**COL216 Assignment2**
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We have created two array of integer initialized with all zero. The first array we created was named counter whose size is 8. This array stores the number between -3 to +3. There are 8 different ways to win Tic-Tac-Toe which are represented by ith position of this array named counter. Without loss of generality let's take one case where player wins by securing all position of column1. In this case counter[0] will be +3 or -3 depending on the player position (1st if it start first else second). Suppose player1 fills any cell of column1 then counter[0] will be decreased by 1 and if player2 fills any cell of column1 then counter[0] will be increased by 1. In this was if it reaches either of the extreme i.e. -3 or +3 then this implies all cell of colunm1 was filled by player1 or player2 respectively. In this way we kept the track of all 8 different ways of winning and if its value was -3 or +3 then we declared player1 or player2 winner.

counter[0]   counter[1]   counter[2]

counter[3]		**Counter[7]**
counter[4]		
counter[5]		**Counter[6]**
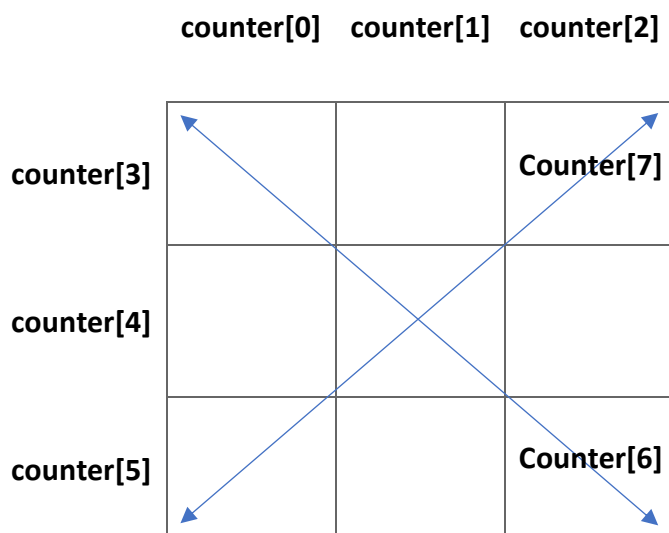
Second array was marker which says -1 if cell with that index was mark by player1 else 1 for player2. Initialized by zero which says none of them has yet marked this position.

marker[0]	marker[1]	marker[2]
marker[3]	marker[4]	marker[5]
marker[6]	marker[7]	marker[8]

If the marker[i] say 0 this means that position is not marked hence we accept this input from user but if ith position is already marked then we again ask for input we correct unmarked index position to mark your position in the grid. We then further mark that position with -1 or +1 for player1 and player2 respectively. We also handled the case when user will input the number which doesn't lie in [0,8], in this case we again ask user to enter correct index number in the range.

Once we receive the index number we calculate which counter[?] to increase or decrease depending on player2 or player1 respectively. If index is i then (i%3) and ([i/3]+3) are the two counter to increase or decrease. (i%3) is column index hence counter index see figure1 for reference. [i/3] is row index and hence ([i/3]+3) is counter reference. If (i%3) and [i/3] are equal that means column and row indexes are equal and hence diagonal element hence counter[6] is increased or decreased in this case. If sum of (i%3) and [i/3] is equal to 2 this implies counter[7] to increase or decrease.

NOTE: The one who have first move, third, fifth and so on i.e. odd positions is referred as player1 and the one with even positions is referred as player2. This is ensured by checking the position by modulo 2.

If none of the counter is -3 or +3 and all positions are marked then this implies "match is drawn". If any counter is -3 or +3 then game is instantaneously terminated by declaring player1 or player2 as winner respectively.