

Computer Programming Laboratory

B.Tech. 1st Semester



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Faculty	Engineering & Technology
Programme	B. Tech. in Computer Science and Engineering
Year/Semester	1 st Year / 1 st 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

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**

Laboratory 1

Title of the Laboratory Exercise: Introduction to Python programming environment

1. Introduction and Purpose of Experiment

Python is a high level, interactive, interpreted, object oriented scripting language. Spyder is an open source integrated development environment for programming in the Python language. In this laboratory exercise, students get familiar with the Spyder IDE to edit and run Python programs using a set of simple exercises.

2. Aim and Objectives

Aim

- To familiarise Spyder IDE and simple Python programs

Objectives

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

- Explain the features and use of Spyder IDE to develop Python programs
- Edit and execute simple Python programs

3. Experimental Procedure

Students are given a set of Python programs. Edit and execute Python programs using

- Python command line
- Command prompt from windows
- Spyder IDE
 - Interactive mode
 - Script mode

4. Algorithms

4.1 Algorithm for printing if the number is odd or even:

Step1 : Start

Step2 : Read a number of type integer

Step3 : If ((number % 2) == 0) , then do

Write number is even,

else write number is odd

Step4 : Stop

4.2 Algorithm for printing numbers from 1 to 10

Step1 : Start

Step2 : for i in range (1,11)

then do , write i

Step3 : Stop

4.3 Algorithm for printing factorial of a number

Step1 : Start

Step2 : Read a number of type integer

Step3 : fact := 1

Step4 : for number in range (1 , number+1)

then do, fact := fact * number

Step5 : Write fact value

Step6 : Stop

4.4 Algorithm for Swapping the values of two numbers

Step1 : Start

Step2 : Read two numbers of type integers

Step3 : a := a + b

b := a – b

a := a – b

Step4 : write the values of the two variables

Step5 : Stop

5. Presentation of Results



```
yup.py
a=int(input("Enter a number : "))
if((a%2)==0):
    print(a," is even")
else:
    print(a," is odd")
```

Python Shell Debug I/O Messages OS Commands

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

Enter a number : 6
6 is even

Figure 5.1

Figure 5.1 output of program of printing if the number is odd or even



```
yup.py
for a in range(1,11):
    print(a)
```

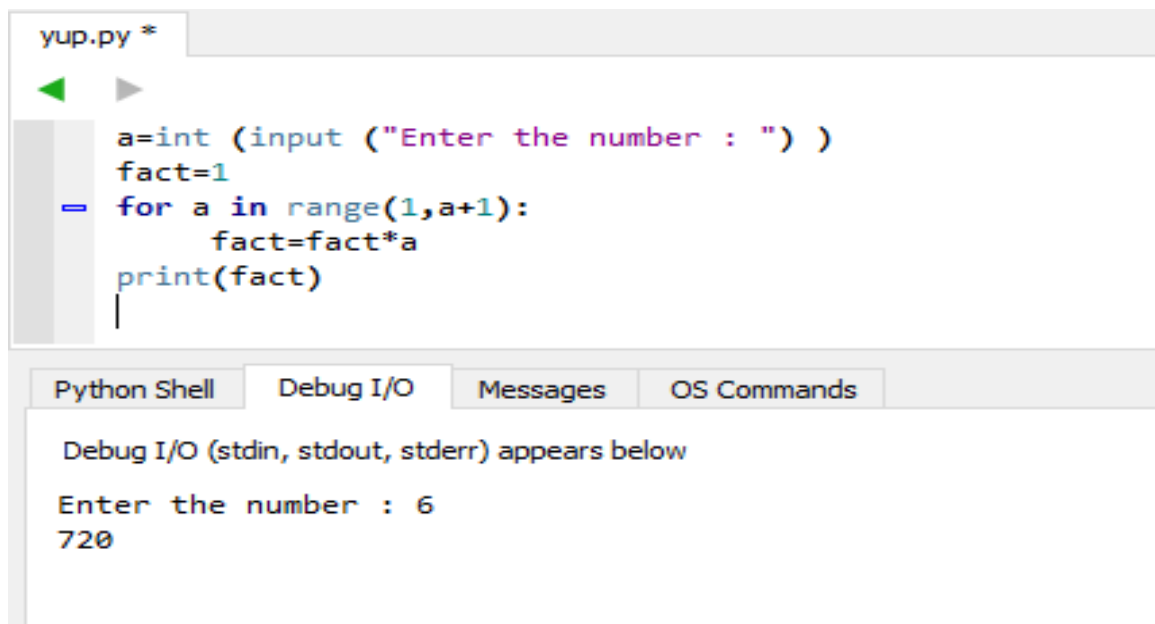
Python Shell Debug I/O Messages OS Commands

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

1
2
3
4
5
6
7
8
9
10

Figure 5.2

Figure 5.2 Output of program of printing numbers from 1 to 10

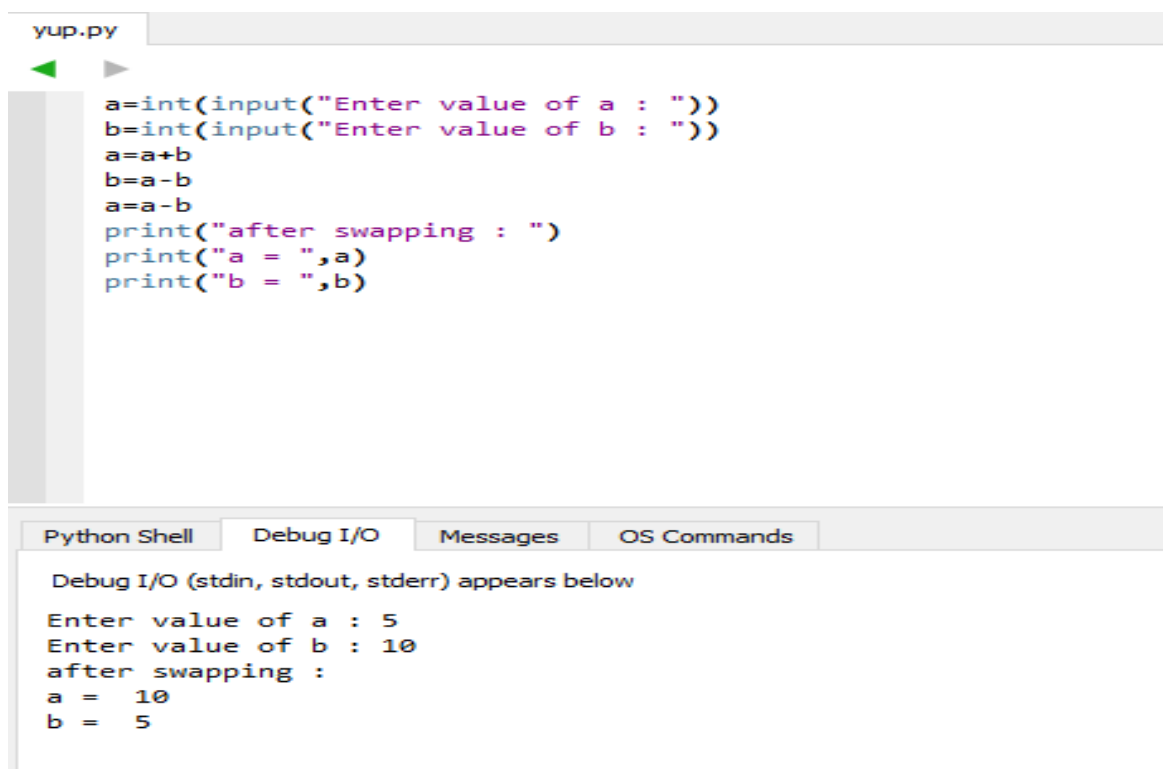


The screenshot shows a Python IDE with a file named 'yup.py'. The code in the editor is a program to calculate the factorial of a number. It prompts the user to 'Enter the number :', takes the input, and calculates the factorial using a loop. The output shows the number 6 and its factorial, 720.

```
yup.py *  
  
a=int (input ("Enter the number : ") )  
fact=1  
for a in range(1,a+1):  
    fact=fact*a  
print(fact)  
|  
  
Python Shell  Debug I/O  Messages  OS Commands  
  
Debug I/O (stdin, stdout, stderr) appears below  
  
Enter the number : 6  
720
```

Figure 5.3

Figure 5.3 Output of program of printing factorial of the number



The screenshot shows a Python IDE with a file named 'yup.py'. The code in the editor is a program to swap two variables. It prompts the user to 'Enter value of a : ' and 'Enter value of b : ', takes the inputs, and then swaps the values using arithmetic operations. The output shows the original values 5 and 10, and then the swapped values 10 and 5.

```
yup.py  
  
a=int(input("Enter value of a : "))  
b=int(input("Enter value of b : "))  
a=a+b  
b=a-b  
a=a-b  
print("after swapping : ")  
print("a = ",a)  
print("b = ",b)  
  
Python Shell  Debug I/O  Messages  OS Commands  
  
Debug I/O (stdin, stdout, stderr) appears below  
  
Enter value of a : 5  
Enter value of b : 10  
after swapping :  
a = 10  
b = 5
```

Figure 5.4

Figure 5.4 Output of swapping values of two variables

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