FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

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FOCUS ON EXCELLENCE

20MCA131 PROGRAMMING LAB

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FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

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FOCUS ON EXCELLENCE

CERTIFICATE

This is to certify that this is a Bonafide record of the Practical work done by ***ADHEENA JOY (FIT21MCA-2006)*** *in the* ***20MCA131 PROGRAMMING LAB*** *Laboratory towards the partial fulfilment for the award of the Master Of Computer Applications during the academic year 2021-2022.*

Signature of Staff in Charge

Name:

Signature of H O D

Name:

Date of University practical examination ……

Signature of
Internal Examiner

Signature of
External Examiner

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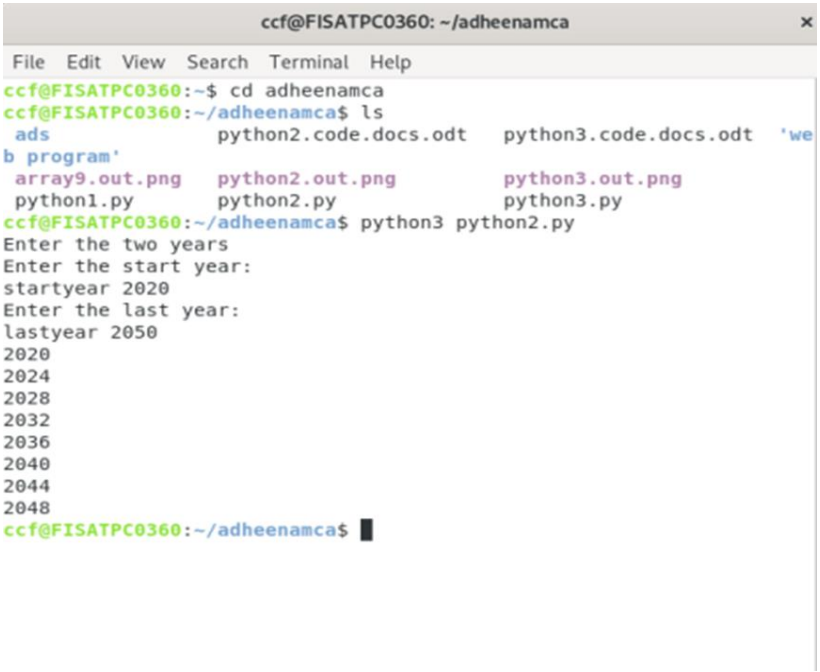
AIM

1.Display future leap years from current year to a final year entered by User.

PROGRAM CODE

```
print("Enter the two years:")

print("Enter the start year:")

startyear=int(input("startyear"))

print("Enter the last year:")

lastyear=int(input("lastyear"))

for year in range(startyear,lastyear):

if (year%4==0) and (year%100!=0) or (year%400==0): print (year)
```

OUTPUT



AIM

2.List comprehensions:

a) Generate positive list of numbers from a given list of integers.

b) Squares of N numbers

c) Form a list of vowels selected from a given word

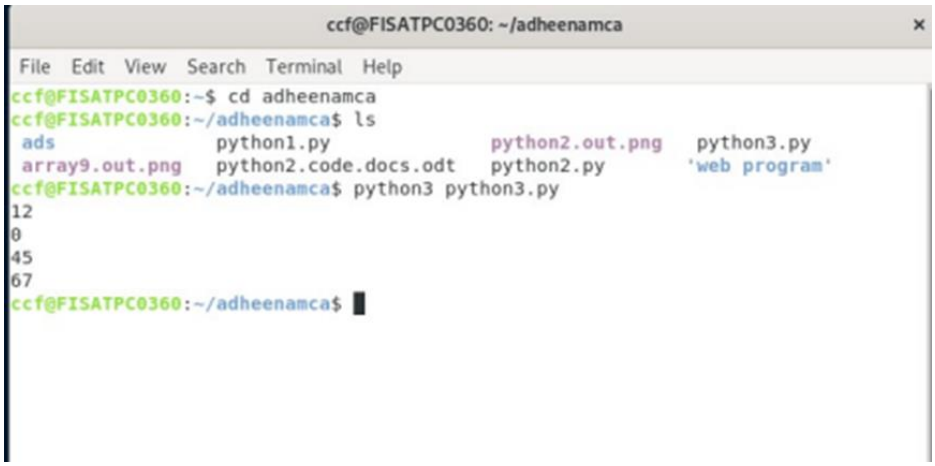
d) List ordinal value of each element of a word

PROGRAM CODE

a)Generate positive list of numbers from a given list of integers.

```
list1=[12,-1,-2,0,45,67]
for num in list1:
if (num>=0):
print(num)
```

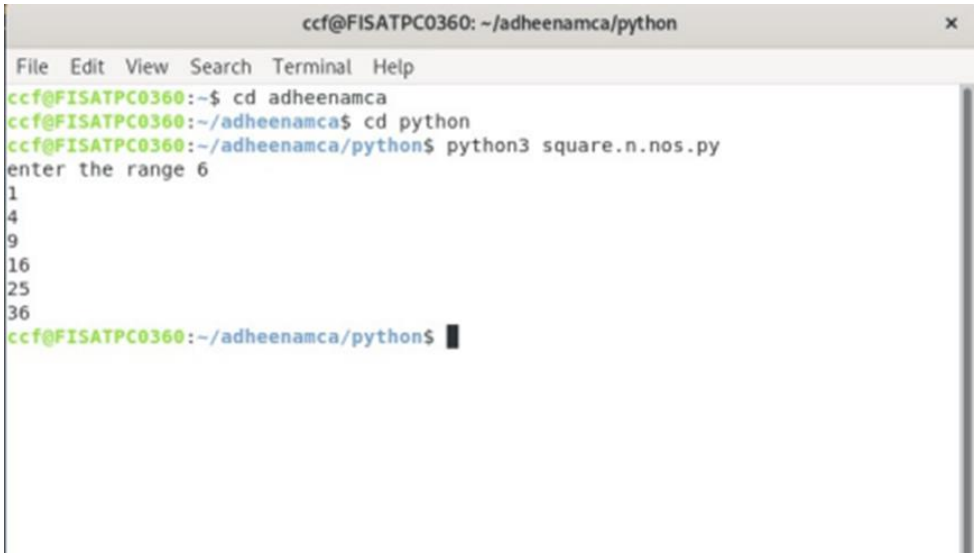
OUTPUT



b)Square of N numbers

```
n=int(input("enter the range"))
for num in range(1,n+1):
num=num*num
print(num)
```

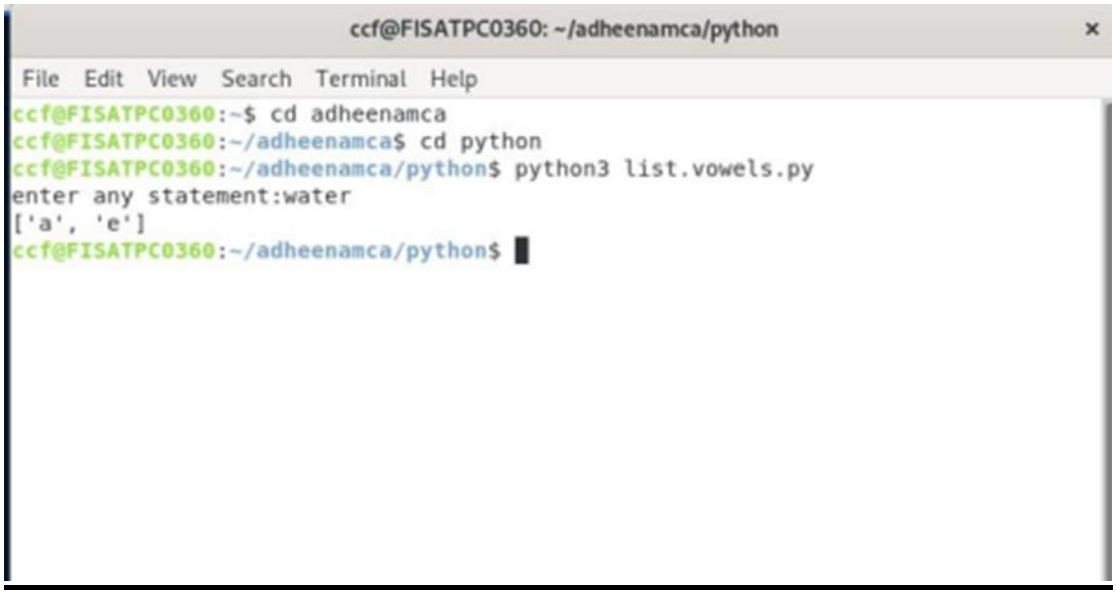
OUTPUT



c)Form a list of vowels selected from a given word.

```
s=input("enter any statement:")
L=[]
for i in s:
if i in "aeiouAEIOU":
L.append(i)
print(L)
```

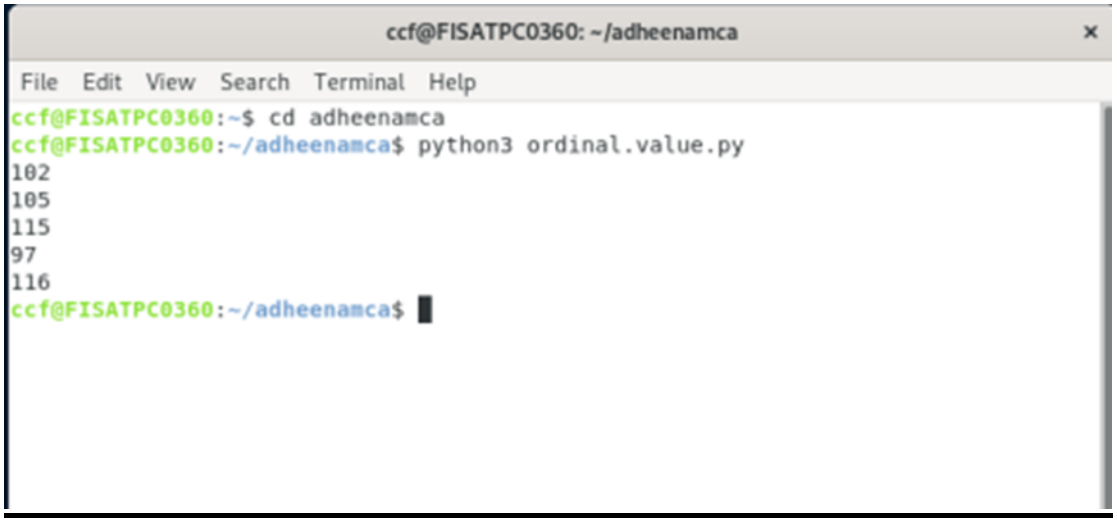
OUTPUT



d)List ordinal values of each element of a word.

```
list=['f','i','s','a','t']
for i in range(0,5):
value=ord(list[i])
print(value)
```

OUTPUT



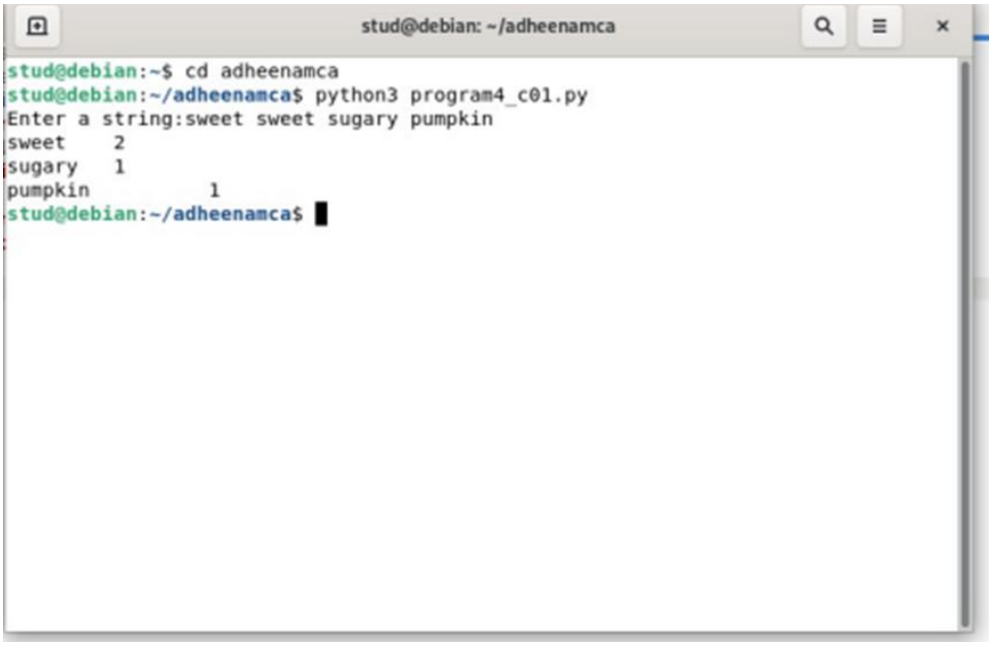
AIM

3.Count the occurrences of each word in a line of text.

PROGRAM CODE

```
list1=[]

list2=[]

x=input("Enter a string:")

for i in x.split(" "):

 list1.append(i)

 if i not in list2:

 list2.append(i)

for i in list2:

 print(i,"\t",list1.count(i))
```

OUTPUT



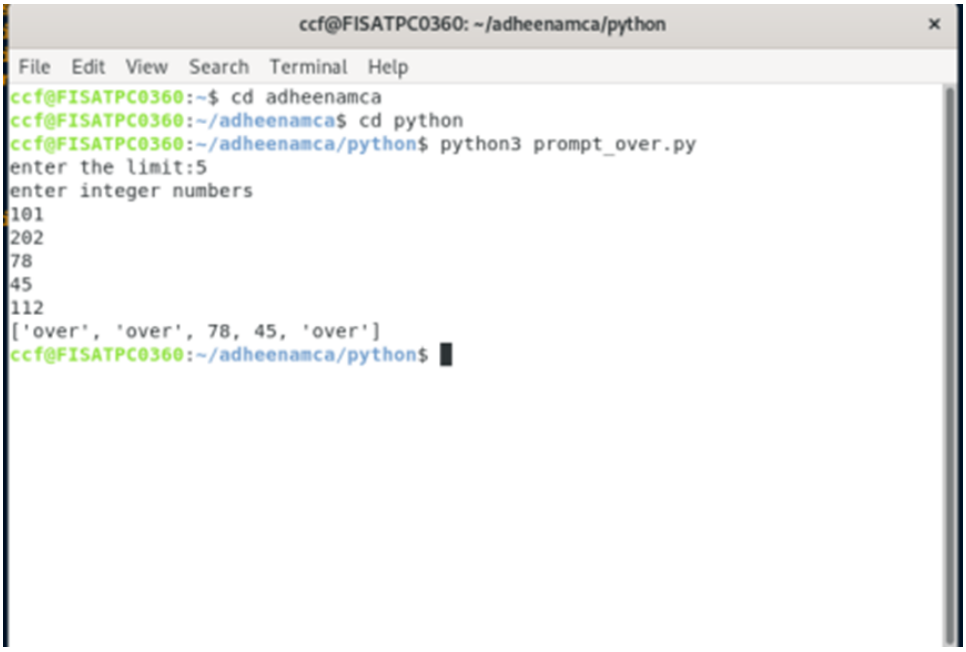
AIM

4. Prompt the user for a list of integers. For all values greater than 100, store ‘over’ instead.

PROGRAM CODE

```
list=[]
n=int(input("enter the limit:"))
print("enter integer numbers")
for i in range(0,n):
j=int(input())
if(j> 100):
list.append("over")
else:
list.append(j)
print(list)
```

OUTPUT



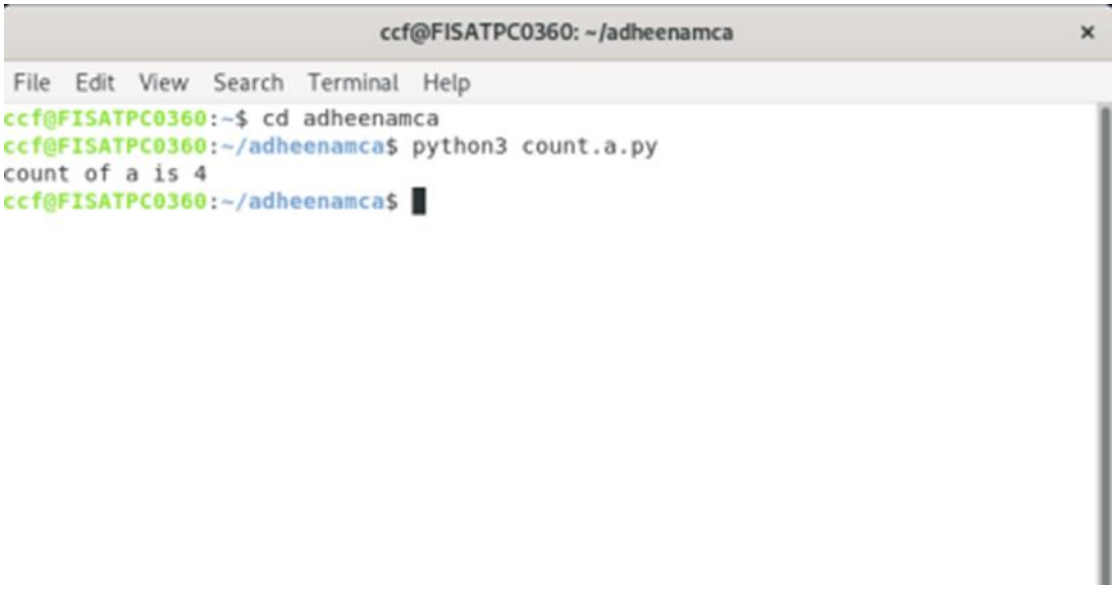
AIM

5.Store a list of first names. Count the occurrences of ‘a’ within the list

PROGRAM CODE

```
list=["anna","deepa","lali"]
count=0
for word in list:
for i in word:
if (i=='a'):
count+=1
print("count of a is",count)
```

OUTPUT



AIM

6.Enter 2 lists of integers. Check

a. whether list are of same length

b. whetherlist sums of same value

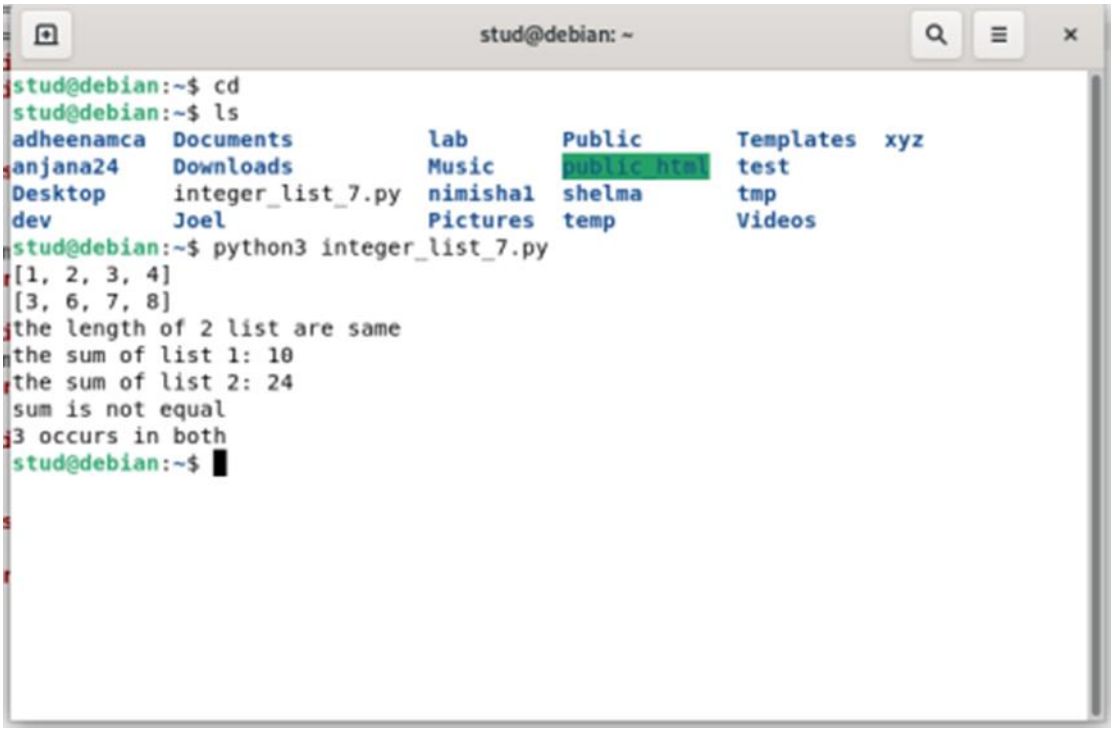
c. whether any value occur in both.

PROGRAM CODE

```
l1=[1,2,3,4]
l2=[5,6,7,8]
print(l1)
print(l2)
if len(l1)==len(l2):
print("the length of 2 list are same") else:
print("the length of 2 list are not same")
sum1=0
for i in range(len(l1)):
sum1=sum1+l1[i]
print("the sum of list 1:",sum1)
sum2=0
for j in range(len(l2)):
sum2=sum2+l2[j]
print("the sum of list 2:",sum2)
if sum1==sum2:
print("sum is equal")
else:
print("sum is not equal")
flag=0
for i in l1:
if i in l2:
```

```
print(i,"occurs in both")

flag=1

if(flag==0):

print("there is no common")
```

OUTPUT



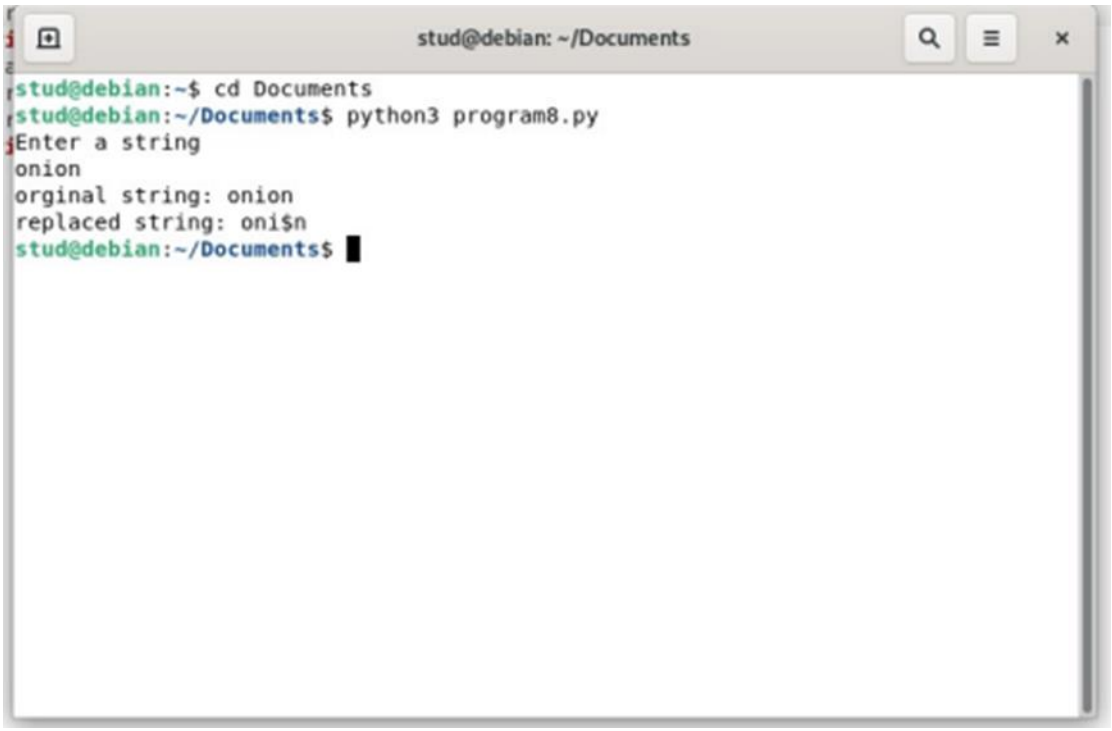
AIM

7.Get a string from an input string where all occurrences of first character replaced with ‘$’,except first character.[eg:onion->oni$n]

PROGRAM CODE

```
str1=input("Enter a string \n")
print("orginal string:",str1)
char=str1[0]
str1=str1.replace(char,'$')
str1=char+str1[1:]
print("replaced string:",str1)
```

OUTPUT



AIM

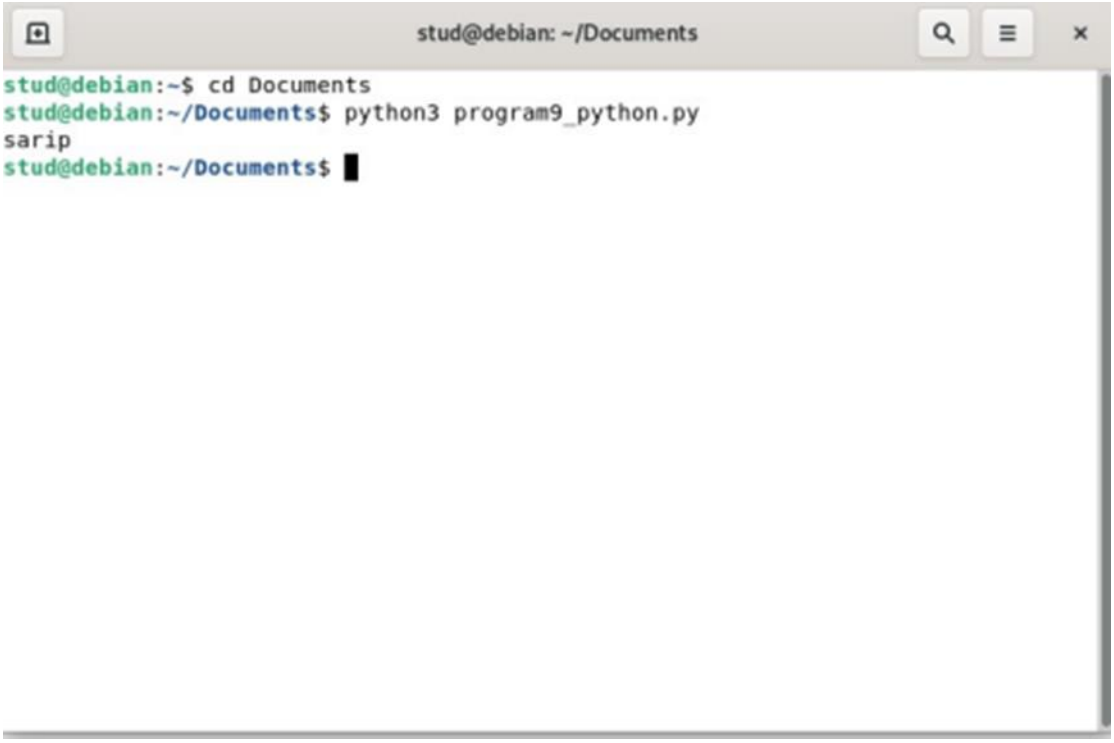
8.Create a string from given string where first and last characters exchanged.

[eg:python->nythop]

PROGRAM CODE

```
s="paris"
t=s[0]
t1=s[-1]
n=len(s)
ns=t1+s[1:n-1]+t
print(ns)
```

OUTPUT



AIM

9.Accept the radius from the user and find the area of the circle.

PROGRAM CODE

```
X=input("enter the radius :")
Y=int(x)
A=3.14*y*y
Print("Area is:")
```

OUTPUT

```
stud@debian:~$ cd adheena
stud@debian:~/adheena$ ls
areacircle.py  factorial.py  fibonacci.png  fibonacci.py  largestthreenumber.py
stud@debian:~/adheena$ python3 areacircle.py
enter the radius 6
113.03999999999999
stud@debian:~/adheena$
```

AIM

10.Find the biggest of 3 numbers

PROGRAM CODE

```
X=input("enter the first number:") Y=input("enter the second number:")
Z=input("enter the third number:") a=int(x)
b=int(y)
c=int(z)
if a>b:
if a>c:
print(a)
else:
print(c)
else:
if b>c:
print(b)
else:
print(c)
```

OUTPUT

```
stud@debian:~$ cd adheena
stud@debian:~/adheena$ ls
areacircle.py  areaofcircle.png  factorial.png  factorial.py  fibonacci.png  fibonacci.py  largestthreenumber.py
stud@debian:~/adheena$ python3 largestthreenumber.py
enter the first number 10
enter the second number 70
enter the third number 50
70
stud@debian:~/adheena$
```

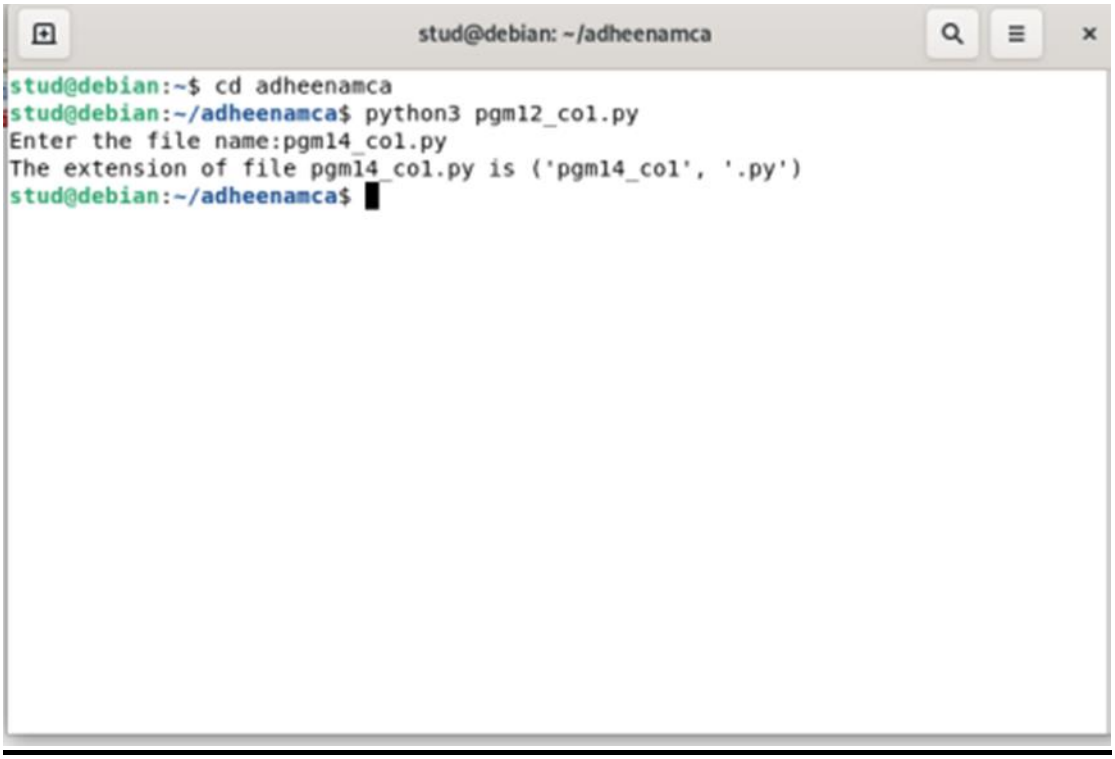
AIM

11.Accept a file name from user and print extension of that.

PROGRAM CODE

```
import os

a=input("Enter the file name:")

print("The extension of file",a,"is",os.path.splitext(a))
```

OUTPUT



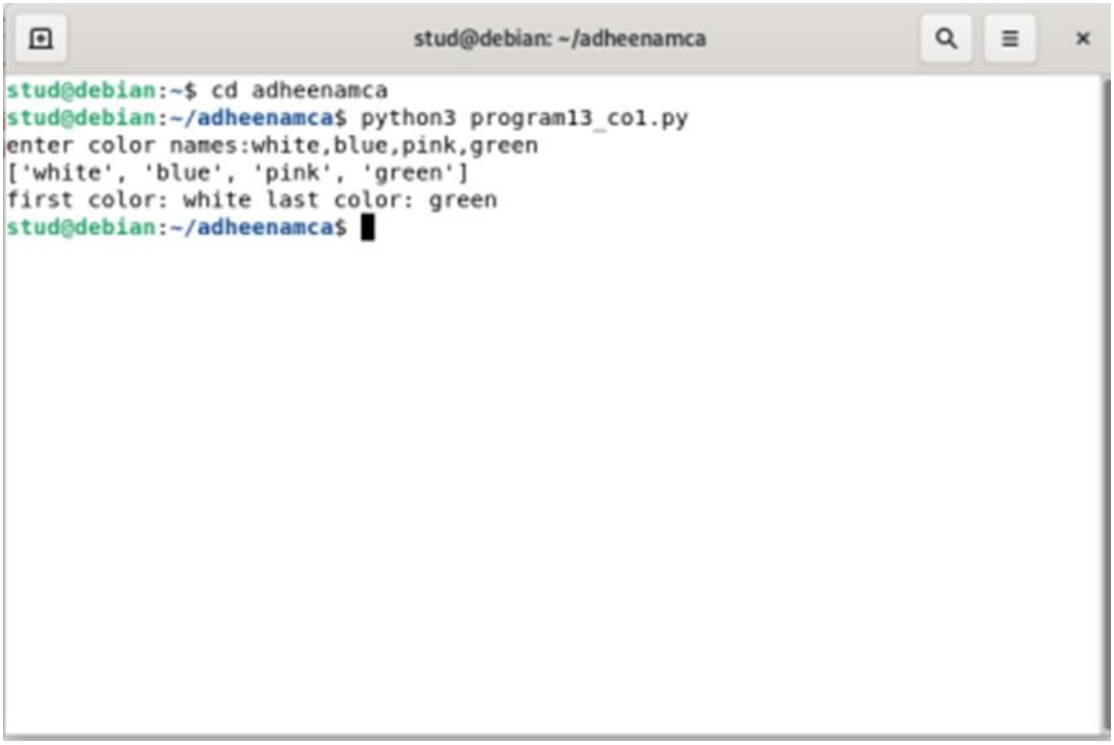
AIM

12.Create a list of colors from comma-separated color names entered by user. Display first and last colors.

PROGRAM CODE

```
Colors=[]
str=(input("enter color names:"))
for I in str.split(','):
colors.append(i)
print(colors)
print("first color:",colors[0],"last
color:",colors[-1]
```

OUTPUT



AIM

13.Accept an integer n and compute n+nn+nnn.

PROGRAM CODE

```
x=int(input("Enter an integer"))
n1=str(x)
n2=n1+n1
n3=n2+n1
result=int(n1)+int(n2)+int(n3)
print(result)
```

OUTPUT

```
enter an integer5
615
```

AIM

14.Print out all color from color-list1 not contained in color-list2

PROGRAM CODE

```
l1=["red","orange","pink","blue"]
l2=["pink","orange","red"]
l3=[]
for i in l1:
if i not in l2:
l3.append(i)
print(l3)
```

OUTPUT

```
['blue']
```

AIM

15.Create a single string separated with space from two strings by swapping the character at position 1.

PROGRAM CODE

```
str1=input("Enter first string:")
str2=input("Enter second string:")
str3=str2[0]+str1[1:]+" "+str1[0]+str2[1:]
print(str3)
```

OUTPUT

```
enter first string:jdheena
enter second string:aoy
adheenajoy
```

AIM

16.Sort dictionary in ascending and descending order.

PROGRAM CODE

```
dict1={"a":1,"c":3,"d":2,"b":4}
l=list(dict1.items())
print(l)
l.sort()
print("ascending order is\n",l)
l=list(dict1.items())
l.sort(reverse=True)

print("descending order is\n",l)
```

OUTPUT

```
stud@debian: ~/mca
stud@debian:~$ cd mca
stud@debian:~/mca$ python3 long.py
[('a', 1), ('c', 3), ('d', 2), ('b', 4)]
ascending order is
 [('a', 1), ('b', 4), ('c', 3), ('d', 2)]
descending order is
 [('d', 2), ('c', 3), ('b', 4), ('a', 1)]
stud@debian:~/mca$
```

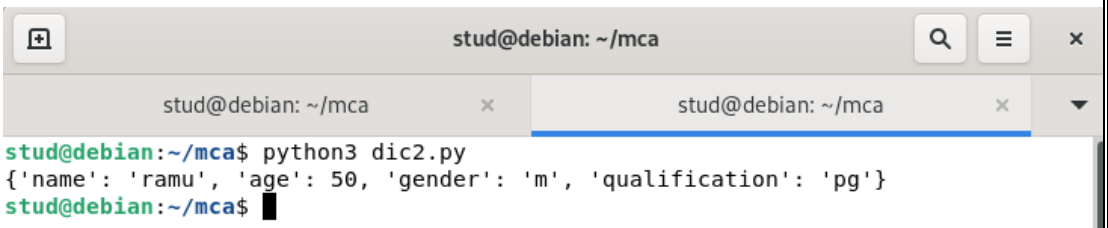
AIM

17.Merge two dictionaries

PROGRAM CODE

```
dict1={"name":"ramu","age":50}
dict2={"gender":"m","qualification":"pg"}
dict1.update(dict2)
print(dict1)
```

OUTPUT



AIM

18.Find gcd of 2 numbers

PROGRAM CODE

```
x=int(input("first number"))
y=int(input("second number"))
if(x>y):
smaller=y
else:
smaller=x
for i in range(1,smaller+1):
if((x%i==0)and(y%i==0)):
hcf=i
print("The HCF is",hcf)
```

OUTPUT

```
first number10
second number5
The hcf is 5
```

AIM

19.From a list of integers, create a list removing even numbers.

PROGRAM CODE

```
l1=[1,2,3,4,5,6]

l2=[]

for i in l1:

If(i%2!=0):

l2.append(i)

print(l2)
```

OUTPUT

```
[1, 3, 5]
```

AIM

20.Program to find the factorial of a number.

PROGRAM CODE

```
n=int(input("Enter a number:"))
fact=1
for i in range(1,n+1):
 fact=fact*i
print(fact)
```

OUTPUT

```
stud@debian:~$ cd adheena
stud@debian:~/adheena$ ls
areacircle.py  factorial.png  factorial.py  fibonacci.png  fibonacci.py  largestthreenumber.py
stud@debian:~/adheena$ python3 factorial.py
enter the number 6
720
stud@debian:~/adheena$
```

AIM

21.Generate fibonacci series of N terms.

PROGRAM CODE

```
n=int(input("Enter a number:"))
f1=0
f2=1
print(f1)
print(f2)
for i in range(0,n-2):
 f3=f1+f2
 print(f3)
 f1=f2
 f2=f3
```

OUTPUT

```
stud@debian:~$ cd adheena
stud@debian:~/adheena$ ls
areacircle.py  areaofcircle.png  factorial.png  factorial.py  fibonacci.png  fibonacci.py  largestthreenumber.py
stud@debian:~/adheena$ python3 fibonacci.py
enter the number 7
0
1
1
2
3
5
8
13
21
stud@debian:~/adheena$
```

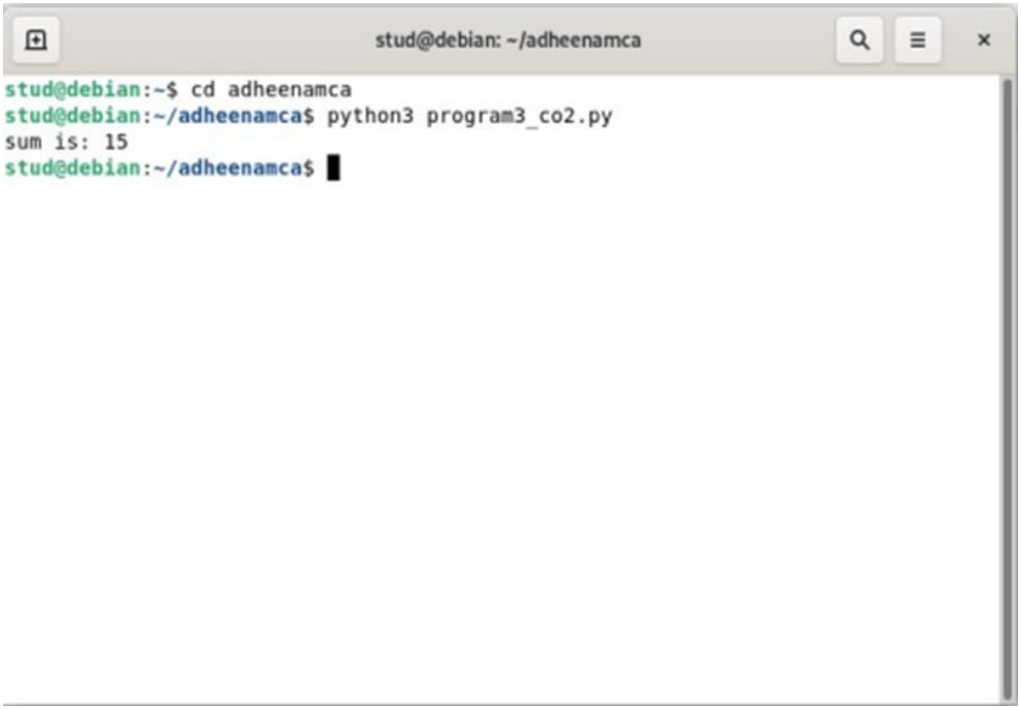
AIM

22.Find the sum of all items in a list.

PROGRAM CODE

```
list1=[1,2,3,4,5]
sum=0
for i in list1:
 sum=sum+i
print(sum)
```

OUTPUT



AIM

23.Generate a list of four digit numbers in a given range with all their digits even and the number is a perfect square.

PROGRAM CODE

```
limit1=1000

limit2=9999

list1=[]

for i in range(limit1,limit2):

 j=i

 digit=[]

 while(i!=0):

 digit.append(i%10)

 i=int(i/10)

 count=0

 for n in digit:

 if n%2==0:

 count=count+1

 if count==4:

 for k in range(31,100):

 if((k**2)==j):

 list1.append(j)
```

```
print(k)

print(list1)
```

OUTPUT

AIM

24.Display the given pyramid with step number accepted from user

Eg: N=4

```
1
2 4
3 6 9
4 8 12 16
```

PROGRAM CODE

```
n=int(input("Enter a number:"))

for i in range(1,n+1):

 for j in range(i,(i*i)+1,i):

 print(j,"\t",end="")

print("\n")
```

OUTPUT

```
stud@debian: ~/adheenamca
stud@debian:~$ cd adheenamca
stud@debian:~/adheenamca$ python3 pattern2.py
enter the value 5
1

2 4

3 6 9

4 8 12 16

5 10 15 20 25

stud@debian:~/adheenamca$
```

AIM

25.Count the number of characters (character frequency) in a string.

PROGRAM CODE

```
string=input("Enter a string:")

list1=[]

for i in string:

 if i not in list1:

 list1.append(i)

for i in list1:

 count=0

 for j in string:

 if(i==j):

 count=count+1

 print(i,"\t:",count)
```

OUTPUT

```
stud@debian: ~/adheenamca
stud@debian:~$ cd adheenamca
stud@debian:~/adheenamca$ python3 pgm6_co2.py
Enter a string:adheenajoy
a       : 2
d       : 1
h       : 1
e       : 2
n       : 1
j       : 1
o       : 1
y       : 1
stud@debian:~/adheenamca$
```

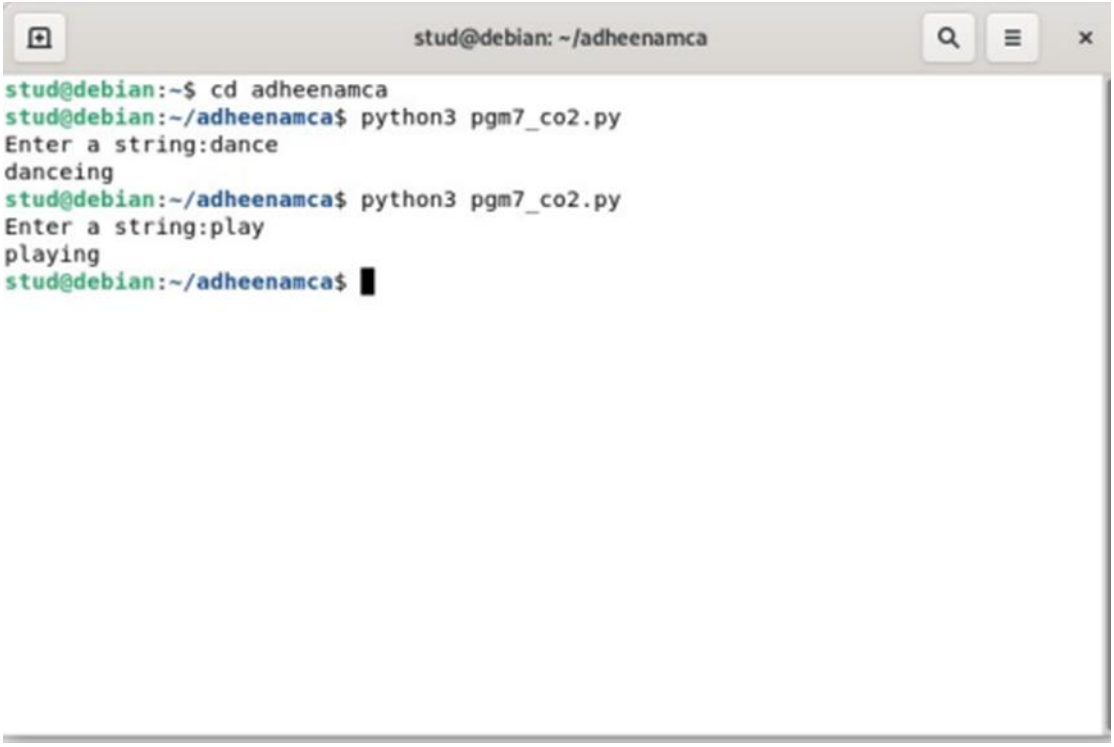
AIM

26.Add ‘ing’ at the end of a given string. If it already ends with ‘ing’, then add‘ly’.

PROGRAM CODE

```
string=input("Enter a string:")

if(string[-3:]=="ing"):

 string+="ly"

else:

 string+="ing"

print(string)
```

OUTPUT



AIM

27.Accept a list of words and return length of longest word.

PROGRAM CODE

```
lis=[]

n=int(input("Enter the range:"))

print("Enter the words:")

for i in range(0,n):

 lis.append(input(""))

longest=lis[0]

for i in range(1,n):

 if(len(lis[i])>len(longest)):

 longest=lis[i]

print("Length of longest word is",len(longest))
```

OUTPUT

```
stud@debian: ~/adheenamca
stud@debian:~$ cd adheenamca
stud@debian:~/adheenamca$ python3 pgm8_co2.py
Enter the range:4
Enter the words:
water
air
fire
earth
Length of longest word is 5
stud@debian:~/adheenamca$
```

AIM

28.Construct following pattern using nested loop.

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

PROGRAM CODE

```
k='*'
for i in range(1,6):
 for j in range(1,i+1):
 print(k,end=" ")
 print("\n")
for i in range(4,0,-1):
 for j in range(1,i+1):
 print(k,end=" ")
 print("\n")
```

OUTPUT

```
stud@debian: ~/adheenamca
stud@debian:~$ cd adheenamca
stud@debian:~/adheenamca$ python3 program9_co2.py


*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*

stud@debian:~/adheenamca$
```

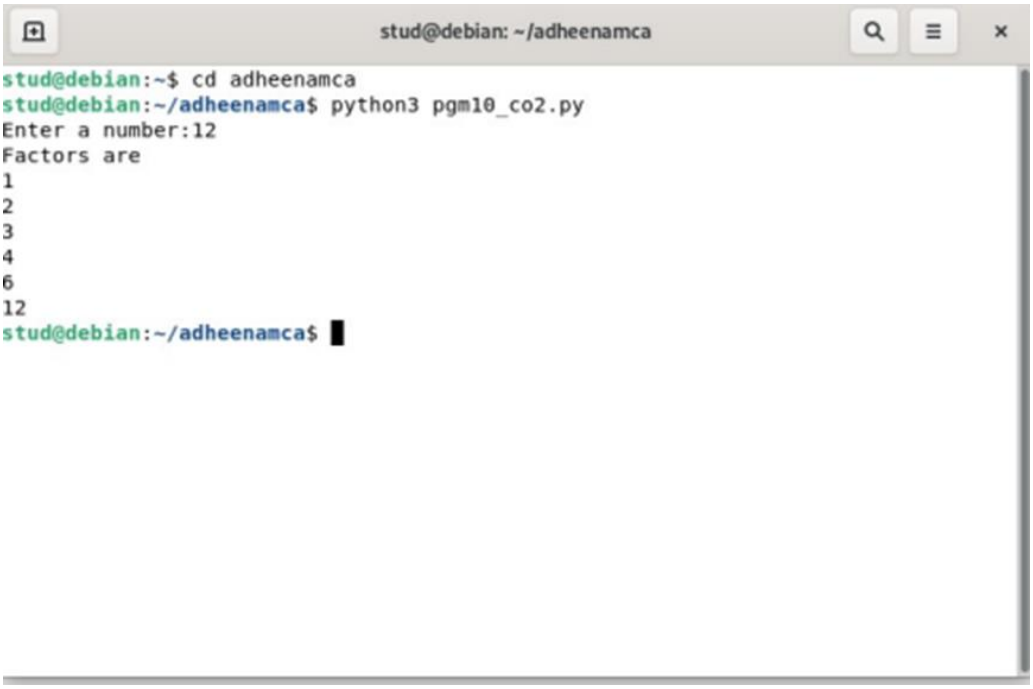
AIM

29.Generate all factors of a number.

PROGRAM CODE

```
n=int(input("Enter a number:"))
print("Factors are")
for i in range(1,n+1):
 if(n%i==0):
 print(i)
```

OUTPUT



AIM

30.Create a package graphics with modules rectangle, circle and sub-package 3D-graphics with modules cuboid and sphere. Include methods to find area and perimeter of respective figures in each module. Write programs that finds area and perimeter of figures by different importing statements. (Include selective import of modules and import * statements)

PROGRAM CODE

graphics\circle.py

```
from math import pi
def area_circle(radius):
    return pi*radius*radius
def perimeter_circle(radius):
    return 2*pi*radius
```

graphics\rectangle.py

```
def area_rec(length,width):
    return length*width
def perimeter_rec(length,width):
    return 2*(length+width)
```

graphics\tdgraphics\cuboid.py

```
def area_cuboid(l,b,h):
    return 2*(l*h + b*h + l*b)
def volume_cuboid(l,b,h):
    return l*b*h
```

graphics\tdgraphics\sphere.py

```
from math import pi
def area_sphere(radius):
    return 4*(pi*radius*radius)
def perimeter_sphere(radius):
```

```
    return 2*pi*radius
```

graphics.py (driver code)

```
import graphics
from graphics import circle,rectangle
from graphics.tdgraphics import cuboid,sphere
from graphics.circle import *
print("Area of a circle with radius 10 is : ",circle.area_circle(10))
print("Permeter of a circle with radius 10 is ",circle.perimeter_circle(10))
print("\n")

print("Area of a Rectangle with length and width 10 is :
        ",rectangle.area_rec(10,10))
print("Permeter of a Rectangle with length and width 10 is :
        ",rectangle.perimeter_rec(10,10))
print("\n")

print("Area of a  cuboid with length,width,height 10 is :
        ",cuboid.area_cuboid(10,10,10))
print("Volume of a cuboid with length,width,height 10 is :
        ",cuboid.volume_cuboid(10,10,10))
print("\n")

print("Area of a spere with radius 10 is : ",sphere.area_sphere(10))
print("Perimeter of a spere with radius 10 is ",sphere.perimeter_sphere(10))
```

OUTPUT

```
Command Prompt
Microsoft Windows [Version 10.0.18362.1316]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\adhee>cd Onedrive

C:\Users\adhee\OneDrive>cd desktop

C:\Users\adhee\OneDrive\Desktop>cd python

C:\Users\adhee\OneDrive\Desktop\python>md graphics

C:\Users\adhee\OneDrive\Desktop\python>cd graphics

C:\Users\adhee\OneDrive\Desktop\python\graphics>notepad circle.py

C:\Users\adhee\OneDrive\Desktop\python\graphics>notepad rectangle.py

C:\Users\adhee\OneDrive\Desktop\python\graphics>md tdgraphics

C:\Users\adhee\OneDrive\Desktop\python\graphics>cd tdgraphics

C:\Users\adhee\OneDrive\Desktop\python\graphics\tdgraphics>notepad cuboid.py

C:\Users\adhee\OneDrive\Desktop\python\graphics\tdgraphics>notepad sphere.py

C:\Users\adhee\OneDrive\Desktop\python\graphics\tdgraphics>cd ..

C:\Users\adhee\OneDrive\Desktop\python\graphics>cd ..

C:\Users\adhee\OneDrive\Desktop\python>notepad driver1.py
```

```
Command Prompt
C:\Users\adhee\OneDrive\Desktop\python>python driver1.py
Area of a circle with radius 10 is :  314.1592653589793
Perimeter of a circle with radius 10 is  62.83185307179586


Area of a Rectangle with length and width 10 is :  100
Perimeter of a Rectangle with length and width 10 is :  40


Area of a cuboid with length,width,height 10 is :  600
Volume of a cuboid with length,width,height 10 is :  1000


Area of a sphere with radius 10 is :  1256.6370614359173
Permeter of a sphere with radius 10 is  62.83185307179586

C:\Users\adhee\OneDrive\Desktop\python>
```

AIM

31.Create Rectangle class with attributes length and breadth and methods to find area and perimeter. Compare two Rectangle objects by their area.

PROGRAM CODE

```
class Rectangle:
    def __init__(self,length,breadth):
        self.length=length
        self.breadth=breadth
    def area(self):
        return self.length*self.breadth
    def perimeter(self):
        return 2*(self.length+self.breadth)
r1=Rectangle(10,2)
r2=Rectangle(5,9)
x=r1.area()
y=r2.area()
z=r1.perimeter()
w=r2.perimeter()
print("Area of rectangle 1:",x);
print("Area of rectangle 2:",y);
print("Perimeter of rectangle 1:",z);
print("Perimeter of rectangle 2:",w);
```

```
if(x>y):

    print("Area of rectangle 1 is larger")

else:

   print("Area of rectangle 2 is smaller")
```

OUTPUT

```
stud@debian: ~/adheenamca
stud@debian:~$ cd adheenamca
stud@debian:~/adheenamca$ python3 pgm1-co4.py
Area of rectangle 2 is smaller
Area of rectangle 1: 20
Area of rectangle 2: 45
Perimeter of rectangle 1: 24
Perimeter of rectangle 2: 28
stud@debian:~/adheenamca$
```

AIM

32.Create a Bank account with members account number, name, type of account and balance. Write constructor and methods to deposit at the bank and withdraw an amount from the bank.

PROGRAM CODE

```
class Bank:
    def __init__(self,acc_no,name,acc_type,balance):
        self.acc_no=acc_no
        self.name=name
        self.acc_type=acc_type
        self.balance=balance
    def withdraw(self,x):
        self.balance=self.balance-x
        print("Balance amount of  after withdrawal",self.balance)
    def deposit(self,y):
        self.balance=self.balance+y
        print("Balance amount of  after deposit",self.balance)
    def displ(self):
        print("account no.:",self.acc_no)
        print("name:",self.name)
        print("type of account:",self.acc_type)
        print("balance amount:",self.balance)
```

```
per1=Bank(1234,"anu","savings",70000)

per2=Bank(1235,"ammu","current",50000)

per3=Bank(1236,"alex","savings",500000)

per1.withdraw(1000)

per2.withdraw(2000)

per3.withdraw(4000)

per1.deposit(1000)

per2.deposit(3000)

per3.deposit(6000)

per1.displ()

per2.displ()

per3.displ()
```

OUTPUT

```
stud@debian: ~/adheenamca
stud@debian:~$ cd adheenamca
stud@debian:~/adheenamca$ python3 pgm2-co4.py
Balance amount of  after withdrawal 69000
Balance amount of  after withdrawal 48000
Balance amount of  after withdrawal 496000
Balance amount of  after deposit 70000
Balance amount of  after deposit 51000
Balance amount of  after deposit 502000
account no.: 1234
name: anu
type of account: savings
balance amount: 70000
account no.: 1235
name: ammu
type of account: current
balance amount: 51000
account no.: 1236
name: alex
type of account: savings
balance amount: 502000
stud@debian:~/adheenamca$
```

AIM

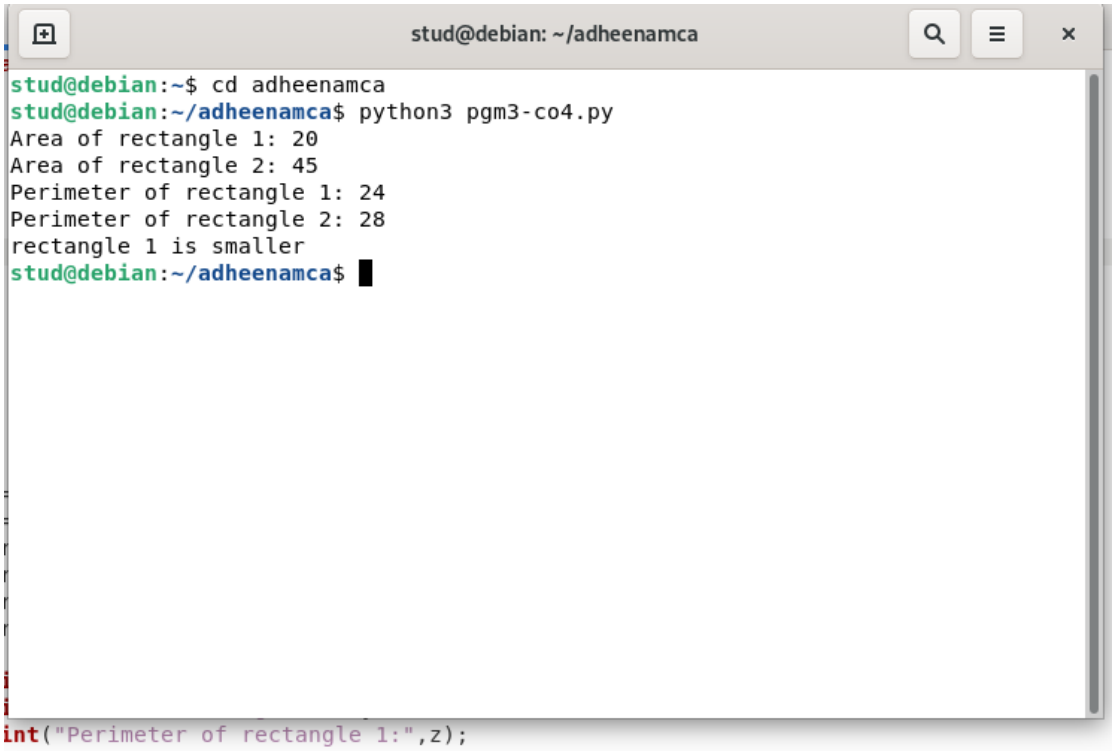
33.Create a class Rectangle with private attributes length and width. Overload '<' operator to compare the area of 2 rectangles.

PROGRAM CODE

```
class Rectangle:
    def __init__(self,length,breadth):
        self.length=length
        self.breadth=breadth
    def area(self):
        return self.length*self.breadth
    def perimeter(self):
        return 2*(self.length+self.breadth)
    def __lt__(self,r2):
        if(self.length*self.breadth<r2.length*r2.breadth):
            return True
        else:
            return False


r1=Rectangle(10,2)
r2=Rectangle(5,9)
x=r1.area()
y=r2.area()
```

```
z=r1.perimeter()

w=r2.perimeter()

print("Area of rectangle 1:",x);

print("Area of rectangle 2:",y);

print("Perimeter of rectangle 1:",z);

print("Perimeter of rectangle 2:",w);

if(r1<r2):

        print("rectangle 1 is smaller")

else:

        print("rectangle 2 is smaller")
```

OUTPUT



AIM

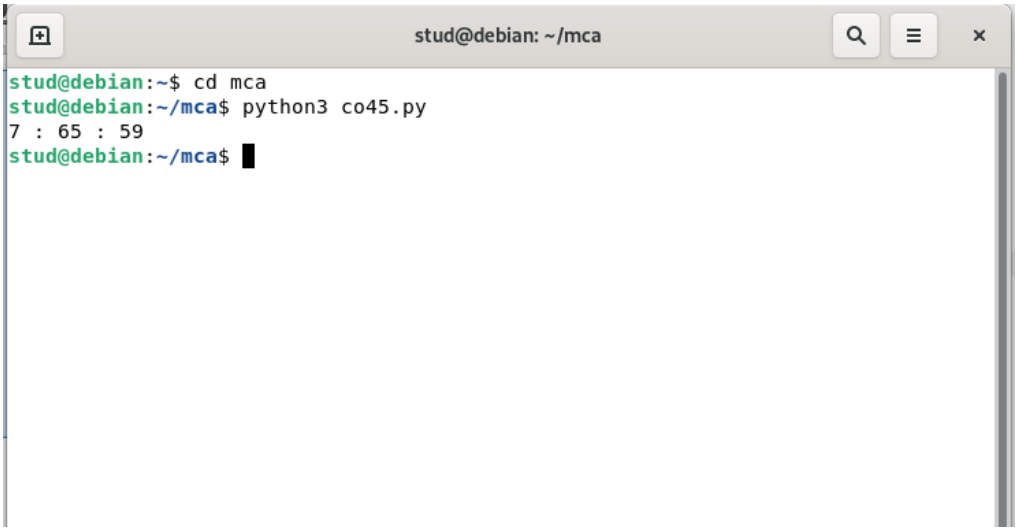
34.Create a class Time with private attributes hour, minute and second. Overload '+' operator to find sum of 2 time.

PROGRAM CODE

Source code

```
class Time:
   def __init__(self,hr,min,sec):
            self.__hr=hr
            self.__min=min
            self.__sec=sec
   def __add__(t1,t2):
            hr=t1.__hr+t2.__hr
            min=t1.__min+t2.__min
            sec=t1.__sec+t2.__sec
            print(hr,":",min,":",sec)
t1=Time(3,45,56)
t2=Time(4,20,3)
t1+t2
```

OUTPUT


stud@debian: ~/mca
stud@debian:~$ cd mca
stud@debian:~/mca$ python3 co45.py
7 : 65 : 59
stud@debian:~/mca$

AIM

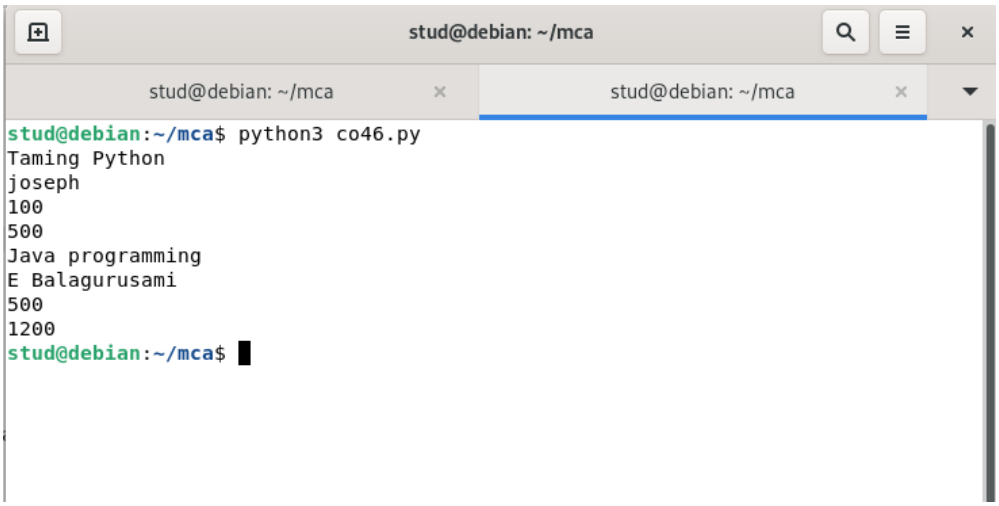
35.Create a class Publisher (name). Derive class Book from Publisher with attributes title and author. Derive class Python from Book with attributes price and no_of_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.

PROGRAM CODE

```
class Publisher(object):
    def __init__(self,name):
        self.name=name
    def display1(self):
        print(self.title)
        print(self.author)

class Book(Publisher):
    def __init__(self,name,title,author):
        super().__init__(name)
        self.title=title
        self.author=author
    def display2(self):
        #super().display1()
        print(self.title)
        print(self.author)
class Python(Book):
    def __init__(self,name,title,author,price,no_of_pages):
        super().__init__(name,title,author)
        self.price=price
        self.no_of_pages=no_of_pages
    def display3(self):
        super().display2()
        print(self.price)
        print(self.no_of_pages)
```

```
p=Python("ABC Publications","Taming Python","jeeva jose",100,500)
p.display3()
q=Python("XYZ Publications","Java programming","E
Balagurusami",500,1200)
q.display3()
```

OUTPUT



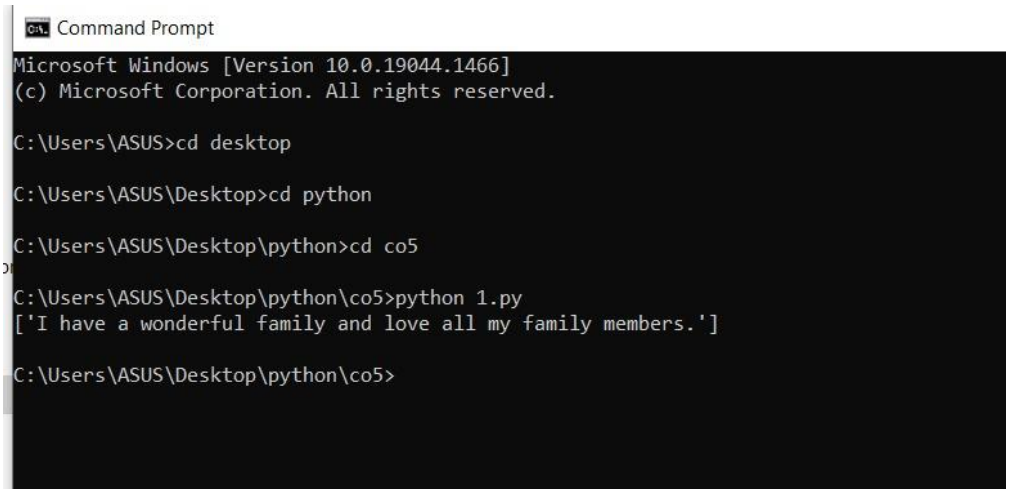
AIM

36.Write a Python program to read a file line by line and store it into a list.

PROGRAM CODE

```
fp=open("text_file.txt",'r')
lines=[]
for line in fp:
        lines.append(line.strip())
print(lines)
```

OUTPUT



AIM

37.Write a Python program to read each row from a given csv file and print a list of strings.

PROGRAM CODE

```
import csv

with open('people.csv', 'r') as file:

    reader = csv.reader(file)
    for row in reader:
        print(row)
```

OUTPUT