



The graph demonstrates a notable time difference between using the First Available (FA) and Minimum Remaining Values (MRV) heuristics. FA, which selects the first variable with a domain greater than one, experiences prolonged runtime because it may inadvertently choose a variable with a large domain. This can lead to a scenario where the domain of a variable is reduced to zero during the search, necessitating backtracking and restarting.

On the other hand, MRV, which prioritises variables with the smallest domains, proves more efficient. By selecting variables with smaller domains first, the likelihood of encountering domains reduced to zero diminishes. Consequently, the number of calls to the backtracking search method is significantly reduced, resulting in the observed faster solving time for MRV.

To provide context, the total time taken by MRV to solve the 95 Sudoku puzzles was 14.24 seconds, while FA took 169.76 seconds. This emphasises the critical role of heuristics in optimising constraint satisfaction problem-solving algorithms. The choice of heuristics, such as variable selection strategies, can profoundly impact the algorithm's efficiency.