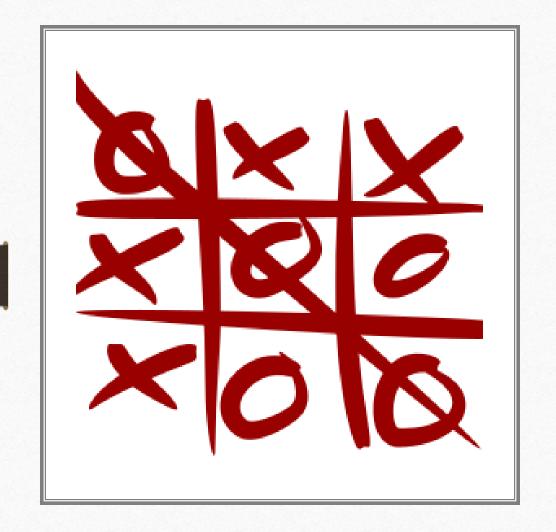# Tic-Tac Game

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- *The goal of Tic -Tac -Toe is to be one of the players to get three same symbols in a row - horizontally, vertically or diagonally - on a 3 x 3 grid.*

Functions :-

- draw_Shape(): This function draw the main shape of game.

- play(): To start the game.

- check_Ifwin(): To check there is a winner or not.

- star_New_Game(): If the user wants to play another game after win or a tie.

```c
#include <stdio.h>
#include<stdlib.h>

//array for cells position
char places[]={'1','2','3','4','5','6','7','8','9'};

//array to mark chosen places..
int marked[9]={0};

//draw the shape
void draw_Shape(char arr[]);

//to check if there is winner or no
int check_Ifwin(char a[] );

//ask user to play again or not
void start_New_Game();

//to start game
void play();


int main()
{
    play();

    return 0;
}
```

Draw-shape();

```
31
32  //function to draw the shape of the game
33  void draw_Shape(char arr[])
34  {
35
36      printf(" ");
37      printf("----------------------\n");
38      printf("|\t|\t|\t|\t\n|   %c\t|   %c\t|   %c\t|\t\n|\t|\t|\t|\t\n",arr[0],arr[1],arr[2]);
39      printf(" ");
40      printf("----------------------\n");
41      printf("|\t|\t|\t|\t\n|   %c\t|   %c\t|   %c\t|\t\n|\t|\t|\t|\t\n",arr[3],arr[4],arr[5]);
42      printf(" ");
43      printf("----------------------\n");
44      printf("|\t|\t|\t|\t\n|   %c\t|   %c\t|   %c\t|\t\n|\t|\t|\t|\t\n",arr[6],arr[7],arr[8]);
45      printf(" ");
46      printf("----------------------\n");
47
48  }
49
```

Check-If-win();

- The player can win if

- Get three same symbol in the first row or second or third

- Get three same symbol in the first column or second or third

- Get three same symbol in main diameter or secondary diameter

```c
}

//function to check if there is a winner , returns 2 if there is a winner else returns
int check_Ifwin(char a[] )
{
    //check equal rows
    for(int i = 0; i < 9; i+=3)
    {
        if(a[i] == a[i+1] && a[i] == a[i+2])
        {
            return 2;
        }
    }
    //check equal coulms
    for(int i = 0; i < 3; i++)
    {
        if(a[i] == a[i+3] && a[i] == a[i+6])
        {
            return 2;
        }
    }
    //check daigonally
    if((a[0] == a[4] && a[0] == a[8]) || (a[2] == a[4] && a[2] == a[6]))
    {
        return 2;
    }
    else
    {
        return 1;
    }
}
```

```
79
80  //function to start a new game or not
81  void start_New_Game()
82  {
83      printf("Enter 0 to exit, 1 to continue\n") ;
84      int choice;
85      scanf("%i", &choice);
86
87      if(choice == 1)
88      {
89          // put the array's values to its initial
90          places[0] = '1';
91          places[1] = '2';
92          places[2] = '3';
93          places[3] = '4';
94          places[4] = '5';
95          places[5] = '6';
96          places[6] = '7';
97          places[7] = '8';
98          places[8] = '9';
99
100         marked[0] = 0;
101         marked[1] = 0;
102         marked[2] = 0;
103         marked[3] = 0;
104         marked[4] = 0;
105         marked[5] = 0;
106         marked[6] = 0;
107         marked[7] = 0;
108         marked[8] = 0;
109
110  //invoke play() method to play again
111         play();
112      }
113      else if(choice == 0)
114      {
115  //if the user does not want to play again exit the program
116         exit(0);
117      }else
118      {
119  // Re_invoke the function if the user didnot enter valid number
120         printf("Invalid number .. try again\n");
121         start_New_Game();
122      }
```

Start-New-Game();

If the game ended with winner or tie the user can play again with enter number one or to exit from game
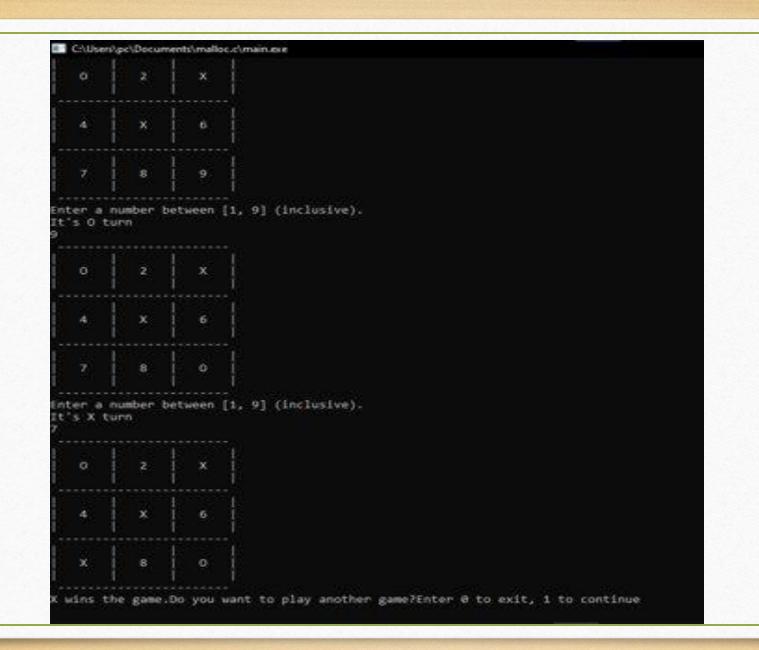
Play();

To start the game
The user will choose number from one to nine and every number he choose will replace it by x or o depend on how's turn
Every number will chosen will book it by -1 by array of marked until be chosen again

```c
//function to start playing
void play()
{
    draw_Shape(places);

    for(int i = 1; i <= 9; i++)
    {
        char player;//to store the player's letter

        if(i % 2 == 0)
        {
            player='O';
            printf("Enter a number between [1, 9] (inclusive).\nIt's O turn\n");
        }
        else
        {
            printf("Enter a number between [1, 9] (inclusive).\nIt's X turn\n");
            player='X';
        }

        int num;//to store the user's selected position number
        scanf("%i",&num);

        //check if the user entered a valid place number

        if(num < 1 || num > 9 || (marked[num-1] == -1))
        {
            printf("You entered invalid number .. Please try again \n");
            i--;
            continue;
        }
        //after recieving the place..

        //mark selected place with -1
```

```c
    }
    //after recieving the place..

    //mark selected place with -1
    marked[num-1] = -1;

    //add the player's letter to the array
    places[num-1] = player;

    //update the draw after this
    draw_Shape(places);

    //By the 5's turn we may have a winner so we have to check
    if (i >= 5){

        if(check_Ifwin(places) == 2)
        {
            printf("%c wins the game.Do you want to play another game?",player);

            //if we have a winner ask if the user want to play again or not
            start_New_Game();
        }
    }

//check if the board is full and there is no winner ..
    if(i == 9 && (check_Ifwin(places) == 1))
    {
        printf("drawDo you want to play another game?\n");
        //ask to start new game or not
        start_New_Game();
    }
}
```