csc324 Quiz #4 Tuesday 14 March 2000

Duration: 15 minutes

Aids allowed: None

Family Name: _____ **Lecturer:** Diane Horton

First Name: _____

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Tutor (circle one):

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Grade: _____

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1. The predicate `numbers(X, Y)` doesn't meet its specifications. It should succeed iff `X` is a list, and `Y` is a list containing all the numbers in `X`, in the same order. Example:

```
numbers( [a, 5, [6, 7], 5, 14, -1], [5, 5, 14, -1])
```

should succeed. Note: built-in predicate `number(X)` succeeds iff `X` is a number.

```
numbers( [], [] ).
numbers( [First|Rest], Ans ) :-
                number(First),  numbers(Rest, NewRest),
                Ans = [First|NewRest].
numbers( [_|Rest], NewRest ) :- numbers(Rest, NewRest).
```

Show an example `numbers` query that gives the wrong answer.

Query:

Answer:

Fix the code by making changes directly on it.

2. Here is a Prolog predicate:

```
whatchama( [X,_|Y], [X|Z] ) :- whatchama( Y, Z ).
whatchama( [], [] ).
```

Complete the following sentence: `whatchama(A, B)` succeeds iff `A` is a list and ...

3. Consider the following Prolog code.

```
top2(X):- female(X), isa2(X).
isa2(X):- parent(X,_), !.

top3(X):- female(X), isa3(X).
isa3(X):- !, parent(X,_).
```

```
parent(fred,sue).
parent(janet,sue).
parent(fred,tim).
parent(janet,tim).
parent(diane,william).
parent(cathy,kit).
male(fred).
female(janet).
female(diane).
female(cathy).
```

Give all possible answers to the query `top2(X)`, in the order that Prolog would produce them.

Give all possible answers to the query `top3(X)`, in the order that Prolog would produce them.