

## Project 2 report Sudoku

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## 1 Statistics and Implementation

**Q4:** Sudoku has been implemented with the help of backtracking in this problem. The running time results of the 10 puzzles have been listed in the following table. The average of the running times is coming to be 1.2005281 sec and the variance of the running times is coming out to be 1.304 sec

Puzzle number	Running time
1	5.42978
2	0.589
3	0.1026
4	0.0647
5	1.811
6	0.2608
7	2.5009
8	0.9748
9	0.09899
10	0.172711

**Q5:** Sudoku has been implemented with the help of . The running time results of the 10 puzzles have been listed in the following table. The average of the running times is coming to be 0.202 sec and the variance of the running times is coming out to be 0.073 sec

Puzzle number	Running time
1	0.057
2	0.182
3	0.172
4	0.69
5	0.716
6	0.0126
7	0.0097
8	0.075
9	0.0546
10	0.0533

## 2 Critical Analysis

The following observations and inferences can be made from the statistics.

1. The running time of solving Sudoku in Problem 5 has been decreased considerably when compared to Problem 4. This has been because many invalid assignments of puzzle have been pruned out in Problem 5 instead of searching all invalid assignments for the puzzle.
2. If we propagate the constraints on the initial input by exploiting the known values the search problem further reduces and we get much faster results.