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AI - LAB

Exp - 3

Pgm :-

```
import random
def   checkIfAvailable (pos) :
        if (board [pos] == " ") ;
                return 1
        else :
                return 0
def   checkWin (player) :
        for  x  in  winningPosition :
                if  board [x[0]] == board [x[1]] and  board [x[1]] == board [x[2]]
                        and  board [x[0]] != " " ;
                Print (player + " Won")
                return 0
        for  i  in  board :
                if  i == " " ;
                        return 1
        print (" Draw match")

def   algoWin (player) ;
        n = -1
        for  x  in  winningPosition :
                if (board [x[0]] == player  and  player [x[1]] == player)  and
                        CheckIfAvailable (x[2]) == 1 ;
                        n = x[2]
                        break
```

①

```python
        elif (board [x[1]] == player and board [x[2]] == player) and
            checkIfAvailable (x[0]) == 1;
        n = x[0]
            break
    elif (board [x[0]] == player and board [x[2]] == player and
        checkIfAvailable (x[1]) == 1;
            n = x[1]
            break

    return n


def    stopPlayer (player):
    n = -1

    for x   in   winningPosition:
            if (board [x[0]] == player  and  board [x[1]] == player)
                and   checkIfAvailable (x[2]) == 1;
            n = x[2]

            break
        elif (board [x[1]] == player  and  board [x[2]] == player) and
            checkIfAvailable (x[0]) == 1;
            n = x[0]
            break
        elif (board [x[0]] == player  and  board [x[2]] == player   and
            checkIfAvailable (x[0]) == 1;
            n = x[1]
            break
    return n
```

②

```
def algo TryWin (player):
    n = -1
    for x in winning Position:
        if board [x[0]] == player and check If Available (x[2]==1) and
            check If Available (x[1]==1);
            if check If Available (x[2]==1);
                n = x[2]
                break
            elif check If Available (x[1]==1):
                n = x[1]
                break
        elif board [x[1]] = player and check If Available (x[0]==1) and
            check If Available (x[2]==1):
            if check If Available (x[0]==1):
                n = x[0]
                break
            elif check If Available (x[2]==1);
                n = x[2]
                break

        return n

def random Pos ():
    while (1):
        n = random.randint (0, 8)
        if check If Available (n) == 1;
            return n
```

```python
def algoPlay(x, y):
    n = algoWin(x)
    if n == -1:
        n = stopPlayer(y)

    if n == -1:
        n = algoTryWin(x)

    if n == -1:
        n = randomPos()

    print("Algorithm inserted at ", end=" ")
    print(n)
    board[n] = x

def play():
    boardDisplay()
    flag = 1
    while (flag):
        print("\n Algorithm 1 playing \n")
        algoPlay("x", "o")
        boardDisplay()
        if checkWin("Algorithm 1") == 1:
            print("\n Algorithm 2 playing \n")
            algoPlay("o", "x")
            boardDisplay()
            if checkWin("Algorithm 2") == 0:
                flag = 0
        else:
            flag = 0

if __name__ == "__main__":
    play()
```

④