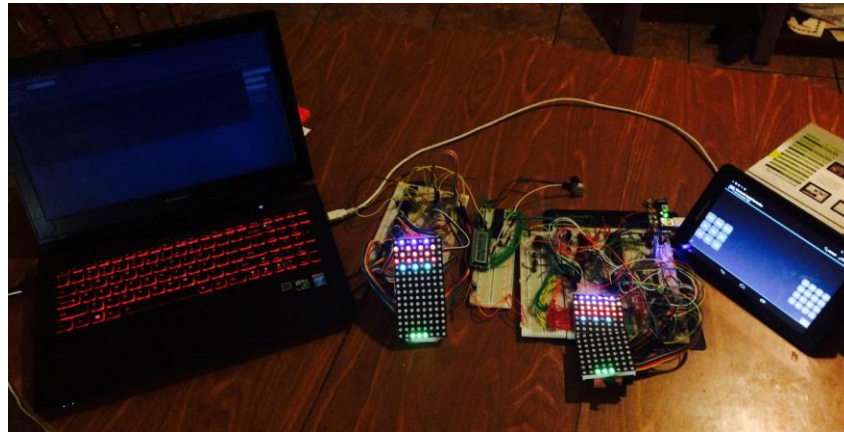


Galaga

By Hector Dominguez



My project proposal was to recreate the game of galaga using a variety of electrical components. What makes this so unique is that i made it into a multiplayer game. Users can compete and see who gets the higher score. The game is set up so that the left side of the board can be controlled via a computer (UART communication), and the right side of the board can be controlled via an android application(UART communication). The game consist of the user shooting the enemies until they destroy every enemy. In this game i used an two LED Matrices as my gameplay display for every user. In order to start the game the user needs to press a start button which will send the signal the matrices that the game has began. The main menu is shown on a small LCD screen which displays the menu that we navigate through and also displays the score in Real-Time while the game is in session.

User guide:

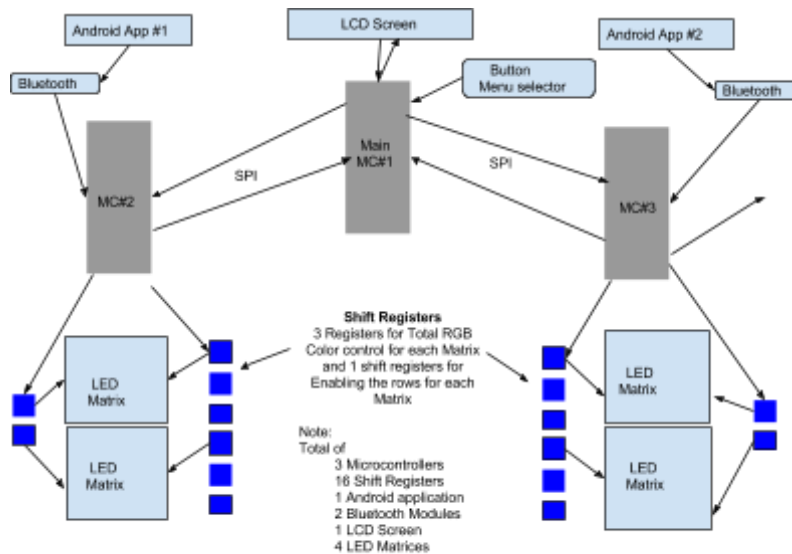
Rules: The Rules of the game is to hit every block that is light up without loosing of all your lives;
controls:

Technologies and components used in Game

- AVR Studio 6
- ATmega1284 (3)
- BreadBoard Wb -106
- 16x2 LED Display
- 330Ω resistors (24)
- Power adapter 6v 1A
- Shift Registers (16)
- 8x8 LED Matrix (4)
- HC-05 Bluetooth Module (2)
- Android Application
- PC integration

Android Application and Computer signals

Value	Action
0x01	Left
0x02	Right
0x03	Shoot



Source Files:

<https://drive.google.com/a/ucr.edu/folderview?id=0B0thDQCQFrjsaTFGQ041Z0hRbDA&usp=sharing>

Master.c

This file has the code that handles the master microcontroller. This microcontroller receives information via UART from two different microcontrollers concurrently and does computation to show who is currently winning.

<https://drive.google.com/file/d/0B0thDQCQFrjsdkxRWTAxTVIfbUE/view?usp=sharing>

Project.c

This code handles the usability of the two slaves microcontrollers. These microcontrollers have the game logic and also handle the game display on the LED Matrices. Since i dasy chained 6 shift registers in order to reproduce RGB colors on both LED Matrices using only 4 pins of the microcontroller. Concurrently it receives data from the bluetooth devices and also sends data to the mater microcontroller. It itulices both UART ports on the microcontroller and is rapidly sending data back and forth.

<https://drive.google.com/file/d/0B0thDQCQFrjsYWtwTGhVWnZSbzQ/view?usp=sharing>

Settings.c

This file has all of the main data needed to set every double pointer arrays and al of the variables that are going to be used on this game.

<https://drive.google.com/file/d/0B0thDQCQFrjsLUh1c05uN213LUU/view?usp=sharing>

Pinouts:

<https://drive.google.com/a/ucr.edu/folderview?id=0B0thDQCQFrjsWTR2NmZIdV9CMFk&usp=sharing>

Demo:

<http://youtu.be/7snzhMUAo5E>