Suppose I have the following QCP instance:

order 3
1 . 3
. 3 .
. . 2

It is of order 3, so I need to generate a set of clauses with the property that satisfying assignments correspond to Latin squares of order 3. Now suppose I have decided to use property (a) in my formula. The clauses expressing this property are:

(C_1,1,1 v C_1,1,2 v C_1,1,3)
(C_1,2,1 v C_1,2,2 v C_1,2,3)
(C_1,3,1 v C_1,3,2 v C_1,3,3)
(C_2,1,1 v C_2,1,2 v C_2,1,3)
(C_2,2,1 v C_2,2,2 v C_2,2,3)
(C_2,3,1 v C_2,3,2 v C_2,3,3)
(C_3,1,1 v C_3,1,2 v C_3,1,3)
(C_3,2,1 v C_3,2,2 v C_3,2,3)
(C_3,3,1 v C_3,3,2 v C_3,3,3)

I also need unit clauses corresponding to the fixed cells of my QCP instance. These are:

(C_1,1,1) (C_1,3,3) (C_2,2,3) (C_3,3,2).

To generate the DIMACS format CNF, I need to map my atoms of the form C_i,j,k onto integers, so that each atom gets a unique integer. Since all the subscripts in my atoms are single digits, I can just map C_i,j,k onto the 3 digit number ijk. (This won't quite work for squares of order larger than 9.)

The resulting DIMACS format CNF is:

```
p cnf 333 13
111 0
133 0
223 0
332 0
111 112 113 0
121 122 123 0
131 132 133 0
211 212 213 0
221 222 223 0
231 232 233 0
311 312 313 0
321 322 323 0
331 332 333 0
```

(This formula can be satisfied by setting all atoms true, a clear indication that it is not correct. Obviously, at least one property that involves clauses with negative literals is needed for correctness.)

Notice that I have declared the CNF to have 333 atoms, even though

there are not nearly that many distinct atoms. This is because the solver needs to know the maximum number it will see used as an atom.
