

COMPUTER SCIENCE 20, SPRING 2012  
DISCRETE MATHEMATICS FOR COMPUTER SCIENCE

Class #8 (Quantificational Logic)

**Homework, due in hard copy Friday 2/10/2012 at 10:10am**

**Please write your TF's name on your homework, and list the names of any students with whom you collaborated.**

1. What are the names of your four group members and your TF?
2. Let  $C(x)$  be the proposition “ $x$  is in the class” and  $L(x, y)$  be the proposition “ $x$  likes  $y$ .” Write the following colloquial English sentences using quantificational formulas. The sentences are not necessarily either grammatical, unambiguous, or gender-neutral. If a sentence has more than one possible meaning, explain the ambiguity and which interpretation you have chosen.
  - (a) Everyone in the class likes someone in the class apart from herself.
  - (b) Someone doesn't like anybody and nobody likes him in return.
  - (c) At least three different people like the same person.
  - (d) It is the case that either everyone likes someone or no one likes anyone, but not both.
  - (e) Some people in the class like a person only if that person likes them.
3. Translate the sentence “Everybody loves my baby but my baby only loves me” into logical expressions. What odd fact must hold if this statement is true? Hint: “everybody” includes “my baby”.