Semantics 1 (Ling-53)
Homework #8 (due Friday March 12 in class)

1. In what follows, you have a model $M_1$, and a set of sentences. Your task is the following:

- For each sentence, give its translation in predicate logic. If a sentence is ambiguous, give the predicate logic formula for each possible interpretation of the sentence. (As usual, ignore tense.)
- For each predicate logic formula determine whether that formula is true or false in $M_1$. A simple yes/no answer is not enough. You must *justify* (explain) your answer in the way illustrated in class.

**MODEL $M_1$:**

(a) Domain: {Tom, John, Bill, Mary, Sue, Carol, Fido, Felix, Nick}

(b) Denotations obtained by means of the Denotation Function $F_1$: $F_1(t) = Tom$, $F_1(j) = John$, $F_1(b) = Bill$, $F_1(m) = Mary$, $F_1(s) = Sue$, $F_1(c) = Carol$, $F_1(f) = Fido$, $F_1(r) = Felix$, $F_1(n) = Nick$

$F_1(\text{dog}) = \{Fido, Nick\}$

$F_1(\text{asleep}) = \emptyset$

$F_1(\text{cat}) = \{Felix\}$

$F_1(\text{happy}) = \{Mary, Sue, Fido, Felix\}$

$F_1(\text{student}) = \{Tom, John, Mary, Sue\}$

$F_1(\text{hungry}) = \{Fido, Nick\}$

$F_1(\text{hate}) = \{(Fido, Felix), (Felix, Fido)\}$

$F_1(\text{friend} - \text{of}) = \{(Tom, John), (John, Tom), (Mary, Carol), (Carol, Mary)\}$

$F_1(\text{see}) = \{(Tom, Mary), (Bill, Mary), (John, Mary)\}$

$F_1(\text{blond}) = \{Tom, Bill, John\}$

$F_1(\text{woman}) = \{Mary, Sue, Carol\}$

**Sentences:**

(a) Every blond man saw a woman.

(b) Some cat hates a dog.

(c) Not every student is a friend of John.

(d) No man is happy.

(e) Nobody is asleep.

(f) Somebody is a friend of Carol and Carol is a friend of somebody.

(g) Some man who is a student is happy or Tom saw Mary.

(h) If some woman is happy, then no dog is hungry.