FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

HORMIS NAGAR, MOOKKANNOOR

ANGAMALY-683577

‘FOCUS ON EXCELLENCE’

LABORATORY RECORD

20MCA131 - PROGRAMMING LAB

Name: **ABHINAND H**

Branch: **MASTER OF COMPUTER APPLICATION**

Semester: **1** **Batch: 2021 A** **Roll No: 02**

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Name : ABHINAND H

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Semester : 1 Roll No: 02

University Exam.Reg. No: FIT21MCA-2002

CERTIFICATE

Certified that this is the Bonafide record of the Practical work done by Mr. **ABHINAND H (FIT21MCA-2002)** in the **20MCA131-PROGRAMMING** Laboratory of the Federal Institute of Science and Technology during the academic year 2021-2022.

Signature of Staff in Charge Signature of H.O.D

Name: Name:

Date:

Date of University practical examination ………………………

Signature of Signature of

Internal Examiner External Examiner

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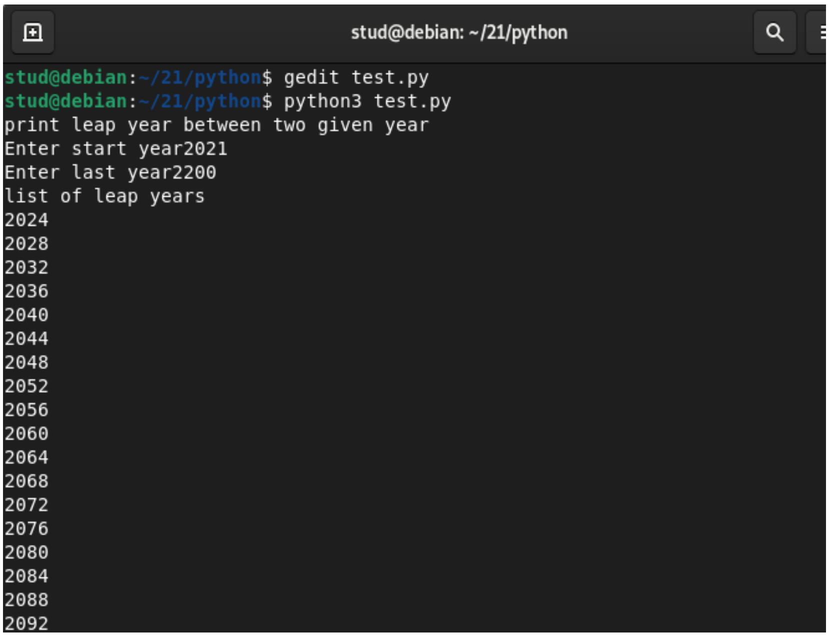
COURSE OUTCOME 1

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

Source code

```
print("print leap year
between two given years");
startyear=2021
endyear=int(input("Enter end year")) print("list of leap years")
for year in
   range(startyear,endyear):
   if(0==year%4):
              print(year)
```

Output



```
stud@debian:~/21/python$ gedit test.py
stud@debian:~/21/python$ python3 test.py
print leap year between two given year
Enter start year2021
Enter last year2200
list of leap years
2024
2028
2032
2036
2040
2044
2048
2052
2056
2060
2064
2068
2072
2076
2080
2084
2088
2092
```

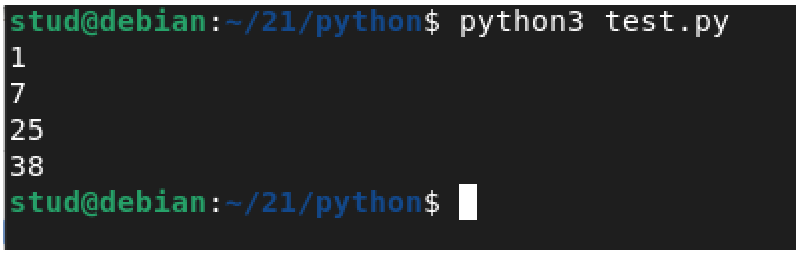
2) **List comprehensions:**

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

   Source code

```
a=[1,7,-6,-12,25,38]
        for i in a:
                if (i>0):
                        print(i)
```

Output



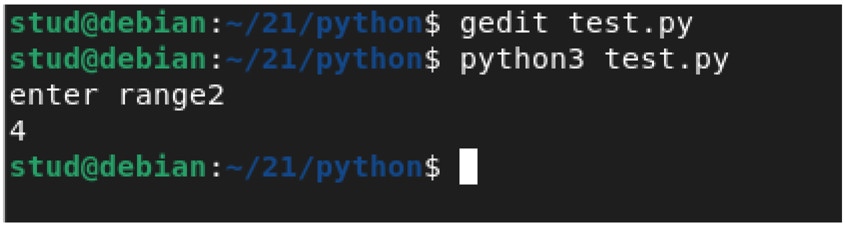
```
stud@debian:~/21/python$ python3 test.py
1
7
25
38
stud@debian:~/21/python$ 
```

b. Square of N numbers

Source code

```
n=int(input(‘enter range’))
for i in range(1,n+1):
          i=i*i
      print(i)
```

Output



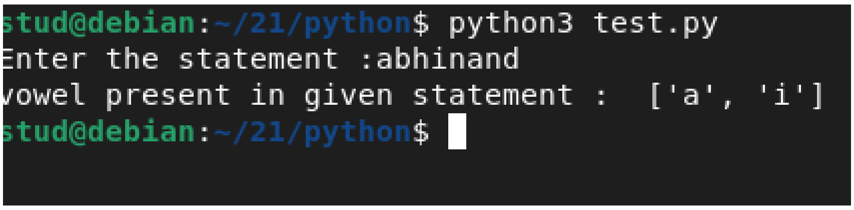
```
stud@debian:~/21/python$ gedit test.py
stud@debian:~/21/python$ python3 test.py
enter range2
4
stud@debian:~/21/python$ 
```

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

Source code

```
a=input("Enter the statement :")
vowels=['a','e','i','o','u']
list1=[]
for x in a:
        if(x in vowels and x not in list1):
                list1.append(x)
print("vowel present in given statement : ",list1)
```

Output



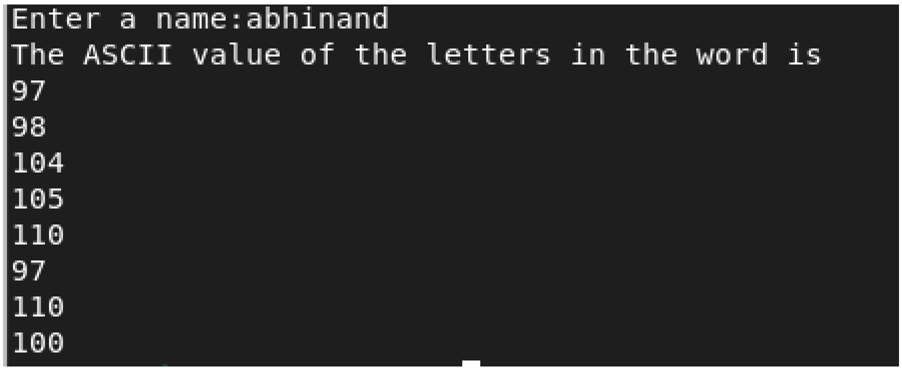
```
stud@debian:~/21/python$ python3 test.py
Enter the statement :abhinand
vowel present in given statement :  ['a', 'i']
stud@debian:~/21/python$ 
```

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

Source code

```
ordinal=input("Enter a name:")
print("The ASCII value of the letters in the word is")
for letter in ordinal:
        n=ord(letter)
 print(n)
```

Output



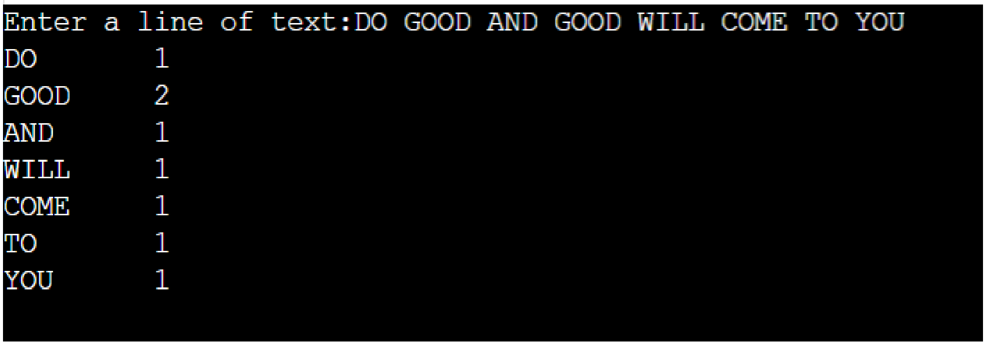
```
Enter a name:abhinand
The ASCII value of the letters in the word is
97
98
104
105
110
97
110
100
```

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

Source code

```
list1=[]
list2=[]
x=input("Enter a line of text:")
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



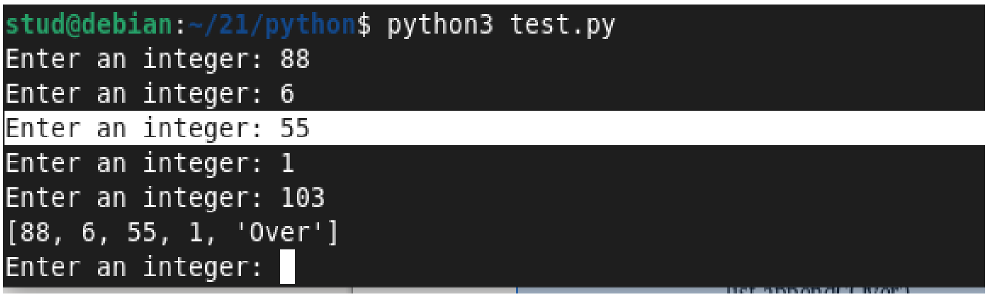
```
Enter a line of text:DO GOOD AND GOOD WILL COME TO YOU
DO        1
GOOD      2
AND       1
WILL      1
COME      1
TO        1
YOU       1
```

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

Source code

```
list=[]
while True:
 n=int(input('Enter an integer: '))
 if(n<=100):
         list.append(n)
 else:
         list.append('over')
         print(list)
```

Output



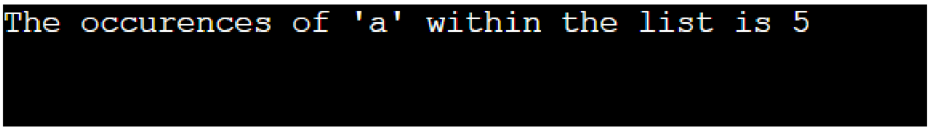
```
stud@debian:~/21/python$ python3 test.py
Enter an integer: 88
Enter an integer: 6
Enter an integer: 55
Enter an integer: 1
Enter an integer: 103
[88, 6, 55, 1, 'Over']
Enter an integer: 
```

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

Source code

```
list1=["abinand","alan","anil"]
count=0
for word in list1:
 for letter in word:
  if letter=="a":
   count=count+1
print("The occurences of 'a' within the list is "+str(count))
```

Output



```
The occurences of 'a' within the list is 5
```

6) Enter 2 lists of integers.Check

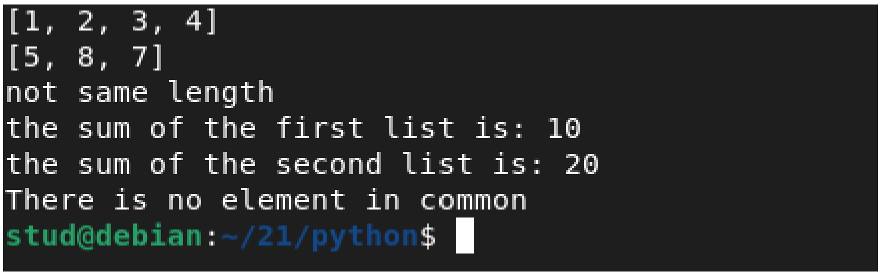
- **a. whether list are of same length**
- **b. whetherlist sums of same value**
- **c. whether any value occur in both.**

Source code

```
l1=[1,2,3,4]
l2=[5,8,7]
print("List 1",l1)
print("List 2",l2)
x=len(l1)
y=len(l2)
if x==y:
 print("List are of same length")
else:
 print("Length of lists are different")
s1=0
s2=0
```

```
for i in range(x):
 s1=s1+l1[i]
print("Sum of elements of List1:",s1)
for j in range(y):
 s2=s2+l2[j]
print("Sum of elememts of List2:",s2)
if s1==s2:
 print("Sum of list elements is same")
else:
 print("Sum of list elements is not same")
print("Common elements are:")
for i in range(x):
 for j in range(y):
          if l1[i]==l2[j]:
                   print(l1[i])
```

Output



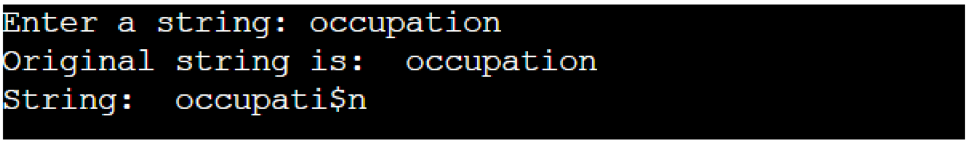
```
[1, 2, 3, 4]
[5, 8, 7]
not same length
the sum of the first list is: 10
the sum of the second list is: 20
There is no element in common
stud@debian:~/21/python$
```

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

Source code

```
str=input("Enter a string: ")
print("Original string is: ",str)
char=str[0]
str=str.replace(char,'$')
str=char+str[1:]
print("String: ",str)
```

Output



```
Enter a string: occupation
Original string is:  occupation
String:  occupati$n
```

8) Create a string from given string where first and last characters exchanged. [eg:python->nythop]

Source code

s=input("Enter a string: ")

t=s[0]

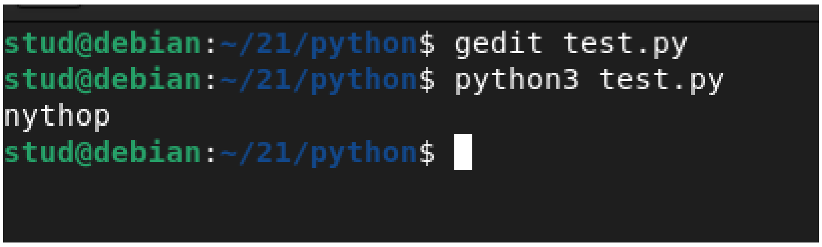
t1=s[-1]

n=len(s)

ns=t1+s[1:n-1]+t

print(ns)

Output



```
stud@debian:~/21/python$ gedit test.py
stud@debian:~/21/python$ python3 test.py
nythop
stud@debian:~/21/python$ 
```

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

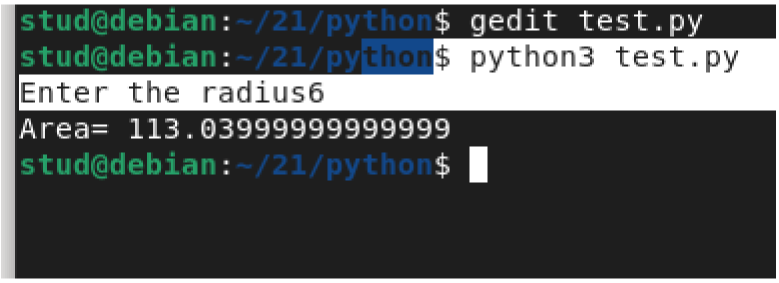
Source code

r=int(input('Enter the radius: '))

A=3.14*r*r

print(A)

Output



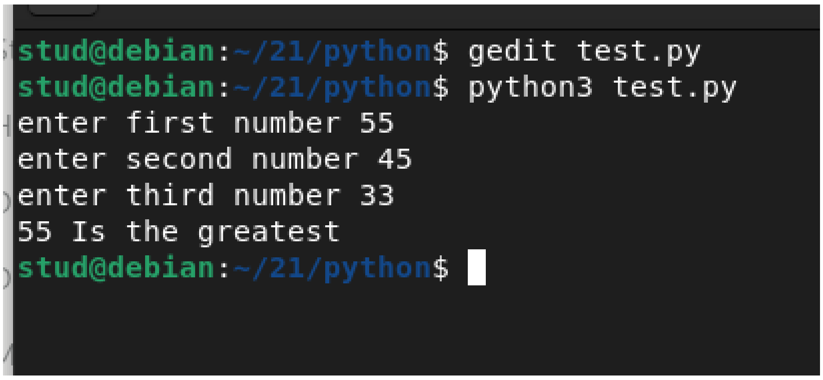
```
stud@debian:~/21/python$ gedit test.py
stud@debian:~/21/python$ python3 test.py
Enter the radius6
Area= 113.03999999999999
stud@debian:~/21/python$ 
```

10) Find the biggest of 3 numbers

Source code

```
a=int(input('Enter first number:'))
b=int(input('Enter second number:'))
c=int(input('Enter third number:'))
if a>b and a>c:
 print(a)
if b>a and b>c:
 print(b)
if c>a and c>b:
 print(c)
```

Output



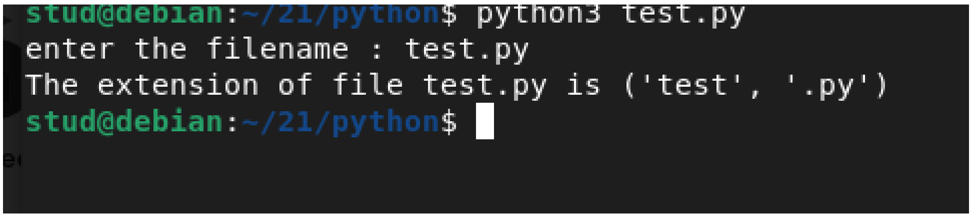
```
stud@debian:~/21/python$ gedit test.py
stud@debian:~/21/python$ python3 test.py
enter first number 55
enter second number 45
enter third number 33
55 Is the greatest
stud@debian:~/21/python$
```

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

Source code

```
import os
a=input("Enter file name:")
print("The extension of file",a,"is",os.path.splitext(a))
```

Output



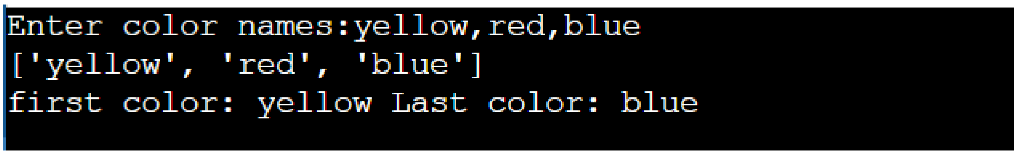
```
stud@debian:~/21/python$ python3 test.py
enter the filename : test.py
The extension of file test.py is ('test', '.py')
stud@debian:~/21/python$
```

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

Source 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



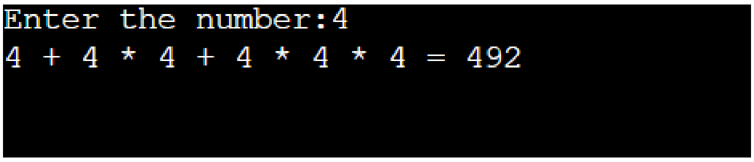
```
Enter color names:yellow,red,blue
['yellow', 'red', 'blue']
first color: yellow Last color: blue
```

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

Source code

```
n=int(input("Enter the number:"))
a=n*1
b=n*11
c=n*111
s=a+b+c
print(n,"+",n,"*",n,"+",n,"*",n,"*",n,"=",s)
```

Output



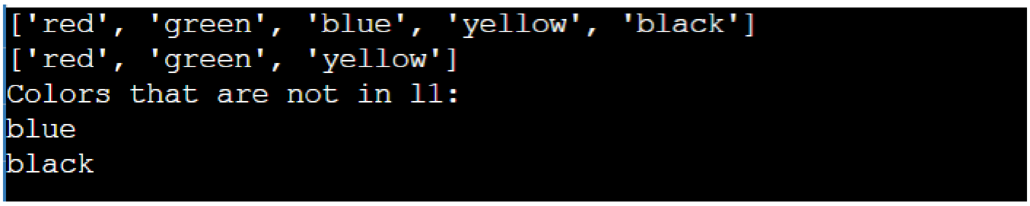
```
Enter the number:4
4 + 4 * 4 + 4 * 4 * 4 = 492
```

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

Source code

```
l1=['red','green','blue','yellow','black']
l2=['red','green','yellow']
print(l1)
print(l2)
print("Colors that are not in l1: ")
for i in l1:
 if i not in l2:
         print(i)
```

Output



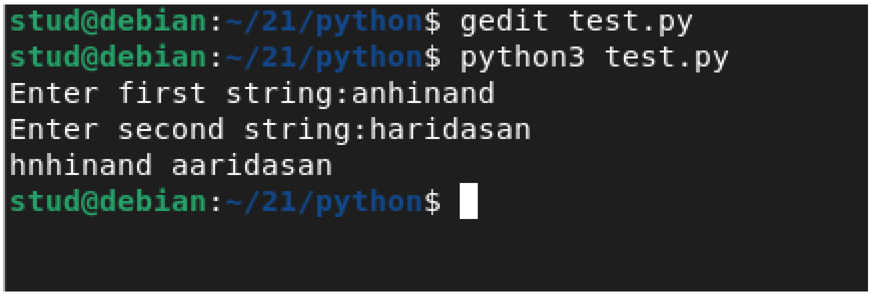
```
['red', 'green', 'blue', 'yellow', 'black']
['red', 'green', 'yellow']
Colors that are not in l1:
blue
black
```

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

Source code

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

Output



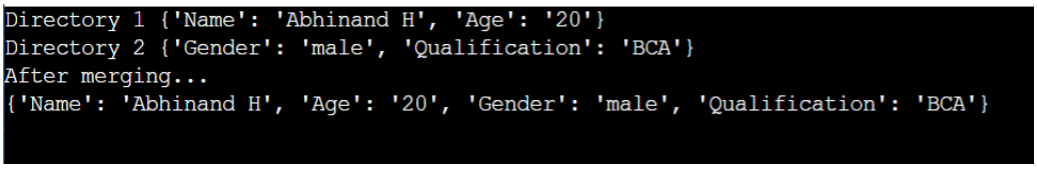
```
stud@debian:~/21/python$ gedit test.py
stud@debian:~/21/python$ python3 test.py
Enter first string:anhinand
Enter second string:haridasan
hnhinand aaridasan
stud@debian:~/21/python$ 
```

16) Merge two dictionaries.

Source code

```
D1={"Name":"Ann mariya","Age":"20"}
print("Directory 1",D1)
D2={"Gender":"Female","Qualification":"BCA"}
print("Directory 2",D2)
D1.update(D2)
print("After merging...")
print(D1)
```

Output



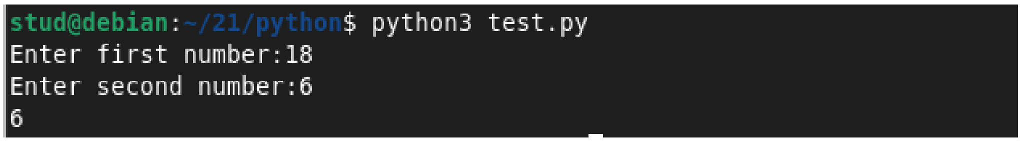
```
Directory 1 {'Name': 'Abhinand H', 'Age': '20'}
Directory 2 {'Gender': 'male', 'Qualification': 'BCA'}
After merging...
{'Name': 'Abhinand H', 'Age': '20', 'Gender': 'male', 'Qualification': 'BCA'}
```

17) Find gcd of 2 numbers

Source code

```
a=int(input("Enter first number: "))
b=int(input("Enter first number: "))
x=min(a,b)
gcd=0
for i in range (1,x+1):
 if((a%x==0) and (b%x==0)):
        gcd=i
print("GCD is",i)
```

Output



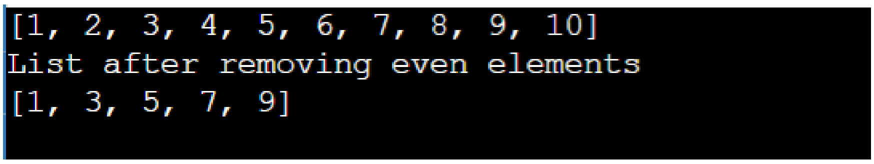
```
stud@debian:~/21/python$ python3 test.py
Enter first number:18
Enter second number:6
6
```

18) From a list of integers,create a list removing even numbers.

Source code

```
l1=[1,2,3,4,5,6,7,8,9,10]
print(l1)
l2=[]
for i in range(len(l1)):
 if l1[i]%2!=0:
        l2.append(l1[i])
print("List after removing even elements")
print(l2)
```

Output



```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
List after removing even elements
[1, 3, 5, 7, 9]
```

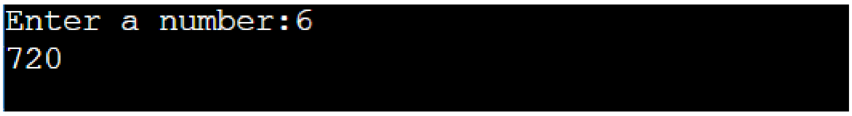
COURSE OUTCOME 2

19) Program to find the factorial of a number.

Source code

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

Output



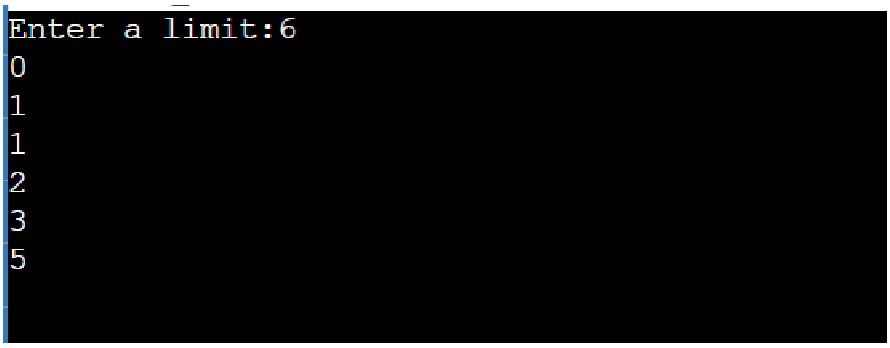
```
Enter a number:6
720
```

20) Generate fibonacci series of N terms.

Source code

```
n=int(input('Enter a limit:'))
a=0
b=1
print(a)
print(b)
for i in range (2,n):
        c=a+b
        print(c)
        a=b
        b=c
```

Output



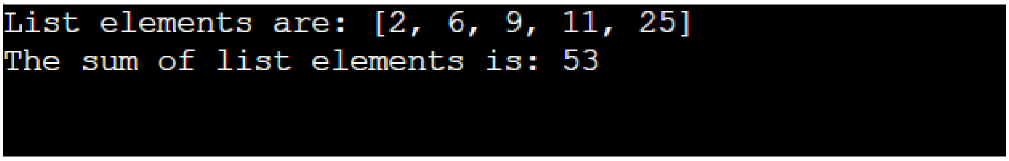
```
Enter a limit:6
0
1
1
2
3
5
```

21) Find the sum of all items in a list.

Source code

```
list=[2,6,9,11,25]
print("List elements are:",list)
sum=0
for i in list:
        sum=sum+i
print("The sum of list elements is:",sum)
```

Output



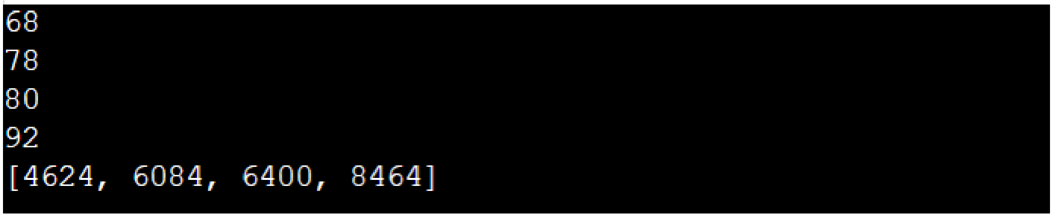
```
List elements are: [2, 6, 9, 11, 25]
The sum of list elements is: 53
```

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

Source 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



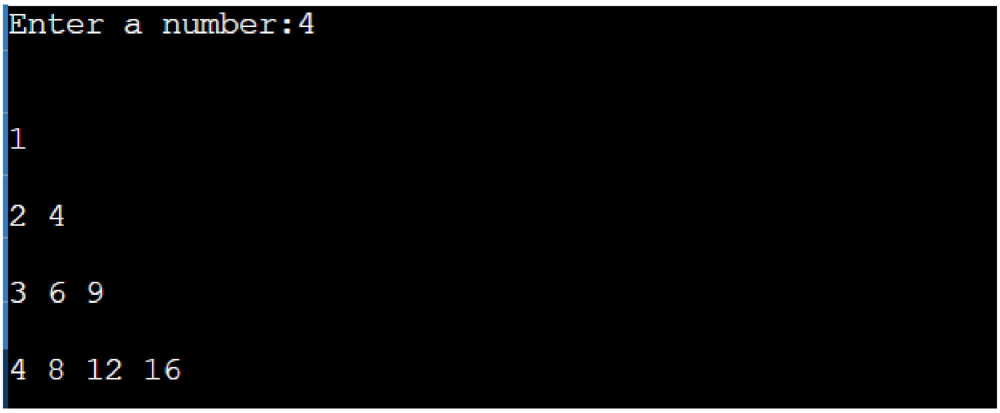
```
68
78
80
92
[4624, 6084, 6400, 8464]
```

23) Display the given pyramid with step number accepted from user.

Source code

```
n=int(input("Enter a number:"))
for j in range(0,n+1):
  for i in range(1,j+1):
        i=j*i
        print(i,end=" ")
  print("\n")
```

Output



```
Enter a number:4


1

2 4

3 6 9

4 8 12 16
```

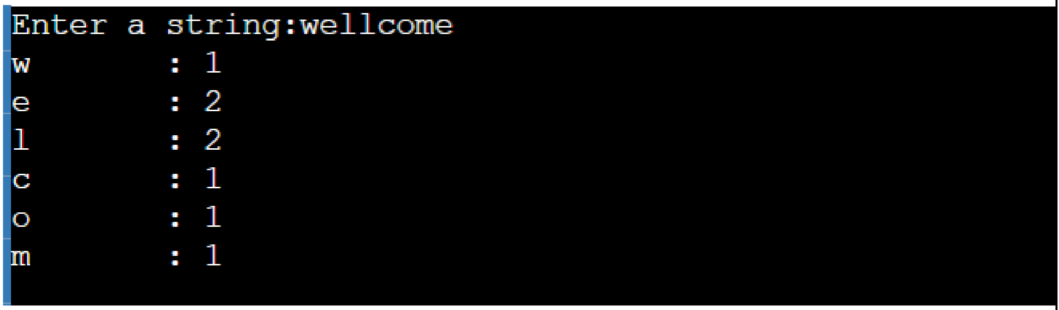
24) Count the number of characters (character frequency) in a string.

Source 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



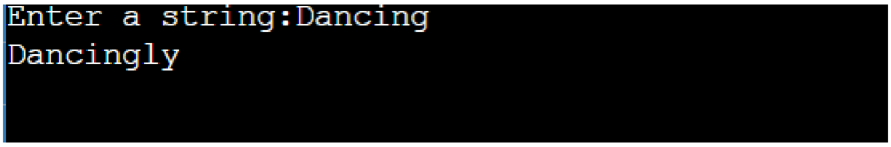
```
Enter a string:wellcome
w        : 1
e        : 2
l        : 2
c        : 1
o        : 1
m        : 1
```

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

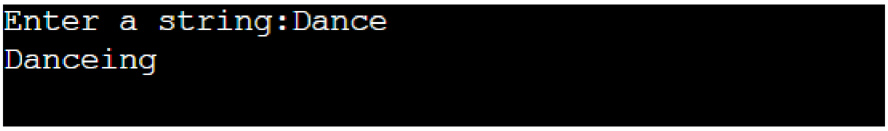
Source code

```
string=input("Enter a string:")
if(string[-3:]=="ing"):
        string+="ly"
else:
        string+="ing"
print(string)
```

Output



```
Enter a string:Dancing
Dancingly
```



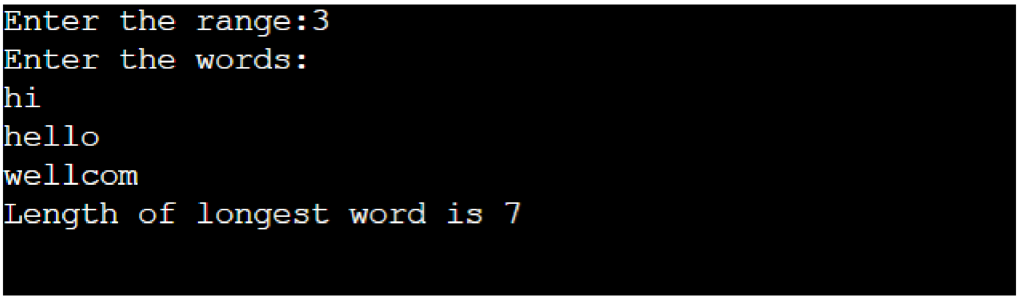
```
Enter a string:Dance
Danceing
```

26) Accept a list of words and return length of longest word.

Source 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



```
Enter the range:3
Enter the words:
hi
hello
wellcom
Length of longest word is 7
```

27) Construct following pattern using nested loop.

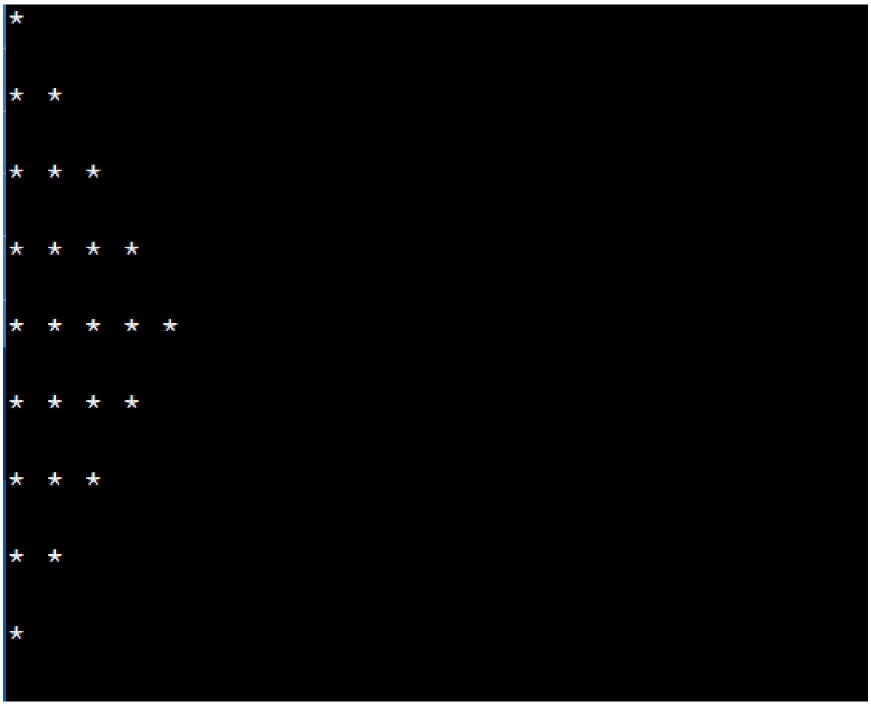
```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
```

*

Source code

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

Output



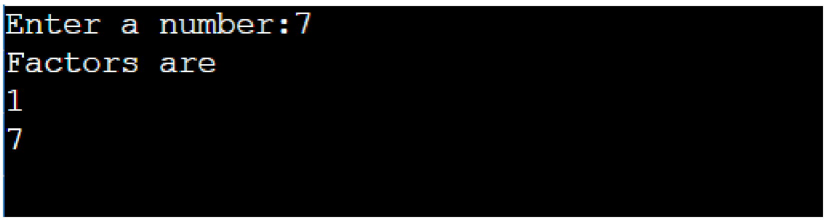
```
*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*
```

28) Generate all factors of a number.

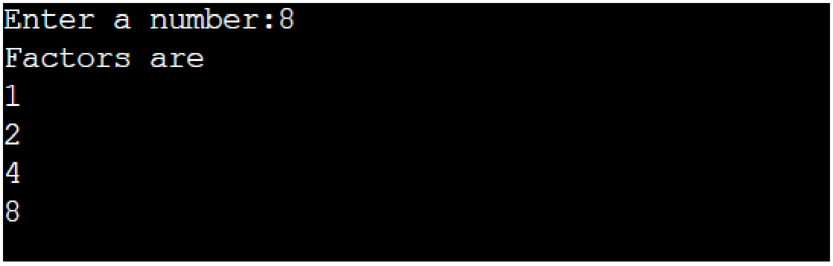
Source code

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

Output



```
Enter a number:7
Factors are
1
7
```



```
Enter a number:8
Factors are
1
2
4
8
```

COURSE OUTCOME 3

29) 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)

Source code

Graphice\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
```

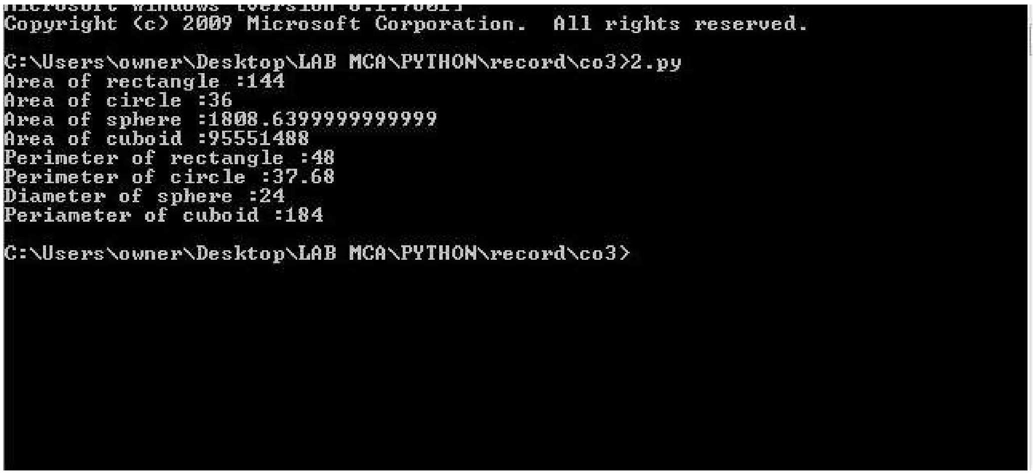
Graphics\tdgraphics\sphere.py

```
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("Permeter of a spere with radius 10 is ",sphere.perimeter_sphere(10))
```

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>
```

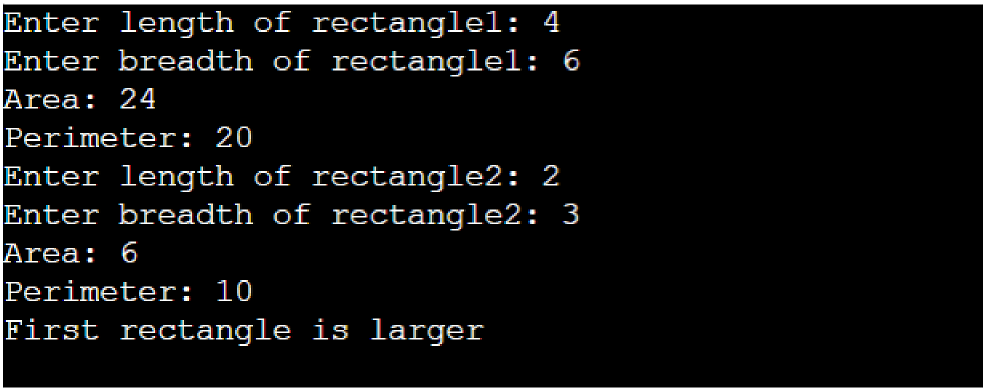
COURSE OUTCOME 4

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

Source 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)

l=int(input("Enter length of rectangle1: "))

b=int(input("Enter breadth of rectangle1: "))

rect1 = Rectangle(l,b)

a1=rect1.area()

p1=rect1.perimeter()

print("Area:",a1)

print("Perimeter:",p1)

l=int(input("Enter length of rectangle2: "))

b=int(input("Enter breadth of rectangle2: "))

rect2 = Rectangle(l,b)

a2=rect2.area()

p2=rect2.perimeter()

print("Area:",a2)
print("Perimeter:",p2)

if (a1>a2):

   print("First rectangle is larger")

elif a1==a2:

   print("Rectangles are of same area")

else:

   print("Second rectangle is larger")
```

Output



```
Enter length of rectangle1: 4
Enter breadth of rectangle1: 6
Area: 24
Perimeter: 20
Enter length of rectangle2: 2
Enter breadth of rectangle2: 3
Area: 6
Perimeter: 10
First rectangle is larger
```

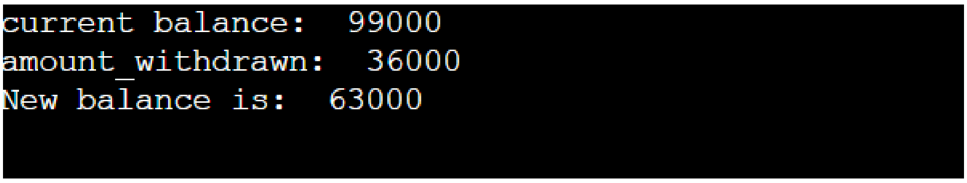
31) Create a Bank account with members account number, name, type of account and balance. Write constructor and methods to deposit at the bank and withdraw an amount from the bank.

Source code

```
class bank:
def __init__(self,acc_no,name,acc_type,bal):

             self.acc_no=acc_no

             self.name=name

             self.acc_type=acc_type

             self.bal=bal



   def deposit(self):
```

```
            self.bal=self.bal+y

            return self.bal

   def withdraw(self):

            return self.bal-y

   def display_balance(self):

            return self.bal

acc1=bank("b11","Ann","Savings",50000)

while(1):

   print("1.Deposit\n2.Withdraw\n3.Display balance\n4.Exit\n")

   ch=int(input("Enter your choice:"))

   if ch==1:

            amt=int(input("Enter the amount:"))

            b=acc1.deposit(amt)

            print("Current balance:",b)

   elif ch==2:

            amt=int(input("Enter the amount:"))

            b=acc1.withdraw(amt)

            print("Current balance:",b)

   elif ch==3:

            cb=acc1.display_balance()

            print("Current balance:",cb)

   elif ch==4:

            exit(1)

   else:
        print("Invalid choice")
```

Output



```
current balance:  99000
amount_withdrawn:  36000
New balance is:  63000
```

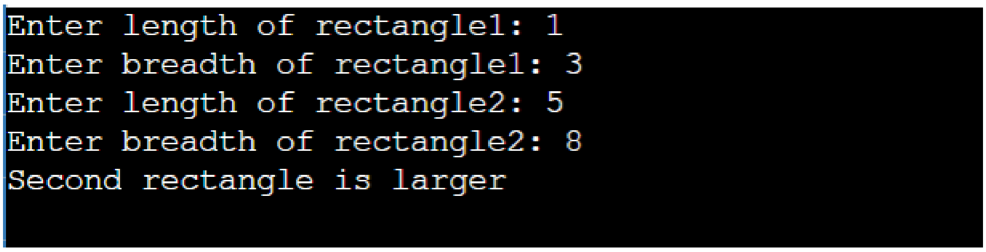
32) **Create a class Rectangle with private attributes length and width. Overload ‘<’ operator to compare the area of 2 rectangles.**

Source code

```
class Rectangle:
  def __init__(self,length,breadth):
        self.__length = length
        self.__breadth = breadth
  def __lt__ (self,rect2):
        if self.__length*self.__breadth < rect2.__length*rect2.__breadth:
              return True
        else:
              return False
l=int(input("Enter length of rectangle1: "))
b=int(input("Enter breadth of rectangle1: "))
rect1 = Rectangle(l,b)
l=int(input("Enter length of rectangle2: "))
b=int(input("Enter breadth of rectangle2: "))
rect2 = Rectangle(l,b)
if rect1 < rect2:
  print("Second rectangle is larger")
```

```
else:

    print("First rectangle is larger")
```

output



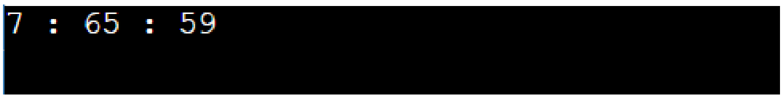
```
Enter length of rectangle1: 1
Enter breadth of rectangle1: 3
Enter length of rectangle2: 5
Enter breadth of rectangle2: 8
Second rectangle is larger
```

33) **Create a class Time with private attributes hour, minute and second. Overload ‘+’ operator to find sum of 2 time.**

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



```
7 : 65 : 59
```

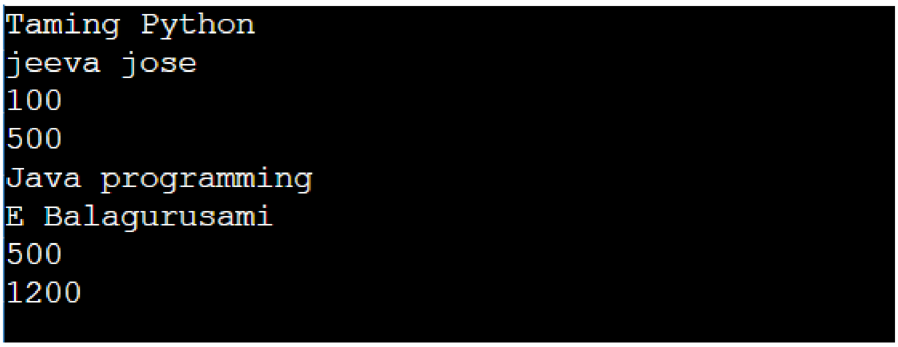
34) Create a class Publisher (name). Derive class Book from Publisher with attributes title and author. Derive class Python from Book with attributes price and no_of_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.

Source 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



```
Taming Python
jeeva jose
100
500
Java programming
E Balagurusami
500
1200
```

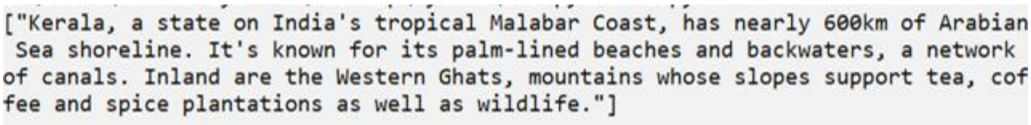
COURSE OUTCOME 5

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

Source code

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

Output



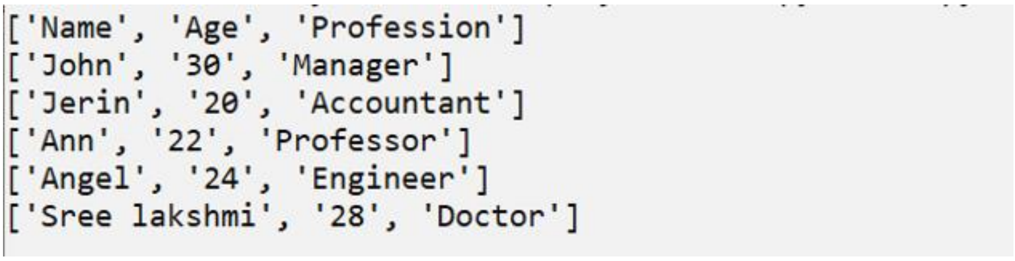
```
["Kerala, a state on India's tropical Malabar Coast, has nearly 600km of Arabian
 Sea shoreline. It's known for its palm-lined beaches and backwaters, a network
of canals. Inland are the Western Ghats, mountains whose slopes support tea, cof
fee and spice plantations as well as wildlife."]
```

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

Source code

```
import csv

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

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

Output



```
['Name', 'Age', 'Profession']
['John', '30', 'Manager']
['Jerin', '20', 'Accountant']
['Ann', '22', 'Professor']
['Angel', '24', 'Engineer']
['Sree lakshmi', '28', 'Doctor']
```