LAB-09

Date 4/4

First Order Logic : Forward Chaining

(I) → Facts = { Initialize }

{"American (Robert)": True, "Hostile (CountryA)": True, "Sells (Robert, Missiles, CountryA)": True}.

Step II Define the Rule:

Write a function (eg is-Criminal) to evaluate the rule:

$$Criminal(x) \leftarrow American(x) \wedge Sells(x, y, z) \wedge Hostile(z).$$

Inputs:

- The name of the person (x).
- Facts dictionary.

Logic:

- Check if all conditions are satisfied:
  - American (x) is True.
  - Sells (x, y, z) is True for some y, z.
  - Hostile (z) is True.

Step III Rule:-

- for x = Robert, evaluate:
- American (Robert)
- Sells (Robert, Missile, Country A).
- Hostile (Country A).
- If all conditions are True, deduce Criminal (Robert) = True

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Step VI Output :-

If Criminal (Robert) is declared as True:
print: "Robert is a criminal".

Print: "Robert is not a Criminal".

→ Result :-

Robert is Criminal.
⇒ Criminal (Robert)

Checking :-

Sells (Robert, CountryA, Weapons)
satisfies the Crime Rule:

' Is Robert American? → Yes (American (Robert) is true)
' Is CountryA hostile? → Yes (hostile (CountryA) is true)
' Did Robert sell weapons to CountryA? → Yes (Sells (Robert, CountryA, Weapons) is true)

→ Output :-

Criminal (Robert)

" Robert is a criminal".