CS246 - Answers / Grading Notes for Exercise Set 3

Exercise 7.1 (5 points)

One solution is as follows:

```
(<= (node.hasNext ?x) (node.instance ?x) (node.next ?x ?y))
(<= (lastnode.instance ?x) (node.instance ?x) (not (node.hasNext ?x)))
```

Exercise 7.2 (5 points)

You had to use Skolem functions here:

```
(<= (lastnode.instance ?x) (node.instance ?x) (not (node.next ?x (f ?x)))
```

Note that this solution is also a solution for Exercise 7.1.

Exercise 7.3 (5 points)

You have to use two Skolem functions for the ggp inversion:

```
(<= (parent ?w (f ?w ?z))          (greatgrandparent ?w ?z))
(<= (parent (f ?w ?z) (g ?w ?z)) (greatgrandparent ?w ?z))
(<= (parent (g ?w ?z) ?z)          (greatgrandparent ?w ?z))
```

You have to use disjunction in the head of the inverse rule for the "clothes" inversion:

```
(<= (or (wears (f ?z) ?z) (= ?z pants)) (clothes ?z))
```

Note that you cannot treat the clothes inversion with two separate rules (do you see why?).

Exercise 8 (50 points)

10 points – renaming to avoid semantic collisions

10 points – basic population of classes and attributes

5 points – superclass inheritance

6 points – correct population of Administrator, Janitor, Technician

5 points – correct population of Room.Floor

5 points – correct population of Appliance and Classroom.Feature (essentially, correctly merging computer-projector with computer.projector and overhead-projector with overhead.projector)

3 points – correct population of Person.Affiliation (essentially, you needed to create a new stanford.computer.science object and make all Stanford person's affiliation's stanford.computer.science)

3 points – correct population of Student.Major

3 points – correct population of Room.Building

Exercise 9 (60 points)

As always, it is difficult to get a perfect score on the presentation part of the assignment. The baseline for "good enough" is 48 points, so anything above that meant that you did something noteworthy.