

Department of Computer Science
Forman Christian College University

COMP360: Introduction to AI
Fall 2021



Estd. 1864

FORMAN CHRISTIAN COLLEGE
(A CHARTERED UNIVERSITY)

Lab 9: Introduction to Prolog

Lab Instructions:

- Get your attendance marked before leaving the classroom.
- This is an individual Lab assignment. Each student must submit their own work.

Submission Instructions:

- Write your prolog code in knowledgebase.pl file.
- Copy-paste your queries and their outputs in the queries.txt file.
- Zip both of these files together and upload them on tmoodle.

Objective:

- Learn basics of Prolog programming
- Create a simple Knowledge Base in Prolog

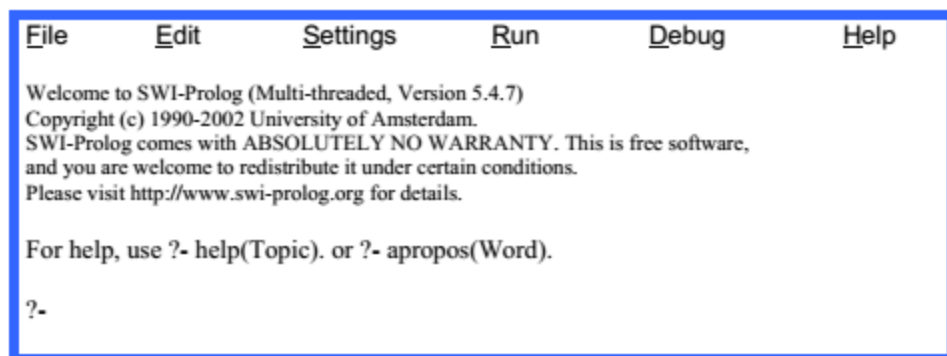
Introduction:

In this lab, you will get familiar with Prolog and its basic function.

SWI-Prolog is a comprehensive Prolog programming environment available from

<http://www.swi-prolog.org/>.

If you use the GUI, the following screen appears with the usual associated meaning for various UI items.



Prolog files are saved using the “.pl” extension.

A variable is a string of upper-case letters, lower-case letters, digits, and underscores characters that start either with an upper-case letter or with an underscore. For example, X, Y, Variable, _tag, X_526, and List, List24, _head, Tail, _input, and Output are all Prolog variables.

You can load Prolog files from the menu or by typing `consult(+File)`.

Some other useful commands include

`edit (+File)`

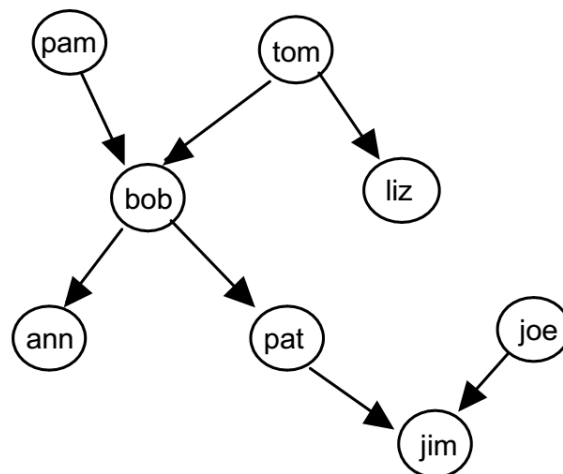
Edit file with the given name. Also available from the menu. If Prolog is started by opening a .pl file then the file name in the command `edit` can be omitted.

`make`

Reload all files that have been changed since they were last loaded. This command is normally used after editing one or more files.

Description:

The family relation is given in the picture (the arrow $X \rightarrow Y$ symbolizes that X is a parent of Y):



Define the predicate `parent(X,Y)` which is true when X is a parent of Y, and the predicate `male(X)` (`female(X)`) which is true when X is a male (a female).

Check the following queries:

```
| ? - "is tom male?"  
| ? - "who is male?"
```

Note that “;” enforces Prolog interpreter to look for the next success whereas <Enter> terminates search for new solutions.

Check now the following queries:

```
| ? "who is a parent of liz?"  
| ? "is bob a parent of pat?"  
| ? "find parent-child relationship"  
| ? "who is a grandparent of jim?"  
| ? "who are tom's grandchildren?"
```

Using the above predicates define the predicates:

`mother(X,Y)` (`father(X,Y)`) to be true when X is a mother (a father) of Y.

Check now who is a mother of jim and of joe.