

# GPS module

## (Technical Note)

## Introduction



### Module- NEO-6M GPS module

Considered as one of the popular GPS modules in the market, the NEO-6M module is a family of stand-alone GPS receivers from the NEO-6 module series. The NEO-6M GPS chip from u-blox is the heart of the module. With a capability, amongst many, of tracking 22 satellites with 161 dB tracking sensitivity, it is proven an excellent component. The active antenna on the chip transmits and receives signals and a built-in EEPROM saves the configuration parameter data in itself.

## Scientific Fact and Applications

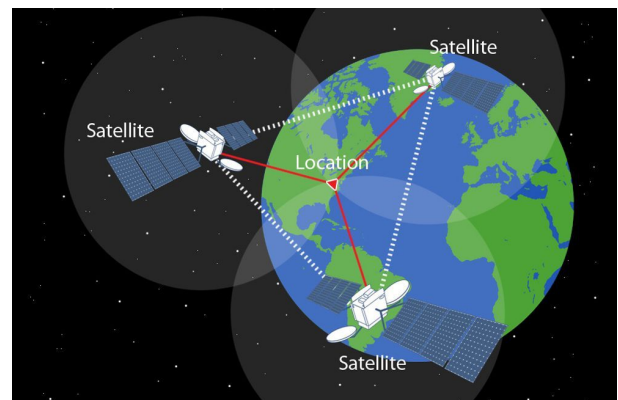
The NEO-6M GPS chip works on the principle of **satellite-based navigation**. It first checks your relative position from a number of satellites (usually there exists a network of at least 24 satellites) and depending on the relative positioning, calculate the actual coordinates of your location. This process is called **trilateration**.

These do not only determine your position which can be 2D (latitude and longitude) and 3D (latitude, longitude, and altitude) but the unit can also determine speed, bearing, track, trip distance, and distance to destination. The information needed to calculate all these parameters are in the form of radio waves. These signals have three type of information: Pseudorandom code (I.D. code to identify the satellite), ephemeris data (finds satellite's position), and almanac data (gives positioning and orbital information for the satellite system).

### Applications:

#### Satellite Technology :

- GPS tracker
- GPS navigator



<https://www.nationalgeographic.org/photo/triangulation-sized/>



<https://gpstracker-malaysia.com/gps-tracking-devices/>

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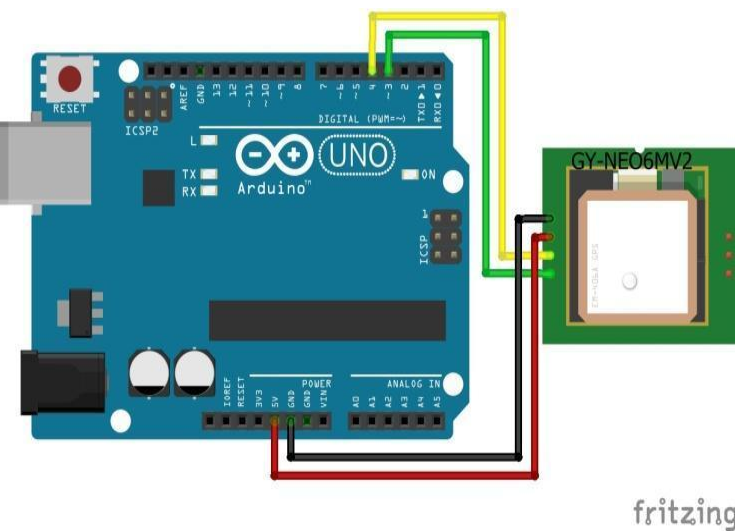
## (Application Note)

### Project

### Procedure

1. Connect **VCC** of the module to the **5V** pin of the Arduino
2. **GND** of the module is connected to **GND** of the arduino
3. **TX** of the module to UART transmitter pin i.e digital pin(**D3**) of arduino
4. **RX** is connected to UART receiver pin i.e. digital pin (**D4**) of arduino

### Schematic



### Components Required

Component	Part No.	Qty
Arduino UNO	EMX-001-A	1
GPS Module	EMS-012-A	1

### Code

```
#include <SoftwareSerial.h>
int RXPin = 4; /* Defining receiver pin */
int TXPin = 3; /* Defining transmission pin */
int GPSBaud = 9600;
SoftwareSerial gpsSerial(RXPin, TXPin); /* Create a software
serial port 'gpsSerial' */
void setup() /* Creating gps interface*/
{ Serial.begin(9600);
gpsSerial.begin(GPSBaud);
}
void loop()
{
  while (gpsSerial.available() > 0) /* Displays new
sentence/information */
    Serial.write(gpsSerial.read());
}
```

### Challenge Yourself