Practice/Real-Life Applications of Computational Algorithms, Fall 2016

Homework 1: Solving Sudoku by SAT

Due: 2016/10/25

1. Goal

In this homework, you will use a SAT solver to solve Sudoku.

(1) Read a Sudoku puzzle from the input

(2) Encode into CNF

(3) Use MiniSat to find an assignment to CNF (if satisfiable)

(4) Output solution from the assignment

(5) Or print "NO" (if the puzzle is not solvable)

2. Input / Output

Each input file contains a puzzle that

(1) has a size N*N, and

(2) is prefilled with numbers 0 to N, where 0 represents the square is empty.

Sample input	Sample Output
060104050	963174258
008305600	178325649
200000001	254689731
800407006	821437596
006000300	496852317
700901004	735961824
500000002	589713462
007206900	317246985
040508070	642598173

3. Command line

Your Sudoku solver should take three arguments:

./solver [Input Puzzle] [Output Puzzle] [MiniSatExe]

where MiniSatExe is the filename of the MiniSat executable.

4. Hand in your assignment

Please upload the following files in a zip, specifying your ID (e.g. Student_ID.zip) to E3 by the deadline.

(1) Source code

(2) A report that introduces your implementation

5. Platform

Linux

6. Q&A

For any question regarding homework 1, please contact 林淯晨 (miz1205@gmail.com)