5COSC023W - Tutorial 6 Exercises

Tic-Tac-Toe — Check for Winners

In the last tutorial we developed a tic-tac-toe game where the computer plays random moves. There was no checking for winners.

The source code we developed can be found at the link below:

`https://dracopd.users.ecs.westminster.ac.uk/DOCUM/courses/5cosc023w/tic_tac_toe_randomplayer_nowinnerchecking.zip`

If you have not saved your previous implementation, create a new project and copy the src directory from the zip above. You will need to change the package names in the files to match the package name of your newly created project..

1. Create a new function `checkWinner(): Char` inside the `Board` class which checks if there is a winner. The function returns 'X' if player `X` has won and 'O' if player `O` has won. If there is no winner, the function returns '-'.
2. Call the `checkWinner()` function at the appropriate places within the main activity to check for winners.
3. Modify your code so that once a winner is determined, a pop up window appears with the winner information and make sure that the game is not playable any more (**Hint:** Make the buttons non-clickable).

The Computer plays Logically

Implement an intelligent version of the computer player. It will be easier if you create your own `Player` class which has 2 subclasses `RandomPlayer` and `LogicalPlayer`

The intelligent computer plays according to the following logic:

1. The intelligent player is able to choose winning positions, i.e. if the computer player has already placed 2 `O` is a row, column or diagonal then it places the next `O` in the slot which completes 3 `O` to win the game.
2. The intelligent computer player is able to defend itself, i.e. if the human player has already placed 2 `X` in a row, column or diagonal, the computer player will choose the free slot which will prevent the human to win in their next move.
3. If there is neither a winning or defending move, the intelligent player will choose a valid move which creates 2 `O` is a row, column or diagonal.
4. If none of the above is applicable the computer player will choose a random valid slot.

Implementing a custom pop up window

Implement a custom popup window and replace your calls to `Toast`. You might would like to search in the Android documentation or look at the sample solution.

Your tutor will also show you how to do this, assuming that you have completed the previous tasks within the tutorial slot.