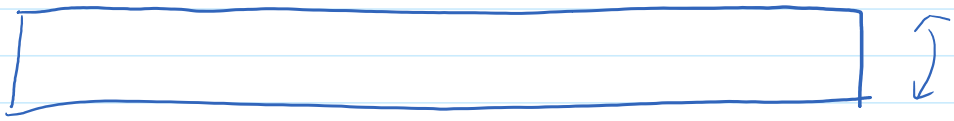
Observation

Monday, July 24, 2017 4:41 PM

1.
Lex has same number of binary constraints after removing duplicates. Not the case for reflex. (Only cares the unordered pair of (row #, col #) Here I mean, matrix of size (3,4) and (4,3) have different number of constraints for reflex, but same for lex. (Check Row_Column_Compo folder)

2.
Reflex prefers columns than rows (e.g., 4*10 better than 10*4), if using row ordering, in the sense of # of different constraints.

Allow me to explain why and correct me if I'm wrong:



If we swap two rows, all the remaining column permutations doesn't affect the corresponding reflex constraint. It would always be $\min\{\text{First row}\} < \min\{Second\ row\}$

We can say row permutation dominates column permutation.

Meanwhile, if we two swap two columns, we can still change the moving status(i.e., in the moving-left set or moving-right set) by row permutations. That would change the corresponding reflex constraint.

3.

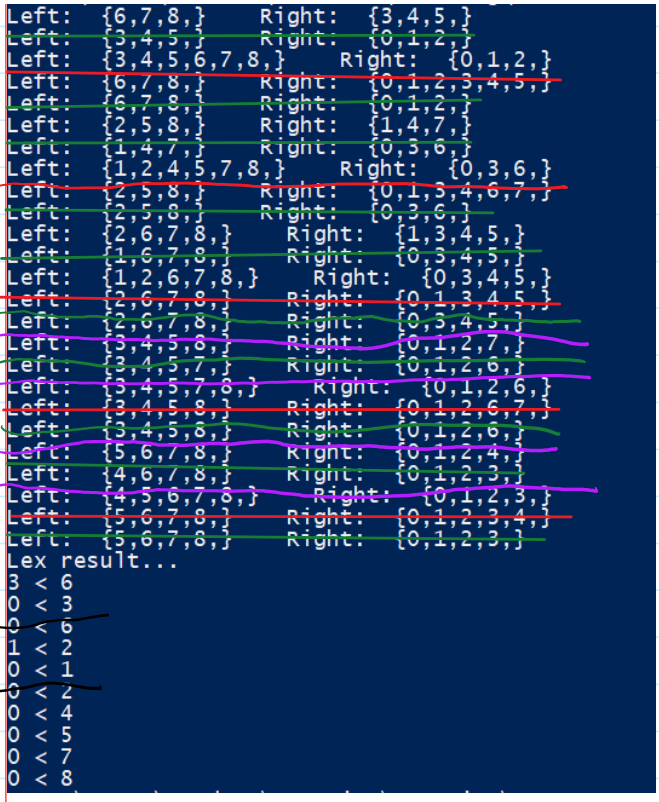
A Global Propagator for $\min\{x_i, \dots, x_k\} < \min\{x_j, \dots, x_w\}$

There is no shared variables between LHS and RHS. As a variable can only move left or right in the ordering.

Under construction…

1. Simplification Example

Redundancy Removal Rules:



:

Right set is Superset of that of other symmetries, left is same

:

the left set is Subset of that of other symmetries, right is same

.

Left set is subset, right set is superset. (By transitivity of set inclusion)

Reflex Statistics

Number of constraints left after the first two removal rule: 10

Number of constraints left after applying the third removal rule: 6

Removed by red: 5
Removed by green: 10
Removed by purple: 4

Lex Statistics

Number of solution left after considering transitivity(in Puget paper): 8

Conclusion

I still don't know how to prove linear number of constraints… But I write an efficient procedure for simplifying reflex constraints under all-different environment. (Haven't used removal rules yet)

It seems that Reflex can be even better than Lex under all-different constraints, in terms of number of most simplified constraints. (Still, I don't know if this always happens. But last example considering all row, column and their composition symmetries indeed falls into this case)

Disclaimer

This is like a half-time report to let you know the progress so we can have some discussion!

For first observation, I haven't tried out to get the most simplified reflex constraints yet, only removing duplicates. But this does suggest whether we should use column or row ordering. It helps when we have less initial constraints.