LOVELY PROFESSIONAL UNIVERSITY

School of Computer Science Engineering
Lovely Professional University, Jalandhar

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Summer Term Project

Sudoku Solver Visualizer

REPORT BY: -

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Acknowledgement

I would like to express my sincere gratitude to Rahul Sir, our trainer, for providing us with the opportunity to participate in the Summer Term Training and Project. His guidance, support, and expertise have been invaluable throughout our journey.

I would also like to extend my appreciation to the university for organizing this training program and for giving us the chance to work on a real-world project like the Sudoku Solver Visualizer

This experience has been immensely beneficial in enhancing our skills and knowledge in computer science and web development.

The training sessions conducted by Rahul Sir have been informative, engaging, and have provided us with a solid foundation in various technologies and best practices. His patience, dedication, and willingness to share his knowledge have been truly commendable.

Through this project, we have gained hands-on experience in building a web application from scratch, utilizing modern tools and frameworks. The step-by-step visualization of the Sudoku Solver Visualizer and the ability to control the speed of the algorithm have been particularly interesting aspects of the project.

We are grateful for the opportunity to work on this project and to learn from Rahul and the university. This experience has been a valuable addition to our academic and professional growth, and we look forward to applying the skills and knowledge gained here in our future endeavours.

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INDRODUCTION

The Sudoku Solver Visualizer is a web application that allows users to visualize the solutions to the classic Sudoku Solver problem. The purpose of this application is to provide an interactive and educational tool for understanding and exploring this fundamental computer science problem.

General Description

- *Perspectives:*

  The Sudoku Solver Visualizer is a standalone web application that can be accessed through a web browser. It provides a user-friendly interface for interacting with the Sudoku Solver and visualizing its solutions.

- *Functions:*

  The key functions of the Sudoku Solver Visualizer include:

  I. Visualizing the grid and the placement of numbers
  II. Providing step-by-step visualization of the algorithm as it searches for solutions
  III. Allowing users to control the speed of the visualization
  IV. Displaying the number .
  V. Validating user input and providing feedback on invalid values

➢ *Characteristics:*

The Sudoku Solver Visualizer has the following characteristics:

I. Responsive design that adapts to different screen sizes and devices
II. Interactive controls for adjusting the visualization speed
III. Ability to display multiple solutions for a given Sudoku .
IV. Clear and intuitive user interface for a seamless experience

Specific Requirements

The key requirements for the Sudoku Solver Visualizer
Ability to accept user input for the value of N

- Validation of user input to ensure valid values
- Visualization of the grid and the placement of numbers.
- Step-by-step animation of the algorithm's progress
- User controls for adjusting the visualization speed
- Display of the number .
- Responsive design to accommodate different screen sizes

Design Constraints

The design constraints for the Sudoku Solver Visualizer:

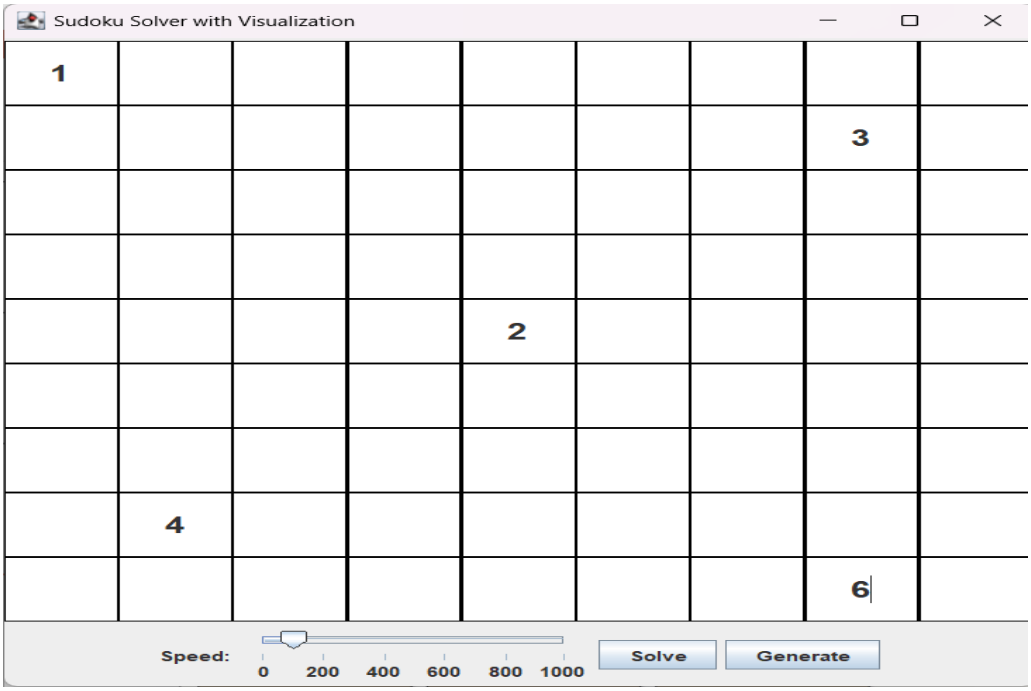
I. User Experience: Ensure a clear and intuitive user interface that is easy to navigate.
II. Performance: Optimize the application for smooth performance, especially during the visualization of multiple solutions.
III. Accessibility: Ensure the application is accessible on various devices and screen sizes.
IV. Scalability: Allow the application to handle large values of N without significant performance degradation.

GitHub and website Link

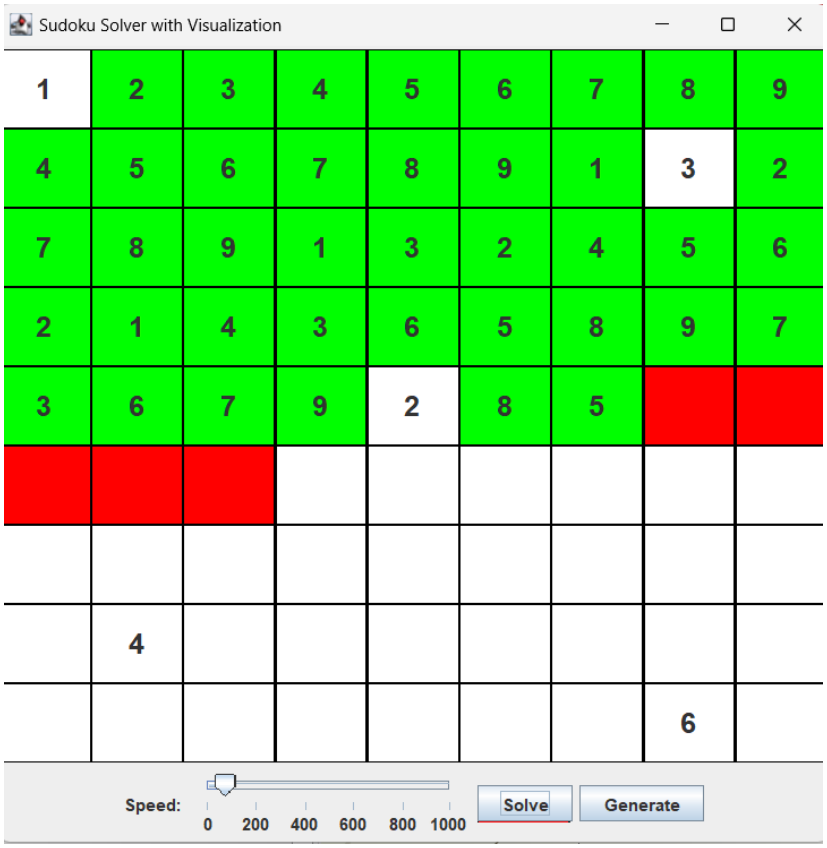
GitHub:
https://github.com/HARSHITARAJORIA/SudokuSolverVisualizer

Screenshots:

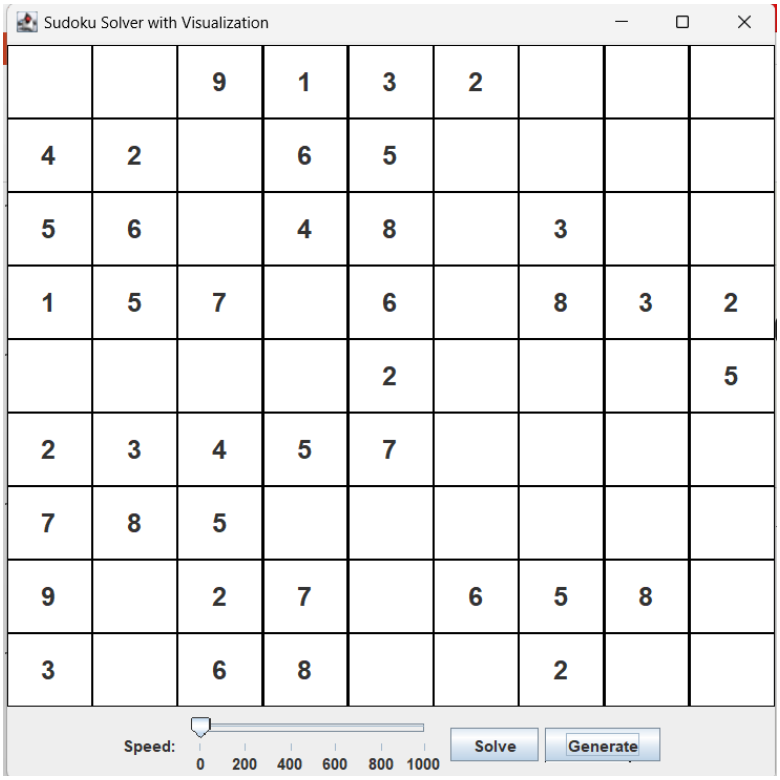
manually entering values:-



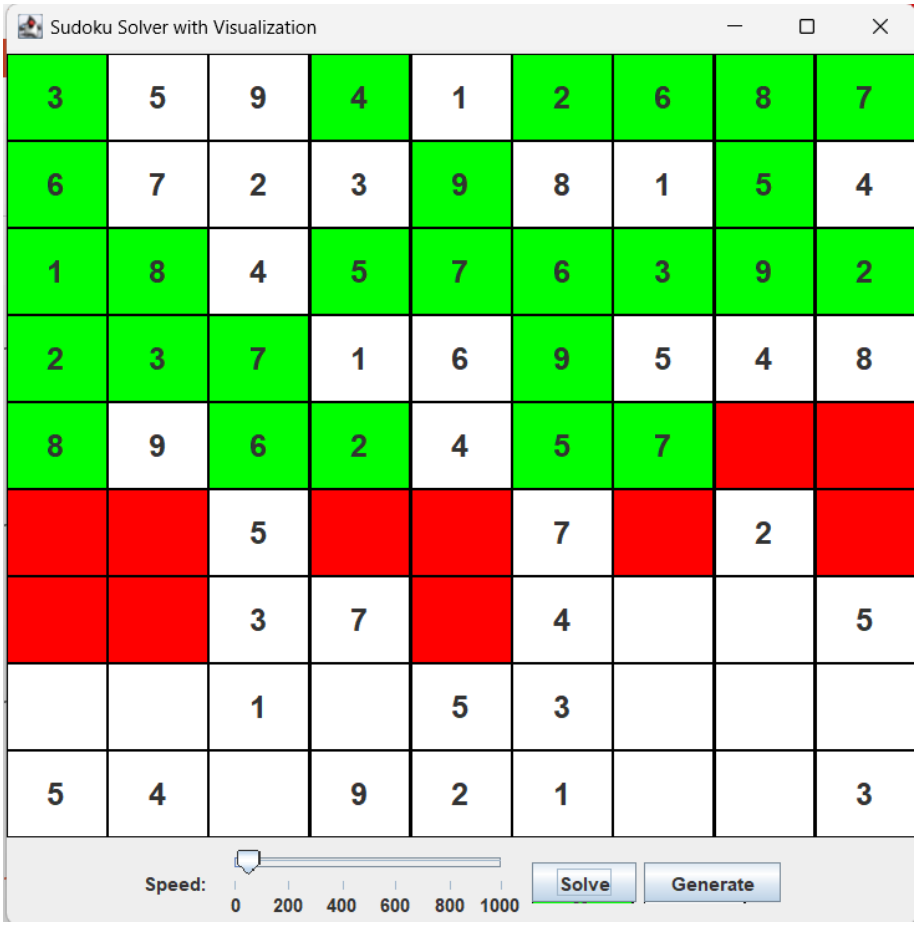
Solving Sudoku:-



Already generated grid:-



Solving Sudoku:-



Conclusion

- In conclusion, the Sudoku Solver Visualizer project has provided us with invaluable experience in web development and algorithm visualization. We have learned to build a responsive and interactive web application from scratch, applying modern tools and frameworks.
- We extend our heartfelt gratitude to Rahul Sir for his guidance and to the university for this opportunity. The skills and knowledge gained from this project will significantly contribute to our academic and professional growth.

End of the Report

Thankyou!!