README: Assignment 2
By Wilana Matthews (1120464)

Github: https://github.com/wilana/COMP4478-Unity
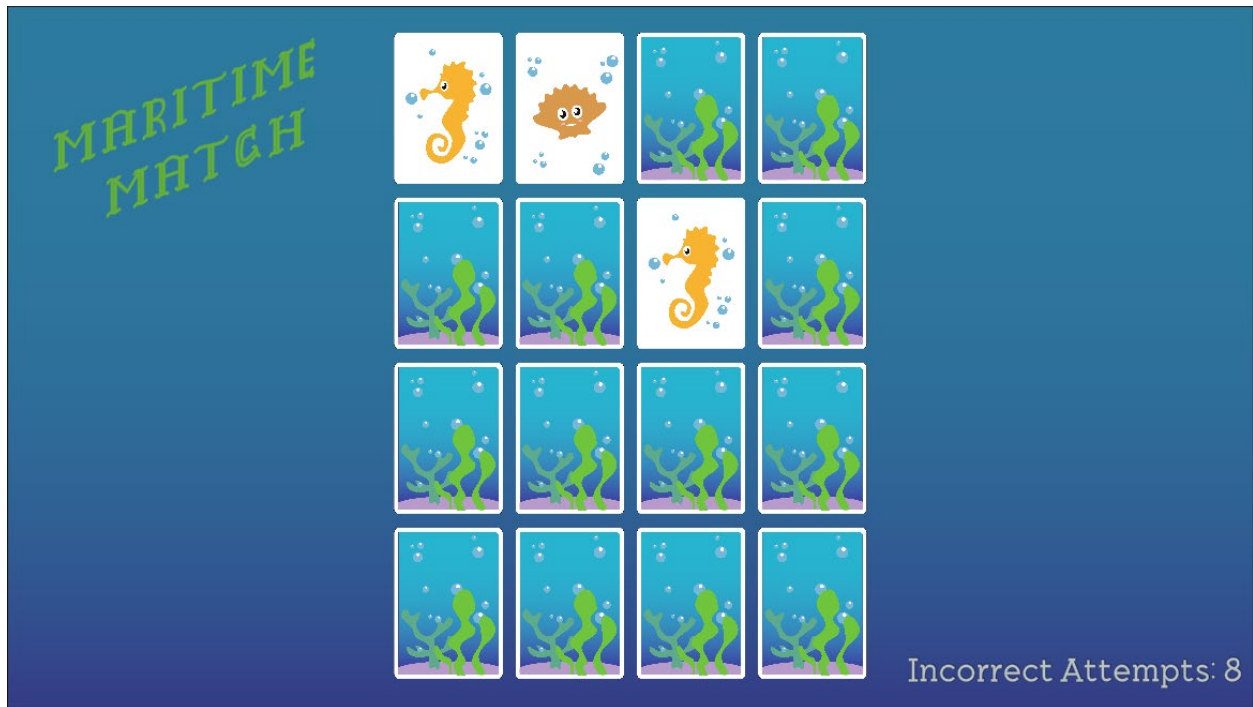
Unity Editor Version: 2021.3.20f1

Description

This is a Unity 2D game in which 16 cards (two of each variation) are generated on screen. The player must click the cards, flipping two at a time to see if the faces/animals on the other side match. If so, the cards will stay flipped over and the player can move on to flip two more cards. If the cards do not match, they will wait nearly a second before flipping over to show the back once again.

Card Generation

To create the cards, a basic card prefab was created with a card script that uses IPointerClickHandler to monitor for player clicks. Eight variants were derived from this prefab, each with a unique image on the back. All card variant prefabs were saved as a list in the Game Controller script, which then duplicates each one and shuffles the order before going through to instantiate them on the screen left to right, top to bottom.
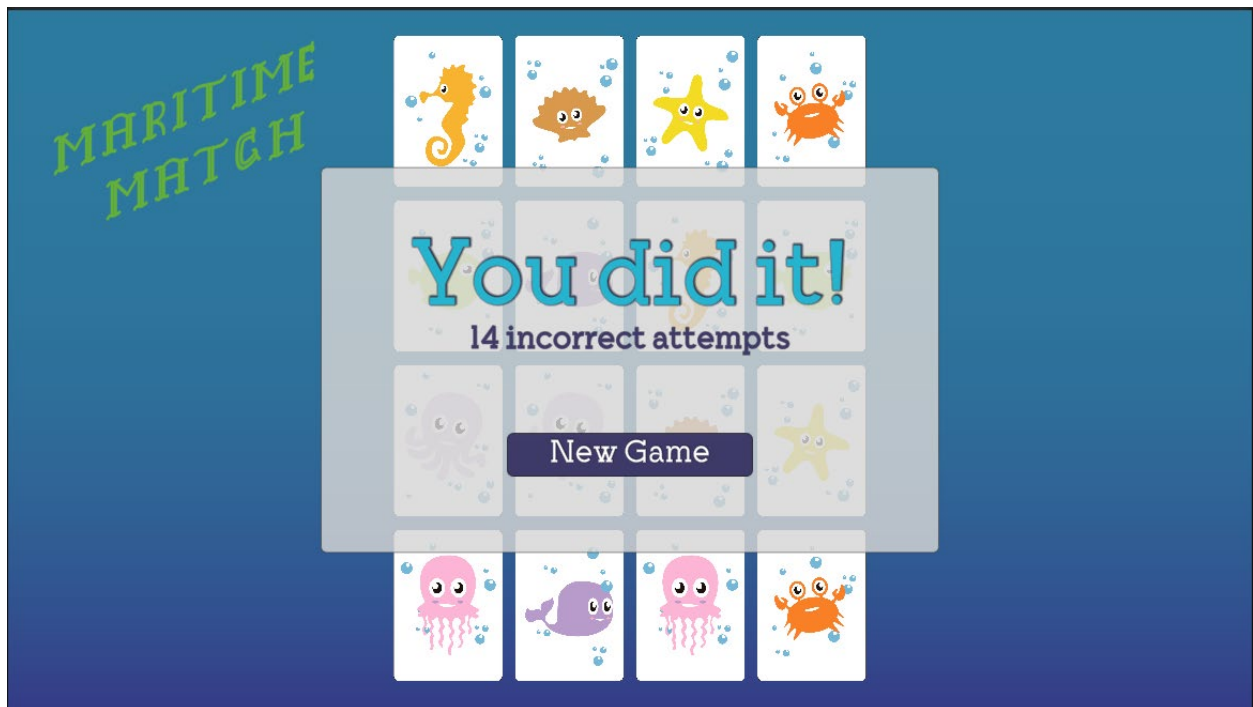
Card Flips

To flip the card, the On Pointer Click method is used. The card script has two Booleans, matched and frontUp, and a flip card method that is called by the pointer handler (when the card hasn't been matched or has the front up or there are less than two cards currently trying to be matched). The flip method changes the sprite and adds/removes the cards from a flipped list in the game controller. The game controller script keeps track of how many cards have been successfully matched and how many cards are currently flipped to try to match together. It verifies the match and either flips the cards back over, keeps them face up, or ends the game.

Game Over

The Game Controller also tracks how many matches have been successfully made. When that number is equal to the original number of prefab variant cards, the panel with the game over screen is displayed. The incorrect attempts are also displayed as a score. The New Game button reloads the game scene, effectively reshuffling the cards.

.

Sources

Resources:

- Brussels City font: https://www.fontspace.com/brussels-city-font-f77356
- Manthan font: https://www.fontspace.com/manthan-font-f55648
- Cartoon marine vectors: https://www.freevector.com/cartoon-octopus-and-friends-vector-19320

Logic:

- Changing an image when clicked: https://www.youtube.com/watch?v=ZSlv4Fc3D74
- Drawing cards onto a Canvas: https://www.youtube.com/watch?v=0-dUB52eEMk
- Shuffling a list in C#: https://forum.unity.com/threads/clever-way-to-shuffle-a-list-t-in-one-line-of-c-code.241052/
- Displaying a Game Over Panel: https://gt3000.medium.com/game-over-man-creating-a-game-over-screen-in-unity-90e1be71cd85