Al Mini Project: Expert System Using Python

You will create a small expert system in Python. You may use pandas when it helps (for reading rule files, organizing data, etc.).

Project Tasks:

1. Choose the Application

Select a domain where expert decision-making is useful.

Examples include: Crop recommendation, plant disease diagnosis, simple medical symptom checker, travel advice, food storage or food safety recommendations....

2. Build Your Rule Base

Gather your rules (at least 10 rules) from scientific or trusted sources (research articles, books, government or university websites).

➤ You must have at least one rule that activates another rule (to show multi-step reasoning or forward chaining).

➤ The rules must be written clearly and logically.

3. Implement Your Expert System

Your Python program must include:

a) A Knowledge Base

Store your rules in a file (CSV, JSON, or another simple format).

Load them into Python (using pandas).

b) A Reasoning Engine

Code the logic that checks rule conditions and applies rules to reach

conclusions.

Keep it simple and clear.

4. Create a Graphical Interface (GUI)

You must design a small GUI using Tkinter, PyQt, or another beginner-friendly library.

The GUI must:

➤ Allow the user to enter input values

➤ Display the system's reasoning and the final recommendation

➤ Be simple and functional.

5. Write the Report

Your report should include:

1. Domain Choice & Justification

2. Rule Base

List all your rules clearly (R1, R2, R3...).

Cite the scientific or domain-specific sources used to justify your rules.

Identify which rules activate other rules.

3. Inference Mechanism

Briefly explain how your system applies the rules.

4. GUI Screenshots

5. Testing

Provide a few test cases with different inputs and outputs.

6. Bibliography

List all your domain references used to justify the rules in Part 2, along with any other relevant sources.