**String Manipulation and Operations**

## ****What is a String?****

A string in Python is a sequence of characters enclosed in **single ('), double (")**, or **triple quotes (''', """)**.

**String Operations**

Python provides several operations for string manipulation:

**1. Concatenation (+)**

Combine two or more strings.

### 2. ****Repetition (****\*****)****

Repeat a string multiple times.

### 3. ****Indexing****

Access individual characters using their position.

### 4. ****Slicing****

Extract a substring by specifying start and end indices.

## 3 String Methods

Python strings come with many built-in methods for manipulation.

1. **Changing Case**

2. **Trimming Whitespace**

3. **Finding and Replacing**

4. **Checking String Properties**

## ****String Formatting****

### ****Using**** % ****Operator**** (Old way)

1. **Using str.format()**
2. **Using f-Strings** (Recommended, Python 3.6+)

**5 Escape Characters**

1. Escape characters let you include special characters in strings.

| **Escape Character** | **Description** |
| --- | --- |
| \' | Single quote |
| \" | Double quote |
| \\ | Backslash |
| \n | Newline |
| \t | Tab |
|  |  |
|  |  |

## ****Multi-line Strings****

Use triple quotes for multi-line strings:

## ****String Splitting and Joining****

### 1. ****Splitting****

Convert a string into a list.

### 2. ****Joining****

Convert a list back into a string.

## ****String Encoding and Decoding****

Strings can be encoded to bytes and decoded back.