Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

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Computer Applications

Computing Fundamentals using Python

Course Content:

Unit II:

Basic Syntax and Control Structures

Conditional statements (if, elif, else), Loops (for and while), Loop control statements (break, continue, pass), Formatted input and output, Comprehensions, Exception handling and error management, Introduction to methods, Methods - Lists, tuples, and sets, Dictionaries and their applications.

Experiential Learning:

Hands-on exercises and problem-solving tasks will cover the use of control structures, handling user input and output, and managing errors and exceptions.

Conditional Programming

To control the flow of a program, we mainly use two key techniques:

1. Conditional Statements (branching)

1. Looping.

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1. Conditional If statement

If Statement

Syntax

```
if condition:
    # code block runs if condition is True
```

If else Statement

Syntax

```
if condition:
    # code block runs if condition is True
else:
    # code block runs if condition is False
```

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Conditional If statement

If elif else Statement

Syntax

```
if condition1:
    # runs if condition1 is True
elif condition2:
    # runs if condition1 is False and condition2 is True
elif condition3:
    # runs if above are False and condition3 is True
else:
    # runs if none of the above conditions are True
```

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Conditional If statement

If Statement Examples

Example 1:

```
speed = 80
if speed > 60:
    print("Over speed! Please slow down.")
```

Example 2:

```
name = “PES"
if “P" in name:
    print("The name has letter P")
```

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Conditional If statement

If else Statement Examples

Example 1:

```
number = 5
if number % 2 == 0:
    print("Even number")
else:
    print("Odd number")
```

Example 2:

```
username = "admin"
password = "1234"
if username == "admin" and password == "1234":
    print("Login successful")
else:
    print("Invalid credentials")
```

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Conditional If statement

If elif else Statement Examples

Example 1:

```
marks = 72

if marks >= 90:
    print("Grade A")
elif marks >= 75:
    print("Grade B")
elif marks >= 50:
    print("Grade C")
else:
    print("Fail")
```

Conditional If statement

If elif else Statement Examples

Example 2:

```
temperature = 32

if temperature > 40:
    print("It's very hot!")
elif temperature > 25:
    print("It's warm outside.")
elif temperature > 10:
    print("It's cool.")
else:
    print("It's cold!")
```

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Conditional If statement

Example 3:

```
num1 = 10
num2 = 5
operation = "multiply"
if operation == "add":
    print(num1 + num2)
elif operation == "subtract":
    print(num1 - num2)
elif operation == "multiply":
    print(num1 * num2)
elif operation == "divide":
    print(num1 / num2)
else:
    print("Invalid operation")
```

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Multiple Choice Questions

```
x = 10
if x > 15:
    print("Greater than 15")
elif x > 5:
    print("Greater than 5")
else:
    print("Less than or equal to 5")
```

Options:

A. Greater than 15

B. Greater than 5

C. Less than or equal to 5

D. Error

ANS: B

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Multiple Choice Questions

Which statement is true about if-elif-else?

Options:

A. Only one elif can be used in a block.
B. else is mandatory.
C. Multiple elif statements can be used.
D. if statement cannot exist without else.

ANS: C.

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Multiple Choice Questions

```
x = 5
y = 10
if x > 2:
    if y > 5:
        print("A")
    else:
        print("B")
else:
    print("C")
```

Options:

A. A

B. B

C. C

D. No output

ANS: A

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Multiple Choice Questions

```
n = -1
if n:
    print("True")
else:
    print("False")
```

Options:

A. True

B. False

C. Error

D. None

Ans: A. True

(Any non-zero number is considered True in Python)

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Multiple Choice Questions

```
x = 0
if x:
    print("One")
elif x == 0:
    print("Two")
else:
    print("Three")
```

Options:

A. One

B. Two

C. Three

D. Error

Answer: B. Two (The first if fails because 0 is False, so it checks the elif condition)

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Multiple Choice Questions

```
x = 5
y = 8
if x > 5 or y < 10:
    print("Hello")
elif x == 5 and y == 8:
    print("Hi")
else:
    print("Bye")
```

Options:

A. Hello
B. Hi
C. Bye
D. No output

Ans: A. Hello (The first condition is True because y < 10)

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Practice Programs

1. Find the Largest of Three Numbers
2. Check whether the given year is Leap Year or not
3. Write a Python program to calculate the **discount and final price** for a customer based on the following conditions:
   - If the purchase amount is **₹1000 or more**, the discount is **20%**.
   - If the purchase amount is **₹500 or more but less than ₹1000**, the discount is **10%**.
   - If the purchase amount is **less than ₹500**, the discount is **5%.**

4. Accept two inputs from the user.
   If both are integers, print their sum.
   If both are strings, print their concatenation.
   If types differ, print “Type mismatch”.

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Practice Programs

5. Write a program that takes two variables and:
Prints “Same memory location” if they point to the same object (id() is equal).
Otherwise prints “Different memory location”.

6. Write a Python program to take a variable and check:
    If it’s an **integer**, print “Integer detected”.
    If it’s a **float**, print “Float detected”.
    If it’s a **string**, print “String detected”.
    Otherwise, print “Unknown type”.

THANK YOU

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