

**Department of Computer Science
Forman Christian College University**

**COMP360: Introduction to AI
Spring 2024**

Lab 11



FORMAN CHRISTIAN COLLEGE
(A CHARTERED UNIVERSITY)

Task 1 (10 Marks)	Task 2 (10 Marks)	Total (20 Marks)

Prologs

Lab Instructions:

- This is an individual Lab assignment. Each student must submit their own work.
- Download the files from tmoodle.
- Then populate the below mentioned files with your implementation.
- After you're done with your implementation, rename it with your name and roll no. (Ali_Abbas_243123455) and upload them on tmoodle.

Objective:

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

Introduction:

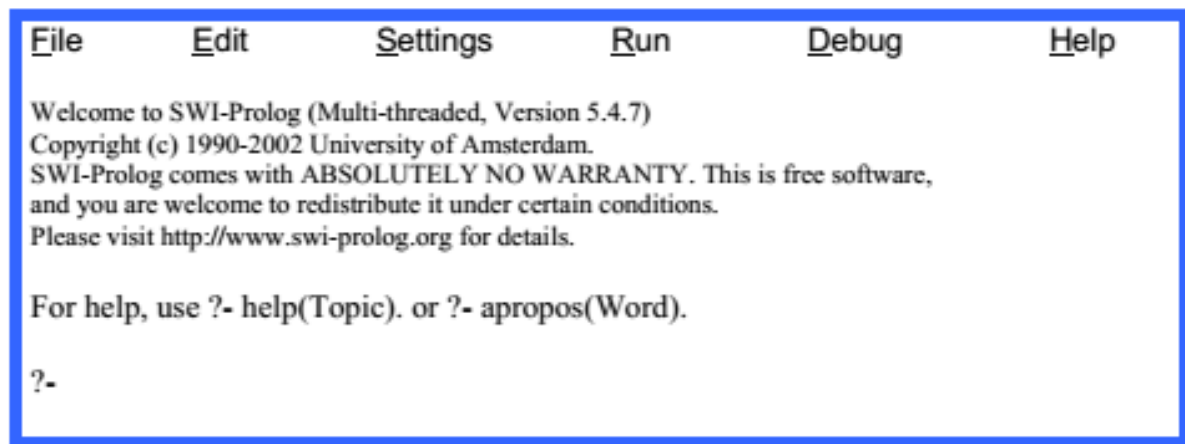
In this lab, you will get familiar with Prolog and its basic function.

SWI-Prolog is a comprehensive Prolog programming environment. You may run this lab on following link:

<https://swish.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)`

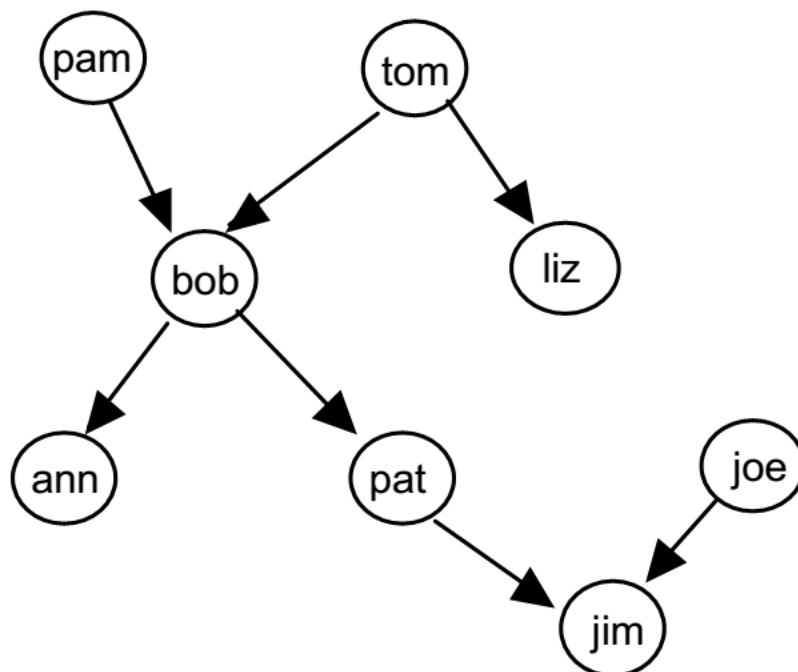
Edit file with the given name. Also available from the menu. If Prolog is started by opening a .pl file then the file name in the command `edit` can be omitted.

`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.