# CS 350 Module Six – Temperature and Humidity Sensor Integration

For this lab, I started by installing the required Python package for the AHTx0 temperature and humidity sensor using pip3. I then powered down the Raspberry Pi and connected the sensor to the existing QWIIC cable from the earlier setup. The connector fit only one way, so there was no confusion during installation.  
  
After powering the Pi back on, I ran the TemperatureSensorTest.py script to make sure the sensor was reading values correctly. Once I confirmed it was working, I moved on to editing the TemperatureSensorIntegration.py file. I set it up so the first line of the 16x2 LCD displays the temperature (in °C or °F) and humidity percentage, and the second line shows the current date and time. I also programmed the button to toggle between Celsius and Fahrenheit.  
  
One of the bigger challenges was formatting the text to fit neatly on the 16-character LCD lines. I solved this by keeping labels short (e.g., 'T:' and 'H:') and making sure the date/time format was compact. Another small hurdle was making sure all the correct libraries were installed, which I handled by installing gpiozero, the Adafruit LCD and sensor libraries, and enabling I²C.  
  
In the end, everything works smoothly. Pressing the button switches between °C and °F instantly, and the display updates every second with real-time sensor data.