Computer Programming Summer Interest Group

Session 5 / Strings

7/16/2025

John 1:1

In the beginning was the Word, and the Word was with God, and the Word was God

Objectives

- By the end of this session, you will be able to:
  - Understand what strings are and how they are used in Python
  - Perform common string operations and methods (concatenation, slicing, formatting)
  - Use string indexing and slicing to access parts of a string
  - Use built-in string methods (lower(), upper(), replace(), find(), etc.)
  - Apply string manipulation in basic input/output programs
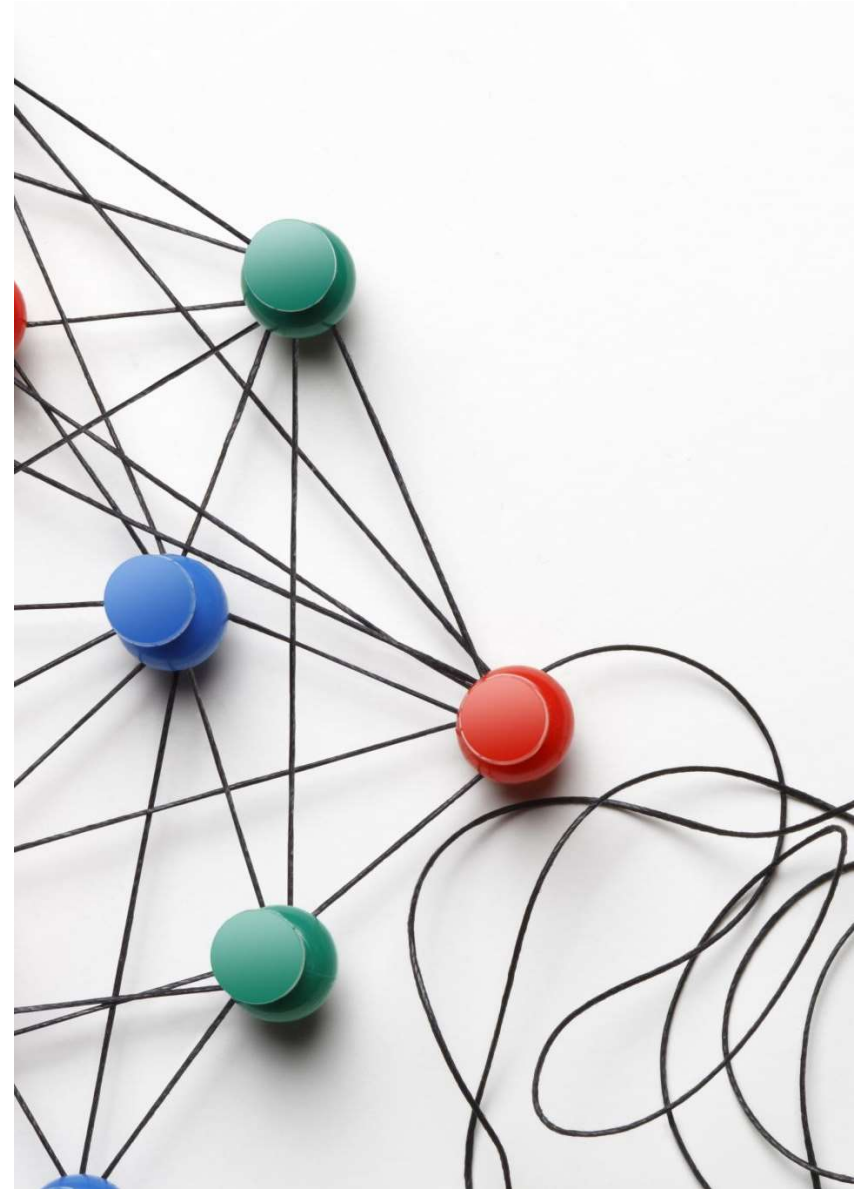
Defining String Values

- Strings are a sequence of characters
- Strings are defined using either single or double quotations
- Strings are immutable (they do not change ... any more than the constant value 5 or True changes)
- Strings are assigned to variables using the = operator

```
greeting = "Hello"
name = "Alice"
print(greeting, name)
```

Defining String Values

- Strings can be concatenated using the + operator

```
greeting = "Hello"
name = "Alice"
print(greeting + name)
```

- Strings can be repeated using the * operator

```
greeting = "Hello"
name = "Alice"
print(greeting, name * 5)
```

String Functions and Methods

- Functions and Methods can be used to provide information about a string or transform one string into another.

- Again, strings are immutable (they do not change)
  - But the value a variable holds may change from one string value to another

- Functions take strings as an argument:
  ```
  text = "Hello, World!"
  text_len = len(text)
  ```

- Method are similar to functions, but are a feature of strings:
  ```
  text = "Hello, World!"
  upper_text = text.upper()
  o_position = text.find('o')
  ```

- f-strings:
  ```
  name = "Alice"
  age = 30
  print(f"My name is {name} and I am {age} years old.")
  ```

- String rounding using f-string:
  ```
  pi = 3.14159
  print(f"{pi:.2f}")   # 3.14
  ```

- .format() method:
  ```
  print("My name is {} and I am {} years old.".format(name, age))
  ```

String Formatting

Activities

1. Letter counter

- Prompt the user for a string to search
- Prompt the user for a letter to count within the string provided
- Convert the string to lower case and count the number of times the letter occurs in the string.

- *What happens when entering a letter that appears in the string?*
- *What happens when entering a letter that does not appear in the string?*
- *What happens when entering a sequence of letters appearing in the string?*

2. Additional String Manipulation

- Prompts the user for a sentence
- Print the sentence in all uppercase
- Print the number of words in the sentence
- Print the first and last characters of the sentence
- Print the sentence with all spaces replaced by underscores