Connect-Four

[Programming-1 Final Project]

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1 Introduction

Connect-Four is a popular game. The winner is the one who can space more four discs of the same color adjacently -either in a vertical, horizontal, or even a diagonal row- than his opponent.
For more informations about the game Connect 4.
This game is developed by the C programming language.

Important Links:
-The full source code GitHub.
-The Game Demo on youtube.

2 Features

-The player can select the Top X Players, the width and the height of the game using the XML file.

-The player is free to choose between two game modes -Human Vs Human OR Human Vs Computer- .

-Vs Computer mode was upgraded to be more difficult
.
-An Algorithm for the computer (personal effort) was implemented to make a progress and stop the player from making a progress.

-The player can save up to 3 games whenever he want.

-Undo and Redo the player moves.

-Displaying the player rank.

3 Design Overview

- ***The structure of the game is almost all about arrays , for example The Board Is a 2D character array .***
-
- ***In files And dealing with it , we saved in binary files.***
-
- ***Nearly all the functions is made using arrays also.***
-
- ***We tried to make separate functions each to perform a specific task.***

4 Assumptions

[1]In case of game loading:
-if the loaded file was corrupted or not found, Ask the player to select another file.

[2]In case of a tie in vs human mode:
-ask the two players to insert their names.

[3]In case of a vs computer mode:
-ask the player to insert his name whatever the result is.

[4]In case of XML file corruption:
-set the default values.

5 Data Structure

-Board array

-player structure

-configuration structure

-Column free spaces array

-position array

-turn array

6 Important Functions

-Undo and Redo

-Save and Load

-Check score

-Check free spaces

-Check winner

-player move

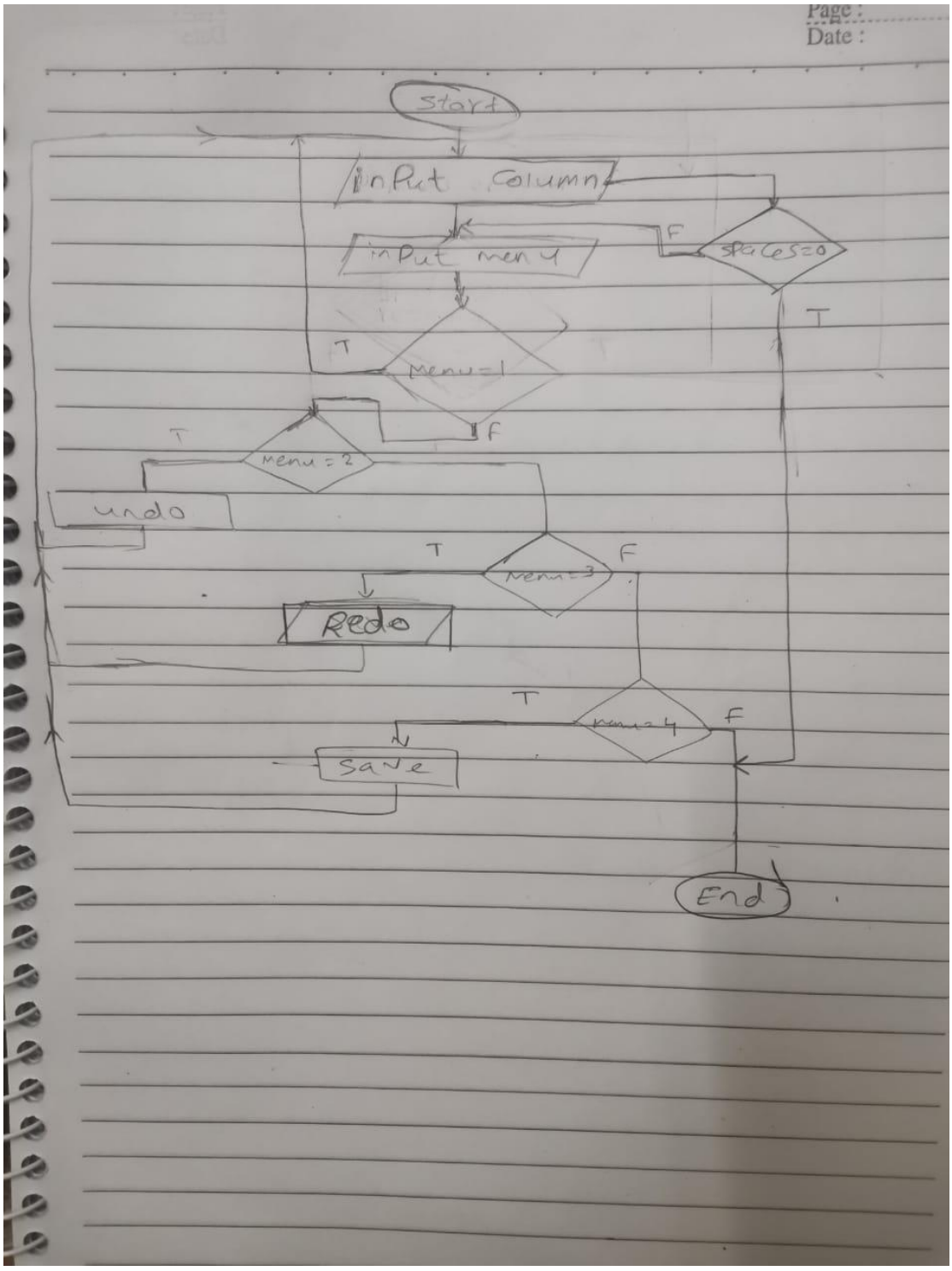
-computer move

-print board

-xml

-Top players

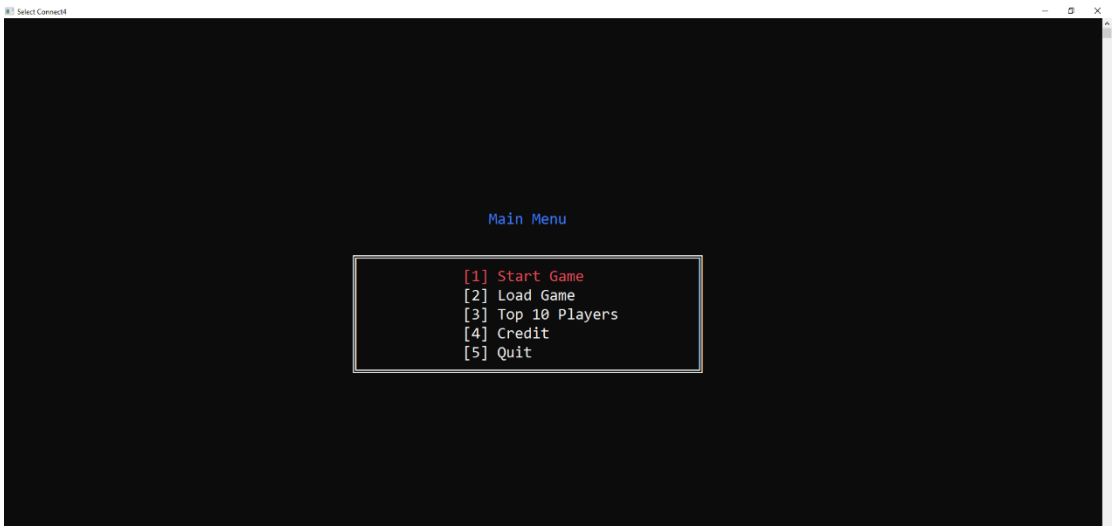
6 – flow chart


Page :
Date :
Start
input column
input menu
spaces=0
F
T
T
menu=1
F
T
menu=2
undo
T
menu=3
F
Redo
T
menu=4
F
save
End

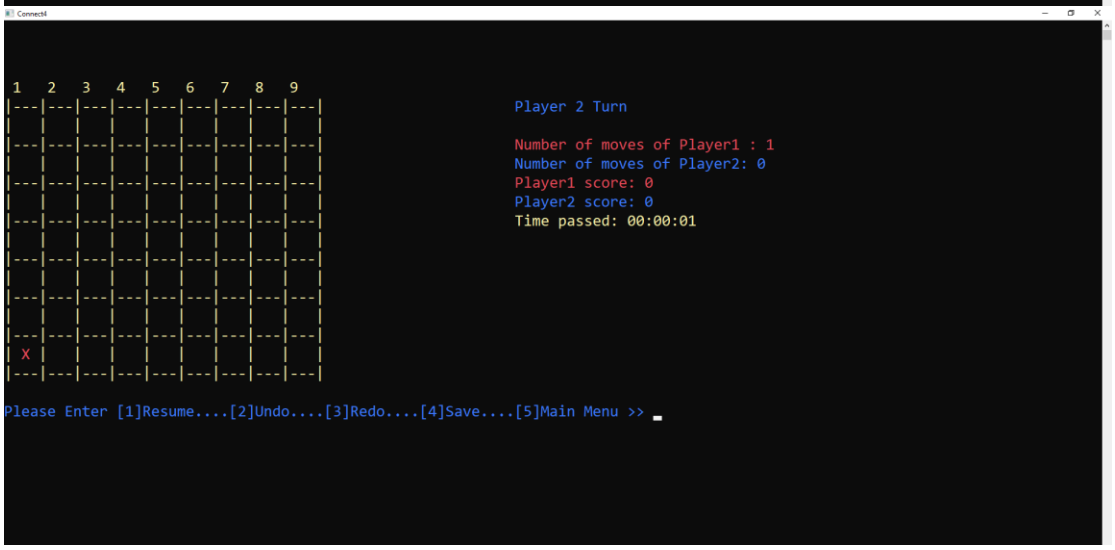
7 User Manual

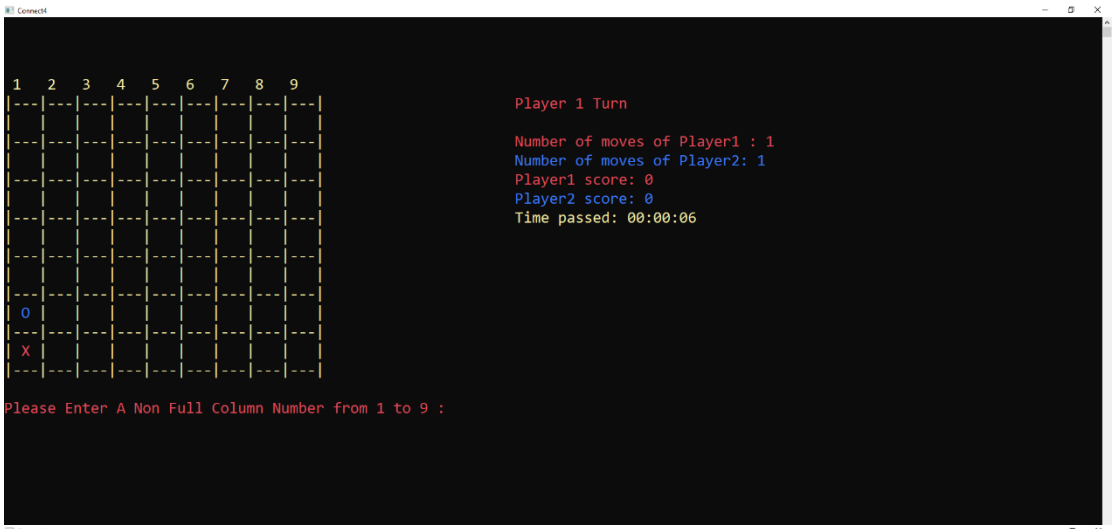
- **First you'll enter the main menu , there are 5 choices you can choose one : the first is to enter a new game and this has to options ; against the computer or (AI) or against your friend using the same keyboard .**
- **Second is to load saved games you have saved before using the in-game menu while you are playing.**
- **Third choice is to see the top scores of the games played before**
- **Forth is the credit where you know some information about the game and who made it .**
- **Fifth and last exit the game if you want to quit it.**
- **The Idea Of the game is to put 4 consecutive symbols of yours to earn points , every consecutive 4 symbols you get a point and by the time the board is full , the winner is the player whose score is more.**

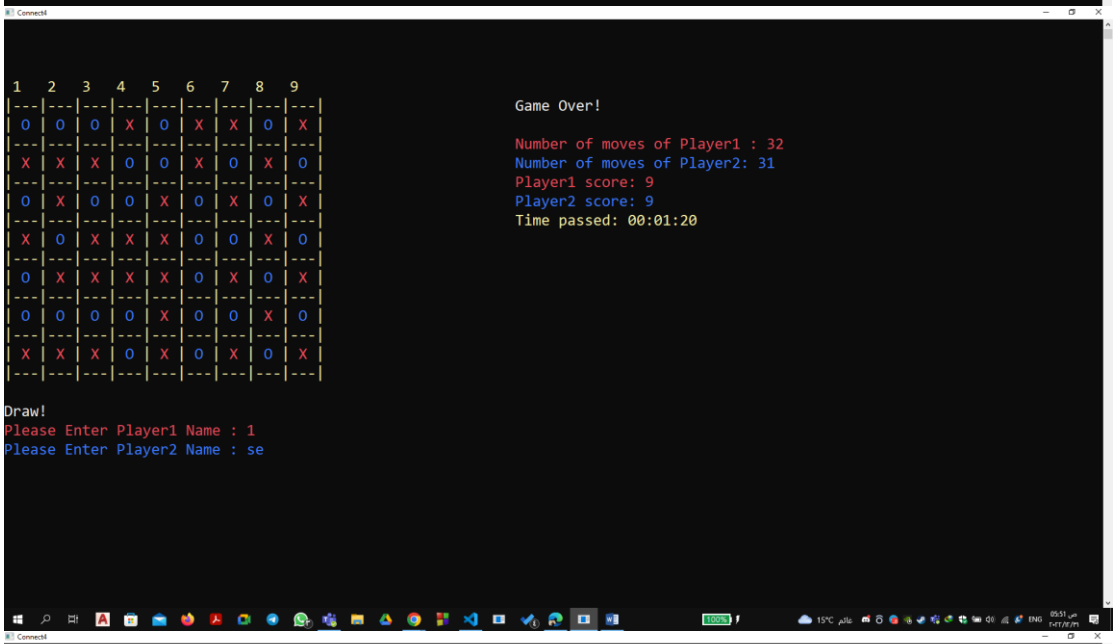
8 Sample Runs

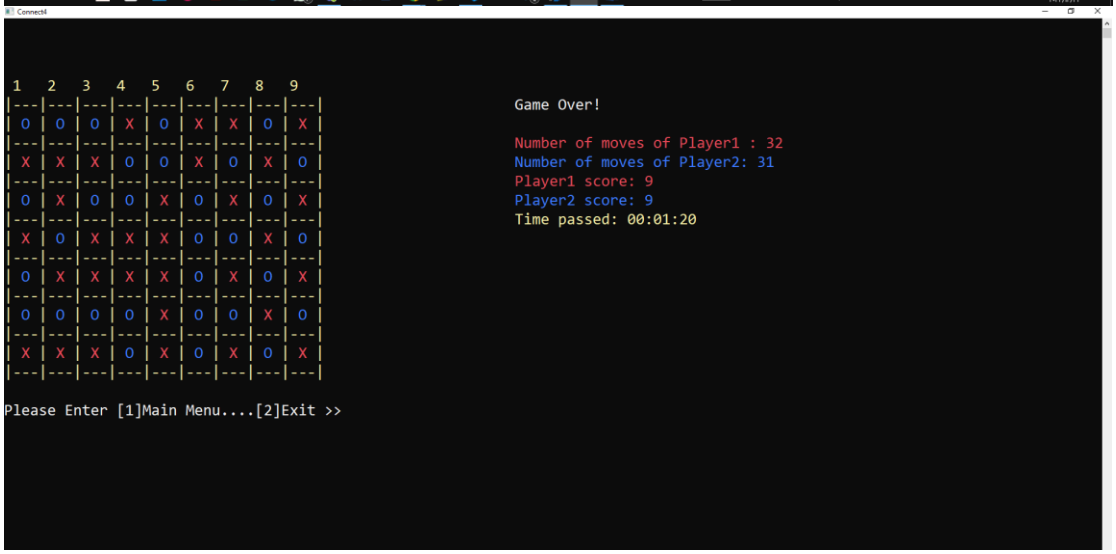


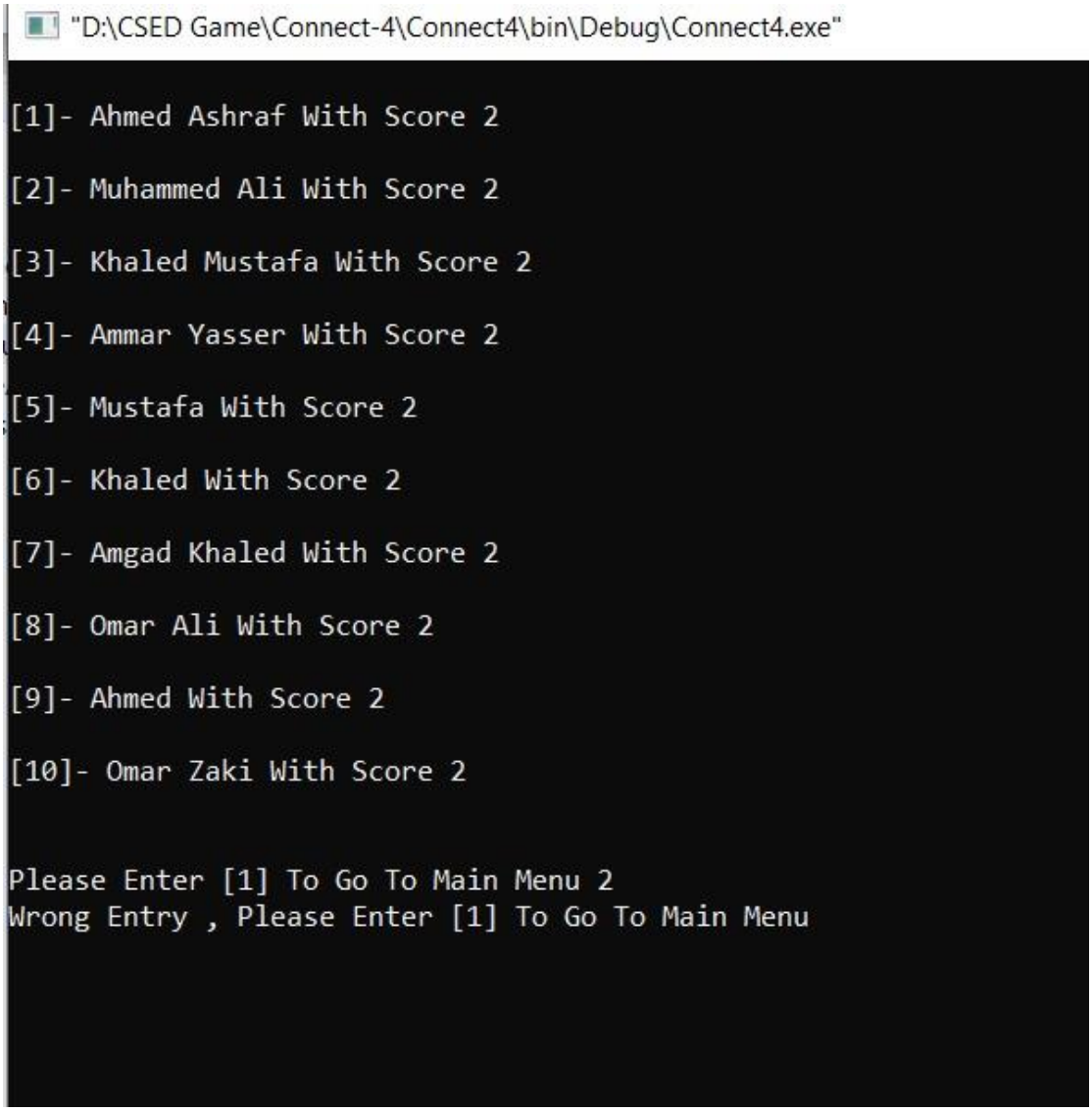
Connect4
Game Mode
[1] One Player Mode : VS. Computer
[2] Two Player Mode : VS. Human


Connect4
1 2 3 4 5 6 7 8 9
X
Player 2 Turn
Number of moves of Player1 : 1
Number of moves of Player2: 0
Player1 score: 0
Player2 score: 0
Time passed: 00:00:01
Please Enter [1]Resume....[2]Undo....[3]Redo....[4]Save....[5]Main Menu >>


Connect4
1 2 3 4 5 6 7 8 9
Player 1 Turn
Number of moves of Player1 : 1
Number of moves of Player2: 1
Player1 score: 0
Player2 score: 0
Time passed: 00:00:06
Please Enter A Non Full Column Number from 1 to 9 :


Connect4
1 2 3 4 5 6 7 8 9
Game Over!
Number of moves of Player1 : 32
Number of moves of Player2: 31
Player1 score: 9
Player2 score: 9
Time passed: 00:01:20
Draw!
Please Enter Player1 Name : 1
Please Enter Player2 Name : se


Connect4
1 2 3 4 5 6 7 8 9
Game Over!
Number of moves of Player1 : 32
Number of moves of Player2: 31
Player1 score: 9
Player2 score: 9
Time passed: 00:01:20
Please Enter [1]Main Menu....[2]Exit >>



9- References

-gotoxy function.
-Stack Over Flow.
- Geek For geeks.
- Tutorialspoint.
- https://cplusplus.com/
- On Youtube : Troubleshooter Youssef shawky , TheNewBoston.