SOURCE CODE

Frontend:

```python
import tkinter as tk

from tkinter import messagebox

import csv


# Load CSV data

def load_data():

    try:

        with open('rainwater_data.csv', newline='') as file:

            reader = csv.DictReader(file)

            data = list(reader)

            return data

    except FileNotFoundError:
```

```python
        messagebox.showerror("Error", "CSV file not found.")

        return []


# Display data in GUI

def show_data():

    data = load_data()

    output.delete('1.0', tk.END)

    for row in data:

        output.insert(tk.END, f"Date: {row['Date']}, Rainfall:
{row['Rainfall(mm)']} mm, Tank Level: {row['Tank_Level(%)']}%,
Usage: {row['Usage(L)']} L\n")


# GUI setup

root = tk.Tk()

root.title("Smart Rainwater Harvesting Monitor")


tk.Label(root, text="Rainwater Harvesting Dashboard",
font=("Arial", 16)).pack(pady=10)
```

```python
tk.Button(root, text="Load Data",
command=show_data).pack(pady=5)

output = tk.Text(root, height=15, width=60)

output.pack(pady=10)


root.mainloop()
```

Backend:

```
Date,Rainfall(mm),Tank_Level(%),Usage(L)

2025-09-01,12.5,80,150

2025-09-02,0.0,75,200

2025-09-03,5.0,78,180

2025-09-04,20.0,90,100
```