Unit 1

INTRODUCTION TO PYTHON

EXPERIMENT :1

Aim:

To write a python program to print the given string “Hello world” using interactive shell.

Algorithm:

Step 1: Start the program.
Step 2: Use print() function to print the given “hello world” string.
Step 3: End the program.

Program:

```
print("Hello world")
```

Output:

```
Hello world
```

Result:

The above program is executed successfully and the required output is obtained.

EXPERIMENT :2

Aim:

To write a python program to print the given “Hello world” string using variable.

Algorithm:

Step 1: Start the program

Step 2: Declare a variable and initiate the value “hello world” to the variable.

Step 3: Using print() function print the output.

Step 4: End the program.

Program:

```
string1 = "Hello world"
print(string1)
```

Output:

Hello world

Result:

The above program is executed successfully and the required output is obtained.

EXPERIMENT :3

Aim:

To write a python program to create a list and store some values and print them.

Algorithm:

Step 1: Start the program.
Step 2: Declare a variable, create a list and initiate the values for the list.
Step 3: Using print() function print the output.
Step 4: End the program.

Program:

```
list = [1,2,3,4,5,6]

print(list)
```

Output:

```
[1, 2, 3, 4, 5, 6]
```

Result:

The above program is executed successfully and the required output is obtained.

EXPERIMENT: 4

Aim:

To write a python program to print the given string.

Algorithm:

Step 1: Start the program
Step 2: Declare two variables of string type and initiate with the values.
Step 3: Using concatenation and print() function print the outputs.
Step 4: End the program

Program:

```
string1= "HelloWorld,PythonisHighlevel,GeneralpurposeProgramminglanguage "

string2="GuidoVanRossuminventedthePythonprogramminglanguagein1990s"

print(string1+string2)
```

Output:

```
HelloWorld,PythonisHighlevel,General purpose Programming language
GuidoVanRossuminventedthePythonprogramminglanguagein1990s
```

Result:

The above program is executed successfully and the required output is obtained.

UNIT-2

CONTROL FLOW AND ARRAYS

EXPERIMENT: 1

AIM:

To find SUM and MULTIPLY of any three numbers

Algorithm

Step 1: Start a program

Step 2: Declare the variables a,b,c and sum

Step 3: Add and multiple the given numbers and assign the result sum

Step 4: Print the output

Step 5: End the program

Program:

```
a = int(input("Enter first number: "))
b = int(input("Enter second number: "))
c = int(input("Enter third number: "))
sum = a+b+c
mul = a*b*c
print("The sum is:",sum,"\nThe product is: ",mul)
```

Output:

```
Enter first number: 1
Enter second number: 2
Enter third number: 3
The sum is: 6
The product is:  6
```

Result:

The given python programing is successfully executed**.**

EXPERIMENT : 2

AIM

Program to find the average of any five numbers**.**

Algorithm:

Step 1: Start a program

Step 2: Declare the variable n, average and sum

Step 3: Using the FOR loop store the input in the form of list

Step 4: Add the values of sum

Step 5: Average = sum/5

Step 6: Display the average

Step 7: Print the output

Step 8: End the program

Program:

```
n = 5
average = 0
sum = 0
for num in range(0,n+1,1):
    sum = sum+num;
average = sum / n
print("Average of first ", n, "natural number is: ", average)
```

Output:

```
Average of first 5 natural number is:  3.0
```

Result:

The given python programing is successfully executed.

EXPERIMENT : 3

AIM:

Program to find simple interest.

Algorithm:

Step 1: Start a program

Step 2: Read principal amount, rate and period

Step 3: Calculate interest using the formula SI=(p*n*r)/100

Step 4: Print simple interest

Step 5: End the program

Program:

```
p = int(input("Enter the principle amount:"))
r = int(input("Enter the rate: "))
n = int(input("Enter the time period: "))
SI  = (p*n*r)/100
print("The simple interest is: ",SI)
```

Output:

```
Enter the principle amount:5000
Enter the rate: 2
Enter the time period: 3
The simple interest is:  300.0
```

Result:

The given python programing is successfully executed.

EXPERIMENT : 4

AIM:

a) program to store and display the above mentioned cities and corresponding items using arrays.
b) Program to display name of cities where sales man has delivered maximum and minimum number of items.
c) Program to search the number of items to be delivered of a user supplied city

Algorithm:

Step 1: Start a program

Step 2: Declare the variable

Step 3: Store the values using array

Step 4: Display the list of cities using FOR loop

Step 5: Print the name of cities where maximum and

Minimum deliveries obtained

Step 6: Find respective cities using if else

Step 7: End the program

Program:

```
from array import *

city = ["Aligarh", "Agra", "Baroda", "Banaras", "Chennai", "New Delhi", "New Jalparipur",
"Howrah", "Kolkata", "Mumbai"]

items = array('i' , [18,25,13,43,8,67,29,11,56,33])

#Item display

print("List of cities and no of items delivered\n")

for i in range(0,10):

  print(city[i],"\t",items[i])

print()


#Max and Min deliveries

max = (items.index(max(items)))

min = (items.index(min(items)))

print("Maximum delivery in: ",city[max])
```

```
print("Minimum delivery in: ",city[min])


#Search for respective city
src = input("Enter the city name to be found: ")
for i in range(0,10):
  if(city[i].lower()==src.lower()):
    print("City: ",city[i])
    print("Products Sold: ",items[i])
    break
  else:
    continue
else:
  print("No match found: ",src)
```

Output:

List of cities and no of items delivered

Aligarh	18
Agra	25
Baroda	13
Banaras	43
Chennai	8
New Delhi	67
New Jalparipur	29
Howrah	11
Kolkata	56
Mumbai	33

Maximum delivery in: New Delhi

Minimum delivery in: Chennai

Enter the city name to be found: chennai

City: Chennai

Products Sold: 8

Result:

The given python programing is successfully executed.

EXPERIMENT : 5

AIM:

Program to find the volume of a sphere with radius 5

Algorithm:

Step 1: Start a program

Step 2: Define the radius of sphere

Step 3: Define the pie and assign

Step 4: Calculate the volume of the sphere as

(4/3)*math.pi*pow

Step 5: Assign the volume of sphere

Step 6: Print the volume of sphere

Step 7: End the program

Program:

```
import math
r = float(input("Enter the radius: "))
vol = (4/3)*math.pi*pow(r,3)
print("The volume is: %.2f"%vol)
```

Output:

```
Enter the radius: 4.5
The volume is: 381.70
```

Result:

The given python programing is successfully executed.

EXPERIMENT : 6

AIM:

Program to find the total wholesale book cost for 60 copies.

Algorithm:

Step 1: Start a program

Step 2: Declare the variable

Step 3: Calculate the discount using formula

Step 4: Print the discount

Step 5: Print the wholesale price of book

Step 6: End the program

Program:

```
no_of_books = int(input("Enter no of books: "))
cov_price = float(input("Enter the cover price: "))
discount = float(input("Enter the discount percentage: "))

cost = (cov_price)*(discount/100)
cost_aft_disc = cov_price - cost

ship1 = float(input("Enter the shipping price for first copy: "))
rem_charge = float(input("Enter the shipping price for other copies: "))
ship2 = rem_charge*(no_of_books-1)

total = cost_aft_disc * no_of_books
total_amnt = total + ship1 + ship2

print("The total amount of books are: %.3f"%total_amnt)
```

Output:

Enter no of books: 60

Enter the cover price: 240.95

Enter the discount percentage: 40

Enter the shipping price for first copy: 30

Enter the shipping price for other copies: 0.75

The total amount of books are: 8748.450

Result:

The given python programing is successfully executed.

Unit – 3

CLASSES AND FUNCTION

EXPERIMENT :1

AIM

program to create Teacher , Program and Student Classes with above mentioned data member sandmember functions.

ALGORITHM

- Create a class teacher with name, department, hours, programsTaught as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class program with name, department, duration as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class student with name, department, rollNo, program as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create an object for the class teacher.
- Set the details for the object using setDetails() method.
- Get the details of the instance using getDetails() method and print it.
- Create an object for the class program.
- Set the details for the object using setDetails() method.
- Get the details of the instance using getDetails() method and print it.
- Create an object for the class student.
- Set the details for the object using setDetails() method.
- Get the details of the instance using getDetails() method and print it.
- End the program.

PROGRAM

```
# Class Teacher
class Teacher:
    name = ""
    department = ""
    hours = 0
    programsTaught = 0

    # Set details
    def setDetails(self, Name, Dept, Hours, programs):
        self.name = Name
        self.department = Dept
        self.hours = Hours
        self.programsTaught = programs
```

```
    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.hours)
        details.append(self.programsTaught)

        return details

# Class Program
class Program:
    name = ""
    department = ""
    duration = 0

    # Set details
    def setDetails(self, Name, Dept, duration):
        self.name = Name
        self.department = Dept
        self.duration = duration

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.duration)

        return details

# Class student
class Student:
    name = ""
    rollNo = ""
    program = ""
    department = ""

    # Set details
    def setDetails(self, Name, rollno, program, Dept):
        self.name = Name
        self.rollNo = rollno
        self.department = Dept
        self.program = program

    # Get details
    def getDetails(self):
        details = []
```

```
        details.append(self.name)
        details.append(self.rollNo)
        details.append(self.program)
        details.append(self.department)

        return details

# Driver code

# Teacher
staff1 = Teacher()
staff1.setDetails('ashok', 'IT', 9, 11)
teacherDetail = staff1.getDetails()
print(teacherDetail)

# Program
program = Program()
program.setDetails('Python programming', 'Computer Science', 9)
programDetail = program.getDetails()
print(programDetail)

# Student
stud1 = Student()
stud1.setDetails('Ramalingam', '19CECS031', 'Computer Science', 'Python Programming')
studentDetail = stud1.getDetails()
print(studentDetail)
```

OUTPUT

```
['ashok', 'IT', 9, 11]
['Python programming', 'Computer Science', 9]
['Ramalingam', '19CECS031', 'Computer Science', 'Python Programming']
```

RESULT

The given python programing is successfully executed.

EXPERIMENT: 2

AIM

program the default department of Teacher, Program and Student should be „ComputerScience‟ ;however a different department could be assigned at runtime.

ALGORITHM:

- Create a class teacher with name, department, hours, programsTaught as data members and setDetails() and getDetails() as member functions with a constructor to give a default value for the department as “Computer Science”. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class program with name, department, duration as data members and setDetails() and getDetails() as member functions with a constructor to give a default value for the department as “Computer Science”. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class student with name, department, rollNo, program as data members and setDetails() and getDetails() as member functions with a constructor to give a default value for the department as “Computer Science”. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create 2 objects for the class teacher staff1 and staff2.
- Set the details for the objects using setDetails() method.
- Get the details of the instances using getDetails() method and print it.
- End the program.

Program Code:

```
# Class Teacher
class Teacher:
    name = ""
    department = ""
    hours = 0
    programsTaught = 0

    def __init__(self):
        self.department = "Computer Science"

    # Set details
    def setDetails(self, Name, Dept, Hours, programs):
        self.name = Name
        self.department = Dept
        self.hours = Hours
        self.programsTaught = programs
    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.hours)
        details.append(self.programsTaught)
```

```
        return details

# Class Program
class Program:
    name = ""
    department = ""
    duration = 0
    # Constructor
    def __init__(self):
        department = "Computer Science"

    # Set details
    def setDetails(self, Name, Dept, duration):
        self.name = Name
        self.department = Dept
        self.duration = duration

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.duration)

        return details

# Class student
class Student:
    name = ""
    rollNo = ""
    program = ""
    department = ""

    def __init__(self):
        self.department = "Computer Science"

    # Set details
    def setDetails(self, Name, rollno, program, Dept):
        self.name = Name
        self.rollNo = rollno
        self.department = Dept
        self.program = program

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
```

```
        details.append(self.rollNo)
        details.append(self.program)
        details.append(self.department)

        return details

# Driver code

# Teacher
staff1 = Teacher()
staff1.setDetails('ashok', 'IT', 9, 11)
Staff2.setDetails('Dinesh', 'CSE', 12, 5)
teacherDetail = staff1.getDetails()
print(teacherDetail)
teacherDetail = staff2.getDetails()
print(teacherDetail)
```

Output:

```
['ashok', 'IT', 9, 11]
['Dinesh', 'CSE', 12, 5]
```

RESULT

The given python programing is successfully executed.

EXPERIMENT :3

AIM

program to over load “+” operator to add the hours of two teachers

ALGORITHM

- Create a class teacher with name, department, hours, programsTaught as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list with __add__() with a parameter staff2. This function is used to overload the ‘+’ operator. This will return the sum of the hours of 2 teachers.
- Create a class program with name, department, duration as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class student with name, department, rollNo, program as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create an object for the class teacher.
- Set the details for the object using setDetails() method.
- Invoke the __add__() method and pass the 2 objects as parameters.
- Print the oputput.
- End the program.

PROGRAM

```
# Class Teacher
class Teacher:
    name = ""
    department = ""
    hours = 0
    programsTaught = 0

    # Set details
    def setDetails(self, Name, Dept, Hours, programs):
        self.name = Name
        self.department = Dept
        self.hours = Hours
        self.programsTaught = programs

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.hours)
        details.append(self.programsTaught)

        return details

    def __add__(self, staff2):
```

```
        total = self.hours + staff2.hours
        return total


# Class Program
class Program:
    name = ""
    department = ""
    duration = 0

    # Set details
    def setDetails(self, Name, Dept, duration):
        self.name = Name
        self.department = Dept
        self.duration = duration

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.duration)

        return details

# Class student
class Student:
    name = ""
    rollNo = ""
    program = ""
    department = ""

    # Set details
    def setDetails(self, Name, rollno, program, Dept):
        self.name = Name
        self.rollNo = rollno
        self.department = Dept
        self.program = program

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.rollNo)
        details.append(self.program)
        details.append(self.department)

        return details
```

```
# Driver code

# Teacher
staff1 = Teacher()
staff2 = Teacher()
staff1.setDetails('Venkat', 'IT', 9, 11)
staff2.setDetails('Senthil', 'CSE', 7, 15)

s3 = staff1 + staff2

print(“Total hours:”, s3)
```

OUTPUT

Total hours: 16

RESULT

The given python programing is successfully executed.

EXPERIMENT :4

AIM

Program to create two sub classes Residential Student and Non Residential Student inherited from Student class. Residential Student would have a data member Hall of Residence and Non-Residential Student would have Address as its data member.

ALGORITHM

- Create a class teacher with name, department, hours, programsTaught as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class program with name, department, duration as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class student with name, department, rollNo, program as data members and setDetails() and getDetails() as member functions. setDetails() is used to set the data members and getDetails() is used to return the values of the data members in the form of list.
- Create a class ResidentialStudent inherited from the class student with HallOfResidence as data members and Print() as member function. Print() method is used to return the values of the data members from the base class and append the value of HallOfResidence in the form of list.
- Create a class teacher inherited from the class student with Address as data members and Print() as member function. Print() method is used to return the values of the data members from the base class and append the value of Address in the form of list.
- Create objects for the classes ResidentialStudent and NonResidentialStudent.
- Set the details for the objects using setDetails() method and set the values for the HallOfResidence & Address induvigually.
- Get the details of the instances using Print() method and print it.
- End the program.

PROGRAM

```
# Class Teacher
class Teacher:
    name = ""
    department = ""
    hours = 0
    programsTaught = 0



    # Set details
    def setDetails(self, Name, Dept, Hours, programs):
        self.name = Name
        self.department = Dept
        self.hours = Hours
        self.programsTaught = programs

    # Get details
```

```
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.hours)
        details.append(self.programsTaught)

        return details

# Class Program
class Program:
    name = ""
    department = ""
    duration = 0
    # Constructor
    def __init__(self):
        department = "Computer Science"

    # Set details
    def setDetails(self, Name, Dept, duration):
        self.name = Name
        self.department = Dept
        self.duration = duration

    # Get details
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.department)
        details.append(self.duration)

        return details

# Class student
class Student:
    name = ""
    rollNo = ""
    program = ""
    department = ""

    # Set details
    def setDetails(self, Name, rollno, program, Dept):
        self.name = Name
        self.rollNo = rollno
        self.department = Dept
        self.program = program

    # Get details
```

```
    def getDetails(self):
        details = []
        details.append(self.name)
        details.append(self.rollNo)
        details.append(self.program)
        details.append(self.department)

        return details

# Class residential student
class ResidentialStudent(Student):
    HallOfResidence = 0

    def Print(self):
        details = self.getDetails()
        details.append(self.HallOfResidence)
        return details

class NonResidentialStudent(Student):
    Address = ""

    def Print(self):
        details = self.getDetails()
        details.append(self.Address)
        return details

# Driver code

# Student
stud1 = ResidentialStudent()
stud2 = NonResidentialStudent()

stud1.setDetails('Ram', '12', 'Computer Science', 'Python Programming')
stud1.HallOfResidence = 203
stud2.setDetails('Sam', '24', 'Computer Science', 'Python Programming')
stud2.Address = "Ram Nagar, Coimbatore, Tamilnadu - 641022"

stud1Det = stud1.Print()
stud2Det = stud2.Print()

print(stud1Det)
print(stud2Det)
```

OUTPUT

['Ram', '12', 'Computer Science', 'Python Programming', 203]

['Sam', '24', 'Computer Science', 'Python Programming', 'Ram Nagar, Coimbatore, Tamilnadu - 641022']

RESULT

The given python programing is successfully executed.

UNIT - 4

FILE HANDLING

EXPERIMENT:1

AIM

Program to print number of days in a month

ALGORITHM

step 1: START

step 2: Declare the variable

step 3: Declare a function using if-else condition to calculate number of days in a month

step 4: Print number of days in a monday

step 5: END

PROGRAM

```
class monthdays:
    def no_of_days(self, year, month):
    leap = 0
    if year % 4 == 0:
    leap = 1
    elif year % 100 == 0:
    leap = 0
    if month == 2:
    return 28 + leap
    list = [1,3,5,7,8,10,12]
    if month in list:
    return 31
    return 30

    ob = monthdays()
```

```
year = int(input("Enter the year: "))

month = int(input("Enter the month number ranges 1 - 12: "))

print(ob.no_of_days(year,month))
```

OUTPUT

```
Enter the year: 2017
Enter the month number ranges 1 - 12: 4
30
```

RESULT

The given python programing is successfully executed.

EXPERIMENT:2

AIM

Program to find the area of triangle and show its type

ALGORITHM

step 1: START

step 2: Declare the variable

step 3: Declare a function to find a valid triangle and then define the type.

Step 4 : calculate the area of triangle

step 5 : Print the value

step 6 : END

PROGRAM

```
#Function to define whether given is a valid triandle or not
    def side_check(a, b, c):
        if a+b>=c and b+c>=a and c+a>=b:
            return True
        else:
            return False

    #Function to define the type
    def type_of_tri(a, b, c):
        if a==b and b==c:
            print("Triangle is Equilateral.")
        elif a==b or b==c or a==c:
            print("Triangle is Isosceles.")
        else:
            print('Triangle is Scalane.')

    #Getting three sides
    side_a = float(input('Enter length of side a: '))
```

```
side_b = float(input('Enter length of side b: '))

side_c = float(input('Enter length of side c: '))


#Function calling and decision making

if side_check(side_a, side_b, side_c):

    type_of_tri(side_a, side_b, side_c)

#Calculate the semi-perimeter

    semi = (side_a+side_b+side_c)/2

      #Calculate the area

    area = (semi*(semi-side_a)*(semi-side_b)*(semi-side_c)) ** 0.5

    print('The area of the triangle is %0.2f' %area)


else:

    print('Tringle is not possible from given sides.')
```

OUTPUT

```
Enter length of side a: 10
Enter length of side b: 10
Enter length of side c: 10
Triangle is Equilateral.
The area of the triangle is 43.30
```

RESULT

The given python programing is successfully executed.

EXPERIMENT:3

AIM

Program to convert the capital letter if it is a small letter and Vice-Versa.

ALGORITHM

step 1: START

step 2: Declare the char data type to get the value from input

step 3: call the function swapcase to change the character from upper case to lower case vice versa.

Step 4 : print the value.

Step 5 : END

PROGRAM

```
char = input("Enter the character to be case changed: ")
print(char.swapcase())
```

OUTPUT

```
Enter the character to be case changed: G
g
```

RESULT

The given python programing is successfully executed.

EXPERIMENT:4

AIM

Program to find those numbers which are divisible by 7 and multiple of 5,between 1500 and 2700

ALGORITHM

step 1: START

step 2: Declare an empty list

step 3: create a FOR loop to check the condition

Step 4 : print the value.

Step 5 : END

PROGRAM

```
for x in range(1500 , 2701):
    if (x%7 == 0) and (x%5 == 0):
        emp_list.append(str(x))
#Printing the result
print (','.join(emp_list))
```

OUTPUT

1505,1540,1575,1610,1645,1680,1715,1750,1785,1820,1855,1890,1925,1960,1995,2030,2065,2100,2135,2170,2205,2240,2275,2310,2345,2380,2415,2450,2485,2520,2555,2590,2625,2660,2695

RESULT

The given python programing is successfully executed.

EXPERIMENT:5

AIM

Program to ask the user for a number.Depending on whether the number is even or odd,print out an appropriate message to the user

ALGORITHM

step 1: START

step 2: Declare the variable to get input from user

step 3: using if-else condition check the value is odd or even

Step 4 : print the value.

Step 5 : END

PROGRAM

```
num = int(input("Enter the integer to be checked whether odd or even: "))
if num%2 == 0:
  print("The given number is even")
else:
  print("The given number is odd")
```

OUTPUT

```
Enter the integer to be checked whether odd or even: 17
The given number is odd
```

RESULT

The given python programing is successfully executed.

UNIT V

TEMPLATES

EXPERIMENT :1

AIM

A function to swap two numbers using functional template. The number could be Integer or float that depends on the user inputs.

ALGORITHM

Step 1: Start a program

Step 2: Declare the variable x,y

Step 3: Swap two function using functional template

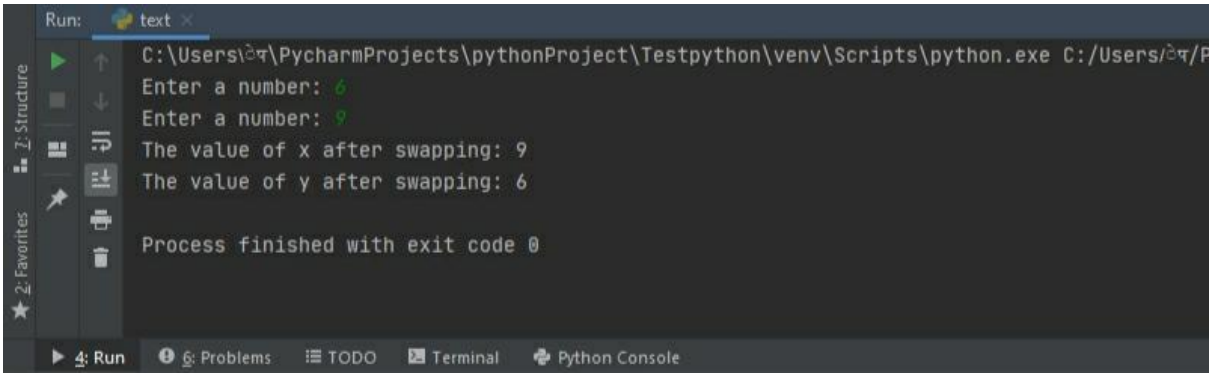
Step 4: Print the output

Step 5: End the program

PROGRAM

```
x  = int(input("Enter a number: "))
y = int(input("Enter a number: "))
temp = x
x = y
y = temp
print('The value of x after snapping: {}'.format(x))
print('The value of y after snapping: {}'.format(y))
```

OUTPUT



RESULT:

The given python programming is successfully executed

EXPERIMENT: 2

AIM

Create a class matrix that has matrix data members and getvalue(), setvalue() as member function. Write a program in python to perform Matrix operation. Add and multiplication using class template.

ALGORITHM

Step 1: Start a program

Step 2: Declare the variable x,y and result

Step 3: Add the two matrix and print the output

Step 4: Multiply the two matrix and print the output

Step 5: End the program

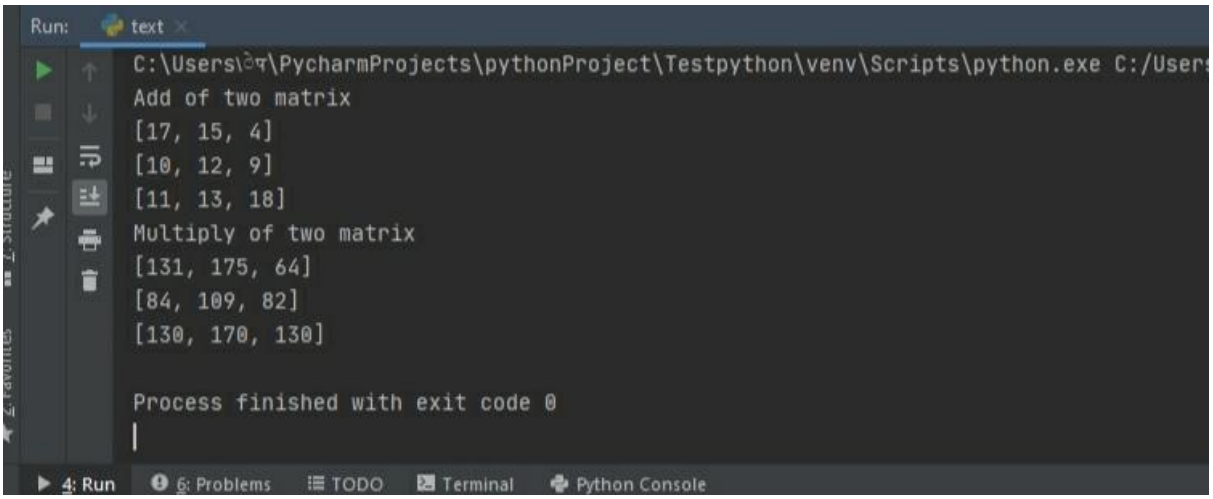
PROGRAM

```
X = [[12,7,3],
    [4 ,5,6],
    [7 ,8,9]]
Y = [[5,8,1],
    [6,7,3],
    [4,5,9]]


result = [[0,0,0]
             [0,0,0],
            [0,0,0]]
Print('Add of two matrix')
# iterate through rows
for i in range(len(X)):
   # iterate through columns
   for j in range(len(X[0])):
       result[i][j] = X[i][j] + Y[i][j]
for r in result:
```

```
    print(r)
Print('multiply of two matrix')
# iterate through rows of X
for i in range(len(X)):
    # iterate through columns of Y
    for j in range(len(Y[0])):
        # iterate through rows of Y
        for k in range(len(Y)):
            result[i][j] += X[i][k] * Y[k][j]
for r in result:
    print(r)
```

OUTPUT



RESULT

The given python programming is successfully executed.

EXPERIMENT: 3

AIM

Write a program in Python to check a number for Armstrong?

ALGORITHM

Step 1: Start a program
Step 2: Declare the variable num and sum

Step 3: The digits is raised to the power power of the number of digits and stored

Step 4: Chech if the sum obtained is same as the original number

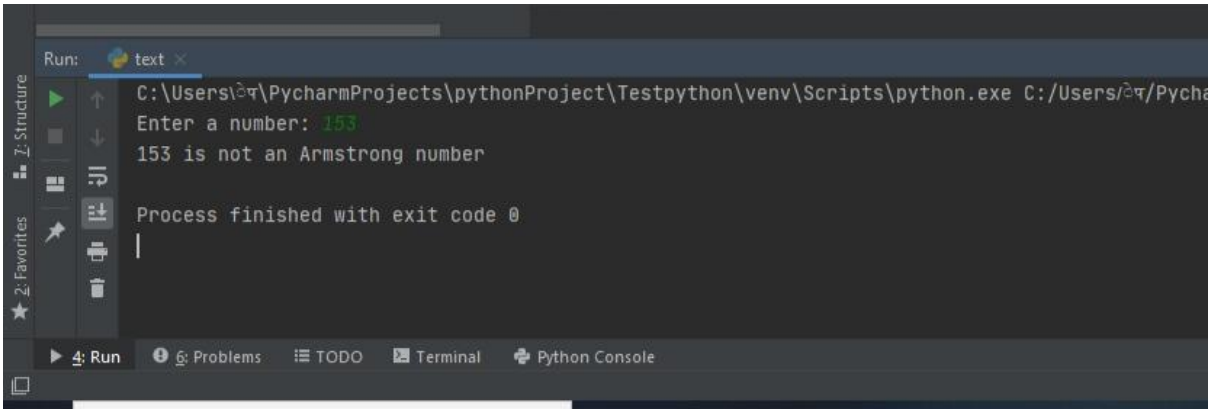
Step 5: Print the result

Step 6: End the program

PROGRAM

```
#  input from the user
num = int(input("Enter a number: "))
sum = 0
# find the sum of the cube of each digit
temp = num
while temp > 0:
   digit = temp % 10
   sum += digit ** 8     #upto eight digit only
   temp //= 10
# showing  result
if num == sum:
   print(num,"is an Armstrong number")
else:
   print(num,"is not an Armstrong number")
```

OUTPUT



RESULT

The given python programming is successfully executed

EXPERIMENT:4

AIM

Write a program in Python to print factorial of a number ?

ALGORITHM

Step 1: Start the program

Step 2: Declare the variablr of num and factorial

Step 3: Iternate from 1 to n using for loop

Step 4: Using the formula calculate the factorial

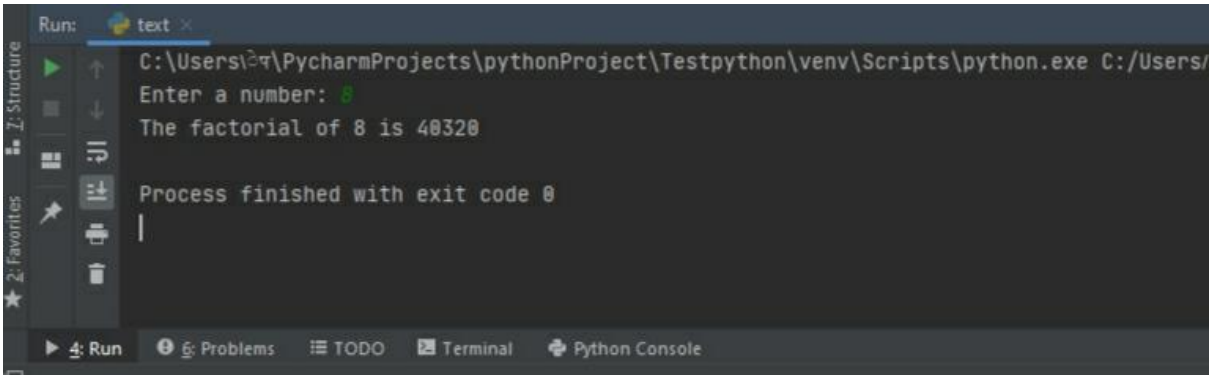
Step 5: Print the output

Step 6: End the program

PROGRAM

```
# To take input from the user
num = int(input("Enter a number: "))
factorial = 1
if num < 0:         #if negative number given by user
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:      #if the number is equal to zero
   print("The factorial of 0 is 1")
else:               #if the numbers are postive
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

OUTPUT



RESULT

The given python programming is successfully executed

EXPERIMENT :5

AIM

Write a program in Python to generate first n Fibonacci terms recursively ?

ALGORITHM

Step 1: Start the program

Step 2: Declare the variable of nterms and count,n1,n2

Step 3: check whether the nterms are positive number

Step 4: Make nterms in Fibonacci number

Step 5: Print the output

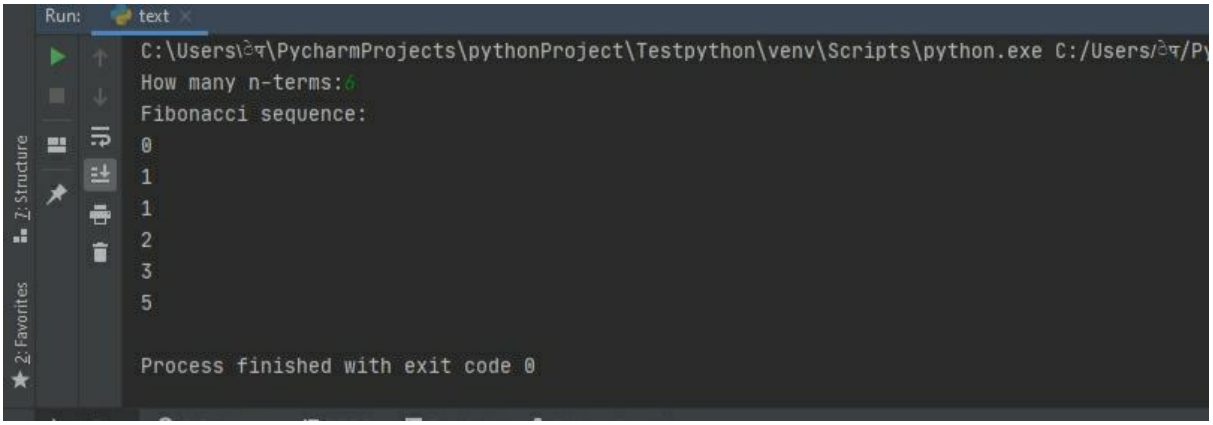
Step 6: End the program

PROGRAM

```
nterms = int(input("How many n-terms:"))
# first two terms
n1, n2 = 0, 1
count = 0

# check if the number of terms is valid
if nterms <= 0:
   print("Please enter a positive integer")
elif nterms == 1:
   print("Fibonacci sequence upto",nterms,":)
   print(n1)
else:
   print("Fibonacci sequence:")
   while count < nterms:
       print(n1)
       nth = n1 + n2
       n1 = n2
       n2 = nth
       count += 1
```

OUTPUT



RESULT

The given python programming is successfully executed

EXPERIMENT:6

AIM

Write a program in Python to compute factorial of an integer n recursively?

ALGORITHM

Step 1: Start a program

Step 2: Declare the variable num

Step 3: Check wether the num is greater than 1

Step 4: Multiply the n with recur factorial

Step 5: Print the output

Step 6: End the program

PROGRAM

```
def recur_factorial(n):
  if n == 1:
      return n
  else:
      return n*recur_factorial(n-1)

num = int(input("Enter a number: "))

# check if the number is negative
if num < 0:
  print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
  print("The factorial of 0 is 1")
else:
  print("The factorial of", num, "is", recur_factorial(num))
```

OUTPUT

RESULT

The given python programming is successfully executed