A BRAIN TEASER GAME : THE MIND GAME APP

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Abstract : The Mind game app is a brain teaser which is created into a 4x4 number grid, which is comprised of three levels: easy, medium, and difficult. There should be a total of 4numbers in each column, with no repeats. Only one solitary solution to each puzzle is allowed. One of the primary benefits of playing this game is its positive impact on cognitive function. The game requires players to think critically and logically, which contributes to improving memory, concentration, and mental agility.

1. Introduction:

The Mind game app is a brain teaser created into a 4x4 number grid, comprised of three levels: easy, medium, and difficult. There should be no repeats in each row, and all the numbers should be 1-4. There should be a total of 4 numbers in each column, with no repeats. Each 4x4 quadrant should have numbers 1-4, with no repeats. Some squares will be pre-filled as "given" to provide a starting point. Only one solitary solution to each puzzle is allowed. One of the primary benefits of playing this game is its positive impact on cognitive function. The game requires players to think critically.

and logically, which contributes to improving memory, concentration, and mental agility. These benefits can be especially useful for older adults who want to keep theirminds sharp and active. puzzles can also help reduce stress and anxiety. The act of completing a puzzle requires focus and attention, which can help calm the mind and promote relaxation. As a result, playing the game can be a great way to unwind and de-stress after a long day. Overall, it is a fun and challenging game that has many practical benefits. Whether you are looking to improve cognitive function, reduce stress, or boost problem-solving skills, this activity is worth considering and logically, which contributes to improving memory, concentration, and mental agility.

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2. Literature Review:

The programming languages commonly used for implementing the Sudoku game are C, C++, and Java. Backtracking is the primary algorithm used in Sudoku to solve the puzzle. Generally, the pencil and paper algorithm is used in Sudoku. Sudoku puzzles come in a variety of sizes, including 9x9,4x4,6x6,12x12,16x16 sizes. The use of mind game app necessitates prolonged usage of digital devices, thereby increasing screen time. This prolonged screen time is associated with potential negative health effects that may arise from excessive device consumption, such as eye strain, sleep disruption, and increased risk of obesity, among others. Furthermore, screen time mayalso contribute to a decrease in physical activity, as people would be more involved with the gadgets. Also, the scope of the app is often limited, as they tend to focus on specific types of games and challenges. While they can indeed be helpful for enhancing certain cognitive skills, they may not provide a comprehensive approach tobrain training

3. Problem Statement:

The Sudoku Game Python Code was created using Python Programming, and it is one of the most popular puzzle games of all time. The objective of the Python Source Code for the Sudoku Game is to fill a 4 range chart (i.e. a 4x4 grid) with numbers so that each row, column, and 2 range contains all the numbers between 1 and 4. We use a backtracking algorithm, the backtracking algorithm works by iteratively trying out different digit combinations and undoing any incorrect choices until a valid solution is found. Implementation of random number generator to fill in few 4x4 grids.
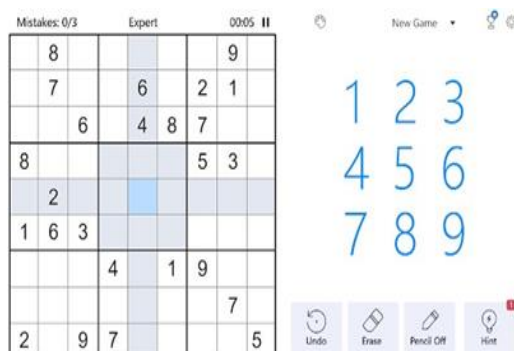
4. Methodology:

The architecture of Mind Game app can be divided into the following main components: the User Interface (UI) layer and the Game Logic layer. The user interface layer is in charge of showing the user the Sudoku game and managing user interactions. The game window, grids, buttons, input fields, and other graphic aspects are among its constituents. User input events like mouse clicks and keystrokes are recorded by the UI layer and sent to the Game Logic layer for processing.
Additionally, it gets updates from the Game Logic layer and modifies the display accordingly to present the user with the game's current status. A target platform-

Tkinter also supports layout managers, such as grid, pack, and place, which help in organizing and aligning GUI elements.

5. Experimental Results:

The results of Mind Game app depend on the specific features and functionalities implemented within the application. Specifically in this, The Sudoku app allows users to solve Sudoku puzzles manually by filling in the missing numbers in the grid. The app may provide features error checking, and highlighting of incorrect values to assist the user in solving the puzzle. One of the key strengths of the Sudoku app is its user- friendly interface. The visually appealing design, clear grid layout, and intuitive controls make

appropriate framework or library, such as Pygame or Tkinter, can be used to create the UI layer. Tkinter is a built-in Python library used for creating graphical user interfaces(GUIs). It provides a set of tools and widgets that enable developers to design and build interactive applications with ease. Tkinter is cross-platform, meaning that applications developed with Tkinter can run on different operating systems without requiring major modifications. The usage of Python and Tkinter together allows developers to create desktop applications with intuitive interfaces and interactive
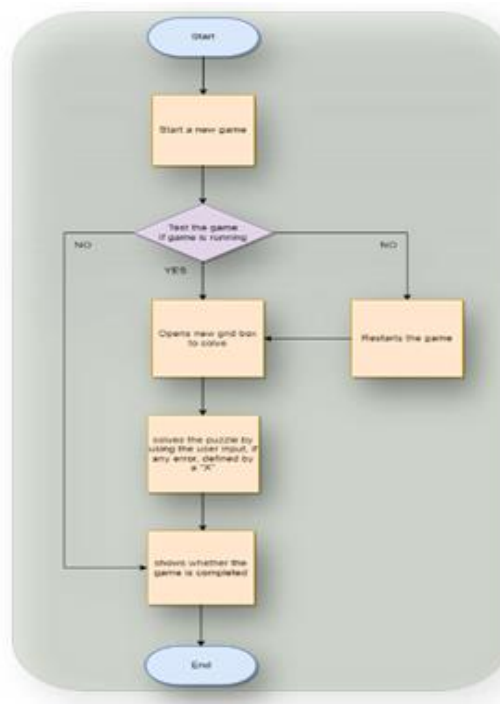
functionalities. In addition to its ease of use, Tkinter offers customization options to create visually appealing and responsive interfaces. Developers can apply different styles, fonts, colors, and themes to match the desired look and feel of the application.
it easy for users to navigate and interact with the puzzles. The app offers various input methods, such as selecting cells and entering numbers using a keyboard. The app can verify the correctness of a user-entered solution or check if a generated solution is valid. It ensures that the solution adheres to the Sudoku rules and does not violate any constraints. Time tracking adds an additional element of challenge and competition to the Sudoku app. Users can strive to improve their solving speed and aim for faster completion times. The app records and displays high scores or completion times, allowing users to compare their performance with others and fostering a sense of achievement. The app include a timer that tracks the time taken by the user to complete a puzzle. This feature allows users to challenge themselves to solve puzzles within a specific time frame or compete with others for faster

completion times. The Sudoku app detects when the user has successfully completed a puzzle. It verifies the correctness of the solution and provides a congratulatory message.
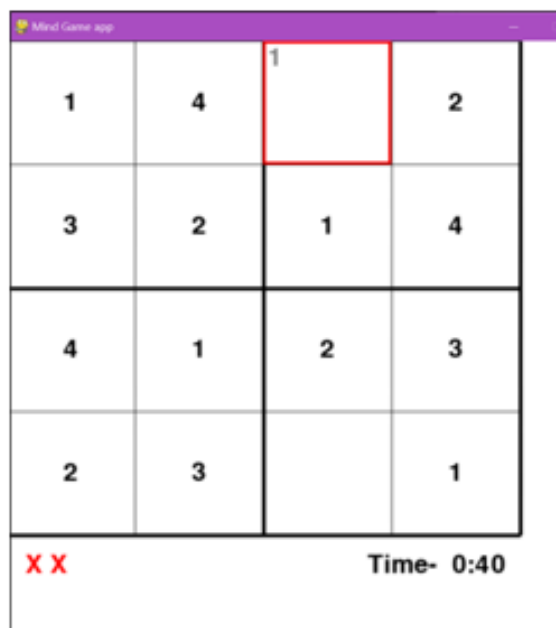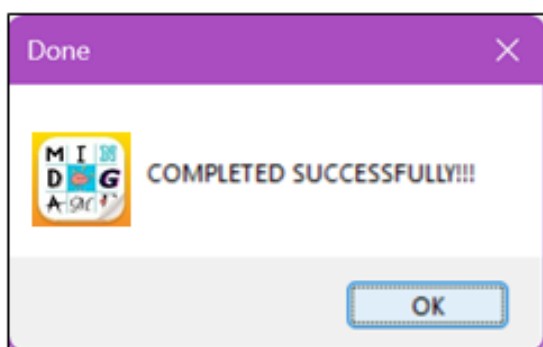

Fig - 1

Fig-2

6. Conclusion:

In conclusion, the Mind Game app provides an engaging and challenging experience for puzzle enthusiasts. With its puzzle generation, solving capabilities, and validation mechanisms, the app offers users a platform to test their logical thinking and problem-solving skills. The app's architecture ensures a smooth user experience, with features like time tracking, high scores, and the ability to save and resume games. Whether users are looking for a casual brain-teaser or a competitive challenge, the app offers a wide range of difficulty levels to cater to different skill levels. Overall, the mind game app is a reliable and enjoyable companion for Sudoku lovers, providing endless hours of entertainment and mental stimulation.

7. Future Work:

The app's future development will be able to improve this gaming even further. It may also be enhanced with features like music, many levels, etc. The app may be further extended utilising the Kivy framework to turn them into apks, making it accessible for the many people across the world and also available for mobile devices. By leveraging Pygame for graphics and event handling and Tkinter for message boxes, you can create a user-friendly interface and implement Sudoku rules and logic. For Android apps, it can be uploaded to the Google Play Store, while iOS apps can be submitted to the Apple App Store. App store guidelines and requirements must be followed to ensure the app meets the necessary criteria for distribution. After deployment, app maintenance and updates are crucial to keep the app relevant and functional. User feedback and analytics can help identify areas for improvement and new features to be added. Regular updates addressing bug fixes, security patches, and compatibility with new devices and operating systems are essential to provide a seamless user experience and retain user engagement.

1. References:

- Kelly, S. (2016a). Basic Introduction to PyGame. In Apress eBooks (pp. 59– 65). https://doi.org/10.1007/978-1-4842-2517-2_9

- Summerfield, M. (2010). Programming in Python 3: A Complete Introduction to the Python Language. Addison-Wesley Professional.

- Moore, A. D. (2021). Python GUI Programming with Tkinter: Design and build functional and user-friendly GUI applications. Packt Publishing Ltd.

- Moore, A. D., & Harwani, B. M. (2019). Python GUI Programming - A Complete Reference Guide: Develop responsive and powerful GUI applications with PyQt and Tkinter. Packt

Publishing Ltd.

- Python Simplified. (2020, October 30). Create a GUI app with Tkinter - Stepby Step Tutorial [Video]. YouTube. https://www.youtube.com/watch?v=itRLRfuL_PQ

- Tech With Tim. (2019, April 6). Python Sudoku Solver Tutorial p.3 - Buildinga GUI (with pygame) [Video]. YouTube. https://www.youtube.com/watch?v=_Z9Mz2V-Mig

- GeeksforGeeks. (2023, May 15). Algorithm to Solve Sudoku Sudoku Solver. https://www.geeksforgeeks.org/sudoku-backtracking-7/