CSC 330 – Artificial Intelligence

**Video #1 – Homework Problems**

Translate the following first-order logic statements into English. Make reasonable assumptions about what the predicates mean.

cat( Alex )

* Alex is a cat

∀x ( pet( x ) 🡪 ( dog( x ) ∨ cat( x ) ) )

* All pets are either dog or cat.

∀x ∃y ( person( x ) 🡪 owns( x, y ) )

* Everyone owns something.

∃x ∀y ( dog( y ) 🡪 loves( x, y ) )

* There is someone that loves all dogs

Translate the following English sentences into first-order logic. Make reasonable assumptions for what predicates mean.

Annette is a band director.

* bandDirector(Annette)

All dogs are animals.

* ∀x (dog(x) 🡪 animal(x))

Someone owns a pet that is a hamster.

* ∃x ∃y ( person(x) 🡪 ( owns(x, y) ^ hamster(y) ^ pet(y) )

Every brick that is red is also heavy.

* ∀x (brick(x) ^ red(x) 🡪 heavy(x))