# FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

**HORMIS NAGAR, MOOKKANNOOR, ANGAMALY-683577**


**FOCUS ON EXCELLENCE**

## 20MCA131 PROGRAMMING LAB

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## CERTIFICATE

*This is to certify that this is a Bonafide record of the Practical work done by ELSAROSE K STANLY (FIT21MCA-2054) 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.*

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**Date of University practical examination ……**

Signature of
Internal Examiner

Signature of
External Examiner

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## COURSE OUTCOME 1

### PROGRAM-1

Display future leap years from current year to a final year entered by user.
Program Code:

```
print("Print leap year between two given years")
print("Enter start year")
start Year=int(input())
print("Enter last year")
end Year=int(input())
print("List of leap years:")
for year in range(start Year, end Year):
if(0==year%4)and(0!=year%100)or(0==year%400):
        print(year)
```

Output:

```
Print leap year between two given years
Enter start year
2000
Enter last year
2028
List of leap years:
2000
2004
2008
2012
2016
2020
2024
```

**PROGRAM-2**

List Comprehensions:

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

print(num)

Program Code:

```
list=[1,-2,67,45,-5]
for num in list:
if num>0:
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 list1.py
0
3
4
5
```

b)Square of Nnumbers.

Program code:

```
list=[5,8,-1,-2]
for num in list:
        print(num * num)
```

Output:


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

Program Code:

```
stringA="elsa"
print("Given String:\n",stringA)
vowels="AaEeIiOoUu"
li=[]
for r in stringA:
if r in vowels:
li.append(r)
        print(li)
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 vow.py
['a', 'e']
```

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

Program code:

```
stringp="Fisat"
```

```
'''for c in stringp:
print(ord(c))'''
s=[ord(p)for p in stringp]
        print(s)
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 ord.py
Enter the word :words
[119, 111, 114, 100, 115]
```

**PROGRAM-3**

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

Program code:

```
s="HI hello, i am mia and i am dia"

l=s.split()

d={x:l.count(x) for x in l}

print(d)
```

Output:

```
{'HI': 1, 'hello,': 1, 'i': 2, 'am': 2, 'mia': 1, 'and': 1, 'dia': 1}
```

**PROGRAM-4**

Prompt the user for a list of integers. For all values greater then 100 store “over” instead.

Program code:

```
x=int(input("enter size"))
li=[]
foriinrange(0,x):
el=int(input())
if(el>=100):
li.append("over")
else:
li.append(el)
        print(li)
```

Output:

```
enter size 3
121
34
1234
['over', 34, 'over']
```

**PROGRAM-5**

Store the list of first names. Count the occurance of ”a” within the list
Program code:

```
list=["anu","ann","hima"]
count=0
print(list)
foriinlist:
forkini:
if(k=='a'):
count=count+1
        print(count)
```

Output:

```
['anu', 'ann', 'hima']
3
```

**PROGRAM-6**

Enter 2 lists of integers
a)check whether list are of same length
Program code:

```
list1=[1,2,3,4]
print(list1)
list2=[5,6,7,9]
print(list2)
p=len(list1)
q=len(list2)
print(p)
print(q)
if(p==q):
print("same")
else:
        print("not same")
```

Output:

```
[1, 2, 3, 4]
[5, 6, 7, 9]
4
4
same
```

b)whether list sums to same value

```
l1=[1,2,3]
print(l1)
l2=[5,6,7,2]
print(l2)
s=0
foriinl1:
s=s+i
print("sumofl1=",s)
p=0
forjinl2:
p=p+j
print("sumofl2=",p)
if(s==p):
print("same")
else:
                print("not same")
```

Output:

```
[1, 2, 3]
[5, 6, 7, 2]
sum of l1= 6
sum of l2= 20
not same
```

c)whether any value occur in both

```
l1=[4,6,5]
l2=[2,1,7]
count=0
print("1st list",str(l1)+"2nd list",str(l2))
forxinl1:
ifxinl2:
print("yes there is",x)
count=count+1
if(count==0):
        print("nothing common")
```

Output:

```
1st list [4, 6, 5]2nd list [2, 1, 7]
nothing common
```

## PROGRAM-7

Get a string from an input string where all occurrences of first character replaced with "$', except first character.
[eg:onion->oniSn]
Program code:

```
s=input("enter a string\n")
print("entered string is:",s)
a=s[0]
str=s.replace(a,"$")
strl=a+str[1:]
print(strl
```

Output:

## PROGRAM-8

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

```
a=input("enterastring")
print(a)
a1=a[0]
a2=a[-1]
print(a1)
print(a2)
rev=(a2+a[1:len(a)-1]+a1)
print(rev)
```

Output:


## PROGRAM-9

Accept the radius from user and find area of circle.

Program code:

```
p=int(input("enter the radius"))
a=3.14*p*p
print(a)
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 area.py
enter the radius3
28.259999999999998
```

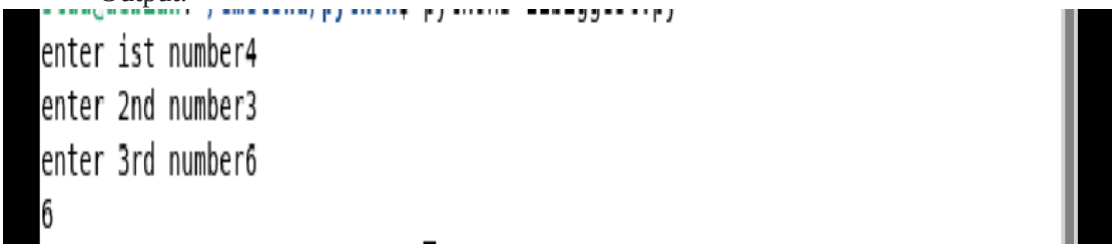
## PROGRAM-10

Find biggest of 3 numbers entered.

Program code:

```
a=int(input("enter ist number"))
b=int(input("enter 2nd number"))
c=int(input("enter 3rd number"))
ifa>b and a>c:
print(a)
ifc>b and c>a:
print(c)
else:
        print(b)
```

Output:




## PROGRAM-11

Accept a filename from user and print extension of that.

Program code:

```
Import os
a=input("Enter the filename\n")
print(os.path.splitext(a))
```

Output:

```
Enter the file name
FILE.PY
('FILE', '.PY')
```

## PROGRAM-12

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

Program code:

```
list1=[]
string=input("Enter colors separated by comma:\n")
for I in string.split(","):
list1.append(i)
print("First and last colors in the list are",list1[0],"and",list1[-1])
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 color.py
Enter the colorblue,red,black
['blue', 'red', 'black']
first color: blue
 last color: black
```

## PROGRAM-13

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

Program code:

```
a=int(input("Input an integer:"))
n1=(a*1)
n2=(a*11)
n3=(a*111)
print(n1+n2+n3)
```

Output:

```
Input an integer : 4
492
```

**PROGRAM-14**

Print out all colors from color- list1 not contained in color-list2.
Program code:

```
list1=["red","green","blue","yellow"]
list2=["black","white","cyan","blue","red"]
l3=[]
print(list1)
print(list2)
foriinlist1:
ifinotinlist2:
l3.append(i)
print("Elementspresentinlist1butnotinlist2are")
print(l3)
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 colorlist.py
['red', 'blue']
```

**PROGRAM-15**

Create a single string separated with space from 2 strings swapping the character at position.

Program code:

```
str1=input("Enter string1:")
str2=input("Enter string2:")
temp=str1[0]
str1=str1.replace(str1[0],str2[0])
str2=str2.replace(str2[0],temp)
str=str1+" "+str2
print(str)
```

Output:

```
C:\Users\hp\Desktop\python1>python 1co16.py
Enter string1:green
Enter string2:blue
breen glue
```

**PROGRAM-16**

Sort a dictionary in ascending and descending order

Program code:

```
d={1:2,3:4,4:3,2:1,0:0}
list1=list(d.items())
dict=dict(list1)
print("Dictionary=",dict)
list1.sort()
print('Ascending order is',list1)
list1=list(d.items())
list1.sort(reverse=True)
print('Descending order is',list1)
```

Output:

```
C:\Users\hp\Desktop\python1>python 1co17.py
Dictionary= {1: 2, 3: 4, 4: 3, 2: 1, 0: 0}
Ascending order is [(0, 0), (1, 2), (2, 1), (3, 4), (4, 3)]
Descending order is [(4, 3), (3, 4), (2, 1), (1, 2), (0, 0)]
```

## PROGRAM-17

Merge 2 dictionaries

Program code:

```
d2={"sex":"Female","qualification":"PG"}
d1.update(d2)
        print(d)
```

Output:

```
{'name': 'Ashna', 'age': '21', 'sex': 'Female', 'qualification': 'PG'}
```

**PROGRAM-18**

Find gcd of 2 numbers

Program code:

```
a=int(input("enter 1st number"))
b=int(input("enter 2nd number"))
z=min(a,b)
for I in range(1,z+1):
if((a % i== 0)and(b % i==0)):
gcd=i
print("gcd is=",gcd)
```

Output:

```
stud@debian:~/elsarose/python/python new$ python3 gcd.py
enter 1st number3
enter 2nd number6
gcd is =  3
```

**PROGRAM-19**

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

Program code:

```
list=[12,13,14,15,16,21]
l1=[]
print(list)
print("New list")
for i in list:
    if i%2!=0:
        l1.append(i)
print(l1)
```

Output:

```
[1, 3, 5, 7, 9, 11]
```

## COURSE OUTCOME 2

### PROGRAM-20

Program to find the factorial of a number

Program code:

```
fact=1
n=int(input('enter the value'))
for i in range(1,n+1):
        fact=fact*i
print(fact)
```

Output:

```
enter the number4
24
```

### PROGRAM-21

Generate fibonaci series of N terms

Program code:

```
f1=0
f2=1
n=int(input('enter the number))
print(f1)
print(f2)
for i in range(2,n):
        f3=f1+f2
        print(f3)
        f1=f2
```

```
        f2=f3
```

Output:

```
enter a number5
1
2
3
5
8
```

**PROGRAM-22**

Find the sum of all items in list?

Program code:

```
list=[1,2,3,4,5,6,7,8,9,10]
sum=0
for i in list:
   sum=sum +int(i)
print("sum:" ,sum)
```

Output:

```
55
```

**PROGRAM-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:

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

**PROGRAM-24**

Display the given pyramid with step number accepted from user.

Program code:

```
l=int(input('Enter the limit:'))
for i in range(1,l+1):
   for j in range(1,i+1):
      c=i*j
      print(c,end=" ")
   print("\n")
```

Output:

```
Enter a number:4
1

2       4

3       6       9

4       8       12      16
```

**PROGRAM-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:

```
Enter a string:emelsha
e       : 2
m       : 1
l       : 1
s       : 1
h       : 1
a       : 1
```

## PROGRAM-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:

```
Enter a string:sleeping
sleepingly
```

## PROGRAM-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:

```
Enter the range:3
Enter the words:
cat
danger
fear
Length of longest word is 6
```

## PROGRAM-28

Construct following patterns using nested loop

*

```
* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*
```

```
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:

```
        *

        * *

        * * *

        * * * *

        * * * * *

        * * * *

        * * *

        * *

        *
```

## PROGRAM-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:

```
Enter a number:100
Factors are
1
2
4
5
10
20
25
50
100
```

## COURSE OUTCOME 3

## PROGRAM-30

Work with built-in packages

Create a package graphics with modules rectangle, circle and sub package 3D (td)-graphics with modules cuboid & 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:

Circle.py

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

rectangle.py

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

sphere.py

```
from math import pi
```

```
def area_sphere(radius):
 return 4*(pi*radius*radius)
def perimeter_sphere(radius):
 return 2*pi*radius
```

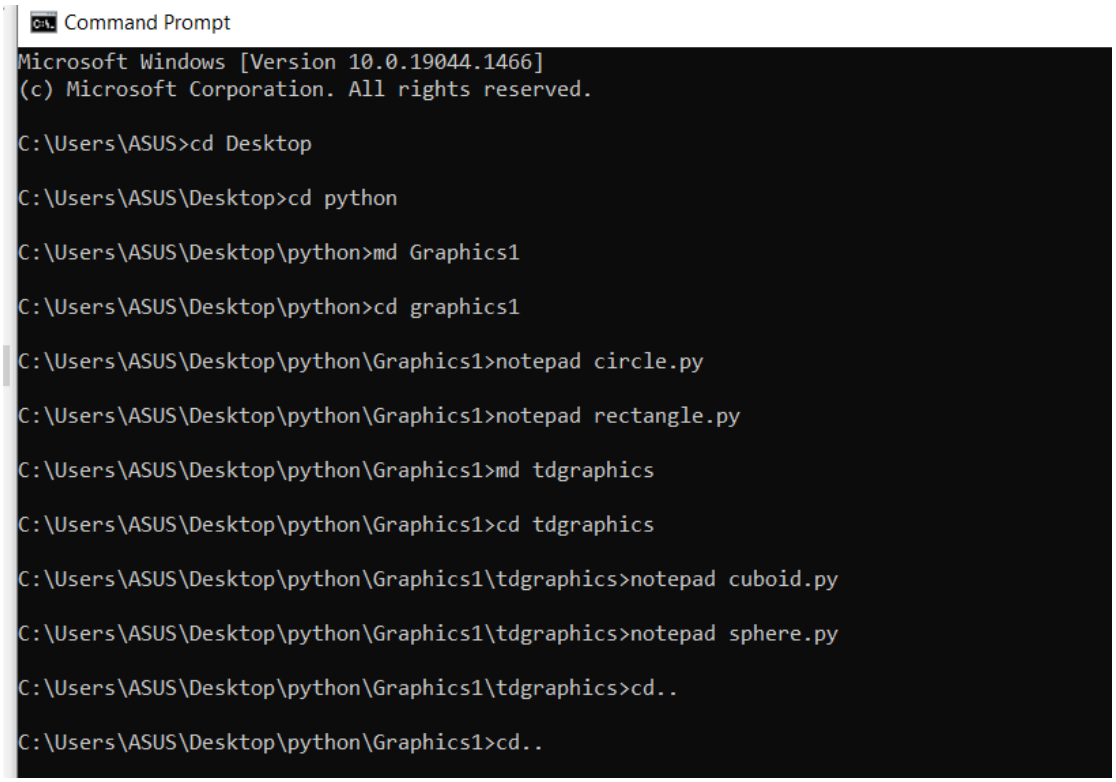
cuboid.py

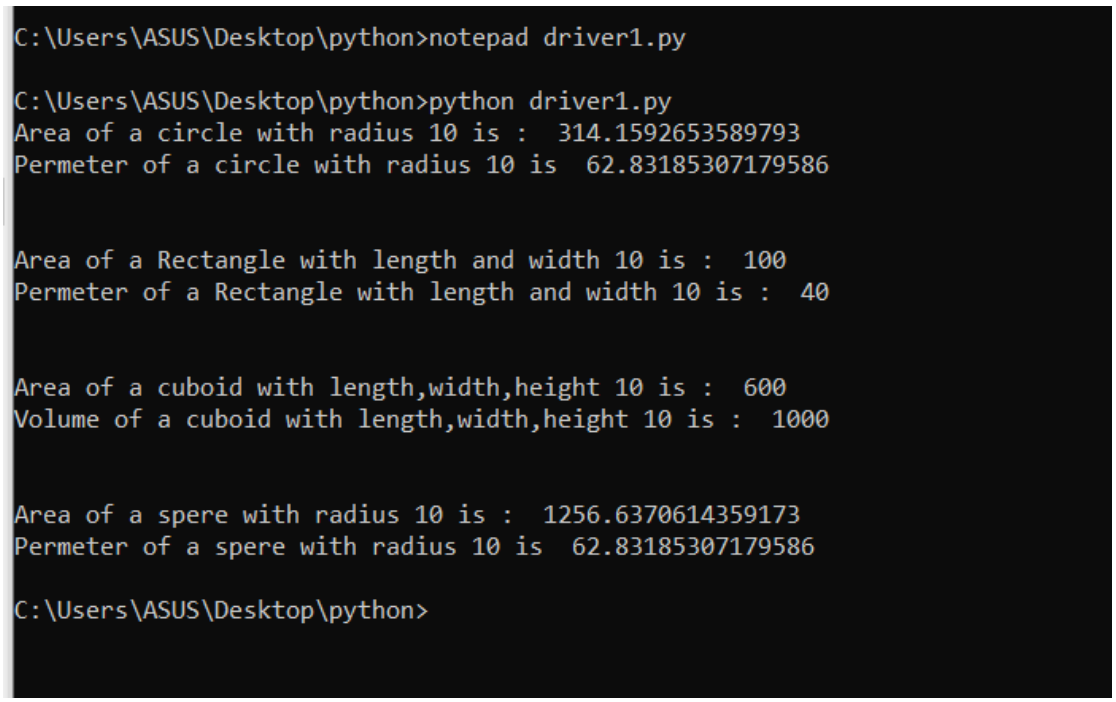
```
def area_cuboid(l,b,h):
 return 2*(l*h + b*h + l*b)
def volume_cuboid(l,b,h):
 return l*b*h
```

driver1.py

```
import Graphics1
from Graphics1 import circle,rectangle
from Graphics1.tdgraphics import cuboid,sphere
from Graphics1.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:




## COURSE OUTCOME 4

## PROGRAM-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)
c=int(input("enter length of 1st rectangle"))
d=int(input("enter breadth 1st rectangle"))
u=int(input("enter length of 2nd rectangle"))
v=int(input("enter breadth of 2nd rectangle"))
r1= Rectangle(c,d)
r3= Rectangle(u,v)
a=r1.area()
b=r3.area()
print("area of 1st rectangle is:",a)
print("perimeter is:",r1.perimeter())
print("area of 2nd rectangle is:",b)
if (a>b):
print("1st is greater")
else:
        print("2nd is greater")
```

Output:

```
enter length of 1st rectangle3
enter breadth 1st rectangle4
enter length of 2nd rectangle5
enter breadth of 2nd rectangle7
area of 1st rectangle is: 12
perimeter is: 14
area of 2nd rectangle is: 35
2nd is greater
```

## PROGRAM-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,type_of_acc,balance):
self.acc_no= acc_no
self.name=name
self.type_of_acc=type_of_acc
self.balance=balance
def deposit(self,x):
self.balance=self.balance+x
print("balance after deposit is=",self.balance)
def withdraw(self,y):
self.balance=self.balance-y
print("balance after withdrawal is=",self.balance)
x=int(input("amount to be deposited"))
y=int(input("amount to withdraw"))
ob1=Bank(1,"aaa","ccc",300000)
ob2=Bank(2,"bbb","ccc",500000)
ob1.deposit(x)
ob1.withdraw(y)
ob2.deposit(x)
ob2.withdraw(y)
```

Output:

```
amount to be deposited20000
amount to withdraw30000
balance after deposit is= 320000
balance after withdrawal is= 290000
balance after deposit is= 520000
balance after withdrawal is= 490000
```

## PROGRAM-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,rr):
if (self.length >rr .length and self.breadth > rr.breadth):
print("Area of first rectangle is greater")
else:
        print("Area of second rectangle is greater")
c=int(input("enter length of 1st rectangle"))
d=int(input("enter breadth 1st rectangle"))
u=int(input("enter length of 2nd rectangle"))
v=int(input("enter breadth of 2nd rectangle"))
r1= Rectangle(c,d)
r3= Rectangle(u,v)
a=r1.area()
b=r3.area()
print("area of 1st rectangle is:",a)
print("perimeter is:",r1.perimeter())
print("area of 2nd rectangle is:",b)
        r1 < r3
```

Output:

```
enter length of 1st rectangle2
enter breadth 1st rectangle3
enter length of 2nd rectangle1
enter breadth of 2nd rectangle5
area of 1st rectangle is: 6
perimeter is: 10
area of 2nd rectangle is: 5
Area of second rectangle is greater
```

## PROGRAM-34

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

Program code:

```
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(3,20,35)
t2=Time(2,25,40)
        print(t1+t2)
```

Output:

```
(5, 45, 75)
```

## PROGRAM-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("XYZ Publications","Wings of Fire","APJ ABDUL KALAM",100,500)
```

p.display3()

Output:

```
Wings of Fire
APJ ABDUL KALAM
Wings of Fire
APJ ABDUL KALAM
100
500
```

## COURSE OUTCOME 5

## PROGRAM-36

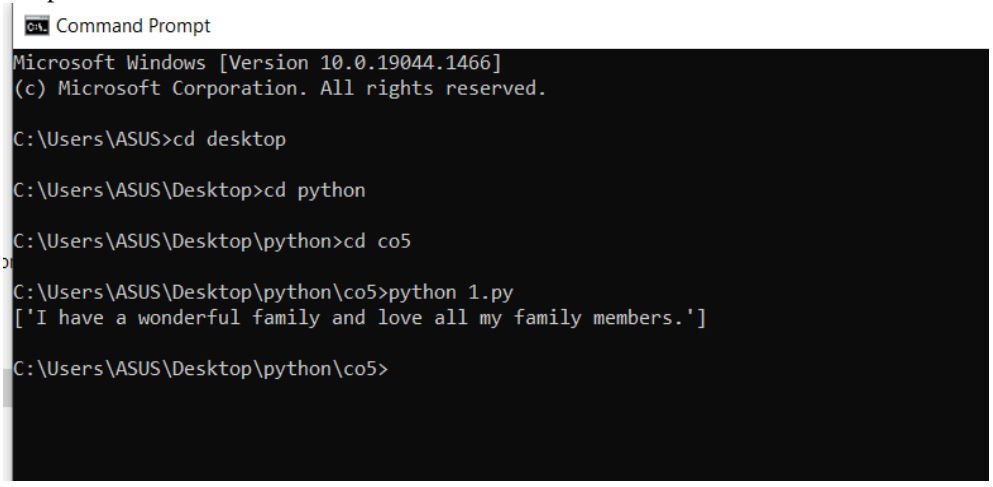
Write a python program to read a file line by line and store it into a list.
Program code:

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

text.txt

```
I have a wonderful family and love all my family members.
```

Output:



## PROGRAM-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('work.csv', 'r') as file:
   reader = csv.reader(file)
   for row in reader:
      print(row)
```

work.csv

| | A | B | C | D |
|---|---|---|---|---|
| 1 | Name | Age | Profession | |
| 2 | Das | 40 | Manager | |
| 3 | Vinu | 38 | Ass.Manager | |
| 4 | Manu | 35 | Staff | |
| 5 | Janaki | 30 | Nurse | |
| 6 | | | | |

Output: