**Python Programming Report**

**Prepared by: Simmi Pandey**

**ID:CS23BCAGN071**

**Semester:4th**

**Department: IT**

**Course: BCA**

**Date: May 19th, 2025**

**1. Basic Arithmetic Operations**

**Objective:**

To perform and display the results of basic arithmetic operations (addition, subtraction, multiplication, and division) using two variables.

**Code Summary:**

python

CopyEdit

a = 8

b = 4

print("Addition:", a + b)

print("Subtraction:", a - b)

print("Multiplication:", a \* b)

print("Division:", a / b)

**Output:**

makefile

CopyEdit

Addition: 12

Subtraction: 4

Multiplication: 32

Division: 2.0

**2. Solving a Quadratic Equation**

**Objective:**

To compute the roots of a quadratic equation in the form ax² + bx + c = 0.

**Code Summary:**

python

CopyEdit

a = 1

b = -5

c = 6

d = (b\*\*2) - (4\*a\*c)

root1 = (-b + d\*\*0.5) / (2\*a)

root2 = (-b - d\*\*0.5) / (2\*a)

print("Quadratic Roots are:", root1, "and", root2)

**Output:**

sql

CopyEdit

Quadratic Roots are: 3.0 and 2.0

**3. Solving a Linear Equation**

**Objective:**

To solve a linear equation of the form ax + b = c and find the value of x.

**Code Summary:**

python

CopyEdit

a = 2

b = 3

c = 7

x = (c - b) / a

print("The value of x is:", x)

**Output:**

csharp

CopyEdit

The value of x is: 2.0

**4. Plotting a Mathematical Function**

**Objective:**

To plot a function y = sin(x) \* cos(2x) and visualize the resulting wave pattern using Matplotlib.

**Code Summary:**

python

CopyEdit

import matplotlib.pyplot as plt

import numpy as np

x = np.linspace(0, 10, 100)

y = np.sin(x) \* np.cos(x \* 2)

plt.plot(x, y)

plt.title("Simple Star-like Pattern")

plt.xlabel("X Axis")

plt.ylabel("Y Axis")

plt.grid(True)

plt.show()

**Output:**

A wave-like plot representing the function. The combination of sine and cosine produces a visually intricate pattern resembling a star-like wave.

**5. Creating a Function to Add Two Numbers**

**Objective:**

To define and use a reusable function that adds two numbers.

**Code Summary:**

python

CopyEdit

def add\_numbers(x, y):

return x + y

print("Sum is:", add\_numbers(10, 5))

**Output:**

csharp

CopyEdit

Sum is: 15

**Conclusion**

This report demonstrates a variety of basic programming tasks in Python:

* Performing arithmetic operations.
* Solving algebraic equations (linear and quadratic).
* Visualizing mathematical functions with matplotlib.
* Writing reusable functions.

Top of Form

Bottom of Form