

# — Exercise 5 —

**Deadline: TODO**

## Task 1 - Backtracking

Implement the incremental removal of constraints in a smarter way than before. Make sure that you reuse as many previously computed information as possible and that no information is lost. E.g. when removing  $a = b$  from which you could infer  $f(a) = f(b)$ , only delete the edge between  $f(a)$  and  $f(b)$  if there exists no other path in-between  $a$  and  $b$ .

## Task 2 - Minimal Infeasible Subsets

Replace `generateTrivialInfeasibleSubset`, instead generate as small infeasible subsets as possible in your solver.

For further information on this topic you may read for example the papers *NP-completeness of small conflict set generation for congruence closure* by Andreas Fellner, Pascal Fontaine and Bruno Woltzenlogel Paleo<sup>1</sup> and *Using BDDs with combinations of theories* by Pascal Fontaine and E. Pascal Gribomont<sup>2</sup>.

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<sup>1</sup><https://link.springer.com/article/10.1007/s10703-017-0283-x>

<sup>2</sup>[https://link.springer.com/content/pdf/10.1007%2F3-540-36078-6\\_13.pdf](https://link.springer.com/content/pdf/10.1007%2F3-540-36078-6_13.pdf)