M14-Exercise 1 for M14-Assignment

This is a test of the connection of OLED display and Launchpad Board

Also first data to light up the display

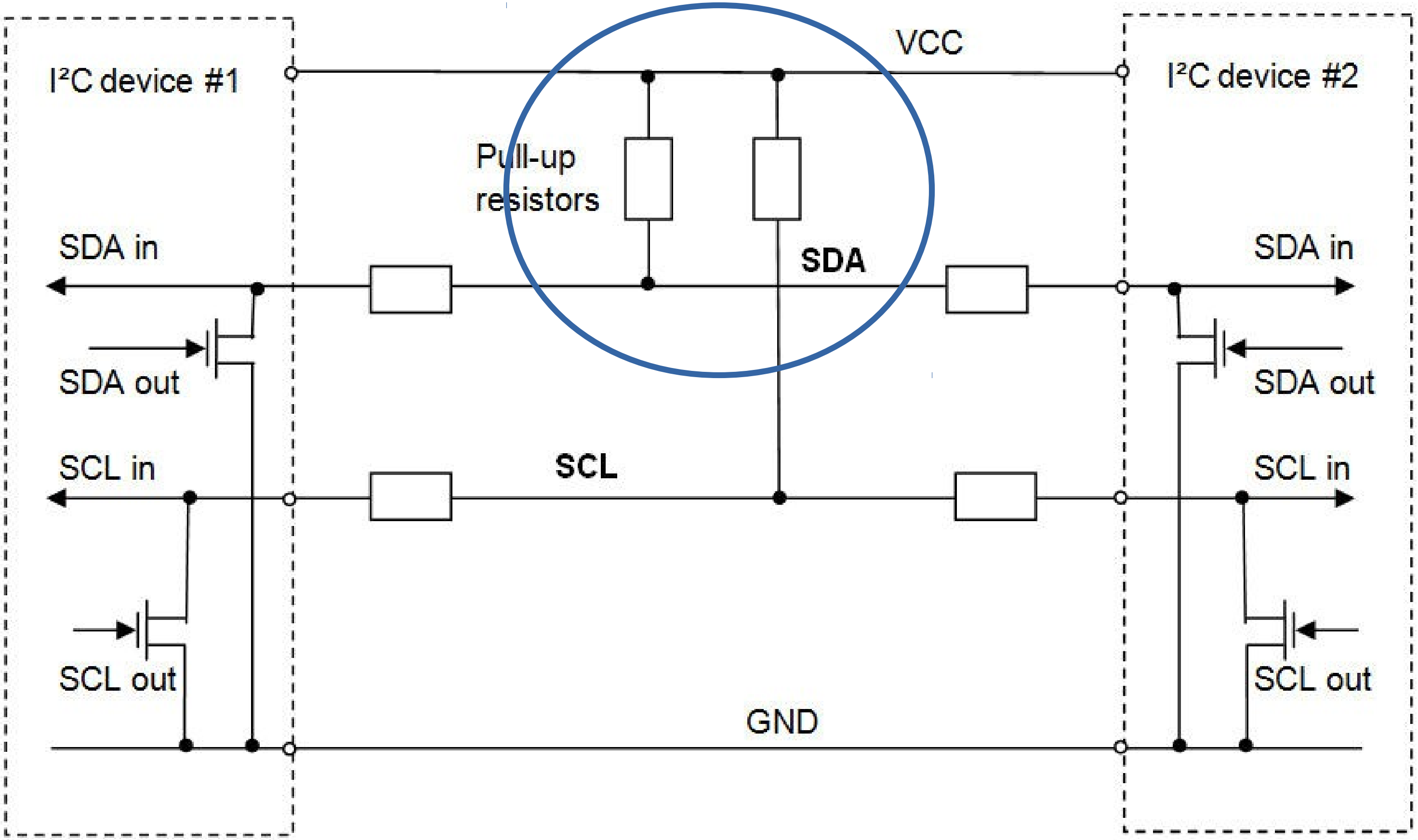
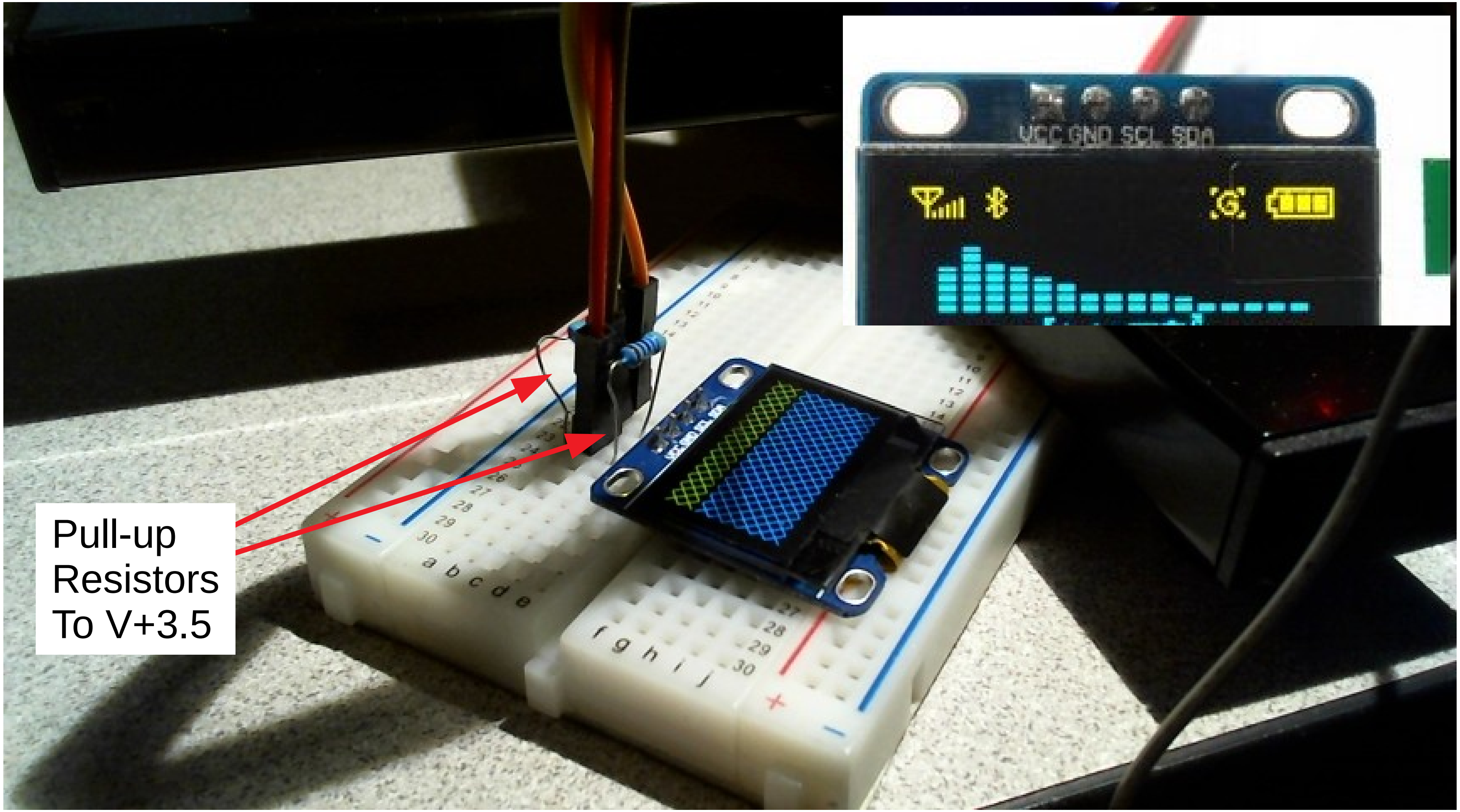


Figure 4: I²C bus with 2 devices connected. SDA and SCL are connected to VCC through pull-up resistors. Each device controls the bus lines outputs with open drain buffers.

Board connections: The display needs 2x 4.7KOhm resistors to pull up SDA & SCL

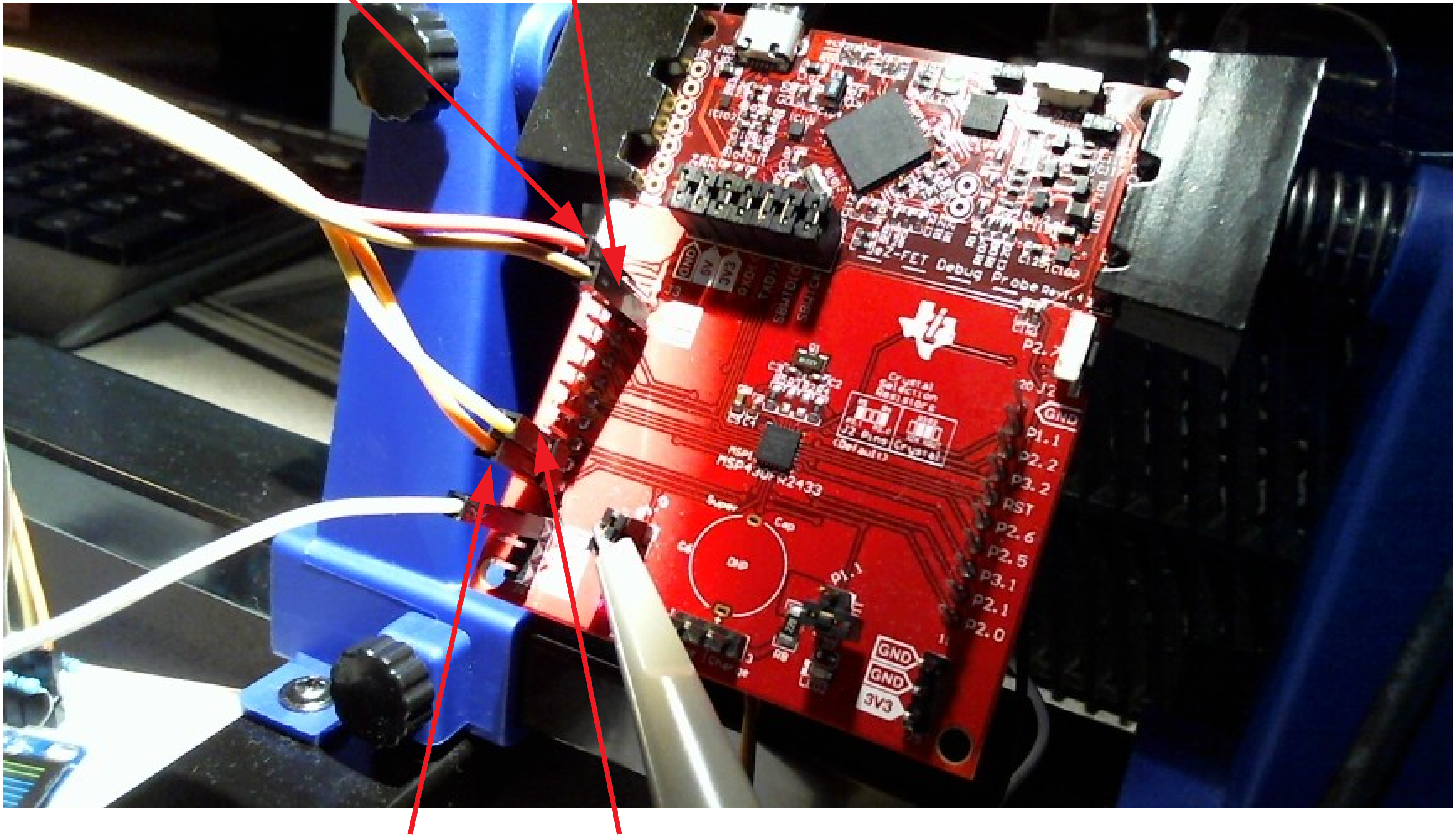


Pull-up Resistors To V+3.5

The connections are V+3.5, Gnd, SDA and SCL. The resistors are connected to V+3.5

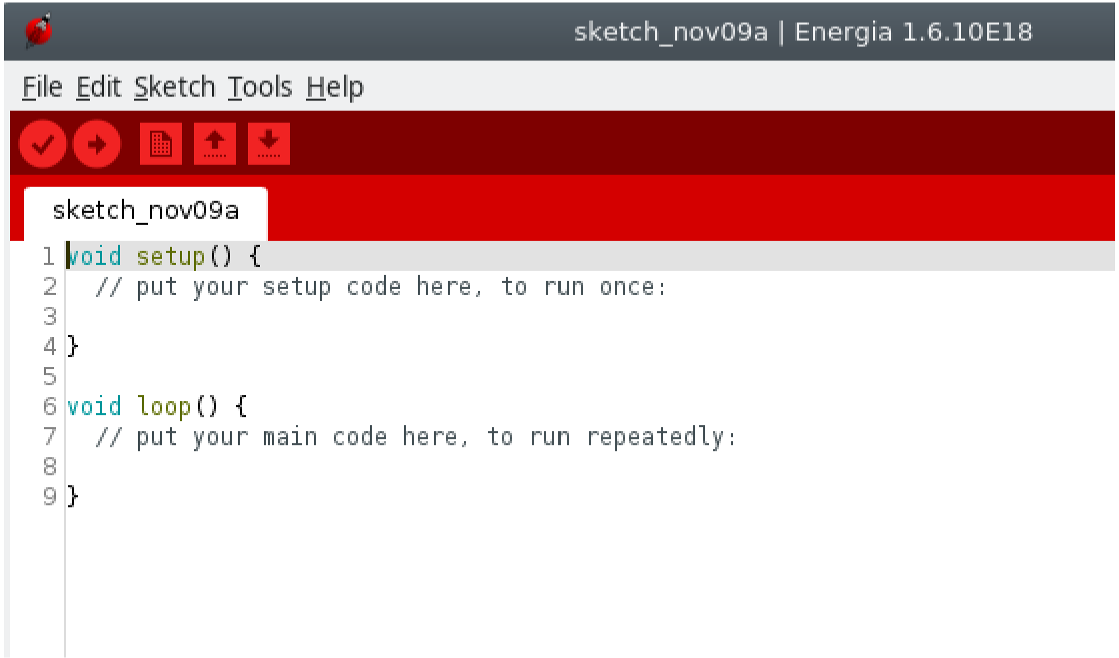
Board Connections: V+3.5 and GND

I2C connections for OLED Display



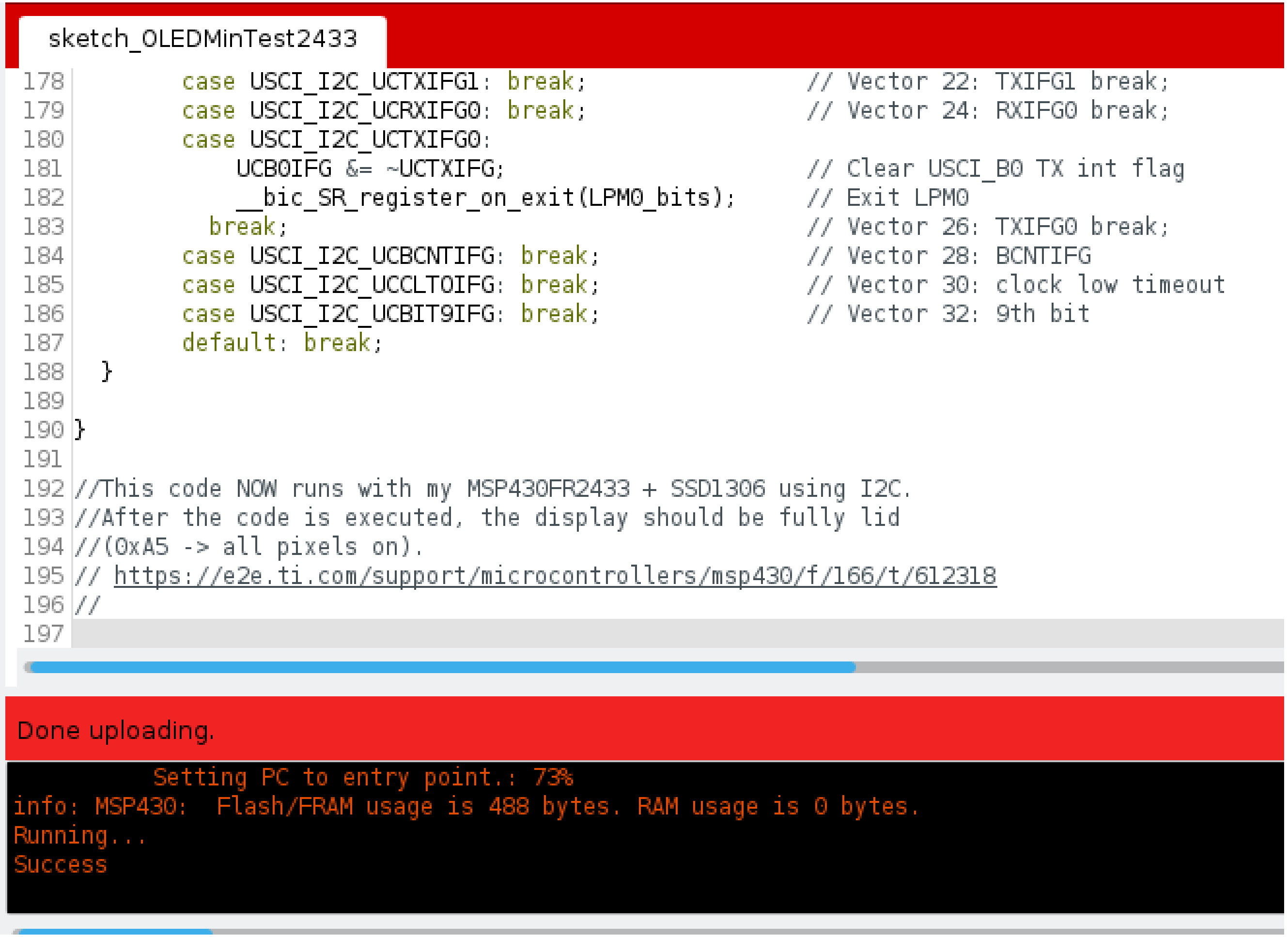
SDA = P1.2   SCL = P1.3

Exercise 1 – Create a new sketch with Energia


sketch_nov09a | Energia 1.6.10E18
File Edit Sketch Tools Help
sketch_nov09a

```
void setup() {
  // put your setup code here, to run once:

}

void loop() {
  // put your main code here, to run repeatedly:

}
```

Download the source code for Exercise #1 from the web site. Copy and place in Energia.
Save a copy with Energia, compile and upload to the board: sketch_OLEDMinTest2433.ino

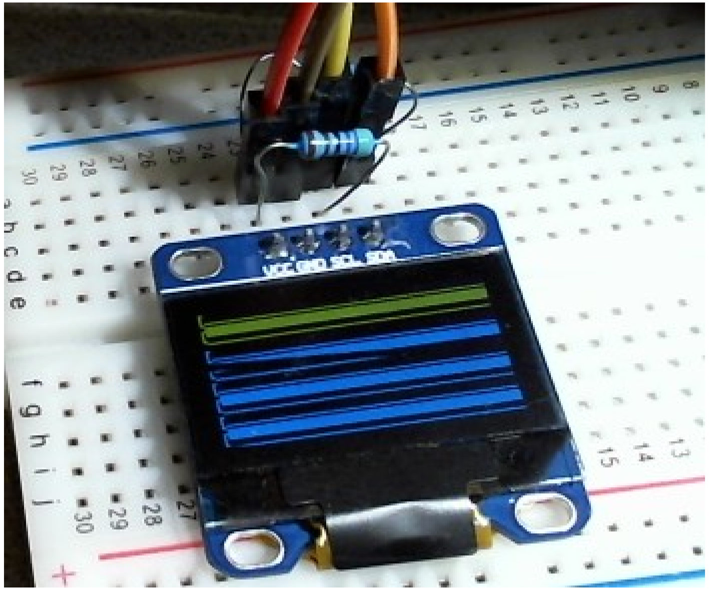


```
        case USCI_I2C_UCTXIFG1: break;                // Vector 22: TXIFG1 break;
        case USCI_I2C_UCRXIFG0: break;                // Vector 24: RXIFG0 break;
        case USCI_I2C_UCTXIFG0:
            UCB0IFG &= ~UCTXIFG;                      // Clear USCI_B0 TX int flag
            __bic_SR_register_on_exit(LPM0_bits);     // Exit LPM0
          break;                                      // Vector 26: TXIFG0 break;
        case USCI_I2C_UCBCNTIFG: break;               // Vector 28: BCNTIFG
        case USCI_I2C_UCCLTOIFG: break;               // Vector 30: clock low timeout
        case USCI_I2C_UCBIT9IFG: break;               // Vector 32: 9th bit
        default: break;
  }

}

//This code NOW runs with my MSP430FR2433 + SSD1306 using I2C.
//After the code is executed, the display should be fully lid
//(0xA5 -> all pixels on).
// https://e2e.ti.com/support/microcontrollers/msp430/f/166/t/612318
//

```

Done uploading.

```
          Setting PC to entry point.: 73%
info: MSP430:  Flash/FRAM usage is 488 bytes. RAM usage is 0 bytes.
Running...
Success
```

This should be the display shown. This Exercise is to make sure you have the correct Connections between the display and the Launchpad. It is also designed to give the First working program to communicate with the OLED display.

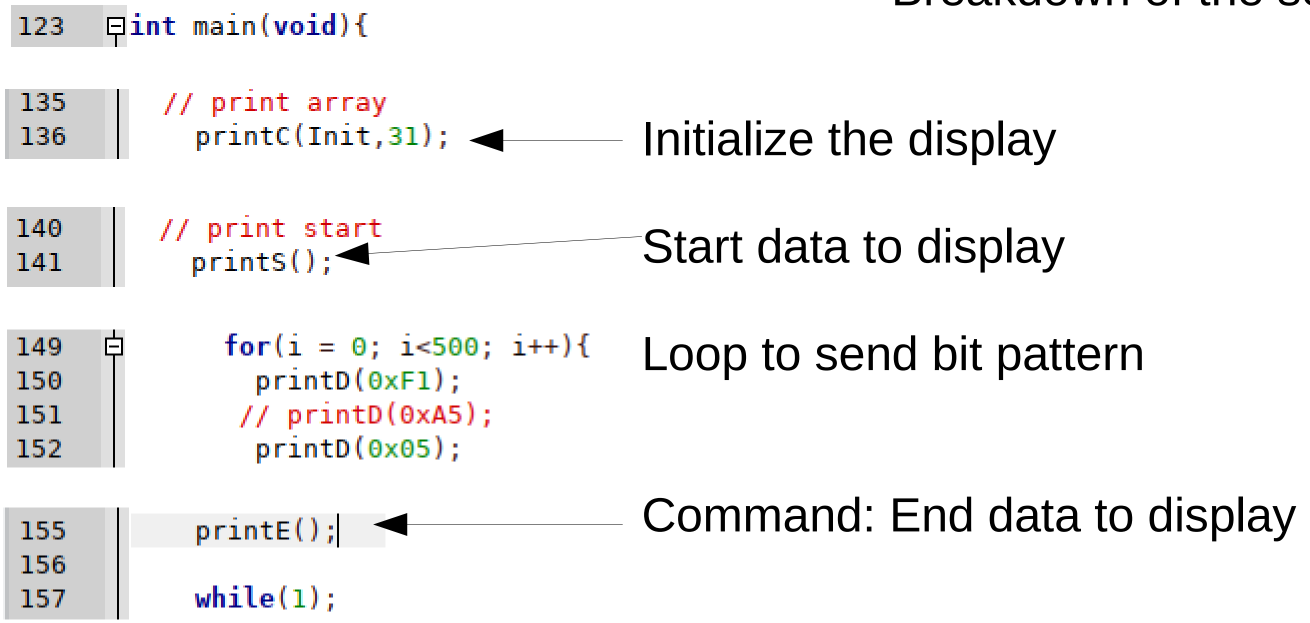


Use a screen shot of this display running for your Assignment Submission.

These boards communicate through I2C protocol using just 4 wires.
There is a long initialization sequence of characters sent to the OLED Display

Line 54: ←------- Initialization sequence
const unsigned char Init[] = {0xAE,0x81,0x7f,0x20,0x01,0x21,0x00,0x7F,0x22,0x00,0x07,
0x40,0xA0,0xA8,0x3F,0xC0,0xD3,0x00,0x8D,0x14,0xDA,0x12,0xD5,0x80,0xD9,0x22,
0xDB,0x30,0xA6,0xA4,0xAF};

Breakdown of the software running



```
int main(void){
```

```
  // print array
    printC(Init,31);
```

Initialize the display

```
  // print start
    printS();
```

Start data to display

```
      for(i = 0; i<500; i++){
        printD(0xF1);
       // printD(0xA5);
        printD(0x05);
```

Loop to send bit pattern

```
    printE();
    
    while(1);
```

Command: End data to display