Day 6

Date : 10/07/24

MON TUE WED THR FRI SAT SUN

Subject Python

Loops In Python :- For, While and Nested Loops

→ Loop is used to execute a group of instructions or a block of code multiple times, without writing it repeatedly. The block of code is executed based on a certain condition. Loops are the control structures of a program.

⇒ While Loop in Python :- A while loop is used to execute a block of statements repeatedly until a given cond^n is satisfied. When the cond^n becomes false, the line immediately after the loop in the program is executed.

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

{ Python uses identation as its method of grouping statements }

→ Using else statement with While Loop in Python :-

The else clause is only executed when your while condition becomes false. If you break out of the loop, or if an exception is raised, it won't be executed.

```
while condition:
    # execute these statements
else:
    # execute these statements
```

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⇒ **For Loop in Python:** For loops are used for sequential traversal, like traversing a list, string or array. In Python, there is "for in" loop which is similar to foreach loop in other languages.

```
for iterator_var in sequence:
    statements(s)
```

→ It can be used to iterate over a range and iterator

```
n = 4
for i in range(0,n):
    print(i)
```

```
0
1
2
3
```

→ We can also combine else statement with for loop like in while loop. But as there is no condition in for loop based on which the execution will terminate so the else block will be executed immediately after for block finishes execution.

```
n = 2
for i in range(0,n):
    print(i)
else:
    print("Else Block")
```

```
0
1
Else Block
```

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⇒ Nested Loops in Python: Python programming lang. allows to use one loop inside another loop which is called Nested Loop.

→ Nested Loops Syntax:

```
for iterator_var in sequence:
    for iterator_var in sequence:
        statement(s)
    statements(s)
```

→ The syntax for a nested while loop statement:

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

Loop Control Statements :- Loop control statements change execution from their normal sequence. When execution leaves a scope, all automatic objects that were created in that scope are destroyed. Python control statements:

Continue Statement :-

→ The continue statement in Python returns the control to the beginning of the loop.

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Ex:
```
for i in 'hello':
    if i == 'e':
        continue
    print(i)
```

Output:
```
h
l
l
o
```

Break Statement :-

The Break statement in Python brings control out of the loop. Ex.

```
for i in 'hello':
    if i == 'e':
        break
    print(i)
```

Output:
```
h
```

Pass Statement :-

We use pass statement in Python to write empty loops. Pass is also used for empty control statements, functions and classes.

```
for i in 'hello':
    pass                    # 0
print(i)
```