Artificial Intelligence:

AI Detective Lab : Logic + Data Analysis

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Lab#02: Programming logic (Prolog)

Name:_____

Reg:_____

Task Statement

✧ You are tasked to build an AI Detective System that combines:

Logical reasoning using Prolog
Data analysis using pandas
Data visualization using Matplotlib

Part A : Prolog Logic (Expert System)

✧ Goal: Identify the murderer using logical reasoning

• Write Prolog facts about suspects: name, location, motive, weapon, evidence
• Write rules to:
mark who is suspicious (at crime scene + motive)
mark who is dangerous (has weapon)
identify the murderer (suspicious + dangerous + left evidence)
• Build a Prolog chatbot that can answer questions:
who was at the library
who had motive
who is suspicious
who is the murderer

Run your chatbot and find the murderer.

Part B : Data Analysis (pandas)

Goal: Analyze and present the evidence as structured data

• Export the same suspect data into a CSV file (suspects.csv)

• Load it using pandas
• Perform:
Filtering (e.g. show only those at the library)
Counting (how many had each weapon type)
Grouping (suspects by motive)

Part C : Visualization (Matplotlib)

Goal: Visualize the case statistics

• Use matplotlib to plot:
a bar chart of weapon usage
a pie chart of locations
any other interesting pattern you observe

Submission Requirements

Submit a single folder containing:

1. detective.pl your Prolog chatbot and rules
2. suspects.csv the evidence data file
3. analysis.ipynb Python notebook using pandas + matplotlib
4. A screenshot of the chatbot showing the murderer result

Evaluation Criteria

Component	Marks
Correct Prolog logic (facts, rules, reasoning)	2
Working chatbot answering questions	2
pandas analysis and correct results	2
matplotlib visualizations	2
Documentation & clarity	1
Creativity	1
Total	10