CSCI 2251, Summer 2020
Programming Assignment 1 – TicTacToe

This assignment has three objectives:

1. to create objects
2. to implement/apply enum type
3. to write a game called TicTacToe
4. to compose text based user interface (not GUI)
5. to write object oriented design document, including UML diagram(s).

Problem Description

This problem is from the textbook exercise 8.18 (page 325): the Tic-Tac-Toe
Create a class `TicTacToe` that will enable you to write a program to play Tic-Tac-Toe. The class contains a **private** 3-by-3 two-dimensional array (nine cells). Use an `enum` type to represent the status of the game after a move, `WIN, DRAW, CONTINUE`. The value in each cell of the array should be named `X`, `O`, and `EMPTY` (for a position that does not contain an `X` or an `O`). The constructor should initialize the board elements to `EMPTY`. Allow two human players. Whenever the first player moves, place an `X` in the specific square, and place an `O` wherever the second player moves. Each move must be to an empty square. After each move, determine whether the game has been won and whether it's a draw.
Create another class `TicTacToeTest` contains the `main()` method, instantiates the object `TicTacToe`, and invokes the methods of `TicTacToe` (`printBoard(), play()`) to play the game.

In your class, you need to have the following

- Constructor: construct the board for the game; initialize the instance variables
- Method `play()`: loop until the game is over
- Method `printStatus()`: prompt for the turn of the player, winner, or draw
- Method `gameStatus()`: return the status of the game after a move, `WIN, DRAW, COUTINUE`
- Method `printBoard()`: Output the 3-by-3 grid board on the screen
- Method `validMove()`: validate the interned move by player

Specifications

Your program must meet the following specifications:

- Work on your own
- The name of the source code file must be exactly
  `TicTacToe.java` *(Name it exactly - capital/lower case letters are important!)*
  `TicTacToeTest.java` *(Name it exactly - capital/lower case letters are important!)*
  Note: the class name needs to be the same as your source file name
- Program header, comments at the top with short description of your program, your name, e-mail, date and course title.

- We expect programming assignments to be implemented using Java 1.8. Your code will be tested on the machines, Windows or Linux, installed the same Java 1.8 version (Java compiler and Java Virtual Machine). Make sure your code runs on at least one of those machines.
- Two part submissions (Blackboard):
    - First part: the file contains a brief description on how to solve this problem, and the UML class diagrams (Word document, Open Office, or others)
    - Second part: your java source code file(s) (.java file(s) only).
- Command line only, do not use graphic user interface (GUI). I will not accept any GUI program.
- No late, refer to the syllabus for the late policy.

I will test your program as follows (assume both `TicTacToe.java` and `TicTacToeTest.java` are in the default folder)

```
javac TicTacToeTest.java
java TicTacToeTest
```

A sample execution of the `java TicTacToeTest` command as the following and your program output should look like the same:

After issued `Java TicTacToeTest` command on the shell (cmd, powershell, or any Linux/Unix shell), your screen should look like to the followings: