

Lecture on Multiple Quantifiers

Convert to symbolic logic with quantifiers:

- 1) Everybody loves somebody.**
- 2) Somebody loves everybody**
- 3) Somebody loves somebody.**
- 4) All students go to some school.**
- 5) Some CS majors take all math courses.**
- 6) Each child as at least one book.**

Convert to a natural English sentence.

Let $x \in T$: set of all trees,

Let $y \in L$: set of types of leaves

$P(x,y)$ = y identifies x.

1) $\forall x \in T, \exists y \in L \mid P(x, y)$

2) $\exists y \in L \mid \forall x \in T, P(x, y)$

3) $\exists y \in L \mid \exists x \in T \mid P(x, y)$

4) $\exists x \in T \mid \forall y \in L, P(x, y)$

5) $\forall y \in L, \exists x \in T \mid P(x, y)$