

Homework #10 – Finding Suspects in Prolog

CSCI 450

Preparation

You will need to finish a program using the programming language Prolog.
Check Course Information on Bb for the link of the Prolog SWISH.

Problem Statement

An expensive item has been stolen from a museum. We need to find out who the thief was based on all available information.

Write a program with the following facts that describe 4 possible suspects (remember that constants start with **lowercase** letters).

Each fact should have the form: `suspect(Name, Profession, Time, Motive)`

`suspect\4` (\4 means it takes 4 parameters as specified above)

- Suspect Mike, gardener, has been observed around midnight. He is known to be broke.
- Suspect Brad, guard, has been observed around midnight. He is known to hate his Job.
- Suspect Nina, guard, has been observed around midnight. She is known to steal regularly.
- Suspect Hope, curator, has been observed around noon. She is known to steal regularly.

And the 2 facts about the crime are as follows:

`timeOfCrime\1`

`weakMotive\1`

- The crime was committed at midnight.
- Hating one's job is considered a weak motive.

Also write 3 rules to find the suspect that had Time and a Motive: “`hadTime`”, “`hasMotive`”, and “`whoCouldHaveDoneIt`”. Variables start with **uppercase** letters.

- “**hadTime**”: takes 1 variable to represent Name of the suspect, if that suspect had `timeOfCrime`. For the antecedent expression (righthand side of the rule), you have to combine `timeOfCrime` and `suspect` together.
- “**hasMotive**”: takes 1 variable to represent Name of the suspect, if the Motive of that suspect is not weak. For the antecedent expression (righthand side of the rule), you have to combine `not(weakMotive(...))` and `suspect` together.
- “**whoCouldHaveDoneIt**”: takes `suspect(...)` as the parameter to find out who the suspect might be, if that suspect *hadTime* and *hasMotive*.

Check Sample Output on next page →

Requirements & Considerations

1. Name your program **findSuspects_yourLastName.pl**
2. Include **header** comments (at the beginning of your program, I used Java comments below, what is the comment symbol for Prolog?) formatted as shown below, using your name and student ID, etc. instead. Be sure to include the Honor Code statement and program description. Your electronic submission of the program file will represent your endorsement of the Honor Code Statement.

```
/* Course: CSCI 450, Section 1
   Student Name: Jane Doe
   Student ID: 12345678
   Homework #10
   Due Date:
```

```

   In keeping with the Honor Code of UM, I have neither given nor received any
   inappropriate assistance from anyone other than the TA or the instructor.
```

```

   Program Description: .....
```

```
*/
```

3. Before each significant step, provide a comment explaining the step (do not comment every line of code).
4. Submit your finished program (**findSuspects_yourLastName.pl**) on Blackboard using the **Homework #10** link under Homework Assignments button.

Sample Output

?- whoCouldHaveDoneIt(X).

X = suspect(mike, gardener, midnight, isBroke)

X = suspect(nina, guard, midnight, stealsRegularly)