# Checkers' User Manual

## Run the Game

To run the game you can simply go to this [URL](URL) and you should be able to see the application running in your browser. If you want to run the application locally you can follow the next instructions instead. Otherwise, you can jump to the next section.

First of all, you must download the project and you can find it [here](here). You must also download the library WebCGF used by the project to abstract more complex calls to WebGL and others. The WebCGF library can be found [here](here).

After you have the two folders, you should put them inside an empty folder of you choice (let's call it root folder from now on) and create a web server on it. You can open an HTTP server in several ways:
-   Open a terminal in root folder and type the command ***python -m http.server*** if you have python installed.
-   Install **Google Chrome Web Server** extension, open it, choose the root folder and select the root folder.
-   Open the root folder in VS code, install **Live Server** extension and press the button to create the server.

Now you can simply go to you browser and insert the URL ***[http://localhost](http://localhost):<port>/tp3*** being ***<port>*** the port you create the server.

You should be able to use the application now. Check the following sections to learn how to use it and how to make the most of it.

## Main menu and Scene

Initially, we provide the user with a Menu with a few buttons:
-   Go to Scene: This button is used to go to the scene, so the user can visualize the scene selected and play the checkers game.
-   Theme 1/2/3: By selecting one of these themes, the user is changing the scene on which the Checkers game will be, having 3 choices: Theme 1 corresponds to *Feup Garden*; Theme 2 corresponds to *Feup "Queijos" Class Room*; Theme 3 corresponds to an *Exquisite Living Room*.
-   Turn max time and Player max time: These buttons correspond, respectively, to changing the game configurations by increasing/decreasing the max time on each turn and the max time of all player turns. This leads to a realistic game, where each player has a limited time and needs to think faster.

After clicking on "Go to Scene" button described above, the user is presented with a top left menu, containing "Start", "Undo", "Replay", "Restart", "Camera" and "Menu" buttons. On the top right, it has an interface where he can change the cameras and lights, and disable or enable some features.

# Game instructions and Buttons actions

When the "Start" button is pressed, the game starts on Player 1 turn. By selecting a piece, the player has visual feedback showing the valid moves from that piece. If no valid moves appear, it means that he can't move that piece to any place, because the places around are already filled or because he has a valid move where can eat more enemy pieces. This means if he has 2 plays (one to eat 1 piece, one to eat 2 pieces), he must choose the play that eats 2 pieces). This "force to eat" feature can be unselected on the interface on the right of the screen, by removing the tick on the respective option. By doing that, the player is free to move any piece to the neighbors' valid positions, even if other pieces would eat an enemy.

To choose the move, after selecting the piece to move and having valid moves, the player only needs to select the tile to which he wants to move the piece.
When he does it, the piece has a linear movement to the respective position. If on the path it has a collision with an enemy piece, it "eats" the enemy piece and the second one starts a parabolic movement to the auxiliar board, while the first continues its linear movement.

If a piece of the current player reaches the first row of the enemy field (or the last row of the board, from the player's view), the piece is converted into a King. To do so, a piece from the auxiliar board is placed on top of the piece to be converted with a smooth parabolic movement. In case there are no pieces of the current player in the auxiliar board, the King waits for a piece to be eaten by the enemy, and then it's made a king. By being a king, the piece has more freedom, being able to move forward and backward. The eating behavior is the same as a normal piece but it can be done in both directions.

At the end of each turn, the camera moves to the respective player's view, so the player has their perspective of the board. This can also be done by pressing the "Camera" button on the left menu, changing between 3 views: Player 1, Auxiliar Board (board that contains the scores, times, and pieces eaten by each player), and Player 2 Views. This button is only available if the user is on "Checkers" view, appearing a popup showing to change to that camera if the player wants the button to have an action.

The end of the game is reached if any player exceeds the time limit defined in the initial menu or if there are no more available plays for each player. When this happens, a menu displaying the results (score, current and total time of each player, and total time of the game) appears, and two buttons can be pressed: one saying thank you, that will go to the scene; and other saying Replay Game. The second one, like the replay button in the fixed menu on the left of the screen, will init the replay of the game, doing every move provided for both player1 and player2 from the beginning of the game until the current play (in case it's end game, until the game ends). This allows the user to visualize every play done.

On the menu, as said above, we also have the following buttons:
- Undo: when pressed, the last move on the game is undone.
- Restart: restarts the game, if there was any currently being played.
- Menu: goes to the initial menu, where the user can set the theme and game configurations.