HW11

- Connect Four Due: January 2nd 00:00:00
- AI Due: January 7th 00:00:00

- Filename: HW#_StuID.zip
  - Ex) HW11_Q12345678.zip

Connect Four

- Rules
  - 6 rows, 7columns
  - Two players
  - 21 red discs and 21 yellow discs
  - Every round, players drop one of their discs into an unfilled column
  - The player who achieves “four in a row” first is the winner
  - If the game board fills before player achieve four in a row, the game is a draw(平手)

Connect Four

- Connect four game:
  - Write a program letting 2 users play Connect Four
  - Use only basic rules
  - Update and show the game board after each move (每下一步都要顯示現在的戰況)
  - When the game ends, determine and show which player is the winner or the game is a draw
  - Include a “README.txt” to instruct how to play your game(最後還要寫一個解釋遊戲要怎麼操作的.txt)

Connect Four

- AI:
  - Write an AI to compete with your classmates (AI VS 玩家)
  - Time for decision in each step is limit to 1 second
  - Upload one header file only → Stu_ID.h

Connect Four

- You can get three files from TA after Jan. 2nd
  - **Source.cpp** : Don't change any code in this file
  - **E12345678.h** : Change the file name and function name to your Stu_ID → Upload this file only (我的ID為：F64096114)
  - **Poor_AI.h** : Write a simple AI for testing

  - Change E12345678.h to Stu_ID.h after completing AI or you have to change file name and function name in source code.

Connect Four

- Source.cpp
- Call two AIs to compete for 100 times
- Players drop the first disc by turns
- The AI which wins more times is the winner
- The round ends by some cases
  - Someone wins when connecting four
  - The board is full (Draw Game)
  - Someone does illegal move (The other player wins)

Connect Four

- Source.cpp
- vector < vector<char> >board
- Use 6x7 vector to store the state of board

	0	1	2	3	4	5	6
0							
1							
2							
3			X	O			
4			O	X			
5		X	O	O	X		

Connect Four

- E12345678.h

Change file name and function name to your Stu_ID before uploading

```
#include <iostream>

using namespace std;

int E12345678(const vector < vector<char> > &, char, char);

int E12345678(const vector < vector<char> > &b, char mydisc, char yourdisc) {
    static const char me = mydisc; //Record the disc type main function assigns
    static const char opponent = yourdisc; //Record the disc type main functior
    int column = -1;
    //Write your AI here
```

Given: board, disc (O or X)
Return: updated board

```
    //Write your AI here

    return column;
}
```

Connect Four

- Poor_AI.h

```
#include <iostream>

using namespace std;

int poor(const vector < vector<char> > &, char, char);

int poor(const vector < vector<char> > &b, char mydisc, char yourdisc) {
    static const char me = mydisc; //Record the disc type main function a
    static const char opponent = yourdisc; //Record the disc type main fu
    int column = -1;
    //Write a simple AI for testing
```

```
    //Write a simple AI for testing

    return column;
}
```

Connect Four

- DEMO