Consider the following problem:

As per the law, it is a crime for an American to sell weapons to hostile nations. Country A, an enemy of America, has some missiles, and all the missiles were sold to it by Robert, who is an American citizen.

PT "Robert is criminal"

It is a crime for an American to sell weapons to hostile nations

Let's p, q and r are variables

$$American(p) \land Weapon(q) \land Sells(p, q, r) \land Hostile(r) \Rightarrow Criminal(p)$$

(i) Country A has some missiles
$$\exists x \; Owns(A, x) \land Missile(x)$$

(ii) All of the missiles were sold to country A by Robert
$$\forall x \; Missile(x) \land Own(A, x) \Rightarrow Sells(Robert, x, A)$$

(iii) Missiles are weapons
$$Missile(x) \Rightarrow Weapon(x)$$

(iv) Enemy of America is known as hostile
$$\forall x \; Enemy(x, America) \Rightarrow Hostile(x)$$

Pseudo-code:

① Initialize RuleBased

```
function Forward_Chaining (KB, Query):
    initialize Inferred = {}
    initialize Agenda = KB.Facts
    Rules = KB.Rules

    while Agenda is not empty:
        Fact = Remove_first (Agenda)
        if Fact is the Query:
            return True

        if Fact not in Inferred:
            Inferred.add(Fact)
            for Rule in Rules:
                if all conditions of the Rule are satisfied
                                                    by Inferred:
                    NewFact = Infer Conclusion from Rule
                    if NewFact not in KB.Facts:
                        Add NewFact to KB.Facts
                        Add NewFact to Agenda

    return False
```