

Project 244

244 වන ව්‍යාපෘතිය



Coding School



```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta http-equiv="X-UA-Compatible" content="IE=edge">
6   <meta name="viewport" content="width=device-width, initial-scale=1.0">
7   <link rel="stylesheet"
8     href="imageOpacity.css">
9   <title>Document</title>
10 </head>
11 <body>
12   <div class="demo-wrap">
13     
18     <div class="text">
19       <h1>Hello World!</h1>
20     </div>
```

html



Glitch

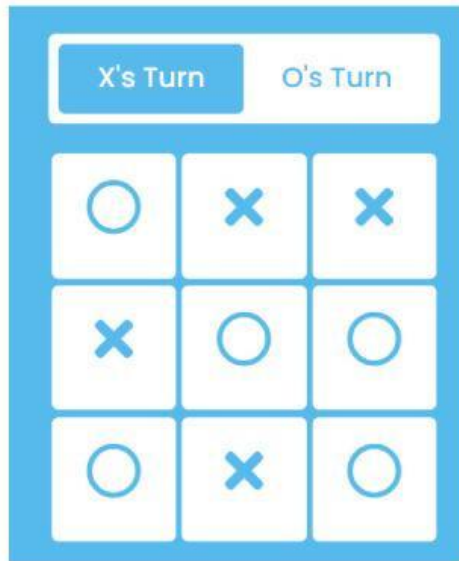


වෙබ් පිටුව බලන්න

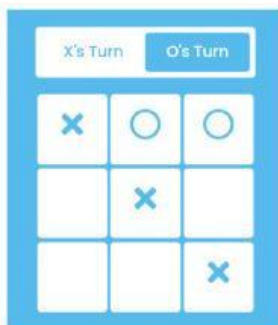


Glitch ආරම්භ කරන්න

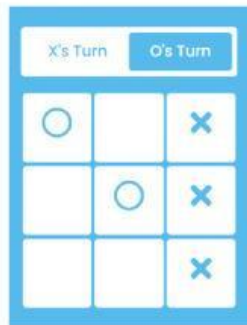
❖ Tic Tac Toe Game එක නිර්මාණයේ තෙවන කොටස.



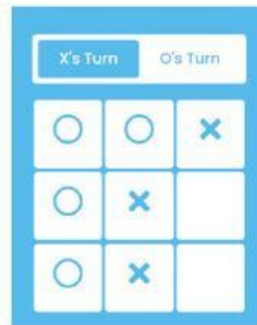
- ❖ මෙම game එකේදී සිදුවන්නේ player කොටුව හෝ රවුම select කර මුලින් ම play කරයි.
- ❖ අප දැන් සලකමු player කතිරය select කර ඇති යැයි, එවිට plyer කැමති තැනකින් මුලින් ම කතිරයක් ලකුණු කරයි.
- ❖ ඉන්පසු අනිත් player රවුම ලකුණන් play කරයි.
- ❖ මඳවත් මඳවට එලස players දෙදනාට අවස්ථව හිමි වේ.
- ❖ පහත ආකාරයට සකස් කර ඇති විට ආදල player ඡය ගනු ලැබේ.



(A)



(B)



(C)



(D)

- ❖ (A) අවස්ථාව දී කතිරය ලකුණන් සෙල්ලම් කළ player ජය ගනී.
- ❖ (B) අවස්ථාව දී කතිරය ලකුණන් සෙල්ලම් කළ player ජය ගනී.
- ❖ (C) අවස්ථාව දී රවුම ලකුණන් සෙල්ලම් කළ 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 තුළ 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 තුළ 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();
}
```

❖ දැන් preview කර console එක බලන්න.



- ❖ දැන් ඉතිරි වන කොටු වලින් එකක් random ලෙස bot මගින් තෝරා ගත යුතුය.
- ❖ ඉන්පසු array length එක 0 ට වඩා වැඩි විට bot එක මගින් 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 කළ සැනින් bot එම මගින් 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
```

- ❖ තවද මෙහිදී bot එක මගින් 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";
}
```

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

X's Turn	O's Turn
1	2

X's Turn	O's Turn
4	5
	6

X's Turn	O's Turn
7	8
	9

X's Turn	O's Turn
1	
4	
7	

X's Turn	O's Turn
	2
	5
	8

X's Turn	O's Turn
	3
	6
	9

X's Turn	O's Turn
1	
	5
	9

X's Turn	O's Turn
	3
	5
7	

- ❖ 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 ඡය 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");
```

❖ 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 boolean 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 boolean 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 කළ 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
}
```

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

```

1 //selecting all required elements
2 const selectBox = document.querySelector(".select-box");
3 const selectBtnX = selectBox.querySelector(".playerX");
4 const selectBtnO = selectBox.querySelector(".playerO");
5 const playBoard = document.querySelector(".play-board");
6 const players = document.querySelector(".players");
7 const allBox = document.querySelectorAll("section span");
8 const resultBox = document.querySelector(".result-box");
9 const wonText = resultBox.querySelector(".won-text");
10 const replayBtn = resultBox.querySelector("button");
11
12 let playerXIcon = "fas fa-times"; //class name of fontawesome cross icon
13 let playerOIcon = "far fa-circle"; //class name of fontawesome circle icon
14 let playerSign = "X"; //this is a global variable because we've used this variable inside multiple functions
15 //this also a global variable with boolean value..we used this variable to stop the bot once match won by someone or drawn
16 let runBot = true;
17
18 window.onload = ()=>{ //once window loaded
19     for (let i = 0; i < allBox.length; i++) { //add onclick attribute in all available span
20         allBox[i].setAttribute("onclick", "clickedBox(this)");
21     }
22 }
23
24 selectBtnX.onclick = ()=>{
25     selectBox.classList.add("hide"); //hide select box
26     playBoard.classList.add("show"); //show the playboard section
27 }
28
29 selectBtnO.onclick = ()=>{
30     selectBox.classList.add("hide"); //hide select box
31     playBoard.classList.add("show"); //show the playboard section
32     players.setAttribute("class", "players active player"); //set class attribute in players with players active player values
33 }
34
35 // user click function
36 function clickedBox(element){
37     if(players.classList.contains("player")){
38         element.innerHTML = `<i class="${playerOIcon}"></i>`; //adding circle icon tag inside user clicked element/box
39         players.classList.remove("active"); //add active class in players
40         playerSign = "O"; //if player choose (O) then change playerSign to O
41         element.setAttribute("id", playerSign); //set id attribute in span/box with player chosen sign
42     }
43     else{
44         element.innerHTML = `<i class="${playerXIcon}"></i>`; //adding cross icon tag inside user clicked element/box
45         players.classList.add("active"); //add active class in players
46         element.setAttribute("id", playerSign); //set id attribute in span/box with player chosen sign
47     }
48     selectWinner(); //calling selectWinner function
49     //add pointerEvents none to playboard so user can't immediately click on any other box until bot select
50     playBoard.style.pointerEvents = "none";
51     element.style.pointerEvents = "none";
52     //generating random number so bot will randomly delay to select unselected box
53     let randomTimeDelay = ((Math.random() * 1000) + 200).toFixed();
54     setTimeout(()=>{
55         bot(runBot); //calling bot function
56     }, randomTimeDelay); //passing random delay value
57 }
58
59 // bot auto select function
60 function bot(runBot){
61     let array = []; //creating empty array...we'll store unclicked boxes index
62     if(runBot){
63         playerSign = "O"; //change the playerSign to O so if player has chosen X then bot will O
64         for (let i = 0; i < allBox.length; i++) {
65             if(allBox[i].childElementCount == 0){ //if the box/span has no children means <i> tag
66                 array.push(i); //inserting unclicked boxes number/index inside array
67             }
68         }

```

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69 //getting random index from array so bot will select random unselected box
70 let randomBox = array[Math.floor(Math.random() * array.length)];
71 if(array.length > 0){ //if array length is greater than 0
72   if(players.classList.contains("player")){
73     allBox[randomBox].innerHTML = '<i class="${playerXIcon}"></i>'; //adding cross icon tag inside bot selected element
74     players.classList.add("active"); //add active class in players
75     playerSign = "X"; //if player has chosen 0 then bot will X
76     allBox[randomBox].setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
77   }
78   else{
79     allBox[randomBox].innerHTML = '<i class="${playerOIcon}"></i>'; //adding circle icon tag inside bot selected element
80     players.classList.remove("active"); //remove active class in players
81     allBox[randomBox].setAttribute("id", playerSign); //set id attribute in span/box with player choosen sign
82   }
83   selectWinner(); //calling selectWinner function
84 }
85 //once bot select any box then user can't click on that box
86 allBox[randomBox].style.pointerEvents = "none";
87 playBoard.style.pointerEvents = "auto";
88 playerSign = "X";
89 }
90 }
91 //let work on select the winner
92 function getIdVal(classname){
93   return document.querySelector(".box" + classname).id; //return id value
94 }
95
96 function checkIdSign(val1, val2, val3, sign){ //checking all id value is equal to sign (X or O) or not if yes then return true
97   if(getIdVal(val1) == sign && getIdVal(val2) == sign && getIdVal(val3) == sign){
98     return true;
99   }
100 }
101
102 function selectWinner(){ //if the one of following winning combination match then select the winner
103   if(checkIdSign(1,2,3,playerSign) || checkIdSign(4,5,6, playerSign) || checkIdSign(7,8,9, playerSign)
104     || checkIdSign(1,4,7, playerSign) || checkIdSign(2,5,8, playerSign) || checkIdSign(3,6,9, playerSign)
105     || checkIdSign(1,5,9, playerSign) || checkIdSign(3,5,7, playerSign)){
106     runBot = false; //passing the false boolean value to runBot so bot won't run again
107     bot(runBot); //calling bot function
108     setTimeout(()=>{ //after match won by someone then hide the playboard and show the result box after 700ms
109       // resultBox.classList.add("show");
110       // playBoard.classList.remove("show");
111     }, 700); //1s = 1000ms
112     wonText.innerHTML = 'Player <p>${playerSign}</p> won the game!'; //displaying winning text with passing playerSign (X or O)
113   }else{ //if all boxes/element have id value and still no one win then draw the match
114     if(getIdVal(1) != "" && getIdVal(2) != "" && getIdVal(3) != "" && getIdVal(4) != ""
115       && getIdVal(5) != "" && getIdVal(6) != "" && getIdVal(7) != ""
116       && getIdVal(8) != "" && getIdVal(9) != ""){
117       runBot = false; //passing the false boolean value to runBot so bot won't run again
118       bot(runBot); //calling bot function
119       setTimeout(()=>{ //after match drawn then hide the playboard and show the result box after 700ms
120         resultBox.classList.add("show");
121         playBoard.classList.remove("show");
122       }, 700); //1s = 1000ms
123       wonText.textContent = "Match has been drawn!"; //displaying draw match text
124     }
125   }
126 }
127
128 replayBtn.onclick = ()=>{
129   window.location.reload(); //reload the current page on replay button click
130 }
131

```