Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

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Computer Applications

Computing Fundamentals using Python

for loop

For loop with multiple lists

```
people = ['Nick', 'Rick', 'Roger', 'Syd']
ages = [23, 24, 23, 21]
for position in range(len(people)):
    person = people[position]
    age = ages[position]
    print(person, age)
```

Note: for loop iterate over the list of positions (0, 1, 2, 3)

for loop

For loop with conditional statements

A for loop in Python iterates over a sequence (like a list, tuple, string, or range), and conditional statements (if, elif, else) allow for specific code blocks to be executed based on whether certain conditions are met.

These two concepts are frequently combined to process data selectively within a loop.

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for loop

For loop with conditional statements

Example 1*: Basic conditional within a for loop*

```
numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

print("Even numbers:")
for number in numbers:
        if number % 2 == 0:                    # Check if the number is even
        print(number)
```

for loop

For loop with conditional statements

Example 2: Using elif and else

```
print("\n Number classification:")

for number in numbers:
    if number < 5:
        print(f"{number} is less than 5")
    elif number == 5:
        print(f"{number} is exactly 5")
    else:
        print(f"{number} is greater than 5")
```

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for loop

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For loop with conditional statements

Example 3: write the result of following code

```
a = [2,3,4,5,6,7,8,9,0]
xyz = [0,12,4,6,242,7,9]
for x in xyz:
    if x in a:
        print(x)
```

for loop

Nested for loop

Syntax

```
for outer_variable in outer_sequence:
    for inner_variable in inner_sequence:
        # code block (runs for every inner loop iteration)
```

- A nested loop means having one loop inside another loop.
- For each iteration of the outer loop, the inner loop runs completely.

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for loop

Nested for loop

Example: Multiplication table

```
for i in range(1, 4):       # outer loop
    for j in range(1, 4):   # inner loop
        print(i, "*", j, "=", i * j)
    print("----")
```

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for loop

Nested for loop

Example: Printing pattern

```
for i in range(1, 6):       # rows
    for j in range(1, i+1):  # columns
        print("*", end=" ")
    print()
```

Example: Nested loop with list

```
colors = ["Red", "Green"]
objects = ["Ball", "Box"]
for c in colors:
    for o in objects:
        print(c, o)
```

for loop

for loop with else

Syntax:

```
for variable in sequence:
    # loop body
else:
    # code that runs if the loop is not terminated by 'break’
```

- The else part runs only if the loop completes normally.
- If the loop is terminated with break, the else block is skipped.

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for loop

for loop with else

Example: 1

```
for i in range(5):
    print(i)
else:
    print("Loop finished successfully")
```

Example 2: Loop with break

```
for i in range(5):
    if i == 3:
        break
    print(i)
else:
    print("Loop finished successfully")
```

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for loop

Multiple choice questions

```
for i in range(2):
    for j in range(2):
        print(i, j, end=" ")
```

Options:

a) 0 0 0 1 1 0 1 1
b) 0 1 1 0 0 1 1 0
c) 0 0 1 1
d) Error

Ans : a

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for loop

Multiple choice questions

```
for i in range(3):
    print(i, end=" ")
else:
    print("Done")
```

Options:

a) 0 1 2 Done
b) Done
c) 0 1 2
d) Error

Ans : a

Computing Fundamentals using Python

for loop

Multiple choice questions

```
for i in range(1, 4):
    for j in range(1, 4):
        if i == j:
            print(i, j)
```

Options:

a) (1,1) (2,2) (3,3)
b) (1,2) (2,3)
c) (1,3) (2,1) (3,2)
d) No output

Ans : a

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for loop

Practice programs

1.Write a program to print the following pattern

```
*
* *
* * *
* * * *
```

2.Write a program that searches for number 7 in the list [1, 3, 5, 9] using a for loop.

- If found: print "Found" and exit loop.
- If not found: print "Not Found" using the else part.

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for loop

Practice programs

3. Write a program to print all pairs (i, j) where i == j for numbers from 1 to 3.

4 . Write a program to print whether numbers from **0 to 5** are "Even" or "Odd".

5. Shopping Cart Search

A user’s cart contains [“apple”, “banana”, “grapes”].Write a program to search for "mango".

- If found : print "Mango is in the cart".
- If not found : print "Mango not available".

THANK YOU

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