The Weather Station.

For the weather station you can use a Raspberry 2B+ or a Pi 3. I have not tested on other models.

Below you will find the sensors I used and the library's that support them. The python code is included. Its important to note, that you should start with the Barometric sensor. Not that it will hurt anything starting with temperature, but starting with Barometric will make it simpler.

For more fun you can add a Raspberry Pi Camera. You can get the details here:

https://www.raspberrypi.org/products/camera-module/

Barometric Sensor:

Sensor: https://www.amazon.com/SunFounder-Barometer-BMP180-Arduino-Raspberry/dp/
B013G6FZVS/ref=sr_1_31?ie=UTF8&qid=1468867279&sr=8-31&keywords=bmp180
Libs: https://github.com/adafruit/Adafruit_BMP183_Unified_Library
Code: bmp.v.1.0.py

```
#!/usr/bin/python
import Adafruit_BMP.BMP085 as BMP085
sensor = BMP085.BMP085()

inHg = 0.0002952998751*sensor.read_pressure()

print 'Pressure = {0:0.2f} Pa'.format(sensor.read_pressure())
print 'Mercury = {0:02f} inHg'.format(inHg)
```

Temperature Sensor:

Sensor: https://www.amazon.com/Digital-Temperature-Humidity-measure-Arduino/dp/B018JO5BRK/
ref=sr_1_3?ie=UTF8&qid=1468867418&sr=8-3&keywords=dht22+sensor
Libs: https://github.com/adafruit/DHT-sensor-library
Code: dht.v1.0.py

```
#!/usr/bin/python
import sys
import Adafruit_DHT
sensor = Adafruit_DHT.AM2302

# Example using a Raspberry Pi with DHT sensor
# connected to GPIO7.
pin = 4

# Try to grab a sensor reading.  Use the read_retry method which will retry up
```

 # to 15 times to get a sensor reading (waiting 2 seconds between each retry).
humidity, temperature = Adafruit_DHT.read_retry(sensor, pin)

 # Un-comment the line below to convert the temperature to Fahrenheit.
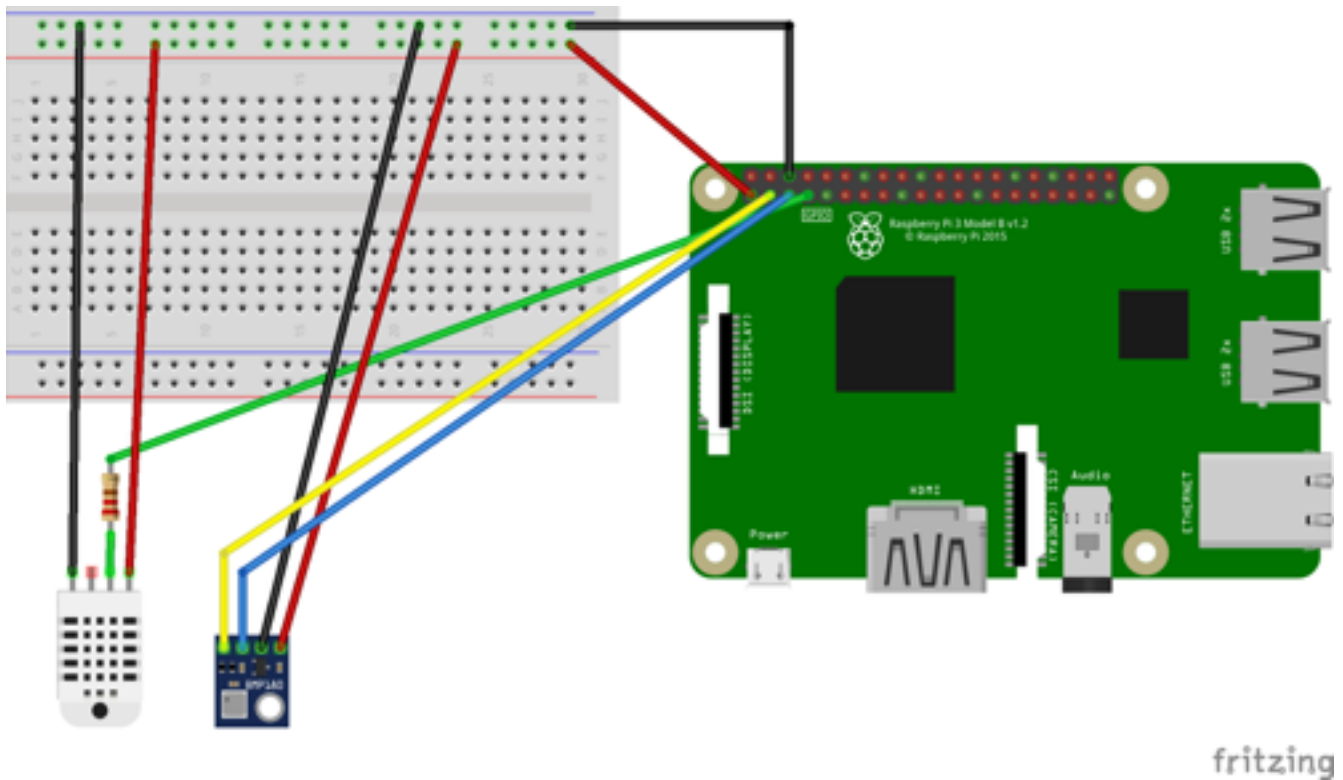*temperature = temperature * 9/5.0 + 32*

 # Calculate dew point.
dewpoint = temperature - ((100-humidity)/5.0)

 # you must create a Cursor object. It will let you execute all the queries you need.
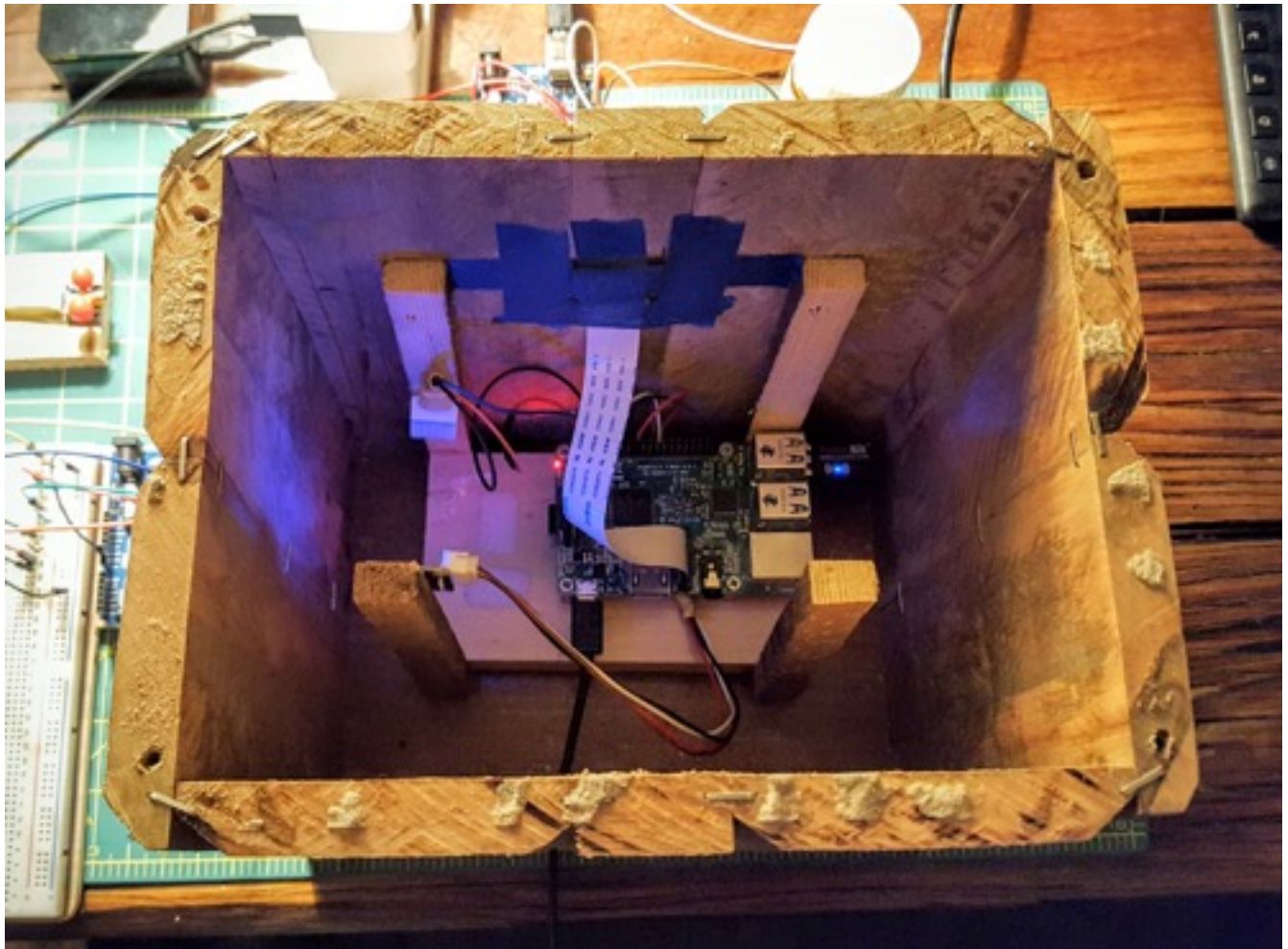*cur = db.cursor()*

sys.exit(0)

Below is a wiring diagram:

Here is a photo of my 1st prototype.

Below are photos of the finished model:

Now if you want to track your data in a database, you can use the information below. The Database design is first followed by the scripts to update the database.

Table BMP:
CREATE TABLE `bmp` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `pa` int(11) NOT NULL,
  `inhg` decimal(5,2) NOT NULL,
  `ts` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  PRIMARY KEY (`id`)

) ENGINE=InnoDB AUTO_INCREMENT=5193 DEFAULT CHARSET=latin1;

Table DHT:
```
CREATE TABLE `dht` (
 `id` int(11) NOT NULL AUTO_INCREMENT,
 `tmp` int(11) NOT NULL,
 `hum` int(11) NOT NULL,
 `dew` int(11) NOT NULL,
 `ts` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`id`)
) ENGINE=InnoDB AUTO_INCREMENT=9335 DEFAULT CHARSET=latin1;
```

Scripts with database logic:

Script: dat.v.1.2.py
```python
#!/usr/bin/python
import MySQLdb
import sys
import Adafruit_DHT

db = MySQLdb.connect(host="",    # your host, usually localhost
             user="",         # your username
             passwd="",   # your password
             db="r")         # name of the data base

sensor = Adafruit_DHT.AM2302

# Example using a Raspberry Pi with DHT sensor
# connected to GPIO7.
pin = 4

# Try to grab a sensor reading.  Use the read_retry method which will retry up
# to 15 times to get a sensor reading (waiting 2 seconds between each retry).
humidity, temperature = Adafruit_DHT.read_retry(sensor, pin)

# Un-comment the line below to convert the temperature to Fahrenheit.
temperature = temperature * 9/5.0 + 32

# Calculate dew point.
dewpoint = temperature - ((100-humidity)/5.0)

# you must create a Cursor object. It will let you execute all the queries you need.
cur = db.cursor()
```

```python
#prepare SQL query for INSERT
sql = "insert into dht (tmp,hum,dew) values('%d','%d','%d')" %((temperature),(humidity),(dewpoint))

try:
    # execute the sql command
    cur.execute(sql)
    db.commit()
except:
    # rollback if error
    db.rollback()

#close cursor
cur.close()

#close connection
db.close()

sys.exit(0)
```

Script: bmp.v1.2.py
```python
#!/usr/bin/python
import MySQLdb
import sys
import Adafruit_BMP.BMP085 as BMP085

sensor = BMP085.BMP085()
inHg = 0.0002952998751*sensor.read_pressure()

db = MySQLdb.connect(host="",    # your host, usually localhost
             user="",        # your username
             passwd="",  # your password
             db="r")         # name of the data base

#print 'Pressure = {0:0.2f} Pa'.format(sensor.read_pressure())
#print 'Mercury = {0:02f} inHg'.format(inHg)

# you must create a Cursor object. It will let you execute all the queries you need.
cur = db.cursor()

#prepare SQL query for INSERT
sql = "insert into bmp (pa,inhg) values('%d','%s')" %((sensor.read_pressure()),(inHg))
```

```python
try:
    # execute the sql command
    cur.execute(sql)
    db.commit()
except:
    # rollback if error
    db.rollback()

#close cursor
cur.close()

#close connection
db.close()

sys.exit(0)
```