Objective

Create a single-player version of the game “Battleship”. The game board consists of a square on which are placed hidden ships of differing sizes. The player clicks on a square to attempt to blow up a ship. If the hit is successful, a red mark appears; otherwise the square is blue. Once an entire ship has been destroyed, it changes to black. The object of the game is to destroy all ships in the least number of moves.

Activity

Students will complete an implementation of the game in as a Visual Basic EXE application. The application need contain only one form containing the game board, a status line indicating the latest move and its outcome, and a counter indicating the number of moves used so far. The application should have a menu that allows the user to start a new game, or to exit the application.

For this version of the application, the board size can be fixed at 10 x 10 and there should be 5 ships of sizes 5, 4, 3, 3 and 2. However, it should be noted that in future iterations of this system, these parameters will become flexible and it may be worthwhile to build flexibility into your code early. Ships must be placed in random locations and randomly oriented (right-left or up-down) on the board.

Submission

Students should

Turn in at the start of class a hardcopy of the code of the application with a cover page clearly indicating the number and name of the assignment and the student’s name and ID #.

Before class time, submit a folder containing the complete VB project for the application to the on-line course Drop Box. (Details to be announced in class.)

Assessment

This assignment will be assessed on the completeness of the solution to the problem. Partial solutions will be given partial credit but only for those features of the application that operate. No credit will be given for non-functional code.

This assignment will contribute about 10% of the portfolio grade unless the grade is an F. In that case, the grade for this assignment will be the course grade. (Translation: you must pass this assignment to pass this class.)

Hints and Notes

1. You may draw on the screen directly using the paint method and the Line command, or you may use the MSFlexGrid component. MSFlexGrid is a complex object designed for completely different purposes. You may find it easier to build something simple rather than wade through the details of its methods and properties.

2. You may find it useful to have a “debug” mode of the program in which the user is shown the location of the ships. This will make your application much easier to debug.

3. To obtain a random number in a range Upper..Lower, use the following code: Int((Upper - Lower + 1) * Rnd + Lower)

4. Note that you cannot simply generate two numbers and an orientation and place the ship in that spot. (Suppose you generate row 1, column 10, and left-right orientation and then proceed to place most of your ship off the board.)