

A Project Synopsis

on

“Sudoku Game”

IN

COMPUTER SCIENCE AND ENGINEERING BY

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Sudoku Game

Introduction-

Sudoku is a popular logic-based number puzzle game that involves filling a 9x9 grid with numbers from 1 to 9, with each number appearing only once in each row, column, and 3x3 sub-grid. The goal of the game is to complete the grid by filling in all the blank spaces with the correct numbers.

A mini project for a Sudoku game typically involves developing a graphical user interface (GUI) that allows users to interact with the game and solve Sudoku puzzles. The game may also include features such as generating new puzzles, checking for errors in the user's solution, and providing hints and solutions to help the user solve the puzzle.

The Sudoku game may be implemented using a programming language such as Python, Java, or C++. The game typically involves using algorithms and data structures such as backtracking and arrays to generate and solve puzzles, store user input, and check for errors.

Overall, a Sudoku game mini-project is a great way for beginners to gain experience in programming and problem-solving while providing a fun and engaging game for users to enjoy.

Literature Survey/Review Of Existing System-

- 1) Sudoku is a popular game that has been implemented in various forms and platforms, including mobile apps, websites, and desktop applications. A literature survey of existing systems reveals several notable implementations of Sudoku games.
- 2) One popular implementation is the Sudoku game developed by Peter Norvig, a well-known computer scientist and author of the book "Artificial Intelligence: A Modern Approach." Norvig's implementation uses a combination of constraint propagation and search algorithms to generate and solve Sudoku puzzles. The game is available on his website and has been used as a benchmark for other Sudoku solvers.
- 3) A mobile app implementation of Sudoku is the "Sudoku Free" game developed by Finger Arts. The app includes various difficulty levels, automatic note-taking, and the ability to undo and redo moves. The game also includes a global leaderboard for players to compete with each other.
- 4) In addition to these implementations, numerous other Sudoku games are available on various platforms, each with unique features and design choices. Overall, existing systems show that Sudoku can be implemented using a variety of techniques and technologies, and can provide an engaging and challenging game for players of all skill levels.

Problem Specification-

The main problem with existing Sudoku games is that they lack certain features that could enhance the user experience. For instance, some games may not offer enough difficulty levels, or may not have the ability to check for errors in the user's solution. Additionally, some existing games may not have an intuitive user interface, making it difficult for new users to navigate and understand the game.

Proposed System-

To address these issues, the proposed system for a Sudoku game will include the following features:

Multiple difficulty levels: The game will offer multiple levels of difficulty, ranging from easy to hard, to accommodate players of different skill levels.

Error checking: The game will check for errors in the user's solution in real time and highlight any mistakes, helping the player identify and correct errors quickly.

Hint system: The game will provide hints to help players solve difficult puzzles, making the game more accessible and enjoyable for players of all skill levels.

Intuitive user interface: The game will have a clean and user-friendly interface that is easy to navigate and understand, ensuring that new users can quickly learn how to play the game.

Responsive design: The game will be designed to be responsive to different screen sizes, making it playable on desktops, laptops, tablets, and mobile devices.

Multiple game modes: The game will offer different game modes such as timed games, multiplayer mode, and arcade mode, to provide variety and keep the gameplay interesting.

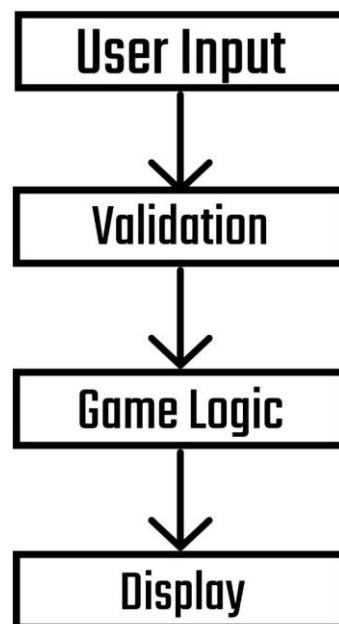
Hardware Requirements-

- 1) Processor: Intel Pentium or equivalent
- 2) RAM: 512 MB
- 3) Hard Disk Space: 50 MB
- 4) Graphics: Any graphics card with DirectX 9.0 or higher.

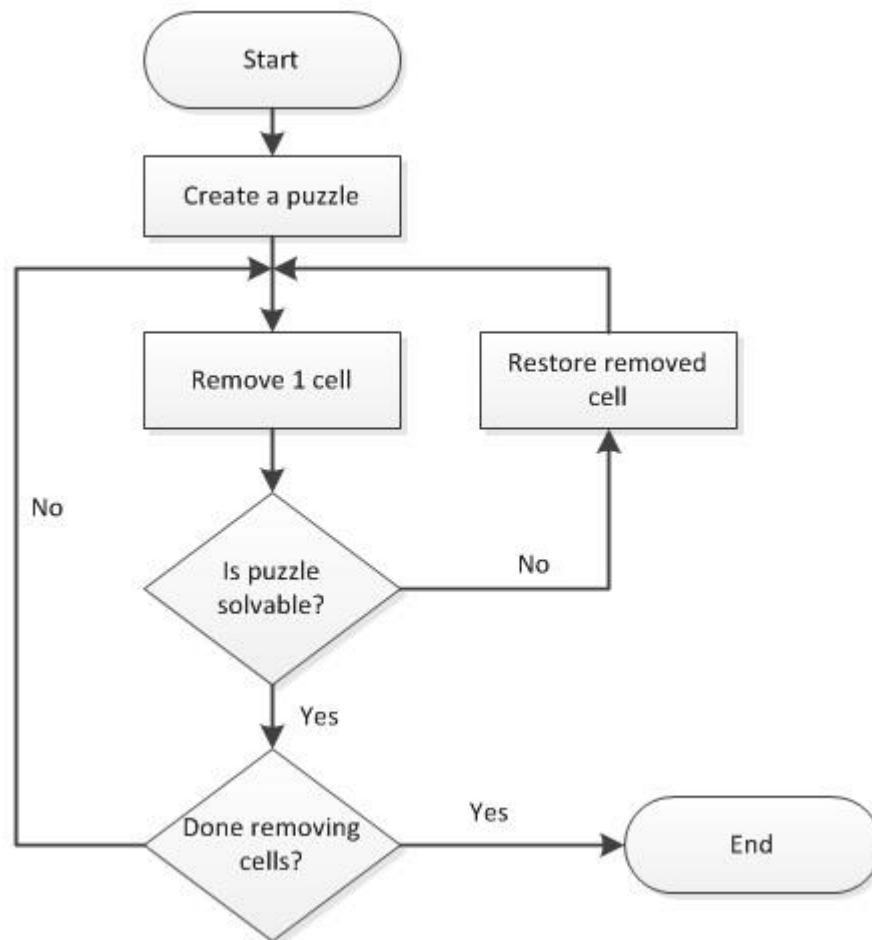
Software Requirements-

- 1)Operating System: Windows 7 or higher, or macOS 10.9 or higher
- 2)Programming Language: Python, Java, or C++
- 3)Integrated Development Environment (IDE): PyCharm, Eclipse, or Visual Studio
- 4)Libraries: Tkinter (for Python), Swing (for Java), or Qt (for C++)
- 5)Database: SQLite or MySQL (for storing game data)
- 6) Mobile Platform: Android or iOS
- 7)Mobile Development Framework: Flutter, React Native, or Native Script
- 8)Integrated Development Environment (IDE): Android Studio or Xcode
- 9)Libraries: Dart (for Flutter), React Native (for React Native), or TypeScript (for Native Script)

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Flow Chart-



Algorithm –

Step 1: - Start.

Step 2: - Generate a Sudoku puzzle.

Step 3: - Display the Sudoku puzzle.

Step 4: - The player selects a cell.

Step 5: - Check if the cell is empty.

Step 6: - If yes, the Player inputs the number.

Step 7: - Check if the number is valid for that row and column.

Step 8: - If yes, Check if the number is valid for that square.

Step 9: - If yes, Fill in the cell with the number.

Step 10: - Check if the puzzle is complete.

Step 11: - If yes, the Player wins.

Step 12: - If no, Continue the game.

Step 13: - If the row, column, or square number is invalid, the Player inputs another number.

Step 14: - End Game.

REFERENCE: -

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[cppreference.com](https://www.cppreference.com)

[sudoku-game · GitHub Topics · GitHub](#)

The C++ Standard Library: A Tutorial and Reference