

CPSC411 ALGORITHM DESIGN AND ANALYSIS PROGRAMMING PROJECT 1

September 8, 2008

1 Deadline

- Deadline for turning in is on Sep 18th, 2:20 PM
- Deadline for demonstration is on Sep 19th, 4:00 PM

2 What to turn in

A tarball (.tar.gz) containing

- a PDF file which briefly introduces your software environment, discusses algorithm you choose, and results of your experiments.
- a file containing your source code.

3 Instruction

- You may use any programming language you like, and your code should be well commented.
- You must demonstrate the correct compilation and execution of your program to Yue (yli@cs.tamu.edu), you must fill the demo registration form (out of HRBB410D) before you come.
- Your implementation is expected to be able to sink the battleships (hidden by our random typing) step by step, and to count the total steps.
- Feel free to make a nice user interface.
- Grading depends on what you will turn in and the demonstration.

4 Problem

Recall the game of Battleship: There is a 10 by 10 grid on which the first player hides three battleships. Each battleship takes up five consecutive grid squares in a line (horizontal or vertical), so 15 grid squares are occupied. The second player guesses a series of grid positions and is informed whether each one hits or misses a battleship; once the second player has found all the occupied grid squares, the game is over. You are to write a program that plays the game Battleship. To simulate the first player, randomly choose locations for the battleships. To simulate the second player, devise a strategy for finding all the battleship locations as quickly as you can. Use a divide-and-conquer or binary search approach. (Source: Skiena, Algorithm Design Manual.)