Assignment 1.1

Name: Krunal Rank
Roll No: U18CO081

Question 1: Is **albert** a parent of **peter**?
Answer 1:

```
?- parent(albert,peter).
true
```

Question 2: Who is the child of **jim**?
Answer 2:

```
?- parent(jim,Who).
Who = brian.
```

Question 3: Who are the parents of **brian**?
Answer 3:

```
?- parent(Who,brian).
Who = jim ;
Who = pat.
```

Question 4: Is **irene** a grandparent of **brian**?
Answer 4:

```
% grandparent(GrandParent, GrandChild)
grandparent(X,Y):-
    parent(X,D),
    parent(D,Y).
```

```
?- grandparent(irene,brian).
true
```

Question 5: Find all grandchildren of **irene**.
Answer 5:

```
?- grandparent(irene,Who).
Who = brian ;
Who = lee ;
Who = sandra ;
Who = james ;
Who = kate ;
Who = kyle.
```

Question 6: Now add the given code and reconsult.
Answer 6:

```prolog
older(Person1, Person2):-
    yearOfBirth(Person1, Year1),
    yearOfBirth(Person2, Year2),
    Year2 > Year1.
```

```prolog
?- [older].
true.
```

Question 7: Who is older than **pat**?
Answer 7:

```prolog
?- older(Who,pat).
Who = irene ;
Who = albert ;
Who = jim ;
Who = peter ;
false.
```

Question 8: Who is younger than **darren**?
Answer 8:

```prolog
?- older(darren,Who).
Who = jenny ;
Who = amanda ;
false.
```

Question 9: List siblings of **sandra**.
Answer 9:

```prolog
sibling(X,Y):-
    parent(D,X),
    parent(D,Y),
    X \= Y.
```

```prolog
?- [siblings].
true.

?- sibling(Who,sandra).
Who = lee ;
Who = james ;
Who = kate ;
Who = kyle ;
false.
```

Question 10: Who is the older brother of **sandra**?
Answer 10:

```
?- older(X,sandra),
|    sibling(X,sandra),
|    male(X).
X = james ;
false.
```

Question 11: Find the predecessors of **kyle**.
Answer 11:

```
predecessor(X,Y):-
    parent(X,Z),
    predecessor(Z,Y).

predecessor(X,Y):-
    parent(X,Y).
```

```
?- predecessor(X,kyle).
X = albert ;
X = irene ;
X = peter.
```

Question 12: Does **kate** have a sister?
Answer 12:

```
?- sibling(kate,X),
female(X).
X = lee ;
X = sandra ;
false.
```

Question 13: How many females and males are there in the knowledge base?
Answer 13:

```
?- aggregate_all(count,female(X),Count).
Count = 7.
```

```
?- aggregate_all(count,male(X),Count).
Count = 8.
```