csc324 Quiz #5 – Solutions Monday 22 November 1999

**Duration:** 15 minutes

**Aids allowed:** None

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**First Name:** ________________ **Tutor:** ________________

**Student #:** ________________

**Grade:** ________

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1. Consider the following predicate:

```
what( [A,A|Rest] ) :- what( Rest ).
what( [] ).
```

(a) Give 3 example queries to `what` that would succeed:

```
what(X) succeeds iff X is a list of even length in which every pair of elements
unifies.  (This is a bit imprecise, but it's awkward to say more formally.)

So, the following are examples of queries that succeed:
     what( [] ).
     what( [a,a] ).
     what( [a,a,b,b,a,a] ).
     what( [[1,2,3],[1,2,3],z,z,[],[],p,p] ).
```

(b) Give 3 example queries to `what` that would fail:

```
what( a ).
what( [1] ).
what( [a,a,a,b,b,c] ).
```

2. Consider the following predicate:

```
huh( [A,A|Rest], New ) :- !, huh( [A|Rest], New ).
huh( [A|Rest], [A|New] ) :- huh( Rest, New ).
huh( [], [] ).
```

(a) Give 3 example queries to `huh` that would succeed:

```
huh(X, Y) succeeds iff X is a list and Y is the same list but with
all sequences of duplicate values replaced by 1 copy of that value.
Note that this doesn't mean Y will have no duplicates at all; they
just won't be consecutive.

So, the following are examples of queries that succeed:
      huh( [], [] ).
      huh( [a,b,c], [a,b,c] ).
      huh( [a,a,a,a,a,b,c,c,c,c,d,a,b,b,c], [a,b,c,d,a,b,c] ).
```

(b) Give 3 example queries to `huh` that would fail:

```
huh( a, X ).
huh( [1], 1 ).
huh( [a,a,a,a,a,b,c,c,c,c,d,a,b,b,c], [a,b,c,d] ).
```

(c) Complete the following sentence: `huh(X,Y)` succeeds iff ...

```
X is a list and Y is the same list but with all sequences of duplicate values
replaced by 1 copy of that value.
```