CSE 341 — Prolog Discussion Questions

These questions use the Prolog rules in the lecture notes.

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

   \[ X = [a, b, c]. \]
   \[ [X|Xs] = [a, b, c]. \]
   \[ [X, Y] = [a, b, c]. \]
   \[ [X, Y, X] = [a, Z, Z]. \]
   \[ \text{likes(mary, X)}. \]
   \[ \text{take_before(X, cse312)}. \]

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

   \[ \text{append([a,b,c], [d], X)}. \]
   \[ \text{append([1,2,3], A, [1,2,3,4,5,6])}. \]
   \[ \text{append([1,2,3], A, [2,3,4,5,6])}. \]
   \[ \text{append(A, B, [1,2])}. \]
   \[ \text{append(A, [3|B], [1,2,3,4,5,3,7,11])}. \]
   \[ \text{member(X, [1,2,3,4])}. \]

3. Write a Prolog rule \texttt{twins} that succeeds if the second argument is a list containing all the elements of the first list, repeated. For example, \texttt{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?

   \[ X \text{ is } 10*5, \ Y \text{ is } X+2. \]
   \[ X = 10*5, \ Y = X+2. \]
   \[ X \text{ is } 10*5, \ Y = X+2. \]