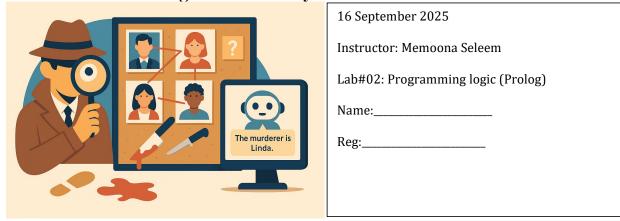
Artificial Intelligence:

AI Detective Lab: Logic + Data Analysis



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