Hello,

I'm the project manager at a Command Line Games, Inc. I have a small dev team and we hired a consulting company to help us build an app that will feature a number of games for children, one being Tic Tac Toe.

They just demoed the basic version of the Tic Tac Toe game in the console and my boss wasn't thrilled with what he saw. The game play was rough. It didn't function as he expected. We've decided to move in a different direction and bring in someone else. While my boss doesn't have a technical background, I do, and we both understand the importance of writing code that can be maintained in the future.

We would like you to improve the existing Tic Tac Toe that the previous firm worked on. There are a number of issues with the code, three of which I've highlighted below. It would be great if you could fix each of these.

- The game does not gracefully handle bad user input. When the user enters something unexpected (like an asterisk) the game cannot handle it. It doesn't validate that the user's input is correct.
- In its current form, it's supposed to be played at a difficulty level of "hard", meaning the computer player cannot be beaten. In reality, however, the computer player can be beaten in certain situations. This is more like a "medium" difficulty level. We just want a "hard" difficulty level.
- The game play left a lot to be desired. The user messages are lacking. They're unclear. It's confusing to see the spot that's selected and the board all on the screen. It's easy to get lost in what's happening. It's weird the way the computer picks its spot without notifying the user.

As you can tell, there are a lot of problems and from what our devs say, the code itself is a mess. It's untested and therefore unmaintainable. It's poorly-written and inflexible. This puts us in a difficult position because we have a number of features we would like to add and we're hoping you can help. We hope that you'll be able to help us get the code in a better state. Without that, our devs don't even think we'll be able to implement the new features my boss has requested.

For one thing, the existing code is so coupled to the console that implementing any other UI is nearly impossible! We'd love to get the code to a place where it would be easier for us to build out a web application in the future. Right now it's written in such a way that you couldn't reuse any of the code for the web application. We'd just have to start from scratch. We would like to focus on a few small features related to the customization at the start of the game. These features are listed below.

- Allow the user to choose which player goes first.
- Allow the user to choose with what "symbol" the players will mark their selections on the board (traditionally it's "X" and "O").

Could you implement these features?

Thanks for your help,
Ryan