Q-6 Write a prolog program for the family tree.

```
/* Facts */
male(hardik).
male(karan).
male(satish).
male(james).
male(simon).
male(harry).
female(helen).
female(sophie).
female(jess).
female(lily).

parent(jack, jess).
parent(jack, lily).
parent(helen, jess).
parent(helen, lily).
parent(oliver, james).
parent(sophie, james).
parent(jess, simon).
parent(ali, simon).
parent(lily, harry).
parent(james, harry).
```

/* Rules */

```
father(X,Y) :- male(X),
               parent(X,Y).

mother(X,Y) :- female(X),
               parent(X,Y).

grandfather(X,Y) :- male(X),
                    parent(X,Z),
                    parent(Z,Y).

grandmother(X,Y) :- female(X),
                    parent(X,Z),
                    parent(Z,Y).

sister(X,Y) :- %(X,Y or Y,X)%
               female(X),
               father(F,Y), father(F,X), X\=Y.

sister(X,Y) :- female(X),
               mother(M,Y), mother(M,X), X\=Y.

aunt(X,Y) :- female(X),
             parent(Z,Y), sister(Z,X),!.

brother(X,Y) :- %(X,Y or Y,X)%
                male(X),
                father(F,Y), father(F,X), X\=Y.
```

```
brother(X, Y) :- male(X),
        mother(M, Y), mother(M, X), X \= Y.

uncle(X, Y) :-
        parent(Z, Y), brother(Z, X).

ancestor :- parent(X, Y).
ancestor :- parent(X, Z),
        ancestor(Z, Y).


// The given statement is a Prolog rule that
   defines the relationship father(X, Y).
   Let's break it down :

// father(X, Y) :- male(X), parent(x, Y).
// Meaning
// Father(X, Y) is true if :
// X is male (male(X)).
// X is a parent of Y (parent(X, Y)).
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// father(X, Y) is true if :
// X is male (male(X)).
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```

* Output

1. ? - father (X, Y).

-> X = jack , Y = jess ;
X = jack, Y = lily ;
X = oliver, Y = james ;
X = ali , Y = simon ;
X = james , Y = harry ;

2. ? - mother (X, Y).

X = helen, Y = jess ;
X = helen, Y = lily ;
X = sophie , Y = james ;
X = jess , Y = simon ;
X = lily , Y = harry ;

3. ? - grandfather (X, harry).

X = oliver ;
X = ali ;

4. ? - ancestor (jack, harry).

true.