



Tic Tac Toe Made by Moeez Raza.

Project I

Documentation

Title

Tic Tac Toe Game

Supervisor

Sir Syed Moin Hassan Shah

Leader

Moeez Raza

Members

Ahmad Farhan

Muneeb Ahmed



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Tic Tac Toe

Objective

Tic Tac Toe is a classic game that has been enjoyed by people of all ages for generations. In this digital age, it has been transformed into a console-based game that can be played on a computer. The game is made in C++ for Object Oriented programming from ADP CS (B) IIIrd semester. It is a great example of how object-oriented programming can be used to create fun and engaging games.

The game is played on a 3x3 grid, where two players take turns marking 'X's and 'O's. The goal of the game is to get three of your marks in a row, either horizontally, vertically, or diagonally. The game is simple to learn but challenging to master, making it a great choice for people of all skill levels.

Members

Supervisor of this project:

- Sir Syed Moin Hassan Shah.

Group members in this project:

- 1) Moeez Raza (Leader)
- 2) Ahmad Farhan
- 3) Muneeb Ahmed
- 4) Muhammad Asad Javaid

Features

This Game provides 3 x 3 grid array where user can play either with another person or with Artificial Intelligence (AI). As this game is console-based user have to chose a column and a row separately. When a user or AI completes its character in a row, column or in diagonal. Game will be end.

Output

```
==== Tic Tac Toe ====
```

- 1) Play 1P
- 2) Play 2P
- 3) Exit

```
Option :
```

A	B	C
1		
2	-	-



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```
3   |   |
Enter player's Columns (A,B,C): b
Enter player's Row (1,2,3): 2
```

A	B	C
1 o		o
-	-	-
2 x	o	
-	-	-
3 o	x	x

```
1st player won!
Press any key to continue . . .
```

Tutorial

Run the “Tic_Tac_Toex.exe” file. Enter 1 if you want to play with your computer Artificial Intelligence (AI). Enter 2 if you want to play with your friend or any other person. 1st player has ‘O’ character while 2nd player or AI has ‘X’ character. As game start you will see a grid of 3 x 3. Game will ask to enter column (A, B, C). Column are the vertical groups of grid cells where ‘A’ is the most left and ‘C’ is the most right but ‘B’ is the center column. After selecting columns select a row. Rows are the horizontal groups of grid cells. Select the row by entering the row number (1, 2, 3).

```
A   B   C
1   |   |
-   -   -
2   | o |
-   -   -
3   |   | x
Enter player's Columns (A,B,C): c
Enter player's Row (1,2,3): 3
Grid Error!
You have entered invalid input.
Enter player's Columns (A,B,C):
```

After giving row or column your character will be displayed in the grid, but if you enter a wrong column or row, you will face grid error. Which says that you have entered wrong row number or column or you have entered a cell which is already be used. But your turn will not be missed and you will be able to enter the column and row again.

Development

This project consist of 6 files in a “.zip” file.

- 1) Tic_Tac_Toex.cpp
- 2) GameFunctions.cpp
- 3) Tic_Tac_Toex.exe
- 4) resource.rc
- 5) resource.res



6) icon.ico

Tic_Tac_toe.cpp

This file is the main source file of the whole project which consist of other source files as a header file and main function. This is the file which consist of the script to be executed (int main()) function.

Source Code

```
#include "GameFunctions.cpp"

//Function to replace (A,B,C) to (1,2,3) respectively
int alphToNum(char coordinate){
    if(coordinate=='A'||coordinate=='a'){return 0;}
    else if(coordinate=='B'||coordinate=='b'){return 1;}
    else if(coordinate=='C'||coordinate=='c'){return 2;}
};

int main(){
    Game Tx3; // Tx3 defined as a class object

    int option; // option is used to tell the mode (1p or 2p)
    int x_cor; // x cordinate (1,2,3)
    char y_cor; // y cordinate (A,B,C)
    int y2_cor; // Make (A,B,C) to (0,1,2) Respectively
    string player; //Player prompt

    /* Interface */
    system("cls"); // Clearing the screen
    cout << "==== Tic Tac Toe ===\n\n1)\tPlay 1P\n2)\tPlay 2P\n3)\tExit\n\nOption : ";
    cin >> option;
    if(option == 1){ // 1P mode, Playing with AI
        player = "Enter player's "; // Prompt

        while(!Tx3.isGameEnd()){ // Continuing until game end
            cout << Tx3; // Printing grid

            if(Tx3.turn == 1){ // 1st player turn
                while(true){ // Again choices if entered is invalid.
                    cout << player << "Columns (A,B,C): ";
                    cin >> y_cor; // Input column
                    cout << player << "Row (1,2,3): ";
                    cin >> x_cor; // Input row
                    y2_cor = alphToNum(y_cor);

                    /* Checking Validity and make move*/
                    if(Tx3.isInputValid(x_cor-1, y2_cor)){
                        Tx3.move(x_cor-1, y2_cor);
                    }
                }
            }
        }
    }
}
```



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```
        break;
    }
    else{ // Generating error on invalid input
        cout<<"Grid Error!\nYou have entered invalid input.\n";
        continue;
    }
}
else{ // 2nd Player turn
    Tx3.AI_move();
}
}

else if (option == 2){ // 2p mode, 2 persons playing
    while (!Tx3.isGameEnd()){ // Continuing until game end
        cout << Tx3; // Printing grid

        if(Tx3.turn == 1){player = "Enter 1st player's ";}
        else{player = "Enter 2nd player's ";}

        while(true){ // Again choices if enterd is invalid.
            cout<<player<<"Column (A,B,C): ";
            cin>>y_cor; // Input column
            cout<<player<<"Row (1,2,3): ";
            cin>>x_cor; // Input row
            y2_cor = alphToNum(y_cor);

            /* Checking Validity and make move*/
            if(Tx3.isInputValid(x_cor-1, y2_cor)){
                Tx3.move(x_cor-1, y2_cor);
                break;
            }
            else{ // Generating error on invalid input
                cout<<"Grid Error!\nYou have entered invalid input.\n";
                continue;
            }
        }
    }
}

return 0;
}
```

GameFunctions.cpp

This file is used as header file in the main source code of the program it is created to make code smaller and more readable. This file contains all the functions including AI move, which is included in the main source file. It uses iostream header file only. Source code is only available in the .zip file.



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resource.rc

This file is used to write all the resources for the C++ file compilation. This is used for adding the icon to the executable file of C++ code.

icon.ico

Icon file is used to embed it in the exe file using resource file.

resource.res

This file is resource file for C++ used to embed icon to the executable file. This file consists of set of binary and unable to read.

Tic_Tac_Toex.exe

This is main compiled form of the project. This file is only executable in Microsoft Windows operating system. This file consists of set binary data and unable to read using normal text editor.