Tic-Tac-Toe with Game Statistics

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1 Tic - Tac - Toe game in Python

2 Display Board 1

[2]:

```python
from IPython.display import clear_output
#Display Board
def display(n_lst):
    clear_output()
    print(' Tic-Tac-Toe ')
    print(' -------------')
    print('|    |     |    |')
    print('| ', n_lst[7], '| ', n_lst[8], ' | ', n_lst[9], '|')
    print('|    |     |    |')
    print(' ---------- ')
    print('|    |     |    |')
    print('| ', n_lst[4], '| ', n_lst[5], ' | ', n_lst[6], '|')
    print('|    |     |    |')
    print(' ---------- ')
    print('|    |     |    |')
    print('| ', n_lst[1], '| ', n_lst[2], ' | ', n_lst[3], '|')
    print('|    |     |    |')
    print(' -------------')
    #print('Raman Classes')
    print('Raman Classes')

#Check board for dummy input
n_lst = ['Dummy', 1,2,3,4,5,6,7,8,9]
display(n_lst)
```

```
 Tic-Tac-Toe 
 -------------
|    |     |    |
|  7 |  8  |  9 |
|    |     |    |
 ---------- 
|    |     |    |
|  4 |  5  |  6 |
|    |     |    |
 ----------
|    |     |    |
|  1 |  2  |  3 |
|    |     |    |
 -------------
Raman Classes
```

3 Display Board 2

[3]:

```python
from IPython.display import clear_output
# Display Board
def display(n_lst):
    clear_output()
    print('| ', n_lst[7], '| ', n_lst[8], ' | ', n_lst[9], '|')
    print('| ', n_lst[4], '| ', n_lst[5], ' | ', n_lst[6], '|')
    print('| ', n_lst[1], '| ', n_lst[2], ' | ', n_lst[3], '|')

n_lst = ['Dummy', 1,2,3,4,5,6,7,8,9]
display(n_lst)
```

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

3.0.1 We will proceed with Display Board 2 for simplicity.

[4]:

```python
n_lst = [' '] * 10
display(n_lst)
```

```
|    |     |    |
|    |     |    |
|    |     |    |
```

[8]:

```python
n_lst = [' '] * 10
for i in range(9):
    temp = int(input("Enter the input: "))
    n_lst[temp] = 'X'
    display(n_lst)
```

```
|  X |  X  |  X |
|  X |  X  |  X |
|  X |  X  |  X |
```

[9]:

```python
n_lst = [' '] * 10
for i in range(9):
    temp = int(input("Enter the input: "))
    if(i%2==0):
        n_lst[temp] = 'X'
    else:
        n_lst[temp] = 'O'
    display(n_lst)
```

```
|  X |  O  |  X |
|  O |  X  |  O |
|  X |  O  |  X |
```

[10]:

```
#Check winning condition
#Winning cases - 1,2,3 - 4,5,6 - 7,8,9 - 1,4,7 - 2,5,8 - 3,6,9 - 1,5,9 - 3,5,7
#Check all the eight cases
def check_winning_condition(mark, n_lst):
    if(((n_lst[1] == mark) and (n_lst[2] == mark) and (n_lst[3] == mark)) or
    ((n_lst[4] == mark) and (n_lst[5] == mark) and (n_lst[6] == mark)) or
    ((n_lst[7] == mark) and (n_lst[8] == mark) and (n_lst[9] == mark)) or
    ((n_lst[1] == mark) and (n_lst[4] == mark) and (n_lst[7] == mark)) or
    ((n_lst[2] == mark) and (n_lst[5] == mark) and (n_lst[8] == mark)) or
    ((n_lst[3] == mark) and (n_lst[6] == mark) and (n_lst[9] == mark)) or
    ((n_lst[1] == mark) and (n_lst[5] == mark) and (n_lst[9] == mark)) or
    ((n_lst[3] == mark) and (n_lst[5] == mark) and (n_lst[7] == mark))):
        return 1
    else:
        return 0
```

[12]:

```
n_lst = [' '] * 10
for i in range(9):
    temp = int(input("Enter the input: "))
    if(i%2==0):
        n_lst[temp] = 'X'
        mark = 'X'
        temp1 = check_winning_condition('X', n_lst)
    else:
        n_lst[temp] = 'O'
        mark = 'O'
        temp1 = check_winning_condition('O', n_lst)
    display(n_lst)
    if(temp1 == 1):
        break
if(temp1 == 1):
    if(i%2 == 0):
        print("Player1 won the match!")
    else:
        print("Player2 won the match!")
else:
    print("Match tie!")
```

```
|  X |     |    |
|  O |  X  |  O |
|  X |  O  |  X |
Player1 won the match!
```

4 Final code for Tic - Tac - Toe game

- Restart the Kernel and run from this cell onwards.

4.1 Display Board

[1]:

```
from IPython.display import clear_output
# Display Board
def display(n_lst):
    clear_output()
    print('| ', n_lst[7], '| ', n_lst[8], ' | ', n_lst[9], '|')
    print('| ', n_lst[4], '| ', n_lst[5], ' | ', n_lst[6], '|')
    print('| ', n_lst[1], '| ', n_lst[2], ' | ', n_lst[3], '|')

n_lst = ['Dummy', 1,2,3,4,5,6,7,8,9]
display(n_lst)
```

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

4.2 Check Winning Conditions

[3]:

```
#Check winning condition
#Winning cases - 1,2,3 - 4,5,6 - 7,8,9 - 1,4,7 - 2,5,8 - 3,6,9 - 1,5,9 - 3,5,7
#Check all the eight cases
def check_winning_condition(mark, n_lst):
    if(((n_lst[1] == mark) and (n_lst[2] == mark) and (n_lst[3] == mark)) or \
    ((n_lst[4] == mark) and (n_lst[5] == mark) and (n_lst[6] == mark)) or \
    ((n_lst[7] == mark) and (n_lst[8] == mark) and (n_lst[9] == mark)) or \
    ((n_lst[1] == mark) and (n_lst[4] == mark) and (n_lst[7] == mark)) or \
    ((n_lst[2] == mark) and (n_lst[5] == mark) and (n_lst[8] == mark)) or \
    ((n_lst[3] == mark) and (n_lst[6] == mark) and (n_lst[9] == mark)) or \
    ((n_lst[1] == mark) and (n_lst[5] == mark) and (n_lst[9] == mark)) or \
    ((n_lst[3] == mark) and (n_lst[5] == mark) and (n_lst[7] == mark))):
        return 1
    else:
        return 0
```

4.3 Add replay option along with game statistics

[4]:

```
#Added names to players
#Added the game play statistics
```

```python
#Total number of matches played, winning count of player1, winning count of player2, number of match ties
#Homework - Add game statistics in CSV file.
#Homework - Add option to display game stats using plots made by using matplotlib, seaborn, or plotly.
player1_name = input('Enter Player1 name: ')
player2_name = input('Enter Player2 name: ')
winning_count_p1 = 0
winning_count_p2 = 0
tie_count = 0
while(True):
    n_lst = [' '] * 10
    display(n_lst)
    player1_mark = input(str(player1_name) + ", please enter your choice! - 'X' or 'O': ")
    if(player1_mark.upper() == 'X'):
        player1_mark = 'X'
        player2_mark = 'O'
    else:
        player1_mark = 'O'
        player2_mark = 'X'
    for i in range(9):
        if(i%2==0):
            #temp = enter_valid_input(n_lst)
            temp = int(input(str(player1_name) + ', enter the input: '))
            n_lst[temp] = player1_mark
            mark = player1_mark
            temp1 = check_winning_condition(mark, n_lst)
        else:
            #temp = enter_valid_input(n_lst)
            temp = int(input(str(player2_name) + ', enter the input: '))
            n_lst[temp] = player2_mark
            mark = player2_mark
            temp1 = check_winning_condition(mark, n_lst)
        display(n_lst)
        if(temp1 == 1):
            break
    if(temp1 == 1):
        if(i%2 == 0):
            print('Hurrey! ' + str(player1_name) + ' won!')
            winning_count_p1 = winning_count_p1 + 1
        else:
            print('Hurrey! ' + str(player2_name) + ' won!')
            winning_count_p2 = winning_count_p2 + 1
    else:
        print('There is a tie.')
        tie_count = tie_count + 1
    replay_status = input('Do you want to play again? - Enter Yes or No: ')
    if(replay_status == 'Yes'):
        clear_output()
    else:
        clear_output()
        print('Total matches played = ' + str(int(winning_count_p1 +␣
 ↪winning_count_p2 + tie_count)))
        print('Number of matches won by ' + str(player1_name) + ' = '␣
 ↪+str(winning_count_p1))
        print('Number of matches won by ' + str(player2_name) + ' = '␣
 ↪+str(winning_count_p2))
        print('Tie count = ' + str(tie_count))
        break
```

```
Total matches played = 4
Number of matches won by Rishabh = 2
Number of matches won by Vinay = 1
Tie count = 1
```

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```
[ ]:
```