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TE Comps A

AI Experiment no. 2

Code:

```
import random
```

```
def TicTacToe():
```

```
    board = [1, 2, 3, 4, 5, 6, 7, 8, 9]
```

```
    end = False
```

```
    MagicSquare = [4, 9, 2, 3, 5, 7, 8, 1, 6]
```

```
def PrintBoard():
```

```
    print()
```

```
    print(" ", board[0], "|", board[1], "|", board[2])
```

```
    print("---|---|---")
```

```
    print(" ", board[3], "|", board[4], "|", board[5])
```

```
    print("---|---|---")
```

```
    print(" ", board[6], "|", board[7], "|", board[8])
```

```
    print()
```

```
def GetNumber():
```

```
    while True:
```

```
        number = input()
```

```
        try:
```

```
            number = int(number)
```

```
            if number in range(1, 10):
```

```
                return number
```

```
            else:
```

```
                print("\nNumber not on board")
```

```
        except ValueError:
```

```
            print("\nThat's not a number. Try again")
```

```
            continue
```

```
def Turn(player):
```

```
    if player == "X":
```

```
        placing_index = GetNumber() - 1
```

```
        if board[placing_index] == "X" or board[placing_index] == "O":
```

```
            print("\nBox already occupied. Try another one")
```

```
            Turn(player)
```

```
        else:
```

```
            board[placing_index] = player
```

```
    else:
```

```
        # Modified AI strategy to prioritize winning or blocking player
```

```
        for i, mark in enumerate(board):
```

```

        if mark != 'X' and mark != 'O':
            board[i] = player
            if CheckWin(player):
                return
            else:
                board[i] = mark

        # If no winning move is available, choose a random move
        placing_index = random.choice([i for i, mark in enumerate(board) if mark != 'X' and
mark != 'O'])
        board[placing_index] = player

def CheckWin(player):
    count = 0
    for x in range(9):
        for y in range(9):
            for z in range(9):
                if x != y and y != z and z != x:
                    if board[x] == player and board[y] == player and board[z] == player:
                        if MagicSquare[x] + MagicSquare[y] + MagicSquare[z] == 15:
                            print("Player", player, "wins!\n")
                            return True

    for a in range(9):
        if board[a] == "X" or board[a] == "O":
            count += 1
        if count == 9:
            print("The game ends in a Tie\n")
            return True

while not end:
    PrintBoard()
    end = CheckWin("O")
    if end:
        break
    print("Choose a box player X")
    Turn("X")

    PrintBoard()
    end = CheckWin("X")
    if end:
        break
    print("AI is making a move...")
    Turn("O")

TicTacToe()

```

Output:

```
 1 | 2 | 3
---|---|---
 4 | 5 | 6
---|---|---
 7 | 8 | 9
```

Choose a box player X
5

```
 1 | 2 | 3
---|---|---
 4 | X | 6
---|---|---
 7 | 8 | 9
```

AI is making a move...

```
 1 | 2 | 0
---|---|---
 4 | X | 6
---|---|---
 7 | 8 | 9
```

Choose a box player X
2

```
 1 | X | 0
---|---|---
 4 | X | 6
---|---|---
 7 | 8 | 9
```

AI is making a move...

```
 1 | X | 0
---|---|---
 4 | X | 6
---|---|---
 7 | 8 | 0
```

Choose a box player X
8

```
 1 | X | 0
---|---|---
 4 | X | 6
---|---|---
 7 | X | 0
```

Player X wins!