RAJALAKSHMI
ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY, Chennai

CS19611 - MOBILE APPLICATION DEVELOPMENT PROJECT REPORT

PUZZLEMANIA: BRAIN TEASER CHALLENGE

Submitted by

JANANI J 220701097

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RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR

THANDALAM

CHENNAI-602 105

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RAJALAKSHMI ENGINEERING COLLEGE

CHENNAI – 602105

BONAFIDE CERTIFICATE

Certified that this project report titled **"PUZZLEMANIA: BRAIN TEASER CHALLENGE"** is the bonafide work of **Janani J (220701097)**, who carried out the work under my supervision. Certified further that to the best of my knowledge, the work reported herein does not form part of any other thesis or dissertation based on which a degree or award was conferred earlier.

SIGNATURE

DR. P. KUMAR

Head of the Department

Computer Science and Engineering

Rajalakshmi Engineering College

Chennai – 602105

SIGNATURE

Dr. V. KARTHICK

Associate Professor

Rajalakshmi Engineering College

Chennai - 602105

Submitted to Project and Viva Voce Examination for the subject

CS19611 –Mobile Application Development Laboratory held on_____.

Internal Examiner

External Examiner

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JANANI J (220701097)

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CHAPTER 1

ABSTRACT

PUZZLEMANIA: BRAIN TEASER CHALLENGE is an Android-based mobile game that challenges users to arrange a shuffled 3x3 grid of numbered tiles into the correct order. Once the "Shuffle" button is pressed, the numbers are mixed randomly and a timer begins, recording the time taken to complete the puzzle. Each move made by the player is also counted, encouraging players to think critically and plan strategically to solve the puzzle in the fewest moves and shortest time. The clean and minimalistic interface ensures smooth gameplay, making it accessible for players of all ages.

This project is developed using Android Studio and focuses on enhancing logical reasoning, memory retention, and quick decision-making skills. By combining entertainment with mental exercise, the game offers a refreshing way to improve cognitive abilities. The tracking of moves and time provides players with measurable goals, motivating continuous improvement and replayability. Overall, PUZZLEMANIA delivers a fun, interactive, and challenging experience designed to sharpen the mind while providing hours of engaging gameplay.

CHAPTER 2

INTRODUCTION

2.1 GENERAL

PUZZLEMANIA: BRAIN TEASER CHALLENGE is an engaging mobile application designed to offer a digital version of the classic sliding number puzzle. Developed using Android Studio and Java, the app presents users with a 3x3 grid of numbered tiles that must be rearranged in order after shuffling. A timer and move counter add an extra layer of challenge, encouraging users to solve the puzzle as efficiently as possible while enhancing their problem-solving and strategic thinking skills.

2.2 OBJECTIVE

- To develop a mobile app that challenges users to solve a shuffled puzzle grid.
- To integrate timer and move-tracking features for enhanced competition and motivation.
- To provide an intuitive and smooth user interface with responsive design and real-time feedback.
- To encourage logical thinking, planning, and memory skills through gameplay.

2.3 EXISTING SYSTEM

Existing puzzle games often lack interactive performance tracking or intuitive controls for casual users. Many applications provide basic grid puzzles without integrated timers, move counters, or a smooth shuffling mechanism, which can reduce the excitement and challenge during gameplay. PUZZLEMANIA aims to fill these gaps by offering a seamless, rewarding, and mentally stimulating experience.

CHAPTER 3

LITERATURE SURVEY

Several mobile applications currently exist that focus on number puzzle games, such as "15 Puzzle" and "Sliding Puzzle Game." These apps offer basic gameplay where users arrange shuffled numbers into sequential order. However, many lack:

- Real-time tracking of moves and time.
- An intuitive and clean user interface optimized for quick interactions.
- Smooth animations and responsive tile movements.

Research in mobile game development highlights the importance of responsive controls, visually appealing interfaces, and performance tracking features to improve user engagement and satisfaction. Many existing puzzle apps either do not track the number of moves or time taken, limiting competitiveness and the player's motivation to improve. Tile movement in some apps is either sluggish or abrupt, affecting the overall gaming experience. Moreover, some applications are cluttered with excessive ads or complex designs that detract from the simple and focused gameplay expected in a puzzle game.

Additionally, studies show that adding performance metrics like time taken and moves used increases replayability, as players aim to beat their previous records. Good puzzle games also integrate smooth shuffling algorithms to ensure fair, solvable configurations, which is missing in several older apps. Offline accessibility and lightweight design are increasingly demanded by users for casual gaming. PUZZLEMANIA is designed to address these gaps, offering a smoother, more strategic, and user-friendly puzzle experience.

CHAPTER 4

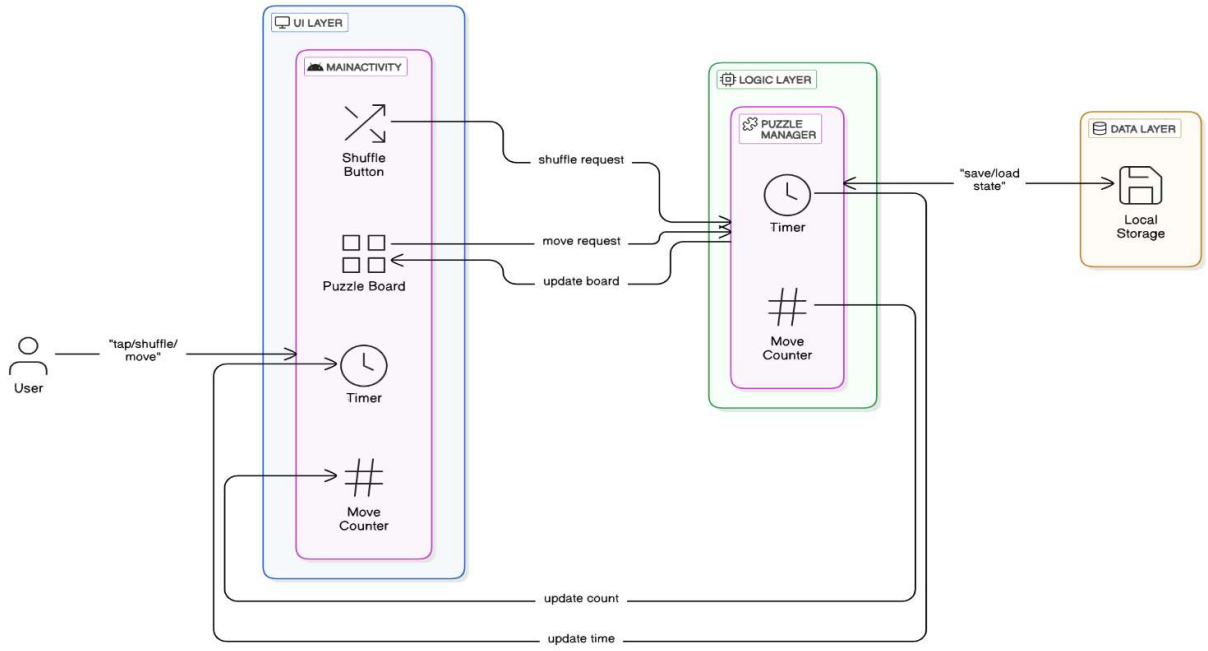
PROPOSED SYSTEM

4.1 SYSTEM OVERVIEW

PuzzleMania: Brain Teaser Challenge improves upon existing puzzle games by offering a clean, interactive, and competitive number puzzle experience with real-time move and time tracking. The app ensures smooth tile movements, randomized but solvable shuffling, and a simple, intuitive interface for enhanced user engagement and mental exercise.

4.2 SYSTEM ARCHITECTURE

- User launches the app.
- Clicks the "Shuffle" button to randomize the puzzle tiles.
- Timer starts automatically after shuffling.
- User rearranges the tiles by sliding them into the correct order.
- System continuously tracks and displays the number of moves and elapsed time.
- Game ends when the puzzle is solved correctly, and final results are shown.



(Fig 3.1 System Architecture)

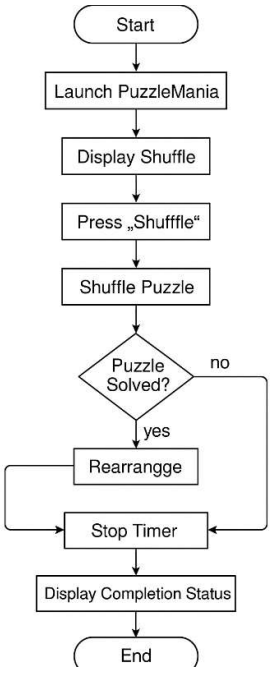
CHAPTER 5

MODULE DESCRIPTION

5.1 MODULES

- **Puzzle Shuffle Logic:** Randomized shuffling of puzzle pieces, followed by a countdown timer that tracks the time taken to complete the puzzle.
- **Timer Module:** A countdown timer that begins once the shuffle action is initiated, challenging the user to complete the puzzle within a time limit.
- **Puzzle Solving Feedback:** Visual feedback that indicates the puzzle's completion status and provides time-based rewards or tips for improvement.
- **UI/UX Module:** Responsive, intuitive material design layout that ensures a smooth user experience with easy navigation and appealing graphics.

5.2 ACTIVITY DIAGRAM



(Fig 4.1 Activity Diagram)

CHAPTER 6

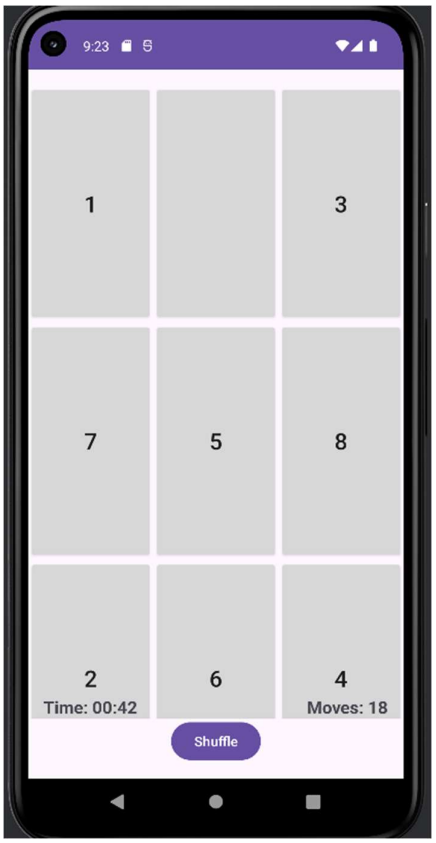
IMPLEMENTAION AND RESULTS

6.1 TOOLS USED

- Android Studio: For building the app.
- Java: For programming the game logic.
- XML: For designing the user interface.
- SQLite: For storing custom Truths/Dares.

6.2 OUTPUT SCREENSHOTS

(Fig 6.1 App Home Page)



(Fig 6.2 After Shuffle Screen)

CHAPTER 7

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

PUZZLEMANIA: BRAIN TEASER CHALLENGE offers an immersive, interactive experience for puzzle enthusiasts, blending fun with cognitive challenges. The inclusion of a timer adds an element of urgency, making it more engaging. With the ability to shuffle and solve the puzzle in a limited time, the app provides an enjoyable mental workout, and the integration of SQLite allows for storing custom Truths/Dares, further enriching the user experience.

6.2 FUTURE ENHANCEMENT

- Integrate multiplayer mode to allow users to challenge friends in real-time.
- Add background music and sound effects to enhance the game atmosphere.
- Implement a scoring system with a leaderboard to track user progress.
- Introduce different difficulty levels with more complex puzzles.
- Add a feature to customize puzzle themes and designs.

REFERENCES

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2) Mobile Game Design Best Practices (2024)
3) SQLite Documentation for Android