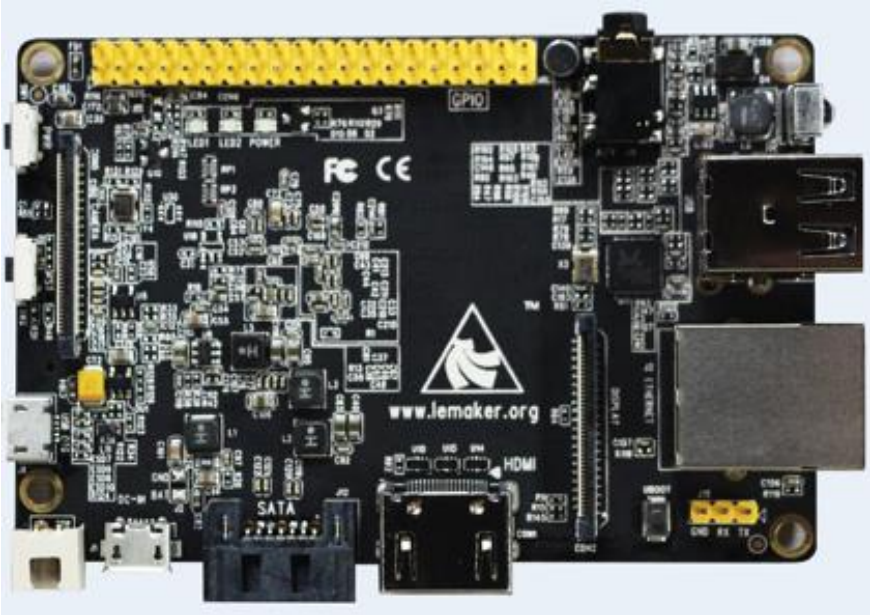
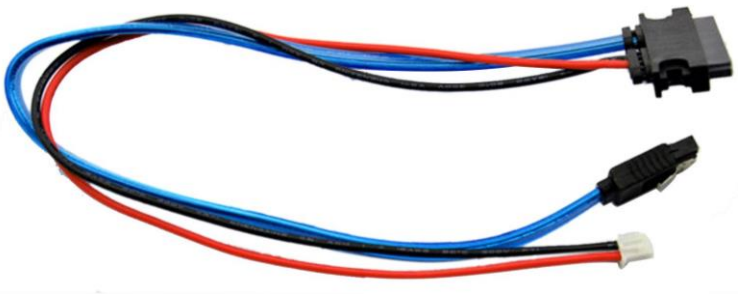
1

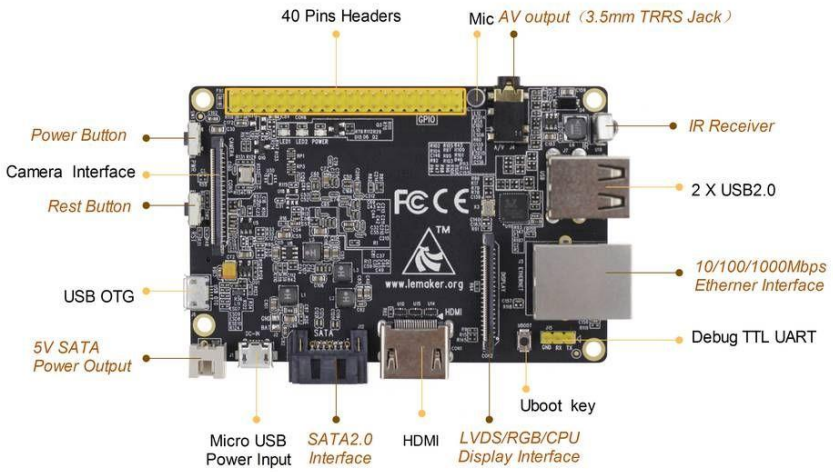
Introduction to Banana Pro

Banana Pro

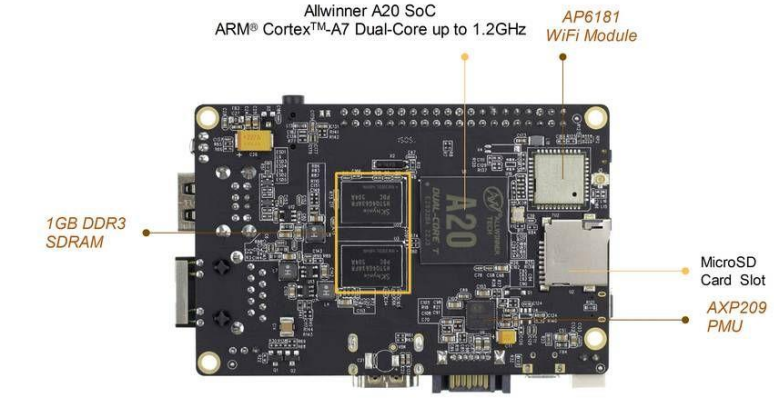


Specifications of Banana Pro



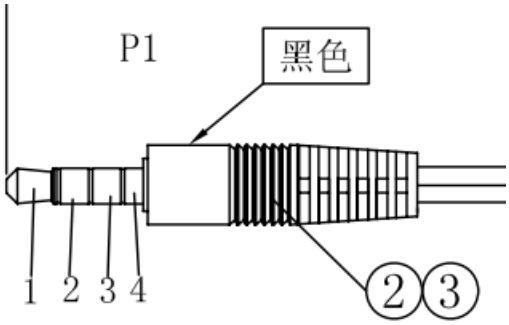


Front side

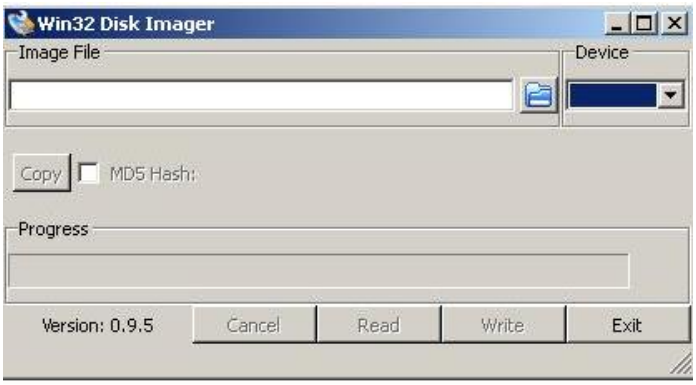


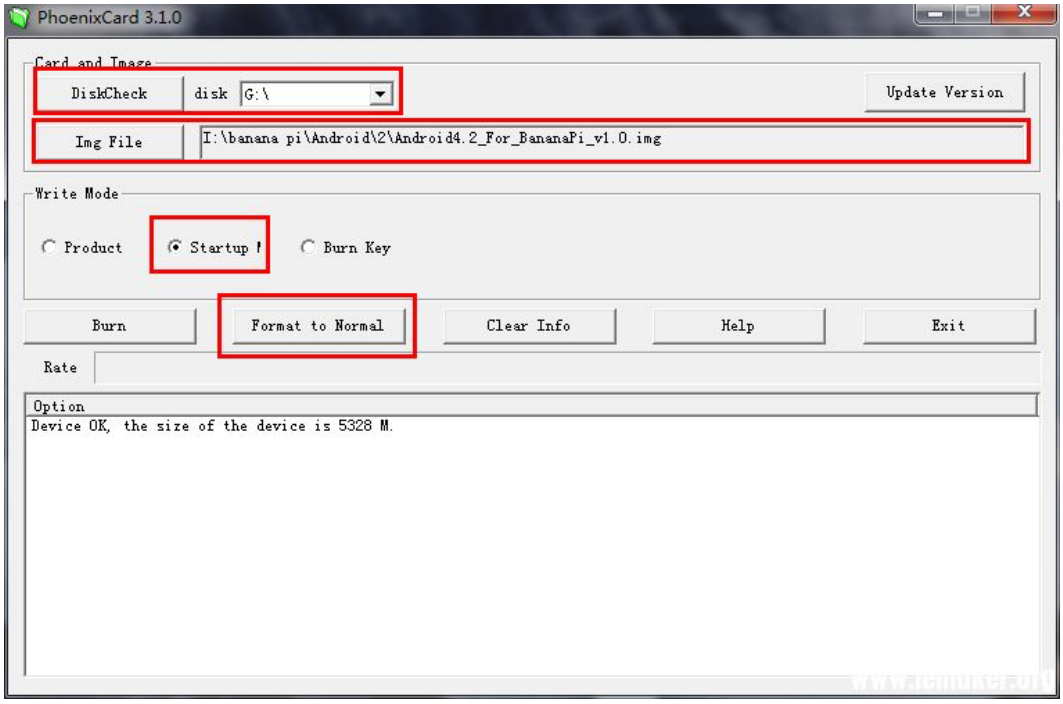
Back side

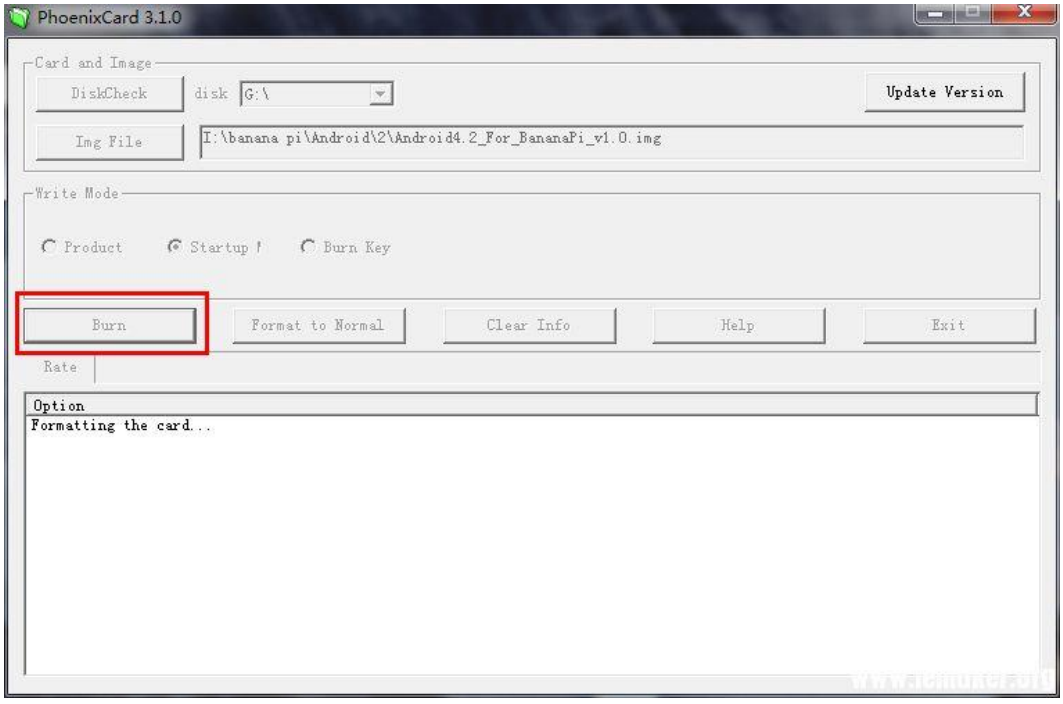
LEMAKER


P1
黑色
1 2 3 4
② ③

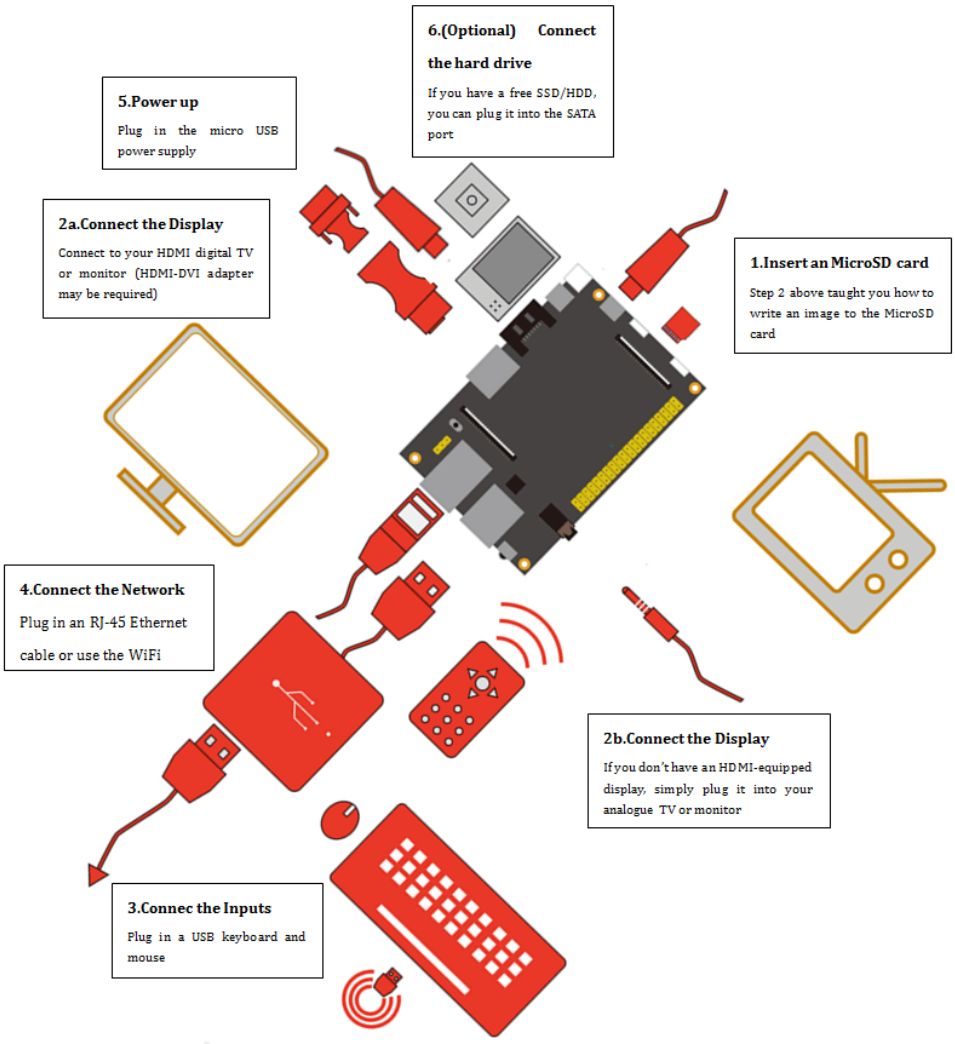
Getting started



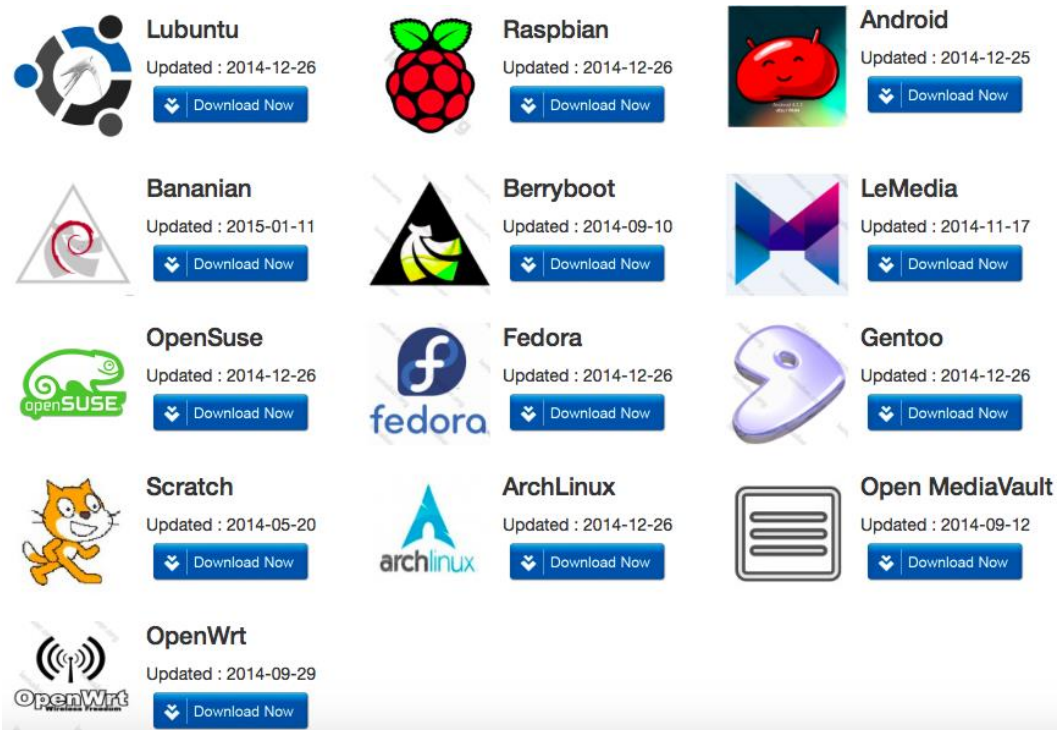

PhoenixCard 3.1.0
Card and Image
DiskCheck
disk G:\
Update Version
Img File
I:\banana pi\Android\2\Android4.2_For_BananaPi_v1.0.img
Write Mode
Product
Startup !
Burn Key
Burn
Format to Normal
Clear Info
Help
Exit
Rate
Option
Device OK, the size of the device is 5328 M.

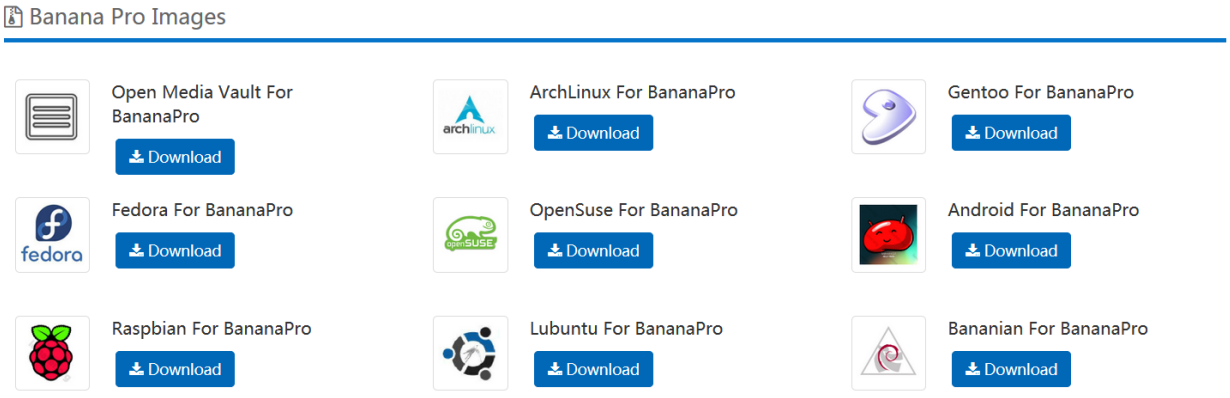

PhoenixCard 3.1.0
Card and Image
DiskCheck
disk G:\
Update Version
Img File
I:\banana pi\Android\2\Android4.2_For_BananaPi_v1.0.img
Write Mode
Product
Startup !
Burn Key
Burn
Format to Normal
Clear Info
Help
Exit
Rate
Option
Formatting the card...

The first boot

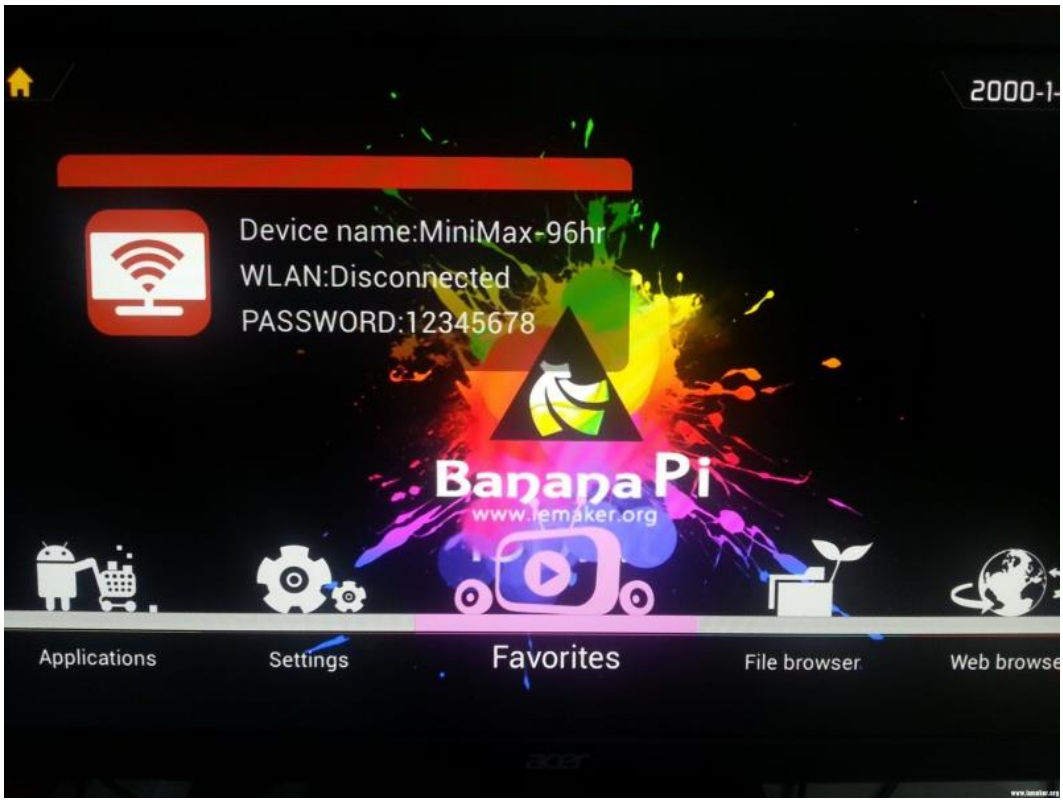


Available operating systems for Banana Pro





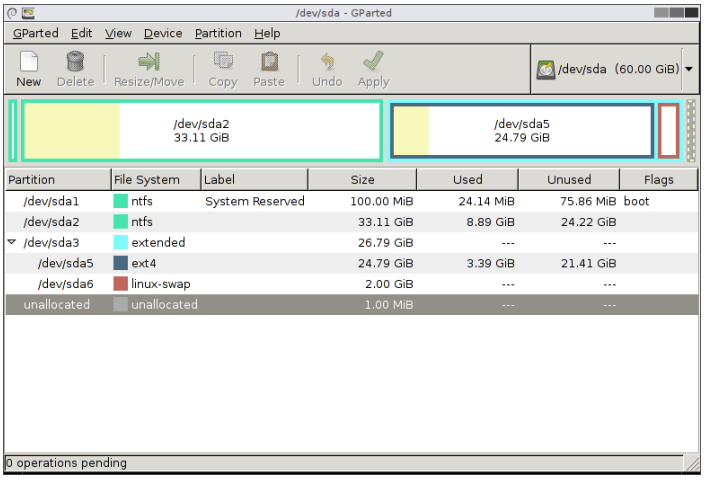
Android


Device name:MiniMax-96hr
WLAN:Disconnected
PASSWORD:12345678
Banana Pi
www.lemaker.org
Applications
Settings
Favorites
File browser

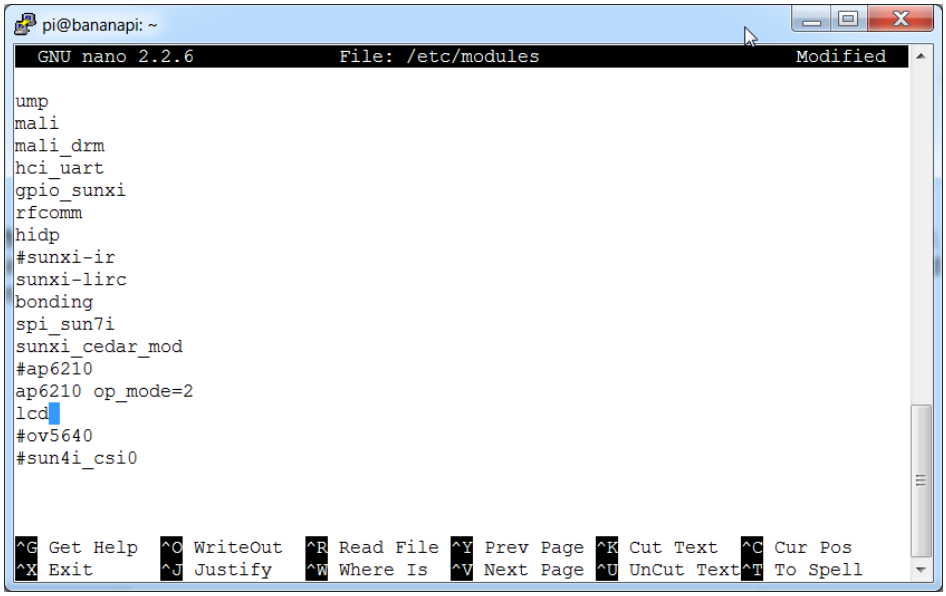

100% 8:35
Google
Terminal Er
YouTube
Drive
A20

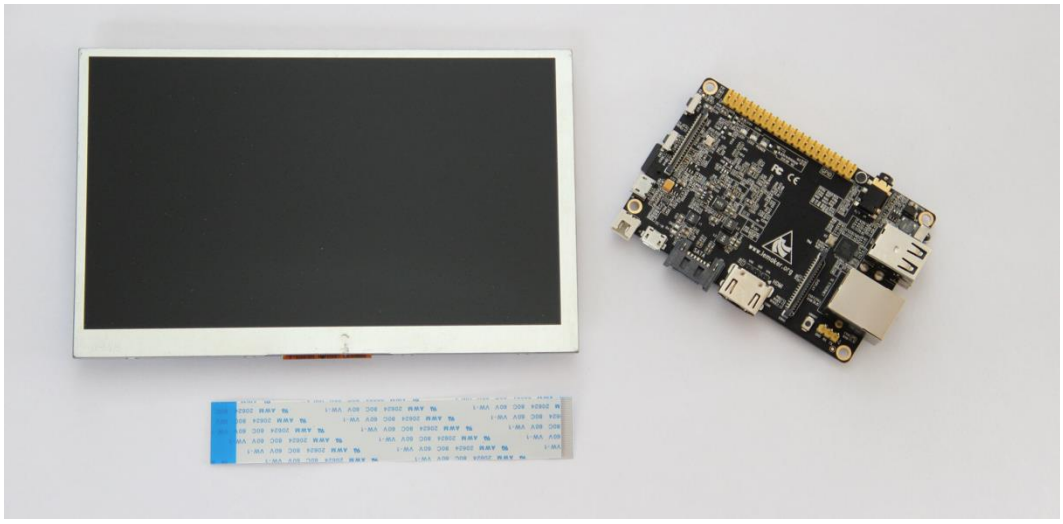
Linux

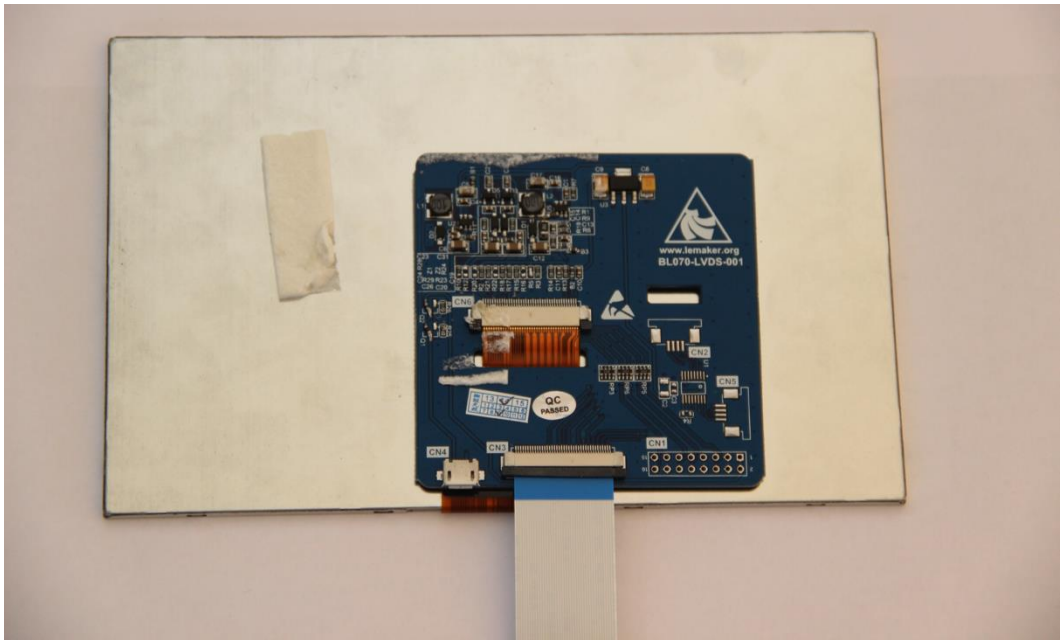
Transferring an OS to a hard disk

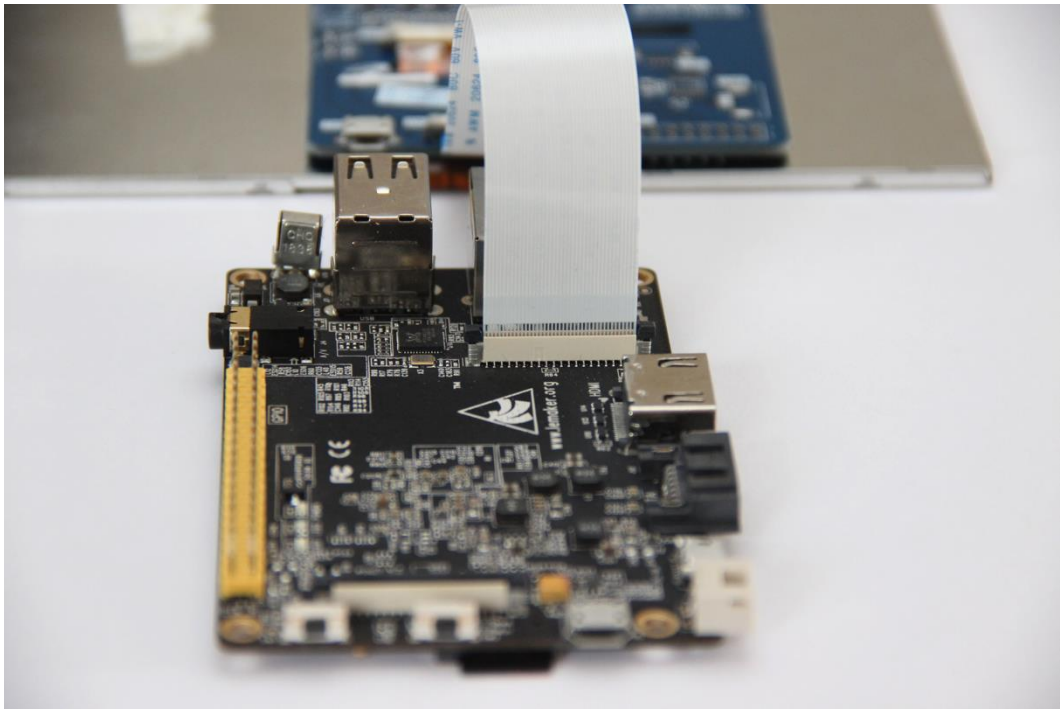


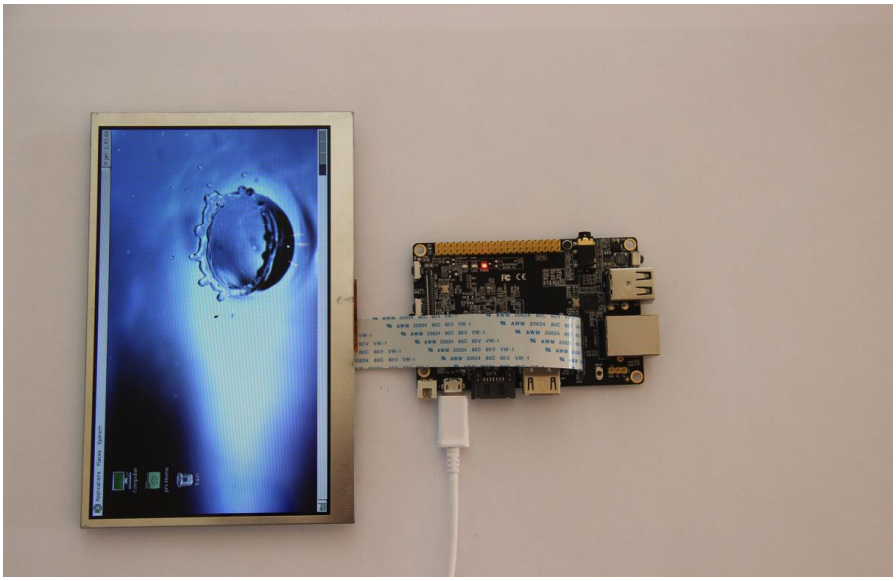
The 7-inch LCD step-by-step guide

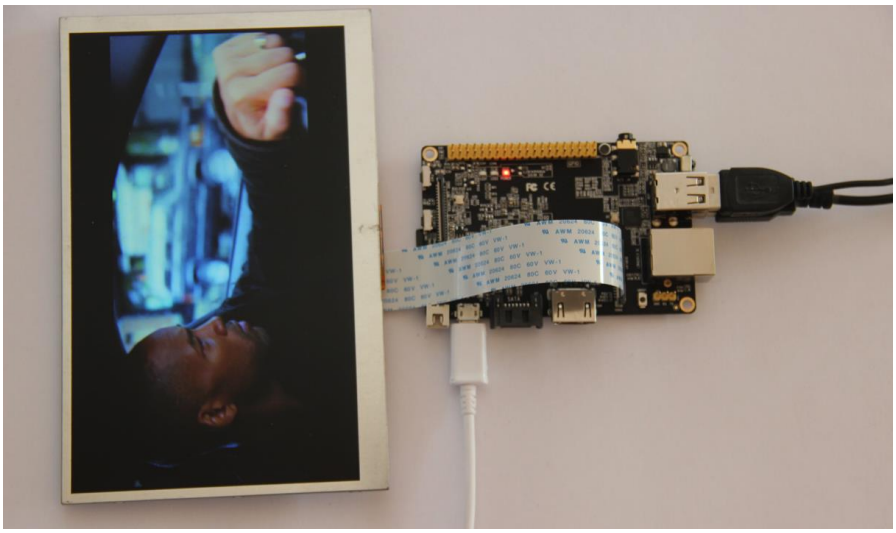





www.lemaker.org
BL070-LVDS-001
QC
PASSED
CN1
CN2
CN3
CN4
CN5
CN6

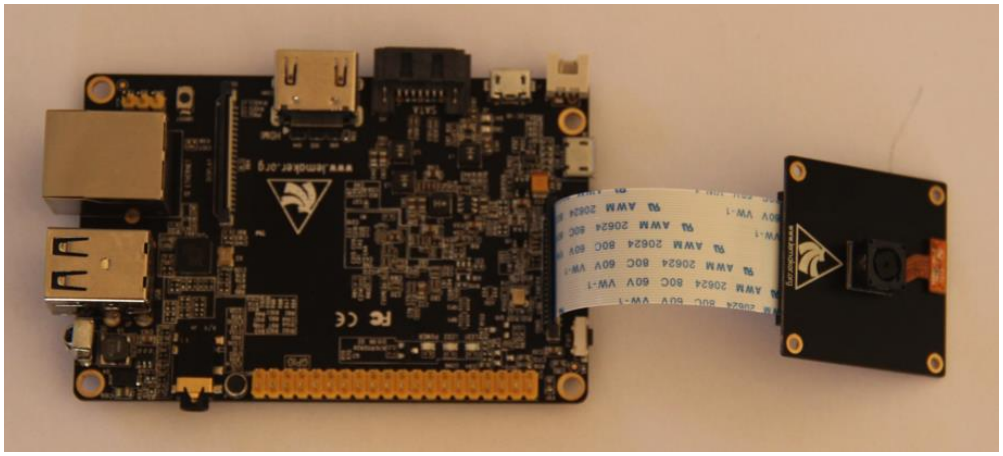


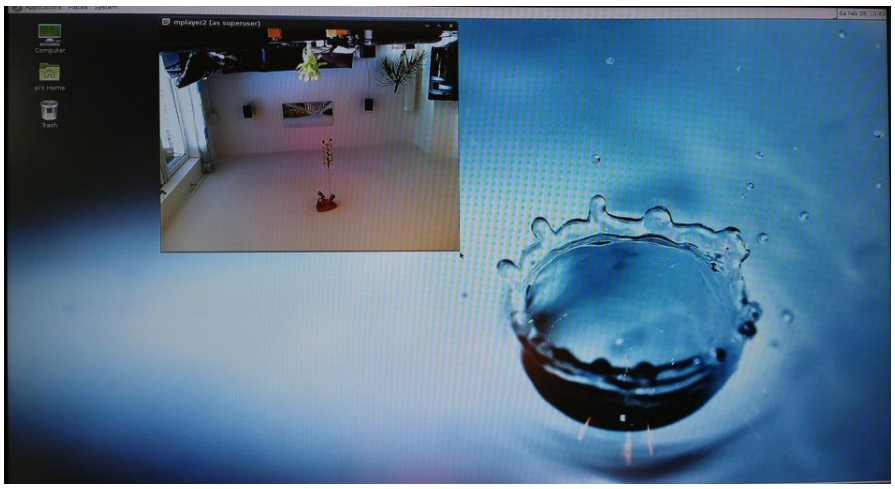




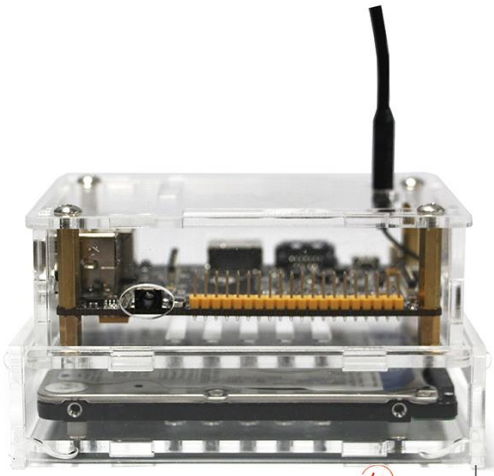
The camera module

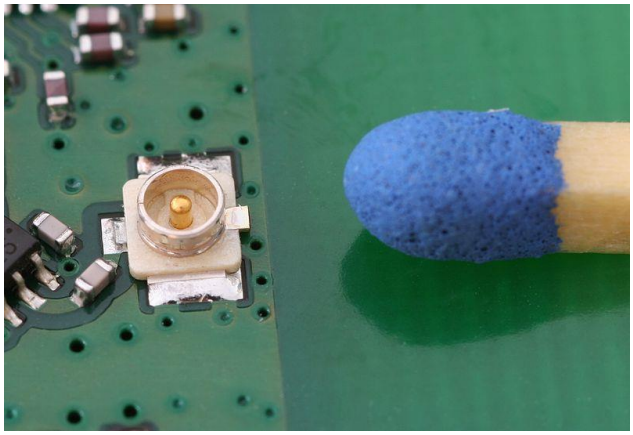
The camera module step-by-step guide



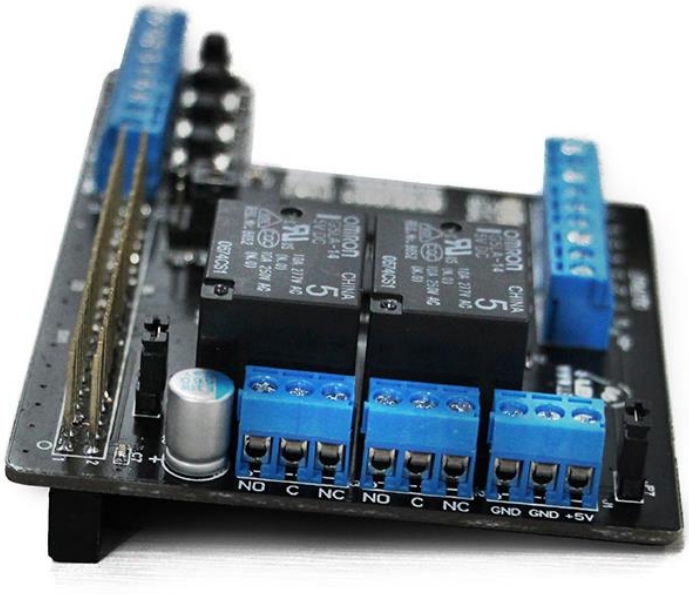


Cases

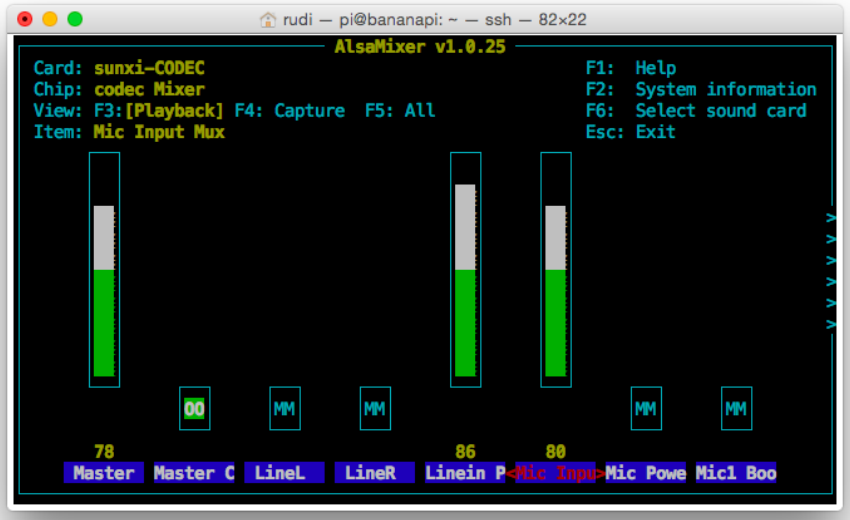




GPIO add-ons

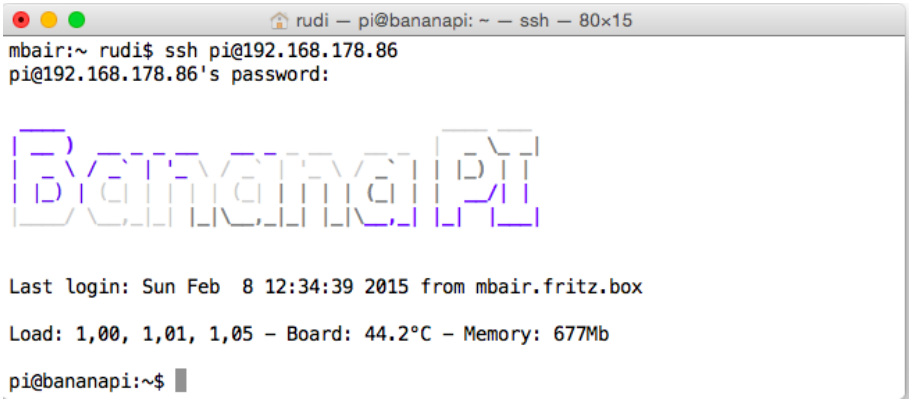


An onboard microphone

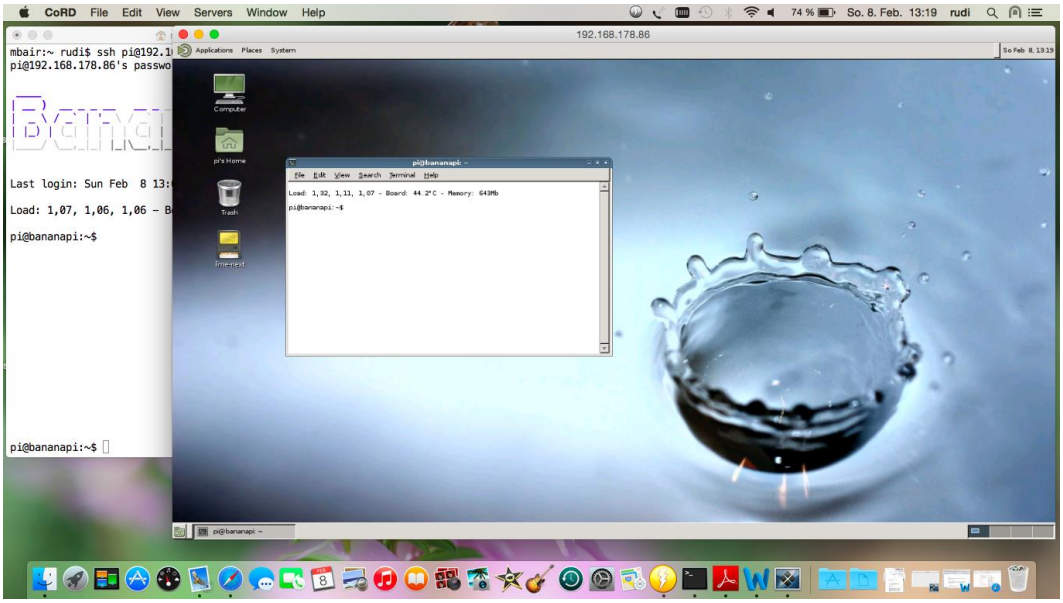


2
Programming Languages

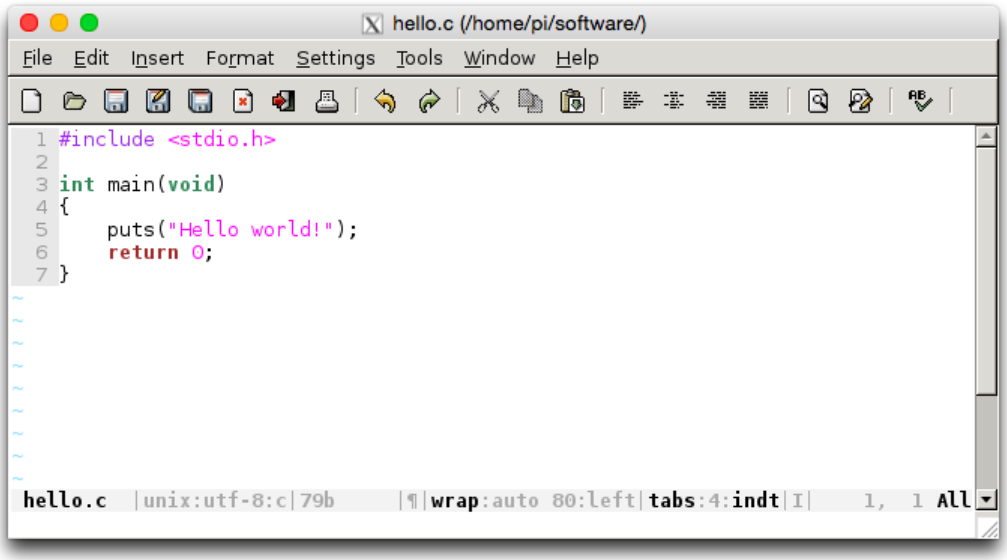
Secure Shell

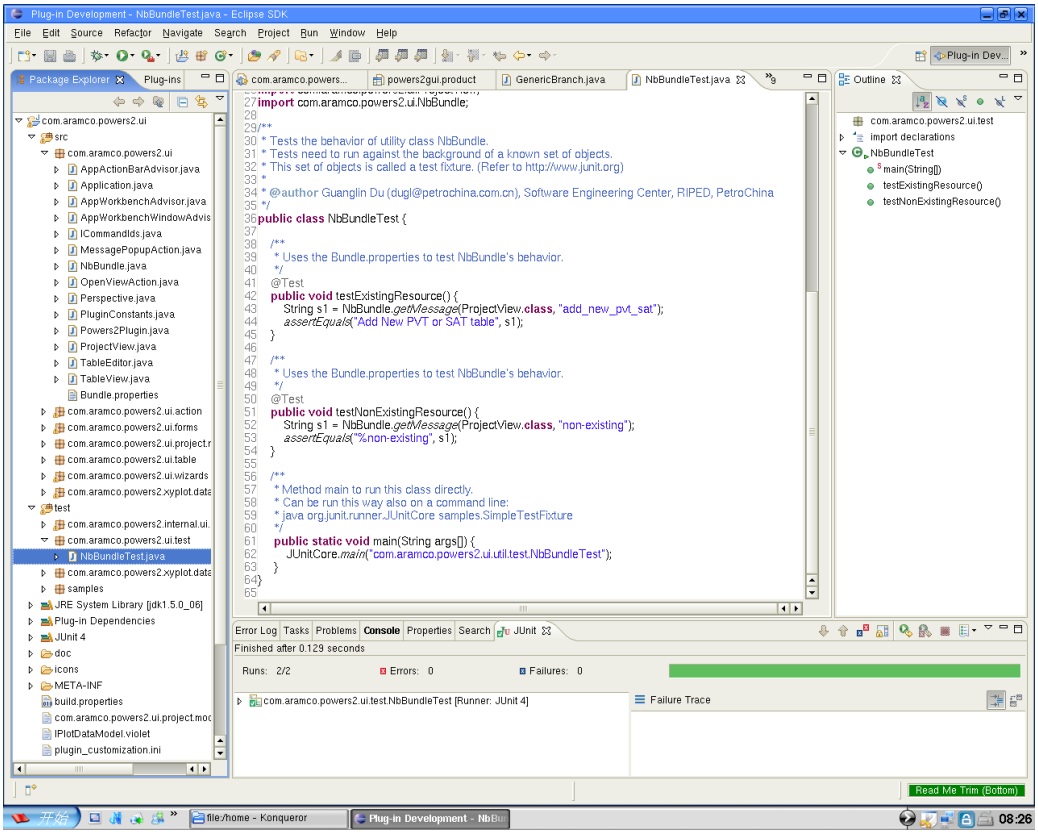


xrdp

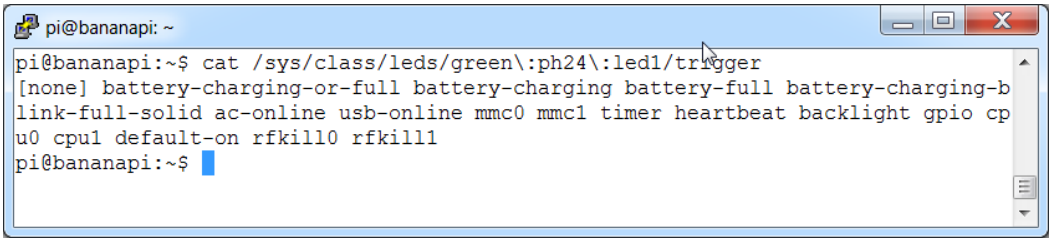

CoRD File Edit View Servers Window Help
So. 8. Feb. 13:19 rudi
192.168.178.86
Applications Places System
mbair:~ rudi$ ssh pi@192.1
pi@192.168.178.86's passwo
Last login: Sun Feb 8 13:
Load: 1,07, 1,06, 1,06 – B
pi@bananapi:~$
Computer
pi's Home
Trash
Internet
pi@bananapi: ~
File Edit View Search Terminal Help
Load: 1,32, 1,11, 1,07 - Board: 44.2°C - Memory: 643Mb
pi@bananapi:~$
pi@bananapi:~$

Editors

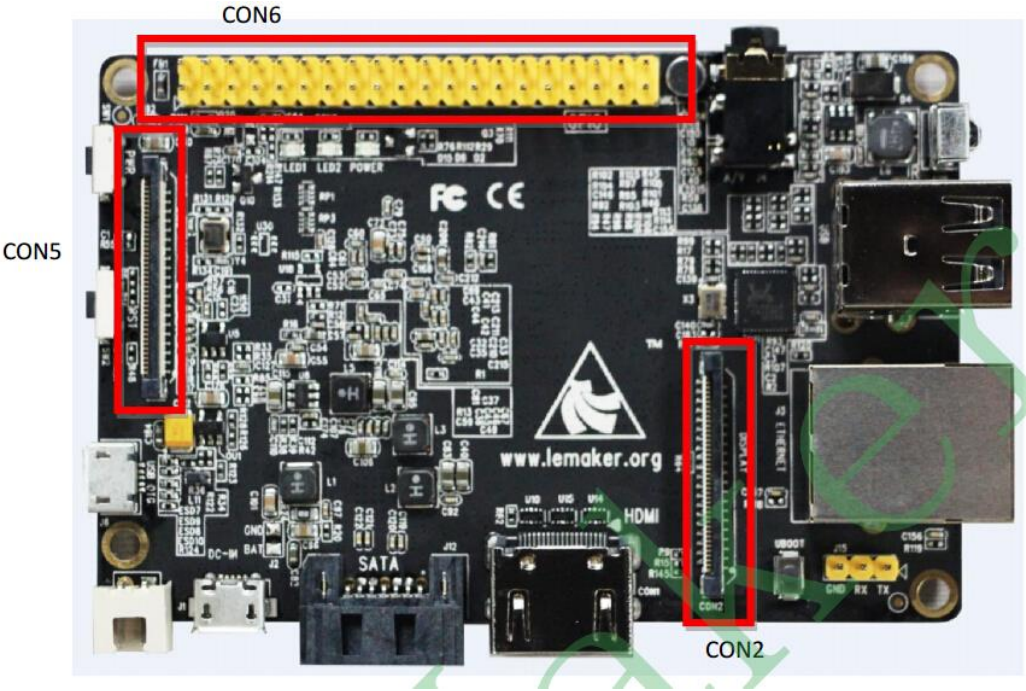

hello.c (/home/pi/software/)
File Edit Insert Format Settings Tools Window Help
1 #include <stdio.h>
2
3 int main(void)
4 {
5 puts("Hello world!");
6 return 0;
7 }
hello.c |unix:utf-8:c|79b |¶|wrap:auto 80:left|tabs:4:indt|I| 1, 1 All



Controlling Banana Pro's LEDs from SSH



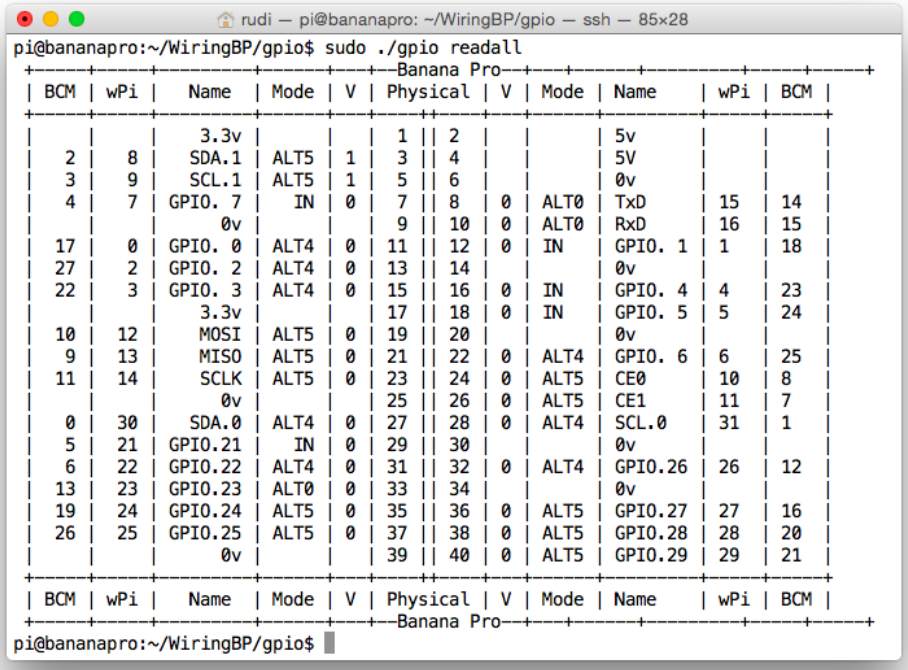
Programming GPIOs from shell

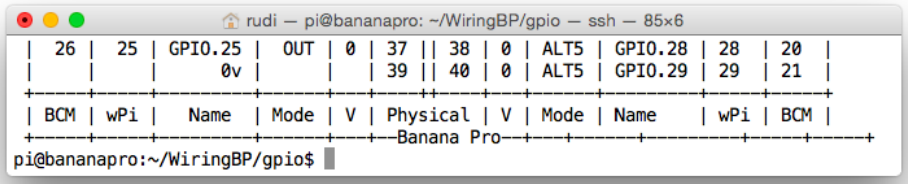


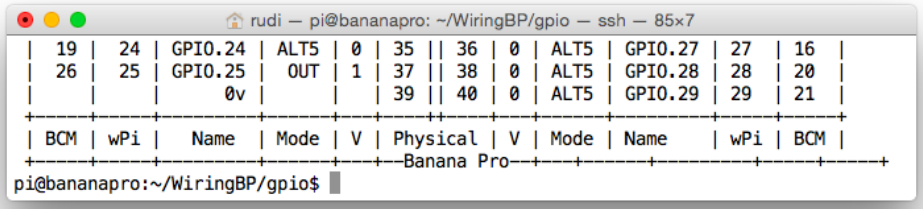
Banana Pro CON6

Pin#	NAME		NAME	Pin#
1	VCC-3.3V		VCC-5V	2
3	TWI2-SDA		VCC-5V	4
5	TWI2-SCK		GND	6
7	IO-1		UART4_TX	8
9	GND		UART4_RX	10
11	IO-0（UART2_RX）		PWM1	12
13	IO-2（UART2_TX）		GND	14
15	IO-3（UART2_CTS）		IO-4(CAN_TX)	16
17	VCC-3.3V		IO-5(CAN_RX)	18
19	SPI0_MOSI		GND	20
21	SPI0_MISO		IO-6(UART2_RTS)	22
23	SPI0_CLK		SPI0_CS0	24
25	GND		SPI0_CS1	26
27	TWI3-SDA		TWI3-SCK	28
29	IO-7(IR0_TX/SPDIF_MCLK)		GND	30
31	UART7_RX		UART7_TX	32
33	IO-8(SPDIF_DO)		GND	34
35	I2S0_LRCK		I2S0_BCLK	36
37	I2S0_MCLK		I2S0_DI	38
39	GND		I2S0_DO0	40

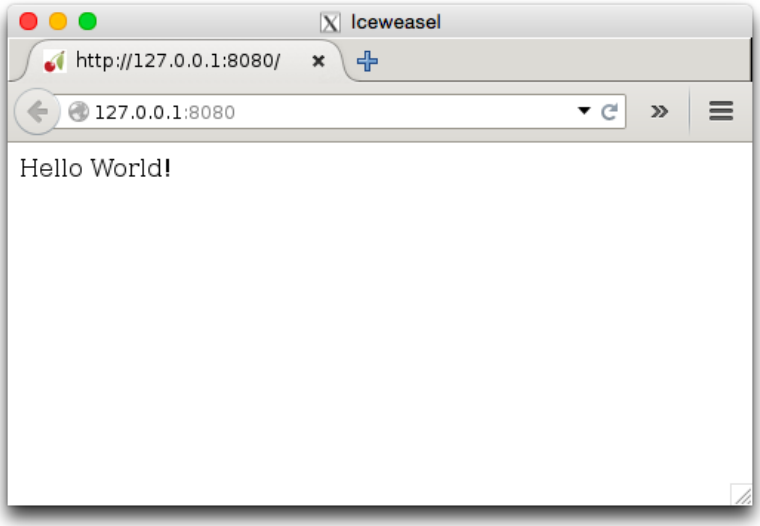
WiringBP


rudi — pi@bananapro: ~/WiringBP/gpio — ssh — 85×28
pi@bananapro:~/WiringBP/gpio$ sudo ./gpio readall
+-----+-----+----------+------+---+--Banana Pro--+---+------+----------+-----+-----+
| BCM | wPi | Name | Mode | V | Physical | V | Mode | Name | wPi | BCM |
+-----+-----+----------+------+---+----++----+---+------+----------+-----+-----+
		3.3v			1		2			5v		
2	8	SDA.1	ALT5	1	3		4			5V		
3	9	SCL.1	ALT5	1	5		6			0v		
4	7	GPIO. 7	IN	0	7		8	0	ALT0	TxD	15	14
		0v			9		10	0	ALT0	RxD	16	15
17	0	GPIO. 0	ALT4	0	11		12	0	IN	GPIO. 1	1	18
27	2	GPIO. 2	ALT4	0	13		14			0v		
22	3	GPIO. 3	ALT4	0	15		16	0	IN	GPIO. 4	4	23
		3.3v			17		18	0	IN	GPIO. 5	5	24
10	12	MOSI	ALT5	0	19		20			0v		
9	13	MISO	ALT5	0	21		22	0	ALT4	GPIO. 6	6	25
11	14	SCLK	ALT5	0	23		24	0	ALT5	CE0	10	8
		0v			25		26	0	ALT5	CE1	11	7
0	30	SDA.0	ALT4	0	27		28	0	ALT4	SCL.0	31	1
5	21	GPIO.21	IN	0	29		30			0v		
6	22	GPIO.22	ALT4	0	31		32	0	ALT4	GPIO.26	26	12
13	23	GPIO.23	ALT0	0	33		34			0v		
19	24	GPIO.24	ALT5	0	35		36	0	ALT5	GPIO.27	27	16
26	25	GPIO.25	ALT5	0	37		38	0	ALT5	GPIO.28	28	20
		0v			39		40	0	ALT5	GPIO.29	29	21
+-----+-----+----------+------+---+----++----+---+------+----------+-----+-----+
| BCM | wPi | Name | Mode | V | Physical | V | Mode | Name | wPi | BCM |
+-----+-----+----------+------+---+--Banana Pro--+---+------+----------+-----+-----+
pi@bananapro:~/WiringBP/gpio$


rudi — pi@bananapro: ~/WiringBP/gpio — ssh — 85×6
| 26 | 25 | GPIO.25 | OUT | 0 | 37 || 38 | 0 | ALT5 | GPIO.28 | 28 | 20 |
| | | 0v | | | 39 || 40 | 0 | ALT5 | GPIO.29 | 29 | 21 |
+-----+-----+---------+------+---+----++----+---+------+---------+-----+-----+
| BCM | wPi | Name | Mode | V | Physical | V | Mode | Name | wPi | BCM |
+-----+-----+---------+------+---+--Banana Pro--+---+------+---------+-----+-----+
pi@bananapro:~/WiringBP/gpio$



A simple web server



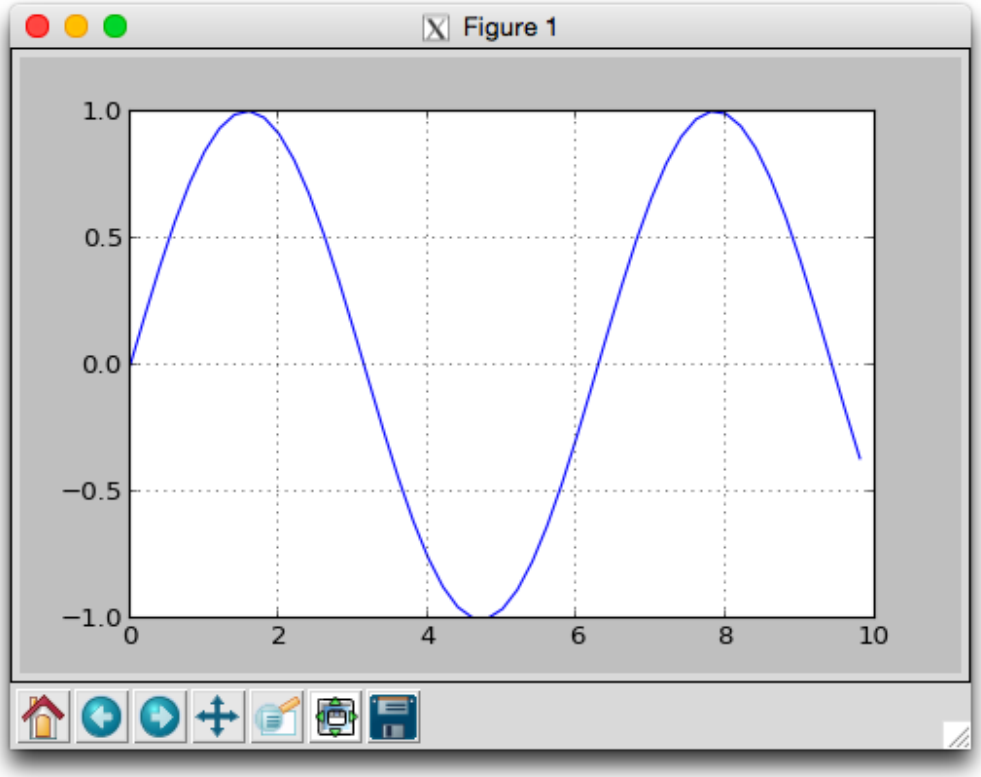
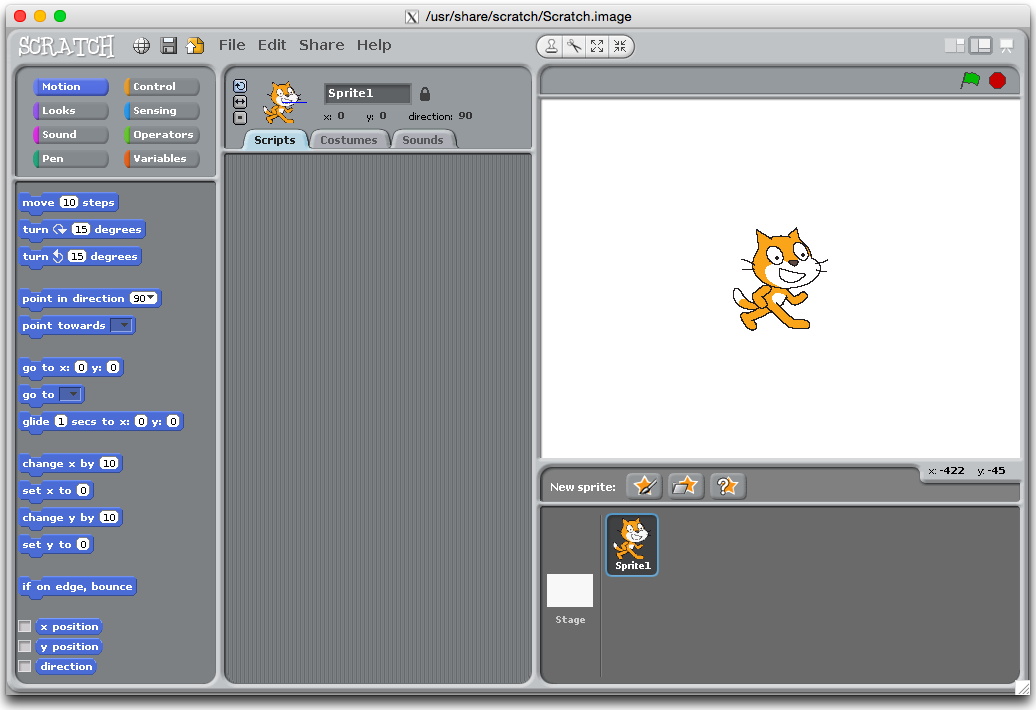
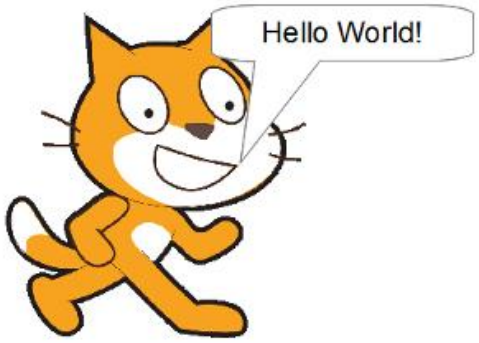


Figure 1
1.0
0.5
0.0
−0.5
−1.0
0
2
4
6
8
10

Scratch

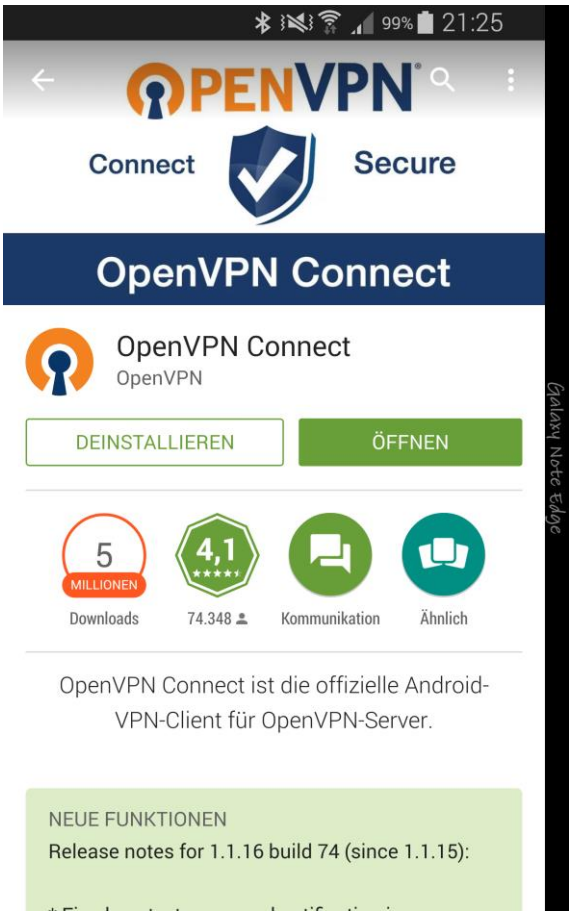


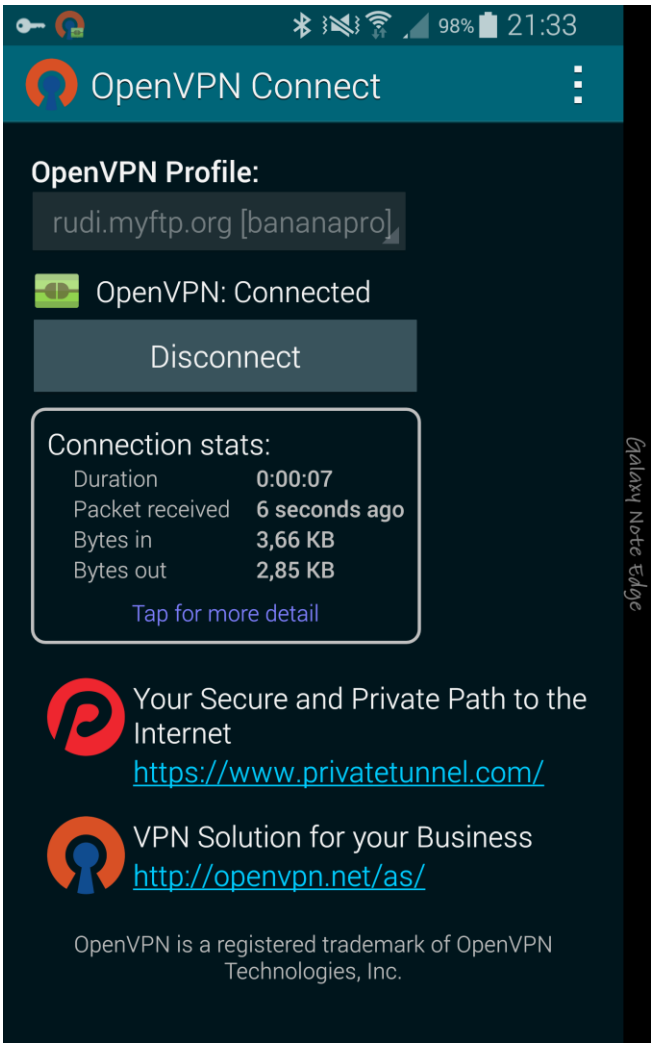
Hello Scratch


Hello World!

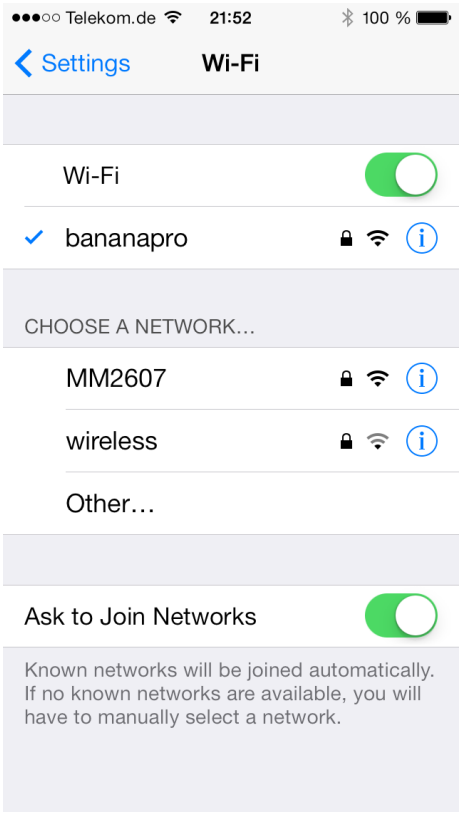
3
Wireless Projects

Connecting from Android

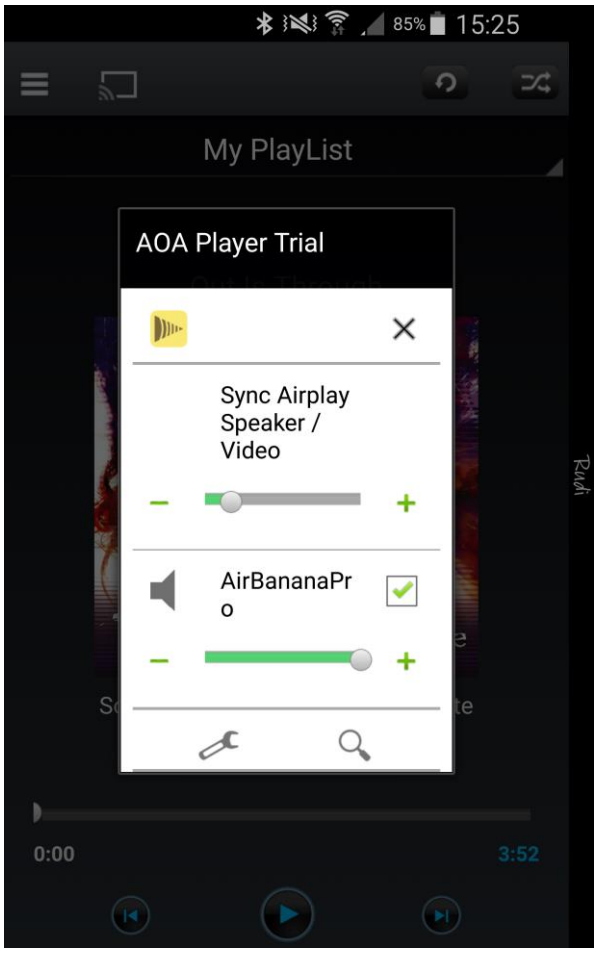



98% 21:33
OpenVPN Connect
OpenVPN Profile:
rudi.myftp.org [bananapro]
OpenVPN: Connected
Disconnect
Connection stats:
Duration 0:00:07
Packet received 6 seconds ago
Bytes in 3,66 KB
Bytes out 2,85 KB
Tap for more detail
Your Secure and Private Path to the Internet
https://www.privatetunnel.com/
VPN Solution for your Business
http://openvpn.net/as/
OpenVPN is a registered trademark of OpenVPN Technologies, Inc.
Galaxy Note Edge

Setting up an access point mode

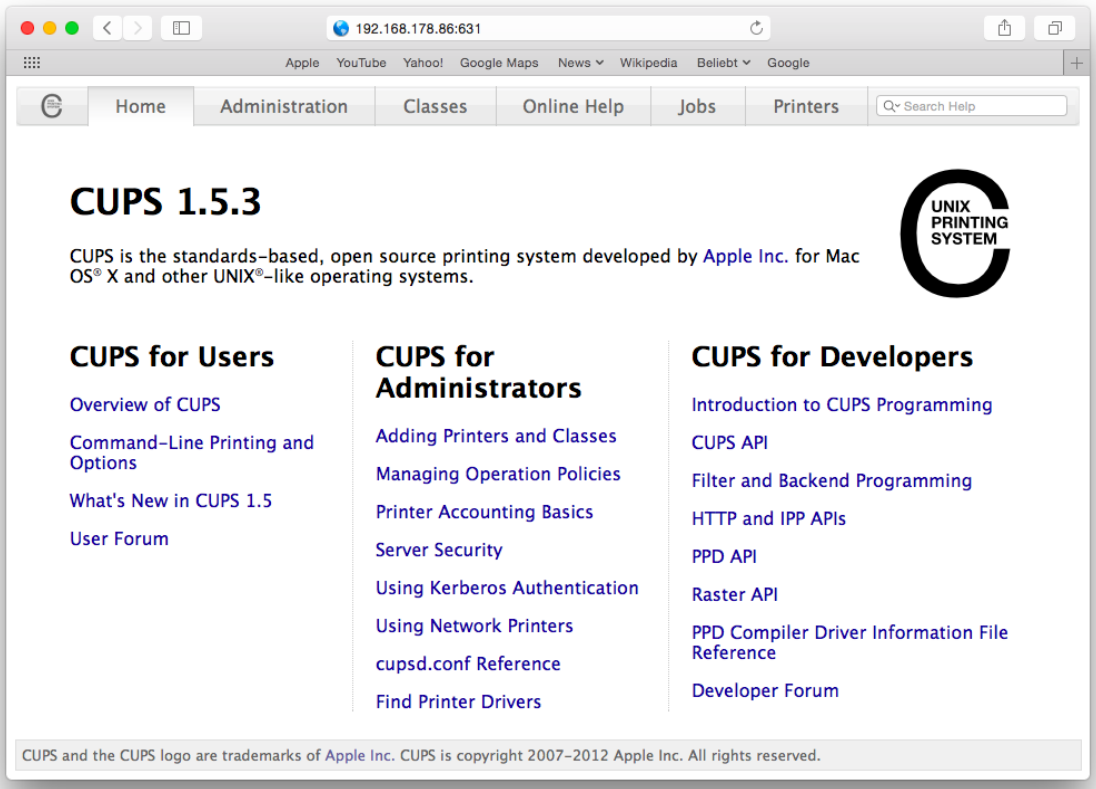


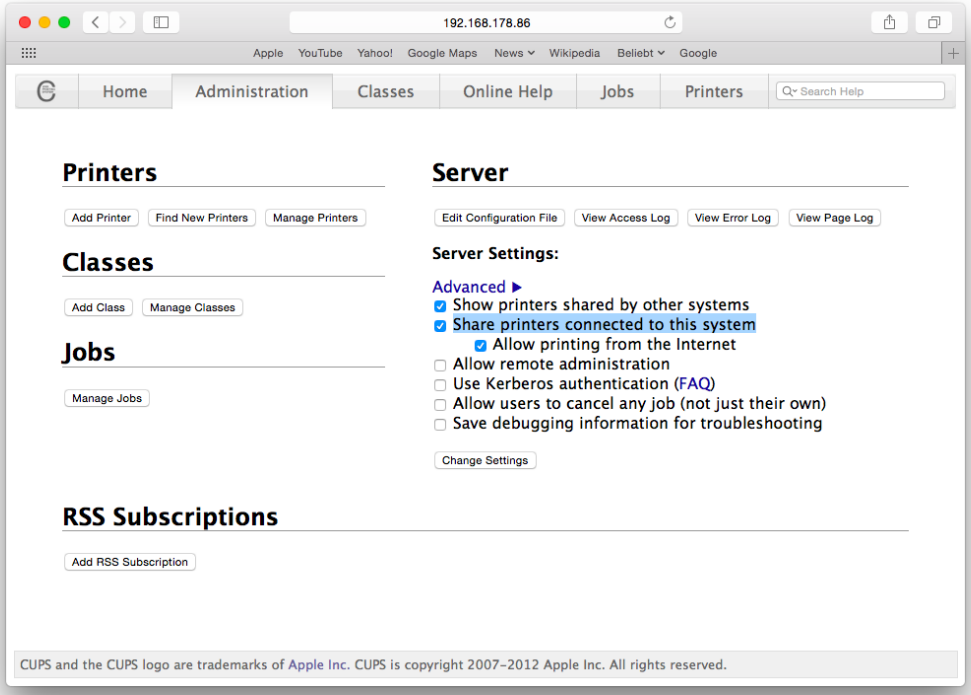
The AirPlay protocol



Using an external USB SPDIF soundcard

Configuring CUPS




192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Home
Administration
Classes
Online Help
Jobs
Printers
Search Help
Printers
Add Printer
Find New Printers
Manage Printers
Classes
Add Class
Manage Classes
Jobs
Manage Jobs
Server
Edit Configuration File
View Access Log
View Error Log
View Page Log
Server Settings:
Advanced ▶
Show printers shared by other systems
Share printers connected to this system
Allow printing from the Internet
Allow remote administration
Use Kerberos authentication (FAQ)
Allow users to cancel any job (not just their own)
Save debugging information for troubleshooting
Change Settings
RSS Subscriptions
Add RSS Subscription
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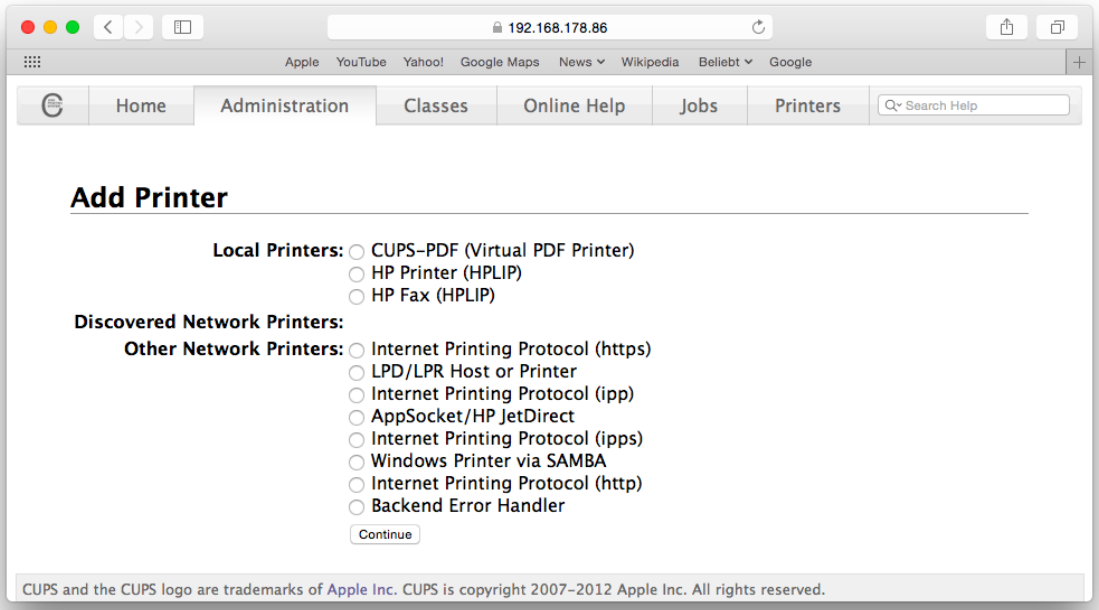
192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Home Administration Classes Online Help Jobs Printers
Search Help
Add Printer
Local Printers: CUPS-PDF (Virtual PDF Printer)
HP Printer (HPLIP)
HP Fax (HPLIP)
Discovered Network Printers:
Other Network Printers: Internet Printing Protocol (https)
LPD/LPR Host or Printer
Internet Printing Protocol (ipp)
AppSocket/HP JetDirect
Internet Printing Protocol (ipps)
Windows Printer via SAMBA
Internet Printing Protocol (http)
Backend Error Handler
Continue
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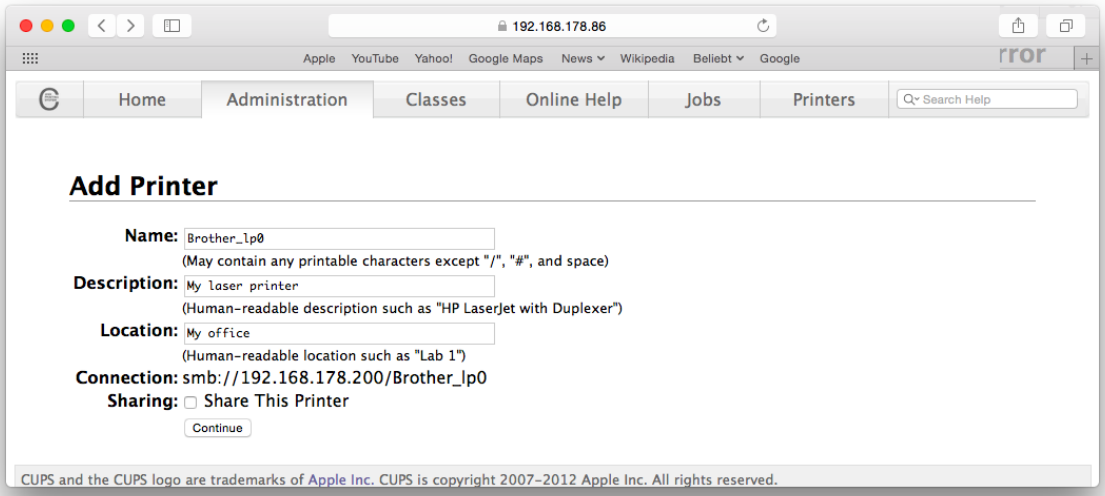
192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Home
Administration
Classes
Online Help
Jobs
Printers
Search Help
Add Printer
Name: Brother_lp0
(May contain any printable characters except "/", "#", and space)
Description: My laser printer
(Human-readable description such as "HP LaserJet with Duplexer")
Location: My office
(Human-readable location such as "Lab 1")
Connection: smb://192.168.178.200/Brother_lp0
Sharing: Share This Printer
Continue
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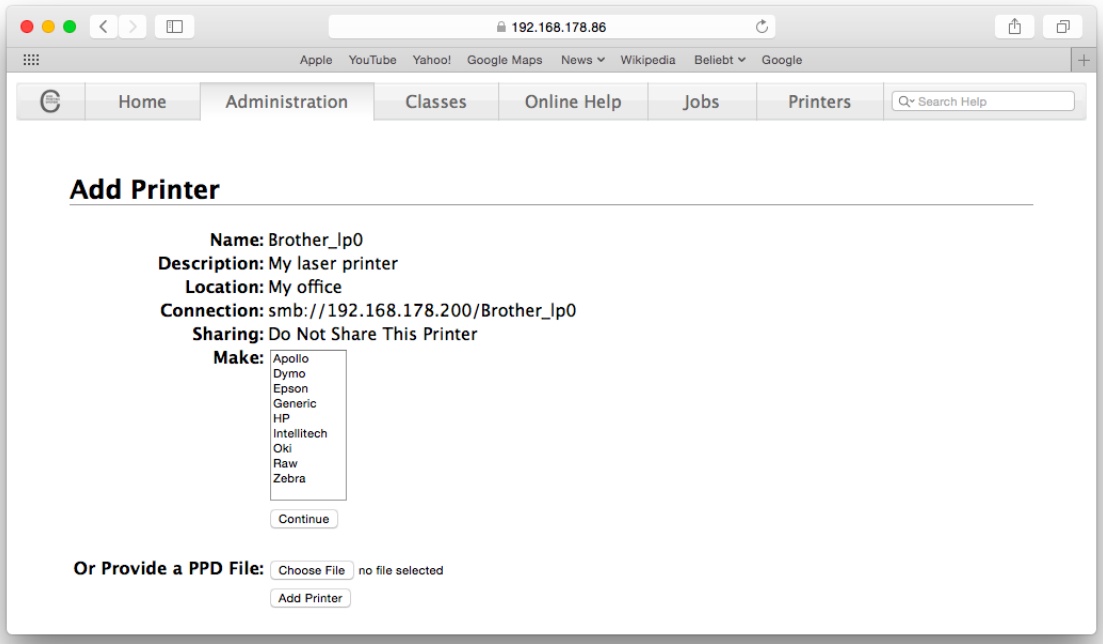
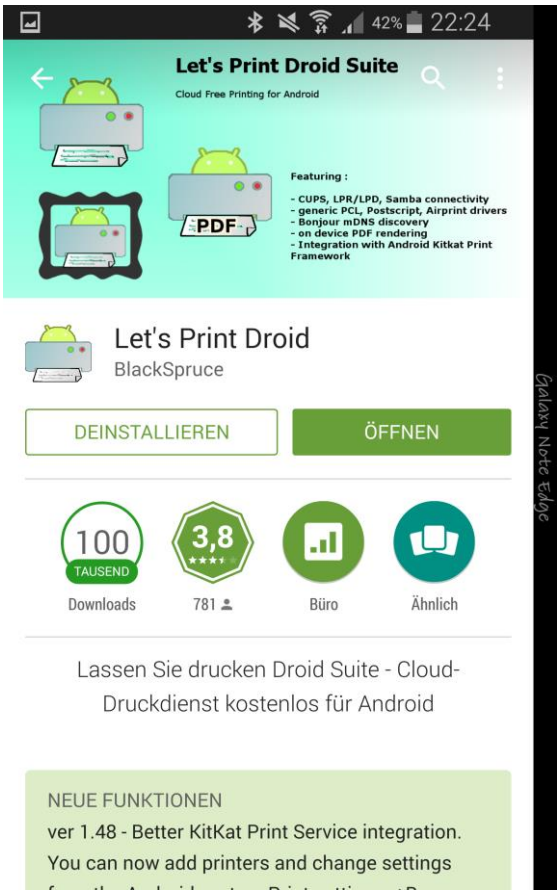
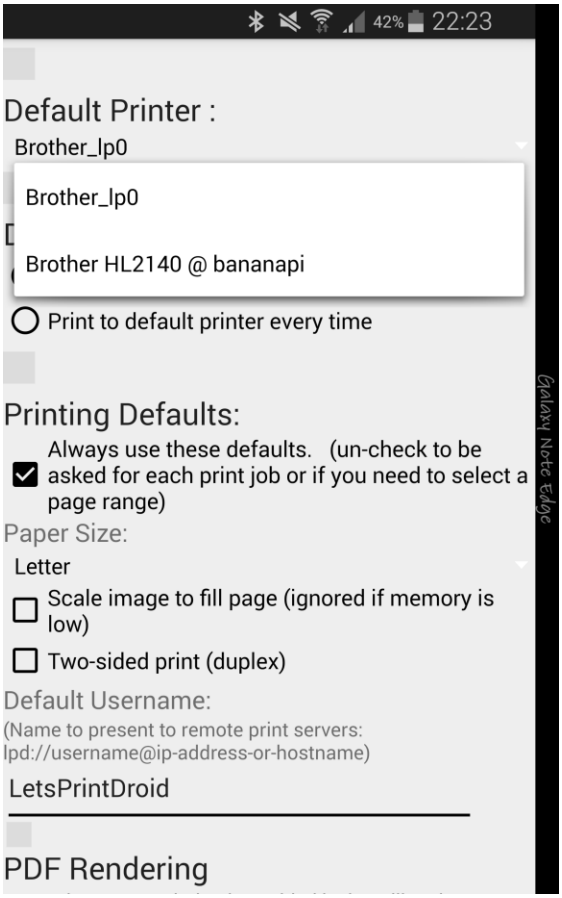
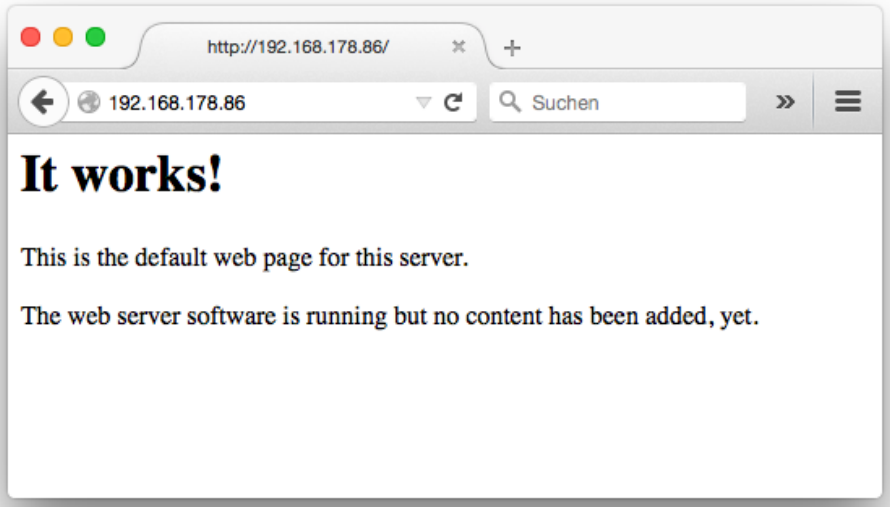

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Home Administration Classes Online Help Jobs Printers
Search Help
Add Printer
Name: Brother_lp0
Description: My laser printer
Location: My office
Connection: smb://192.168.178.200/Brother_lp0
Sharing: Do Not Share This Printer
Make:
Apollo
Dymo
Epson
Generic
HP
Intellitech
Oki
Raw
Zebra
Continue
Or Provide a PPD File:
Choose File
no file selected
Add Printer

Printing from Android and iOS

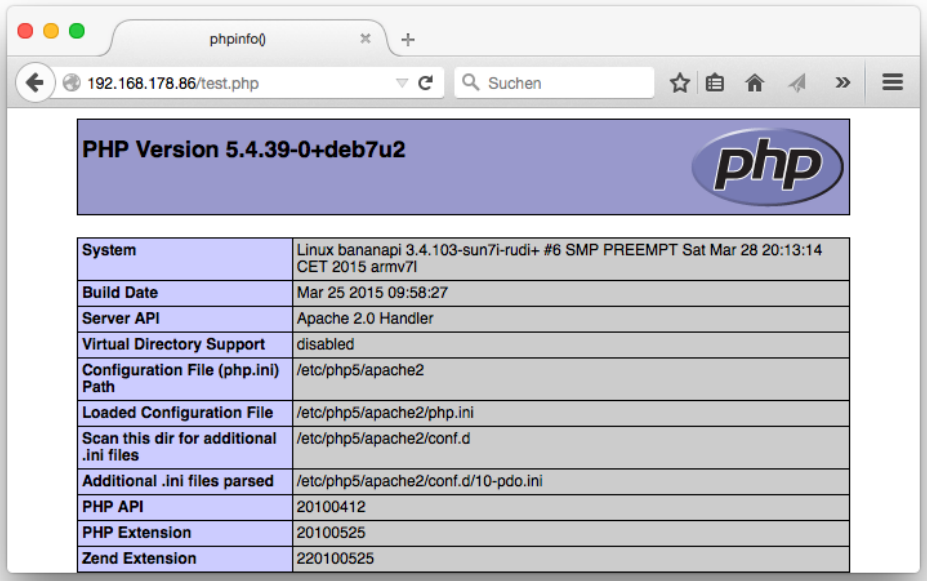



42% 22:23
Default Printer :
Brother_lp0
Brother_lp0
Brother HL2140 @ bananapi
Print to default printer every time
Printing Defaults:
Always use these defaults. (un-check to be asked for each print job or if you need to select a page range)
Paper Size:
Letter
Scale image to fill page (ignored if memory is low)
Two-sided print (duplex)
Default Username:
(Name to present to remote print servers: lpd://username@ip-address-or-hostname)
LetsPrintDroid
PDF Rendering
Galaxy Note Edge

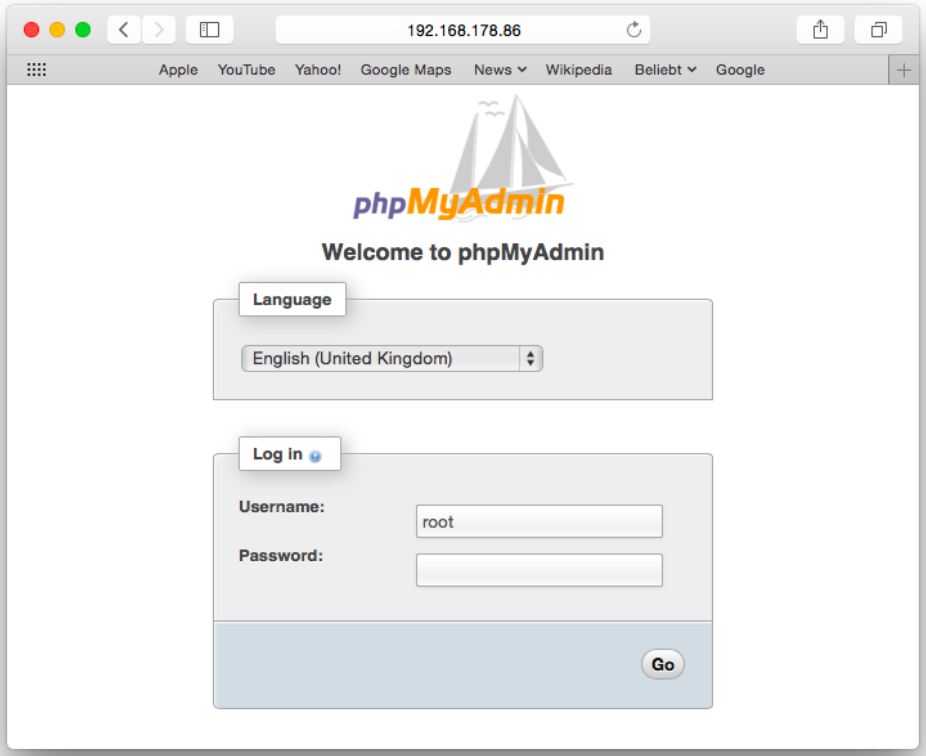
Serving web pages

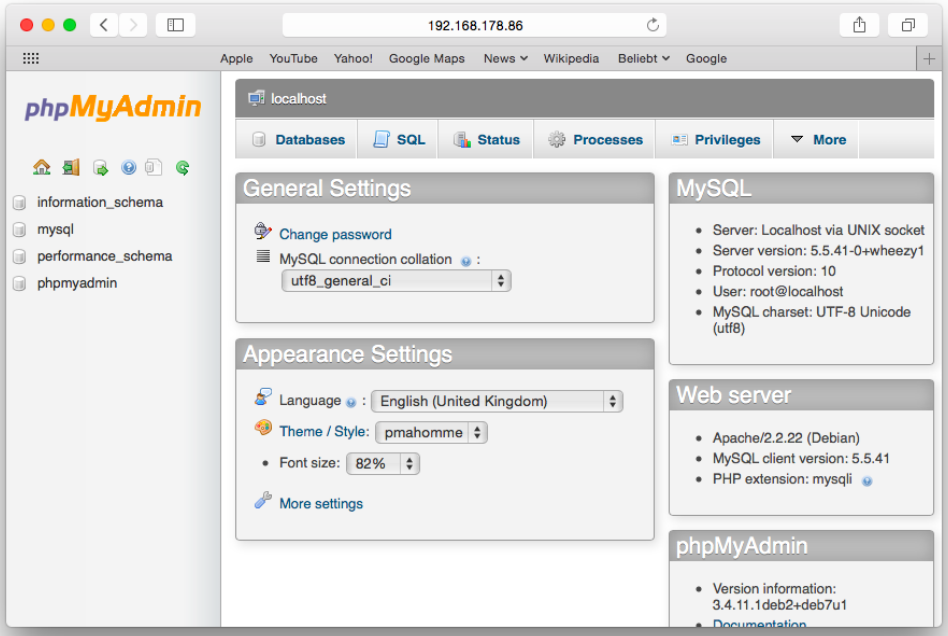


Installing php and mysql

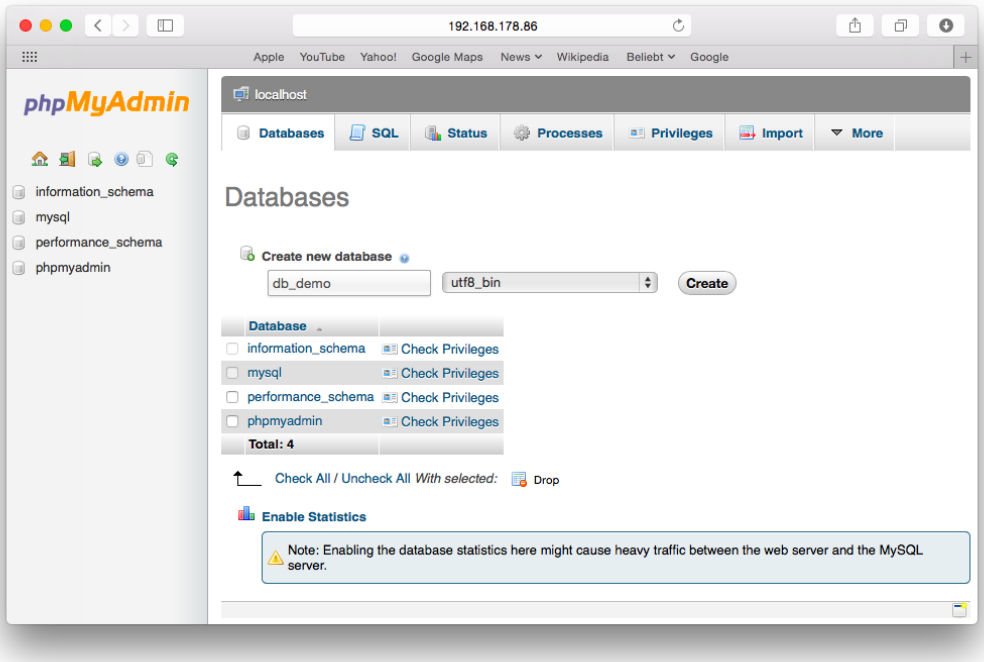


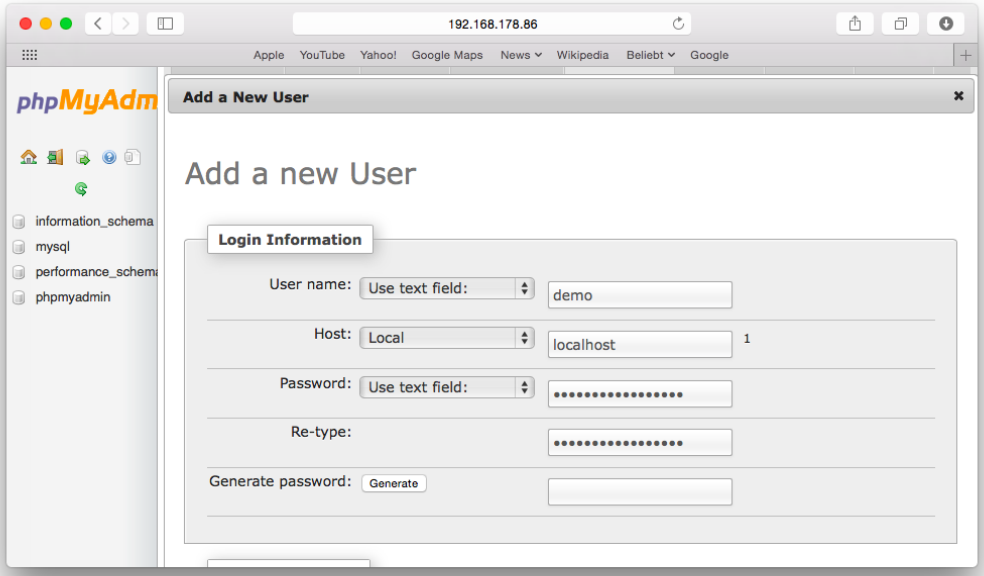
System	Linux bananapi 3.4.103-sun7i-rudi+ #6 SMP PREEMPT Sat Mar 28 20:13:14 CET 2015 armv7l
Build Date	Mar 25 2015 09:58:27
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php5/apache2
Loaded Configuration File	/etc/php5/apache2/php.ini
Scan this dir for additional .ini files	/etc/php5/apache2/conf.d
Additional .ini files parsed	/etc/php5/apache2/conf.d/10-pdo.ini
PHP API	20100412
PHP Extension	20100525
Zend Extension	220100525

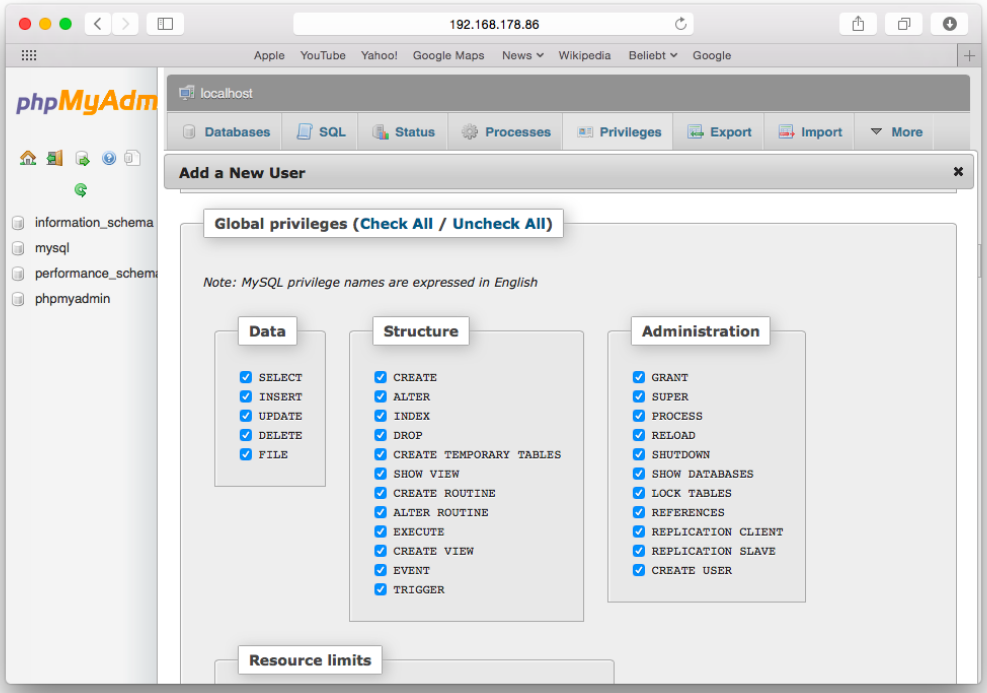

192.168.178.86
Apple
YouTube
Yahoo!
Google Maps
News
Wikipedia
Beliebt
Google
phpMyAdmin
Welcome to phpMyAdmin
Language
English (United Kingdom)
Log in
Username:
root
Password:
Go

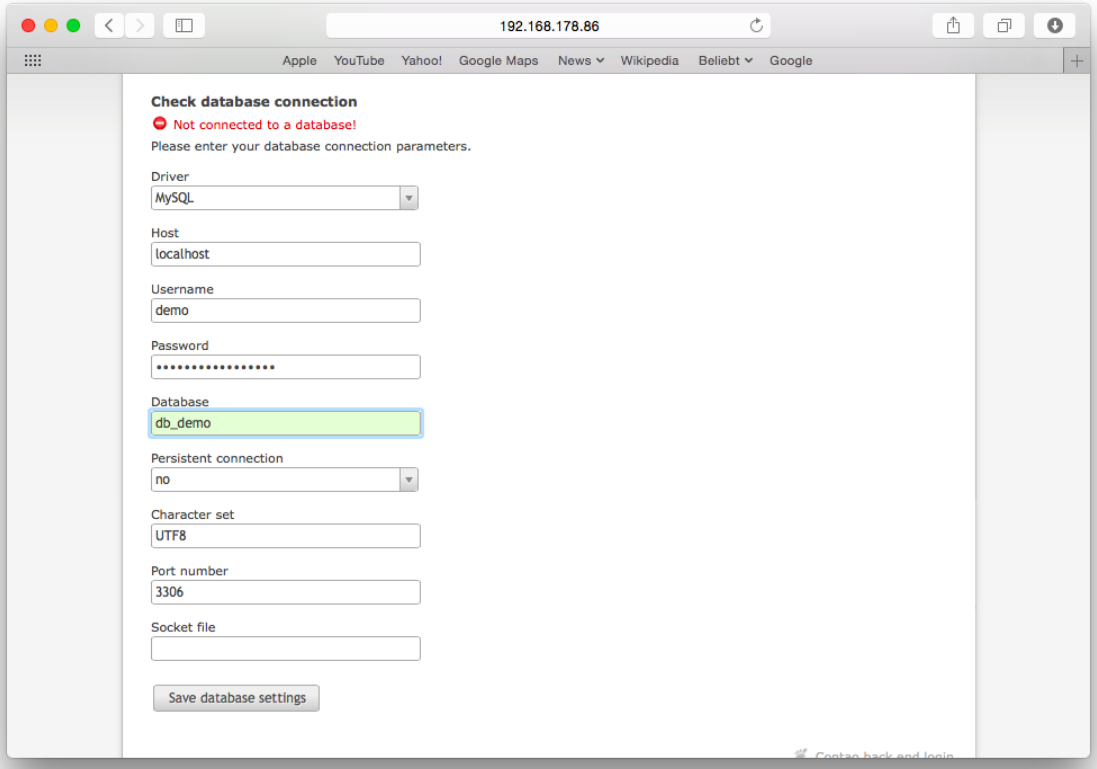

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
phpMyAdmin
information_schema
mysql
performance_schema
phpmyadmin
localhost
Databases SQL Status Processes Privileges More
General Settings
Change password
MySQL connection collation :
utf8_general_ci
Appearance Settings
Language : English (United Kingdom)
Theme / Style: pmahomme
Font size: 82%
More settings
MySQL
Server: Localhost via UNIX socket
Server version: 5.5.41-0+wheezy1
Protocol version: 10
User: root@localhost
MySQL charset: UTF-8 Unicode (utf8)
Web server
Apache/2.2.22 (Debian)
MySQL client version: 5.5.41
PHP extension: mysqli
phpMyAdmin
Version information: 3.4.11.1deb2+deb7u1

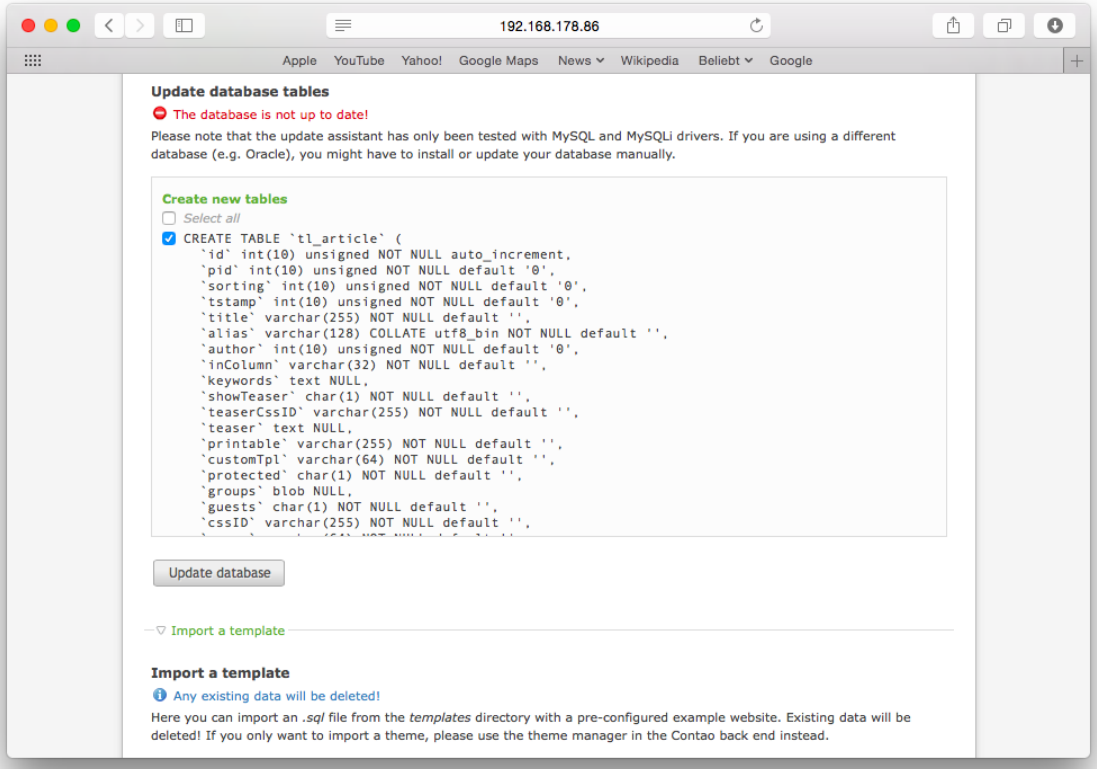
Installing contao

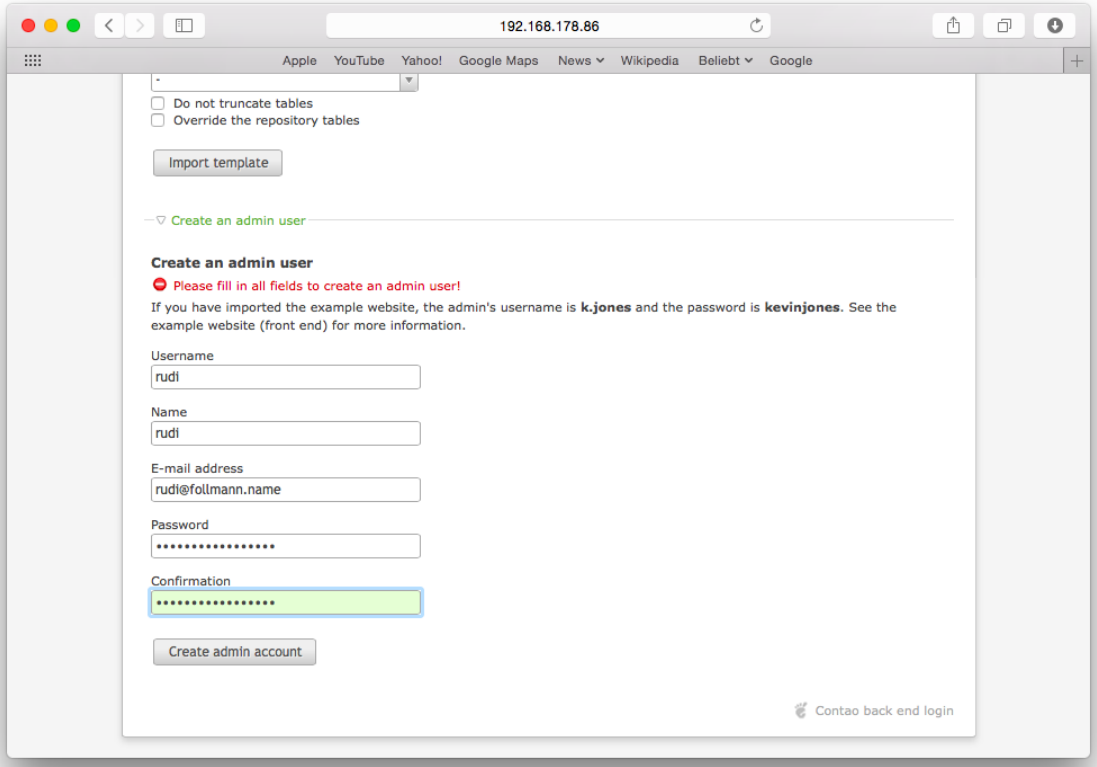


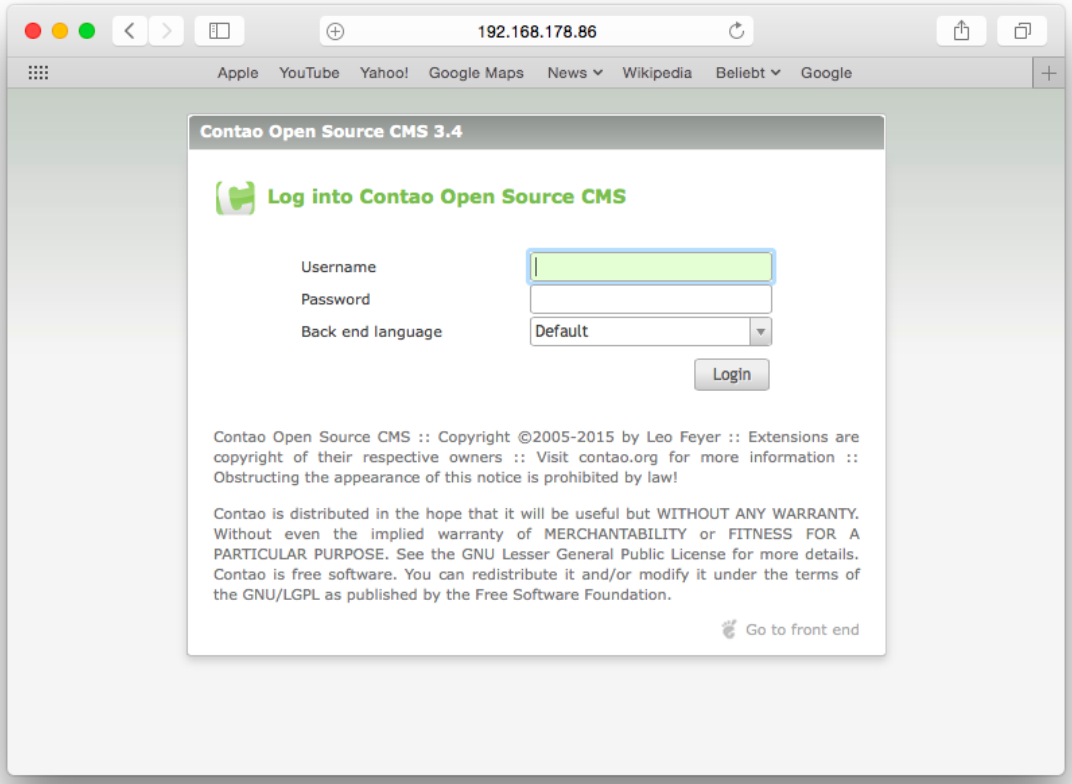

192.168.178.86
Apple
YouTube
Yahoo!
Google Maps
News
Wikipedia
Beliebt
Google
phpMyAdm
Add a New User
information_schema
mysql
performance_schema
phpmyadmin
Add a new User
Login Information
User name:
Use text field:
demo
Host:
Local
localhost
Password:
Use text field:
Re-type:
Generate password:
Generate

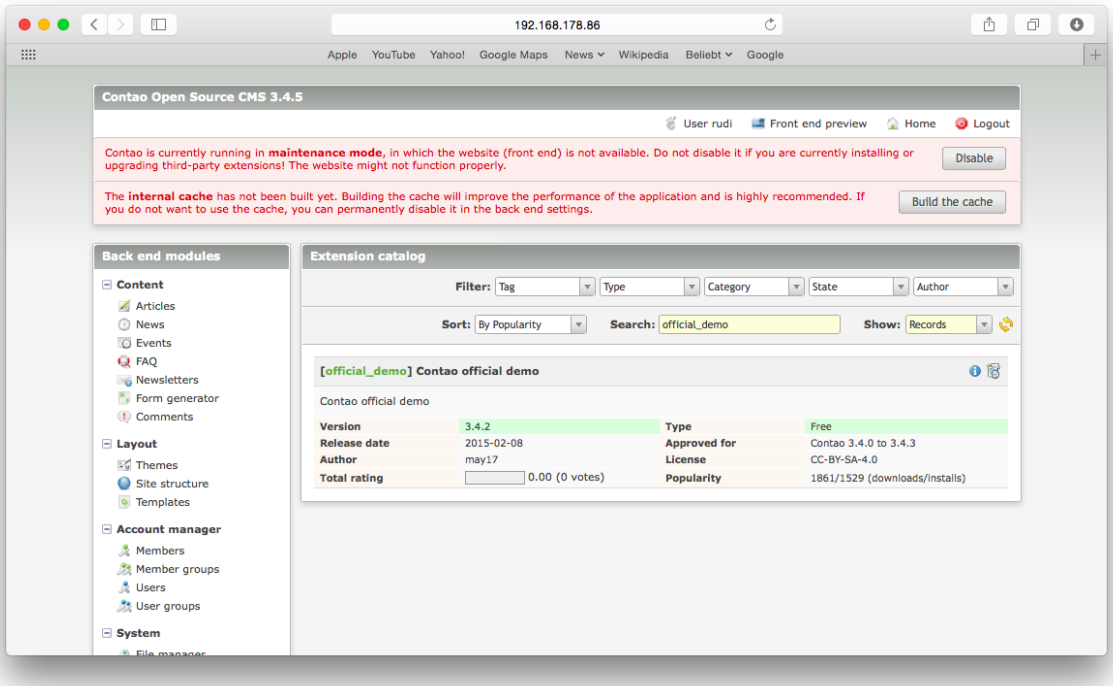

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
phpMyAdm
localhost
Databases SQL Status Processes Privileges Export Import More
Add a New User
information_schema
mysql
performance_schema
phpmyadmin
Global privileges (Check All / Uncheck All)
Note: MySQL privilege names are expressed in English
Data
SELECT
INSERT
UPDATE
DELETE
FILE
Structure
CREATE
ALTER
INDEX
DROP
CREATE TEMPORARY TABLES
SHOW VIEW
CREATE ROUTINE
ALTER ROUTINE
EXECUTE
CREATE VIEW
EVENT
TRIGGER
Administration
GRANT
SUPER
PROCESS
RELOAD
SHUTDOWN
SHOW DATABASES
LOCK TABLES
REFERENCES
REPLICATION CLIENT
REPLICATION SLAVE
CREATE USER
Resource limits

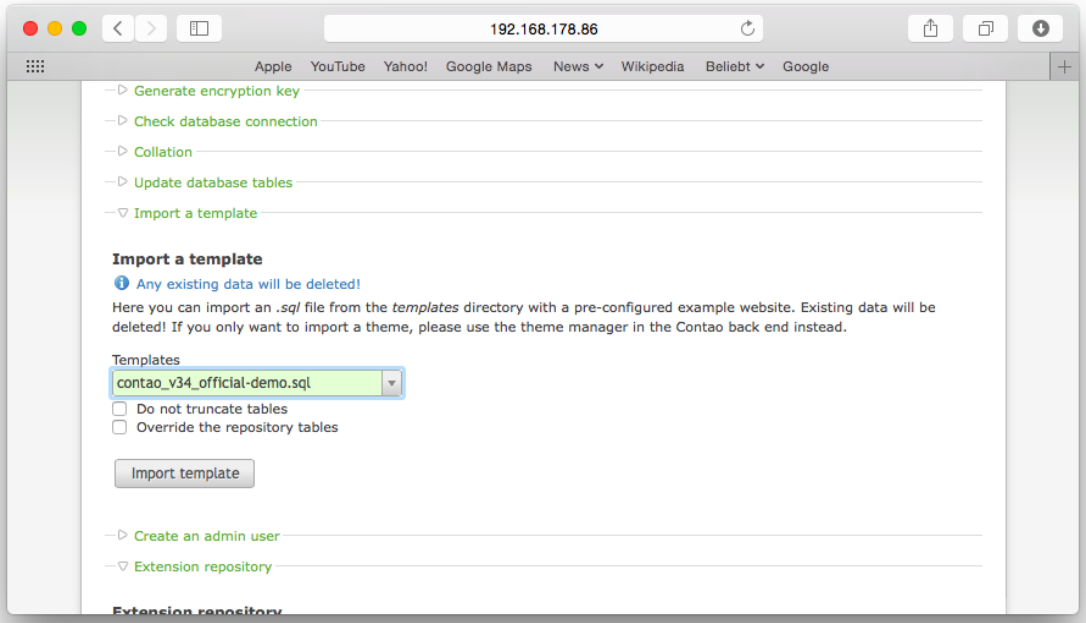

192.168.178.86
Apple
YouTube
Yahoo!
Google Maps
News
Wikipedia
Beliebt
Google
Check database connection
Not connected to a database!
Please enter your database connection parameters.
Driver
MySQL
Host
localhost
Username
demo
Password
Database
db_demo
Persistent connection
no
Character set
UTF8
Port number
3306
Socket file
Save database settings

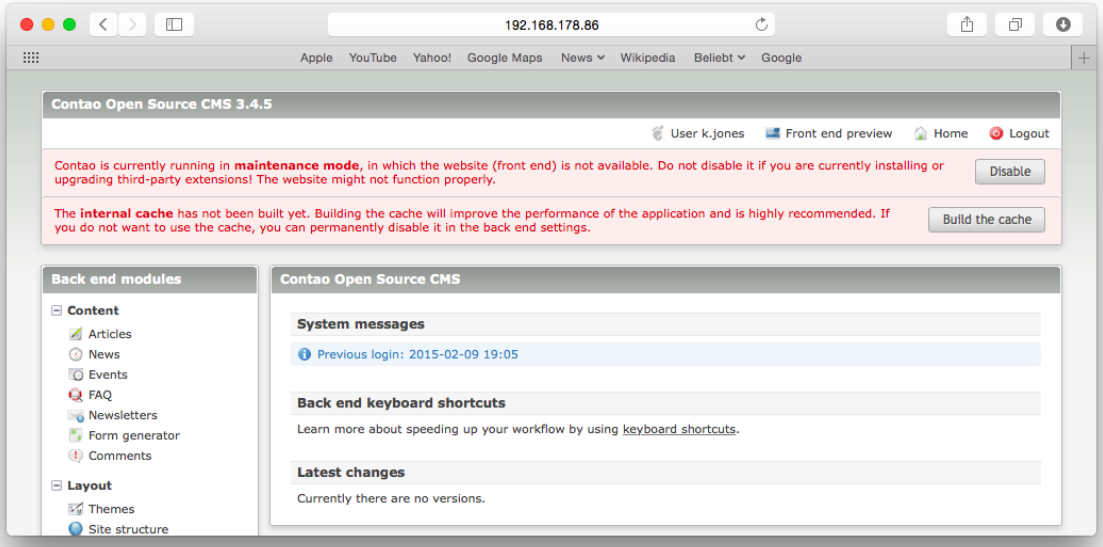

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Update database tables
The database is not up to date!
Please note that the update assistant has only been tested with MySQL and MySQLi drivers. If you are using a different database (e.g. Oracle), you might have to install or update your database manually.
Create new tables
Select all
CREATE TABLE `tl_article` (
`id` int(10) unsigned NOT NULL auto_increment,
`pid` int(10) unsigned NOT NULL default '0',
`sorting` int(10) unsigned NOT NULL default '0',
`tstamp` int(10) unsigned NOT NULL default '0',
`title` varchar(255) NOT NULL default '',
`alias` varchar(128) COLLATE utf8_bin NOT NULL default '',
`author` int(10) unsigned NOT NULL default '0',
`inColumn` varchar(32) NOT NULL default '',
`keywords` text NULL,
`showTeaser` char(1) NOT NULL default '',
`teaserCssID` varchar(255) NOT NULL default '',
`teaser` text NULL,
`printable` varchar(255) NOT NULL default '',
`customTpl` varchar(64) NOT NULL default '',
`protected` char(1) NOT NULL default '',
`groups` blob NULL,
`guests` char(1) NOT NULL default '',
`cssID` varchar(255) NOT NULL default '',
Update database
Import a template
Import a template
Any existing data will be deleted!
Here you can import an .sql file from the templates directory with a pre-configured example website. Existing data will be deleted! If you only want to import a theme, please use the theme manager in the Contao back end instead.

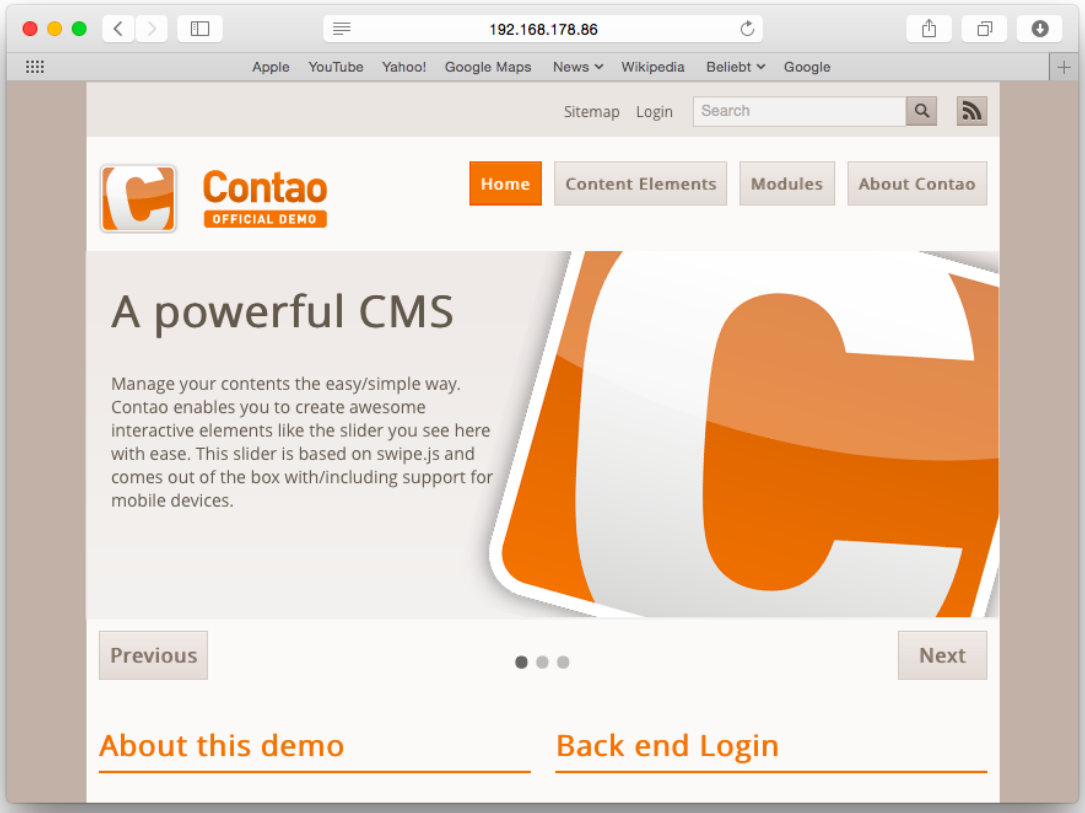

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Do not truncate tables
Override the repository tables
Import template
Create an admin user
Create an admin user
Please fill in all fields to create an admin user!
If you have imported the example website, the admin's username is k.jones and the password is kevinjones. See the example website (front end) for more information.
Username
rudi
Name
rudi
E-mail address
rudi@follmann.name
Password
Confirmation
Create admin account
Contao back end login


192.168.178.86
Apple
YouTube
Yahoo!
Google Maps
News
Wikipedia
Beliebt
Google
Contao Open Source CMS 3.4
Log into Contao Open Source CMS
Username
Password
Back end language
Default
Login
Contao Open Source CMS :: Copyright ©2005-2015 by Leo Feyer :: Extensions are copyright of their respective owners :: Visit contao.org for more information :: Obstructing the appearance of this notice is prohibited by law!
Contao is distributed in the hope that it will be useful but WITHOUT ANY WARRANTY. Without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details. Contao is free software. You can redistribute it and/or modify it under the terms of the GNU/LGPL as published by the Free Software Foundation.
Go to front end

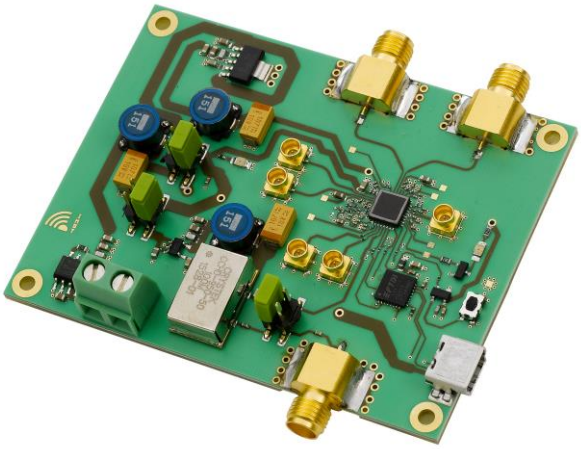

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Contao Open Source CMS 3.4.5
User rudi
Front end preview
Home
Logout
Contao is currently running in maintenance mode, in which the website (front end) is not available. Do not disable it if you are currently installing or upgrading third-party extensions! The website might not function properly.
Disable
The internal cache has not been built yet. Building the cache will improve the performance of the application and is highly recommended. If you do not want to use the cache, you can permanently disable it in the back end settings.
Build the cache
Back end modules
Content
Articles
News
Events
FAQ
Newsletters
Form generator
Comments
Layout
Themes
Site structure
Templates
Account manager
Members
Member groups
Users
User groups
System
Extension catalog
Filter: Tag Type Category State Author
Sort: By Popularity
Search: official_demo
Show: Records
[official_demo] Contao official demo
Contao official demo
Version 3.4.2
Release date 2015-02-08
Author may17
Total rating 0.00 (0 votes)
Type Free
Approved for Contao 3.4.0 to 3.4.3
License CC-BY-SA-4.0
Popularity 1861/1529 (downloads/installs)


192.168.178.86
Apple
YouTube
Yahoo!
Google Maps
News
Wikipedia
Beliebt
Google
Generate encryption key
Check database connection
Collation
Update database tables
Import a template
Import a template
Any existing data will be deleted!
Here you can import an .sql file from the templates directory with a pre-configured example website. Existing data will be deleted! If you only want to import a theme, please use the theme manager in the Contao back end instead.
Templates
contao_v34_official-demo.sql
Do not truncate tables
Override the repository tables
Import template
Create an admin user
Extension repository

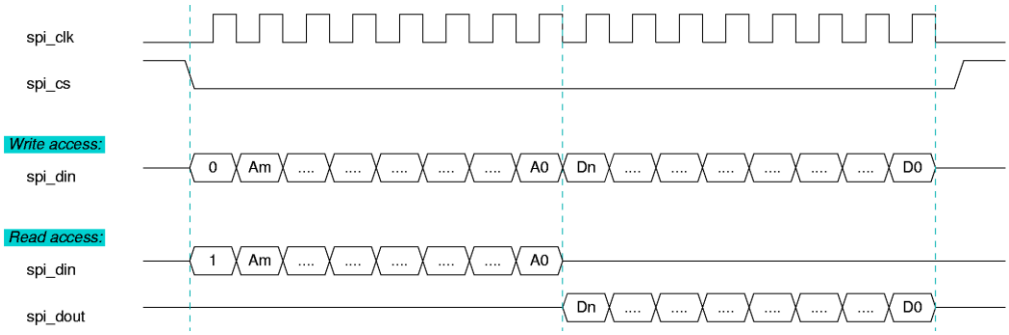

192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Contao Open Source CMS 3.4.5
User k.jones Front end preview Home Logout
Contao is currently running in maintenance mode, in which the website (front end) is not available. Do not disable it if you are currently installing or upgrading third-party extensions! The website might not function properly.
Disable
The internal cache has not been built yet. Building the cache will improve the performance of the application and is highly recommended. If you do not want to use the cache, you can permanently disable it in the back end settings.
Build the cache
Back end modules
Content
Articles
News
Events
FAQ
Newsletters
Form generator
Comments
Layout
Themes
Site structure
Contao Open Source CMS
System messages
Previous login: 2015-02-09 19:05
Back end keyboard shortcuts
Learn more about speeding up your workflow by using keyboard shortcuts.
Latest changes
Currently there are no versions.


192.168.178.86
Apple YouTube Yahoo! Google Maps News Wikipedia Beliebt Google
Sitemap Login Search
Contao
OFFICIAL DEMO
Home Content Elements Modules About Contao
A powerful CMS
Manage your contents the easy/simple way. Contao enables you to create awesome interactive elements like the slider you see here with ease. This slider is based on swipe.js and comes out of the box with/including support for mobile devices.
Previous
Next
About this demo
Back end Login

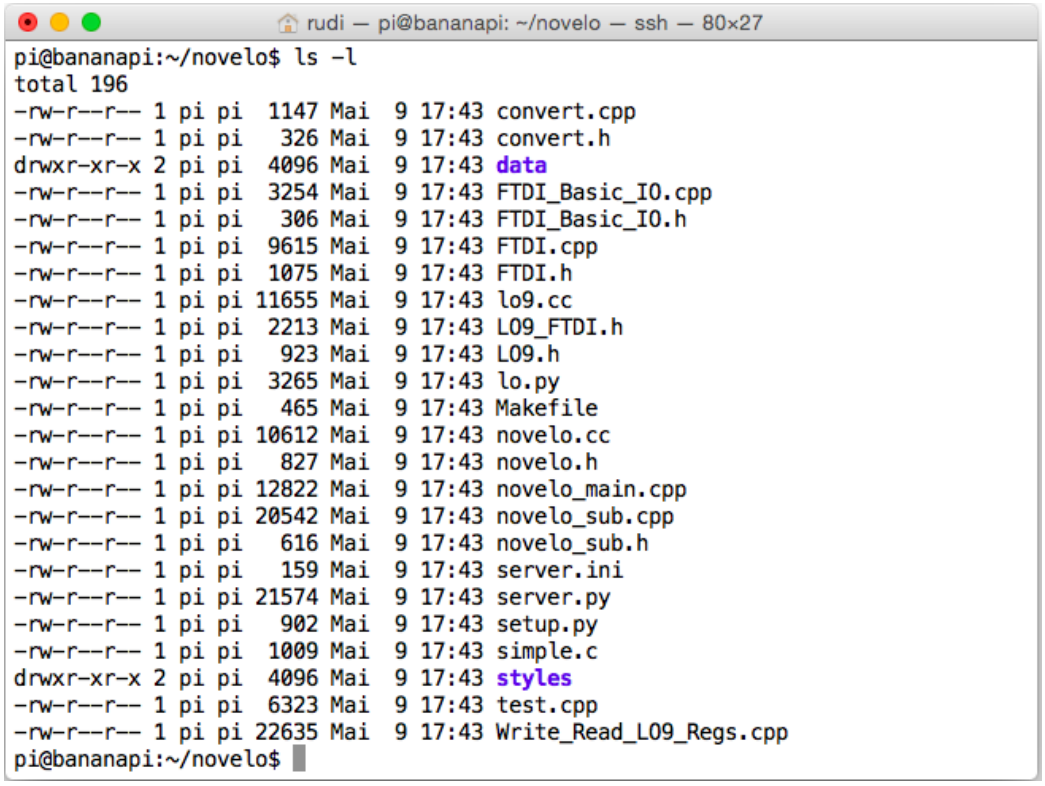
A measurement server

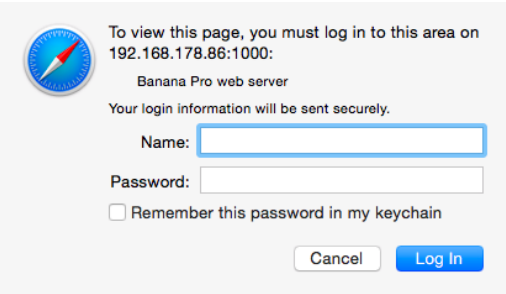


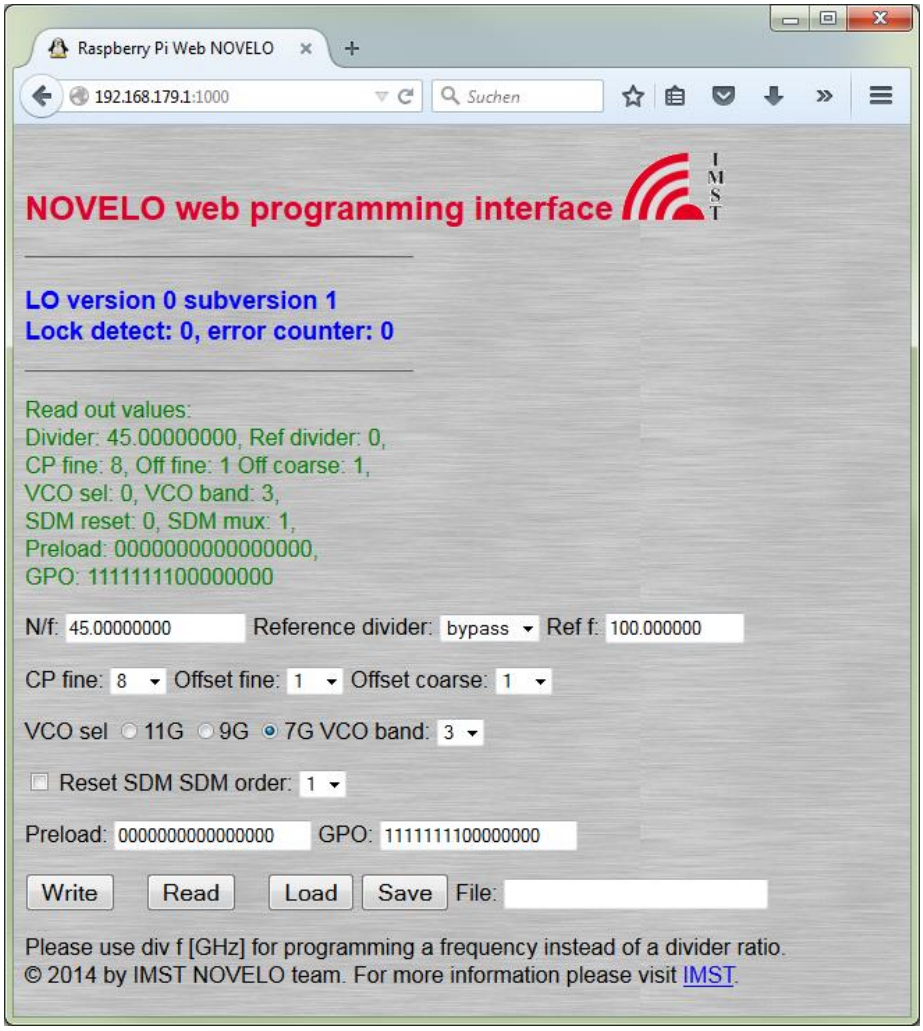
The FTDI/SPI control of devices



A web server


rudi — pi@bananapi: ~/novelo — ssh — 80×27
pi@bananapi:~/novelo$ ls -l
total 196
-rw-r--r-- 1 pi pi 1147 Mai 9 17:43 convert.cpp
-rw-r--r-- 1 pi pi   326 Mai 9 17:43 convert.h
drwxr-xr-x 2 pi pi 4096 Mai 9 17:43 data
-rw-r--r-- 1 pi pi 3254 Mai 9 17:43 FTDI_Basic_IO.cpp
-rw-r--r-- 1 pi pi   306 Mai 9 17:43 FTDI_Basic_IO.h
-rw-r--r-- 1 pi pi 9615 Mai 9 17:43 FTDI.cpp
-rw-r--r-- 1 pi pi 1075 Mai 9 17:43 FTDI.h
-rw-r--r-- 1 pi pi 11655 Mai 9 17:43 lo9.cc
-rw-r--r-- 1 pi pi 2213 Mai 9 17:43 LO9_FTDI.h
-rw-r--r-- 1 pi pi   923 Mai 9 17:43 LO9.h
-rw-r--r-- 1 pi pi 3265 Mai 9 17:43 lo.py
-rw-r--r-- 1 pi pi   465 Mai 9 17:43 Makefile
-rw-r--r-- 1 pi pi 10612 Mai 9 17:43 novelo.cc
-rw-r--r-- 1 pi pi   827 Mai 9 17:43 novelo.h
-rw-r--r-- 1 pi pi 12822 Mai 9 17:43 novelo_main.cpp
-rw-r--r-- 1 pi pi 20542 Mai 9 17:43 novelo_sub.cpp
-rw-r--r-- 1 pi pi   616 Mai 9 17:43 novelo_sub.h
-rw-r--r-- 1 pi pi   159 Mai 9 17:43 server.ini
-rw-r--r-- 1 pi pi 21574 Mai 9 17:43 server.py
-rw-r--r-- 1 pi pi   902 Mai 9 17:43 setup.py
-rw-r--r-- 1 pi pi 1009 Mai 9 17:43 simple.c
drwxr-xr-x 2 pi pi 4096 Mai 9 17:43 styles
-rw-r--r-- 1 pi pi 6323 Mai 9 17:43 test.cpp
-rw-r--r-- 1 pi pi 22635 Mai 9 17:43 Write_Read_LO9_Regs.cpp
pi@bananapi:~/novelo$


To view this page, you must log in to this area on 192.168.178.86:1000:
Banana Pro web server
Your login information will be sent securely.
Name:
Password:
Remember this password in my keychain
Cancel
Log In


Raspberry Pi Web NOVELO
192.168.179.1:1000
Suchen
NOVELO web programming interface
LO version 0 subversion 1
Lock detect: 0, error counter: 0
Read out values:
Divider: 45.00000000, Ref divider: 0,
CP fine: 8, Off fine: 1 Off coarse: 1,
VCO sel: 0, VCO band: 3,
SDM reset: 0, SDM mux: 1,
Preload: 0000000000000000,
GPO: 1111111100000000
N/f: 45.00000000
Reference divider: bypass
Ref f: 100.000000
CP fine: 8
Offset fine: 1
Offset coarse: 1
VCO sel 11G 9G 7G VCO band: 3
Reset SDM SDM order: 1
Preload: 0000000000000000
GPO: 1111111100000000
Write
Read
Load
Save
File:
Please use div f [GHz] for programming a frequency instead of a divider ratio.
© 2014 by IMST NOVELO team. For more information please visit IMST.

4
Arcade Cabinet

Installing modules

```
mali_drm                 2608  1
drm                    209226  2 mali_drm
mali                   111427  0
ump                     52415  4 mali,disp_ump
```

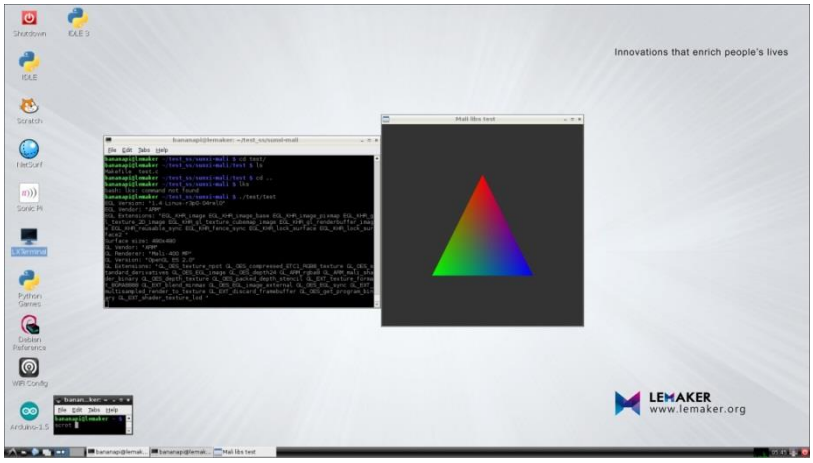
```
# /etc/modules: kernel modules to load at boot time.
#
# This file contains the names of kernel modules that should be loaded
# at boot time, one per line. Lines beginning with "#" are ignored.

ump
mali
mali_drm
```

Installing libump

```
bananapi@lemaker ~ $ sudo find /usr/include/ -name ump*
/usr/include/ump
/usr/include/ump/ump_platform.h
/usr/include/ump/ump_ref_drv.h
/usr/include/ump/ump.h
```

```
bananapi@lemaker ~ $ sudo find / -name *UMP*
/usr/lib/arm-linux-gnueabihf/libUMP.a
/usr/lib/arm-linux-gnueabihf/libUMP.so.3
/usr/lib/arm-linux-gnueabihf/libUMP.so.3.0.0
/usr/lib/arm-linux-gnueabihf/libUMP.so
```

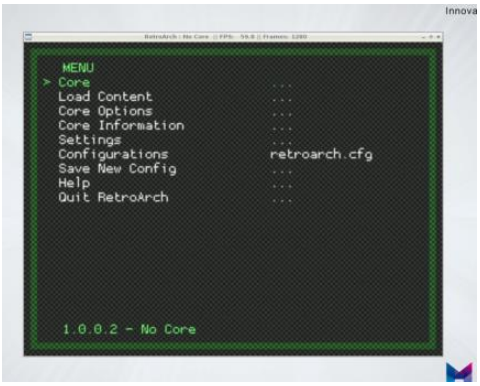
Testing hardware acceleration

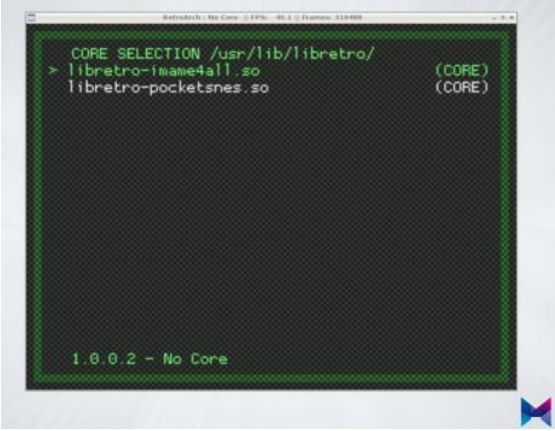


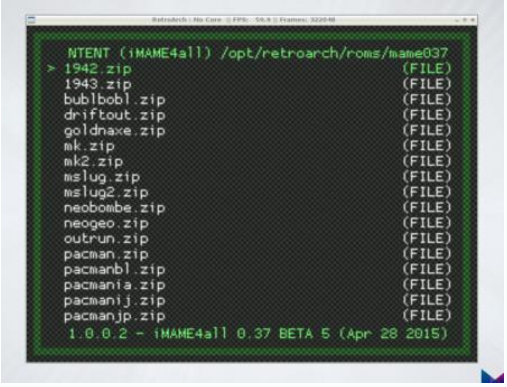
Framebuffer version RetroArch

```
bananapi@lemaker ~/RetroArch $ ls /opt/retroarch/bin/retroarch
/opt/retroarch/bin/retroarch
```

Playing a game from RetroArch menu interface

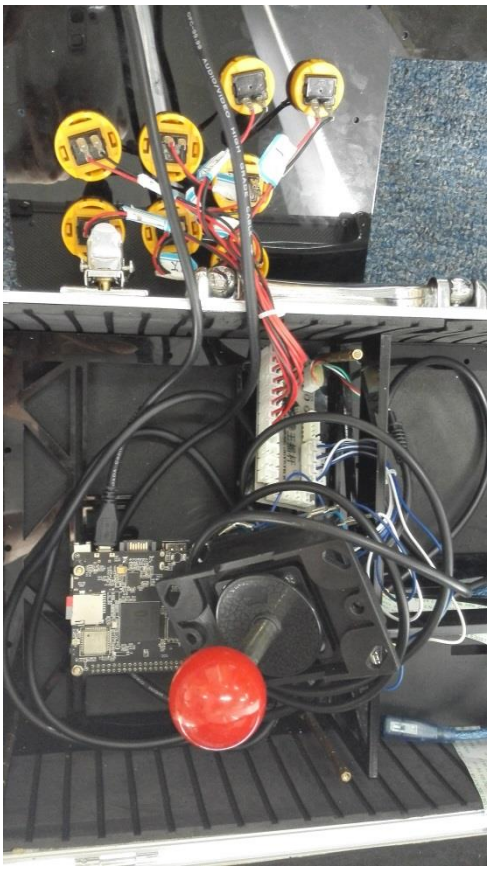



CORE SELECTION /usr/lib/libretro/
> libretro-imame4all.so (CORE)
libretro-pocketsnes.so (CORE)
1.0.0.2 - No Core


NTENT (iMAME4all) /opt/retroarch/roms/mame037
> 1942.zip (FILE)
1943.zip (FILE)
bublbobl.zip (FILE)
driftout.zip (FILE)
goldnaxe.zip (FILE)
mk.zip (FILE)
mk2.zip (FILE)
mslug.zip (FILE)
mslug2.zip (FILE)
neobombe.zip (FILE)
neogeo.zip (FILE)
outrun.zip (FILE)
pacman.zip (FILE)
pacmanbl.zip (FILE)
pacmania.zip (FILE)
pacmanij.zip (FILE)
pacmanjp.zip (FILE)
1.0.0.2 - iMAME4all 0.37 BETA 5 (Apr 28 2015)

Suitcase

Joystick



A micro USB extended line

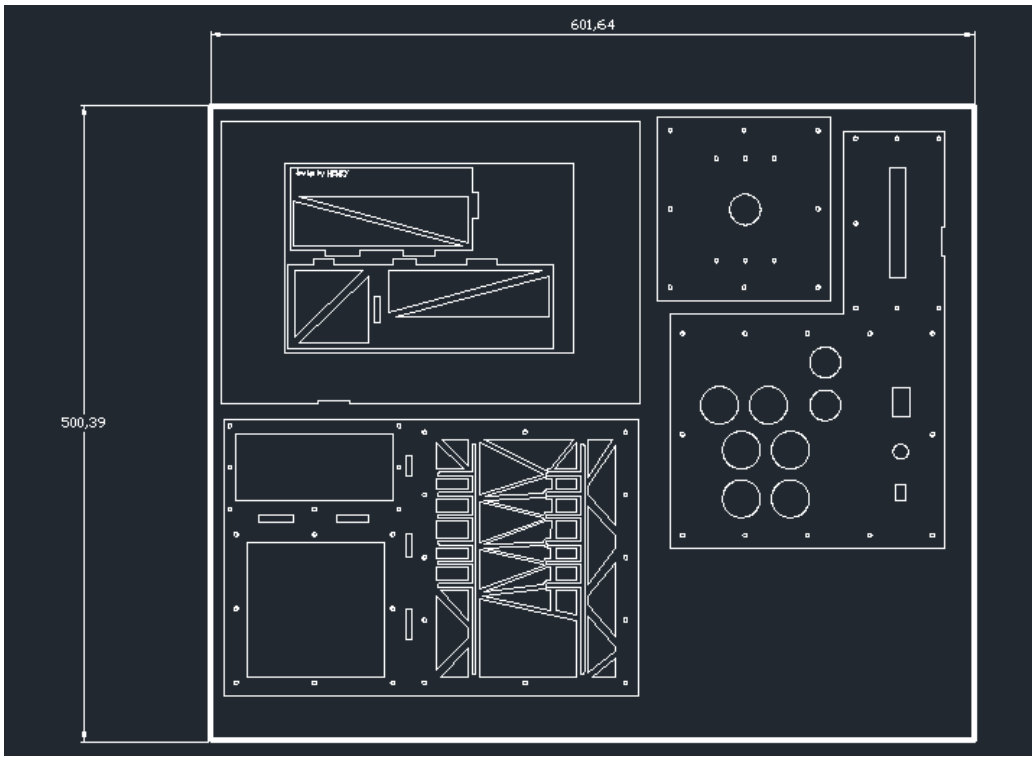
A USB hub

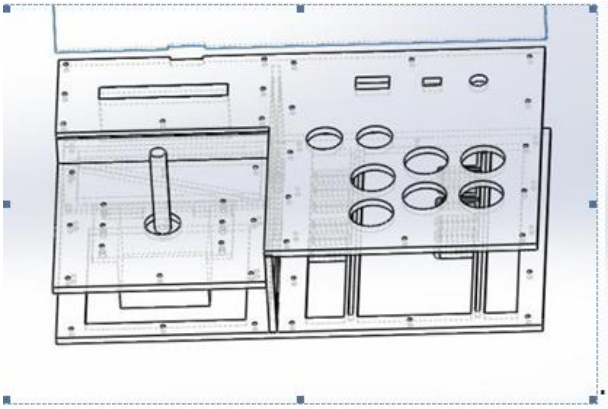
An LCD display

An audio extended line

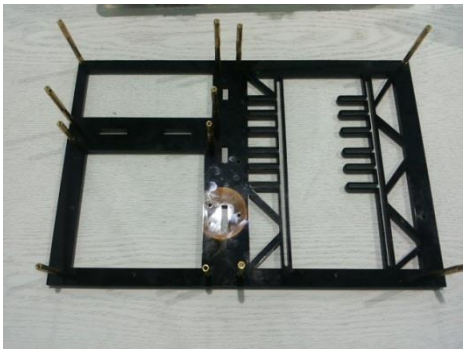
A mini keyboard

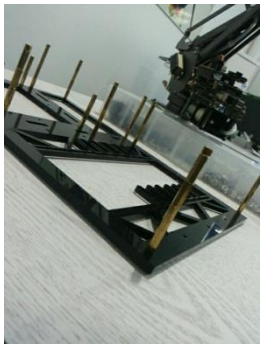
Designing a frame



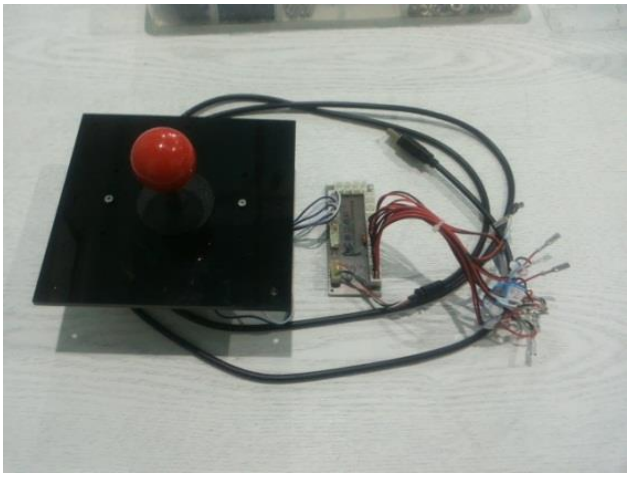


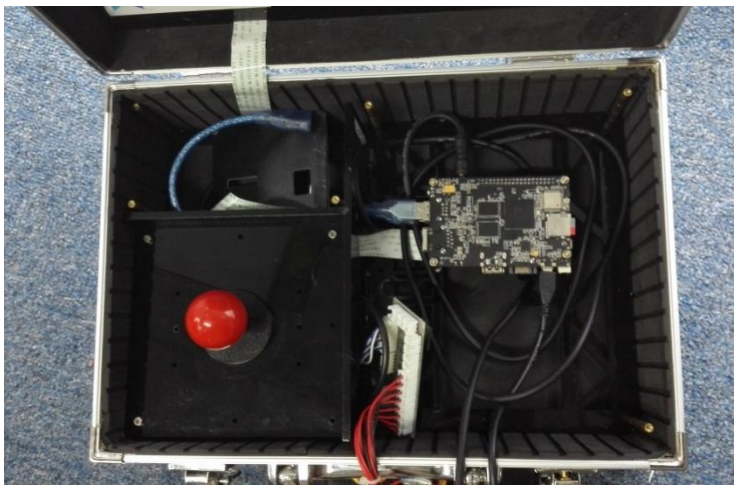
Assembling a base frame





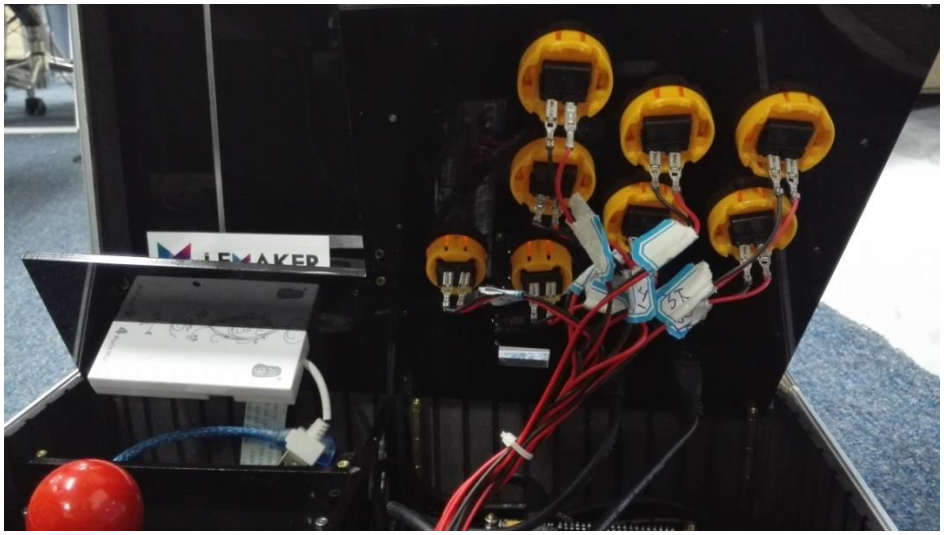
Assembling Banana Pro and a joystick





Mounting an LCD

Assembling a top frame

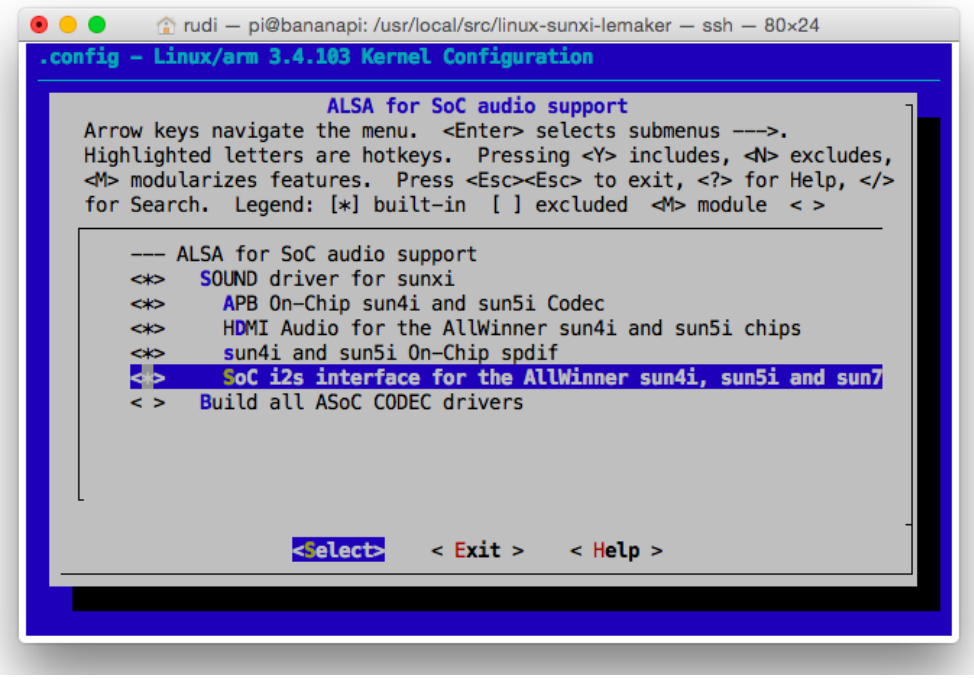


Configuring output to an LCD

Playing the game on the arcade cabinet

5
A Multimedia Centre

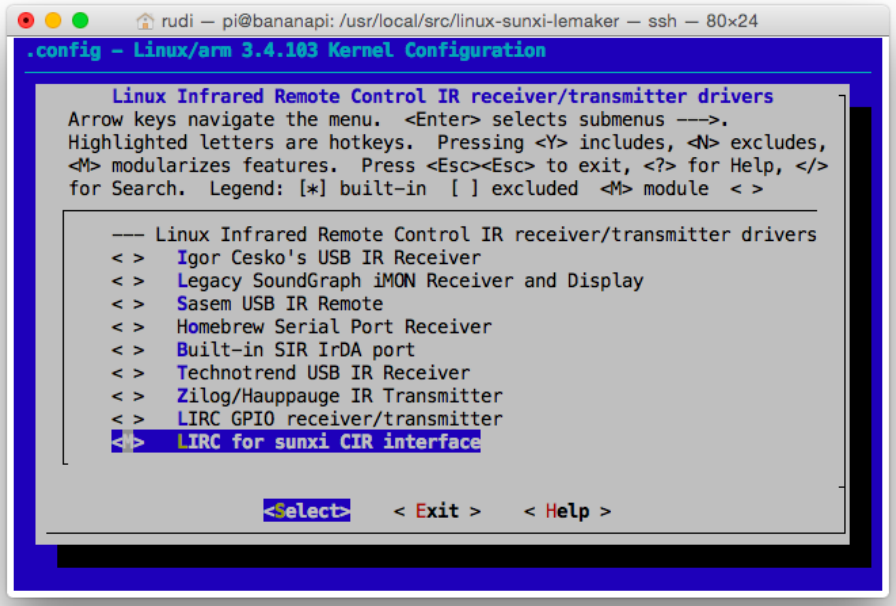
Adding the I2S audio device



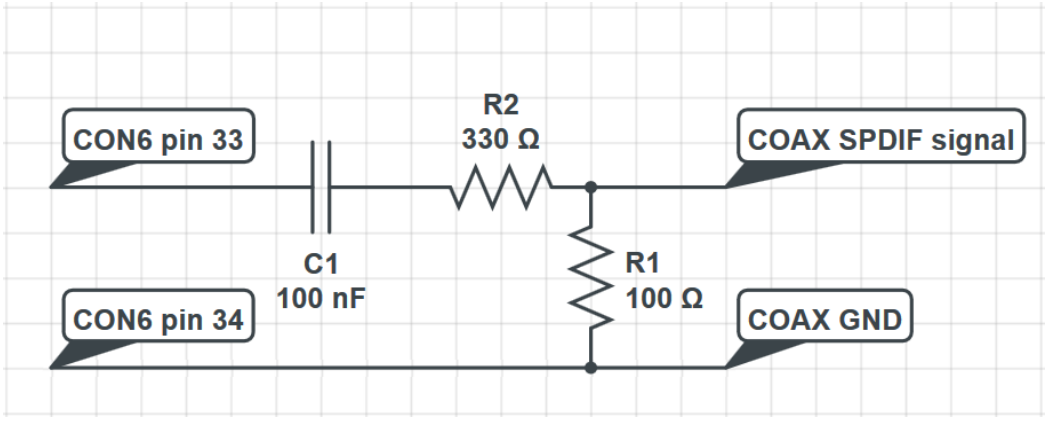

rudi — pi@bananapi: /usr/local/src/linux-sunxi-lemaker — ssh — 80×15
pi@bananapi:/usr/local/src/linux-sunxi-lemaker$ aplay -l
**** List of PLAYBACK Hardware Devices ****
card 0: sunxicodec [sunxi-CODEC], device 0: M1 PCM [sunxi PCM]
Subdevices: 1/1
Subdevice #0: subdevice #0
card 1: sunxisndspdif [sunxi-sndspdif], device 0: SUNXI-SPDIF sndspdif-0 []
Subdevices: 1/1
Subdevice #0: subdevice #0
card 2: sunxisndi2s [sunxi-sndi2s], device 0: SUNXI-I2S sndi2s-0 []
Subdevices: 1/1
Subdevice #0: subdevice #0
card 3: sunxisndhdmi [sunxi-sndhdmi], device 0: SUNXI-HDMIAUDIO sndhdmi-0 []
Subdevices: 1/1
Subdevice #0: subdevice #0
pi@bananapi:/usr/local/src/linux-sunxi-lemaker$

Deactivating display driver kernel logging

Activating the sunxi lirc driver



Using an electrical SPDIF with Banana Pro

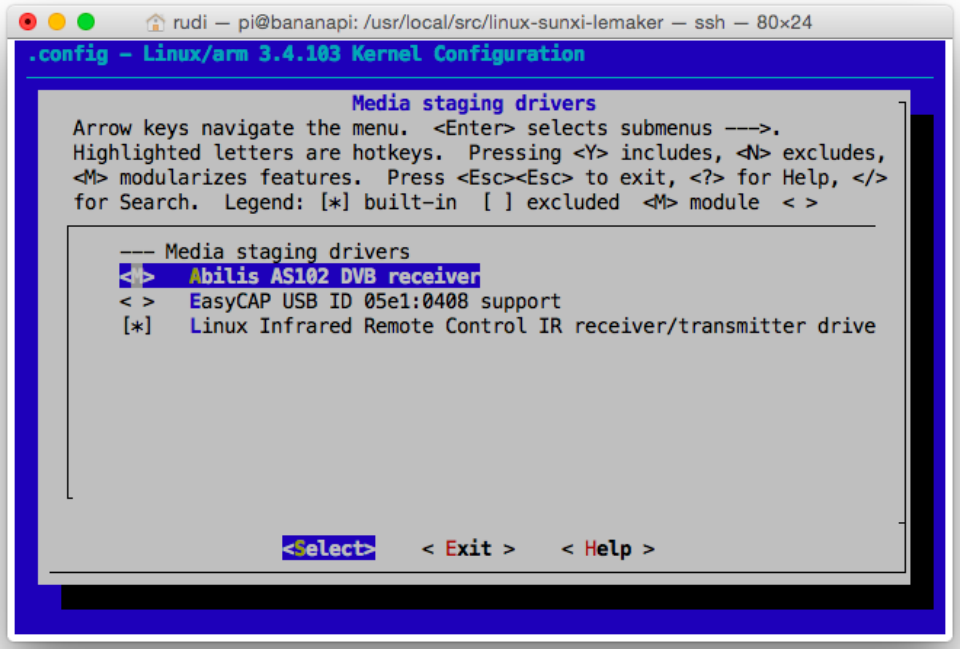


Configuring a remote control

rudi — pi@bananapi: ~ — ssh — 80×24

```
pi@bananapi:~$ mode2 -d /dev/lirc0 -m
     8724-pulse     4458-space      533-pulse      575-space      469-pulse
1706-space
      512     1663      491      575      491      575
      469      597      512      618      448     1685
      512     1727      448     1706      512     1663
      512     1706      469      575      491     1706
      469      618      469      554      533      597
      469     1685      491      554      533      575
      491      575      469      597      491      597
      491      575      469     1706      469      618
      469     1706      491     1706      491     1685
      491     1663      512     1685      491     1706
      512    21693     8767     2282      512    16275
     8788     2261      491    16275     8788     2218
      555    16275     8767     2239      533    16275
     8788     2218      533    16275     8767     2239
      512    16275     8831     2197      576    16275
     8788     2239      469    16275     8788     2282
      469    16275     8788     2303      469    16275
     8767     2261      491    16275     8810     2218
      491    16275     8746     2261      512    16275
     8788     2261      491    16275     8788     2261
      512    16275     8788     2218      491    16275
```

The DVB kernel driver

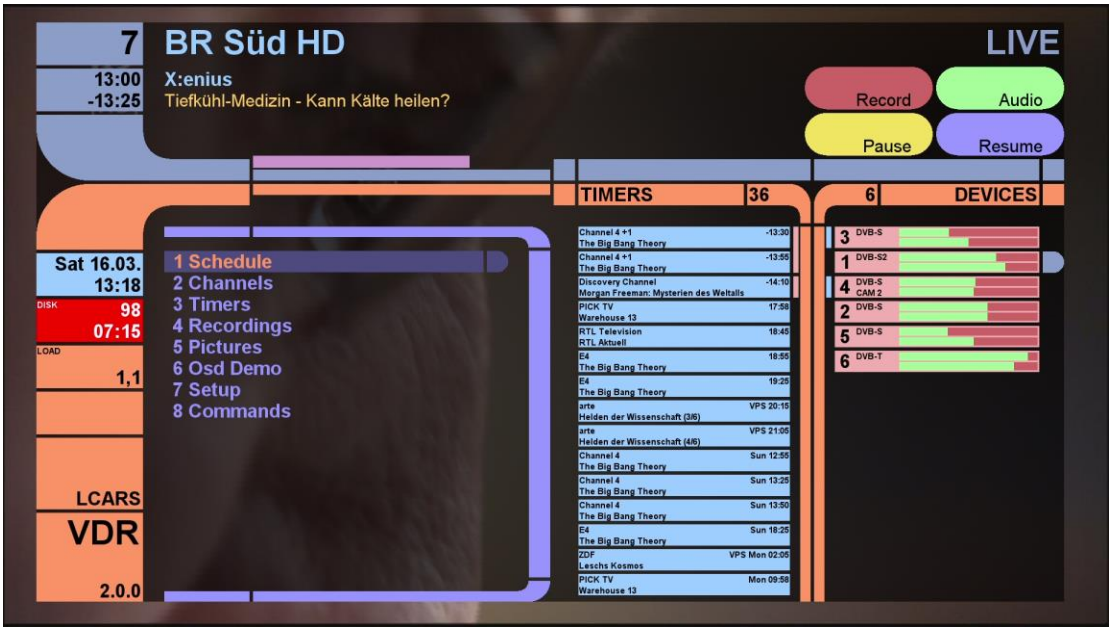

rudi — pi@bananapi: /usr/local/src/linux-sunxi-lemaker — ssh — 80×24
.config - Linux/arm 3.4.103 Kernel Configuration
Media staging drivers
Arrow keys navigate the menu. <Enter> selects submenus --->.
Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes,
<M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </>
for Search. Legend: [*] built-in [ ] excluded <M> module < >
--- Media staging drivers
<M> Abilis AS102 DVB receiver
< > EasyCAP USB ID 05e1:0408 support
[*] Linux Infrared Remote Control IR receiver/transmitter drive
<Select> < Exit > < Help >


TeVii
S660
S2


DVB S2
HD

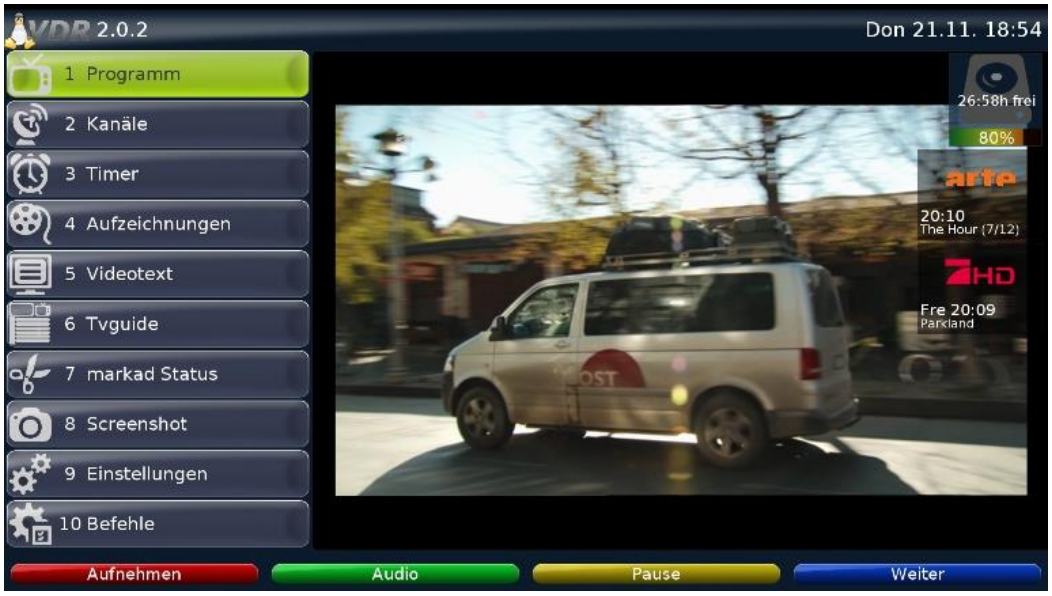
The DVB userspace driver

VDR scripts

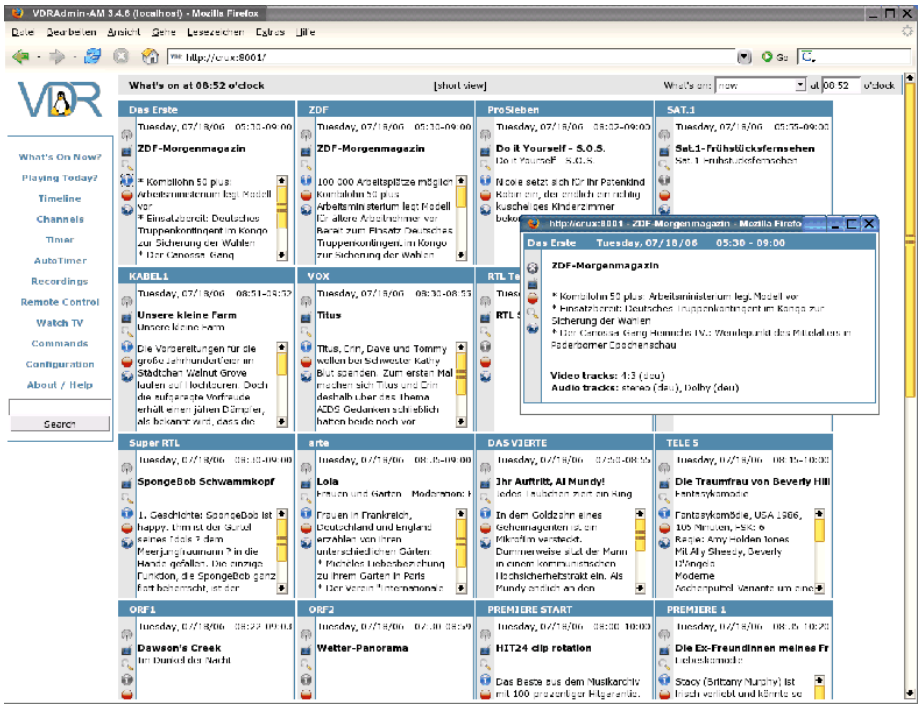


Watching teletext

Changing VDR's skin



Vdradmin-am


VDRAdmin-AM 3.4.6 (localhost) - Mozilla Firefox
What's on at 08:52 o'clock
[short view]
What's on:
now
at
o'clock
What's On Now?
Playing Today?
Timeline
Channels
Timer
AutoTimer
Recordings
Remote Control
Watch TV
Commands
Configuration
About / Help
Search
Das Erste
ZDF
ProSieben
SAT.1
ZDF-Morgenmagazin
Do it Yourself - S.O.S.
Sat.1-Frühstücksfernsehen
KABEL1
VOX
Unsere kleine Farm
Titus
Super RTL
arte
DAS VIERTE
TELE 5
SpongeBob Schwammkopf
Lola
Ihr Auftritt, Al Mundy!
Die Traumfrau von Beverly Hill
ORF1
ORF2
PREMIERE START
PREMIERE 1
Dawson's Creek
Wetter-Panorama
HIT24 dip rotation
Die Ex-Freundinnen meines Fr
http://erux:8001 - ZDF-Morgenmagazin - Mozilla Firefo
Das Erste Tuesday, 07/18/06 05:30 - 09:00
ZDF-Morgenmagazin
Video tracks: 4:3 (deu)
Audio tracks: stereo (deu), Dolby (deu)

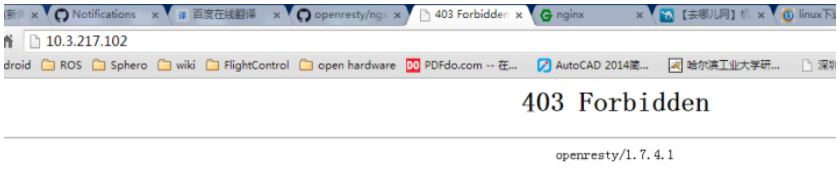
6

Remote Controlling a Smart Monitor Car

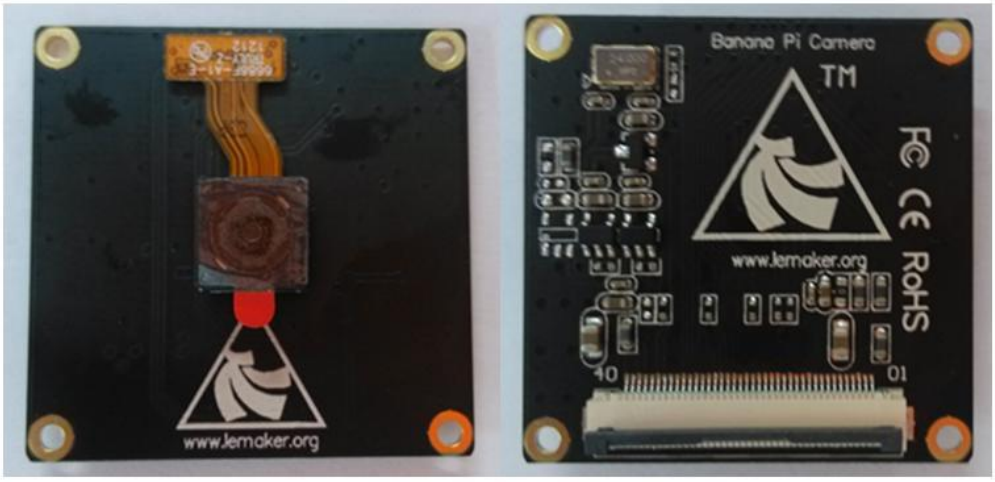
Starting the nginx server

```
bananapi@lemaker ~/remote_monitor_car/bananapro_ipcamera $ sudo /usr/local/live/nginx/sbin/nginx
nginx: [emerg] open() "/home/logs/nginx-rtmp/1936.error.log" failed (2: No such file or directory)
```

Accessing the nginx server

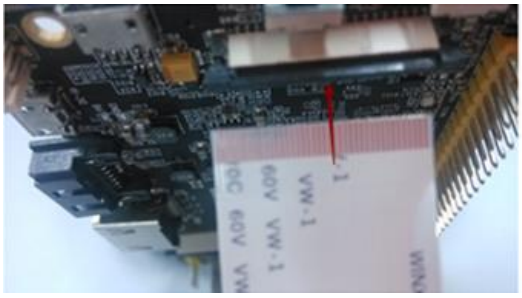


Setting up a camera

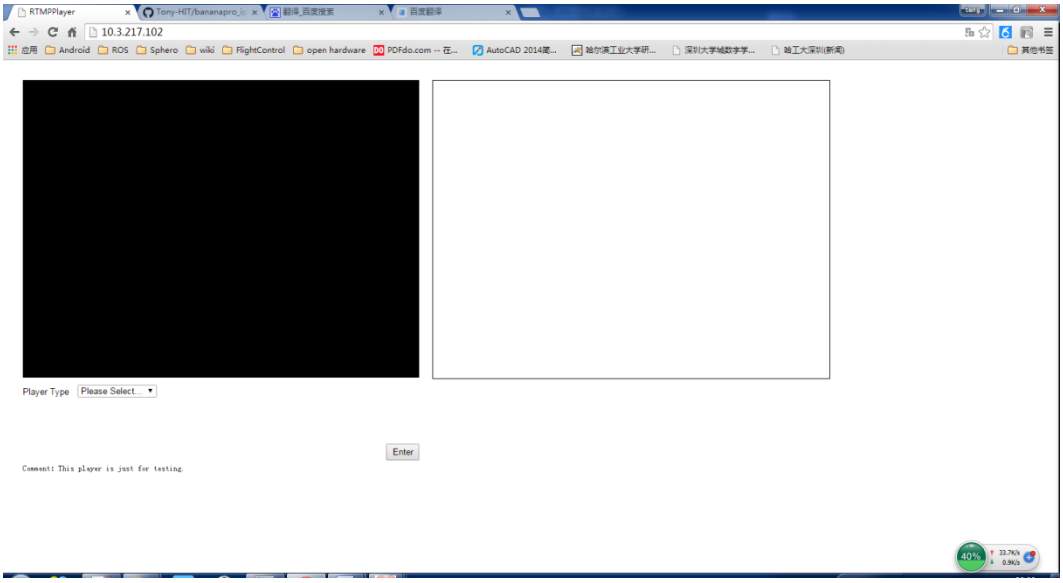


Connecting the camera module


Camera interface

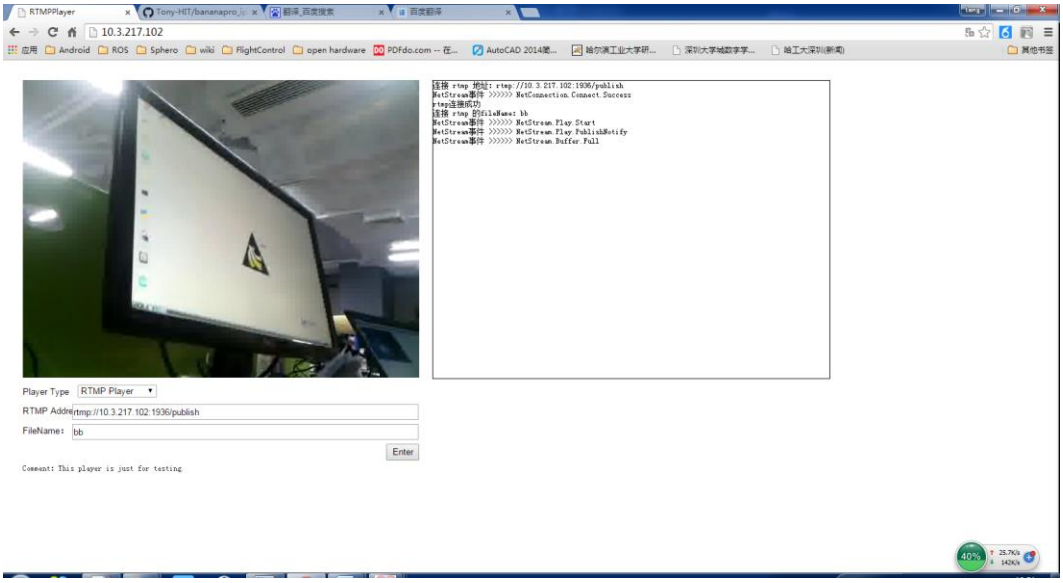



```
frame=13056 fps= 15 q=24.8 size=  102470kB time=00:14:29.66 bitrate= 965.2kbits/
frame=13064 fps= 15 q=24.8 size=  102532kB time=00:14:30.20 bitrate= 965.2kbits/
frame=13072 fps= 15 q=24.8 size=  102594kB time=00:14:30.73 bitrate= 965.2kbits/
frame=13080 fps= 15 q=24.8 size=  102657kB time=00:14:31.26 bitrate= 965.2kbits/
frame=13088 fps= 15 q=24.8 size=  102719kB time=00:14:31.80 bitrate= 965.2kbits/
frame=13096 fps= 15 q=24.8 size=  102781kB time=00:14:32.30 bitrate= 965.2kbits/
frame=13104 fps= 15 q=24.8 size=  102844kB time=00:14:32.83 bitrate= 965.2kbits/
frame=13112 fps= 15 q=24.8 size=  102906kB time=00:14:33.36 bitrate= 965.2kbits/
frame=13120 fps= 15 q=24.8 size=  102968kB time=00:14:33.90 bitrate= 965.2kbits/
frame=13128 fps= 15 q=24.8 size=  103031kB time=00:14:34.43 bitrate= 965.2kbits/
frame=13136 fps= 15 q=24.8 size=  103093kB time=00:14:34.96 bitrate= 965.2kbits/
frame=13144 fps= 15 q=24.8 size=  103155kB time=00:14:35.50 bitrate= 965.2kbits/
frame=13152 fps= 15 q=24.8 size=  103218kB time=00:14:36.03 bitrate= 965.2kbits/
frame=13160 fps= 15 q=24.8 size=  103280kB time=00:14:36.56 bitrate= 965.2kbits/
frame=13168 fps= 15 q=24.8 size=  103342kB time=00:14:37.10 bitrate= 965.2kbits/
frame=13176 fps= 15 q=24.8 size=  103405kB time=00:14:37.63 bitrate= 965.2kbits/
frame=13184 fps= 15 q=24.8 size=  103467kB time=00:14:38.16 bitrate= 965.2kbits/
frame=13192 fps= 15 q=24.8 size=  103529kB time=00:14:38.70 bitrate= 965.2kbits/
frame=13200 fps= 15 q=24.8 size=  103591kB time=00:14:39.23 bitrate= 965.2kbits/
frame=13208 fps= 15 q=24.8 size=  103654kB time=00:14:39.76 bitrate= 965.2kbits/
frame=13216 fps= 15 q=24.8 size=  103716kB time=00:14:40.30 bitrate= 965.2kbits/
frame=13224 fps= 15 q=24.8 size=  103778kB time=00:14:40.83 bitrate= 965.2kbits/
frame=13232 fps= 15 q=24.8 size=  103841kB time=00:14:41.36 bitrate= 965.2kbits/
frame=13240 fps= 15 q=24.8 size=  103903kB time=00:14:41.90 bitrate= 965.2kbits/
```

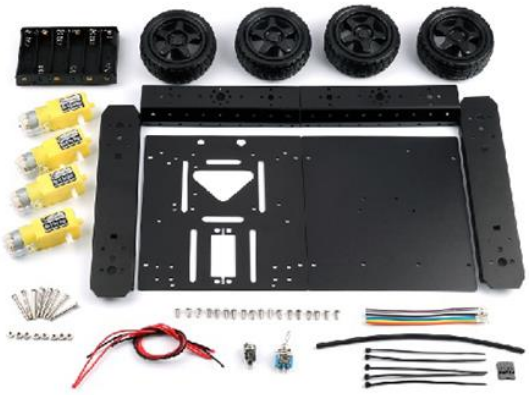

RTMPPlayer
10.3.217.102
Player Type
Please Select...
Enter
Comment: This player is just for testing.


Player Type
RTMP Player
RTMP Addre
FileName:
Enter


Player Type
RTMP Player
RTMP Addre
rtmp://10.3.217.102:1936/publish
FileName:
bb
Enter


RTMPPlayer
10.3.217.102
Player Type
RTMP Player
RTMP Addr
rtmp://10.3.217.102:1936/publish
FileName:
bb
Enter
Comment: This player is just for testing.

A car suite



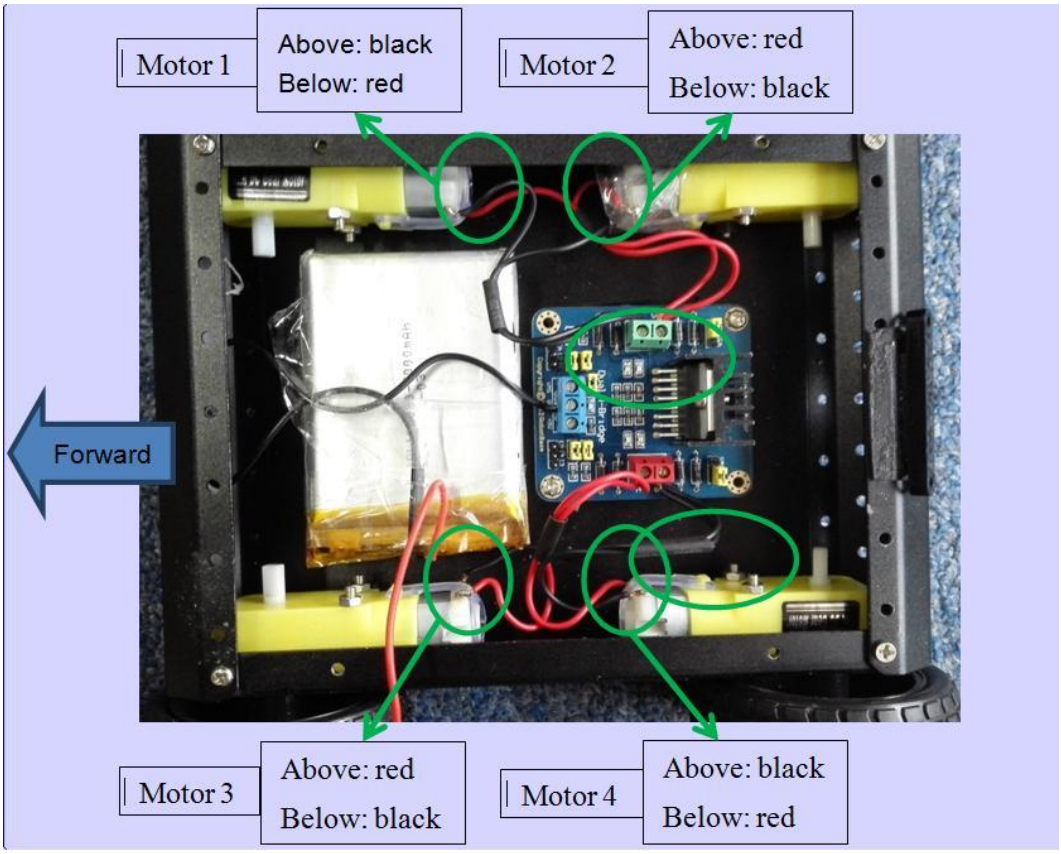

RobotBase
Mini DC Gear Motor

The L289N motor drive board

Battery

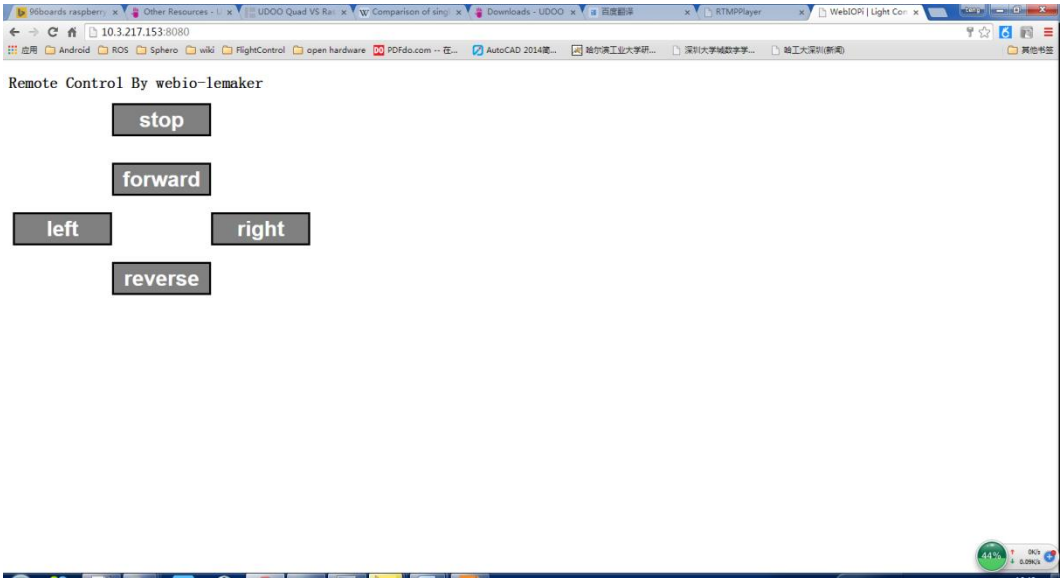
A 5 inch LCD

Assembly

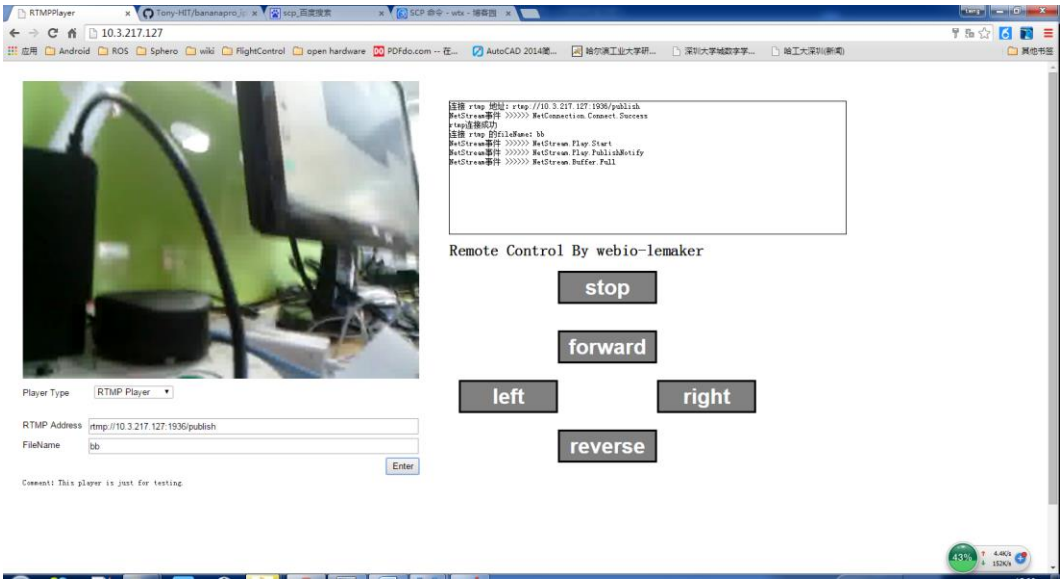

Motor 1
Above: black
Below: red
Motor 2
Above: red
Below: black
Forward
Motor 3
Above: red
Below: black
Motor 4
Above: black
Below: red

Testing webiopi on Banana Pro

Writing the webiopi controlling code

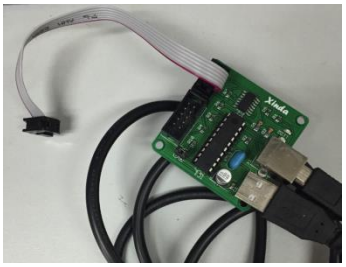


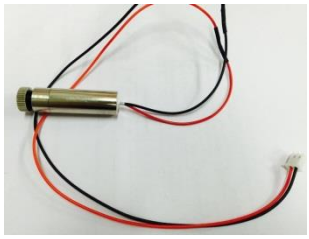
Adding the car controls to the IP camera web page

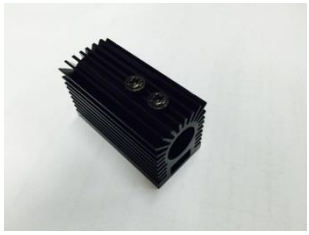


7
Laser Engraver

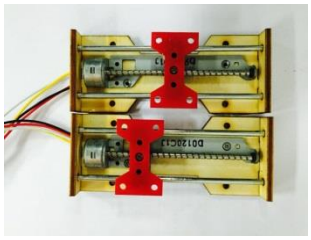
Preparing materials



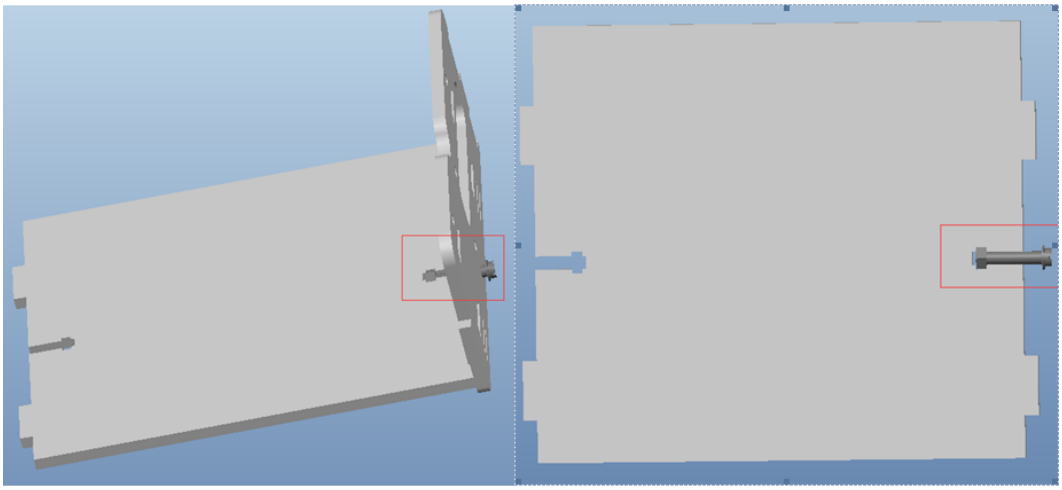


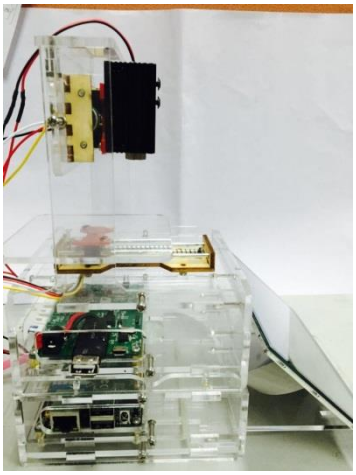


104

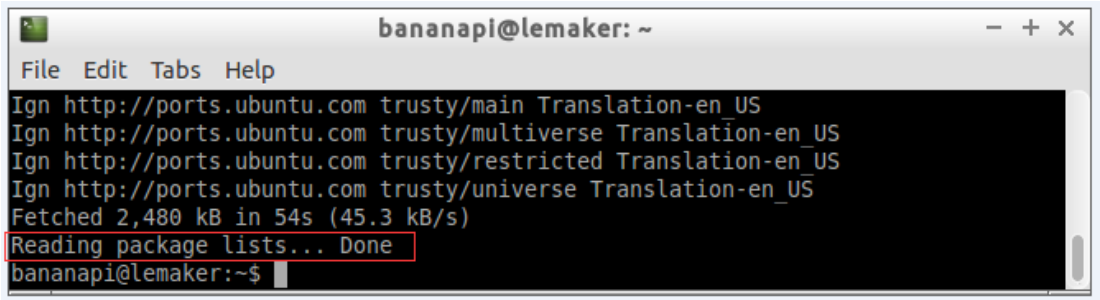


Setting up the laser engraving machine hardware

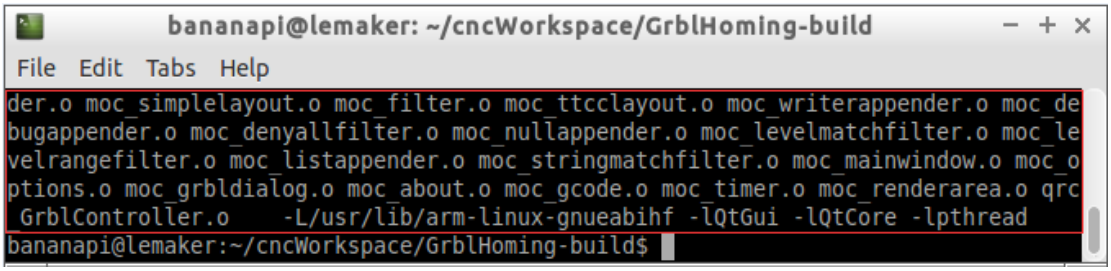


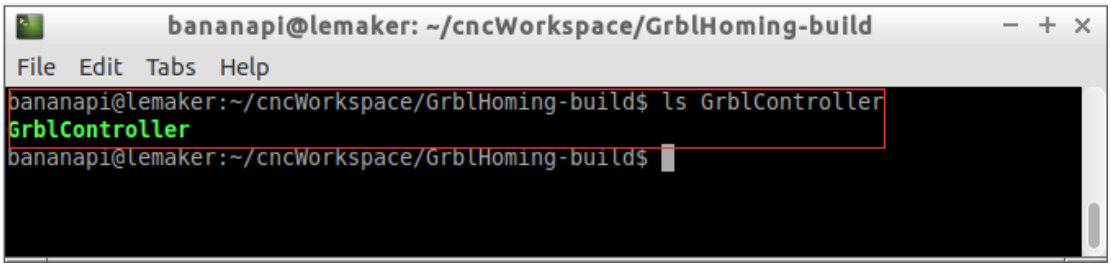


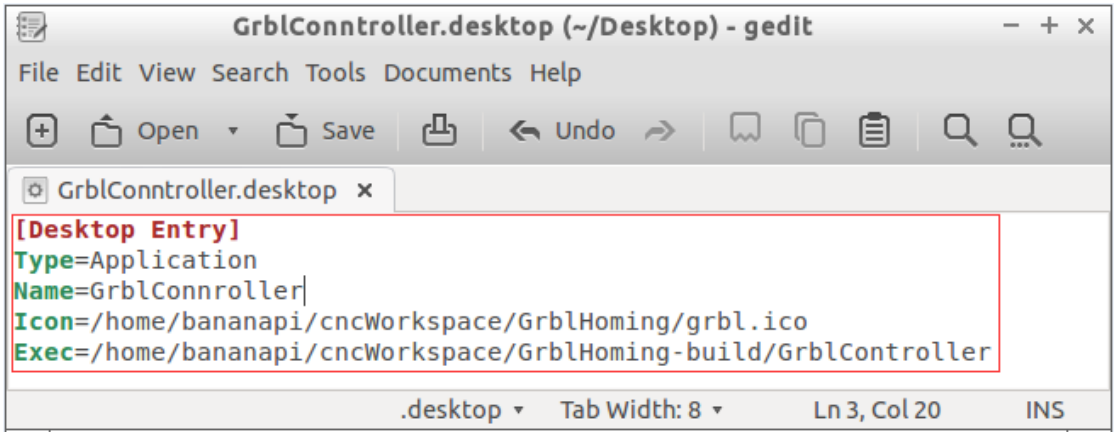
Installing dependencies



Installing the GrblController software

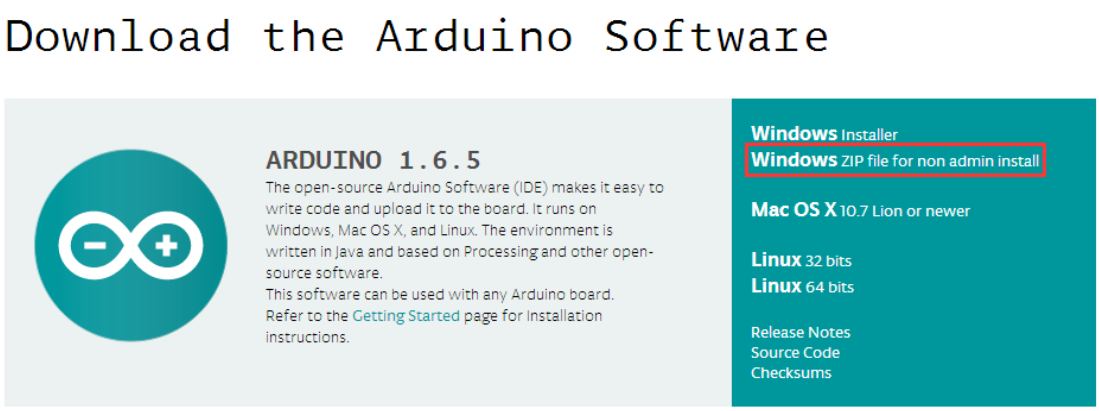


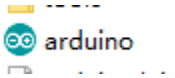




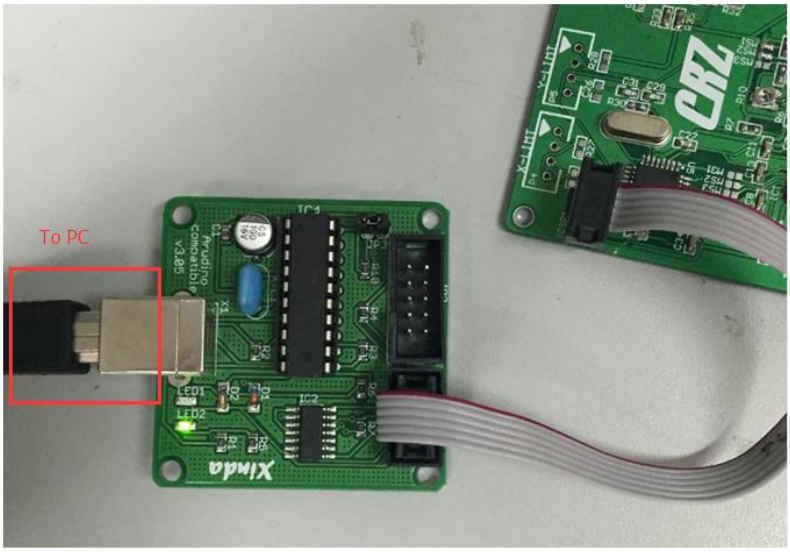
Installing Inkscape

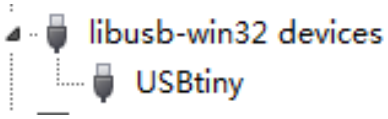
Installing Arduino

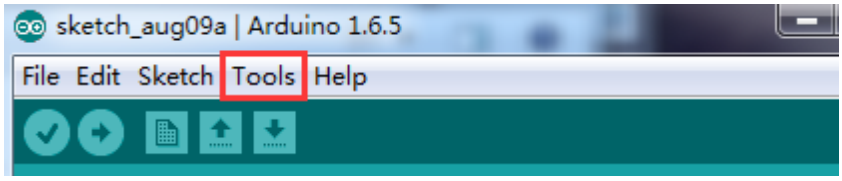


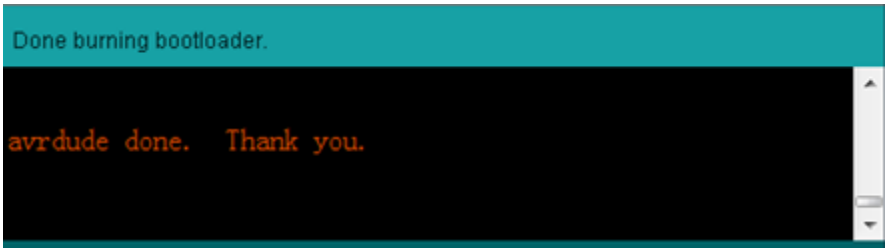


Loading bootloader

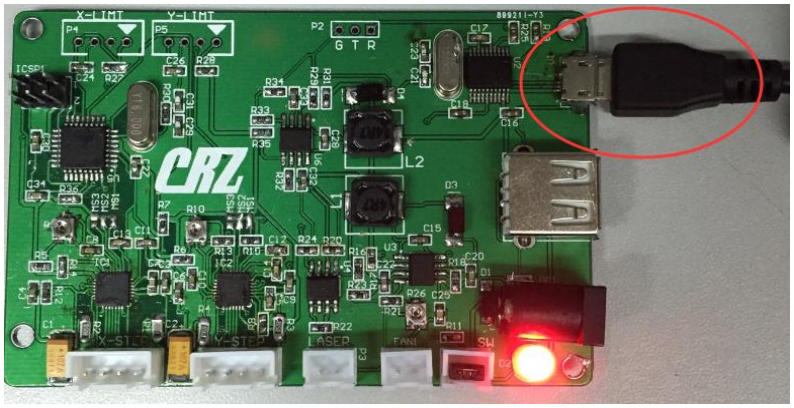


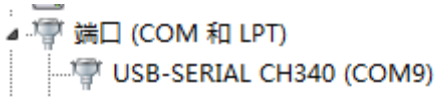


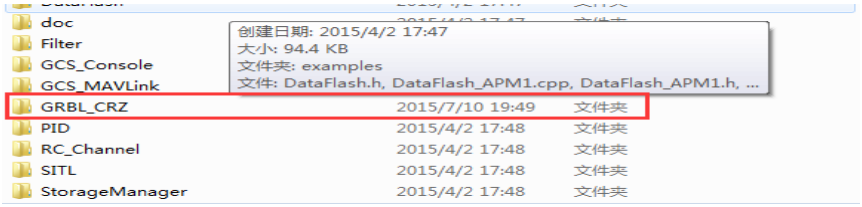


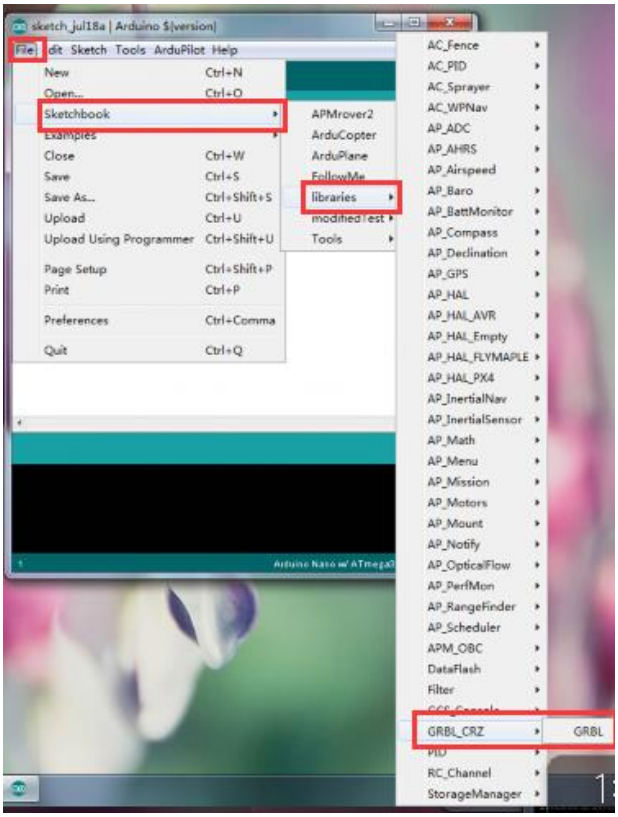


Loading the driving code



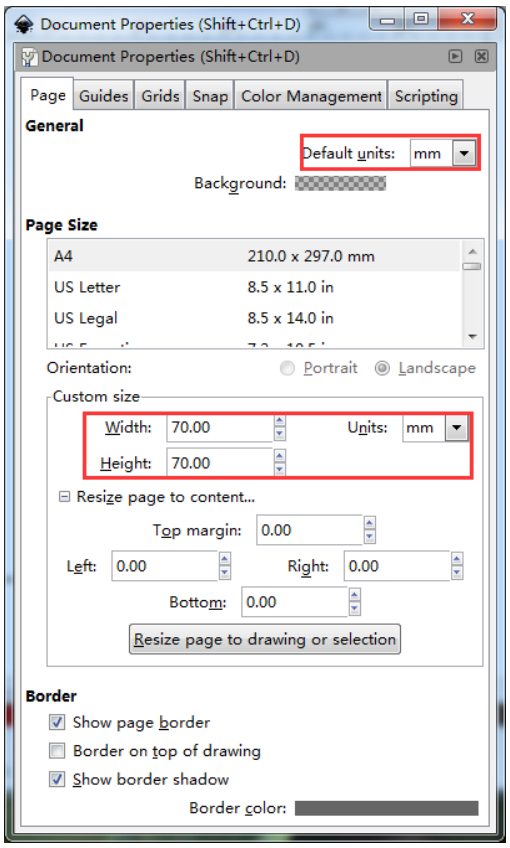


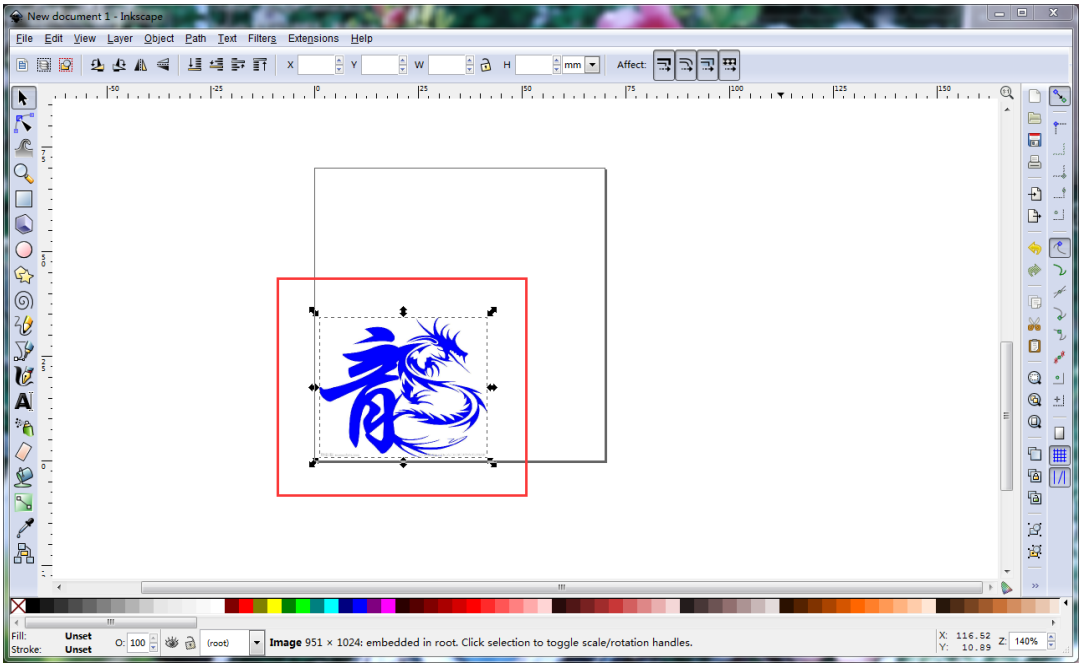


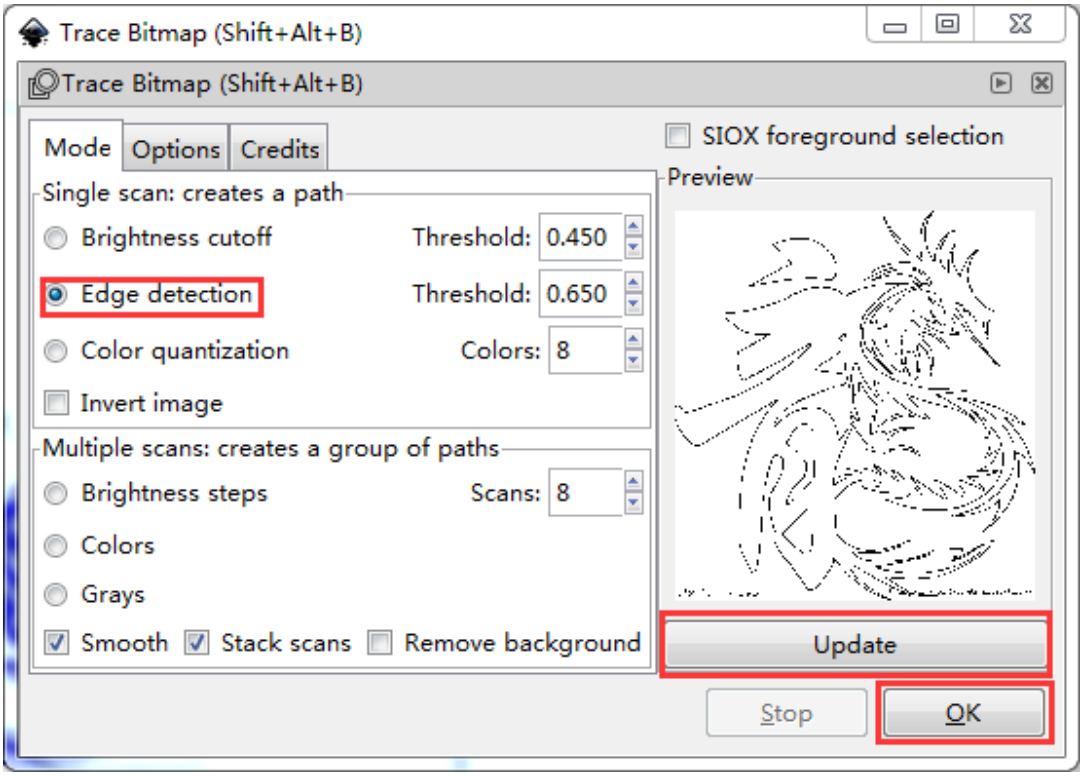


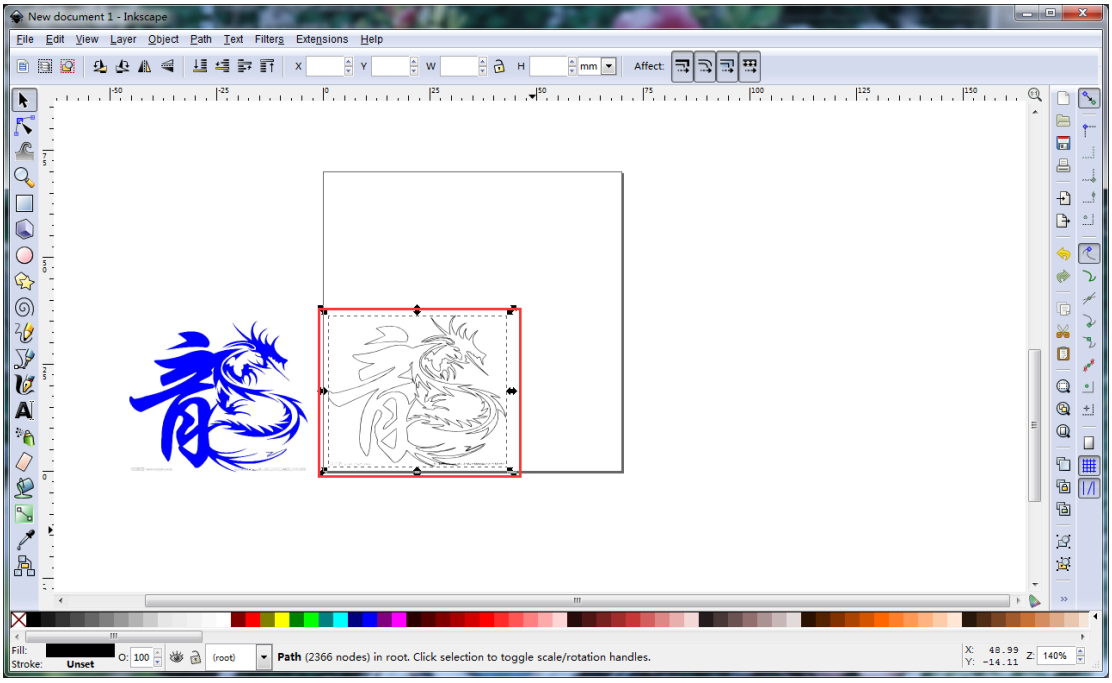
Done compiling.

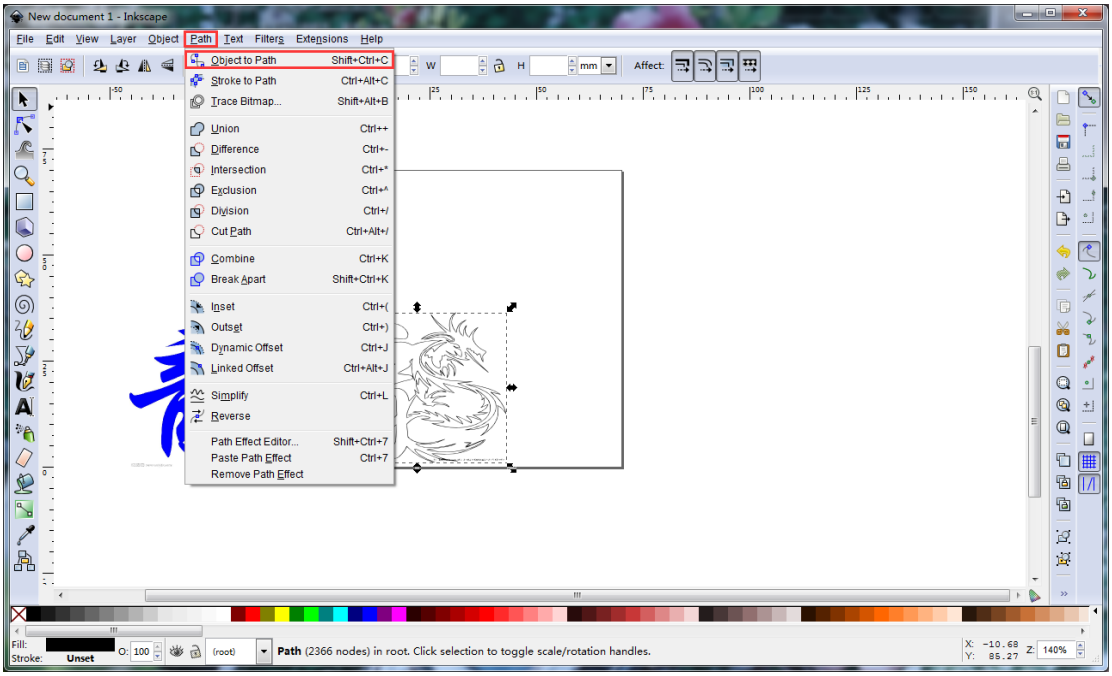
Generate the G code

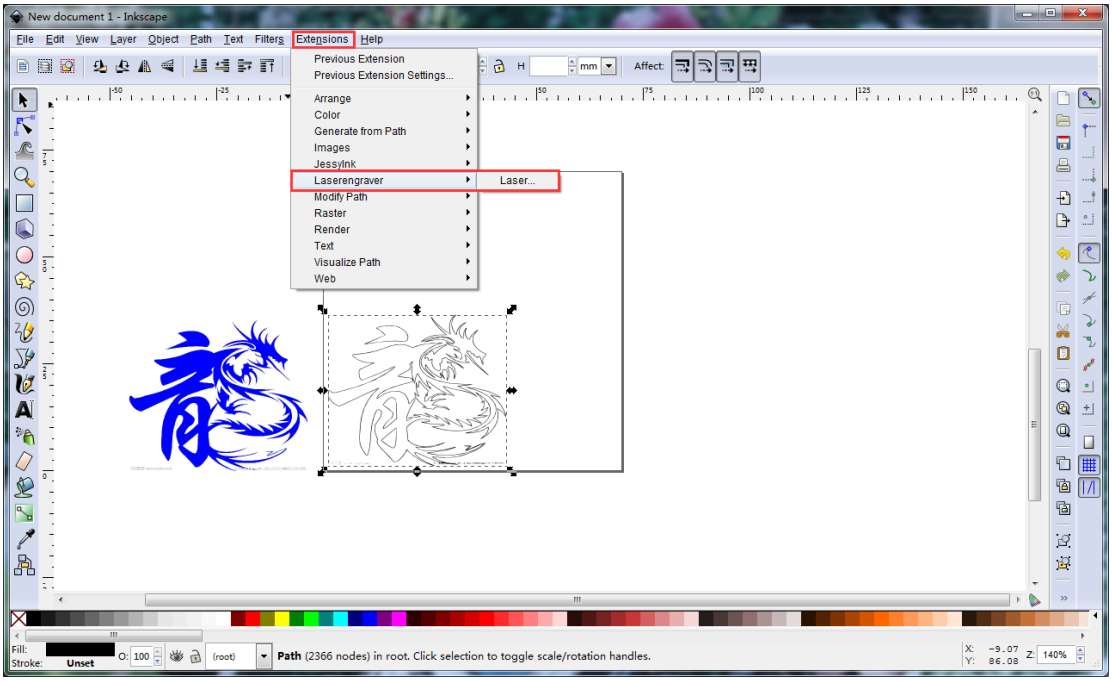


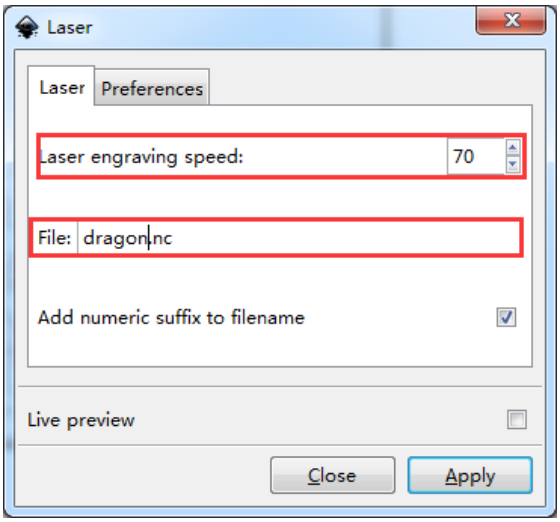

New document 1 - Inkscape
File Edit View Layer Object Path Text Filters Extensions Help
Affect:
Fill: Unset
Stroke: Unset
Image 951 × 1024: embedded in root. Click selection to toggle scale/rotation handles.

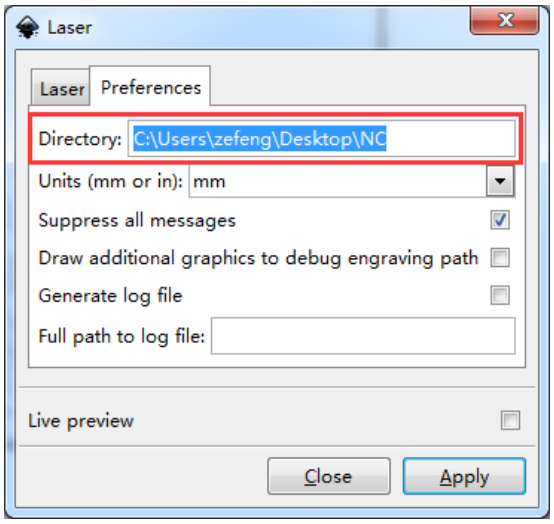

Trace Bitmap (Shift+Alt+B)
Trace Bitmap (Shift+Alt+B)
Mode
Options
Credits
SIOX foreground selection
Single scan: creates a path
Brightness cutoff
Threshold: 0.450
Edge detection
Threshold: 0.650
Color quantization
Colors: 8
Invert image
Multiple scans: creates a group of paths
Brightness steps
Scans: 8
Colors
Grays
Smooth
Stack scans
Remove background
Preview
Update
Stop
OK


New document 1 - Inkscape
File Edit View Layer Object Path Text Filters Extensions Help
Affect:
Fill:
Stroke: Unset
Path (2366 nodes) in root. Click selection to toggle scale/rotation handles.

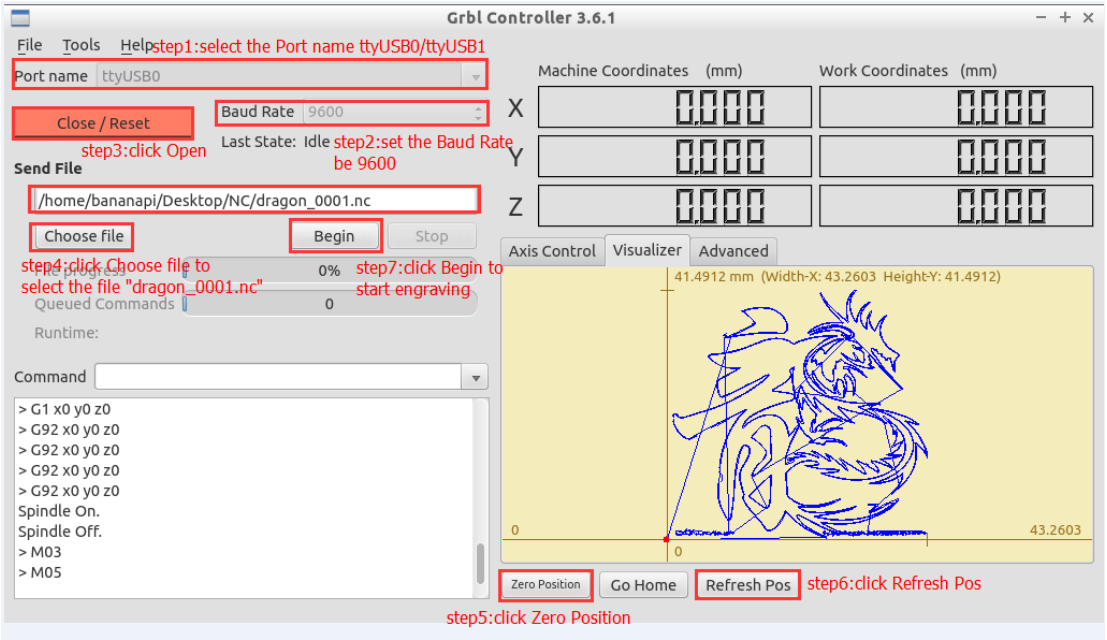

New document 1 - Inkscape
File Edit View Layer Object Path Text Filters Extensions Help
Object to Path Shift+Ctrl+C
Stroke to Path Ctrl+Alt+C
Trace Bitmap... Shift+Alt+B
Union Ctrl++
Difference Ctrl+-
Intersection Ctrl+*
Exclusion Ctrl+^
Division Ctrl+/
Cut Path Ctrl+Alt+/
Combine Ctrl+K
Break Apart Shift+Ctrl+K
Inset Ctrl+(
Outset Ctrl+)
Dynamic Offset Ctrl+J
Linked Offset Ctrl+Alt+J
Simplify Ctrl+L
Reverse
Path Effect Editor... Shift+Ctrl+7
Paste Path Effect Ctrl+7
Remove Path Effect
Affect:
Fill:
Stroke: Unset
O: 100
(root)
Path (2366 nodes) in root. Click selection to toggle scale/rotation handles.
X: -10.68
Y: 85.27
Z: 140%


New document 1 - Inkscape
File Edit View Layer Object Path Text Filters Extensions Help
Previous Extension
Previous Extension Settings...
Arrange
Color
Generate from Path
Images
JessyInk
Laserengraver
Laser...
Modify Path
Raster
Render
Text
Visualize Path
Web
Path (2366 nodes) in root. Click selection to toggle scale/rotation handles.


Laser
Laser
Preferences
Laser engraving speed:
70
File:
dragon.nc
Add numeric suffix to filename
Live preview
Close
Apply


Laser
Laser
Preferences
Directory:
C:\Users\zefeng\Desktop\NC
Units (mm or in):
mm
Suppress all messages
Draw additional graphics to debug engraving path
Generate log file
Full path to log file:
Live preview
Close
Apply

Beginning the engraving process

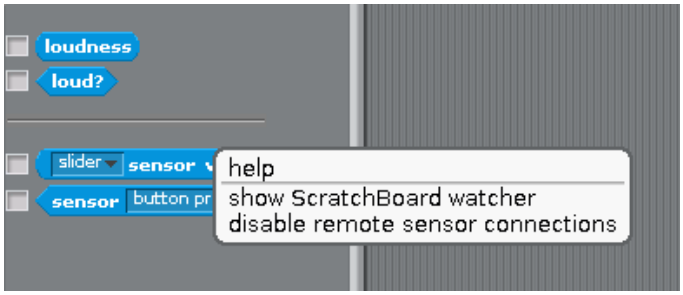


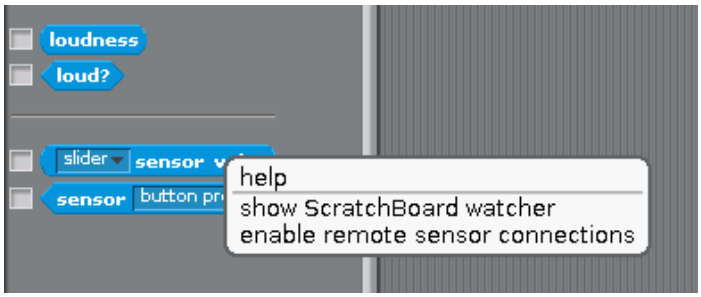
8

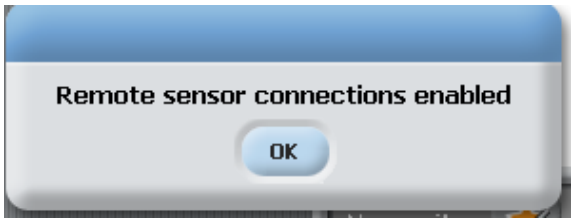
Scratch—Building a Smart House

Running LeScratch

```
Connecting...
Scratch not up. Sleeping for 5 and trying again.
Connecting...
Scratch not up. Sleeping for 5 and trying again.
Connecting...
Scratch not up. Sleeping for 5 and trying again.
Connecting...
```



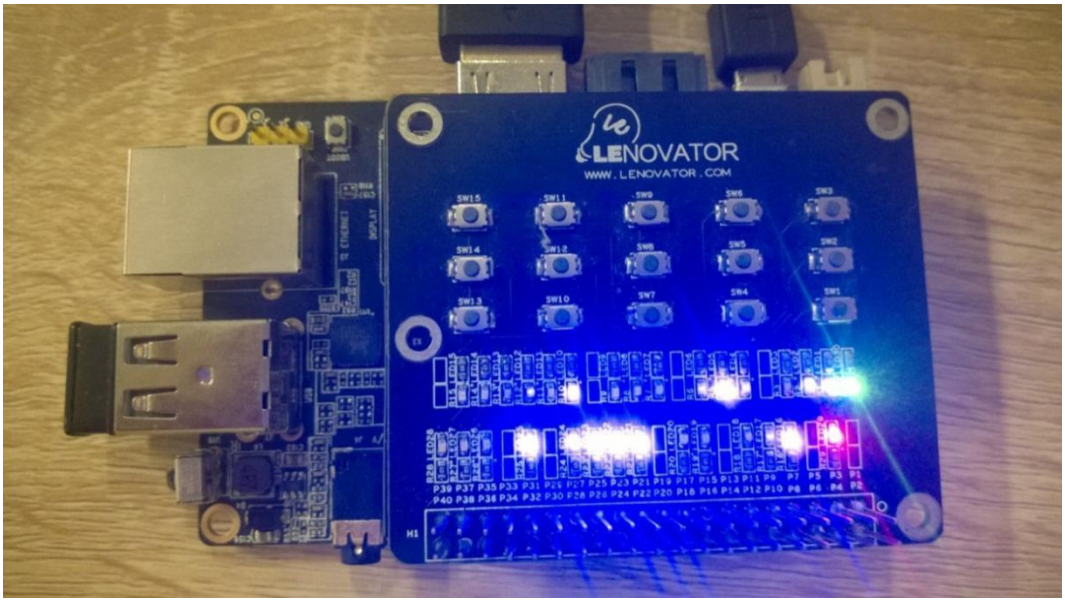


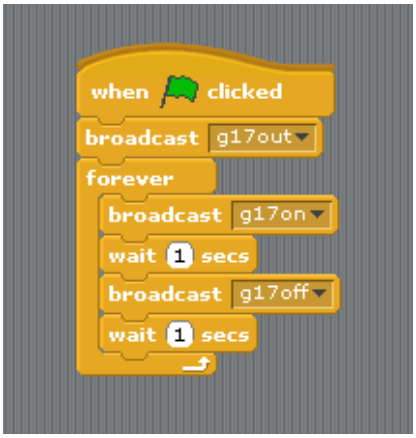


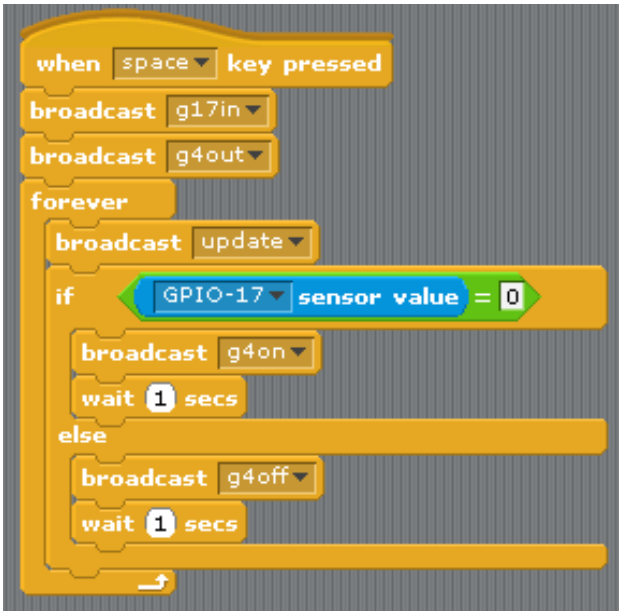

```
Connecting...
Connected!
Reconnected.
```

```
Connecting...
Connected!
USB_HUB
I2CButton
PCF8591
UltraSonic
DHTreader
RTC
TiltSensor
LNdigital
StepMotor
SoundDetect
LCD1602
TouchSensor
IOboard
LightSensor
```

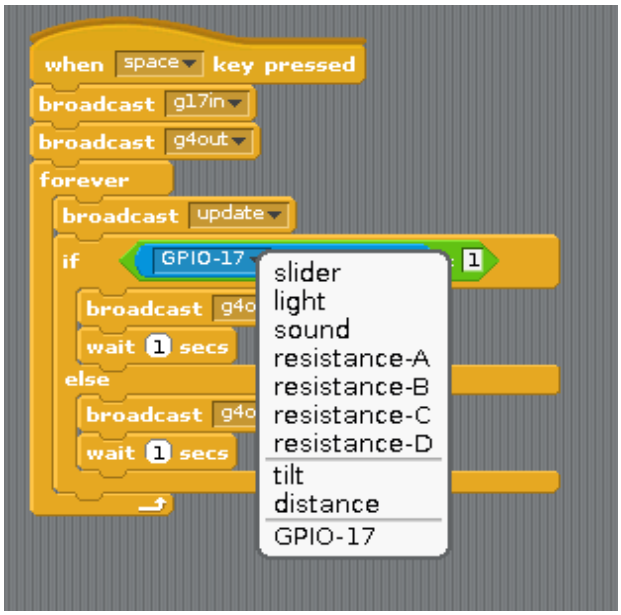
Example – The GPIO board

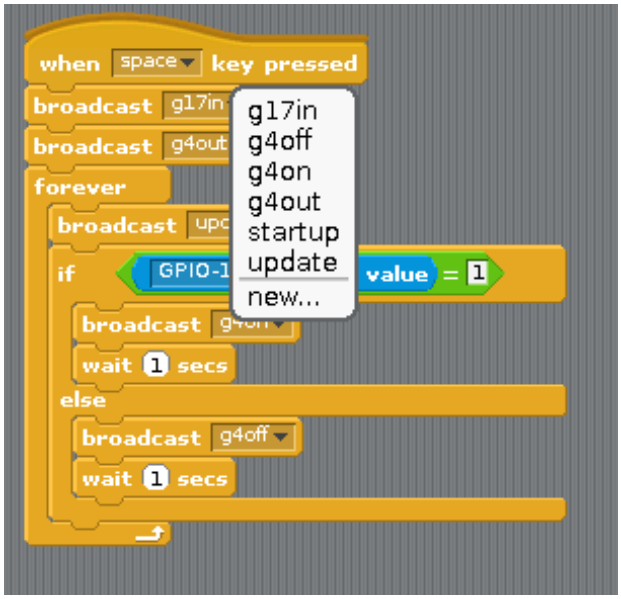



when clicked
broadcast g17out
forever
broadcast g17on
wait 1 secs
broadcast g17off
wait 1 secs

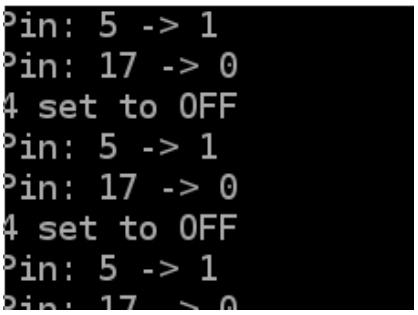

when space key pressed
broadcast g17in
broadcast g4out
forever
broadcast update
if GPIO-17 sensor value = 0
broadcast g4on
wait 1 secs
else
broadcast g4off
wait 1 secs

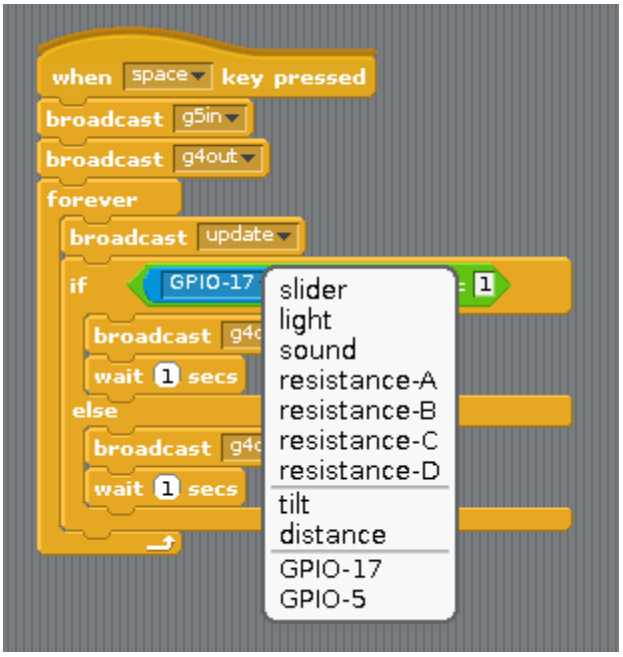

when clicked
broadcast g12out g13out g19out g16out g6out
forever
broadcast g12on g13on g19on g16on g6on
wait 1 secs
broadcast g12off g13off g19off g16off g6off
wait 1 secs


when space key pressed
broadcast g17in
broadcast g4out
forever
broadcast update
if GPIO-17 1
broadcast g4o
wait 1 secs
else
broadcast g4o
wait 1 secs
slider
light
sound
resistance-A
resistance-B
resistance-C
resistance-D
tilt
distance
GPIO-17

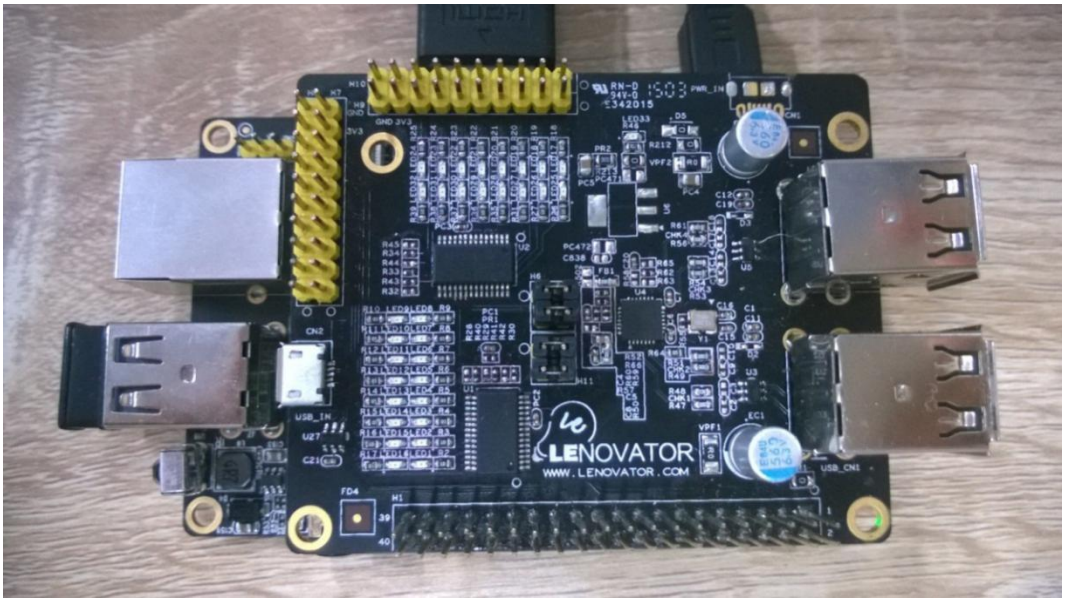

when space key pressed
broadcast g17in
broadcast g4out
forever
broadcast upd
if GPIO-1 value = 1
broadcast g4on
wait 1 secs
else
broadcast g4off
wait 1 secs
g17in
g4off
g4on
g4out
startup
update
new...

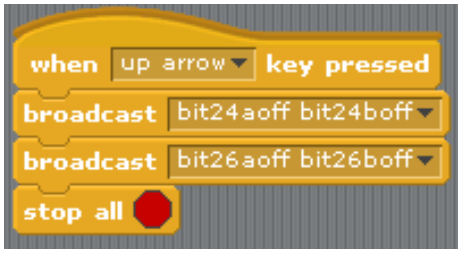

?
Message name:
g5in
OK
Cancel


Pin: 5 -> 1
Pin: 17 -> 0
4 set to OFF
Pin: 5 -> 1
Pin: 17 -> 0
4 set to OFF
Pin: 5 -> 1

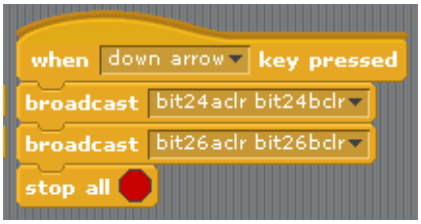

when space key pressed
broadcast g5in
broadcast g4out
forever
broadcast update
if GPIO-17 = 1
broadcast g4
wait 1 secs
else
broadcast g4
wait 1 secs
slider
light
sound
resistance-A
resistance-B
resistance-C
resistance-D
tilt
distance
GPIO-17
GPIO-5

Example – A USB Hub

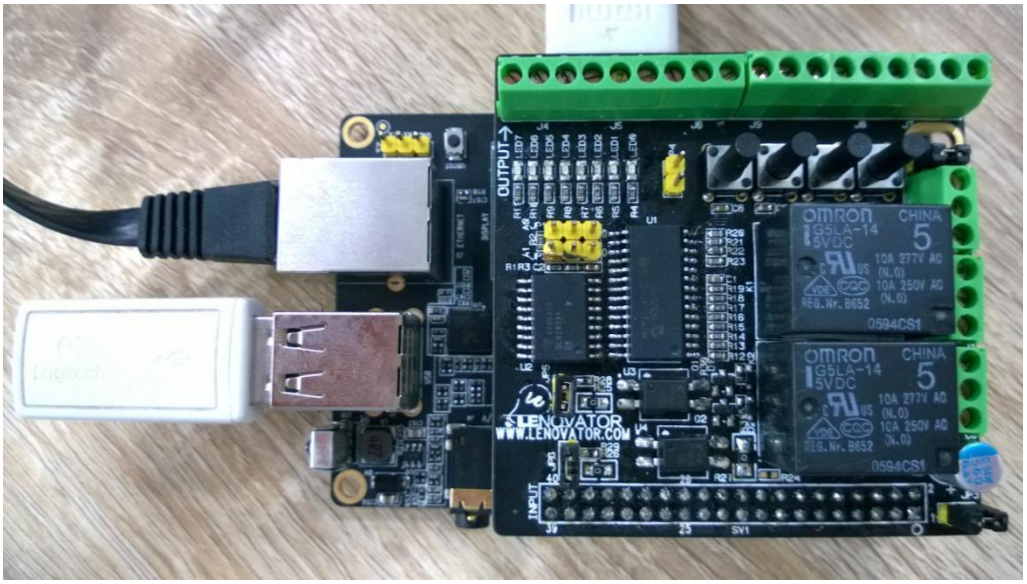


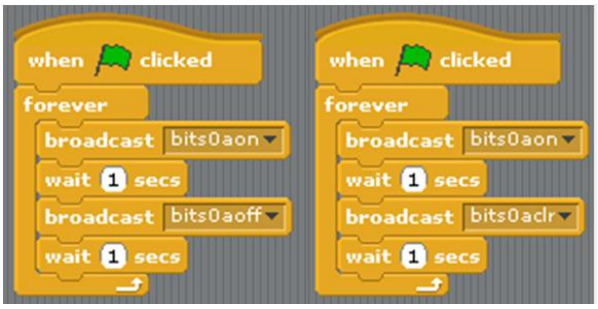


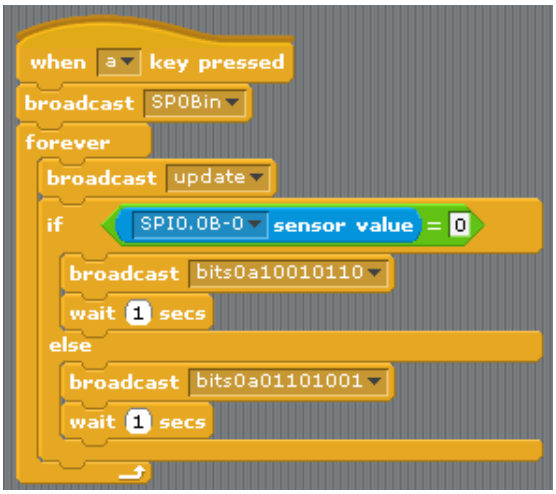

when a key pressed
broadcast bit24a00000000
broadcast bit24b00000000
broadcast bit26a00000000
broadcast bit26b00000000
forever
broadcast bit24a10010111
broadcast bit24b01101000

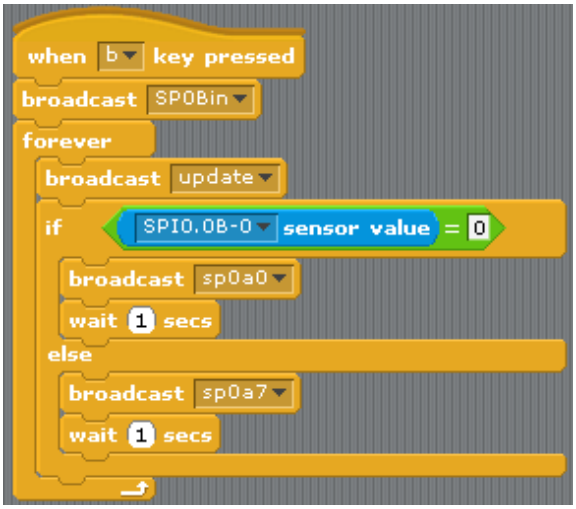

when down arrow key pressed
broadcast bit24aclr bit24bclr
broadcast bit26aclr bit26bclr
stop all

Serial Peripheral Interface (SPI)

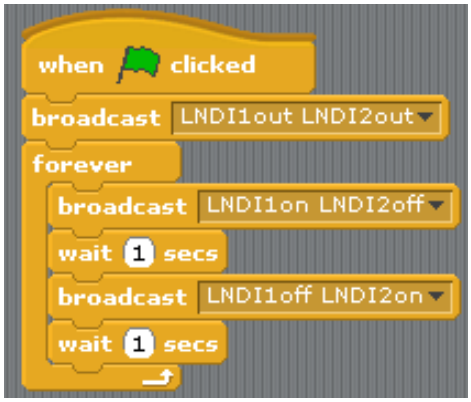


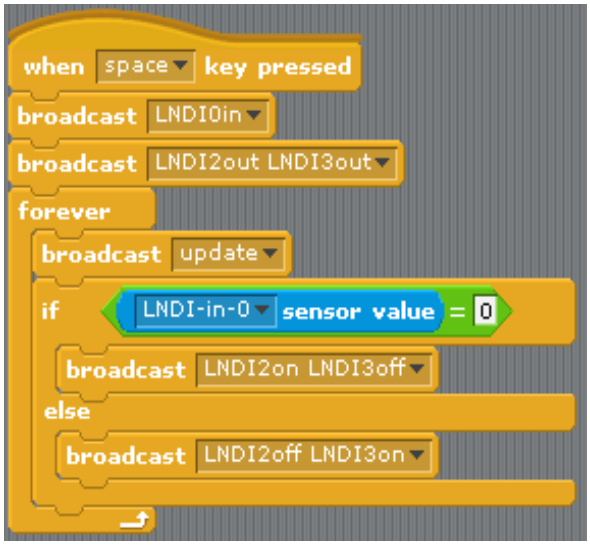

when clicked
forever
broadcast bits0aon
wait 1 secs
broadcast bits0aoff
wait 1 secs
when clicked
forever
broadcast bits0aon
wait 1 secs
broadcast bits0aclr
wait 1 secs


when a key pressed
broadcast SPI0Bin
forever
broadcast update
if SPI0.0B-0 sensor value = 0
broadcast bits0a10010110
wait 1 secs
else
broadcast bits0a01101001
wait 1 secs

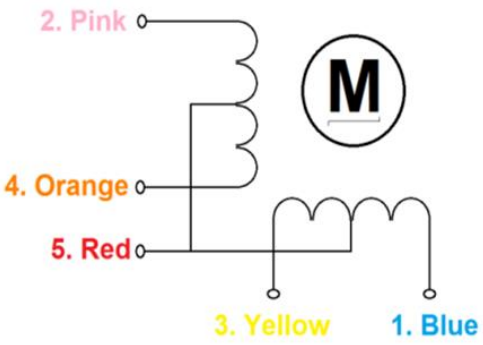


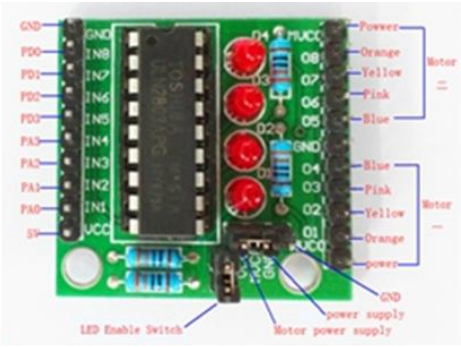
Example: LN Digital (the LNDI commands)

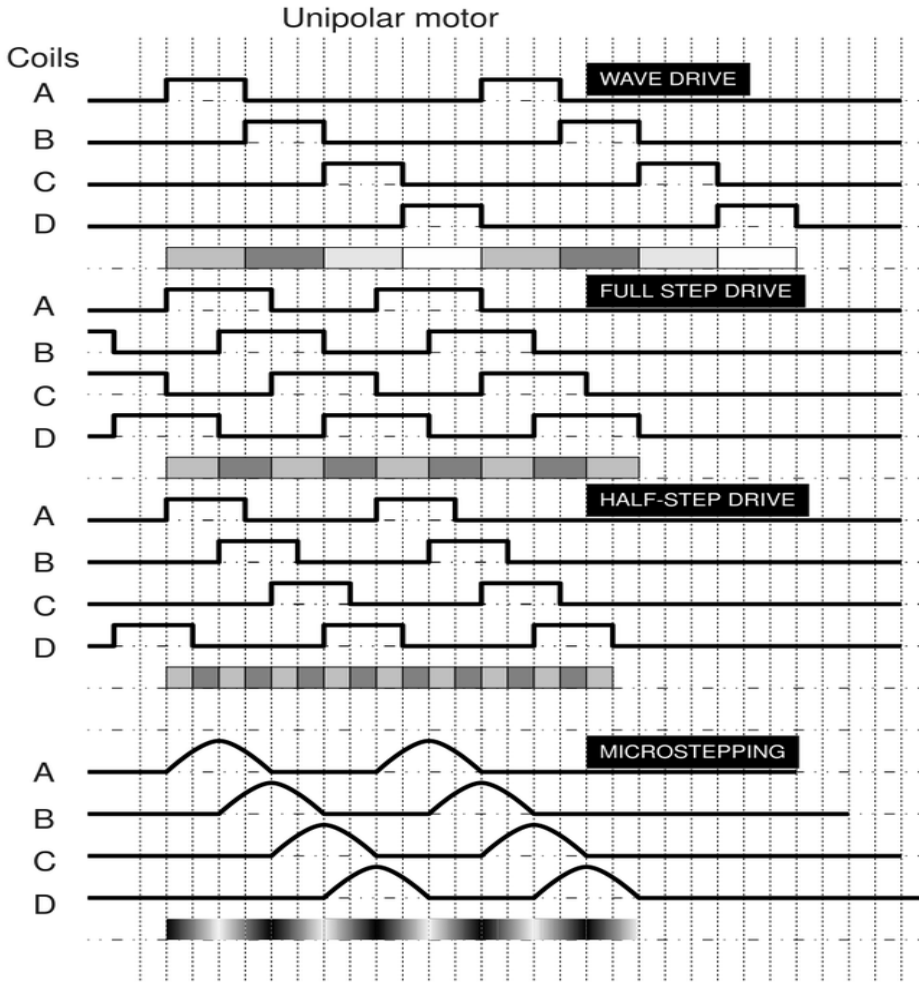




Technical specifications

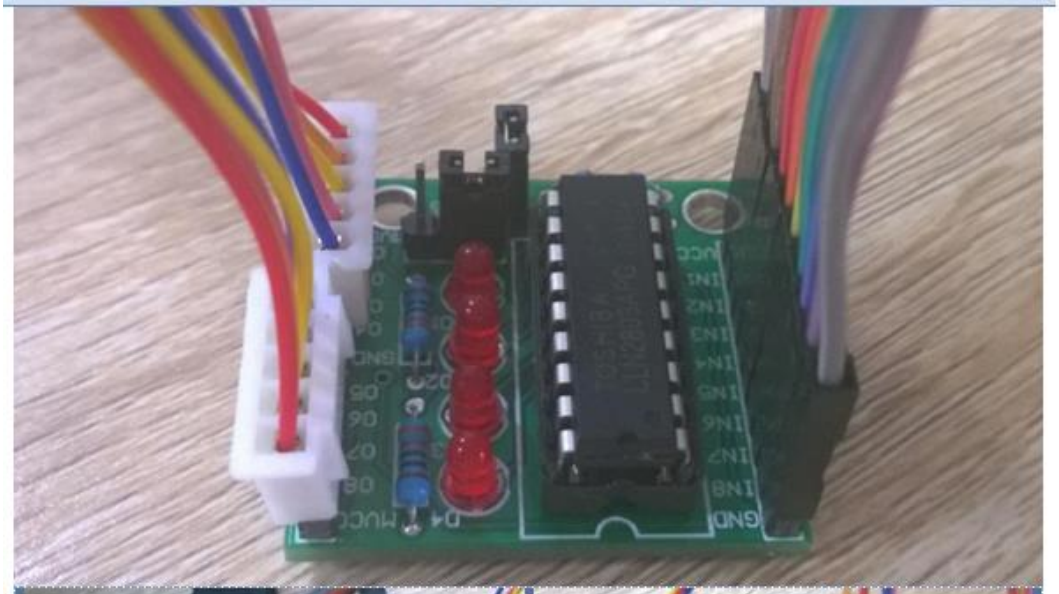


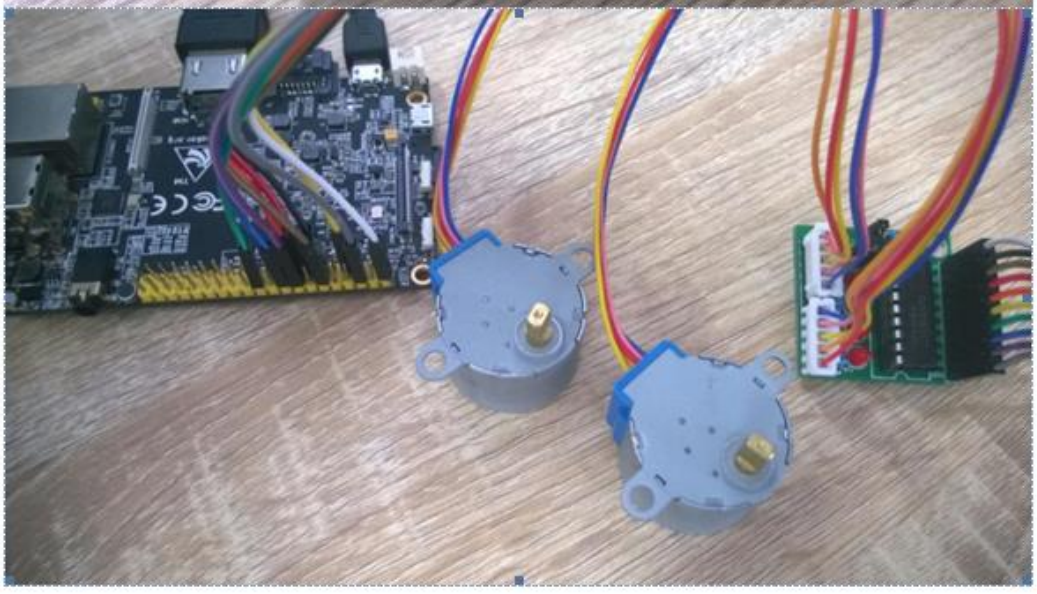



Unipolar motor
Coils
A
B
C
D
WAVE DRIVE
FULL STEP DRIVE
HALF-STEP DRIVE
MICROSTEPPING

Example – the step motor

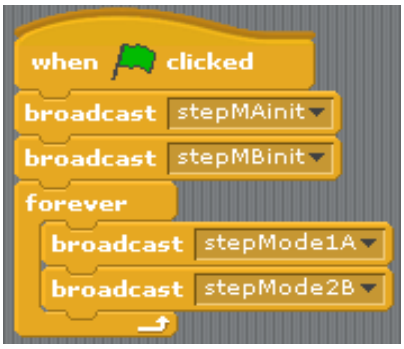
GND	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	VCC
PIN 6	PIN 23	PIN 26	PIN 36	PIN 37	PIN 7	PIN 22	PIN 18	PIN 16	PIN 2



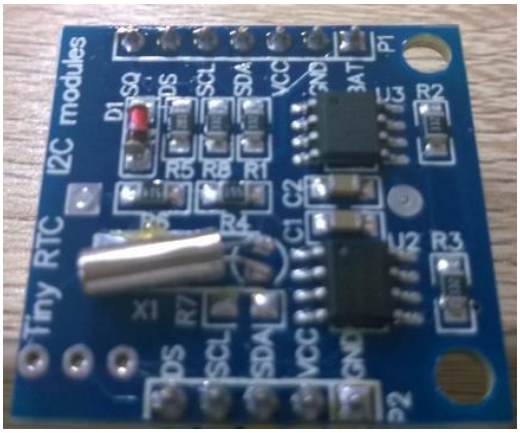



stepM5A256P

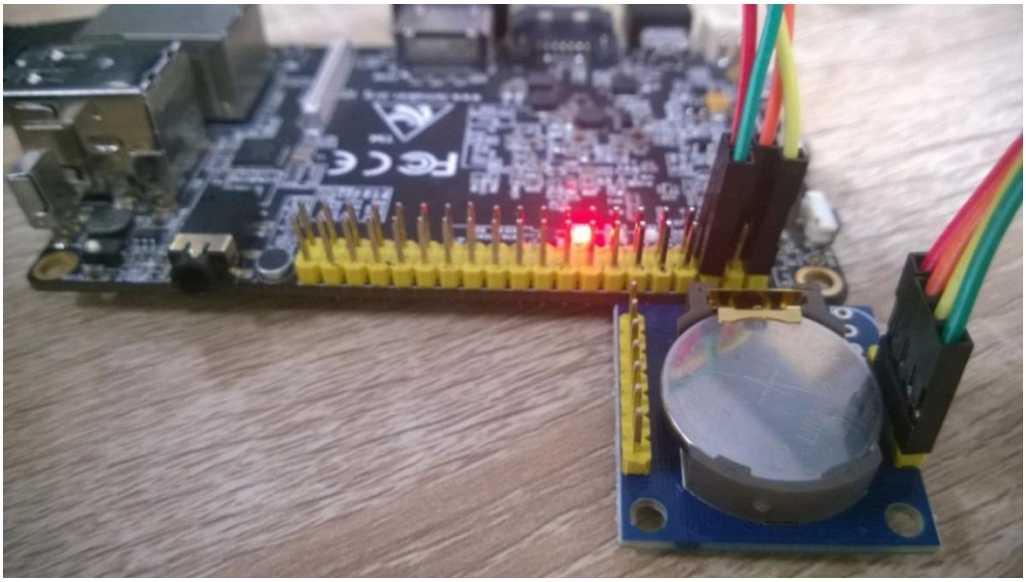

when clicked
broadcast stepMAinit
broadcast stepMBinit
forever
broadcast stepM5A256P
broadcast stepM5A256N
broadcast stepM5B256P
broadcast stepM5B256N

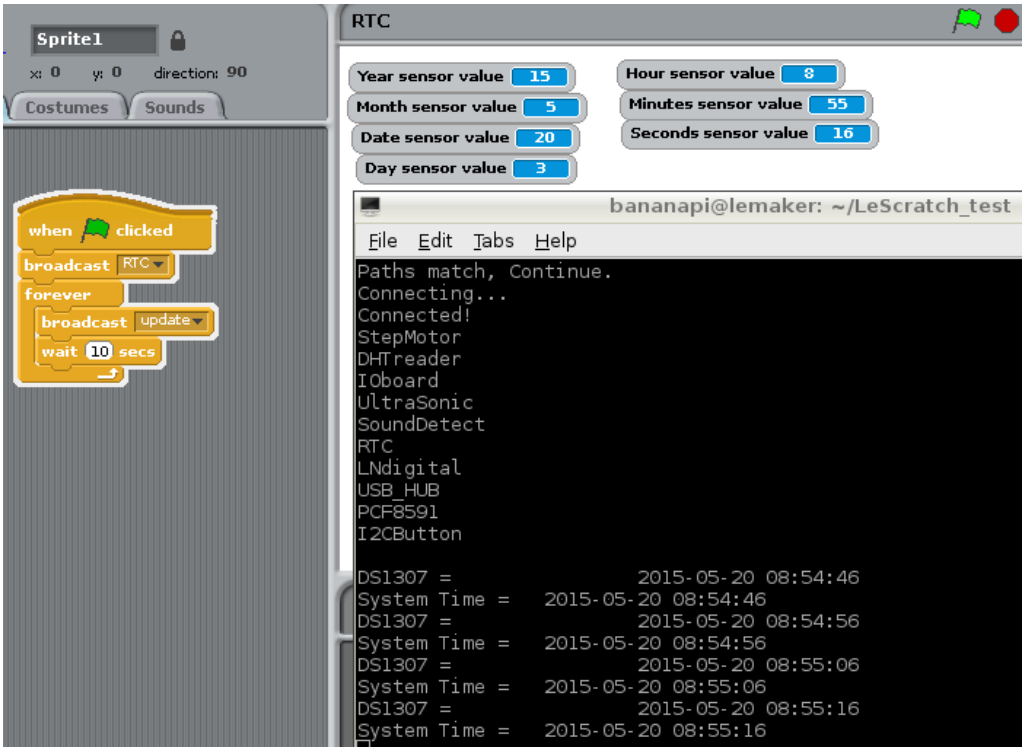

when clicked
broadcast stepMAinit
broadcast stepMBinit
forever
broadcast stepMode1A
broadcast stepMode2B

Technical specifications

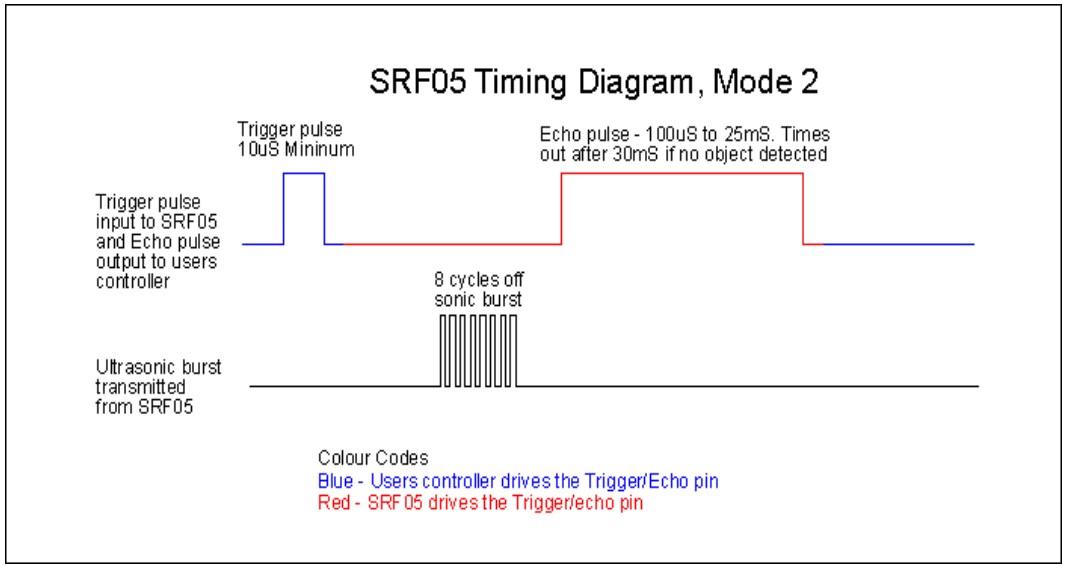


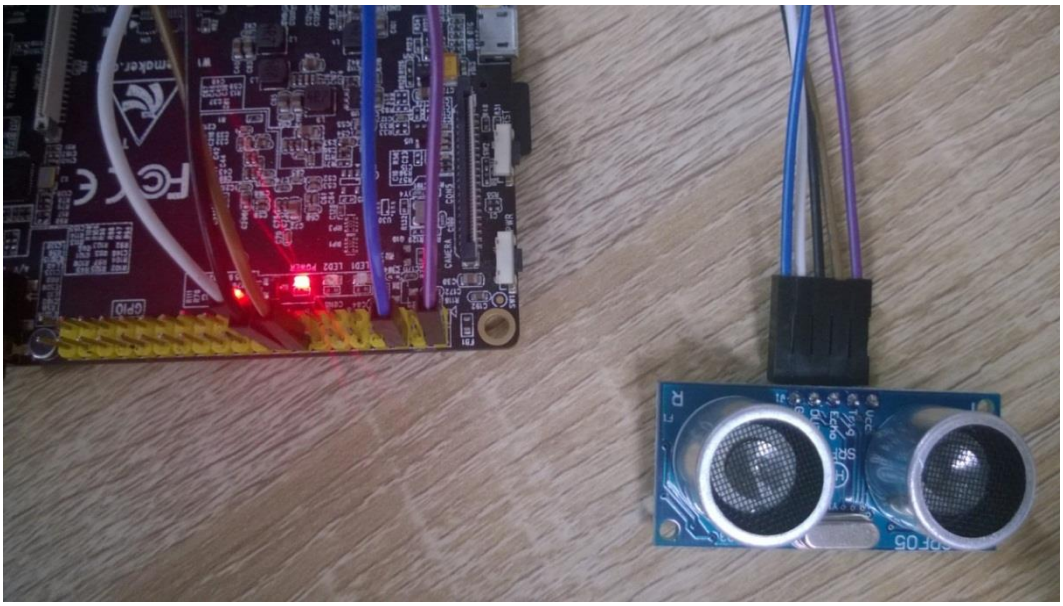
Example – RTC

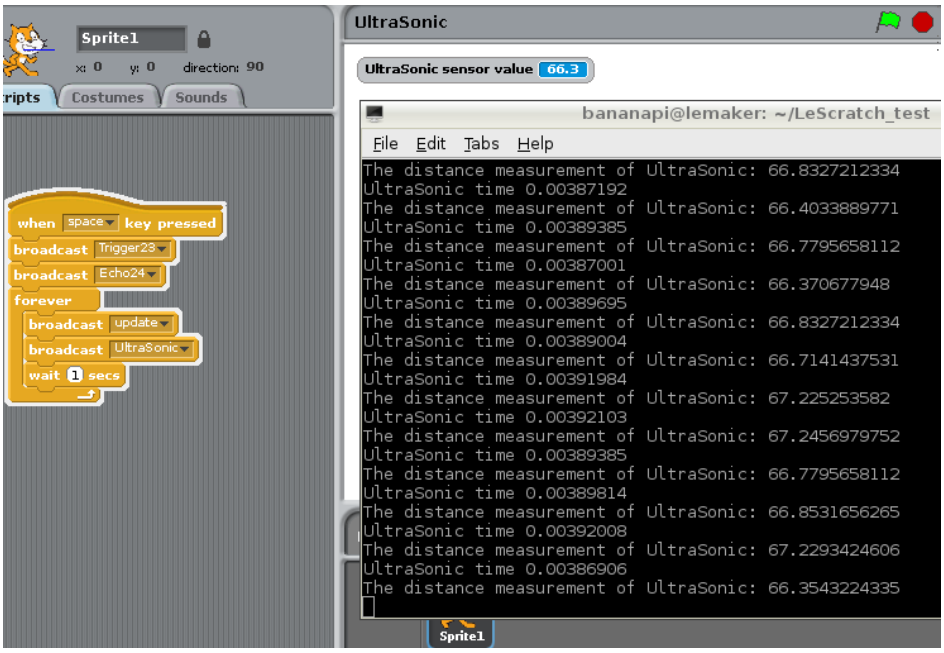



Sprite1
x: 0 y: 0 direction: 90
Costumes
Sounds
when clicked
broadcast RTC
forever
broadcast update
wait 10 secs
RTC
Year sensor value 15
Month sensor value 5
Date sensor value 20
Day sensor value 3
Hour sensor value 8
Minutes sensor value 55
Seconds sensor value 16
bananapi@lemaker: ~/LeScratch_test
File Edit Tabs Help
Paths match, Continue.
Connecting...
Connected!
StepMotor
DHTreader
IOboard
UltraSonic
SoundDetect
RTC
LNdigital
USB_HUB
PCF8591
I2CButton
DS1307 = 2015-05-20 08:54:46
System Time = 2015-05-20 08:54:46
DS1307 = 2015-05-20 08:54:56
System Time = 2015-05-20 08:54:56
DS1307 = 2015-05-20 08:55:06
System Time = 2015-05-20 08:55:06
DS1307 = 2015-05-20 08:55:16
System Time = 2015-05-20 08:55:16

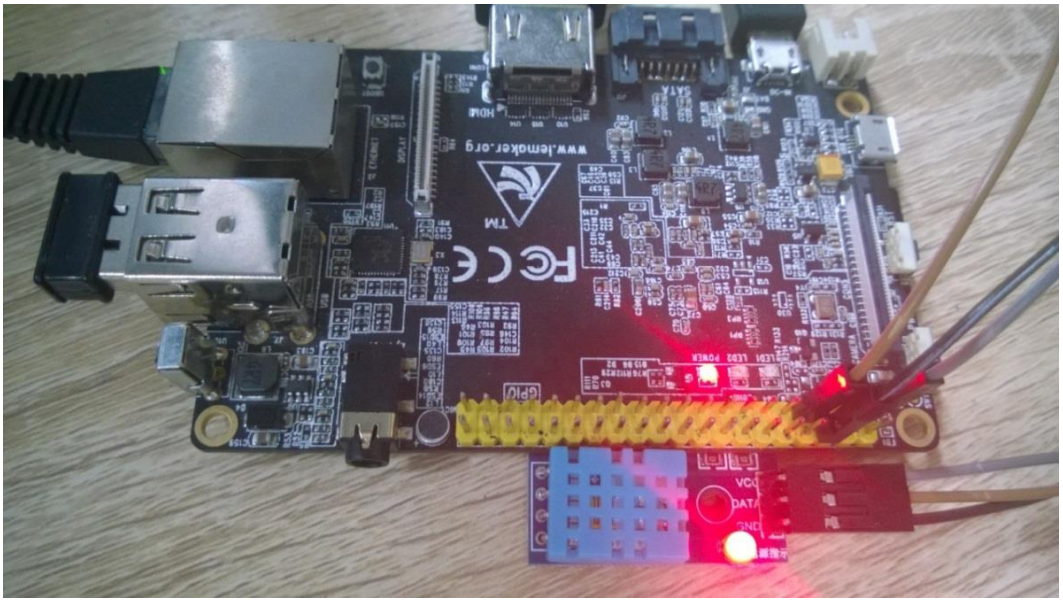
Example – the ultrasonic sensor

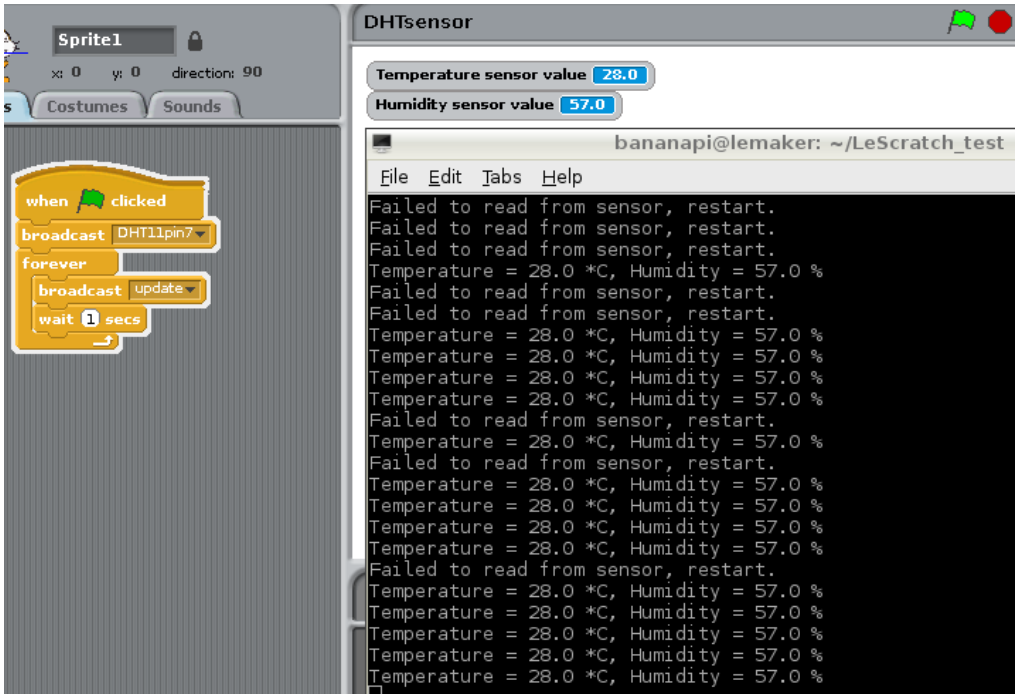




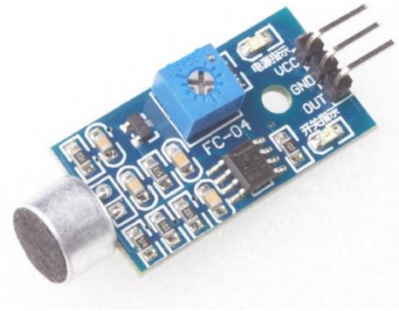

Sprite1
x: 0 y: 0 direction: 90
ripts
Costumes
Sounds
when space key pressed
broadcast Trigger23
broadcast Echo24
forever
broadcast update
broadcast UltraSonic
wait 1 secs
UltraSonic
UltraSonic sensor value 66.3
bananapi@lemaker: ~/LeScratch_test
File Edit Tabs Help
The distance measurement of UltraSonic: 66.8327212334
UltraSonic time 0.00387192
The distance measurement of UltraSonic: 66.4033889771
UltraSonic time 0.00389385
The distance measurement of UltraSonic: 66.7795658112
UltraSonic time 0.00387001
The distance measurement of UltraSonic: 66.370677948
UltraSonic time 0.00389695
The distance measurement of UltraSonic: 66.8327212334
UltraSonic time 0.00389004
The distance measurement of UltraSonic: 66.7141437531
UltraSonic time 0.00391984
The distance measurement of UltraSonic: 67.225253582
UltraSonic time 0.00392103
The distance measurement of UltraSonic: 67.2456979752
UltraSonic time 0.00389385
The distance measurement of UltraSonic: 66.7795658112
UltraSonic time 0.00389814
The distance measurement of UltraSonic: 66.8531656265
UltraSonic time 0.00392008
The distance measurement of UltraSonic: 67.2293424606
UltraSonic time 0.00386906
The distance measurement of UltraSonic: 66.3543224335
Sprite1

Example – the DHT sensor

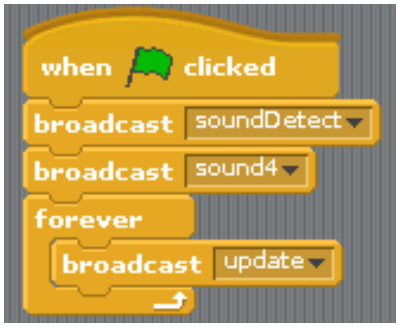


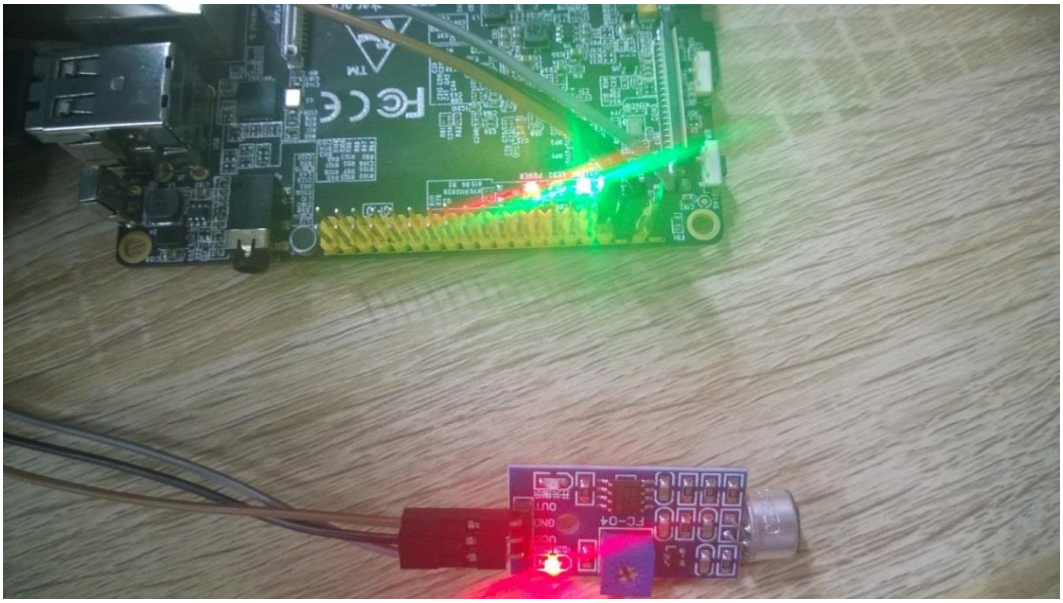


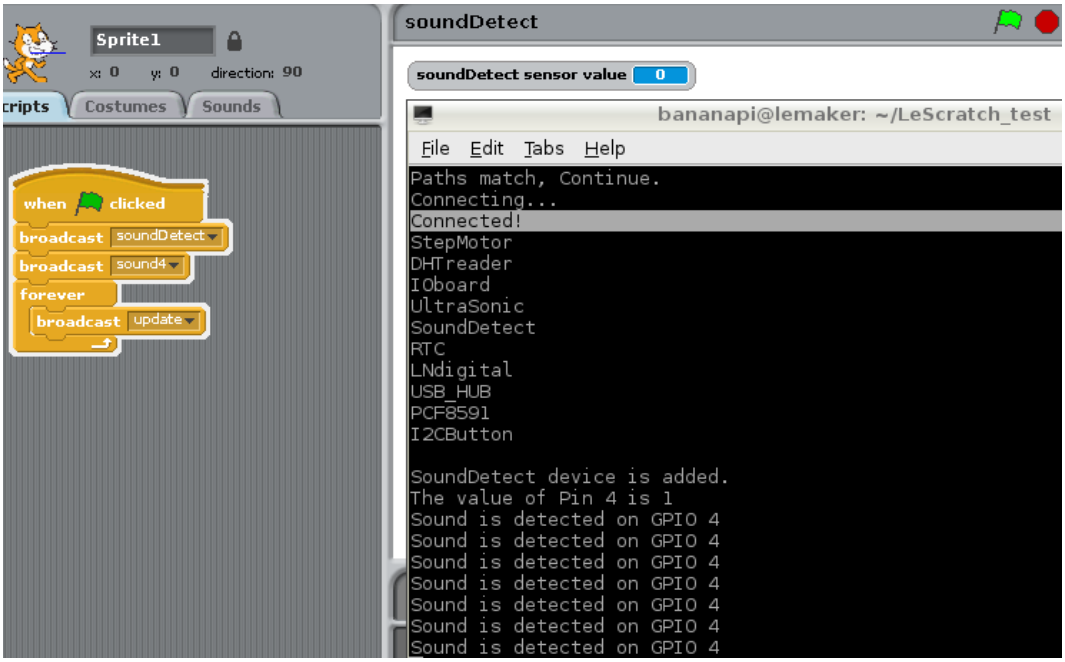
Technical specifications



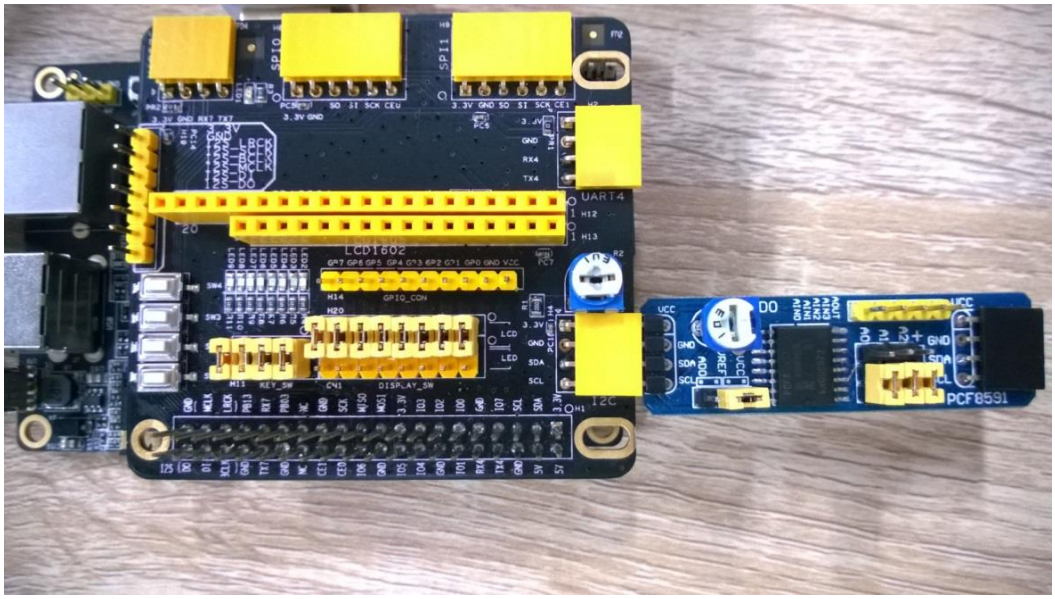
Example – the sound detect sensor

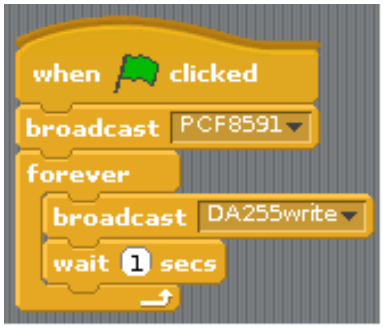


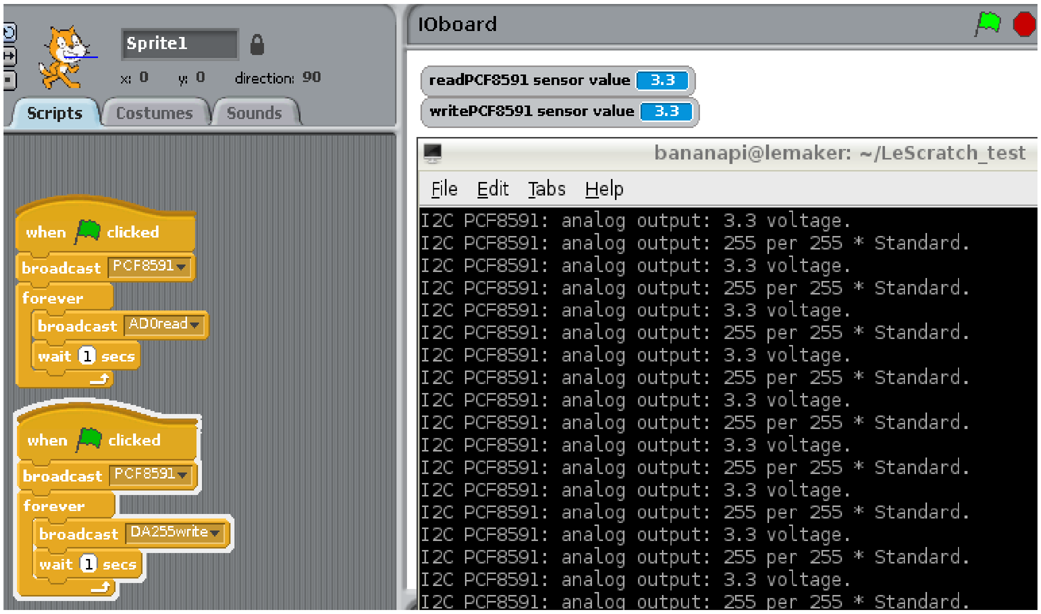


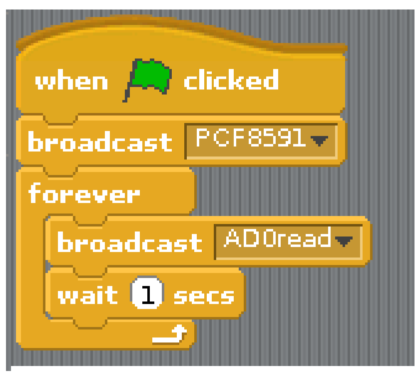

Sprite1
x: 0
y: 0
direction: 90
cripts
Costumes
Sounds
when clicked
broadcast soundDetect
broadcast sound4
forever
broadcast update
soundDetect
soundDetect sensor value 0
bananapi@lemaker: ~/LeScratch_test
File Edit Tabs Help
Paths match, Continue.
Connecting...
Connected!
StepMotor
DHTreader
IOboard
UltraSonic
SoundDetect
RTC
LNdigital
USB_HUB
PCF8591
I2CButton
SoundDetect device is added.
The value of Pin 4 is 1
Sound is detected on GPIO 4
Sound is detected on GPIO 4
Sound is detected on GPIO 4
Sound is detected on GPIO 4
Sound is detected on GPIO 4
Sound is detected on GPIO 4
Sound is detected on GPIO 4

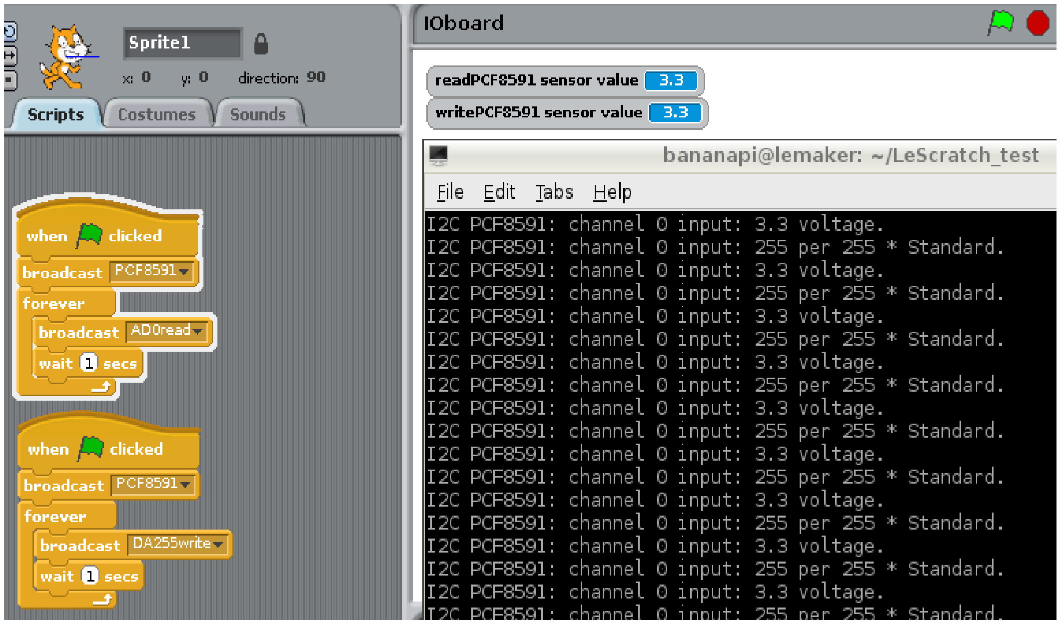
Example – the AD/DA convertor



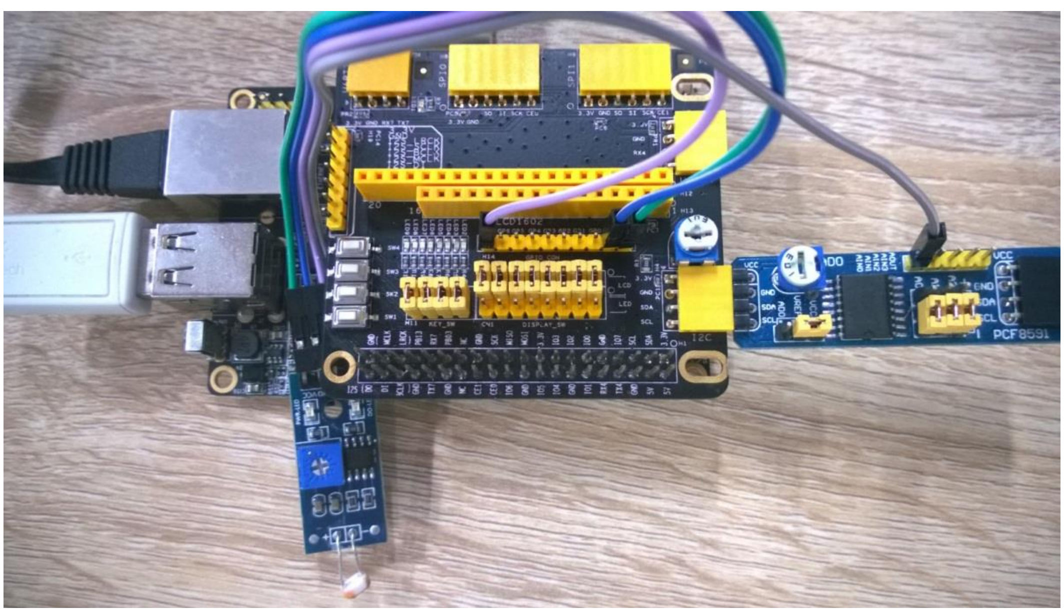



Sprite1
x: 0 y: 0 direction: 90
Scripts
Costumes
Sounds
when clicked
broadcast PCF8591
forever
broadcast AD0read
wait 1 secs
when clicked
broadcast PCF8591
forever
broadcast DA255write
wait 1 secs
IOboard
readPCF8591 sensor value 3.3
writePCF8591 sensor value 3.3
bananapi@lemaker: ~/LeScratch_test
File Edit Tabs Help
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.
I2C PCF8591: analog output: 3.3 voltage.
I2C PCF8591: analog output: 255 per 255 * Standard.

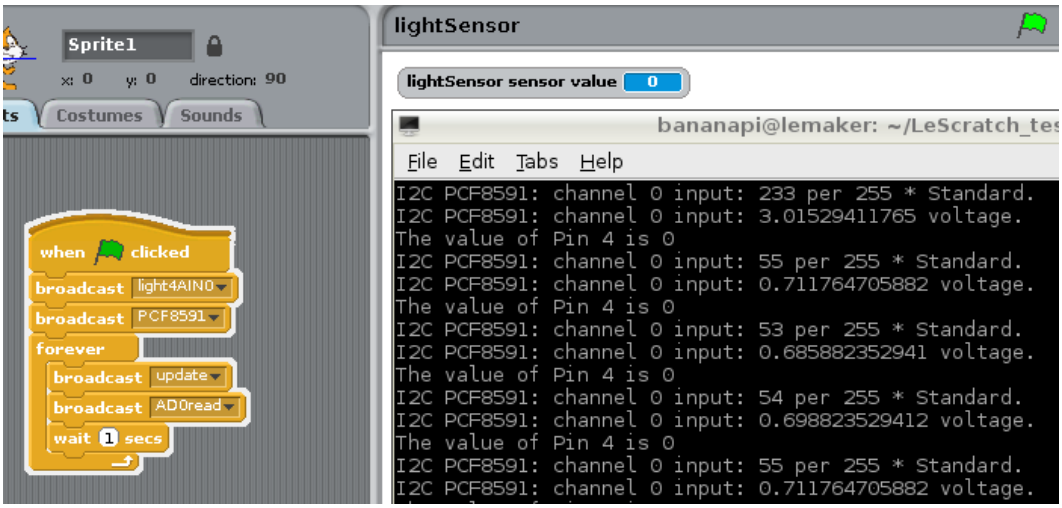

when clicked
broadcast PCF8591
forever
broadcast AD0read
wait 1 secs



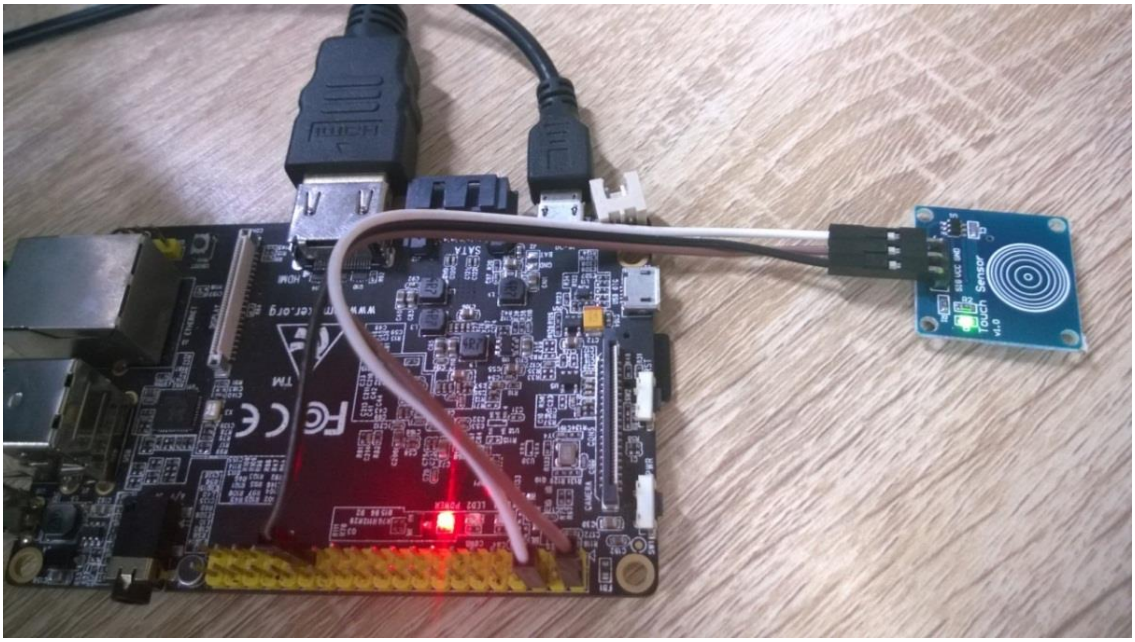
Example – Photoresistor

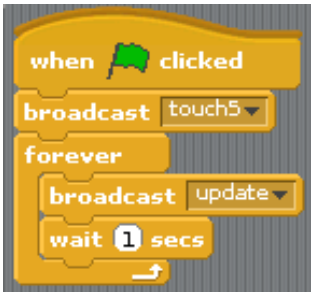


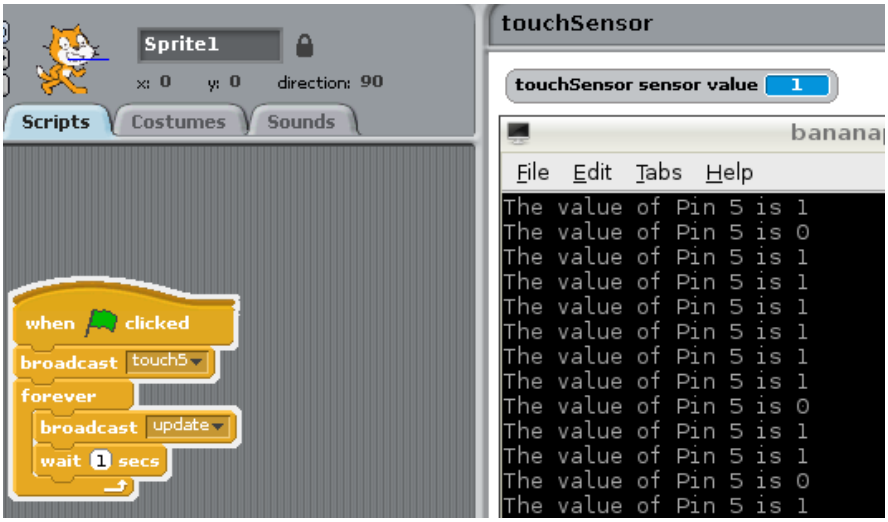

when clicked
broadcast light4AIN0
broadcast PCF8591
forever
broadcast update
broadcast ADCread
wait 1 secs


Sprite1
x: 0 y: 0 direction: 90
Costumes
Sounds
when clicked
broadcast light4AIN0
broadcast PCF8591
forever
broadcast update
broadcast ADCread
wait 1 secs
lightSensor
lightSensor sensor value 0
bananapi@lemaker: ~/LeScratch_tes
File Edit Tabs Help
I2C PCF8591: channel 0 input: 233 per 255 * Standard.
I2C PCF8591: channel 0 input: 3.01529411765 voltage.
The value of Pin 4 is 0
I2C PCF8591: channel 0 input: 55 per 255 * Standard.
I2C PCF8591: channel 0 input: 0.711764705882 voltage.
The value of Pin 4 is 0
I2C PCF8591: channel 0 input: 53 per 255 * Standard.
I2C PCF8591: channel 0 input: 0.685882352941 voltage.
The value of Pin 4 is 0
I2C PCF8591: channel 0 input: 54 per 255 * Standard.
I2C PCF8591: channel 0 input: 0.698823529412 voltage.
The value of Pin 4 is 0
I2C PCF8591: channel 0 input: 55 per 255 * Standard.
I2C PCF8591: channel 0 input: 0.711764705882 voltage.

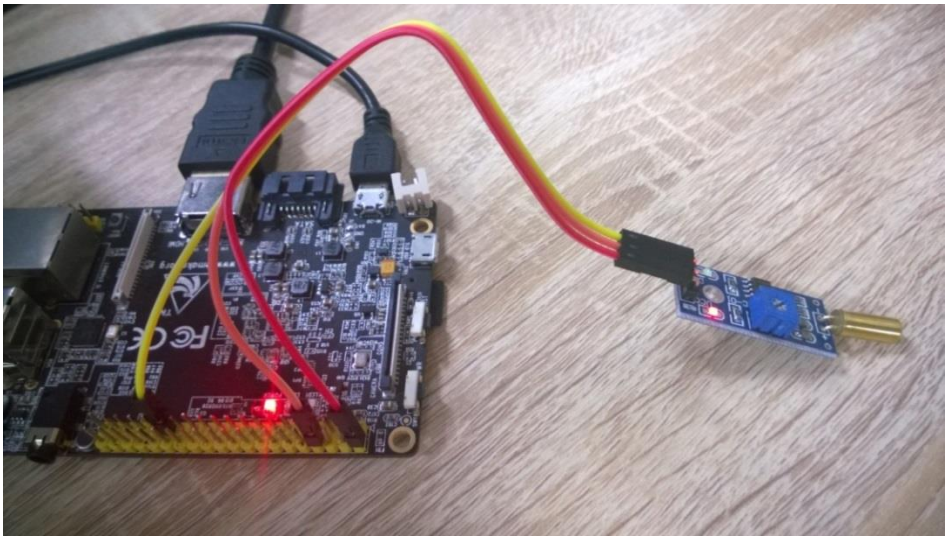
Technical specifications



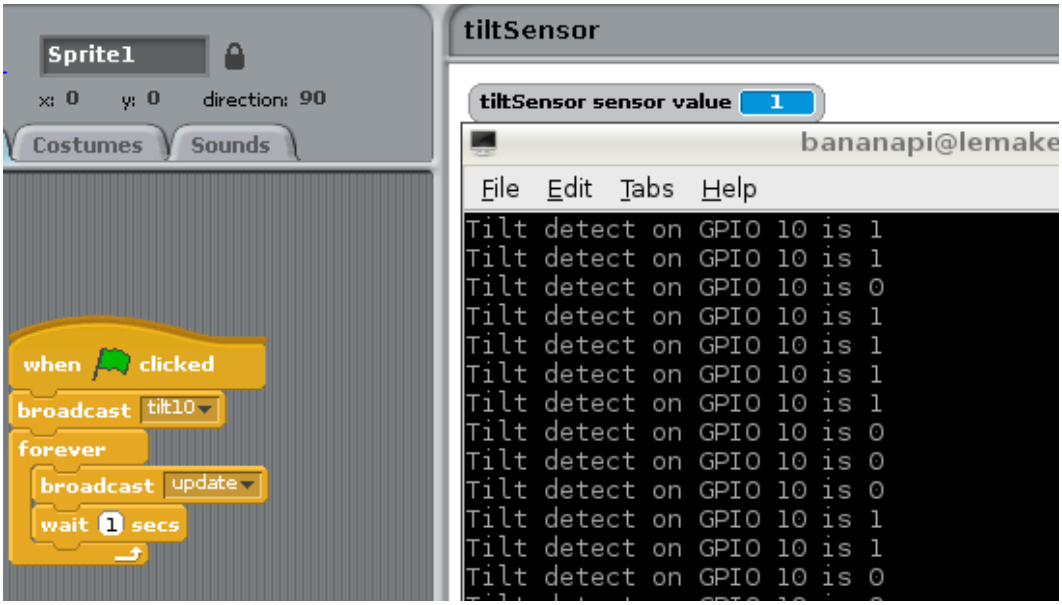




Example – the tilt sensor



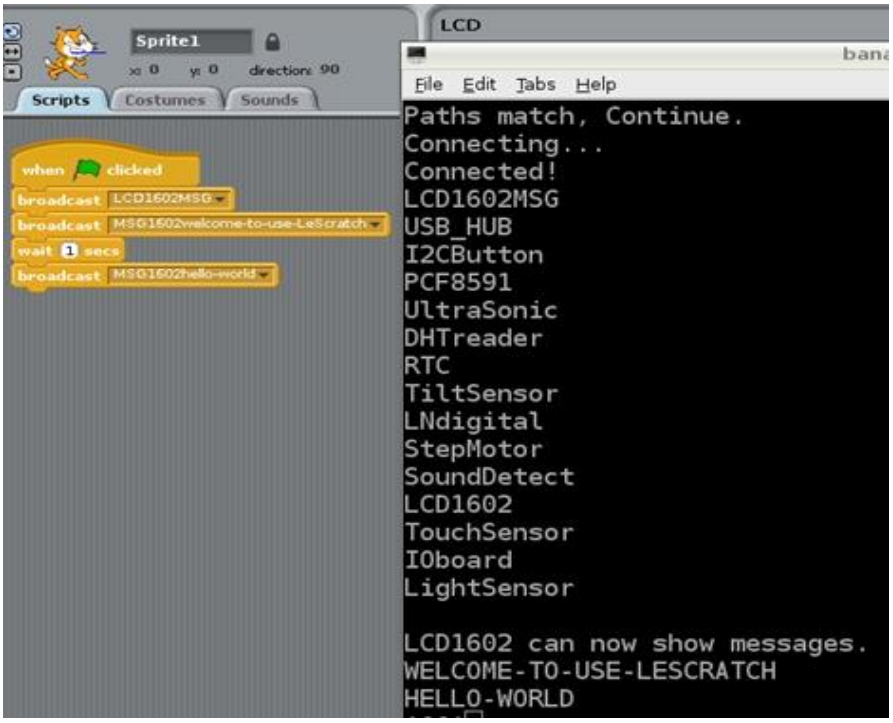

when clicked
broadcast tilt10
forever
broadcast update
wait 1 secs


Sprite1
x: 0 y: 0 direction: 90
Costumes
Sounds
when clicked
broadcast tilt10
forever
broadcast update
wait 1 secs
tiltSensor
tiltSensor sensor value 1
bananapi@lemake
File Edit Tabs Help
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 0
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 0
Tilt detect on GPIO 10 is 0
Tilt detect on GPIO 10 is 0
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 1
Tilt detect on GPIO 10 is 0

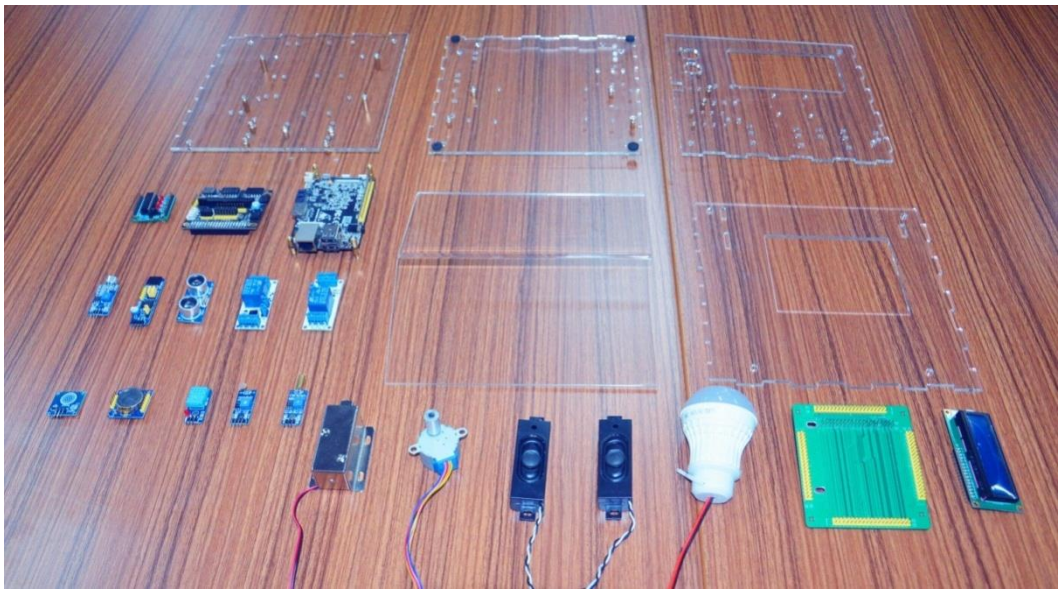
Technical specifications

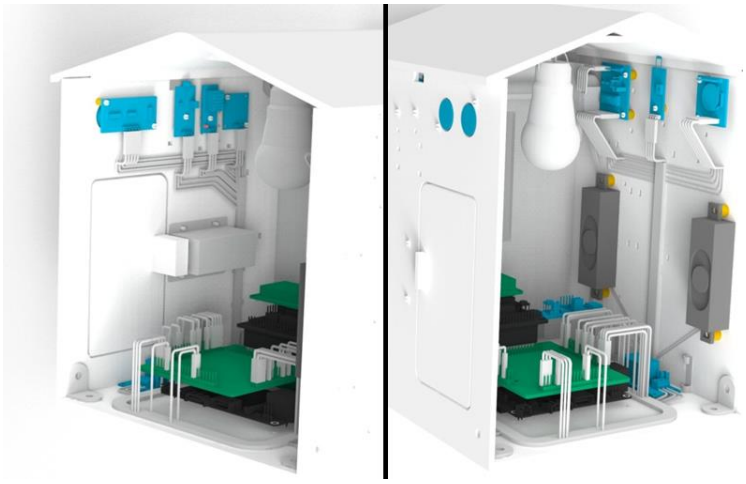
No.	Symbol	Level	Function	
1	Vss	--	0V	Power Supply
2	Vdd	--	+5V	
3	V0	--	for LCD	
4	RS	H/L	Register Select: H:Data Input L:Instruction Input	
5	R/W	H/L	H--Read L--Write	
6	E	H,H-L	Enable Signal	
7	DB0	H/L	Data bus used in 8 bit transfer	
8	DB1	H/L		
9	DB2	H/L		
10	DB3	H/L		
11	DB4	H/L	Data bus for both 4 and 8 bit transfer	
12	DB5	H/L		
13	DB6	H/L		
14	DB7	H/L		
15	BLA	--	BLACKLIGHT +5V	
16	BLK	--	BLACKLIGHT 0V-	

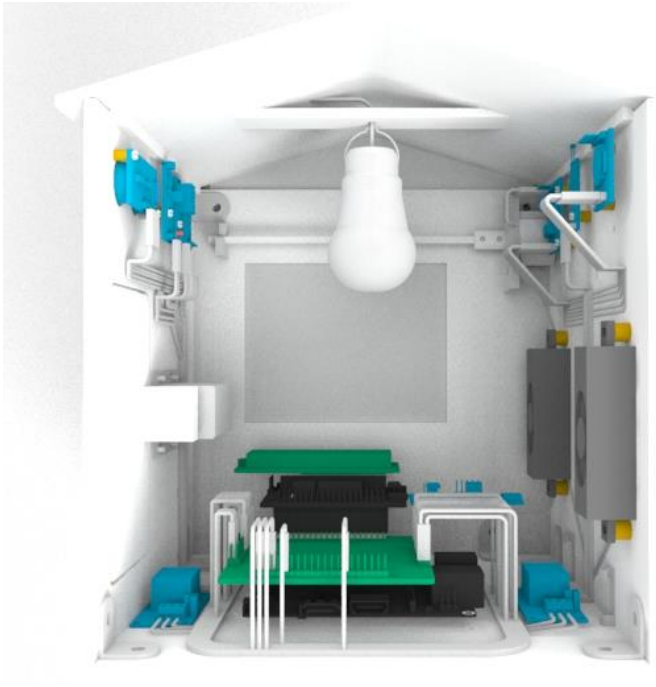
Example – the LCD1602 display

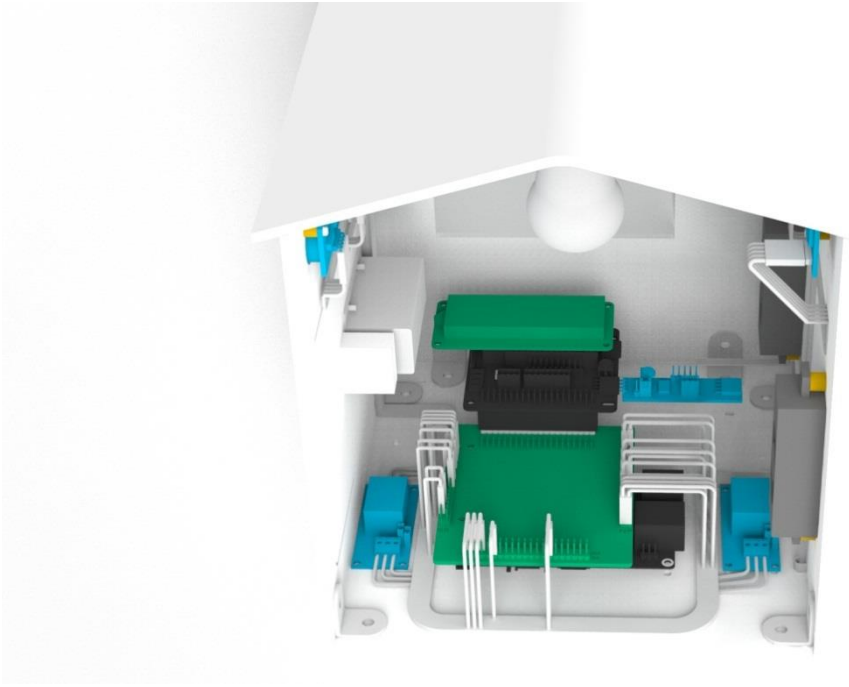

Sprite1
x: 0
y: 0
direction: 90
Scripts
Costumes
Sounds
when clicked
broadcast LCD1602MSG
broadcast MSG1602welcome-to-use-LeScratch
wait 1 secs
broadcast MSG1602hello-world
LCD
File Edit Tabs Help
Paths match, Continue.
Connecting...
Connected!
LCD1602MSG
USB_HUB
I2CButton
PCF8591
UltraSonic
DHTreader
RTC
TiltSensor
LNdigital
StepMotor
SoundDetect
LCD1602
TouchSensor
IOboard
LightSensor
LCD1602 can now show messages.
WELCOME-TO-USE-LESCRATCH
HELLO-WORLD

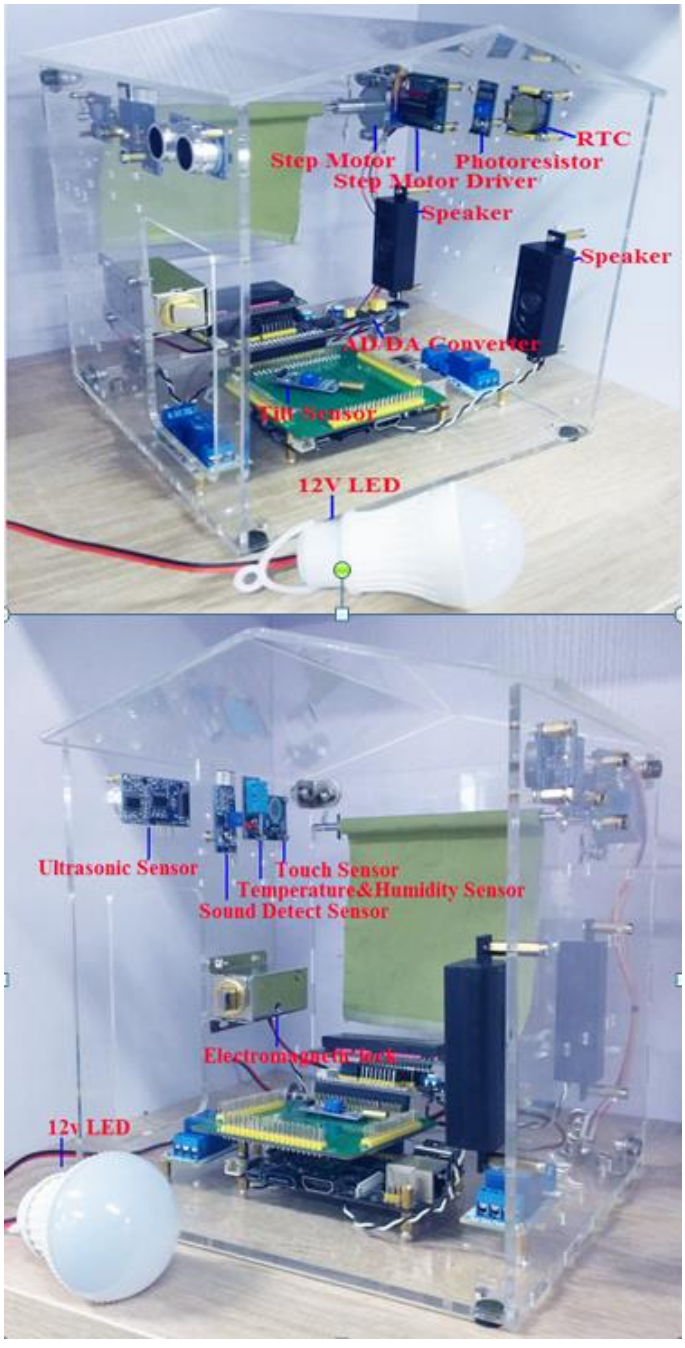
Building the LeScratch smart house

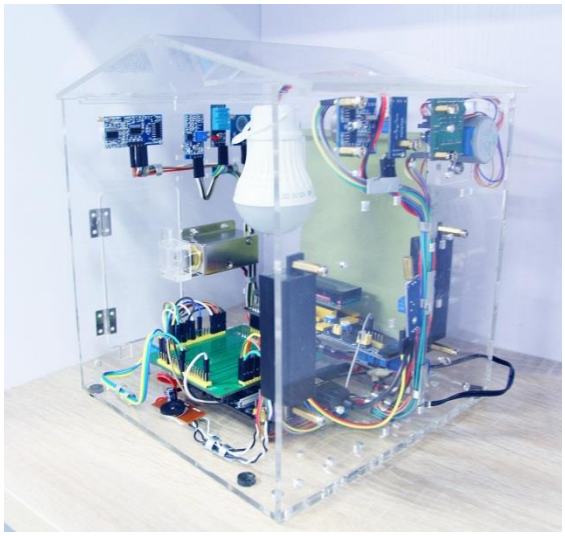




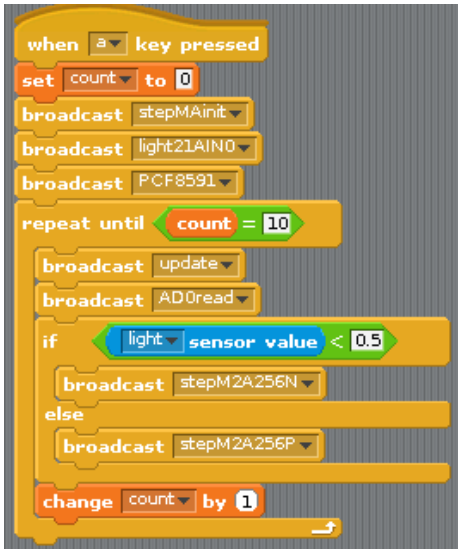


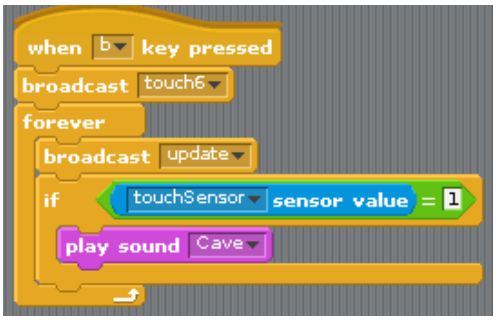


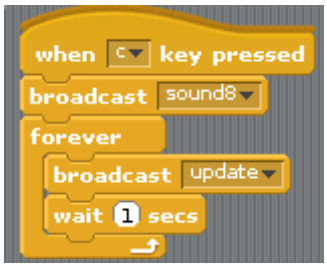

RTC
Step Motor
Photoresistor
Step Motor Driver
Speaker
Speaker
AD/DA Converter
Tilt Sensor
12V LED
Ultrasonic Sensor
Touch Sensor
Temperature&Humidity Sensor
Sound Detect Sensor
Electromagnetic lock
12v LED




when space key pressed
broadcast RTC
broadcast DHT11pin24
broadcast LCD1602
broadcast Trigger14
broadcast Echo15
forever
broadcast update
broadcast UltraSonic
wait 1 secs


when a key pressed
set count to 0
broadcast stepMAinit
broadcast light21AIN0
broadcast PCF8591
repeat until count = 10
broadcast update
broadcast AD0read
if light sensor value < 0.5
broadcast stepM2A256N
else
broadcast stepM2A256P
change count by 1


when b key pressed
broadcast touch6
forever
broadcast update
if touchSensor sensor value = 1
play sound Cave


when c key pressed
broadcast sound8
forever
broadcast update
wait 1 secs