



Final Project

T.P.S Report Pt. I

COVER SHEET

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Systems Programming

Implementation - Heart Beat Monitor

C Code

First, we attached an RGB LED 8x8 Matrix display to the arduino to be used to show the current heart beats per minute value. Next, a heart beat monitor was installed to the arduino as well to allow for tests with the display. We also attached an LED that would flash according to the heart beats per minute currently shown on the display. We take an analog reading from the heartbeat monitor, which is then sent into a series of formulas that allow us to calculate the beats per minute. This value is then sent to the RGB matrix display, and the number is directly displayed. This is possible because of the code from the arduino sketch that connects the two working components. In the C file, there is a method called InputCmd, which will always ask the user to input a command whether it be resume (the monitor's natural state), pause (stop the monitor and display the value currently displayed), exit (exit the program), or show X (show the value on the display the user inputs as integer X). Once the user puts in a command that will take them to either the resume, pause, or show methods.

Arduino Code

Each method sends a char byte like 'r' or 'p' using the sendBytes method to the arduino, which the arduino sketch will use in order to understand what it will have to do when operating the display at that time. We have a method called connectArduino, which initiates this ability of exchange of information. The arduino code takes data from the heart beat monitor and after setting up the display matrix will decide on what number to depict onto it. There is a maximum number of 99 that can be shown since the code is made to only display 2 numbers. More specifically the code also tries to see if a command has come through by trying to read input. It uses the ASCII values for the command chars being sent through to check for each command. There are also calculations within the main loop in order to make the LED flash depending on the heart rate value. Otherwise there is an if statement to make sure that if there is no detected heart beat the LED won't blink (or if there is nothing shown on the display).