CS213: Object Oriented Programming

Assignment 3

FACULTY OF COMPUTERS AND ARTIFICIAL

INTELLIGENCE, CAIRO UNIVERSITY

CS213: Programming II

Year 2022-2023

First Semester

Assignment 3 – Parts 2 & 3 & 4

Course Team Members:

Mazen Abdelfattah Omar_S2_20230607
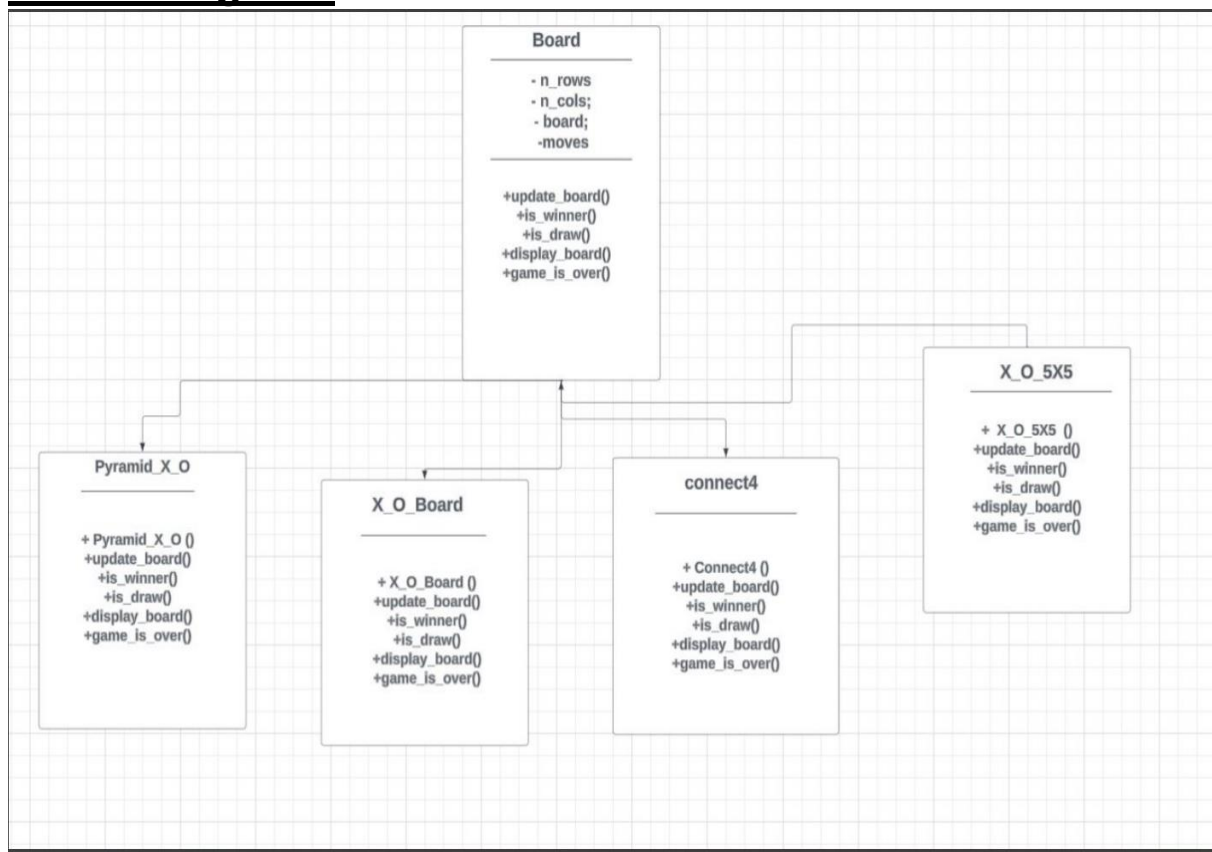
Ahmed Elkholy Mahmoud_S2_ 20220037

Mahmoud Ehab Helmy_S2_20220457

Submitted to Dr. Mohamed Elramly

1-Work Breakdown Table:

Ahmed Elkholy Mahmoud	Mahmoud Ehab Helmy	Mazen Abdelfattah Omar
20220037	20220457	20230607
1- Pyramidic Tic-Tac-Toe	2- Four-in-a-row	3- 5 x 5 Tic Tac Toe

2-UML Diagram:

3-GitHub ScreenShots:

Update Player.cpp
Mazen-Abdelfattah committed yesterday — Verified — 3ca08e6

Add files via upload
Mazen-Abdelfattah committed yesterday — Verified — 54f4bc3

Commits on Dec 13, 2023

Update GUI.cpp
elkholyjr committed 3 days ago — Verified — 95e9ec4

Create GUI.cpp
elkholyjr committed 3 days ago — Verified — 36ad75c

Commits on Dec 12, 2023

Update main.cpp
MahmoudEhab3 committed 4 days ago — Verified — b06d0f2

Update connect4.h
MahmoudEhab3 committed 4 days ago — Verified — 96e3a5e

Update connect4.cpp
MahmoudEhab3 committed 4 days ago — Verified — c1feb3e

game2
MahmoudEhab3 committed 4 days ago — Verified — bd4ebdf

Commits on Dec 7, 2023

Update A3_S2_20230607_Problem6.cpp
Mazen-Abdelfattah committed last week — Verified — 5864f2e

Create A3_S2_20230607_Problem6.cpp
Mazen-Abdelfattah committed last week — Verified — ecf7a31

Commits on Dec 6, 2023

Update BoardGame_Classes.hpp
elkholyjr committed last week — Verified — ce7096b

Update RandomPlayer.cpp
elkholyjr committed last week — Verified — bed6c62

Update X_O_Board.cpp
elkholyjr committed last week — Verified — 4dc357f

Update CMakeLists.txt
elkholyjr committed last week — Verified — c6a818b

Update A3_S1_20220457_Problem5.cpp
MahmoudEhab3 committed last week — Verified — c23085e

Update A3_S1_20220457_Problem2.cpp
MahmoudEhab3 committed last week — Verified — a226fc7

Update A3_S1_20220457_Problem2.cpp
MahmoudEhab3 committed last week — Verified — a67e4df

Commits on Dec 5, 2023

Update X_O_Board.cpp
elkholyjr committed 2 weeks ago — Verified — 5a68daf

Add files via upload
elkholyjr committed 2 weeks ago — Verified — 4f87205

Create read me
elkholyjr committed 2 weeks ago — Verified — d8e5625

Commits on Dec 4, 2023

Update A3_S1_20220457_Problem5.cpp
MahmoudEhab3 committed 2 weeks ago — Verified — e239fa3

A3_S1_20220457_Problem5
MahmoudEhab3 committed 2 weeks ago — Verified — 37883cb

A3_S1_20220457_Problem2
MahmoudEhab3 committed 2 weeks ago — Verified — 2768c1b

Create README!
elkholyjr committed 1 hour ago — Verified — 37aceae

Update X_O_5X5.cpp
elkholyjr committed 1 hour ago — Verified — 09348a0

Update X_O_5X5.cpp
elkholyjr committed 1 hour ago — Verified — f7b54f1

Delete Task 2/FCAI_Game_App/Hello!
elkholyjr committed 1 hour ago — Verified — 8f5f23b

Add files via upload
elkholyjr committed 1 hour ago — Verified — 41e579b

Create Hello!
elkholyjr committed 1 hour ago — Verified — 1ecf2eb

Update X_O_Board.h
Mazen-Abdelfattah committed 2 hours ago — Verified — c58bc88

Update X_O_Board.cpp
Mazen-Abdelfattah committed 2 hours ago — Verified — 1940012

Update X_O_Board.cpp
Mazen-Abdelfattah committed 6 hours ago — Verified — b729beb

Update X_O_Board.cpp
Mazen-Abdelfattah committed 6 hours ago — Verified — 71bdc68

Commits on Dec 15, 2023

Update main.cpp
Mazen-Abdelfattah committed yesterday — Verified — 5c71271

Update Player.cpp
Mazen-Abdelfattah committed yesterday — Verified — 3ca08e6

Add files via upload
Mazen-Abdelfattah committed yesterday — Verified — 54f4bc3

4-Code Descriptions:

Mazen's Description:

The main changes I have done was in "is_winner" function which is in sub class of the parent class "Board". I have to make count_x & count_o to count the no. of 3 consecutive Xs or 3 consecutive Os. To do so, I had to check first if the "n_moves" equals to 24 or not.
There was 15 possibilities to had 3 consecutive Xs or Os in either columns or rows (total 30), and 18 possibilities to had 3 consecutive Xs or Os diagonally, However I had covered all the possibilities in the code and increment the counters.

Ahmed's Description:

Most of my changes was in "is_winner" function which is in sub class of the parent class "Board". I had used arrays, bitwise and, and if conditions which helped me in detecting the cases to get 3 consecutive Xs or Os and in these cases the function return true else return false.

Mahmoud's Description:

I had made "connect4 class" which inherits from "Board class".
I have handled the constructor and "display_board" function to fit in the game.
In "is_winner" function I need to emphasize that there are 4 consecutive Xs or Os to return true, to do so I have defined all the possibilities for that (in rows,columns,diagonal) .
If there was not any possibility to get 4 consecutive Xs or Os the function returns false.

5-Report of the code quality of each member:

Mazen's Code Review:

Ahmed's Code:

Pros	Cons
• The requirements have been met. • The code is easy to read. • Passed all testcases I have done. • Code formatted correctly. • Acceptable performance. • ReadMe up to dated. • No errors.	• He used "using namespace std" and This is not the best thing to do (As we learned from PVS) • I have faced some difficulties to understand what he had done in "is_winner" function.

Mahmoud's code:

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