FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)™

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FOCUS ON EXCELLENCE

20MCA131 PROGRAMMING LAB LABORATORY RECORD

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CERTIFICATE

This is to certify that this is a Bonafide record of the Practical work done by ***AYANA SUSAN BABU(FIT21MCA-2043)*** *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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Signature of H O D

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Date of University practical examination ……

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Internal Examiner

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External Examiner

CONTENT

COURSE OUTCOME 1

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

Source code:

```
endyear=int(input("Enter the last year"))
print("list of leap year")
for year in range(2021,endyear):
        if(0==year%4):
                print(year)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 leap.py
Enter the last year2080
list of leap year
2024
2028
2032
2036
2040
2044
2048
2052
2056
2060
2064
2068
2072
2076
```

2) List comprehensions:

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

Source code:

```
list1=[78,-89,56,75,-45,-96,32,20]
for num in list1:
        if num>=0:
                print(num)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 positive.py
78
56
75
32
20
```

b) Square of N numbers

Source code:

```
list1=[3,6,9,12,15]
for s in list1:
    num=s*s
    print(num)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 square.py
9
36
81
144
225
```

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

Source code:

```
l=[]
word=input("Enter a word")
vowel=['a','e','i','o','u']
for i in word:
if i in vowel:
l.append(i)

print(l)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 vowel.py
Enter a word umbrella
['u', 'e', 'a']
```

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

Source code:

```
word=input("Enter a word")
for i in word:
        print(ord(i))
```

Output:

```
stud@debian:~/ayana/python/record$ python3 ord.py
Enter a wordpython
112
121
116
104
111
110
```

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

Source code:

```
s=input("Enter a string:")
count=dict()
word=s.split()
for i in word:
  if i in count:
    count[i]+=1
  else:
    count[i]=1
print(count)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 occurencee.py
Enter a string:four and four
{'four': 2, 'and': 1}
```

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

Source code:

```
list=[]
print("Enter 6 integer numbers")
for i in range(6):
        a=input()
        if int(a)>100:
                list.append('over')
        else:
                list.append(a)
print (list)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 over.py
Enter 6 integer numbers
56
105
23
800
62
200
['56', 'over', '23', 'over', '62', 'over']
```

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

Source code:

```
list=[]
l=[]
print("Enter five names")
for i in range(5):
        list.append(input())
for i in list:
        count=0
        for j in i:
                if(j=='a'):
                        count=count+1
        l.append(count)
print(l)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 occ.py
Enter five names
ayana
aleesha
anagha
elizaba
anju
[3, 2, 3, 2, 1]
```

6) Enter 2 lists of integers.Check

a. whether list are of same length

b. whether list sums of same value

c. whether any value occur in both.

Source code:

```
l1=[5,6,3,7]
l2=[2,1,7,10,8]
if len(l1)==len(l2):
  print("The list is of same length")
else:
  print("The list is of different length")
sum1=0
sum2=0
for i in l1:
      sum1=sum1+i
print("The sum of list1 is:",sum1)
for j in l2:
                  sum2=sum2+j
print("The sum of list2 is:",sum2)
if sum1==sum2:
        print("The sum of list1 is equal to list2")
else:
        print("The sum of list1 is not equal to list2")
flag=0
for i in range(len(l1)):
        for j in range(len(l2)):
        if l1[i]==l2[j]:
          print(l1[i],"and",l2[j],"occur in both")
if flag==0:
  print("no common elements")
```

Output:

```
stud@debian:~/ayana/python/record$ python3 list.py
The list is of different length
The sum of list1 is: 21
The sum of list2 is: 28
The sum of list1 is not equal to list2
7 and 7 occur in both
no common elements
```

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:

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

Output:

```
stud@debian:~/ayana/python/record$ python3 replace.py
Enter a string onion
Orginal string: onion
Replaced string: oni$n
```

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

Source code:

```
s="python"
t=s[0]
t1=s[-1]
n=len(s)
ns=t1+s[1:n-1]+t
print(ns)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 exchange.py
nythop
```

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

Source code:

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

Output:

```
stud@debian:~/ayana$ python3 area.py
Enter the radius: 25
Area of circle=  1962.5
```

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:~/ayana$ python3 threenumber.py
Enter first number99
Enter second number55
Enter third number47
99
```

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:~/ayana/python/record$ python3 ext.py
Enter file name:area.py
The extension of file area.py is ('area', '.py')
```

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

Display first and last colors.

Source code:

```
color=[]
color=[i for i in input("Enter the colour:").split(',')]
print(color)
i=len(color)-1
print("first colour:",color[0])
print("last colour:",color[i])
```

Output:

```
stud@debian:~/ayana/python/record$ python3 color.py
Enter the colour:red,blue,yellow,black,white
['red', 'blue', 'yellow', 'black', 'white']
first colour: red
last colour: white
```

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

Source code:

```
i=input("Enter a number")
j=i+i+i
k=i+i
s=i
s1=int(k)+int(j)+int(s)
print(s1)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 fourteen.py
Enter a number5
615
```

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

Source code:

```
l1=['red','green','orange']
l2=['red','green','yellow']
print(l1)
print(l2)
for i in l1:
   if i not in l2:
     print(i)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 colorlist.py
['red', 'green', 'orange']
['red', 'green', 'yellow']
orange
```

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

Source code:

```
a=input("enter string 1:")
b=input("enter string 2:")
new_a = b[:1] + a[1:]
new_b = a[:1] + b[1:]
c=new_a+ ' ' + new_b
print(c)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 swap.py
enter string 1:apple
enter string 2:orange
opple arange
```

16) Sort dictionary in ascending and descending order.

Source code:

```
dict1={"a":1,"c":3,"d":2,"b":4}

l=list(dict1.items())

print(l)

l.sort()

print("Ascending order is\n",l)
```

```
l=list(dict1.items())

l.sort(reverse=True)

print("Descending order is\n",l)
```

Output:

```
stud@debian:~/ayana/python$ python3 dic16.py
[('a', 1), ('c', 3), ('d', 2), ('b', 4)]
Ascending order is
 [('a', 1), ('b', 4), ('c', 3), ('d', 2)]
Descending order is
 [('d', 2), ('c', 3), ('b', 4), ('a', 1)]
stud@debian:~/ayana/python$
```

17)Merge two dictionaries.

Source code:

```
D1={"name":"ayana","age":"24"}
D2={"sex":"female","qualification":"pg"}
D1.update(D2)
print(D1)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 dic.py
{'name': 'ayana', 'age': '24', 'sex': 'female', 'qualification': 'pg '}
```

18)Find gcd of 2 numbers

Source code:

```
s=int(input("Enter fist number"))
r=int(input("Enter second number"))
if s>r:
        smaller=r
else:
        smaller=s
for i in range(1,smaller+1):
        if(s%i==0)&(r%i==0):
                hcf=i
print("hcf is")
print(hcf)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 gcd.py
Enter fist number6
Enter second number4
hcf is
2
```

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

Source code:

```
l1=[2,5,7,8,4,1,3]
l2=[]
for i in l1:
        if(i%2!=0):
                l2.append(i)
print(l2)
```

Output:

```
stud@debian:~/ayana/python/record$ python3 even.py
[5, 7, 1, 3]
```

COURSE OUTCOME 2

20)Program to find the factorial of a number.

Source code:

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

Output:

```
stud@debian:~/ayana/python/record/co2$ python3 factoriall.py
enter the number10
3628800
```

21)Generate fibonacci series of N terms.

Source code:

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

Output:

```
stud@debian:~/ayana/python/record/co2$ python3 fibseries.py
enter the number12
0
1
1
2
3
5
8
13
21
34
55
89
144
233
```

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

Source code :

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

Output:

```
stud@debian:~/ayana/python/record/co2$ python3 sum.py
The sum of list is: 17
```

23)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:~/ayana/python/record/co2$ python3 list.py
68
78
80
92
[4624, 6084, 6400, 8464]
```

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

Eg n=4

1

2 4
3 6 9
4 8 12 16

Source code:

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

Output:

```
stud@debian:~/ayana/python/record/co2$ python3 five.py
Enter a number5
1

2 4

3 6 9

4 8 12 16

5 10 15 20 25
```

25)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:~/ayana/python/record/co2$ python3 cf.py
Enter a string:happy
h       : 1
a       : 1
p       : 2
y       : 1
```

26)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:~/ayana/python/record/co2$ python3 ing.py
Enter a string:cook
cooking
stud@debian:~/ayana/python/record/co2$ python3 ing.py
Enter a string:loving
lovingly
```

27)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:~/ayana/python/record/co2$ python3 longest.py
Enter the range:5
Enter the words:
apple
orange
grape
banana
pappaya
Length of longest word is 7
```

28)Construct following pattern using nested loop.

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

* * * *

* * *
* *
*
```

Source code:

```
k="*"
for i in range(1,6):
    for j in range(1,i+1):
        print(k,end="")
    print("\n")
for i in range(5,0,-1):
    for j in range(1,i):
        print(k,end="")
```

Output:

```
stud@debian:~/ayana/python/record/co2$ python3 nine.py
*
**
***
****
*****
****
***
**
*
```

29)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:~/ayana/python/record/co2$ python3 fact.py
Enter a number:12
Factors are
1
2
3
4
6
12
```

COURSE OUTCOME 3

30)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

defperimeter_rec(length,widt):
```

```
    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:

```
PS D:\mySpace\learn\python> python graphics.py
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
PS D:\mySpace\learn\python>
```

COURSE OUTCOME 4

31)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,l,b):
    self.length=l
    self.breadth=b
  def area(self):
    return self.length*self.breadth
  def peri(self):
    return 2*(self.length+self.breadth)
r1=Rectangle(10,2)
r2=Rectangle(5,9)
x=r1.area()
y=r2.area()
m=r1.peri()
n=r2.peri()
print("rectangle1 area=",x)
print("rectangle2 area=",y)
print("rectangle1 perimeter=",m)
print("rectangle2 perimeter=",n)
if(x<y):
  print("r1 is smaller")
else:
  print("r2 is smaller")
```

Output:

```
stud@debian:~/ayana/python/co4$ python3 1.py
rectangle1 area= 20
rectangle2 area= 45
rectangle1 perimeter= 24
rectangle2 perimeter= 28
r1 is smaller
```

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.

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:

```
2435 anju sbi 21000
5436 aju federal 19500
```

33)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:

```
stud@debian:~/ayana/python/co4$ python3 3.py
Enter length of rectangle1: 1
Enter breadth of rectangle1: 6
Enter length of rectangle2: 2
Enter breadth of rectangle2: 6
Second rectangle is larger
```

34)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:

```
stud@debian:~/ayana/python/co4$ python3 4.py
7 : 65 : 59
```

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.

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","Python","jJames",100,500)
p.display3()
q=Python("XYZ Publications","Java ","George",500,1200)
```

```
q.display3()
```

Output:

```
stud@debian:~/ayana/python/co4$ python3 5.py
Python
James
100
500
Java
George
500
1200
```

COURSE OUTCOME 5

36)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:

```
stud@debian:~/ayana/python/co4$ python3 6.py
['India, officially the Republic of India (Hindi: Bhārat Gaṇarājya),[24] is a country in South Asia. It is the seventh-largest country by area, the se
cond-most populous country, and the most populous democracy in the world. Bounded by the Indian Ocean on the south, the Arabian Sea on the southwest,
and the Bay of Bengal on the southeast, it shares land borders with Pakistan to the west;[f] China, Nepal, and Bhutan to the north; and Bangladesh and
 Myanmar to the east. In the Indian Ocean, India is in the vicinity of Sri Lanka and the Maldives; its Andaman and Nicobar Islands share a maritime bo
rder with Thailand, Myanmar and Indonesia.Modern humans arrived on the Indian subcontinent from Africa no later than 55,000 years ago.']
```

37)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:

```
stud@debian:~/ayana/python/co4$ python3 7.py
['Name', 'Batch', 'RollNumber']
['Ayana', 'A', '43']
['Ann', 'A', '18']
['Deena', 'B', '52']
```