CSEE W4840 Project Proposal: Networked Battleship

Project Members:

Dan Aprahamian   dha2108
Apoorva Gade   avg2118
Shihab Hamati   ssh2145
Marc Howard   mh3203

I. Introduction

Our plan is to implement the popular game Battleship. We plan on using two Altera DE2 Boards, connected via an Ethernet cable. Each board would maintain the state of the game. Each player would interface via a board with a PS2 Keyboard, and would view output on a VGA-enabled display.

II. Features

    i. Memory to store game state
    ii. PS/2 Keyboard for User Input
    iii. Ethernet connection to another DE2 Board running the same program
    iv. Digital logic for processing input from user and other board
    v. Basic feedback and error checking
    vi. VGA Display for displaying game state to user
    vii. Sound through speakers
    viii. Enhanced Graphics

III. Implementation

We are going to design a hardware component to perform each of the tasks above, using smaller components as internals of each of those large main components. We will then test each of the components in turn with test data, and fix any errors that we discover. We are then going to link those components together one at a time, testing and fixing errors with each linkage until we are able to provide the full functionality of the game. After that we will add as much polish to the game as we are able until we present it at the end of the semester.

IV. Milestones

a. Milestone 1:
    i. Large Components:
        1. Keyboard Interface
        2. Digital Logic of Game
        3. Memory storage
    ii. Link all three together, test, and debug using test signals for the Ethernet and VGA. This should provide full game logic functionality without actually interfacing with the monitor or Ethernet.

b. Milestone 2:
    i. Large Components:

1. Ethernet
2. VGA
ii. Link these two into the game system, test, and debug. Ensure that the game works properly between two DE2 boards, with basic graphics.
c. Milestone 3:
i. Large Components:
1. Enhanced Graphics
2. Sound
3. Basic feedback and error checking
ii. Add these components into the main game system and ensure proper functionality is retained and that the game works without errors.
iii. Add any additional polish to the game that we can.

V. Additional Add-ons
a. Even better graphics if possible.
i. Cutscene for hit or miss.
ii. Special sound effects for various events.