

HÁSKÓLINN Í REYKJAVÍK
REYKJAVIK UNIVERSITY

ENGINEERING DEPARTMENT

EMBEDDED SYSTEM PROGRAMMING
T-738-EMBE

Assignment 5.2

Bjarki Laxdal
Email: Bjarki18 AT ru.is
Phone: 843-9292

24th October 2022

1 Part 1

- 1.1 Connect the Raspberry Pi and Arduino serial ports (see L5.2). Make sure to use a level translator or a voltage divider to protect the Raspberry Pi Rx input. Connect an LED to Arduino pin 11 through a 1K resistor to ground.

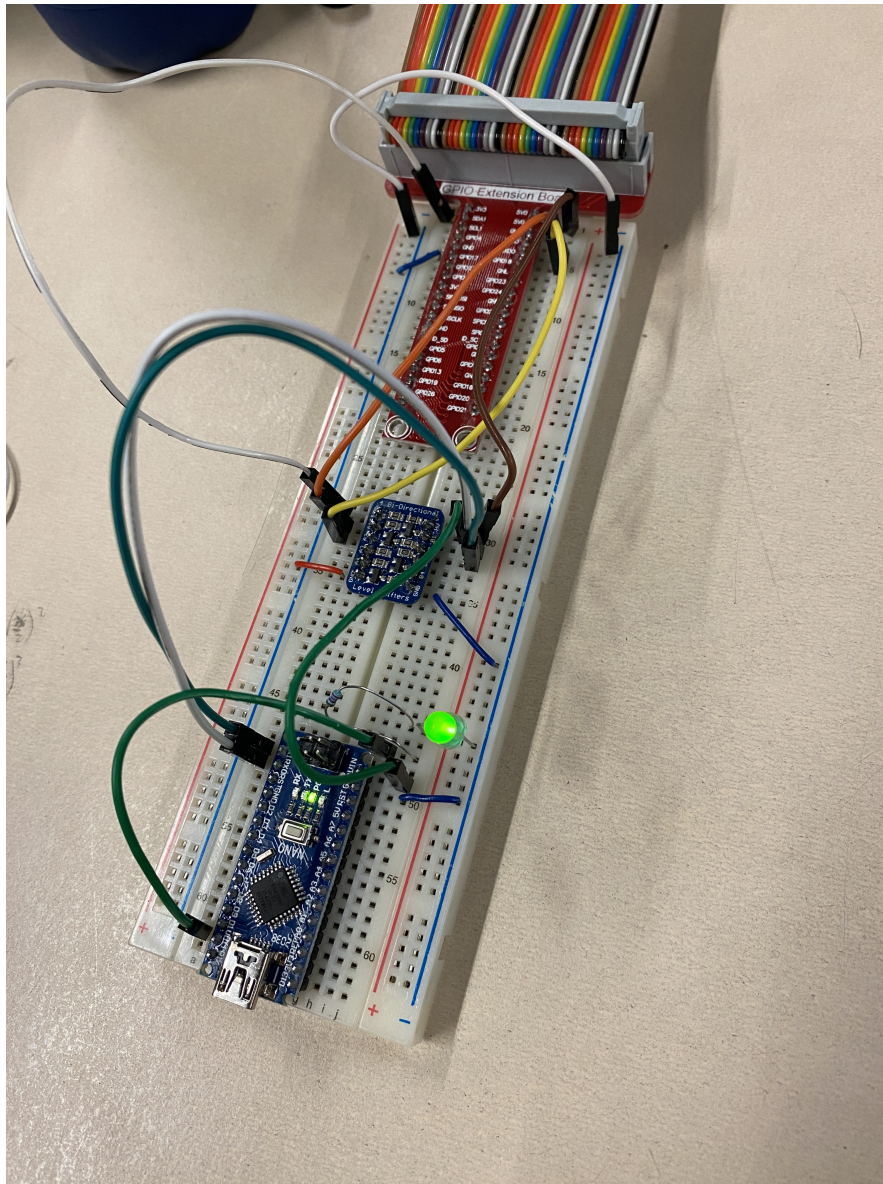


Figure 1: Picture of circuit

2 Part 2

Establish communication between the Raspberry Pi and the Arduino.

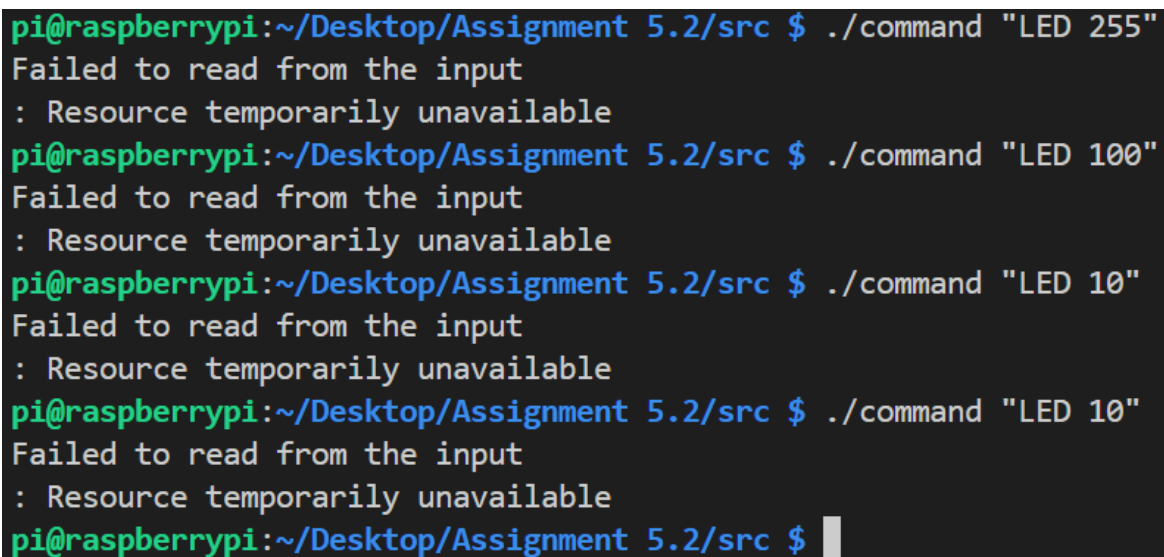
2.1 Output without changes

2.1.1 Does the brightness of the diode change with the commanded value?

Yes, the brightness of the diode changes with the commanded value.

2.1.2 Does the Raspberry Pi print the reply from the Arduino?

No it doesn't print the reply, this is because the RPI expects a null character/EOL character to be present at the end of the string.

A terminal window on a Raspberry Pi with a dark background. The prompt is 'pi@raspberrypi:~/Desktop/Assignment 5.2/src \$'. Four commands are entered: './command "LED 255"', './command "LED 100"', './command "LED 10"', and './command "LED 10"'. Each command is followed by the output 'Failed to read from the input' and ': Resource temporarily unavailable'. The cursor is at the end of the fourth command line.

```
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LED 255"
Failed to read from the input
: Resource temporarily unavailable
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LED 100"
Failed to read from the input
: Resource temporarily unavailable
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LED 10"
Failed to read from the input
: Resource temporarily unavailable
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LED 10"
Failed to read from the input
: Resource temporarily unavailable
pi@raspberrypi:~/Desktop/Assignment 5.2/src $
```

Figure 2: Command output without changes

2.2 Output with changes

2.2.1 Does the brightness of the diode change with the commanded value?

Yes, the brightness of the diode changes with the commanded value.

2.2.2 Does the Raspberry Pi print the reply from the Arduino?

Yes the RPI now prints the reply from the arduino, this is because I added "\n" to the end of each response string.

```
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LED 255"
The following was read in [22]: Set brightness to 255

pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LEDs 255"
The following was read in [26]: Unknown command: LEDs 255

pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command "LEDs 256"
The following was read in [26]: Unknown command: LEDs 256

pi@raspberrypi:~/Desktop/Assignment 5.2/src $
```

Figure 3: Command output without changes

3 Part 3

Both the LEDs brightness changed accordingly, and a response was received from the arduino.

```
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ gcc -o command command.c
pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command 2 100
The following was read in [22]: Set brightness to 100

pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command 2 255
The following was read in [22]: Set brightness to 255

pi@raspberrypi:~/Desktop/Assignment 5.2/src $ ./command 3 100
The following was read in [19]: Unknown command: 3

pi@raspberrypi:~/Desktop/Assignment 5.2/src $
```

Figure 4: Output from binary commands