Internet of Things: Technologies and Applications – Lab 4

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1 Part I

We begin by publishing telemetry events through the gateway, illustrated step by step as follows:

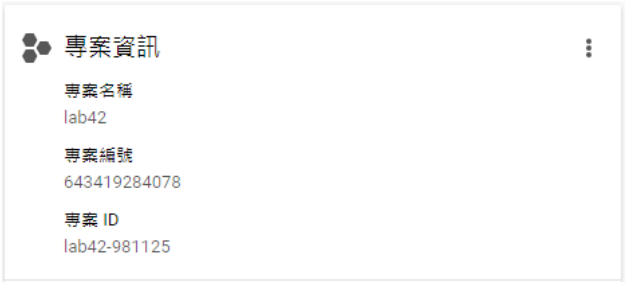

Figure 1: Create cloud project `lab42` with ID `lab42-981125`.

*Student ID: 110062421

Figure 2: Create cloud pub/sub topic `gateway-telemetry` with device state topic `gateway-state` under registry ID `lab42-registry`.

Figure 3: Create cloud gateway `lab42-gateway` under `lab42-registry` using the generated RSA public key.

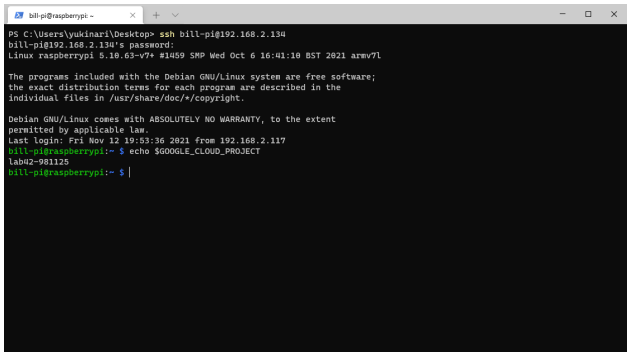

Figure 4: Set local environment variable `GOOGLE_CLOUD_PROJECT` value to cloud project ID `lab42-981125`.

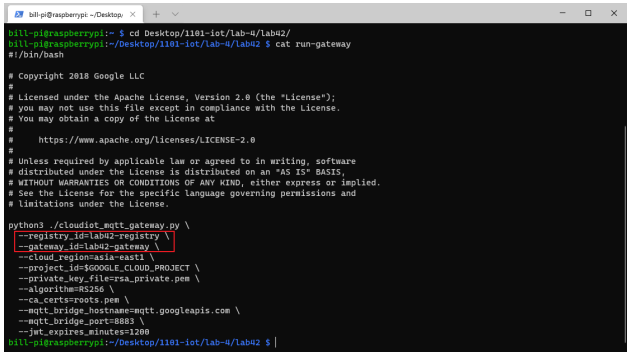

Figure 5: Set local registry and gateway ID to `lab42-registry` and `lab42-gateway` respectively.

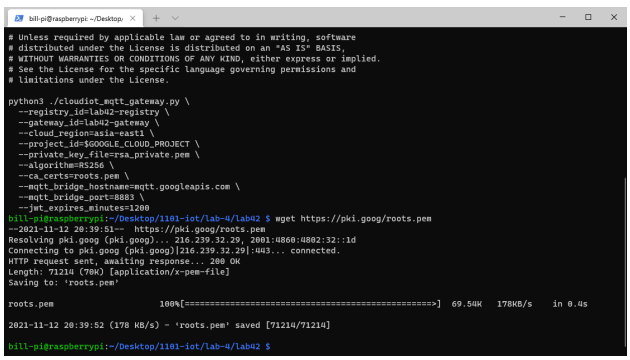

Figure 6: Get `roots.pem` from Google API.

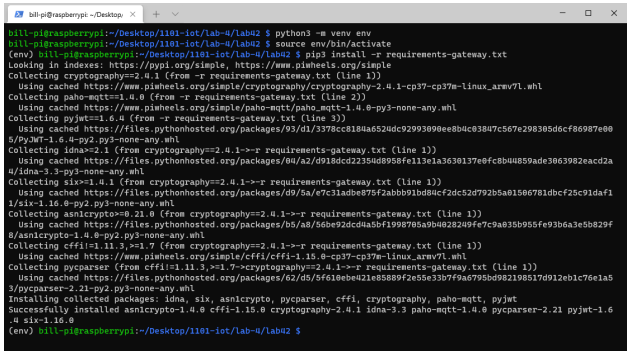

Figure 7: Install gateway's requirements.

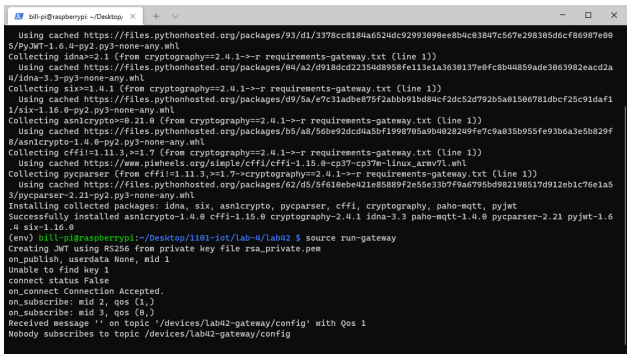

Figure 8: Run the given gateway program.

Figure 9: Create cloud device with ID `thermostat` under `lab42-registry` using the generated RSA public key and add it to gateway `lab42-gateway`.

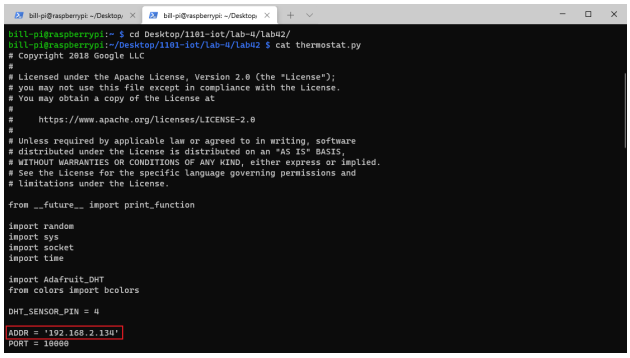

Figure 10: Set IP address in `thermostat.py` to that of the Raspberry Pi.

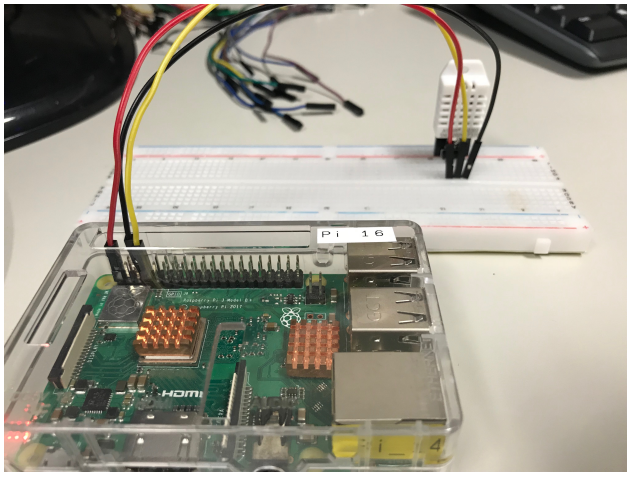

Figure 11: Connect the DHT22 sensor to Raspberry Pi's GPIO pin 4.

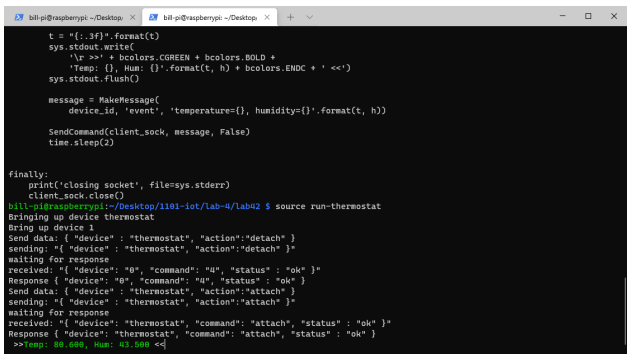

Figure 12: Run the given thermostat program.

2 Part II

In the second part of the experiment, we create a subscription to our telemetry topic to view data:

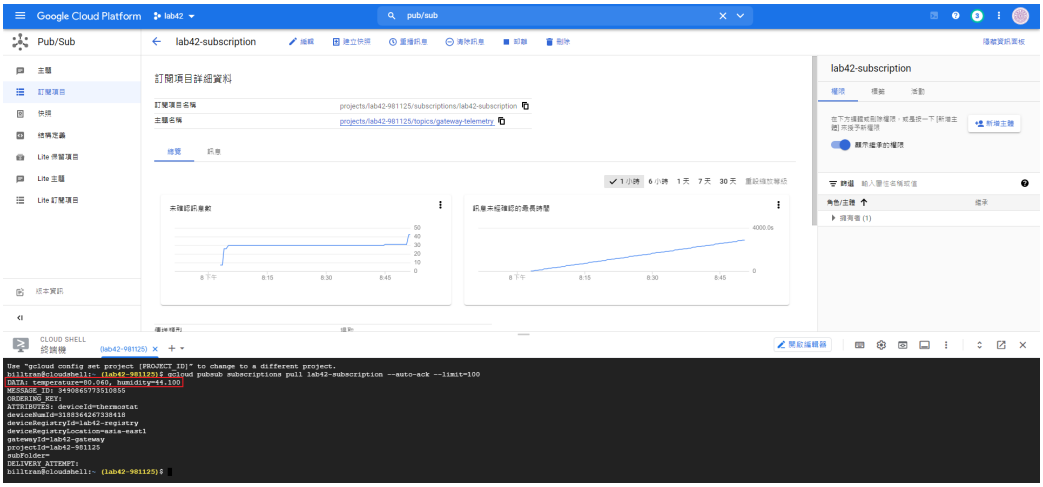

Figure 13: Execute pull device data command on the Cloud Shell.