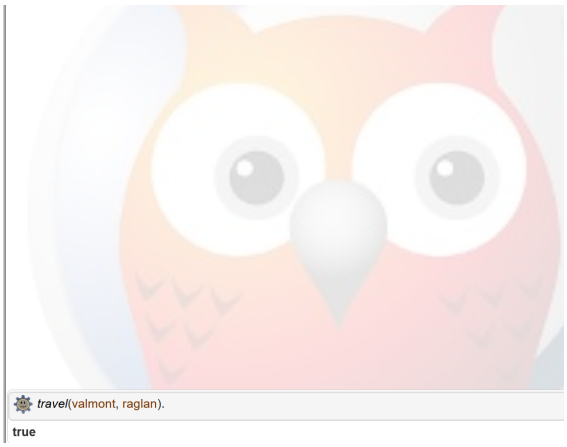
lab3

a1

```
connected(1, 2).
connected(3, 4).
connected(5, 6).
connected(7, 8).
connected(9, 10).
connected(12, 13).
connected(13, 14).
connected(15, 16).
connected(17, 18).
connected(19, 20).
connected(4, 1).
connected(6, 3).
connected(4, 7).
connected(6, 11).
connected(14, 9).
connected(11, 15).
connected(16, 12).
connected(14, 17).
connected(16, 19).

path(X, Y) :- connected(X, Y).

path(X, Y) :- connected(X, Z), path(Z, Y).
```

a2

```prolog
% Fakten: Definition der Transportmittel und ihrer Verbindungen
connected(valmont, raglan, car).
connected(raglan, valmont, car).
connected(valmont, raglan, train).
connected(raglan, valmont, train).
connected(valmont, raglan, airplane).
connected(raglan, valmont, airplane).
connected(X, Z, car) :- connected(X, Y, car), connected(Y, Z, car).
connected(X, Z, train) :- connected(X, Y, train), connected(Y, Z, train).
connected(X, Z, airplane) :- connected(X, Y, airplane), connected(Y, Z, airplane).

travel(X, Y) :- connected(X, Y, _).
travel(X, Y) :- connected(X, Z, _), travel(Z, Y).

```

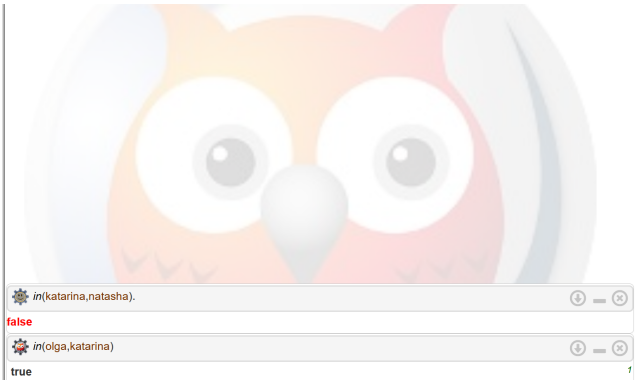


a3

Der vorfahr Predikat wird funktionieren aber er wird mehrere mahle durch derselben person durchgehen, das ist nur inefizient.

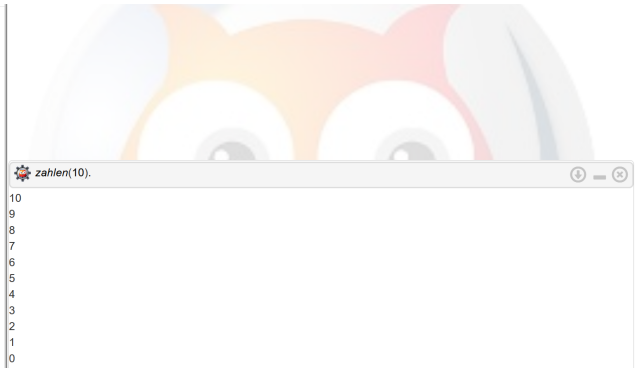
a4

```prolog
directlyin(katarina, olga).
directlyin(olga, natasha).
directlyin(natasha, irina).

in(X, Y) :- directlyin(Y, X).
in(X, Y) :- directlyin(Z, Y), in(X, Z).

```



a5

```prolog
zahlen(0) :-
    write(0), nl.

zahlen(N) :-
    N > 0,
    write(N),
    nl,
    N2 is N - 1,
    zahlen(N2).

```



a6

```
compara(X, Y) :-
    X >= Y,
    write(X), write(' ist größer oder gleich '), write(Y), nl.

compara(X, Y) :-
    X < Y,
    write(X), write(' ist kleiner als '), write(Y), nl.
```