FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

HORMIS NAGAR, MOOKKANNOOR

ANGAMALY-683577

'FOCUS ON EXCELLENCE'

LABORATORY RECORD

20MCA131 - PROGRAMMING LAB

Name: ABHIJITH RAJEEV

Branch: MASTER OF COMPUTER APPLICATIONS

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

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University Exam.Reg. No: FIT21MCA-2001

CERTIFICATE

Certified that this is the Bonafide record of the Practical work done by Mr. **ABHIJITH RAJEEV** 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 Internal Examiner — Signature of 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:~/Documents/python co1$ python3 prg2.py
Enter leap year between given two years
Enter end year2040
List of leap years
2024
2028
2032
2036
stud@debian:~/Documents/python co1$
```

2) List comprehensions:

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

Source code

```
list=[-11,4,8,-34,10,14]
print("Elements in the list are:",list) print("Positive numbers in the list")
for num in list:
    if num>=0:
        print(num)
```

Output

```
stud@debian:~/Documents/python co1$ python3 prg3a.py
1  7  25  38  stud@debian:~/Documents/python co1$
```

b. Square of N numbers

Source code

```
n=int(input('Enter range:'))
for num in range(1,n+1):
    num=num*num
    print(num)
```

Output

```
stud@debian:~/Documents/python co1$ python3 prg3b.py
enter range 5
1
4
9
16
25
stud@debian:~/Documents/python co1$
```

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

Source code

```
s=input("Enter a string: ")
list=[]
for i in s:
   if i in "aeiouAEIOU":
            list.append(i)
print("vowels in the list are:")
print(list)
```

Output

```
stud@debian:~/Documents/python col$ python3 prg3c.py
['a', 'i', 'i']
stud@debian:~/Documents/python col$
```

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

Source code

```
print("String: Welcome")
print("Ordinal Values")
for i in 'W','e','l','c','o','m','e':
   x=ord(i)
   print(x)
```

Output

```
stud@debian:~/Documents/python col$ python3 prg3d.py
Enter a name:fisat
The ASCII value of the letters in the word is
102
105
115
97
116
stud@debian:~/Documents/python col$
```

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

```
stud@debian:~/Documents/python col$ python3 prg4.py
Enter a string:good morning abhijith good morning
good     2
morning          2
abhijith         1
stud@debian:~/Documents/python col$
```

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:~/Documents/python col$ python3 prg5.py
Enter an integer: 5
Enter an integer: 98
Enter an integer: 34
Enter an integer: 89
Enter an integer: 108
[5, 98, 34, 89, 'Over']
Enter an integer:
```

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

Source code

```
list=[“abhinav","albin","abhijith”] print("Elements in the list are:")
print(list)
count=0
for word in list:
        for i in word:
                if i=='a':
                        count+=1
print("count of 'a' is:", count)
```

Output

```
stud@debian:~/Documents/python co1$ python3 prg6.py
The occurences of 'a' within the list is 4
stud@debian:~/Documents/python co1$
```

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=[1,3,2]
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

```
stud@debian:~/Documents/python co1$ python3 prg7.py
[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:~/Documents/python co1$
```

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

```
stud@debian:~/Documents/python co1$ python3 prg8.py
Enter a string:onion
oni$nstud@debian:~/Documents/python co1$
```

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:~/Documents/python co1$ python3 prg9.py
nythop
stud@debian:~/Documents/python co1$
```

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:~/Documents/python co1$ python3 prg10.py
Enter the radius 5
Area= 78.5
stud@debian:~/Documents/python co1$
```

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:~/Documents/python co1$ python3 prg11.py
enter first number 10
enter second number 50
enter third number 20
50 Is the biggest
stud@debian:~/Documents/python co1$
```

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:~/Documents/python co1$ python3 prg12.py
enter the filename : prg12.py
The extension of file prg12.py is ('prg12', '.py')
stud@debian:~/Documents/python co1$
```

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

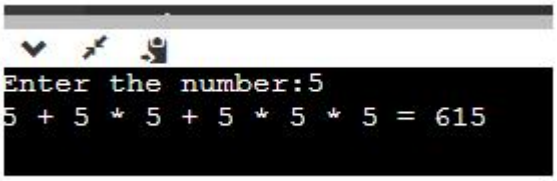
```
stud@debian:~/Documents/python co1$ python3 prg13.py
Ente the size:4
Enter Your Choice:red
Enter Your Choice:blue
Enter Your Choice:green
Enter Your Choice:yellow
red
yellow
stud@debian:~/Documents/python co1$
```

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



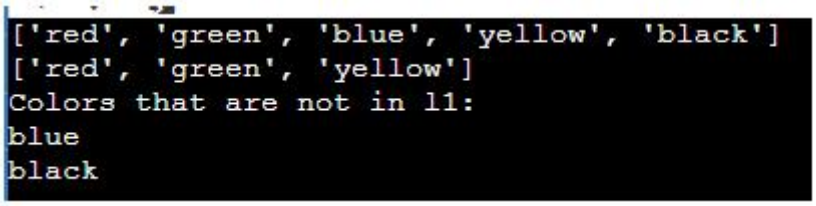
14) Print out all color from color-list1 not contained in color-list2

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

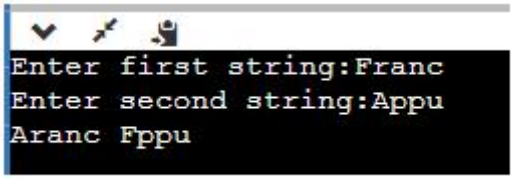


15) Create a single string separated with space from two strings by swapping the character at position 1.

Source code

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

Output



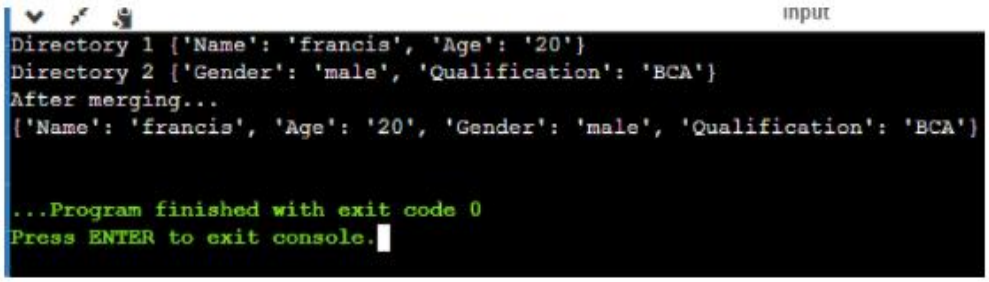
16) Merge two dictionaries.

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

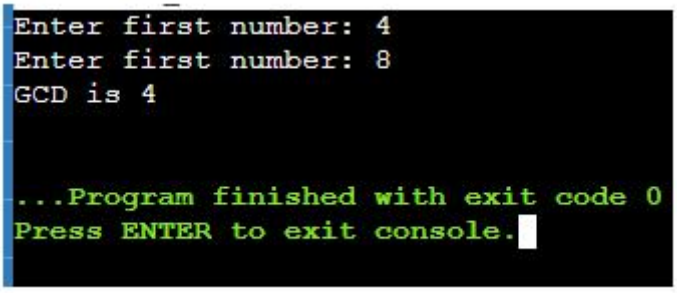


17) Find gcd of 2 numbers

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



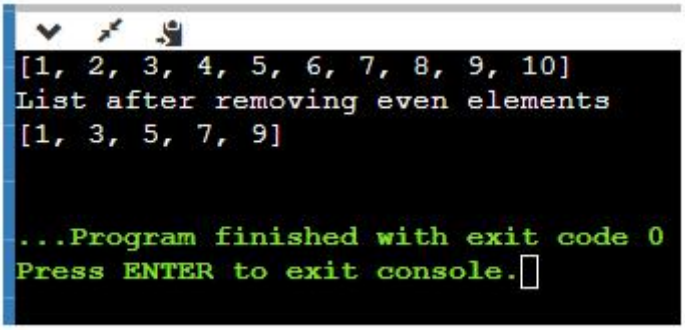
18) From a list of integers,create a list removing even numbers.

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



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

```
stud@debian:~/Documents/Python co2$ python3 prg1.py
Enter a number:5
120
stud@debian:~/Documents/Python co2$
```

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

```
stud@debian:~/Documents/Python co2$ python3 prg2.py
Enter a number:10
0
1
1
2
3
5
8
13
21
34
stud@debian:~/Documents/Python co2$
```

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

```
stud@debian:~/Documents/Python co2$ python3 prg3.py
15
stud@debian:~/Documents/Python co2$
```

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

```
stud@debian:~/Documents/Python co2$ python3 prg4.py
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

```
stud@debian:~/Documents/Python co2$ python3 prg5.py
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

```
stud@debian:~/Documents/Python co2$ python3 prg6.py
Enter a string:subtract
s       : 1
u       : 1
b       : 1
t       : 2
r       : 1
a       : 1
c       : 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

```
stud@debian:~/Documents/Python co2$ python3 prg7.py
Enter a string:add
adding
```

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

```
stud@debian:~/Documents/Python co2$ python3 prg8.py
Enter the range:3
Enter the words:
hello
world
abhijith
Length of longest word is 8
```

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

```
stud@debian:~/Documents/Python co2$ python3 prg9.py
*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*
```

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

```
stud@debian:~/Documents/Python co2$ python3 prg10.py
Enter a number:10
Factors are
1
2
5
10
```

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

```
Area of a circle with radius 10 is :  314.1592653589793
Permeter of a circle with radius 10 is  62.83185307179586


Area of a Rectangle with length and width 10 is :  100
Permeter 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 spere with radius 10 is :  1256.6370614359173
Permeter of a spere with radius 10 is  62.83185307179586
```

COURSE OUTCOME 4

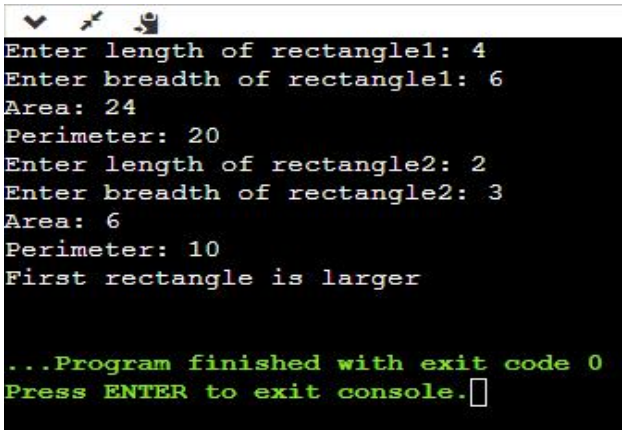
30) Create Rectangle class with attributes length and breadth and methods to find area and perimeter. Compare two Rectangle objects by their area.

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



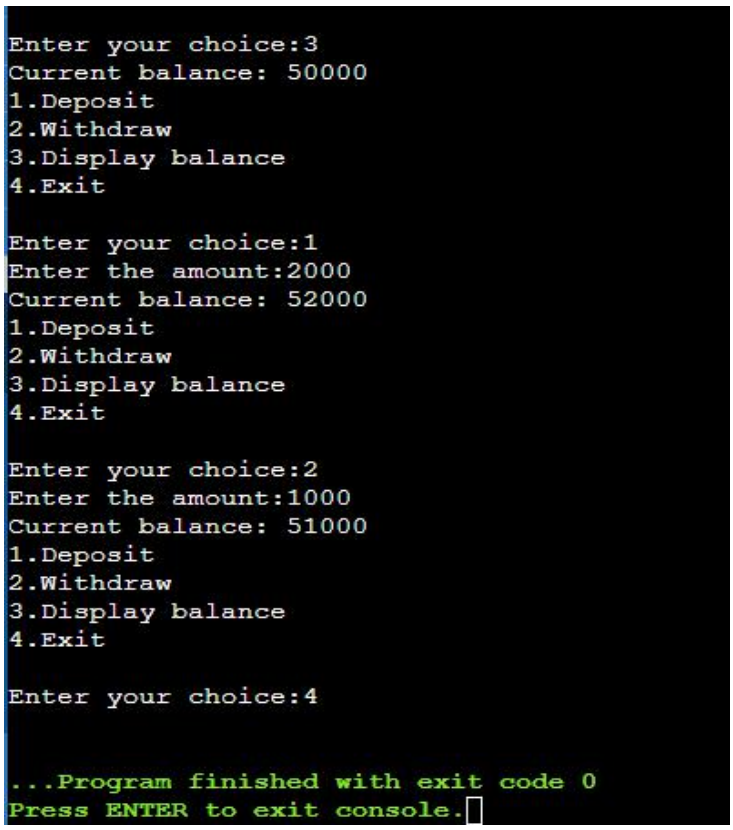
31) Create a Bank account with members account number, name, type of account and balance. Write constructor and methods to deposit at the bank and withdraw an amount from the bank.

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

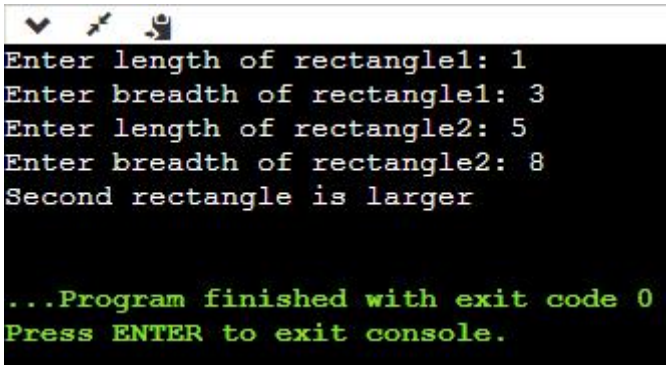


32) Create a class Rectangle with private attributes length and width. Overload '<' operator to compare the area of 2 rectangles.

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

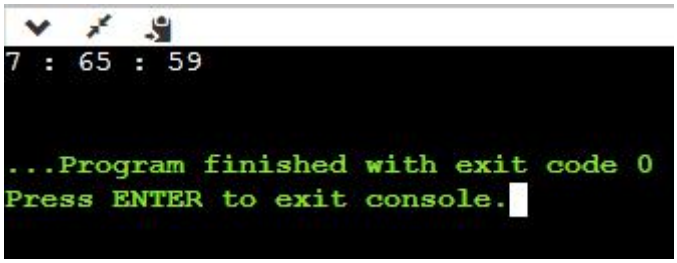


33) Create a class Time with private attributes hour, minute and second. Overload '+' operator to find sum of 2 time.

Source code

```
class Time:
    def __init__(self,h,m,s):
        self.__hour=h
        self.__minute=m
        self.__second=s
    def __add__(self,ob):
        hour=self.__hour+ob.__hour
        minute=self.__minute+ob.__minute
        second=self.__second+ob.__second
        t=Time(hour,minute,second)
        return t

    def print_it(self):
        print("Hour :",self.__hour)
        print("Minute :",self.__minute)
        print("Second :",self.__second)

t1=Time(10,10,10)
t2=Time(20,20,20)
t3=t1+t2
t3.print_it()
```

Output



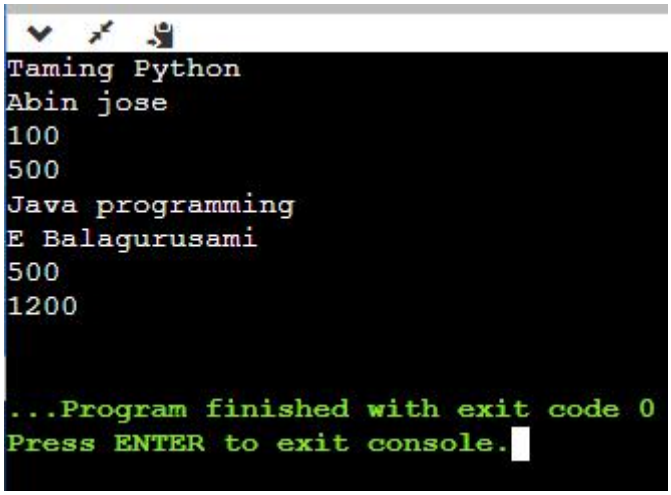
34) Create a class Publisher (name). Derive class Book from Publisher with attributes title and author. Derive class Python from Book with attributes price and no_of_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.

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","Gaming Python","Gokul",100,500)
p.display3()
q=Python("XYZ Publications","Java programming","E Balagurusami",500,1200)
q.display3()
```

Output



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']
```