CS 3410 Systems Programming
Final Project Part 1 Write Up
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After wiring the circuit to the Arduino and connecting it to a computer, we wrote an Arduino sketch and a C file simultaneously.

The Arduino Sketch:
The code we wrote in the Arduino sketch allows two LEDs to blink (one to the user's live heartbeat and one fades an LED to the user's live heartbeat). After setting up the loop function with different pins to correspond to the circuit, the loop function is where the Arduino communicates with our C code.

With the boolean paused set to false, the if statement will continuously print the user's live BPM on the LCD screen. The way that this changes is by inputting different commands through the terminal (running the C file).

The loop in the sketch checks for the serial input through Serial.available and reads the user's command string. These strings are commands that are sent after the user is prompted to enter showX, pause or resume. Once that is read in, the string from the terminal is compared to the hardcoded strings that are declared in the sketch. From there it compares them to each if-statement. If the resume command is read in, the boolean paused is set to false, and then clears the LCD to reset the user's real time BPM data. If the command is show X, then the boolean paused is true and clears the LCD, and then resets the LCD to print "X". Finally, if the command is set to pause, then the boolean paused is set to true and the LCD is cleared to clean the screen and then prints the last BPM read before the command was called.

The C file:
Using the template from Lab 8, we started with the skeleton and built our code from there. We reset the dev path to the our device's port to ensure that the C file would be communicating with the correct port.
We have a while loop to continually run until the user decides to quit the program. We use strcmp to compare the strings that the user is typing in and compares it to the hardcoded preset char arrays in the C file and communicates the command to the Ardunio using the send_cmd() function (provided in the template code). There is an if-statement for each command (resume, pause, exit and showX). We also added another command called 'help' that the user can use, and describes what each option does.