Experiment – 1

WEATHER MODELLING USING QUADRATIC EQUATION

Software Engineering

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- **Execution**
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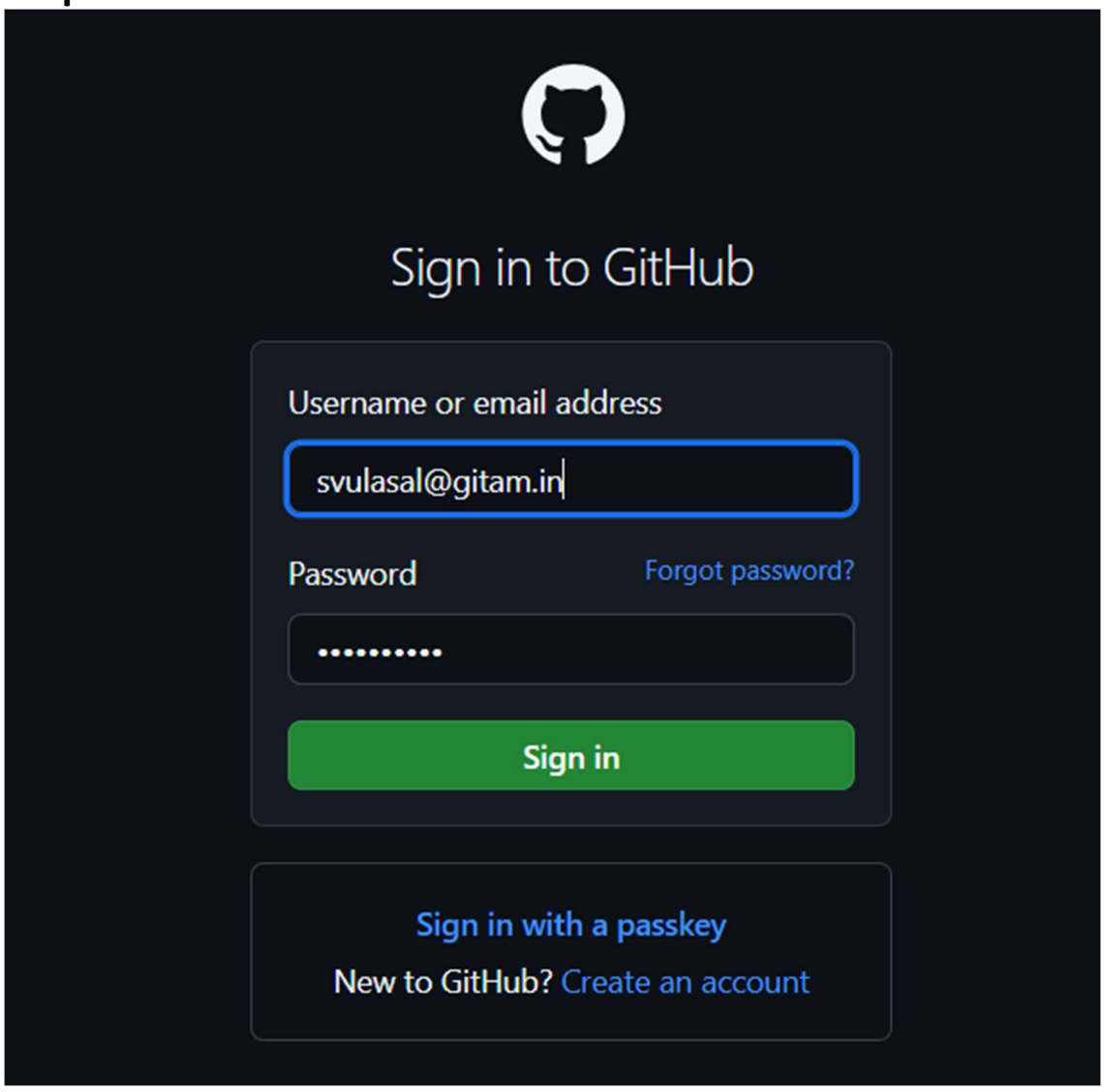
Aim: - Implement weather modelling using the quadratic solution in stages:

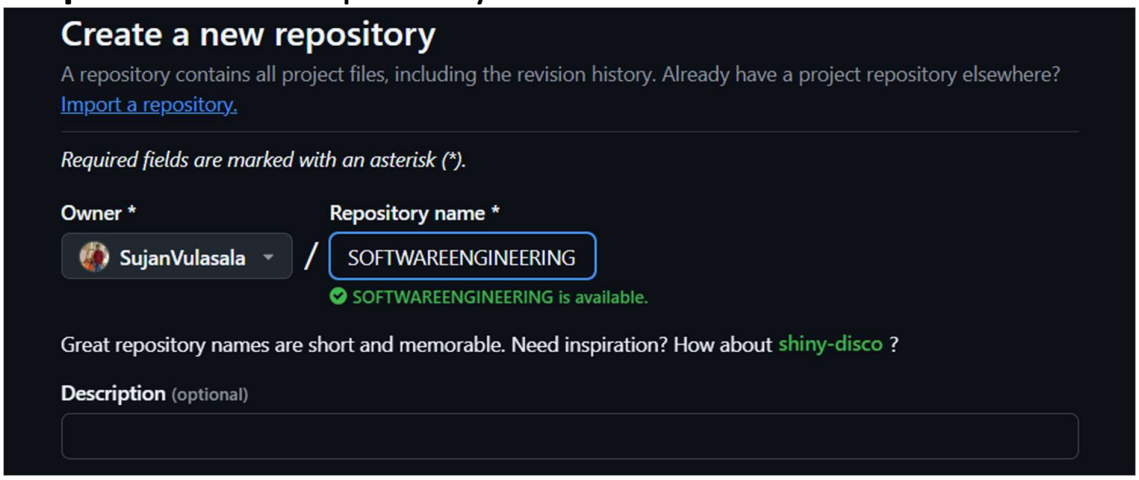
- Hard-coding variables.
- Keyboard input.
- File input for a single set of data.
- File input for multiple sets of data.
- Save all versions, debug, fix issues, create a GitHub account, and version the files.

Algorithm Versioning: -

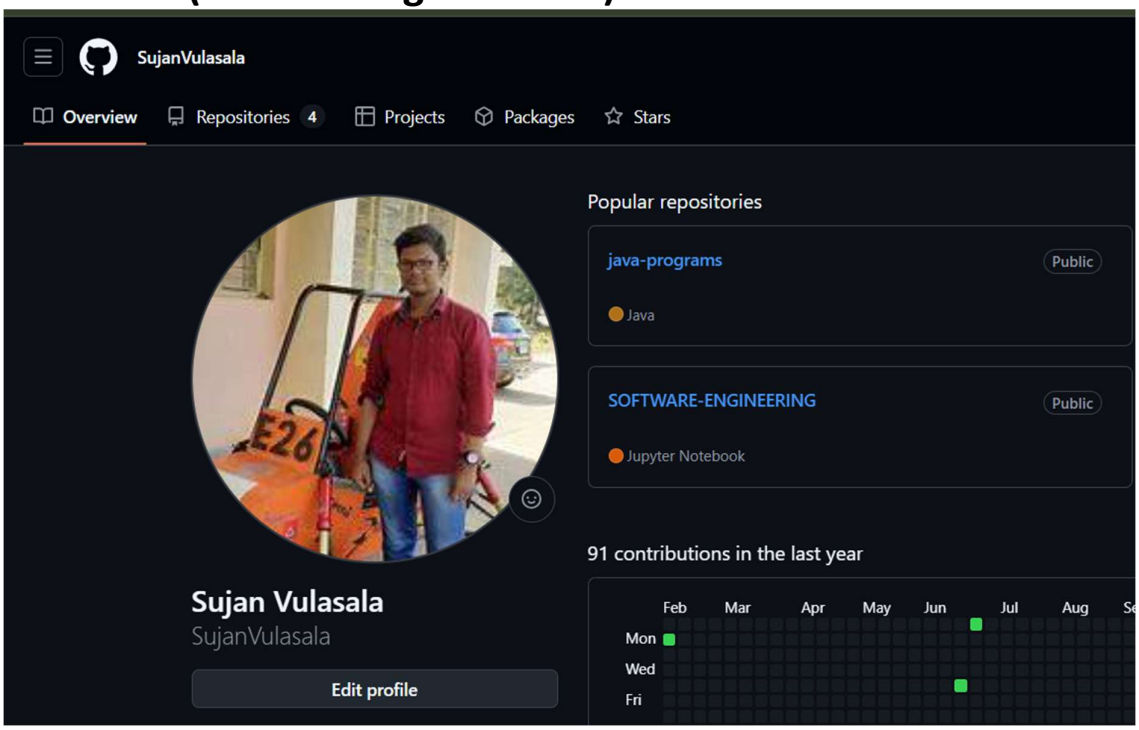
Step 1: Create a GitHub account.



Step 2: Create a repository on GitHub and collect its URL.



Step 3: Create a local repository and write the program for **Version 1 (hard-coding variables)**.



Step 4: Use the following commands to push Version 1 to GitHub:

- git init
- git add README.md
- git commit -m "first commit"
- git branch -M main
- git remote add origin <repository_url>

- git push -u origin main

Step 5: Modify the program to implement **Version 2 (keyboard input)**.

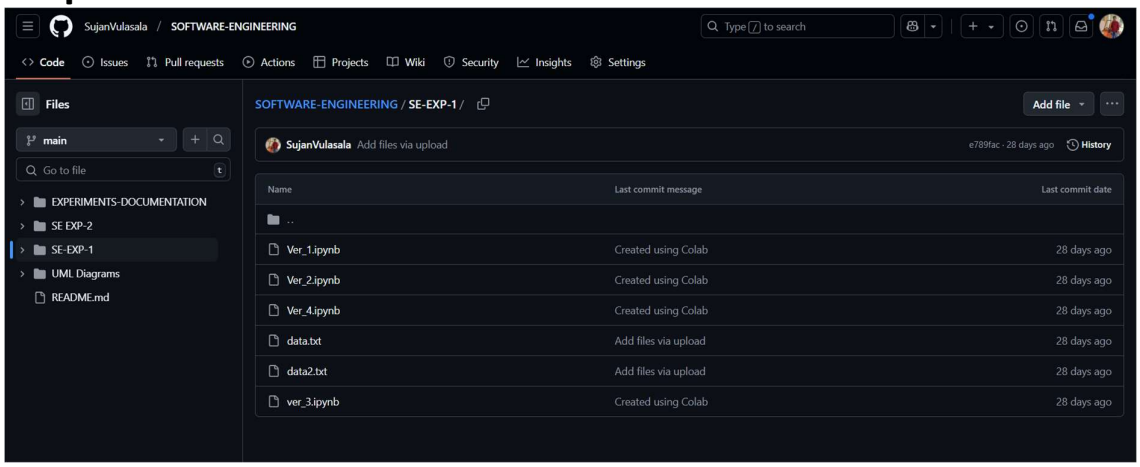
Step 6: Push Version 2 to GitHub using the same commands as Step 4.

Step 7: Modify the program for **Version 3 (file input for a single set of data)**.

Step 8: Push Version 3 to GitHub.

Step 9: Modify the program for **Version 4 (file input for multiple sets of data)**.

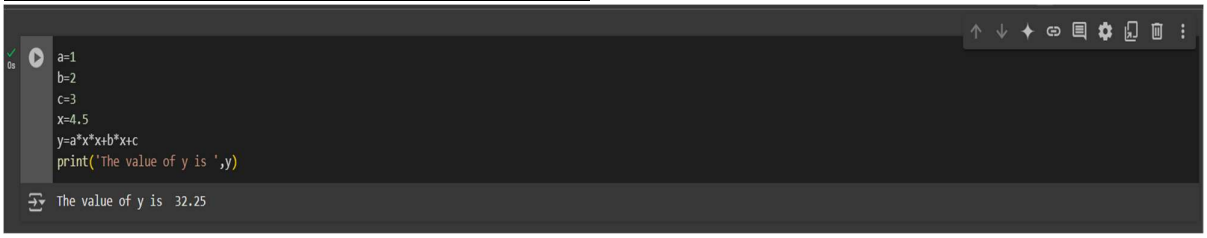
Step 10: Push Version 4 to GitHub.



Execution: -

Version1:Hard Coding Variables :-

Program outputs for version1: -



Version2:Keyboard Input

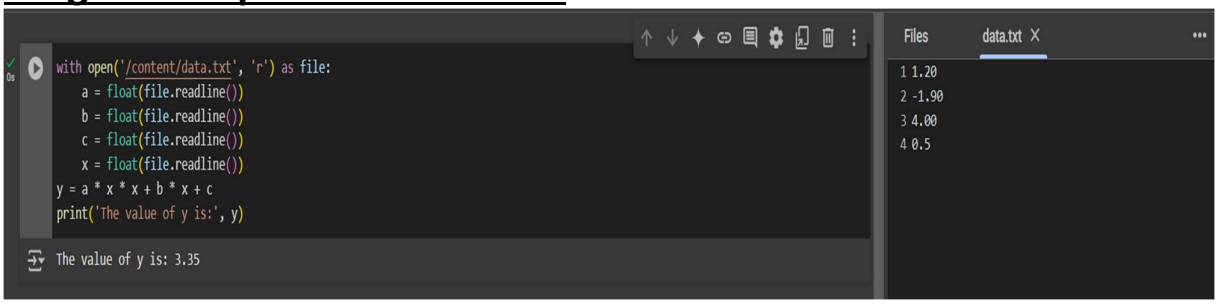
Program outputs for version2:

```
a=float(input('Enter the value of a: '))
b=float(input('Enter the value of b: '))
c=float(input('Enter the value of c: '))
x=float(input('Enter the value of x: '))
y=a*x*x+b*x+c
print('The value of y is ',y)
```

```
Enter the value of a: 1.0
Enter the value of b: 2.0
Enter the value of c: 3.0
Enter the value of x: 4.5
The value of y is  32.25
```

Version3:File input for single set of data

Program outputs for version3:



```
with open('/content/data.txt', 'r') as file:
    a = float(file.readline())
    b = float(file.readline())
    c = float(file.readline())
    x = float(file.readline())
y = a * x * x + b * x + c
print('The value of y is:', y)
```

```
The value of y is: 3.35
```

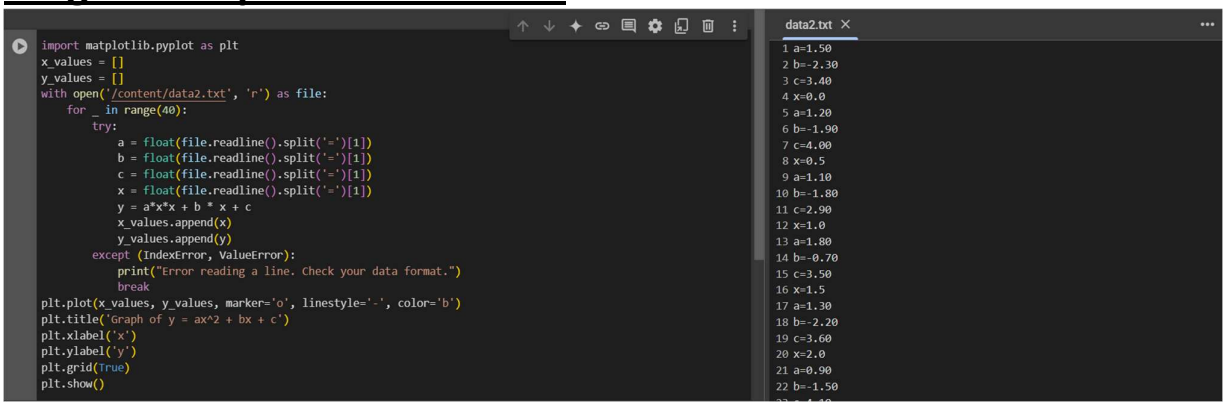
Files

data.txt

```
1.20
-1.90
4.00
0.5
```

Version4:File input for multiple sets of data

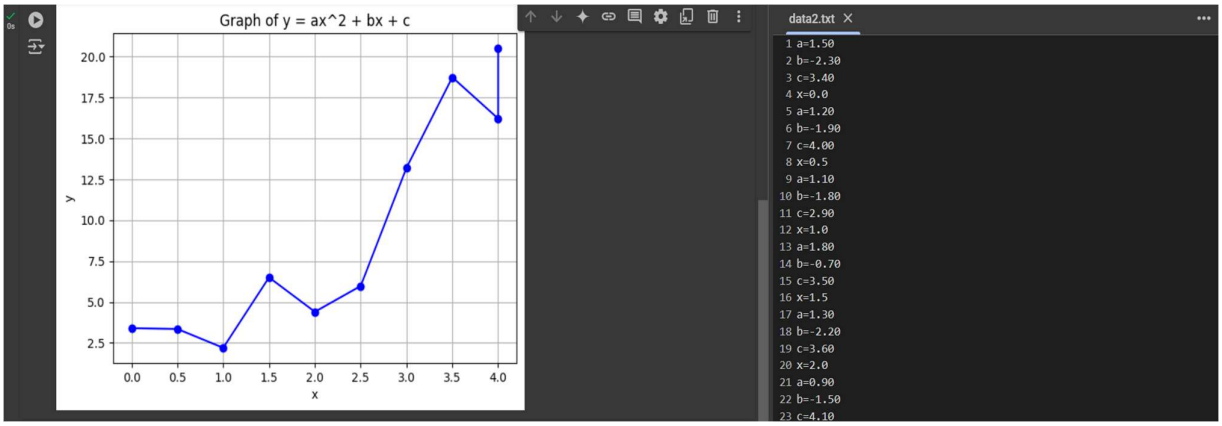
Program outputs for version4:



```
import matplotlib.pyplot as plt
x_values = []
y_values = []
with open('/content/data2.txt', 'r') as file:
    for _ in range(40):
        try:
            a = float(file.readline().split('=')[1])
            b = float(file.readline().split('=')[1])
            c = float(file.readline().split('=')[1])
            x = float(file.readline().split('=')[1])
            y = a*x*x + b * x + c
            x_values.append(x)
            y_values.append(y)
        except (IndexError, ValueError):
            print("Error reading a line. Check your data format.")
            break
plt.plot(x_values, y_values, marker='o', linestyle='-', color='b')
plt.title('Graph of y = ax^2 + bx + c')
plt.xlabel('x')
plt.ylabel('y')
plt.grid(True)
plt.show()
```

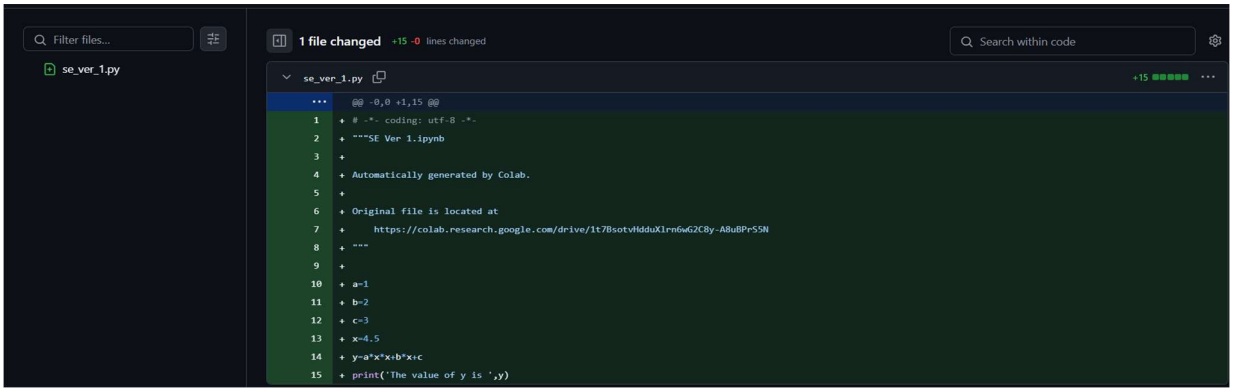
data2.txt

```
a=1.50
b=-2.30
c=3.40
x=0.0
a=1.20
b=-1.90
c=4.00
x=0.5
a=1.10
b=-1.80
c=2.90
x=1.0
a=1.80
b=-0.70
c=3.50
x=1.5
a=1.30
b=-2.20
c=3.60
x=2.0
a=0.90
b=-1.50
```

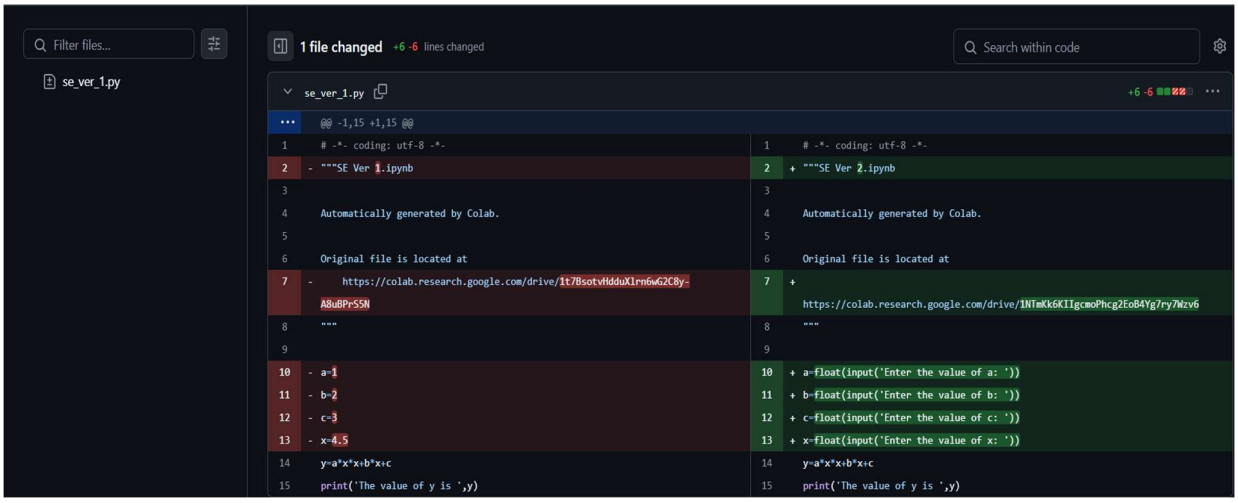


GitHub Commit History :-

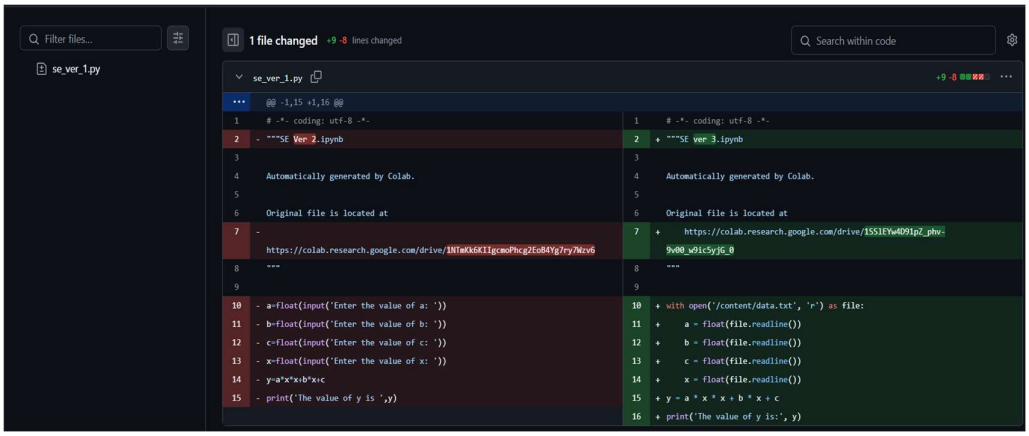
GitHub commit history for v1: -



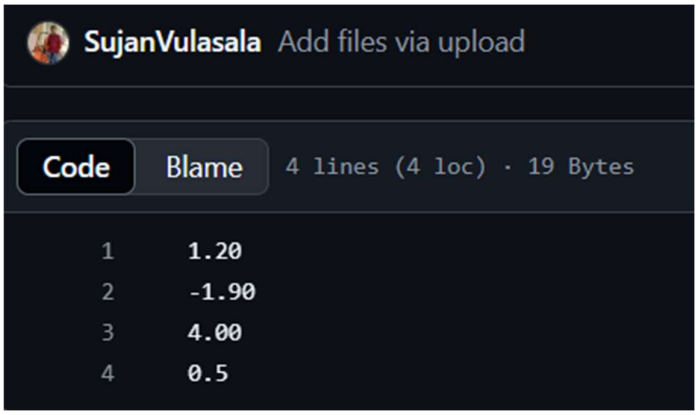
GitHub commit history for v2 :-



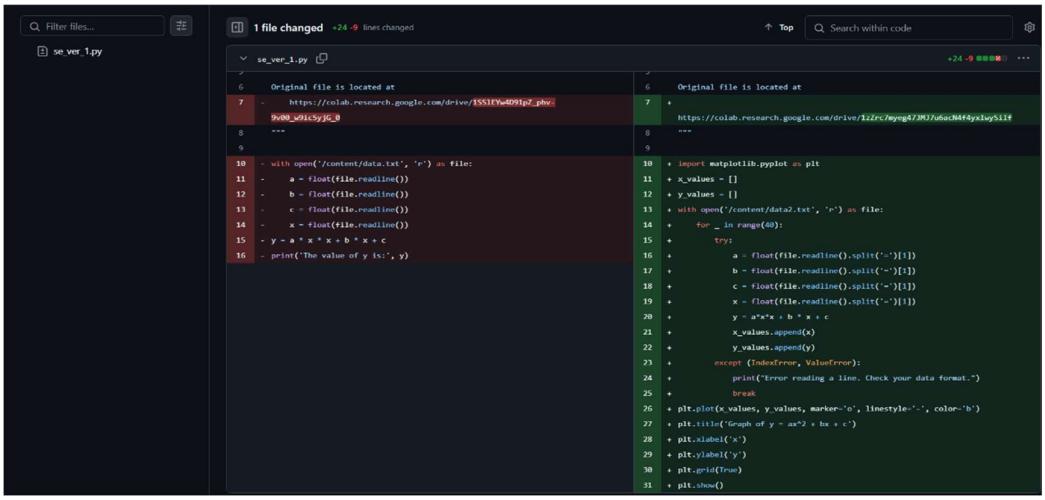
GitHub commit history for v3 :-



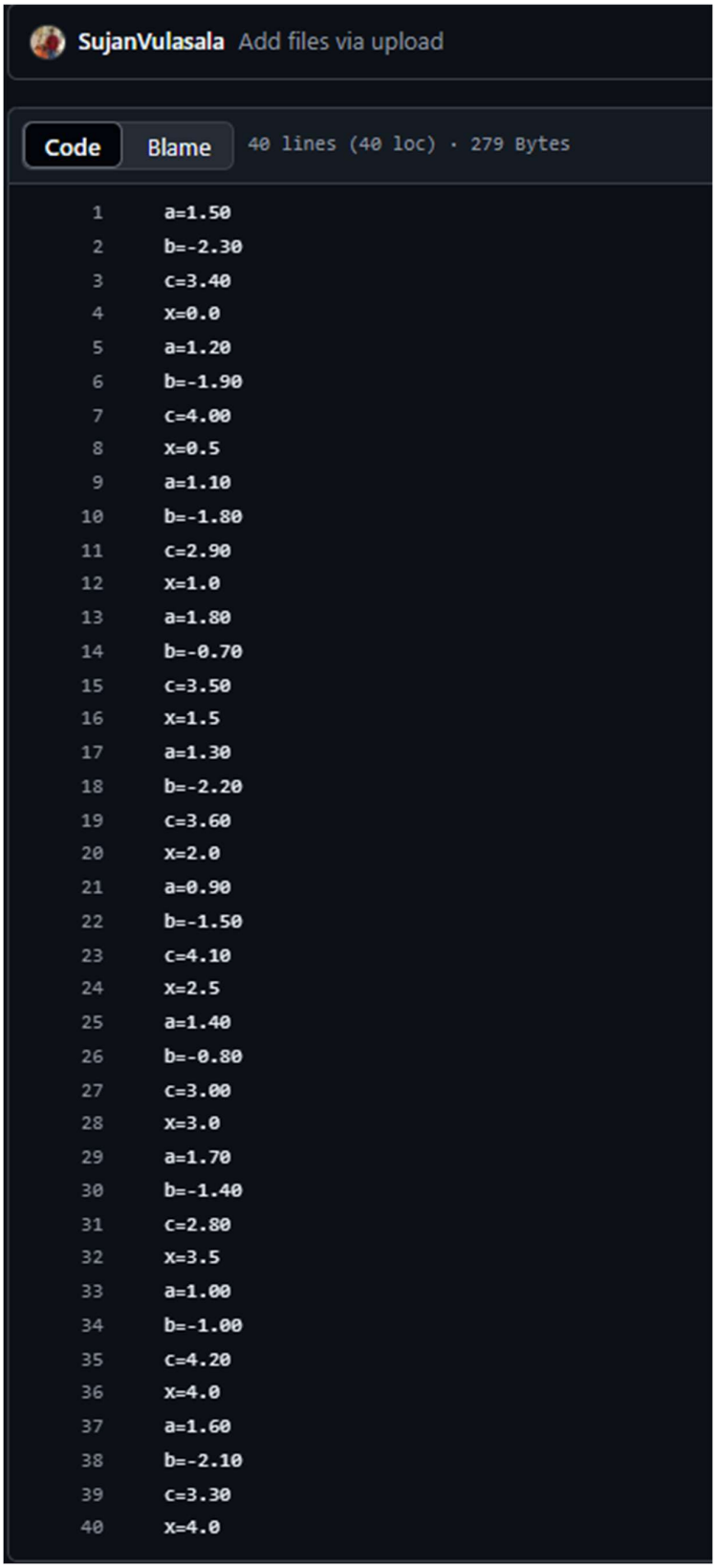
Data for v3: -



GitHub commit history for v4 :-



Data for v4: -


SujanVulasala Add files via upload
Code
Blame
40 lines (40 loc) · 279 Bytes
a=1.50
b=-2.30
c=3.40
x=0.0
a=1.20
b=-1.90
c=4.00
x=0.5
a=1.10
b=-1.80
c=2.90
x=1.0
a=1.80
b=-0.70
c=3.50
x=1.5
a=1.30
b=-2.20
c=3.60
x=2.0
a=0.90
b=-1.50
c=4.10
x=2.5
a=1.40
b=-0.80
c=3.00
x=3.0
a=1.70
b=-1.40
c=2.80
x=3.5
a=1.00
b=-1.00
c=4.20
x=4.0
a=1.60
b=-2.10
c=3.30
x=4.0

Result: -

A weather modelling system was successfully implemented using the quadratic solution in stages. The code was versioned and saved on a GitHub repository, and all versions were documented for reference.