APCSA

Final Project

Link to EXCALIDRAW: https://excalidraw.com/#room=9cf06b1bfd7ea92a9c68,txdpmMpDm_5OARDtFFaHEg
Link to slides:https://docs.google.com/presentation/d/1ORnCVpSnzTvalJwR5UHx9MYQT6dkzZutBYxwfw-crS4

Intro:

Period: 7
Group Member Names: Arman Johal, Elias Xu
Group Title: Ægrammers
Project Title: Processing Arcade

Description:

This mini-arcade project has three mini-games: Tic-Tac-Toe, 2048, and Wordle. A menu allows you to choose the specific games you want to play.

For tic-tac-toe, board placements will start with “x” and from clicks with a mouse. With a loss or a victory, the board will reset, and the score tracker will mark the change.

For wordle, a word will be chosen from all valid words in the top ten thousand most used words with a length equal to five letters, which will serve as an answer. Then, the player could enter words from the keyboard, registering a keypress once the key is released if the input is a backspace, the last. Different colors will appear with an entry for each letter depending on the position and whether the letter appears in the answer. If there is a yellowish color for a letter, it seems but it's in the wrong position. If it is green, the letter appears both in the correct position and exists at that position in the answer. If it is grey, the letter will not be in the word.

For 2048, tiles will be controlled by the up, down, left, and right keys. Each key corresponds to a shift by every “line” to the indicated direction. The blocks will merge if they are the same, creating a singular block that is double the side of the original, and after each move, an additional block of value two or value four will be made (this is chosen randomly). If no move could change the board state, the player loses, but if they manage to get a block equal to 2048, the player wins.

We used multiple libraries for the project (to see graphically, look at UML diagram). For the Wordle and the TwentyFortyEight class, we used the java.util.arrays class to work with the respective patches and boards. Additionally,

we used the java.util.ArrayList library in in the Wordle class to work with the words that were returned. We also used java.io.file, java.util.Scanner, java.util.ArrayList, and java.io.FileException, and java.io.FileWriter to work with reading and writing words to the dictionary .txt files.

How does it work?

To open the application, open the file from processing and press the “Start button.” If that doesn’t work, go to sketch.properties in your directory and set the main file as “main.pde”

When running the main file, there will be a menu with multiple options for playing the game.

When a game selector button is pressed (using a mouse left-click), the window changes to display the selected game.

For 2048:

> Use the arrow keys to shift the blocks in that direction. When the board is shifted, cells of like value that are adjacent are summed together. Each time the board is shifted, a two or 4-cell is randomly placed on an empty cell. The color of each cell changes according to the value of each cell. You win the game if you get a cell valued at two thousand forty-eight. You lose if the board is completely filled up with no possible moves.

For Wordle:

> Type letters with your keyboard to form a five-letter word. Press enter to check your solution. Letters in the right place are highlighted in green, letters in the solution but not in the right place are highlighted in yellow, and letters not contained in the solution remain gray. Using these hints, you can guess again. If you guess the word within six tries, you win. If you can’t, you lose; the correct answer is displayed in the bottom row.

For Tictactoe:

> Player 1 goes first and plays with Xs, left-clicking to place one down in the desired cell of the 3×3 game board. Player 2 goes next, right-clicking to place down an O. This continues until either one

player wins, in which case the winning player's score is incremented by one, or the board has no empty squares, and the game is a draw. After reaching the end, the game board is reset and you can start playing another round.

When not in the main menu, a quit button is visible in the top-right corner. Left-clicking will take you back to the main menu.

Logs

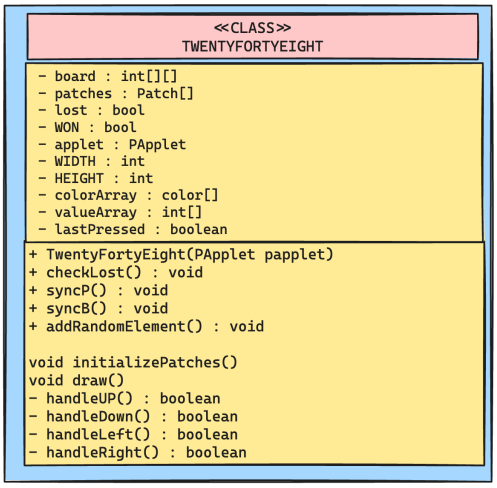
Arman

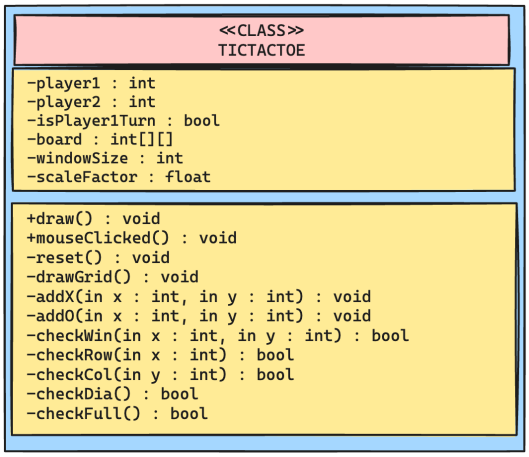
- Created the main class and UI
- Created the tic-tac-toe class
- Reworked the Sortwords class so it didn't have to be manually set for Wordle
- Wrote How it works section
- Maintained UML Diagram
- Made the how it works section

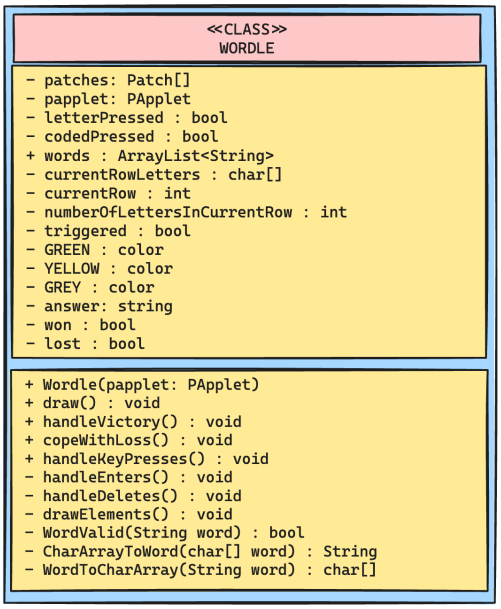
Elias

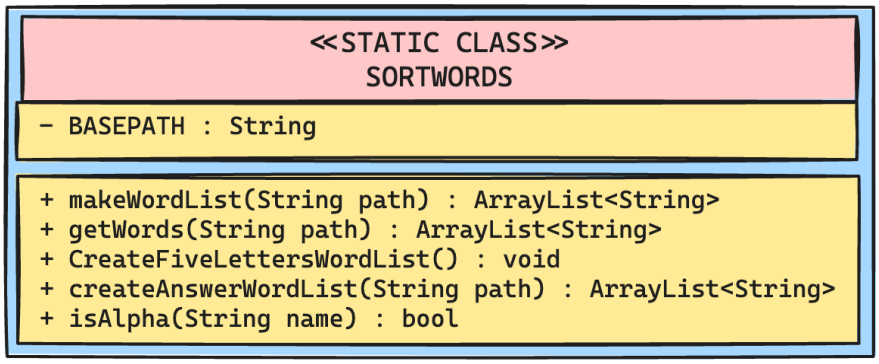
- Created the 2048 class
- Created Wordle class
- Created all helper classes, such as the patch class and the sort words class, along with all other associated functions
- Renamed trivially named commits; audited them to signify the importance
- Created and maintained the repository
- Created the description

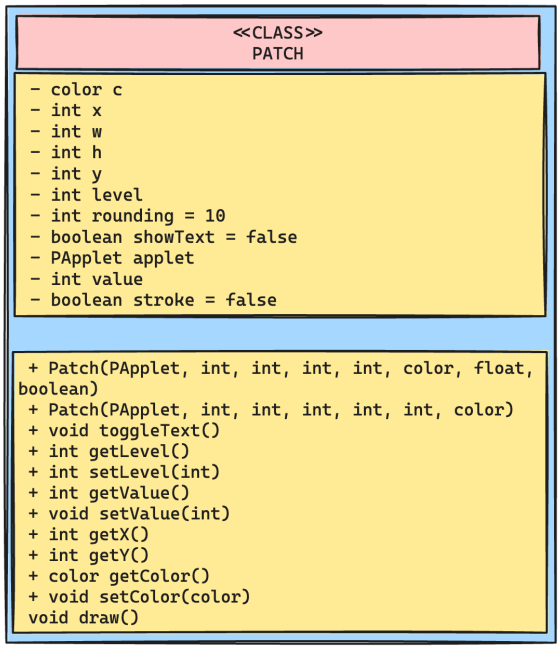
UML Diagrams and Different Classes

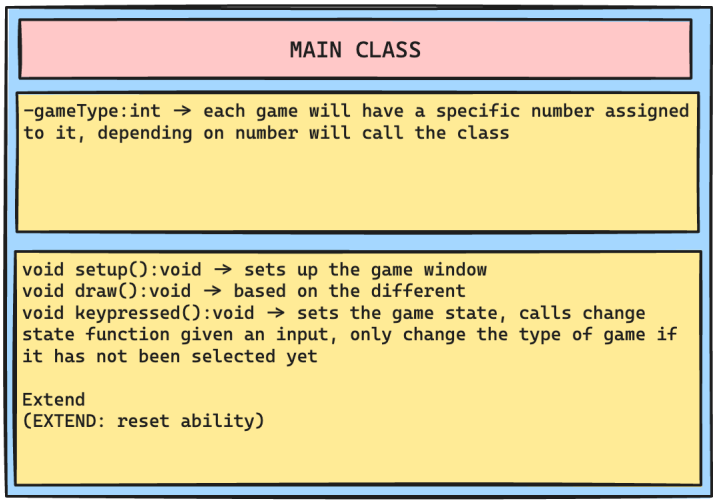












FULL UML DIAGRAM