Lab 5

Name: Taiki Tsukahara
Team Member: Aaron Garcia, Nhat Minh Dinh, Taiki Tsukahara

#1 Create the following knowledge base. Name the program kbase1

```
1 woman(mia).
2 woman(jody).
3 woman(yolanda).
4 loves(vincent,mia).
5 loves(marcellus,mia).
6 loves(pumpkin,honey_bunny).
7 loves(honey_bunny,pumpkin).
```

a. Tell me which of the individuals you know about is a woman.
Query:

```
?- woman(X).
```

Result:

```
woman(X).
X = mia
X = jody
X = yolanda
```

b. Is there any individual X such that Marcellus loves X and X is a woman?
Query:

```
?- loves(marcellus, X), woman(X).
```

Result:

```
loves(marcellus, X), woman(X).
X = mia
```

#2 Create the following knowledge base. Name the program kbase2

```
1 loves(vincent,mia).
2 loves(marcellus,mia).
3 loves(pumpkin,honey_bunny).
4 loves(honey_bunny,pumpkin).
```

a. Create a rule: It says that an individual X will be jealous of an individual Y if there is some individual Z that X loves, and Y loves that same individual Z too.

Rule:

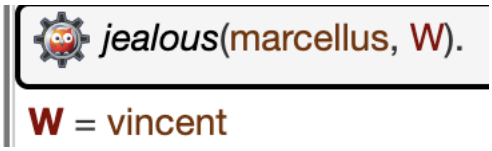
```
6 jealous(X, Y) :- loves(X, Z), loves(Y, Z), X \= Y.
```

b. Create the following query: Can you find an individual W such that Marcellus is jealous of W?

Query:

```
?- jealous(marcellus, W).
```

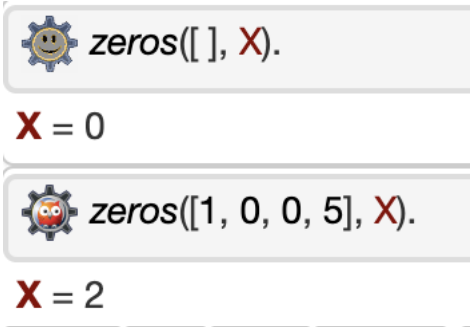
Result:



#3 Write a Prolog relation that accepts a list of integers, and counts the number of zeros in the list

```
%empty list
zeros([], 0).
%if first list item is 0, count eachtime you have 0, counter
zeros([0 | T], Z) :- zeros(T, Z1), Z is Z1 + 1.
%if first item is not 0, keep counting 0 in the list
zeros([_ | T], Z) :- zeros(T, Z).
```

Query & Result



#4 Write a Prolog relation "intersect (L1, L2, R)" that succeeds if R is the intersection of L1 and L2. (Assume no duplicates)

```
1 intersect([], _, []).
2 intersect([X|R], Y, [X|Z]) :- member(X, Y), !, intersect(R, Y, Z).
3 intersect([_|R], Y, Z) :- intersect(R, Y, Z).
```

Query & Result