Philosophy 110
Introductory Logic
Spring 2008

Homework Assignment #14
Due at the beginning of class on April 28, 2008

Exercises 11-1
14

Additional symbolization
1. The fastest cheetah has spots.
   D: Animals
   C①: ① is a cheetah.
   F①②: ① is faster than ②.
   S①: ① has spots.

Exercises 11-4
2, 10, 14

Additional Derivation Exercises
Provide derivations for the following arguments.
1. $\exists xRxa.\ \exists xRxb \rightarrow \forall x(Lx \rightarrow Mxa).\ La.\ a=b.\ \therefore Mab.$
2. $Kab.\ \exists x(Kxb \ \& \ \forall y(Kyb \rightarrow y=x)).\ \exists xKxb \rightarrow Kcb.\ \therefore a=c$

For each argument in (3) and (4), demonstrate its validity using a derivation or demonstrate its invalidity using an interpretation in a small finite domain.
3. a. $\exists xFx \ \& \ \exists x{\sim}Fx. \ \therefore \exists x\exists y\ x\neq y$
   b. $\exists x\exists y\ x\neq y. \ \therefore \exists xFx \ \& \ \exists x{\sim}Fx$

4. a. $\exists x(Fx \ \& \ \forall y(Fy \rightarrow y=x)). \ \therefore \ \forall x\forall y((Fx \ \& \ Fy) \rightarrow y=x)$
   b. $\exists x([Fx \ \& \ Gx] \ \& \ \forall y[(Fy \ \& \ Gy) \rightarrow y=x)]) \ \therefore \exists x([Fx \ \& \ \forall y(Fy \rightarrow y=x)] \ \& \ Gx)$