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Subject: **Artificial Intelligence Lab**

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Experiment No.02

Aim:- To implement simple programs using PROLOG as an AI programming Language

Perform the following questions:

1. Display the syntax to install prolog in ubuntu.

```
apsit@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sudo apt-get install swi-prolog
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
swi-prolog is already the newest version (8.4.2+dfsg-2ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 15 not upgraded.
```

2. Display the syntax to execute program in prolog.

```
1 fruit(mango).
2 fruit(orange).
3
```

```
apsit@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/gauri$ swipl -s exp2.pl
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.2)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

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

?- fruit(mango).
true.

?- fruit(apple).
false.

?- fruit(orange).
true.
```

3.Write a simple program to interpret the following:

        John and Mike are friends.

        sonu is a singer.

        5 is an odd number.

```
4 friend(john,mike).
5 singer(sonu).
6 odd(5).
7
```

4. Check whether question 3 is true or false.

```
?- friend(john,jacob).
false.

?- friend(john,mike).
true.

?- odd(5).
true.

?- singer(sonu).
true.
```
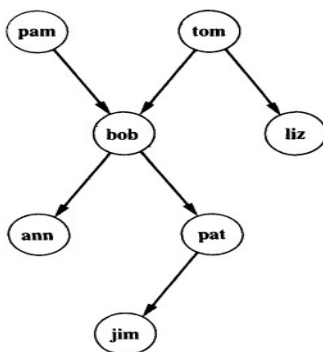
5. Write a program for the following family Tree.

Figure 1.1 A family tree.

```
8
9 parent(pam,bob).
0 parent(tom,bob).
1 parent(tom,liz).
2 parent(bob,ann).
3 parent(bob,pat).
4 parent(pat,jim).
5
```

6. Answer the below questions keeping question 5 as reference.
   a) Is bob parent of pat.
   b) Is liz parent of pat.
   c) Who is liz parent?
   d) Who are Bob children?
   e) Display all parent child pair.

```
?- parent(bob,pat).
true.

?- parent(liz,pat).
false.

?- parent(x,liz).
false.

?- parent(X,liz).
X = tom.

?- parent(bob,X).
X = ann ;
X = pat.

?- parent(X,Y).
X = pam,
Y = bob ;
X = tom,
Y = bob ;
X = tom,
Y = liz ;
X = bob,
Y = ann ;
X = bob,
Y = pat ;
X = pat,
Y = jim.
```

7. Write facts and rules between the friendship of two people.

```
16 likes(dan,sally).
17 likes(sally,dan).
18 likes(john,mike).
19 friendship(X,Y):-
20 likes(X,Y);
21 likes(Y,X).
22
```

8. Check their friendship with 'and' and 'or' condition.

AND

```
?- friendship(john,mike).
false.

?- friendship(dan,sally).
true.
```

OR

```
?- friendship(john,mike).
true ;
false.

?- friendship(dan,sally).
true ;
true.
```