

# Engage 2020

## ENTERTAIN THE CREW

### Project:

Unbeatable Tic-tac-toe game using Minimax algorithm

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### Uniqueness of the Solution

#### + Features :

- ★ Multiplayer
- ★ Hints and instructions
- ★ Timer

#### Suggestions :

##### ➤ Score Board:

- Introduce **reset board** and **reset score** options for starting a new game with running scores and starting a new game afresh respectively.
- Map a variable for each of the players to increment (if wins) and display the scores.

##### ➤ Undo/Redo:

- Declare a data structure which could store the states of the board [~adding prevState of AppProvider.js in a stack]. Display two states back for undo or two states ahead for redo and continue the game.

##### ➤ Hints:

- Declare a variable which could read all the cells of the current state of the board, lookup for a move in a dataset composed of

all best possible moves for current move and output it on the screen.

➤ **Timer:**

- Set a timer for each move of the players. If the player's thinking time exceeds the limit, he/she loses.

➤ **AI+**

- Allot some arbitrary thinking-time for the players to make a move and if it exceeds the limit, the AI can make a random move.

## **Bottlenecks :**

### **Timer -**

- Malfunction of the timer if New Game with Timer button is clicked before the Timeout.
  - **Complication:** duplication of the variable count of the state.
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## **Code Quality**

**Size = 344 KB**

**Cyclomatic complexity value = 6**

- minimax.js = 6
  - Metrics:-
  - There are **8** functions in this file.
  - Function with the largest signature takes **3** arguments, while the median is **1.5**.
  - Largest function has **8** statements in it, while the median is **1**.
  - The most complex function has a cyclomatic complexity value of **6** while the median is **1**.
- serviceWorker.js = 5
  - Metrics:-

- There are **16** functions in this file.
- Function with the largest signature takes **2** arguments, while the median is **1**.
- Largest function has **8** statements in it, while the median is **1**.
- The most complex function has a cyclomatic complexity value of **5** while the median is **1**.
- Other js files have cyclomatic complexity value **1**.