1. What is a String?

A **string** is a **sequence of characters** enclosed within **quotes**.

These characters can be:

- Letters → `A`, `B`, `C`, `a`, `z`
- Numbers (as text) → `"123"`
- Symbols → `"@#!$%"`
- Spaces → `"Hello world"`

Python considers anything inside:

- `'single quotes'`
- `"double quotes"`
- `'''triple quotes'''` (for multi-line text)

as a **string**.

2. Examples of Strings

```
"Hello"
"Python"
"12345"
"@#&$"
""
```

All of the above are **valid strings** in Python.

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3. Don't Confuse Strings with Numbers

Code	Data Type
`"123"`	String (text)
`123`	Integer (number)

`"123"` is **text**, so `"123" + "123"` = `"123123"`
`123 + 123` = `246` (mathematical addition)

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4. How to Check If Something is a String?

Use the built-in `type()` function.

```
name = "Amit"
print(type(name))
```

Output:

```
<class 'str'>
```

`str` means it's a **string**.

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5. Working with String Variables

You can **store** strings in variables:

```
city = "Delhi"
print("City:", city)
```

```
City: Delhi
```

You can also **combine (join)** strings:

```
first_name = "Anjali"
last_name = "Sharma"
full_name = first_name + " " + last_name

print("Full name is:", full_name)
```

Output:

```
Full name is: Anjali Sharma
```

---

6. Strings Can Be Empty or Multi-line

```
empty = ""
print(empty)  # prints nothing


quote = """This is a
multi-line
string."""
print(quote)
```

Output:

```
This is a
multi-line
string.
```

---

7. Practice Questions for Students

1. Store your **name** in a variable and print it
2. Store your **city name** and print: `"I live in <city name>"`
3. Create a string with **symbols** and print it
4. Write a string with numbers like `"2025"` and check its type
5. Try joining `"Good"` and `"Morning"` with a space
6. Use triple quotes to write a 3-line message and print it
7. Store your first name and last name, then print:
   `"Your full name is: Firstname Lastname"`
8. Try `type(123)` and `type("123")` → what's the difference?

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1. What are String Functions?

String functions are **built-in tools** in Python that help us **work with text easily**.

Think of them like buttons you press to:

- Make all letters uppercase
- Count characters
- Replace words
- Clean up spaces
- Format your name

These functions **work only on strings**.

Real-Life Analogy:

Imagine you have a name badge that says:

```
"   prince   "
```

You can:

- ✂️ Trim the extra spaces → `.strip()`
- 🔠 Make it uppercase → `.upper()`
- 🔡 Make it lowercase → `.lower()`
- 🎩 Capitalize the name → `.capitalize()`

All these are **string functions** in Python.

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2. Most Common String Functions

`.upper()` → Converts text to ALL UPPERCASE

```
name = "prince"
print(name.upper())
```

Output:

```
PRINCE
```

`.lower()` → Converts text to all lowercase

```
name = "PYTHON"
print(name.lower())
```

Output:

```
python
```

`.title()` → Capitalizes the first letter of every word

```
text = "welcome to python class"
print(text.title())
```

Output:

```
Welcome To Python Class
```

`.capitalize()` → Capitalizes only the first letter of the sentence

```
sentence = "python is powerful"
print(sentence.capitalize())
```

Output:

```
Python is powerful
```

`.strip()` → Removes spaces from both sides

```
name = "   anjali   "
print(name.strip())
```

Output:

```
anjali
```

(Without the spaces)

`.replace(old, new)` → Replaces one word/letter with another

```
message = "Hello World"
print(message.replace("World", "Python"))
```

Output:

```
Hello Python
```

`.count("text")` → Counts how many times a letter/word appears

```
text = "banana"
print(text.count("a"))
```

Output:

```
3
```

`.find("text")` → Tells the position/index of the word/letter

```
quote = "Knowledge is power"
print(quote.find("power"))
```

Output:

3. Practice Time

1. Write your name in lowercase and convert it to uppercase
2. Take a sentence and use `.title()` to make it look better
3. Count how many times `"a"` appears in `"banana banana"`
4. Replace `"India"` with `"Bharat"` in a string
5. Clean up a name like `" Prince "` using `.strip()`
6. Ask the user for their name, then print it in title case
7. Ask the user to enter a word, and check how many times the letter `"e"` appears
8. Create a string `"python is great"` → use functions to make it `"Python Is Great"`
9. Write a program that asks for your favorite movie and prints it in UPPERCASE
10. Take the input `" I love python "` → remove spaces, replace `"python"` with `"coding"` and print it

1. `len()` – Length of the String

What it does:

`len()` tells you **how many characters** (letters, spaces, symbols) are in a string.

Example:

```
word = "Python"
print(len(word))
```

Output:

```
6
```

Important:

Spaces and symbols are also counted!

```
sentence = "Hello World!"
print(len(sentence))
```

```
12
```

Because:

- `Hello` = 5 letters
- Space = 1
- `World` = 5
- `!` = 1
  → Total = 12 characters

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2. `in` – Check if Something Exists in a String

What it does:

It checks if a **word or letter exists** inside the string.

Example:

```
message = "I love Python"
print("love" in message)   # True
print("java" in message)   # False
```

Output:

```
True
False
```

You can use it with `if`:

```
msg = "Coding is fun"
if "fun" in msg:
    print("Yes, it's fun!")
```

---

3. String Comparison (`==`, `!=`)

`==` → checks if two strings are exactly same

```
a = "hello"
b = "hello"
print(a == b)  # True
```

`!=` → checks if two strings are not same

```
x = "python"
y = "java"
print(x != y)  # True
```

Output:

```
True
```

---

4. String + String = Joined (Concatenation)

In Python, using `+` with strings **joins** them.

```
first = "Good"
second = "Morning"
print(first + second)
```

Output:

```
GoodMorning
```

Add a space if needed:

```
print(first + " " + second)
```

Output:

```
Good Morning
```