Reflection:

The beginning of this assignment was not very difficult. We had done stuff like this in the past, including a connect four game. And I was fairly comfortable with dynamic arrays. I decided to also use a structure for the array to more easily consolidate information about it, and to be able to pass the array into functions more easily. The assignment asked to use classes, though the description of what to use seemed somewhat ambiguous. We also never went over classes in CS 161, so I elected not to use them. I decided to read the whole assignment before beginning programming it, So I planned ahead on certain things. For instance I knew right away that I would need to be able to check for a win for any sized board, and that I would need to resize the board every game.

For the AI I decided to keep it simple, all it does is come up with a random place on the board and tries to place a marker there. It does this until it finds a spot that is not in use. For whether the AI starts first or not, it was just using some if statements and multiple function calls. The most difficult aspect was getting the victory check to work, because each way you can win requires a different way to find it. At the core of all of them is looping through and a potential line where a victory could be achieve and checking to see if the next in the line is the same as the last and the same as the character whose victory we are checking.

For input validation the only ones I really worried about are the integers for creating the board and placing characters, as those are the only ones that really have the potential to crash the program. For these I just used a for loop to make sure that the user inputed a positive integer in the bounds of the board. For the size of the board as long as it was a positive integer, I really didn't care how large of a board they want. For most the other inputs they are just characters, so technically if the user inputs something other than the options it wont work exactly right, but it wont completely crash the program. I didn't really worry about this because the assignment says not to really worry about it.

To check to make sure it all worked, I went through winning games for all possibilities for both players on a 3x3 board, and a few of the victories for larger boards, most importantly the diagonal wins, as I was most worried about those actually working. I also played a few games with the AI, and made sure to enter bad inputs to make sure the warning worked. Finally, I had someone else use the program to see if it wasn't just me who could use it