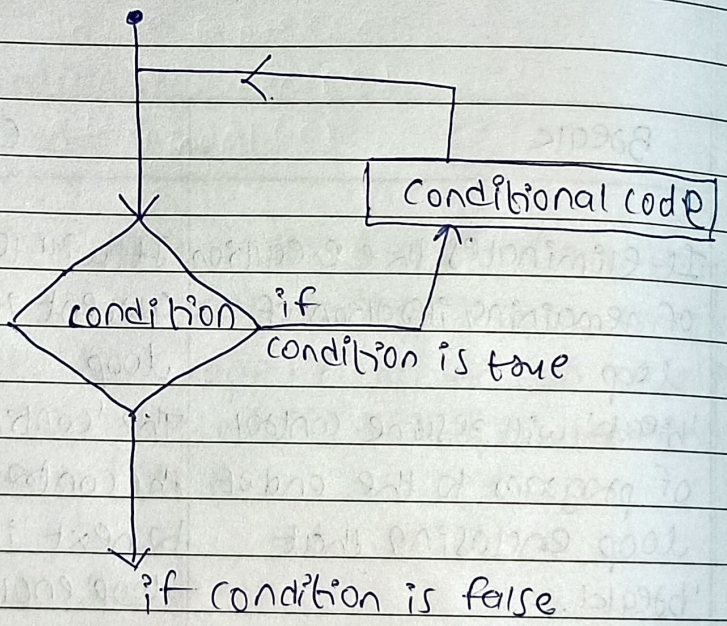
Experiment 1.4

Aim : To understand the looping statements.

Theory:

In general statements are executed sequentially. The first statement in a function is executed first, followed by the second and so on. There may be a situation when you need to execute a block of code several number of times.

A loop statement allows us to execute a statement or group of statements multiple times. The falowing diagram illustrates a loop statement -



Python programming language provides following types of loops to handle looping requirements.

1. while loop- A while loop statement in Python, repeatedly executes a target statement as long as a given condition is true.

Syntax:-

```
while expression:
    statement(s)
```

Here statements may be single statement or a blocks of statements. The condition maybe any expression, and true is any non-zero value. The loop iterates while the condition is true.
When the condition becomes false, program control passes to the line immediately following the loop.

2. for loop- It has the ability to iterate over the items of any sequence, such as a list or a string.

Syntax:

```
for iterating_var in sequence:
    statements(s)
```

If a sequence contains an expression list, it is evaluated first. Then, the first item in the sequence is assigned to the iterating variable. Next, the statements block is executed. Each item in the list is assigned to and statement(s) block is executed until the entire sequence is exhausted.

5. nested loop- Python programming language allows to use one loop inside another loop.

Syntax.

```
for iterating_var in sequence:
    for iterating_var in sequence
        statements(s)
    statements(s)
```

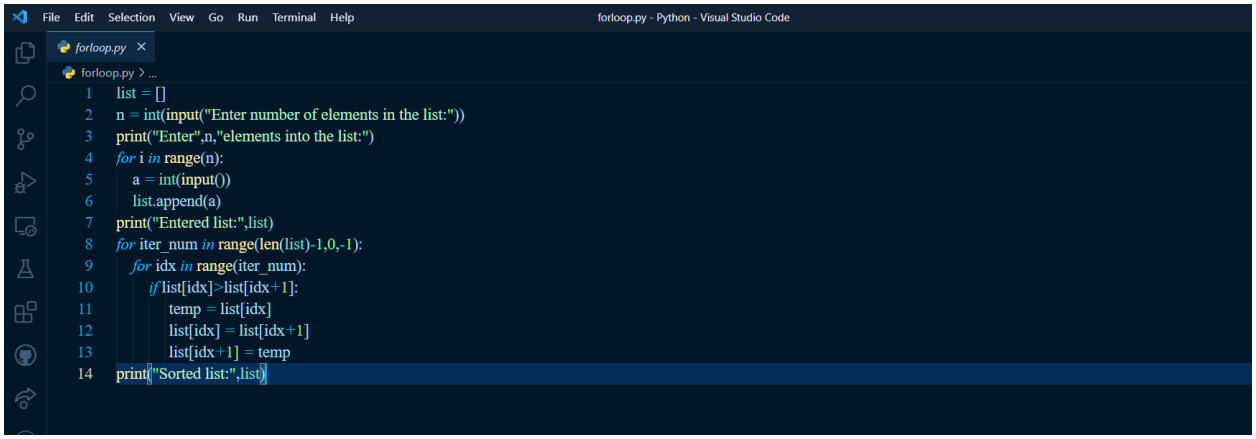
The syntax for a nested while loop statement in Python Programming language as follows-

```
while expression:
    while expression:
        statement(s)
    statement(s)
```

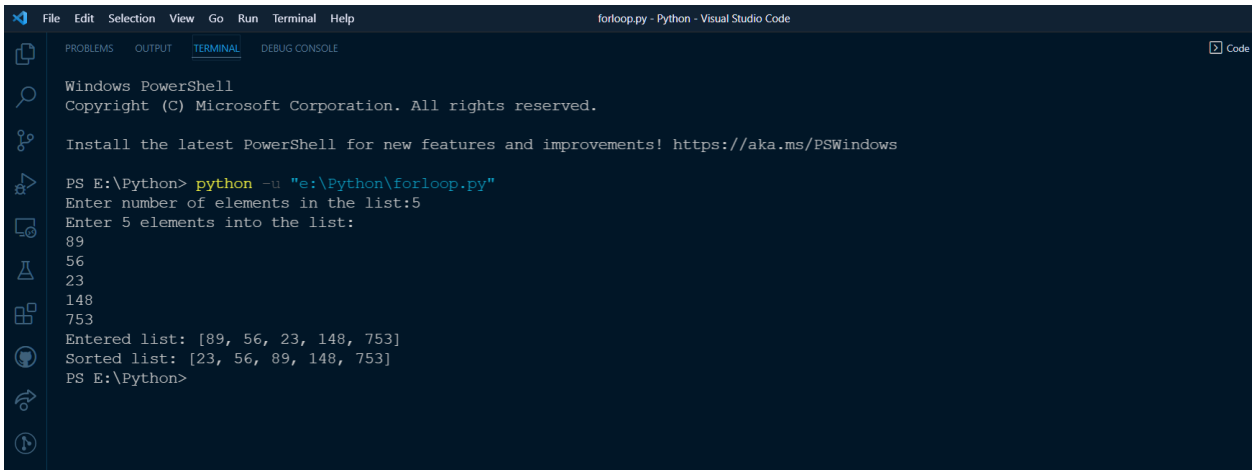
Programs:

A. Write a python code for any one program using a for loop.

Code:

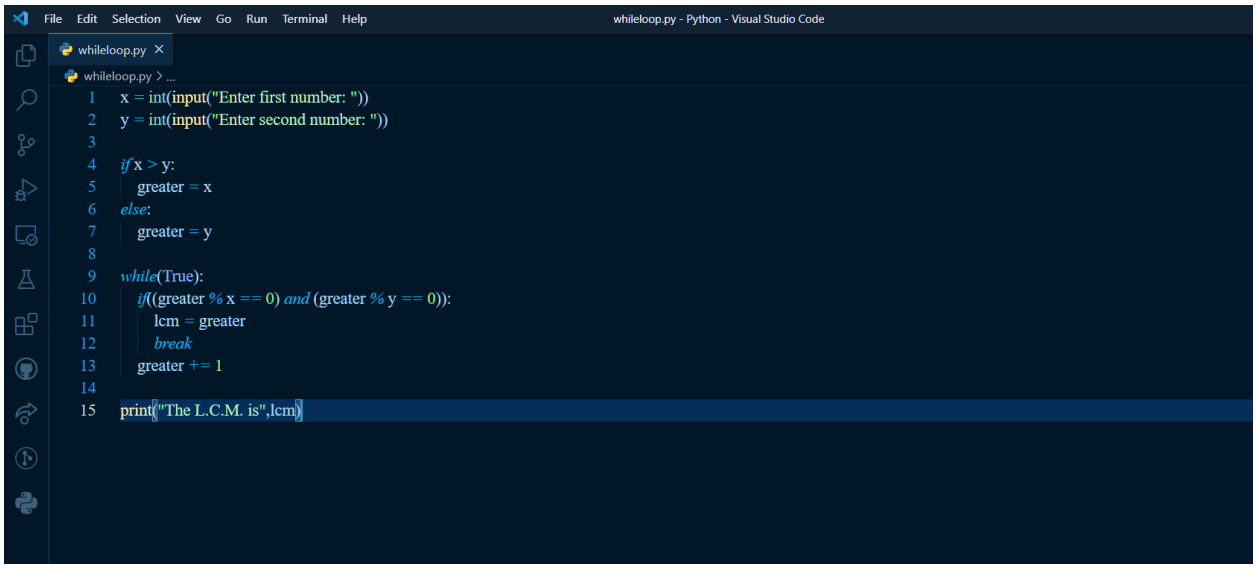


Output:

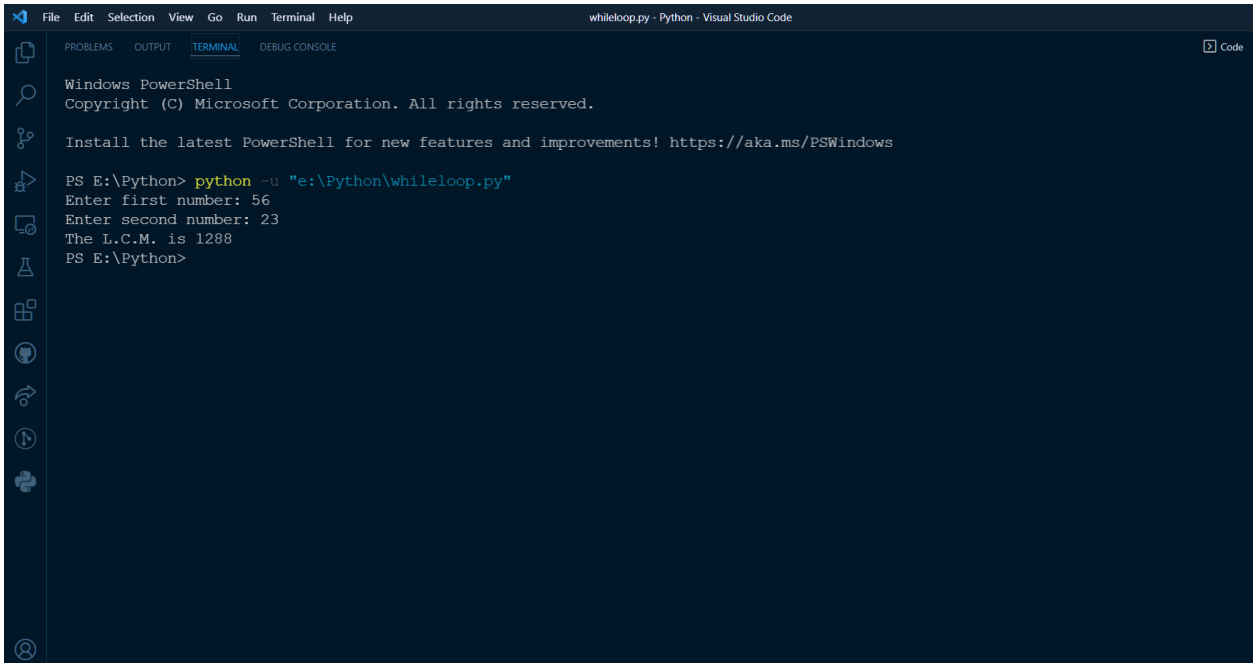


B. Write a python code for a given program using a while loop.

Code:



Output:



Conclusion: We have studied how looping statements work and also implemented it.