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Implementation of toy problems (TIC TAC TOE)

AIM:

To implement the toy problems (Tic Tac Toe) using python.

ALGORITHM:

1. Create a dictionary ‘theBoard’ which contains the keys of the dictionary.

2. Create a list ‘board_keys’ which append the key values.

3. Define a function printBoard() which will print the updated board after every move in the game.

4. Define a function game() which has all the game play functionality.

5. Create a variable ‘move’ which keeps track of the player moves.

6. Check if the player ‘X’ or ‘O’ wins for every move after 5 moves.

7. Use if...else condition to check whether the player ‘X’ or ‘O’ wins.

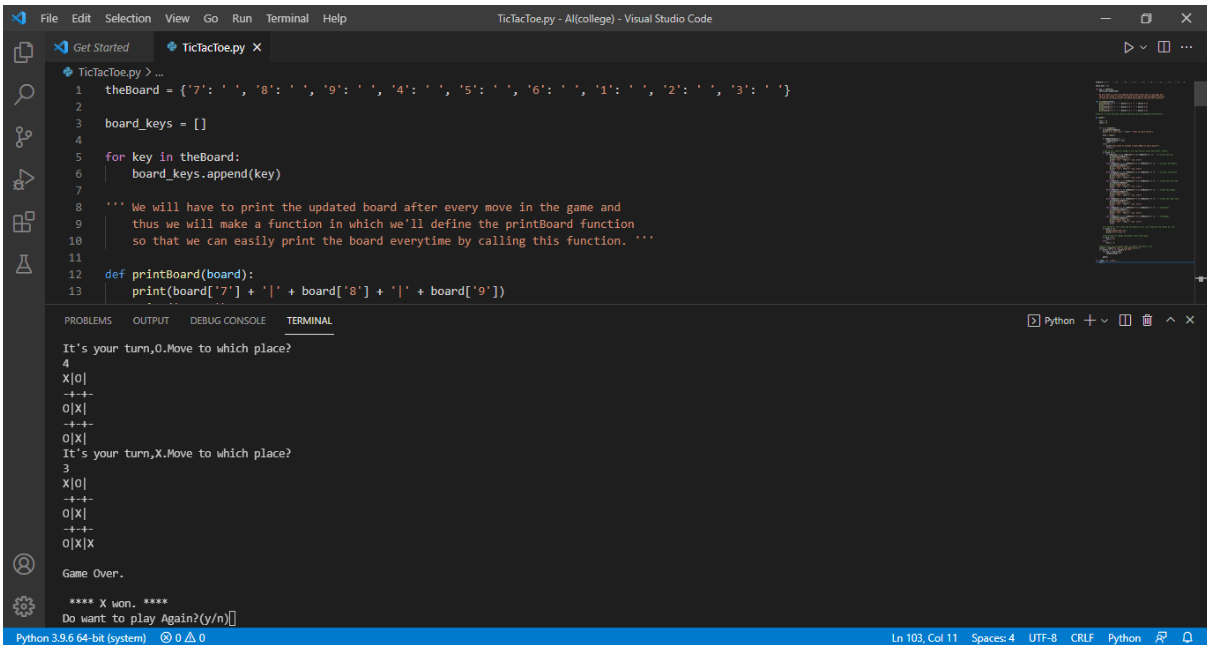
8. If neither ‘X’ nor ‘O’ wins, declare the result as a tie.

9. Ask if the player wants to restart the game or not.

SOURCE CODE:

```
theBoard = {'7': ' ', '8': ' ', '9': ' ', '4': ' ', '5': ' ' , '6': ' ', '1': ' ', '2': ' ', '3': ' '}

board_keys = []

for key in theBoard:
    board_keys.append(key)

''' We will have to print the updated board after every move in the game and
    thus we will make a function in which we'll define the printBoard function
    so that we can easily print the board everytime by calling this function. '''

def printBoard(board):
    print(board['7'] + '|' + board['8'] + '|' + board['9'])
    print('-+-+-')
    print(board['4'] + '|' + board['5'] + '|' + board['6'])
    print('-+-+-')
    print(board['1'] + '|' + board['2'] + '|' + board['3'])

# Now we'll write the main function which has all the gameplay functionality.
def game():

    turn = 'X'
    count = 0


    for i in range(10):
        printBoard(theBoard)
        print("It's your turn," + turn + ".Move to which place?")

        move = input()

        if theBoard[move] == ' ':
            theBoard[move] = turn
            count += 1
        else:
            print("That place is already filled.\nMove to which place?")
            continue

        # Now we will check if player X or O has won,for every move after 5 moves.
        if count >= 5:
            if theBoard['7'] == theBoard['8'] == theBoard['9'] != ' ': # across the top
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['4'] == theBoard['5'] == theBoard['6'] != ' ': # across the middle
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['1'] == theBoard['2'] == theBoard['3'] != ' ': # across the bottom
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['1'] == theBoard['4'] == theBoard['7'] != ' ': # down the left side
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['2'] == theBoard['5'] == theBoard['8'] != ' ': # down the middle
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['3'] == theBoard['6'] == theBoard['9'] != ' ': # down the right side
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['7'] == theBoard['5'] == theBoard['3'] != ' ': # diagonal
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break
            elif theBoard['1'] == theBoard['5'] == theBoard['9'] != ' ': # diagonal
                printBoard(theBoard)
                print("\nGame Over.\n")
                print(" **** " +turn + " won. ****")
                break

        # If neither X nor O wins and the board is full, we'll declare the result as 'tie'.
        if count == 9:
            print("\nGame Over.\n")
            print("It's a Tie!!")

        # Now we have to change the player after every move.
        if turn =='X':
            turn = 'O'
        else:
            turn = 'X'

    # Now we will ask if player wants to restart the game or not.
    restart = input("Do want to play Again?(y/n)")
    if restart == "y" or restart == "Y":
        for key in board_keys:
            theBoard[key] = ""

        game()

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

OUTPUT:



```python
theBoard = {'7': ' ', '8': ' ', '9': ' ', '4': ' ', '5': ' ', '6': ' ', '1': ' ', '2': ' ', '3': ' '}

board_keys = []

for key in theBoard:
    board_keys.append(key)

''' We will have to print the updated board after every move in the game and
    thus we will make a function in which we'll define the printBoard function
    so that we can easily print the board everytime by calling this function. '''

def printBoard(board):
    print(board['7'] + '|' + board['8'] + '|' + board['9'])
```

```
It's your turn,O.Move to which place?
4
X|O|
-+-+-
O|X|
-+-+-
O|X|
It's your turn,X.Move to which place?
3
X|O|
-+-+-
O|X|
-+-+-
O|X|X

Game Over.

 **** X won. ****
Do want to play Again?(y/n)
```

RESULT:

The Tic Tac Toe game has been successfully created using python.