

CS2007301 電子電路 Electronic Circuits

Project B3: Sensor Value Display using IoT

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Objective: To track room real-time temperature and humidity using Arduino IoT system and other application and display it on our phone.

Approach

The connection to the Blynk App is done by enabling the serial USB connection, in this case COM3 as the active port, through some shell commands.

How it works

The DHT 11 sensor sends its recorded value from the environment to the Blynk Cloud, which could then be accessed through the Blynk App through mobile phones.

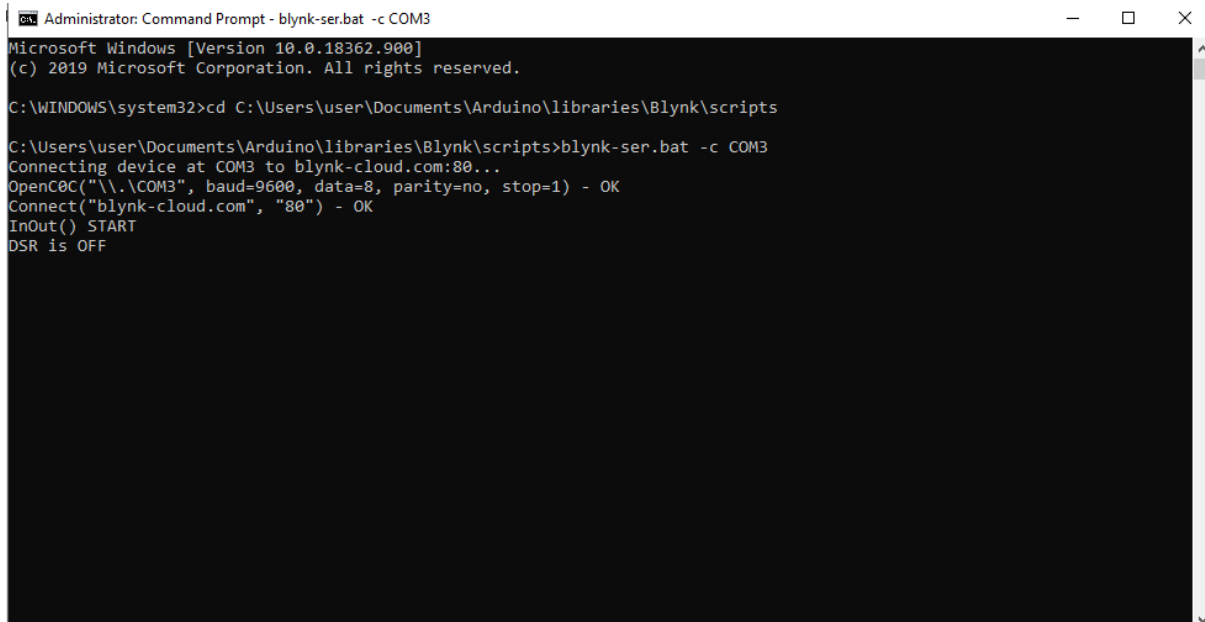
The following is needed to connect the code to the Blynk App.

1. Upload the Arduino code to the Arduino UNO board
2. Open Command Prompt, running as Administrator
3. Enter the following commands

cd "File directory of the Blynk scripts folder"

blynk-ser.bat -c "Port that is connected to the Arduino Board"

The following will then be displayed, indicating a successful connection.



```
Administrator: Command Prompt - blynk-ser.bat -c COM3
Microsoft Windows [Version 10.0.18362.900]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Users\user\Documents\Arduino\libraries\Blynk\scripts
C:\Users\user\Documents\Arduino\libraries\Blynk\scripts>blynk-ser.bat -c COM3
Connecting device at COM3 to blynk-cloud.com:80...
OpenC0C("\\.\COM3", baud=9600, data=8, parity=no, stop=1) - OK
Connect("blynk-cloud.com", "80") - OK
InOut() START
DSR is OFF
```

Figure 1 Running some shell commands in Command Prompt

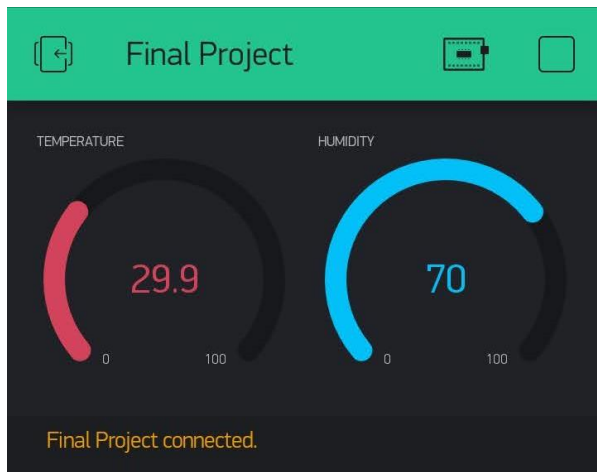


Figure 2.1 Project connected to the Blynk Cloud, displaying real-time temperature and humidity

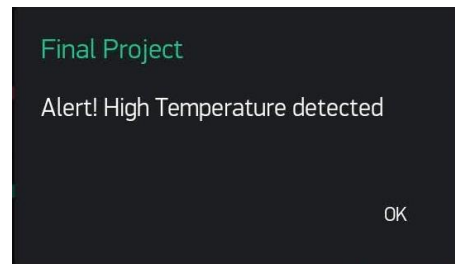


Figure 2.2 Notification pushed when temperature is above 32°C

A message saying “[Project Name] is connected” will pop-up at the very bottom of the screen, indicating that the code has been successfully connected to the cloud.

The real-time values are then displayed on the phone screen.

One feature it has is the ability to notify the user whether the room temperature is too high, in this case, the limit is 32°C, which can be observed in the attached code file (Figure 2.2).

Circuit Diagram

The diagram is pretty straightforward as it only requires the DHT 11 sensor to be properly setup in the board.

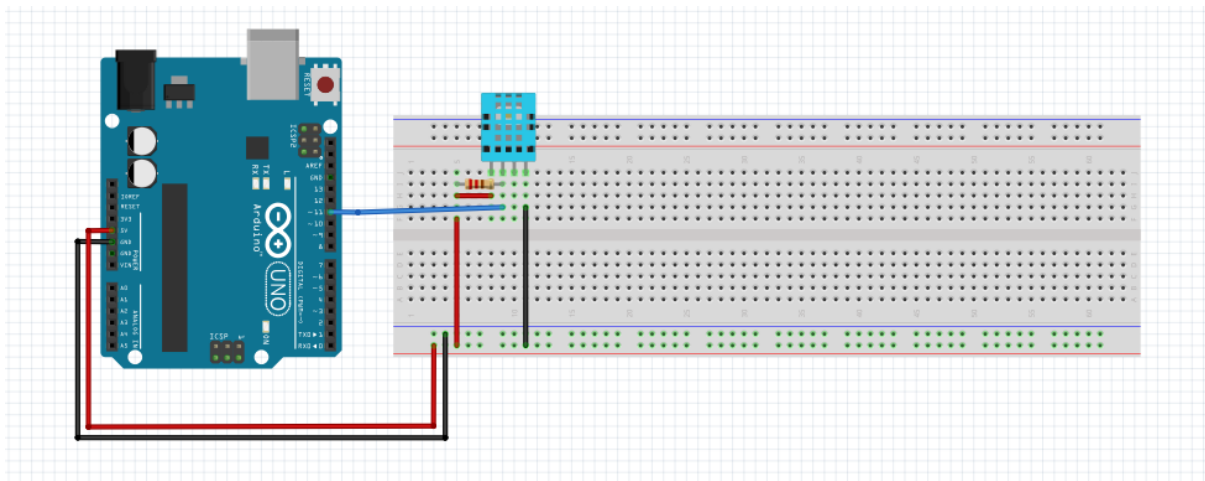


Figure 3 Circuit diagram

Additions

Some additional features were added which includes a simple ON/OFF switch for an LED, an RGB LED in which each value of the colors can be modified using 3 sliders and a SOS light signal for emergency purposes. All of them are controlled through the Blynk App.

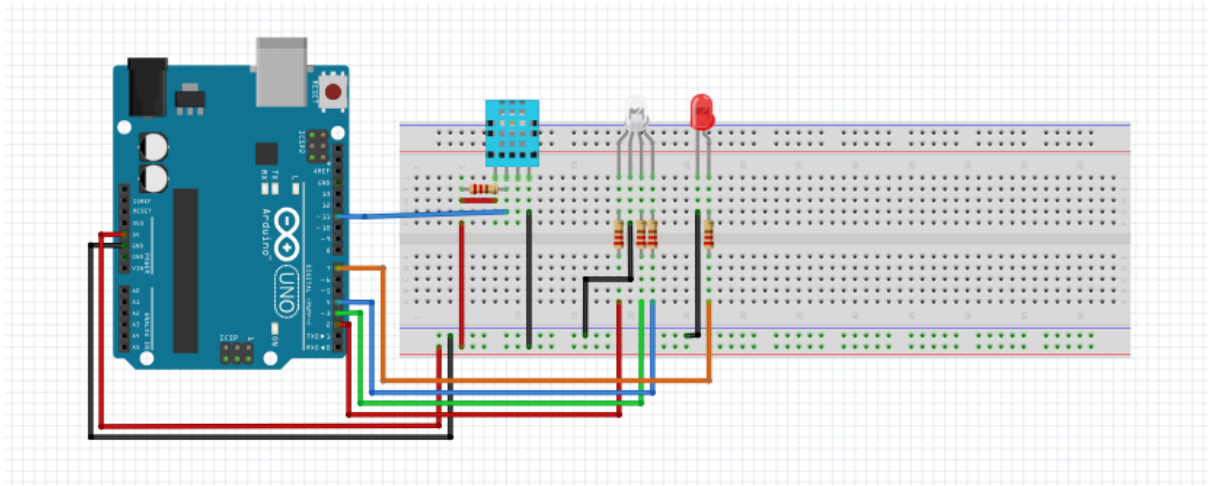


Figure 4 Final diagram used in this project

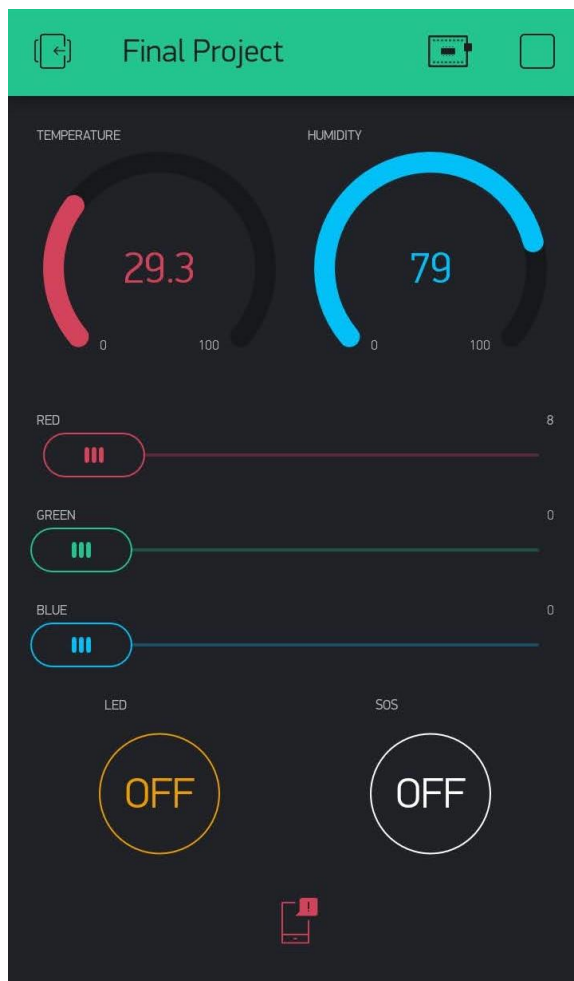


Figure 5.1 All of the functions available, all in neutral mode

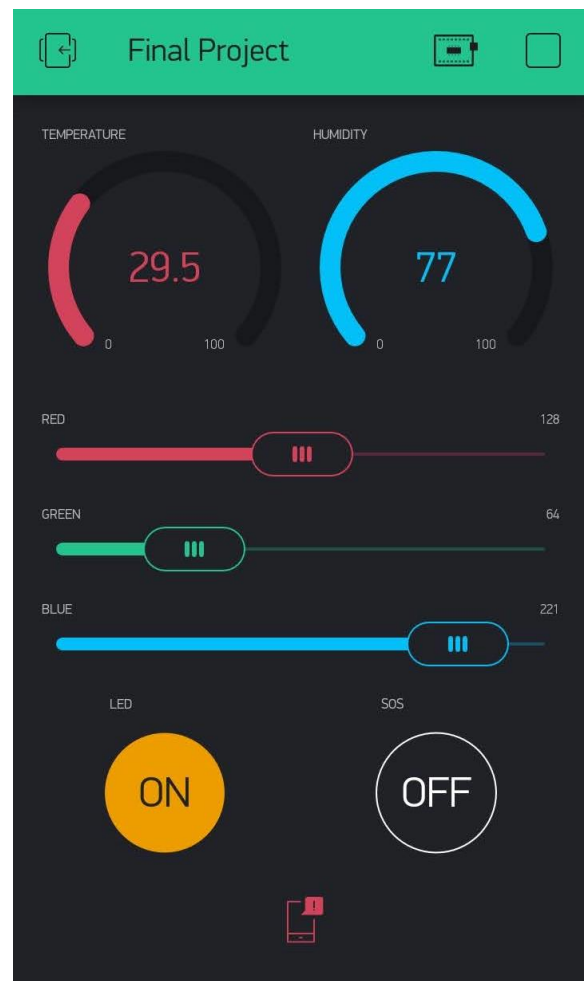


Figure 5.2 Functions applied

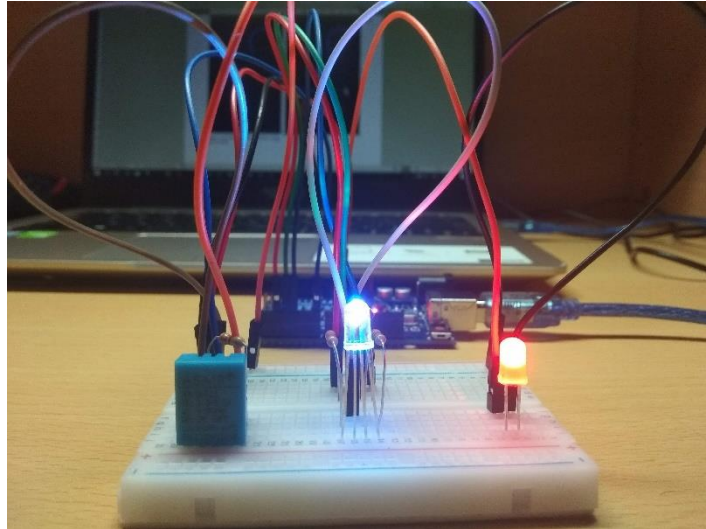


Figure 5.3 LED actuators results from Figure 5.2's configuration

References:

1. Blynk Guide
URL: <https://docs.blynk.cc/>
2. How to display sensor data in Blynk App
URL: <http://help.blynk.cc/en/articles/512056-how-to-display-any-sensor-data-in-blynk-app>
3. GitHub used to download required Arduino Libraries
URL: <https://github.com/>
4. Arduino Libraries used to download required Arduino Libraries
URL: <https://www.arduino-libraries.info/>