Homework 6: Pet Detective

Objective: Learning about logic programming, Prolog in particular.

You need a Prolog interpreter. You can use SWI-Prolog or Amzi Prolog which you need to download, or you can use online SWI-SH which does not require any download but is less powerful in general. Downloading an interpreter to your system is recommended

Problem Definition

You are a pet detective. A lovely parrot is kidnapped! The owner of the parrot hired you. The only clue is the security camera recordings. You've analyzed camera recordings and found a plate number that led to an address. There are six people living in this house. You've arrested them all, they are your suspects now.

Six bags with different colors are found in this house, you don't know who owns which bag. And your suspects deny cooperating. A food item was carried in each bag, according to *"criminal analysis"*. However, you are not sure about food items because one of the suspects managed to clear them before you arrested them.

Your goal is to find who committed this horrible crime! For that, you must learn who owns which bags, as well as what was the food item that bag.

As a result of your interrogations, you've ended up with some clues. **The suspect who owns the bag which carried the food item *nuts* is guilty!**

- Men: `Gencer`, `Can`, `Rasim`. Women: `Beyza`, `Canan`, `Meryem`.
- Bags: `BlueBag`, `OrangeBag`, `RedBag`, `PurpleBag`, `GreenBag`, `YellowBag`.
- Food: `Avocado`, `Onion`, `Nuts`, `Chocolate`, `Garlic`, `Cookies`.

Clues

1. The man who owns the `RedBag` did not carry `Cookies`, `Chocolate`, or `Avocado`. `Onion` was not carried by using `RedBag`.
2. `Beyza` owns either the `YellowBag` or the `BlueBag`; `Meryem` owns the *other*.
3. The person who carried the `Avocado`, who was not `Beyza` nor `Gencer`, does not own `BlueBag` nor the `OrangeBag`.
4. The woman who carried the `Cookies` owns the `YellowBag`.

5. The food item carried with `PurpleBag` belongs to either `Can` or `Gencer`.
6. The `Chocolate` was not carried with `OrangeBag`.
7. `Meryem` did not carry a food item with the `YellowBag` nor the `GreenBag`.
8. `Onion` is carried by `Gencer`.
9. It was found that `Nuts` were carried with `GreenBag`. So the owner of the `GreenBag` is guilty.

Assingment

Write a Prolog program that solves this problem. Upload your solutions (hw6-yourname.pl) to SUcourse.

Your program should do the followings;

- Define appropriate predicates, namely `man`, `woman`, `person`.
- Write a rule for each clue.
- Find the answer to final conjunctive query `guilty(X)`, which will return the substition for the kidnapper.
- Query `guilty(X)` should print all the relations (who owns which bag and which food item is carried by using which bag etc.), together with who the kidnapper is.
- Below snippet should give you an idea about the `guilty(X)`.

```
guilty(X) :-
    ...
    clue1(...),
    ...
    write("Kidnapper is :"), write(X), nl,
    ...
    .
```

- Below snippet of two different clues should give you an idea about the clues.

```
clue_i(..., OwnsY, ..., CarriedZ) :-
    ...
    OwnsY = peopleXi,
    \+peopleXj = CarriedZ.

clue_j(..., OwnsG, ..., CarriedQ) :-
    ...
    \+OwnsG = CarriedQ.
```