FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

HORMIS NAGAR, MOOKKANNOOR

ANGAMALY-683577

'FOCUS ON EXCELLENCE'

PYTHON PROGRAMMING

……..

LABORATORY RECORD

Name : **AKSHAY B**

Branch : MASTER OF COMPUTER APPLICATION

Semester : 1 Batch : SEMESTER -1 A

Roll No : 10

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University Exam.Reg. No:

CERTIFICATE

This is to certify that this is a Bonafide record of the Practical work done and submitted to Kerala Technological University in partial fulfillment for the award of the Master Of Computer Applications is a record of the original research work done by AKSHAY B *in the* ***PYTHON PROGRAMMING LAB*** *Laboratory of the Federal Institute of Science and Technology during the academic year 2020-2021.*

Signature of Staff in Charge
Name:
Date:

Signature of H.O.D
Name:

Date of University practical examination ……

Signature of
Internal Examiner

Signature of
External Examiner

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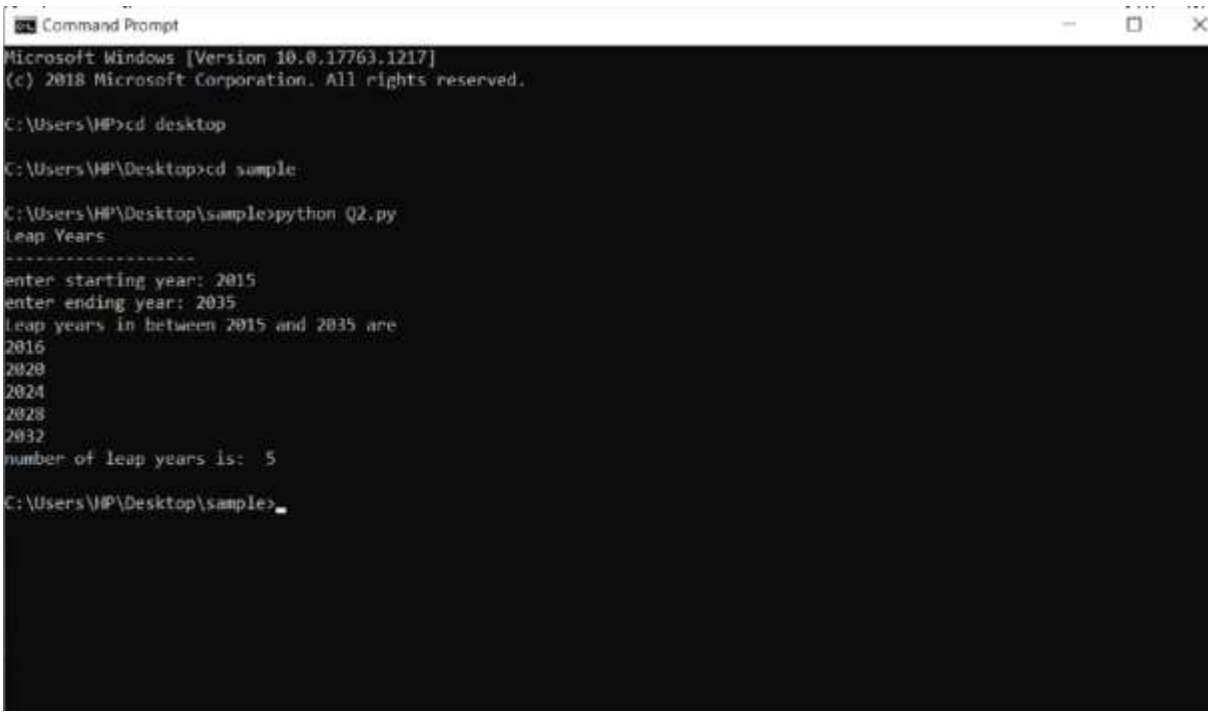
1. Display future leap years from current year to a final year entered by user.

Program:

```
print("Leap Years")
print("-------------------------")
start=int(input("enter starting year: "))
end=int(input("enter ending year: "))
c=0
print("Leap years in between" ,start ,"and",end,"are")
while start <= end :
if start % 4 == 0 and start % 100 !=0 :
print(start)
c+=1
if start % 100 == 0 and start % 400 == 0 :
 print(start)
start = start+1
print("number of leap years is: ",c)
```

Output:



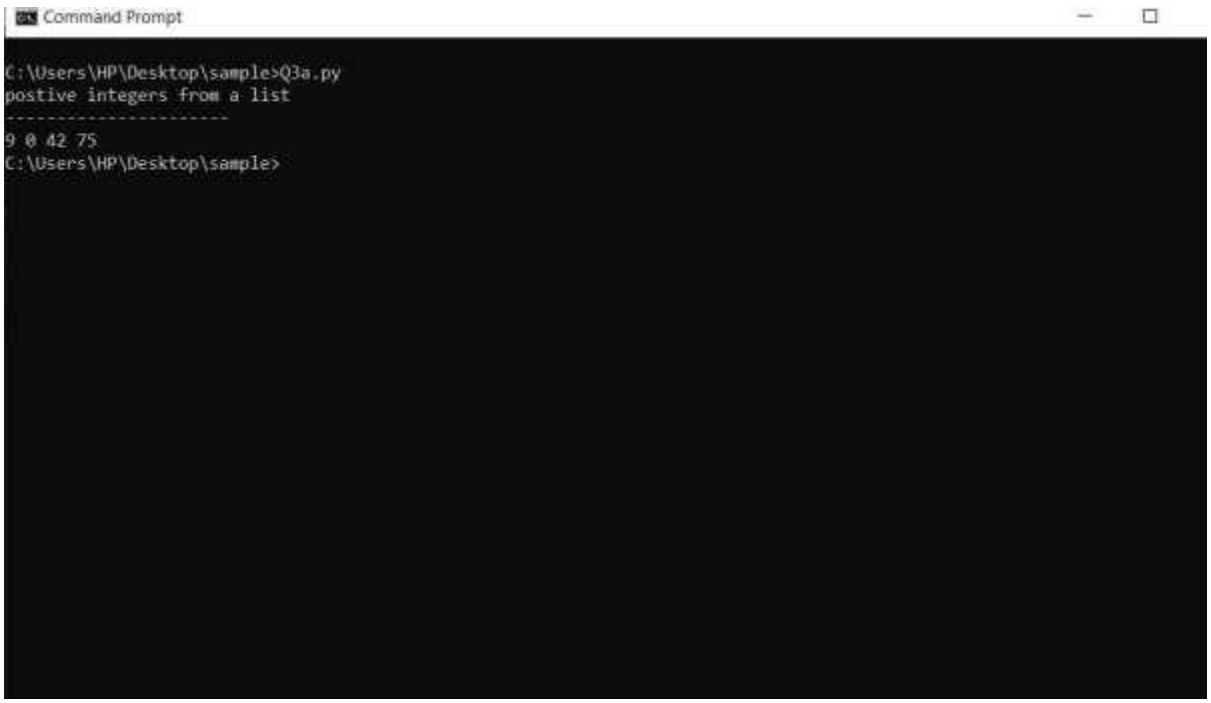
2. List comprehensions

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

Program:

```
print("postive integers from a list")
print("-----------------------")
 list1=[9,-2,0,42,75,-33]
 for num in list1:
if num >=0 :
print(num,end=" ")
```

Output:

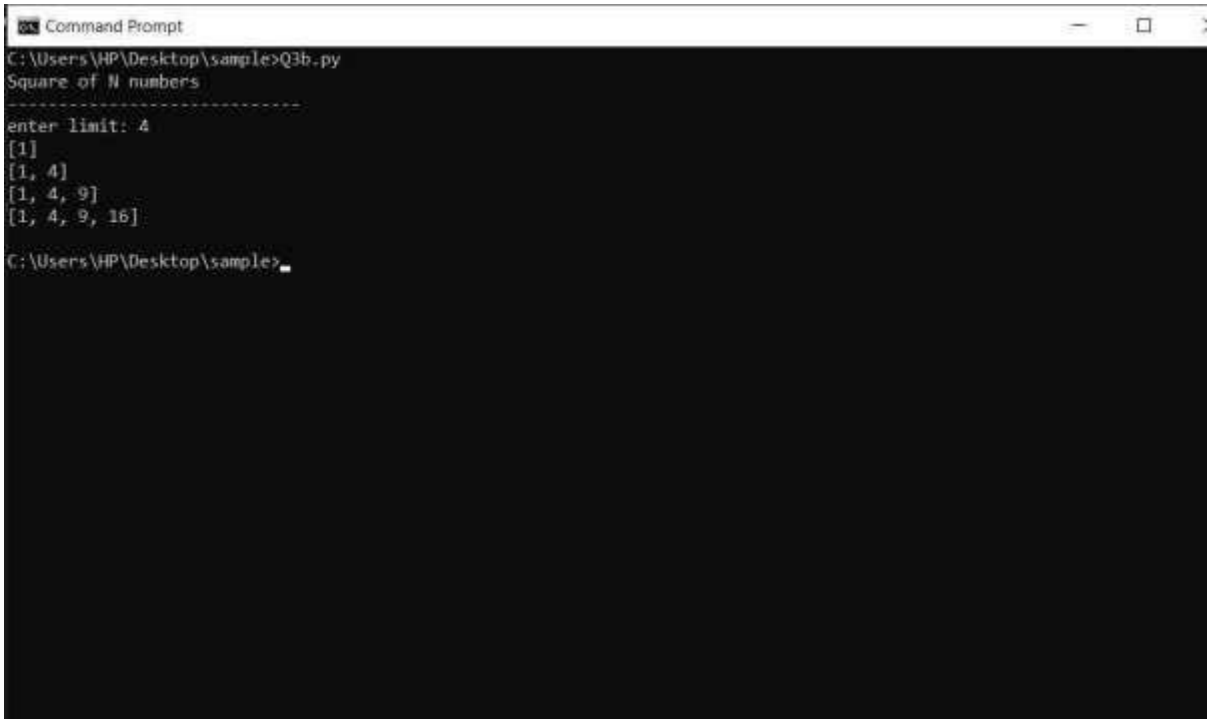


b. Square of N numbers.

Program:

```
print("Square of N numbers")
print("----------")
limit=int(input("enter limit: "))
list1=[]
for i in range(1,limit+1):
list1.append(i*i)
print(list1)
```

Output:

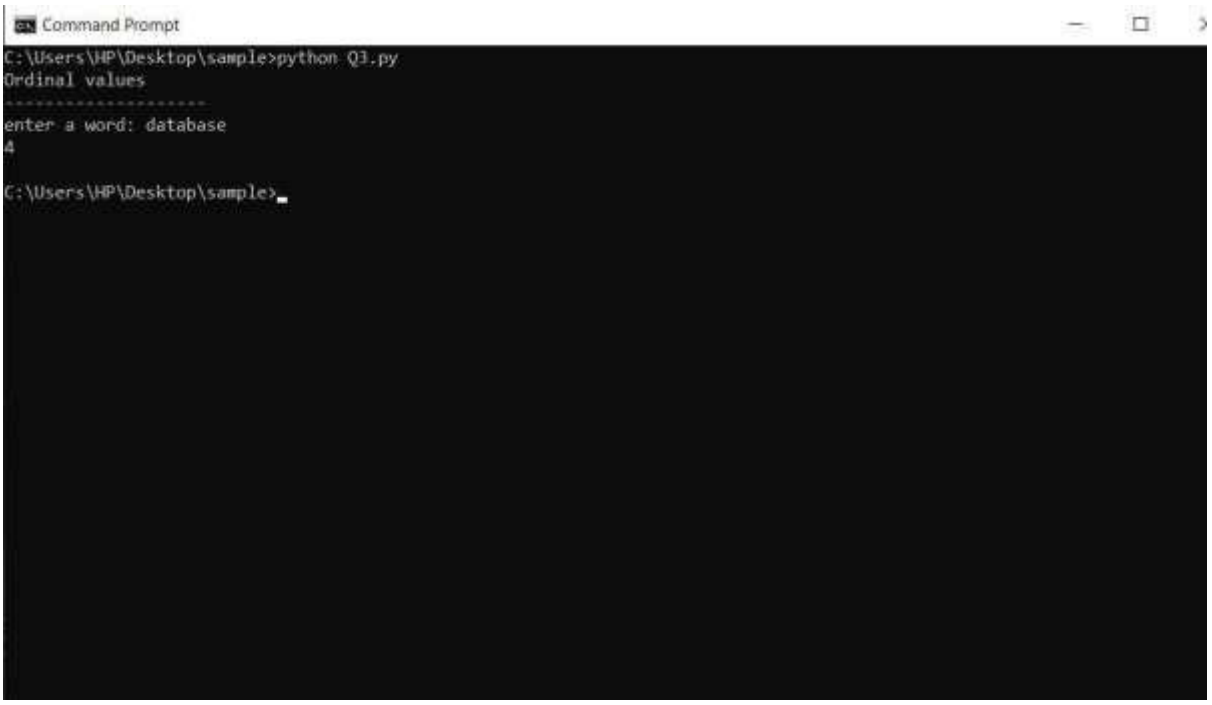


c. Form a list of vowels selected from a given word.

Program:

```
print("Ordinal values")

print(" --------- ")

 str=input("enter a word:")

 vowels=0

for char in str :

if char in 'aeiouAEIOU' :

vowels=vowels+1

else :

continue

print(vowels)
```

Output:

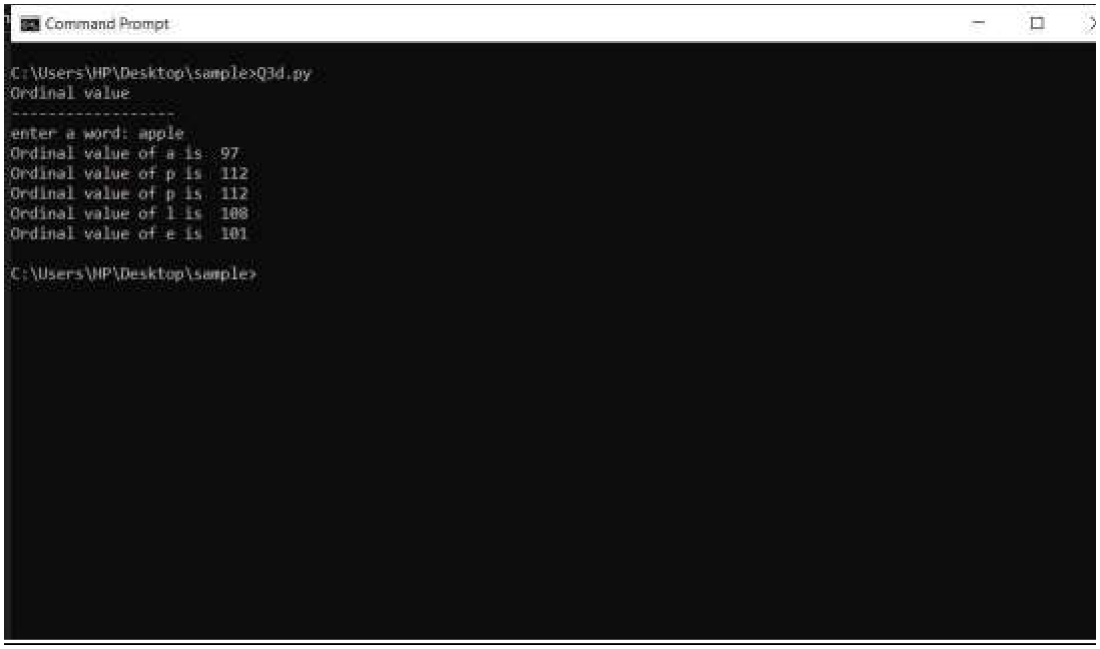


d. List of ordinal values of each element of a word

Program:

```
print("Ordinal  value")
print("..........")
word=input("enter a word: ")
for ch in word:
print("Ordinal value of "+ch+" is ",ord(ch))
```

Output :

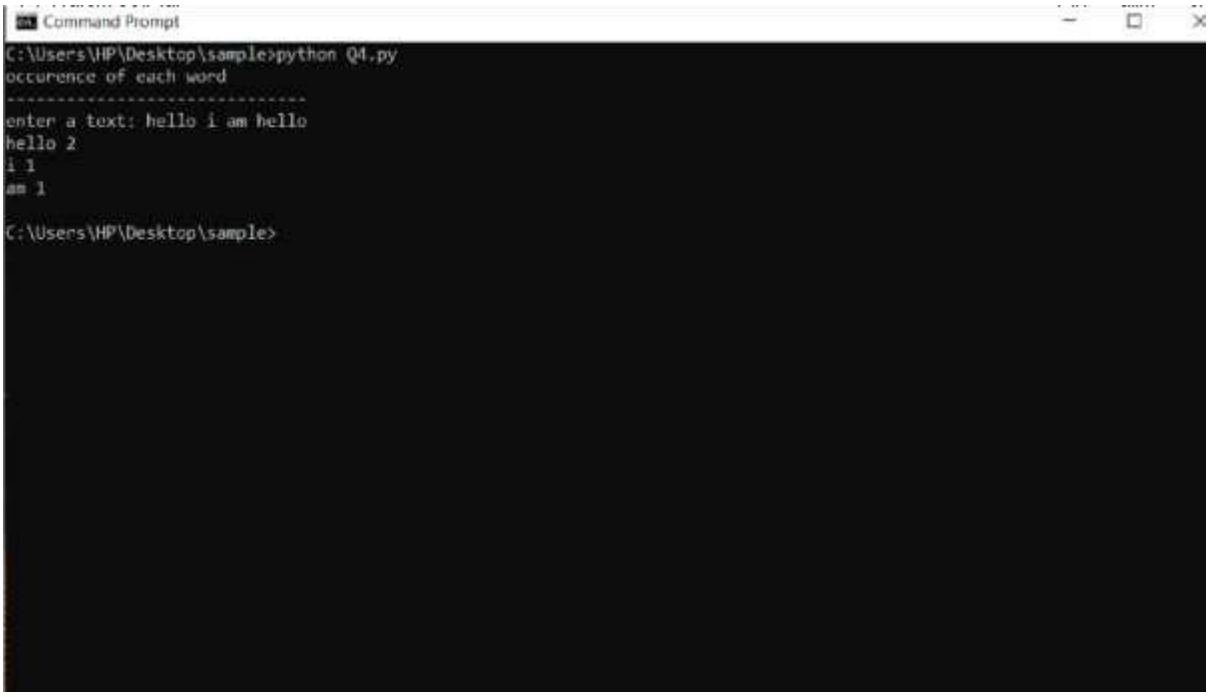


3.Count the occurrences of each word in a line of text.

Program:

```
print("occurence of eachword")
print("-----------------------------------")

str=input("enter a text: ")

counts={}

words=str.split()

for word in words :

if word in counts :

counts[word]+=1

 else :
counts[word]=1

for k,v in counts.items():

print(k,v)
```

Output:

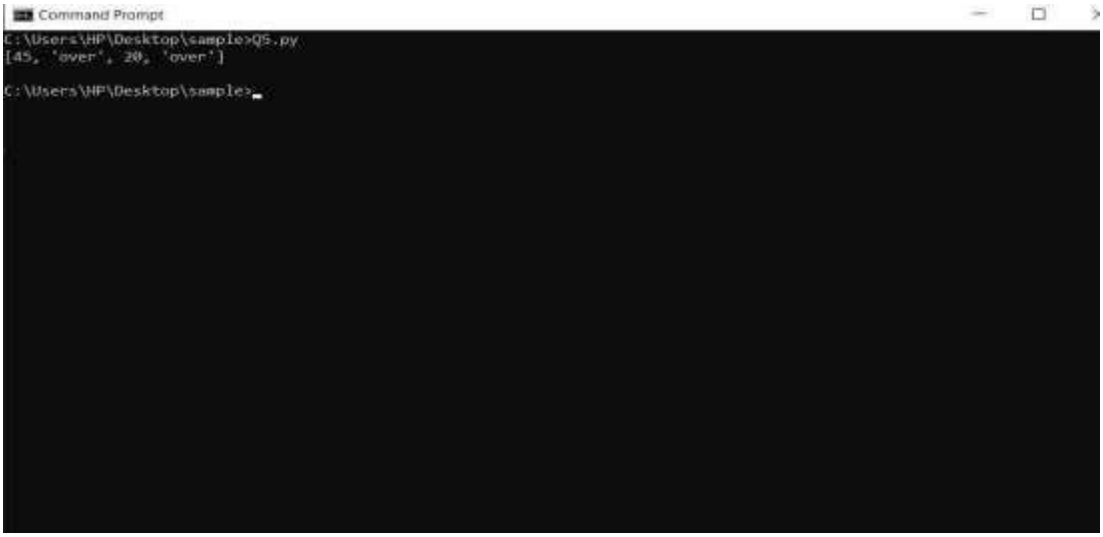


4.Prompt the user for a list of integers. For all values greater than 100, store 'over' instead.

Program:

```
list=[45,102,20,120]
new_list=[]
for i in list:
if i>100:
new_list.append("over")
else:
new_list.append(i)
 print(new_list)
```

Output:

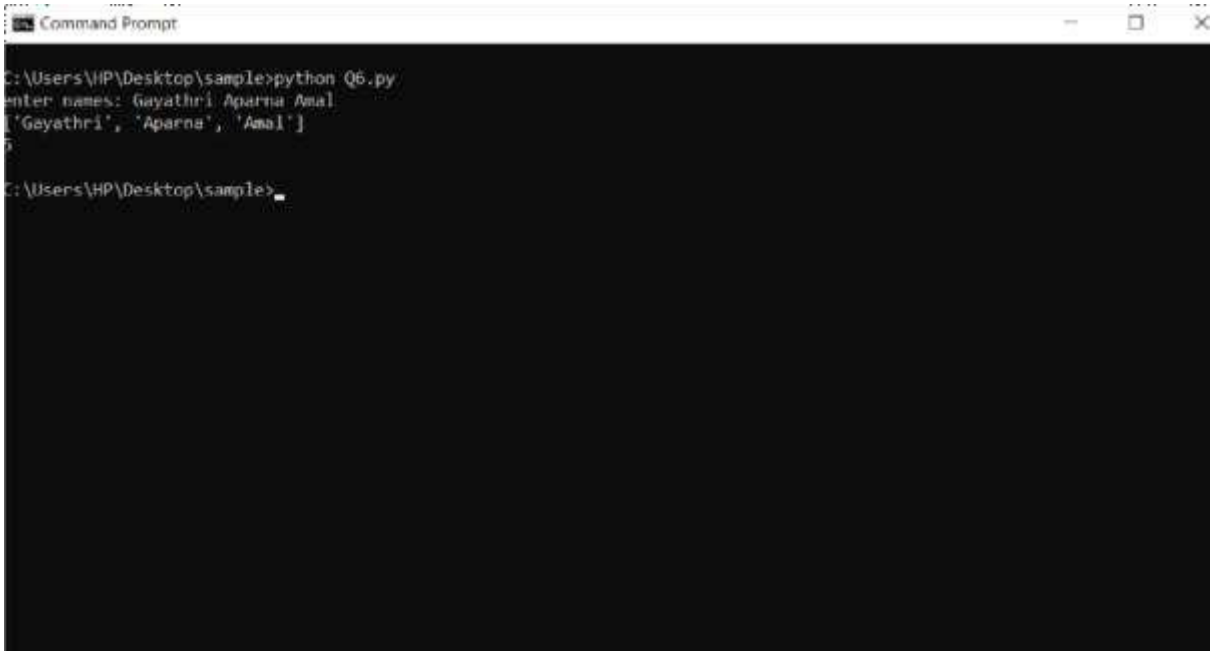


5. Store a list of first names. Count the occurrences of 'a' within the list.

Program:

```
list=input("enter names: ")

words=list.split()

print(words)

 c=0

for word in words :

for char in word :

if char in 'a' :

c=c+1

 else :

continue

print(c)
```

Output:

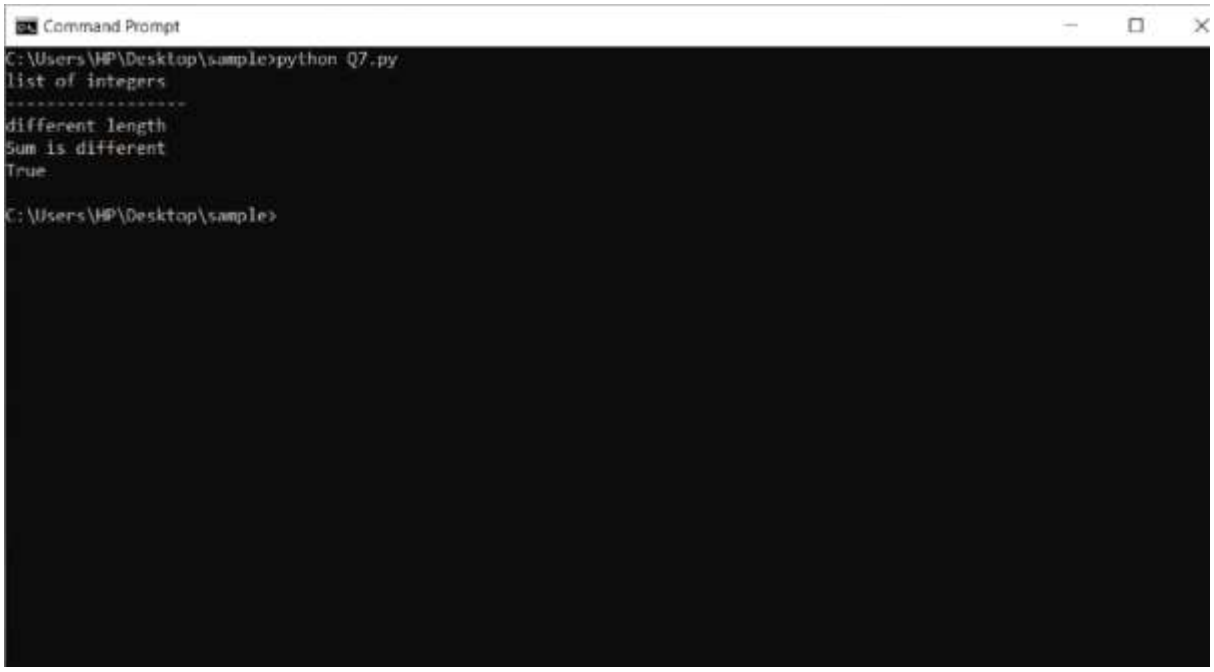


6. Enter 2 list of integers. Check (a) Whether lists are of same length (b) Whether lists sums to same value (c) Whether any value occur in both

Program:

```
print("list of integers")
print("----------")
list1=[1,23,34,26]
list2=[1,56,39,2,67]
if len(list1)==len(list2):
 print("lists are of samelength")
 else :
print("different length")
 if sum(list1)==sum(list2) :
 print("Sum is same")
else :
print("Sum isdifferent")
f=0
for elem in list2 :
if elem in list1 :
f=1
if f==1 :
print('True')
else :
print(False)
```

Output:


Command Prompt
C:\Users\HP\Desktop\sample>python Q7.py
list of integers
different length
Sum is different
True
C:\Users\HP\Desktop\sample>

7. Get a string from an input string where all occurrences of first character replaced with '$', except first character.

Program:

```
str=input("enter a string: ")
first_letter=str[0]
replace_str="$"
 new_str=str.replace(first_letter,replace_str)
print(new_str.replace(replace_str,first_letter,1))
```

Output:

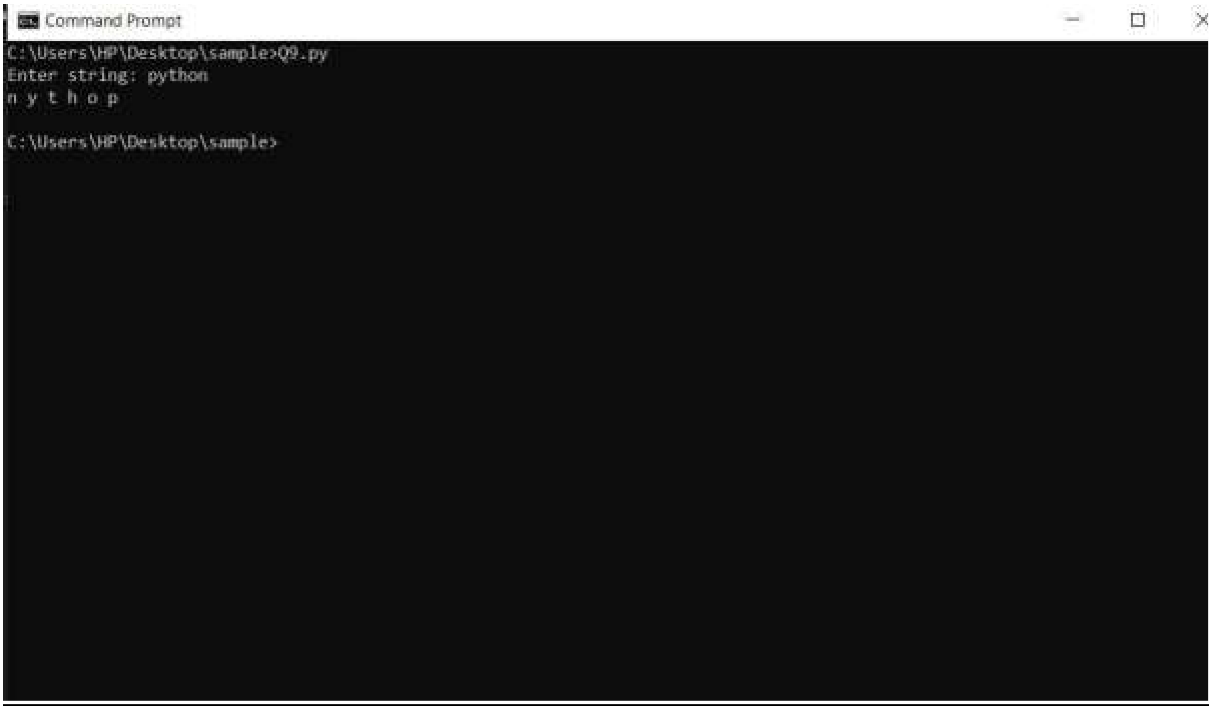
\

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

Program:

```
str=input("Enter string: ")
letters=list()
for i in str:
letters.append(i)
first_letter=letters[0]
letters[0]=letters[-1]
letters[-1]=first_letter
rev_str=" "
print(rev_str.join(letters))
```

Output:

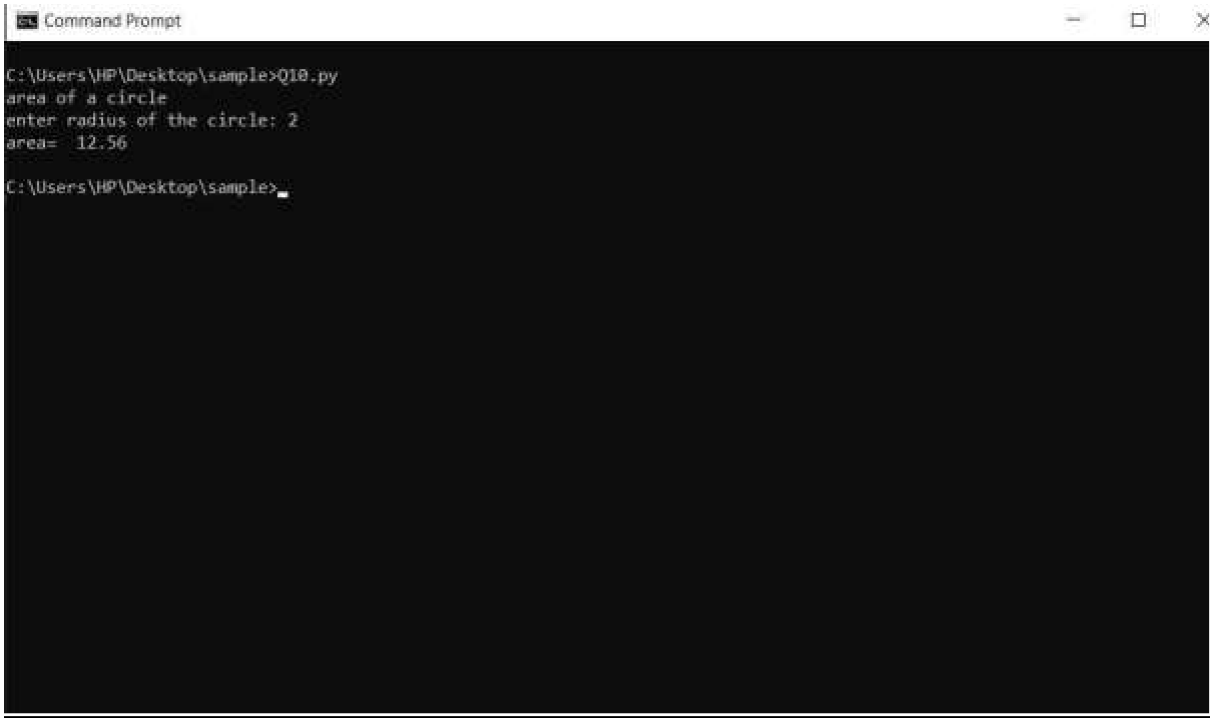


9.Accept the radius from user and find area of circle.

Program:

```
print("area of a circle")
r=float(input("enter radius of thecircle:"))
area=3.14*r*r
print("area= ",area)
```

Output:



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10.Find the biggest of 3 numbers entered.

Program:

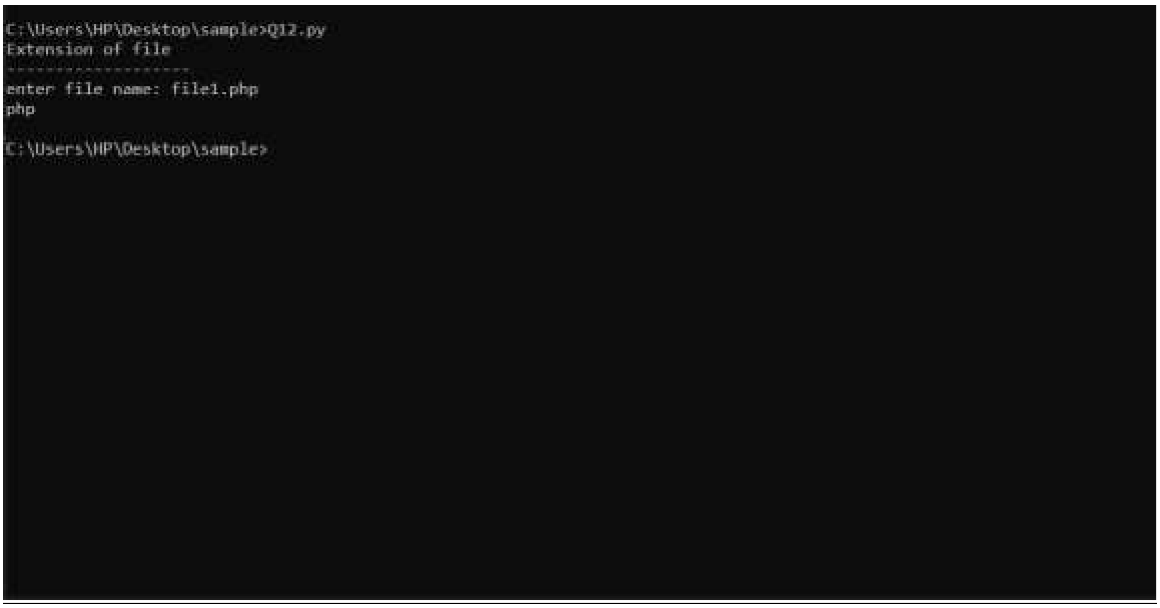
```
print("Largest of 3 numbers")
print("-----------------------------")
 n1=int(input("Enter first number: "))
n2=int(input("Enter second number: "))
n3=int(input("Enter third number: "))
if (n1>=n2) and (n1>=n3):
largest=n1
elif (n2>=n1)and(n2>=n3):
largest=n2
else :
largest=n3
print("Largest number is: ",largest)
```

Output:

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

```
print("Extension of file")
print("..........")
file=input("enter file name: ")
l=list()
l=file.split(".")
print(l[-1])
```

Output:

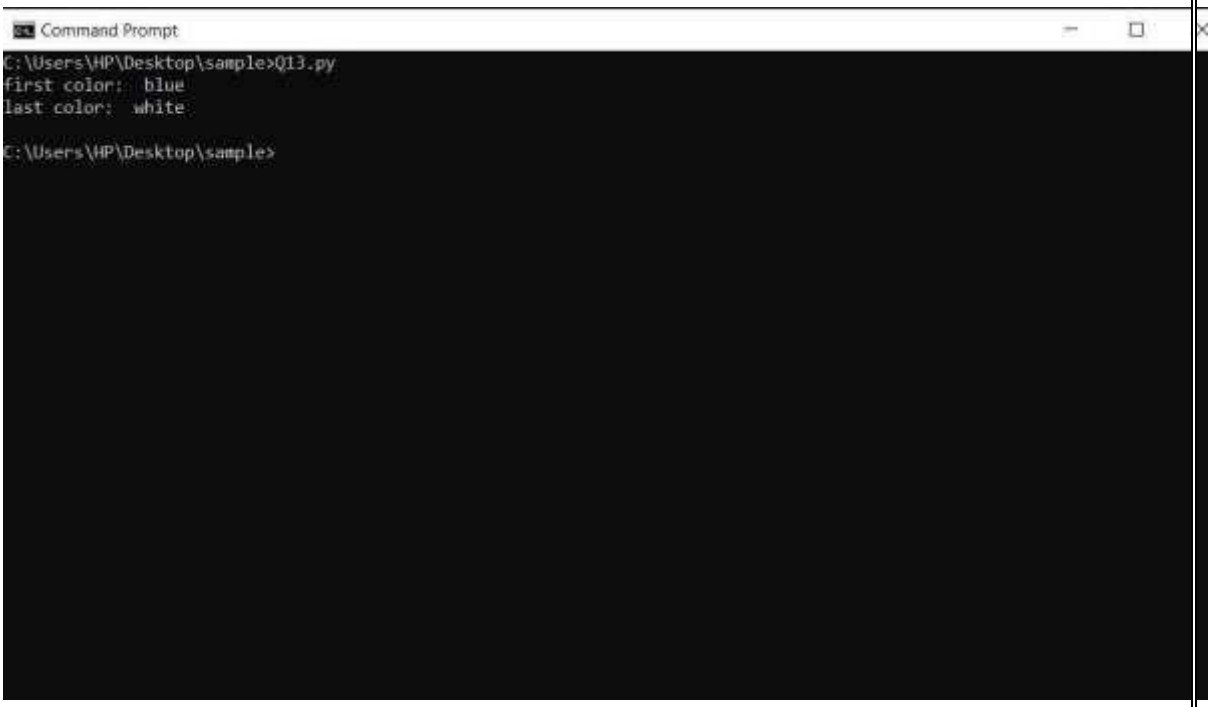


12.Create a list of colors from comma-separated color names entered by user. Display first and last colors.

Program:

```
List1=['blue','black','yellow','red','white']
print("first color",:List1[0])
print("last color: ",List1[4])
```

Output:

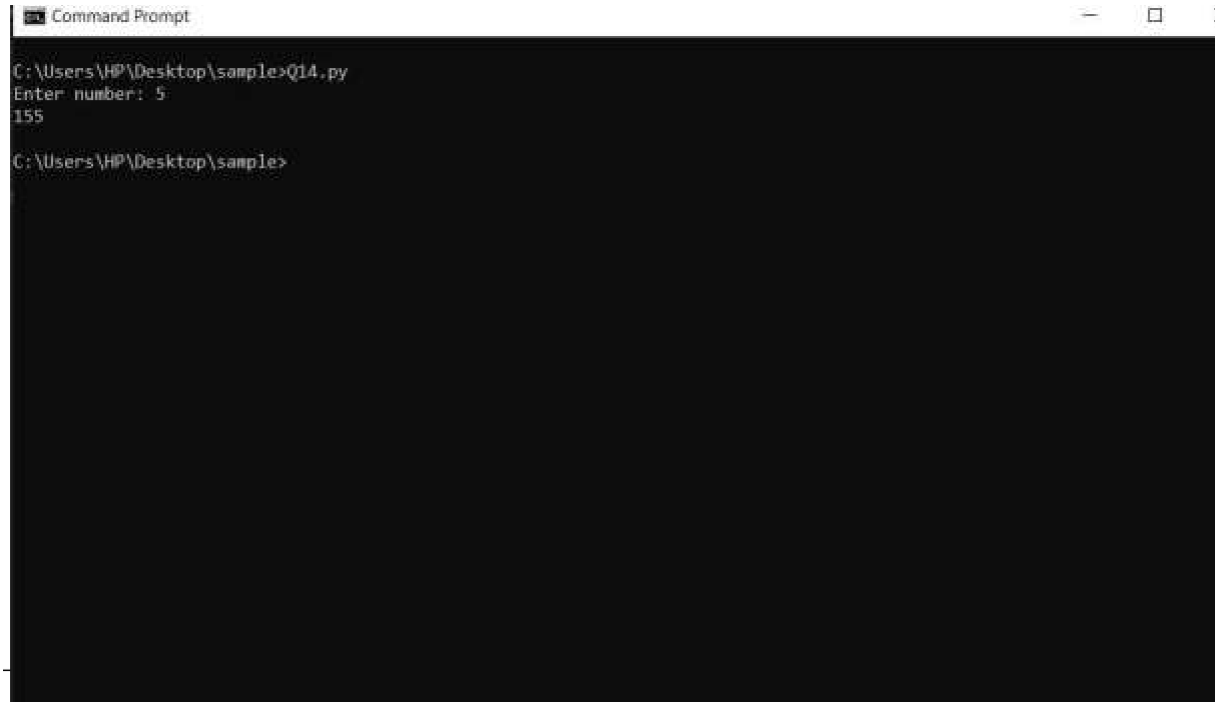


13.Accept an integer n and compute n+nn+nnn.

Program: :

```
n=int(input("Enter number: "))
num=n + n * n + n * n * n
print(num)
```

Output:



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

Program:

```
color_list1=['blue','white','black','green','indigo']
color_list2=['green','red','blue','white','yellow'] sorted_list=list(set(color_list1) -
set(color_list2))
print("colors are: ",sorted_list)
```

Output:

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

Program:

```
str1=input("enter first string: ")
str2=input("enter second string: ")
new_str1=str2[:1] + str1[1:]
new_str2=str1[:1] + str2[1:]
print("After swapping: ",new_str1 + ' ' + new_str2)
```

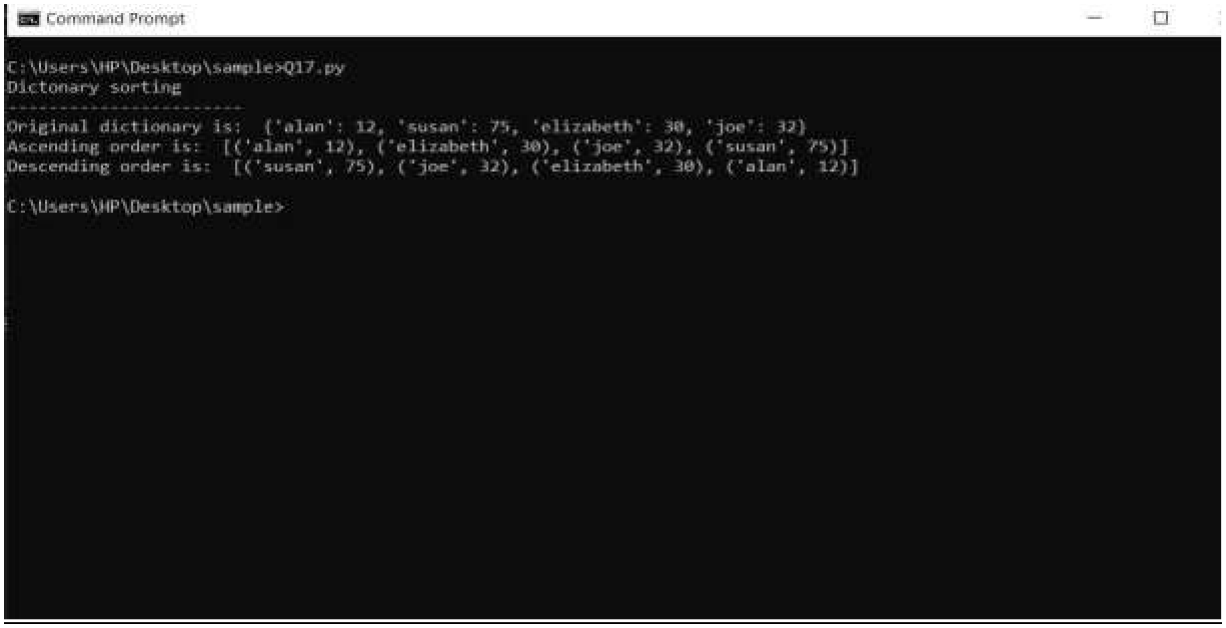
Output:

16.Sort dictionary in ascending and descending order.

Program:

```
print("Dictonary sorting")
print("-------------------------")
D={'alan':12,'susan':75,'elizabeth':30,'joe':32}
print("Original dictionary is: ",D)
l=list(D.items())
l.sort()
print("Ascending order is: ",l)
l=list(D.items())
l.sort(reverse=True)
print("Descending order is: ",l)
```

Output:

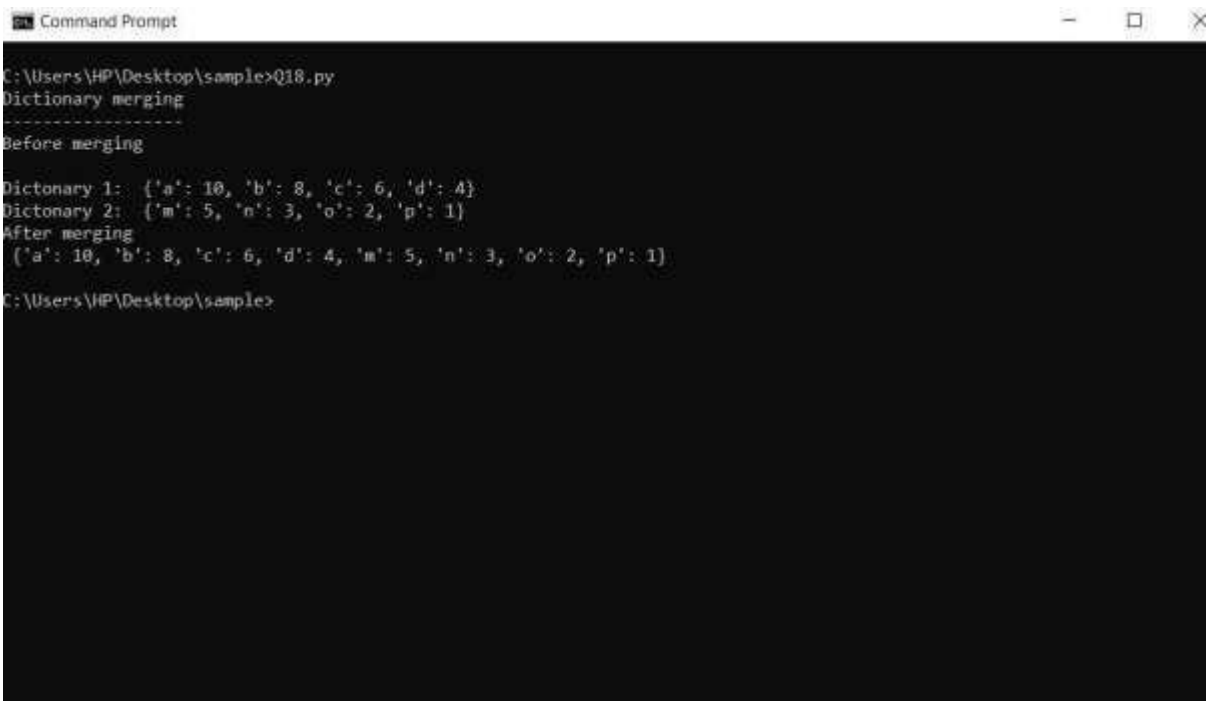


17. Merge two dictionaries

Program:

```
print("Dictionarymerging")
print("..........")
d1={'a':10,'b':8,'c':6,'d':4}
d2={'m':5,'n':3,'o':2,'p':1}
print('Before merging\n')
print("Dictonary 1: ",d1)
print("Dictonary 2: ",d2)
d1.update(d2)
print('After merging\n',d1)
```

Output:

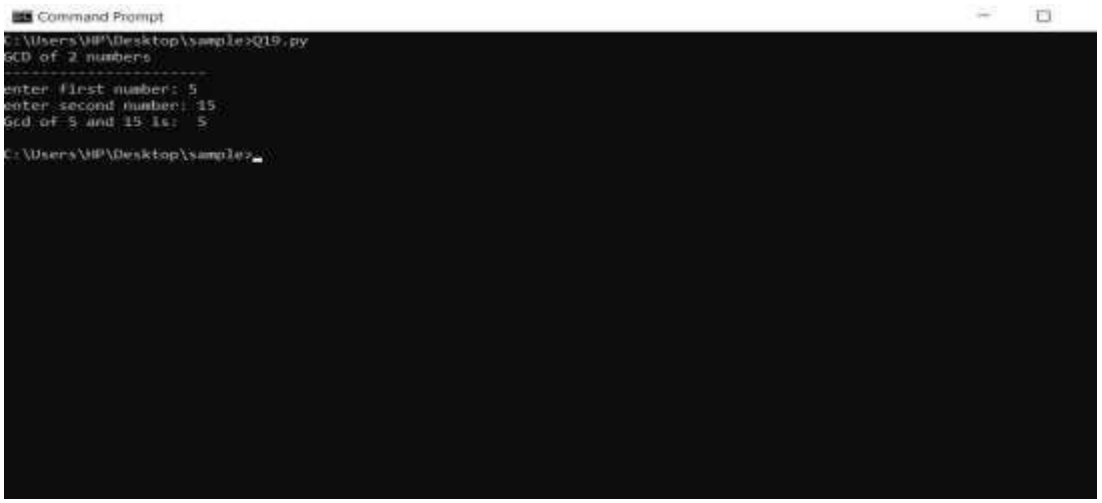


18.Find gcd of 2 numbers.

Program:

```
print("GCD of 2 numbers")
print("-----------------------------")
n1=int(input("enter first number: "))
n2=int(input("enter second number: "))
def gcd(a,b):
if(b==0):
return a else:
return gcd(b,a%b)
result=gcd(n1,n2)
print("Gcd of" ,n1, "and" ,n2, "is:",result)
```

Output:

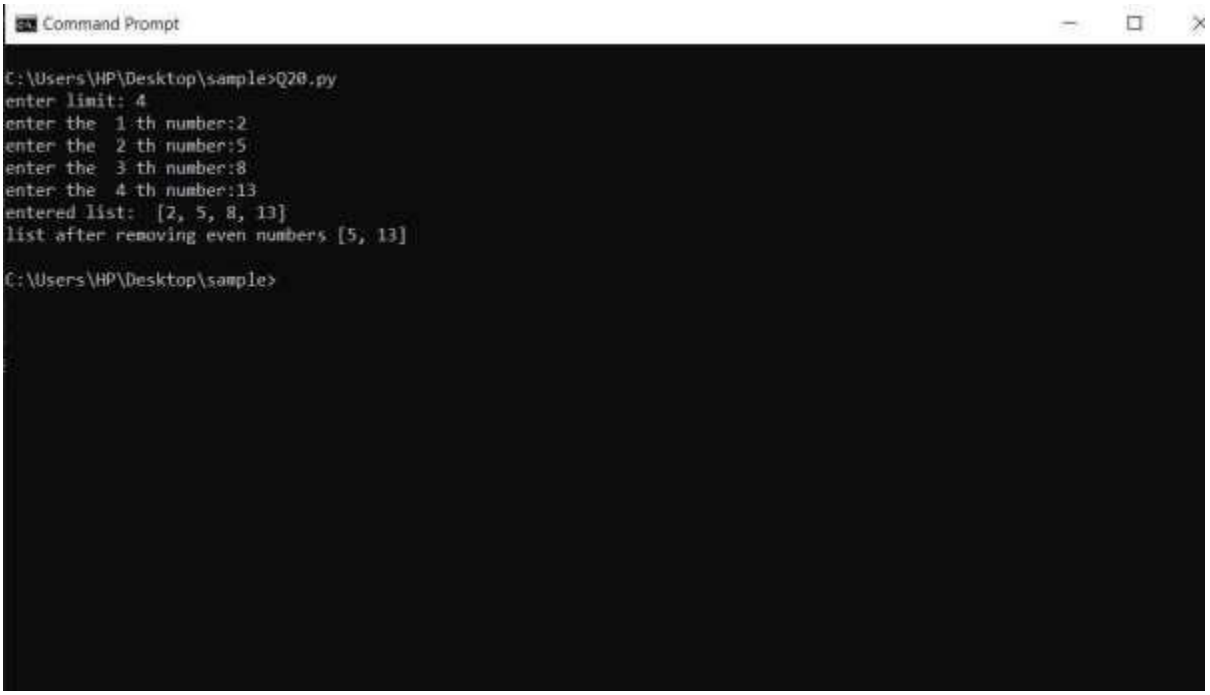


19. From a list of integers, create a list removing even numbers.

Program:

```
limit=int(input("enter limit: "))
n=[]
for i in range(1,limit+1):
num=int(input(f"enter the {i} th number:"))
n.append(num)
print("entered list: ",n)
odd_list=[]
for i in n:
if i%2!=0:
odd_list.append(i)
print("list after removing even numbers",odd_list)
```

Output:



20. Program to find the factorial of a number

Program:

```
print("factorial of a number")
print("-----------------")
num=int(input("enter a number: "))
fact=1
if num < 0:
print("enter a positive number")
else:
for i in range(1,num+1):
fact=fact*i
print("factorial of",num,"is",fact)
```

Output:

21. Generate Fibonacci series of N terms

Program:

```
print("fibonacci series")
print("..........")
limit=int(input("enter limit: "))
n1=0
n2=1
count=1
while count < limit:
print(n1)
n=n1+n2
n1=n2
n2=n
count=count+1
```

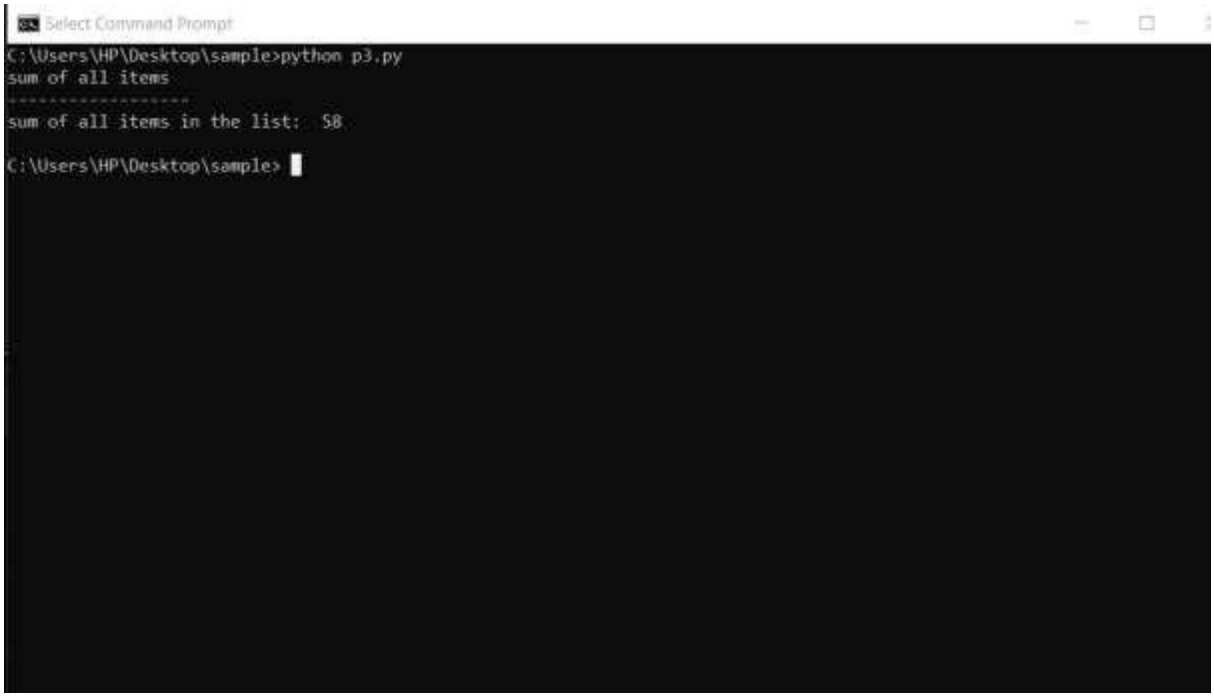
Output:

22. Find the sum of all items in a list

Program:

```
print("sum of all items")
print("..........")
total=0 list1=[11,10,12,20,5]
for ele in range(0,len(list1)):
 total = total + list1[ele]
print("sum of all items in the list: ",total)
```

Output:



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:

```
sq_list=[]
limit=int(input("enter the range: "))
if(limit<1000 or limit>9999):
print("enter a range between 1000 to 9999")
else:
for i in range(32,99):
 s=0
if(i*i>limit):
break
else:
for k in str(i*i):
if(int(k)%2==0):
 s=s+1
if(s==4):
sq_list.append(i*i)
if(len(sq_list)==0):
print("No numbers satisfying both conditions found in the range")

else:

print(f"Numbers satisfying both conditons are->{sq_list}")
```

Output:

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:

```
sum=0

limit=int(input("enter limit:"))
for i in range(1,limit+1):
print("\n")
for j in range(1,i+1):
sum=i*j
print(sum,end=' ')
print("\n")
```

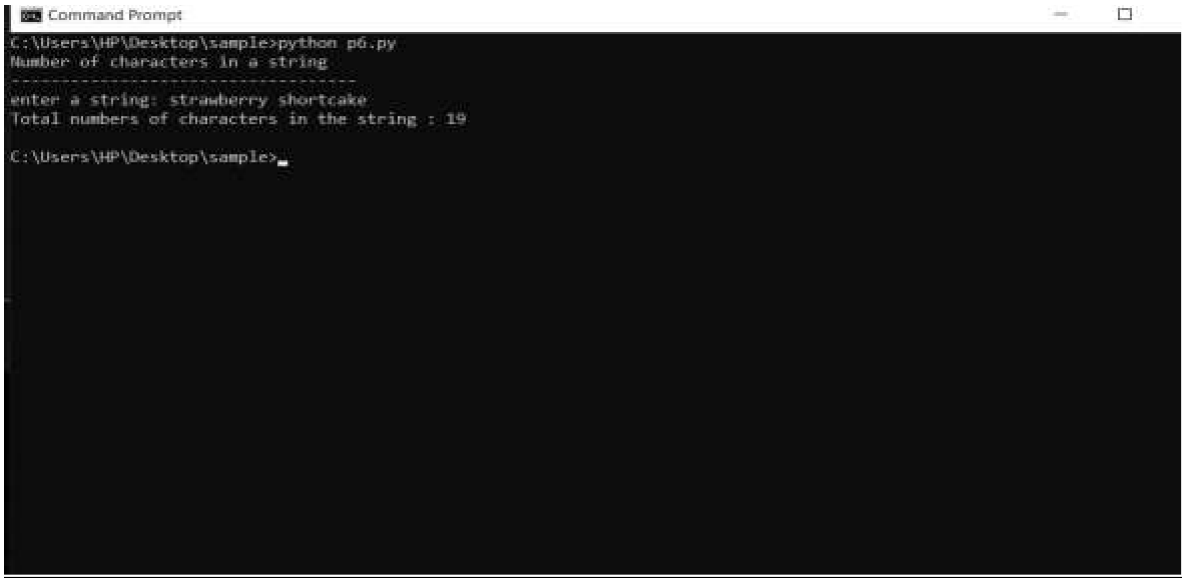
Output :

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

Program:

```
print("Number of characters in a string")
print("-----------------------------------------")
string=input("enter a string: ")
count=0
for i in range(0,len(string)):
if(string[i]!=' '):
count = count + 1
print("Total numbers of characters in the string : "+str(count))
```

Output:



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

Program:

```
string1=input("enter a string: ")
 str1="ly"
str2="ing"
last=string1[-3:]
if last in 'ing':
string1=string1+str1
print("string is: "+string1)
else:
string1=string1+str2
print("string is: "+string1)
```

Output:

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

Program:

```
str_list=list() long=0
string=' '
lim=int(input("enter the limit: "))
for i in range(1,lim+1):
item=str(input(f"enter the string{i}:"))
str_list.append(item)
for i in str_list:
if(long<=len(i)):
long=len(i)
string=i
print(f"Longest word in the list is {string} and its length is {long}")
```

Output:

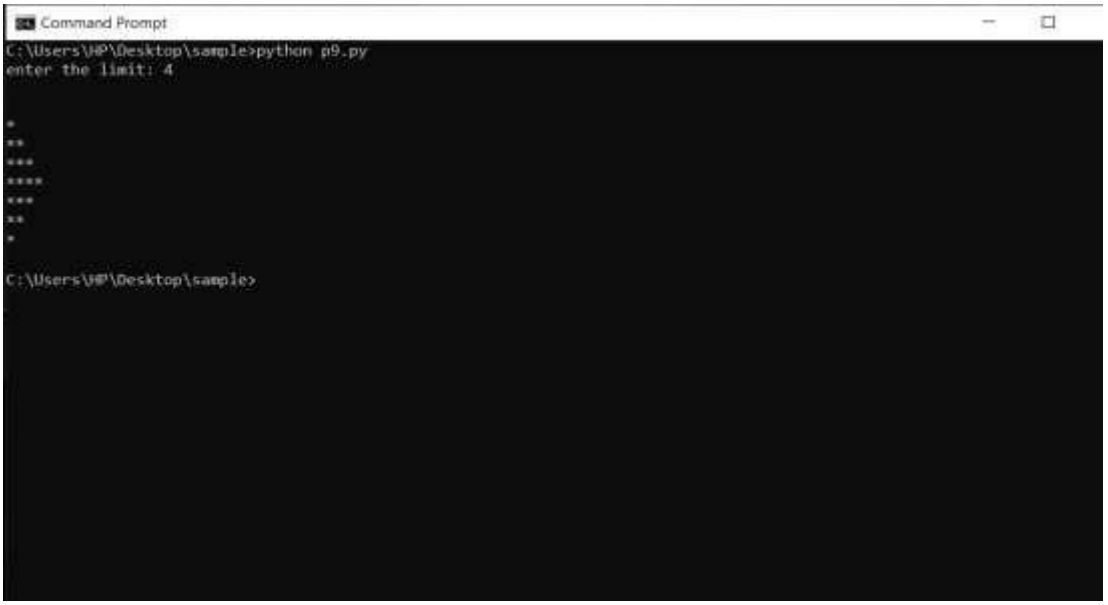
28. Construct following pattern using nested loop.

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

Program:

```
lim=int(input("enter the limit: "))
print("\n")
for i in range(1,lim+1):
print('*'*i)
 j=lim-1
while(j!=0):
print('*'*j)
j=j-1
```

Output:

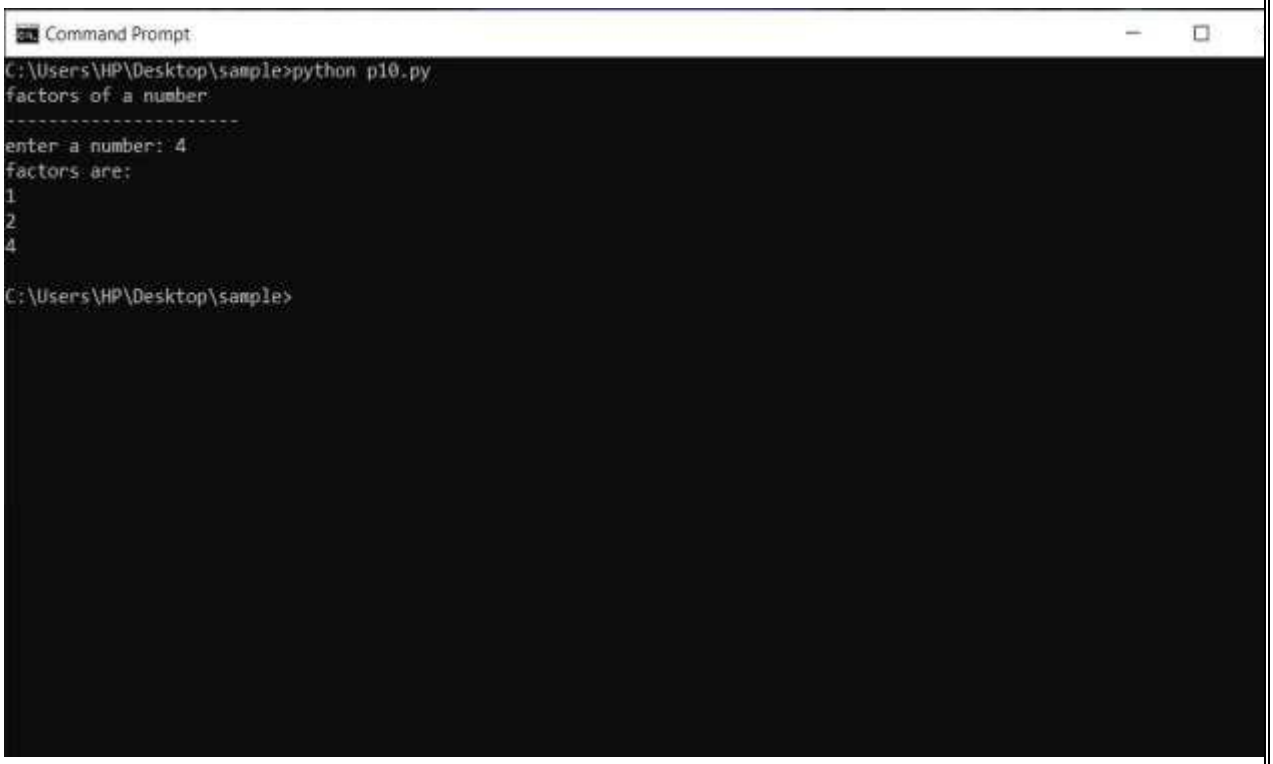


29.Generate all factors of a number.

Program:

```
print("factors of a number")
print("----------------------")
num=int(input("enter a number: "))
print("factors are: ")
 for i in range(1,num+1):
if num % i ==0:
print(i)
```

Output:



30. Write lambda functions to find area of square, rectangle and triangle.

Program:

```
square=lambda x: x ** 2

rectangle=lambda x,y: x*y

triangle=lambda x,y: 0.5*(x*y)

print("1.Area of square")

print("2.Area of rectangle")

print("3.Area of triangle")

print("\n")

ch=int(input("enter a choice: "))
if(ch==1):
side = int(input("enter one side: "))
 print("\n")
print(f"Area of the square is {square(side)}")
elif(ch==2):
length=int(input("enter the length: "))
breadth=int(input("enter the breadth: "))
print("\n")
print(f"Area of the rectangle is{rectangle(length,breadth)}")
elif(ch==3):
height=int(input("enter the height: "))
breadth=int(input("enter the breadth: "))
print("\n")
print(f"Area of triangle is{int(triangle(height,breadth))}")

else:

print("Invalid input")
```

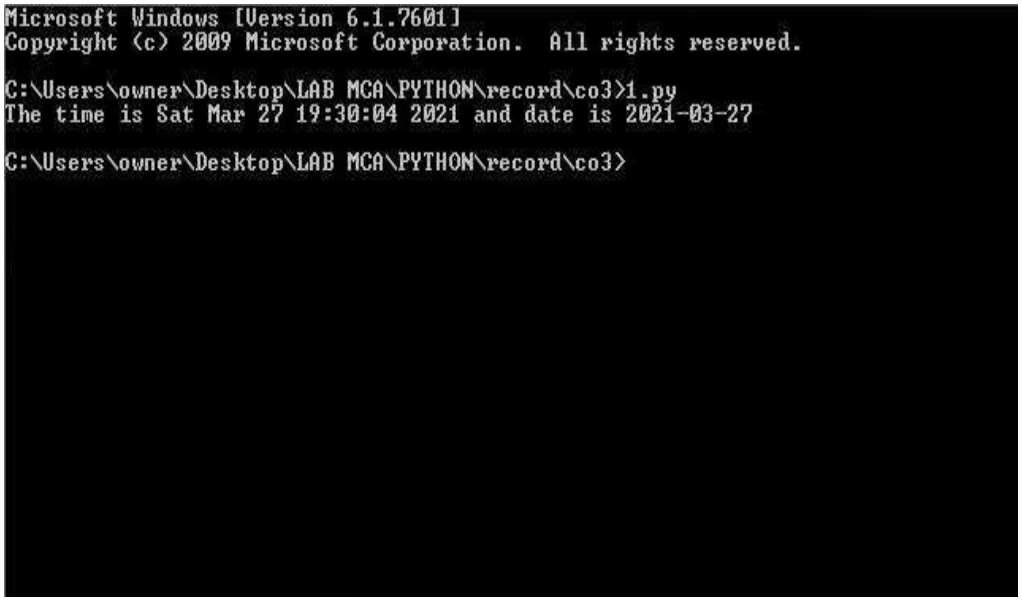
Output:

31. Work with built-in packages

Program:

```
import time

import datetime

today=datetime.date.today()

print(f"The time is {time.ctime()} and date is {today}")
```

Output:



32. Create a package graphics with modules rectangle,circle.include method to find area and perimeter of respective figures in each.Write a program to find area and perimeter of figure by different importing statements

Program:

```
from graphics import rectangle as r, circle as c

from graphics.three_d_graphics import sphere as s, cuboid as cu

print(f"Area of rectangle :{r.area(12,12)}")

print(f"Area of circle :{c.area(6)}")

print(f"Area of sphere :{s.area(12)}")

print(f"Area of cuboid :{cu.area(12,16,18)}")

print(f"Perimeter of rectangle :{r.perimeter(12,12)}")

print(f"Perimeter of circle :{c.perimeter(6)}")

print(f"Diameter of sphere :{s.diameter(12)}")

print(f"Periameter of cuboid :{cu.perimeter(12,16,18)}")
```

Output:

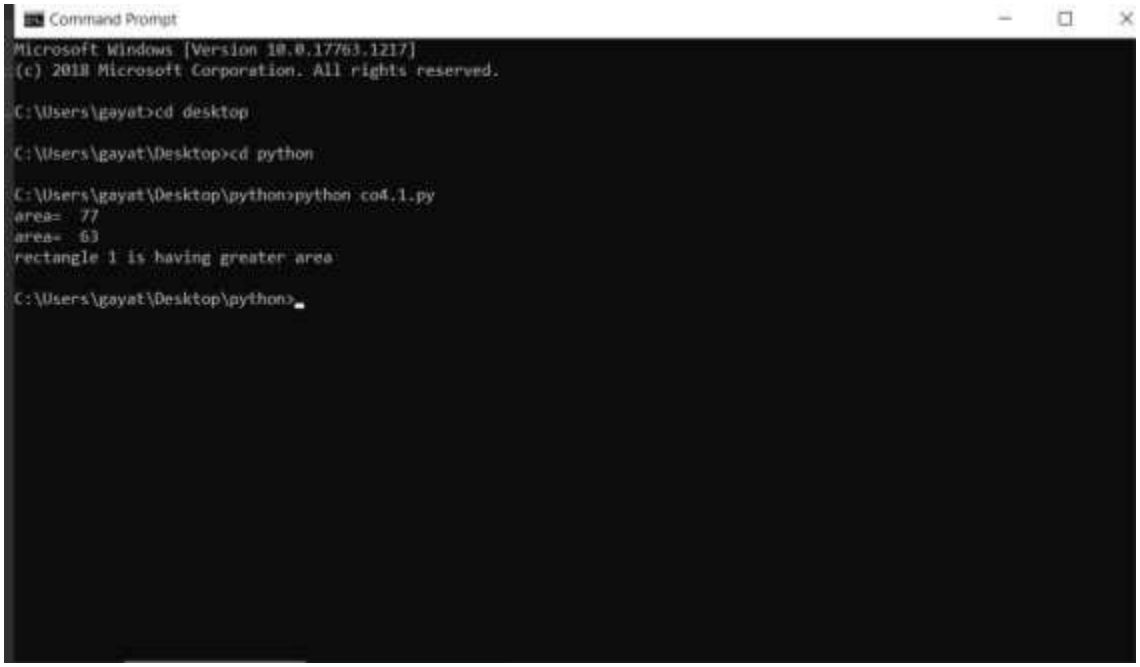
```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\owner\Desktop\LAB MCA\PYTHON\record\co3>2.py
Area of rectangle :144
Area of circle :36
Area of sphere :1808.6399999999999
Area of cuboid :95551488
Perimeter of rectangle :48
Perimeter of circle :37.68
Diameter of sphere :24
Periameter of cuboid :184

C:\Users\owner\Desktop\LAB MCA\PYTHON\record\co3>
```

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

Program:

```
class Rectangle:
 def arearect(self,l,w):
      self.l=l
      self.w=w
      self.area=self.l*self.w
      print("area= ",self.area)
rect1=Rectangle()
rect2=Rectangle()
rect1.arearect(11,7)
rect2.arearect(9,7)
if(rect1.area<rect2.area):
       print("rectangle 2 is having greater area")
elif(rect1.area==rect2.area):
       print("both rectangles have some area")
else:
       print("rectangle 1 is having greater area")
```

Output:

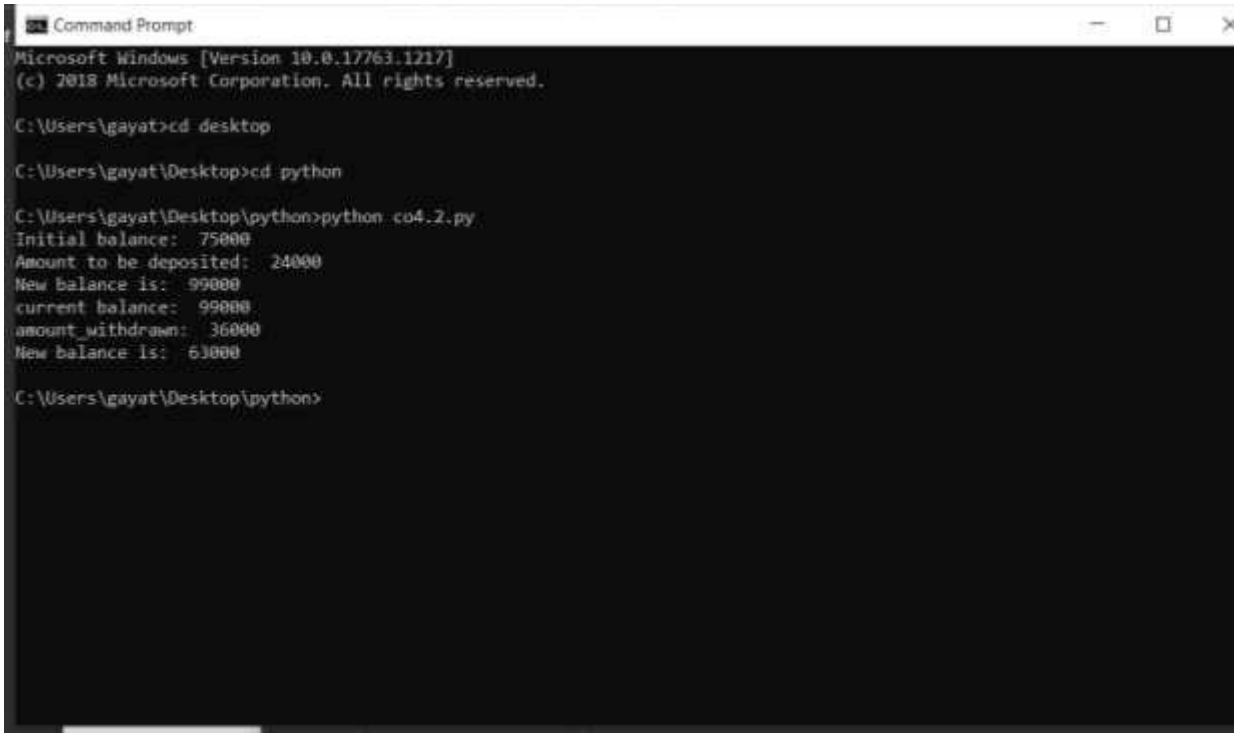


34. Create a Bank account with members account number, name, type of account and balance. Write constructor and methods to deposit at the bank and withdraw an amount from the bank.

Program:

```
class Bank_account:
        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 deposit(self,deposit_am):
                print("Initial balance: ",self.balance)
                print("Amount to be deposited: ",deposit_am)
                self.balance=self.balance+deposit_am
                print("New balance is: ",self.balance)
        def withdraw(self,withdrawn_am):
                print("current balance: ",self.balance)
                print("amount_withdrawn: ",withdrawn_am)
                self.balance=self.balance-withdrawn_am
                print("New balance is: ",self.balance)
P=Bank_account(1234,'Rose','savings',75000)
P.deposit(24000)
P.withdraw(36000)
```

Output:



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

Program:

```
class Rectangle:
def init (self,l,w):
                self.l=l
                self.w=w
def lt (self,a):
                if((self.l*self.w)>(a.l*a.w)):
                        print("rect1 is having greater area")
                        return(self.l*self.w)

else:

                        print("rect2 is having greater area")
                        return(a.l*a.w)
rect1=Rectangle(9,4)
rect2=Rectangle(8,5)
print(rect1<rect2)
```

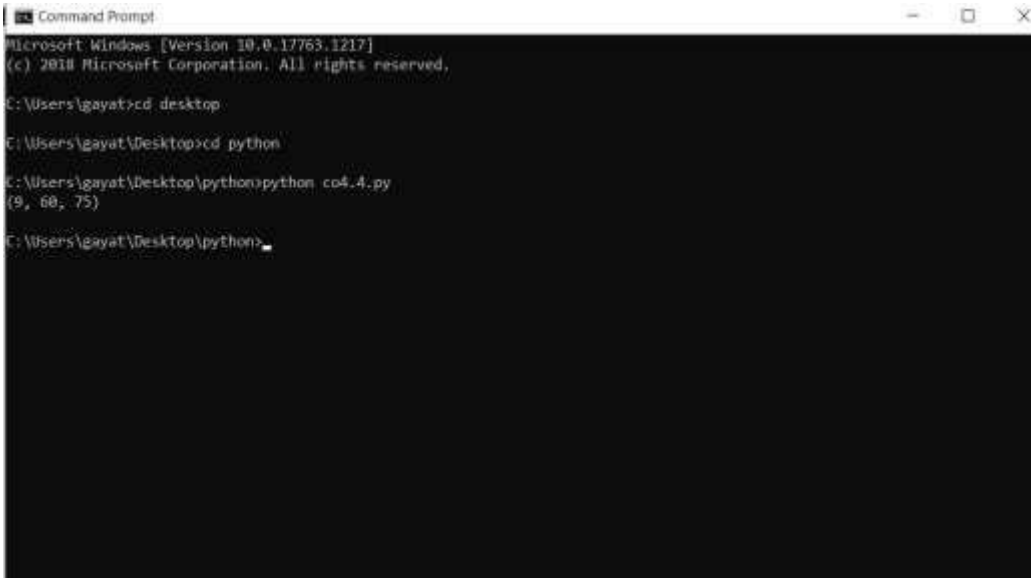
Output:

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

Program:

```
class Time:
    def init (self,hr,min,sec):
            self.hr=hr
            self.min=min
            self.sec=sec
    def__add__(self,t):
            return(self.hr+t.hr,self.min+t.min,self.sec+t.sec)
    t1=Time(4,15,45)
    t2=Time(5,45,30)
    print(t1+t2)
```

Output:

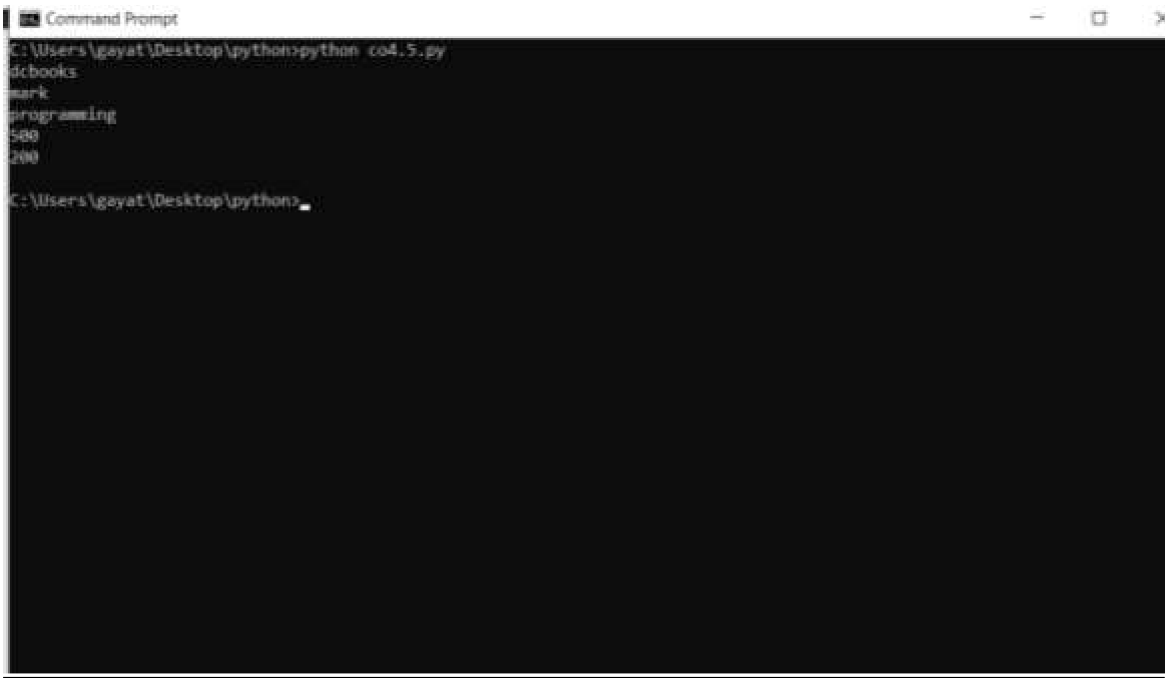


37. Create a class Publisher (name). Derive class Book from Publisher with attributes title and author. Derive class Python from Book with attributes price and no_of_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.

Program:

```
class Publisher:
        def init (self,n):
                self.name=n
class Book(Publisher):
        def init (self,n,a,t):
                super(). init (n)
                self.title=t
                self.author=a
class Python(Book):
        def init (self,n,a,t,p,pg):
                super(). init (n,a,t)
                self.price=p
                self.pages=pg
        def Print(self):
                print(P.name)
                print(P.title)
                print(P.author)
                print(P.price)
                print(P.pages)
P=Python('dcbooks','programming','mark',500,200)
P.Print()
```

Output:

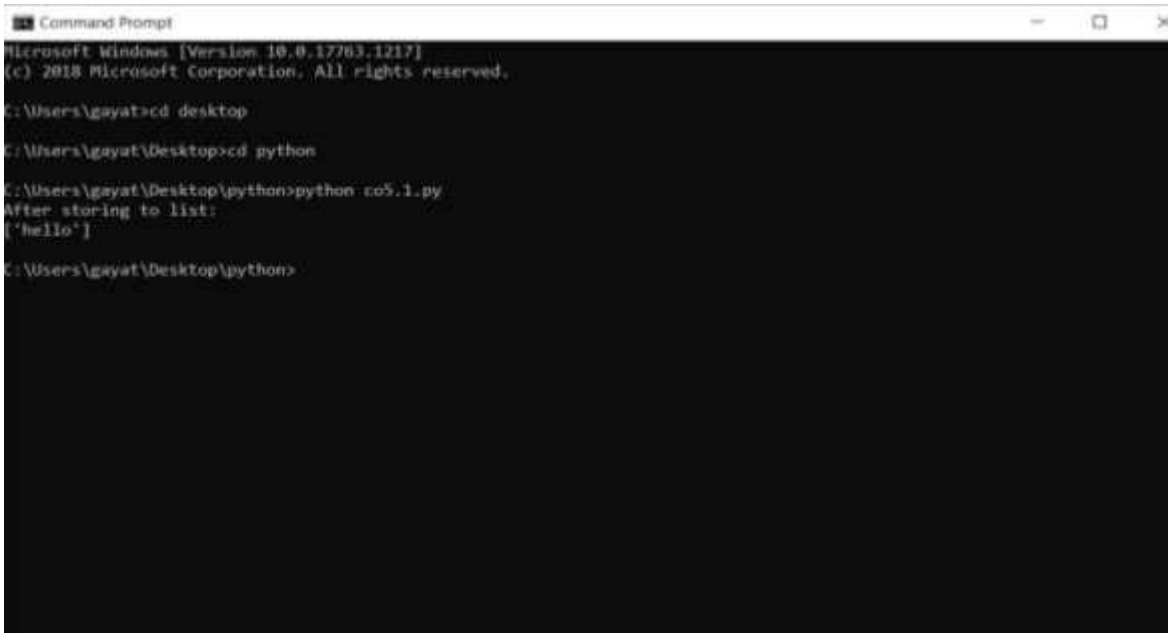


38. Write a Python program to read a file line by line and store it into a list

Program:

```
file1=open("demofile1.txt",'r')
list1=file1.readlines()
print(f"After storing to list:\n{list1}")
```

Output:



39. Python program to copy odd lines of one file to other

Program:

```
file1=open("demofile1.txt",'r')
file2=open("demofile2.txt",'w+')
list1=file1.readlines()
for i in range(0,len(list1),2):
file2.write(list1[i])
print("odd lines copied to another file")
```

Output: