LOVELY PROFESSIONAL UNIVERSITY

School of Computer Science Engineering
Lovely Professional University, Jalandhar

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Summer Term Project

N Queen 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 N-Queen Visualiser. 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 N-Queen problem 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.

Table of Content

INDRODUCTION

The N-Queen Visualiser is a web application that allows users to visualize the solutions to the classic N-Queen 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 N-Queen Visualiser is a standalone web application that can be accessed through a web browser. It provides a user-friendly interface for interacting with the N-Queen problem and visualizing its solutions.

- *Functions:*

  The key functions of the N-Queen Visualiser include:

  I. Visualizing the chessboard and the placement of queens
  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 of possible solutions for a given N
  V. Validating user input and providing feedback on invalid values

- *Characteristics:*

  The N-Queen Visualiser 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 N-Queen problem
  IV. Clear and intuitive user interface for a seamless experience

Specific Requirements

The key requirements for the N-Queen Visualiser include:

- Ability to accept user input for the value of N
- Validation of user input to ensure valid values
- Visualization of the chessboard and the placement of queens
- Step-by-step animation of the algorithm's progress
- User controls for adjusting the visualization speed
- Display of the number of possible solutions for a given N
- Responsive design to accommodate different screen sizes

Design Constraints

The design constraints for the N-Queen Visualiser include:

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.

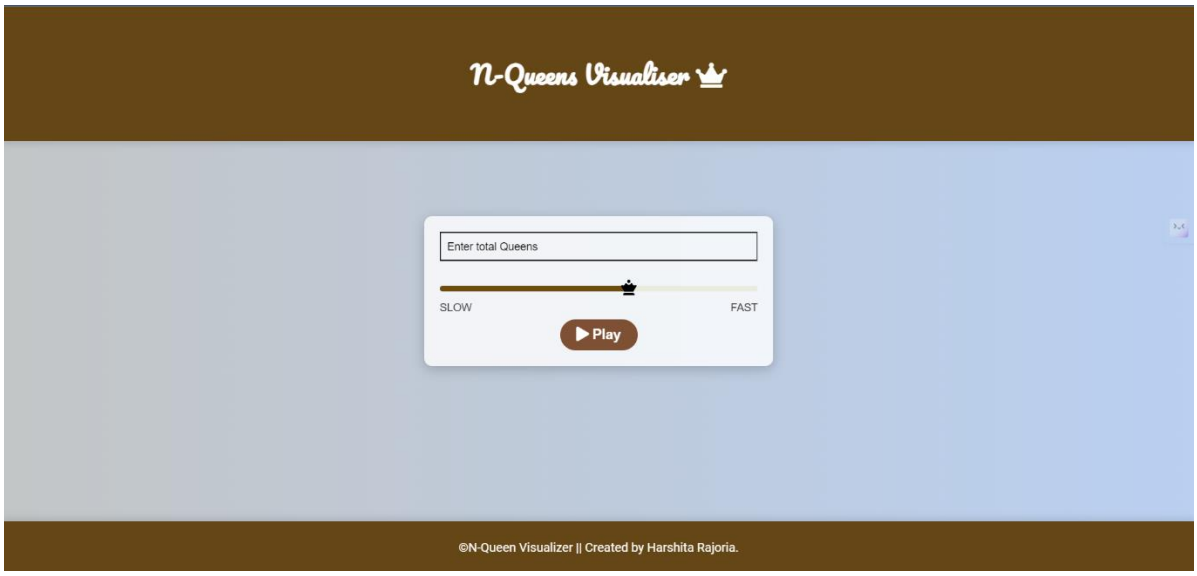
GitHub and website Link

GitHub: https://github.com/HARSHITARAJORIA/N-Queen-Visualizer

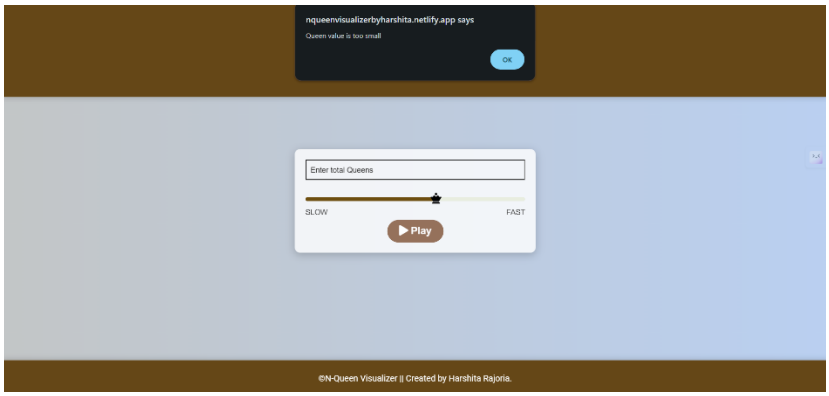
Website: https://nqueenvisualizerbyharshita.netlify.app/

Screenshots:

Inteface:

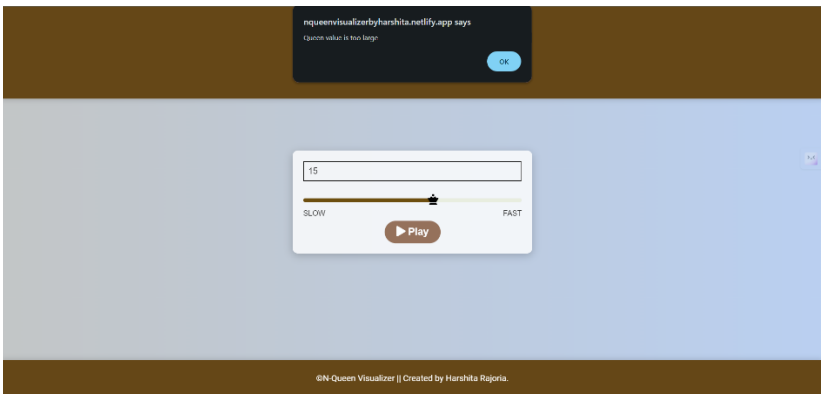


Showing Constraints:

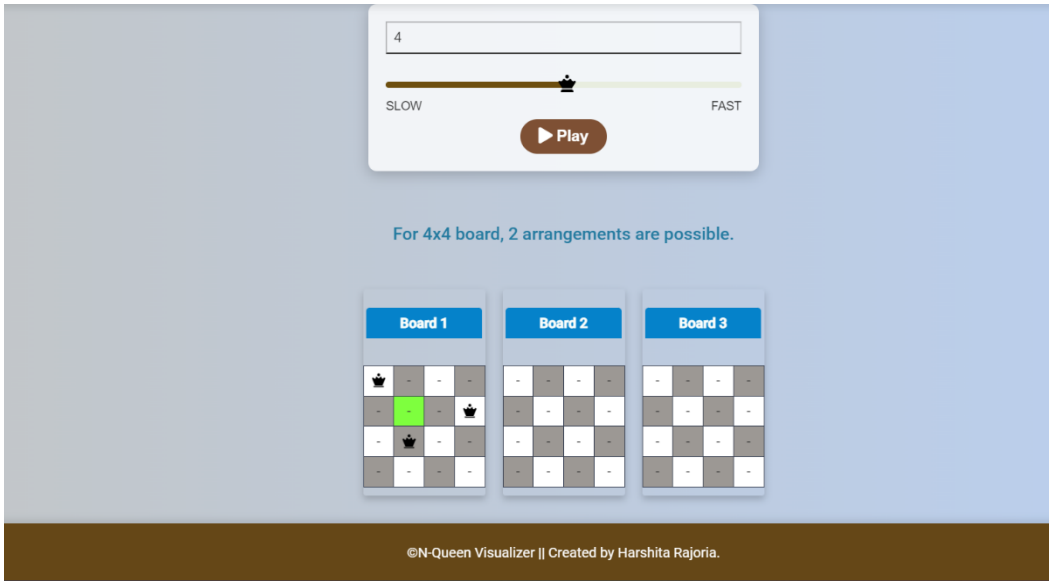


User Input is too Small

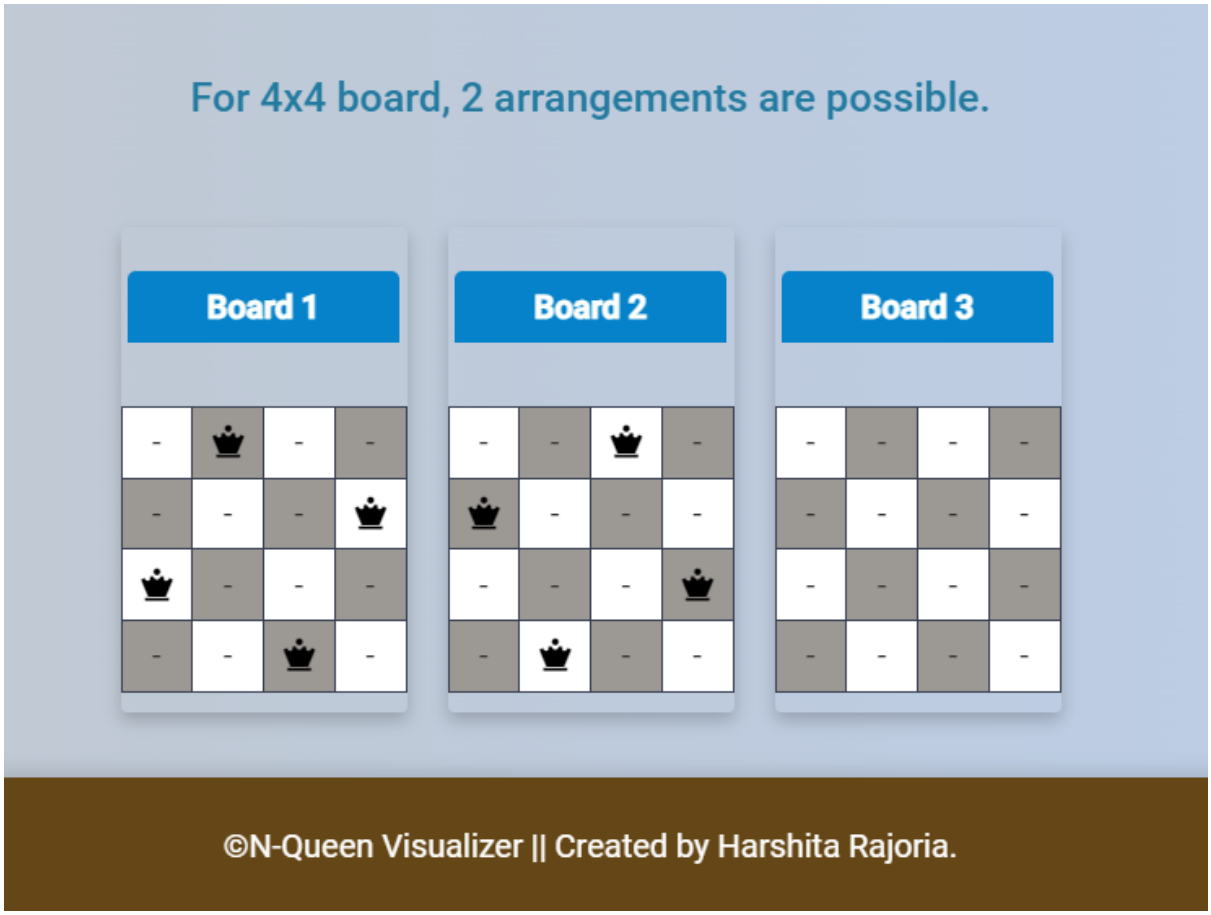
User Input is too Large



Valid input and playing:



Showing backtracking and all the possible solutions:



End of the Report

Thankyou!!