Experiment: 3

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Subject: Python Lab

Experiment – 3: Python Conditional Statements

1. Aim: To implement a Python program to demonstrate conditional statements.
2.Objectives: After performing this experiment, the student will be able to understand and write conditional statements in Python.
3.Outcomes: Students shall be able to **understand** the structure, syntax and semantics of a Python program. (LO-404.1).
4.Prerequisite: Knowledge of Python data types, basics of conditional statements
5.Requirements: Personal Computer (PC), Windows /Linux Operating System, Python IDE

1. Pre-Experiment Exercise:

Theory:

Python provides three important conditional statements:

i. If statement: if statement consists of a Boolean expression followed by one or more statements. When the condition is satisfied, the 'if' block is executed. Otherwise, the control skips the code under the 'if' block and reaches the statement after the 'if' block.

```
Syntax:
 if condition:
        Indented statement(s)
```

ii. If…else statement: if statement can be followed by an optional else statement, which executes when the Boolean expression is FALSE.

```
Syntax:
 if condition:
     Indented statement(s)
 else:
     Indented statement(s)
```

iii. Nested if... else statement: You can use one if or elif statement inside another if or elif statement(s). When any of the conditions is 'True', its block of code is executed. Unlike the 'else' statement, there can be any number of 'elif' statements followed by a single 'if'.

```
Syntax:
 if condition1:
       Indented statement(s)
 elif condition2:
     Indented statement(s)
 elif condition3:
    Indented statement(s)
 ...
 else:
   Indented statement(s)
```

2. Laboratory Exercise

A. Procedure

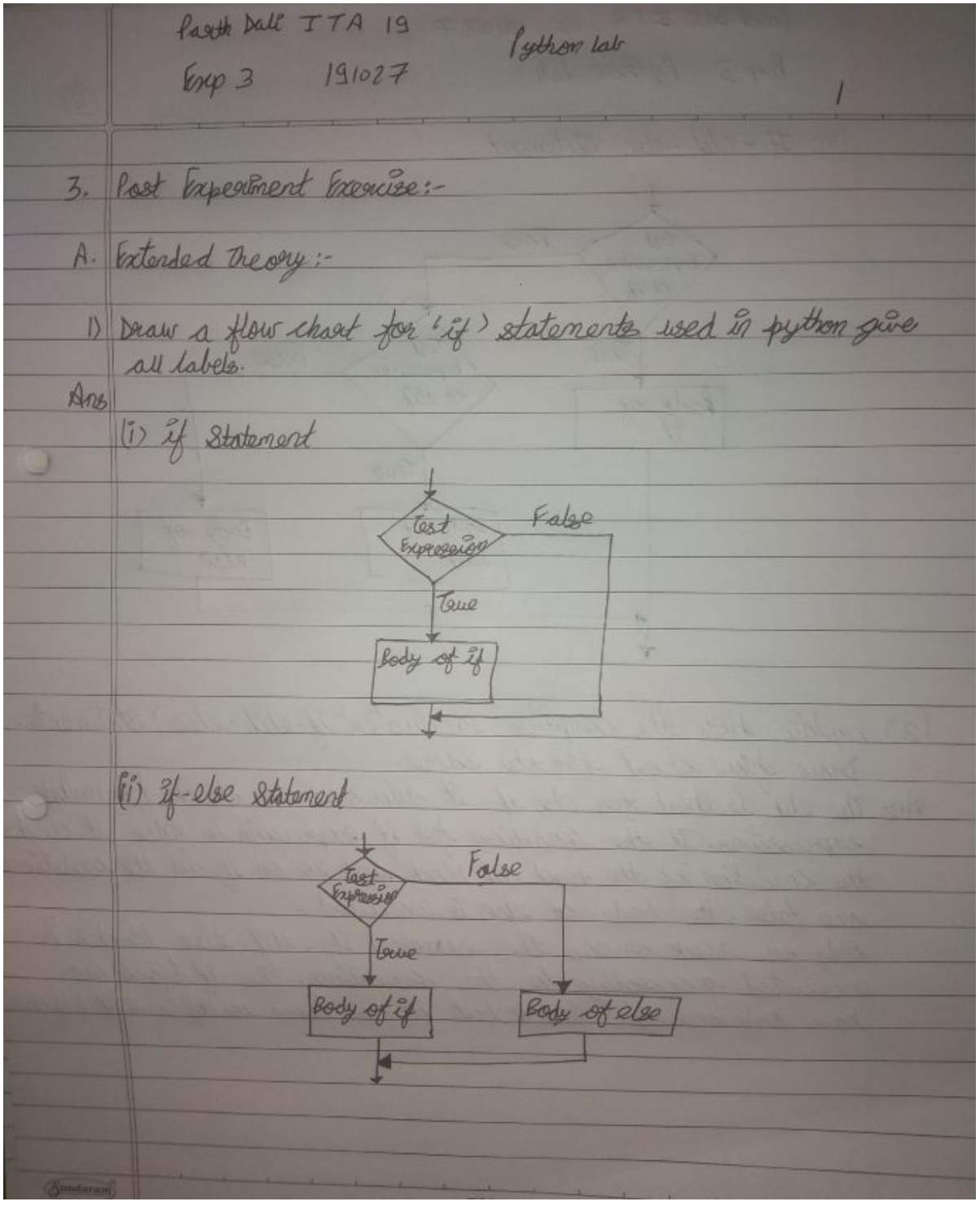
i. Open IDE for Python programming
ii. Open new Python file from menu file-new
iii. Type Python code with proper syntax
iv. Save file with .py extension
v. Execute the command statements inside the saved file using ctrl+enter key and explore results in other windows of IDE.

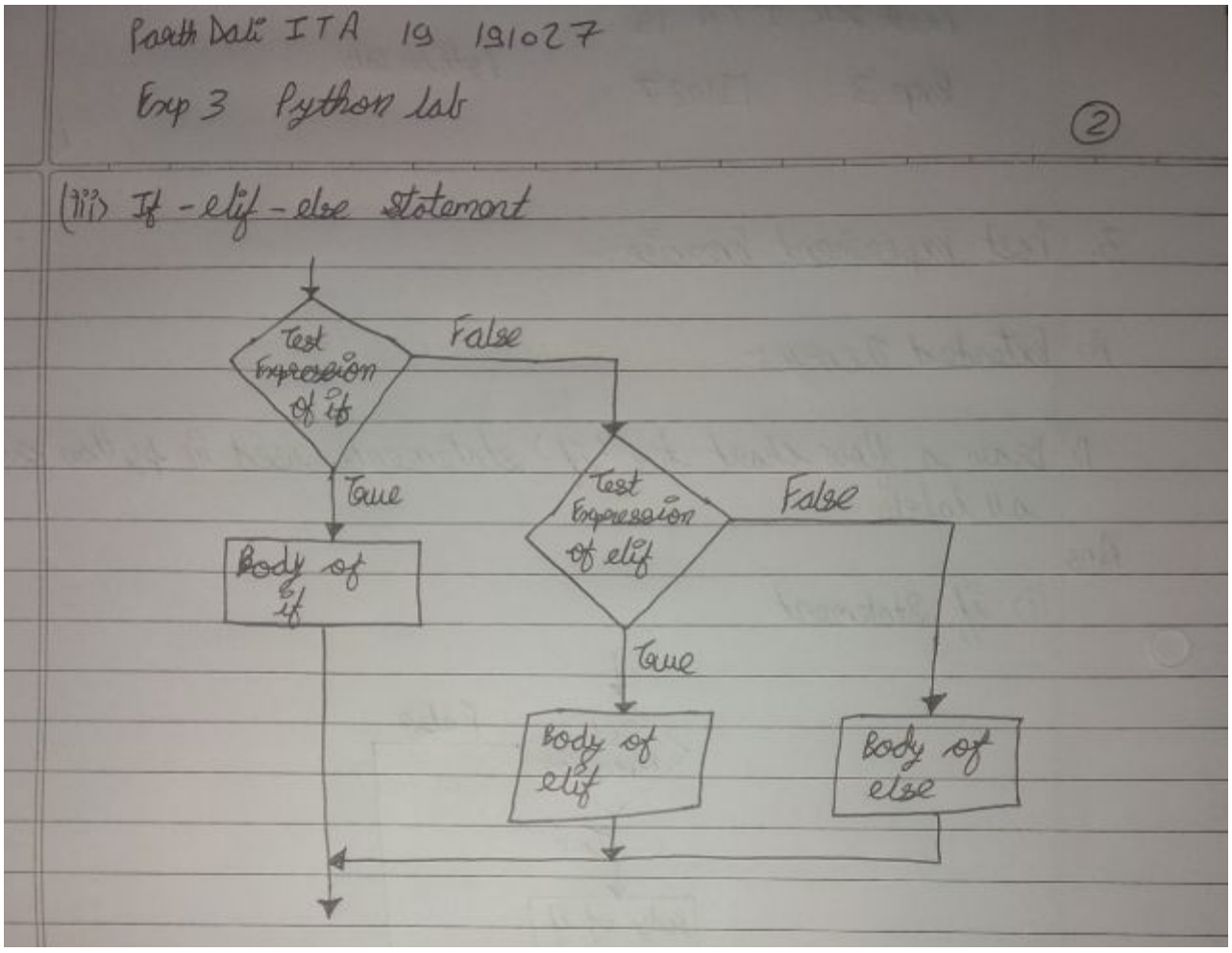
3. Post-Experiments Exercise

A. Extended Theory:

1. Draw flowchart for 'if' statements used in Python, give all labels.

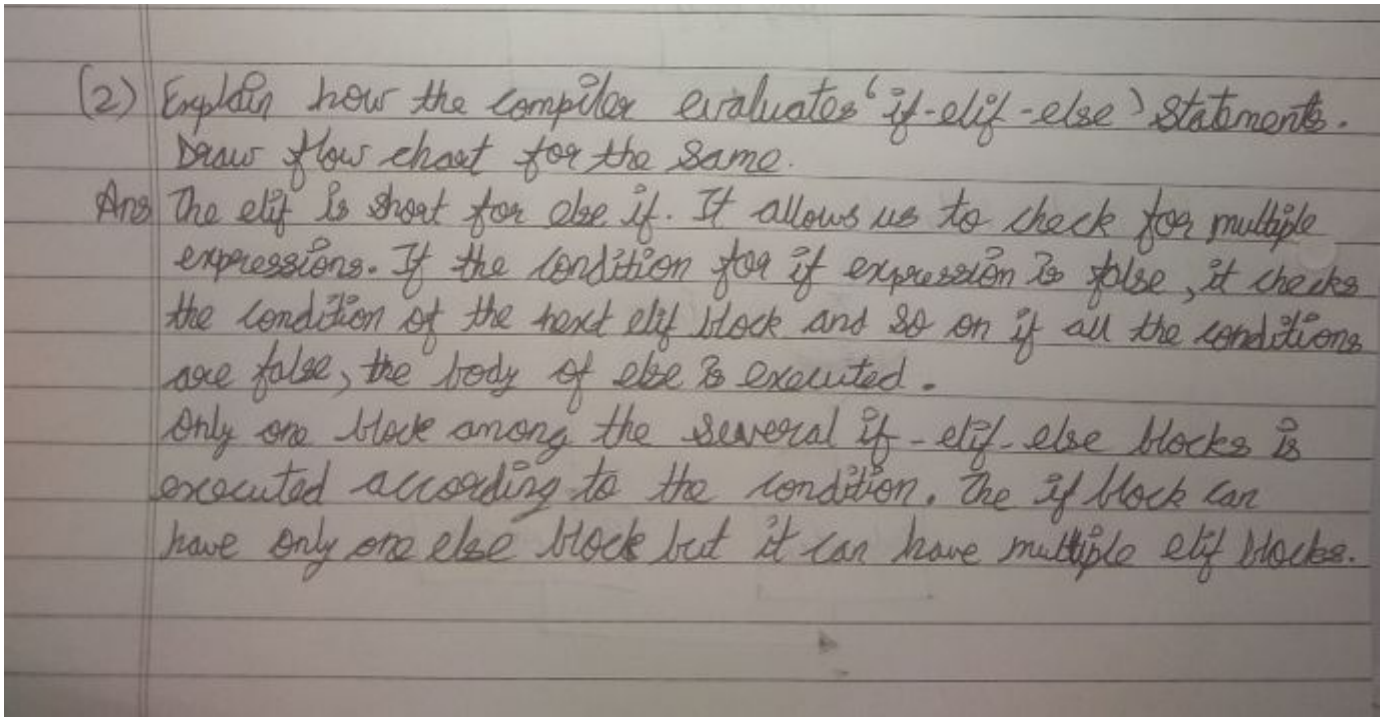
Ans:





2. Explain how the compiler evaluates 'if...elif...else' statements, Draw flowchart for the same.

Ans:



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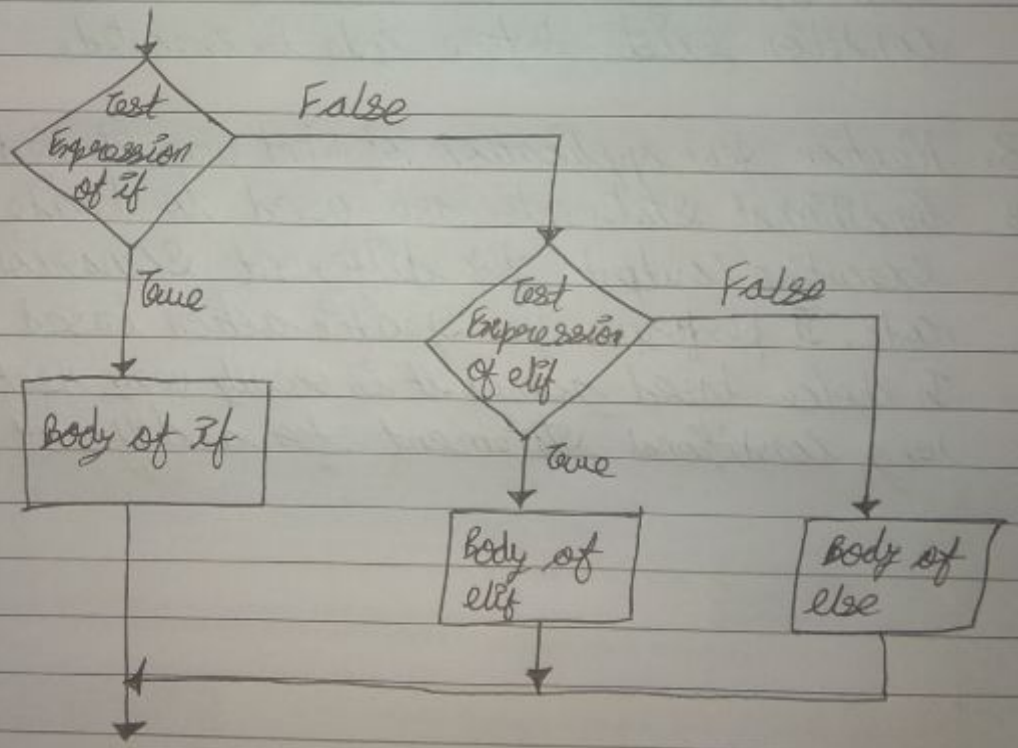
Syntax :- if test expression
    Body of if
elif test expression
    Body of elif
else
    Body of else

Flowchart :-



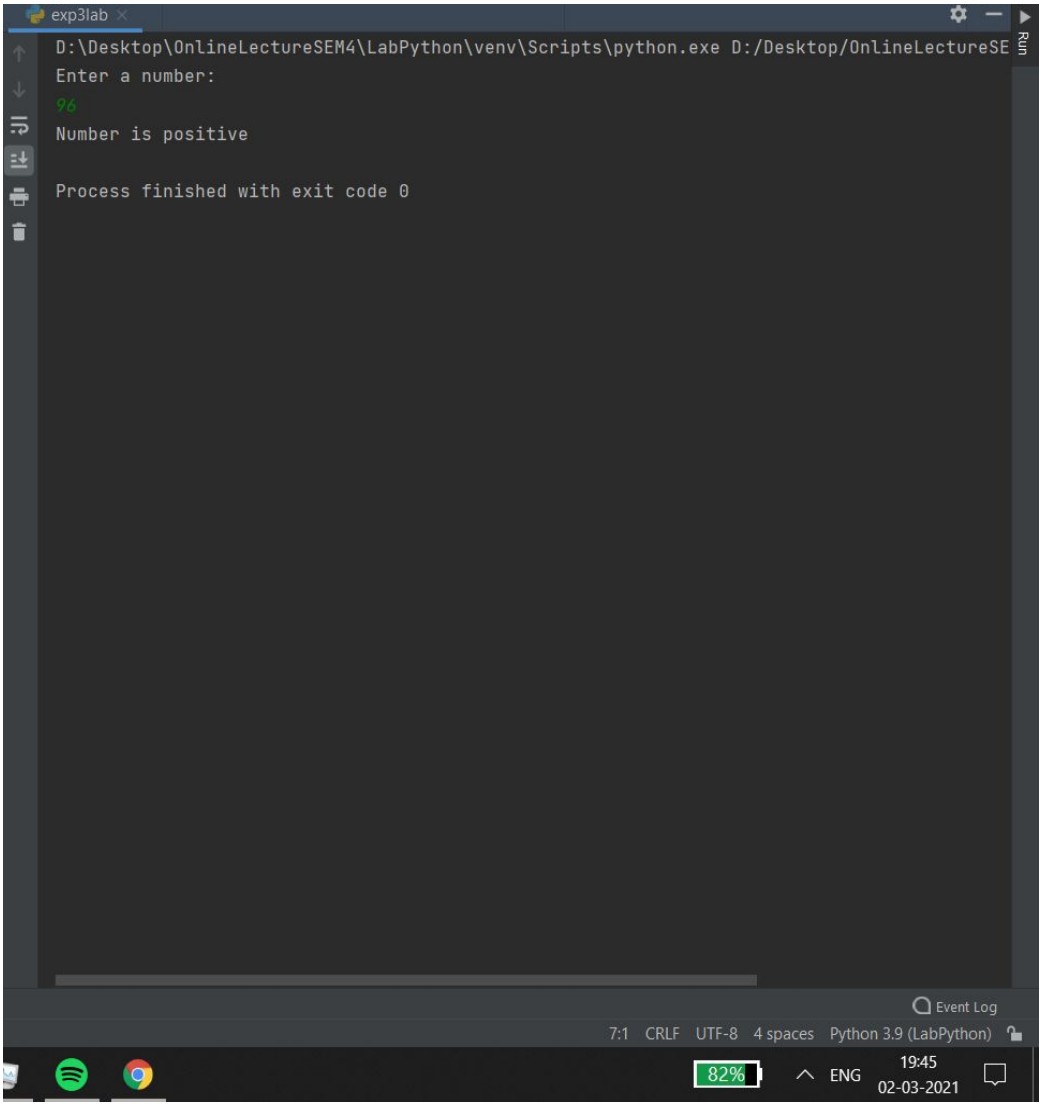
B. Questions/Programs:

1. Write a Python program to check and print if the inputted number is ‘positive’, ‘negative’ or ‘zero’.

Program:

```
a=int(input("Enter a number:\n"))
if(a<0):
    print("Number is negative")
elif(a>0):
    print("Number is positive")
else:
    print("Number is 0")
```

Output:

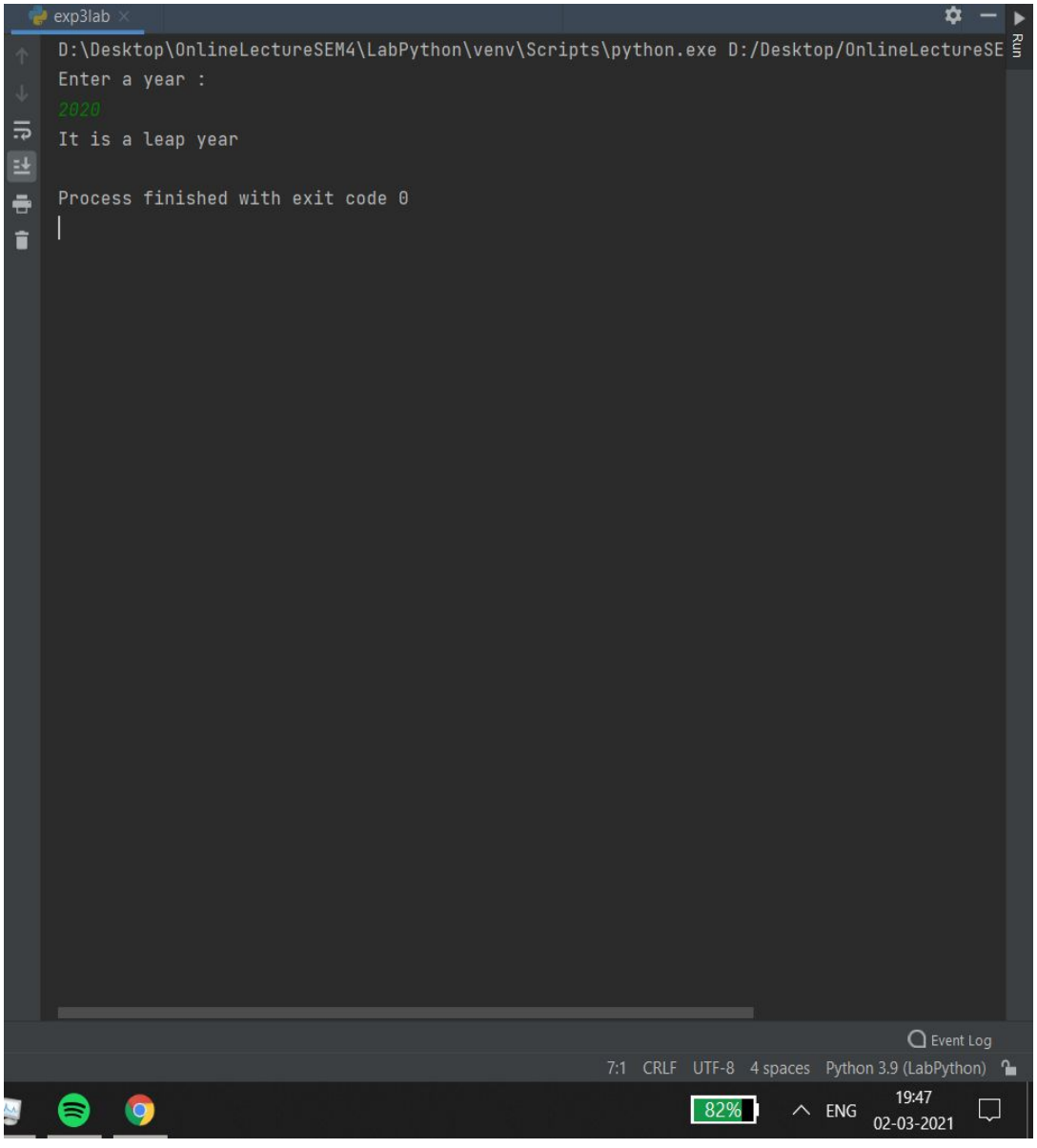


2. Write a program to check whether the input year is a leap year or not.

Program:

```
year = int(input("Enter a year : \n")) # taking input year from user
if (year % 4) == 0:   #checking all 3 conditions using nested if
    if (year % 100) == 0:
        if (year % 400) == 0:
            print("It is a leap year")
        else:
            print("It is not a leap year")
    else:
        print("It is a leap year")
else:
    print("It is not a leap year")
```

Output:



3. Write a program to print Fibonacci sequence with the help of the if-else.

Program:

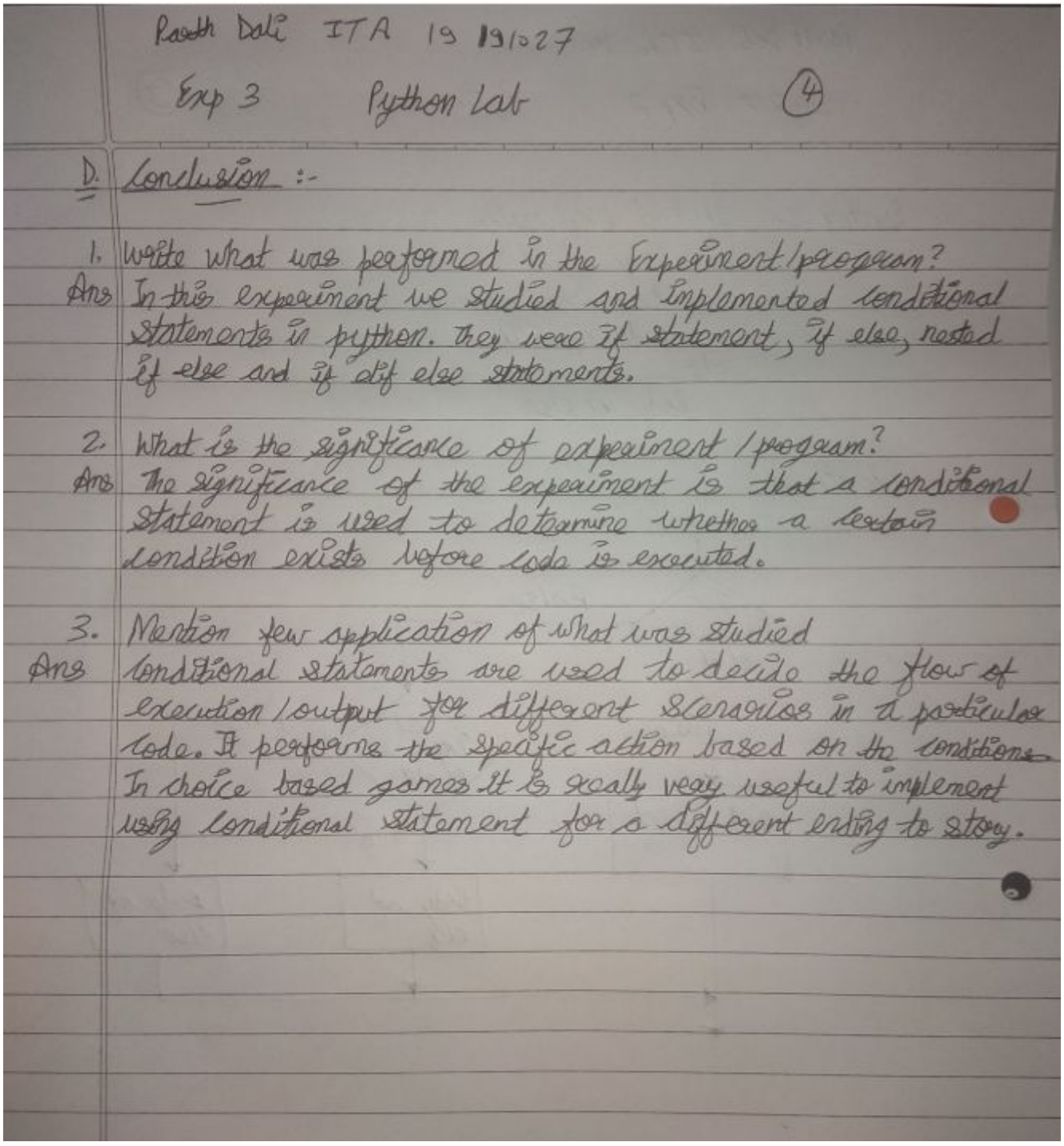
```
num = int(input("Enter the number of terms : "))
count = 0
n1 = 0 #intial term
n2 = 1 #second term of the series
if num < 0:
    print("Enter a valid number")
else:
    print("Series is : ")
    print(n1)
    while count < num - 1:
        n = n1 + n2 #adding the intial and second term to get the next term in the series
        print(n)
        n1 = n2
        n2 = n
        count = count + 1
```

Output:

C. Conclusion:

1. Write what was performed in the experiment/program.
2. What is the significance of experiment/program?
3. Mention a few applications of what was studied.

Ans:



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D. Conclusion :-

1. Write what was performed in the Experiment/program?

Ans In this experiment we studied and implemented conditional statements in python. They were if statement, if else, nested if else and if elif else statements.

2. What is the significance of experiment / program?

Ans The significance of the experiment is that a conditional statement is used to determine whether a certain condition exists before code is executed.

3. Mention few application of what was studied

Ans conditional statements are used to decide the flow of execution / output for different scenarios in a particular code. It performs the specific action based on the conditions. In choice based games it is really very useful to implement using conditional statement for a different ending to story.

D. References

[1] MT Savaliya, "Programming through Python", StarEdu Solutions India Pvt.

[2] https://www.python.org/

[3] www.pythonforbeginners.com