Artificial Intelligence Lab (PCCAIML491)

Assignment 2

1. **Consider the following facts:**
   parent(sudip, piyus).
   parent(sudip, raj).
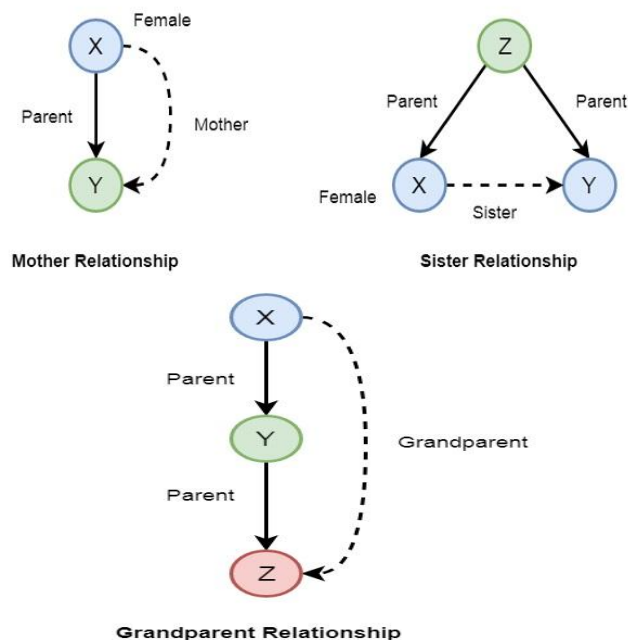   male(piyus).
   male(raj).
   Write a Prolog program to define the rule for brother relationship and query it. Two persons are brothers, if, they both are male and they have the same parent.

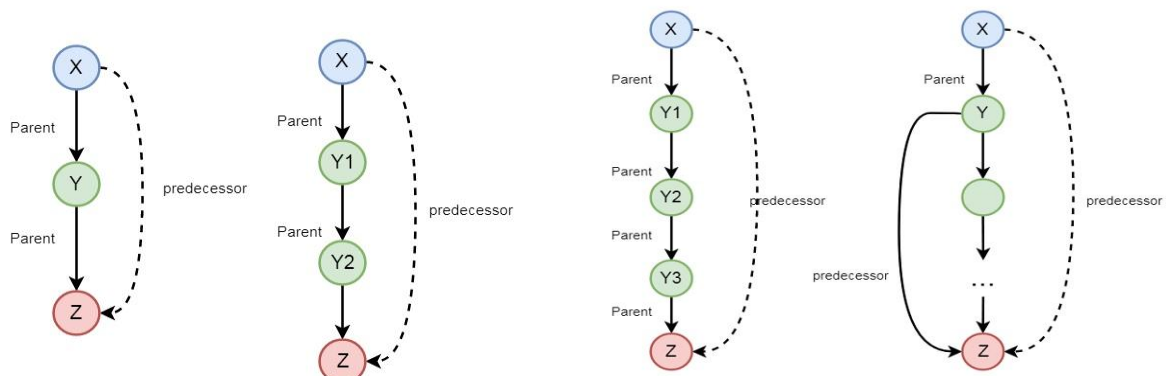2. **Consider the following facts:**
   parent(pam, bob).
   parent(tom, bob).
   parent(tom, liz).
   parent(bob, ann).
   parent(bob, pat).
   parent(pat, jim).

   parent(bob, peter).
   parent(peter, jim).
   female(pam).
   female(liz).
   female(pat).
   female(ann).
   male(tom).
   male(bob).
   male(jim).

Mother Relationship

Sister Relationship

Grandparent Relationship

Write a Prolog program to define the rule for mother, father, sister, grandparent, grandmother, grandfather, wife and uncle relationship and query it.

3. Write a Prolog program to define the rule for predecessor relationship (recursive) from the facts given in question no. 2.

4. Write a Prolog program to execute a forward and backward loop in Prolog.

5. Write a Prolog program of Looping until a Condition is Satisfied.

6. Write a Prolog program to find the factorial of a given number.

7. Write a Prolog program to find the sum of n numbers.

8. Consider the following facts:

    person(john,smith,45,london,doctor).
    person(martin,williams,33,birmingham,teacher).
    person(henry,smith,26,manchester,plumber).
    person(jane,wilson,62,london,teacher).
    person(mary,smith,29,glasgow,surveyor).

    Write a Prolog program to define the rule which will display all names whose surname is smith.

9. Write a Prolog program to define a predicate to output the values of the squares of the integers from N1 to N2 inclusive and test it with N1=6 and N2=12.

10. Consider the facts of the question no. 8. Write a Prolog program that takes no argument, age40 and have it read the facts on the age and profession only. It will only take profession for which the age is greater than equal to 40.