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**Project Proposal:** 2048: The Remake

Hi Prof. Arias,

      For Project 2, I plan to remake the popular mobile game 2048. How the game works basically is the player is presented a four-by-four matrix, and they must slide either up, down, right, or left in the hopes of combining tiles of equal value until they get to the 2048 tile. To provide a visual, imagine the player has two tiles next to each other that each have the value of two. Let's say the user then slides their finger to the right across the screen; once this happens the two tiles will combine into one and that tile will now be equal to four. As the player progresses they will continue to combine equal tiles until they eventually get to the tile 2048. However, they player can lose if all tiles become filled and there are no tiles that can be combined with one another. The reason why I am choosing to remake this game is because I feel that it possesses a lot of interesting theory and it heavily depends on the game engines ability to work with multidimensional arrays.

      However, since I would be making this game on desktop I would need to change some of 2048's core mechanics. The first thing that I would have to change would be to combat the inability to be able to register touch or gestures. I would solve this problem, by providing four buttons in which the user could click in order to move up, down, left, or right. Other than this slight change however, the rest of the games mechanics would be exactly the same. I think the best way to create a game such as this would be by having the main board be a simple four-by-four matrix. I would then have each button call to a number of methods in which would be able to check if the individuals 'move' is valid. Some things that determine if a move is invalid are things such as, the row or column is already full so shifting in that direction wouldn't be able to happen since their simply isn't enough space for the tiles to all shift over. Another possibility would be if the user attempts to slide in the direction in which two tiles are not equal to each other. If this were to happen, then the board would either have to slide over accordingly or not shift at all (if that row or column was already full). Another thing in which I would have to check would be if the user's board is full and there are no valid moves. If this were to happen then the user would automatically lose. Along with conditions however I would also have to check and keep track of the merging of multiple tiles from a single move. Overall, I feel that the game's dependency on arrays will be extremely interesting and truly a great learning experience.