CS200
(Dr. Naveed Arshad)

Read the handout very carefully.

(Deadline: 13 October, 2017 11:55 PM)

Important Guidelines:

1- You are only supposed to submit **Mine.h** and **Mine.cpp** files.
2- Make sure all your function and struct names are exactly same as specified in the handout. And all the functions described here should be public whereas the 2D array should be private.
3- You are supposed to do this assignment **alone.** Any kind of collaboration, except for discussing what was taught in the class is strictly prohibited.
4- Any case of cheating (if caught) will be reported to the Disciplinary Committee without any delay.
5- Any assignment which is even one second late, or has any other file except the above mentioned will not be accepted.
6- If your code does not compile, do not argue for the grade.

Mine Solver

In this assignment you will be helping Dr. Mine in determining if his mines can be explored properly or not. Dr. Mine runs a mining business and is a pretty happy man. He owns a lot of mines, but the people he hires to explore these sometimes get lost in his mines and never return. Your job is to help him determine whether he should send a particular miner in the mine. Following are the requirements of the Dr. Mine:

- Write a **Mine** class which represents a mine as a 2D array of booleans, containing nxn elements where n is a runtime parameter.
- Each index of the array can either be one or zero. Ones are the places where a miner could go, and 0 represents obstacles.
- Provide the class structure in **Mine.h** file.
- Define the following functions in the class:
    - A Default Constructor which keeps the sets the size of mine to 5x5 and initializes each index of mine randomly to one or zero.
    - An Overloaded Constructor which takes the size of Mine from the user, and initializes each index of mine randomly to one or zero
    - Another Overloaded Constructor which takes the pointer to a 2D array, its size n, and copies its contents to the mine (2D array) inside the class.
    - Now your class will have a function which will dictate whether a particular **Miner** can traverse this mine or not.
    - A **Miner** cannot necessarily move in all four directions and is represented by a **struct Miner (define it in Mine.h too)** having the following attributes:
        - {bool up, down, left, right;} each telling you the directions in which a **Miner** can move. A true represents that a **Miner** can move in that specific direction.
    - This function, **can_solve()**, takes a Miner and two **(define this struct in Mine.h) mine_index structs** as arguments and tells whether a Miner can traverse this specific mine from start to end point, hence allowing the Mine owner to know whether to hire a specific Miner or not. The **mine_index struct** will contain the following attributes:
        - {int row, col;} where row represents the row index and col represents the column index in 2D Mine Array.
- Provide all the function definitions in another file named **Mine.cpp.**