

Deliverables for milestone 2:

**Partial functionality:**

The application:

- a. has the tic-tac-toe table completely done.
- b. has 'X' and 'O' images for both the players.
- c. randomly assigns 'X' and 'O' to player one and player 2.
- d. Alternates the turns between the players.
- e. Assigns each player 15 seconds of time to play. If no move is made, another player is given the opportunity to play.
- f. Displays the time slot allocated for each player.
- g. Has 'start' button to start the game and 'stop' button to end the game.

**Functionality yet to be implemented:**

- a. I have started looking into min-max algorithm. Still trying to figure out how it works. So far I have worked out the basics of how the algorithm works. Learning how the algorithm can be tweaked so that player of the game is not frustrated. From what I understand, min-max algorithm makes the game such that the best a player can do is draw with the Artificial Intelligence of the game. This makes the game no fun to play!
- b. Still need to add logic so that game is over after a total of 9 moves (i.e. all the cells in the tic-tac-toe table are filled).
- c. Add option to select between 'Single Player' and 'Multi-player' mode.

**User flow for the application:**

On launching the application, the user will be presented with the initial screen where the timer is stopped, all the cells are empty. However, player one and player two are assigned 'X' or 'O'.

By default, the game will select single player in segmented view. This mode will allow the player to play against the computer. The player can also select '2-player' mode in the segmented control.

In order to start the game, the player has to press 'Start'. This will disable the segmented control. It can be re-enabled by pressing the 'Stop' button.

On pressing the 'Start' button, all the fields in the tic-tac-toe table will be enabled. Player is free to select anywhere. 'Start' button is disabled again until 'Stop' button is pressed.

Player can play until the game is over.

At the game of the end, the player will be prompted to play again. On selecting 'Yes', player will be able to continue with the currently selected mode. On selecting 'No', the game will behave like 'Stop' button has been pressed i.e.

- Timer will stop.

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- All the fields in the tic-tac-toe table will be disabled.
- Segmented view will be re-enabled.

At any point in the game, the player can press the 'Stop' button to stop the game. There isn't an explicit 'End' game button. The hope is that the application will be moved to background when the player is done playing.

### **Algorithm and logic:**

Single player mode: For this, the algorithm will be the min-max algorithm. Currently working on this algorithm. Still need to put time into it to understand it and then tweak it.

Multiplayer mode: In multiplayer mode, the logic and algorithm is pretty simple.

- a. Randomly select one player as the first player to start the game.
- b. Alternate turns between the two players.
- c. On selecting all the 9 cells in the table, declare winner or draw.
- d. Prompt user to 're-match' or 'stop'.
- e. On 'stopping', the players are free to either play single player mode or continue multiplayer mode.

### **Assets:**

Images not included in the application are uploaded in the Images folder.