Assignment 1: Advanced Programming

Due date: Monday 10th March 2014 by 5:00PM

N.B. Submit this assignment using Moodle before the above date.

Assignment Marking: 15% of overall

Description:

Create a tic-tac-toe (X's and O's) JFrame application game in Java using Swing. The frame will have nine input fields to accept X and O input from the user and any necessary control buttons etc. The focus of this assignment is to implement rigorous exception handling into your code so that the potential errors with the system are correctly handled using exception handling. The system must be modularized, i.e., split into classes that perform specific functions, at a minimum there should be a GUI class for user input and a Gamelogic class which controls the logic of the game conditions, e.g, winning, losing, turns, stalemate. Additionally the project must have a minimum of three custom exception classes created and <u>used</u>. The custom exception classes must be used to report the status of the game to the user and must be called: IncorrectEntryException, PlayerOutOfTurnException and StalemateException. The IncorrectEntryException must be thrown when a user enters a character <u>other than an X or an O</u> into the game interface; the PlayerOutOfTurnException must be thrown when a user attempts to play an X when the system is expecting and O (or visa versa); the StalemateException must be thrown when all the game cells are full and no three-in-a-row has been achieved. The user must receives a clear explanation of the exception that has occurred preferably using an appropriate dialog box. The project must be delivered with FULL Javadoc comments and in a single executable JAR file.

The required classes:

You MUST split the program into at least **<u>FIVE</u>** classes in order to receive the appropriate marks:

1. A **JFrame** class to act as a GUI (this class should catch exceptions)
2. A **Gamelogic** class to provide the logic for computing the end of the game and/or the stalemate conditions or winning and losing conditions (this class should be the class used to throw exceptions)
3. A minimum of three exception classes namely, **IncorrectEntryException**, **PlayerOutOfTurnException** and **StalemateException**.

What to hand up:

One executable JAR file with the entire working program.

N.B. Proposed Marking Scheme:

The marks will be awarded as follows **[Total 100 Marks]:**

1. Deliver a working GUI JFrame with input fields and ActionListeners **[20 marks]**

2. Include custom exception class IncorrectEntryException **[10 marks]**

3. Include custom exception class PlayerOutOfTurnException **[10 marks]**

4. Include custom exception class StalemateException **[10 marks]**

5. Handle/Throw the custom exceptions **[20 marks]**

6. Use dialogue boxes to inform the user of game conditions reached **[10 marks]**

7. Deliver a SEPARATE GUI class and GameLogic classes that work together **[10 marks]**

8. Deliver the project as an executable JAR file **[5 marks]**

9. Deliver Javadoc for the project and add it to the JAR file **[5 marks]**

Note:

This is an individual assignment, any student involved in collusion will get 0%

Any assessments handed up LATER than the above deadline will receive 0% (If there are any genuine circumstances affecting the delivery date it is your responsibility to inform the lecturer)

You **<u>CAN</u>** ask questions and ask for help with this assignment during the labs, lectures, or by e-mail