Home Work - Day 11.2

Python for loop Statements

1. Print First 10 natural numbers using while loop

Expected output:

1
2
3
4
5
6
7
8
9
10

2. Print the following pattern

Write a program to print the following number pattern using a loop.

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

3. Calculate the sum of all numbers from 1 to a given number

Write a program to accept a number from a user and calculate the sum of all numbers from 1 to a given number

For example, if the user entered **10** the output should be **55** (1+2+3+4+5+6+7+8+9+10)

Expected Output:

Enter number 10
Sum is: 55

4. Write a program to print multiplication table of a given number

For example, **num = 2** so the output should be
2
4
6
8
10
12
14
16
18
20

5. Display numbers from a list using loop

Write a program to display only those numbers from a list that satisfy the following conditions

- The number must be divisible by five
- If the number is greater than 150, then skip it and move to the next number
- If the number is greater than 500, then stop the loop

Given:
numbers = [12, 75, 150, 180, 145, 525, 50]

Expected output:
75
150
145

6. Count the total number of digits in a number

Write a program to count the total number of digits in a number using a **while loop**.
For example, the number is **75869**, so the output should be **5**.

7. Print the following pattern

Write a program to use for loop to print the following reverse number pattern
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1

8. Print list in reverse order using a loop

Given: list1 = [10, 20, 30, 40, 50]

Expected output:

50
40
30
20
10

9. Display numbers from -10 to -1 using for loop

Expected output:

-10
-9
-8
-7
-6
-5
-4
-3
-2
-1

10. Use else block to display a message "Done" after successful execution of for loop

For example, the following loop will execute without any error.

Given:

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

Expected output:

0
1
2
3
4
Done!

11. Write a program to display all prime numbers within a range

Note: A Prime Number is a number that cannot be made by multiplying other whole numbers. A prime number is a natural number greater than 1 that is not a product of two smaller natural numbers

Examples:

- 6 is not a prime number because it can be made by 2×3 = 6
- 37 is a prime number because no other whole numbers multiply together to make it.

Given:

```
# range
start = 25
end = 50
```

Expected output:

Prime numbers between 25 and 50 are:
29
31
37
41
43
47

12. Display Fibonacci series up to 10 terms

The Fibonacci Sequence is a series of numbers. The next number is found by adding up the two numbers before it. The **first two numbers are 0 and 1**.

For example: **0, 1, 1, 2, 3, 5, 8, 13, 21**. The next number in this series above is **13+21 = 34**.

Expected output:

Fibonacci sequence:
0 1 1 2 3 5 8 13 21 34

13. Find the factorial of a given number

Write a program to use the loop to find the factorial of a given number.

The factorial (symbol: !) means to multiply all whole numbers from the chosen number down to 1.

For example: calculate the factorial of 5

5! = 5 × 4 × 3 × 2 × 1 = 120

Expected output: 120

14. Reverse a given integer number

Given: 76542

Expected output: 24567

15. Use a loop to display elements from a given list present at odd index positions

Given:
my_list = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

Expected output: 20 40 60 80 100

16. Calculate the cube of all numbers from 1 to a given number

Write a program to print the cube of all numbers from 1 to a given number

Given:
input_number = 6

Expected output:

Current Number is: 1 and the cube is 1
Current Number is: 2 and the cube is 8
Current Number is: 3 and the cube is 27
Current Number is: 4 and the cube is 64
Current Number is: 5 and the cube is 125
Current Number is: 6 and the cube is 216

17. Find the sum of the series up to n terms

Write a program to calculate the sum of series up to n term. For example, if **n =5** the series will become 2 + 22 + 222 + 2222 + 22222 = 24690

Given:
n = 5

Expected output:

24690

18. Print the following pattern

Write a program to print the following start pattern using the **for loop**

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```