

## Project #4

Write a program that solves Sudoku puzzles. The input to Sudoku is a 9x9 board that is subdivided into 3x3 squares. Each cell is either blank or contains an integer from 1 to 9.

A solution to a puzzle is the same board with every blank cell filled in with a digit from 1 to 9 such that every digit appears exactly once in every row, column, and square.

The input to the program is a text file containing a collection of Sudoku boards, with one board per line. For each board that is read, the output is a printout of the board correctly filled in.

### Part a

Some of the declarations and definitions for the `board` class are given to you. Add functions to the class that:

1. initialize the board, and update conflicts,
2. print the board and the conflicts to the screen,
3. check whether a value causes conflicts if it is placed in a cell,
4. add a value to a cell, and update conflicts,
5. clear a cell, and update conflicts, and
6. check to see if the board has been solved (return true or false, and print the result to the screen)

For each row  $i$  and digit  $j$ , keep track of whether each digit  $j$  has been placed in row  $i$ . Do the same for each column and each square. We will use this information in part b of the project to write the Sudoku solver.

The code you submit should read each Sudoku board from the file one-by-one, print the board and conflicts to the screen, and check to see if the board has been solved (all boards will not be solved at this point).