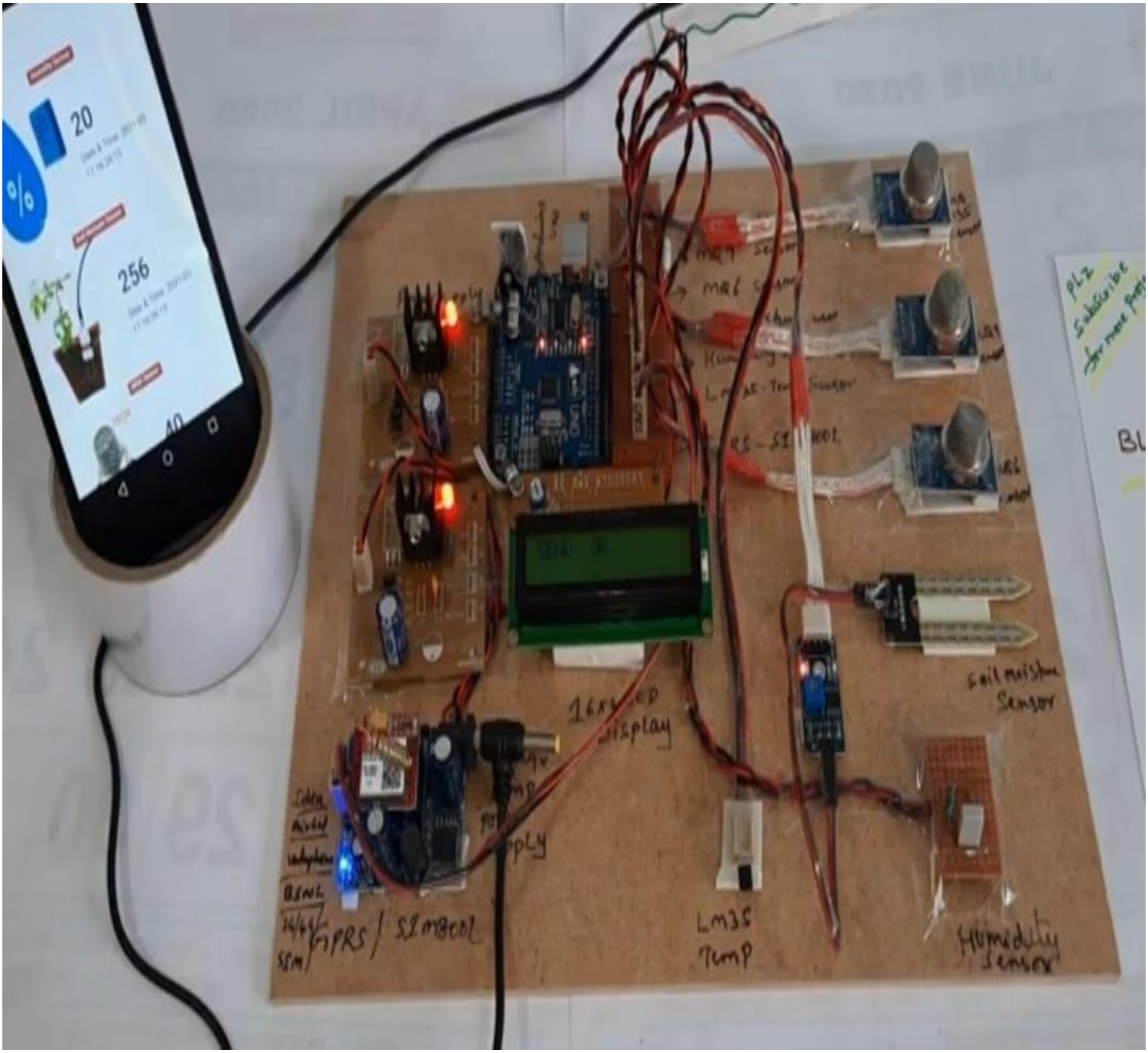
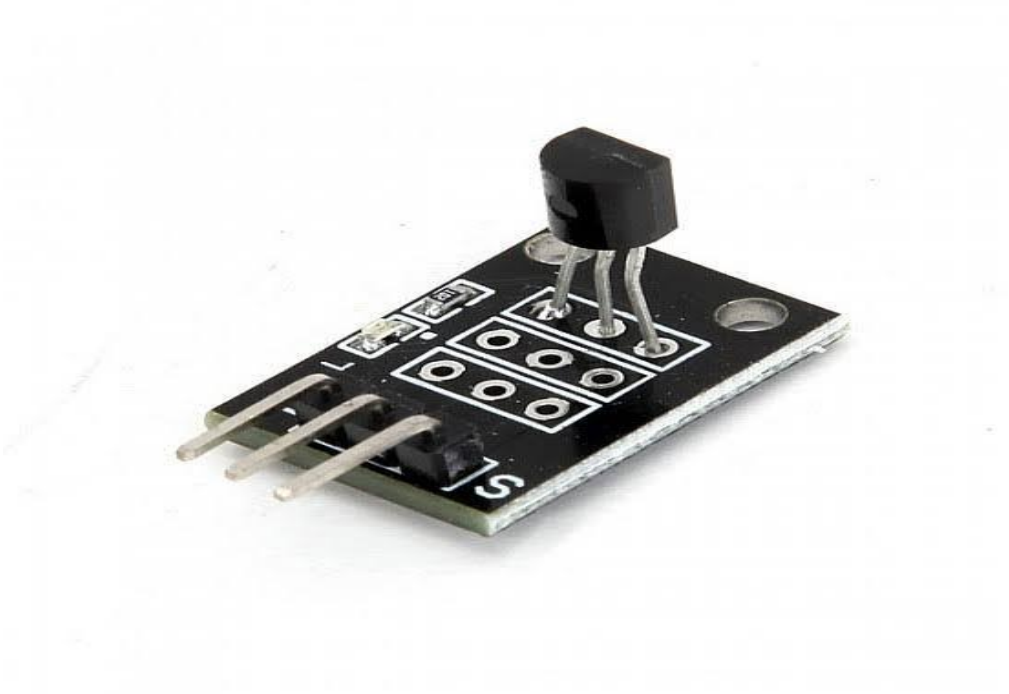
Environmental monitoring-phase 3

PROJECT DESIGN:



COMPONENTS :

▪*TEMPARATURE SENSOR :*



▪*CAPACITIVE HUMIDITY SENSORS :*

▪*MQ 135 SENSOR:*

▪*MQ 6 GAS SENSOR :*

▪*MQ 9 GAS SENSOR :*

CODE:

```
# Adafruit IO Environmental Monitor for Feather or Raspberry Pi -
# an internet-enabled environmental monitor

# Import standard python modules
import time

# import Adafruit Blinka
import board
import busio

# import CircuitPython sensor libraries
import adafruit_sgp30
import adafruit_veml6070
from adafruit_bme280 import basic as adafruit_bme280

# import Adafruit IO REST client
from Adafruit_IO import Client, Feed, RequestError
```

```
# loop timeout, in seconds.
LOOP_DELAY = 10

# Set to your Adafruit IO key.
# Remember, your key is a secret,
# so make sure not to publish it when you publish this code!
ADAFRUIT_IO_KEY = 'YOUR_AIO_KEY'

# Set to your Adafruit IO username.
# (go to https://accounts.adafruit.com to find your username)
ADAFRUIT_IO_USERNAME = 'YOUR_AIO_USERNAME'

# Create an instance of the REST client
aio = Client(ADAFRUIT_IO_USERNAME, ADAFRUIT_IO_KEY)

try: # if we already have the feeds, assign them.
    tvoc_feed = aio.feeds('tvoc')
    eCO2_feed = aio.feeds('eco2')
    uv_feed = aio.feeds('uv')
    temperature_feed = aio.feeds('temperature')
    humidity_feed = aio.feeds('humidity')
    pressure_feed = aio.feeds('pressure')
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    altitude_feed = aio.feeds('altitude')
except RequestError: # if we don't, create and assign them.
    tvoc_feed = aio.create_feed(Feed(name='tvoc'))
    eCO2_feed = aio.create_feed(Feed(name='eco2'))
    uv_feed = aio.create_feed(Feed(name='uv'))
    temperature_feed =
aio.create_feed(Feed(name='temperature'))
    humidity_feed = aio.create_feed(Feed(name='humidity'))
    pressure_feed = aio.create_feed(Feed(name='pressure'))
    altitude_feed = aio.create_feed(Feed(name='altitude'))

# Create busio I2C
i2c = busio.I2C(board.SCL, board.SDA)
# Create VEML6070 object.
uv = adafruit_veml6070.VEML6070(i2c)
# Create BME280 object.
bme280 = adafruit_bme280.Adafruit_BME280_I2C(i2c)
bme280.sea_level_pressure = 1013.25
# Create SGP30 object using I2C.
sgp30 = adafruit_sgp30.Adafruit_SGP30(i2c)
sgp30.iaq_init()
sgp30.set_iaq_baseline(0x8973, 0x8aae)
```

```
# Sample VEML6070
def sample_VEML():
    for _ in range(10):
        uv_raw = uv.uv_raw
    return uv_raw

while True:
    print('Reading sensors...')
    # Read SGP30.
    eCO2_data = sgp30.eCO2
    tvoc_data = sgp30.TVOC

    # Read VEML6070.
    uv_data = sample_VEML()

    # Read BME280.
    temp_data = bme280.temperature
    # convert temperature (C->F)
    temp_data = int(temp_data) * 1.8 + 32
    humid_data = bme280.humidity
    pressure_data = bme280.pressure
```

```
alt_data = bme280.altitude


print('sending data to adafruit io...')
# Send SGP30 Data to Adafruit IO.
print('eCO2:', eCO2_data)
aio.send(eCO2_feed.key, eCO2_data)
print('tvoc:', tvoc_data)
aio.send(tvoc_feed.key, tvoc_data)
time.sleep(2)
# Send VEML6070 Data to Adafruit IO.
print('UV Level: ', uv_data)
aio.send(uv_feed.key, uv_data)
time.sleep(2)
# Send BME280 Data to Adafruit IO.
print('Temperature: %0.1f C' % temp_data)
aio.send(temperature_feed.key, temp_data)
print("Humidity: %0.1f %%" % humid_data)
aio.send(humidity_feed.key, int(humid_data))
time.sleep(2)
print("Pressure: %0.1f hPa" % pressure_data)
aio.send(pressure_feed.key, int(pressure_data))
print("Altitude = %0.2f meters" % alt_data)
```

```
aio.send(altitude_feed.key, int(alt_data))
# avoid timeout from adafruit io
time.sleep(LOOP_DELAY * 60)
```