Exercise 1: Print First 10 natural numbers using while loop

Expected output:

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

Exercise 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
```

Exercise 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
```

Exercise 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
```

Exercise 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
```

Exercise 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**.

Exercise 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
```

Refer: Print patterns in Python

Exercise 8: Print list in reverse order using a loop

Given:

```
list1 = [10, 20, 30, 40, 50]
```

Expected output:

```
50

40

30

20

10
```

Exercise 9: Display numbers from -10 to -1 using for loop

Expected output:

```
-10

-9

-8

-7

-6

-5

-4

-3

-2

-1
```

Exercise 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!
```

Exercise 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
```

Exercise 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
```

Exercise 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
```

Exercise 14: Reverse a given integer number

Given:

76542

Expected output:

24567

Exercise 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]
```

Note: list index always starts at 0

Expected output:

```
20 40 60 80 100
```

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

Write a program to rint 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
```

Exercise 17: Find the sum of the series upto 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:

```
# number of terms
n = 5
```

Expected output:

```
24690
```

Exercise 18: Print the following pattern

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

```
*

* *

* * *

* * * *

* * * * *

* * * *

* * *
```

```
 * *

 *
```