Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

Samyukta D Kumta

Computer Applications

Computing Fundamentals using Python

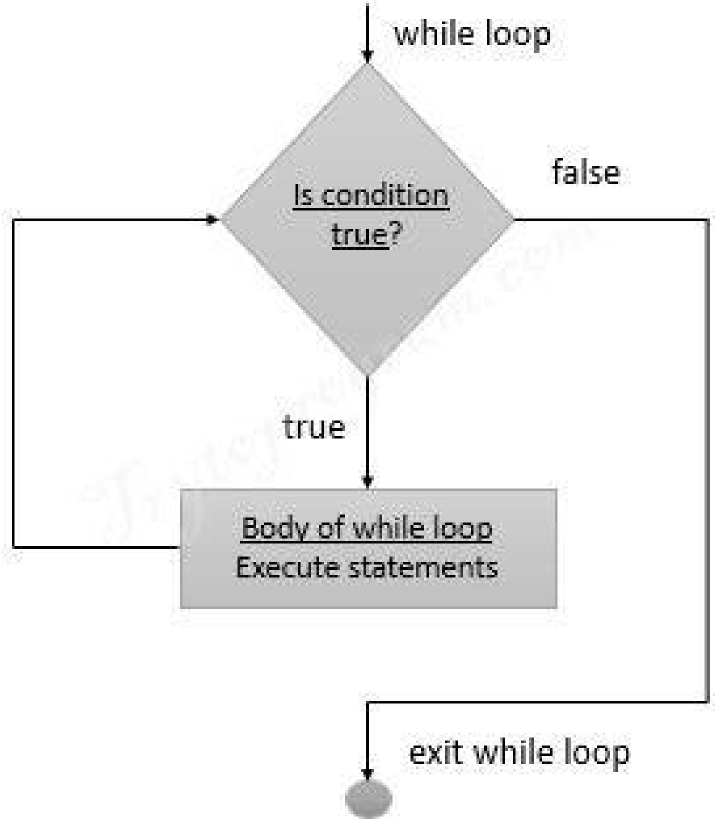
while loop

Syntax:

```
while(expression):
    statement(s)
```

Example:1

```
x = 0
while x < 9:
  print(x)
  x = x + 1
```



Computing Fundamentals using Python

while loop

Example : 2

```
i = 1
while i < 6:
  print(i)
  i += 1
else:
  print("i is no longer less than 6")
```

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while loop

Example :3

```
password = "python123"
user_input = ""

while user_input != password:
    user_input = input("Enter password: ")

print("Access Granted")
```

while loop

Example 4: Infinite loop

```
while True:
    print("This will run forever")



while True:
    for i in range(5):
        print(i)
```

Computing Fundamentals using Python

while loop

Multiple choice questions

What will happen if the condition in a while loop is always True and there is no break statement?

a) The loop will run infinitely
b) The loop will execute once
c) The loop will throw an error
d) None of the above

a) The loop will run infinitely

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while loop

```
x = 0
while x < 3:
    print("Hello")
    x += 1
else:
    print("Done")
```

a) Hello Hello Hello
b) Hello Hello Hello Done
c) Done
d) Infinite loop

b) Hello Hello Hello Done

while loop

Which keyword is used to stop a while loop immediately in Python?

a) continue

b) pass

c) break

d) exit

Answer: c) break

while loop

What will happen if the else part of a while loop is executed?

a) Runs only if the loop condition becomes False
b) Runs only if a break statement is encountered
c) Runs always after loop ends
d) Never runs

Answer: a) Runs only if the loop condition becomes False

Which of the following is NOT true about a while loop in Python?

a) It may have an else part
b) It must run at least once
c) It executes as long as the condition is true
d) It can be infinite if condition never becomes false

Answer: b) It must run at least once

while loop

Write python programs using while loop

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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Formatted Input in Python

Input is always taken as a string using the input() function. You often need to convert it to other types (int, float, list, etc.).

1.Read string

```
name = input("Enter your name: ")
print("Hello,", name)
```

2.Read integer

```
age = int(input("Enter your age: "))
print("Next year you will be", age + 1)
```

3. Multiple inputs in one line

```
a, b = map(int, input("Enter two numbers: ").split())
print("Sum:", a + b)
```

Formatted Input in Python

Input is always taken as a string using the input() function. You often need to convert it to other types (int, float, list, etc.).

2.Read integer

```
age = int(input("Enter your age: "))
print("Next year you will be", age + 1)
```

Following are Python type conversion functions:

Function	*Meaning*
float (<expr >)	**Convert expr to a floating-point value.**
int (<expr >)	**Convert expr to an integer value.**
Complex (<expr >)	**Convert expr to a complex value.**
str (<expr >)	**Return a string representation of expr**

Formatted Input in Python

Input is always taken as a string using the input() function. You often need to split() the input to get separate values.

3. Multiple inputs in one line – identify separate values

```
    dateStr = input ( "Enter a date (mm/dd/yyyy) : " )
    monthStr , dayStr , yearStr = dateStr.split ( " / " )
       print(The entered date is : " , monthStr , dayStr+" , " , yearStr))
```

- *read the date as a string*
- *split it at the slashes into 3 strings*
- *"unpacked" the list of three strings into the variables monthStr, dayStr, and yearStr using simultaneous assignment*

4. List from input

Syntax:

```
values = list(map(datatype, input().split()))
```

We can use for any datatype → int, float, str, complex, etc.

- split() → breaks the input string into tokens.
- map() → applies conversion to each token.
- List() → stores all values in a list.

```
nums = list(map(int, input("Enter numbers separated by space: ").split()))
print("Numbers are:", nums)
```

Same applied for other datatypes

-
  ```
  decimals = list(map(float, input("Enter decimal numbers: ").split()))
   print(decimals)
  ```

-
  ```
  words = list(map(str, input("Enter words: ").split()))
   print(words)
  ```

-
  ```
  cnums = list(map(complex, input("Enter complex numbers: ").split()))
   print(cnums)
  ```

-
  ```
  pairs = [ (int(x), float(y)) for x, y in (item.split(',') for item in input("Enter int,float pairs: ").split()) ]
   print(pairs)
  ```

Practice Programs

Write python code to read input: space-separated Celsius values

```
celsius = list(map(float, input("Enter temperatures in Celsius: ").split()))

fahrenheit = [(c * 9/5) + 32 for c in celsius]
print("Temperatures in Fahrenheit:", fahrenheit)
```

Practice Programs

- Write a Python program that accepts marks of 5 subjects (space-separated integers) from the user and prints the average marks.
- Complex Numbers for Circuit Simulation. Read 2 complex numbers from the user and print their sum.
- Take 3 coordinate points as input in the format x,y (space-separated) and store them in a list of tuples.
- Employee Data Take input in the format name,salary (space-separated) for 3 employees and store it in a dictionary.

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