**CMSC330 Fall 2015 Quiz #5**

**Name** _____

**Discussion Time (circle one): 10am 11am 12pm 1pm 2pm 3pm**

**Discussion TA (circle one): Adam Amelia Maria Chris Samuel Josh Michael Max Candice**

**Instructions**

- Do not start this test until you are told to do so!
- You have 15 minutes for this quiz.
- This is a closed book exam. No notes or other aids are allowed.
- For partial credit, show all of your work and clearly indicate your answers.

1. (15 pts) Prolog

   Given the following clauses, list all answers returned by the following queries.

```
saiyan(vegeta).
saiyan(goku).
saiyan(X) :- father(Y, X), saiyan(Y).
father(goku, gohan).
father(vegeta, trunks).
fights1(X, Y) :- saiyan(X), saiyan(Y).
fights2(X, Y) :- saiyan(X), saiyan(Y), !, X \= Y.
```

```
foo([], A, A).
foo([H|T], A, R) :- foo(T, [H|A], R).
```

a. (3 pt) ?- fights1(vegeta, X).

b. (3 pt) ?- fights2(X, trunks).

c. (3 pt) ?- not(father(X, gohan)).

d. (3 pt) ?- foo([], [b], Z).

e. (3 pt) ?- foo([a,14,"kittens!"], [], X).

2. (5 pts) Prolog cont.

Define a predicate *even/1* whose argument is a list, and the end result is to determine if there are an even number of elements in the list.

```
?-even([a,b,c,d]).
R = true.
```