<Write-up>

1. Single Puzzle Performance

- Without minimum-remaining values and the degree heuristic -> 65s
- Without least-constraining value heuristic -> 10s
- Without any heuristics -> 111s

2. From the above experiments, I learned that it is very important to choose and implement the right heuristic functions because it will make significant changes in its performance. Without those heuristics, it would have been just a brute-force algorithm that takes lots of time to explore every possibility. Among those results, the fastest method was solving without least-constraining value heuristic. I think that the more important part is to choose which variable to start backtracking than using the least-constraining value heuristic, because choosing not efficient variable could result in very long time to backtrack. Therefore, the second experiment had minimum effect on the time performance than other experiments did. The implemented sudoku solve worked pretty well I think, and I learned how backtracking would be used to solve this kind of problem. I used to enjoy solving a sudoku puzzle since I was in elementary school, and it was truly amazing that how computers can solve the puzzles within 10 seconds.