# Software Engineering Lab Task 5

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Implement weather modelling using the quadratic solution in stages: hard-coding variables keyboard input, read from a file, for a single set of input, multiple sets of inputs. save all versions, debug, fix problems, create a GitHub account.

**Aim:**

To model weather temperature using a quadratic equation, demonstrating three scenarios:

1. **Hardcoded Values**: Predefined inputs for simplicity.

2. **Keyboard Input**: User-provided inputs for flexibility.

3. **File Input**: Reading inputs from a file for automated processing.

About the Program:

- The program utilizes a quadratic equation to model temperature changes over time.

- Equation given by:

  Temperature=a×(time)^2+b×(time)+c

1. Hardcoding Variables:

   - Predefined values for coefficients a$a$, b$b$, and c$c$.

   - Calculate temperature for a given time using these hardcoded values.

```
[3]  from google. colab import drive
     drive .mount('/content/drive')

     Mounted at /content/drive
```

```python
# Define the quadratic function
def calculate_temperature(a, b, c, time):
    return a * (time ** 2) + b * time + c

# Hardcoded variables
a, b, c = 0.1, 2, 10
time = 5

# Calculate and display temperature
temperature = calculate_temperature(a, b, c, time)
print(f"Temperature at time {time} hours with hardcoded variables: {temperature}")
```

```
Temperature at time 5 hours with hardcoded variables: 22.5
```

## 2. Accepting Variables via Keyboard Input:

- Prompt the user to enter values for coefficients a$a$, b$b$, and c$c$.

- Calculate temperature for a given time using these user-provided values.

```python
# Accept coefficients from user input
a = float(input("Enter coefficient a: "))
b = float(input("Enter coefficient b: "))
c = float(input("Enter coefficient c: "))
time = float(input("Enter time: "))

# Calculate and display temperature
temperature = calculate_temperature(a, b, c, time)
print(f"Temperature at time {time} hours with keyboard input: {temperature}")
10
```
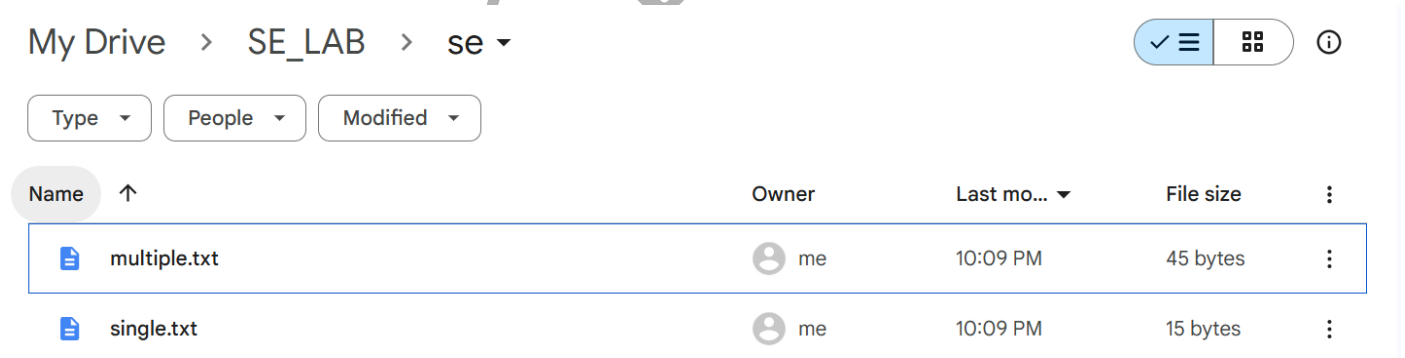
```
Enter coefficient a: 0.1
Enter coefficient b: 2
Enter coefficient c: 10
Enter time: 5
Temperature at time 5.0 hours with keyboard input: 22.5
```

## 3. Reading Variables from a File:

- Read coefficients a, b, c, and time from a file.

- Calculate temperature for each set of inputs read from the file.

Step 1: upload the required files in google drive. So that we can use in code.

My Drive > SE_LAB > se ▾

| Name ↑ | Owner | Last mo... ▾ | File size | |
|---|---|---|---|---|
| multiple.txt | me | 10:09 PM | 45 bytes | ⋮ |
| single.txt | me | 10:09 PM | 15 bytes | ⋮ |

Files
- IDS CASE STUDY
- SE_LAB
  - SE_LAB EXP 2.ipynb
  - SE_LAB EXP 3.ipynb
  - multiple.txt
  - multiple_inputs.txt
  - single.txt
  - single_input.txt
- archive (4)

```python
# Function to read coefficients from a file
def read_coefficients(filename):
    try:
        with open(filename, 'r') as file:
            return map(float, file.read().strip().split(','))
    except Exception as e:
        print(f"Error: {e}")
        return None

# Read coefficients from file
filename = '/content/drive/MyDrive/SE_LAB/single.txt'
coefficients = read_coefficients(filename)

if coefficients:
    a, b, c, time = coefficients
    print(f"Coefficients read from file: a={a}, b={b}, c={c}, time={time}")
```
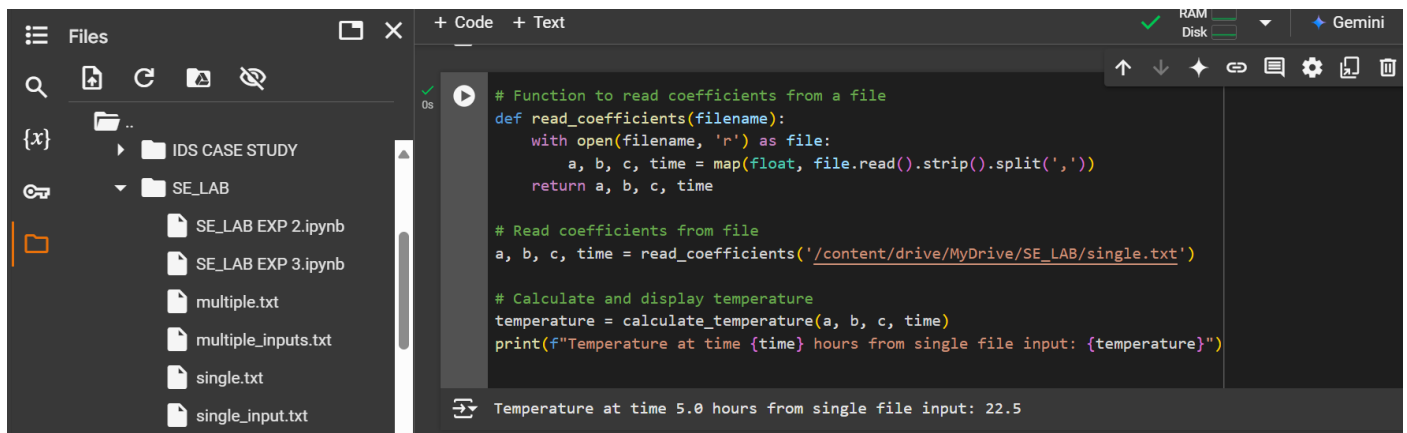
```
Coefficients read from file: a=0.1, b=2.0, c=10.0, time=5.0
```

## 4. Processing a Single Set of Inputs:

- Read a single set of coefficients from a file.

- Calculate and display the temperature for this set.

```python
# Function to read coefficients from a file
def read_coefficients(filename):
    with open(filename, 'r') as file:
        a, b, c, time = map(float, file.read().strip().split(','))
    return a, b, c, time

# Read coefficients from file
a, b, c, time = read_coefficients('/content/drive/MyDrive/SE_LAB/single.txt')

# Calculate and display temperature
temperature = calculate_temperature(a, b, c, time)
print(f"Temperature at time {time} hours from single file input: {temperature}")
```
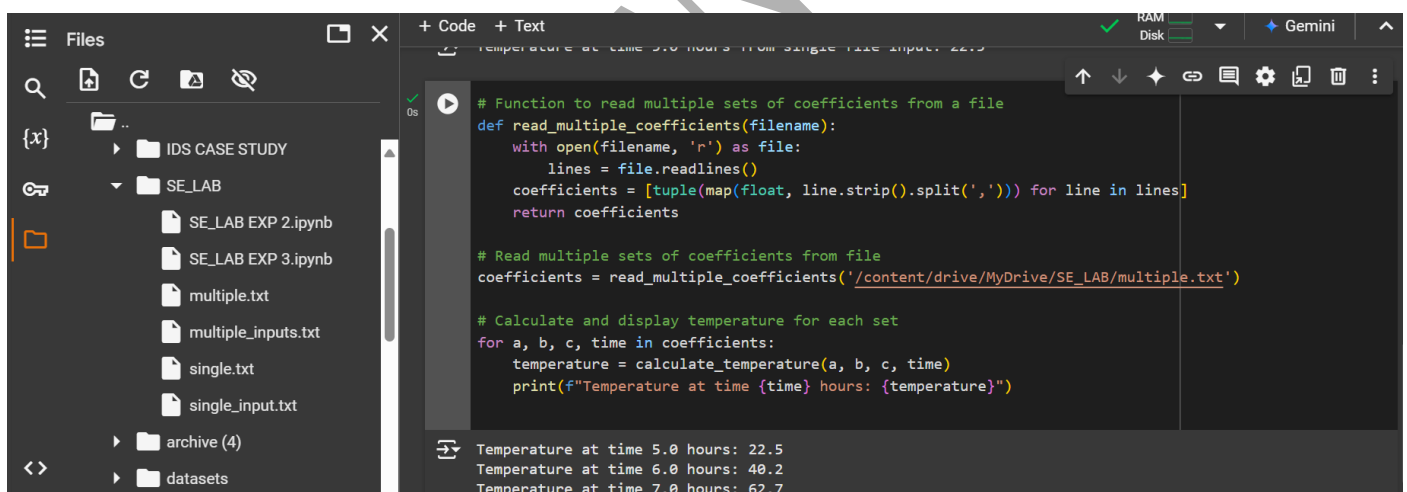
```
Temperature at time 5.0 hours from single file input: 22.5
```

## 5. Processing Multiple Sets of Inputs:

- Read multiple sets of coefficients from a file.

- Calculate and display the temperature for each set.

```python
# Function to read multiple sets of coefficients from a file
def read_multiple_coefficients(filename):
    with open(filename, 'r') as file:
        lines = file.readlines()
    coefficients = [tuple(map(float, line.strip().split(','))) for line in lines]
    return coefficients

# Read multiple sets of coefficients from file
coefficients = read_multiple_coefficients('/content/drive/MyDrive/SE_LAB/multiple.txt')

# Calculate and display temperature for each set
for a, b, c, time in coefficients:
    temperature = calculate_temperature(a, b, c, time)
    print(f"Temperature at time {time} hours: {temperature}")
```
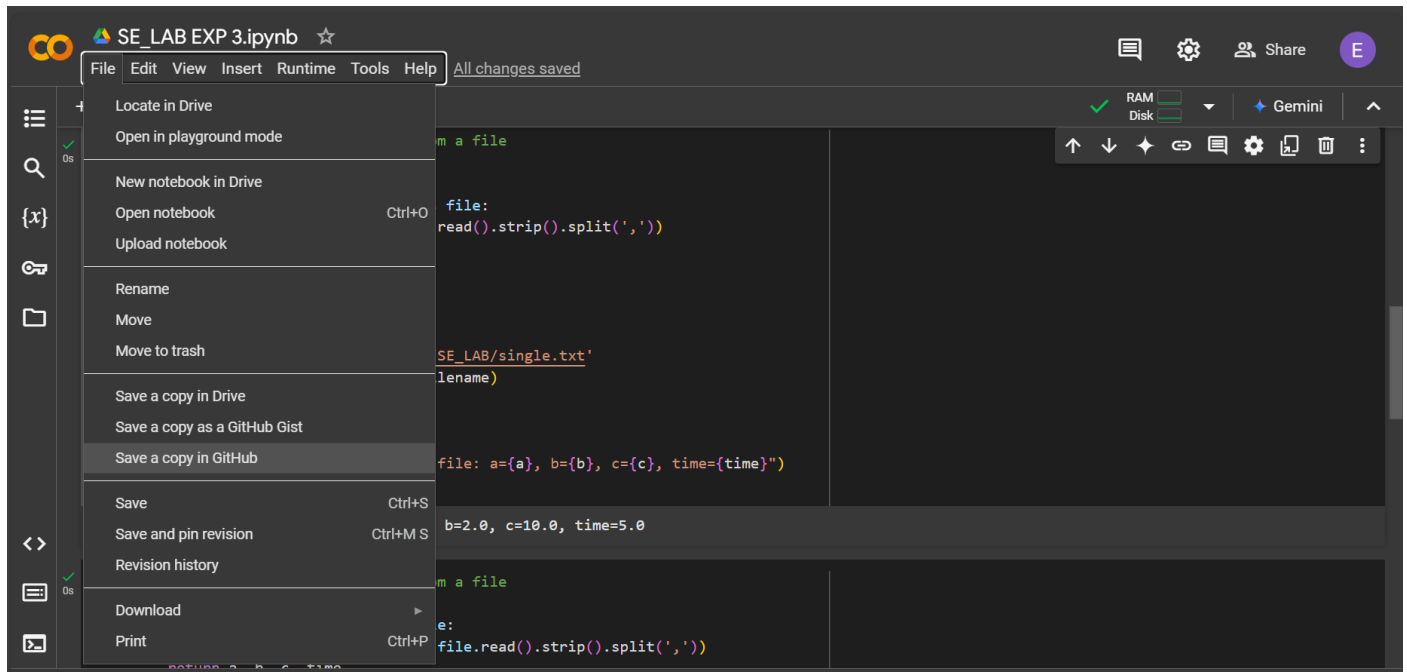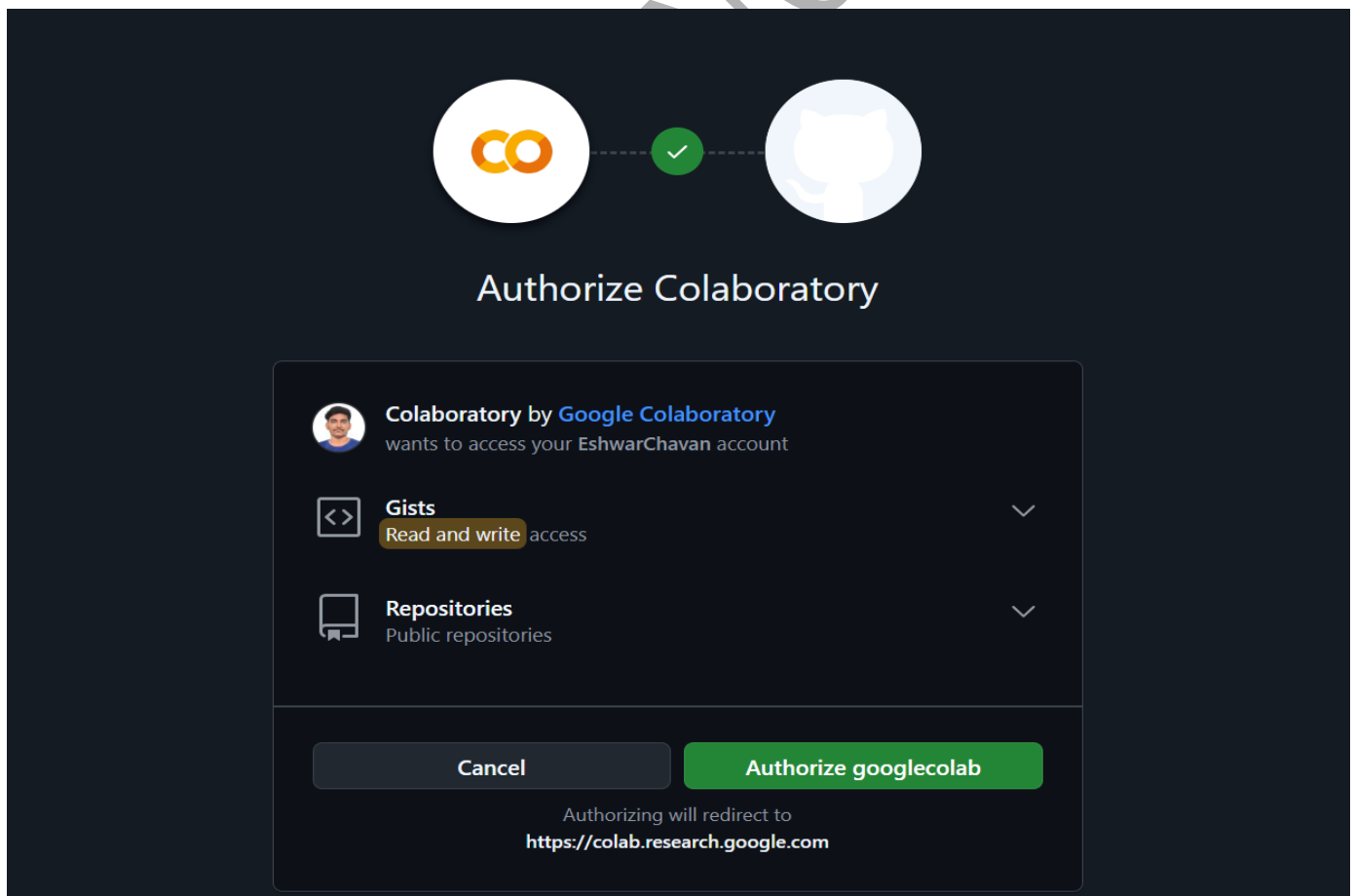
```
Temperature at time 5.0 hours: 22.5
Temperature at time 6.0 hours: 40.2
Temperature at time 7.0 hours: 62.7
```
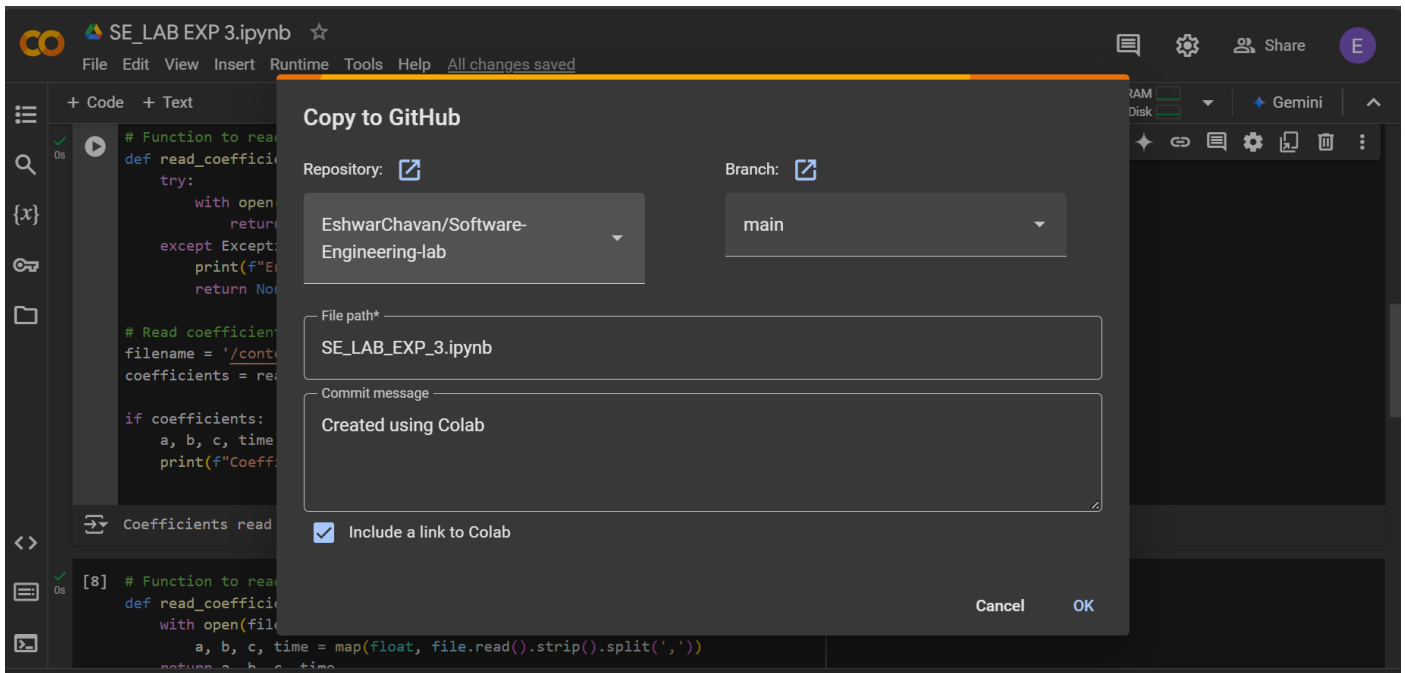
Pushing the project to GitHub.

Step 1: Click on file and select option save a copy in GitHub



Step 2: Authorize Colaboratory

## Step 3: Click on ok for copying to GitHub.



## Step 4: Pushed into GitHub