Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

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Computer Applications

Computing Fundamentals using Python

2. Looping

- Loops are used to execute a block of code repeatedly.
- Helps avoid writing the same code multiple times.

Types of Loops

1. for loop – Used to iterate over a sequence (list, tuple, string, range).
2. while loop – Runs as long as the given condition is True.

Different forms of loop

1. Loops with control statement.
2. Loops with iterations (range())
3. Nested Loops
4. Infinite Loops
5. Loop with else

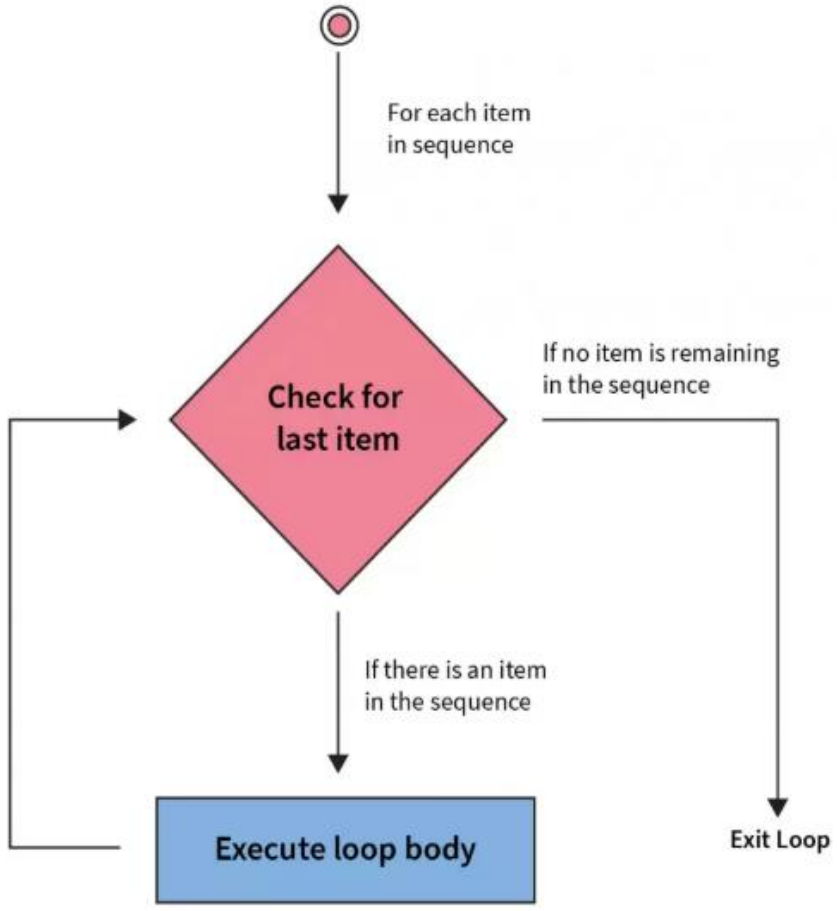
Computing Fundamentals using Python

for loop

- Iterating over a sequence using a for loop in Python (that is, a list, a tuple, a dictionary, a set, or a string)
- With the for loop we can execute a set of statements, once for each item in a list, tuple, set etc.

Syntax:

```
for variable in sequence:
    # block of code
```



Computing Fundamentals using Python

for loop

1.Iterating through characters of a string.

```
name = "Python"
for ch in name:
    print(ch)
```

2.Iterating through elements of a list.

```
Courses = [“BCA", “MCA", “MBA"]
for c in Courses:
    print(c)
```

for loop

3.Iterating through elements of a Tuple

```
numbers = (10, 20, 30)
for num in numbers:
    print(num)
```

4.Iterating through elements of a set

```
colors = {"red", "green", "blue"}
for color in colors:
    print(color)
```

for loop

5.Iterating through keys, values, and items(Dictionaries)

```
student = {"name": "Sam", "age": 25, "grade": "A"}
print("\nKeys:")
for key in student:
    print(key)

print("\nValues:")
for value in student.values():
    print(value)

print("\nKey & Value:")
for key, value in student.items():
    print(key, ":", value)
```

for loop

6.For loop using range()

- The range() function generates a sequence of numbers.
- It does not create a list directly (it creates a range object)

Syntax:

range(start, stop, step)

- start → beginning number (default = 0)
- stop → end number (not included)
- step → difference between numbers (default = 1)

Computing Fundamentals using Python

for loop

Example:

```
#Using one argument in range()
for i in range(5):
   print("Iteration:", i)

#Using two arguments
for x in range(2, 6):
  print(x)

#Using three arguments
for i in range(1, 10, 2):
    print(i)
```

Computing Fundamentals using Python

for loop

Multiple choice questions

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

A) 0 1 2 3
B) 1 2 3
C) 0 1 2
D) Error

Ans: C

for loop

Multiple choice questions

Which of the following correctly prints numbers from 5 to 9?

A)
```
for i in range(5, 9):
    print(i)
```
B)
```
for i in range(5, 10):
    print(i)
```
C)
```
for i in range(9, 5):
    print(i)
```
D)
```
for i in range(5, 10, 2):
    print(i)
```

Ans: B

Computing Fundamentals using Python

for loop

Multiple choice questions

```
for i in range(9, 5, -1):
    print(i)
```

A) 9 8 7 6
B) 9 10 11 12
C) No output
D) Error

Ans : C

Computing Fundamentals using Python

for loop

Multiple choice questions

```
for i in range(9, 5, -1):
    print(i)
```

A) 9 8 7 6
B) 9 10 11 12
C) No output
D) Error

Ans : C

Computing Fundamentals using Python

for loop

Multiple choice questions

```
for i in range(5, 5):
    print("Hello")
```

A) Hello printed 5 times
B) Hello printed once
C) No output
D) Error

Ans: C

Computing Fundamentals using Python

for loop

Multiple choice questions

```
for i in range(2, 10, -2):
    print(i)
```

A) 2 0 -2 -4
B) 2 4 6 8
C) Infinite loop
D) No output

Ans: D

Computing Fundamentals using Python

for loop

Practice Programs

1. Sum of first N numbers
2. Multiplication table of a number
3. Reverse a string using for loop
4. Print a right triangle pattern
5. Sum of Even Numbers from 1 to 100

THANK YOU

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