1. The blanks that need to be filled in are the variables, 8 variables in total
2. 1 to 4 in discrete number
3. Each column/row/2*2 quadrants contains all 4 numbers with no repeated values.

```
template([[Y1,4,3,2],[3,Y2,Y3,Y4],[4,1,Y5,Y6],[Y7,Y8,4,1]]).

checkrange([]).
%fix the range of values
checkrange([X|R]):-
    member(X,[1,2,3,4]),
    checkrange(R).

checklist([]).
%check through the board
checklist([X|R]):-
    checkrange(X),
    checklist(R).

noconflict(R):-
%attempt to remove the duplicate by sort, if length after sorting matches then there is no conflict
    sort(R,Set),
    length(Set,N),
    length(R,N).

noconflictrow([]).
noconflictrow([X|Other]):-
%check each row for duplicates
    noconflict(X),
    noconflictrow(Other).

noconflictcolumn([[],[],[],[]]).

noconflictcolumn([[X|Other1],[Y|Other2],[A|Other3],[B|Other4]]):-
%check each column for duplicates
    noconflict([X,Y,A,B]),
    noconflictcolumn([Other1,Other2,Other3,Other4]).

div(L, X, Y) :-
   append(X, Y, L),
   length(X, N),
   length(Y, N).

noconflictquad([]).
```

```
noconflictquad([A,B,C,D]):-
% check for the quad
%first sort the list into four quads
      div(A,A1,A2),
      div(B,B1,B2),
      div(C,C1,C2),
      div(D,D1,D2),
      append(A1,B1,X),
      append(A2,B2,Y),
      append(C1,D1,Z),
      append(C2,D2,H),
%check for conflict in the quads
      noconflict(X),
      noconflict(Y),
      noconflict(Z),
      noconflict(H).

solution([]).

solution(L):-
%satisfy the constraints
      checklist(L),
      noconflictrow(L),
      noconflictcolumn(L),
      noconflictquad(L).
```