PYTHON TUTORIAL FOR BEGINNERS

Chapter – 15

Nested Loops in Python

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Nested Loops in Python

==Loop inside another loop== is nested loop. This means that for every single time the outer loop runs, the inner loop **runs all of its iterations**.

Why Use Nested Loops?

- Handling Multi-Dimensional Data: Such as matrices, grids, or lists of lists.
- Complex Iterations: Operations depend on multiple variables or dimensions.
- Pattern Generation: Creating patterns, such as in graphics or games.

Nested Loop Syntax

Syntax:

```
Outer_loop:
    inner_loop:
        # Code block to execute – inner loop
    # Code block to execute – outer loop
```

Nested Loop Example

Example: *Print numbers from 1 to 3, for 3 times using for-for nested loop*

```python
for i in range(3): # Outer for loop (runs 3 times)
    for j in range(1,4):
        print(j)
    print()
```

Example: *Print numbers from 1 to 3, for 3 times using while-for nested loop*

```python
i = 1
while i < 4:  # Outer while loop (runs 3 times)
    for j in range(1, 4):
        print(j)

    print()
    i += 1
```

Nested Loop Interview Question

Example: *Print prime numbers from 2 to 10*

```python
for num in range(2, 10):
    for i in range(2, num):
        if num % i == 0:
            break
    else:
        print(num)
```