

1 Project Title

C++ Implementation of the MMemory MatchCard Game

2 Objective

This project focuses on creating a C++ **console application** to implement the MMemory Matchcard game, using object-oriented programming principles. The game challenges players to find matching pairs of cards from a shuffled deck. Players take turns flipping cards to reveal their values, aiming to collect as many matching pairs as possible.

3 Project Overview

The *Memory Match* game is a two-player card game where each player tries to match pairs of cards from a shuffled deck laid out in a grid. On each turn, a player flips two cards face-up. If the cards match, the player scores points and takes another turn. If the cards don't match, they are flipped face-down again, and the next player gets a turn. The player who finds the most pairs of matching cards wins the game.

4 Game Setup

- **Players:** The game is designed for 2 players.
- **Deck:** The deck consists of normal cards which are numbers and special cards which will be illustrated.
- **Board:** The cards are placed face-down in a 4 x 4 grid. Players take turns flipping two cards to try and match pairs.

5 Gameplay Mechanics

5.1 Start of Game

- The deck is shuffled, and the cards are laid out face-down in the grid.
- Each card has a number, and there are two cards for each unique number in the deck.

5.2 Player Actions

- On their turn, a player flips two cards face-up.
- If the cards match, the player keeps the pair and takes another turn.
- If the cards don't match, the cards are turned face-down again, and the next player takes their turn.

5.3 Special Cards

In addition to regular cards, special cards with unique effects are added to make the game more challenging:

- **Standard Card:** This represents the normal cards (digits between 1 to 6). This card has no special abilities.

- **Bonus Card:** If a player flips a bonus card, they get an extra point or a bonus turn. The deck consists of 2 bonus cards only.
- **Penalty Card:** If a player flips a penalty card, they lose a point or skip their next turn. The deck consists of 2 penalty cards only.

5.4 Scoring

- Each player scores a point for every matched pair of cards.
- The game continues until all pairs have been matched.
- The player with the most pairs wins the game.

5.5 Game Strategy

- Players must remember the locations of previously revealed cards to increase their chances of finding matches on subsequent turns.
- Good memory and strategy are key to winning.

6 Game Features

The project will include the following features:

- **Deck and Card Management:** A class to manage the deck of cards and each card's state (face-up or face-down).
- **Player Management:** A class to handle the players' actions and scores.
- **Turn Management:** A mechanism that allows players to take turns flipping cards.
- **End of Game:** The game ends when all pairs have been matched. The player with the most matches wins.