

3/12/24 Forward Chaining,

- * 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 missiles were sold to it by Robert, who is an American citizen.

Prove Robert is criminal

Proof:

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

Let's take three variables x, y, z
 $American(x) \wedge weapon(y) \wedge sells(x, y, z) \wedge$
 $hostile(z) \Rightarrow criminal(x)$

- Country A, an enemy of America and has some missiles

Enemy(America, A)
owns(A, ~~x~~) \wedge Missile(x) \swarrow

- All the missiles were sold to country A by Robert.

$\forall x Missile(x) \wedge owns(A, x) \Rightarrow sells(Robert, x, A)$

- Missiles are weapons
 $\text{Missile}(x) \Rightarrow \text{Weapon}(x)$
- Enemy of America is known as hostile
 $\forall x \text{ Enemy}(x, \text{America}) \Rightarrow \text{Hostile}(x)$
- Robert is a criminal
 $\text{Criminal}(\text{Robert})$

Forward chaining proof:

