

Homework 2

Problem 3.40

(a) Kilam is a student

$$S(\text{Kilam})$$

(b) All students are smart

$$\forall s (S(s) \rightarrow I(s))$$

(c) No student is a friend of Kilam

$$\forall s (S(s) \rightarrow \neg F(s, \text{Kilam}))$$

(d) Every student is a friend of some other student

$$\forall a (S(a) \rightarrow \exists b (S(b) \wedge a \neq b \wedge F(a,b)))$$

(e) There is a student who is a friend of every other student

$$\exists a (S(a) \wedge \forall b ((S(b) \wedge a \neq b) \rightarrow F(a,b)))$$

(f) All smart students have a friend

$$\forall s ((S(s) \wedge I(s)) \rightarrow \exists b (S(b) \wedge F(s,b)))$$