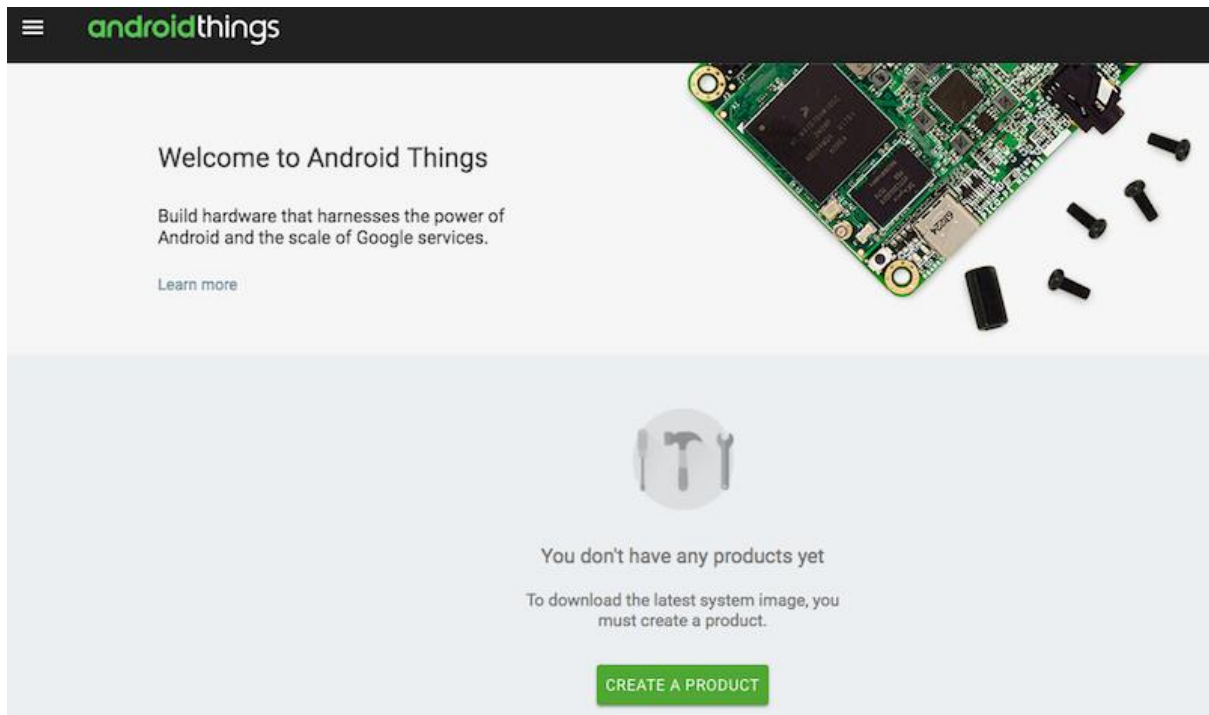
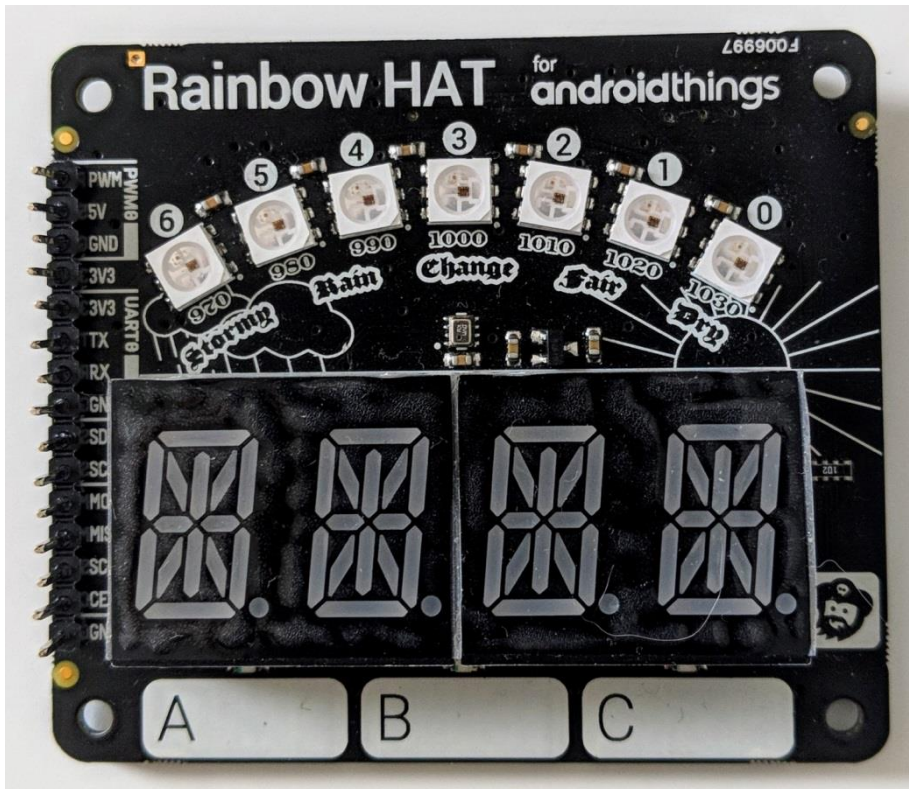
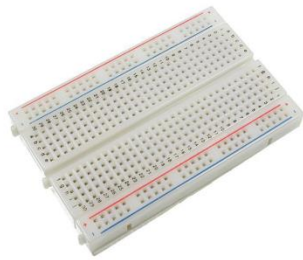


Chapter 1: Introducing Android Things







Tools

Use these tools to streamline development of your Android Things projects.




Setup Utility

This command line tool will get you up and running with Android Things quickly. It will help you flash your board with either a generic image or your own custom image of Android Things and connect your board to Wi-Fi. A generic image is for early prototyping only and you will not have access to other Console features, such as metrics, crash reports, and over-the-air (OTA) updates. A custom image is for developers in the later stages of development beyond early prototyping.

[DOWNLOAD](#)

General

 Google iot_imx7d_pico
1.0.0

Networks


CONNECT TO NETWORK


Peripherals

 I/O Pinout


 Rainbow HAT

← **Networks**

 Wi-Fi
Disconnected

 Ethernet
Disconnected

General

 Google iot_imx7d_pico
1.0.0

Networks

↔ Ethernet 0
192.168.42.52

Peripherals





I/O I/O Pinout

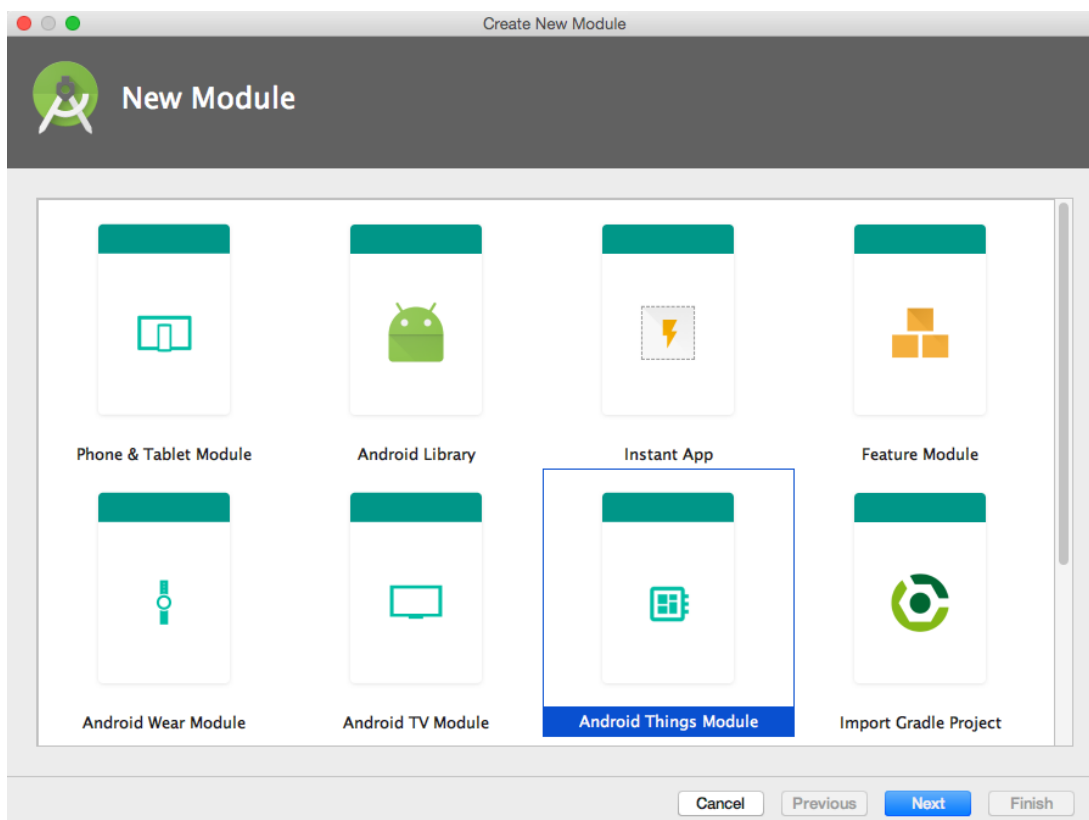
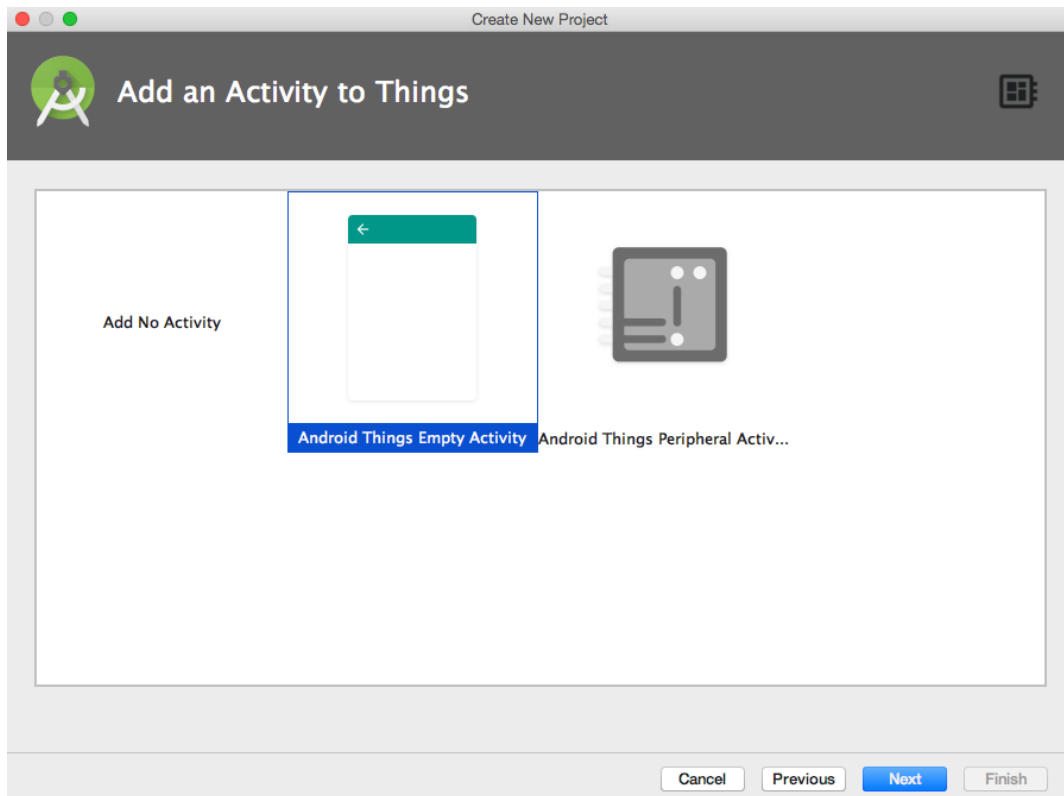
 Rainbow HAT

Create New Project

Target Android Devices

Select the form factors and minimum SDK
Some devices require additional SDKs. Low API levels target more devices, but offer fewer API features.

- Phone and Tablet**
API 23: Android 6.0 (Marshmallow) 
By targeting API 23 and later, your app will run on approximately 39.3% of devices. [Help me choose](#)
 Include Android Instant App support
- Wear**
API 21: Android 5.0 (Lollipop) 
- TV**
API 21: Android 5.0 (Lollipop) 
- Android Auto**
- Android Things**
API 26: Android 8.0 (Oreo) 



Chapter 2: The Rainbow HAT



Managed by Google

Android Framework

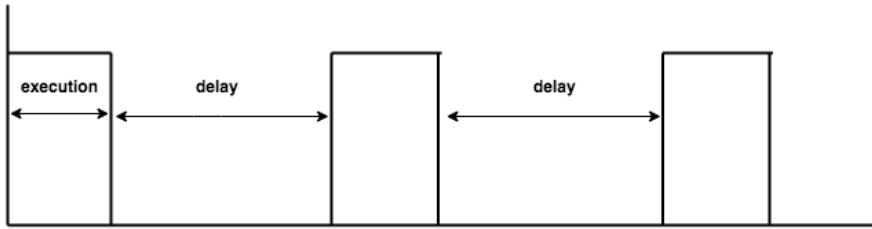
Hardware Libraries

Linux Kernel

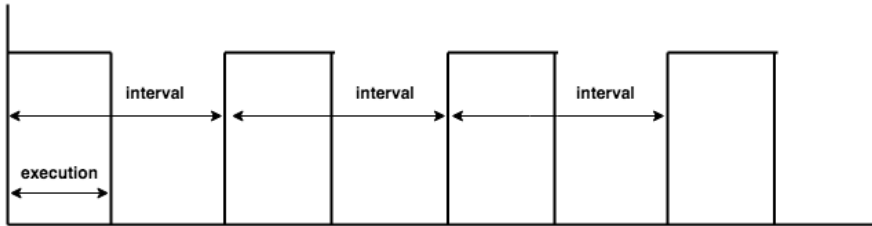
Managed by Developers

Apps

User Drivers



Handler / Runnable

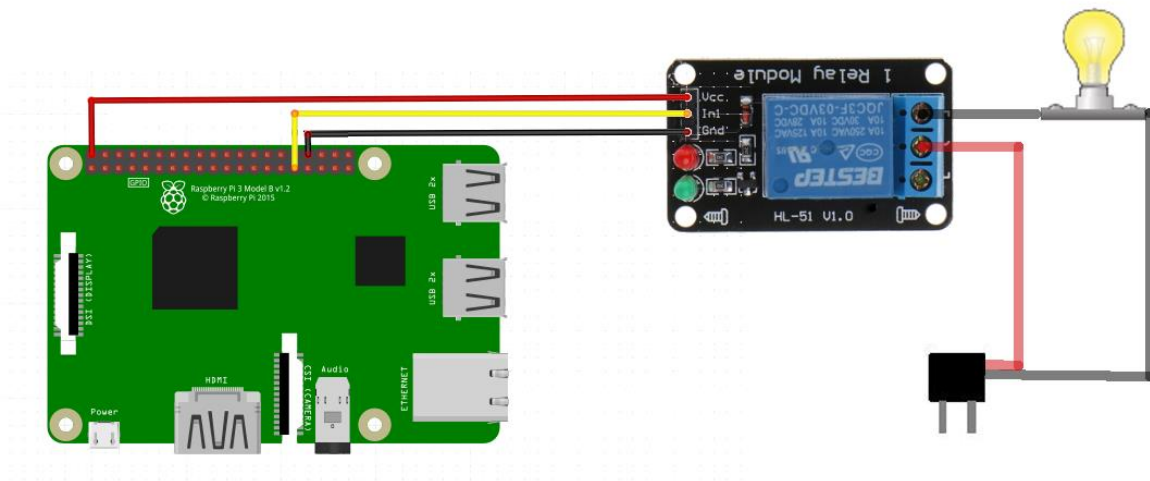


Timer / TimerTask



Chapter 3: GPIO - Digital Input/Output

		Active type	
		HIGH	LOW
Value	True	1	0
	False	0	1





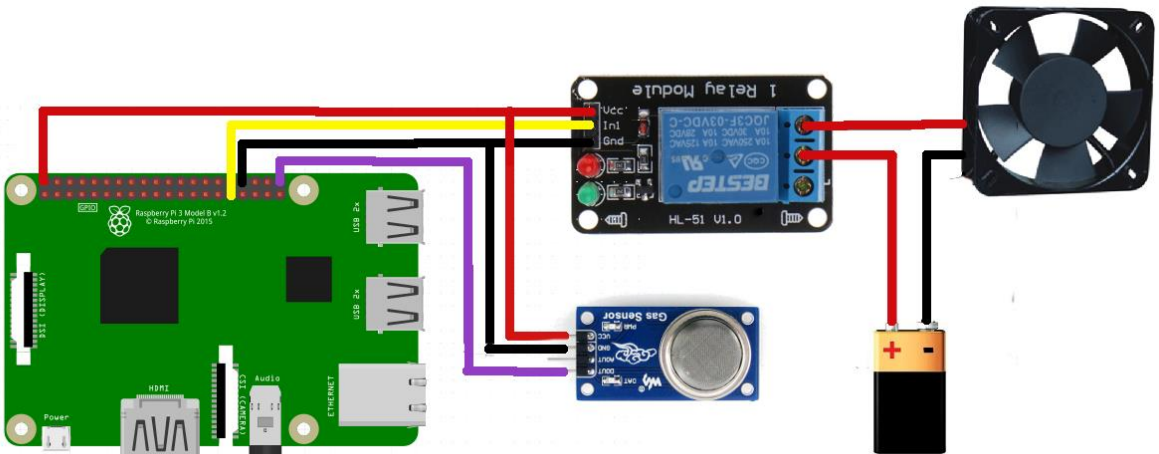
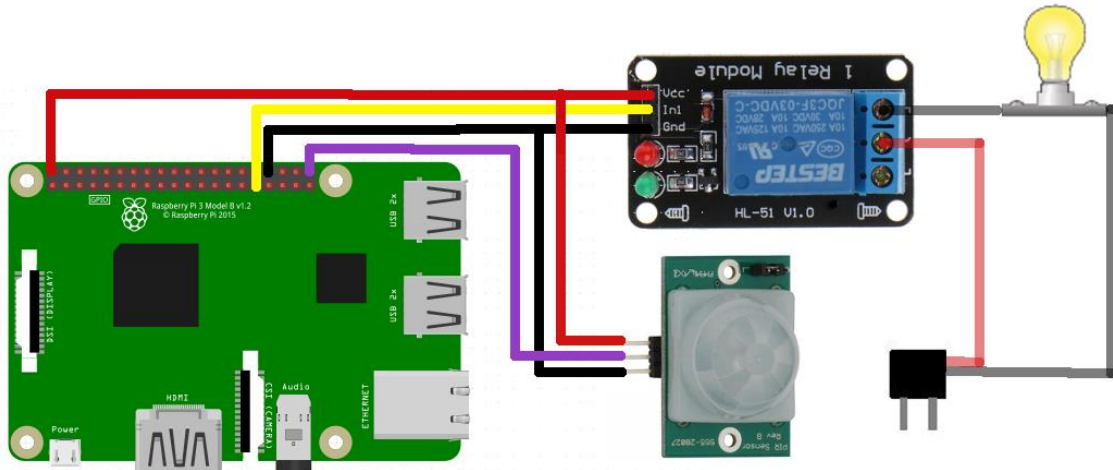
Presence (PIR)

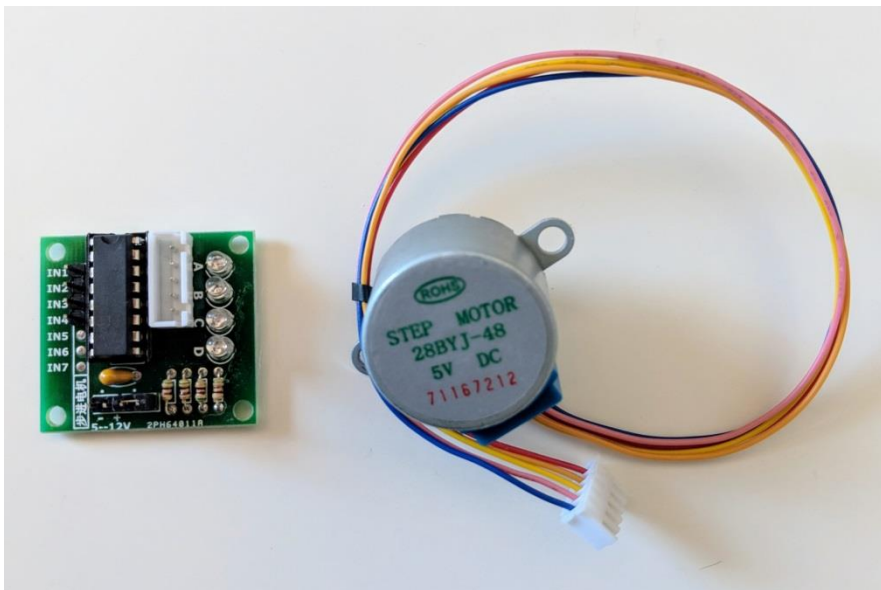
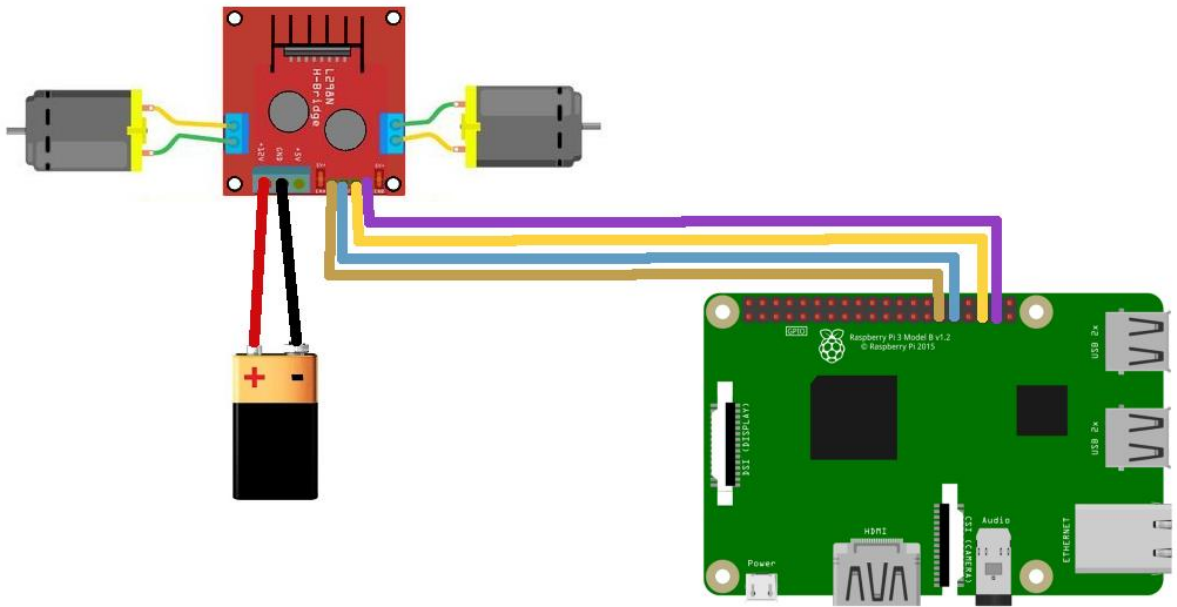


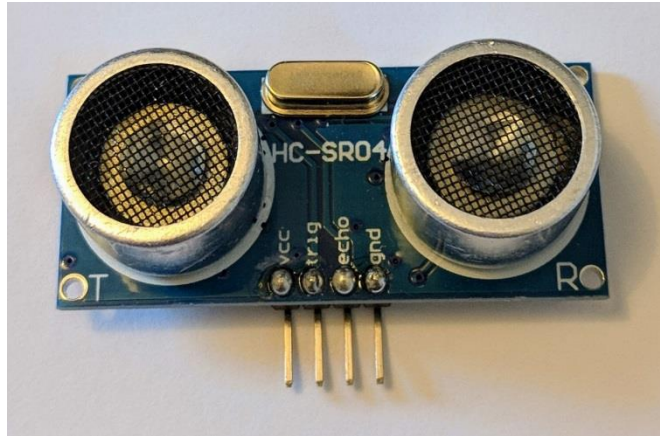
Harmful Gas



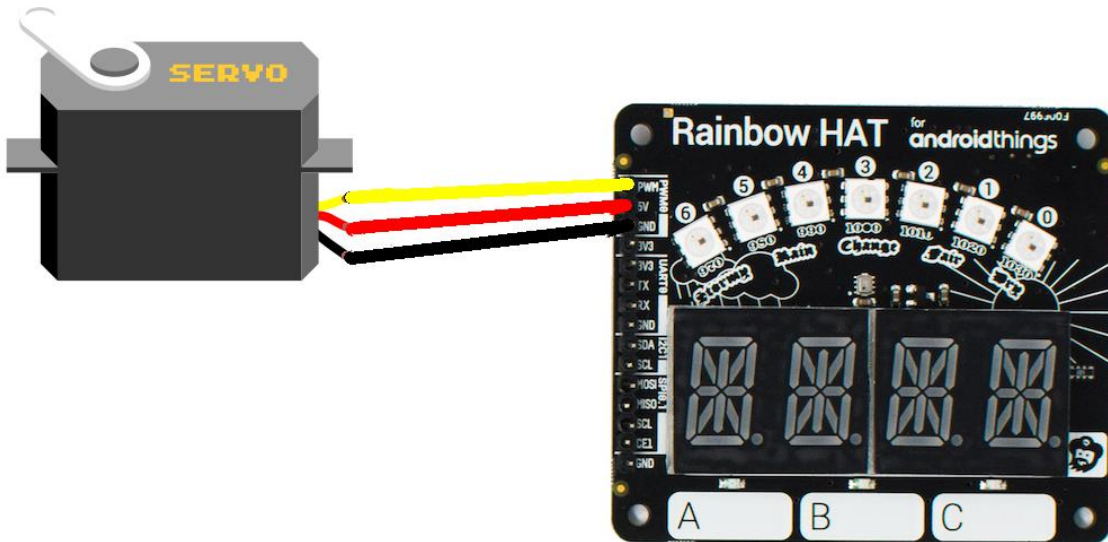
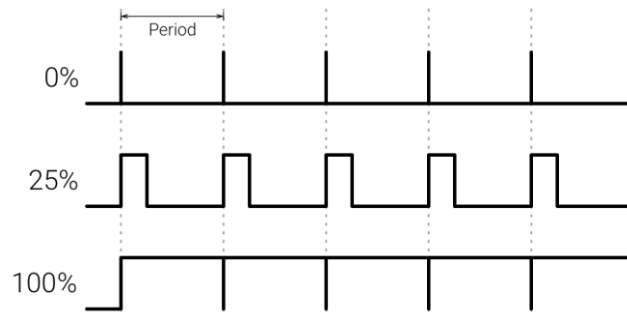
Raindrop

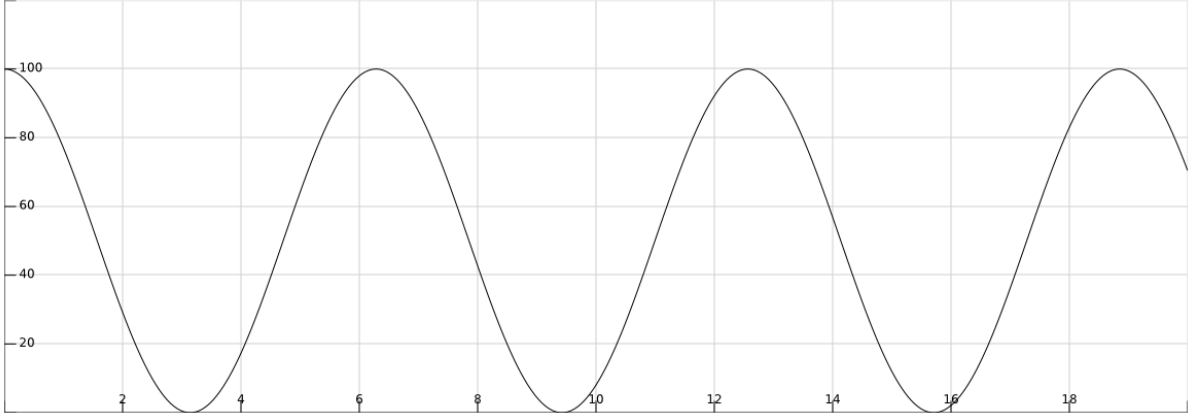
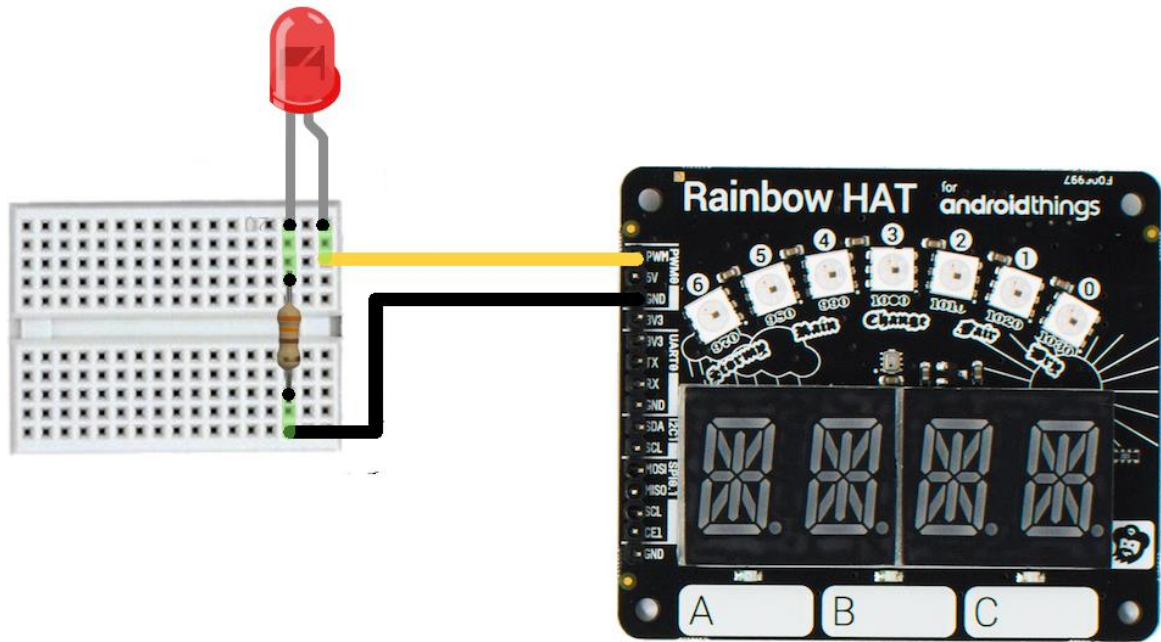




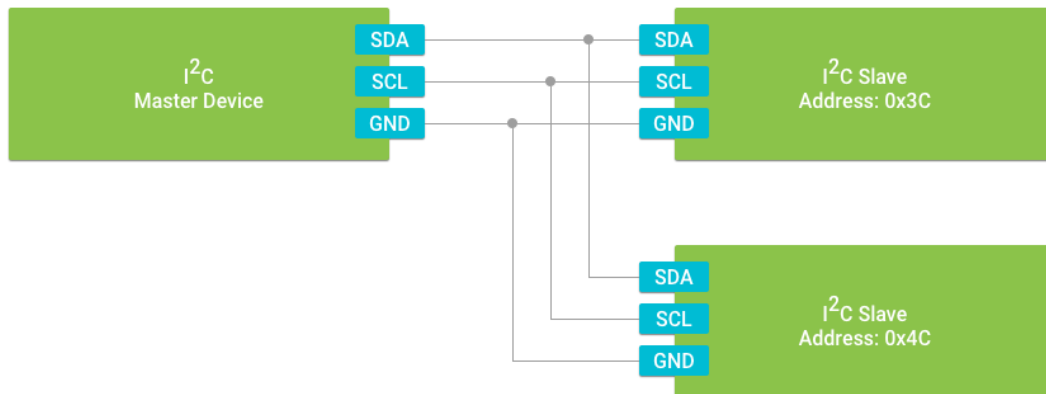


Chapter 4: PWM - Buzzers, Servos, and Analog Output

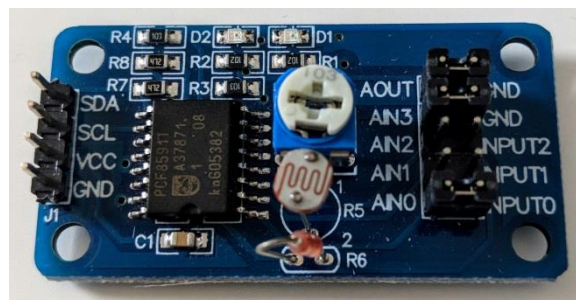




Chapter 5: I2C - Communicating with Other Circuits



BYTE	BIT							
	7 (MSB)	6	5	4	3	2	1	0 (LSB)
I ² C slave address	L	H	L	L	A2	A1	A0	R/W



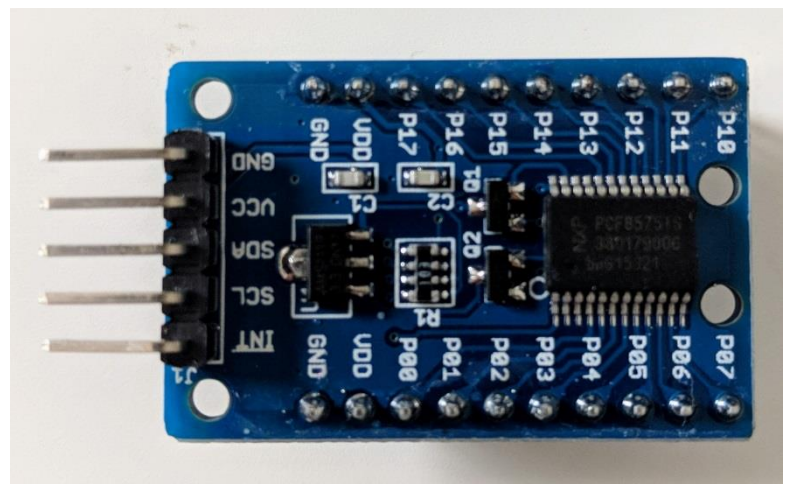
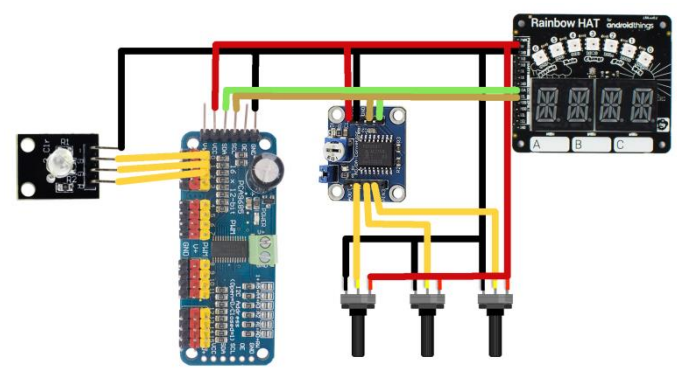
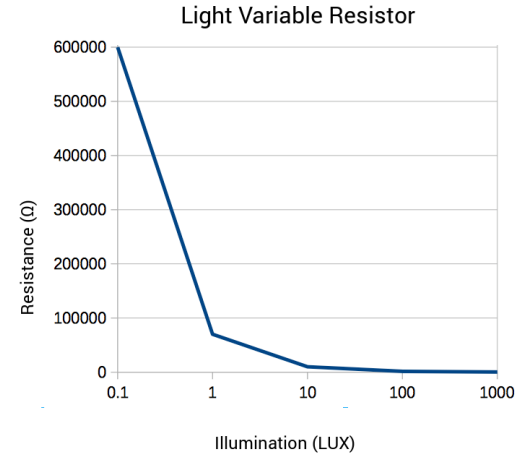
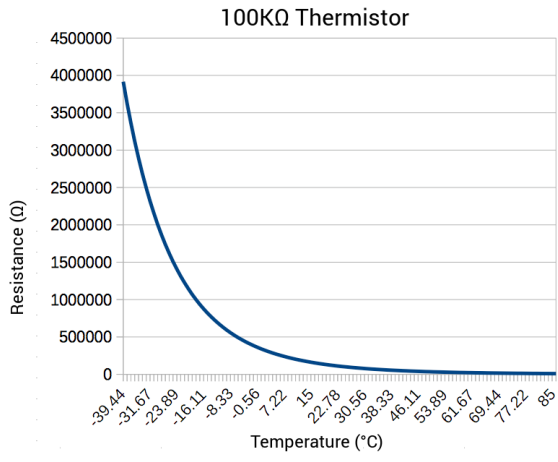
Potentiometers (various models)

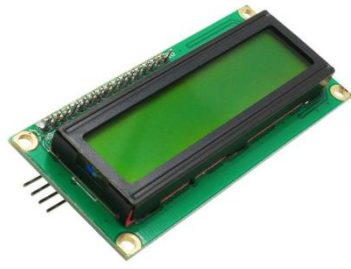


Moisture sensor



Light Variable Resistor





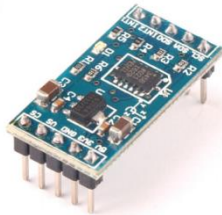
2x16 characters LED Screen



128x64 pixels OLED Screen



HMC5883L
Magnetometer



ADXL345
Accelerometer

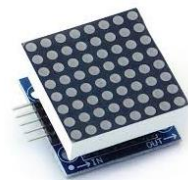
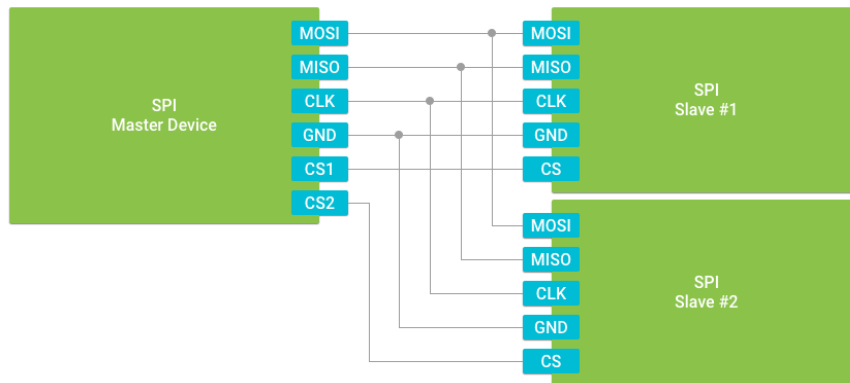


MMA7660FC
Accelerometer



MPU6050
Accelerometer + Gyroscope

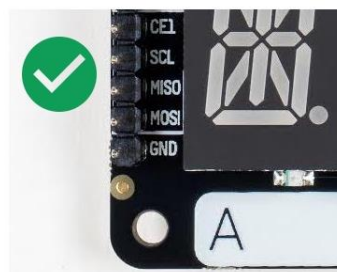
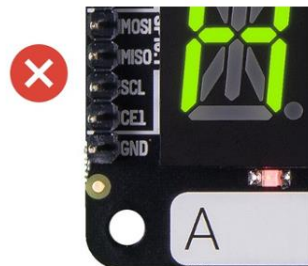
Chapter 6: SPI - Faster Bidirectional Communication

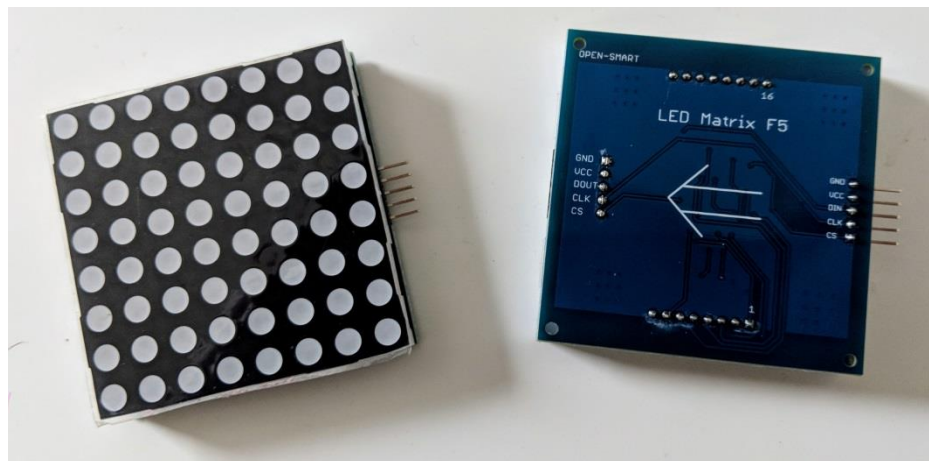
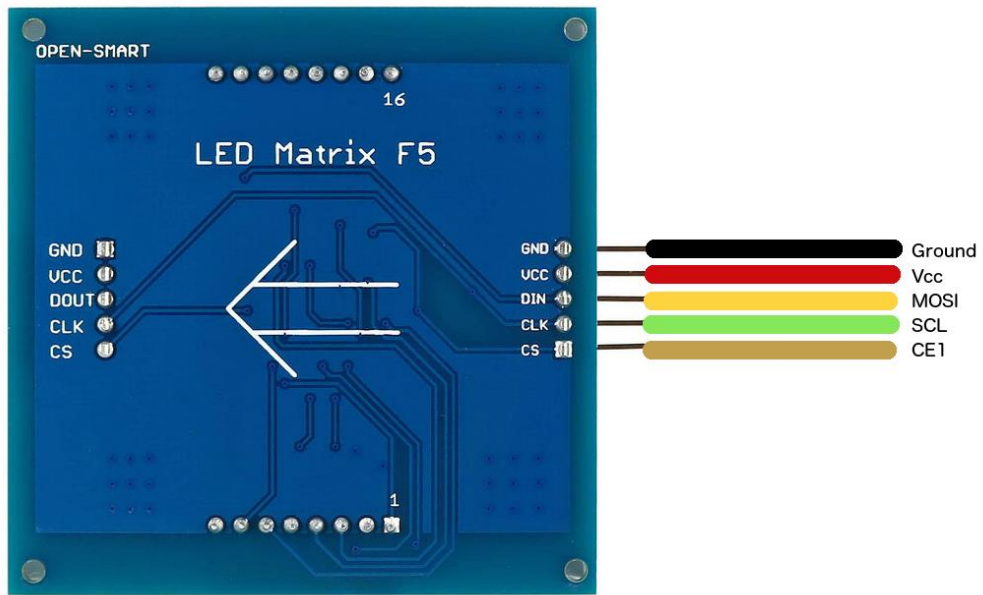


LED matrix

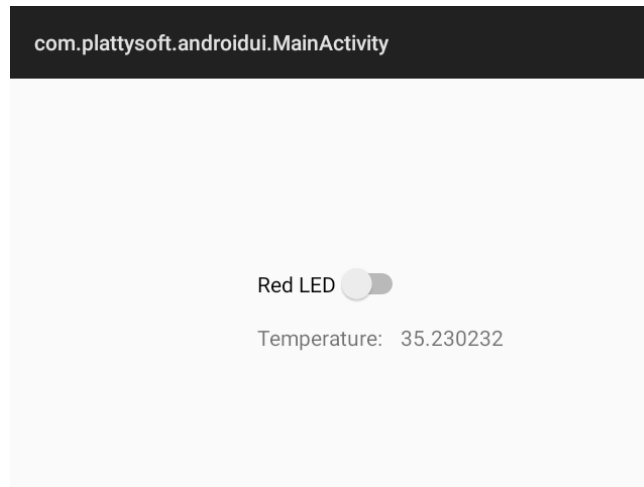


OLED display





Chapter 7: The Real Power of Android Things



METHOD: GET | SCHEME // HOST [:" PORT] [PATH [?" QUERY]] | length: 37 bytes

URL: http://192.168.42.38:8080/temperature

HEADERS: + Add header | Add authorization

BODY: Payloads are disallowed for GET request. Click here to open an entity-body editor or change a method definition in settings.

Response | Cache Detected - Elapsed Time: 24ms

200 OK

HEADERS: Content-Type: text/html, Date: Mon, 11 Jun 2018 22:34:02 GMT -34s, Connection: keep-alive, Content-Encoding: gzip, Transfer-Encoding: chunked

BODY: {"temperature":34.346031188964844}

Top | Bottom | 2Request | Copy | Download

Project Overview | Database

Cloud Firestore Beta
The next generation of the Real-time Database with more powerful queries and automatic scaling. [Learn more](#)

Realtime Database
Store and sync data in real time across all connected clients. [Learn more](#)

GET STARTED | GET STARTED

Not sure which to choose? [View comparison](#)

https://androidthingsquickstartguide.firebaseio.com/

Your security rules are defined as public, so anyone can steal, modify, or delete data in your database [LEARN MORE](#) [DISMISS](#)

```
androidthingsquickstartguide
├── redLED: false
└── temperature: 41.520992279052734
```