

Prolog Mini-Exercises

These questions use the Prolog rules in the lecture notes.

1. What are all the answers that Prolog returns for the following goals?

```
X=[a,b,c].
```

```
[X|Xs] = [a,b,c].
```

```
[X,Y] = [a,b,c].
```

```
[X,Y,X] = [a,Z,Z].
```

```
likes(mary,X).
```

```
take_before(X,cse312).
```

2. What are all the answers that Prolog returns for the following goals?

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

```
append([1,2,3],A,[1,2,3,4,5,6]).
```

```
append([1,2,3],A,[2,3,4,5,6]).
```

```
append(A,B,[1,2]).
```

```
append(A,[3|B],[1,2,3,4,5,3,7,11]).
```

```
member(X,[1,2,3,4]).
```

3. Write a Prolog rule `twins` that succeeds if the second argument is a list containing all the elements of the first list, repeated. For example, `twins([a,b,c],S)` succeeds with `S=[a,a,b,b,c,c]`.
4. Write a Prolog rule to reverse a list.
5. Write a Prolog rule to sum the numbers in a list. (You can assume that the list consists of numbers.)
6. What are all the answers that Prolog returns for the following goals?

```
X is 10*5, Y is X+2.
```

```
X = 10*5, Y = X+2.
```

```
X is 10*5, Y = X+2.
```