
GO

$$a \wedge b \rightarrow \neg(c \wedge d)$$

$$a \wedge b \rightarrow \neg c \vee \neg d$$

$$\neg(a \wedge b) \vee \neg c \vee \neg d$$

$$\neg a \vee \neg b \vee \neg c \vee \neg d$$

$$d \rightarrow (\neg a \vee \neg b \vee \neg c)$$

$$d \rightarrow \neg(a \wedge b \wedge c)$$

HALT

is There some input that makes my alg run forever?

one

Proposition — fixed

alg runs forever on some input — P

Predicate — every — exist

x runs forever on y — P(x, y)

Variables

- Code changeable named value

$$X = X + 1$$

- Math unchanging unknown

~~$X = X + 1$~~

- Stars

My algorithm is faster than yours

____ is faster than ____

My alg faster on mine ____

____ is faster than ____ on ____

____ is ____ than ____ on ____

Type: Person

$L(x,y)$: ____ x loves ____ y

m: Luther Tyrannosaurus

Everyone loves me (bound)

$\forall x.\ L(x, m)$

$\exists x.\ L(x, m)$

$\neg \exists x.\ L(x, m)$

is there an x, $L(x, m) \wedge L(m, x)$

(x: unbound)

domain : set of all allowed values of variables

Variable

Predicate

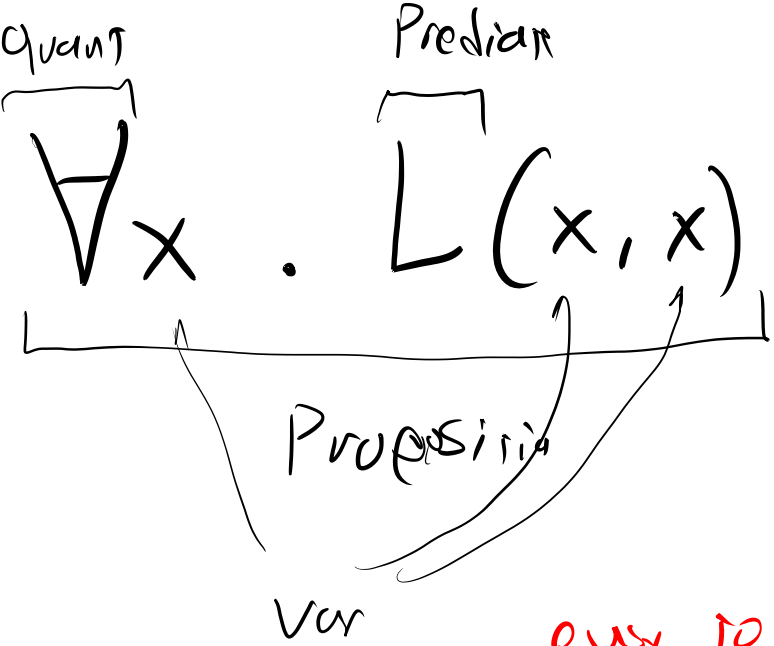
Quantifiers

$\forall$

for all

$\exists$

there exists



easy to disprove

$\exists x . L(x, x)$

easy to prove

$\forall x.\ P(x)$

$P(x_0) \wedge P(x_1) \wedge P(x_2) \wedge \ldots$

$\ldots P(x_{last})$

$\neg \forall x.\ P(x) \equiv \exists x.\ \neg P(x)$

$\neg \exists x.\ P(x) \equiv \forall x.\ \neg P(x)$

$\exists x.\ P(x)$

$P(x_0) \vee P(x_1) \vee P(x_2) \vee \ldots$

$\ldots P(x_{last})$

$\nexists \equiv \neg \exists$