

The Story Project

Part II - Friend or Foe

CS343
Fall 2006

This project builds on part 1. It is a good idea to compile KM using the instructions given in the initial story project handout. This project is **much** more challenging than the last one, so make sure that you start early and use the KM manual as a reference.

1 Some axioms

Every physical object has exactly one size. There are 5 sizes: very small, small, medium, large, and very large (call them **VerySmall*, **Small*, **Medium*, **Large*, and **VeryLarge* respectively). If a thing A is larger than another thing B, then B is smaller than A. If something is very small, then all of its parts are very small too. If you like a person or animal, then he/she is your friend. If you are someone's friend, then he's your friend too (and vice-versa). But your friends' friends are not necessarily your friends.

2 Winnie's friends

Piglet, Rabbit, and Owl are Winnie's friends. Piglet is a very small animal. Very small animals are afraid of every other animal, except the ones who are their friends. Piglet likes all of Winnie's friends. Winnie is afraid of one kind of animal-Heffalumps. Rabbits have medium-sized brains. Owls are wise animals so they have very large brains. Every animal is smarter than all animals with smaller brains, and not as smart as all animals with larger brains.

3 Hints

If something doesn't work at first, it might be because certain slot values have not been instantiated. It might help to evaluate some slots at the end of your code by saying something like

```
(the Brain parts of (every Animal))  
(the larger-than of (the Brain parts of (every Animal)))  
(the smaller-than of (the Brain parts of (every Animal)))
```

Remember that's a feature, not a bug. Look at `if`, `forall`, and `allof` expressions in the manual. You'll want to say something like "for all animals x, if the size of x is very small, then for all parts y of x, the size of y is very small", and "Every animal is smarter than all of the animals that have smaller brains."

4 Questions

1. Is Rabbit Piglet's friend? Yes.

```
KM> ((the friends of *Piglet) includes *Rabbit)
(t)
```

2. Carl is a Heffalump. Is Winnie afraid of him? Yes.

```
KM> (*Carl has (instance-of (Heffalump)))
KM> ((the afraid-of of *Winnie) includes *Carl)
(t)
```

3. Is Owl smarter than Winnie? Yes.

```
KM> ((the smarter-than of *Owl) includes *Winnie)
(t)
```

4. Is Winnie's brain larger than Rabbit's brain? No.

```
KM> ((the larger-than of (the Brain parts of *Winnie))
      includes (the Brain parts of *Rabbit))
NIL
```

5 Submitting

Submit using

```
turnin --submit jmugan story2 story2.km story2.txt
```

There is a 20% per day penalty for late submissions. To submit late use

```
turnin --submit jmugan story2-one-day-late story2.km story2.txt
turnin --submit jmugan story2-two-days-late story2.km story2.txt
turnin --submit jmugan story2-three-days-late story2.km story2.txt
```

It is important that you call your files story2.km and story2.txt, otherwise the grading program will not be able to find them.