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

Name: SUBHENDU MAJI Roll Number: 18ETCS002121

Laboratory 4

Title of the Laboratory Exercise: Logic operations and decision making

1. Introduction and Purpose of Experiment

   Python provides number of control flow instructions/statements to control the flow of program execution conditionally. By solving the problems, students will be able to apply conditional control statements to control the program execution.

2. Aim and Objectives

   Aim

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

   Objectives

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

   - Apply conditional control statements such as *if-else* and nested *if-else* to express decisions

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 check the given number is zero, positive or negative
   b. Write a program to find greatest of three numbers
   c. Write a program to enter the marks of a student in 6 subjects and grade the students

5. Calculations/Computations/Algorithms

5.1 Algorithm of program to check the given number is zero, positive or negative

Step1: start

Step2: read a number

Step3: if number < 0, then do

Write “number is negative “

Step4: if number :== 0 , then do

Write “number is zero”

Step5: else , write “number is positive”

Step6: stop

5.2 Algorithm of a program to find greatest of three numbers

Step1: start

Step2: read three values ,say a,b,c

Step3: if (a>b) and (a>c), then do

maximum := a

Step4: if (b>c) and (b>a), then do

maximum := b

Step5: else, then do

maximum := c

` Step6: write maximum

Step7: stop

5.3 Algorithm of a program to enter the marks of a student in 6 subjects and grade the students

Step1: start

Step2: read marks of 6 subjects, say a,b,c,d,e,f

Step3: total := a+b+c+d+e+f

Step4: average := total/6

Step5: calculate grade

If average>90, then do, grade := ‘A’

If average >70, then do, grade := ‘B’

If average >50, then do, grade := ‘C’

else, do, grade := ‘FAIL’

step6: write total, average and grade

step7: stop

6. Presentation of Results

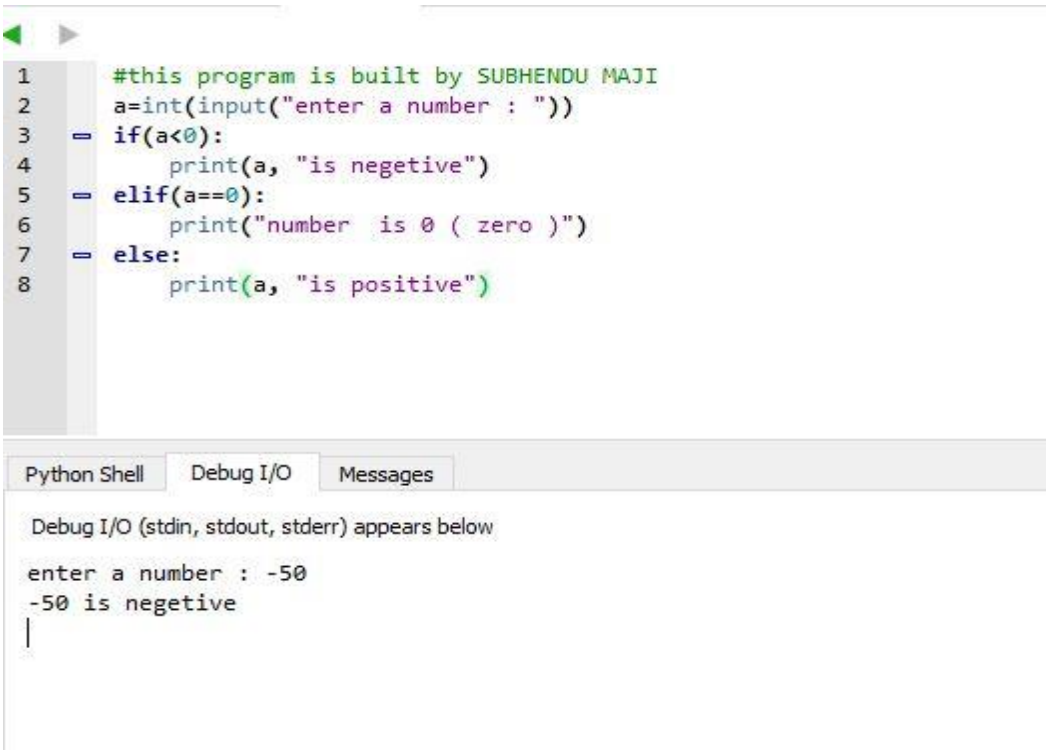

Figure 6. 1 output of program to check the given number is zero, positive or negative

```
#this program is built by SUBHENDU MAJI
x,y,z=(input("Enter three numbers (separqated by space ): ").split())
a=int(x)
b=int(y)
c=int(z)
if((a>b) and (a>c)):
    ma=a
elif((b>c) and (b>a)):
    ma=b
else:
    ma=c
print(ma, "is greatest of three numbers")
```

Python Shell | Debug I/O | Messages

Debug I/O (stdin, stdout, stderr) appears below

```
Enter three numbers (separqated by space ): 16 9 58
58 is greatest of three numbers
```

Figure 6. 2 output of a program to find greatest of three numbers

```
#this program is built by SUBHENDU MAJI
k,l,m,n,o,p=(input("enter marks of 6 subjects out of 100 (seperated by space): ").split())
a=float(k)
b=float(l)
c=float(m)
d=float(n)
e=float(o)
f=float(p)
total=float(a+b+c+d+e+f)
avg=float(total/6)
if(avg>90):
    grade='A'
elif(avg>70):
    grade='B'
elif(avg>50):
    grade='C'
else:
    grade='FAIL'
print("total out of 600=  ",total)
print("averge = ",avg)
print("grade = ",grade)
```

Python Shell | Debug I/O | Messages

Debug I/O (stdin, stdout, stderr) appears below

```
enter marks of 6 subjects out of 100 (seperated by space): 70.5 80 90.5 91.5 85 96.5
total out of 600=   514.0
averge =  85.66666666666667
grade =  B
```

Figure 6. 3 output of a program to enter the marks of a student in 6 subjects and grade the students

7. Analysis and Discussions

7.1 program to check the given number is zero, positive or negative

the program inputs the number from the user of which it checks if it is 0, positive or negative. It compares the number with zero. If the number is less than 0, then it prints the number is negative. if the number the greater than 0, then it prints the number is positive, otherwise it prints the number in zero.

7.2 program to find greatest of three numbers

The program inputs three numbers. Then it compares each number with other two numbers. And finds the greatest of the three. at last it prints the number.

7.3 program to enter the marks of a student in 6 subjects and grade the students

The program inputs the marks of 6 subjects. It calculates the total of the marks by adding them.it calculates the average by dividing the total marks by 6. Then it gives grades on the average criteria. If the average is between 100-90, then the grade is ‘A’, ’B’ for 90-70, ’C’ for 70-50, and ’FAIL’ for less than 50. At last it prints the total, average and grade.

8. Conclusions

Programs involving branching using if - else statements in Python is developed.

9. Comments

1. Limitations of Results

In the first and second program, user can only input integer values. The program will give error if the user inputs decimal value.