# CS4543/5543 - Embedded Systems

**Assignment #2**
Fall 2025

The purpose of this assignment is to test the Vanduino shield that you soldered in Assignment #1. You will be writing an Arduino sketch (i.e., an application) that will exercise many of the functions of the shield.

1. Visually inspect your Vanduino shield, looking for any solder bridges between pads, for any unsoldered connections, and for unconnected solder joints. It might be helpful to have one of your fellow students inspect your shield.

2. Install the small shunts between the 'C' and 'G' pins on the two three-pin headers. These shunts connect the Common Cathode (CC) pins on the seven-segment digits to ground.

3. It is best to unplug the Arduino from the USB cable while doing the next step. Carefully connect the Vanduino shield to your Arduino. Be sure that the pins on the Vanduino are straight and in a straight line, so that when you connect it to the Arduino all of the outer pins get inserted into the headers on the Arduino. Be careful – it is easy to accidently have one or more of the pins to miss its corresponding header hole on the Arduino.

4. Plug the USB cable from your laptop into the Arduino. The LED labelled "Power" should light, indicating that your Vanduino board is receiving power from the Arduino.

5. Using the Arduino IDE, write the `setup()` and `loop()` functions that perform the following tests:

   (a) Turns the LED connected to pin 13 on the Arduino ON for one half second, then OFF for one half second. Repeat this sequence a few times, verifying that the LED is soldered correctly. You can use the `blink` example sketch included with the IDE as a guide for this code.

   (b) Turns on each segment of the seven segment display, including the decimal point, for 1/2 second each. With both shunts installed, the same segment in each digit should light simultaneously. With only one shunt installed, only one digit will light up.

   (c) Turns on all segments of the seven segment display simultaneously, forming an '8' plus decimal point, for 1/2 second, then off for 1/2 second. Repeat several times.

If your tests produce the expected results, then your Vanduino board and soldering passes the test! If there are discrepancies in your results, you will need to check your soldering job and correct the problem.

Good luck!