

**CSC 1850 (Fall 2025)**  
**Optional Project**  
**(0 points)**

**Optional Optional Optional Optional Optional Optional Optional Optional**

**Problem**

Write a JAVA program that plays the *TicTacToe* game. In the game, you will play with the computer to take turns marking an available cell in a  $3 \times 3$  grid with tokens (U for yourself and C for the computer). When a player has placed three tokens in a horizontal, vertical, or diagonal row on the grid, the game is over and that player has won. A draw (no winner) occurs when all the cells on the grid have been filled with tokens and neither player has achieved a win.

- The program initializes the grid with all question marks as follows.

```
? ? ?
? ? ?
? ? ?
```

- The program repeatedly prompts you to enter the position of an available cell you would like to mark (i.e., in which row and which column). The index of both rows and columns starts from 0. Then the program marks that cell with the letter U and determines the status of the game. If the game is unfinished yet, the computer randomly marks an available cell with letter C, refreshes the grid and determines the status of the game. The program continues until the game is over.

**Please discover/find the classes/objects for the program first.**

**The game itself should be a class/object. The player can be a class/object. The other player(computer) can be a class/object.**

The following are some examples when running the program:

```
>java TicTacToe
? ? ?
? ? ?
? ? ?

Which cell would you like to mark (row and column)? 1 1
? ? ?
? U ?
? C ?

Which cell would you like to mark (row and column)? 2 0
? C ?
? U ?
U C ?

Which cell would you like to mark (row and column)? 0 2
? C U
```

```
? U ?  
U C ?
```

Congratulation! You won!

```
>java TicTacToe  
? ? ?  
? ? ?  
? ? ?
```

```
Which cell would you like to mark (row and column)? 2 2  
C ? ?  
? ? ?  
? ? U
```

```
Which cell would you like to mark (row and column)? 0 1  
C U ?  
? ? C  
? ? U
```

```
Which cell would you like to mark (row and column)? 0 2  
C U U  
? ? C  
? C U
```

```
Which cell would you like to mark (row and column)? 1 0  
C U U  
U C C  
? C U
```

```
Which cell would you like to mark (row and column)? 2 0  
C U U  
U C C  
U C U
```

Game is over with no winner!

```
>java TicTacToe  
? ? ?  
? ? ?  
? ? ?
```

```
Which cell would you like to mark (row and column)? 1 1  
? ? ?  
? U C  
? ? ?
```

```
Which cell would you like to mark (row and column)? 0 0  
U ? ?  
? U C
```

? ? C

```
Which cell would you like to mark (row and column)? 2 1
U ? C
? U C
? U C
```

**Sorry, you lost!**

#### **Other Requirements**

Your code should include comments as specified in the course syllabus.