ENHANCING DIGITAL GOVERNMENT AND ECONOMY
Digital Skills for Students

Final Project

Memory Card Game

Submitted By

Name: Pranto Kumar

ID: 22103021

Organizer University: Jagannath University
Venue: International University of Business, Agriculture and Technology (IUBAT)
Dept./Institute/Centre: Computer Science and Engineering (CSE)
Unique Batch Number: 03
Training Track/Course Name: Front-End Development (ReactJS)

Project Description: Memory Card Game

1. Project Overview

The **Memory Card Game** is a classic, brain-stimulating card-matching game designed to enhance short-term memory and concentration. Players are presented with a grid of face-down cards, and they must flip over two cards at a time in an attempt to find matching pairs. The goal is to match all pairs in the least number of moves and as quickly as possible.

2. Project Objective

The objective of this project is to create an interactive and visually appealing memory-based game using core web technologies. The game helps improve cognitive skills by challenging the player's memory and pattern recognition abilities in a fun and engaging way.

3. Features

1. **Card Grid Layout:** A grid of face-down cards is displayed. Clicking a card flips it over to reveal an image or symbol.

2. **Matching Logic:** Players can flip two cards at a time. If the two revealed cards match, they remain face-up; otherwise, they flip back down after a short delay.

3. **Move Counter:** The game keeps track of the number of moves the player makes.

4. **Timer:** A timer tracks how long the player takes to complete the game.

5. **Game over Screen:** When all card pairs are matched, a congratulatory message appears with the total time and move count.

6. **Responsive Design:** The layout adjusts to various screen sizes, ensuring playability across devices.

4. Technical Details

Frontend Development:

- **HTML5:** For structuring the game elements (card grid, timer, move counter, etc.).
- **CSS3:** For styling the cards, animations (like flipping), and overall layout.
- **JavaScript (ES6):** For handling the game logic — card flipping, matching, score tracking, and game resets.

Game Logic:

- **Card Setup:** A shuffled deck is generated with pairs of images or symbols.
- **Flip Animation:** Smooth animations for flipping cards using CSS transitions.
- **Match Checking:** Compare two selected cards and manage state accordingly.
- **Timer & Counter:** Track player performance with a dynamic timer and move count.

UI Elements:

- **Card Grid:** Display of shuffled cards.
- **Move Counter:** Shows how many attempts have been made.
- **Timer:** A real-time clock starts on the first move.
- **Reset Button:** Allows the user to restart the game.

5. Future Improvements

- **Leaderboard:** Track and display high scores (lowest moves or fastest times).
- **Themes:** Add customizable themes (animals, numbers, emoji's, flags, etc.).
- **Difficulty Levels:** Varying grid sizes for easy, medium, and hard modes.
- **Audio Effects:** Sounds for flipping cards, successful matches, and game completion.
- **Multiplayer Mode:** Allow turn-based gameplay between two players.

6. Conclusion

The Memory Card Game is a timeless and mentally engaging game that provides both entertainment and cognitive training. Developed using HTML, CSS, and JavaScript, this project offers a smooth, responsive, and enjoyable user experience. It not only demonstrates front-end development skills but also provides a foundation for future improvements and more advanced game features.

This project will be fully responsive, ensuring accessibility for a wide range of devices. Furthermore, additional features and improvements can be added over time, making the game more enjoyable and competitive for users.