**HW #3: MQTT Raspberry Pi Introduction Group 8**

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| **Percent Contribution** | |
| Stepan Kalinin | 25% |
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| Rishab Gujarathi | 25% |

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| **TASKS** | | Stepan Kalinin | | Connor Smith | | Sagar Hirenallur Prasannakumar | | Rishab Gujarathi | |  |
| MQTT Broker | Code | 100% | |  | |  | |  | |  |
| Debug | 100% | |  | |  | |  | |  |
| Report | 100% | |  | |  | |  | |  |
| Raspberry Pi A | Code | 100% | |  | |  | |  | |  |
| Debug | 100% | |  | |  | |  | |  |
| Report | 100% | |  | |  | |  | |  |
| Raspberry Pi B | Code |  | |  | | 50% | | 50% | |  |
| Debug |  | |  | | 50% | | 50% | |  |
| Report |  | |  | | 50% | | 50% | |  |
| Raspberry Pi C | Code |  | | 100% | |  | |  | |  |
| Debug |  | | 100% | |  | |  | |  |
| Report |  | | 100% | |  | |  | |  |
| Laptop 2 | Code |  | |  | | 50% | | 50% | |  |
| Debug |  | |  | | 50% | | 50% | |  |
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| Report | | | 25% | | 25% | | 25% | | 25% | |

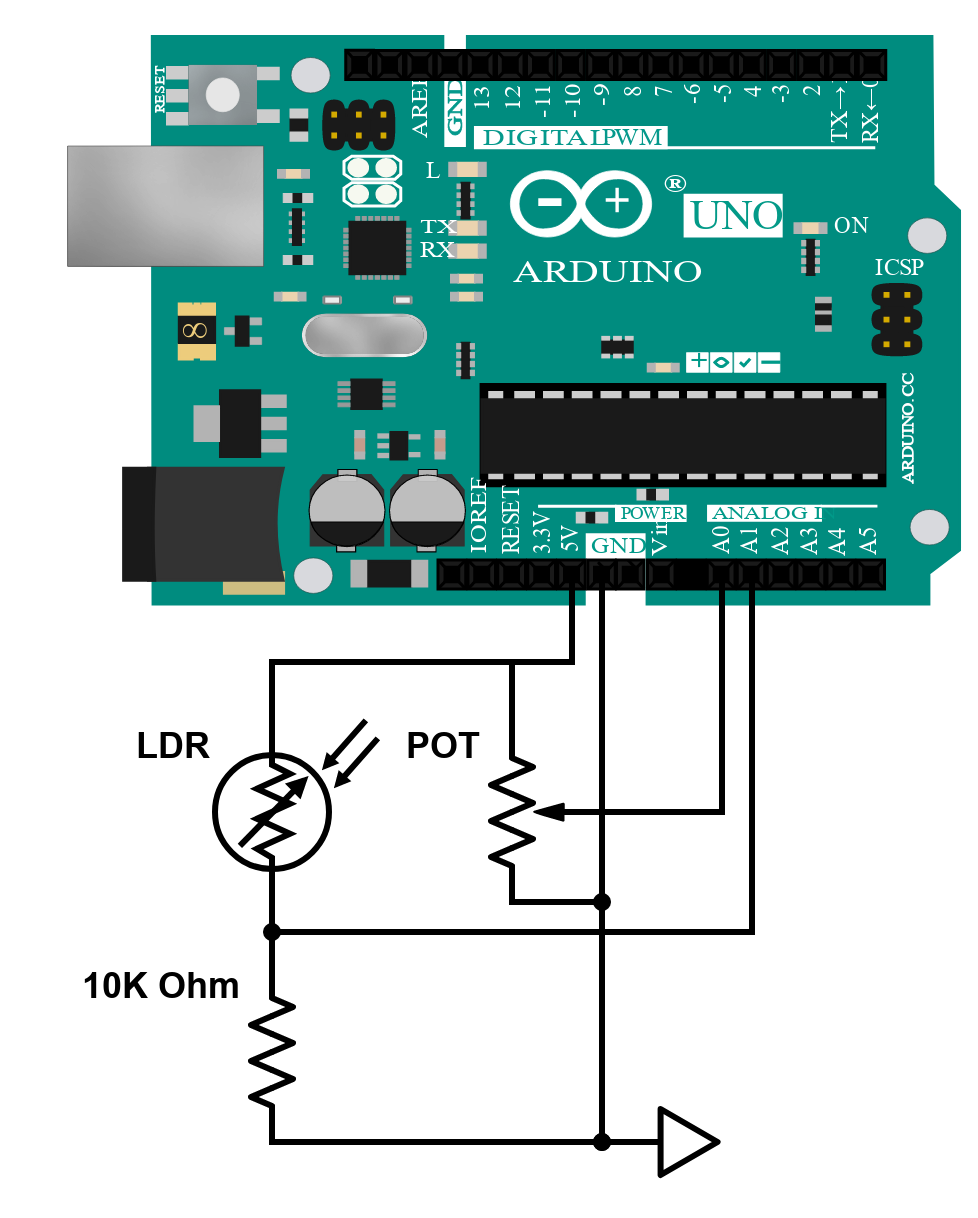
**1. Objective**

For this assignment, we are attempting to have 3 Raspberry Pi devices communicate with an MQTT broker to use the LDR output generated by Raspberry Pi A to illuminate a light on Raspberry Pi B. This is done by Raspberry Pi C receiving LDR and threshold values to publish whether the light should turn on or off for Raspberry Pi B. All the published messages across all Raspberry Pis are logged to a second laptop.

**2. Description**

**2.1 Raspberry Pi A**

**2.1.1 Circuit setup**



Instead of an ADC we used an Arduino to read the analog values. The Arduino is running a Telemetrix

sketch for communication with Raspberry Pi. The Arduino is connected to the Raspberry Pi via a USB cable.

**2.1.2 Design decisions**

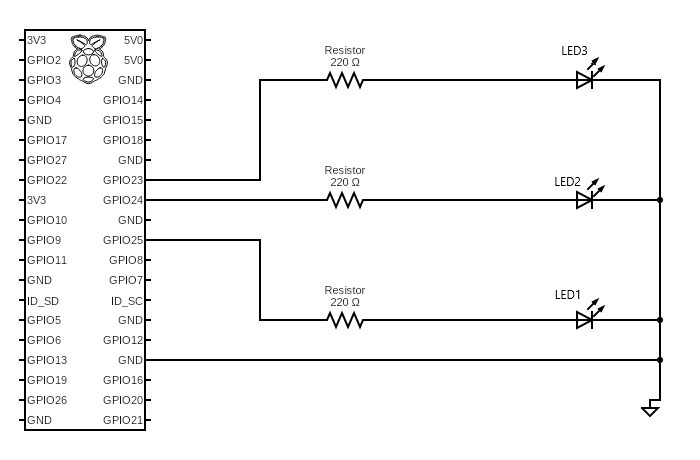
As specified in the assignment, the sampling rate was set at 10 Hz. The values observed from the potentiometer were 0-1023 (the entire range), and the values observed from LDR were 0-1017. Because of that, no scaling was done, and the values were reported raw.

**2.2 Broker**

We chose Mosquitto as our broker for its popularity and ease of setup. The installation instructions can be found in the broker/ directory in the submission.

**2.3 Schematic Diagram**

**2.3.1 Raspberry Pi B**



**2.3.2 Raspberry Pi A**