

## Lab 1: Implement Tic – Tac – Toe Game.

Python Code:

```
# Initialize the board
```

```
board = [['-' for _ in range(3)] for _ in range(3)]
```

```
def print_board(board):
```

```
    for row in board:
```

```
        print(" ".join(row))
```

```
    print()
```

```
def check_winner(board):
```

```
    # Check rows and columns
```

```
    for i in range(3):
```

```
        if board[i] == ['X', 'X', 'X'] or [board[j][i] for j in range(3)] == ['X', 'X', 'X']:
```

```
            return 'X'
```

```
        if board[i] == ['O', 'O', 'O'] or [board[j][i] for j in range(3)] == ['O', 'O', 'O']:
```

```
            return 'O'
```

```
    # Check diagonals
```

```
    if [board[i][i] for i in range(3)] == ['X', 'X', 'X'] or [board[i][2 - i] for i in range(3)] == ['X', 'X', 'X']:
```

```
        return 'X'
```

```
    if [board[i][i] for i in range(3)] == ['O', 'O', 'O'] or [board[i][2 - i] for i in range(3)] == ['O', 'O', 'O']:
```

```
        return 'O'
```

```
    return None
```

```
def is_full(board):

return all(cell != '-' for row in board for cell in row)

def start_game():

current_player = input("Enter first player ('X' or 'O'): ").upper()

while not is_full(board):

print_board(board)

row = int(input(f"{current_player}'s turn. Enter row (0-2): "))

col = int(input(f"{current_player}'s turn. Enter col (0-2): "))

if 0 <= row < 3 and 0 <= col < 3 and board[row][col] == '-':

board[row][col] = current_player

winner = check_winner(board)

if winner:

print_board(board)

print(f"{winner} is the winner!")

return

current_player = 'O' if current_player == 'X' else 'X'

else:

print("Invalid move! Try again.")

print_board(board)

print("Game Draw")

start_game()
```

## Output:

1. Enter first player ('X' or 'O'): O

---

---

---

O's turn. Enter row (0-2): 1

O's turn. Enter col (0-2): 1

---

- O -

---

X's turn. Enter row (0-2): 2

X's turn. Enter col (0-2): 2

---

- O -

-- X

O's turn. Enter row (0-2): 2

O's turn. Enter col (0-2): 1

---

- O -

- O X

X's turn. Enter row (0-2): 1

X's turn. Enter col (0-2): 2

- - -

- O X

- O X

O's turn. Enter row (0-2): 0

O's turn. Enter col (0-2): 1

- O -

- O X

- O X

O is the winner!

2. Enter first player ('X' or 'O'): X

- - -

- - -

- - -

X's turn. Enter row (0-2): 0

X's turn. Enter col (0-2): 0

X - -

- - -

- - -

O's turn. Enter row (0-2): 1

O's turn. Enter col (0-2): 1

X - -

- O -

- - -

X's turn. Enter row (0-2): 2

X's turn. Enter col (0-2): 2

X - -

- O -

- - X

O's turn. Enter row (0-2): 0

O's turn. Enter col (0-2): 1

X O -

- O -

- - X

X's turn. Enter row (0-2): 2

X's turn. Enter col (0-2): 1

X O -

- O -

- X X

O's turn. Enter row (0-2): 2

O's turn. Enter col (0-2): 0

X O -

- O -

O X X

X's turn. Enter row (0-2): 0

X's turn. Enter col (0-2): 2

X O X

- O -

O X X

O's turn. Enter row (0-2): 1

O's turn. Enter col (0-2): 2

X O X

- O O

O X X

X's turn. Enter row (0-2): 1

X's turn. Enter col (0-2): 0

X O X

X O O

O X X

Game Draw

3. Enter first player ('X' or 'O'): X

---

---

---

X's turn. Enter row (0-2): 6

X's turn. Enter col (0-2): 3

Invalid move! Try again.