

01/10/2024

## LAB 01- TIC TAC TOE GAME

### ALGORITHM/PSEUDOCODE-

CLASSMATE  
Date 01-10-24  
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WEEK-1 :

Implement Tic-Tac-Toe Game

ALGORITHM:

Initialization:

Step 1: Start with an empty board

Step 2: Print the current board.

check whose turn it is:

If current player is "X":

Get Player move

Else :

Select random move for AI

Step 3: Place current player's mark on board

If check for win :

Print current board

Announce current player as winner

Exit game

If check for tie :

Print current board

Announce tie

exit game

Step 4: Switch turns

Step 5: Stop

## CODE/INPUT-

```
import random
```

```
def print_board(board):  
    """Prints the Tic Tac Toe board."""  
    print("-----")  
    for row in board:  
        print("|", end="")  
        for cell in row:  
            print(" " + cell + " |", end="")  
        print("\n-----")
```

```
def check_win(board, player):  
    """Checks if the player has won."""  
    # Check rows  
    for row in board:  
        if all(cell == player for cell in row):  
            return True  
  
    # Check columns  
    for col in range(3):  
        if all(board[row][col] == player for row in range(3)):  
            return True  
  
    # Check diagonals  
    if all(board[i][i] == player for i in range(3)):  
        return True  
    if all(board[i][2 - i] == player for i in range(3)):  
        return True
```

```
    return False
```

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

```
for cell in row:
    if cell == " ":
        return False
return True
```

```
def get_player_move(board):
    """Gets the player's move."""
    while True:
        try:
            row = int(input("Enter row (1-3): ")) - 1
            col = int(input("Enter column (1-3): ")) - 1
            if 0 <= row <= 2 and 0 <= col <= 2 and board[row][col] == " ":
                return row, col
        except:
            print("Invalid move. Try again.")
    except ValueError:
        print("Invalid input. Please enter a number.")
```

```
def get_ai_move(board):
    """Gets the AI's move using a simple random strategy."""
    empty_cells = []
    for row in range(3):
        for col in range(3):
            if board[row][col] == " ":
                empty_cells.append((row, col))
    if empty_cells:
        return random.choice(empty_cells)
    return None
```

```
def main():
    """Main function to run the game."""
    board = [[" " for _ in range(3)] for _ in range(3)]
    current_player = "X"
    ai_player = "O"
```

```

while True:
    print_board(board)

    if current_player == "X":
        row, col = get_player_move(board)
    else:
        print("AI's turn...")
        row, col = get_ai_move(board)

    board[row][col] = current_player

    if check_win(board, current_player):
        print_board(board)
        print(current_player + " wins!")
        break
    elif is_board_full(board):
        print_board(board)
        print("It's a tie!")
        break

    current_player = "O" if current_player == "X" else "X"

if __name__ == "__main__":
    main()

```

## OUTPUT-

```
✓ 30s
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↔
-----
| | | |
-----
| | | |
-----
| | | |
-----
Enter row (1-3): 1`
Invalid input. Please enter a number.
Enter row (1-3): 1
Enter column (1-3): 1
-----
| X | | |
-----
| | | |
-----
| | | |
-----
AI's turn...
-----
| X | | |
-----
| O | | |
-----
| | | |
-----
Enter row (1-3): 2
Enter column (1-3): 2
-----
| X | | |
-----
| O | X | |
-----
| | | |
-----
AI's turn...
-----
| X | | |
-----
| O | X | |
-----
| | O | |
-----
Enter row (1-3): 3
Enter column (1-3): 3
```

```
-----
Enter row (1-3): 3
Enter column (1-3): 3
-----
| X | | |
-----
| O | X | |
-----
| | O | X |
-----
X wins!
```