Memory Game Android Application Report

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1. Team Members with Roll Numbers

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2. Project Scope

The Memory Game Android application is designed to improve cognitive skills and provide entertainment. The game involves matching pairs of cards by remembering their positions, helping users enhance their memory through an engaging and interactive experience.

Key Objectives:

- To provide a fun and educational experience for users of all ages.
- To develop an intuitive and visually appealing game interface.
- To maintain smooth performance across different devices.

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3. Features

- **Dynamic Gameplay**: Shuffling and random arrangement of cards for a unique experience each time.
- **Multiple Levels**: Easy, medium, and hard levels to suit players of different skill levels.
- **Timer and Score Tracker**: Players can challenge themselves to beat the clock and achieve high scores.
- **Sound Effects and Animations**: Enhance user engagement and provide feedback on interactions.
- **Responsive Design**: Optimized for different screen sizes and resolutions.

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4. Design of the Mobile App

The app comprises three primary components:

1. **Main Menu**: Includes options to start the game, view high scores, and access settings.

2. **Game Screen**: Displays the playing grid with cards and features like a timer and a score counter.
3. **Results Screen**: Shows the user's performance summary after each game.

UI Design:

- Simple and intuitive layout for ease of navigation.
- Colourful and interactive card designs to enhance visual appeal.

Architecture:

- **Front-End**: Designed using XML layouts.
- **Back-End**: Java for game logic and interaction handling.

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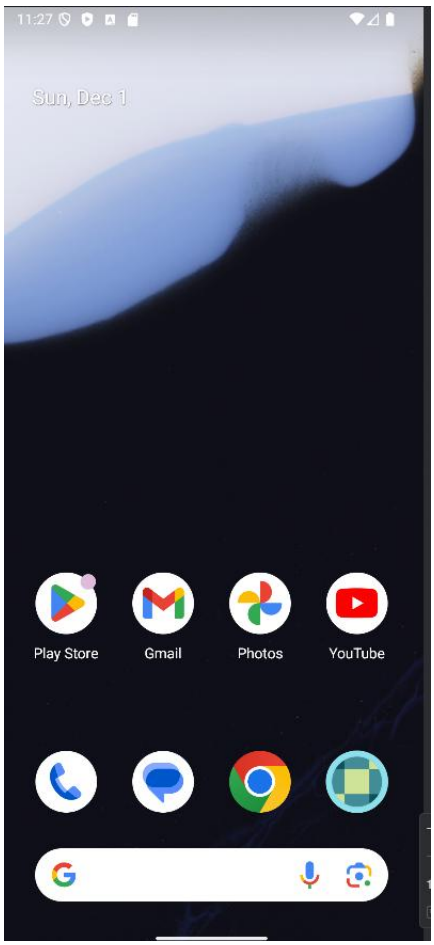
5. Screenshots of the Front End

(Include screenshots of the following screens):

1. Main Menu



2. Game Screen

3. Results Screen

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6. Code Snippets

Fragment Usage

// Example of using a Fragment to display game rules

FragmentManager fragmentManager = getSupportFragmentManager();

FragmentTransaction fragmentTransaction = fragmentManager.beginTransaction();

RulesFragment rulesFragment = new RulesFragment();

fragmentTransaction.replace(R.id.fragment_container, rulesFragment);

fragmentTransaction.commit();

Intent Handling

```
// Navigation between activities
Intent intent = new Intent(MainActivity.this, GameActivity.class);
startActivity(intent);
```

Timer Logic

```
// Timer implementation
new CountDownTimer(30000, 1000) {
   public void onTick(long millisUntilFinished) {
      timerTextView.setText("Time: " + millisUntilFinished / 1000);
   }

   public void onFinish() {
      endGame();
   }
}.start();
```

Card Matching Logic

```
// Checking for a match between two cards
if (card1.getImageResource() == card2.getImageResource()) {
   card1.setVisibility(View.INVISIBLE);
   card2.setVisibility(View.INVISIBLE);
   score += 10;
} else {
   resetCards(card1, card2);
}
```

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7. GitHub Link

GitHub Repository: Memory Game Project

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8. Future Scope

- **Advanced Levels**: Introduce more levels with increasing complexity.
- **Global Leaderboards**: Add online leaderboards to foster competition among players.
- **Enhanced Graphics**: Incorporate 3D effects and advanced animations.
- **Multiplayer Mode**: Allow users to compete against each other in real-time.
- **Power-Ups and Bonuses**: Add game mechanics to make gameplay more engaging.

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9. Conclusion

The Memory Game application delivers a compelling blend of entertainment and mental exercise. With its dynamic gameplay, user-friendly interface, and adaptability, it serves as both a fun pastime and a tool for cognitive enhancement. Future updates could expand its functionality to cater to a broader audience and provide even greater value.