🧠 Topic 3: range() Function

◆ **Definition**

The range() function in Python is used to generate a sequence of numbers, often for looping purposes.

◆ **Terminologies**

- **Start:** The beginning number of the sequence (default is 0).

- **Stop:** The number at which the sequence ends (exclusive).

- **Step:** The difference between each number (default is 1).

◆ **Syntax**

range(start, stop, step)

◆ **Examples + Outputs**

Example 1

for i in range(5):

   print(i)

Output:

0

1

2

3

4

Example 2

for i in range(2, 10, 2):

```
    print(i)
```

Output:

2

4

6

8

Example 3

Reverse order:

```
for i in range(10, 0, -1):
    print(i)
```

Output:

10

9

8

7

6

5

4

3

2

1

◆ **Benefits**

✅ Saves memory (doesn't create a full list).

✅ Useful in loops and indexes.

✅ Great for counters and sequences.

◆ **Challenges**

Solved Challenge 1:

for i in range(1, 6):

   print(i**2)

Solved Challenge 2:

for i in range(10, 0, -2):

   print(i)

Your 18 Challenges:

1. Print numbers 1–20.

2. Print even numbers 2–20.

3. Print numbers from 10 down to 1.

4. Print squares of numbers 1–10.

5. Use range to print "Python" 5 times.

6. Print numbers with step 3 up to 30.

7. Print multiples of 5 using range.

8. Print numbers 50–100 with step 10.

9. Use range to count odd numbers 1–15.

10. Print countdown from 5 to 1.

11. Print all multiples of 4 under 40.

12. Generate range(0, 101, 10).

13. Use range() with len() to access list items.

14. Print all indexes in a string.

15. Print first 10 numbers starting from 3.

16. Print every second number in 1–10.

17. Print total of all numbers in range(1,11).

18. Create nested loop with range(3).