CSL 452 - Artificial Intelligence

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Lab 3

Q.1) Sudoku Solver Using CSP

Analysis: The performance has been analyzed on the basis of the total search time requirement for a particular Sudoku Puzzle and the number of backtracks which are required to perform the complete solution.
The method that was used is that for all the inputs provided to the solver, it will create the start and end times for each sudoku and add up the times of various such sudokus. The average of this time is then taken to determine the average performance of the algorithm over a range of sudoku puzzles. Similar approach is taken for the number of backtracks. The summarized average data is as shown below. (A few algorithms take a very long time to run due to their implementation)
The process takes a very long time so for checking only a few cases may be checked for comfort.

Now the performances of the algorithms is as follows:

Algorithm	Average Time Taken (in seconds)	Average BackTracks (number of steps)
BS	24.09	1055506
BS-I	9.50	252865
BS-II	109.96	33906
BS-FC	184.28	22525

The code can be run as:
python BS.py p.txt, python BS-I.py p.txt, python BS-II.py p.txt, python BS-FC.py p.txt