TIC TAC TOE GAME

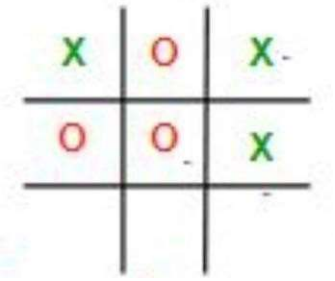
OBJECTIVE:

Tic-Tac-Toe is a very simple two-player game. So only two players can play at a time. This game is also known as Noughts and Crosses or X's and O's game. Tic-Tac-Toe is to be one of the players to
get three same symbols in a row - horizontally, vertically or diagonally - on a 3 x 3 grid.

ABSTRACT:

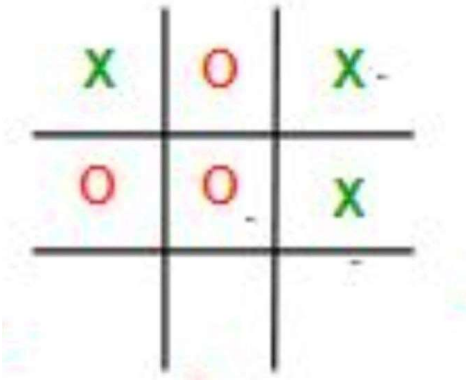
Tic Tac Toe is traditionally played on a 3 × 3 grid. Players take turns placing a mark in one of the
cells of the grid. The goal of the game is for players to position their marks so that they make a
continuous line of three cells vertically, horizontally, or diagonally.

INTRODUCTION:

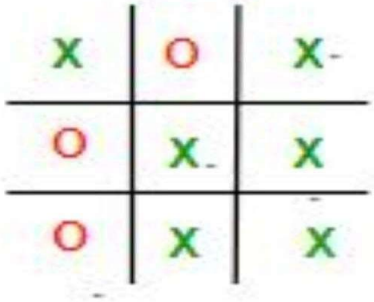


put Xs and Os in compartments of a figure formed by two vertical lines crossing two horizontal lines and each tries to get a row of three Xs or three Os before the opponent does

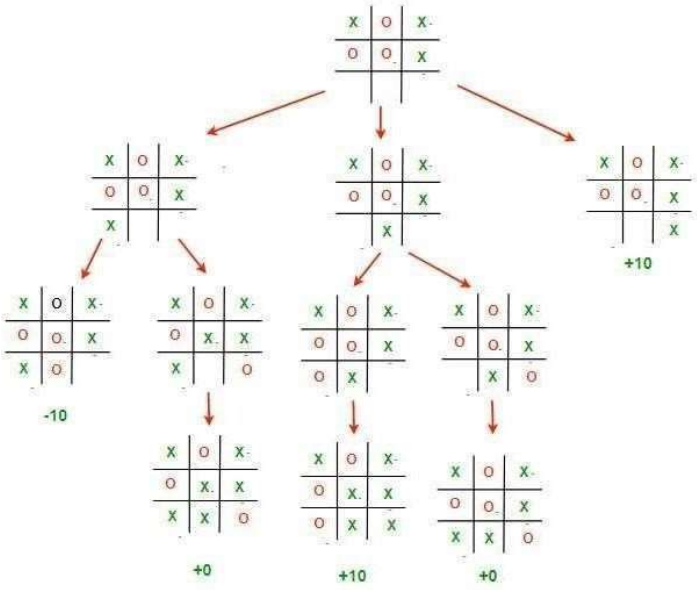
Problem:



Solution:



Tree:



PYTHON CODE:

```
def sum(a, b, c ):
return a + b + c

def printBoard (xState, zState):
   zero = 'X' if xState[0] else ('Y' if zState[0] else 0)
one = 'X' if xState[1] else ('Y' if zState[1] else 1)
two = 'X' if xState [2] else ('Y' if zState[2] else 2)
three= 'X' if xState[3] else ('Y' if zState[3] else 3)
Four ='X' if xState[4] else ('Y' if zState[4] else 4)
five = 'X' if xState[5] else ('Y' if zState[5] else 5)
six = 'X' if xState[6] else ('Y' if zState[6] else 6)
seven = 'X' if xState[7] else ('Y' if zState[7] else 7)
eight='X' if xState[8] else ('Y' if zState [8] else 8)
print(f"{zero} | {one} | {two} ")     print(f"--|---|---
")
   print(f"{three} | {Four} | {five}
")     print(f"--|---|---")
print(f"{six} | {seven} | {eight} ")


def checkWin(xState, zState):
   wins = [[0, 1, 2], [3, 4, 5], [6, 7, 8], [0, 3, 6], [1, 4, 7], [2, 5, 8], [0, 4, 8], [2, 4, 6]]
for win in wins:
      if(sum(xState[win[0]], xState[win[1]], xState[win[2]]) == 3):
         print("x won the match")            return 1
if(sum(zState[win[0]], zState[win[1]], zState[win[2]]) == 3):
         print("y Won the
match")           return 0
return -1

if _name_ == "_main_":
   xState = [0, 0, 0, 0, 0, 0, 0, 0, 0]
zState = [0, 0, 0, 0, 0, 0, 0, 0, 0]
turn= 1 # 1 for x and 0 for o
print("Welcome to Tic Tac Toe")
   while(True):
      printBoard(xState, zState)
if (turn == 1):
```

```
        print("X's Chance")          value =
int(input("Please enter a value: "))
xState[value] = 1        else:
        print("Y's Chance")          value =
int(input("Please enter a value: "))
zState[value] = 1        cwin = checkWin(xState,
zState)       if(cwin != -1):
        print("Match over")
break
    turn = 1 - turn
```

OUTPUT:

```
In [2]: def sum(a, b, c ):
            return a + b + c

        def printBoard (xState, zState):
            zero = 'X' if xState[0] else ('Y' if zState[0] else 0)
            one = 'X' if xState[1] else ('Y' if zState[1] else 1)
            two = 'X' if xState [2] else ('Y' if zState[2] else 2)
            three= 'X' if xState[3] else ('Y' if zState[3] else 3)
            Four ='X' if xState[4] else ('Y' if zState[4] else 4)
            five = 'X' if xState[5] else ('Y' if zState[5] else 5)
            six = 'X' if xState[6] else ('Y' if zState[6] else 6)
            seven = 'X' if xState[7] else ('Y' if zState[7] else 7)
            eight='X' if xState[8] else ('Y' if zState [8] else 8)
            print(f"{zero} | {one} | {two} ")
            print(f"--|---|---")
            print(f"{three} | {Four} | {five} ")
            print(f"--|---|---")
            print(f"{six} | {seven} | {eight} ")


        def checkWin(xState, zState):
            wins = [[0, 1, 2], [3, 4, 5], [6, 7, 8], [0, 3, 6], [1, 4, 7], [2, 5, 8], [0, 4, 8], [2, 4, 6]]
            for win in wins:
                if(sum(xState[win[0]], xState[win[1]], xState[win[2]]) == 3):
                    print("x won the match")
                    return 1
                if(sum(zState[win[0]], zState[win[1]], zState[win[2]]) == 3):
                    print("y Won the match")
                    return 0
            return -1

        if __name__ == "__main__":
            xState = [0, 0, 0, 0, 0, 0, 0, 0, 0]
            zState = [0, 0, 0, 0, 0, 0, 0, 0, 0]
            turn= 1 # 1 for x and 0 for o
            print("Welcome to Tic Tac Toe")
            while(True):
                printBoard(xState, zState)
                if (turn == 1):
                    print("X's Chance")
                    value = int(input("Please enter a value: "))
                    xState[value] = 1
                else:
                    print("Y's Chance")
                    value = int(input("Please enter a value: "))
                    zState[value] = 1
                cwin = checkWin(xState, zState)
                if(cwin != -1):
                    print("Match over")
                    break
                turn = 1 - turn
```

```
Welcome to Tic Tac Toe
0 | 1 | 2
--|---|---
3 | 4 | 5
--|---|---
6 | 7 | 8
X's Chance
Please enter a value: 0
X | 1 | 2
--|---|---
3 | 4 | 5
--|---|---
6 | 7 | 8
Y's Chance
Please enter a value: 2
X | 1 | Y
--|---|---
3 | 4 | 5
--|---|---
6 | 7 | 8
X's Chance
Please enter a value: 4
X | 1 | Y
--|---|---
3 | X | 5
--|---|---
6 | 7 | 8
Y's Chance
Please enter a value: 5
X | 1 | Y
--|---|---
3 | X | Y
--|---|---
6 | 7 | 8
X's Chance
Please enter a value: 8
x won the match
Match over
```

CONCLUSION:

The key to this code is a back and forth between the two players, where the player whose "turn it is" desires to pick the move with the maximum score. In turn, the scores for each of the available moves are determined by the opposing player deciding which of its available moves has the minimum score.

REFERENCES:

-EDUCATIVE -CLEVERPROGRAMMER -PROGRAMIZ