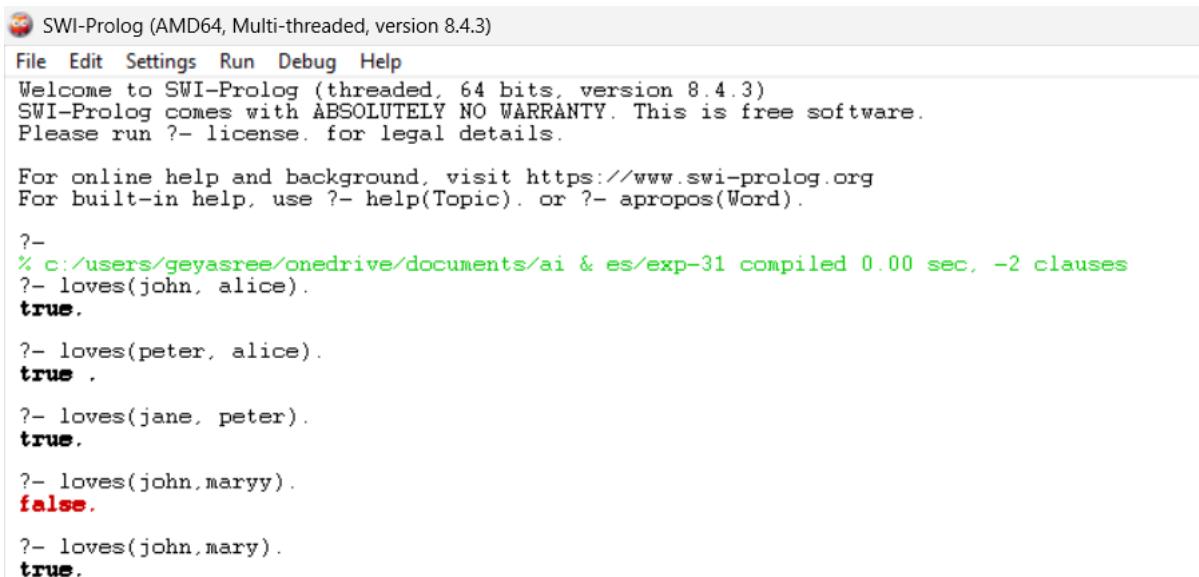


MLA0109 – Artificial Intelligence and Machine Learning

Prolog programs – Day 4

1. Consider a simple knowledge base describing who loves whom. Define the following relationships in Prolog and write a query to find out who loves someone named "Alice."
 - a) loves(john, mary)
 - b) loves(jane, peter)
 - c) loves(peter, alice)
 - d) loves(john, alice).



The screenshot shows the SWI-Prolog interface. The title bar says "SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)". The menu bar includes File, Edit, Settings, Run, Debug, Help. A welcome message states: "Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.3) SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software. Please run ?- license. for legal details." Below the menu, it says: "For online help and background, visit <https://www.swi-prolog.org>. For built-in help, use ?- help(Topic). or ?- apropos(Word)." The main area contains the following Prolog code and its execution:

```
?- % c:/users/geyasree/onedrive/documents/ai & es/exp-31 compiled 0.00 sec, -2 clauses
?- loves(john, alice).
true.

?- loves(peter, alice).
true .

?- loves(jane, peter).
true.

?- loves(john, maryy).
false.

?- loves(john, mary).
true.
```

2. Write a Prolog program containing facts related to following predicates
 - a) Location (city, state)
 - b) Stays (person, city)
 - c) Display: list of persons, state and city
 - d) Given person, find the state in which he is staying.

```

SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)
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?- 
% c:/users/geyasree/onedrive/documents/ai & es/exp-32 compiled 0.00 sec, -2 clauses
?- location(hyderabad,telangana).
true.

?- stays(sita,pune).
true.

?- display(Person, City, State).
Person = ravi,
City = chennai,
State = tamilnadu .

```

3. Write a Prolog program that answers bout family members and relationships.

Include predicates & clauses which defines sister, brother, father, mother, Grandchild, Grandfather and uncle. The program should be able to answer question such as following :

- a) Father(X, bob)
- b) Grandson(X,Y)
- c) Uncle (bill, Sue)
- d) Mother (marry, X).

```

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?- 
% c:/users/geyasree/onedrive/documents/ai & es/exp-33 compiled 0.00 sec, -2 clauses
?- parent(bob,sam).
true.

?- parent(linda,alice).
true.

?- parent(john,alice).
true.

?- male(sam).
true.

?- male(john).
true.

?- female(susan).
true.

?- female(alice).
true.

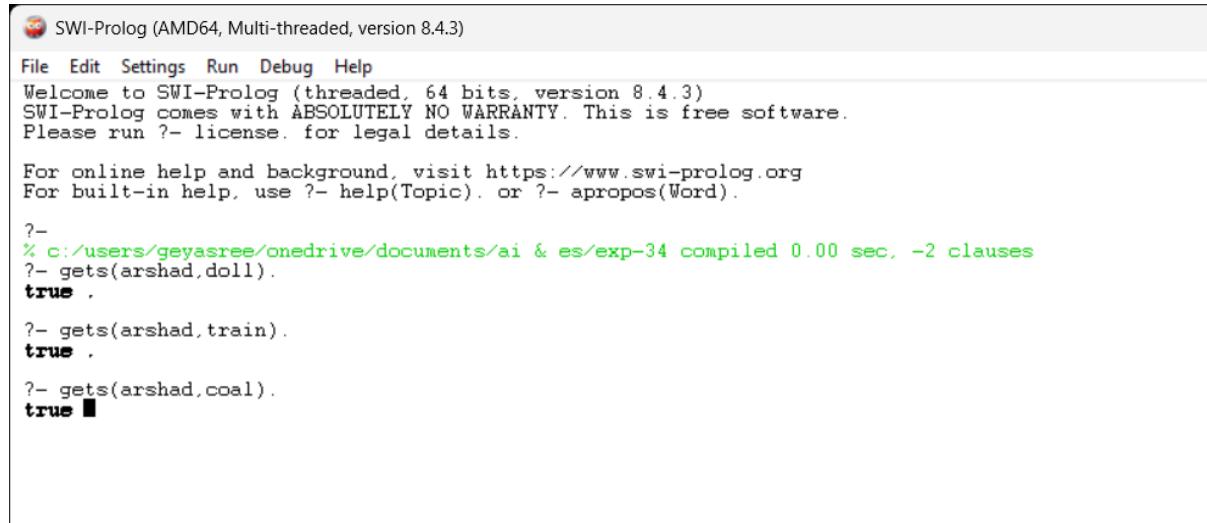
?- male(sam).
true.

?- father(X,Y).
X = john,
Y = bill ■

```

4. Write simple fact for the statements using PROLOG

- a) Every boy or girl is a child**
- b) Every child gets a doll or a train or a lump of coal**
- c) No boy gets any doll**
- d) no child who is good gets any lump of coal**
- e) Jack is a boy.**



```
SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)
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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).

?- % c:/users/geyasree/onedrive/documents/ai & es/exp-34 compiled 0.00 sec, -2 clauses
?- gets(arshad,doll).
true .

?- gets(arshad,train).
true .

?- gets(arshad,coal).
true .
```