CSCE476/876 **Spring 2002**

Homework 6

Assigned on: Monday April 8, 2002.

Due: Monday April 22, 2002.

Pen and paper, should be returned in class. Total value 120 points.

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1. AIMA, exercise 6.1 10 points.
2. AIMA, exercise 6.3 10 points.
3. AIMA, exercise 6.7 10 points.
4. AIMA, exercise 6.8 10 points.
5. AIMA, exercise 6.9 10 points.
6. AIMA, exercise 6.12 10 points.
7. Axioms in FOL *(Adapted from AIMA, exercise 7.6)* Total 15 points.

   Using the following:
   `Child(x,y)`, `Sibling(x,y)`, `Female(x)`, `Male(x)`, and `Spouse (x, y)`:

   - (10 points) Write axioms describing the predicates: `GrandChild`, `GreatGrandParent`, `Brother`, `Sister`, `Daughter`, `Son`, `Aunt`, `Uncle`, `BrotherInLaw`, `SisterInLaw`, and `FirstCousin`. We want these axioms to be definitions, so use $\Leftrightarrow$ instead of $\Rightarrow$.
   - (5 points) Knowing that a second cousin is a child of one's parent first cousin, write the definition of a N^{th}`-cousin`, as a recursive expression in terms of the predicates defined above. Hint: Let N^{th}`-cousin` be a ternary predicate, that takes as input n, and two persons p_1 and p_2.

8. AIMA, exercise 7.9.
   Questions a, b, and c.
   Five (5) points per question Total 15 points.
9. AIMA, exercise 7.11
   Five (5) points per question. Total of 30 points.