



## **Experiment – 1**

# **WEATHER MODELLING USING QUADRATIC EQUATION**

## **Software Engineering**

By

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(DEEMED TO BE UNIVERSITY)

BENGALURU, KARNATAKA, INDIA

Academic Year 2024-25

# INDEX

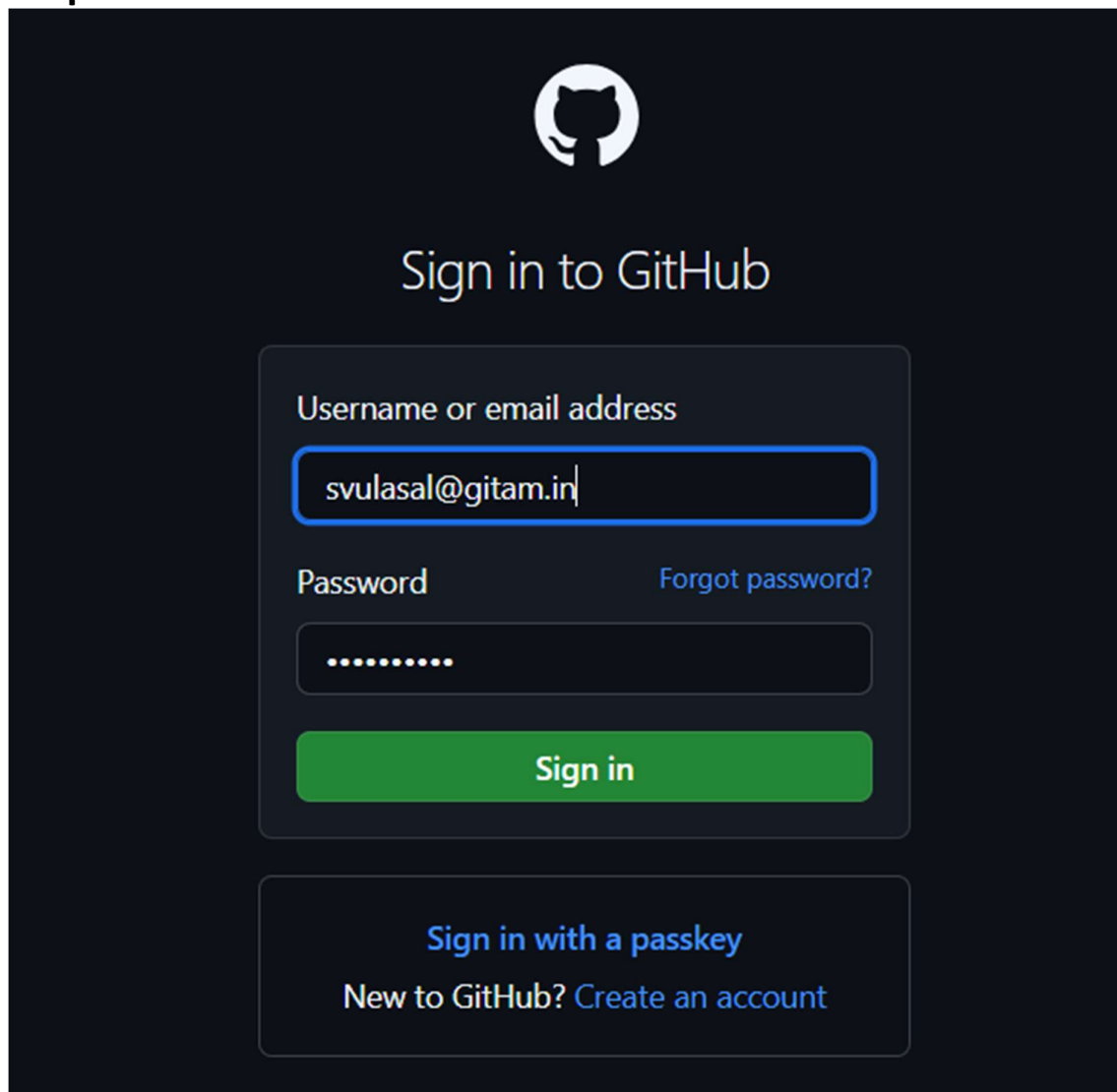
- **Aim**
- **Algorithm Development**
- **Execution**
- **Result**

**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.

The image shows the GitHub sign-in page. At the top is the GitHub logo (Octocat) in white on a dark background. Below it is the text "Sign in to GitHub". The main form is a dark gray box with rounded corners. It contains a label "Username or email address" above a text input field with the value "svulasal@gitam.in". Below this is a label "Password" above a password input field with masked characters ".....". To the right of the password field is a link "Forgot password?". Below the password field is a green "Sign in" button. At the bottom of the form is a link "Sign in with a passkey". Below the entire form is a link "New to GitHub? Create an account".

Sign in to GitHub

Username or email address

svulasal@gitam.in

Password

Forgot password?

.....

Sign in

Sign in with a passkey

New to GitHub? Create an account

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

### Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

*Required fields are marked with an asterisk (\*).*

Owner \*

SujanVulasala

Repository name \*

SOFTWAREENGINEERING

✔ SOFTWAREENGINEERING is available.


Great repository names are short and memorable. Need inspiration? How about [shiny-disco](#) ?

Description (optional)

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

SujanVulasala

Overview Repositories 4 Projects Packages Stars



**Sujan Vulasala**  
SujanVulasala  
[Edit profile](#)

Popular repositories

java-programs Public

Java

SOFTWARE-ENGINEERING Public

Jupyter Notebook

91 contributions in the last year

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mon								
Wed								
Fri								

## 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)**.

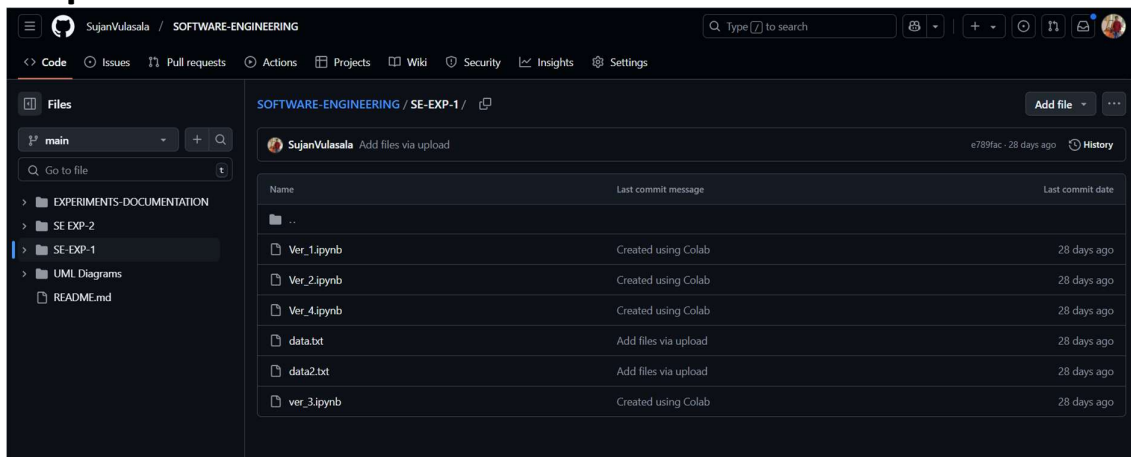
**Step 6:** Push Version 2 to GitHub using the same commands as Step 4.

**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)**.

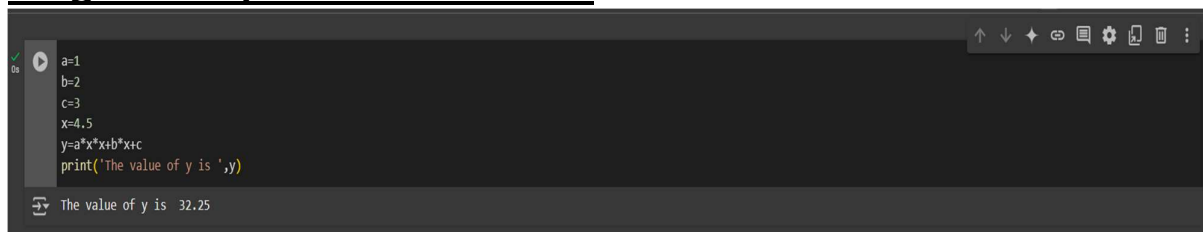
**Step 10:** Push Version 4 to GitHub.



**Execution: -**

**Version1:Hard Coding Variables :-**

**Program outputs for version1: -**



## Version2:Keyboard Input

### Program outputs for version2:

```
27s 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:

```
10s 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
```

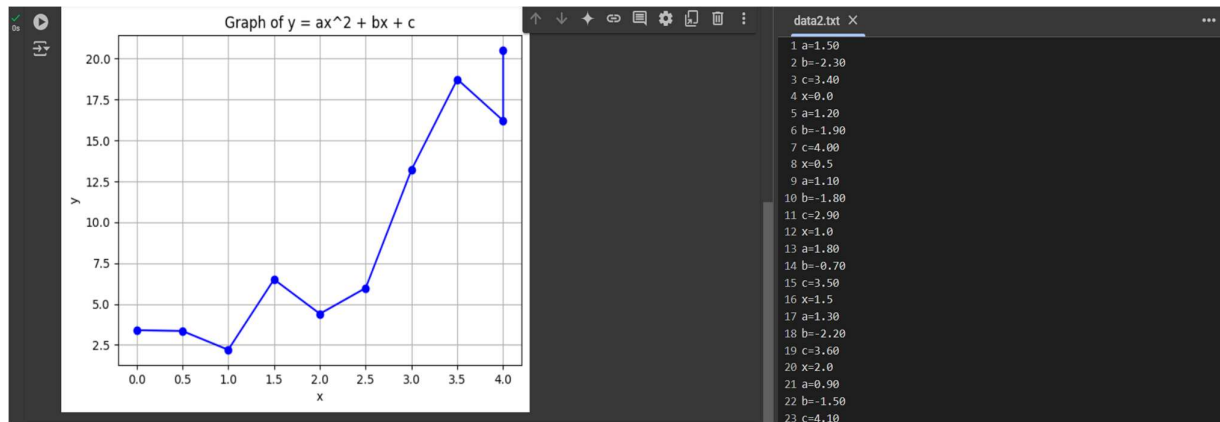
Files	data.txt X
1	1.20
2	-1.90
3	4.00
4	0.5

## 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 X
1 a=1.50
2 b=-2.30
3 c=3.40
4 x=0.0
5 a=1.20
6 b=-1.90
7 c=4.00
8 x=0.5
9 a=1.10
10 b=-1.80
11 c=2.90
12 x=1.0
13 a=1.80
14 b=-0.70
15 c=3.50
16 x=1.5
17 a=1.30
18 b=-2.20
19 c=3.60
20 x=2.0
21 a=0.90
22 b=-1.50
23 c=4.10



## GitHub Commit History :-

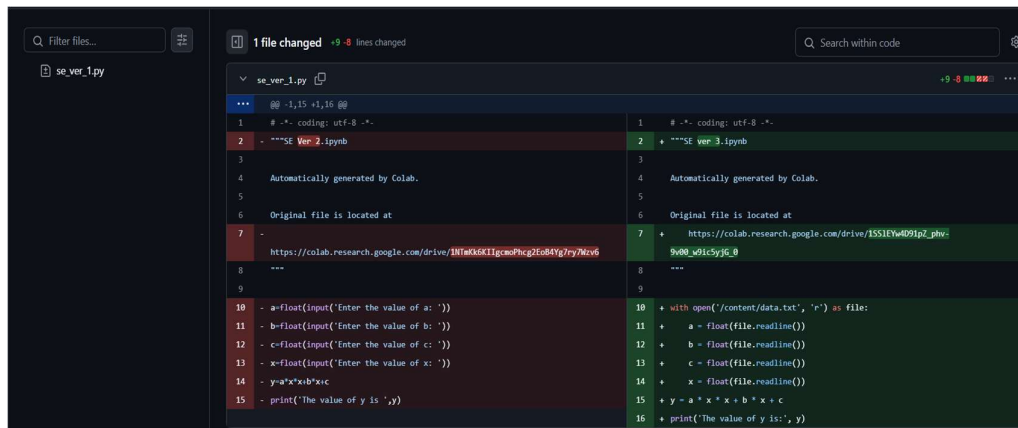
### GitHub commit history for v1: -

```
1 file changed +15 -0 lines changed
se_ver_1.py
+++ @@ -0,0 +1,15 @@
1 + # -*- coding: utf-8 -*-
2 + """SE Ver 1.ipynb
3 +
4 + Automatically generated by Colab.
5 +
6 + Original file is located at
7 + https://colab.research.google.com/drive/1t7BsothHduXlrn6wG2CBy-ABuBPr5SN
8 + """
9 +
10 + a=1
11 + b=2
12 + c=3
13 + x=4.5
14 + y=a*x+b*x+c
15 + print('The value of y is ',y)
```

### GitHub commit history for v2 :-

se_ver_1.py	se_ver_2.py
+++ @@ -1,15 +1,15 @@	1 # -*- coding: utf-8 -*-
1 + # -*- coding: utf-8 -*-	2 + """SE Ver 2.ipynb
2 - """SE Ver 1.ipynb	3
3	4 Automatically generated by Colab.
4 Automatically generated by Colab.	5
5	6 Original file is located at
6 Original file is located at	7 +
7 - https://colab.research.google.com/drive/1t7BsothHduXlrn6wG2CBy-ABuBPr5SN	8 https://colab.research.google.com/drive/1NTmk6KIIgcmoPhcg2EoB4Yg7ry7NzV6
8 - """	9
9	10 + a=float(input('Enter the value of a: '))
10 - a=1	11 + b=float(input('Enter the value of b: '))
11 - b=2	12 + c=float(input('Enter the value of c: '))
12 - c=3	13 + x=float(input('Enter the value of x: '))
13 - x=4.5	14 y=a*x+b*x+c
14 y=a*x+b*x+c	15 print('The value of y is ',y)
15 print('The value of y is ',y)	

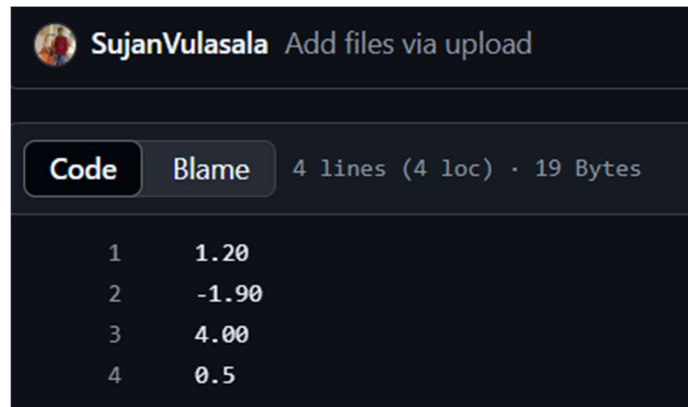
## GitHub commit history for v3 :-



The screenshot shows a GitHub commit history for v3. The file se\_ver\_1.py is compared with se\_ver\_3.ipynb. The diff shows changes in the file content, including a new URL and a new line of code.

```
@@ -1,15 +1,16 @@
1 # -*- coding: utf-8 -*-
2 - """SE Ver 2.ipynb
3
4 Automatically generated by Colab.
5
6 Original file is located at
7 - https://colab.research.google.com/drive/1HTak6K1Igc0Phcg2E0BAyG7y7Wz6v
8 ---
9
10 - a=float(input('Enter the value of a: '))
11 - b=float(input('Enter the value of b: '))
12 - c=float(input('Enter the value of c: '))
13 - x=float(input('Enter the value of x: '))
14 - y=a*x+b*x*c
15 - print('The value of y is ',y)
16
```

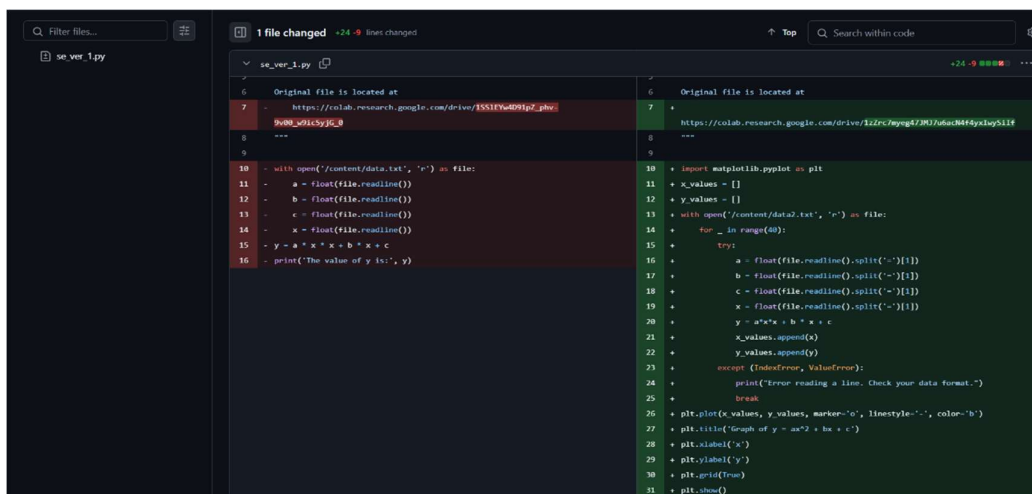
## Data for v3: -



The screenshot shows a GitHub commit by SujanVulasala. The commit message is "Add files via upload". The file se\_ver\_1.py is shown with 4 lines of code. The data for v3 is as follows:

Line	Value
1	1.20
2	-1.90
3	4.00
4	0.5

## GitHub commit history for v4 :-




The screenshot shows a GitHub commit history for v4. The file se\_ver\_1.py is compared with se\_ver\_4.ipynb. The diff shows changes in the file content, including a new URL and a new line of code.

```
6 Original file is located at
7 - https://colab.research.google.com/drive/1SS1EWd091p2_phv-
8 9v00_v9ic5yjc_0
9 ---
10
11 - with open('/content/data.txt', 'r') as file:
12 - a = float(file.readline())
13 - b = float(file.readline())
14 - c = float(file.readline())
15 - x = float(file.readline())
16 - y = a * x * x + b * x * c
17 - print('The value of y is: ', y)
18
```



## Data for v4: -

 **SujanVulasala** Add files via upload

Code

Blame

40 lines (40 loc) · 279 Bytes

```
1      a=1.50
2      b=-2.30
3      c=3.40
4      x=0.0
5      a=1.20
6      b=-1.90
7      c=4.00
8      x=0.5
9      a=1.10
10     b=-1.80
11     c=2.90
12     x=1.0
13     a=1.80
14     b=-0.70
15     c=3.50
16     x=1.5
17     a=1.30
18     b=-2.20
19     c=3.60
20     x=2.0
21     a=0.90
22     b=-1.50
23     c=4.10
24     x=2.5
25     a=1.40
26     b=-0.80
27     c=3.00
28     x=3.0
29     a=1.70
30     b=-1.40
31     c=2.80
32     x=3.5
33     a=1.00
34     b=-1.00
35     c=4.20
36     x=4.0
37     a=1.60
38     b=-2.10
39     c=3.30
40     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.