Class 03: Strings in Python

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Strings

String is a data type that can Store a sequence of character.

Basic String Operations

- Concatenation:

  "hello" + "world" → "helloworld"

- Length of string:

  len("hello") → 5

- Accessing characters (Indexing):

  text = "hello"
  print(text[0]) # 'h'

- str[0] = "r"   # not allowed

Basic String Operations

- Slicing: -> accessing part of a string.
  Str[starting_idx: ending_idx]

  text = "hello world"
  print(text[0:5])   # 'hello'

- Slicing with Negative Index
  str = "Apple"

  Character A p p l e
  Index   -5 -4 -3 -2 -1

  Example Slice:
  str[-3:-1] → "pl"

String Function

- Uppercase / Lowercase:
  ```
  "hello".upper()      # 'HELLO'
  "WORLD".lower()    # 'world'
  ```

- Replace:
  ```
  "hello world".replace("world", "Python")  # 'hello Python'
  ```

- Split and Join:
  ```
  "a,b,c".split(",")              # ['a', 'b', 'c']
  "-".join(["a", "b", "c"])       # 'a-b-c'
  ```

- Strip (Remove whitespace):
  ```
  "  hello  ".strip()        # 'hello'
  ```

String Function

- Find and Count:

  "banana".find("na")   # return first index of first occurrence: 2

  "banana".count("a")   # count the occurrence of substring: 3

- f-strings

  name = "Rasel"
  age = 25
  f"Hello, my name is {name} and I am {age} years old."

- String Check Methods (Return True/False):

  "abc".isalpha()   # True

  "123".isdigit()   # True

  "abc123".isalnum() # True

  "   ".isspace()   # True

  "Hello".istitle() # True

String Function

- Startswith / Endswith:

```
"Python".startswith("Py")    # True

"Python".endswith("on")      # True
```

Allowed vs Not Allowed String Operations in Python

Allowed

Concatenation ("a" + "b" → "ab")

Repetition ("ha" * 3 → "hahaha")

Indexing ("abc"[1] → "b")

Slicing ("hello"[1:4] → "ell")

Length (len("abc") → 3)

String methods (.upper(), .find(), etc)

Membership ("a" in "apple" → True)

Looping through string

Not Allowed

"a" - "b" (Subtraction not allowed)

"a" * "b" (Can't multiply by string)

Assignment to index ("abc"[0] = "z")

Deleting characters directly (del str[1])

Using len() on non-string without conversion

Using undefined methods ("abc".push())

Using in with non-iterables (3 in 10)

Type mismatched operations ("abc" + 1)

Let's practice

1. WAP to input user's first name & print its length.

2. WAP to find the occurrence of '$' in a string.

3. WAP to check if a string is a palindrome or not.

Example: "madam" → Palindrome

4. WAP to convert a string to uppercase and lowercase.

5. WAP to count how many vowels('aeiouAEIOU') are present in a string.

5. Capitalize the first letter of every word in a string and print it.

6. Take a sentence as input and find the longest and the shortest word.

7. Find the first non-repeating character in a string.

Conditional Statements

If-elif-else (Syntax)

```
if (Condition):
        Statement1


elif (Condition):
        Statement2


else:
        Statement3
```

Examples

```python
number = int(input("Enter a number: "))

if number == 0:
    print("You entered ZERO.")
elif number > 0:
    print("You entered a POSITIVE number.")
else:
    print("You entered a NEGATIVE number.")
```

Let's Practice

1. Take a number as input and check whether it's even or odd.
2. Print numbers from 1 to 100, but:
   Print "Fizz" if divisible by 3
   "Buzz" if divisible by 5
   "FizzBuzz" if divisible by both

3. Input marks and print the grade (A, B, C, etc.) based on score ranges using if-elif-else.
4. Take three numbers and find the greatest one using condition checks.
5. Input a year and check if it's a leap year.
6. Check whether a number is positive, negative, or zero.
7. Input a single alphabet and check whether it's a vowel or a consonant.

Thanks for Watching

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