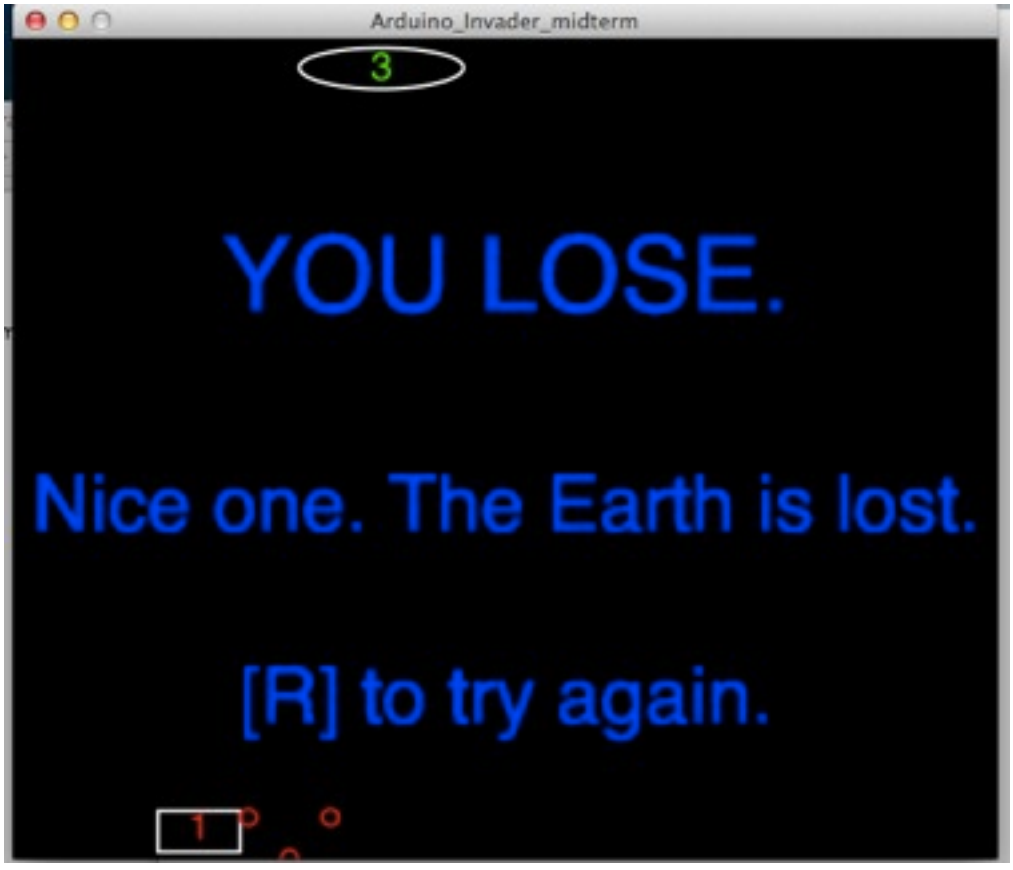
Midterm – Arduino Invader

Posted on **October 27, 2012** by **Matt**

OK, here we go. I wanted to do something different for the midterm/ Arduino assignment than my usual notKirby update, especially since I'm now using that game for my Studio project. I liked the idea of using the Arduino as a game controller and decided to create a new game to feature Arduino control. A push button is perfect for firing lasers and a rotary potentiometer with its dial that you can spin could stand in for a joystick to move a character (or a ship!), so I figured a Space Invaders-style arcade game was appropriate. Especially because the potentiometer's linear set of values translates perfectly to movement in one plane (horizontal, in this case).



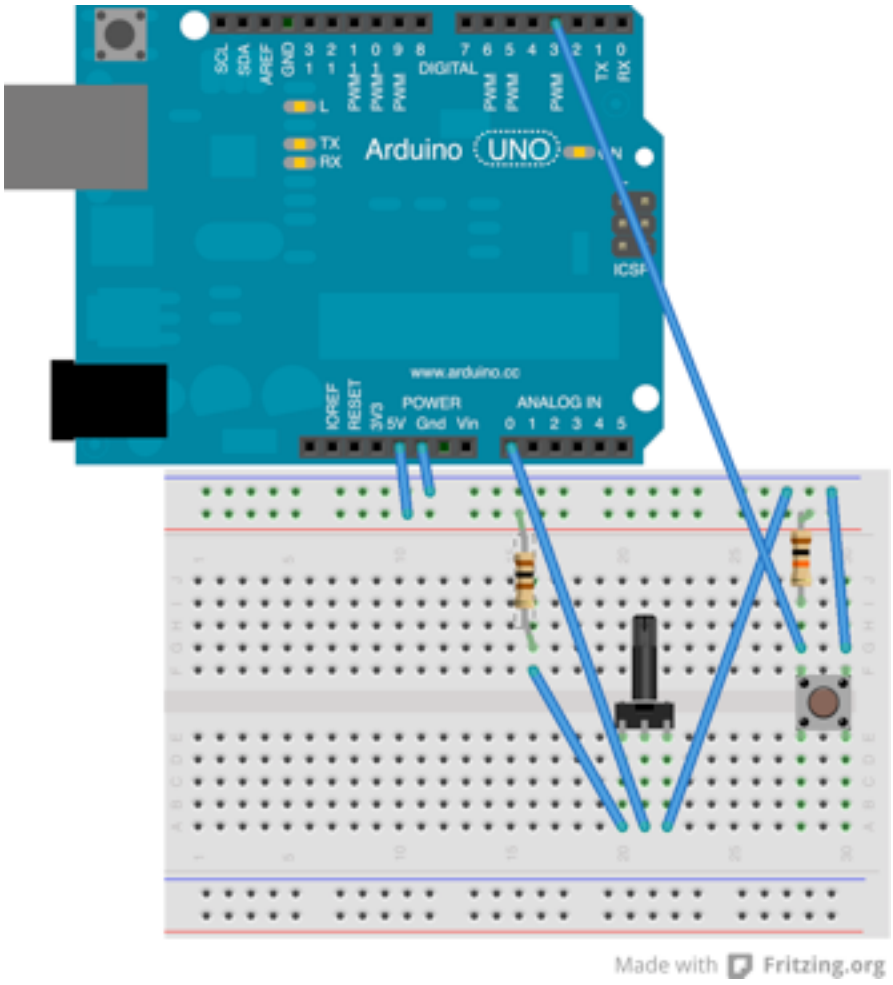
You saw the game in class and it was buggy, for which I apologize. I've fixed the bugs and posted the game on OpenProcessing. ~~Click the picture on the left to check it out.~~ You might wonder how you play it on

OpenProcessing; I commented out the Arduino-specific code and implemented keyboard controls. See the game description on OP for details.

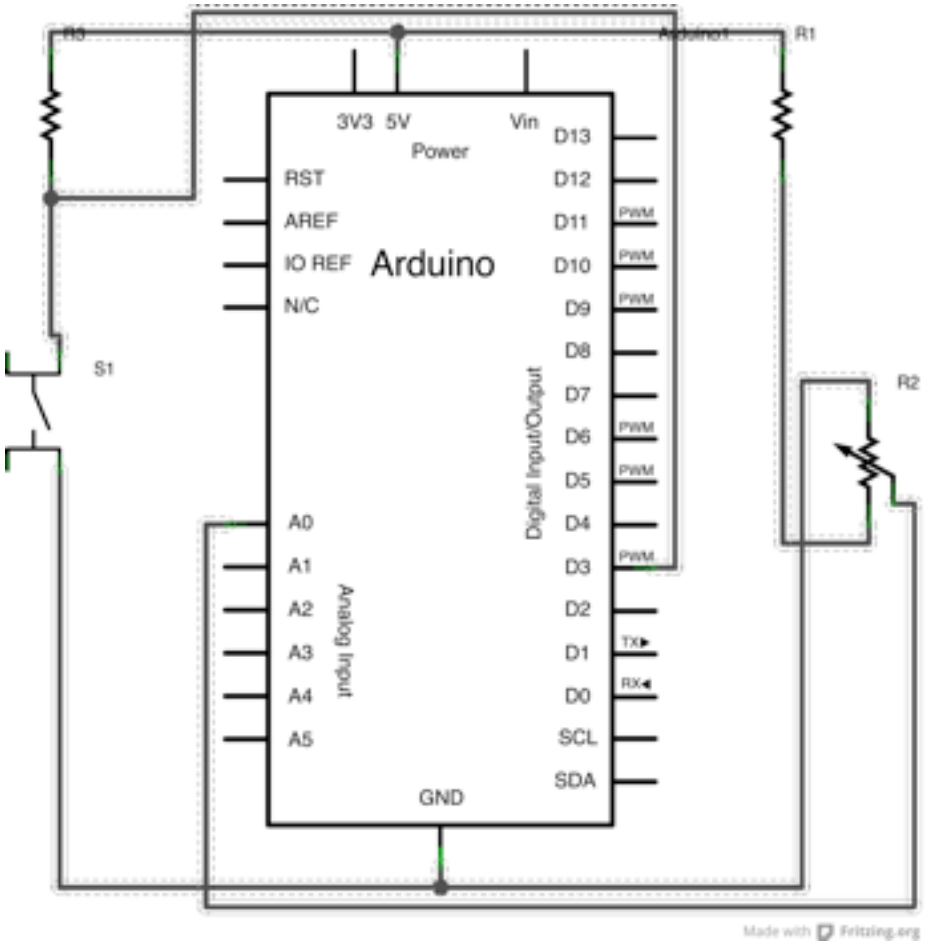
I tried to go easy on the comments (you guys know how I am) but I did comment the code pretty thoroughly where appropriate. I also included the Arduino code as a commented-out tab within the Processing sketch, so you can see it there. The game is very simple but it still posed a few interesting challenges, so take a look at the code and read the comments if you're interested in methodology.

Maybe you'd like to see the game in action the **real** way. Here's a video of me playing the game with Arduino controls one-handed while recording the experience on my phone with the other hand. I even try to beat the game. Do I succeed? Only one way to find out.

Documentation! I have that. I finally got Fritzing to work, and it is pretty sweet once you get the hang of it.



Here is the breadboard view.



And here is the schematic! Much nicer looking than my hand-drawn ones.

What's that leave? Oh, the math. Yuck. Well, there's 5V of power running past 100ohms resistance into the potentiometer, so that's 5V / 100ohms = 50mA current running into the pot. The same 5V runs into the push button via a 10k resistor, so that's 5V / 10,000ohms = 0.5mA current into the push button.

Everyone had really cool projects and I'm a bit embarrassed that mine isn't nearly as cool as I wanted to make it. I lost a couple of days to this stupid cold and that severely limited my time, so not only was I unable to make an encasing for the controller but I couldn't implement more sophisticated game mechanics either. Still, I've got some clear ideas about how to make the game better which wouldn't be that hard to add in; they include:

-More than one shot onscreen at a time.
-Enemy ship moves down the screen towards you, like actual Space Invaders.
-More than one enemy.
-Multiplayer via a second potentiometer and push button. In that case there's no CPU and you just try to blast each other.
-Better presentation.

Hopefully I can return to this project and make those improvements. If you have any suggestions, let me know! And congrats to everyone on your projects – they are really cool. I'm glad to have class with you guys.