ARTIFICIAL INTELLIGENCE

Exercise3 – Puzzle solving in Prolog.

- In this exercise I have solved the given puzzle using Prolog.
- We were given 5 different characters, and one was the killer among us.
- We were given few hints, and we must program accordingly and have to solve the program.

Following are the steps:

- Write all the facts.
- Declare all the rule possible using all the hints given in the question.
- Run the PL and the output will be printed.

1. Facts:
   ```
   person(alice).
   person(husband).
   person(son).
   person(daughter).
   person(brother).

   child(son).
   child(daughter).

   male(husband).
   male(son).
   male(brother).

   female(alice).
   female(daughter).

   twin(alice,    brother).
   twin(brother,  alice).
   twin(son,      daughter).
   twin(daughter, son).
   ```

2. Rules:

   ```
   istwin(X) :- twin(X, _).
   older(alice,   son).
   older(alice,   daughter).
   older(husband, son).
   older(husband, daughter).
   inbar(M, N) :- person(M), person(N),
            male(M),   female(N).
   ```

```
together(S, T) :- S=alice, T=husband.
together(S, T) :- T=alice, S=husband.

alone(P) :- person(P), child(P).
```

3. Hints
    ```
    solution(Killer, Victim, InBarA, InBarB, Alone) :-
       person(Killer), person(Victim),

       /* A man and a woman were together in the
          at the time of the murder. */
        inbar(InBarA, InBarB),
             InBarA \= Killer, InBarB \= Killer,
             InBarA \= Victim, InBarB \= Victim,

       /* One of the children was alone at the
          time of the murder. */
             alone(Alone),
             Alone \= InBarA, Alone \= InBarB,
             Alone \= Killer, Alone \= Victim,

       /* Alice and her husband were not together
          at the time of the murder. */
        \+ together(Killer, Victim), Killer \= Victim,

       /* Alice and her husband were not together
          at the time of the murder. */
        \+ together(InBarA, InBarB),

       /* The victim's twin was innocent. */
         istwin(Victim), \+ twin(Victim, Killer),

       /* The killer was younger than the victim. */
             \+ older(Killer, Victim).
    ```
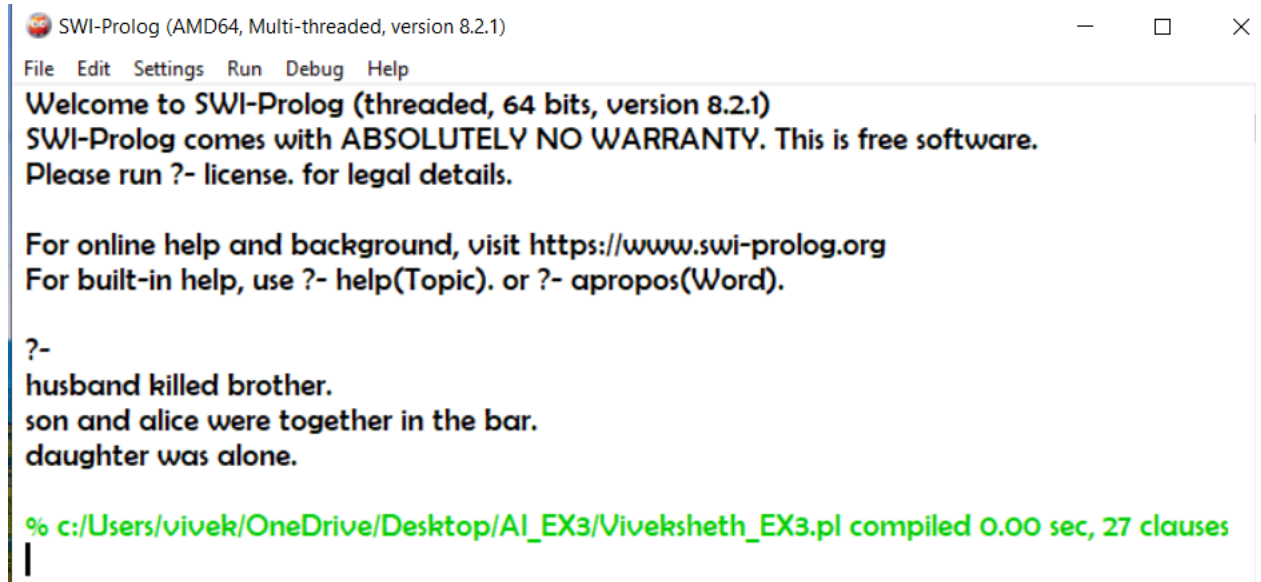
Screenshots:

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SWI-Prolog (AMD64, Multi-threaded, version 8.2.1)   —   □   ✕

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For online help and background, visit https://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?-
husband killed brother.
son and alice were together in the bar.
daughter was alone.

% c:/Users/vivek/OneDrive/Desktop/AI_EX3/Viveksheth_EX3.pl compiled 0.00 sec, 27 clauses
|

Thank you.

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