Connect 4
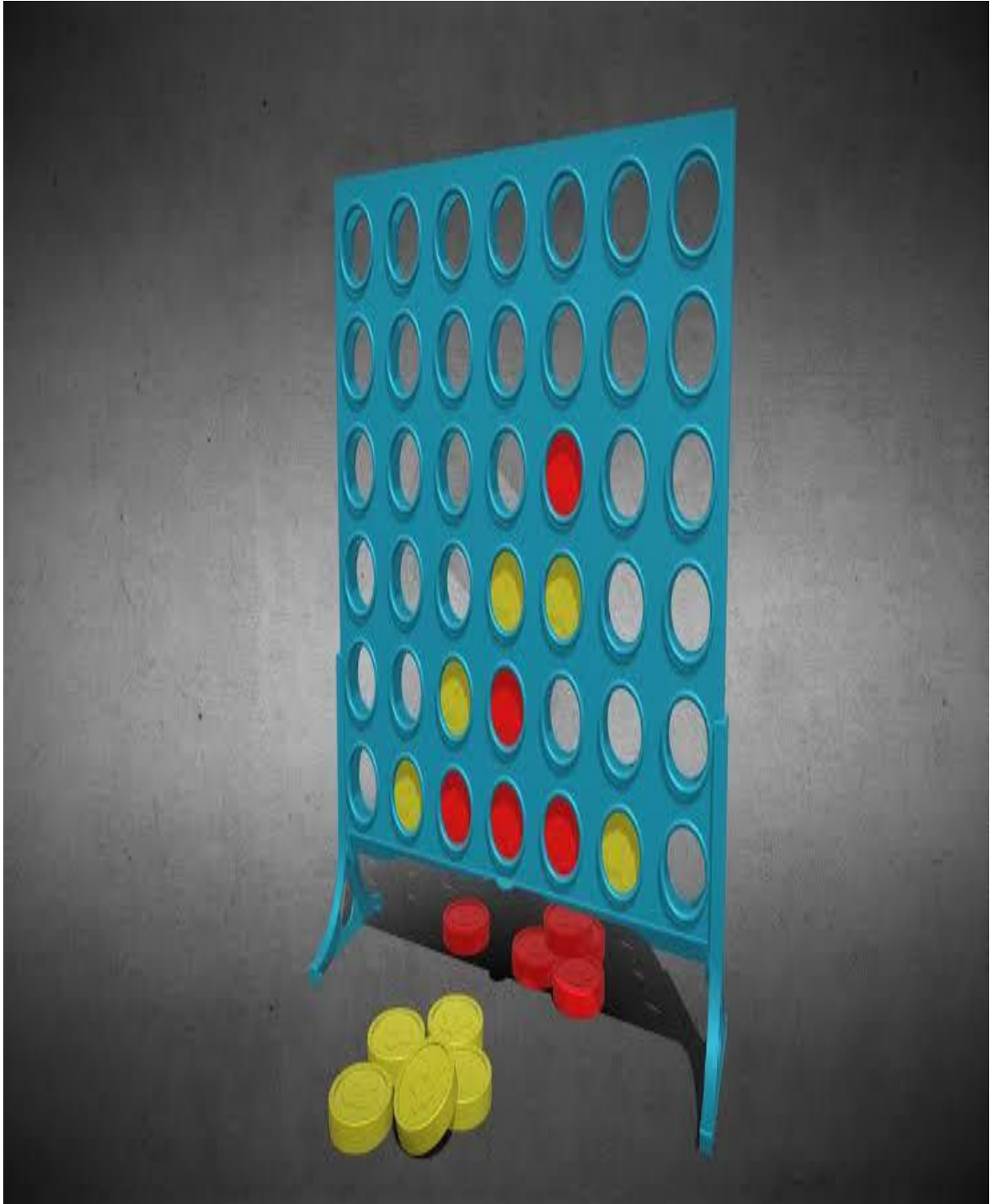

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PROGRAMMING PROJECT　**OMAR KHALED**　　　ID : 21010869

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Description

C program made by MOHAMED AHMED and OMAR KHALED.
The program is about famous game"CONNECT4". Also known as
(Find Four) .We used the code blocks IDE. The application
consists of modules, each module has a specific function will
define below.
We hope you could gently review the previous pages to have a
deep understand of the project.

Hope you enjoy using our version of this game.

ASSUMPTIONS

We assumed that at the end

Of game we will print the

Recent score for the player

Not the highest . but we

Save in highscore file the

Highest.

REFERENCES

we use YouTube channel to

learn how to deal with binary

files , However, this

is the only part we copied.

The code was written by us

You can see how organized it is

User Manual

The game "Connect4" is a game that can played by one player(vs computer) or by two competing player. In connect 4 two player take turns selecting a column to place their piece. We have two pieces

like('X','O') , then the piece then drops down into the lowest row in the game board. When you connect 4 pieces beside each other either a vertical , horizontal , positive diagonal and negative diagonal your score will increase by one.

At the end of game ,the game will ask the winner for his name and put it at the highscore list.

The player who will connect more 4 pieces will win the game .

Main menu

The place where the tale begins , the tale of honor and excite.

The player has four options to select. The first is New game ,

Second is load game , third is display the top highscore list ,

The fourth is Exit the game , which is not good choice , because this

game you will find that it make you very happy.

Welcome to our project

(connect four)

Main menu

When you start the game you have 4 options to select

The first is New game, Second is load game, third is display the top highscore list, The fourth is Exit the game. You will able to choose the size that you need from the XML file. Or you can also load the default

(Width = 7 , Height = 9 , Highscores = 10)

```
<< Main Menu >>
1-Start a new game
2-Load a game
3-Top players
4-Quit
select type:
```

Choosing the start new game

Here you can choose the mode that you need 1- one player : to play against the computer 2- two player : to play vs your friend 3- go back : to back to

New Game Menu

```
<< Main Menu >>
1-Start a new game
2-Load a game
3-Top players
4-Quit
select type:1

1-one player
2-two player
3-Go back
select type:2
-welcome in game
```

After select the mode you have 5 choices in each game .

```
type 'c' to select column
type 'u' for undo
type 'r' for redo
type 's' for save
type 'e' for exit
select type:
```

Top player

```
<< Main Menu >>
1-Start a new game
2-Load a game
3-Top players
4-Quit
select type:3
NAME                           SCORE                      RANK
OMAR                           1                          1
ALI                            1                          2
MOHAMED                        1                          3
SARA                           1                          4
```

Here you can see the top highscore list and their number as you like at XML FILE.

Score one

```
    1   2   3   4
-------------------
 |   |   |   |   |
-------------------
 | O |   |   | X |
-------------------
 | O |   |   | X |
-------------------
 | X | O |   | X |
-------------------
 | X | O | O | X |
-------------------
Time elapsed: 1 M:13 S
number of moves of player 1 is '6'        number of moves of player 2 is '5'
the score of player 1 is '1'              the score of player 2 is '0'
the deck of player 1 is 'X'               the deck of player 2 is 'O'
the color of player 1 is 'Green'          the color of player 2 is 'Red'
it's player 2 turn
type 'c' to select column
type 'u' for undo
type 'r' for redo
type 's' for save
type 'e' for exit
select type:
```

When you connect 4 your score will increase like green player.

Winning a game

The player with high score is the winner , after end of game you are required to enter your name then it will print for you your score.

```
    1   2   3   4
-------------------
| X | X | O | O |
-------------------
| X | O | O | X |
-------------------
| X | O | X | O |
-------------------
| X | O | X | O |
-------------------
number of moves of player 1 is '8'      number of moves of player 2 is '8'
the score of player 1 is '1'            the score of player 2 is '0'
the deck of player 1 is 'X'             the deck of player 2 is 'O'
the color of player 1 is 'Green'        the color of player 2 is 'Red'
-end game
player 1 is winner
please enter your name:sara
Your Rank is 4
type 'b' to go back menu
type 'e' to exit
select type:
```

If you and your friend or you and AI have the same score so no winner.

```
    1   2   3   4
-------------------
| O | X | O | O |
-------------------
| O | X | X | X |
-------------------
| X | O | O | X |
-------------------
| X | O | X | O |
-------------------
number of moves of player 1 is '8'      number of moves of player 2 is '8'
the score of player 1 is '0'            the score of player 2 is '0'
the deck of player 1 is 'X'             the deck of player 2 is 'O'
the color of player 1 is 'Green'        the color of player 2 is 'Red'
-end game
same score! No winner in game

type 'b' to go back menu
type 'e' to exit
```

FEATURES SECTION.

1-Splitting our project on different files and use the header files .

We have split our project into header files.

The header files are :- color.h , select_column.h , score.h , undo_redo.h , save_load.h , highscore.h , printArrays.h , xml.h.

Name	Date modified	Type	Size
📁 bin	12/30/2022 4:25 PM	File folder	
📁 obj	12/30/2022 4:25 PM	File folder	
📄 color	12/30/2022 3:58 PM	H File	1 KB
📄 configuration	12/30/2022 11:53 PM	XML Document	1 KB
📄 ffffpppp.cbp	12/30/2022 4:24 PM	CBP File	1 KB
📄 ffffpppp.depend	12/31/2022 1:01 AM	DEPEND File	1 KB
🖼 ffffpppp	12/31/2022 12:42 AM	Application	101 KB
📄 ffffpppp.layout	12/31/2022 12:45 AM	LAYOUT File	1 KB
📄 highscore	12/31/2022 12:42 AM	H File	5 KB
📄 highscore	12/30/2022 8:02 PM	Text Document	1 KB
🪟 main	12/31/2022 1:01 AM	C File	26 KB
📄 printArrays	12/30/2022 3:44 PM	H File	3 KB
📄 save_load	12/30/2022 10:51 PM	H File	5 KB
📄 savegame1	12/30/2022 10:52 PM	BIN File	1 KB
📄 score	12/30/2022 3:53 PM	H File	2 KB
📄 select column	12/31/2022 1:01 AM	H File	7 KB
📄 undo_redo	12/30/2022 10:35 PM	H File	2 KB
📄 xml	12/30/2022 3:44 PM	H File	7 KB

In order to make you discover where the error easily .

1-when there is error in height .

```
there is error in Height!
please enter the path:
```

2-when there is error in width.

```
there is error in width!
please enter the path:
```

3-Signification Option in our Application

You can at any time save the game easily and you can back to it at any time and continue your game .

Our application undos and redos easily , whether you are playing against a computer or a friend .

You can exit the whole game and end this tale.

This everything . Hope you enjoy the game

Game Design And Architecture

Thanks to God, we made a very strong design that check all possibilities that the user can make by mistake , a design that you can understand it easily and simple function like undo , redo.

The functions like (check_score) it is main done by recursion.

The game was a sequence of action help the user to play it easily .

The main menu have all the option that the user can select and it was easily to design.

We designed a program that has a small function and here job above it

By calling the function (menu) it is change the screen and ask you to select the mode and then Read the size grid from xml file then you start the game successfully.

After all moves done(End of game) we take the winner for his name and compare his name with other names at highscore file and if

The is already exist we save the highest score ,if not exist we append it at the highscore file.

Header files and functions in them

Include function	Importance of function	Header file
Printing _board	Printing the board after each move	Color.h
Empty board	Printing empty board in the begiining	Highscore.h
Check board	Check if the board is full	Save_load.h
Score	Count the addition score after each move	Xml.h
Undo	To make undo	Score.h
Redo	To make redo	PrintArrays.h
Player	For player vs player In two player mode	Undo_redo.h
Computer	for player vs computer in one player mode	Select_column.h
game_flow	The most important function in the game . It is responsible for start the game flow	
Xml	Function to check every thing in xml file and read height and width and Highscore from xml fuction.	
Check_name	Function check if the constant name at xml file exist or not	
Common		
Mode_selection	Mode selection for one or two player	
saving	Function to save the	

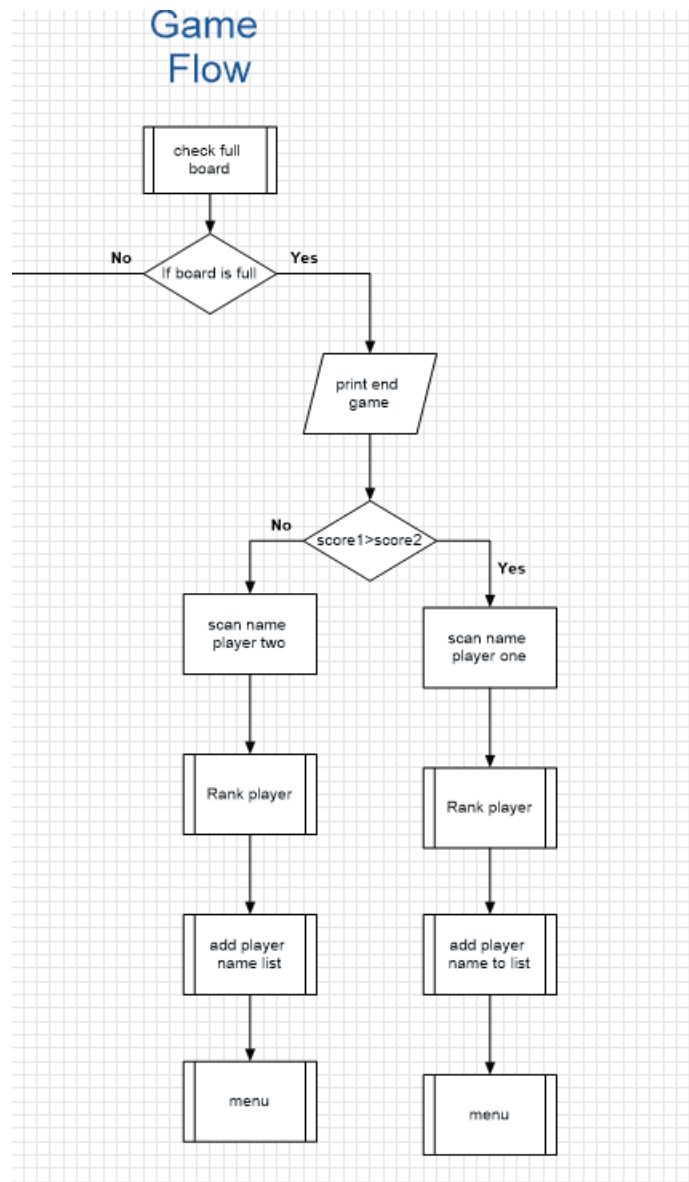|		
	game	
Loading	Function	
Top	Function to print top player, (their number as you like)	
High_score_list	function to compare the name with other names and take his top score and save it to the file.	
Rank_player	Function to print the winner rank after end of game	
Menu	Main menu selection	
Fn_save	Function to save everything about the game	
Fn_load	Function to load everything about the game	

Data structure

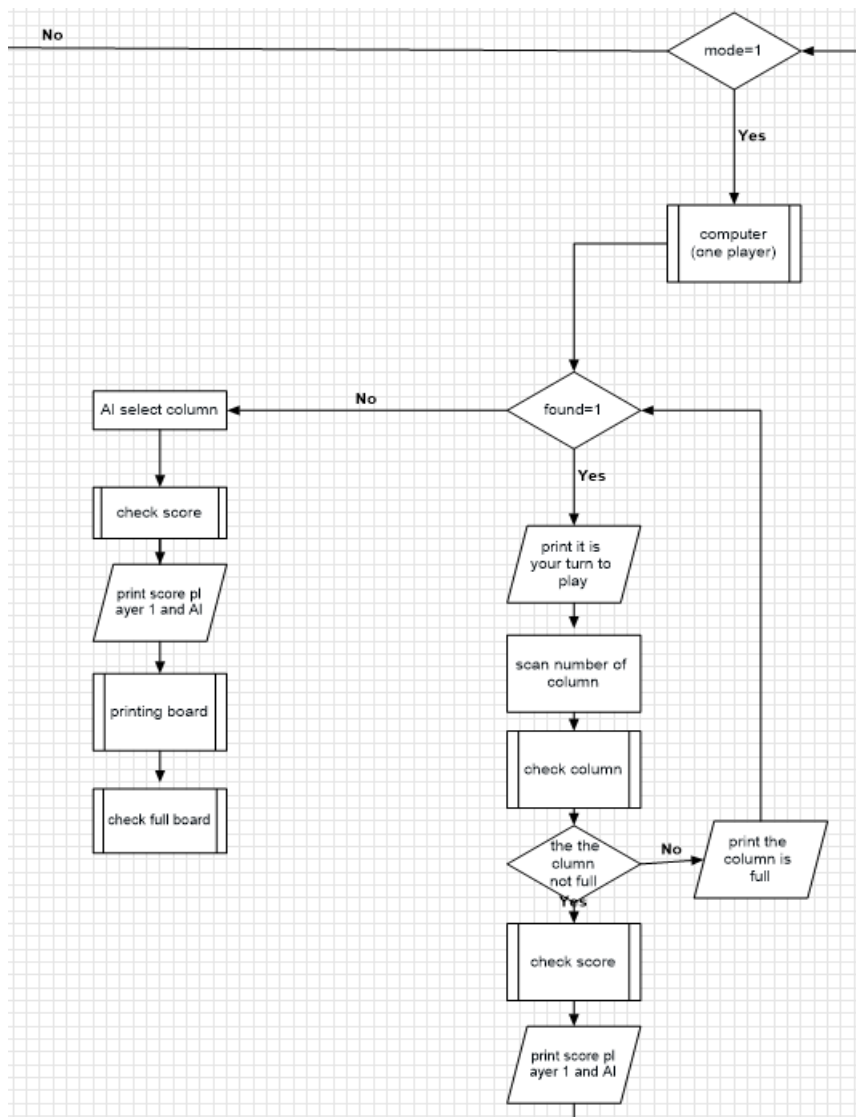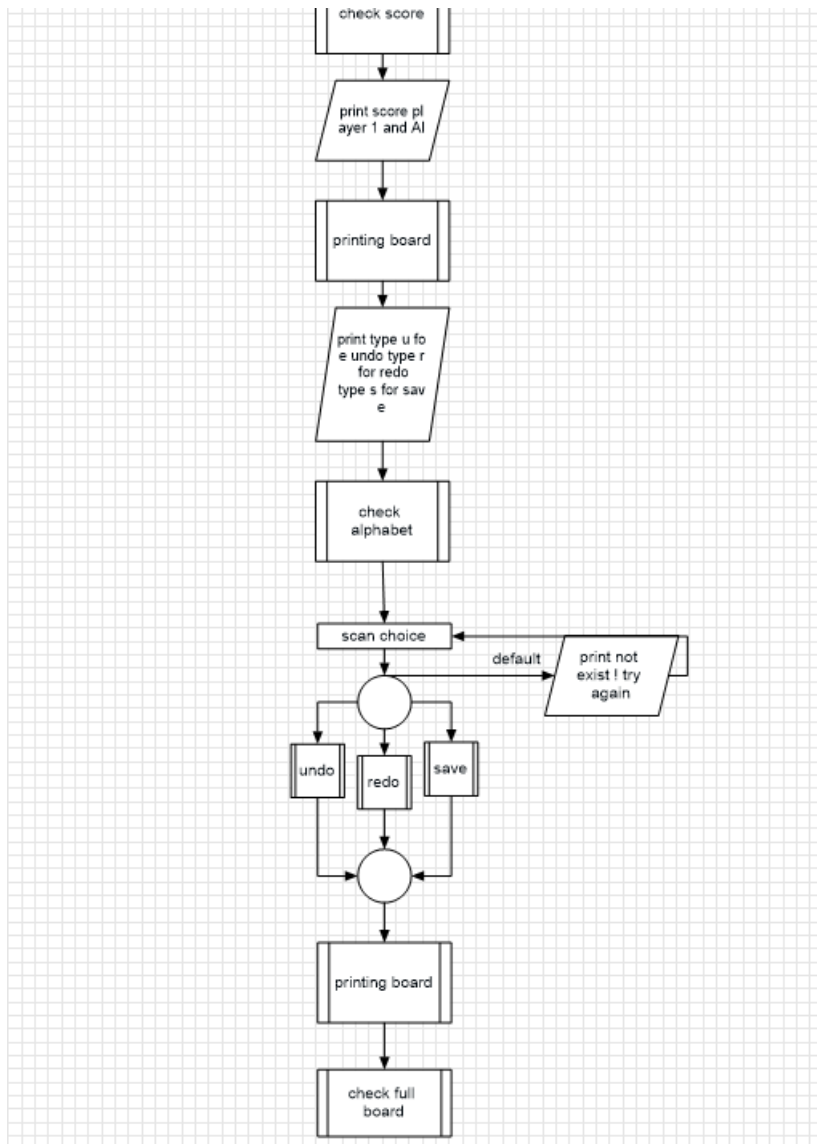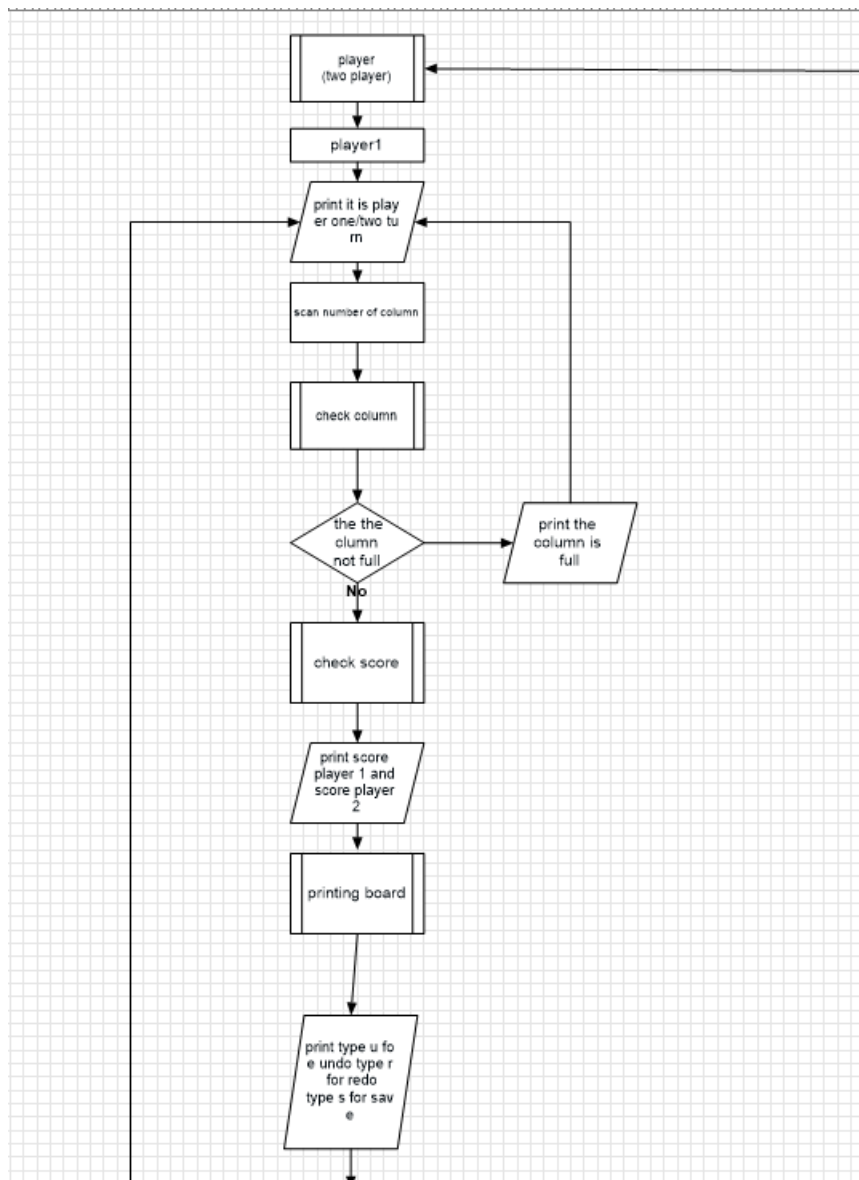| Name	Type	Element	Usage
Display	Array of character.	Characters inside the grid	The grid itself, the most important array in the game
Arr(game_details)	Integer array	For each play : the row and column that the player choose	Signification in the undo and redo
Pl_one	Structure of integer and characters	Moves, score, name, color , deck of player one	Save the information of player one .
Pl_two	Structure of integer and characters	Moves, score, name, color , deck of player two	Save the information of player one.
configuration	Structure of integers	The height, width and highscore	Significant for receiving the input from xml file that the user pass to it
Top	Structure of integer and characters.	Rank , name ,score the player	Save this information, then recalling them when we need
Array	Array of structures	Structures of type Top	Used for saving and reloading the top ten players
Score_arr	Array of Integer	Score of each player	Signification in the undo.

Flow charts

1th GAME LOOP

First part

Second part :-

Third part

check score

print score player 1 and AI

printing board

print type u foe undo type r for redo type s for save

check alphabet

scan choice → default → print not exist ! try again

undo   redo   save

printing board

check full board

Fourth part

player
(two player)

player1

print it is play
er one/two tu
rn

scan number of column

check column

the the
clumn
not full

print the
column is
full

No

check score

print score
player 1 and
score player
2

printing board

print type u fo
e undo type r
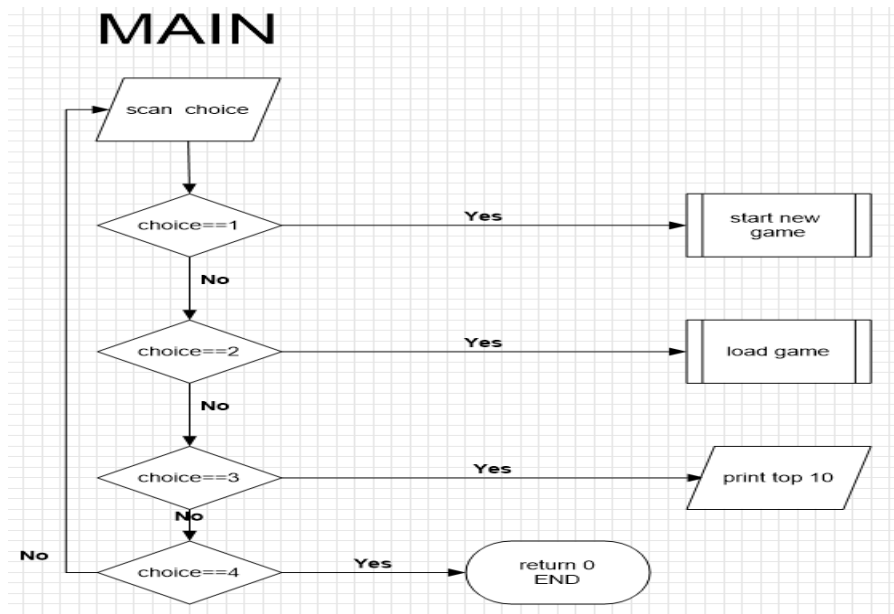for redo
type s for sav
e

Fifth part : -

Main

MAIN

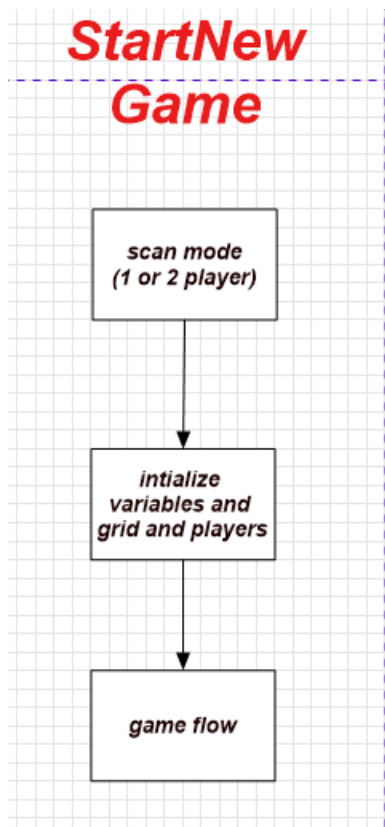Start New Game

StartNew Game

description

C program made by MOHAMED AHMED and OMAR KHALED. The program is about famous game"CONNECT4". Also known as (Find Four) .We used the code blocks IDE. The application consists of modules, each module has a specific function will define below.

We hope you could gently review the previous pages to have a deep understand of the project.

Hope you enjoy using our version of this game. ☺

GitHub:

https://github.com/mohamedahmedomar/ConnectFourgamed

It was great to use github,it make it easy for us to share code files and

Collaborate with my friend in project and it save a lot of time .

☺☺☺☺☺☺☺☺