Software Engineering

Lab Task 1

VU22CSEN0100322

1. Implement Weather Modeling* 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.

CODE:

main.py × weather.txt +

main.py > read_coefficients_from_file > ...

```
1   def temperature_modeling(a, b, c, time):
2       # Calculate temperature based on time using the quadratic equation
3       temperature = a * time**2 + b * time + c
4       return temperature
5
6   # Function to read coefficients and times from file
7   def read_coefficients_from_file(filename):
8       coefficients = []
9       with open(filename, 'r') as file:
10          lines = file.readlines()
11          for line in lines:
12              if line.strip():  # Check if line is not empty
13                  a, b, c, time = map(float, line.split())
14                  coefficients.append((a, b, c, time))
15      return coefficients
16
17  # Hard-coded coefficients
18  a_hardcoded, b_hardcoded, c_hardcoded = 0.1, 2, 10
19  time_hardcoded = 5  # Example time value
20
21  # Display results for hard-coded coefficients
22  print("Hard-coded Variables for Weather Modeling")
23  print("Temperature for hardcoded coefficients at time", time_hardcoded,
    "hours:", temperature_modeling(a_hardcoded, b_hardcoded, c_hardcoded,
    time_hardcoded))
24  print("\n")
25
26  # Keyboard input coefficients
27  print("Keyboard Input for Weather Modeling")
28  a_keyboard = float(input("Enter coefficient a: "))
```

AI {} Python Ln 8, Col 22 Spaces: 4 History

Txt file:

weather.txt

```
0.1 1.0 3.0 4.0
1.0 1.0 4.0 2.0
0.2 1.5 1.0 3.0
```

OUTPUT:

```
Hard-coded Variables for Weather Modeling
Temperature for hardcoded coefficients at time 5 hours: 22.5


Keyboard Input for Weather Modeling
Enter coefficient a: 1
Enter coefficient b: 2
Enter coefficient c: 3
Enter time in hours: 4
Temperature for keyboard input coefficients at time 4.0 hours: 27.0


Read from a File for Weather Modeling
Set 1:
Temperature for file input coefficients at time 4.0 hours: 8.6

Set 2:
Temperature for file input coefficients at time 2.0 hours: 10.0

Set 3:
Temperature for file input coefficients at time 3.0 hours: 7.3
```