Computer Programming Laboratory

B.Tech. 1st Semester

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Faculty	Engineering & Technology
Programme	B. Tech. in Computer Science and Engineering
Year/Semester	1st Year / 1st Semester
Name of the Laboratory	Computer Programming Laboratory
Laboratory Code	18ESL109A

List of Experiments

1. Introduction to Python programming environment
2. Variables, data types, operators and expressions
3. Input output operations
4. Logic operations and decision making
5. Loop statements
6. Character and string operations
7. Functions
8. File handling
9. Data structures
10. Libraries

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Index Sheet

No.	Lab Experiment	Performing the experiment (7)	Document (7)	Viva (6)	Total Marks (20)
1	Introduction to Python programming environment				
2	Variables, data types, operators and expressions				
3	Input output operations				
4	Logic operations and decision making				
5	Loop statements				
6	Character and string operations				
7	Functions				
8	File handling				
9	Data structures				
10	Libraries				
11	Lab Internal Test conducted along the lines of SEE and valued for 50 Marks and reduced for 20 Marks				
	Total Marks				

Lab Internal Marks =

Signature of the Staff In-charge

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Laboratory 5

Title of the Laboratory Exercise: Loop statements

1. Introduction and Purpose of Experiment

   Loop statements are used to repeat a statement or set of statements multiple times. By solving the problems students will be able to apply iterative control statements to control the program execution.

2. Aim and Objectives

   Aim

   - To develop programs involving loops using appropriate control statements in Python

   Objectives

   At the end of this lab, the student will be able to

   - Apply loop control statements such as *for* and *while* to repeat a block of code

3. Experimental Procedure

   i. Analyse the problem statement
   ii. Design an algorithm for the given problem statement and develop a flowchart/pseudo-code
   iii. Implement the algorithm in Python language
   iv. Execute the Python program
   v. Test the implemented program
   vi. Document the Results
   vii. Analyse and discuss the outcomes of the experiment

4. Questions

   a. Write a program to accept an integer number and reverse the order of digits in the number
   b. Write a program to accept a list of integers and display the smallest and largest element in the list without using the built in function
   c. Write a program to perform addition and subtraction of two matrices

5. Calculations/Computations/Algorithms

5.1 Algorithm of program to accept an integer number and reverse the order of digits in the number

Step1: start

Step2: read an integer value, say n

Step3: now, while(n>0):

remainder :=n%10

reverse :=(reverse*10)+remainder

n :=n//10

Step4: write reverse

Step5: stop

5.2 Algorithm of program to accept a list of integers and display the smallest and largest element in the list without using the built in function

Step1: start

Step2: read number of terms in the list, say n

Step3: declare an empty list l

Step4: read elements into the list

Step5: calculate the minimum number in the list by comparing every number with first element

Step6: calculate the maximum number in the list by comparing every number with first element

Step7: write maximum and minimum element on the list

Step8: stop

5.3 Algorithm of program to perform addition and subtraction of two matrices

Step1: start

Step2: read values of matrix A and matrix B

Step3: perform addition and subtraction by following syntax

sum[i][j] = a[i][j] + b[i][j]

dif[i][j] = b[i][j] - a[i][j]

step4: write sum[i][j] and dif[i][j]

step5: stop

6. Presentation of Results

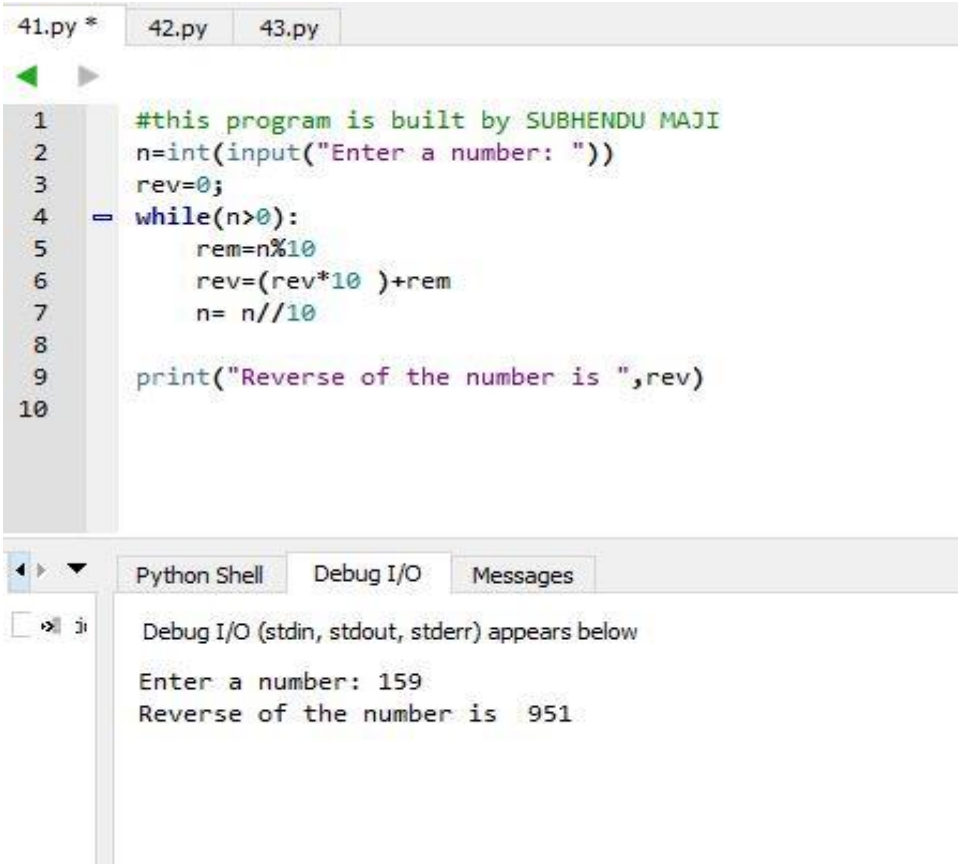

figure 6. 1 output of program to accept an integer number and reverse the order of digits in the number

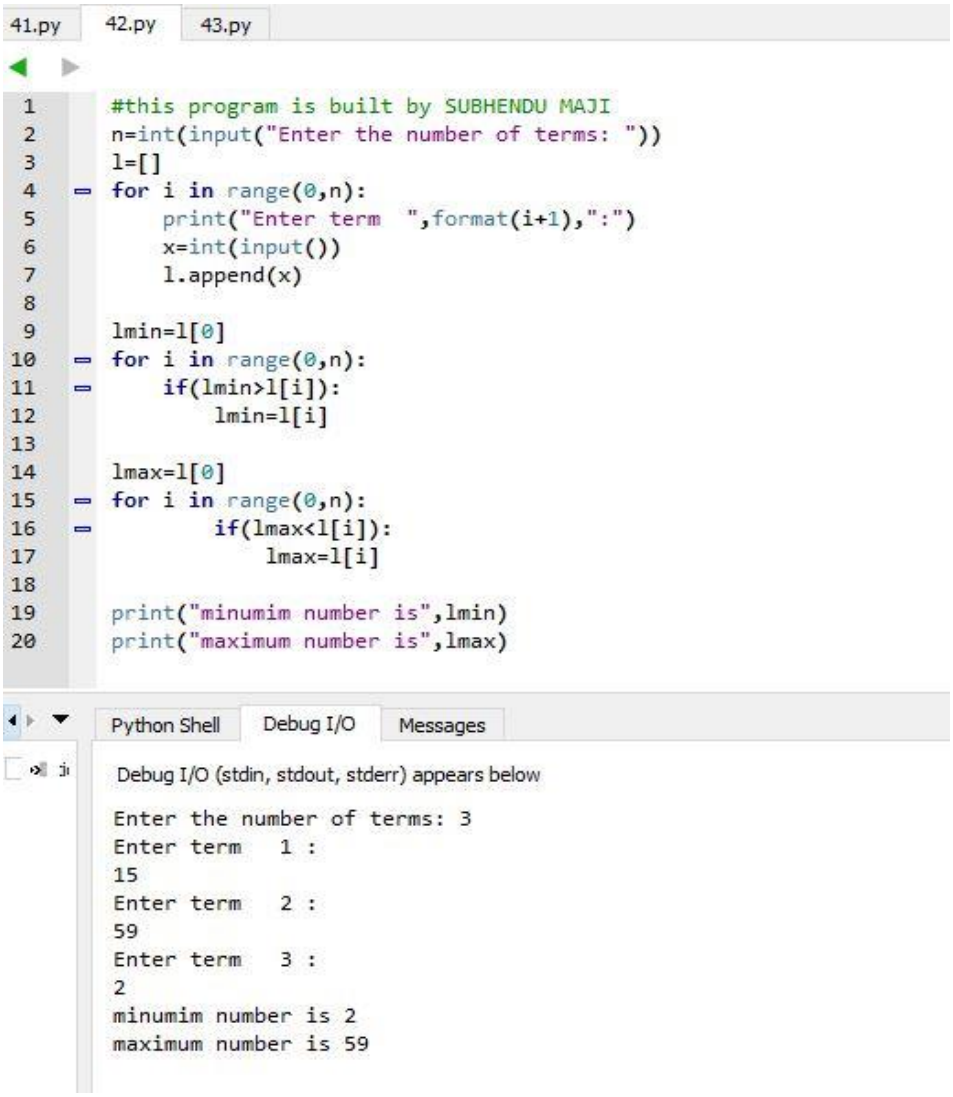

figure 6. 2 output of program to accept a list of integers and display the smallest and largest element in the list without using the built in function

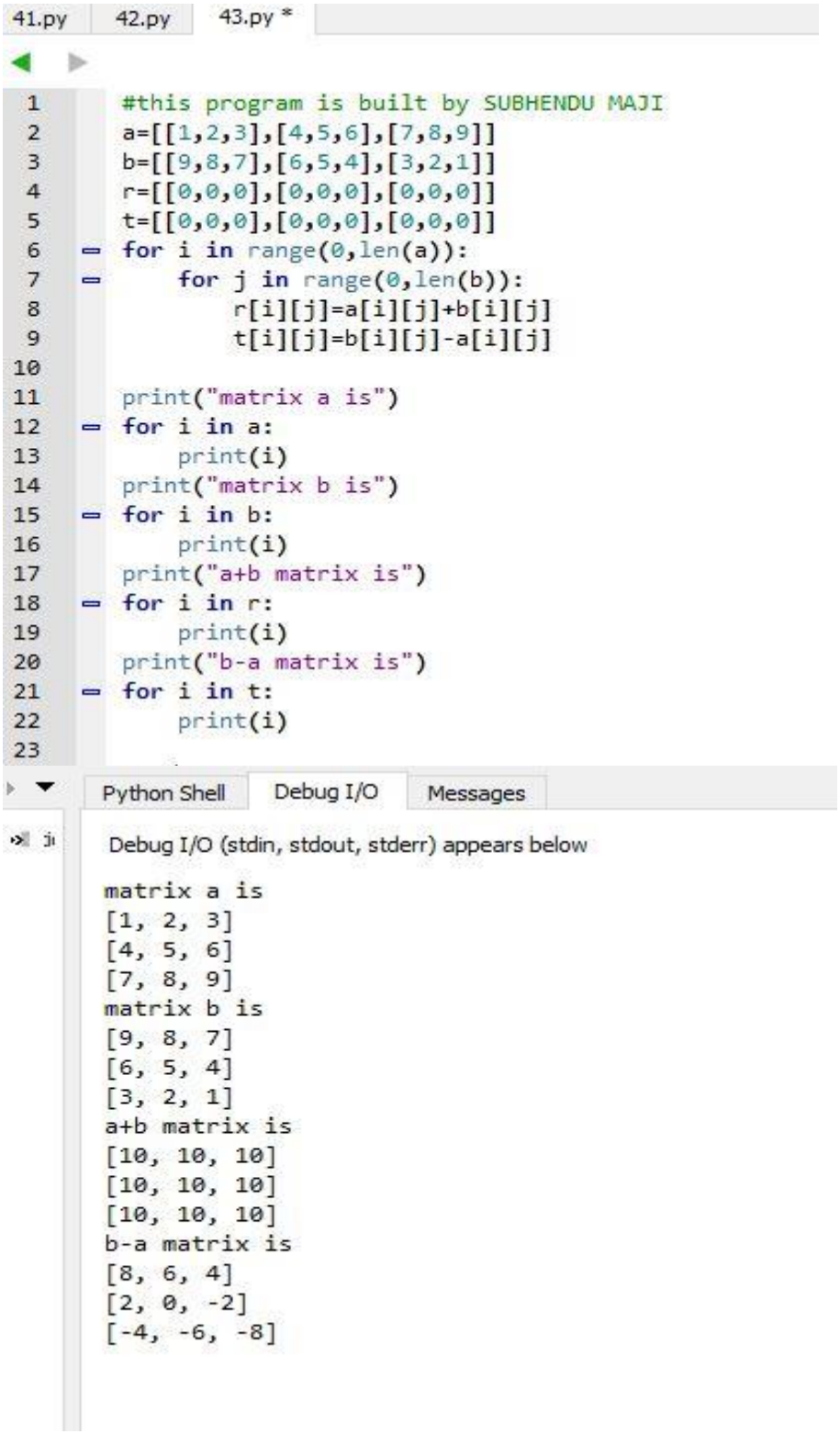

figure 6. 3 output of program to perform addition and subtraction of two matrices

7. Analysis and Discussions

7.1 Program to accept an integer number and reverse the order of digits in the number

The program takes inputs an integer value from the user. Then it calculates the reverse of the number by mathematical operation, and prints it.

7.2 Program to accept a list of integers and display the smallest and largest element in the list without using the built in function

First, the program inputs the elements in an empty list. Then it, calculates the minimum and maximum element by comparing each element with first element. At last, prints it.

7.3 Program to perform addition and subtraction of two matrices

This program just adds and subtracts the given matrices and stores it in a third matrix. And then it prints them.

8. Conclusions

It can be concluded that use of nested for loop has been learnt.

9. Comments

1.Limitations of Result

9.1.1 Program to accept an integer number and reverse the order of digits in the number

In this program, the user can get reverse of numbers only, reverse of words is not possible using this logic.

9.1.2 Program to accept a list of integers and display the smallest and largest element in the list without using the built in function

In this program, user can input only integer value in the list.

9.1.3 Program to perform addition and subtraction of two matrices

In this program user cannot input his desired value in matrix A and matrix B after compiling.