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SIM800L GPRS GSM MODULE FOR ARDUINO & RASPBERRY

Introduction:

The SIM800L GPRS GSM module emerges as a pivotal communication tool tailored for Arduino and Raspberry Pi applications, providing a seamless bridge to the world of cellular connectivity. Developed by SIMCom, this compact module integrates GSM and GPRS capabilities, making it an ideal choice for diverse projects such as Internet of Things (IoT) applications, remote sensing, and mobile data transmission. With its quad-band GSM frequencies, the SIM800L ensures global compatibility, while GPRS Class 10 support facilitates efficient data transmission.

Its small form factor is well-suited for projects with space constraints, and the module's versatility is underscored by its compatibility with the UART interface, ensuring ease of integration with popular microcontrollers like Arduino and single-board computers like Raspberry Pi. Whether you're a hobbyist or a professional, the SIM800L GPRS GSM module empowers your projects with reliable wireless communication, ushering in a new era of connectivity for a myriad of applications.

Pinout:

1. NET = Antenna
2. VCC = +3.7-4.2V
3. RST = Reset
4. RXD = Rx Data Serial
5. TXD = Tx Data Serial
6. GND = Ground/0V
7. RING = when call incoming
8. DTR = controls the sleep mode
9. MICP = Microphone +
10. MICN = Microphone -
11. SPKP = Speaker +
12. SPKN = Speaker –

Specifications:

- Chip : SIM800L
- Operating Voltage: 3.7V - 4.2V
- Module Size: 2.5cm * 2.3cm

Objectives:

The SIM800L GPRS GSM module serves as a pivotal component in Arduino and Raspberry Pi projects, aiming to achieve wireless communication capabilities. Its primary objectives encompass the facilitation of remote monitoring and control, enabling projects to communicate without the constraints of physical connections. By integrating this module, developers can harness the power of GSM and GPRS networks for internet of Things (IoT) connectivity, allowing devices to seamlessly interact with cloud platforms and serves.

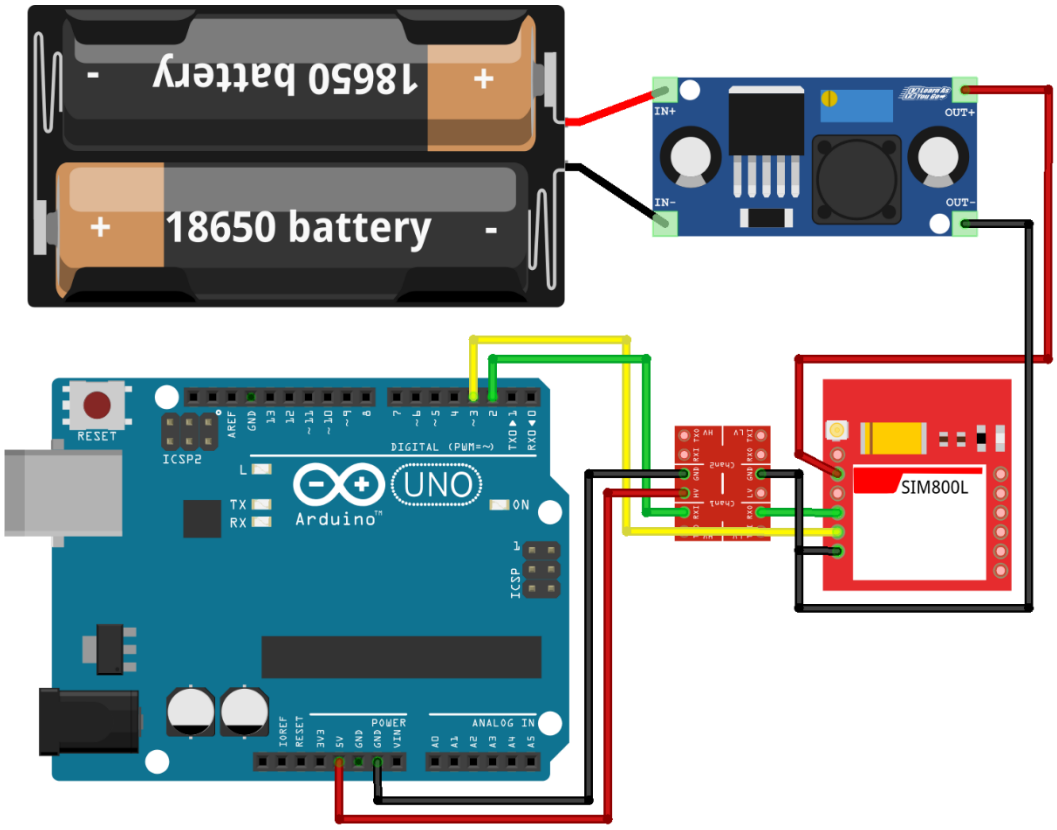
List of Component Needed:

1. SIM800L Module x 1
2. Arduino UNO x 1
3. SIM Card x 1
4. Logic Level Converter (LC04A) x 1
5. 18650 Li-Ion Battery x 2
6. 18650 Li-Ion Battery Holder x 1
7. ALM2596 DC Buck Converter x 1
8. Jumper Wires x ~10pcs

Procedures:

Step 1:

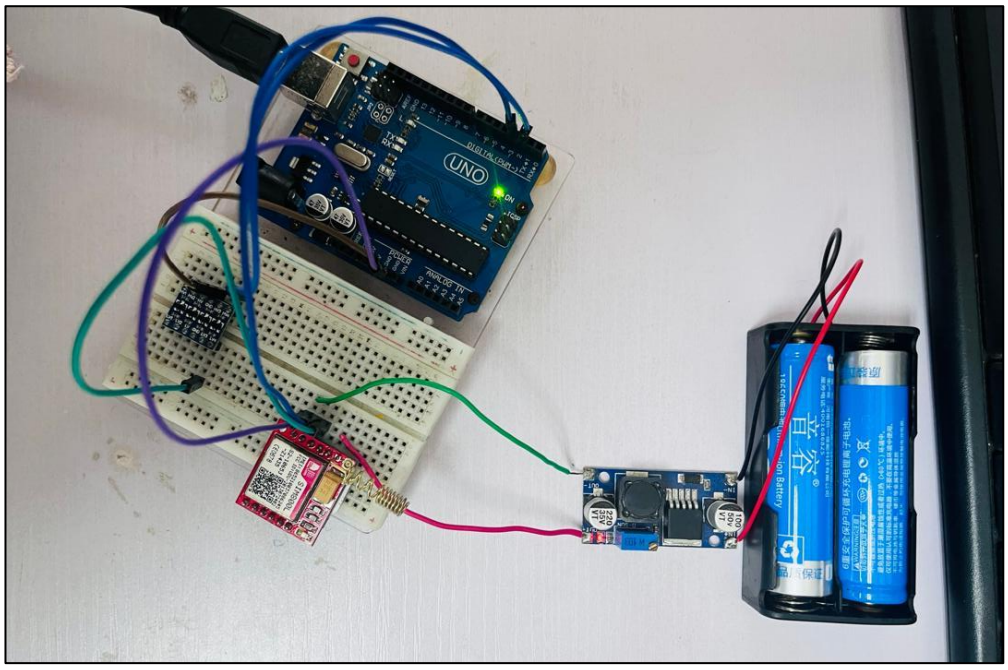
- Insert the SIM card into the SIM card slot on the module
- Adjust the output of Buck Converter to 4v (recommended).
- Connect the SIM800L module to the Arduino as image & table below:



Wiring Diagram

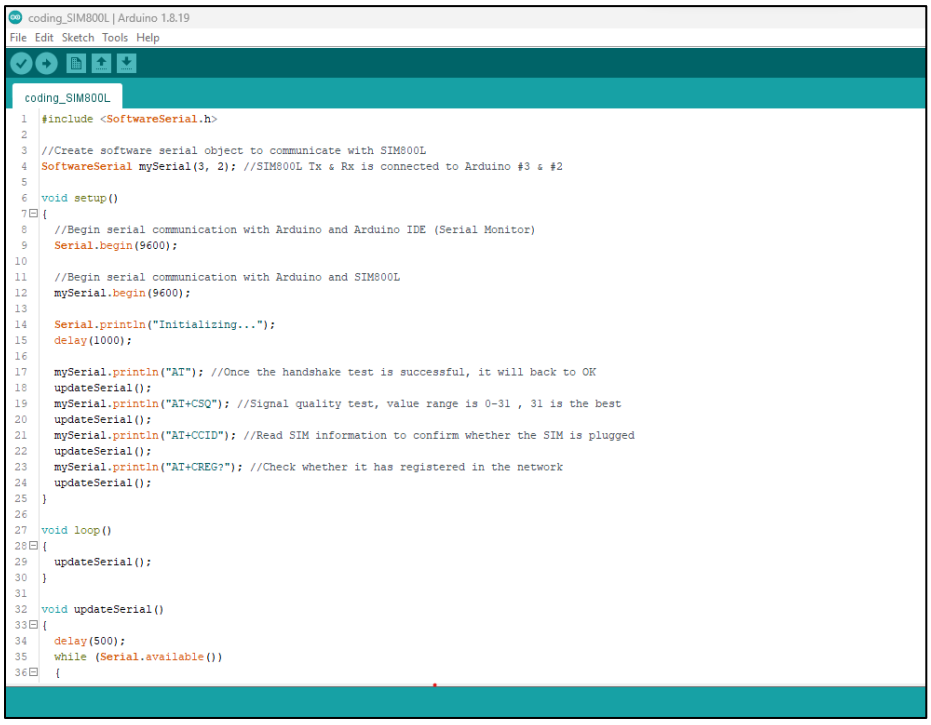
Arduino UNO	Serial Converter LC04A		SIM800L	Buck Converter ALM2596
D2	RX (on HV)	RX (on LV)	RX	-
D3	-		TX	-
VCC	HV		-	OUT +
GND	GND		GND	OUT -

- Setup sample:



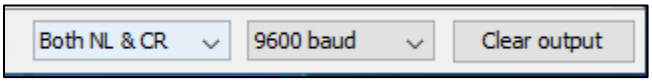
Step 2:

- Open Arduino IDE on computer and write or upload a sketch to communicate with the SIM800L module using AT commands.



```
coding_SIM800L | Arduino 1.8.19
File Edit Sketch Tools Help
coding_SIM800L
#include <SoftwareSerial.h>

//Create software serial object to communicate with SIM800L
SoftwareSerial mySerial(3, 2); //SIM800L Tx & Rx is connected to Arduino #3 & #2

void setup()
{
  //Begin serial communication with Arduino and Arduino IDE (Serial Monitor)
  Serial.begin(9600);

  //Begin serial communication with Arduino and SIM800L
  mySerial.begin(9600);

  Serial.println("Initializing...");
  delay(1000);

  mySerial.println("AT"); //Once the handshake test is successful, it will back to OK
  updateSerial();
  mySerial.println("AT+CSQ"); //Signal quality test, value range is 0-31 , 31 is the best
  updateSerial();
  mySerial.println("AT+CCID"); //Read SIM information to confirm whether the SIM is plugged
  updateSerial();
  mySerial.println("AT+CREG?"); //Check whether it has registered in the network
  updateSerial();
}

void loop()
{
  updateSerial();
}

void updateSerial()
{
  delay(500);
  while (Serial.available())
  {
```

- Use the Serial Monitor in the Arduino IDE to send AT commands and receive responses from the module
- Select the baud rate to **'9600 baud'** & communication mode to **'Both NL & CR'**



- Use commands like **'ATD'** to dial a number and **'ATH'** to hang up
- For example, use '**ATD +601********;**' to make a call. (Replace ******** with phone number)

Discussion:

The SIM800L GPRS GSM module stands as a fundamental component in the arsenal of Arduino and Raspberry Pi developers, offering robust wireless communication capabilities. From remote monitoring to SMS alerts and beyond, the SIM800L facilitates seamless data transmission over cellular networks, augmenting the capabilities of these platforms. However, developers must navigate considerations such as power consumption, network coverage, and data costs to optimize the module's performance effectively. Despite challenges, the SIM800L GPRS GSM module represents a cornerstone in the evolution of Arduino and Raspberry Pi projects, promising innovation and connectivity in an increasingly interconnected world.