CIIC 4030/ICOM 3046 Programming Languages
Assignment #6

In this problem we consider a database of smoothie stores in ***PROLOG***. Each store has a name, a list of employees, and a list of smoothie that can be purchased in the store, which are encoded in a store predicate. Each smoothie is defined by a name, a list of fruits, and a price, which are encoded in a smoothie predicate. For example, here are three predicates defining three different smoothie stores:

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store(best_smoothies, [alan,john,mary],
    [ smoothie(berry, [orange, blueberry, strawberry], 2),
      smoothie(tropical, [orange, banana, mango, guava], 3),
      smoothie(blue, [banana, blueberry], 3) ]).

store(all_smoothies, [keith,mary],
    [ smoothie(pinacolada, [orange, pineapple, coconut], 2),
      smoothie(green, [orange, banana, kiwi], 5),
      smoothie(purple, [orange, blueberry, strawberry], 2),
      smoothie(smooth, [orange, banana, mango],1) ]).

store(smoothies_galore, [heath,john,michelle],
    [ smoothie(combo1, [strawberry, orange, banana], 2),
      smoothie(combo2, [banana, orange], 5),
      smoothie(combo3, [orange, peach, banana], 2),
      smoothie(combo4, [guava, mango, papaya, orange],1),
      smoothie(combo5, [grapefruit, banana, pear],1) ]).
```

1. Write a Prolog predicate ***more_than_four(X)*** that is true if store X has four or more smoothies on its menu.
2. Write a Prolog predicate ***exists(X)*** that is true if there is a store that sells a smoothie named X.
3. Write a Prolog predicate ***ratio(X,R)*** that is true if there is a store named X, and if R is the ratio of the store's number of employees to the store's number of smoothies on the menu.
4. Write a Prolog predicate ***average(X,A)*** that is true if there is a store named X, and if A is the average price of the smoothies on the store's menu.