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2048 Game

For this project we were instructed to create the popular game 2048. The goal of this game is to get a score of 2048. To this you are given a 4x4 board full of numbers which you can shift all towards a direction. Every tile that is equal and shifted into each other merges into one and creates double the value. The game is complete when you run out of valid moves (you loose) or you receive the value 2048 (you win)

To do this, I implemented a direction method and within are called the methods which deal with moving the elements according to direction. The swap methods called in the direction methods use bubble sort to move any value greater than to any side of the board. It does this using bubble sort. Too, if the element reaches a value equal to it, it will multiply by 2 and merge.

To check if you won, a for loop will go through each element to check if it's the 2048 value. If it is, it will break out of the while loop keeping the game running and stop the game. If not, it will continue. To check if you lost, the checkIfGameOver method will check if the board is empty (if there is any 0s) and if it is, it will check around the element to see if anything is equal to it so it can move. If there is no element equal, then there are no valid moves and game over.

To create random 2 and 4 dropper, 1st an array list was created. This array list will keep track of all 0s in the array and store them into the list. As long as the size of the list is greater than 0, it will drop a random number, meaning as long as the board has empty spots. It will do this by choosing and getting a random 0 from that list, then using a probability if statement to determine if it will produce a 2 (80%) or a 4(20%).