Project 244
244 වන ව්‍යාපෘතිය

DP EDUCATION

Coding School

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel= "stylesheet"
    href= "imageOpacity.css">
    <title>Document</title>
</head>
<body>
    <div class="demo-wrap">
        <img
          class="img-bg"
          background-image src="scenery.jpg"
          alt=""
        >
        <div class="text">
          <h1>Hello World!</h1>
        </div>
```

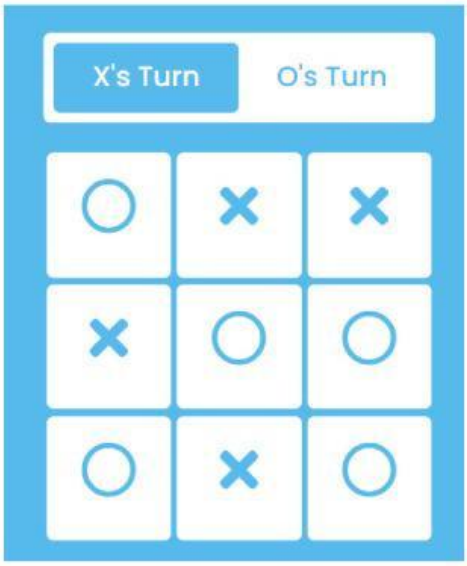
html Glitch

වෙබ් පිටුව බලන්න

Glitch ආරම්භ කරන්න

LIVEWORKSHEETS

❖ Tic Tac Toe Game එක නිර්මාණයේ තෙවන කොටස.



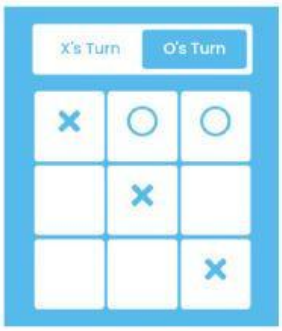
❖ මෙම game එකෙදී සිදුවන්නේ player කොටුව හෝ රවුම select කර මුලින් ම play කරයි.

❖ අප දැන් සලකමු player කතිරය select කර ඇති යැයි, එවිට plyer කැමති තැනකින් මුලින් ම කතිරයක් ලකුණු කරයි.

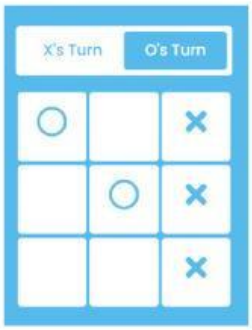
❖ ඉන්පසු අනිත් player රවුම ලකුණන් play කරයි.

❖ මරුවන් මරුවට එලස players දෙදනාට අවස්ථාව හිමි වේ.

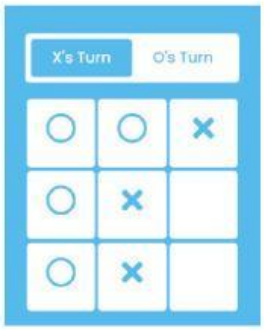
❖ පහත ආකාරයට සකස් කර ඇති විට ආදල player ජය ගනු ලැබේ.



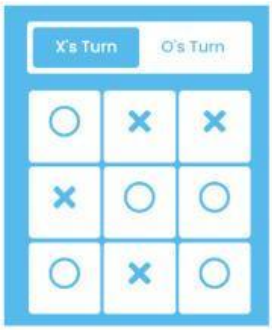
(A)



(B)



(C)



(D)

LIVEWORKSHEETS

- (A) අවස්ථාව දී කතිරය ලකුණන් සෙල්ලම් කල player ජය ගනී.
- (B) අවස්ථාව දී කතිරය ලකුණන් සෙල්ලම් කල player ජය ගනී.
- (C) අවස්ථාව දී රවුම ලකුණන් සෙල්ලම් කල player ජය ගනී.
- (D) අවස්ථාව දී තරගය draw වේ.
- දැන් game එකෙහි auto play වීමට ආදාල කොටස නිර්මාණය කරමු.
- ඒ සඳහා bot ලෙස function එකක් code කරමු.
- මුලින් ම එම function එක තුල කතිරයක් හෝ රවුමක් ලකුණු කර නැති කොටු ලබා ගැනීම සඳහා empty array එකක් නිර්මාණය කර ගන්න.
- ඉන්පසු for loop එකක් නිර්මාණය කරන්න.
- එම for loop එක 0 සිට box වල size දක්වා call කර ගන්න.
- එම loop එක තුල allBox class එක සඳහා child element ඇති දැයි බලන්න.
- Box එක select කර නොමැති නම් හෝ box එක click කර නොමැති නම්, එනම් span එක සඳහා child element නොමැත.
- එය නිවැරදිව සිදු වේ දැයි check කිරීම සඳහා console log එකක් දමා check කර ගනිමු.

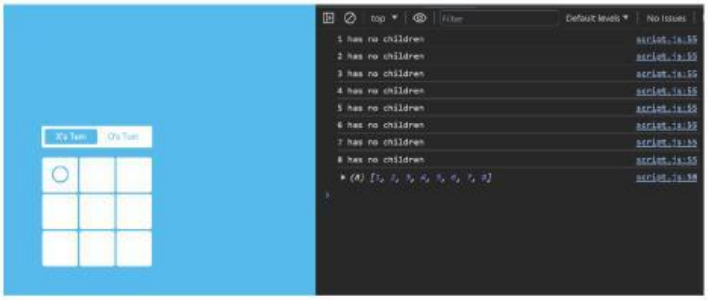
```
// bot auto select function
function bot(){
  let array = []; //creating empty array...we'll store unclicked boxes index
    for (let i = 0; i < allBox.length; i++) {
      if(allBox[i].childElementCount == 0){ //if the box/span has no children means <i> tag
        array.push(i); //inserting unclicked boxes number/index inside array
        console.log(i + " " + "has no children");
      }
    }
  console.log(array);
}
```

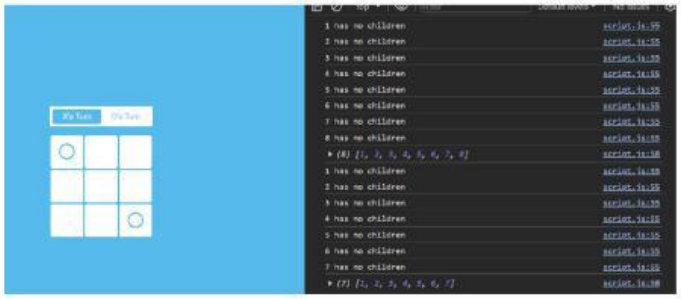
- දැන් මෙම function එක clickedBox function එකෙහි අවසානයට call කරන්න.

```
// user click function
function clickedBox(element){
  if(players.classList.contains("player")){
    //adding circle icon tag inside user clicked element/box
    element.innerHTML = `<i class="${playerOIcon}"></i>`;
    ///add active class in players
    players.classList.remove("active");
    }
  else{
    //adding cross icon tag inside user clicked element/box
    element.innerHTML = `<i class="${playerXIcon}"></i>`;
    //add active class in players
    players.classList.add("active");
    }
  element.style.pointerEvents = "none";
  bot();
}
```

LIVEWORKSHEETS

❖ දැන් preview කර console එක බලන්න.





❖ දැන් ඉතිරි වන කොටු වලින් එකක් random ලෙස bot මඟින් තොරා ගත යුතුය.

❖ ඉන්පසු array length එක 0 ට වඩා වැඩි විට bot එක මඟින් කතිරයක් හෝ රවුමක් නිර්මාණය වන සේ සකස් කරමු.

```
// bot auto select function
function bot(){
  let array = []; //creating empty array...we'll store unclicked boxes index
    for (let i = 0; i < allBox.length; i++) {
      if(allBox[i].childElementCount == 0){ //if the box/span has no children means <i> tag
        array.push(i); //inserting unclicked boxes number/index inside array
      }
    }

  //getting random index from array so bot will select random unselected box
  let randomBox = array[Math.floor(Math.random() * array.length)];
  if(array.length > 0){ //if array length is greater than 0
    if(players.classList.contains("player")){
        //adding cross icon tag inside bot selected element
        allBox[randomBox].innerHTML = `<i class="${playerXIcon}"></i>`;
        players.classList.add("active"); ///add active class in players
    }else{
      //adding circle icon tag inside bot selected element
        allBox[randomBox].innerHTML = `<i class="${playerOIcon}"></i>`;
        players.classList.remove("active"); //remove active class in players
    }
  }
}
```

❖ දැන් preview කර බලන්න. එවිට player කොටුවක් click කල සැනින් bot එම මඟින් ද කොටුවක් select වේ.

❖ එය වලක්වා ගැනීම සඳහා පහත පරිදි code කරන්න. මෙය bot function එක call තැනම code කරන්න.

```
//generating random number so bot will randomly delay to select unselected box
let randomTimeDelay = ((Math.random() * 1000) + 200).toFixed();
setTimeout(()=>{
  bot(); //calling bot function
}, randomTimeDelay); //passing random delay value
```

LIVEWORKSHEETS

- තවද මෙහිදී bot එක මඟින් select කරන කොටු නැවත player select කිරීමට හැකියාව ඇත. එය වලක්වා ගැනීමට පහත code කරන්න.

```
//once bot select any box then user can't click on that box
allBox[randomBox].style.pointerEvents = "none";
```

- playerSing ලෙස variable එකක් සකස් කර එහි අගය සඳහා X ලබා දෙන්න.

```
let playerSign = "X"; //this is a global variable beacuse we've used this variable inside multiple functions
```

- දැන් clickedBox function එක හා bot function එක සඳහා පහත පරිදි modify කර ගන්න.

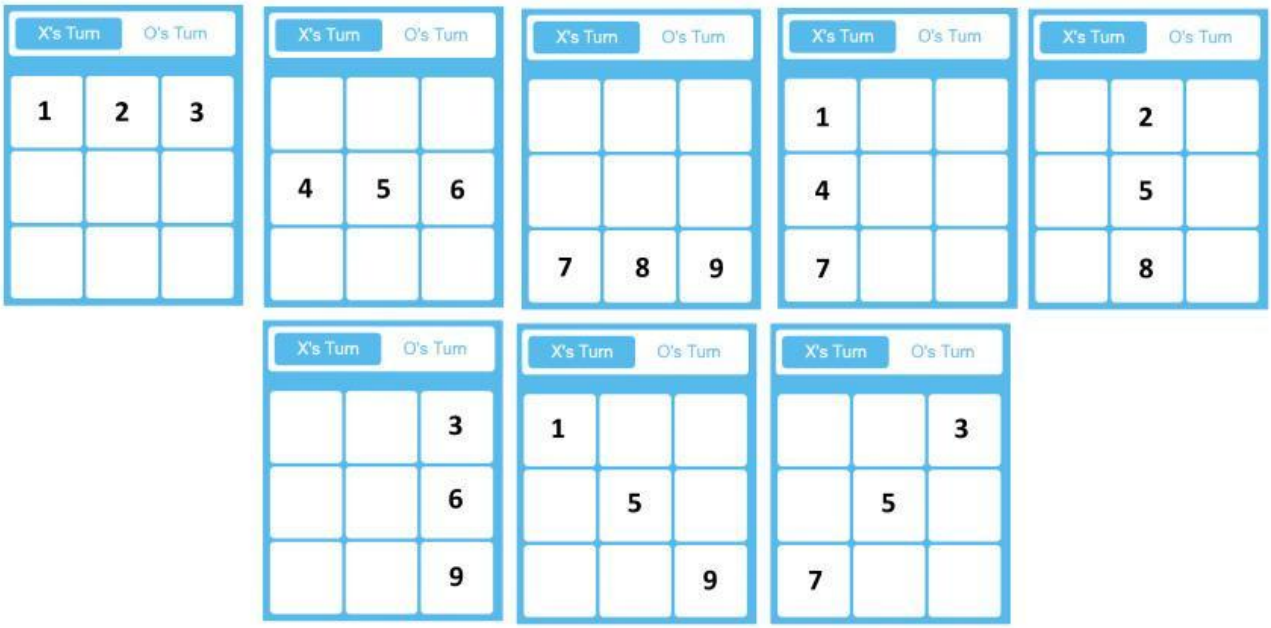
```
// user click function
function clickedBox(element){
  if(players.classList.contains("player")){
    element.innerHTML = `<i class="${playerOIcon}"></i>`;//adding circle icon tag inside user clicked element/box
    players.classList.remove("active"); ///add active class in players
    playerSign = "O"; //if player choose (O) then change playerSign to O
    element.setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
  }
  else{
    element.innerHTML = `<i class="${playerXIcon}"></i>`;//adding cross icon tag inside user clicked element/box
    players.classList.add("active");  //add active class in players
    element.setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
  }
  element.style.pointerEvents = "none";
  //generating random number so bot will randomly delay to select unselected box
  let randomTimeDelay = ((Math.random() * 1000) + 200).toFixed();
  setTimeout(()=>{
    bot(); //calling bot function
  }, randomTimeDelay); //passing random delay value
}

// bot auto select function
function bot(){
  let array = []; //creating empty array...we'll store unclicked boxes index
  playerSign = "O"; //change the playerSign to O so if player has chosen X then bot will O
  for (let i = 0; i < allBox.length; i++) {
    if(allBox[i].childElementCount == 0){ //if the box/span has no children means <i> tag
      array.push(i); //inserting unclicked boxes number/index inside array
    }
  }
  //getting random index from array so bot will select random unselected box
  let randomBox = array[Math.floor(Math.random() * array.length)];
  if(array.length > 0){ //if array length is greater than 0
    if(players.classList.contains("player")){

      allBox[randomBox].innerHTML = `<i class="${playerXIcon}"></i>`; //adding cross icon tag inside bot selected element
      players.classList.add("active"); ///add active class in players
      playerSign = "X"; //if player has chosen O then bot will X
      allBox[randomBox].setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
    }
    else{
      allBox[randomBox].innerHTML = `<i class="${playerOIcon}"></i>`; //adding circle icon tag inside bot selected element
      players.classList.remove("active"); //remove active class in players
      allBox[randomBox].setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
    }
  }
    //once bot select any box then user can't click on that box
    allBox[randomBox].style.pointerEvents = "none";
    playerSign = "X";
}
```

LIVEWORKSHEETS

❖ පහත දැක්වෙන කොටු වල කතිර හෝ රවුන් එක ඇති විට ආදාල ලකුණ ජය ගනු ලැබේ.



❖ Winner select කර ගැනීම සඳහා පහත පරිදි code කර ගමු.

❖ Box class එකේ ඇති id එක x ද, o ද යන්න return කර ගැනීම සඳහා පහත පරිදි function එකක් නිර්මාණය කරන්න.

```
//let work on select the winner
function getIdVal(classname){
    return document.querySelector(".box" + classname).id; //return id value
}
```

❖ ඉහත ජය ගැනීමට හැකි අවස්ථා වල එකම ලකුණ ඇති දැයි බැලීම සඳහා පහත පරිදි function එකක් නිර්මාණය කරන්න.

```
function checkIdSign(val1, val2, val3, sign){ //checking all id value is equal to sign (X or O) or not if yes then return true
    if(getIdVal(val1) == sign && getIdVal(val2) == sign && getIdVal(val3) == sign){
        return true;
    }
}
```

❖ Result box එක හා won text එක සඳහා පහත පරිදි variables දෙකක් නිර්මාණය කර ගන්න.

```
const resultBox = document.querySelector(".result-box");
const wonText = resultBox.querySelector(".won-text");
```

LIVEWORKSHEETS

❖ දැන් selectWinner function එක පහත පරිදි code කර ගන්න.

```
function selectWinner(){ //if the one of following winning combination match then select the winner
    if(checkIdSign(1,2,3,playerSign) || checkIdSign(4,5,6, playerSign) || checkIdSign(7,8,9, playerSign)
       || checkIdSign(1,4,7, playerSign) || checkIdSign(2,5,8, playerSign) || checkIdSign(3,6,9, playerSign)
       || checkIdSign(1,5,9, playerSign) || checkIdSign(3,5,7, playerSign)){
        runBot = false; //passing the false boolen value to runBot so bot won't run again
        bot(runBot); //calling bot function
        setTimeout(()=>{ //after match won by someone then hide the playboard and show the result box after 700ms
           // resultBox.classList.add("show");
            //playBoard.classList.remove("show");
        }, 700); //1s = 1000ms
        wonText.innerHTML = `Player <p>${playerSign}</p> won the game!`; //displaying winning text with passing playerSign (X or O)
    }else{ //if all boxes/element have id value and still no one win then draw the match
        if(getIdVal(1) != "" && getIdVal(2) != "" && getIdVal(3) != "" && getIdVal(4) != ""
           && getIdVal(5) != "" && getIdVal(6) != "" && getIdVal(7) != ""
           && getIdVal(8) != "" && getIdVal(9) != ""){
            runBot = false; //passing the false boolen value to runBot so bot won't run again
            bot(runBot); //calling bot function
            setTimeout(()=>{ //after match drawn then hide the playboard and show the result box after 700ms
                resultBox.classList.add("show");
                playBoard.classList.remove("show");
            }, 700); //1s = 1000ms
            wonText.textContent = "Match has been drawn!"; //displaying draw match text
        }
    }
}
```

❖ දැන් styles වල ඇති result-box class එකේ ඇති “display:none” attribute එක remove කර පහත පරිදි එය modify කරන්න.

```
.result-box{
  padding: 25px 20px;
  border-radius: 5px;
  max-width: 400px;
  width: 100%;
  opacity: 0;
  text-align: center;
  background: #ffffff;
  pointer-events: none;
  transform: translate(-50%, -50%) scale(0.9);
}
```

❖ දැන් “result-box.show” class එක සඳහා පහත පරිදි styles ලබා දෙන්න.

```
.result-box.show{
  opacity: 1;
  pointer-events: auto;
  transform: translate(-50%, -50%) scale(1);
}
```

❖ Replay button එක click කල විට game re-play වන ලෙස සකස් කරමු. ඒ සඳහා replay button එක සඳහා පහත පරිදි variables එකක් නිර්මාණය කර ගන්න. Button එක සඳහා on click function එක පහත පරිදි වේ.

```
const replayBtn = resultBox.querySelector("button");
```

```
replayBtn.onclick = ()=>{
    window.location.reload(); //reload the current page on replay button click
}
```

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❖ සම්පූර්ණ JavaScript code පහත ඇත. එහි ඇති ආකාරයට selectWinner function call කර ගන්න.

```javascript
//selecting all required elements
const selectBox = document.querySelector(".select-box");
const selectBtnX = selectBox.querySelector(".playerX");
const selectBtnO = selectBox.querySelector(".playerO");
const playBoard = document.querySelector(".play-board");
const players = document.querySelector(".players");
const allBox = document.querySelectorAll("section span");
const resultBox = document.querySelector(".result-box");
const wonText = resultBox.querySelector(".won-text");
const replayBtn = resultBox.querySelector("button");

let playerXIcon = "fas fa-times"; //class name of fontawesome cross icon
let playerOIcon = "far fa-circle"; //class name of fontawesome circle icon
let playerSign = "X"; //this is a global variable beacuse we've used this variable inside multiple functions
//this also a global variable with boolen value..we used this variable to stop the bot once match won by someone or drawn
let runBot = true;

window.onload = ()=>{ //once window loaded
    for (let i = 0; i < allBox.length; i++) { //add onclick attribute in all available span
       allBox[i].setAttribute("onclick", "clickedBox(this)");
    }
}

selectBtnX.onclick = ()=>{
    selectBox.classList.add("hide"); //hide select box
    playBoard.classList.add("show"); //show the playboard section
}

selectBtnO.onclick = ()=>{
    selectBox.classList.add("hide"); //hide select box
    playBoard.classList.add("show"); //show the playboard section
    players.setAttribute("class", "players active player"); //set class attribute in players with players active player values
}

// user click function
function clickedBox(element){
  if(players.classList.contains("player")){
    element.innerHTML = `<i class="${playerOIcon}"></i>`;//adding circle icon tag inside user clicked element/box
    players.classList.remove("active"); ///add active class in players
    playerSign = "O"; //if player choose (O) then change playerSign to O
    element.setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
  }
  else{
    element.innerHTML = `<i class="${playerXIcon}"></i>`;//adding cross icon tag inside user clicked element/box
    players.classList.add("active");  //add active class in players
    element.setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
  }
  selectWinner(); //calling selectWinner function
  //add pointerEvents none to playboard so user can't immediately click on any other box until bot select
  playBoard.style.pointerEvents = "none";
  element.style.pointerEvents = "none";
  //generating random number so bot will randomly delay to select unselected box
  let randomTimeDelay = ((Math.random() * 1000) + 200).toFixed();
  setTimeout(()=>{
    bot(runBot); //calling bot function
  }, randomTimeDelay); //passing random delay value
}

// bot auto select function
function bot(runBot){
  let array = []; //creating empty array...we'll store unclicked boxes index
  if(runBot){
    playerSign = "O"; //change the playerSign to O so if player has chosen X then bot will O
    for (let i = 0; i < allBox.length; i++) {
      if(allBox[i].childElementCount == 0){ //if the box/span has no children means <i> tag
        array.push(i); //inserting unclicked boxes number/index inside array
      }
    }
```

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```
    //getting random index from array so bot will select random unselected box
    let randomBox = array[Math.floor(Math.random() * array.length)];
    if(array.length > 0){ //if array length is greater than 0
      if(players.classList.contains("player")){
        allBox[randomBox].innerHTML = `<i class="${playerXIcon}"></i>`; //adding cross icon tag inside bot selected element
        players.classList.add("active"); ///add active class in players
        playerSign = "X"; //if player has chosen O then bot will X
        allBox[randomBox].setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
      }
      else{
        allBox[randomBox].innerHTML = `<i class="${playerOIcon}"></i>`; //adding circle icon tag inside bot selected element
        players.classList.remove("active"); //remove active class in players
        allBox[randomBox].setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
      }
      selectWinner(); //calling selectWinner function
    }
      //once bot select any box then user can't click on that box
    allBox[randomBox].style.pointerEvents = "none";
    playBoard.style.pointerEvents = "auto";
    playerSign = "X";
  }
}
//let work on select the winner
function getIdVal(classname){
    return document.querySelector(".box" + classname).id; //return id value
}

function checkIdSign(val1, val2, val3, sign){ //checking all id value is equal to sign (X or O) or not if yes then return true
    if(getIdVal(val1) == sign && getIdVal(val2) == sign && getIdVal(val3) == sign){
        return true;
    }
}

function selectWinner(){ //if the one of following winning combination match then select the winner
    if(checkIdSign(1,2,3,playerSign) || checkIdSign(4,5,6, playerSign) || checkIdSign(7,8,9, playerSign)
        || checkIdSign(1,4,7, playerSign) || checkIdSign(2,5,8, playerSign) || checkIdSign(3,6,9, playerSign)
        || checkIdSign(1,5,9, playerSign) || checkIdSign(3,5,7, playerSign)){
        runBot = false; //passing the false boolen value to runBot so bot won't run again
        bot(runBot); //calling bot function
        setTimeout(()=>{ //after match won by someone then hide the playboard and show the result box after 700ms
           // resultBox.classList.add("show");
            //playBoard.classList.remove("show");
        }, 700); //1s = 1000ms
        wonText.innerHTML = `Player <p>${playerSign}</p> won the game!`; //displaying winning text with passing playerSign (X or O)
    }else{ //if all boxes/element have id value and still no one win then draw the match
        if(getIdVal(1) != "" && getIdVal(2) != "" && getIdVal(3) != "" && getIdVal(4) != ""
           && getIdVal(5) != "" && getIdVal(6) != "" && getIdVal(7) != ""
           && getIdVal(8) != "" && getIdVal(9) != ""){
            runBot = false; //passing the false boolen value to runBot so bot won't run again
            bot(runBot); //calling bot function
            setTimeout(()=>{ //after match drawn then hide the playboard and show the result box after 700ms
                resultBox.classList.add("show");
                playBoard.classList.remove("show");
            }, 700); //1s = 1000ms
            wonText.textContent = "Match has been drawn!"; //displaying draw match text
        }
    }
}

replayBtn.onclick = ()=>{
    window.location.reload(); //reload the current page on replay button click
}
```

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