REPORT ON PROGRAMMING PROJECT

Git hub: https://github.com/AndrewSafwat1/connect4_game.git

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DESCRIPTION:

We have implemented a connect 4 game using c programming language

FEATURES:

Our connect four game can be played in two modes multipliers and single player

It has a menu of four sections (new game , load game ,top players , exit)

DESIGN OVERVIEW:

Menu of game is square like and with a lightbar to make it to deal with

Board of game is well designed and enhanced with colours when playing

Top players can be loaded in game after end playing or from menu . It is sorted according to scores of players.

ASSUMPTIONS:

Game size cannot be more than (50*50)

Tabs and spaces will change name of user (ahmed!= ahmed)

If the two players get same score , no one of them will be taken in file

DATA STRUCTURES:

2 dimensional array to save moves and print board using it

1 dimensional array to check completeness of columns

Struct for time

Struct for top score parameters

Struct for game configuration

IMPORTANT FUNCTIONS OF GAME:

Printscores :will print X top scores where x is a parameter taken in

Start of game

Push1,push2,pop1_value,pop2_value …: will deal with stack of undo/redo

Horizontal check: will count score in rows

Vertical check : will count score in columns

Diagonal check 135:to count score in one diagonal

Diagonal check 45 :to count score In the diagonal

Check score:will display total scores of each player

Play _display_with computer: function to manage playing of computer

It calls many inside it like score functions and undo/redo functions

Init_array: will initialize array of playing with stand values

Printboard: to display board of game after each move

Play_display :same as play_display with compuer but it manages multiplayer mode

Choices/draw_box_main: help in printing menu and game array in board like way.

Save functions: to save game in files

Load functions: to play saved games

(USER MANUAL)

Open game and a main menu will appear

Choose one of menu components(new game , load game, top score,exit)

If you choose a new game a sub menu will appear and you can choose a mode (1 player,2 players)

Game parameters will be read from configuration file in start of game

Choose a column to put your move

Score will be updated after each new connect 4 formation .

Winner player name will be taken in top score file and his rank (according to his score in game).

Top players will be displayed in end of game

You can save and load game

You can display top scores from main menu

You can undo a move in game by pressing u and redo by pressing r

REFERENCES:

GEEKS FOR GEEKS (Qsort function implementaion)

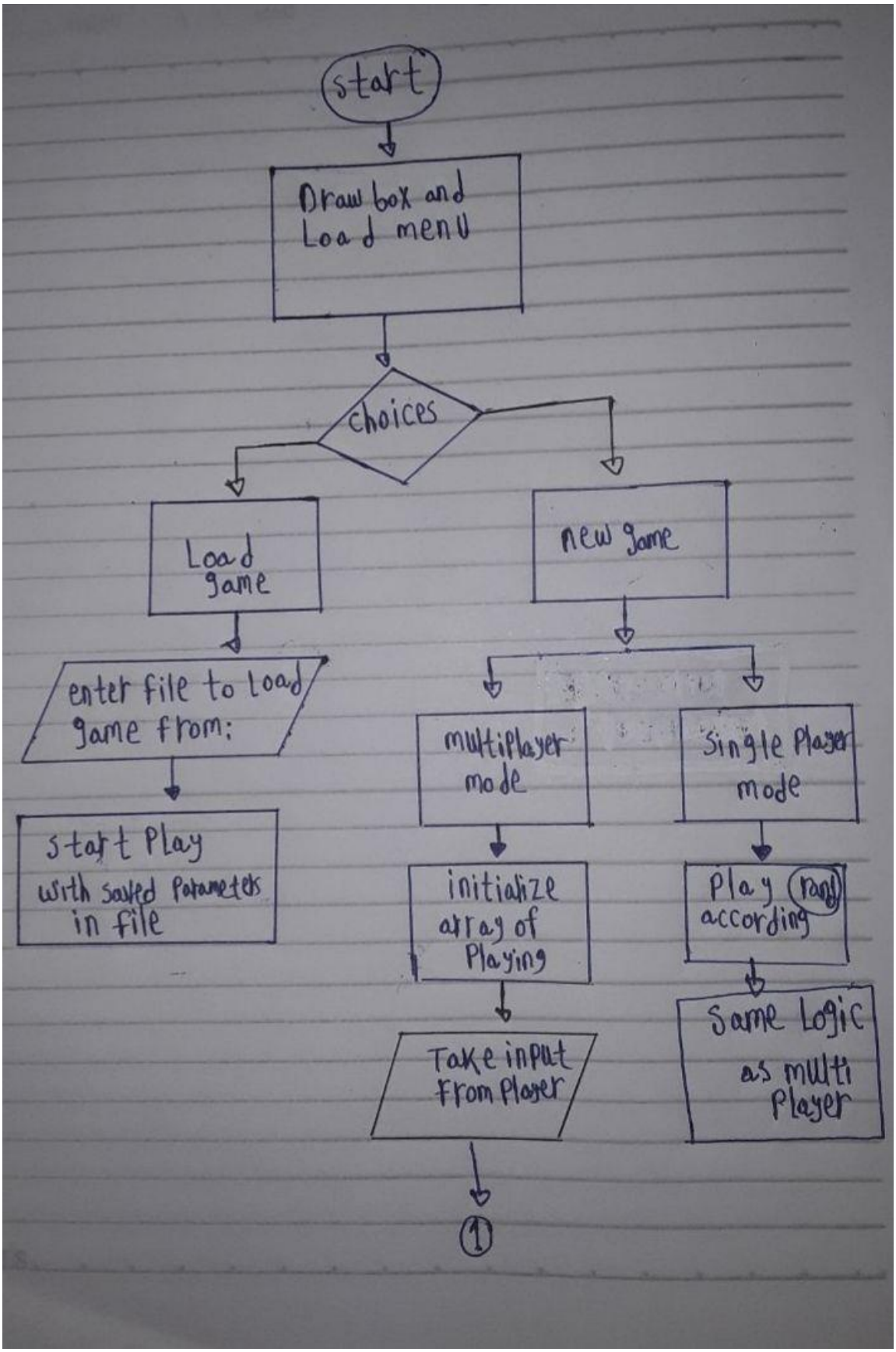
https://www.geeksforgeeks.org/

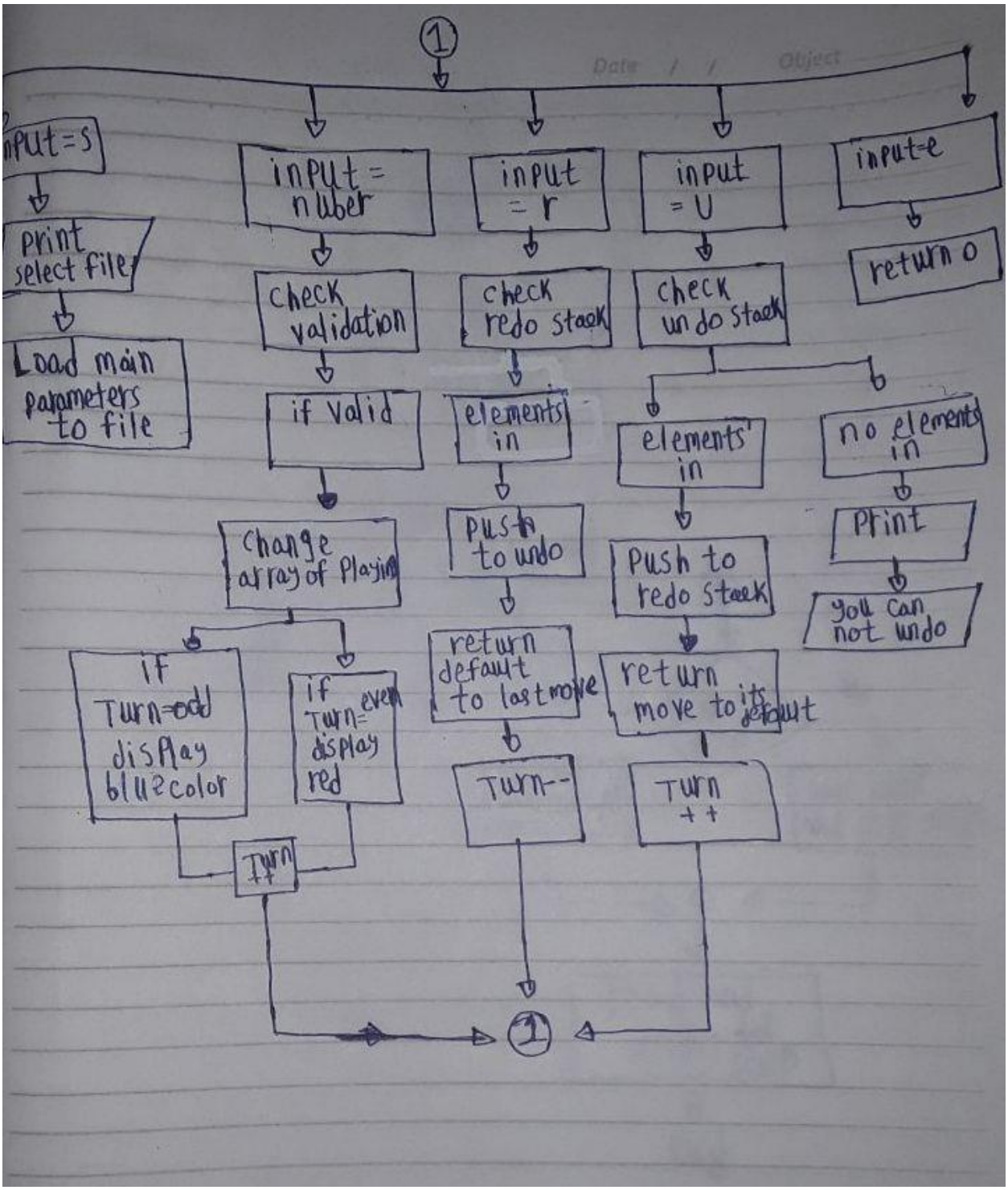
Troubleshooter Youssef shawky (youtube channel)

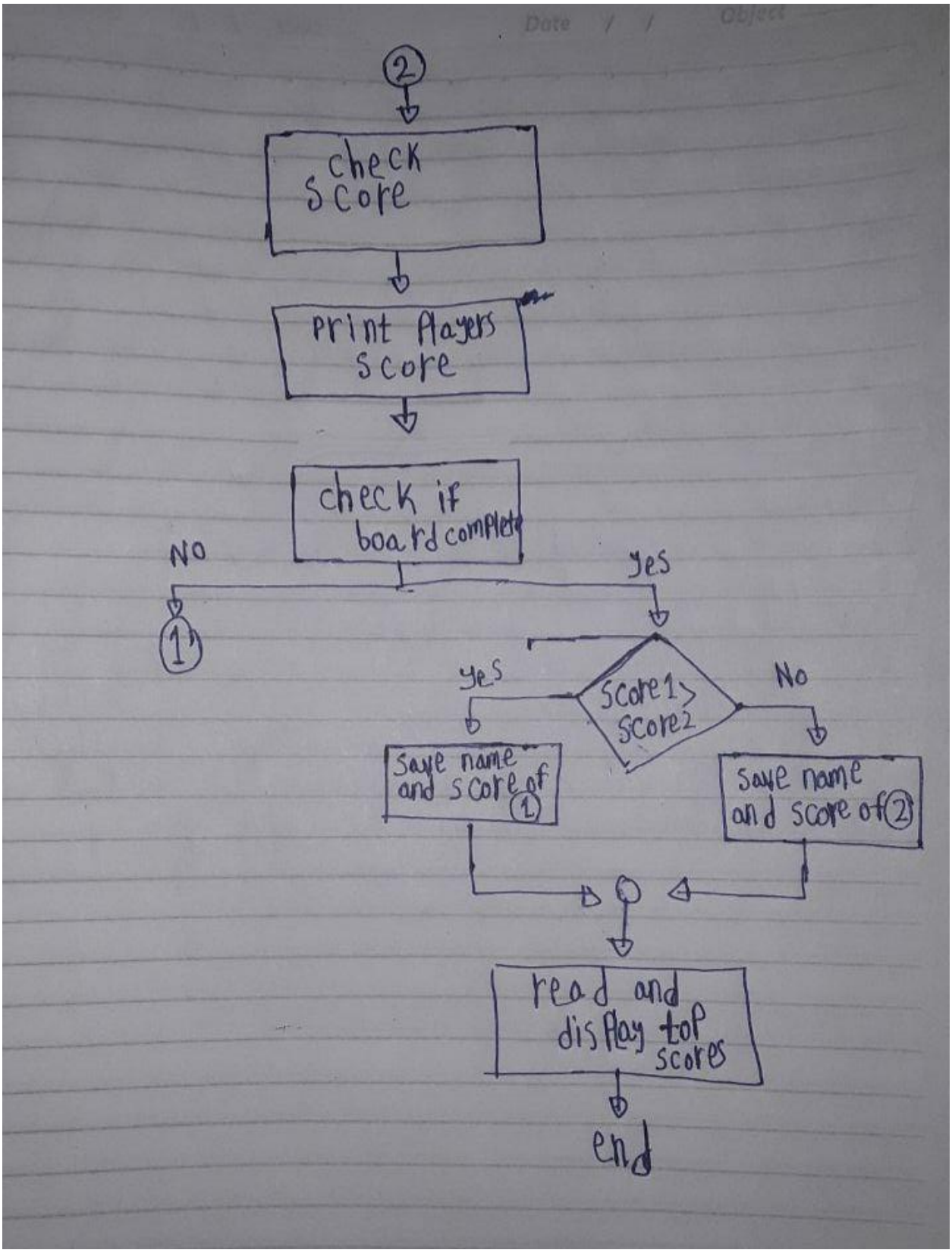
(main menu)

https://www.youtube.com/watch?v=_3VdROJmaJk&list=PLVp0hvzMSQHTlz2CNlbhq-E6WYYujm7b8&index=42

FLOW CHART:


start
Draw box and Load menu
choices
Load game
new game
enter file to load game from:
multiplayer mode
Single Player mode
start Play with saved Parameters in file
initialize array of Playing
Play (rand) according
Take input from Player
Same Logic as multi Player
1

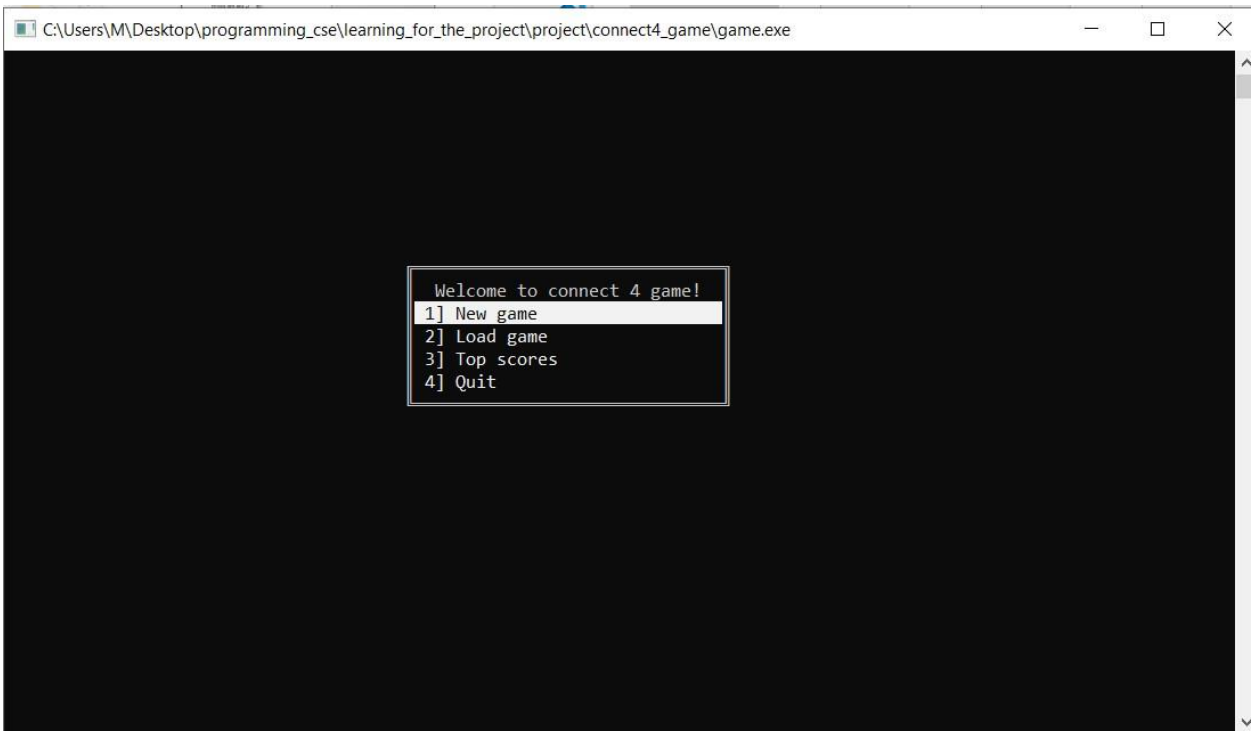

1
input=s
Print select file
Load main parameters to file
input = number
check validation
if valid
change array of Playing
if Turn=odd display blue color
if Turn=even display red
Turn ++
input = r
check redo stack
elements in
push to undo
return default to last move
Turn--
input = U
check undo stack
elements in
Push to redo stack
return move to its default
Turn ++
input=e
return 0
no elements in
Print
you can not undo
1


2
check score
print players score
check if board complete
NO
Yes
1
Yes
score1 > score2
No
save name and score of 1
save name and score of 2
read and display top scores
end

Video :

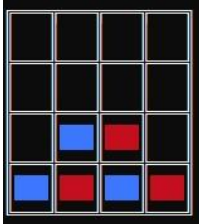
https://drive.google.com/drive/folders/16f5ovu34YN4bk1lO2jkWZ1wYoZJE1jgi?usp=sharing

sample runs:


C:\Users\M\Desktop\programming_cse\learning_for_the_project\project\connect4_game\game.exe
Welcome to connect 4 game!
1] New game
2] Load game
3] Top scores
4] Quit

1] Single player
2] Multiplayer
3] Main menu

COMPUTER'S TURN



Player 1 score: 0

Player 2 score: 0

time taken in game:

seconds : 7

Player 1 total moves: 3

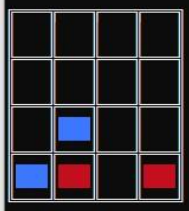
Player 2 total moves: 3

Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):

Player 1 total moves: 3

Player 2 total moves: 3

Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):
u



Player 1 score: 0

Player 2 score: 0

time taken in game:

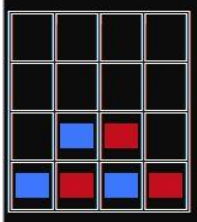
seconds : 33

Player 1 total moves: 4

Player 2 total moves: 4

Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):

```
Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):
s

Choose from 1 -> 3 the file index you want to save your game in:
3
```

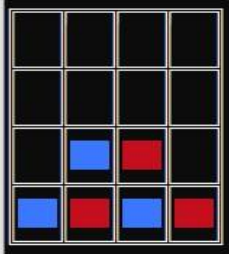


```
Player 1 score: 0

Player 2 score: 0

time taken in game:

        minutes : 1             seconds : 14

Player 1 total moves: 5

Player 2 total moves: 5

Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):
```

C: > Users > M > Desktop > programming_cse > learning_for_the_project > project >

```xml
<?xml version="1.0" encoding="UTF-8"?>

<Configurations>
    <Height>4</Height>
    <Width>4   </Width>
    <Highscores>10</Highscores>

</Configurations>
```

```
Player 1 total moves: 4

Player 2 total moves: 4

Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):
r
```



```
Player 1 score: 0

Player 2 score: 0

time taken in game:

        seconds : 51

Player 1 total moves: 5

Player 2 total moves: 5

Player1, Choose column from 1 to 4 (u for undo, r for redo, s for save, x for main menu):
```