

FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY

(FISAT)TM

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‘FOCUS ON EXCELLENCE’

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FOCUS ON EXCELLENCE

CERTIFICATE

*Certified that this is a Bonafide record of the Practical work done by
Ms.BINDHU JOY (FIT21MCA-2044) in the **20MCA131-PROGRAMMING**
Laboratory of the Federal Institute of Science and Technology during the academic
year 2021-2022.*

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Course Outcome 1(CO1)

PROGRAM NO:1

AIM

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

Input

```
#leap
print ("Enter last year")
endYear = int(input())
print ("List of leap years:")
for year in range(2021, endYear+1):
    if (year % 4 == 0 ) and (year % 100 != 0) or (year % 400 == 0):
        print (year)
```

Output

```
Enter the current year:2021
Enter the year limit:2030
The leap years are
2024
2028
```

PROGRAM NO:2

AIM

2. List comprehensions:

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

Input

```
#positive no in list
list1=[0,-1,-2,3,4,1,2,5]
for num in list1:
    if (num>=0):
        print(num)
```

Output

```
Positive list of numbers
[1, 4, 6, 3, 90]
```

AIM

(b) Square of N numbers

Input

```
#Square of n numbers
```

```
list1=[3,5,6]
```

```
list2=[]
```

```
print("The squares of the given numbers are:")
```

```
for i in list1:
```

```
    s=(i*i) print(s)
```

Output

```
Enter the limit:5
```

```
1 * 1 = 1
```

```
2 * 2 = 4
```

```
3 * 3 = 9
```

```
4 * 4 = 16
```

```
5 * 5 = 25
```


AIM

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

Input

```
#vowel in string
word=input('Enter the string:')
vowel=['a','e','i','o','u']
list1=[]
for d in word:
    if(d in vowel and d not in list1):
        list1.append(d)
print('vowels are:',list1)
```

Output

```
Enter the word:Input
vowels are: ['I', 'u']
```

AIM

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

Input

#ordinal value

```
word=input('Enter the string:')
```

```
print([ord(x) for x in word])
```

Output

```
Enter the string:pen
Ordinal value
p = 112
e = 101
n = 110
```

PROGRAM NO:3

AIM

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

Input

```
list1=[]
list2=[]
x=input("Enter a string:")
for i in x.split(" "):
    list1.append(i)
    if i not in list2:
        list2.append(i)
for i in list2:
    print(i,"\t",list1.count(i))
```

Output

```
Enter the string:a set of words that is complete in itself A sentence is a set of words that contain
{'a': 2, 'set': 2, 'of': 2, 'words': 2, 'that': 2, 'is': 2, 'complete': 1, 'in': 1, 'itself': 1, 'A': 1, 'sentence': 1, 'contain': 1}
```

PROGRAM NO:4

AIM

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

Input

```
#store over for values>100
w=int(input('Enter the limit:'))
list1=[]
for i in range(0,w):
    value=int(input('Enter the values:'))
    if(value>100):
        list1.append('over')
    else:
        list1.append(value)
print(list1)
```

Output

```
Enter the limit:4
Enter the values:12
Enter the values:102
Enter the values:201
Enter the values:45
[12, 'over', 'over', 45]
```

PROGRAM NO:5

AIM

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

Input

```
#counta word=['anna','anu']  
r=0  
for d in word:  
    for c in d:  
        if (c=='a'):  
            r=r+1  
print(r)
```

Output

```
| Occurance of a in the given list is 3
```

PROGRAM NO:6

AIM

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

Input

```
#lensame l1=[1,2,3,4,5]
l2=[6,3,21,6,]
p=len(l1)
q=len(l2)
if(p==q):
    print("The length of two lists are same")
else:
    print("The length of lists are not same")
s=0
p=0

for i in l1:
    s=s+i
print("Sum of list1 is",s)
for r in l2:
    p=p+r
print("Sum of list2 is",p)
if(s==p):
    print("Sum of elements in two lists are same")
else:
    print("Sum of elements in two lists are not same")
l3=[]
f=0

for i in l1:
    if i in l2:
        l3.append(i)
```

```
f=f+1  
print(l3)  
if(f==0):  
    print("no element is same")
```

Output

```
The length of lists are not same  
Sum of list1 is 15  
Sum of list2 is 36  
Sum of elements in two lists are not same  
values that occur in both list: [3]
```

PROGRAM NO:7

AIM

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

Input

```
#character replace
str1=input("Enter a string:")
print("Original string:",str1)
char=str1[0]
str1=str1.replace(char,'$')
str1=char+str1[1: ]
print("Replaced string: ",str1)
```

Output

```
Enter a string:onion
Original string: onion
Replaced string:  oni$n
```


PROGRAM NO:8

AIM

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

Input

```
#First and last character exchange
str=input("Enter a string:")
char=str[0]
char1=str[-1]
n=len(str)
ns=char1+str[1:n-1]+charprint(ns)
```

Output

```
Enter a string:python
nythop
```

PROGRAM NO:9

AIM

Accept the radius from user and find area of circle.

Input

```
#Area of the circle
x=int(input('Enter the radius:'))
A=3.14*x*x
print("Area of the circle is",A)
```

Output

```
Enter the radius:2
Area of the circle is_12.56
```

PROGRAM NO:10

AIM

Find biggest of 3 numbers entered.

Input

```
#biggest of 3 nos
a=int(input('Enter the first number:'))
b=int(input('Enter the second number:'))
c=int(input('Enter the third number:'))
if a>b:
    if a>c:
        print(a)
    else:
        if(b>c):
            print(b)
else:
    print(c)
```

Output

```
Enter the first number:2
Enter the second number:5
Enter the third number:6
Biggest of the three number is:
6
```

PROGRAM NO :11

AIM

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

Input

```
#extention of file
import os
a=input("Enter the file name\n")
print(os.path.splitext(a))
```

Output

```
Enter the file name:12col.py
The extention of file 12col.py is ('12col', '.py')
```

PROGRAM NO:12

AIM

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

Input

```
#first and last colours
```

```
l1=['Red','blue','white','yellow','Black']
```

```
print("First and last colours in the list are:")
```

```
print(l1[0],'and',l1[-1])
```

Output

```
First and last colours in the list are:  
Red and Black
```

PROGRAM NO :13

AIM

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

Input

```
#computing n+nn+nnn
x=int(input("enter the numbers"))
a=str(x)
b=a+a
c=a+a+a
d=x+int(b)+int(c)
print(d)
```

Output

```
Enter a number:2
246
```

PROGRAM NO:14

AIM

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

Input

```
#colours not in list2
l1=['red','blue','black']
l2=['red','white','pink']
l3=[]
for i in l1:
    if i not in l2:
        l3.append(i)
print('colours not in l2 is:\n',l3)
```

Output

```
colours not in l2 is:
['blue', 'black'] _
```

PROGRAM NO:15

AIM

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

Input

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

Output

```
Enter first string:code
Enter second string:Analysis
Aode cnalysis
```


PROGRAM NO:16

AIM

Sort dictionary in ascending and descending order.

Input

```
#ascending and descending order
d1={"annie":1,"carolin":3,"danic":2,"baachu":4}
l=list(d1.items())
print("orginal list is",l)
l.sort()
print("Ascending order is\n",l)
l=list(d1.items())
l.sort(reverse=True)
print("Desencding order is\n",l)
```

Output

```
orginal list is [('annie', 1), ('carolin', 3), ('danic', 2), ('baachu', 4)]
Ascending order is
[('annie', 1), ('baachu', 4), ('carolin', 3), ('danic', 2)]
Desencding order is
[('danic', 2), ('carolin', 3), ('baachu', 4), ('annie', 1)]
```

PROGRAM NO:17

AIM

Merge two dictionaries.

Input

```
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': 'Ann mariya', 'Age': '20'}  
Directory 2 {'Gender': 'Female', 'Qualification': 'BCA'}  
After merging...  
{'Name': 'Ann mariya', 'Age': '20', 'Gender': 'Female', 'Qualification': 'BCA'}
```

PROGRAM NO:18

AIM

Find GCD of 2 numbers.

Input

```
x=int(input("Enter 1st number:"))
y=int(input("Enter 2nd number:")) for i
in range(1,x+1):
    if(x%i==0andy%i==0):
        gcd=i

print("GCD=",gcd)
```

Output

```
Enter 1st number:9
Enter 2nd number:27
GCD= 9
```

PROGRAM NO:19

AIM

From a list of integers,create a list removing evennumbers.

Input

```
L1=[1,2,3,4,5,6,7,8,9,10]
print(l1)
l2=[]
for l 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(CO2):

PROGRAM NO:20

AIM

Program to find the factorial of a number.

Input

```
#co21factorial of a number
n=int(input('Enter the number:'))
fact=1
for i in range(1,n+1):
    fact=fact*i
print(fact)
```

Output

```
Enter the number:4
24
```

PROGRAM NO:21

AIM

Generate Fibonacci series of N terms.

Input

```
#co22fibanocciseries
n=int(input('Enter number of terms:'))
f1=0
f2=1
print(f1,f2)
for i in range(0,n):
    f3=f1+f2
    print(f3)
    f1=f2
    f2=f3
```

Output

```
Enter number of terms:4
0
1
1
2
3
5
```

PROGRAM NO:22

AIM

Find the sum of all items in a list.

Input

```
#sum of items in list
l1=[1,2,3,4]
l3=[]
s=0
p=0
for i in l1:
    s=s+i
print("Sum of list1 is",s)
```

Output

```
Sum of list1 is 10
```

PROGRAM NO:23

AIM

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

Input

```
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 NO:24

AIM

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

Eg: N=4 1
2 4
3 6 9
4 8 12 16

Input

```
#pyramid with step no
n=int(input('enter the step number'))
for i in range(1,n+1):
    for j in range(1,i+1):
        s=i*j
        print(s,'\t',end="")
    print("\n")
```

Output

```
Enter the step no:4
1
2      4
3      6      9
4      8      12      16
```

PROGRAM NO:25

AIM

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

Input

```
#character frequency
str=input("Enter a string:")
fnd=input("Enter character:")
cnt=0
fnd=fnd.lower()
str=str.lower()
for i in str:
    if i==fnd:
        cnt=cnt+1
print("Freq:->",cnt)
```

Output

```
Enter a string:India is our Nation
Enter character:i
Freq:-> 4
```

PROGRAM NO:26

AIM

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

Input

```
#add ing
a=input("Enter a word\n")
l=len(a)
ll=a[l-3:l]
if(ll=="ing"):
    s=a+"ly"
else:
    s=a+"ing"
print (s)
```

Output

```
Enter a string:writing
writingly
```

PROGRAM NO:27

AIM

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

Input

#Length of the longest word

```
lis=[]
n=int(input("Enter the
range:"))print("Enter the
words:")

for i in
range(0,n)
:
    lis.append
end(input(
""))
longest=lis
[0]

for i in
range(1,n):
    if(len(lis[i])>l
en(longest)):

        longest=lis[i]

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

Output

```
Enter the range:4
Enter the words:
India
Sreelanka
Iran
America
Length of longest word is 9
```

PROGRAM NO:28

AIM

Construct following pattern using nested loop.

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

Input

```
#pattern star
for i in range(0,5):
    for j in range(0,i):
        print("*",end="")
    print("\n")
for i in range(5,0,-1):
    for j in range(i,0,-1):
        print("*",end="")
    print("\n")
```

Output

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

PROGRAM NO:29

AIM

Generate all factors of a number.

Input

```
#All factors of a no
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:6
Factors are
1
2
3
6
```

Course Outcome 3(CO3):

PROGRAM NO:30

AIM

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.

Input

Graphics\circle.py

```
from math import pi

def area_circle(radius):
    return pi*radius*radius

def perimeter_circle(radius):
    return 2*pi*radius
```

Graphics\rectangle.py

```
def area_rec(length,width):
    return length*width

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


Graphics\tdgraphics\cuboid.py

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

Graphics\tdgraphics\sphere.py

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

Graphics.py (driver code)

```
import graphics
from graphics import circle,rectangle
from graphics.tdgraphics import cuboid,sphere
from graphics.circle import *

print("Area of a circle with radius 20 is : ",circle.area_circle(20))
print("Perimeter of a circle with radius 20 is ",circle.perimeter_circle(20))
print("\n")

print("Area of a Rectangle with length 20 and width 10 is :
",rectangle.area_rec(20,10))

print("Perimeter of a Rectangle with length 20 and width 10 is :
",rectangle.perimeter_rec(20,10))

print("\n")

print("Area of a cuboid with length,width,height 8 is : ",cuboid.area_cuboid(8,8,8))
print("Volume of a cuboid with length,width,height 12 is :
",cuboid.volume_cuboid(12,12,12))

print("\n")

print("Area of a sphere with radius 20 is : ",sphere.area_sphere(20))
print("Perimeter of a sphere with radius 20 is ",sphere.perimeter_sphere(20))
```

Output

```
PS D:\mySpace\learn> cd python
PS D:\mySpace\learn\python> md Graphics

Directory: D:\mySpace\learn\python

Mode                LastWriteTime         Length Name
----                -
d-----         28-02-2022   08:29 PM             Graphics

PS D:\mySpace\learn\python> cd Graphics
PS D:\mySpace\learn\python\Graphics> notepad __init__.py
PS D:\mySpace\learn\python\Graphics> notepad circle.py
PS D:\mySpace\learn\python\Graphics> notepad rectangle.py
PS D:\mySpace\learn\python\Graphics> md tdgraphics

Directory: D:\mySpace\learn\python\Graphics

Mode                LastWriteTime         Length Name
----                -
d-----         28-02-2022   08:32 PM             tdgraphics

PS D:\mySpace\learn\python> python graphics.py
Area of a circle with radius 10 is : 314.1592653589793
Perimeter of a circle with radius 10 is 62.83185307179586

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

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

Area of a sphere with radius 10 is : 1256.6370614359173
Perimeter of a sphere with radius 10 is 62.83185307179586
PS D:\mySpace\learn\python> □
```

Course Outcome 4(CO4):

PROGRAM NO:31

AIM

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

Input

```
class Rectangle:

    def __init__(self,l,b):

        self.l=l

        self.b=b

    def area(self):

        return (self.l*self.b)

    def perimeter(self):

        return 2*(self.l+self.b)

p=int(input("Enter length of first rectangle:"))

q=int(input("Enter breadth of first rectangle:"))

r=int(input("Enter length of second rectangle:"))

s=int(input("Enter breadth of second rectangle:"))

r1=Rectangle(p,q)

r2=Rectangle(r,s)

x=r1.area()

y=r2.area()

z=r1.perimeter()

h=r2.perimeter()

if(x>y):

    print("Area of first rectangle is greater")

else:

    print("Area of second rectangle is greater")
```

```
print("Perimeter of first rectangle is",z)
print("Perimeter of second rectangle is",h)
```

Output

```
Enter length of first rectangle:5
Enter breadth of first rectangle:4
Enter length of second rectangle:3
Enter breadth of second rectangle:2
Area of first rectangle is greater
Perimeter of first rectangle is 18
Perimeter of second rectangle is 10
```

PROGRAM NO:32

AIM

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.

Input

```
class Bank:
    def __init__(self,acno,name,typeofac,balance):
        self.acno=acno
        self.name=name
        self.typeofac=typeofac
        self.balance=balance
    def withdraw(self,x):
        self.balance=self.balance-x
        print("Balance is:",self.balance)
    def deposit(self,y):
        self.balance=self.balance+y
        print("Balance is:",self.balance)

ac1=Bank(1,"Aiswarya","SB",10000)
ac2=Bank(2,"Krishnenth", "SB",20000)
p=int(input("Enter amount to withdraw:"))
q=int(input("Enter amount to deposit:"))
r=int(input("Enter amount to withdraw:"))
ac1.withdraw(p)
ac2.deposit(q)
ac1.deposit(r)
```

Output

```
Enter amount to withdraw:1000
Enter amount to deposit:2000
Enter amount to withdraw:2000
Balance is: 9000
Balance is: 22000
Balance is: 11000
```

PROGRAM NO:33

AIM

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

Input

```
class Rectangle:
    def __init__(self,length,breadth):
        self._length=length
        self._breadth=breadth
    def area(self):
        a=self._length*self._breadth
        print("area",a)
        return a
    def perimeter(self):
        p=2*(self._length+self._breadth)
        print("perimeter",p)
    def __lt__(self,rr):
        if(self._breadth*self._length>rr._breadth*rr._length):
            return True
        else:
            return False

r1=Rectangle(5,7)
r2=Rectangle(4,6)
if(r1<r2):

    print("Area of first rectangle is greater")
else:
    print("Area of second rectangle is greater")
```

Output

Area of first rectangle is greater

PROGRAM NO:34

AIM

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

Input

```
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("The Sum of Two Times is",hr,":",min,":",sec)

t1=Time(2,30,46)
t2=Time(4,20,2)
t1+t2
```

Output

The Sum of Two Times is 6 : 50 : 48

PROGRAM NO:35

AIM

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.

Input

```
class Publisher:
    def __init__(self,name):
        self.name=name
class Book(Publisher):
    def __init__(self,name,title,author):
        super().__init__(name)
        self.title=title
        self.author=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 display(self):
        print("Name:",self.name)
        print("Title:",self.title)
        print("Author:",self.author)
        print("Price:",self.price)
        print("No of pages:",self.no_of_pages)
p1=Python("Times publications","Python Programming","Mr.James",480,210)
p1.display()
```

Output

Name: Times publications
Title: Python Programming
Author: Mr.James
Price: 480
No of pages: 210

Course Outcome 5(CO5):

PROGRAM NO:36

AIM

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

Input

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

Output

```
PS C:\Users\HP\OneDrive\Desktop\python\co5> python qn1.py  
["Cats, also called domestic cats are small, carnivorous mammals, of the family Felidae.", "Domestic cat  
s are often called 'house cats' when kept as indoor pets.", 'Cats have been domesticated for nearly 10,00  
0 years.', 'They are one of the most popular pets in the world.']  
PS C:\Users\HP\OneDrive\Desktop\python\co5> 
```

PROGRAM NO:37

AIM

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

Input

```
import csv

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

    reader = csv.reader(file)

    for row in reader:

        print(row)
```

Output

```
PS C:\Users\HP\OneDrive\Desktop\python\co5> python qn2.py
['Name', 'Designation', 'Salary']
['Jessy', 'Manager', '90000']
['Tom', 'Clerk', '40000']
['Alfred', 'Assistant Manager', '70000']
PS C:\Users\HP\OneDrive\Desktop\python\co5> █
```