Project Proposal

<u>TEAM NAME</u> –	**CODE BLOOD**	
<u>PORJECT NAME</u> –	**Tic Tac Toe Game**	
<u>TEAM MEMBERS</u> –		
	Aman	19103013
	Rohit Bajaj	19103017
	Arzoo Goyal	18103087
	Geetika Bansal	18103028
	Piyush	3rd Year

<u>ABOUT PROJECT</u>

TIC TAC TOE is a (one 3X3 board) very popular game.This game is played between two players. The first player makes move with the circle(0) or cross(X).The player,who has first formed a horizontal,vertical or diagonal sequence first is a winner. This game is implimented using the minimax algorithm.

Although this is a simple project but we can make this project big and quite learning by adding different modes of playing (Man vs Computer, Man vs Man, 2-player online game). Still working on the project.

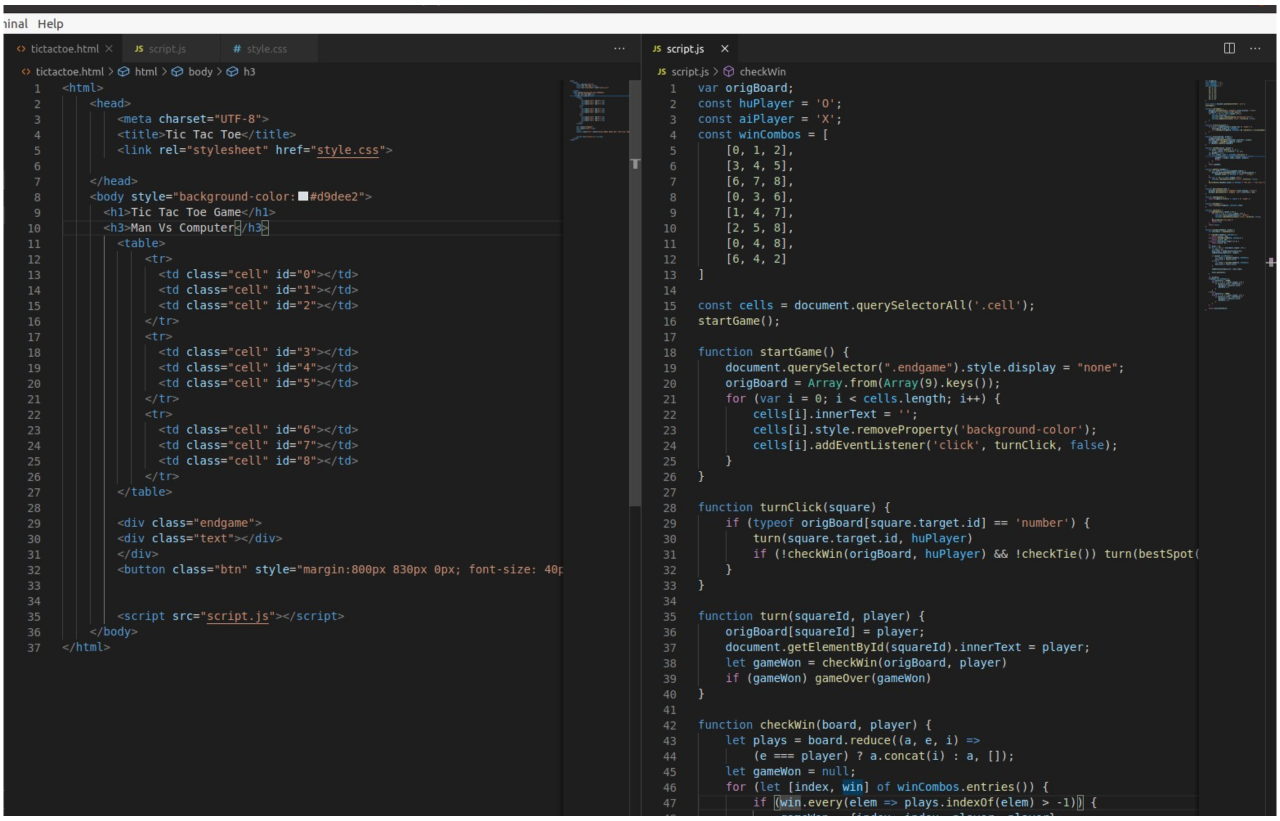
WHAT WE WILL DO IN PROJECT
In this project we will make a game of tic tac toe which will be played between user and computer.

Technologies to be used:
Bootstrap, HTML, CSS and javascirpt.

Learning Outcomes:
Every team member has learned many new technical skills. They are :

- Python (1st yearities)
- HTML + CSS (1st yearities)
- Bootstrap (2nd yearities)
- Javascript (2nd yearities)

Code Pics:

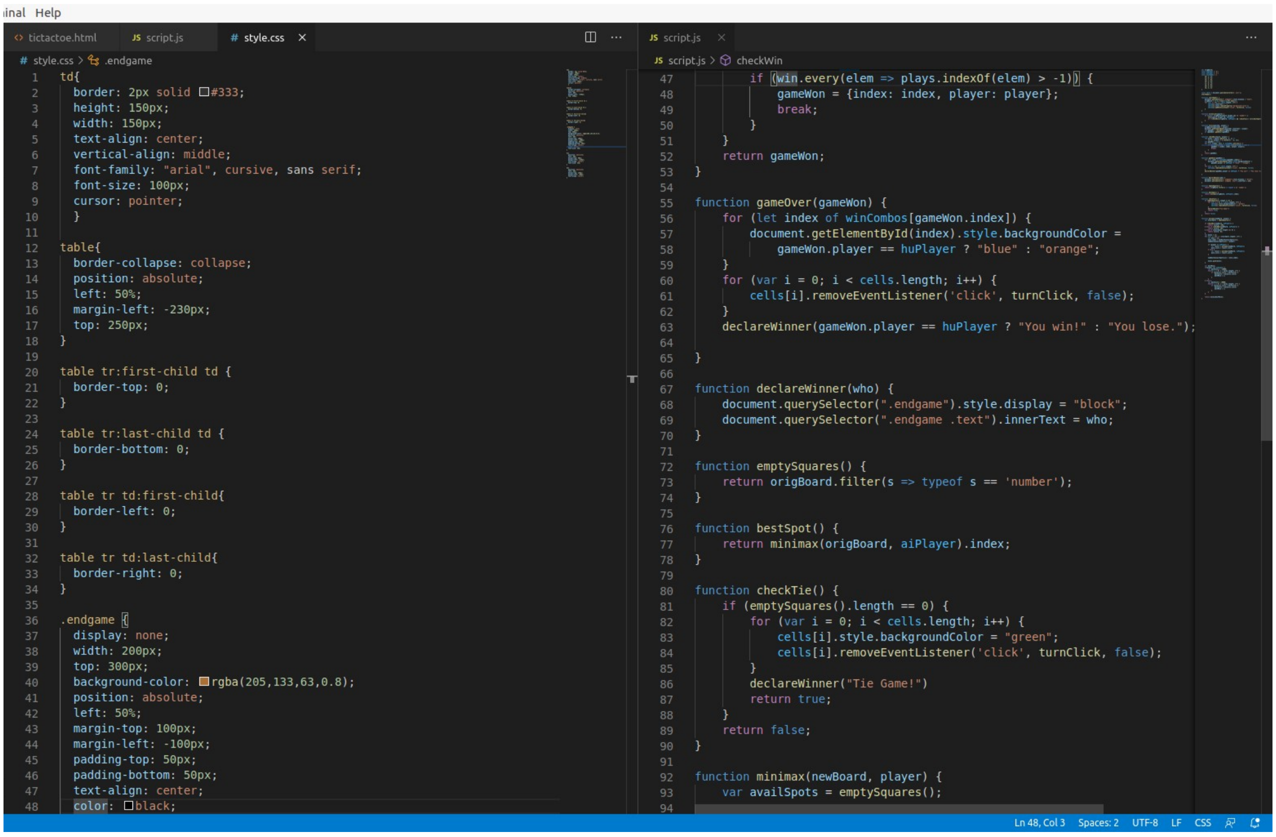


tictactoe.html

```html
<html>
    <head>
        <meta charset="UTF-8">
        <title>Tic Tac Toe</title>
        <link rel="stylesheet" href="style.css">

    </head>
    <body style="background-color:#d9dee2">
      <h1>Tic Tac Toe Game</h1>
      <h3>Man Vs Computer</h3>
        <table>
            <tr>
              <td class="cell" id="0"></td>
              <td class="cell" id="1"></td>
              <td class="cell" id="2"></td>
            </tr>
            <tr>
              <td class="cell" id="3"></td>
              <td class="cell" id="4"></td>
              <td class="cell" id="5"></td>
            </tr>
            <tr>
              <td class="cell" id="6"></td>
              <td class="cell" id="7"></td>
              <td class="cell" id="8"></td>
            </tr>
        </table>

        <div class="endgame">
        <div class="text"></div>
        </div>
        <button class="btn" style="margin:800px 830px 0px; font-size: 40p


        <script src="script.js"></script>
    </body>
</html>
```

script.js

```javascript
var origBoard;
const huPlayer = 'O';
const aiPlayer = 'X';
const winCombos = [
    [0, 1, 2],
    [3, 4, 5],
    [6, 7, 8],
    [0, 3, 6],
    [1, 4, 7],
    [2, 5, 8],
    [0, 4, 8],
    [6, 4, 2]
]

const cells = document.querySelectorAll('.cell');
startGame();

function startGame() {
    document.querySelector(".endgame").style.display = "none";
    origBoard = Array.from(Array(9).keys());
    for (var i = 0; i < cells.length; i++) {
        cells[i].innerText = '';
        cells[i].style.removeProperty('background-color');
        cells[i].addEventListener('click', turnClick, false);
    }
}

function turnClick(square) {
    if (typeof origBoard[square.target.id] == 'number') {
        turn(square.target.id, huPlayer)
        if (!checkWin(origBoard, huPlayer) && !checkTie()) turn(bestSpot(
    }
}

function turn(squareId, player) {
    origBoard[squareId] = player;
    document.getElementById(squareId).innerText = player;
    let gameWon = checkWin(origBoard, player)
    if (gameWon) gameOver(gameWon)
}

function checkWin(board, player) {
    let plays = board.reduce((a, e, i) =>
        (e === player) ? a.concat(i) : a, []);
    let gameWon = null;
    for (let [index, win] of winCombos.entries()) {
        if (win.every(elem => plays.indexOf(elem) > -1)) {
```

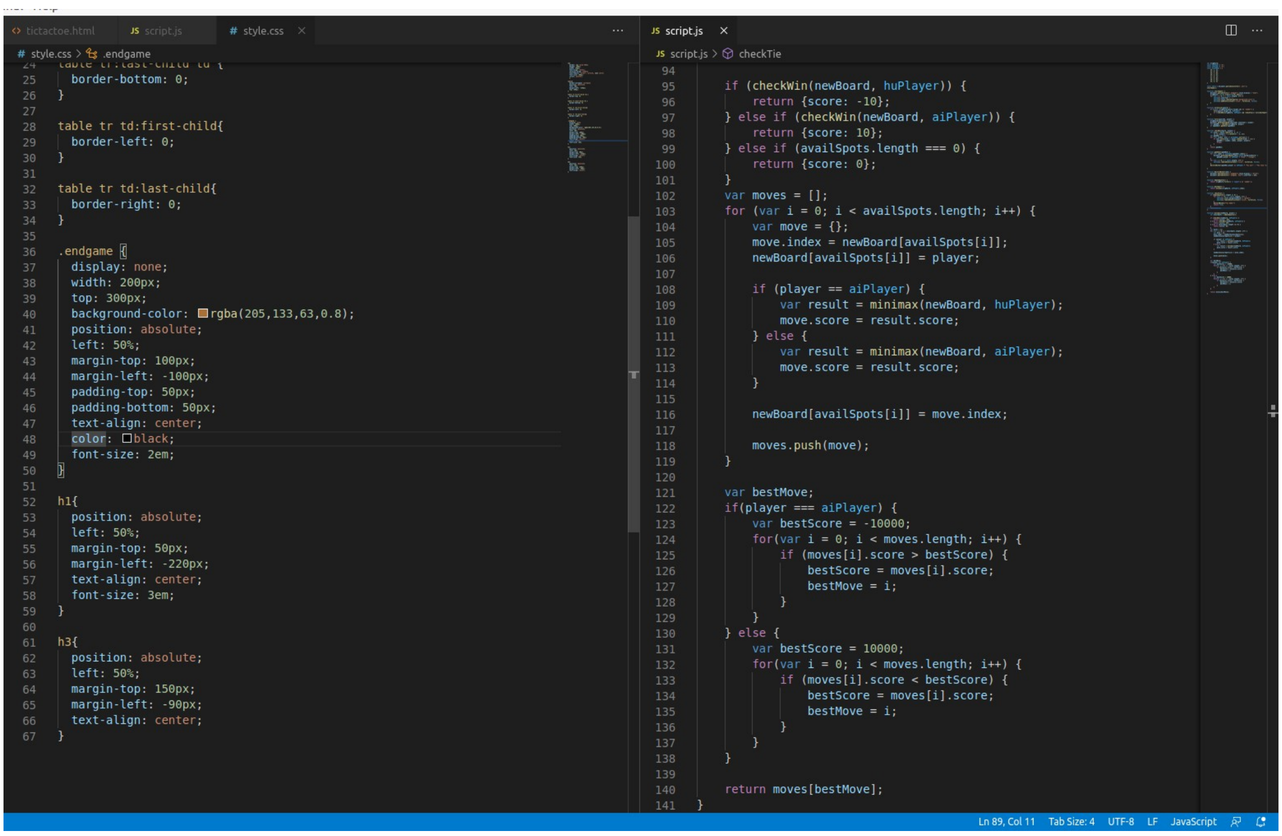


style.css

```css
td{
  border: 2px solid #333;
  height: 150px;
  width: 150px;
  text-align: center;
  vertical-align: middle;
  font-family: "arial", cursive, sans serif;
  font-size: 100px;
  cursor: pointer;
  }

table{
  border-collapse: collapse;
  position: absolute;
  left: 50%;
  margin-left: -230px;
  top: 250px;
}

table tr:first-child td {
  border-top: 0;
}

table tr:last-child td {
  border-bottom: 0;
}

table tr td:first-child{
  border-left: 0;
}

table tr td:last-child{
  border-right: 0;
}

.endgame {
  display: none;
  width: 200px;
  top: 300px;
  background-color: rgba(205,133,63,0.8);
  position: absolute;
  left: 50%;
  margin-top: 100px;
  margin-left: -100px;
  padding-top: 50px;
  padding-bottom: 50px;
  text-align: center;
  color: black;
```

script.js

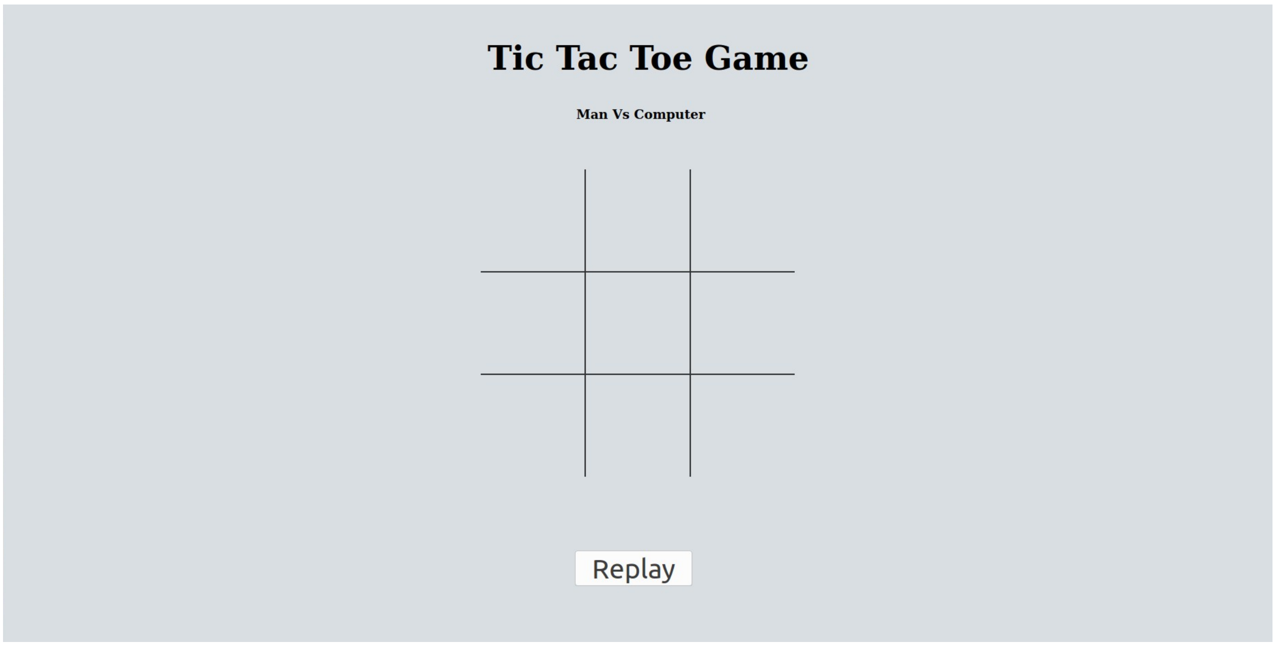
```javascript
        if (win.every(elem => plays.indexOf(elem) > -1)) {
            gameWon = {index: index, player: player};
            break;
        }
    }
    return gameWon;
}

function gameOver(gameWon) {
    for (let index of winCombos[gameWon.index]) {
        document.getElementById(index).style.backgroundColor =
            gameWon.player == huPlayer ? "blue" : "orange";
    }
    for (var i = 0; i < cells.length; i++) {
        cells[i].removeEventListener('click', turnClick, false);
    }
    declareWinner(gameWon.player == huPlayer ? "You win!" : "You lose.");

}

function declareWinner(who) {
    document.querySelector(".endgame").style.display = "block";
    document.querySelector(".endgame .text").innerText = who;
}

function emptySquares() {
    return origBoard.filter(s => typeof s == 'number');
}

function bestSpot() {
    return minimax(origBoard, aiPlayer).index;
}

function checkTie() {
    if (emptySquares().length == 0) {
        for (var i = 0; i < cells.length; i++) {
            cells[i].style.backgroundColor = "green";
            cells[i].removeEventListener('click', turnClick, false);
        }
        declareWinner("Tie Game!")
        return true;
    }
    return false;
}

function minimax(newBoard, player) {
    var availSpots = emptySquares();
```

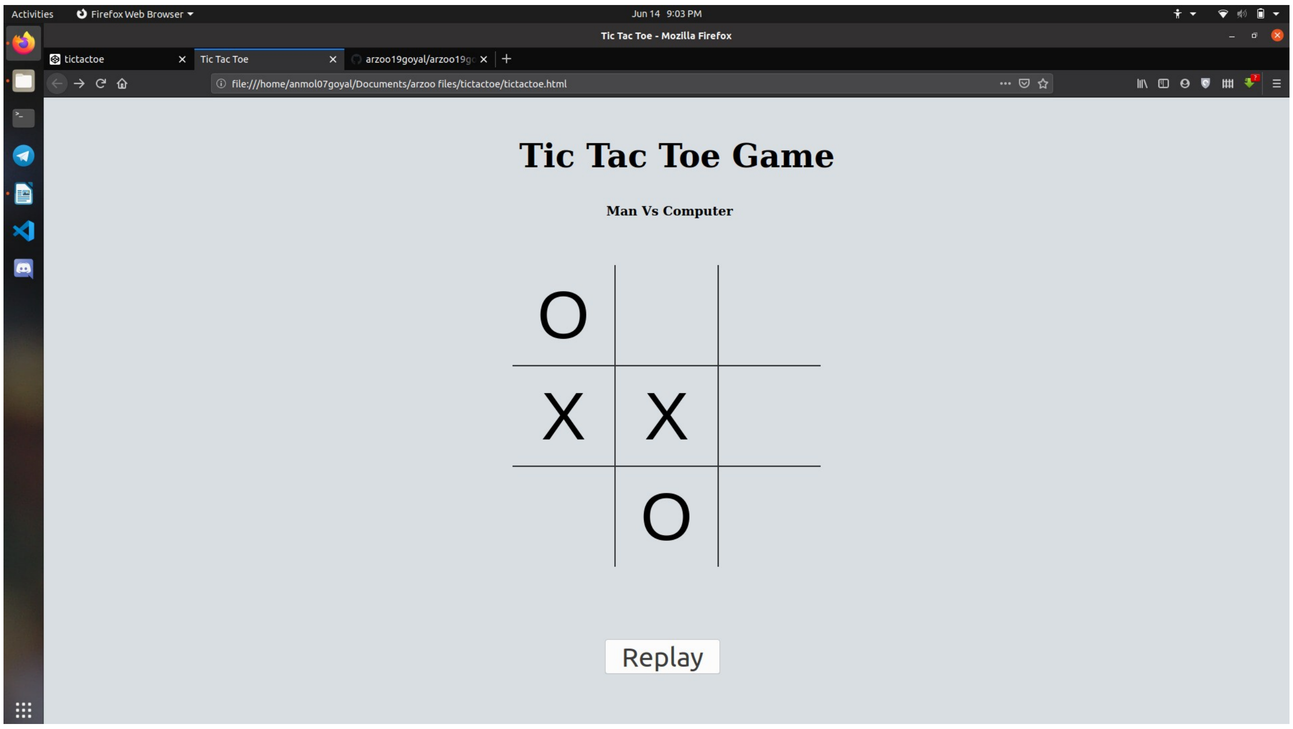


```css
table tr:last-child td {
  border-bottom: 0;
}

table tr td:first-child{
  border-left: 0;
}

table tr td:last-child{
  border-right: 0;
}

.endgame {
  display: none;
  width: 200px;
  top: 300px;
  background-color: rgba(205,133,63,0.8);
  position: absolute;
  left: 50%;
  margin-top: 100px;
  margin-left: -100px;
  padding-top: 50px;
  padding-bottom: 50px;
  text-align: center;
  color: black;
  font-size: 2em;
}

h1{
  position: absolute;
  left: 50%;
  margin-top: 50px;
  margin-left: -220px;
  text-align: center;
  font-size: 3em;
}

h3{
  position: absolute;
  left: 50%;
  margin-top: 150px;
  margin-left: -90px;
  text-align: center;
}
```

```javascript

    if (checkWin(newBoard, huPlayer)) {
        return {score: -10};
    } else if (checkWin(newBoard, aiPlayer)) {
        return {score: 10};
    } else if (availSpots.length === 0) {
        return {score: 0};
    }
    var moves = [];
    for (var i = 0; i < availSpots.length; i++) {
        var move = {};
        move.index = newBoard[availSpots[i]];
        newBoard[availSpots[i]] = player;

        if (player == aiPlayer) {
            var result = minimax(newBoard, huPlayer);
            move.score = result.score;
        } else {
            var result = minimax(newBoard, aiPlayer);
            move.score = result.score;
        }

        newBoard[availSpots[i]] = move.index;

        moves.push(move);
    }

    var bestMove;
    if(player === aiPlayer) {
        var bestScore = -10000;
        for(var i = 0; i < moves.length; i++) {
            if (moves[i].score > bestScore) {
                bestScore = moves[i].score;
                bestMove = i;
            }
        }
    } else {
        var bestScore = 10000;
        for(var i = 0; i < moves.length; i++) {
            if (moves[i].score < bestScore) {
                bestScore = moves[i].score;
                bestMove = i;
            }
        }
    }

    return moves[bestMove];
}
```

Game Pics:



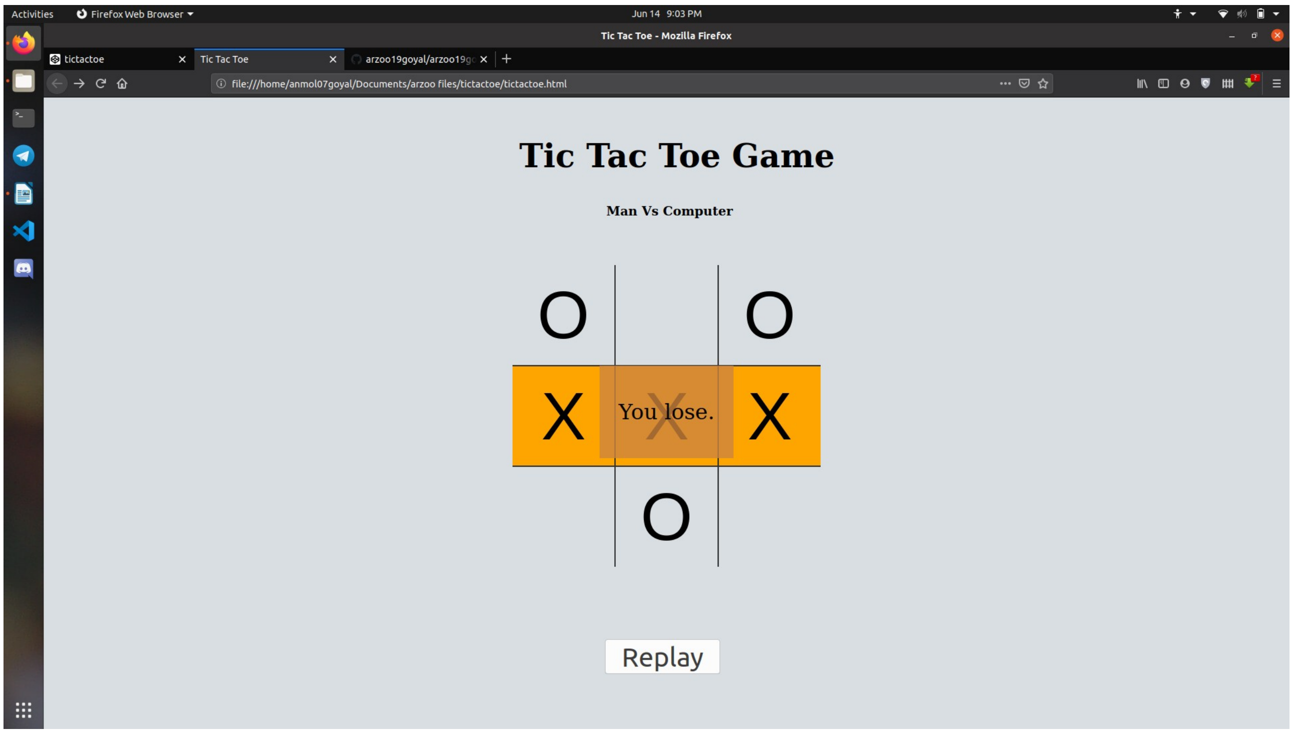

Activities
Firefox Web Browser
Jun 14 9:03 PM
Tic Tac Toe - Mozilla Firefox
tictactoe
Tic Tac Toe
arzoo19goyal/arzoo19g
file:///home/anmol07goyal/Documents/arzoo files/tictactoe/tictactoe.html

Tic Tac Toe Game

Man Vs Computer

O		
X	X	
	O	

Replay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Jun 14 9:03 PM
Tic Tac Toe - Mozilla Firefox
tictactoe
Tic Tac Toe
arzoo19goyal/arzoo19g
file:///home/anmol07goyal/Documents/arzoo files/tictactoe/tictactoe.html

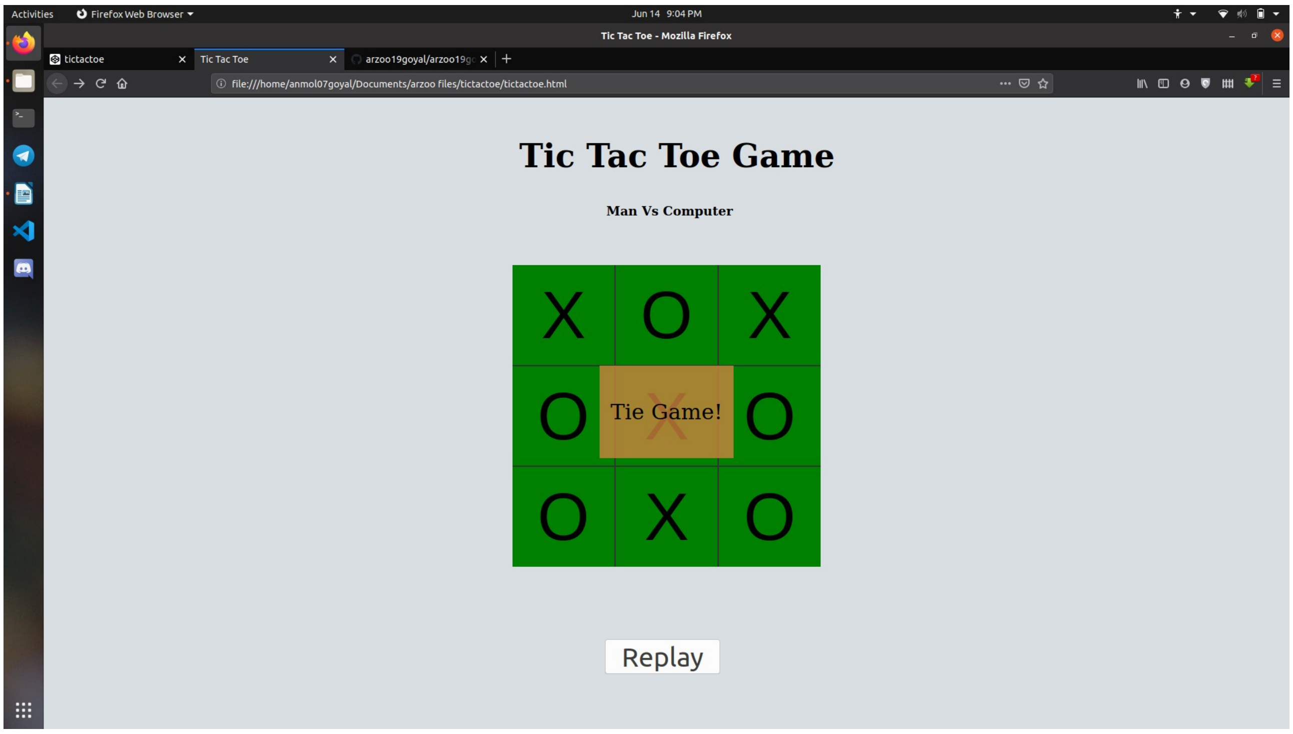
Tic Tac Toe Game

Man Vs Computer

O		O
X	X	X
	O	

You lose.

Replay


Activities
Firefox Web Browser
Jun 14 9:04 PM
Tic Tac Toe - Mozilla Firefox
tictactoe
Tic Tac Toe
arzoo19goyal/arzoo19g
file:///home/anmol07goyal/Documents/arzoo files/tictactoe/tictactoe.html

Tic Tac Toe Game

Man Vs Computer

X	O	X
O	X	O
O	X	O

Tie Game!