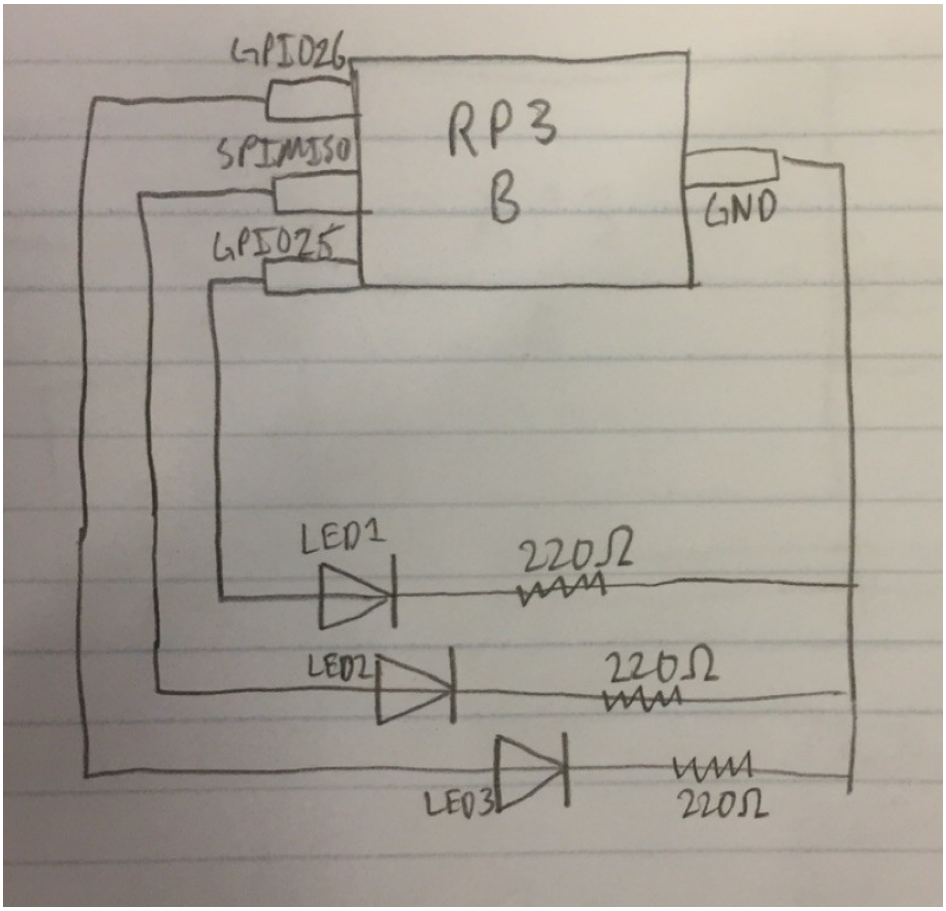
a.)
Marcus (Shaun) Fath – 25%
Kevin Kantesaria – 25%
Daniel Cary – 25%
Aaron Chen – 25%

b.)

Task	Shaun contrib.	Kevin contrib.	Daniel contrib.	Aaron contrib.
Written report	20%	30%	10%	40%
Pi A Code	40%	10%	10%	40%
Pi B Code	10%	40%	20%	30%
Pi C Code	30%	20%	40%	10%
Laptop 1 Code (Broker)	20%	20%	40%	20%
Laptop 2 Code (Log)	20%	40%	20%	20%
Pi A breadboard	40%	10%	40%	10%

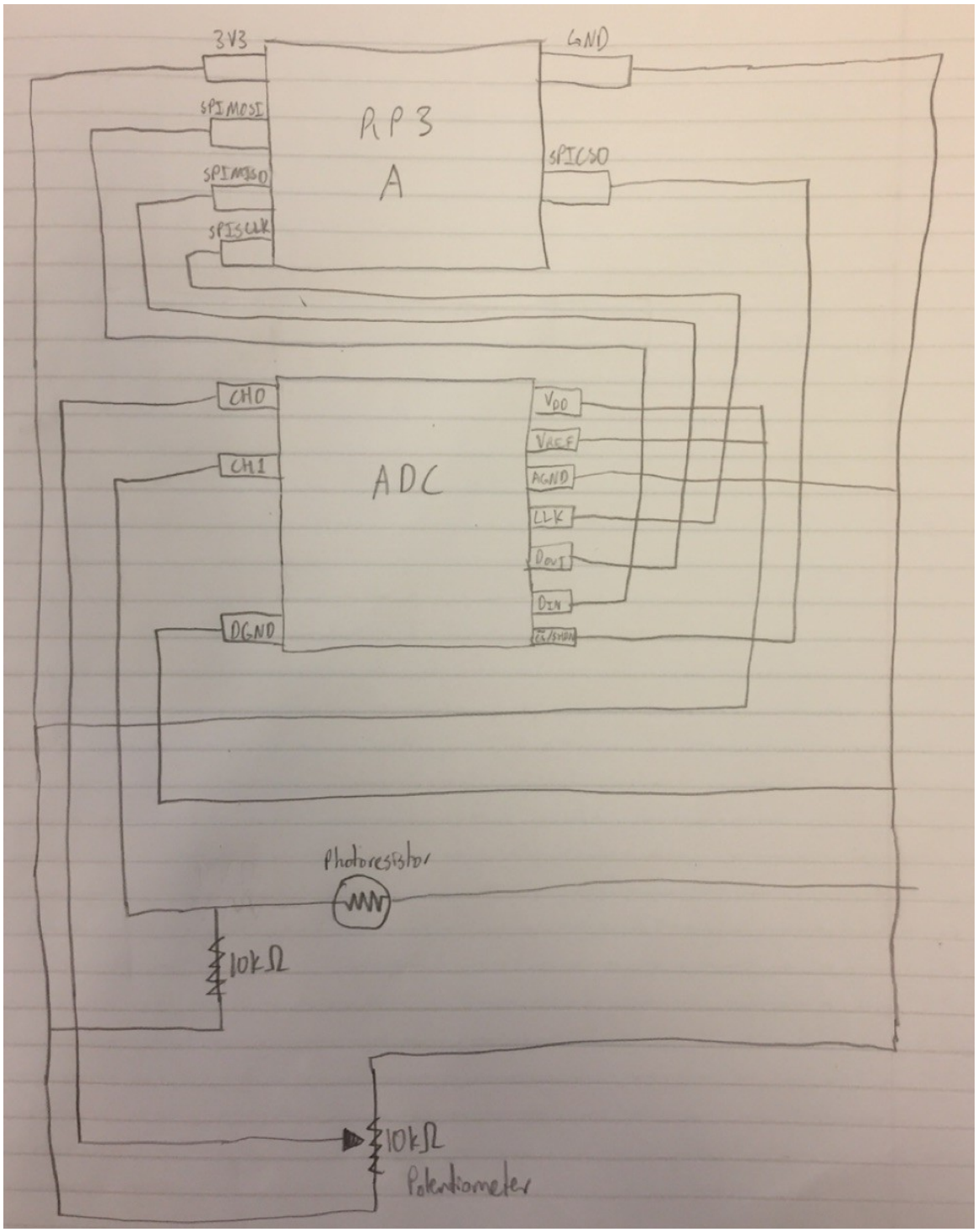
c)

Pi B


GPIO26
SPIMISO
GPIO25
RP3
B
GND
LED1
220Ω
LED2
220Ω
LED3
220Ω

d)

Pi A


3V3
GND
SPIMOSI
RP3
A
SPICSO
SPIMISO
SPISCLK
CH0
CH1
ADC
VDD
VREF
AGND
CLK
DOUT
DIN
CS/SHDN
DGND
Photoresistor
10kΩ
10kΩ
Potentiometer

e)

Design Choices

We decided to use Mosquitto as our MQTT broker since it is open source and offers compatibility with Linux and Windows operating systems.

Steps to install Mosquitto:

Linux:

1) Update mosquitto repository

run bash command: *sudo apt-add-repository ppa:mosquitto-dev/mosquitto-ppa*

2)install mosquitto

run bash command: *sudo apt-get install mosquitto*

3)start mosquitto

run bash command: *sudo service mosquitto start*

Windows:

1) Visit *https://mosquitto.org/download/*

2) Scroll down to the section that says Windows and click on the appropriate package to download

For our Analog to Digital Converter (ADC) we use the default SPI speed 1 MHz. We scaled the values for the LDR and the potentiometer to a normalized value that is between 0 and 1. The raw original values were between 0 and 1024 for the potentiometer, and for the LDR it was 0 and 680. So to scale the numbers down so that they were between 0 and 1, we just divided the raw number by the raw max number. This results in the normalized value that is sent to the broker.