**9. Implement Game theory and demonstrate game playing strategies.**

# Tic-Tac-Toe game in Python

board = [" " for x in range(9)]

def print\_board():

row1 = "| {} | {} | {} |".format(board[0], board[1], board[2])

row2 = "| {} | {} | {} |".format(board[3], board[4], board[5])

row3 = "| {} | {} | {} |".format(board[6], board[7], board[8])

print()

print(row1)

print(row2)

print(row3)

print()

def player\_move(icon):

if icon == "X":

number = 1

elif icon == "O":

number = 2

print("Your turn player {}".format(number))

choice = int(input("Enter your move (1-9): ").strip())

if board[choice - 1] == " ":

board[choice - 1] = icon

else:

print()

print("That space is taken!")

def is\_victory(icon):

if (board[0] == icon and board[1] == icon and board[2] == icon) or \

(board[3] == icon and board[4] == icon and board[5] == icon) or \

(board[6] == icon and board[7] == icon and board[8] == icon) or \

(board[0] == icon and board[3] == icon and board[6] == icon) or \

(board[1] == icon and board[4] == icon and board[7] == icon) or \

(board[2] == icon and board[5] == icon and board[8] == icon) or \

(board[0] == icon and board[4] == icon and board[8] == icon) or \

(board[2] == icon and board[4] == icon and board[6] == icon):

return True

else:

return False

def is\_draw():

if " " not in board:

return True

else:

return False

while True:

print\_board()

player\_move("X")

print\_board()

if is\_victory("X"):

print("X wins! Congratulations!")

break

elif is\_draw():

print("It's a draw!")

break

player\_move("O")

if is\_victory("O"):

print\_board()

print("O wins! Congratulations!")

break

elif is\_draw():

print("It's a draw!")

break

**Output:**

**| | | |**

**| | | |**

**| | | |**

**Your turn player 1**

**Enter your move (1-9): 4**

**| | | |**

**| X | | |**

**| | | |**

**Your turn player 2**

**Enter your move (1-9): 7**

**| | | |**

**| X | | |**

**| O | | |**

**Your turn player 1**

**Enter your move (1-9): 5**

**| | | |**

**| X | X | |**

**| O | | |**

**Your turn player 2**

**Enter your move (1-9): 4**

**That space is taken!**

**| | | |**

**| X | X | |**

**| O | | |**

**Your turn player 1**

**Enter your move (1-9): 9**

**| | | |**

**| X | X | |**

**| O | | X |**

**Your turn player 2**

**Enter your move (1-9): 2**

**| | O | |**

**| X | X | |**

**| O | | X |**

**Your turn player 1**

**Enter your move (1-9): 1**

**| X | O | |**

**| X | X | |**

**| O | | X |**

**X wins! Congratulations!**