CMPE 114/115

Fundamentals of Programming II

Section 05

**Memory Card Game – Flipping Tiles**

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# **Description**

Memory game which requires players to couple similar components. Participants need to find a match for a word, picture, or whatever cards contain. First, players will open the card randomly and the rest of them will be closed. Players will try to remember the similarity between the cards and match them in a restricted time. When they choose the wrong one, the system will warn them with a sound effect that represents a wrong move. There won’t be any hints for helping. Players can find further instructions at the help desk of the game.

Memory games have benefits on people's health like developing critical thinking, providing exercises for the brain, visual recognizing, helping for long-term memory ... etc. Our main audience is those people who want to practice memory. Fast playability makes the game stand out. Players can choose a card number and with this, they hit the timer and start the game. This game is played with AI so gamers can’t match with a partner. Rivalry is to the computer.

# **Functionality**

The memory card game is a game board consisting of several cards, and each card has an image on the front side and is initially facing down. The game functions as follows:

* Each time the game starts, the cards will be shuffled so that their positions are unknown to the player.
* When the player clicks on the card, it will be flipped over, and the image will be revealed.
* If the player flips over two cards that have the same image and it matches, the cards will be removed from the board.
* If the player flips over the cards and they don’t match, they will be flipped back to their initial positions.
* A tracker to keep the track of the player’s attempts and score.
* The time limit will start as soon as the player starts the game, and the player must find the pairs under the given time limits, which makes it more challenging.
* The game will end when all the pairs are found, or the limited time runs out.

On the demo date, we are aiming to represent our game (project) functionality with a nice and friendly interface. As well as going through all the code that has been written in Object-Oriented and functional paradigms. We will try to minimize the use of procedural paradigms as much as possible in this project for the maintainability and reusability of the program.

The main objective of “Group Loop” isn’t just to build the program for this semester but rather it is to continue improving and developing more projects in the game development area.

# **Introduction to Game**

Welcome to the exciting world of Memory Game, where your memory skills will be put to the test! In this game, you will need to find and match similar components by flipping over cards with various images on them. Remembering the cards' positions is key to finding matching pairs as the game starts with all cards face down. Locate matching pairs amongst the cards to win points. Uncovering two cards that do not match means they will be flipped back over, and you need to continue searching for matching pairs.

This AI opponent game is designed to help you improve your memory skills and encourages critical thinking, brain exercises, visual recognition, and long-term memory. An AI opponent makes the game more competitive, adding to its difficulty. The pairing challenge won't have any clues to support you, yet game instructions are available at the help desk.

Success in the game involves finding all matching pairs within a predetermined time limit. Players can easily navigate and enjoy the game thanks to its user-friendly interface. By utilizing Object-Oriented and functional paradigms, the game's developers ensured the program's maintainability and reusability. Experience the excitement of this adventure, try out your memory skills, and see how high you can climb on the Memory Game leaderboard!

# **Workload Division**

* Ahmad is going to be responsible for the entire interface of the program which includes the JavaFx library, implementing the main classes, and helping his groupmates in writing the program and making sure that they are following the OOP Paradigm.
* Zeynep implements the required functional classes for the program such as “Cards Class”, “Memory Class”, “Timer Class” and the design of the images for the cards.
* Ceren is going to collaborate with Zeynep on implementing the classes such as “Tracker Class”, and “SoundEffect Class”, and what is going to be needed furthermore such as extra methods for extra features to be added to the program.
* Efe is also working together with Ahmad on the UI of the project by using JavaFx Library and implementing the required interfaces and classes that are going to be needed.