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 $ax^2 + bx + c = 0$.

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