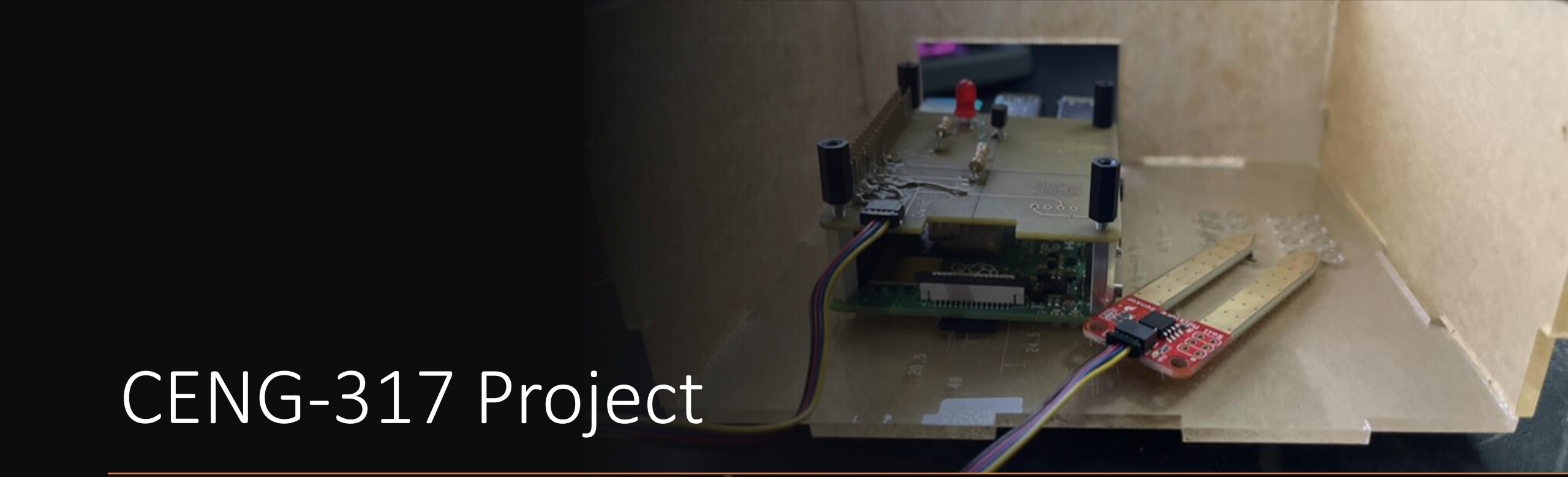


CENG-317 Project

Mi Nam Alcantara (n01451260)

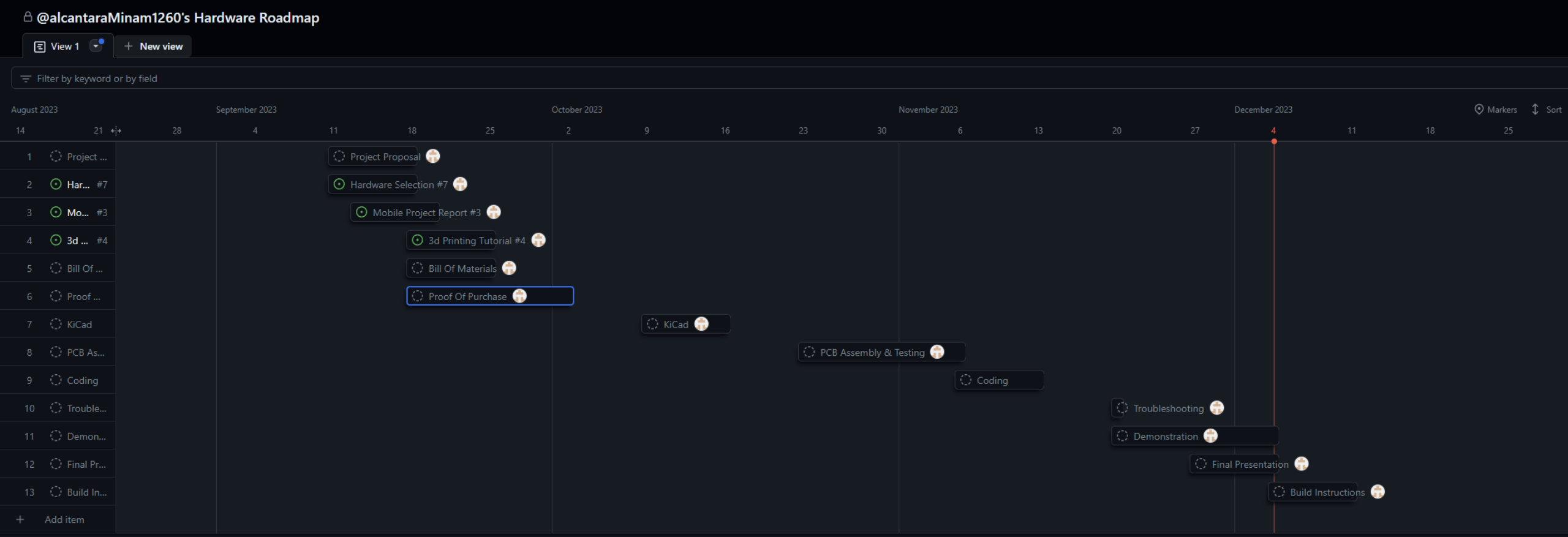
I2C Address: 0x28

```
pi@raspberrypi:~ $ i2cdetect -y 1
     0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00:                 -- -- -- -- -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- 28 -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- --
pi@raspberrypi:~ $
```

Bill Of Materials

- Important Purchases
- Qwiic Soil Moisture Sensor $19.99 CAD

# Bill Of Materials								
Part	Price in CAD	Quantity	Shipping Cost	Duty	Tax	Subtotal Paid	Subtotal propose to order	Expected Arrival Da
2N4124 PNP Transistor from Parts kit	0.70	1				$ 0.70		Semester
5mm Red LED from Parts kit	0.26	1				$ 0.26		Semester
220 Ohm Resistor from Parts kit	0.02	1				$ 0.02		Semester
2.2 kOhm Resistor from Parts kit	0.02	1				$ 0.02		Semester
Raspberry Pi Extreme Kit	144.95	1				$ 144.95		Semester
SD card reader	7.91	1				$ 7.91		Semester
SenseHat	43.16	1				$ 43.16		Semester
Network adapter	20.99	1				$ 20.99		Semester
Ethernet cable	9.49	1				$ 9.49		Semester
Stacking Header	4.24	1			0.55	4.79		*Reading Week*
Qwiic socket	0.81	1			0.11	0.92		*Reading Week*
Qwiic Cables	12.88	1			1.67	14.55		*Reading Week*
16mm Standoff	1.11	4			0.58	5.02		*Reading Week*
M2.5 Screw	0.26	4			0.14	1.18		*Reading Week*
Leadfree Solder	96.11	0.02				]		Reading W
PCB	6.62	1				$ 6.62		Reading W
Laser Cutting	1/min	TBD				$ 1.00		Reading W
3D Printing	0.15/gram	TBD				$ 0.15		Reading W
SparkFun Qwiic Soil Moisture Sensor	13.67	1				$ 13.67		
Assembly	20/hour	TBD						Reading W
Totals						$ 256.12		



Project Roadmap

Reading/Writing To Sensor

```python
#!/usr/bin/env python

# Modified code from Official Sparkfun Github
# https://github.com/sparkfun/Qwiic_Soil_Moisture_Sensor_Py

#0 is the highest Moisture level
#1023 is the lwoest
#0 - 1023 : 10-bit ADC, 2^10 (or 1024),values ranging from 0 to 1023

import qwiic_soil_moisture_sensor
import time
import sys

def runExample():
    print("\nSparkFun Qwiic Soil Moisture Sensor Example 1\n")
    mySoilSensor = qwiic_soil_moisture_sensor.QwiicSoilMoistureSensor()

    if mySoilSensor.is_connected() == False:
        error_message = "The Qwiic Soil Moisture Sensor device isn't connected to the system. Please check your connection"
        sys.stderr.write(error_message + "\n")
        return

    mySoilSensor.begin()

    print("Initialized.")

    while True:
        mySoilSensor.read_moisture_level()
        print(mySoilSensor.level)
        mySoilSensor.led_on()
        time.sleep(1)
        mySoilSensor.led_off()
        time.sleep(1)

if __name__ == '__main__':
    try:
        runExample()
    except (KeyboardInterrupt, SystemExit) as exErr:
        print("\nEnding Example 1")
        sys.exit(0)
```

```
pi@raspberrypi:~ $ python moistureDetectFinal.py

SparkFun Qwiic Soil Moisture Sensor Example 1

Initialized.
1023
1023
50
1023
1023
1023
1020
1023
1005
1023
1023
1023
1023
1023
1023
1020
^C
Ending Example 1
pi@raspberrypi:~ $ python moistureDetectFinal.py

SparkFun Qwiic Soil Moisture Sensor Example 1

Initialized.
1023
1001
1014
1016
1011
1010
1007
1006
1010
1015
1004
^C
Ending Example 1
pi@raspberrypi:~ $
```

Course Knowledge Utilized

- TECH 101, CENG150 (Electric Circuits) (Electrical circuit and board knowledge)
- TECH 104, CENG 153 (Programming) (Basic Programming and How to use the Pi)
- CENG 252 (Embedded Systems) (How sensors work)