TIC TAC TOE-DOWN THE MEMORY LANE 03

Aright guys in the previous video we had seen the outline of the game we have a play method and we had a place method, play method alternates the turn between the players X and O. Even number turns is for X and odd number turns is for O and place method checks whether the position is a valid one and a vacant one it is so it allows the players to place it if not it asks for input again and again till he gives the valid position, so this is how game had gone till now so let us see this particular thing that has been undefined won so let us define that method now define won so won we have a same thing symbol as an argument we have been passing symbol so let us see so what should you check? Check rows, you should check for rows if any of the rows has been occupied or you should check for columns, if any of the columns has been occupied in a consecutive manner or check the diagonals, diagonals if any of the diagonals has been occupied so you have to check all these things and return the answer any of these things has been occupied then that person has won. So see check rows check columns check diagonals all these are intuitive to us we have to define it, let us define it one by one. check rows, define check rows we have pass the symbol ok, i need to check each of the three rows so i need to use a variable check this so let me call as row r let me call it as r, r in the range of there are zeros so let me say three, r in the range of three for each row i will have a counter count is initially zero that is we haven't counter the occurrence of that symbol in the row so count is initially zero now let me iterate through every cell in the row for that let me use c column that is each row has three columns has a cell of three columns right? one cell belonging to each column we have it so we have to iterate over each of these cells for c for cell or column you can take anything for c in the range of three because each row has three cells, c is in the range of three so let me call it i will say if board at the r and c index contains the symbol i will increment my counter, count equal to count plus one, why do i use the counter here? Because it may be the case that in some column or in some row X X and the third thing may be O, in that case it is not winning placement XXX is a winning placement so i need to count how many times i had seen the symbol X so that is why i am using something called as counter, at the end of this loop where we had iterated over each cell i will check the value of the counter, if counter is equal to three because each row has three cells, if all three cells have the same symbol then it is a winning move i should print that it is a winning move so let me print this particular symbol has won let me say this person has won and i will return true here i am returning so this particular functionality comes to an end, in case if the first row doesn't satisfy it the loop for r will be check once again and for the second loop same check would be done for the third row the same check would be done so once for all the rows this check has been done and none of the places this has been encounter that means there is no winning movement along the rows so in that case this check rows thing here that is winning is not due to occupying three consecutive cells or any row along any row the person has not occupied three consecutive cells so in that case you should say it is not a winning thing so i should return false that is the person has not occupied three consecutive cells along any row that is the meaning here i hope you can understand this check rows functionality otherwise no problem you can pause the video here dry run the code and you

will definitely understand it. So check rows is done check columns is pretty much similar so let me just copy paste it copy let me paste ok this is check columns just the name and some indices change because here a column value is fixed rows changed so let me change this as c and r so the rows change that is the column value is fixed rows change that's the only change here otherwise it is pretty much the same i guess you can understand this we would let me show you see in check rows we fix up this row we check each cell we count in check columns we fix up the column in each of the row corresponding cell we count if you don't understand please don't worry dry running is the key here you sit think like a computer just have a index table something like this and dry run it you will definitely understand it, it is very easy for all that it requires is some amount of thinking that's it it's very easy please make sure that you understand till here ok check rows is done check columns is done now check diagonals so yeah i will show here wait ok see the diagonals zero comma zero one comma one two comma two the general format it is of the form i comma i so both the values are same along this diagonal and this diagonal differs so let us three cells so let us manually do it two comma zero one comma one zero comma two so please make a note of these values that's it so for this i comma i general format you can use a loop something similar to what we are use in rows and columns just for that other case we need to use the thing manually let us do it now define check diagonals check diagonals for the symbol check it so for that diagonal let us do it if board of zero or maybe we can even manually do it no problem it is up to you, you can use a loop as well as you can do manually anything zero two is equal to board of one one that is allowed in maths but not in programming so we have to use and operator and we have to say board of one one is equal to board of two comma zero that is one of the diagonals and that particular thing is equal to this corresponding symbol only then this person has won so let me check it you can use any of the three values i am using one comma one that i equal to symbol in that case you say this particular symbol has won and you return true ok next is along the other diagonal here you are returning so in case if this diagonal has been satisfied this particular functionality would come to an end if this diagonal has not been satisfied only then the control would be transferred here you have to check this diagonal, board of zero comma zero is equal to board of one comma one and board of one comma one is equal to board of two comma two and board of one comma one is equal to symbol this can be return using the loop as well i will leave it as an exercise for you guys please do try using a loop to simplify this thing instead of using these many comparisons you can simplify it, alright if that is the case then this is pretty much the same so let me copy paste it copy paste ok in case if both the cases didn't satisfy then it means along the diagonals there is no winning move in that case you have to return false so you had checked rows, checked columns, checked diagonals and see this won functionality is check rows or check columns or check diagonals if in one of the places or operator works in this manner if at least one of this values is true the final answer is true, if along the row or along the columns or along the diagonals there is a winning movement then you would return true that is that person has won, if all three places there is no winning movement only then it will return false that is this person has not won so this is how this functionality works ok let me save it ok so i hope you would have understood the code till now please do pause understand the flow of the code really well and then proceed towards running the code, you can try dry running it as i said dry running is the best

way to understand the computers perspective please do understand really well before proceeding further let us run this code and see what happens in the next video.