CvP - Werkcollege 10

Exercise 1 One person is jealous of the other if they both love the same person. Given the following facts:

```
loves(vincent,mia).
loves(marsellus,mia).
loves(pumpkin, honey_bunny).
loves(honey_bunny, pumpkin).
```

Write a Prolog rule `jealous()` that gives the following answer:

```
?- jealous(vincent,marsellus).
true.
?- jealous(marsellus,vincent).
true.
?- jealous(vincent, mia).
false.
```

Exercise 2 Find the last element of a list. For example,

```
?- my_last(X,[a,b,c,d]).
X = d
```

Exercise 3 Write a rule `my_length(L, N)` that finds the number of elements `N` of the list `L`.

Exercise 4 Write rule `has_factor(N,L)` that states if `N` has an odd factor `F`, such that `N > F >= L`, given `L` is odd.

Exercise 5 Write a rule `is_prime(P)` that determines whether a given integer number is prime.
Hint: reuse `has_factor(N,L)`, use not equal: =\= and not provable: \+.

Exercise 6 Consider the following set of facts and rules:

```
enjoys(vincent,X) :- \+ big_kahuna_burger(X).
enjoys(vincent,X) :- burger(X).

burger(X) :- big_mac(X).
```

```
burger(X) :- big_kahuna_burger(X).
burger(X) :- whopper(X).

big_mac(a).
big_kahuna_burger(b).
whopper(c).
```

The \+ operator means true, if not provable. The following queries have the following answers:

```
?- enjoys(vincent, a).
true.
?- enjoys(vincent, b).
true.
?- enjoys(vincent, c).
true.
```

(a) Explain the output of each query.

(b) Use the cut predicate `!` to ensure that vincent does not enjoy the Kahuna burger.