Tutorial

Predicate Logic and
Propositional Logic

Every child loves Santa.

$\forall x\ (CHILD(x) \rightarrow LOVES(x, Santa))$

- Everyone who loves Santa loves any reindeer.

Everyone who loves Santa loves any reindeer.

$\forall x, \forall y\ (LOVES(x,Santa) \wedge REINDEER(y) \rightarrow LOVES(x,y))$

Rudolph is a reindeer, and Rudolph has a red nose.

$$REINDEER(Rudolph) \wedge REDNOSE(Rudolph)$$

Anything which has a red nose is weird or is a clown.

$$\forall x$$
$$REDNOSE(x) \rightarrow WEIRD(x) \vee CLOWN(x)$$

No reindeer is a clown.

$\neg \exists x\,(REINDEER(x) \wedge CLOWN(x))$

Scrooge does not love anything which is weird.

$\forall x\ (WEIRD(x) \rightarrow \neg\ LOVES(Scrooge,x))$

Anyone whom Mary loves is a football star.

$\forall x\ (LOVES(Mary,x) \rightarrow STAR(x))$

Any student who does not pass does not play.

$$\forall x\,(STUDENT(x) \wedge \neg PASS(x) \rightarrow \neg PLAY(x))$$

John is a student.

STUDENT(John)

Any student who does not study does not pass.

$$\forall x\,(STUDENT(x) \wedge \neg\, STUDY(x) \rightarrow \neg\, PASS(x))$$

Anyone who does not play is not a football star.

$$\forall x\ (\neg\ PLAY(x) \rightarrow \neg\ STAR(x))$$

Anyone who rides a Harley is a rough character.

$$\forall x: rides(x,Harley) \rightarrow roughcharacter(x)$$

Every biker rides either Harley or bmw.

$\forall x: biker(x) \rightarrow rides(x, Harley) \vee rides(x, bmw)$

Anyone who rides a bmw is a yuppie.

$\forall x: rides(x,bmw) \rightarrow yuppie(x)$

Every yuppie is a lawyer.

$\forall x: \quad yuppie(x) \rightarrow lawyer(x)$

Any nice girl does not date anyone who is a rough character.

$$\forall x: \forall y:$$
$$nicegirl(x) \wedge roughcharacter(y)$$
$$\rightarrow \sim date(x,y)$$

Mary is a nice girl and John is a biker.

Nicegirl(mary) $\wedge$ *biker(john)*

Thank you