UCT31021 – PRACTICAL FOR ARTIFICIAL INTELLIGENCE
DEPARTMENT OF ICT
FACULTY OF TECHNOLOGY

SOUTH EASTERN UNIVERSITY OF SRILANKA

Labsheet: 01

Date: 10.07.2024

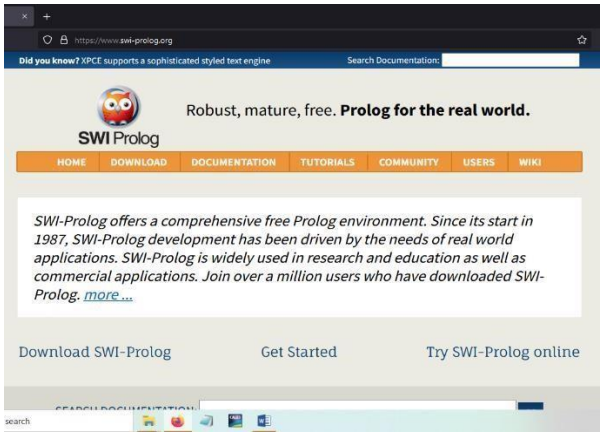
Title : Introduction to PROLOG

Aims :

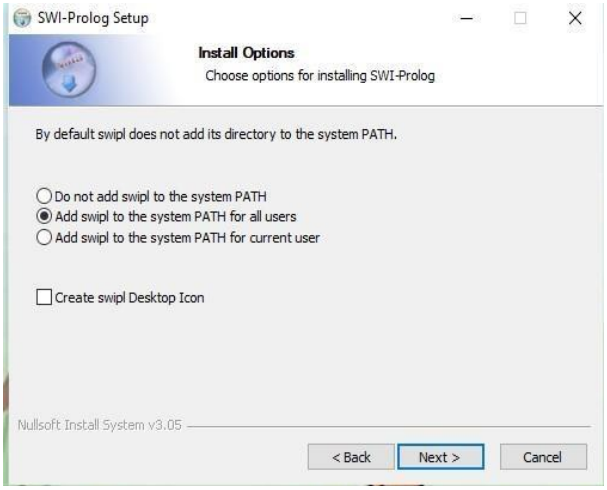
- To introduce main components in logic Programming
- To get familiar with Data objects.
- Read user input.

Task 01: Download setup file and installation.

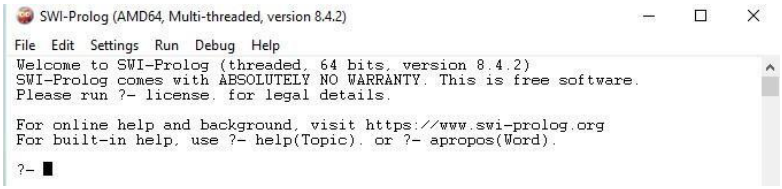
1. Visi the official website - https://www.swi-prolog.org/



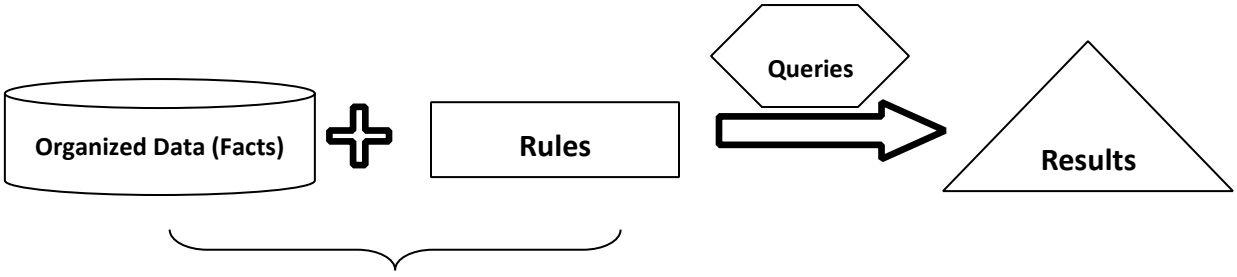
2. Modify the system path by adding swipl location.



3. Prolog console

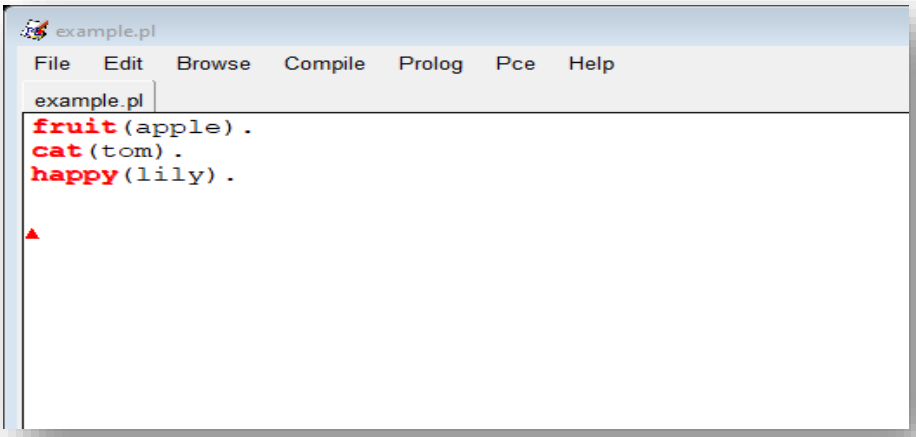


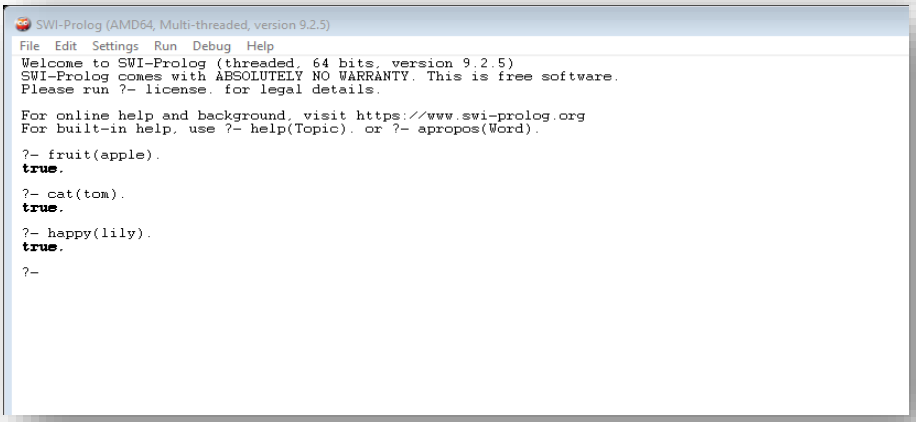
Introduction:



Knowledge Base / Clauses **Example:**

Fact	**Rules**	**Query**
Apple is a fruit	X is eatable if it is a fruit.	Is apple a fruit?
Tom is a cat	Tom is hungry if he is searching for food.	Is tom a cat?
Lilli is happy	Lilli is happy if she is dance.	Is lilli happy?





Task 02: Writing on the Console

1. Write a statement to Hello World.

```
?- write("Hello World.").
Hello World.
true.

?-
```

2. Display your name and address in multiline.

```
?- write("Name:lahiru Buddhika,"),nl,
|    write("Address:Dunakadeniya,"),nl,
|    write("Welipannagahamulla.").
Name:lahiru Buddhika,
Address:Dunakadeniya,
Welipannagahamulla.
true.

?-
```

3. Identify the currently working directory by "pwd." Predicate

```
?- pwd.
% c:/users/lahiru/documents/prolog/
true.

?-
```

4. Use "halt." predicate or Ctrl+d to stop working of the PROLOG console.

```
?- halt.
```

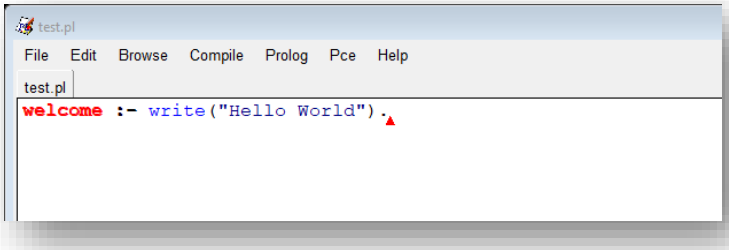
Task 03: Creating Knowledgebase

1. Create a knowledgebase and name it as test.pl in the working directory.

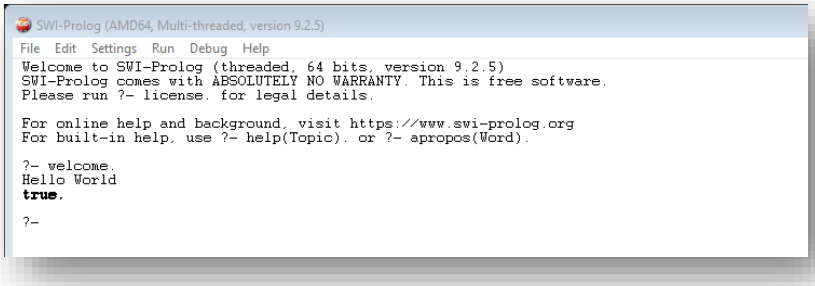
   Open the prolog→Click on file→Click on new→Enter the file name as test.pl→Click on open

2. Insert the following code and save it.

   Welcome :- write('Hello world.').



3. Type "welcome." and observe the outcomes on the consoler.

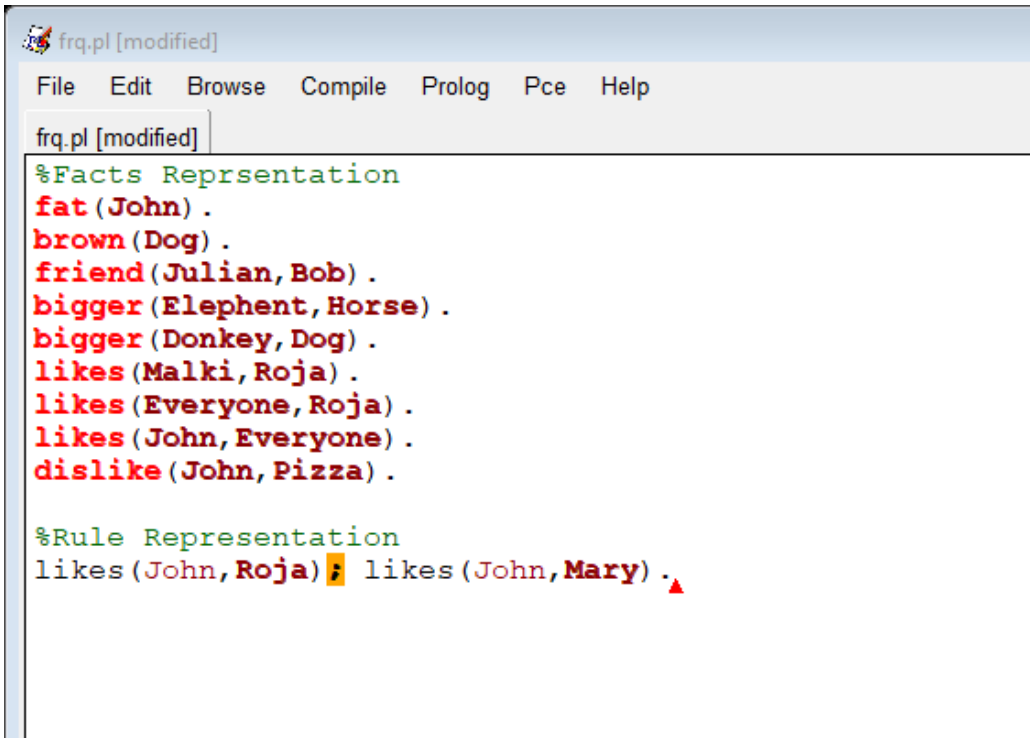


Task 04: Facts, rules and queries

Some syntax:

if	:-
and	,
or	;
not	not

1. Write down the relationship of given facts and rules.
   - I. John is fat.
   - II. Dog is brown.
   - III. Julian is friend with bob. IV. Elephant is bigger than horse V. Donkey is bigger than dog. VI. Malki likes roja.
   - VII. Everyone likes roja.
   - VIII. John likes everyone.
   - IX. John likes roja or john likes mary. X. John does not like pizza.



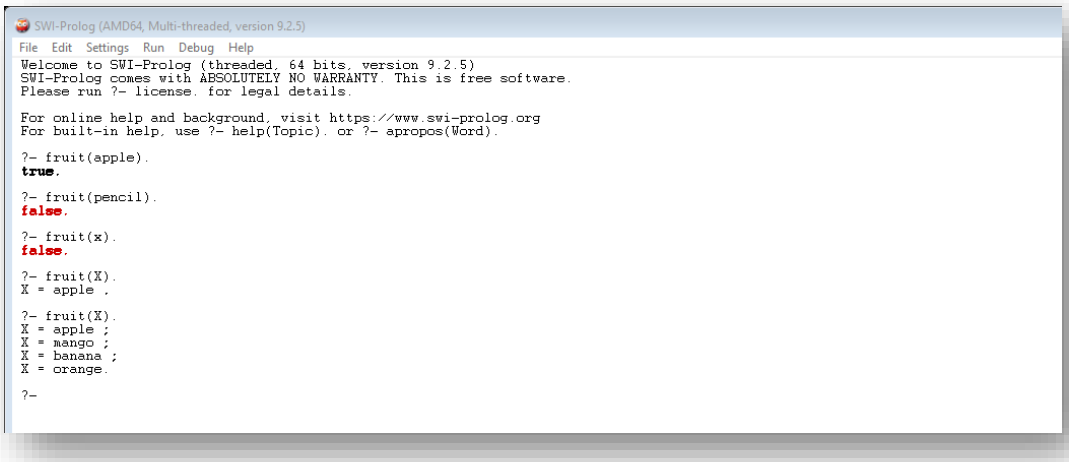
2. Create new knowledgebase file. Add following facts. Load the file into the PROLOG console.

fruit(apple). fruit(mango).

fruit(banana).

fruit(orange).

I. Save the file and load into the PROLOG consoler.
II. Check whether apple is a fruit. Use "fruit('apple')".
III. Check whether pencil is a fruit.
IV. Display available fruits which stored in the knowledgebase.

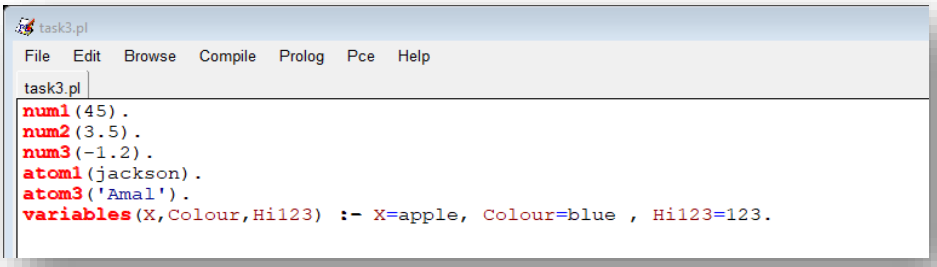


To view all fruit type fruit(X) then it will show the first fruit after that press ";" semicolon to view the other fruit as well

Task 05: Data Objects

Data Objects	**description**	**Example**
Numbers	Integers and floats value	6, 4.32, -7.91
Atoms	Atoms do not have any numerical value. They can be any names/objects.	jackson, x64_yz, 'Jackson'
Variable	Start with capital letter and used it to hold a value.	X, Colour, Hi, and_123

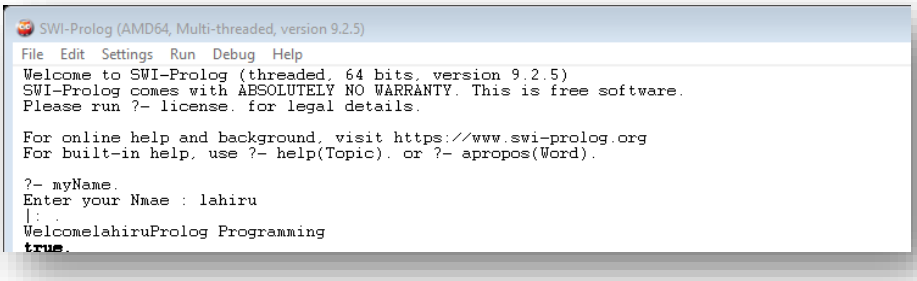
1. Create three examples for each data object with different combinations.

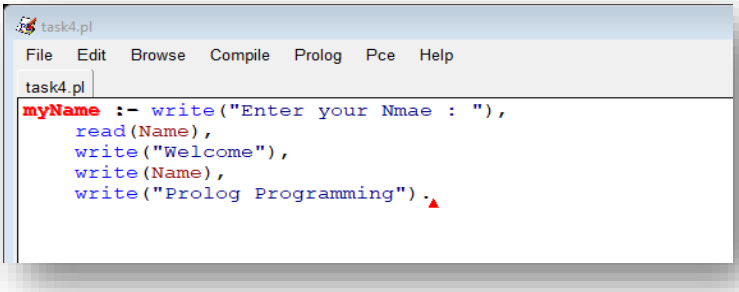


Task06: Read user input.

1. Use *read(VariableName)*. To read an user input.
   Ex: myName
   write('Enter your name: '),
   read(Name),
   write(Name).

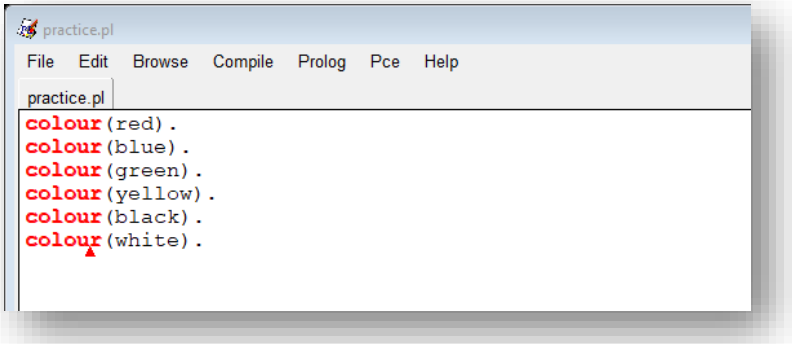
2. Write a rule to request your name and it will welcome you to the Prolog Programming.
   Output : Enter your name : XXX
   Welcome XXX to Prolog Programming.

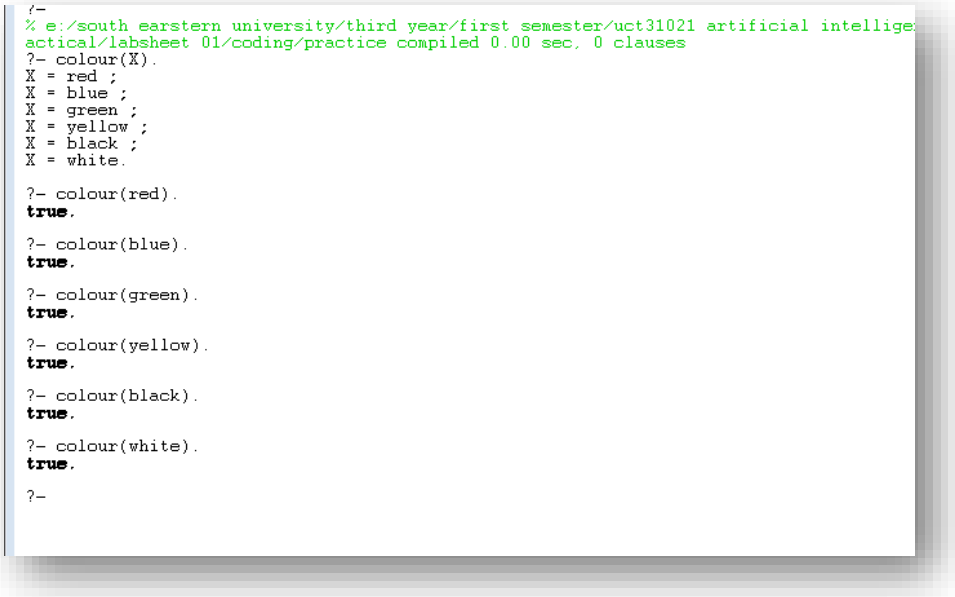




Practice Question:

1. Create new knowledgebase to display and identify 6 colors.





2. Create a knowledge base to store the following details.

Course code	**Subject**
CIS 11051	Database Design
CIS 21031	Platform Technology
UTC 31021	AI
CIS 41032	Advanced Database

Ex : CIS 11051 is Database Design.

3. Read user input command to display Student data Object and the student can have name, age, specialization and current_GPA.

```
?- student.
Enter name :'XXX'.
Enter Age : |: 20.
Enter Specialization : |: software.
Enter GPA: |: 3.82.
student: Name : XXX, Age: 20, Specialization: software, GPA : 3.82
true.
```

practice3.pl

File Edit Browse Compile Prolog Pce Help

practice3.pl

```
student :- write("Enter name : " ),
     read(Name),
     write("Enter Age : "),
     read(Age),
     write("Enter Specialization"),
     read(Spe),
     write("Enter GPA : "),
     read(GPA),
     write("Student: Name :"),
     write(Name),
     write("Age :"),
     write(Age),
     write("Specialization :"),
     write(Spe),
     write("GPA : "),
     write(GPA).
```

```
% e:/south earstern university/third year/first semester/uct31021 artificial intelligent practical/labsheet 01/coding/
% e:/south earstern university/third year/first semester/uct31021 artificial intelligent practical/labsheet 01/coding/
?-
|    student.
Enter name : lahiru
|: .
Enter Age : |: 24.
Enter Specialization|: software.
Enter GPA : |: 3.38
|: .
Student: Name :lahiruAge :24Specialization :softwareGPA : 3.38
true.

?-
```