Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

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Computer Applications

Computing Fundamentals using Python

Course Content:

Unit III:

String Manipulation and Functions

Strings and string manipulation, Basic algorithms: searching and sorting, Introduction to functions, Defining and calling functions, Function arguments and parameters, Scope and variable lifetime, Lambda functions, Recursion.

Experiential Learning:

Hands-on exercises involving string manipulation, function definitions, lambda functions, and recursion, enhancing skills in Python programming and data manipulation.

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Strings and String Manipulation

- A string is a sequence of characters enclosed in single quotes ('), double quotes ("), or triple quotes (''' or """).
- Strings are immutable → once created, they cannot be modified directly.

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Strings common operations

1. Accessing Character
2. Slicing
3. String methods

Strings common operations

Accessing Character

Each character can be accessed using indexing ([] brackets).

Indexing works in two ways:

1. Positive Indexing (from left → right, starting at 0)
2. Negative Indexing (from right → left, starting at -1)
3. Accessing with variables
4. Looping Through Characters
5. Character checking

Strings common operations

Positive Indexing

- Index starts from **0** (first character).

Example:

```
s = "HELLO"
print(s[0])   # H
print(s[1])   # E
print(s[2])   # L
print(s[3])   # L
print(s[4])   # O
```

Note :If you try to access an index that doesn't exist → IndexError.

```
print(s[5])
```

Strings common operations

Negative Indexing

Index starts from **-1** (last character).

Example:

```
s = "HELLO"
print(s[-1])  # O (last char)
print(s[-2])  # L
print(s[-3])  # L
print(s[-4])  # E
print(s[-5])  # H (first char)
```

Note : If you go beyond range in negative indexing → also IndexError.

Strings common operations

Accessing with variables

```
s = "PYTHON"
i = 3
print(s[i])   # H
```

Strings common operations

Looping Through character

```
s = "HELLO"

# Using for loop
for ch in s:
    print(ch)

# Using index
for i in range(len(s)):
    print(i, ":", s[i])
```

Strings common operations

Character checking

```
s = "PYTHON"

print("P" in s)   # True
print("Z" in s)   # False
```

Counting

```
print(s.count("O"))   # 1
```

Strings common operations

Example: Find the output for the following example

```
word = "Programming“

first = word[0]
last = word[-1]
middle = word[len(word)//2]
print(first, last, middle)
```

MCQ's

1. What is the output?

```
s = "PYTHON"
print(s[2])
```

Ans: T

2.What does code prints?

```
s = "PYTHON"
print(s[-2])
```

Ans: O

MCQ's

3. What happens with following code?

s = "HELLO"

print(s[10])

Ans:Error: IndexError (out of range)

4.What is TRUE?

s = "PYTHON"

Options:

a) s[0] == s[-6]

b) s[1] == s[-1]

c) s[2] == s[-2]

d) s[3] == s[-4]

Ans: a) s[0] == s[-6] (both point to first char 'P')

Programs

1: Write program to access First,fifth and last letter Accessing with Positive Index for string “Programming”.

2. Write program to access First, last and second last , Accessing with Negative Index for string “PES UNIVERSITY”.

3. Find All Occurrences of a Character in given string s and letter in char

s = "programming"

char = "m"

4. Write program to Count Vowels from given text: **s = "Education“.**

THANK YOU

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