EXPERIMENT: TIC TAC TOE GAME

Aim: Implement an Algorithm in Python for solving of tic tac toe game.

Code:

```python
def print_board(board):
    """Print the Tic Tac Toe board."""
    for row in board:
        print(" | ".join(row))
        print("-" * 5)


def check_winner(board):
    """Check if there's a winner."""
    for row in board:
        if row.count(row[0]) == len(row) and row[0] != ' ':
            return True
    for col in range(len(board)):
        if board[0][col] == board[1][col] == board[2][col] and board[0][col] != ' ':
            return True
    if board[0][0] == board[1][1] == board[2][2] and board[0][0] != ' ':
        return True
    if board[0][2] == board[1][1] == board[2][0] and board[0][2] != ' ':
        return True
    return False


def is_board_full(board):
    """Check if the board is full."""
    for row in board:
```

```python
        if ' ' in row:
            return False
    return True


def tic_tac_toe():
    """Main function to play Tic Tac Toe."""
    board = [[' ' for _ in range(3)] for _ in range(3)]
    player = 'X'

    while True:
        print_board(board)
        row = int(input(f"Player {player}, enter row (0, 1, 2): "))
        col = int(input(f"Player {player}, enter column (0, 1, 2): "))

        if board[row][col] != ' ':
            print("That position is already taken. Try again.")
            continue

        board[row][col] = player

        if check_winner(board):
            print_board(board)
            print(f"Player {player} wins!")
            break
        elif is_board_full(board):
            print_board(board)
```

```
        print("It's a tie!")
        break

    player = 'O' if player == 'X' else 'X'

if __name__ == "__main__":
   tic-tac-toe ()
```

Output:

```
| |

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| |

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| |
```

Player X, enter row (0, 1, 2): 1

Player X, enter column (0, 1, 2): 1

```
| |

-----

|X|

-----

| |
```

Player O, enter row (0, 1, 2): 0

Player O, enter column (0, 1, 2): 2

```
| |O

-----

|X|

-----
```

| |

Player X, enter row (0, 1, 2): 0

Player X, enter column (0, 1, 2): 0

X| |O

|X|

| |

Player O, enter row (0, 1, 2): 2

Player O, enter column (0, 1, 2): 2

X| |O

|X|

| |O

Player X, enter row (0, 1, 2): 2

Player X, enter column (0, 1, 2): 0

X| |O

|X|

X| |O

Player O, enter row (0, 1, 2): 1

Player O, enter column (0, 1, 2): 2

X| |O

```
|X|O

-----

X| |O
```

Player X, enter row (0, 1, 2): 0

Player X, enter column (0, 1, 2): 1

```
X|X|O

-----

|X|O

-----

X| |O
```

Player X wins!

Result: Code has been Implemented successfully.