

1. Implementation of Tic Tac Toe game here, the player needs to take turns marking the spaces in a 3x3 grid with their own marks, if 3 consecutive marks (Horizontal, Vertical,Diagonal) are formed then the player who owns these moves get won. Noughts and Crosses or X's and O's abbreviations can be used to play.
- USN-1NT18CS133

Algorithm/Explanation:

Tic-tac-toe is a two-player game. It contains 3*3 board where each player takes turn and select a block which is not marked already and marks it with 'x' and 'o' for player 1 and 2 respectively. if 3 consecutive marks (Horizontal, Vertical, Diagonal) are formed then the player who owns these moves get won.

In the program,

- 1.The board function is called to display the board
- 2.The game status function is called to check if there is a winner always after a player turn.

```
In [2]: square=[0,1,2,3,4,5,6,7,8,9]
def board():
    print('\n\tTic Tac Toe')
    print('Player 1 (X) - Player 2 (O)')
    print('   |   |   ')
    print('   ',square[1] , ' | ' ,square[2] , ' | ' ,square[3] )

    print('_____|_____|_____|')
    print('   |   |   ')
    print('   ',square[4] , ' | ' ,square[5] , ' | ' ,square[6] )
    print('_____|_____|_____|')
    print('   |   |   ')
    print('   ',square[7] , ' | ' ,square[8] , ' | ' ,square[9] )
    print('   |   |   ')
def game_status():
    if square[1] == square[2] and square[2] == square[3]:
        return 1
    elif square[4] == square[5] and square[5] == square[6]:
        return 1
    elif square[7] == square[8] and square[8] == square[9]:
        return 1
    elif square[1] == square[4] and square[4] == square[7]:
        return 1
    elif square[2] == square[5] and square[5] == square[8]:
        return 1
    elif square[3] == square[6] and square[6] == square[9]:
        return 1
    elif square[1] == square[5] and square[5] == square[9]:
        return 1
    elif square[3] == square[5] and square[5] == square[7]:
        return 1
    elif square[1] != 1 and square[2] != 2 and square[3] != 3 and square[4] != 4 and square[5] != 5 and square[6] != 6 and square[7] != 7 and square[8] != 8 and square[9] != 9:
        return 0
    else:
        return -1
player = 1
status = -1
while status== -1:
    board()
    if player%2 == 1:
        player = 1
    else:
        player = 2
    print('\nPlayer', player)
    choice = int(input('Enter a number:'))
    if player == 1:
        mark = 'X'
    else:
        mark = 'O'
    if choice == 1 and square[1] == 1:
        square[1] = mark
    elif choice == 2 and square[2] == 2:
        square[2] = mark
    elif choice == 3 and square[3] == 3:
        square[3] = mark
    elif choice == 4 and square[4] == 4:
        square[4] = mark
    elif choice == 5 and square[5] == 5:
        square[5] = mark
    elif choice == 6 and square[6] == 6:
        square[6] = mark
    elif choice == 7 and square[7] == 7:
        square[7] = mark
    elif choice == 8 and square[8] == 8:
        square[8] = mark
    elif choice == 9 and square[9] == 9:
        square[9] = mark
    else:
        print('Invalid move ')
        player -= 1
    status = game_status()
    player += 1
print('RESULT')
if status == 1:
    print('Player',player-1,'win')
else:
    print('Game draw')
```

```

Tic Tac Toe
Player 1 (X) - Player 2 (O)

   |   |   |
 1 | 2 | 3 |
_____|_____|_____|
   |   |   |
 4 | 5 | 6 |
_____|_____|_____|
   |   |   |
 7 | 8 | 9 |
   |   |   |
```

Player 1
Enter a number:5

```

Tic Tac Toe
Player 1 (X) - Player 2 (O)

   |   |   |
 1 | 2 | 3 |
_____|_____|_____|
   |   |   |
 4 | X | 6 |
_____|_____|_____|
   |   |   |
 7 | 8 | 9 |
   |   |   |
```

Player 2
Enter a number:2

```

Tic Tac Toe
Player 1 (X) - Player 2 (O)

   |   |   |
 1 | O | 3 |
_____|_____|_____|
   |   |   |
 4 | X | 6 |
_____|_____|_____|
   |   |   |
 7 | 8 | 9 |
   |   |   |
```

Player 1
Enter a number:3

```

Tic Tac Toe
Player 1 (X) - Player 2 (O)

   |   |   |
 1 | O | X |
_____|_____|_____|
   |   |   |
 4 | X | 6 |
_____|_____|_____|
   |   |   |
 7 | 8 | 9 |
   |   |   |
```

Player 2
Enter a number:1

```

Tic Tac Toe
Player 1 (X) - Player 2 (O)

   |   |   |
 O | O | X |
_____|_____|_____|
   |   |   |
 4 | X | 6 |
_____|_____|_____|
   |   |   |
 7 | 8 | 9 |
   |   |   |
```

Player 1
Enter a number:7
RESULT
Player 1 win

```
In [ ]:
```