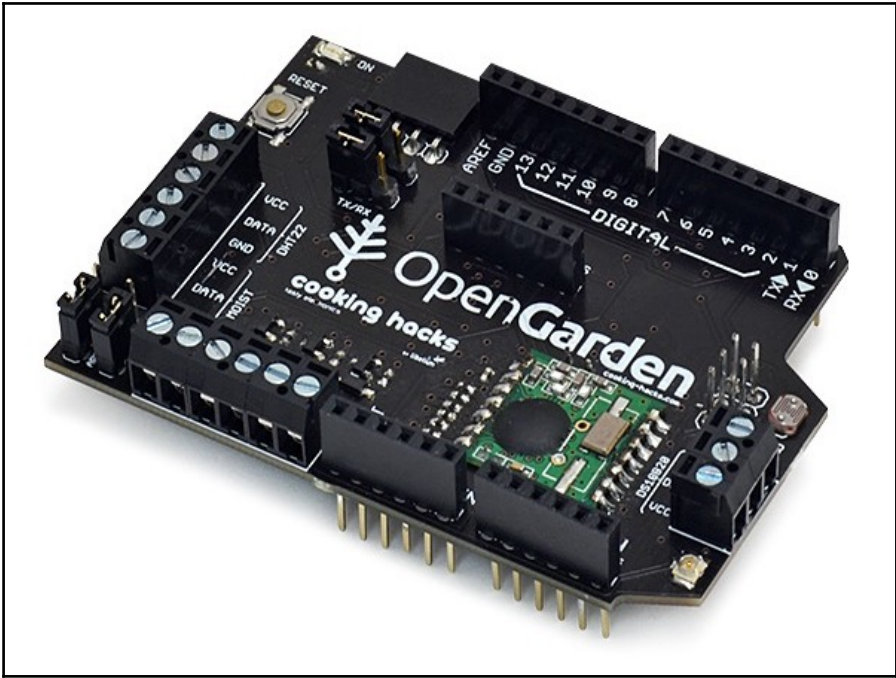
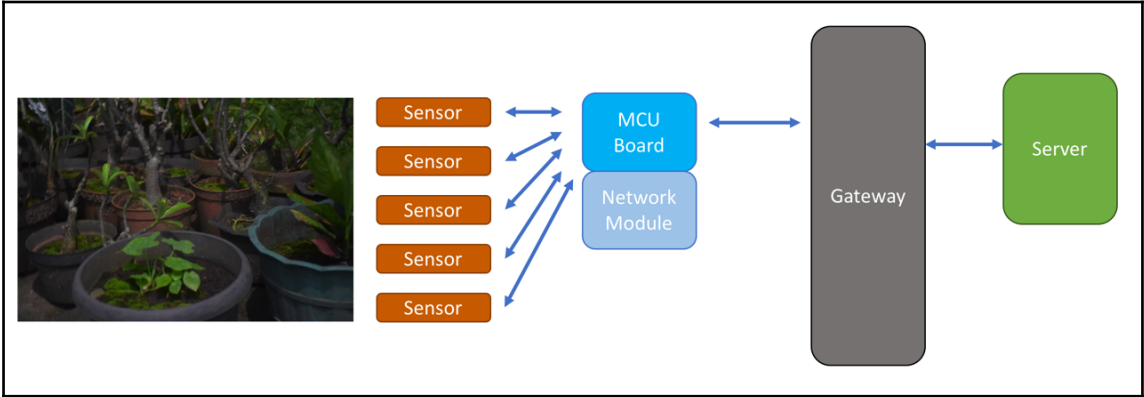
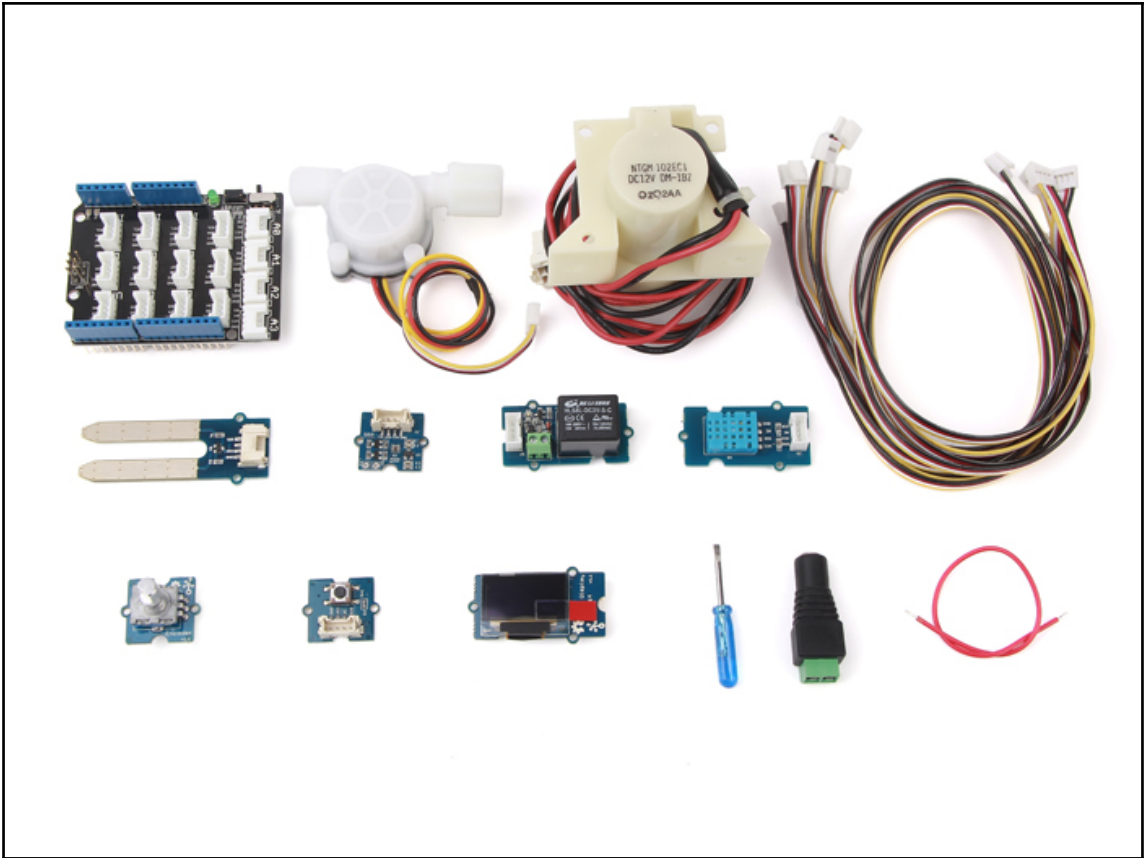
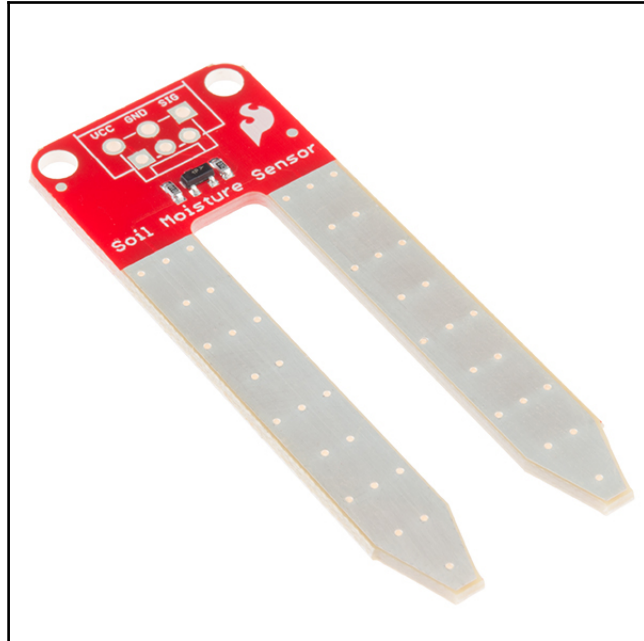
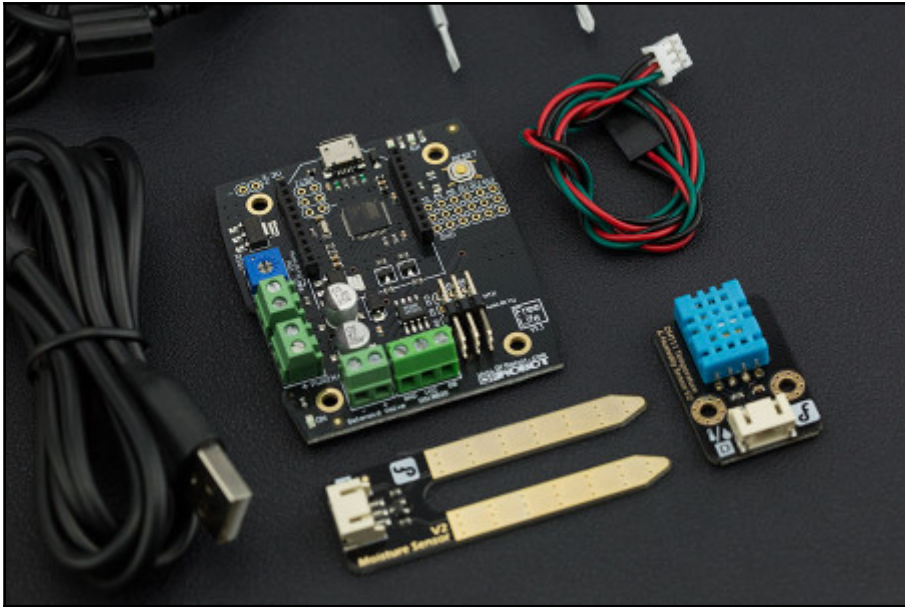


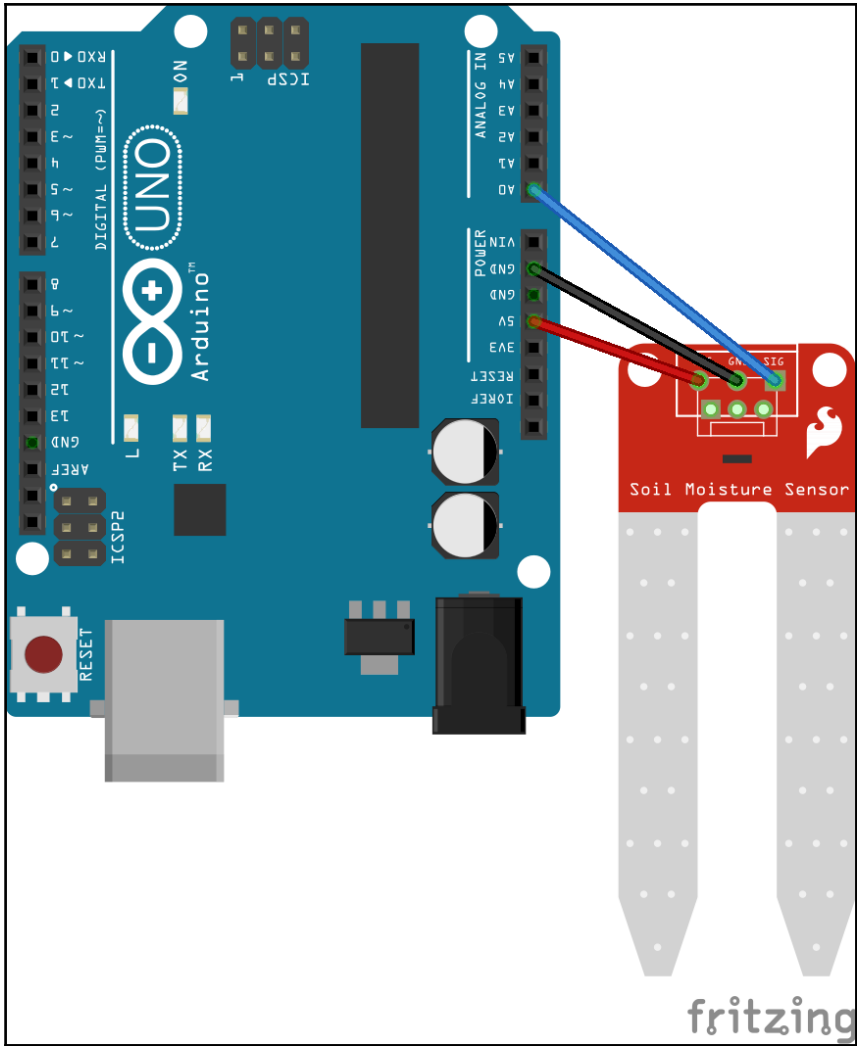
Chapter 1: A Simple Smart Gardening System

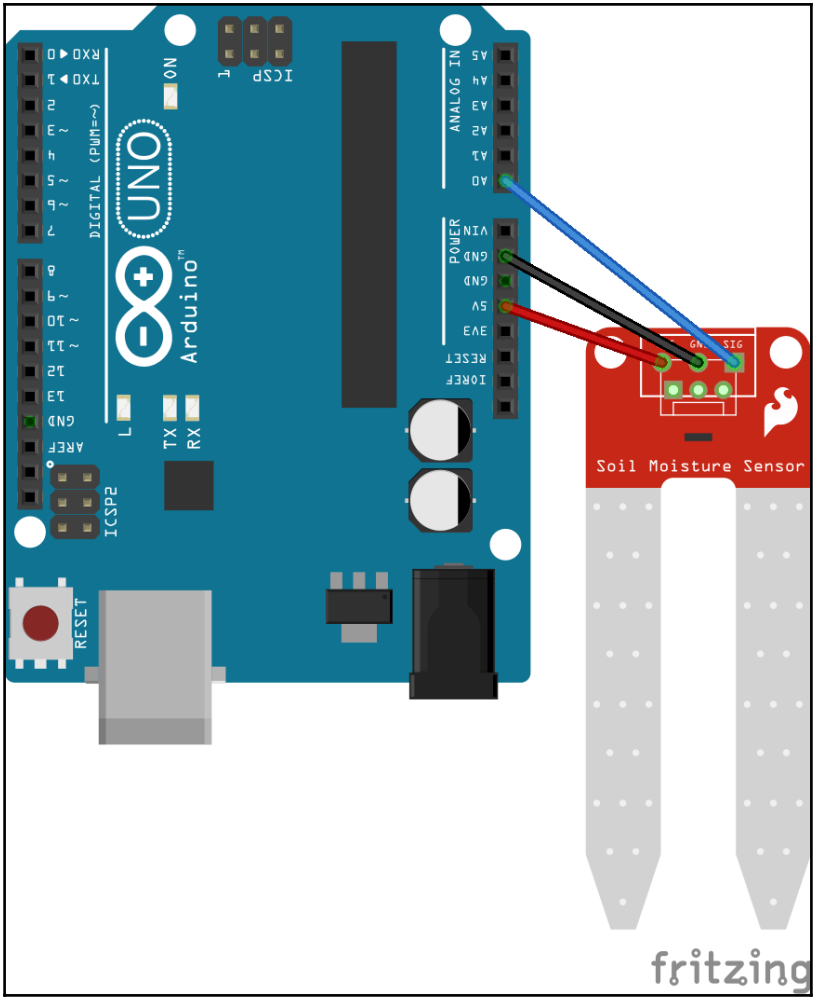


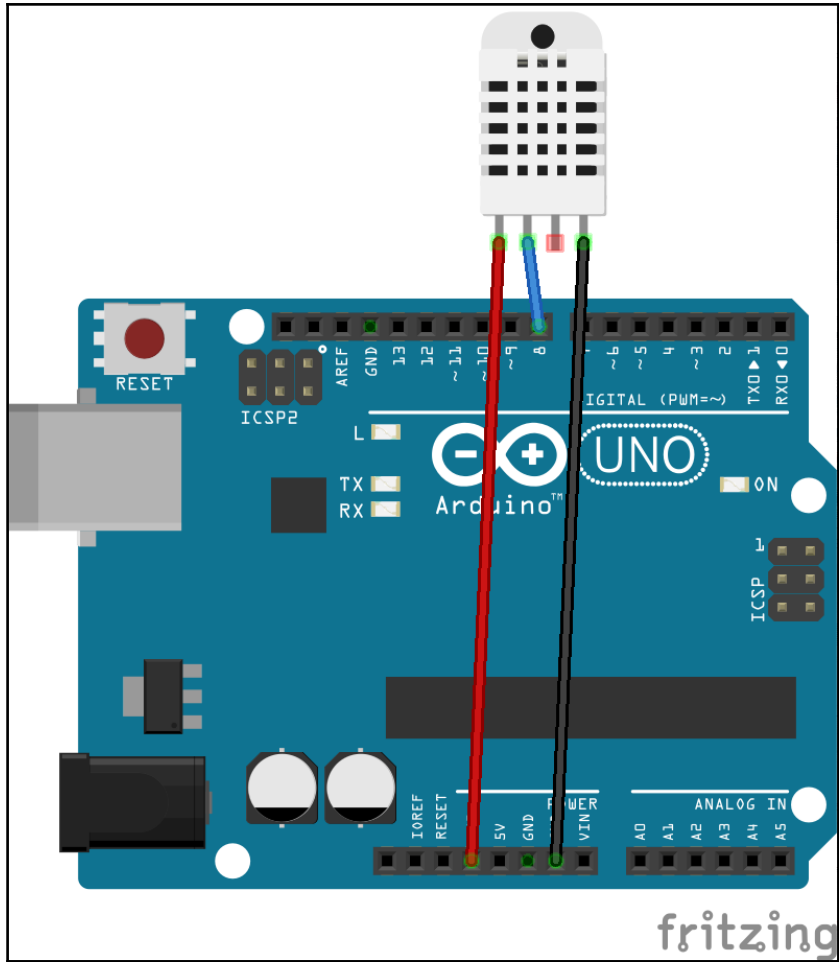


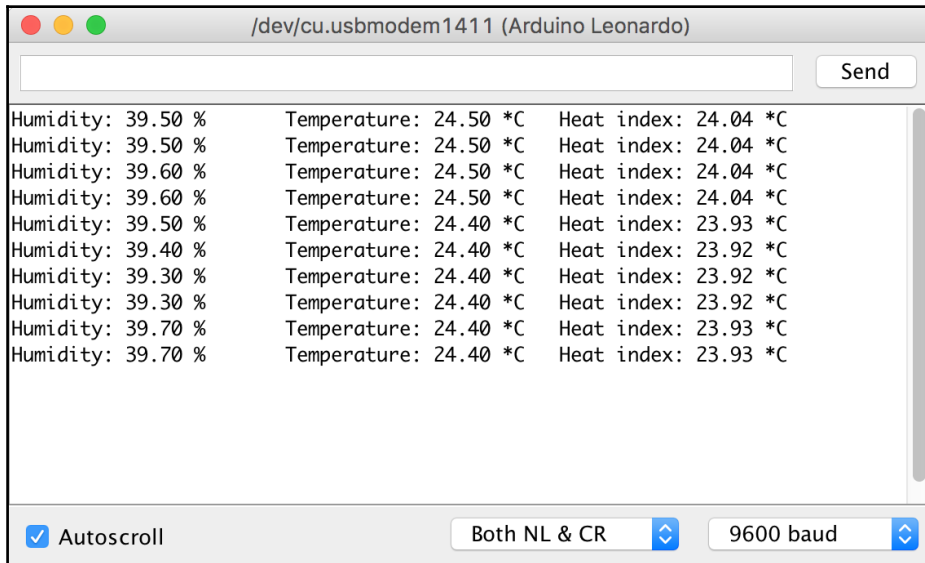
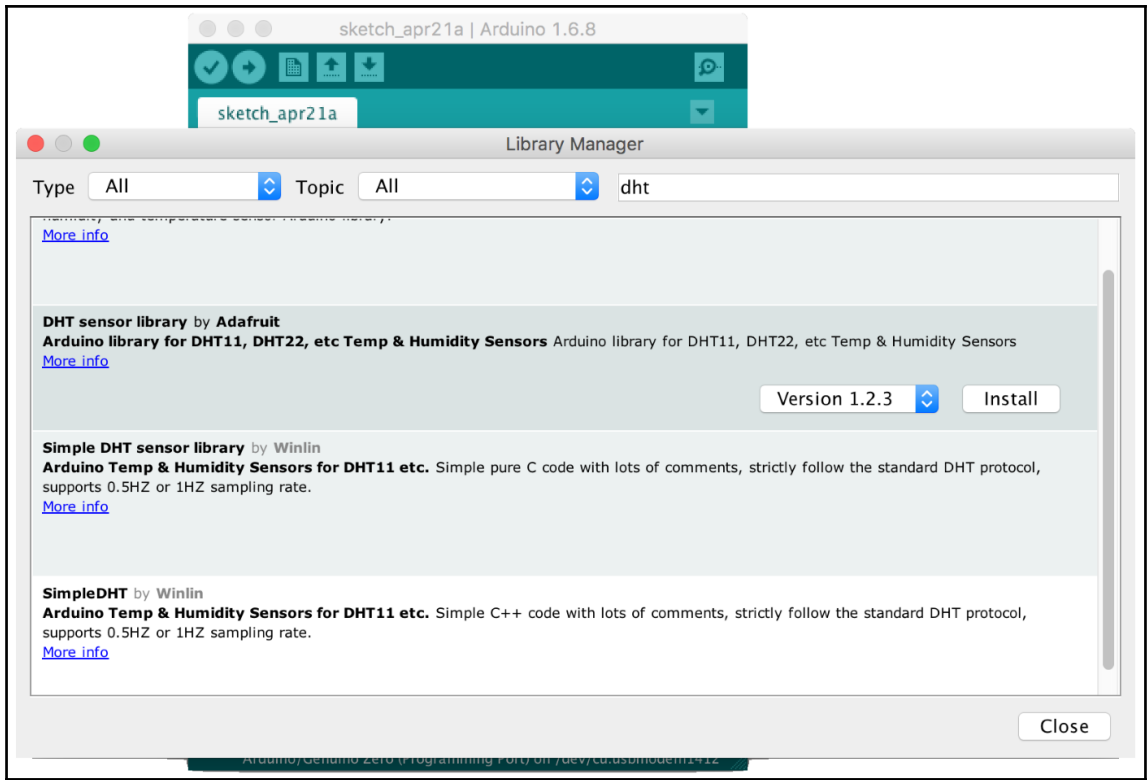


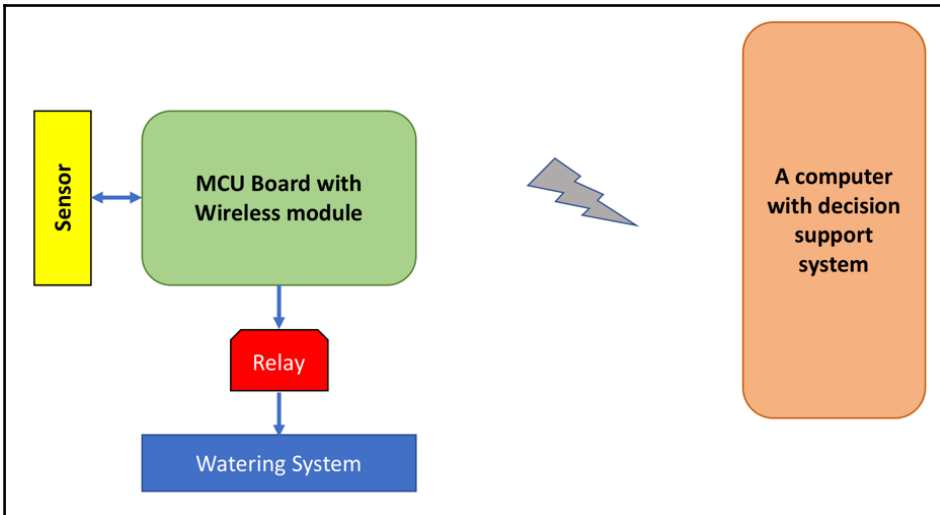


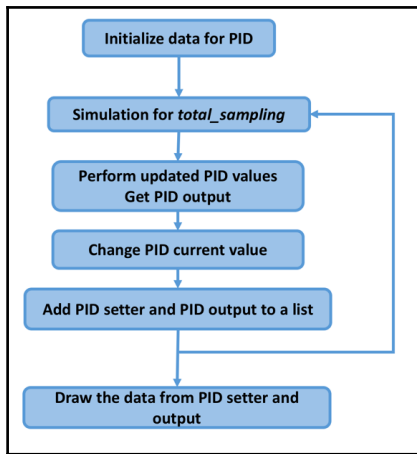
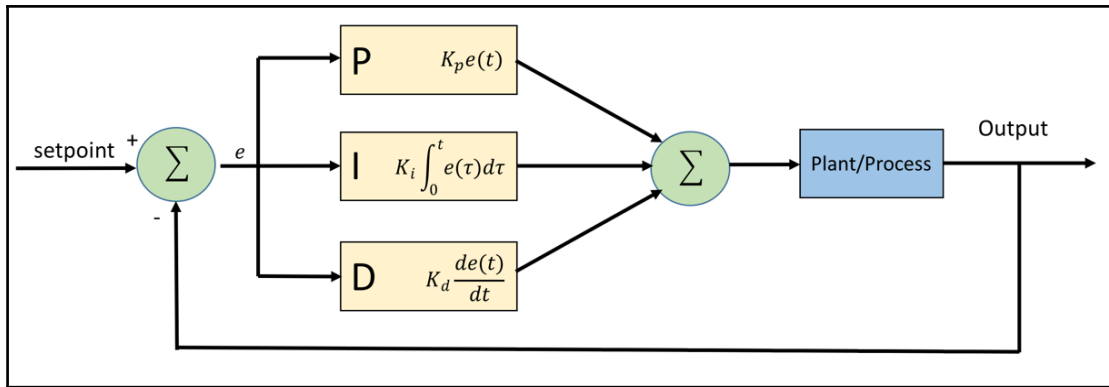


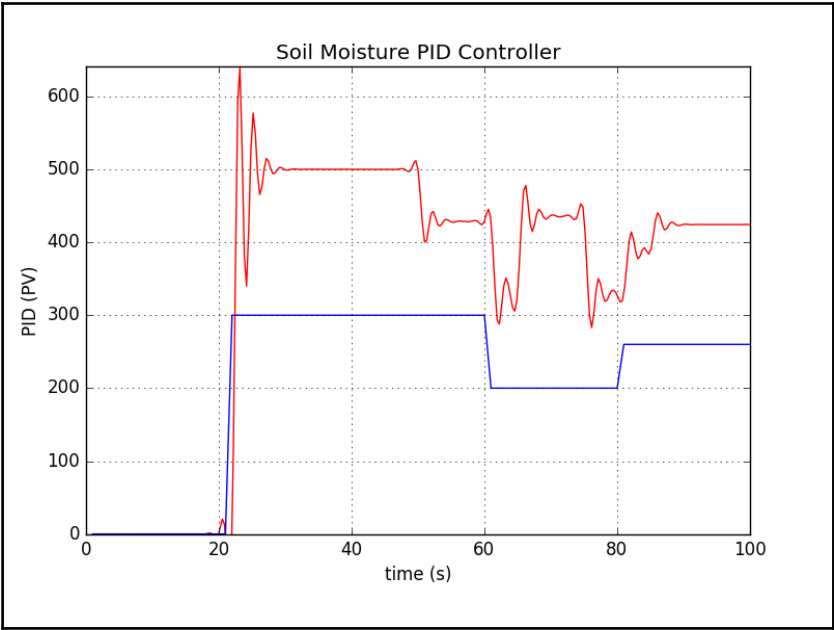
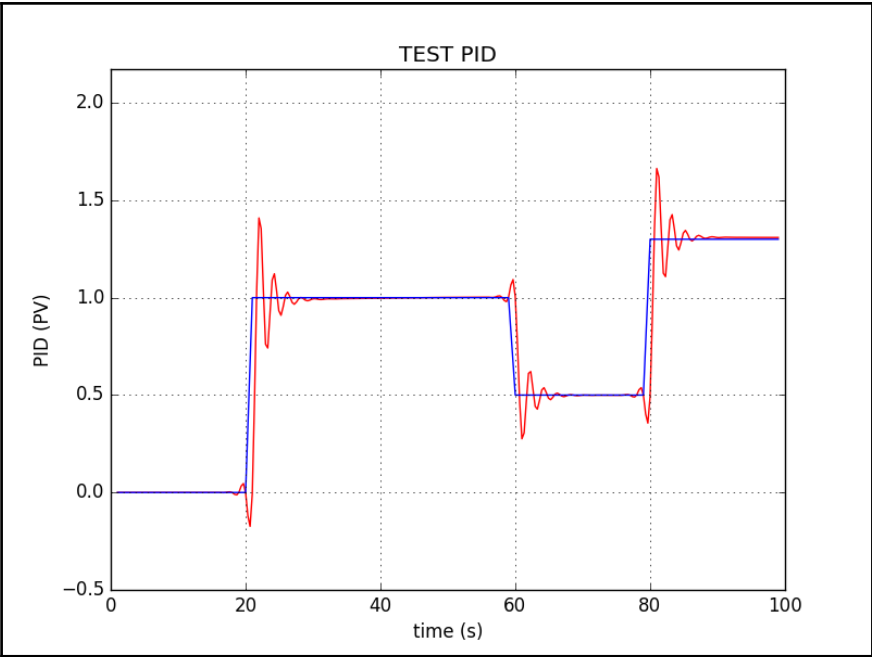




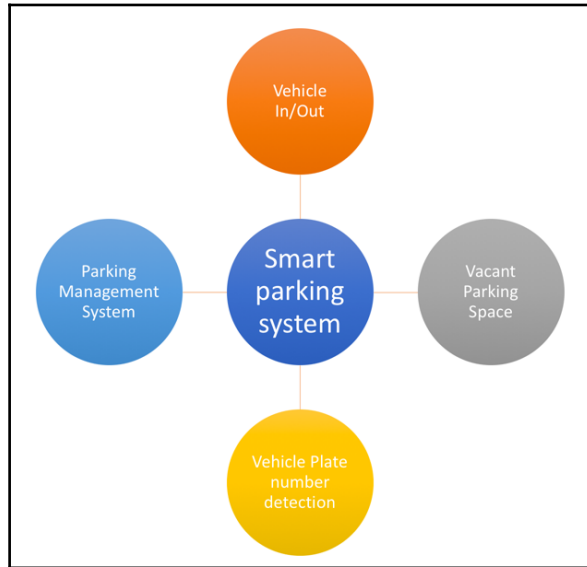


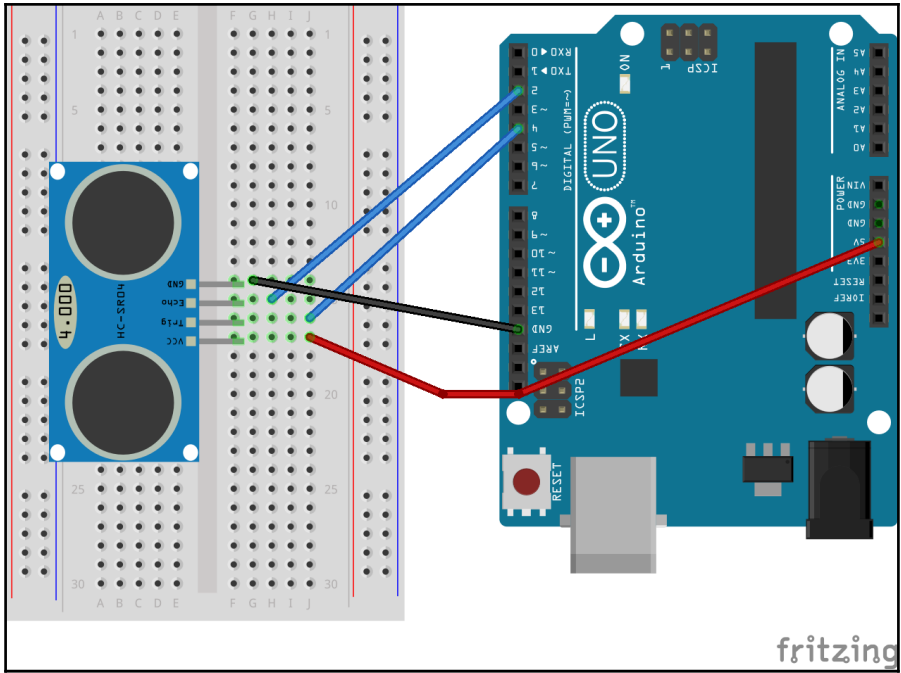




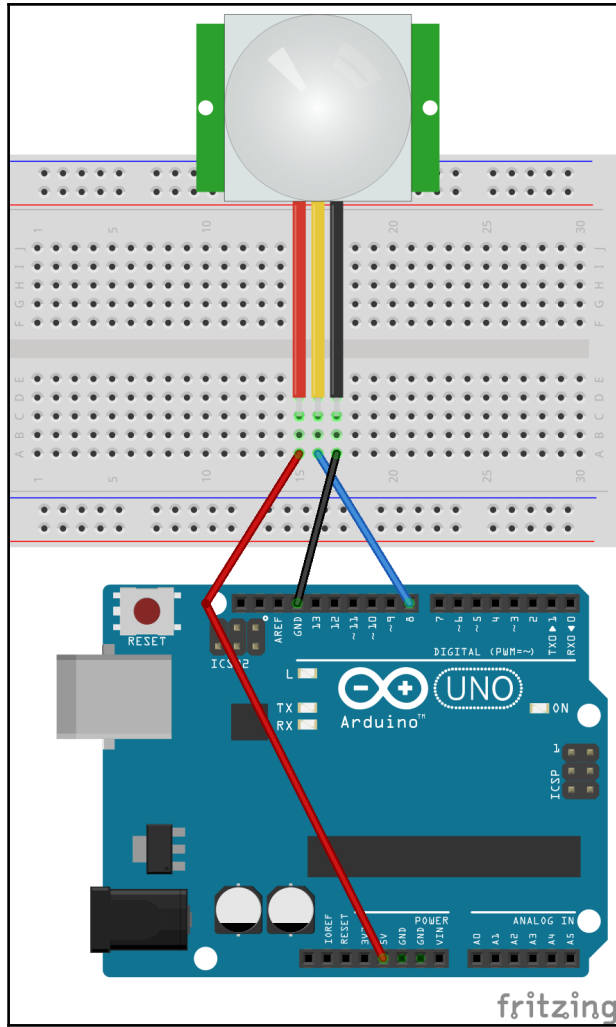


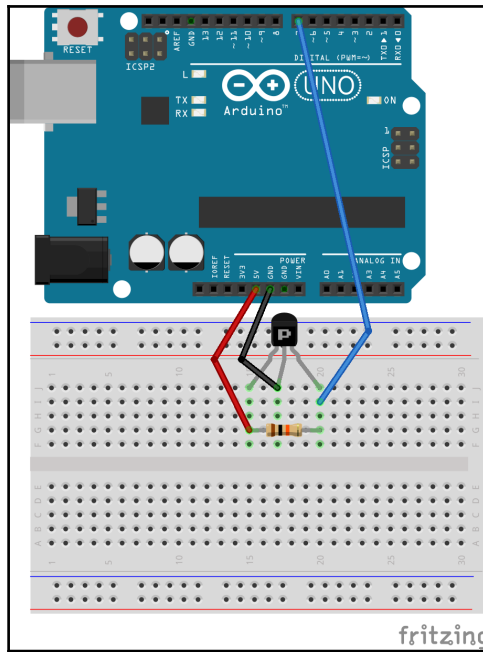
Chapter 2: A Smart Parking System

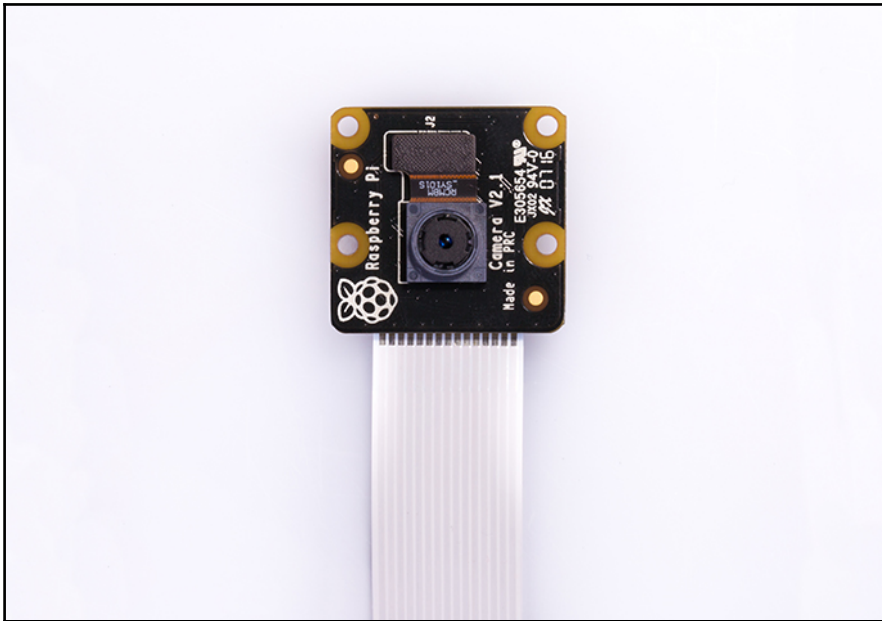
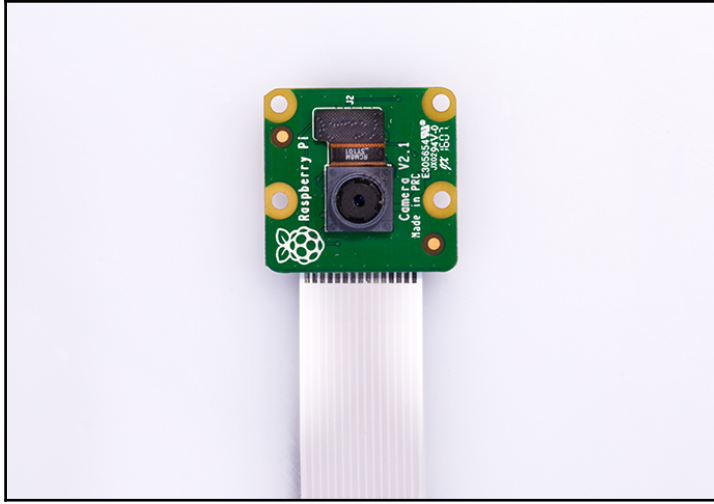










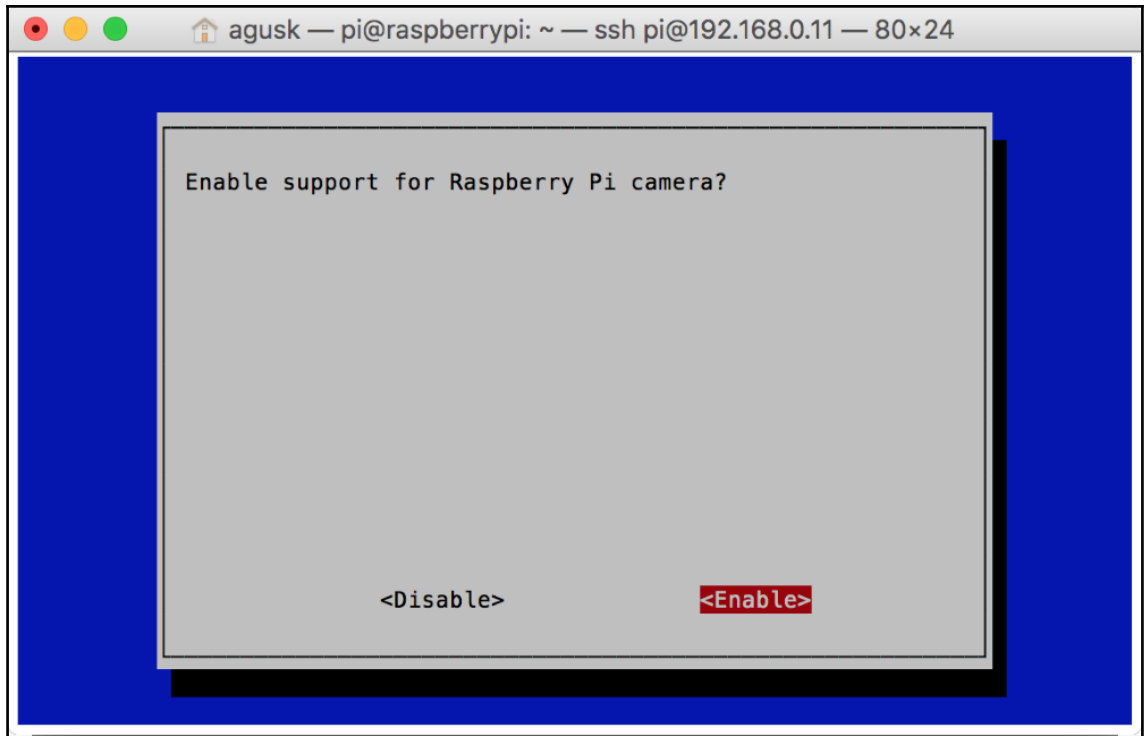


```
agusk — pi@raspberrypi: ~ — ssh pi@192.168.0.11 — 80x24

Raspberry Pi Software Configuration Tool (raspi-config)

1 Expand Filesystem          Ensures that all of the SD card s
2 Change User Password      Change password for the default u
3 Boot Options              Choose whether to boot into a des
4 Wait for Network at Boot  Choose whether to wait for networ
5 Internationalisation Options Set up language and regional sett
6 Enable Camera             Enable this Pi to work with the R
7 Add to Rastrack           Add this Pi to the online Raspber
8 Overclock                 Configure overclocking for your P
9 Advanced Options          Configure advanced settings
0 About raspi-config        Information about this configurat

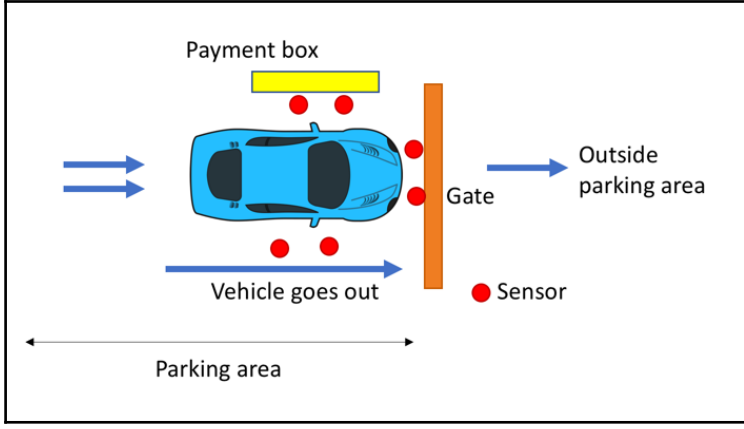
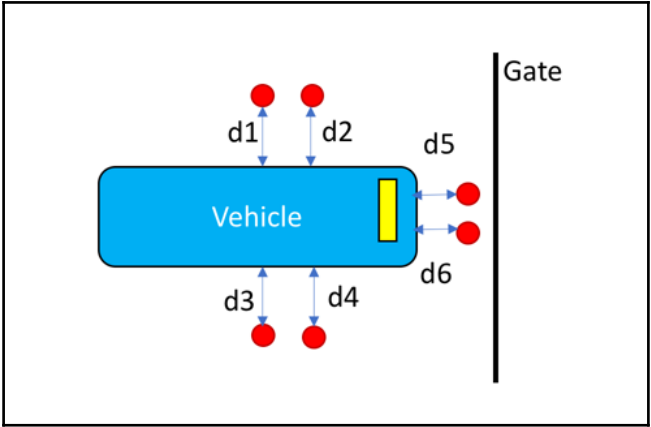
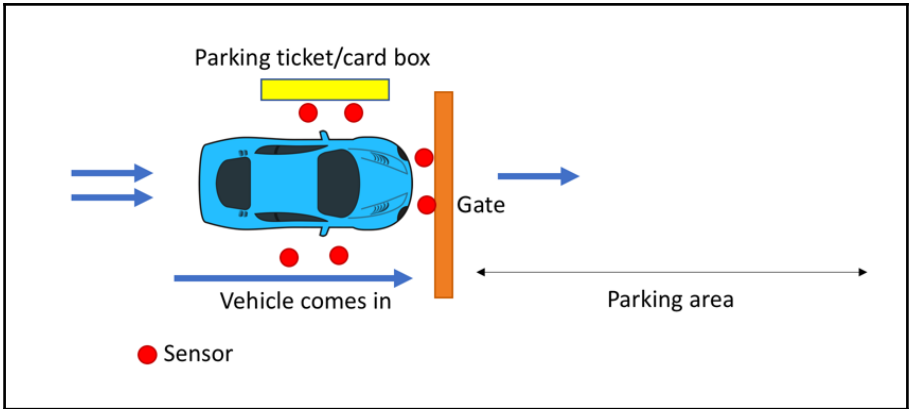
                <Select>                <Finish>
```



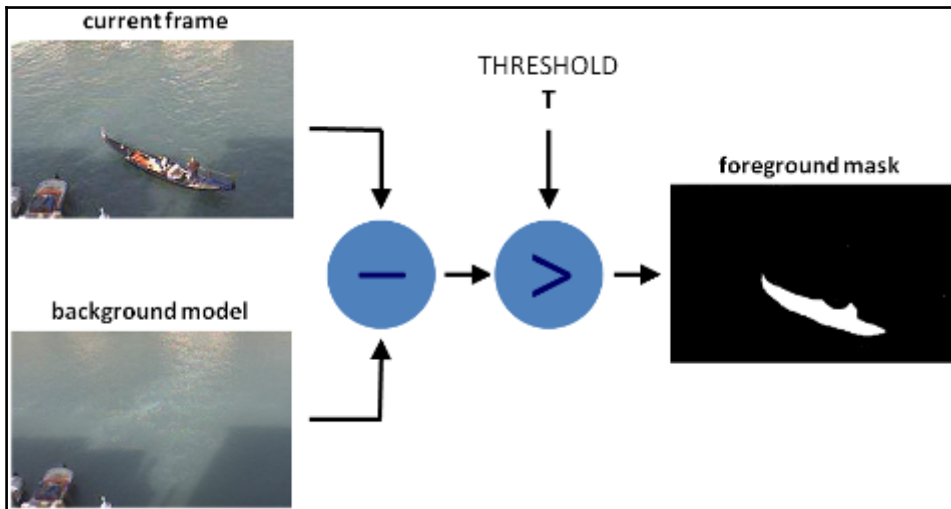


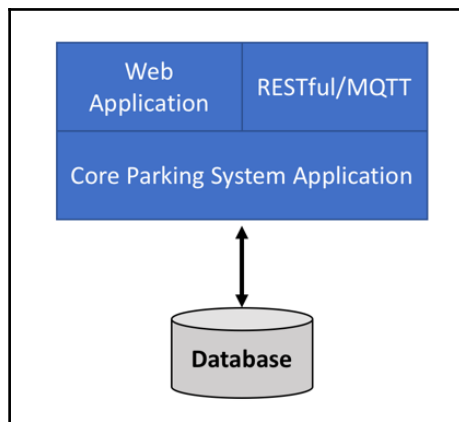
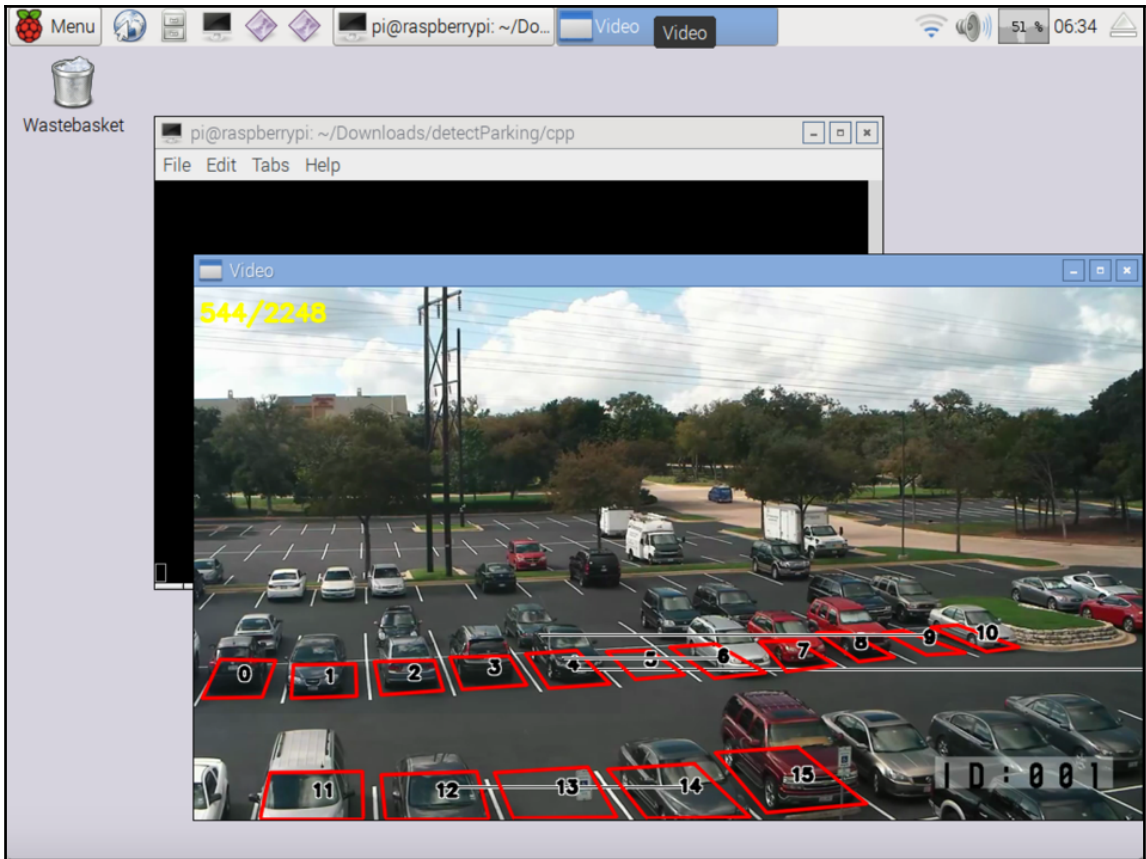
```
agusk — pi@raspberrypi: ~ — ssh pi@192.168.0.11 — 80×21
pi@raspberrypi:~ $ vcgencmd get_camera
supported=1 detected=1
pi@raspberrypi:~ $ █
```

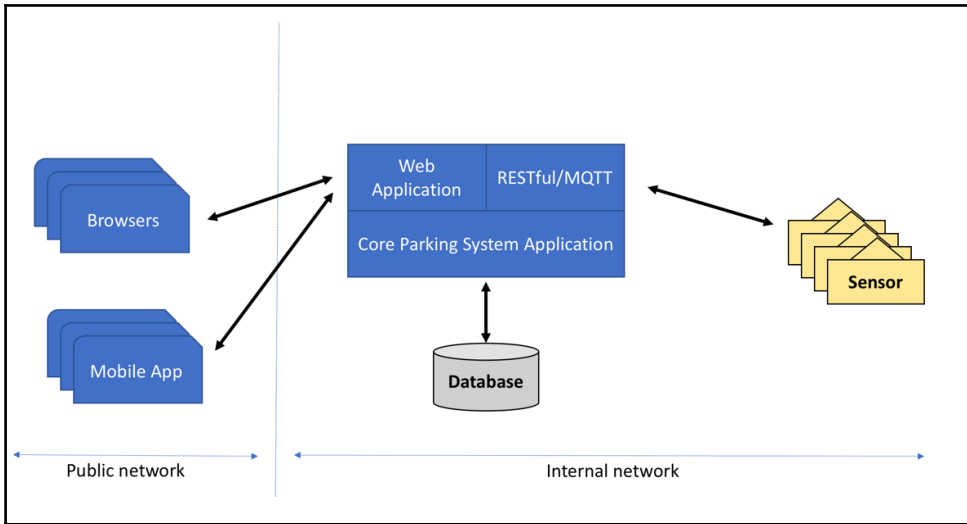
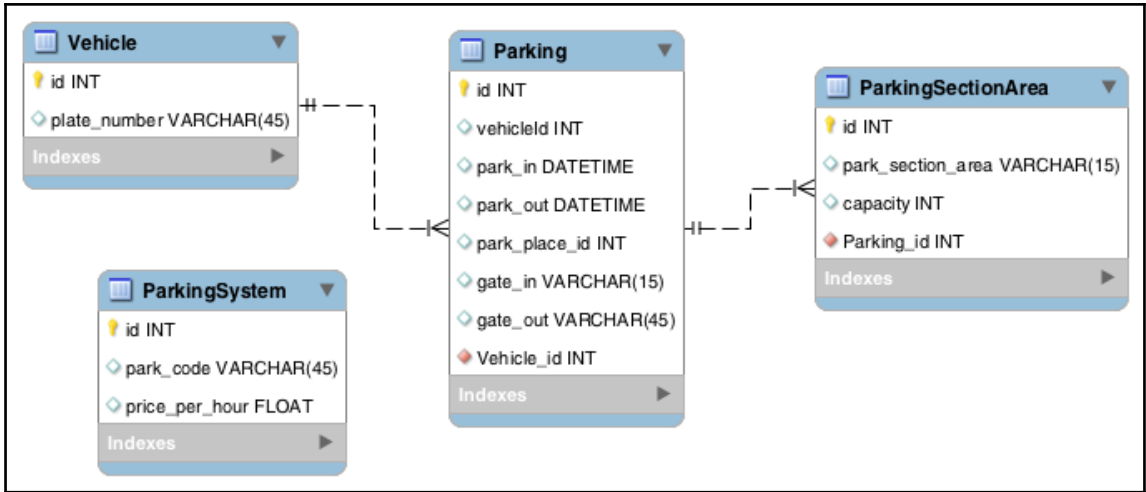


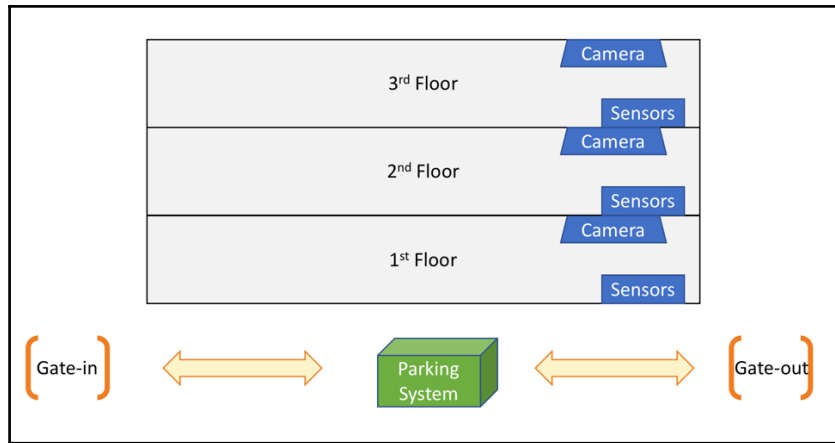




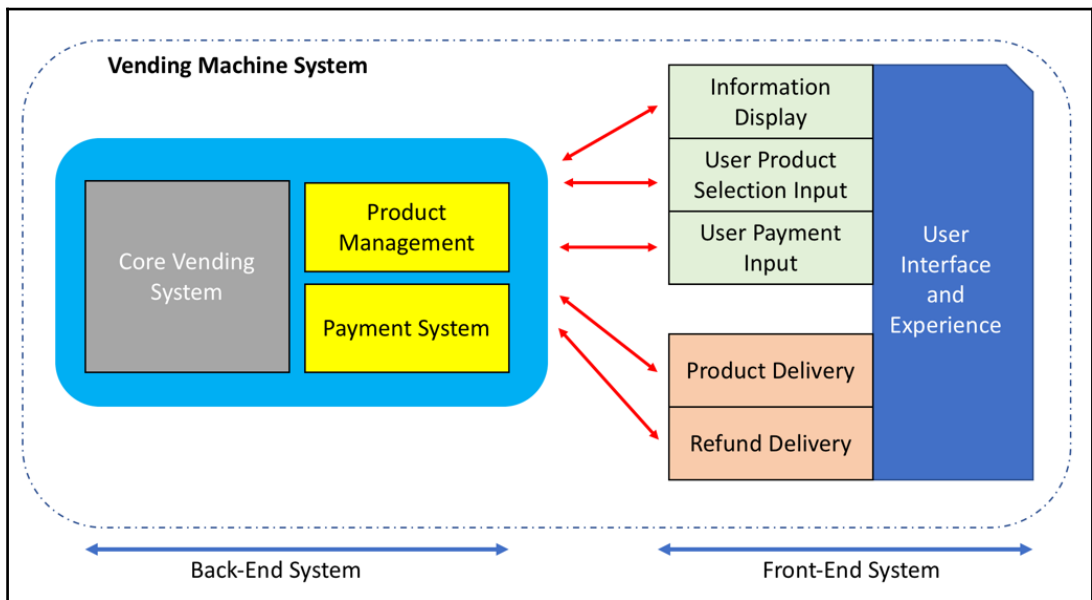




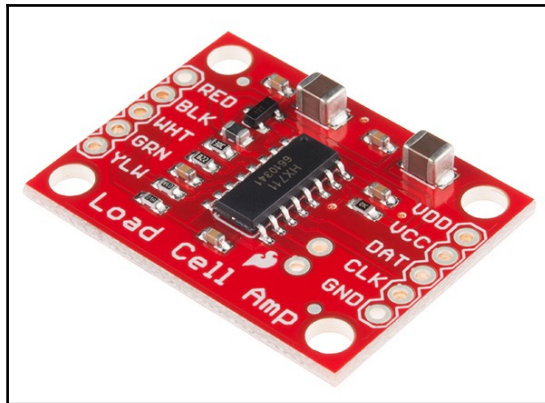
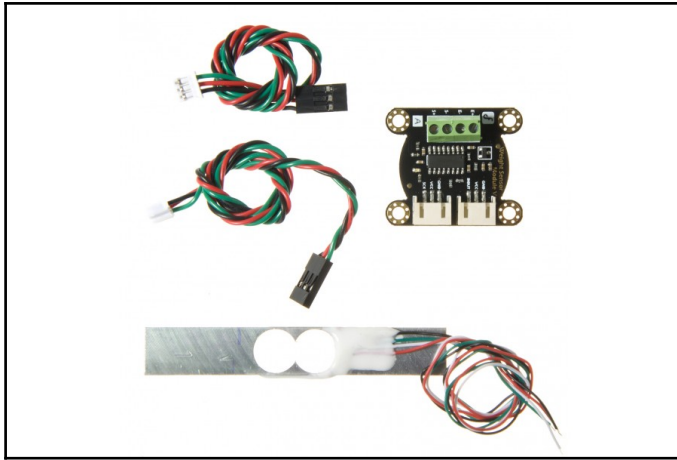


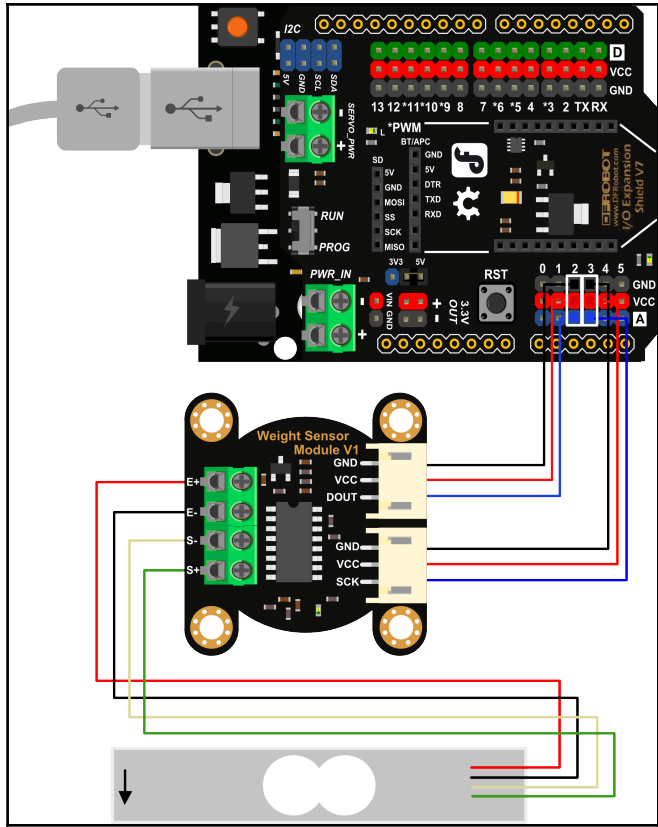


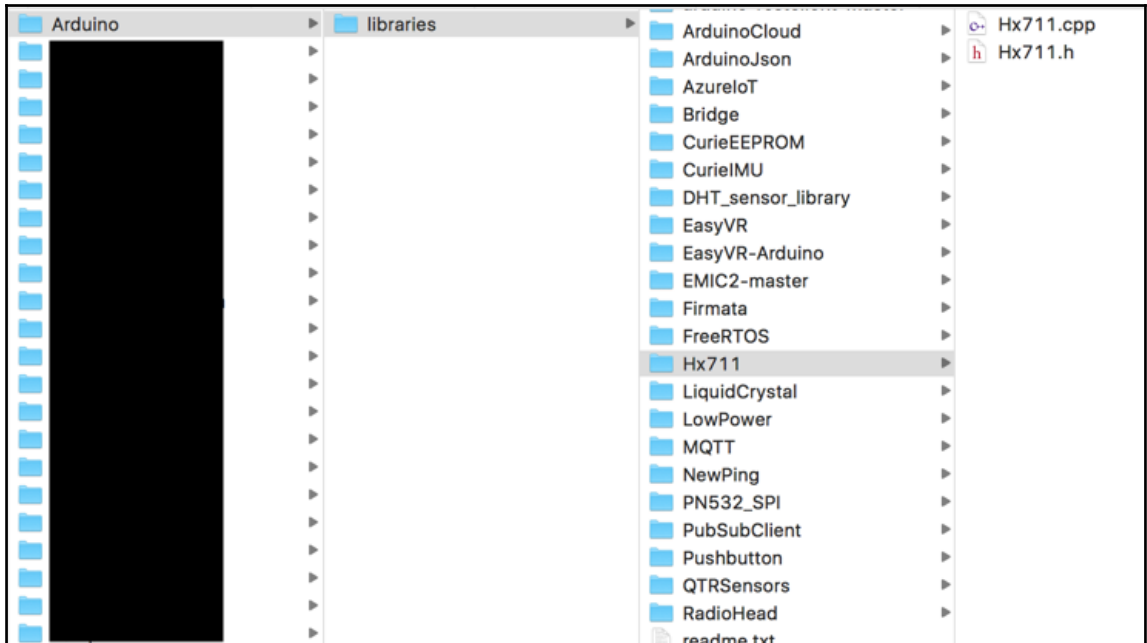
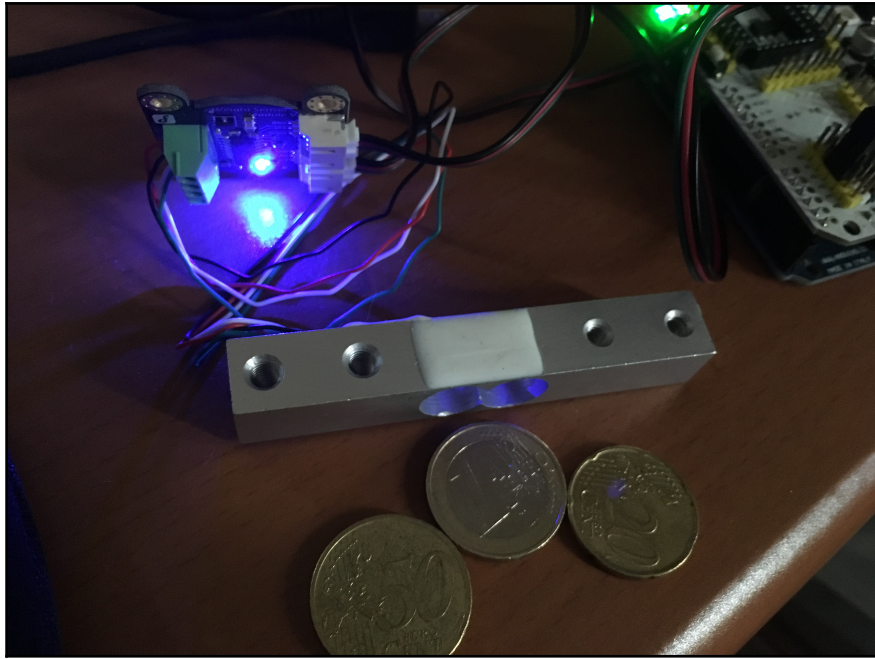
Chapter 3: Making Your Own Vending Machine

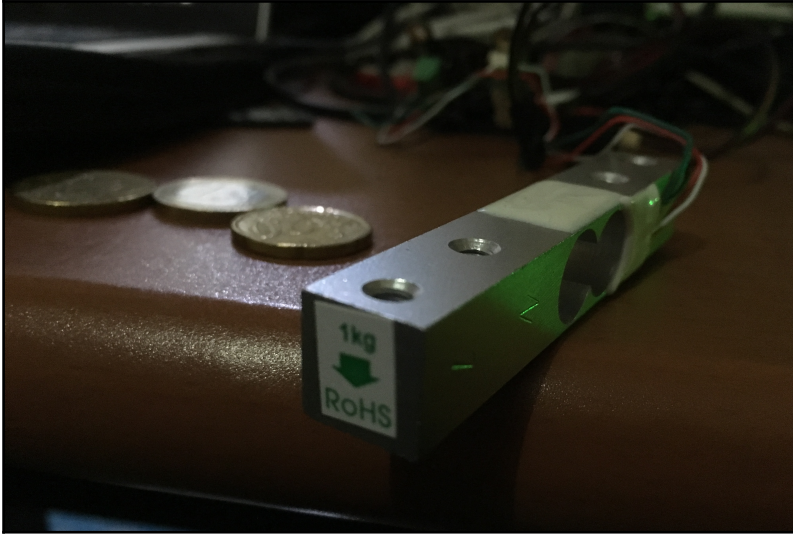










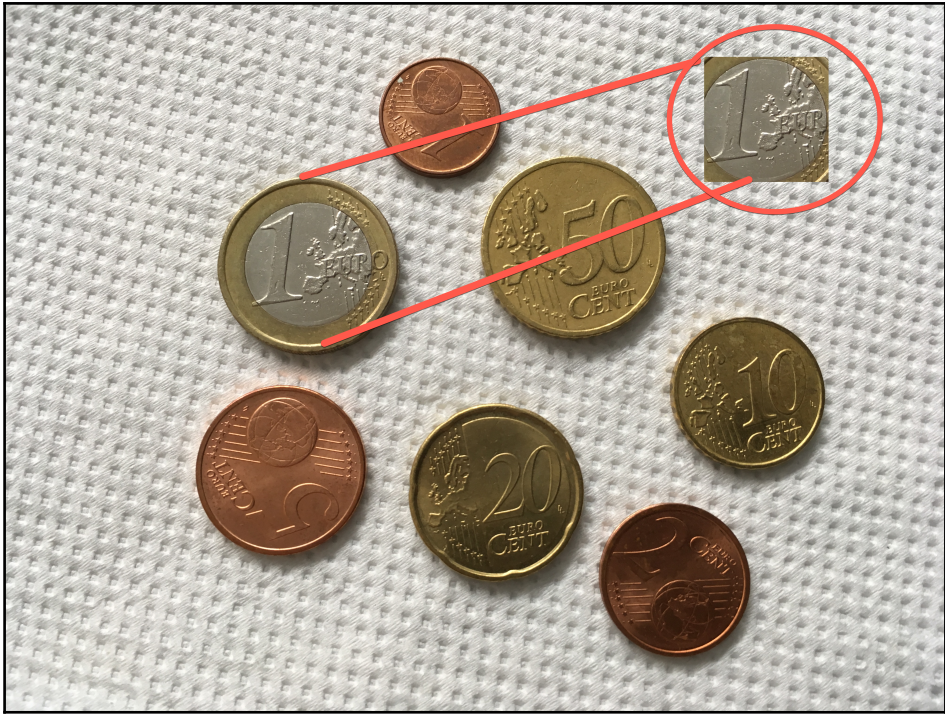


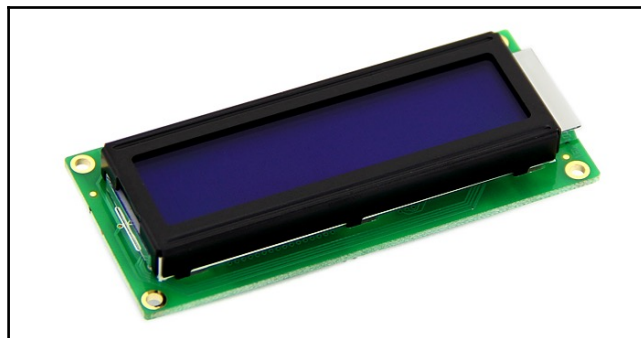
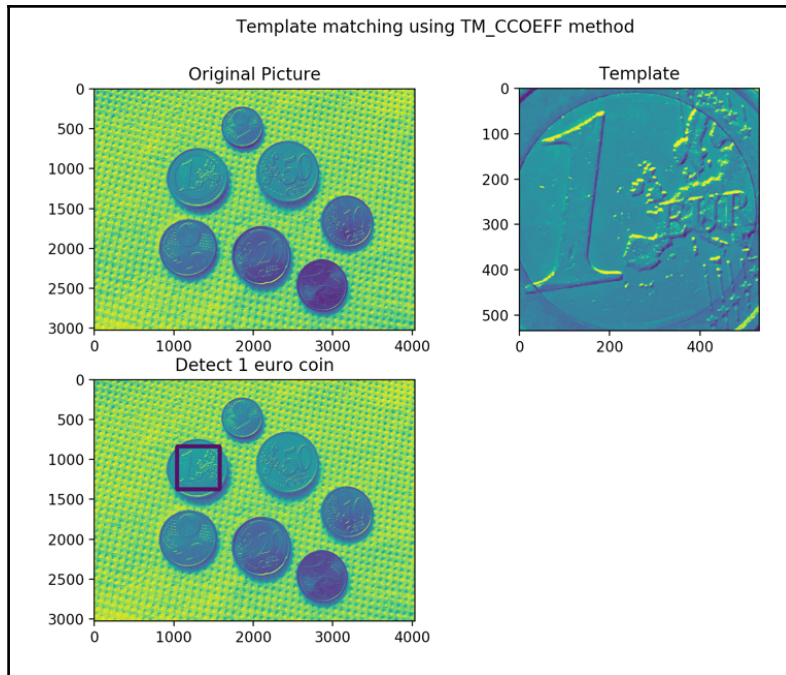
```

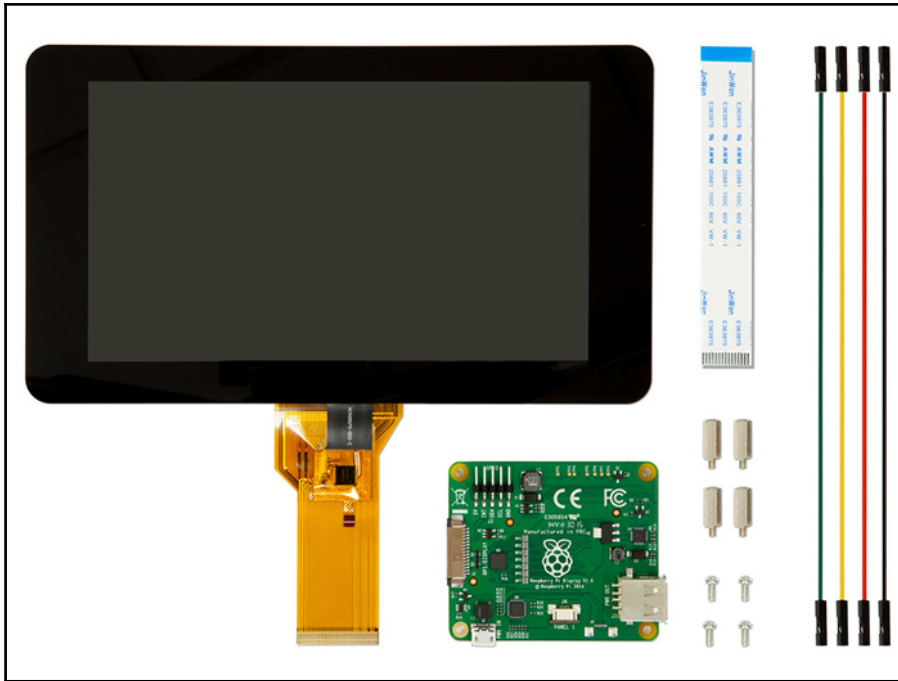
/dev/cu.usbmodem1421 (Arduino Leonardo)
Coin: 15.0 g
Coin: 9.5 g
Coin: -6.4 g
Coin: 25.1 g
Coin: 15.1 g
Coin: 16.0 g
Coin: 15.1 g
Coin: 15.1 g
Coin: 15.1 g
Coin: 15.1 g
Coin: 15.2 g
Coin: 15.2 g
Coin: 15.2 g
Coin: 15.2 g

```

Autoscroll Both NL & CR 9600 baud Clear output





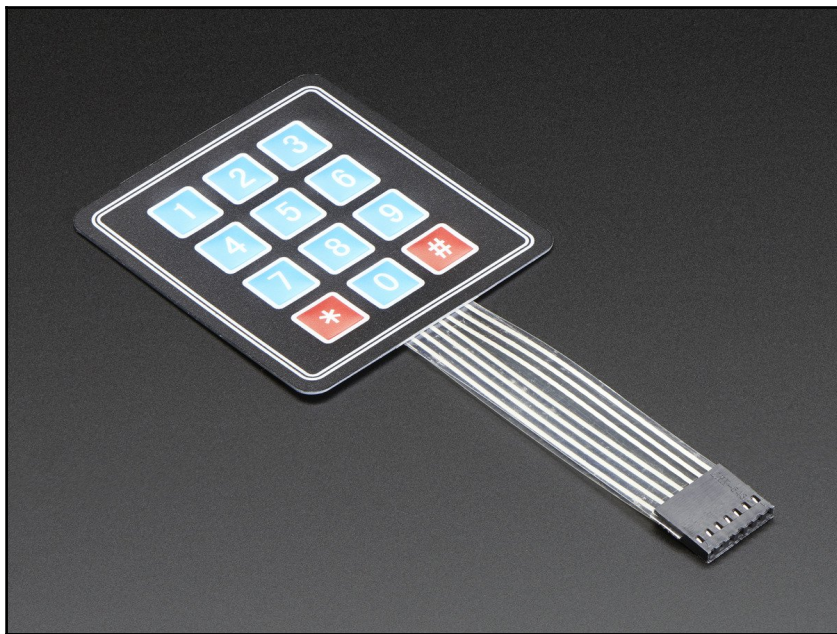
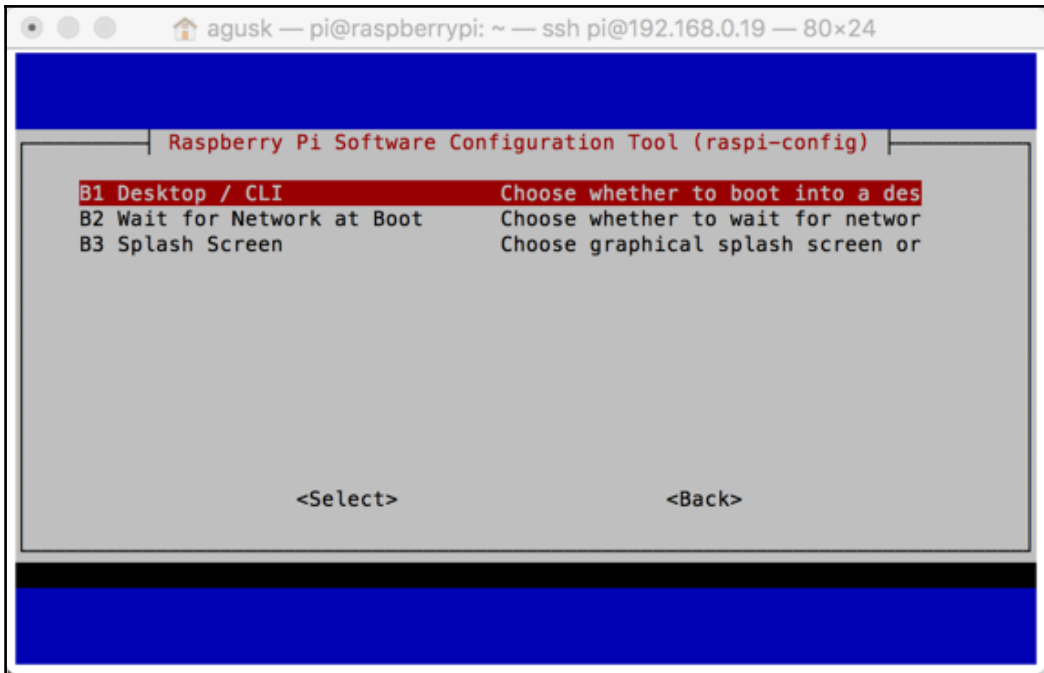


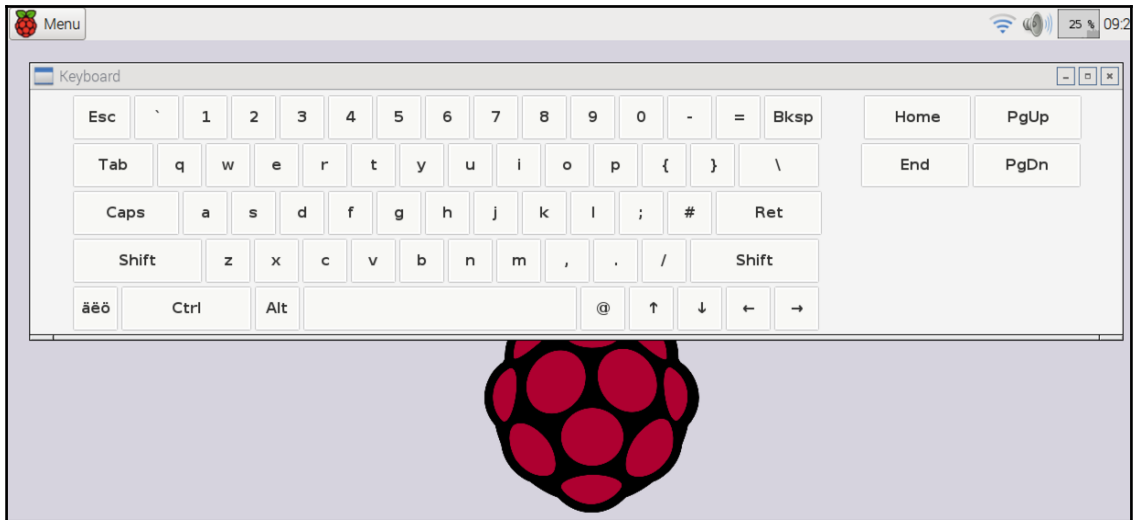
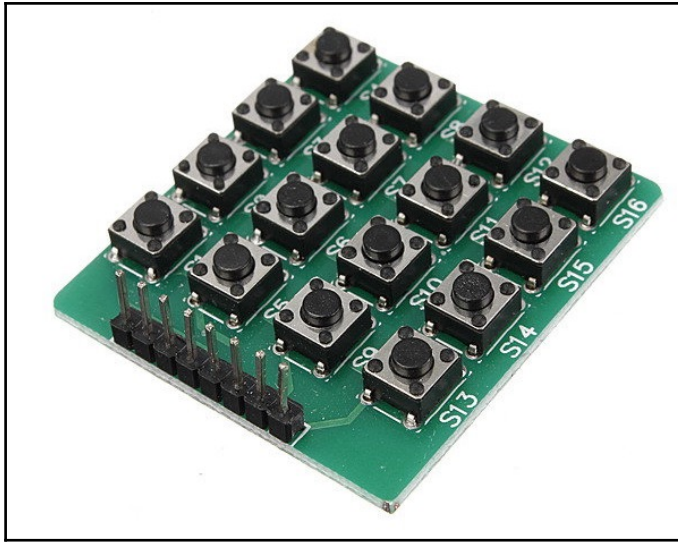
```
agusk — pi@raspberrypi: ~ — ssh pi@192.168.0.19 — 80x24
```

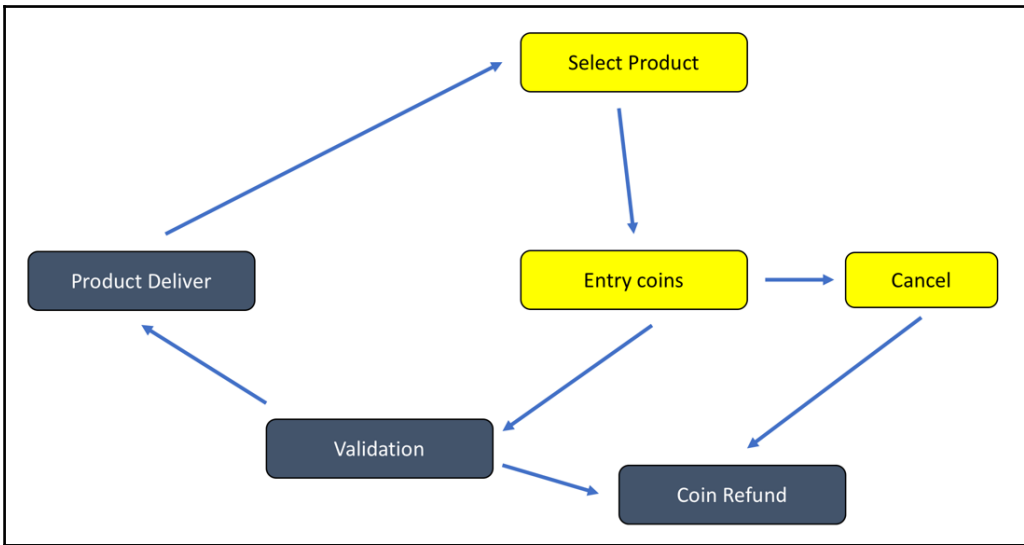
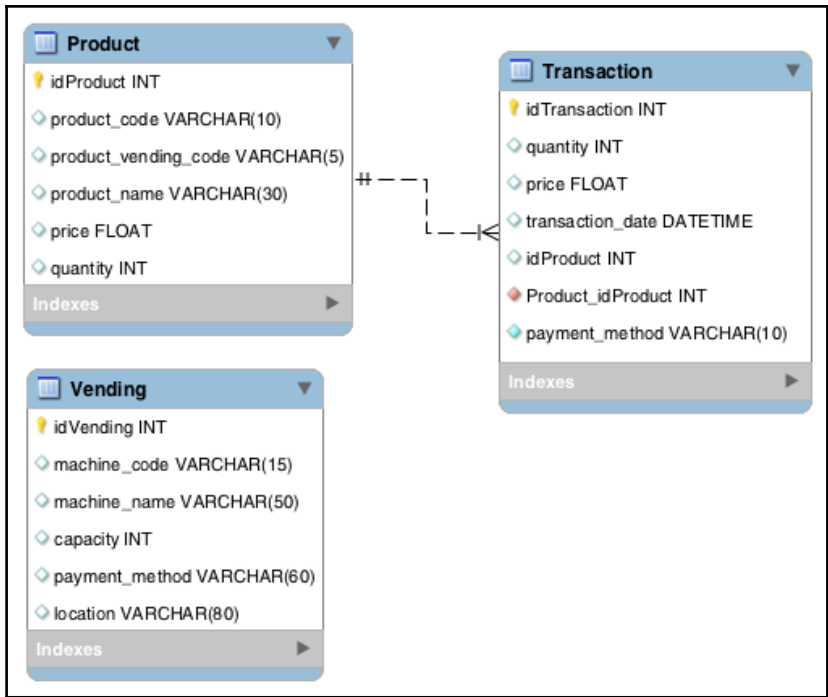
```
Raspberry Pi Software Configuration Tool (raspi-config)
```

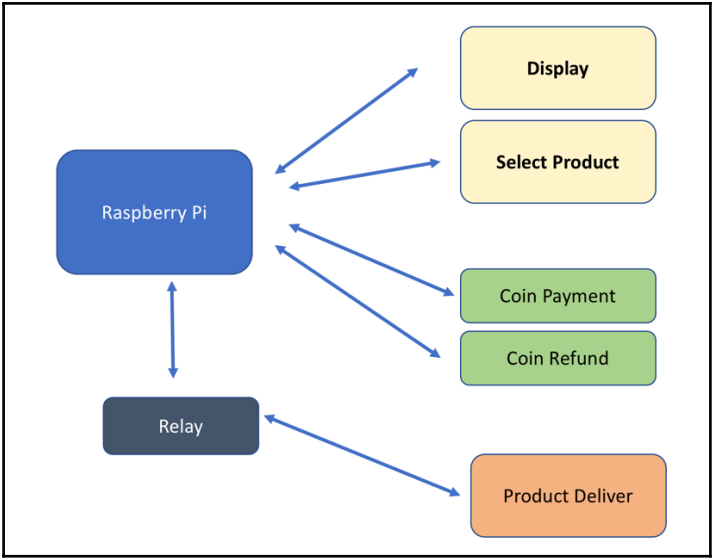
1 Change User Password	Change password for the default u
2 Hostname	Set the visible name for this Pi
3 Boot Options	Configure options for start-up
4 Localisation Options	Set up language and regional sett
5 Interfacing Options	Configure connections to peripher
6 Overclock	Configure overclocking for your P
7 Advanced Options	Configure advanced settings
8 Update	Update this tool to the latest ve
9 About raspi-config	Information about this configurat

```
<Select> <Finish>
```









Chapter 4: A Smart Digital Advertising Dashboard



Screenly OSE

ose.demo.screenlyapp.com

Settings System Info

Schedule Overview

+ Add Asset

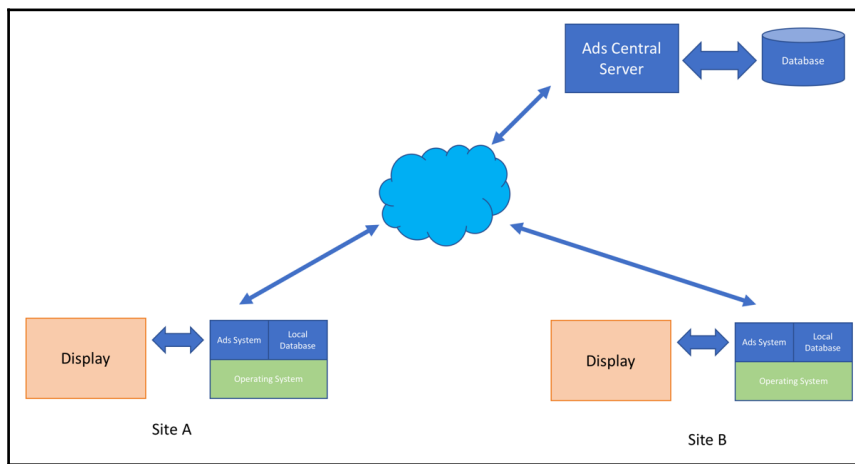
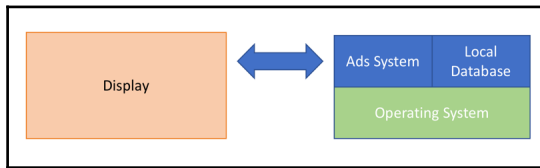
ACTIVE ASSETS

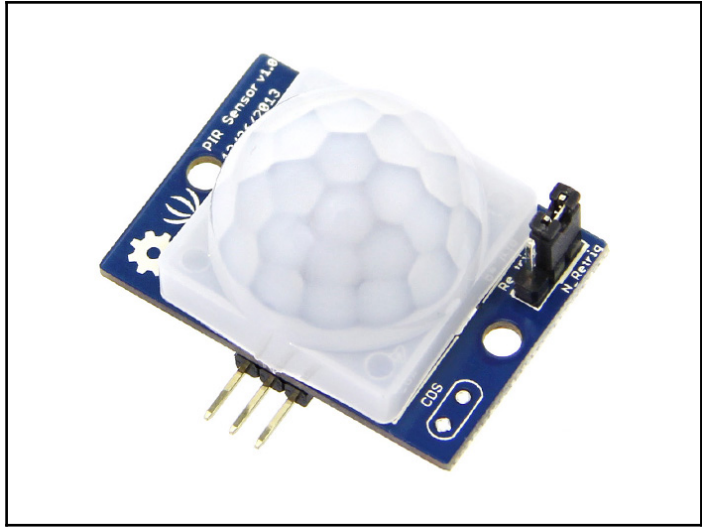
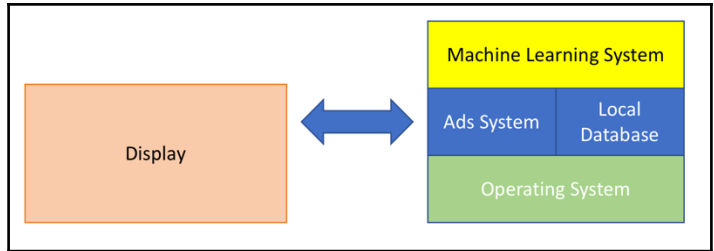
Name	Start	End				
ScreenlyApp	04/22/2013 07:19:00 PM	04/29/2013 07:19:00 PM			On	Off
Screenly Logo	04/22/2013 07:19:00 PM	04/29/2013 07:19:00 PM			On	Off

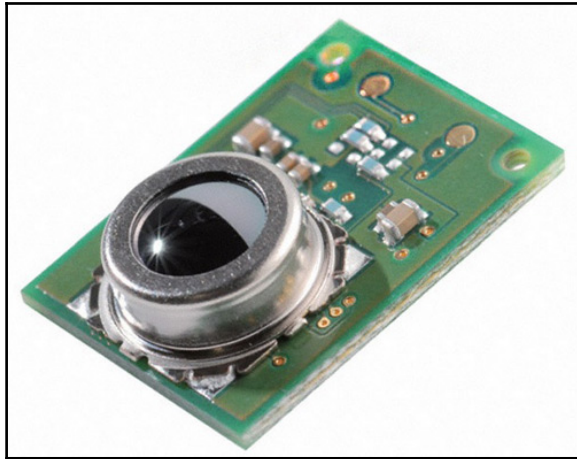
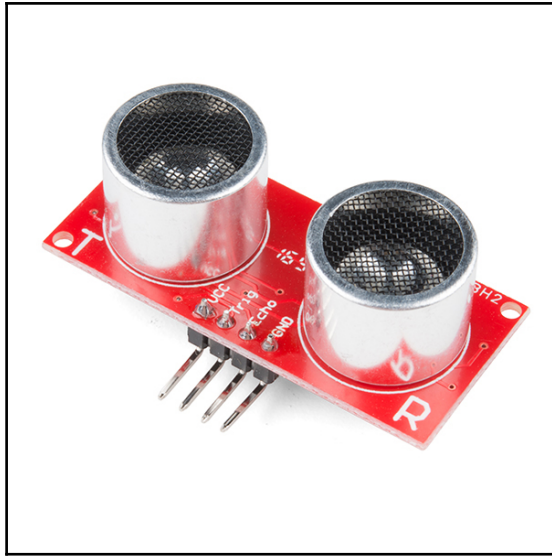
INACTIVE ASSETS

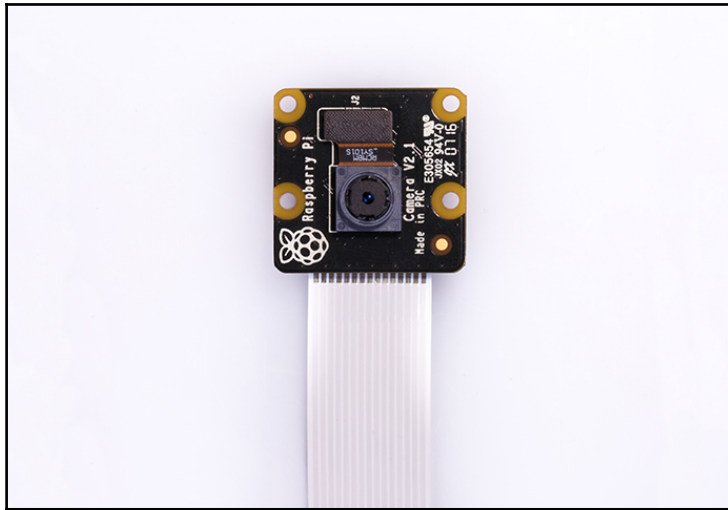
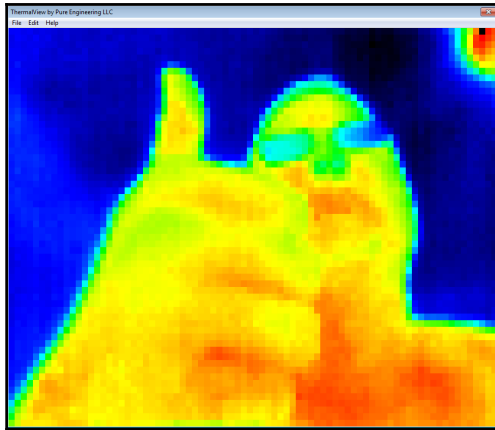
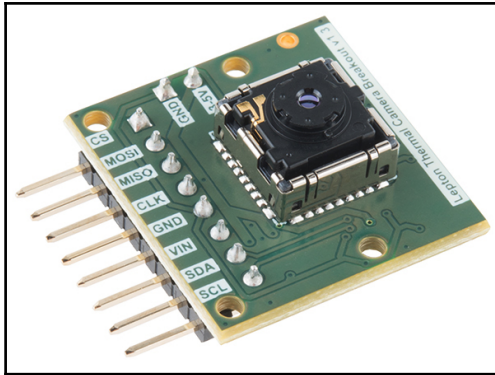
Want to get more out of Screenly? [Try Screenly Pro.](#)

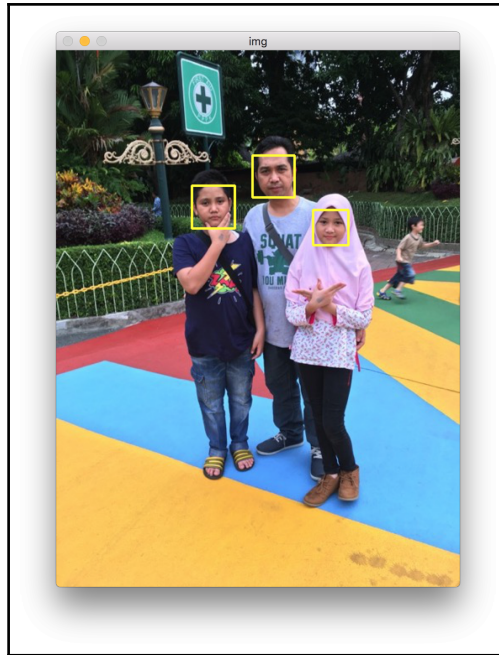
© 2012-2013. WireLoad, Inc. WIRELOAD



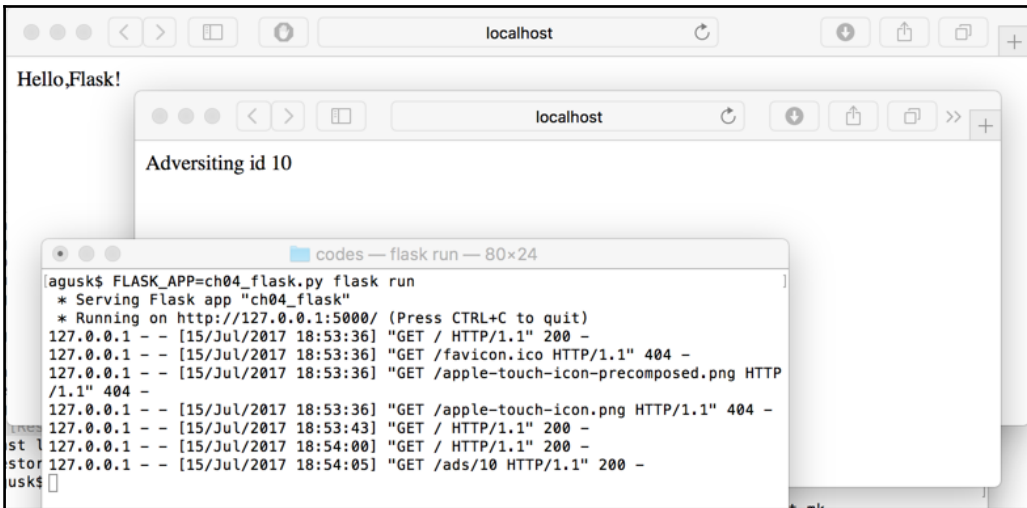
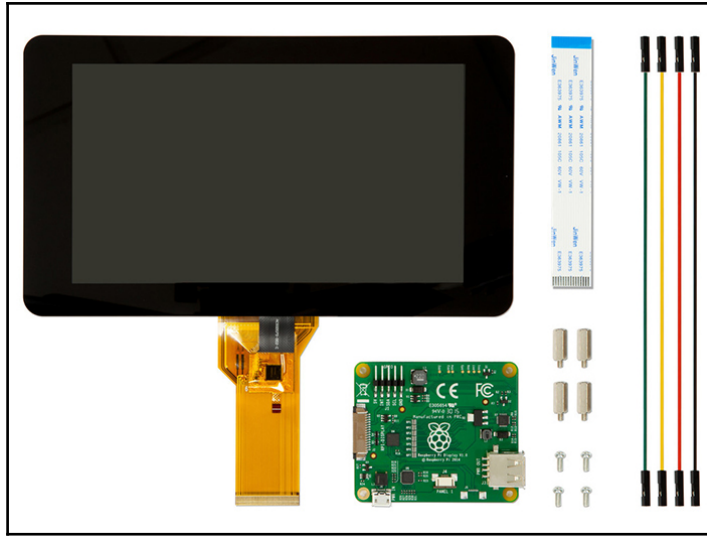


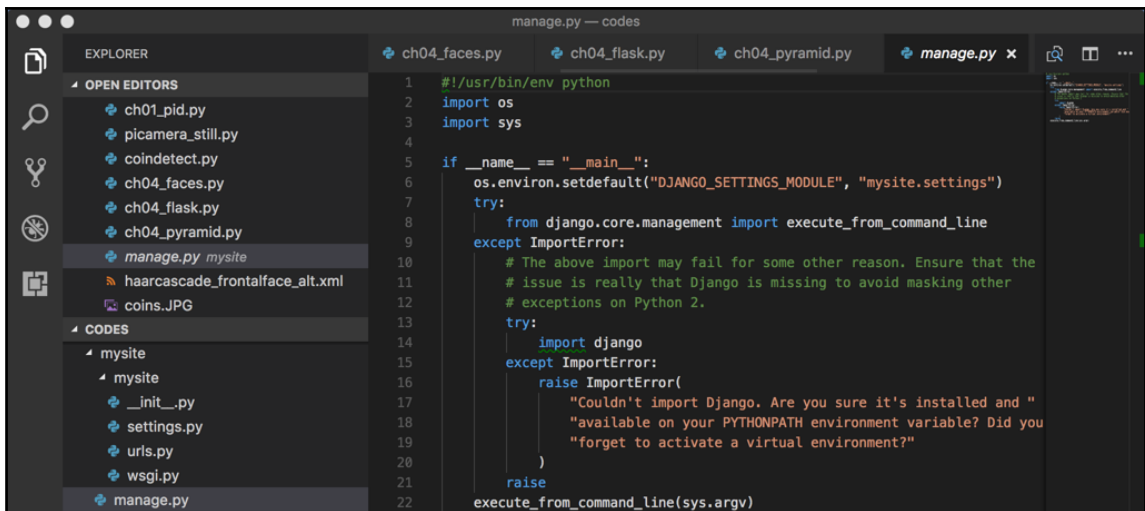
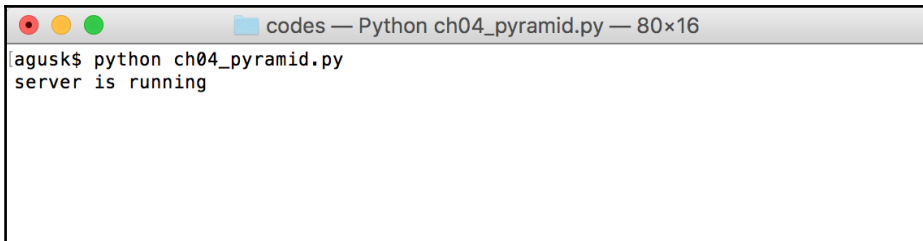
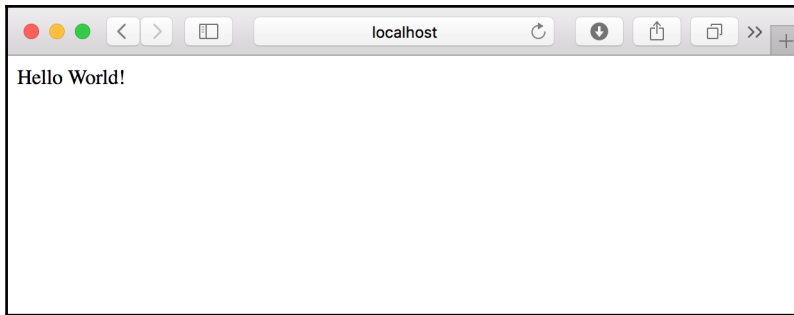






```
codes — Python ch04_faces.py — 80x24
lagusk$ python ch04_faces.py
Number of faces detected: 3
█
```



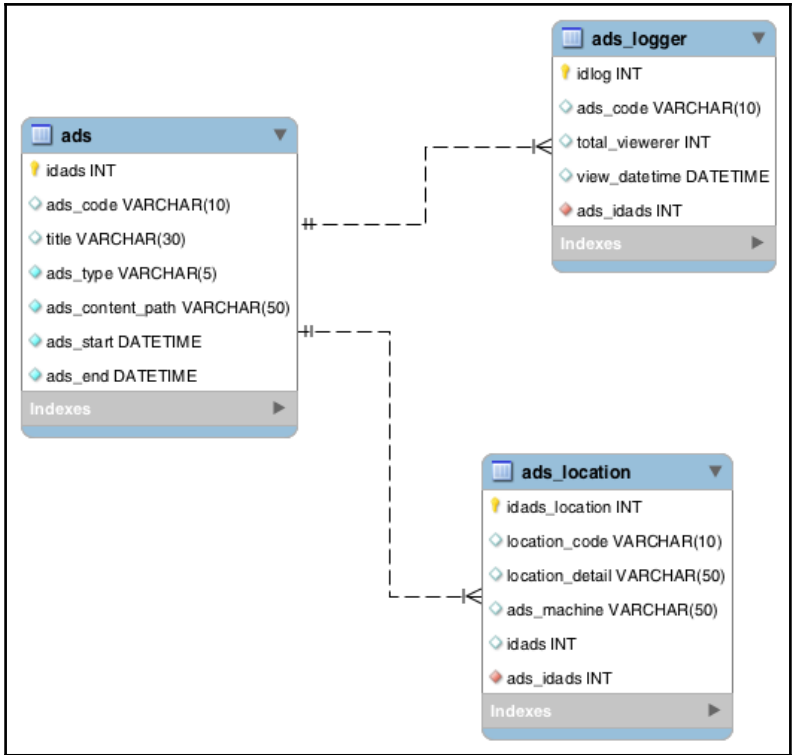
```
mysite — Python < Python manage.py runserver — 80x24
agusk$ pip install Django
Collecting Django
  Downloading Django-1.11.3-py2.py3-none-any.whl (6.9MB)
    100% |#####| 7.0MB 138kB/s
Requirement already satisfied: pytz in /usr/local/lib/python2.7/site-packages (from Django)
Installing collected packages: Django
Successfully installed Django-1.11.3
agusk$ django-admin startproject mysite
agusk$ cd mysite/
agusk$ python manage.py runserver
Performing system checks...

System check identified no issues (0 silenced).

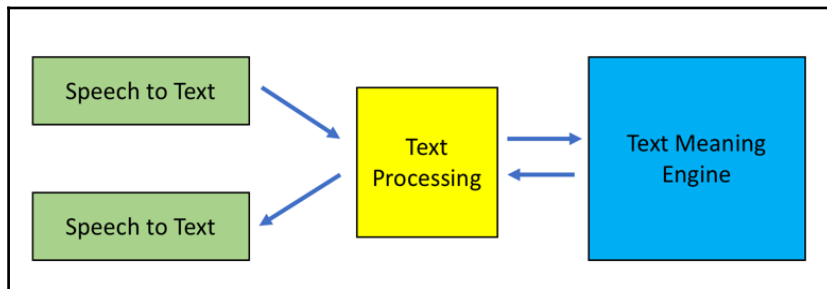
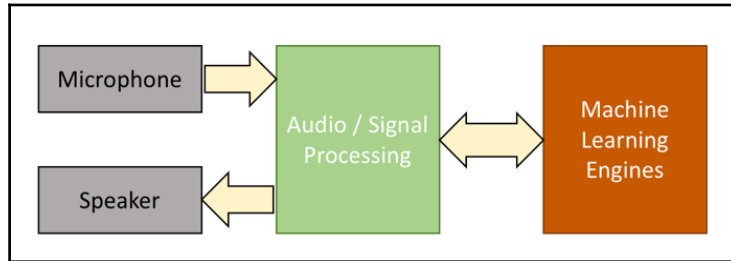
You have 13 unapplied migration(s). Your project may not work properly until you
apply the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.

July 17, 2017 - 00:09:36
Django version 1.11.3, using settings 'mysite.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.
```



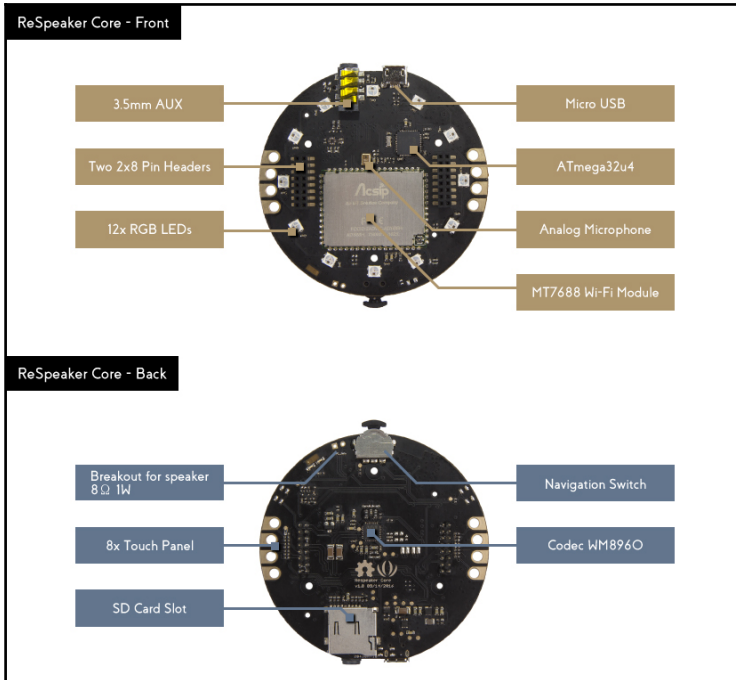
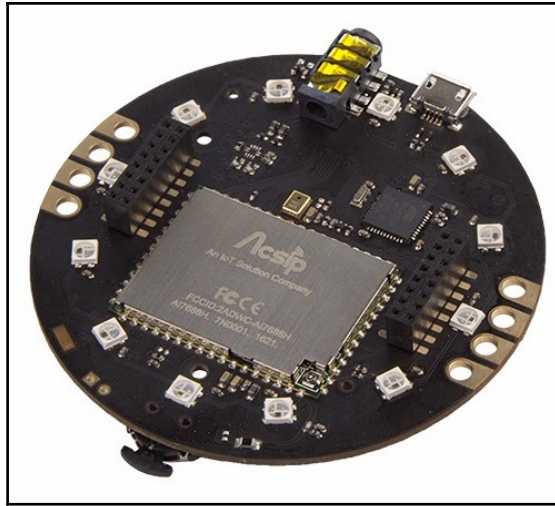


Chapter 5: A Smart Speaker Machine









192.168.100.1

JuciBox
Open Source Software

Basic Mode

OVERVIEW NETWORK WIFI SYSTEM STATUS

192.168.100.131 (akumbp)

LAN

MediaTek MT7688 ver:1 eco:2

- LAN 1
- WAN OFFLINE
- USB 0

WIFI

Schedule Off

LAN

192.168.100.1

WAN

Internet OFFLINE

agusk — ssh root@192.168.1.130 — 80x24

AlsaMixer v1.0.28

Card: MTK APSoC I2S
Chip:
View: F3:[Playback] F4: Capture F5: All
Item: Headphone [dB gain: 6.00, 6.00]

F1: Help
F2: System information
F6: Select sound card
Esc: Exit

100<->100
<Headphon>Headphon 86<->86 100 100
Speaker Speaker Speaker Speaker PCM Play Mono Out

The screenshot shows the Arduino IDE interface. The title bar reads "ArduinoReSpeaker | Arduino 1.8.3". The menu bar includes icons for check, run, upload, and download. The main editor window displays the following code:

```
#include "respeaker.h"

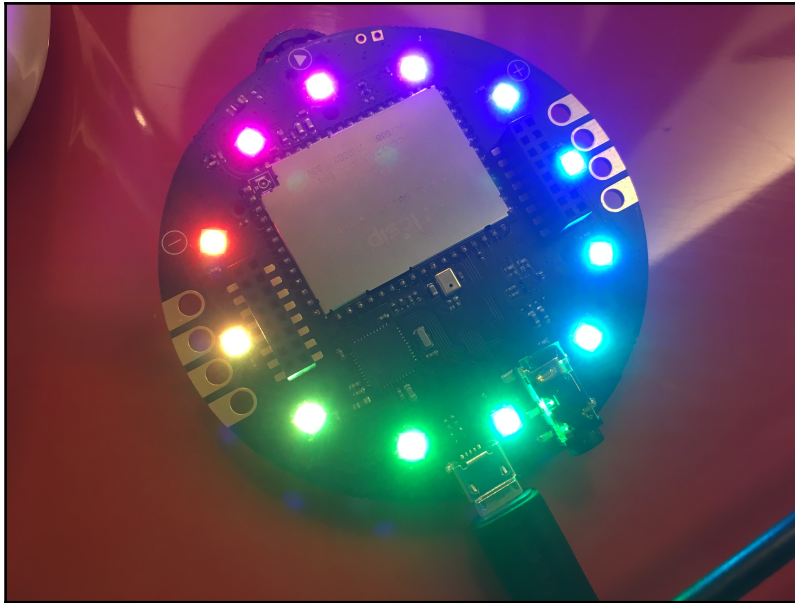
uint8_t offset = 0;
void setup() {
  respeaker.begin();
  // set brightness level (from 0 to 255)
  respeaker.pixels().set_brightness(128);
}

void loop() {
  respeaker.pixels().rainbow(offset++);
  delay(10);
}
```

Below the code editor, a teal notification bar says "Done Saving.". The serial monitor shows the following error messages:

```
Invalid library found in /Users/agusk/Documents/Arduino
Invalid library found in /Users/agusk/Documents/Arduino
Invalid library found in /Users/agusk/Documents/Arduino
Invalid library found in /Users/agusk/Documents/Arduino
```

The status bar at the bottom indicates "13" and "Arduino Leonardo on /dev/cu.usbmodem1411".

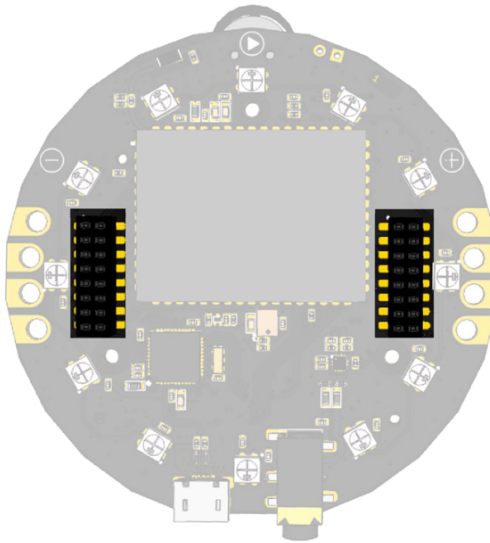


RESPEAKER

seeed Computers

J5

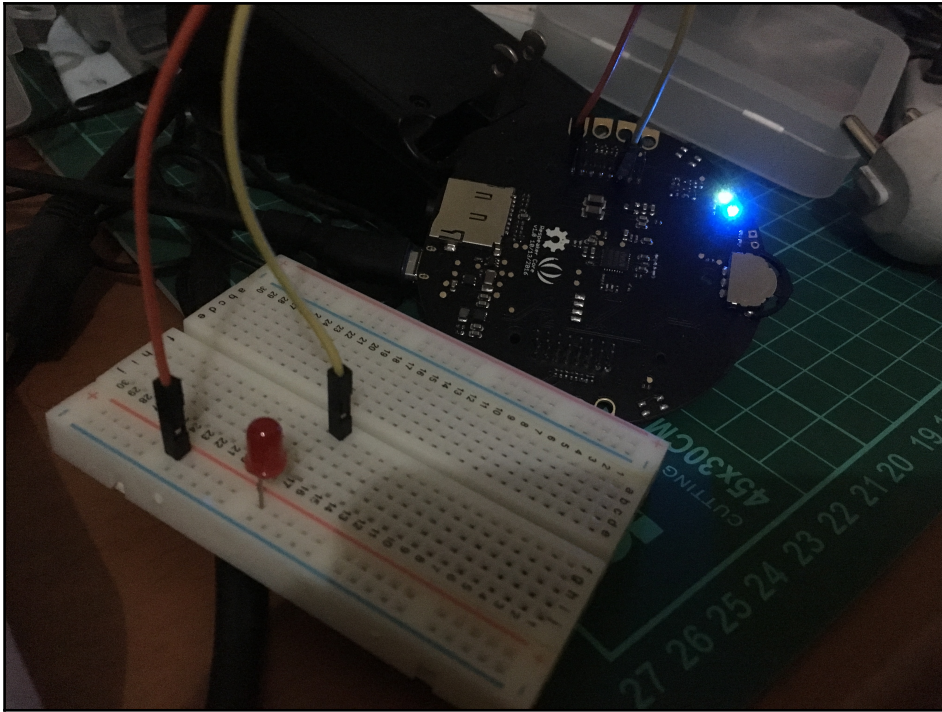
GPIO45/UART_TX1	MCLK OUT
GPIO46/UART_RX1	GPIO1/I2S_DAC
GPIO0/I2S_ADC	GPIO2/I2S_LRCLK
PF7/A0	GPIO3/I2S_BCLK
PF6/A1	GPIO4/I2C_SCL
PF4/A2	GPIO5/I2C_SDA
PF1/A3	USBDP
PF0/AS/CHARGE_STATE	USBDM



J6

VDD_5V	HP_SEL
GPIO12/UART_RX0/ VAD_STATE	GPIO12/UART_TX0
MT_GPIO18/PWM_CH0	PD6/A11/D12
HP L	HP R
PD7/A7/D6	PD1/SDA/D2
PD4/A6/D4	PD0/SCL/D3
AGND	NC
NC	GND

GND
POWER
MT7688
ARDUINO
MIC ARRAY
NC
7688&MIC ARRAY
Clock




```
agusk — -bash — 80x24
-----
* 1 1/2 oz Gin           Shake with a glassful
* 1/4 oz Triple Sec     of broken ice and pour
* 3/4 oz Lime Juice     unstrained into a goblet.
* 1 1/2 oz Orange Juice
* 1 tsp. Grenadine Syrup
-----
issue: http://www.seeed.cc/respeaker
-----
default: username:root password:root
-----
root@ReSpeaker:~# ls /sys/class/gpio/
export      gpio15      gpio17      gpiochip127  gpiochip64
gpio14      gpio16      gpiochip0   gpiochip32   unexport
root@ReSpeaker:~# echo 18 > /sys/class/gpio/export
root@ReSpeaker:~# /sys/class/gpio/gpio18/
-ash: /sys/class/gpio/gpio18/: Permission denied
root@ReSpeaker:~# ls /sys/class/gpio/gpio18/
active_low  device      direction  edge        subsystem  uevent      value
root@ReSpeaker:~# echo "out" > /sys/class/gpio/gpio18/direction
root@ReSpeaker:~# echo 1 > /sys/class/gpio/gpio18/value
root@ReSpeaker:~# echo 0 > /sys/class/gpio/gpio18/value
root@ReSpeaker:~# echo 18> /sys/class/gpio/unexport
```

Microsoft Azure

Succesfully added Bing Speech API to your subscription.

Your APIs Hello [redacted] (Log out)

 Bing Speech API

This API key is currently active
30 days remaining

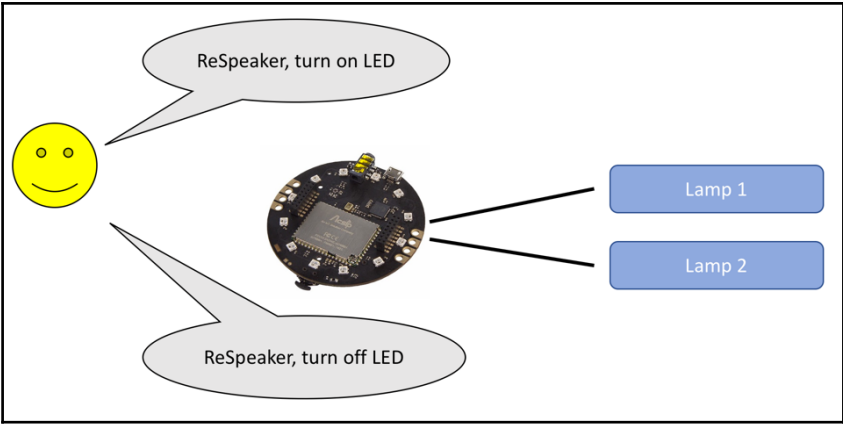
Convert speech to text and back again to understand user intent
5,000 transactions, 20 per minute for each feature.

Endpoint: <https://api.cognitive.microsoft.com/sts/v1.0>

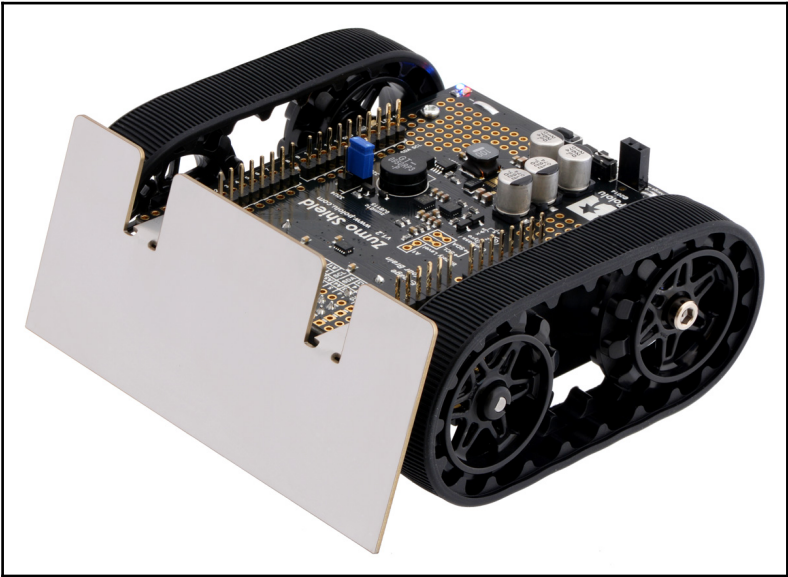
Key 1: [redacted]

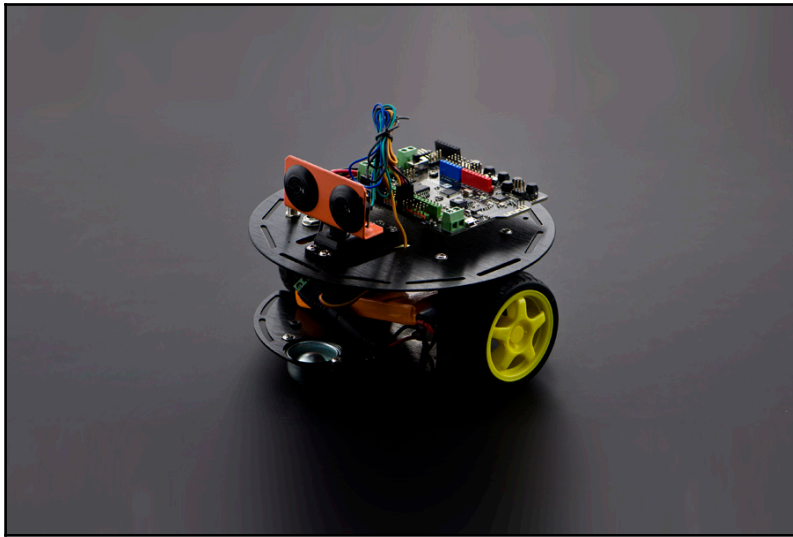
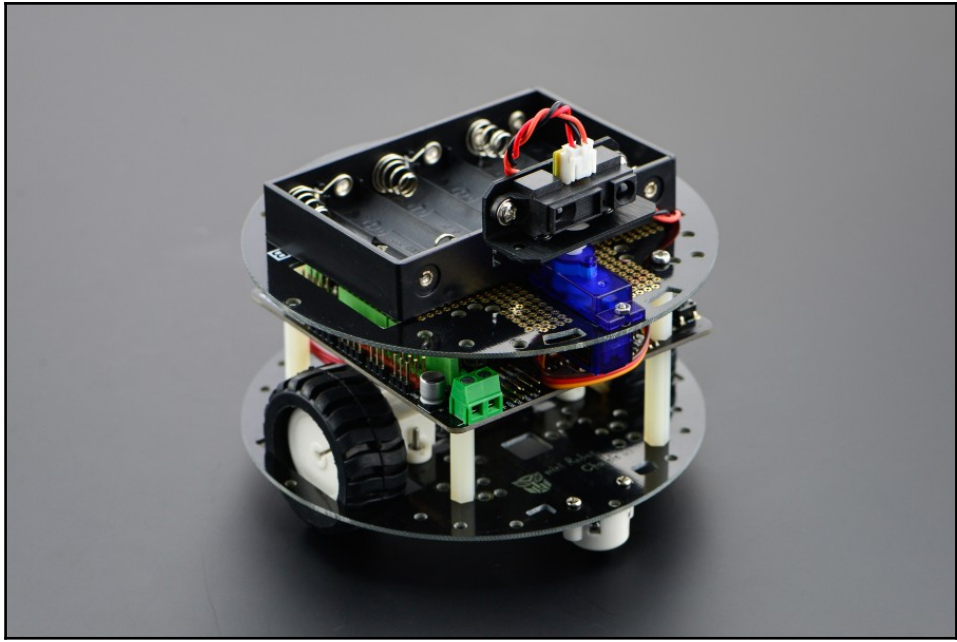
Key 2: [redacted]

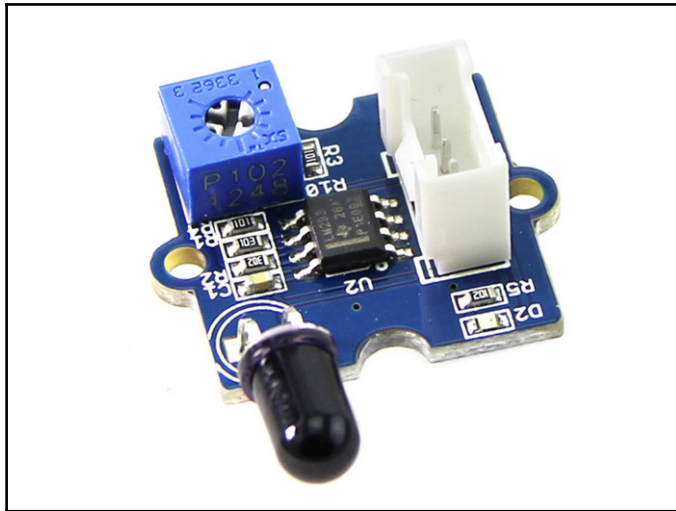
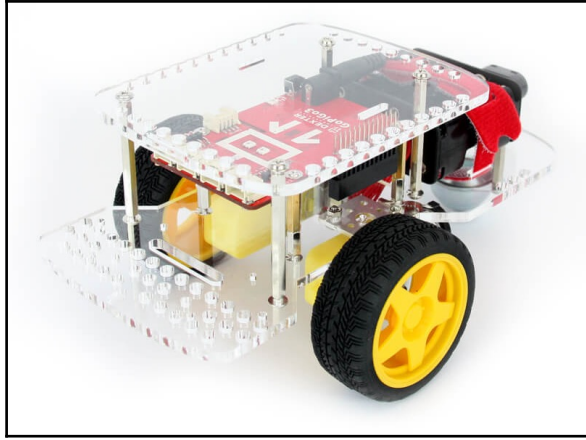
**Bing Speech
API KEY**

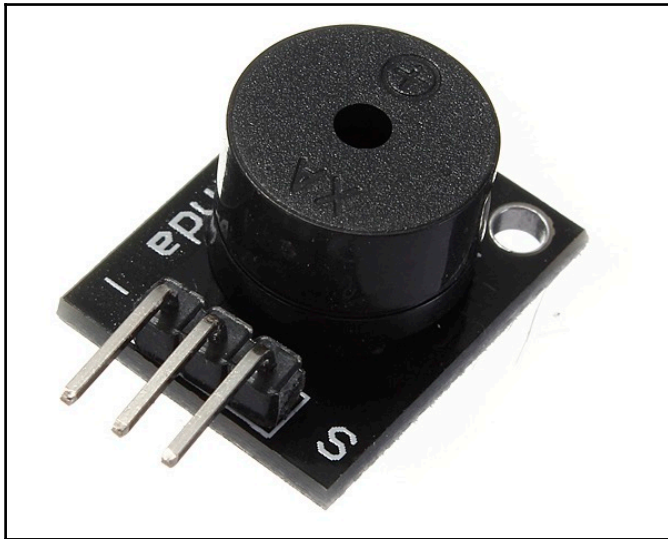
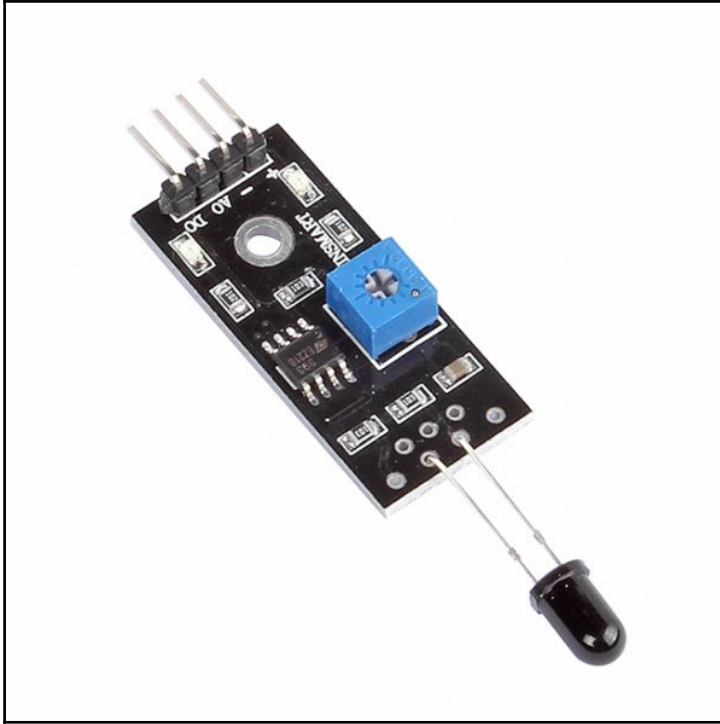


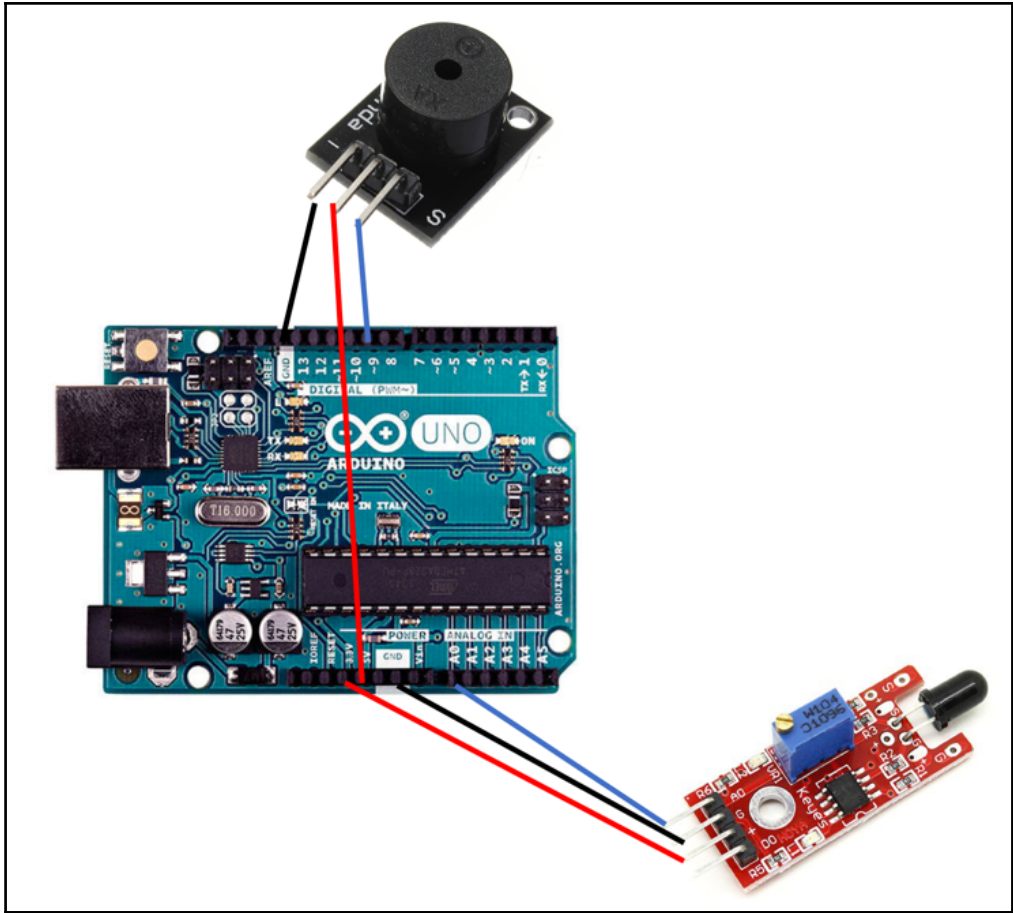
Chapter 6: Autonomous Firefighter Robot

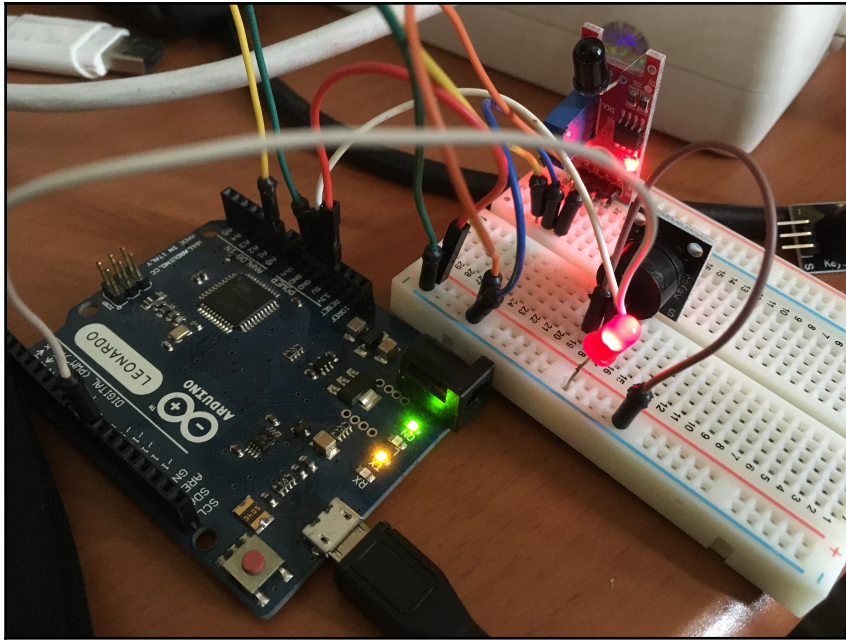








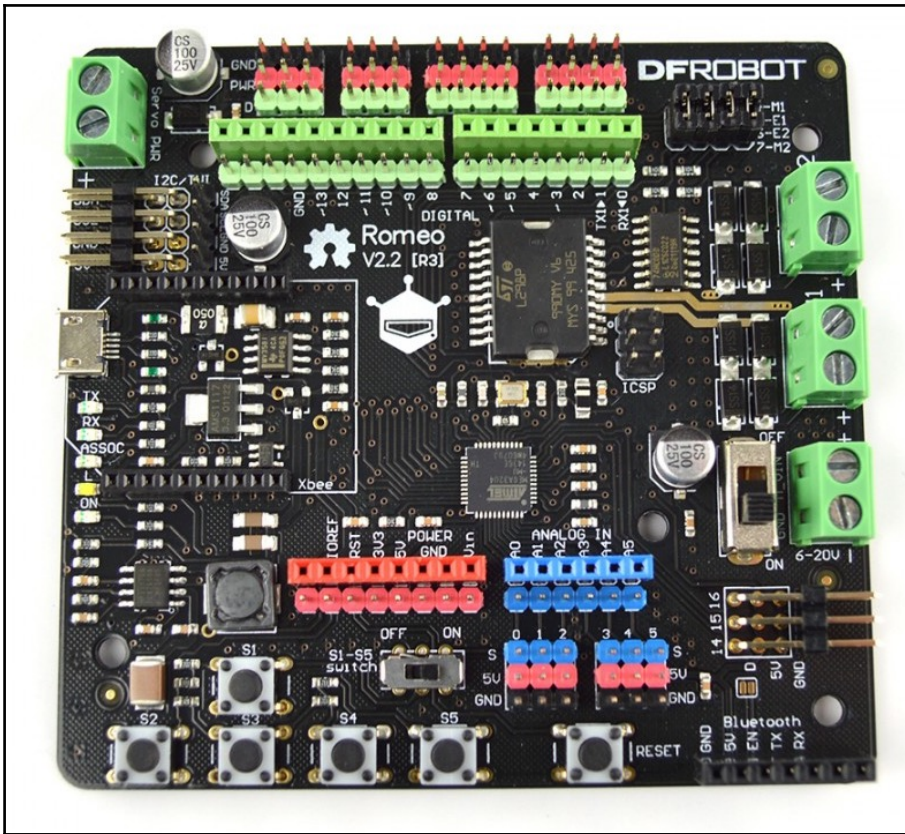
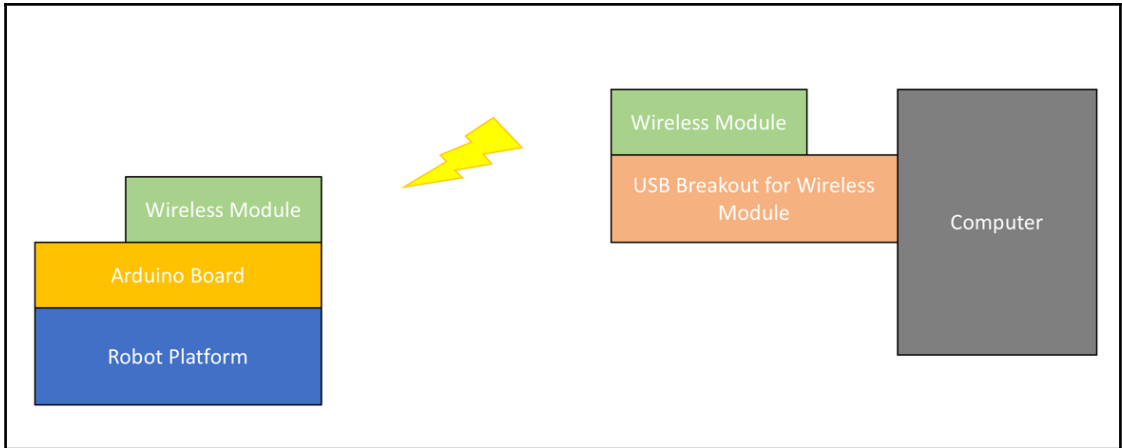


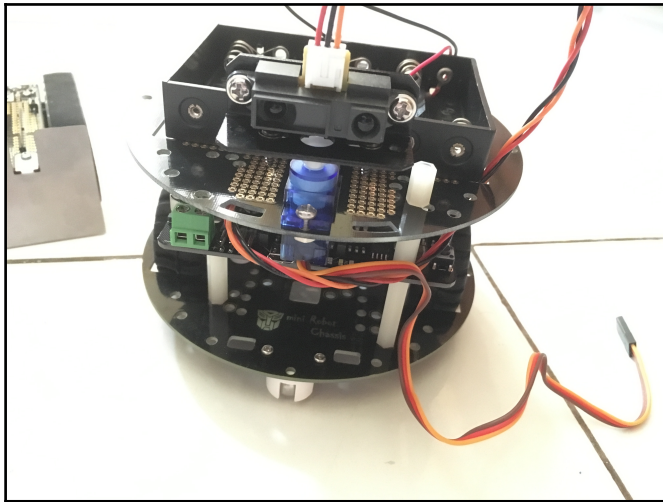
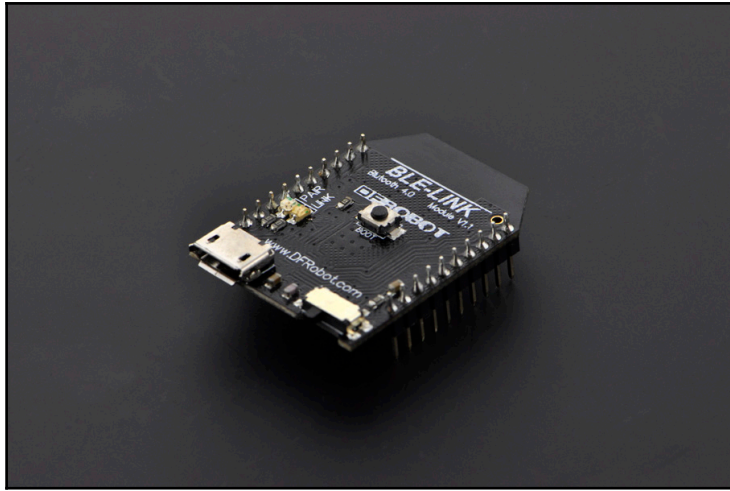


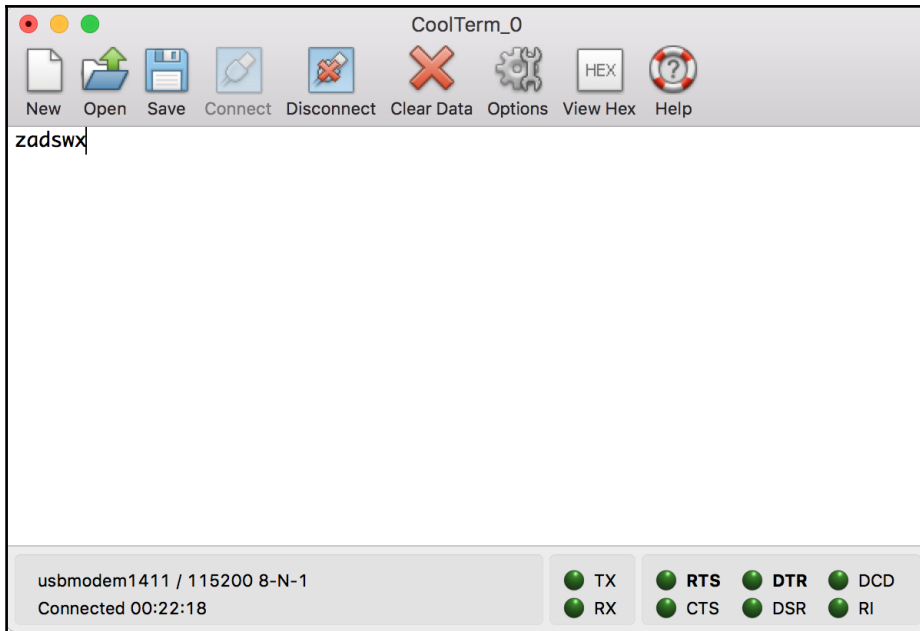
```

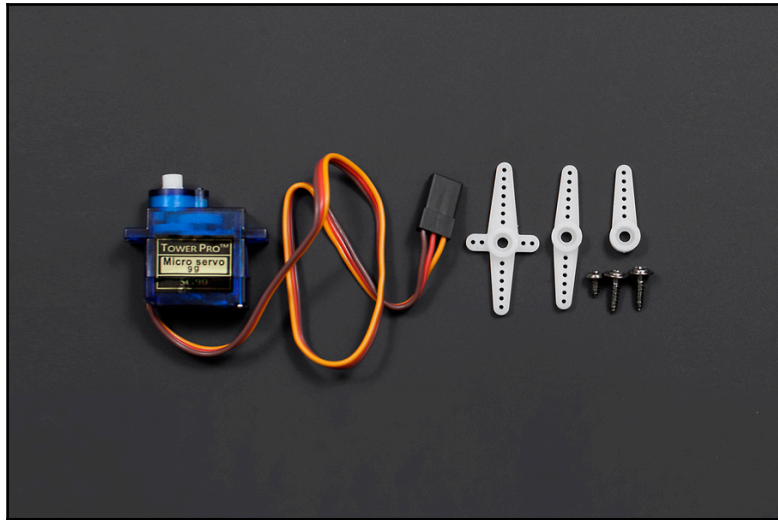
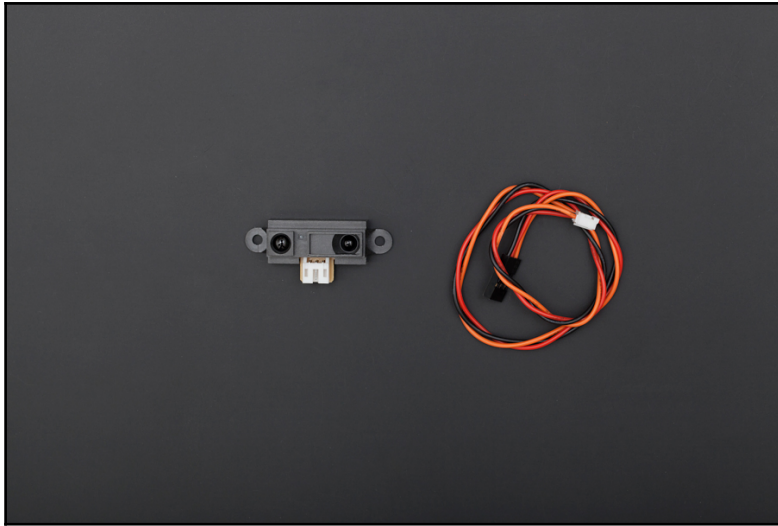
/dev/cu.usbmodem1421 (Arduino Leonardo)
Send
Sensor value = 65. Fire detected!!
Sensor Value = 66. Fire detected!!
Sensor Value = 60. Fire detected!!
Sensor Value = 60. Fire detected!!
Sensor Value = 66. Fire detected!!
Sensor Value = 71. Fire detected!!
Sensor Value = 60. Fire detected!!
Sensor Value = 64. Fire detected!!
Sensor Value = 66. Fire detected!!
Sensor Value = 60. Fire detected!!
Sensor Value = 59. Fire detected!!
Sensor Value = 66. Fire detected!!
Sensor Value = 69. Fire detected!!
Sensor Value = 60. Fire detected!!
 Autoscroll
Both NL & CR
9600 baud
Clear output

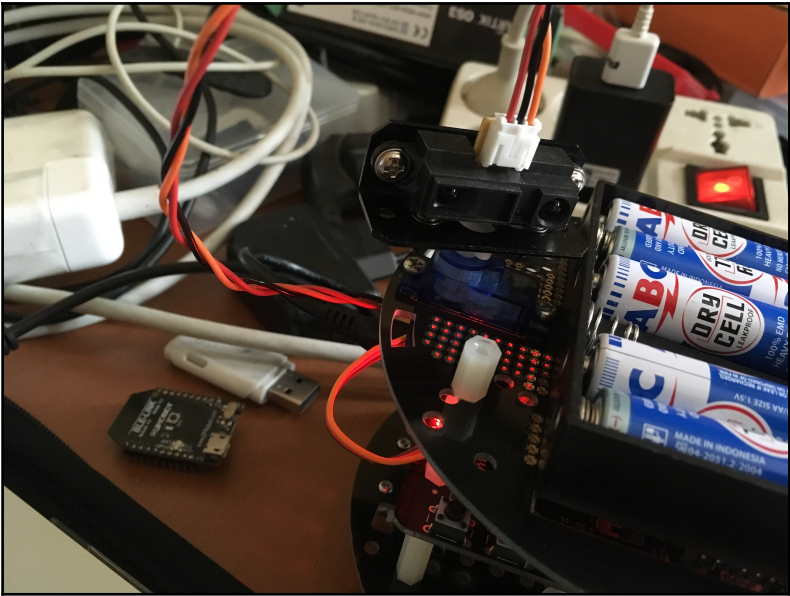
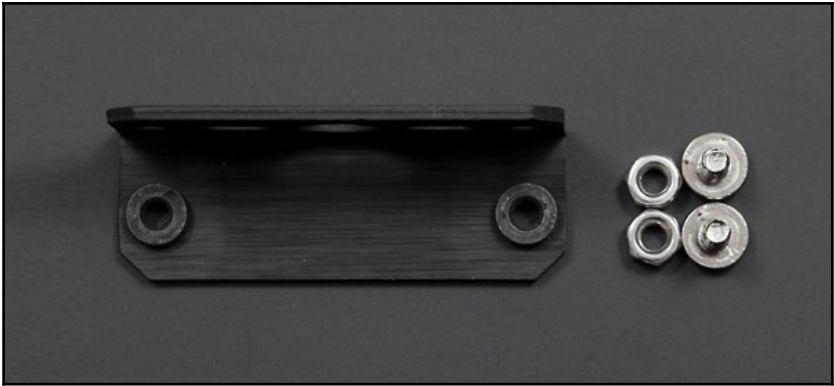
```





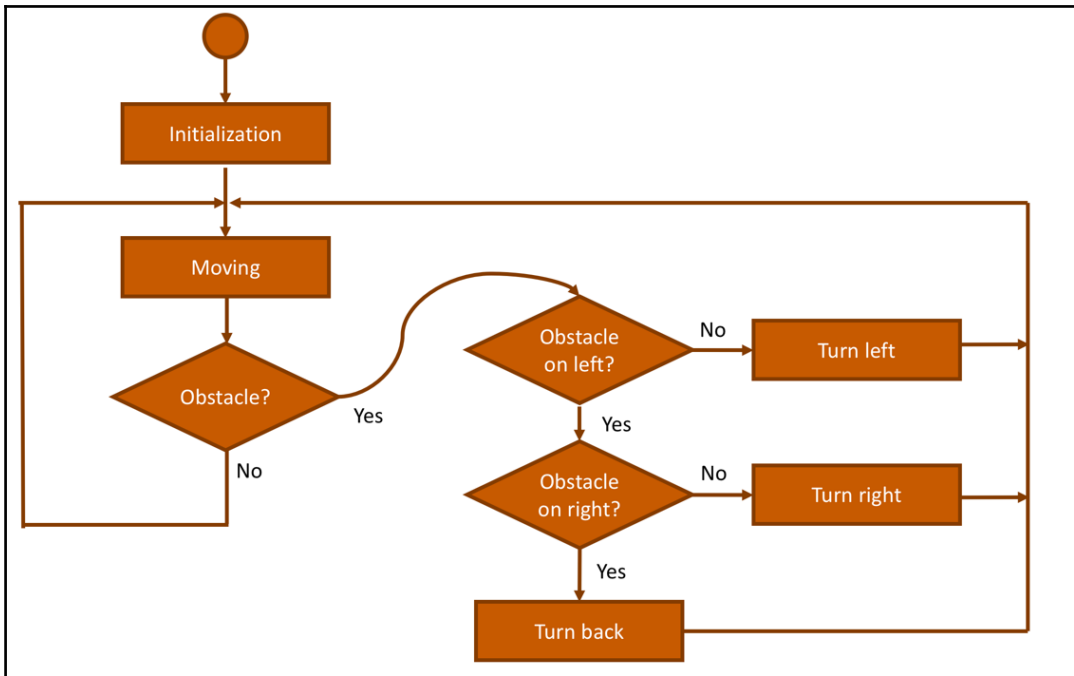


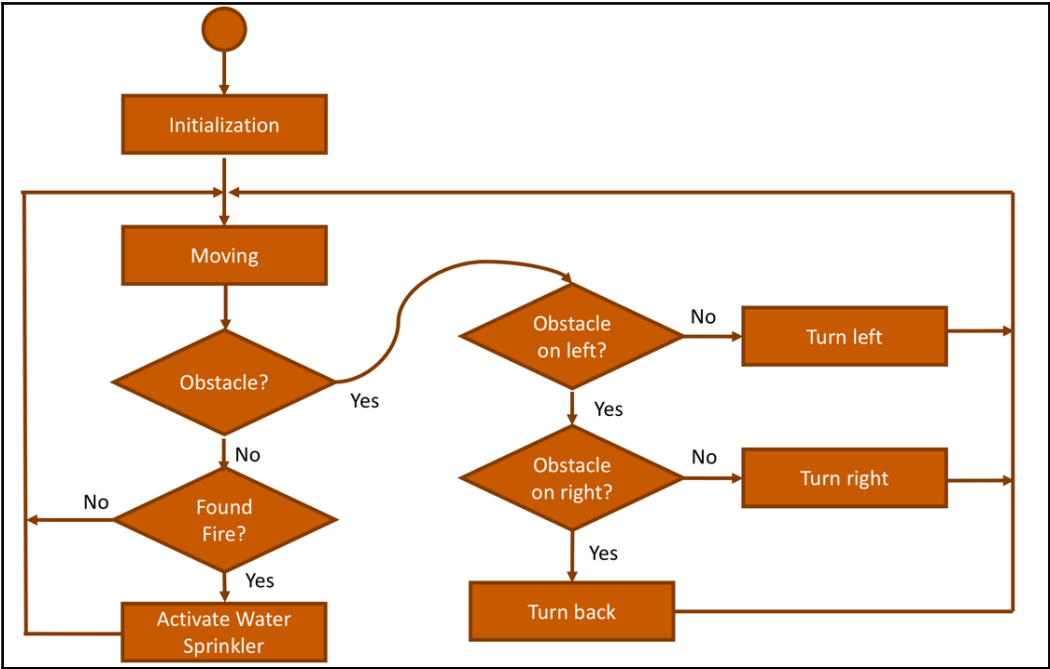
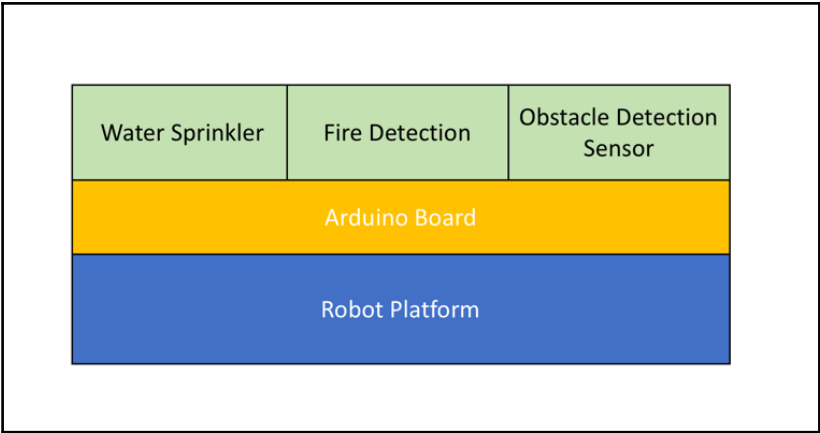


```

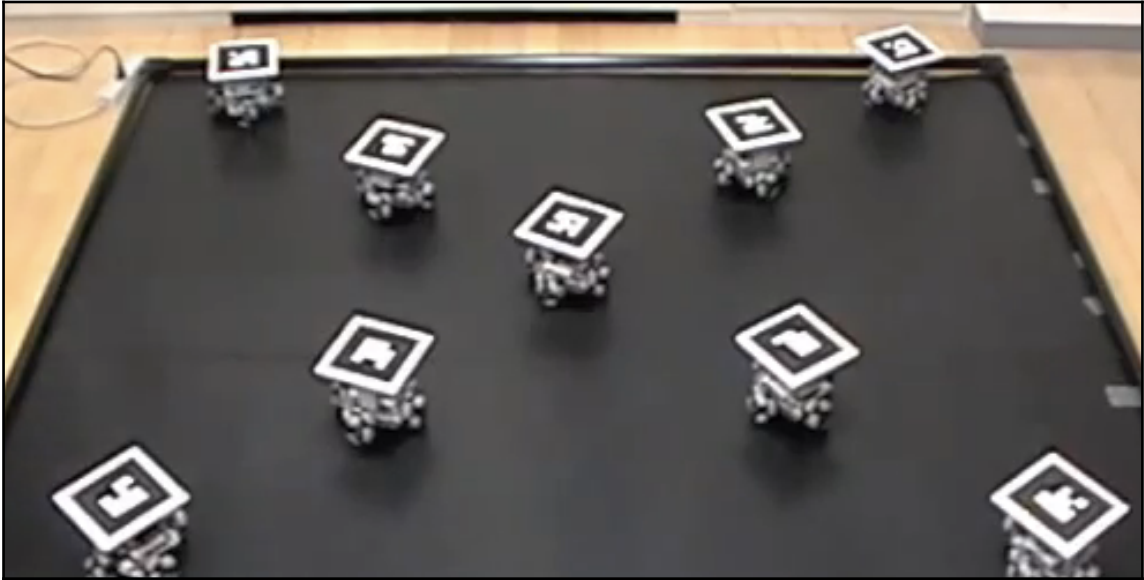
/dev/cu.usbmodem1421 (Arduino Leonardo)
Send
Distance. value: 916. Range: 34 mm
Distance. Value: 916. Range: 34 mm
Distance. Value: 915. Range: 34 mm
Distance. Value: 915. Range: 34 mm
Distance. Value: 915. Range: 34 mm
Distance. Value: 915. Range: 34 mm
Distance. Value: 915. Range: 34 mm
Distance. Value: 915. Range: 34 mm
Distance. Value: 919. Range: 34 mm
Distance. Value: 935. Range: 32 mm
Distance. Value: 928. Range: 33 mm
Distance. Value: 916. Range: 34 mm
Distance. Value: 916. Range: 34 mm
Distance. Value: 916. Range: 34 mm
 Autoscroll
No line ending 9600 baud Clear output

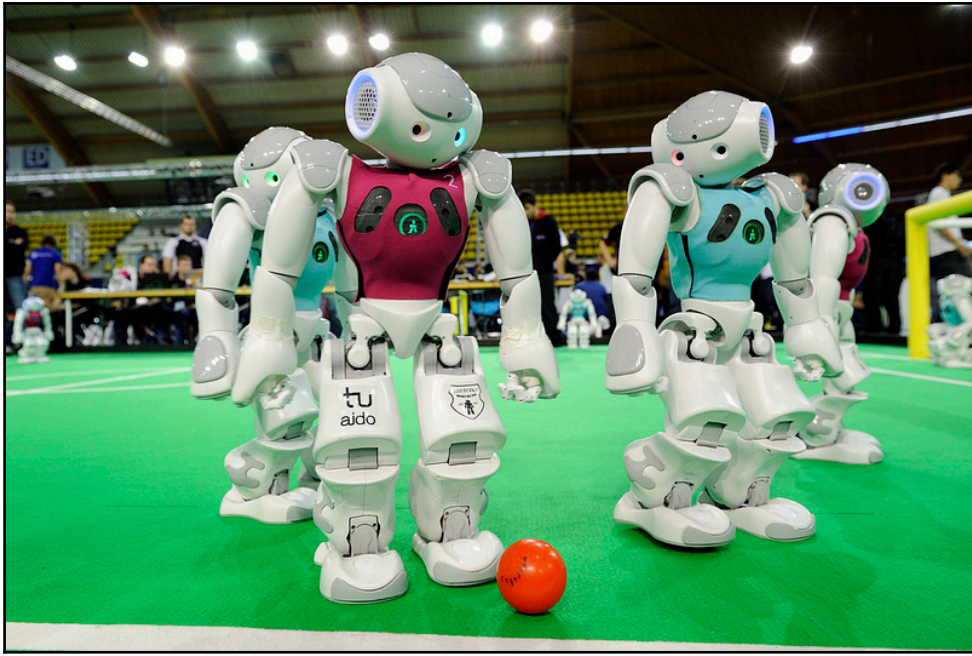
```



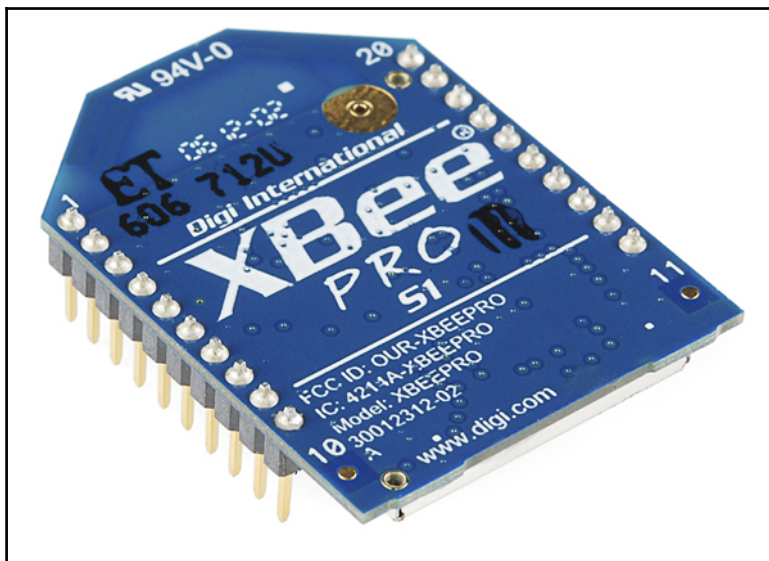


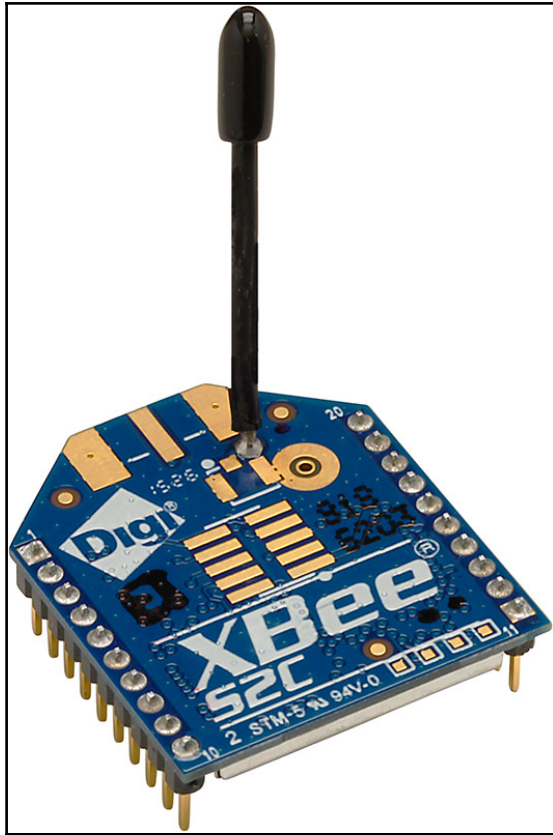
Chapter 7: Multi-Robot Cooperation Using Swarm Intelligence

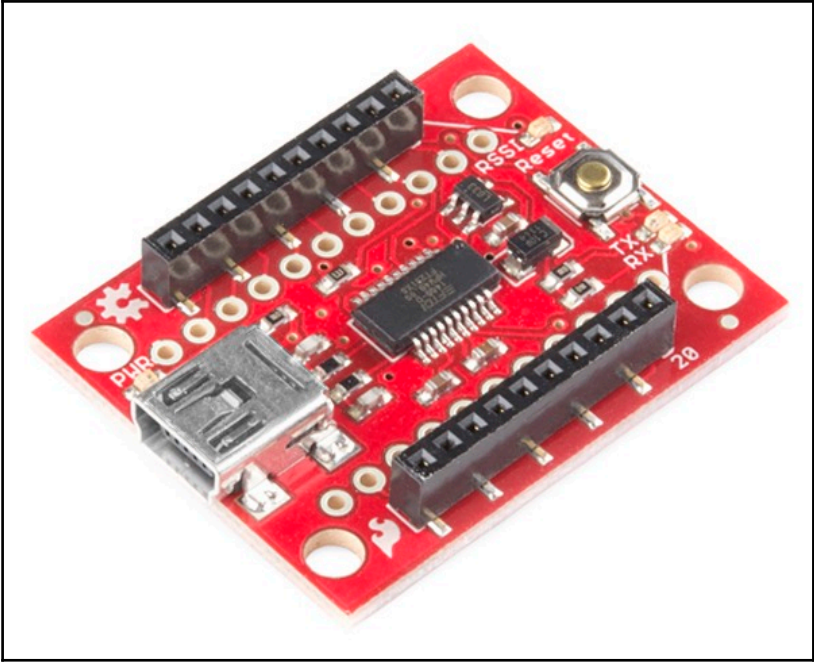





```
ch7 — bash — 80x24
agusk$ python ch07_pso.py
Particle Swarm Optimisation
PARAMETERS
-----
Population size : 100
Dimensions      : 2
Error Criterion : 1e-05
c1              : 2
c2              : 2
function        : f6
RESULTS
-----
gbest fitness   : 0.999999980881
gbest params    : [ 7.05603575e-05  1.18834023e-04]
iterations      : 9
params: [ 1.29335985e-04 -9.77756137e-05], fitness: 0.999997991953, best: [ 0.
00055992 -0.00130097]
params: [-0.00046384 -0.00288337], fitness: 0.999992966728, best: [ 0.00192684
0.00182032]
params: [ 0.00145055  0.00016542], fitness: 0.999732030179, best: [-0.01487944 -
0.00680651]
params: [-0.00106421 -0.0001624 ], fitness: 0.999996754879, best: [ 0.00170296 -
```







XCTU

Radio Modules

Name:

Function: XBEE 802.15.4

Port: usbserial-A9C.../B/N/1/N - AT

MAC: 0013A200409FCEE0

✕
↻
⌵

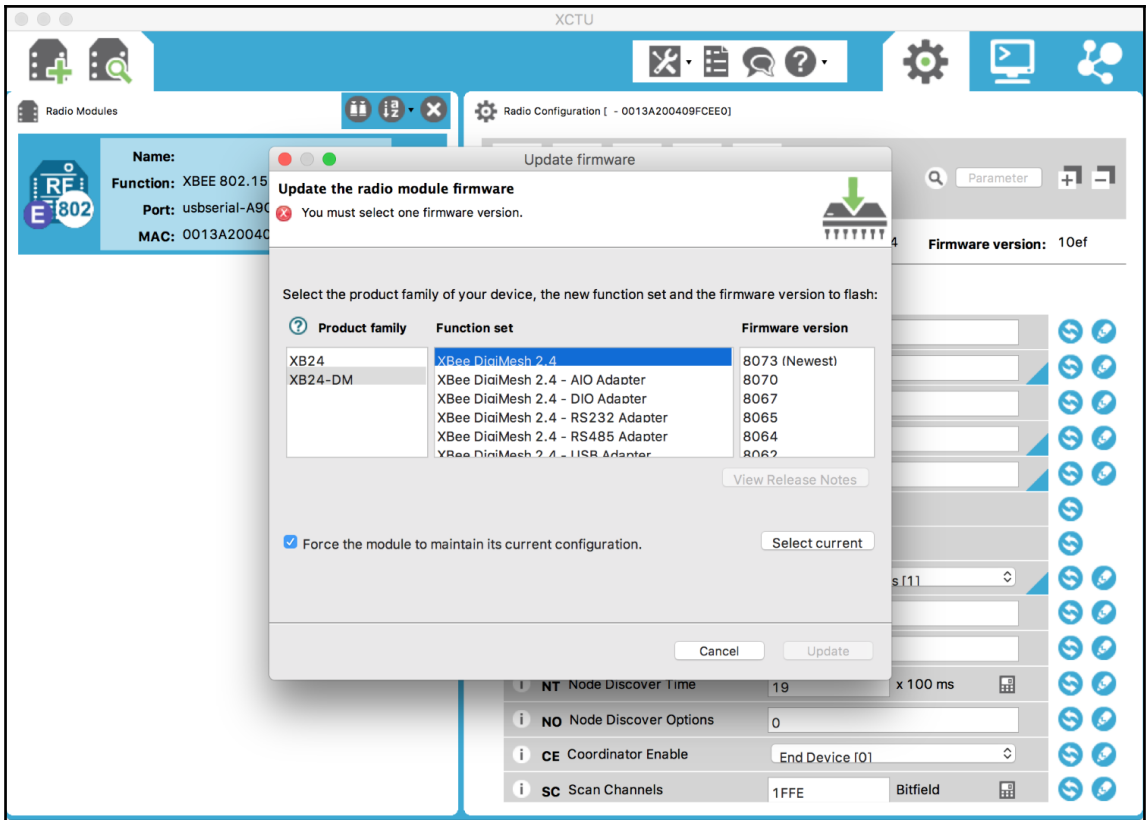
Radio Configuration [- 0013A200409FCEE0]

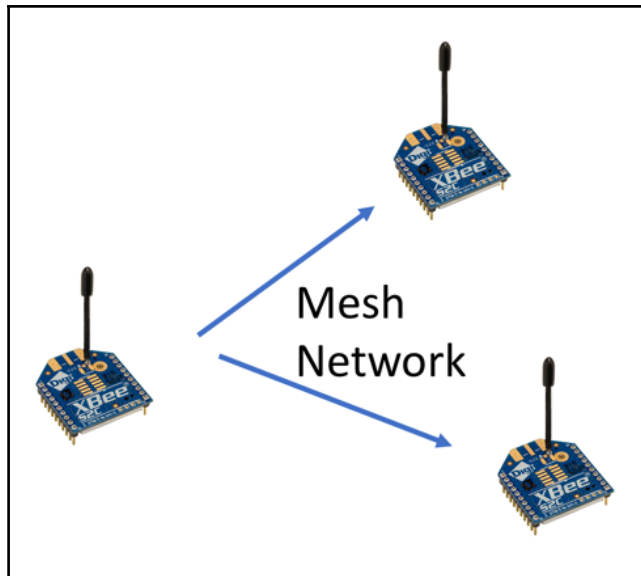
+
-

Product family: XB24
Function set: XBEE 802.15.4
Firmware version: 10ef

▼ **Networking & Security**
Modify networking settings

CH Channel	<input type="text" value="C"/>	⚙️ 🔍
ID PAN ID	<input type="text" value="3001"/>	⚙️ 🔍
DH Destination Address High	<input type="text" value="0"/>	⚙️ 🔍
DL Destination Address Low	<input type="text" value="1"/>	⚙️ 🔍
MY 16-bit Source Address	<input type="text" value="2"/>	⚙️ 🔍
SH Serial Number High	<input type="text" value="13A200"/>	⚙️ 🔍
SL Serial Number Low	<input type="text" value="409FCEE0"/>	⚙️ 🔍
MM MAC Mode	<input type="text" value="802.15.4 no ACKs [11]"/>	⚙️ 🔍
RR XBee Retries	<input type="text" value="0"/>	⚙️ 🔍
RN Random Delay Slots	<input type="text" value="0"/>	⚙️ 🔍
NT Node Discover Time	<input type="text" value="19"/> x 100 ms	⚙️ 🔍
NO Node Discover Options	<input type="text" value="0"/>	⚙️ 🔍
CE Coordinator Enable	<input type="text" value="End Device [0]"/>	⚙️ 🔍
SC Scan Channels	<input type="text" value="1FFE"/> Bitfield	⚙️ 🔍





XCTU

Radio Modules

- Name: [REDACTED]
Function: XBee DigiMesh 2.4
Port: usbserial-A9C.../B/N/1/N - AT
MAC: 0013A200409FCEE0
- Name: [REDACTED]
Function: XBee DigiMesh 2.4
Port: usbserial-A60.../B/N/1/N - AT
MAC: 0013A20040A169FB

Radio Configuration [- 0013A200409FCEE0]

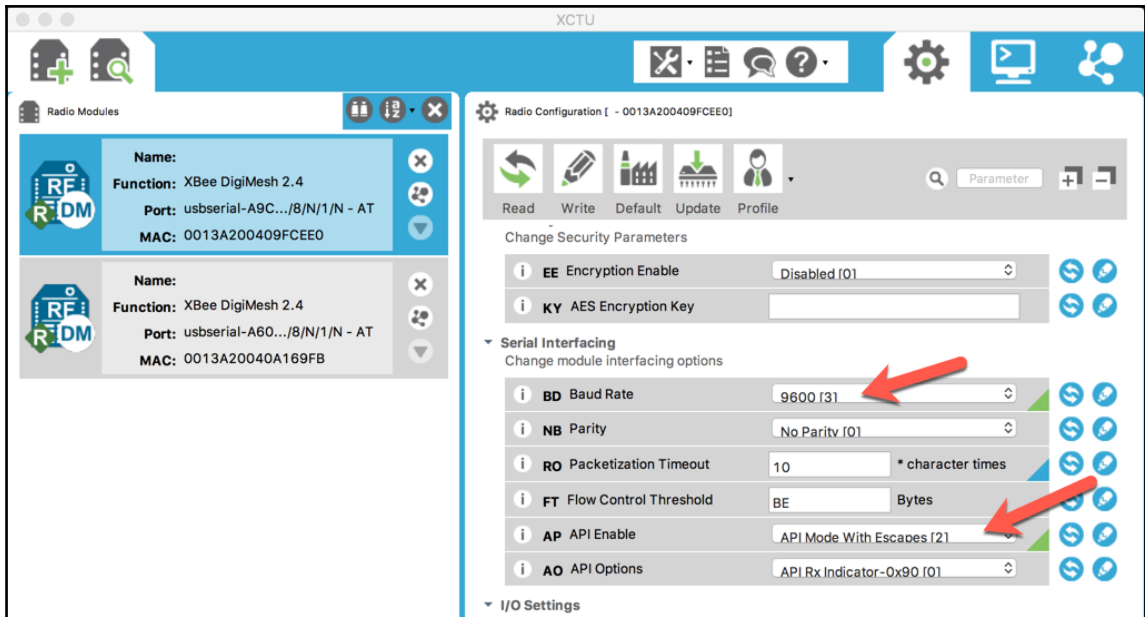
Read Write Default Update Profile

Parameter

Product family: XB24-DM Function set: XBee D...sh 2.4 Firmware version: 8073

MAC/PHY
Change MAC/PHY Settings

CH Operating Channel	C	[Settings]
ID Network ID	3001	[Settings]
MT Broadcast Multi-Transmits	3	[Settings]
PL TX Power Level	Highest [41]	[Settings]
RR Unicast Retries	0 Retries	[Settings]
CA CCA Threshold	2C -dBm	[Settings]



```

codes — Python ch07_xbee_reader.py — 80x24
'tx': [{'default': '\x10', 'len': 1, 'name': 'id'},
       {'default': '\x00', 'len': 1, 'name': 'frame_id'},
       {'default': None, 'len': 8, 'name': 'dest_addr'},
       {'default': '\xff\xfe', 'len': 2, 'name': 'reserved'},
       {'default': '\x00', 'len': 1, 'name': 'broadcast_radius'},
       {'default': '\x00', 'len': 1, 'name': 'options'},
       {'default': None, 'len': None, 'name': 'data'}]}
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']
['0013A200409FCEE0', 'Hello XBee 2', 'C2']

```

XCTU

Radio Modules

- Name:** XBee DigiMesh 2.4
Function: XBee DigiMesh 2.4
Port: usbserial-A9C.../B/N/1/N - AT
MAC: 0013A200409FCEE0
- Name:** XBee DigiMesh 2.4
Function: XBee DigiMesh 2.4
Port: usbserial-A60.../B/N/1/N - AT
MAC: 0013A20040A169FB

Radio Configuration [- 0013A200409FCEE0]

Read Write Default Update Profile

Parameter

BH Broadcast Hops	0	
NH Network Hops	7	Hops
MR Mesh Unicast Retries	1	Mesh Uni... Retries
NN Network Delay Slots	3	Network ...ay Slots

Addressing
Change Addressing Settings

SH Serial Number High	13A200	
SL Serial Number Low	409FCEE0	
DH Destination Address High	0	
DL Destination Address Low	FFFF	
NI Node Identifier		
NT Network Discovery Back-off	82	* 100 ms
NO Network Discovery Options	0	
CI Cluster ID	11	

XCTU

Radio Modules

- Name:** XBee DigiMesh 2.4
Function: XBee DigiMesh 2.4
Port: usbserial-A9C.../B/N/1/N - AT
MAC: 0013A200409FCEE0

Radio Configuration [- 0013A200409FCEE0]

Read Write Default Update Profile

Parameter

EE Encryption Enable	Disabled [0]	
KY AES Encryption Key		

Serial Interfacing
Change module interfacing options

BD Baud Rate	9600 [3]	
NB Parity	No Parity [0]	
RO Packetization Timeout	10	* character times
FT Flow Control Threshold	BE	Bytes
AP API Enable	Transparent Mode [0]	
AO API Options	API Rx Indicator-0x90 [0]	

I/O Settings
Modify DIO and ADC Options

DO DIO/ADO	Disabled [0]	
DI DIO1/AD1	Disabled [0]	

