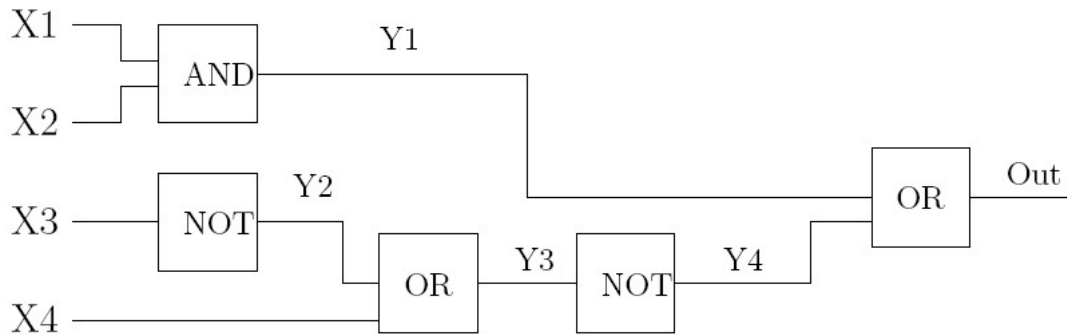**Example, a boolean circuit.**

Contents of .pl file:

```prolog
and(0,0,0). and(0,1,0).
and(1,0,0). and(1,1,1).
or(0,0,0). or(0,1,1).
or(1,0,1). or(1,1,1).
not(0,1). not(1,0).

nand(X,Y,Out) :-
    and(X,Y,OutAnd), not(OutAnd,Out).

circuit(X1, X2, X3, X4, Out) :-
    and(X1, X2, Y1),
    not(X3, Y2),
    or(Y2, X4, Y3),
    not(Y3, Y4),
    or(Y1, Y4, Out).
```

Example, boolean circuits, cont.

Queries

```
?- circuit(0, 1, 0, 1, Out).
Out = 0 ?
yes
?- circuit(X1, X2, X3, X4, 1).
X1 = 0,
X2 = 0,
X3 = 1,
X4 = 0 ? ;
X1 = 0,
X2 = 1,
X3 = 1,
X4 = 0 ?
yes
| ?- circuit(1,X,Y,Z,0).
X = 0,
Y = 0,
Z = 0 ? ;
X = 0,
Y = 0,
Z = 1 ? ;
X = 0,
Y = 1,
Z = 1 ? ;
no
```

("Fill in the blanks" computation)