BCA
III SEMESTER
PYTHON PROGRAMMING LAB QQ

1. Write a program to demonstrate different number data types in python.
2. Write a program to perform different arithmetic operations on numbers in python
3. Write a program to perform different string operations.
4. Write a python script to print the current date
5. Write a python program to perform list operations in python.
6. Write a program to demonstrate working with tuples in python
7. Write a program to demonstrate working with dictionaries in python
8. Write a program to demonstrate working of if..else if in Python
9. Write a program to calculate sum of series
10. Write a python program to find factorial of a number using recursion
11. Write a python program to define a module to find Fibonacci Numbers and import the module to another program.
12. Create a list and perform the following methods 1) insert() 2) remove() 3) append() 4) len() 5) pop() 6) clear().
13. Write a program to compute area of following shapes: circle, rectangle and triangle
14. Write a program for filter() to filter only even numbers from a given list
15. Write Python program to demonstrate math built- in functions
16. Write a program in Python to handle user defined exception for given problem
17. Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero.
18. Write a program to find mean, median, mode for the given set of numbers in a list.
19. Write a program to check if the given string is palindrome or not.
20. Write a python code to read a csv file using pandas module and print the first and last five lines of a file

Program 1

```
# Python program to demonstrate the numeric values.
a = 5
print(“ Value of a is: ”, a)
print("Type of  a: ", type(a))
b = 5.0
print(“ Value of b is: ”, b)
print("\nType of b: ", type(b))
c = 2 + 4j
print(“ Value of c is: ”, c)
print("\nType of c: ", type(c))
```

Program 2

```
# Python program to perform arithmetic operations.
```

```
# Receiving the input
num1 = input('Enter first number: ')
num2 = input('Enter second number: ')

# Arithmetic operations
sum = float(num1) + float(num2)
min = float(num1) - float(num2)
mul = float(num1) * float(num2)
div = float(num2) / float(num2)

# Printing the results
print('The sum of {0} and {1} is {2}'.format(num1, num2, sum))
print('The subtraction of {0} and {1} is {2}'.format(num1, num2,
min))
print('The multiplication of {0} and {1} is {2}'.format(num1, num2,
mul))
print('The division of {0} and {1} is {2}'.format(num1, num2, div))
```

Program 3

```
# Python program to demonstrate string operations.
str1="Welcome you all students"
capital=str1.upper()
print(capital)

small=capital.lower()
print(small)

str2=str1.replace("students","engineers")
print(str2)

st=" This is an example of strip "
left=st.lstrip()
print(left)

right=st.rstrip()
print(right)


#The startswith() method returns True if the string starts with the specified value, otherwise
False
prefix1=str1.startswith("Welcome ")
print(prefix1)

prefix2=str2.startswith("s")
print(prefix2)

#The endswith() method returns True if the string ends with the specified value, otherwise
False.
prefix3=str2.endswith("w")
```

```
print(prefix3)
```

Program 4

```
#Python program to print the current date.
from datetime import date
today = date.today()

# dd/mm/YY
d1 = today.strftime("%d/%m/%Y")
print("d1 =", d1)

# Textual month, day and year
d2 = today.strftime("%B %d, %Y")
print("d2 =", d2)

# mm/dd/y
d3 = today.strftime("%m/%d/%y")
print("d3 =", d3)

# Month abbreviation, day and year
d4 = today.strftime("%b-%d-%Y")
print("d4 =", d4)
```

program5

5. Write a python program to perform list operations.

```
# Creating a List
List = [1,2,3]
print("Initial List: ")
print(List)
List.append(2)
List.append(4)
print("\n List after Addition of Two elements: ")
print(List)


# Addition of Element at specific Position using Insert Method
List.insert(3,12)
List.insert(4,14)
print("\n List after performing Insert Operation: ")
print(List)


# Removing elements from List using remove() method
List.remove(1)
List.remove(2)
```

```
print("\n List after Removal of two elements: ")
print(List)


# Print elements of a range using Slice operation
Sliced_List = List[2:4]
print("\nSlicing elements in a range 2-4: ")
print(Sliced_List)


# Addition of List to a List using append () method
List2 = [8,10]
List.append(List2)
print("\n List after Addition of a List: ")
print(List)
```

Output:
Initial List:
[1, 2, 3]
List after Addition of Three elements:
[1, 2, 3, 2, 4]
List after performing Insert Operation:
[1, 2, 3, 12, 14, 2, 4]
List after Removal of two elements:

[3, 12, 14, 2, 4]

Slicing elements in a range 2-4:
[14, 2]
List after Addition of a List:
[3, 12, 14, 2, 4, [8, 10]]

Program 6

6. Write a program to demonstrate working with Tuples.

```
# Creating an empty Tuple
Tuple1 = ()
print("Initial empty Tuple: ")
print(Tuple1)
# Creating a Tuple with the use of string
Tuple2 = ('Chennai', 'Delhi')
print("\nTuple with the use of String: ")
print(Tuple2)

# Creating a Tuple with the use of list
list1 = [1, 2, 4, 5, 6]
```

```
print("\nTuple using List: ")
print(tuple(list1))
# Creating a Tuple with the use of built-in function
Tuple3 = tuple('Bengaluru')
print("\nTuple with the use of function: ")
print(Tuple3)


# Printing the values of Tuple
print("\nFirst element of Tuple: ")
print(Tuple3[0])
# Tuple unpacking. This line unpack values of Tuple2
a, b = Tuple2
print("\nValues after unpacking: ")
print(a)
print(b)
```

Output:
Initial empty Tuple:
()
Tuple with the use of String:
('Chennai', 'Delhi')
Tuple using List:
(1, 2, 4, 5, 6)

Tuple with the use of function:
('B', 'e', 'n', 'g', 'a', 'l', 'u', 'r', 'u')
First element of Tuple:
B
Values after unpacking:
Chennai
Delhi

Program 7: Write a program to demonstrate dictionaries in python.

```
# demo for all dictionary methods
dict1 = {1: "Python", 2: "Java", 3: "Ruby", 4: "Scala"}
# copy() method
dict2 = dict1.copy()
print(dict2)
# clear() method
dict1.clear()
print(dict1)
# get() method
print(dict2.get(1))
# items() method
print(dict2.items())

# keys() method

print(dict2.keys())
```

```
# pop() method
dict2.pop(2)
print(dict2.pop(2))
# popitem() method
dict2.popitem()
print(dict2)
# update() method
dict2.update({3: "Scala"})

print(dict2)
# values() method
print(dict2.values())
```

```
Output:
{1: 'Python', 2: 'Java', 3: 'Ruby', 4: 'Scala'}
{}
Python
dict_items([(1, 'Python'), (2, 'Java'), (3, 'Ruby'), (4, 'Scala')])
dict_keys([1, 2, 3, 4])
{1: 'Python', 3: 'Ruby', 4: 'Scala'}
{1: 'Python', 3: 'Ruby'}
{1: 'Python', 3: 'Scala'}
dict_values(['Python', 'Scala'])
```

Program 8

```
# Write a program to demonstrate working of if..else if in Python
name = input("Enter your Name:")
regno = input("Enter your Reg.No. :")
marks = int(input("Enter your Average Mark: "))
print("*********************************************************")
print("Result: ", regno, name)

if marks >= 75 and marks <= 100:
        print("Congrats ! you passed in First class with Distinction...")
elif marks >= 60 and marks < 75:
        print("Congrats ! you passed in First class ...")
elif marks >= 50 and marks < 60:
        print("You passed in Second class ...")

elif  marks >= 40 and marks <50:
        print("You passed in Pass class ...")
else:
        print("Sorry, you failed")
        print("*********************************************************")
```

Program 9

Write a program to calculate sum of series

```
n=int(input("Enter the value of 'n' = "))
sum = 0
for i in range(1,n+1):
        sum=sum+i

print("Sum of the series is",sum)
```

Output:
Enter the value of 'n' = 10
Sum of the series is 55

Program 10

Program to find factorial of given number

```
def factorial(n):
# Checking the number is 1 or 0 then return 1 other wise return
factorial
if (n == 1 or n == 0):
        return 1
else:
        return (n * factorial(n - 1))
```

```
num = int(input("Enter a number: "))
print("number : ", num)
print("Factorial : ", factorial(num))
```

Output:
Enter a number: 5
number : 5
Factorial : 120

Program 11

Program to define a module to find the Fibonacci series and importing to another program.

Program name is fib.py

```
def fibonaci(n):

  n1,n2 = 0,1
  count =0
  if n<=0:
     print("please enter positive num")
  elif n==1:
     print(n1)
  else:
     print("fibonacci sequence:")
     while count < n:
       print(n1)
       n1,n2 = n2, n1+n2
       count=count+1
```

Program name is mainFib.py

```
import fib
nterms=int(input("enter a number"))
fib.fibonaci(nterms)
```

Output:
Enter the number to generate the Fibonacci series:5
0 1 2 3 5

Name: fibo.py

```
def fibo(n):
  n1,n2 = 0,1
  count =0
  if n<=0:
    print("please enter positive num")n
```

```
  elif n==1:
    print(n1)
  else:
    print("fibonacci sequence:")
    while count < n:
      print(n1)
      n1,n2 = n2, n1+n2
      count=count+1
```

---

fiboMain.py

```
import fib
nterms=int(input("enter a number"))
fib.fibo(n)
```

Program 12: Create a list and perform the following methods 1) insert() 2) remove() 3) append() 4) len() 5) pop() 6) clear().

```
my_list = ["apple", "banana", "cherry"]
print("Original list:", my_list)
my_list.insert(1, "orange")
print("After insert('orange', 1):", my_list)
my_list.remove("banana")
print("After remove('banana'):", my_list)
my_list.append("grape")
print("After append('grape'):", my_list)
list_length = len(my_list)
print("Length of the list:", list_length)
removed_element = my_list.pop(0)
print("Removed element:", removed_element)
print("List after pop(0):", my_list)
removed_last = my_list.pop()
print("Removed last element:", removed_last)
print("List after pop():", my_list)
my_list.clear()
print("After clear():", my_list)
```

Program 13

Write a program to calculate the area of Circle,Rectangle, and Triangle.

```
print ( "1-rectangle, 2-triangle, 3-circle" )
figure = input ( "Select a shape:" )
if figure == '1' :
print ( "The lengths of the sides of the rectangle:" )
```

```
a = float (input ( "a =" ))
b = float (input ( "b =" ))
print ( "Area:% .2f" % (a * b))
elif figure == '2' :
print ( "The lengths of the sides of the triangle:" )
a = float (input ( "a =" ))
b = float (input ( "b =" ))
c = float (input ( "c ="))

p = (a + b + c) / 2
from math import sqrt
s = sqrt (p * (p - a) * (p - b) * (p - c))
print ( "Area:% .2f" % s)
elif figure == '3' :
r = float (input ( "Circle radius R =" ))
from math import pi
print ( "Area:% .2f" % (pi * r ** 2 ))
else :
print ( "Input error" )
```

Output:

```
1-Rectangle, 2-Triangle, 3-Circle
Select a shape:1
The lengths of the sides of the rectangle:
a =3

b =4
Area: 12.00
1-Rectangle, 2-Triangle, 3-Circle
Select a shape:2
The lengths of the sides of the triangle:
a =3
b =5
c =6
Area: 7.48

1-Rectangle, 2-Triangle, 3-Circle
Select a shape:3
Circle radius R =5
Area: 78.54
```

Program 14

Write a python program for filter() to filter only even numbers from a given list

DEFINITION:

The filter() function is a built-in Python function that is used to filter elements of an iterable (like a list, tuple, etc.) based on a condition

PYTHON CODE

```
# Define a function to check if a number is even
def is_even(num):
    return num % 2 == 0

# Given list of numbers
numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

# Use filter() to get only even numbers
even_numbers = list(filter(is_even, numbers))

# Print the result
print("Even numbers:", even_numbers)
```

OUTPUT

[2, 4, 6]

Program 15

Write Python program to demonstrate math built- in functions

Built-in math functions

```
import math
sq = math.sqrt(64)
ce = math.ceil(1.4)
fl = math.floor(1.4)
p = math.pi
po = pow(4, 3)
mi = min(5, 10, 25)
ma = max(5, 10, 25)
ab = abs(-7.25)
anglDegree = 90
anglRadian = math.radians(anglDegree)

print('sqrt(64) is:', sq)
print('ceil(1.4) is:', ce)
print('floor(1.4) is:', fl)
print('pi(1.4) is:', p)
print('pow(4,3) is:', po)
print('min(5,10,25) is:', mi)
print('max(5,10,25) is:', ma)
print('abs(-7.25) is:', ab)
print('The given angle is :', anglRadian)
print('sin(x) is :', math.sin(anglRadian))
print('cos(x) is :', math.cos(anglRadian))
print('tan(x) is :', math.tan(anglRadian))
```

Output:

```
sqrt(64) is: 8.0
ceil(1.4) is: 2
```

floor(1.4) is: 1
pi(1.4) is: 3.141592653589793
pow(4,3) is: 64
min(5,10,25) is: 5
max(5,10,25) is: 25
abs(-7.25) is: 7.25
The given angle is : 1.5707963267948966
sin(x) is : 1.0
cos(x) is : 6.123233995736766e-17
tan(x) is : 1.633123935319537e+16

Program 16

Write a program in Python to handle user defined exception for given problem

```
class FiveDivisionError(Exception):
#this is exception class called when five division error happens
        pass
try:
        n1=int(input("Enter first number:"))
        n2=int(input("Enter second number:"))

if(n2==5):
        raise FiveDivisionError("cannot divide by five")
        div=n1/n2
        print("division is:",div)
        except (FiveDivisionError,ZeroDivisionError) as var:
        print(var)
```

Output1:
Enter first number:4
Enter second number:5
cannot divide by five

Output2:
Enter first number:4
Enter second number:3
division is: 1.3333333333333333

Program 17

Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero.

```
n = int(input("Enter A Number--->"));
while n >=0:
        print (n);
        n = n - 1;
```

Output:
Enter A Number--->8
8
7
6
5
4
3
2
1
0

https://evidencen.com/3-ways-to-calculate-mean-median-and-mode-in-python/

Program 18

Write a program to find mean, median, mode for the given set of numbers in a list.

1. Mean (Average):

The **mean** is the sum of all the numbers in a dataset divided by the number of values.

Formula: mean=sum of all values/number of values

2. Median:

The **median** is the **middle value** of a dataset when the numbers are arranged in **ascending order**.

Example:

- For [1, 3, 5], the median is 3.
- For [1, 3, 5, 7], the median is (3 + 5)/2 = 4.

3. Mode:

The **mode** is the number that appears **most frequently** in a dataset.

Example:

- For [2, 3, 3, 4, 5], the mode is 3.
- For [1, 2, 3, 4], there is **no mode** (all numbers appear once).

numbers=[1,2,3,4,5,6,8,8,9,8,7,8,5,6,3,8,2,8,10,11,1,8,5,8,9,3,25,5,6,47,1,2]

PYTHON CODE

```
from statistics import mean, median, mode

def calculate(numbers):
    # Calculate mean, median, and mode
    mean_value = mean(numbers)
    median_value = median(numbers)
    mode_value = mode(numbers)

    # Print the results
    print(f"Mean: {mean_value}")
    print(f"Median: {median_value}")
    print(f"Mode: {mode_value}")


# Example list of numbers
numbers = [4, 2, 7, 4, 9, 4, 2]

calculate(numbers)
```

Program 19

Write a program to check if the given string is palindrome or not

```
#using built-in function
word = input("Enter any word: ")
rev = reversed(word)
if list(word)==list(rev):
        print('It is a palindrome')
else:
        print('It is not a palindrome')

#Palindrome program in python without using built-in function
string=input("Enter any word:")
if(string==string[::-1]):
        print('It is a palindrome')
else:
        print('It is not a palindrome')
```

Output:

```
Enter any word: madam
It is a palindrome
Enter any word: hello
It is not a palindrome
```