**Memory Puzzle**

Team Members:

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**Project Proposal**

Project Synopsis

This summative project will be a memory puzzle game. There will be a screen full of cards facing down where each card will have a pair. The player is able to flip two cards at a time. The goal is to have each card face up by matching each pair at a time in the least number of moves.

Project Description

**Screens:**

In this memory puzzle game, the player will be brought to a menu screen. The player will be given a series of options before playing the game. The player will be customize the game they are going to play by changing settings such as the size of the board, they will be able to see how more games they can play, they will be able to view the current high scores, they will be able to see instructions and they will be able to exit the game. The different screens will be using GUI buttons to navigate. The player will input clicks using the mouse to do this. Other inputs include text such as the name of the player. In terms of processing, the size of the card grid, number of cards, and other specifications will be processed as the player chooses settings. Since the game includes a three strike system, the game will process whether the player will be able to continue playing more games. In terms of output, the game will output different screens, numbers such as high scores/number of strikes, and strings for instructions and information.

**Game:**

During the actual game, a screen will output cards faced down in a square (size will be chosen). Each card will have one identical card. The objective of the game is to match each pair. The player will be able to choose two cards at once. If the two cards match, they will remain face up. If the two cards do not match, they will flip back over. The game is won when each pair has been matched meaning all the cards are faced up. The high score will be recorded based on the number of moves. In terms of input in the game, the player will use clicks of the mouse to select cards. In terms of processing before the game starts, the game will process and assign the pair of cards randomly. In terms of processing during the game, the game will process whether the cards match and the number of moves. In terms of output, the game will output images for the cards, strings for the instruction, and integers for the number of moves.

**Three strike system/High score:**

The game will work based on a three strike system where the player will be given three strikes to begin with. If the player loses a game, they will lose a strike. If they win a game, they will gain a strike. If the player runs out of strikes, they will not be able to play the game again. The game will process how many strikes the player has. If the player has enough, the game will output the buttons to play. If not, the game will output a game over screen.

Concept Diagrams

Refer to Diagrams attached.

Programming Topics Covered

* Arrays
* Decisions
* Math
* File Input and Output
* GUI
* Advanced Strings
* Loops
* Random

Topics I Need to Learn

* Ordering information in the text file (based on high score)
* Using the GUI buttons in an array

Feature Breakdown

* Random card positions each game
* Customizing game (choosing a size for the card grid)
* Sound effects when cards match and do not match
* Three strike system
* High score

Timeline and Division of Labour