Module 2

❖ Topic: Core Python concepts

- Introduction of python,If, If- else, Nested if-else,while,for-loop
- Assignment Level Basic

B1. **What is Python ,Name some of the features of Python.**

Ans : Python is a dynamic, high level, free open source and interpreted programming language.

It supports object-oriented programming as well as procedural oriented programming.

In Python, we don't need to declare the type of variable because it is a dynamically typed language.

Features:

- Easy To Learn & Use While Coding.
- Open Source Programming Language.
- Extensible Feature.
- Interpreted Language.
- Expressive Language.

- Cross-Platform Portable LLanguage
- Object-Oriented Language
- Dynamic Memory Allocation.
- High-Level Interpreted Language.
- Graphical User Interface (GUI) Support.

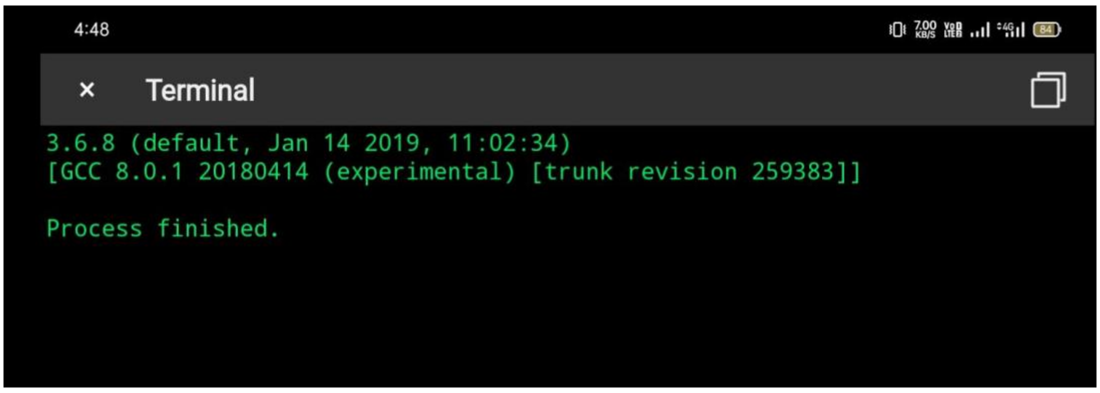
B2. Write a Python program to get the Python version you are using?

Ans:

Code: import sys

Print(sys.version)

o/p :



```
3.6.8 (default, Jan 14 2019, 11:02:34)
[GCC 8.0.1 20180414 (experimental) [trunk revision 259383]]

Process finished.
```

B3. Is python the right choice for Web based Programming?

Ans: Python is another open source programming that has become popular for creating web-related applications and large programs.

Scripts written in Python are often very clear to read,

the language is also known for its flexibility.

Whether you’re looking for database tools, image manipulation scripts, or something else entirely, if it’s written in Python, you’ll find it here.

B4.Why was the language called as Python?

Ans: When he began implementing Python, Guido van Rossum was also reading the published scripts from “Monty Python’s Flying Circus”, a BBC comedy series from the 1970s.

Van Rossum thought he needed a name that was short, unique, and slightly mysterious, so he decided to call the language Python.

B5.Write a Python program to check if a number is positive, negative or zero.

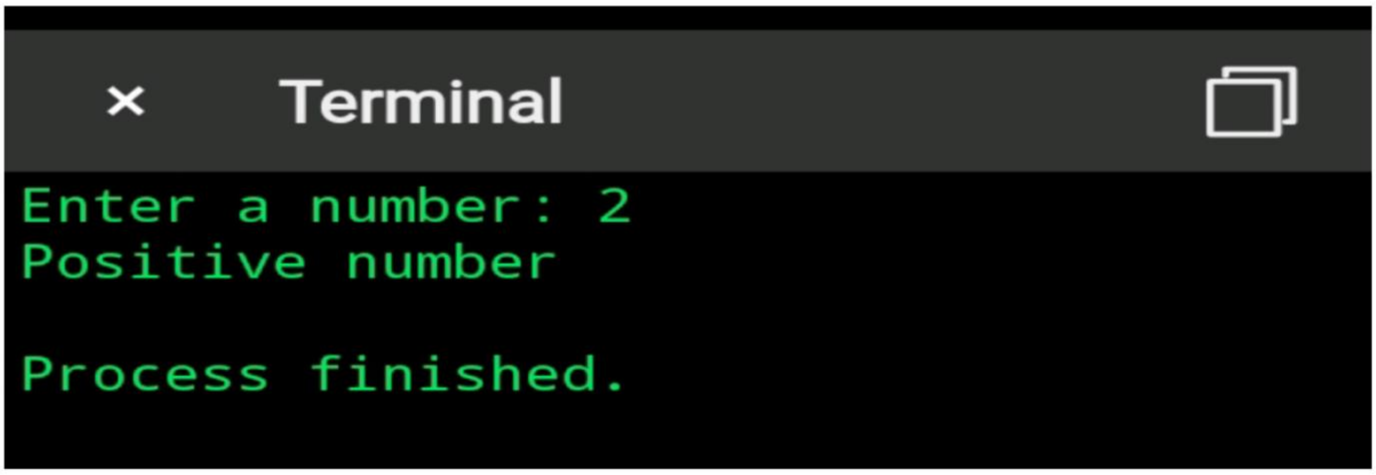
Ans:

Code:

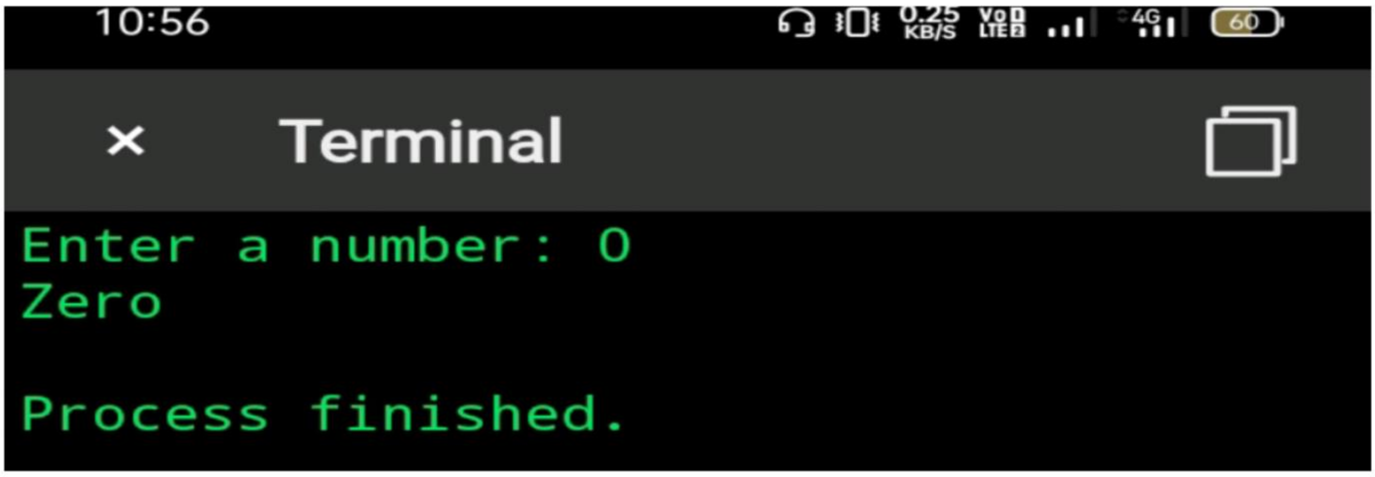
```
     N = float(input(“Enter a number: “))
If n >= 0:
   If n == 0:
       Print(“Zero”)
   Else:
       Print(“Positive number”)
Else:
```

  Print(“Negative number”)

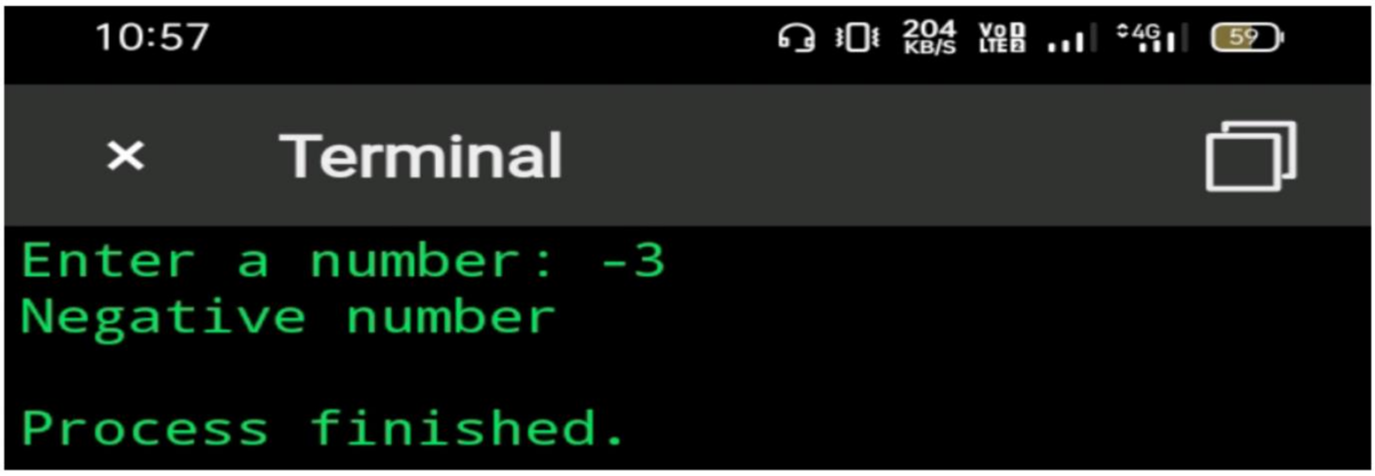
o/p :



```
Enter a number: 2
Positive number

Process finished.
```



```
Enter a number: 0
Zero

Process finished.
```



```
Enter a number: -3
Negative number

Process finished.
```

B6. What is the language from which Python has got its features or derived its features?

Ans: Python is derived from many other languages, including ABC, Modula-3, C, C++, Algol-68, SmallTalk, and Unix shell and other scripting languages. Python is copyrighted.

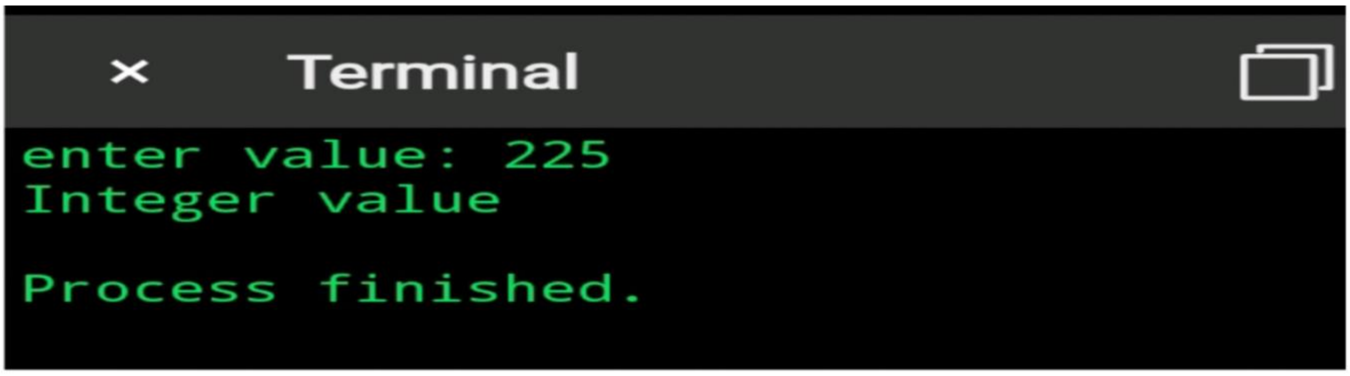
B7. Write a Python program to check if variable is of integer or string.

Ans:

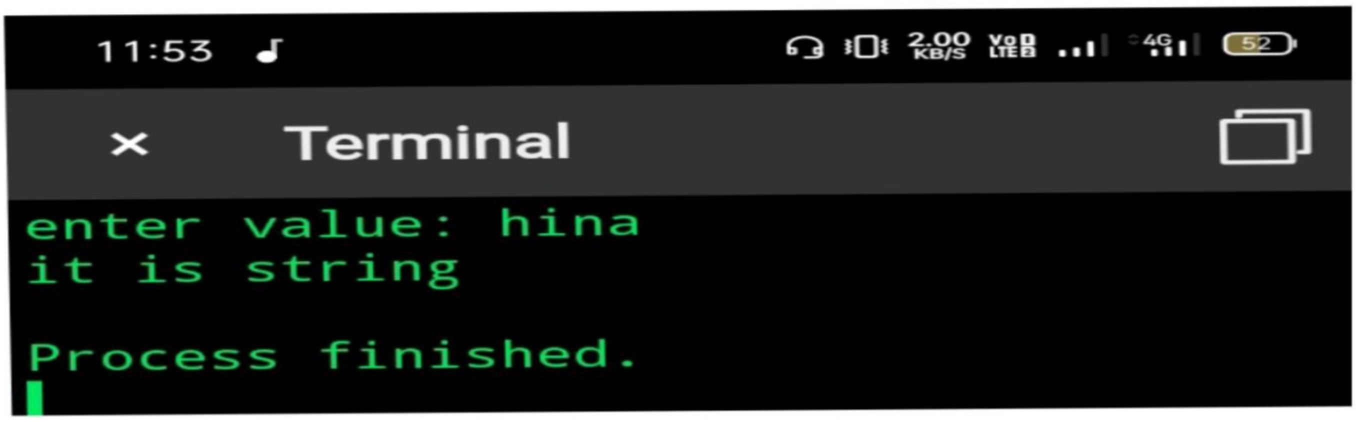
Code :

```
      S = input (‘enter value: ‘)
If s.isdigit():
  Print(‘Integer value’)
Else:
  Print(‘it is string’)
```

O/p:



```
enter value: 225
Integer value

Process finished.
```



```
enter value: hina
it is string

Process finished.
```

B8. Does python support switch or case statement in Python?

Ans: Python doesn't have a switch/case statement because of Unsatisfactory Proposals . Nobody has been able to suggest an implementation that works well with Python's syntax and established coding style.

Most programming languages have switch/case because they don’t have proper mapping constructs. You cannot map a value to a function, that’s why they have it. But in Python, you can easily have a mapping table(dict) where a certain value maps to a certain function.

B9.How Python is interpreted?

Ans : Python converts source code written by the programmer into intermediate language which is again translated into the native language / machine language that is executed.

So Python is an Interpreted language.

- It is processed at runtime by the interpreter.

- The program need not be compiled before its execution.

- Python is also interactive where it can prompt and interact with the interpreter directly to write the programs.

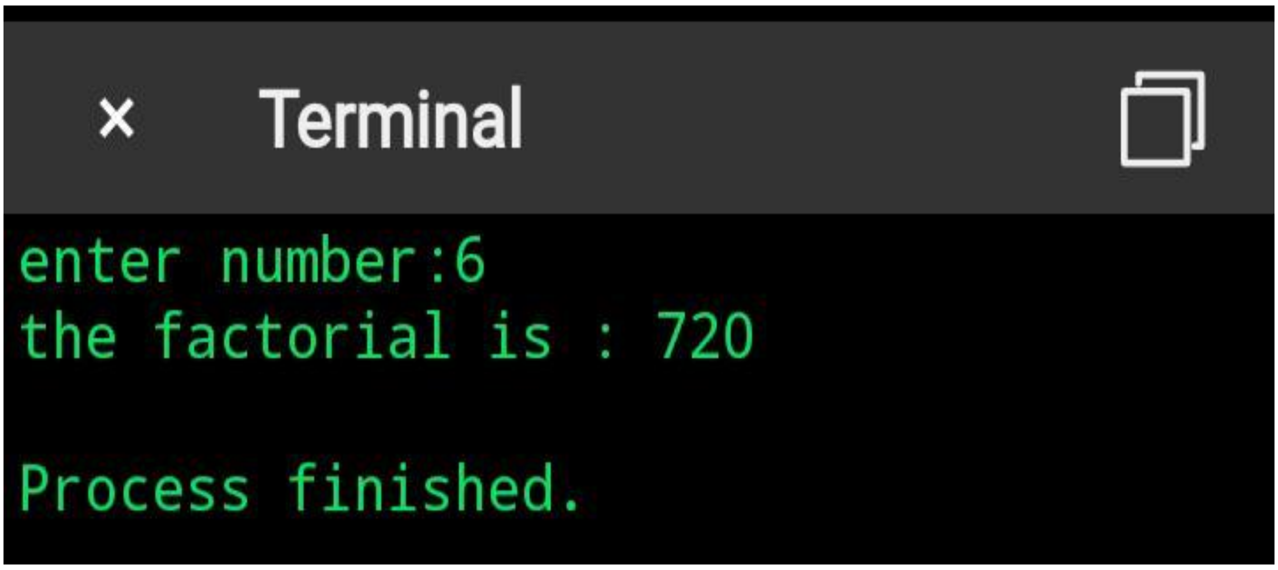
- It supports the object-oriented style of the technique which encapsulates the code within the objects.

B10:- Write a Python program to get the Factorial number of given number.

Ans: code :

```
X=int(input (“enter number:”))
Fact=1
While(x>0):
  Fact=fact*x
  X=x-1
Print(“the factorial is :”,fact)
```

O/p:

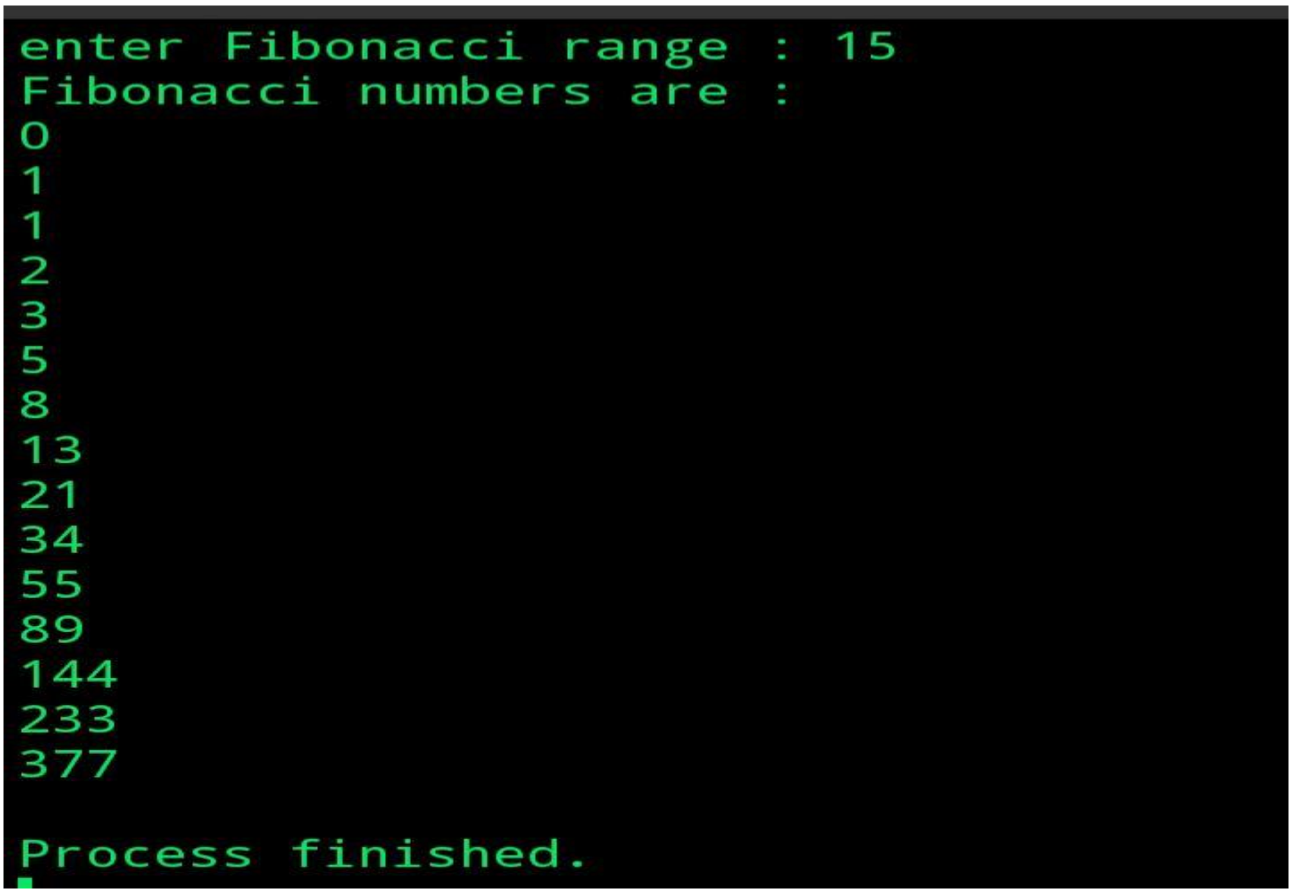


```
enter number:6
the factorial is : 720

Process finished.
```

B11:- Write a Python program to get the Fibonacci series of given range

Ans : code-

```
X=int(input("enter Fibonacci range : "))

Print("Fibonacci numbers are :")

A=0

B=1

Print(a)

Print(b)

For I in range(2,x):

  C=a+b

  Print©

  A=b

  B=c
```



```
enter Fibonacci range : 15
Fibonacci numbers are :
0
1
1
2
3
5
8
13
21
34
55
89
144
233
377

Process finished.
```

B12.How memory is managed in Python?

Ans: Memory management in Python involves a private heap containing all Python objects and data structures. The management of this private heap is ensured internally by the Python memory manager. The Python memory manager has different components which deal with various dynamic storage management aspects, like sharing, segmentation, preallocation or caching.

At the lowest level, a raw memory allocator ensures that there is enough room in the private heap for storing all Python-related data by interacting with the memory manager of the operating system. On top of the raw memory allocator, several object-specific allocators operate on the same heap and implement distinct memory management policies adapted to the peculiarities of every object type.

B13.What is namespace in Python?

Ans: namespace is a collection of currently defined symbolic names along with information about the object that each name references. You can think of a namespace as a dictionary in which the keys are the object names and the values are the objects themselves. Each key-value pair maps a name to its corresponding object.

In a Python program, there are four types of namespaces:

Built-In

Global

Enclosing

Local

B14.What is the purpose continue statement in python?

Ans: The continue statement gives you the option to skip over the part of a loop where an external condition is triggered, but to go on to complete the rest of the loop. That is, the current iteration of the loop will be disrupted, but the program will return to the top of the loop.

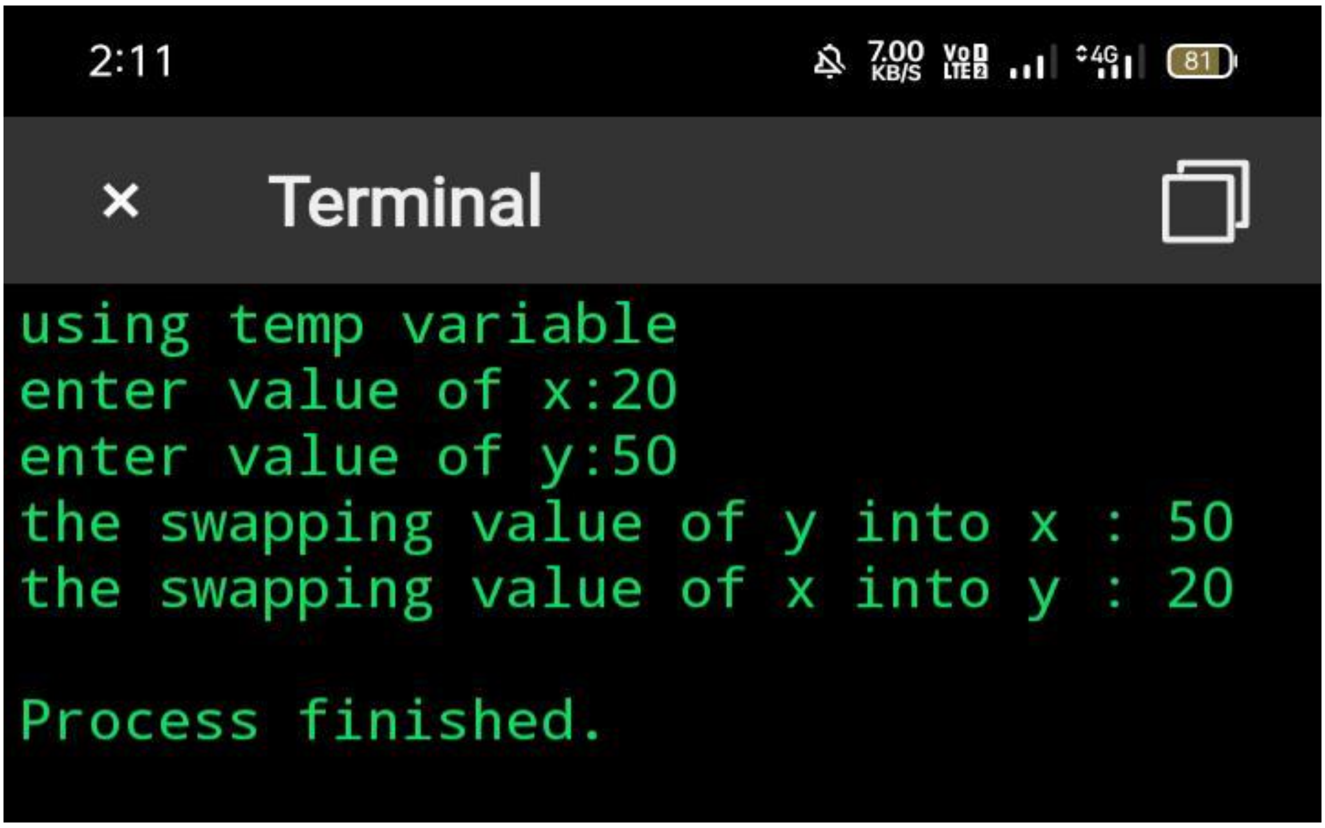
Assignment Level Intermediate:

I1: Write python program that swap two number with temp variable and without temp variable.

Ans: using temp variable:

```
Print("using temp variable")
X=int(input ("enter value of x:"))
Y=int(input ("enter value of y:"))
Temp=x
X=y
Y=temp
Print("the swapping value of y into x :",x)
Print("the swapping value of x
```

O/p:



```
using temp variable
enter value of x:20
enter value of y:50
the swapping value of y into x : 50
the swapping value of x into y : 20

Process finished.
```

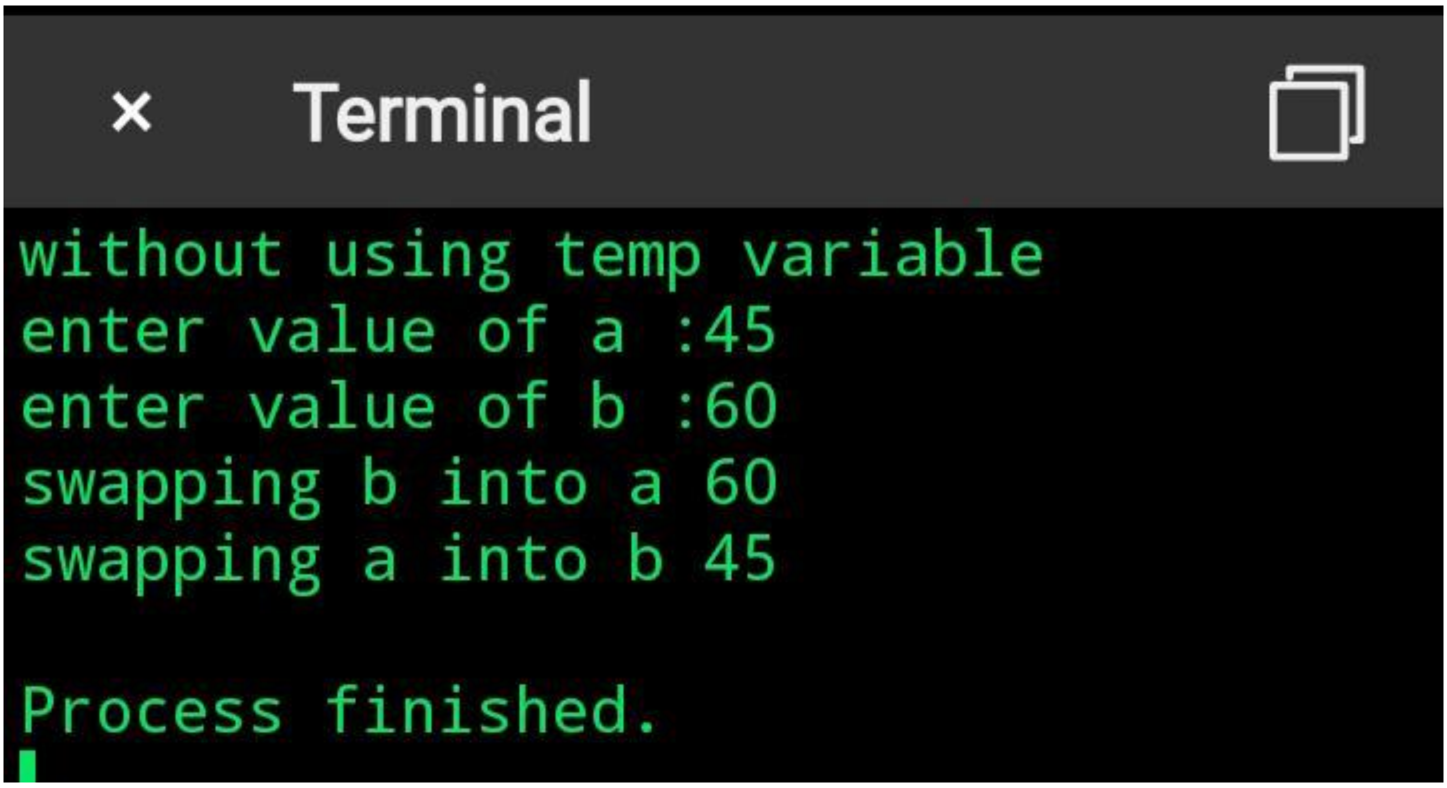
Without using temp variable:

Code:

```
Print("without using temp variable ")
```

```
A=int(input(“enter value of a :”))

B=int(input(“enter value of b :”))

B=a+b

A=b-a

B=b-a

Print(“swapping b into a”,a)

Print(“swapping a into b”,b)
```

O/p:



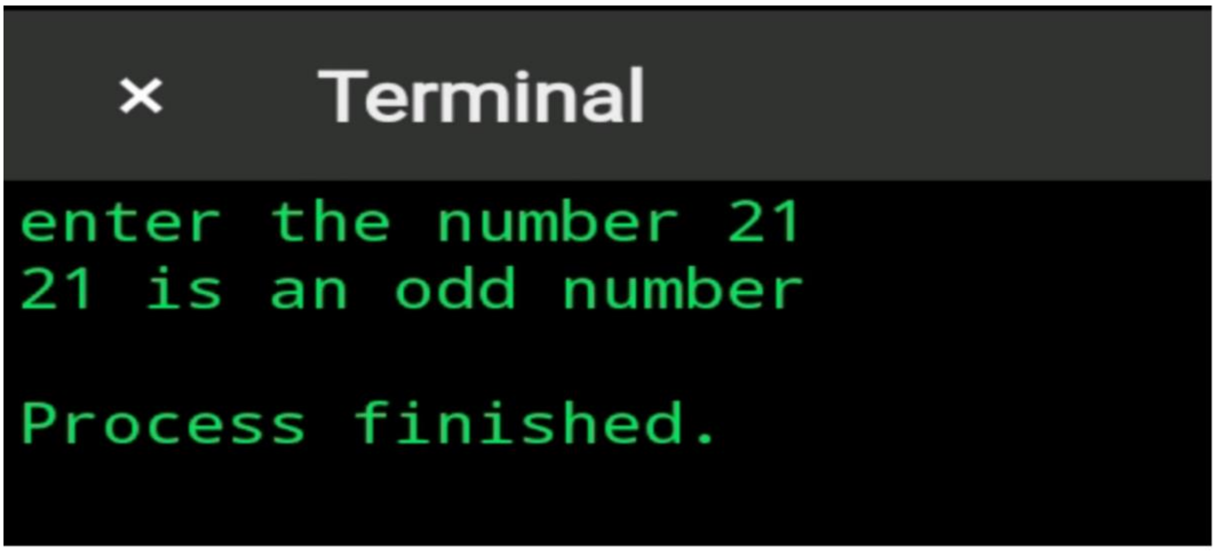
```
without using temp variable
enter value of a :45
enter value of b :60
swapping b into a 60
swapping a into b 45

Process finished.
```

I2:- Write a Python program to find whether a given number is even or odd, Print out an appropriate message to the user.

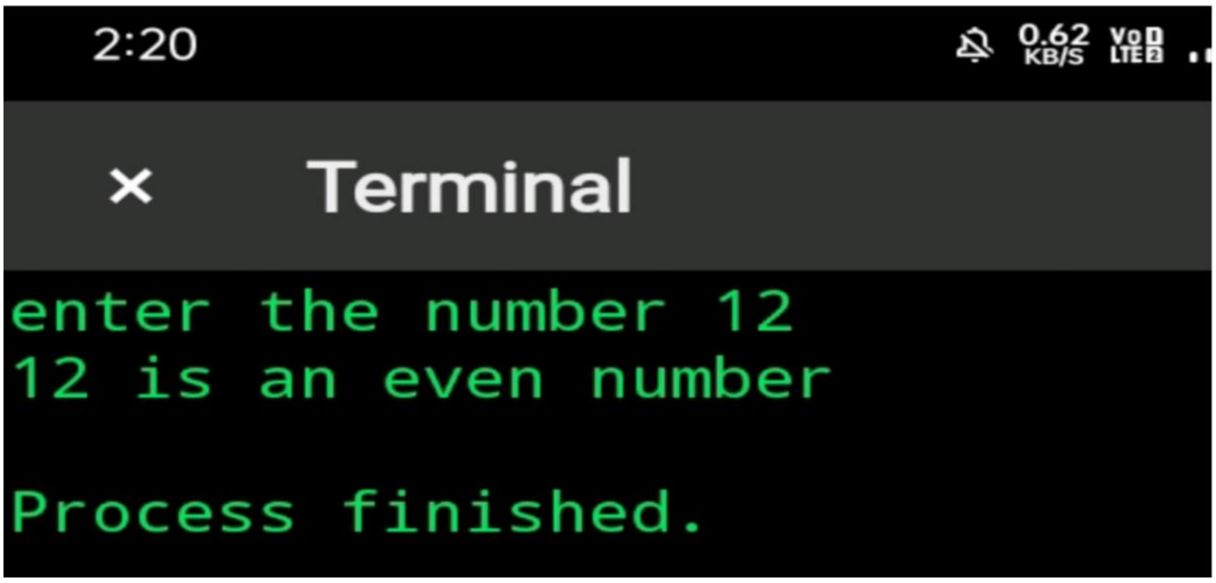
Ans: code:

```
I=int(input(“enter the number “))
If i%2==0 :
        Print(I,”is an even number”)
Else :
        Print(I,”is an odd number”)
```

O/p:



```
enter the number 21
21 is an odd number

Process finished.
```



```
enter the number 12
12 is an even number

Process finished.
```

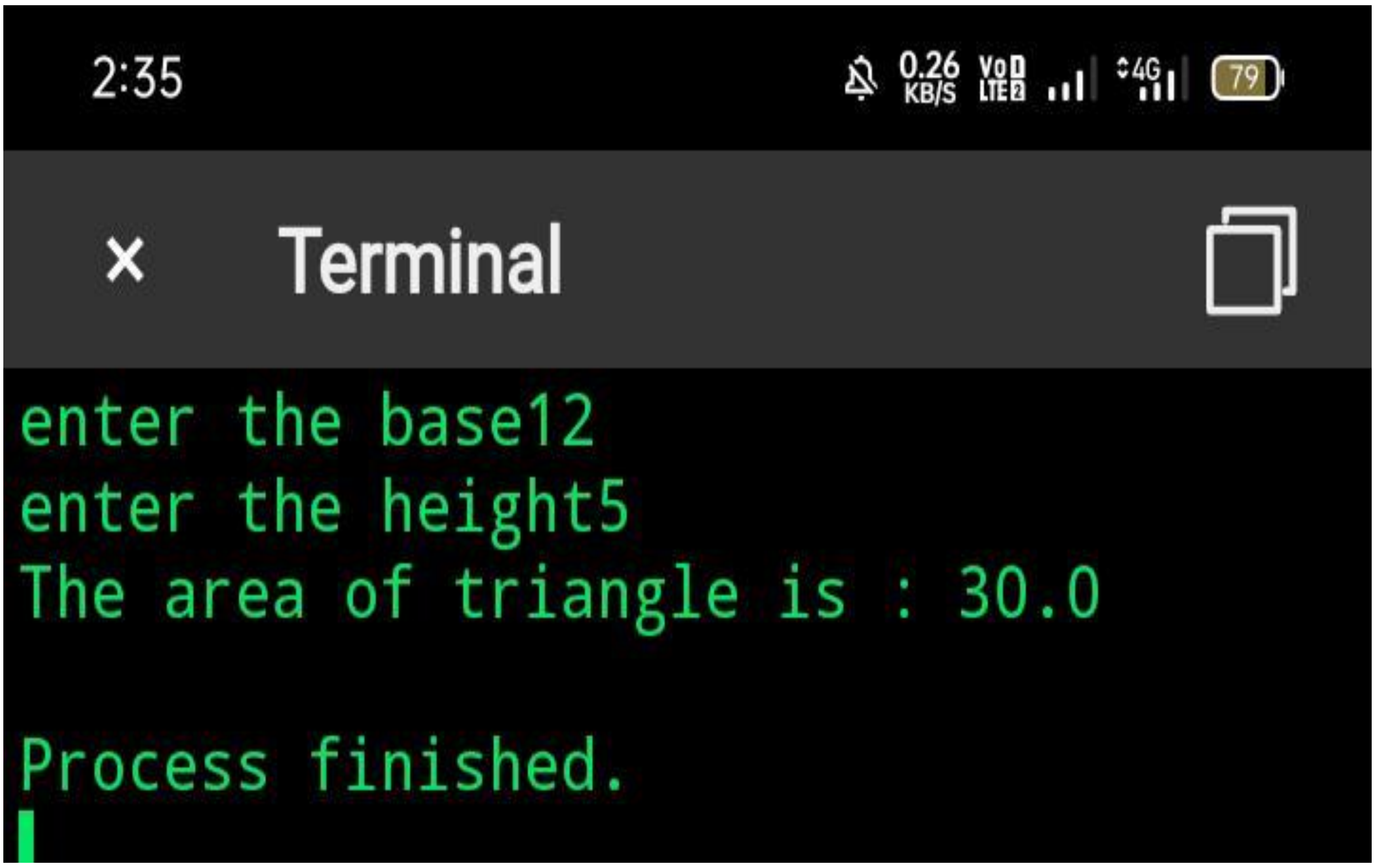
I3:- : Write a Python program that compute the area of following 1) Triangle (accepts base and height) 2) Circle (accept radius).

Ans: code

Area of Triangle:

```
B=int(input(“enter the base “))
h=int(input(“enter the height “))
triangle=0.5*b*h
print(“The area of triangle is :”,triangle)
```

O/p :



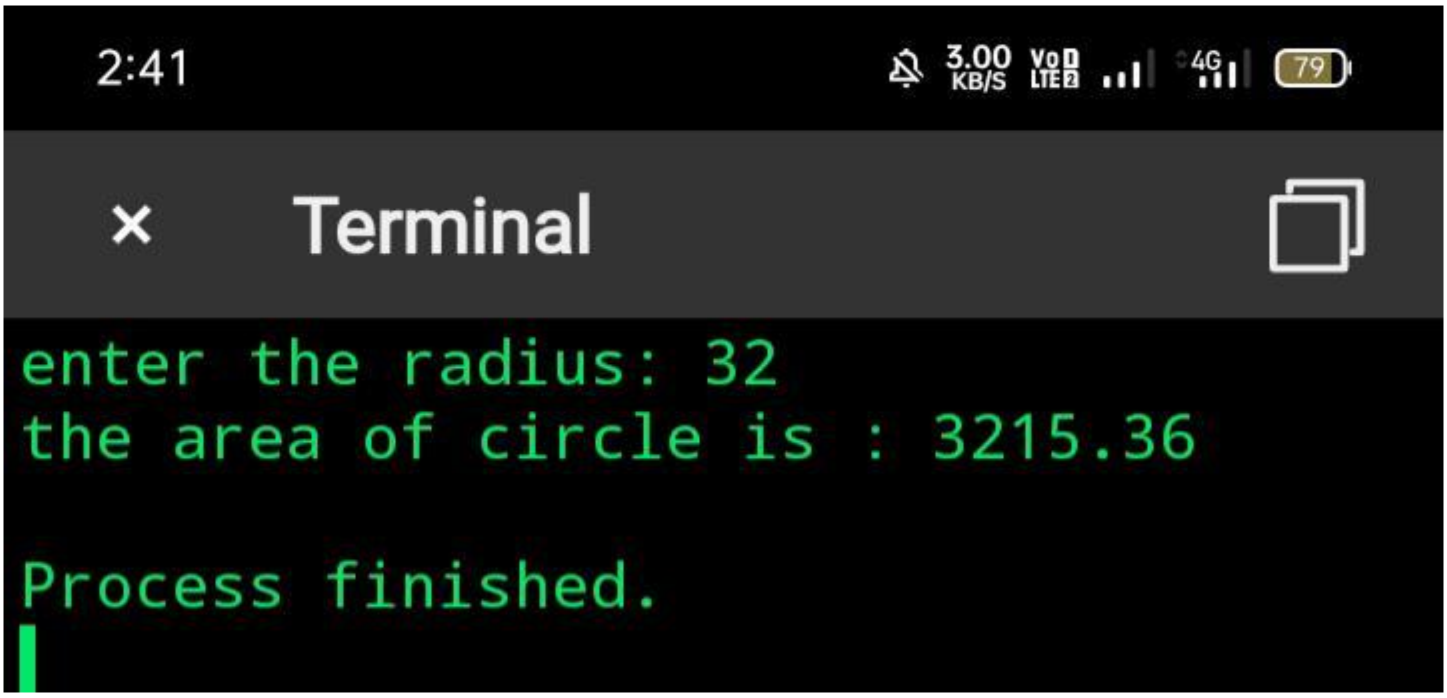
```
enter the base12
enter the height5
The area of triangle is : 30.0

Process finished.
```

Code :

Area of Circle:

```
r=int(input(“enter the radius “))
area=3.14*r*r
print(“the area of circle is :”,area)
```

O/p:



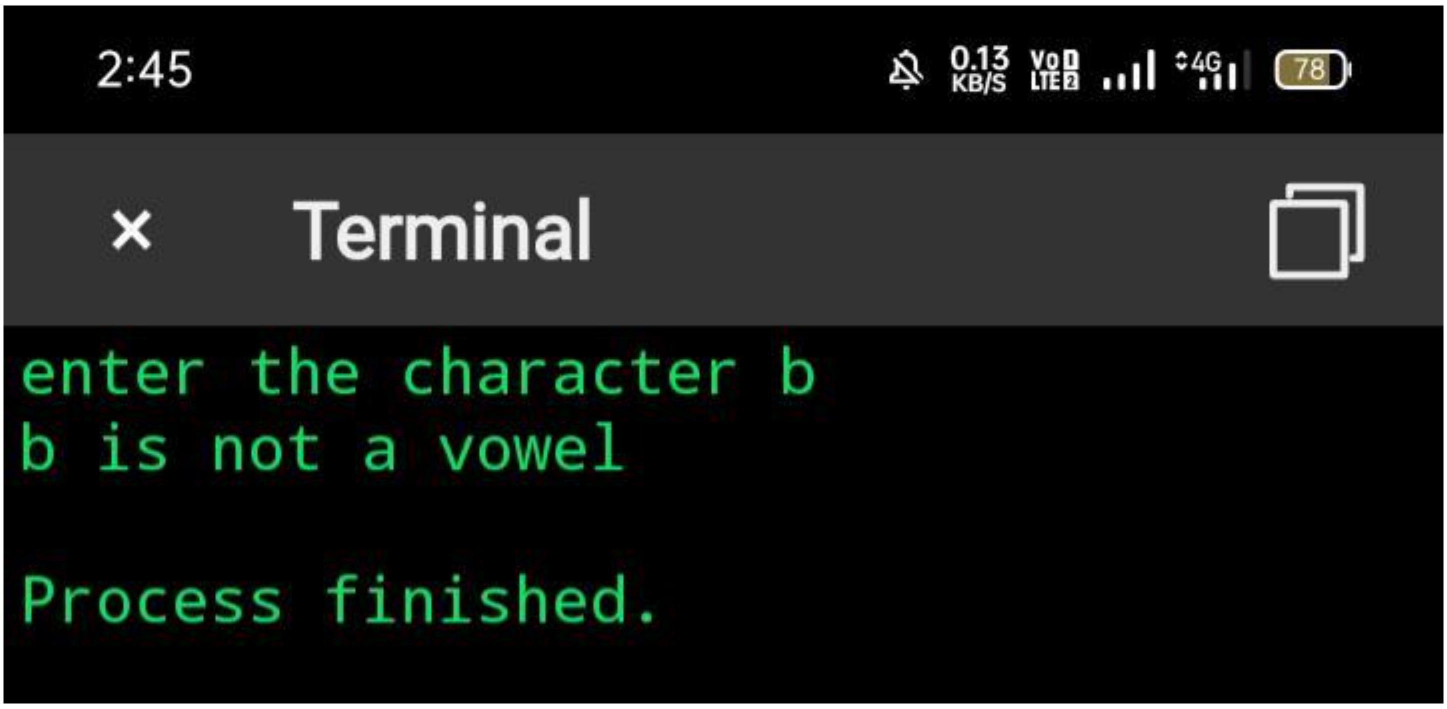
```
enter the radius: 32
the area of circle is : 3215.36

Process finished.
```

I4:- Write a Python program to test whether a passed letter is a vowel or not.

Ans: code-

```
C=str(input(“enter the character “))
If (c==’a’ or c==’e’ or c== ‘I’ or c==’o’ or c==’u’ or
c==’A’ or c==’E’ or c==’ I ‘ or c==’O’ or c==’U’) :
    Print(c,”is a vowel”)
Else :
    Print(c,”is not a vowel”)
```

O/p:



```
enter the character b
b is not a vowel

Process finished.
```

I5:-Write a Python program to compute the value of a specified principal amount, rate of interest, and a number of years.

Code:

P=int(input(“Enter the Principal Amount “))

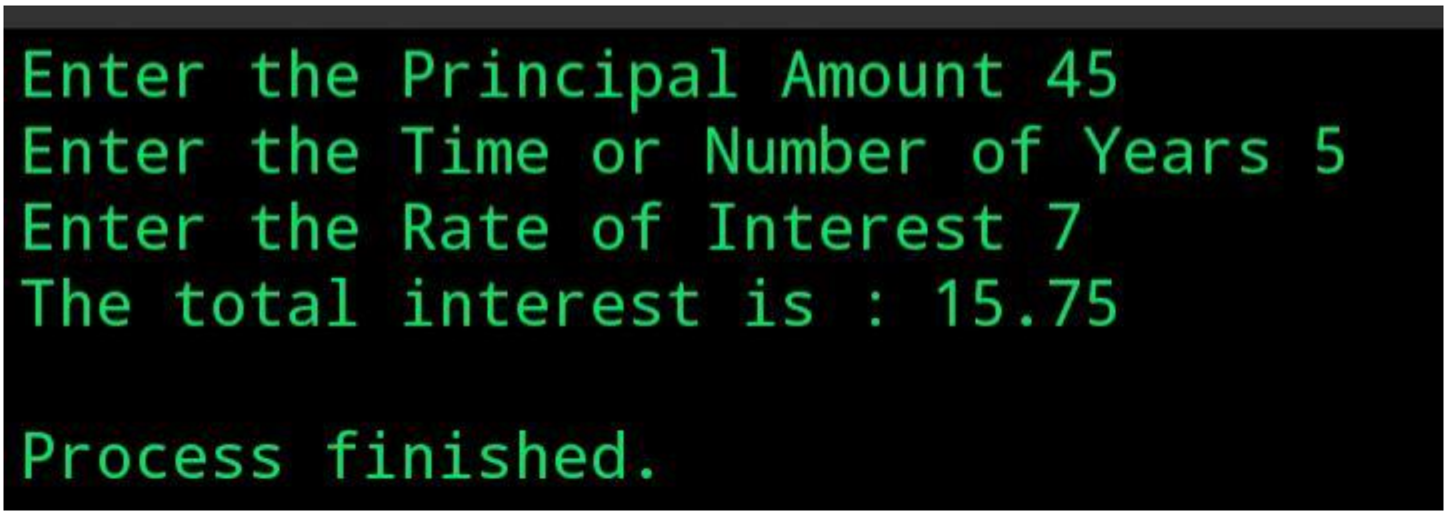
T=int(input(“Enter the Time or Number of Years “))

R=int(input(“Enter the Rate of Interest “))

Interest=P*T*R/100

Print(“The total interest is :”,Interest)

O/p:



```
Enter the Principal Amount 45
Enter the Time or Number of Years 5
Enter the Rate of Interest 7
The total interest is : 15.75

Process finished.
```

I6.What are the tools that help to find bugs or perform static analysis?

Ans: Pychecker and Pylint are the static analysis tools that help to find bugs in python.

Pychecker is an opensource tool for static analysis that detects the bugs from source code and warns about the style and complexity of the bug.

I7.What are Python decorators?

Ans: A decorator in Python is a function that accepts another function as an argument. The decorator will usually modify or enhance the function it accepted and return the modified function. This means that when you call a decorated function, you will get a function that may be a little different that may have additional features compared with the base definition.

I8.What is PEP 8?

Ans : PEP stands for Python Enhancement Proposal. A PEP is a document that describes new features proposed for Python and documents aspects of Python, like design and style, for the community.

PEP 8 exists to improve the readability of Python code. It was written in 2001 by Guido van Rossum, Barry Warsaw, and Nick Coghlan. PEP 8 is particularly important if you’re looking for a development job. Writing clear, readable code shows professionalism. It’ll tell an employer that you understand how to structure your code well.

Creator of Python, Guido van Rossum said, “Code is much more often than it is written.” The code can be written in a few minutes, a few hours, or a whole day but once we have written the code, we will never rewrite it again. But sometimes, we need to read the code again and again.

Assignment Level Advance:

A1:- Write a Python program to sort three integers without using conditional statements and loops.

Code:

A=int(input("enter the number for a "))

B=int(input("enter the number for b "))

C=int(input("enter the number for c "))

Print(a,b,c)

Max1=max(a,b,c)

Print(max1)

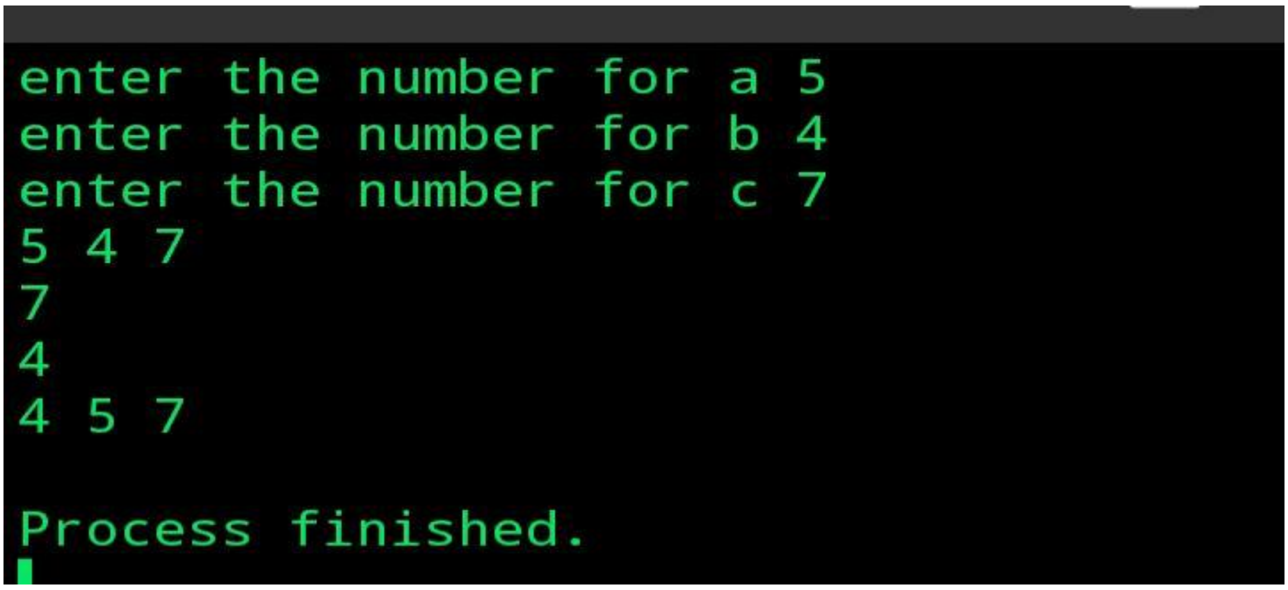
Min1=min(a,b,c)

Print(min1)

Sort=(a+b+c)-max1-min1

Print(min1,sort,max1)

O/p:



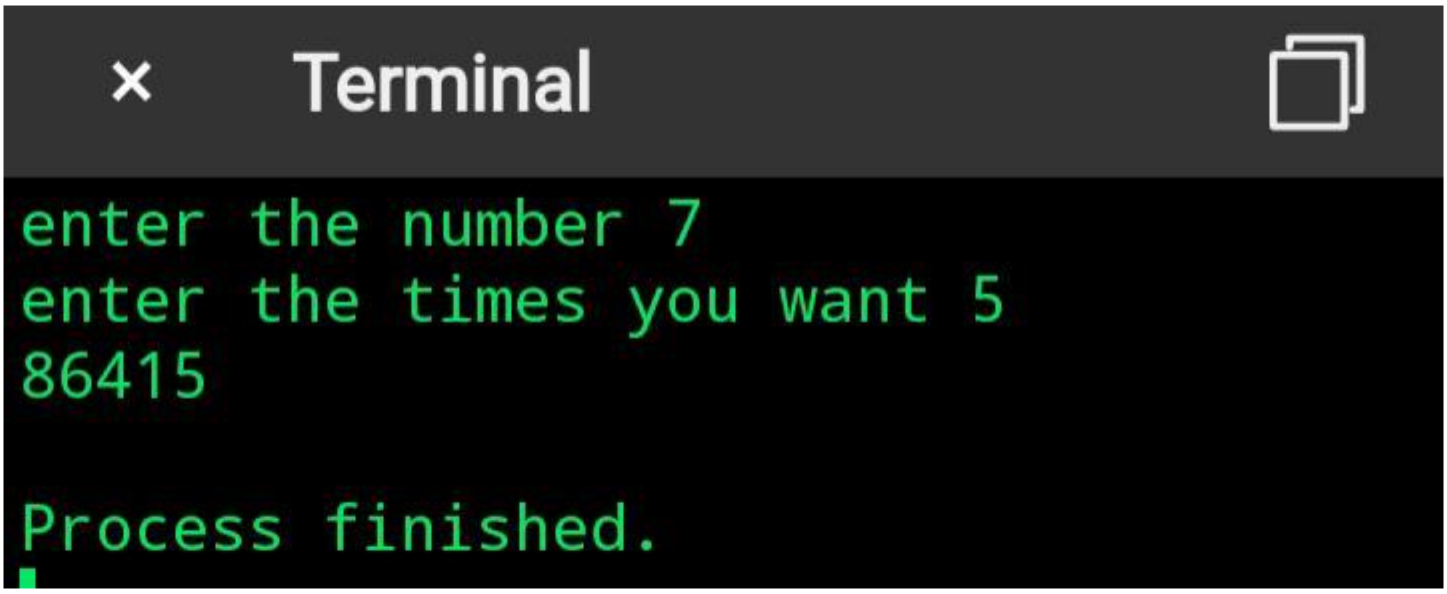
```
enter the number for a 5
enter the number for b 4
enter the number for c 7
5 4 7
7
4
4 5 7

Process finished.
```

A2:- Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.

Code:

```
N=int(input("enter the number "))

A=int(input("enter the times you want "))

C=n

S=0

For I in range(a) :

  S=s+c

  C=c*10+n

Print(s)
```

O/p:



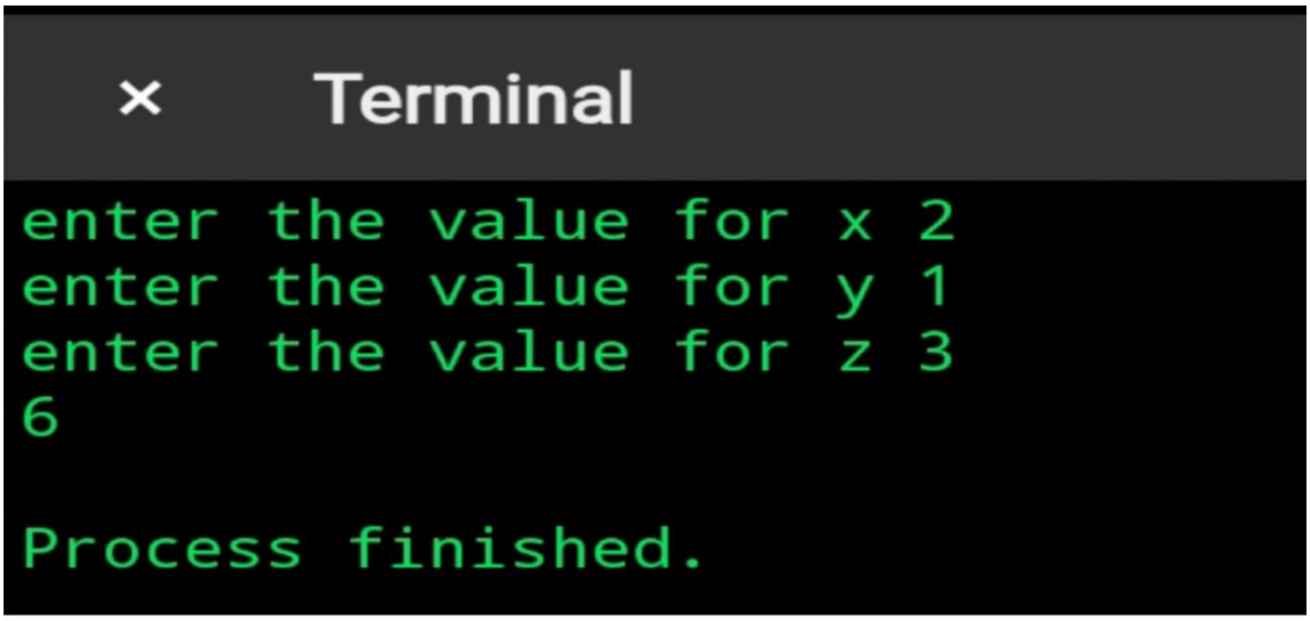
```
enter the number 7
enter the times you want 5
86415

Process finished.
```

A3:- Write a Python program to sum of three given integers. However, if two values are equal sum will be zero.

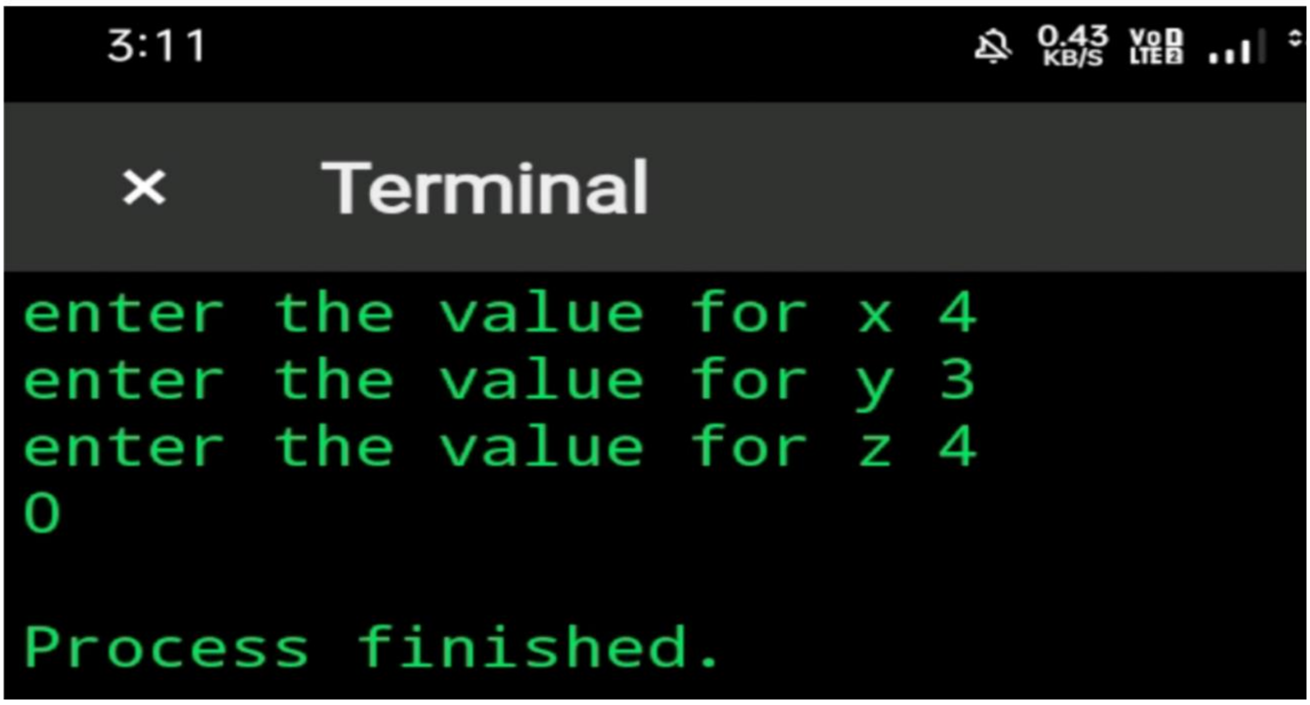
Code:

```
X=int(input(“enter the value for x “))

Y=int(input(“enter the value for y “))

Z=int(input(“enter the value for z “))

If x==y or x==z or y==z :

        Print(“0”)

Else :

        P=x+y+z

        Print(p)
```

O/p:



```
enter the value for x 2
enter the value for y 1
enter the value for z 3
6

Process finished.
```



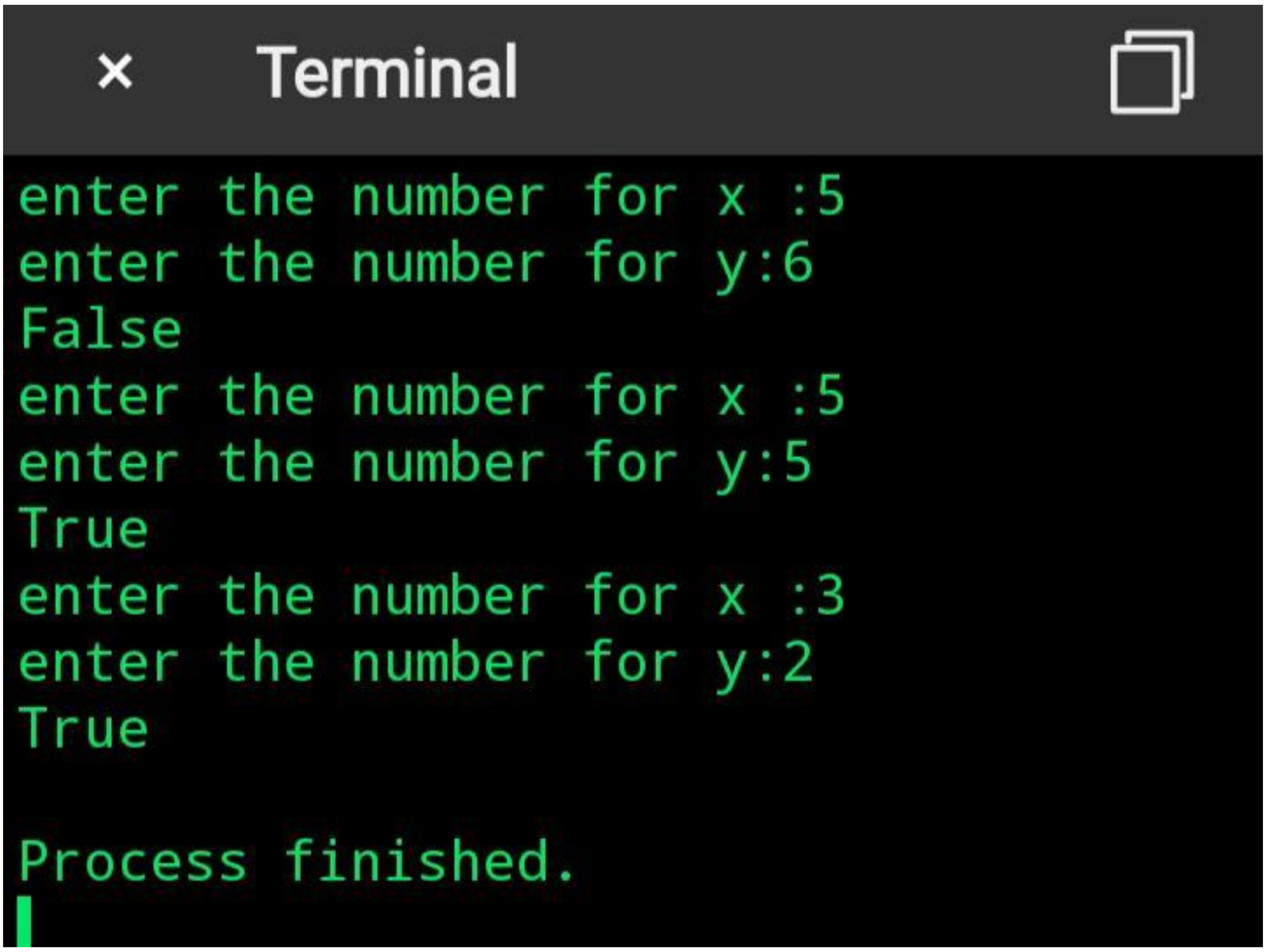
```
enter the value for x 4
enter the value for y 3
enter the value for z 4
0

Process finished.
```

A4:- Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.

Code :

```
X=int(input("enter the number for x "))

Y=int(input("enter the number for y"))

If x==y or (x+y)==5 or (x-y)==5 :

        Print("True")

Else :

        Print("False")
```

O/p:



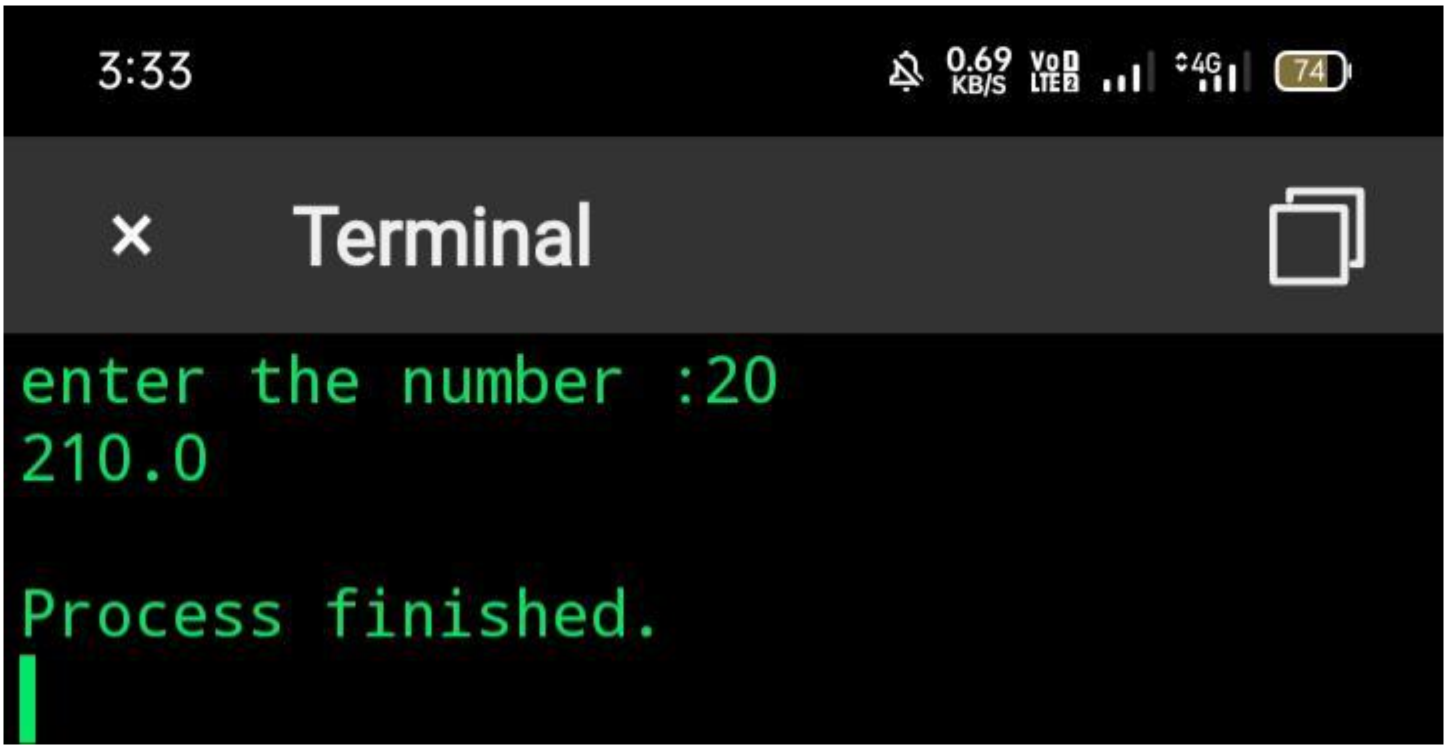
```
enter the number for x :5
enter the number for y:6
False
enter the number for x :5
enter the number for y:5
True
enter the number for x :3
enter the number for y:2
True

Process finished.
```

A5:- Write a python program to sum of the first n positive integers

Code:

```
X=int(input(“enter the number :”))

Z=x*(x+1)/2

Print(z)
```

O/p:



```
enter the number :20
210.0

Process finished.
```

•

❖ Topic: String manipulation , BasicOperation,Stringslice,Function And method

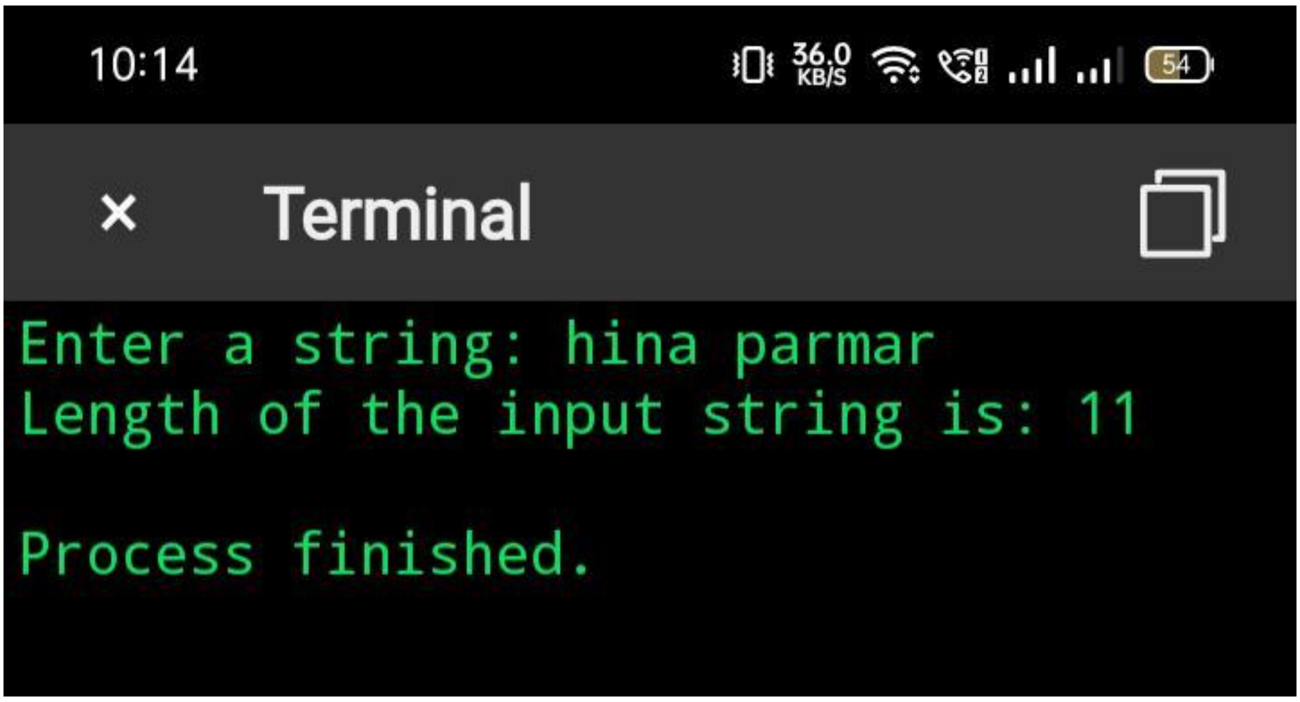
•Assignment Level Basic

B1.Write a Python program to calculate the length of a string.

Code:

```
Str = input("Enter a string: ")
Print("Length of the input string is:", len(str))
```

O/p:



```
Enter a string: hina parmar
Length of the input string is: 11

Process finished.
```

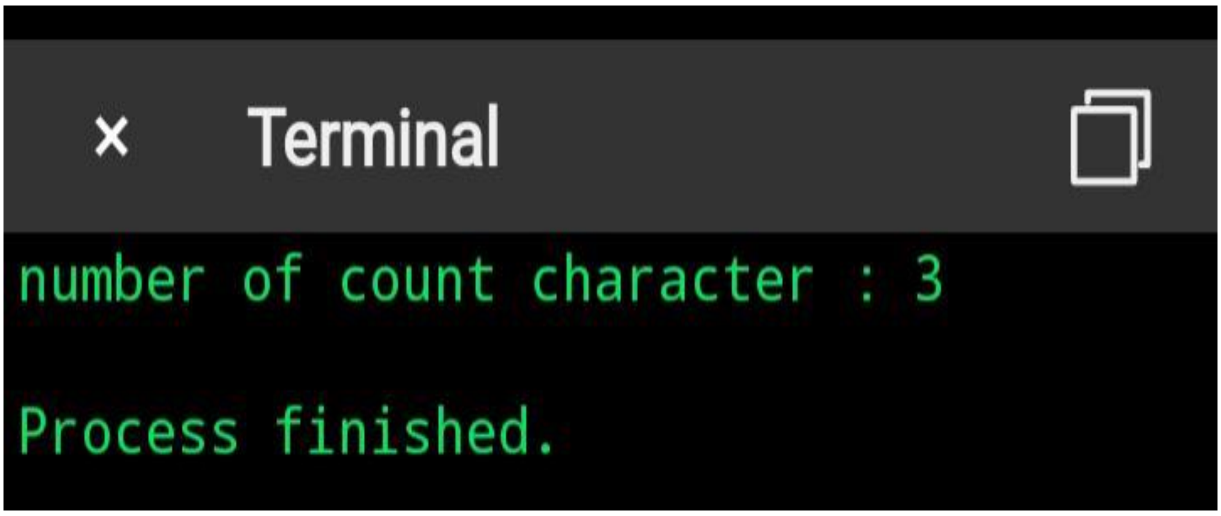
B2 . Write a Python program to count the number of characters (character frequency) in a string .

Code:

X=”Dixa Deep Dhruv”

Print(“number of count character :”,x.count(‘D’))

O/p:



```
number of count character : 3

Process finished.
```

B3. What are negative indexes and why are they used?

Ans: Python programming language supports negative indexing of arrays, something which is not available in arrays in most other programming languages. This means that the index value of -1 gives the last element, and -2 gives the second last element of an array. The negative indexing starts from where the array ends.

B4. Explain split(), sub(), subn() methods of “re” module in Python.

Ans:

Split() : The split() method splits a string into a list.

You can specify the separator, default separator is any whitespace.

Eg. x=‘1,2,3’

Print(x.split(‘,’))

[‘1’, ‘2’, ‘3’]

Sub():searches for the pattern in the string and replaces the matched strings with the replacement (repl). If the sub() function couldn't find a match, it returns the original string. Otherwise, the sub() function returns the string after replacing the matches.

Subn() : subn() belongs to the regular expressions (RE) module in Python and specifies strings or a set of strings or patterns that match it. To use this function, we need to import the RE module.

B5.How do you perform pattern matching in Python? Explain

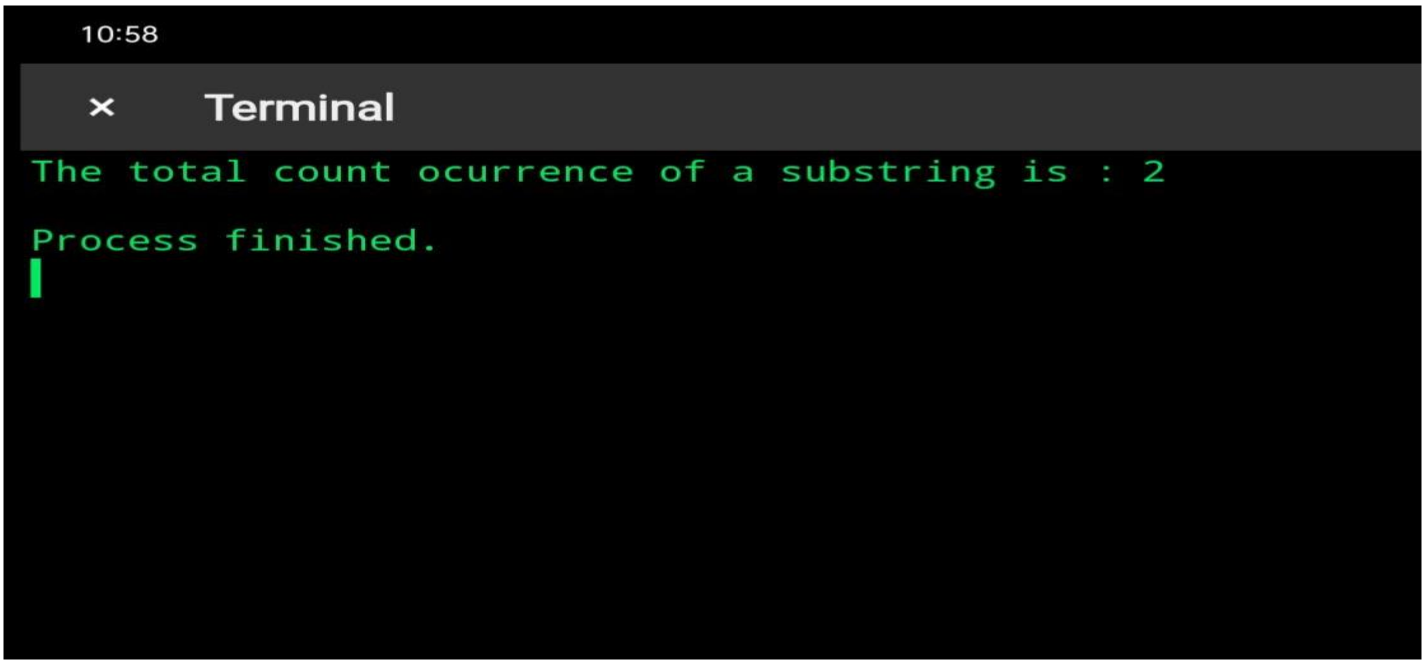
B6. Write a Python program to count occurrences of a substring in a string

Code:

Str=”The dress looks good , you have good knowledge about dress.”

Print(“The total count ocurrence of a substring is :”,str.count(“good”))

O/p:



10:58

× Terminal

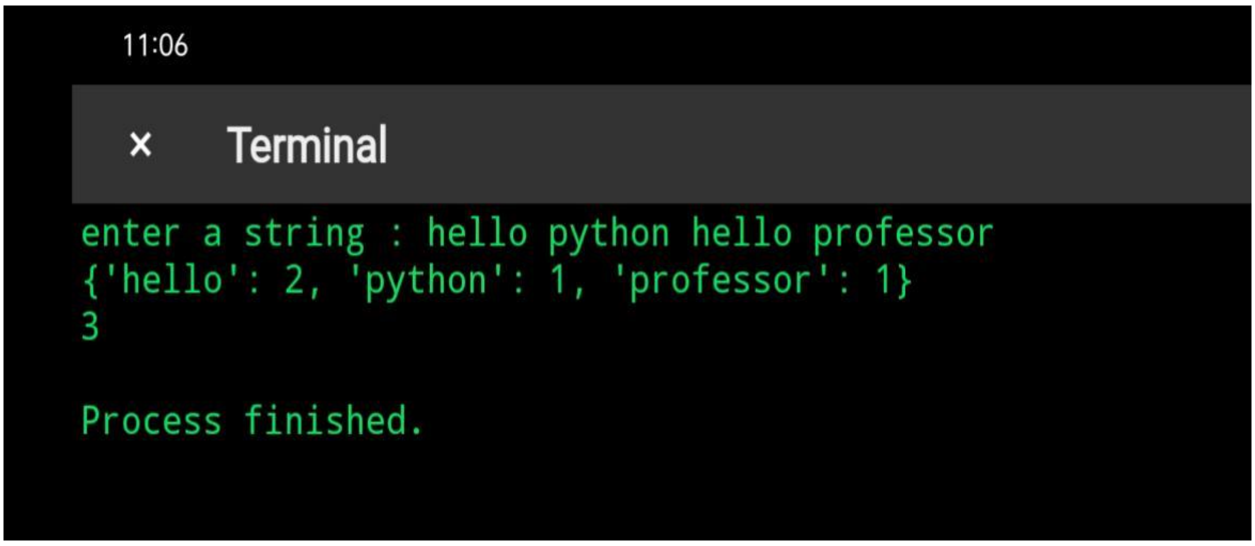
```
The total count ocurrence of a substring is : 2

Process finished.
```

B7. Write a Python program to count the occurrences of each word in a given sentence

Code:

```
Def word_count(str):
  Counts = dict()
  Words = str.split()


  For word in words:
    If word in counts:
      Counts[word]+=1
    Else:
      Counts[word]=1
  Return counts
X=str(input (“enter a string : “))
Print(word_count(x))
```

O/p:



```
enter a string : hello python hello professor
{'hello': 2, 'python': 1, 'professor': 1}
3

Process finished.
```