number formatting
print("Score rounded: {:.1f}".format(score))
```

```
print("Score padded: {:10.2f}".format(score))
```

7. Sample Output

Hello, Alice. You scored 95.567 marks.
Name: Alice, Age: 20, Name again: Alice
Student Alice is 20 years old.
Score rounded: 95.6
Score padded: 95.57

8. Summary

- str.format() allows **dynamic insertion of values** into strings.
- Supports **positional, indexed, and keyword formatting**.
- Can **format numbers** with precision and width.
- Provides a **clean and readable** way to create strings dynamically.