TDT4136 Assignment 3

Andreas Ahlgren Marken

October 5, 2023

Easy board

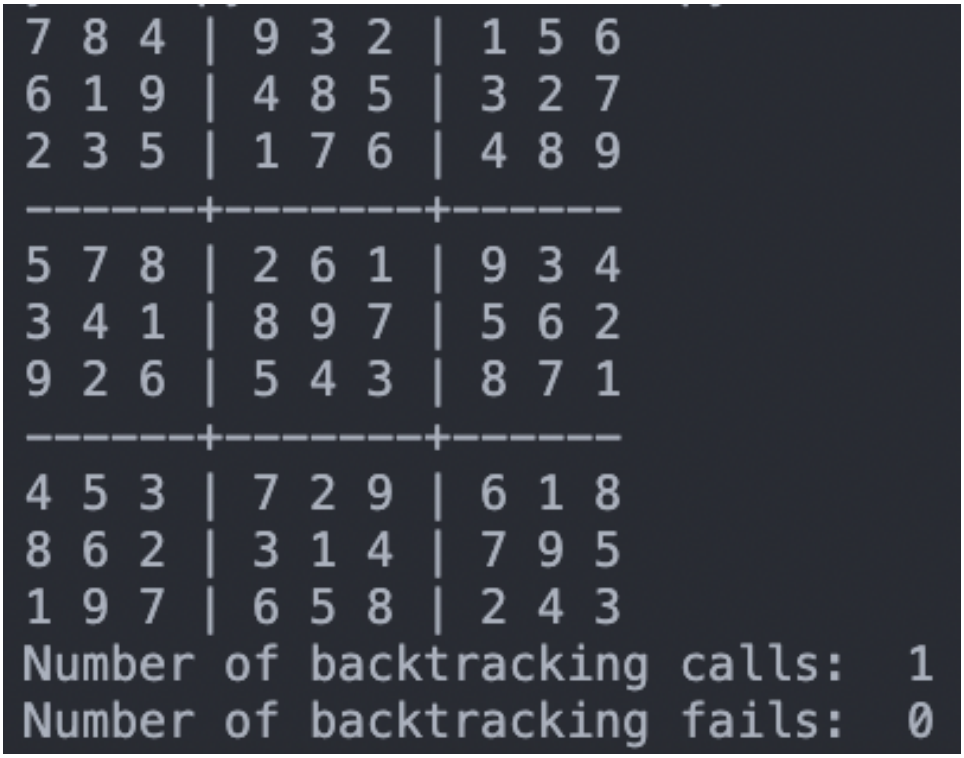

Figure 1: Easy Sudoku board

Medium board

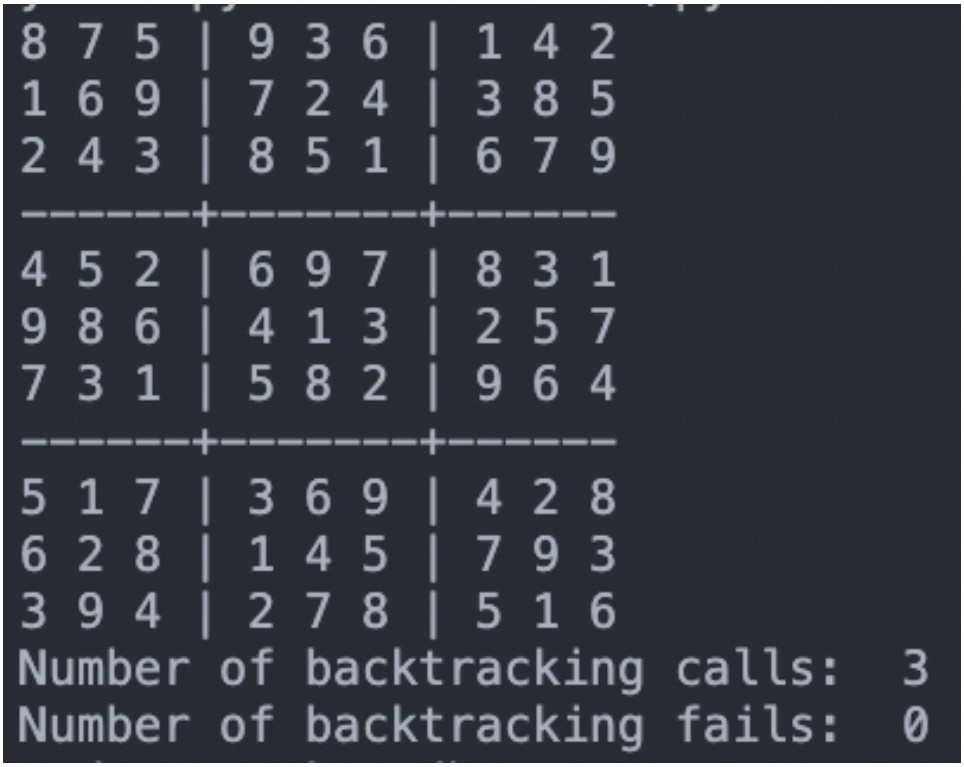

Figure 2: Medium Sudoku board

Hard board

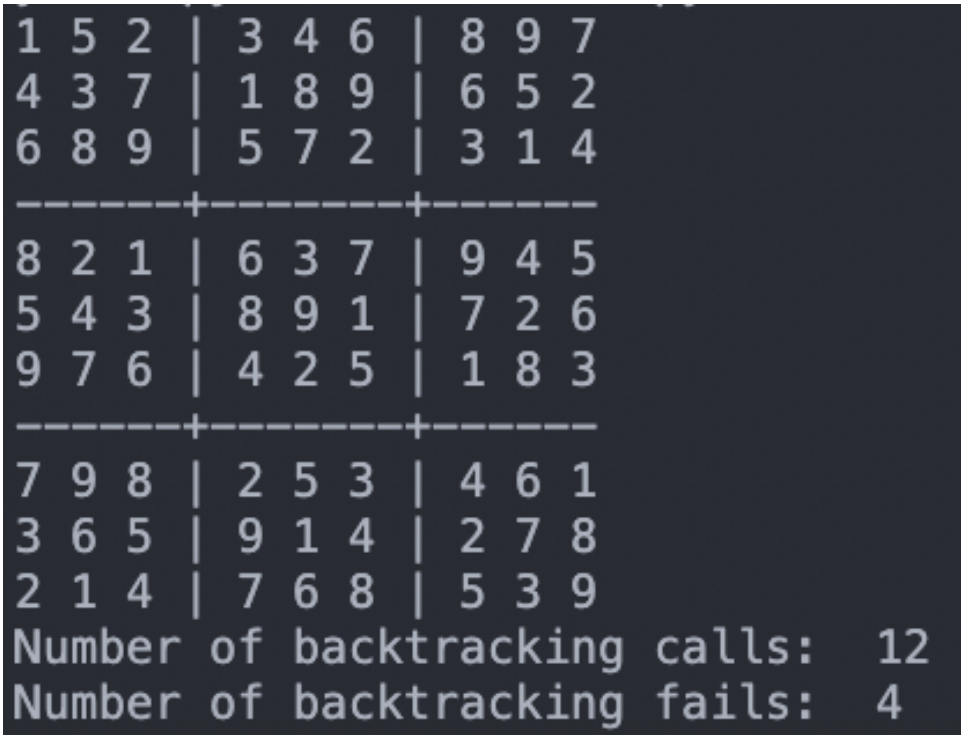

Figure 3: Hard Sudoku board

Very hard board

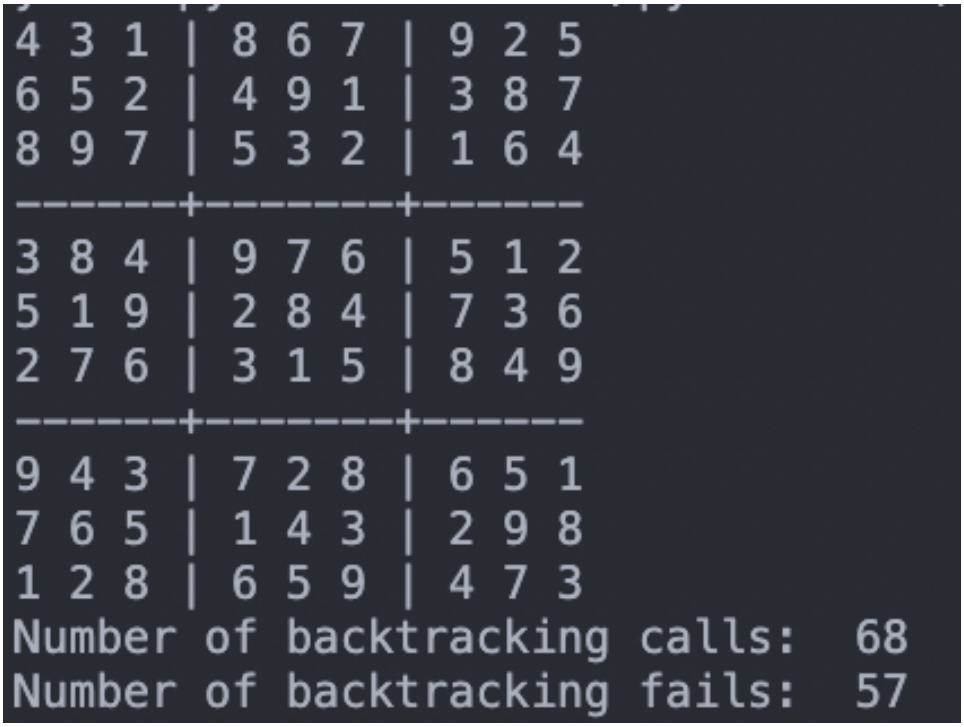

Figure 4: Very hard Sudoku board

4.2c)

As we can see from the different figures, as we use the methods on supposedly harder boards, the number of times backtrack() gets called and returns failure increases. If we take some time to think about this, for me at least, this makes a lot of sense. A harder board would require more trial and error than a easier board that has more solutions than the harder boards.

For the easy board, backtrack was called 1 time. The first time we tried assigning values, the solution allowed us to update the domains of the other variables and find a solution.

When we then take a look at the medium difficulty board, we end up having to call backtrack 3 different times, meaning we have to try 3 values that was consistent which ended up giving the solution.

In the hard board backtrack returned failure 4 times, meaning that it tried 4 times different values that was consistent in the partial assignment, but ending op not giving a complete consistent assignment.

In the very hard board, there where a total of 57 times backtrack gave failure out of a total of 68 different consistent values. This makes sense, given that it is harder to find a consistent solution on a harder board because of the smaller set of solutions.