Team:Bug busters

Introduction to

PYTHON LOOP

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INTRODUCTION TO LOOPS

- Imagine doing the task to write down your name for 500 times.Now,Imagine the computer doing the same task for you in 0.001 second that is a loop.
- lets understand loop with a help of a life example suppose,you are listening a song on Spotify and you are changing the song again and again the changement of song in repetition is called loop.
- **Basically, A loop means repetition**

LOOPS IN PYTHON

- Loops in Python allow you to repeat a block of code multiple times without rewriting it. They are used when you want to perform an action again and again, such as printing numbers, processing items in a list, or checking conditions repeatedly.

Program

```
for i in range(1, 6):
    print(i)
```

output

1
2
3
4
5

Example:

```
students = ["Aisha", "Rahul", "Kabir"]

for name in students:
    print("Marking attendance for:", name)
```

Output

Marking attendance for: Aisha
Marking attendance for: Rahul
Marking attendance for: Kabir

TYPES OF LOOP

For loop

A for loop in Python is used to repeat a block of code for each item in a sequence (like a list, string, or range). It automatically picks each item one by one and runs the code inside the loop

While loop

A while loop is a control structure that repeatedly executes a block of code as long as a specified condition remains true. It checks the condition before each iteration, and stops when the condition becomes false.

Nested loop

A nested loop is a loop inside another loop. The inner loop runs completely for each single iteration of the outer loop. It is used when we need to perform repeated actions within another repeated action — like printing patterns, working with rows and columns, or handling multi-dimensional data.

FOR LOOP

DEFINATION

A for loop is used to repeat a block of code for each item in a sequence (list, string, range, etc.).

KEY POINT

range() is commonly used in loops.

Loop runs until all items are covered.

Indentation is required in Python.

PROGRAM

```
for i in range(1, 6): print(i)
```

Output:

1
2
3
4
5

WHILE LOOP

DEFINATION

while loop repeatedly executes a block of code as long as a condition remains true.

KEY POINTS

Inner loop runs fully for each outer loop iteration.

Useful for patterns, matrices, tables, etc.

Increases number of total iterations → be careful of complexity.

Syntax:

```
while (Condition)
{
    Statements;
}
```

PROGRAM

```python
num = 1
while True:
    print (num, "John")
    num = num + 1
    if num == 5:
        break
```

```
1 John
2 John
3 John
4 John
```

NESTED LOOP

DEFINATION

A nested loop means placing one loop inside another loop.
The inner loop runs completely for each iteration of the outer loop.

KEY POINTS

Inner loop runs fully for each outer loop iteration.

Useful patterns, matrices, tables, etc.

Increases number of total iterations → be careful of complexity.

PROGRAM

```
for i in range(1, 4): for j in range(1, 3): print(i, j)
```

Output:

```
1 1
1 2
2 1
2 2
3 1
3 2
```

THANK YOU

- TO conclude, loop are the backbone of automation in python, making program, smarter, and more efficient