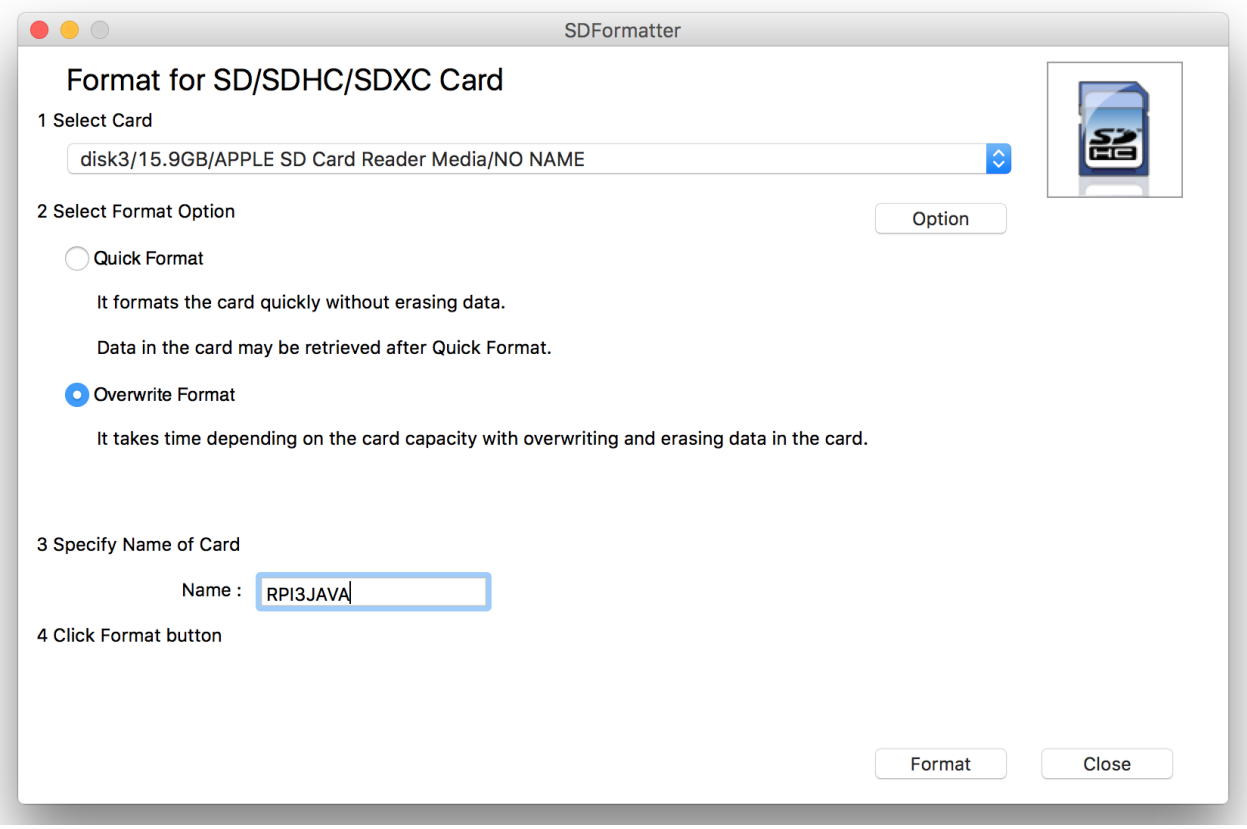
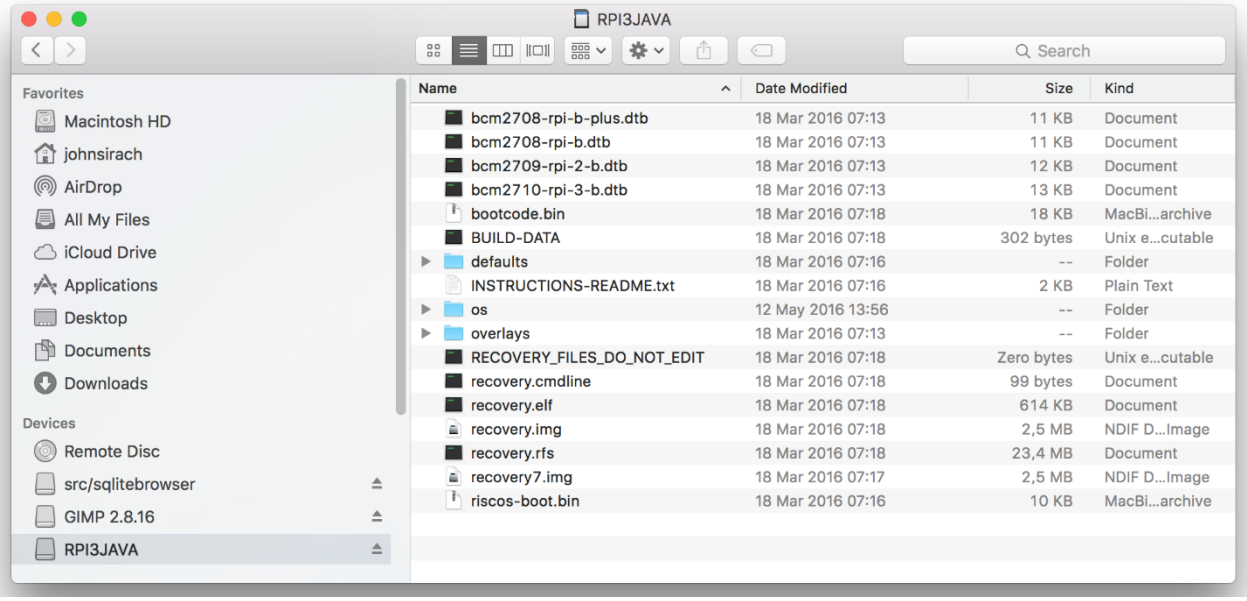
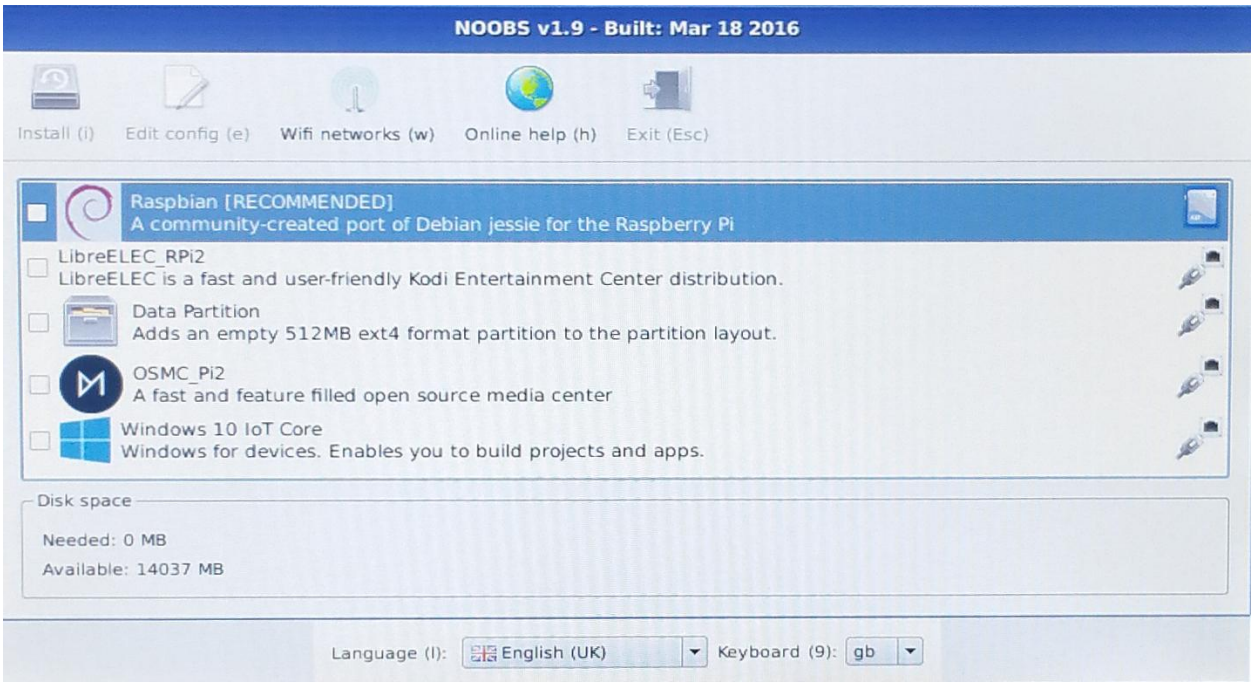
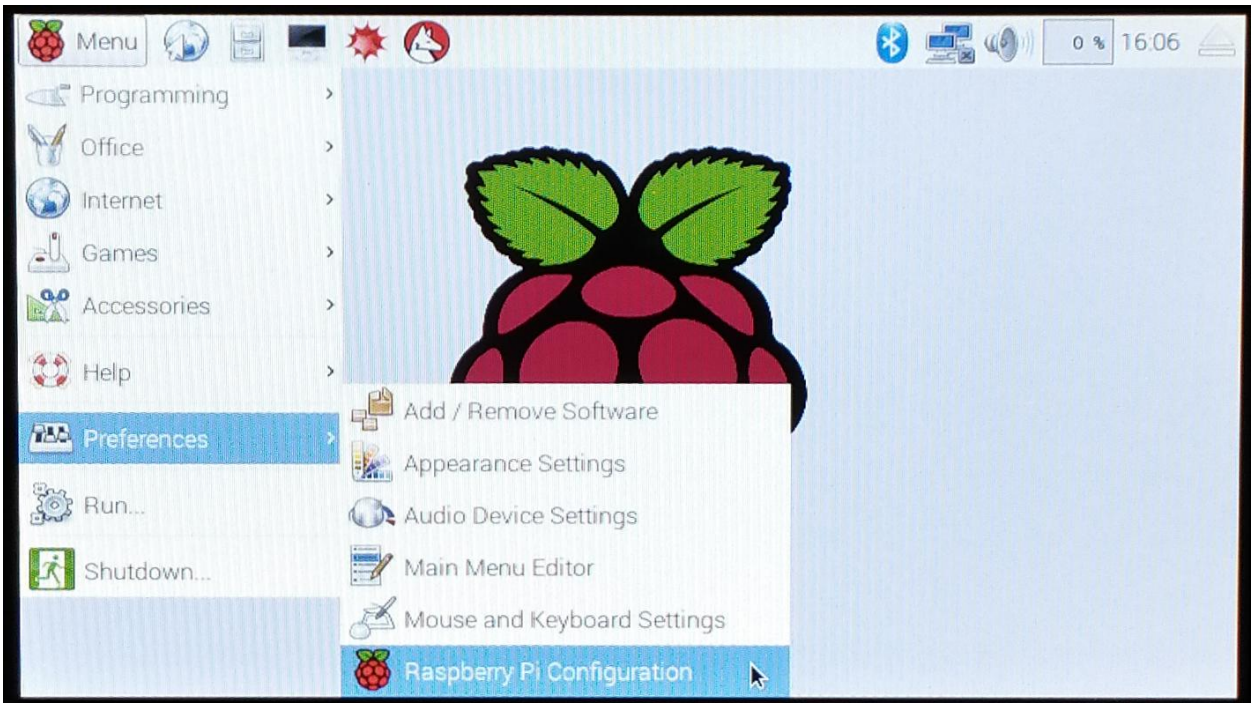
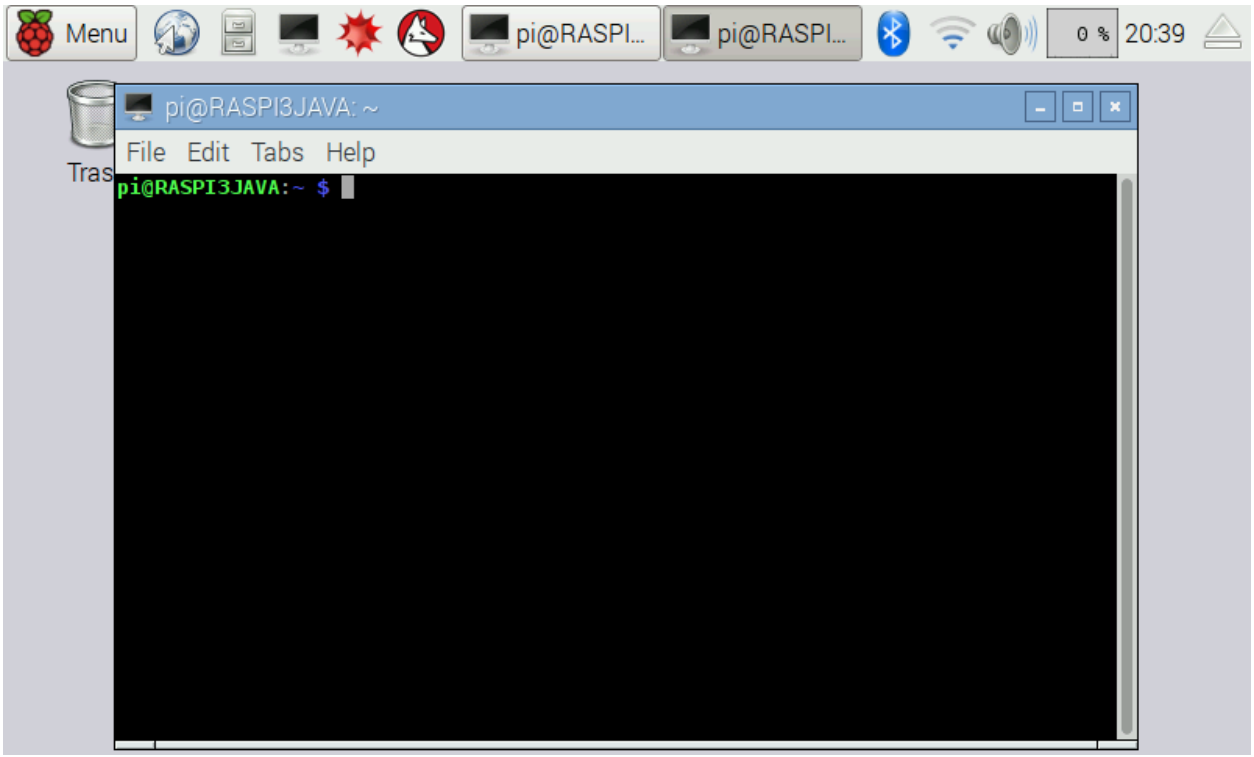
Chapter 1: Setting up Your Raspberry Pi

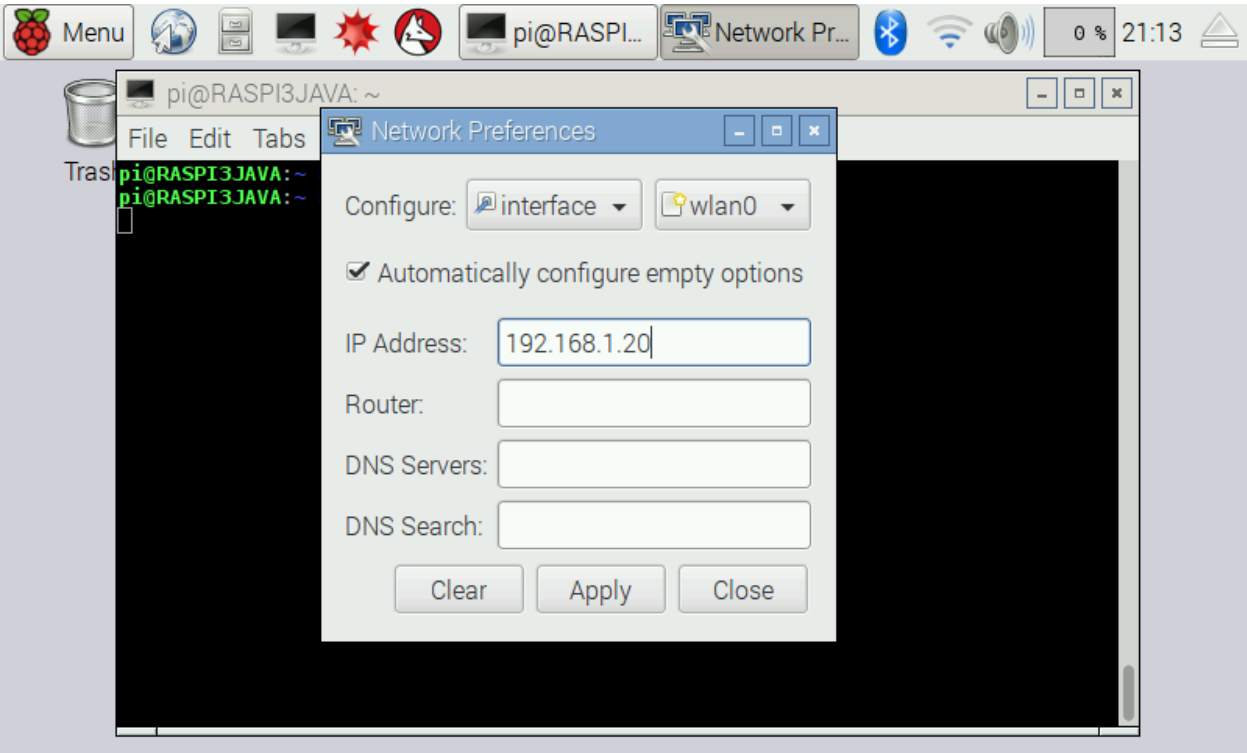



RPI3JAVA
Search
Favorites
Macintosh HD
johnsirach
AirDrop
All My Files
iCloud Drive
Applications
Desktop
Documents
Downloads
Devices
Remote Disc
src/sqlitebrowser
GIMP 2.8.16
RPI3JAVA
Name
Date Modified
Size
Kind
bcm2708-rpi-b-plus.dtb 18 Mar 2016 07:13 11 KB Document
bcm2708-rpi-b.dtb 18 Mar 2016 07:13 11 KB Document
bcm2709-rpi-2-b.dtb 18 Mar 2016 07:13 12 KB Document
bcm2710-rpi-3-b.dtb 18 Mar 2016 07:13 13 KB Document
bootcode.bin 18 Mar 2016 07:18 18 KB MacBi...archive
BUILD-DATA 18 Mar 2016 07:18 302 bytes Unix e...cutable
defaults 18 Mar 2016 07:16 -- Folder
INSTRUCTIONS-README.txt 18 Mar 2016 07:16 2 KB Plain Text
os 12 May 2016 13:56 -- Folder
overlays 18 Mar 2016 07:13 -- Folder
RECOVERY_FILES_DO_NOT_EDIT 18 Mar 2016 07:18 Zero bytes Unix e...cutable
recovery.cmdline 18 Mar 2016 07:18 99 bytes Document
recovery.elf 18 Mar 2016 07:18 614 KB Document
recovery.img 18 Mar 2016 07:18 2,5 MB NDIF D...Image
recovery.rfs 18 Mar 2016 07:18 23,4 MB Document
recovery7.img 18 Mar 2016 07:17 2,5 MB NDIF D...Image
riscos-boot.bin 18 Mar 2016 07:16 10 KB MacBi...archive

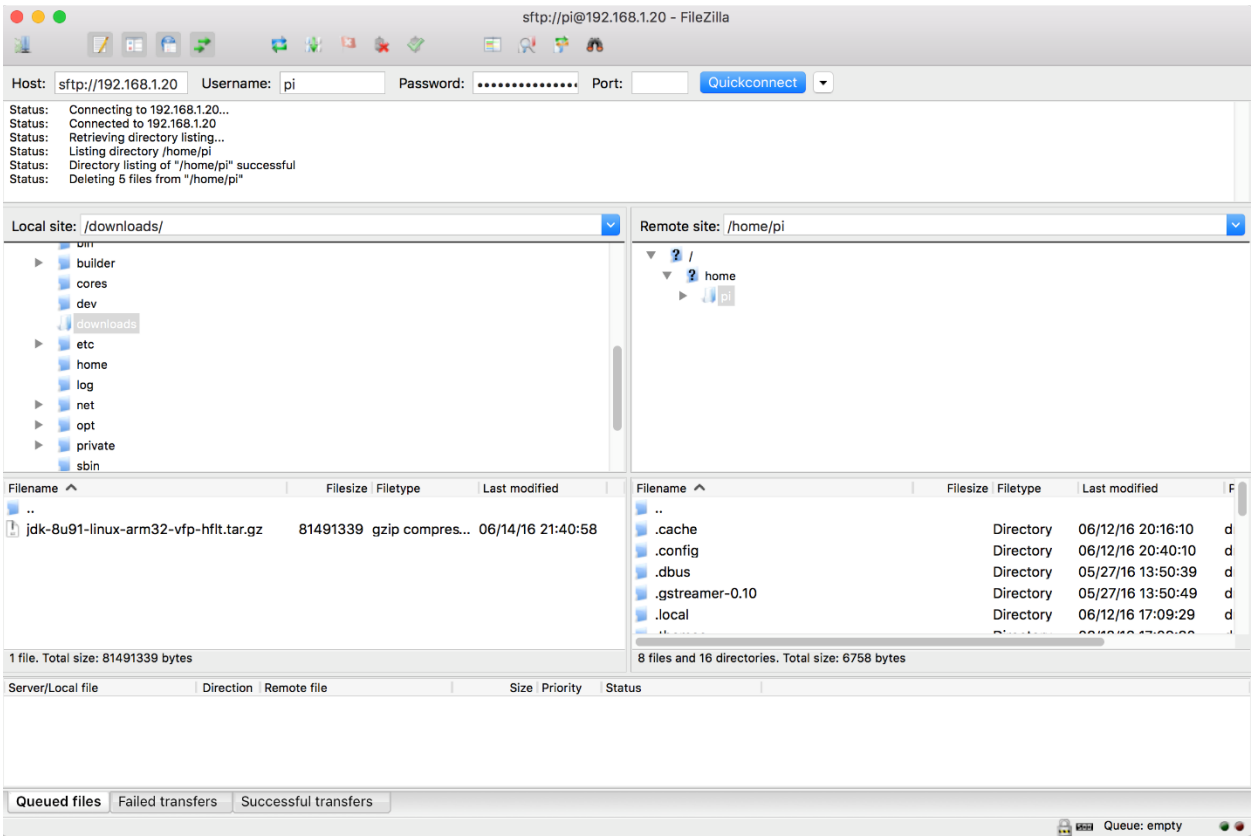

NOOBS v1.9 - Built: Mar 18 2016
Install (i)
Edit config (e)
Wifi networks (w)
Online help (h)
Exit (Esc)
Raspbian [RECOMMENDED]
A community-created port of Debian jessie for the Raspberry Pi
LibreELEC_RPi2
LibreELEC is a fast and user-friendly Kodi Entertainment Center distribution.
Data Partition
Adds an empty 512MB ext4 format partition to the partition layout.
OSMC_Pi2
A fast and feature filled open source media center
Windows 10 IoT Core
Windows for devices. Enables you to build projects and apps.
Disk space
Needed: 0 MB
Available: 14037 MB
Language (l): English (UK)
Keyboard (9): gb

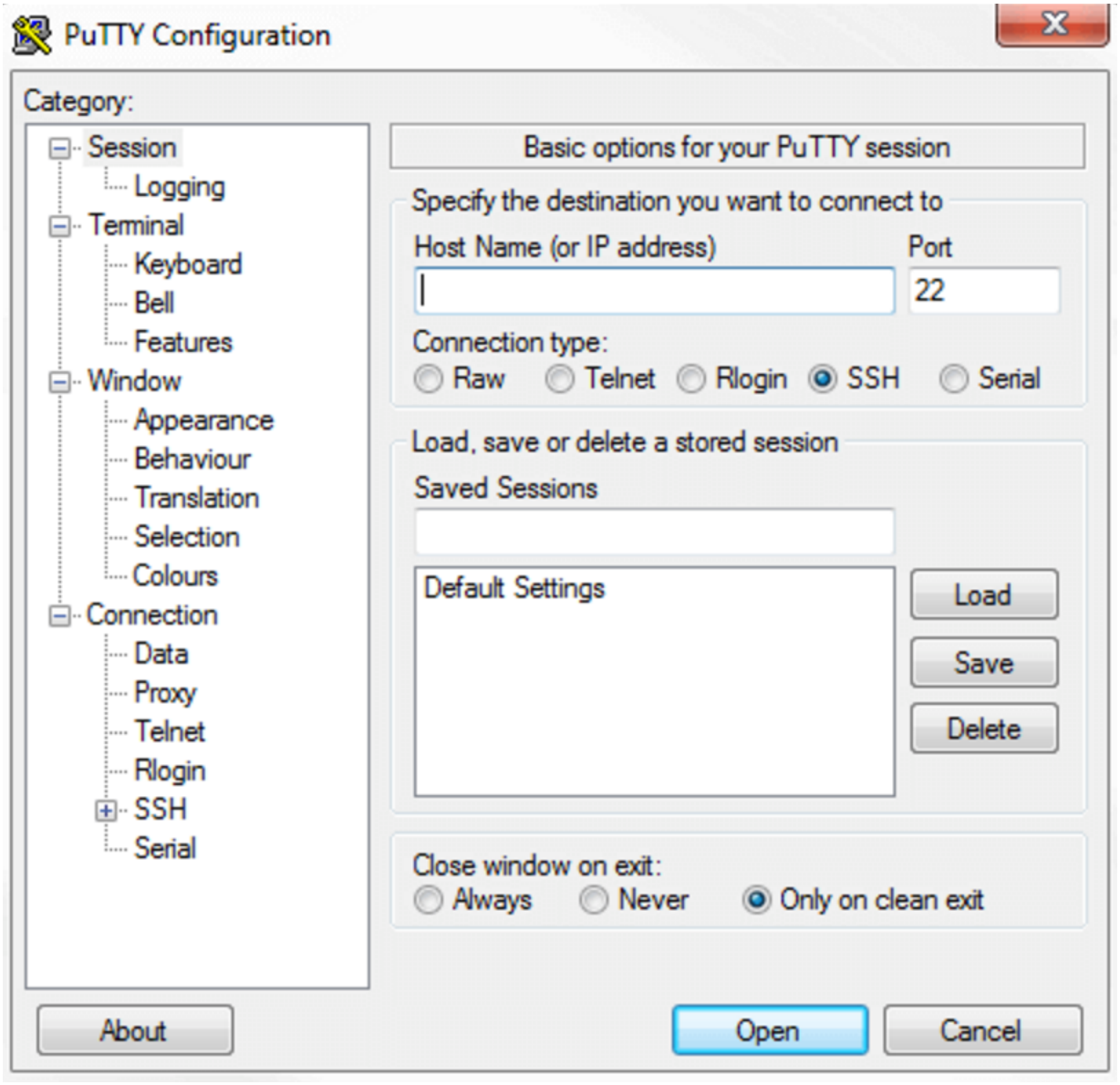

Menu
0 %
16:06
Programming
Office
Internet
Games
Accessories
Help
Preferences
Run...
Shutdown...
Add / Remove Software
Appearance Settings
Audio Device Settings
Main Menu Editor
Mouse and Keyboard Settings
Raspberry Pi Configuration

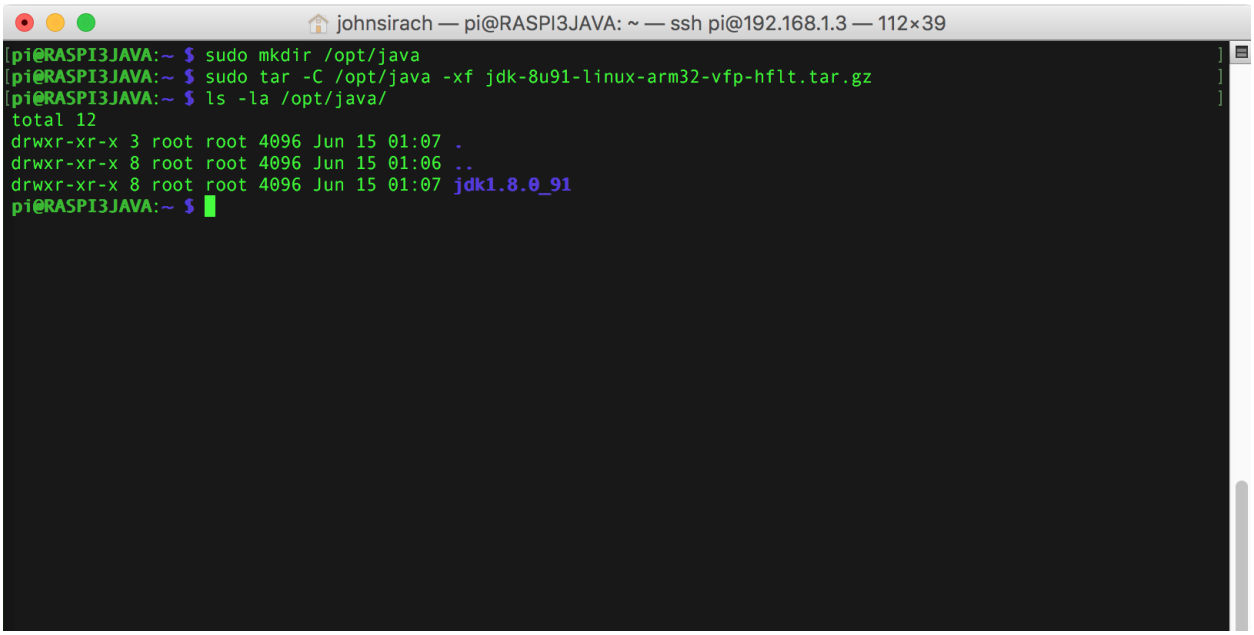

Menu
pi@RASPI...
pi@RASPI...
0 %
20:39
pi@RASPI3JAVA: ~
File Edit Tabs Help
pi@RASPI3JAVA:~ $

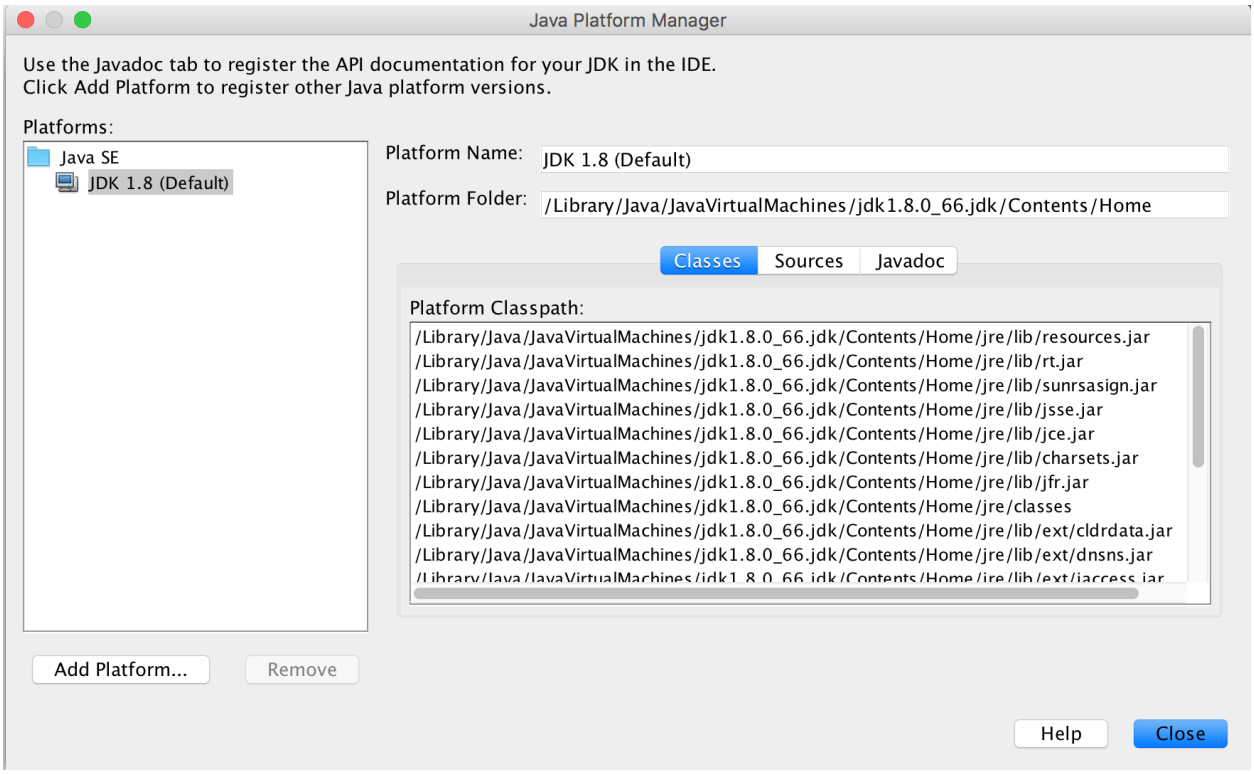


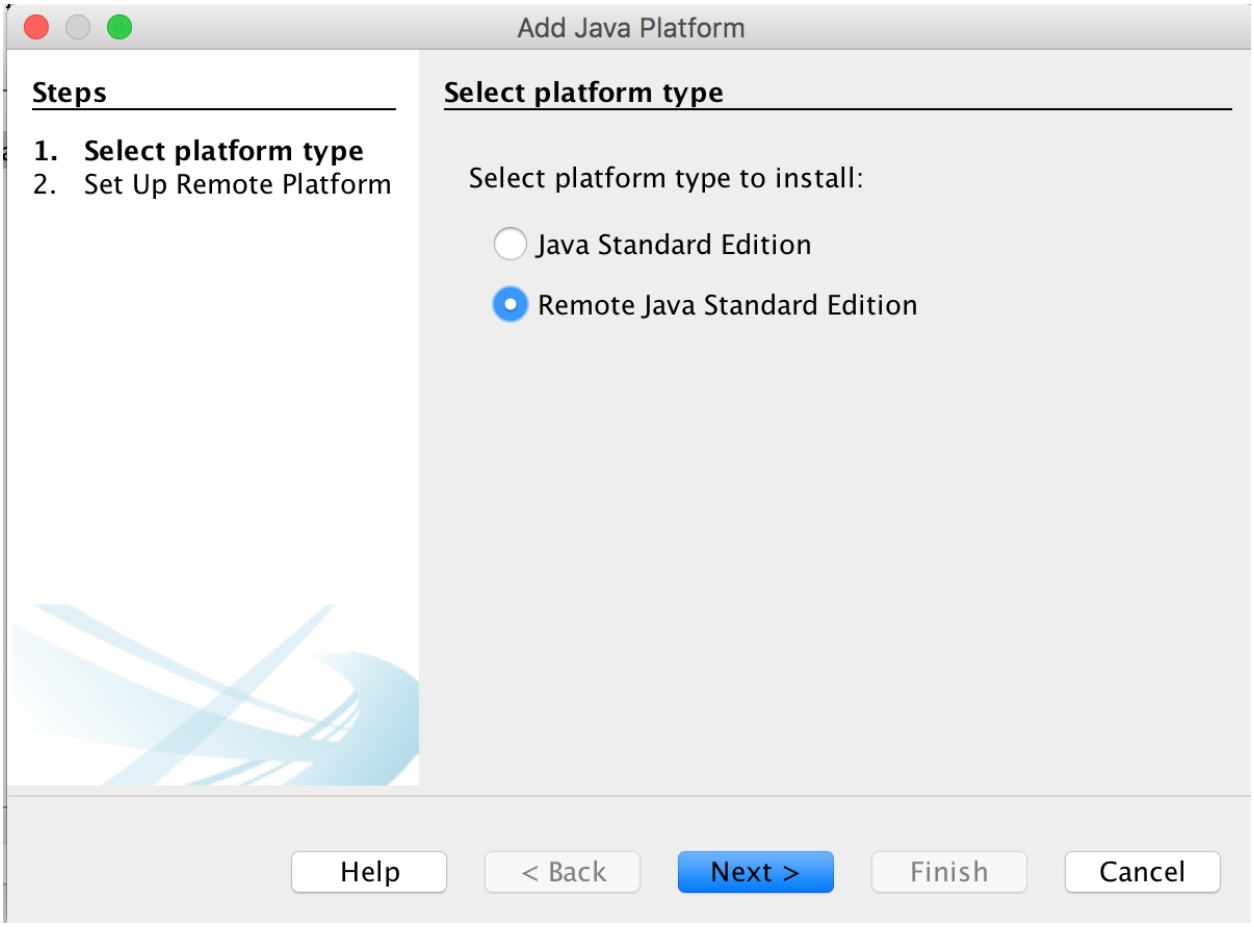

```
[  OK  ] Reached target Login Prompts.
[  OK  ] Started LSB: Start NTP daemon.
[  OK  ] Started Configure Bluetooth Modems connected by UART.
[  OK  ] Reached target Multi-User System.
         Starting Update UTMP about System Runlevel Changes...
         Starting Load/Save RF Kill Switch Status of rfkill1...
         Starting Bluetooth service...
[  OK  ] Started Load/Save RF Kill Switch Status of rfkill1.
[  OK  ] Started Update UTMP about System Runlevel Changes.
[  OK  ] Started Bluetooth service.
[  OK  ] Reached target Bluetooth.

Raspbian GNU/Linux 8 RASPI3JAVA tty1

RASPI3JAVA login: pi (automatic login)
Last login: Sun Jun 12 21:18:52 CEST 2016 from 192.168.1.3 on pts/0
Linux RASPI3JAVA 4.4.11-v7+ #888 SMP Mon May 23 20:10:33 BST 2016 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
pi@RASPI3JAVA:~ $
```

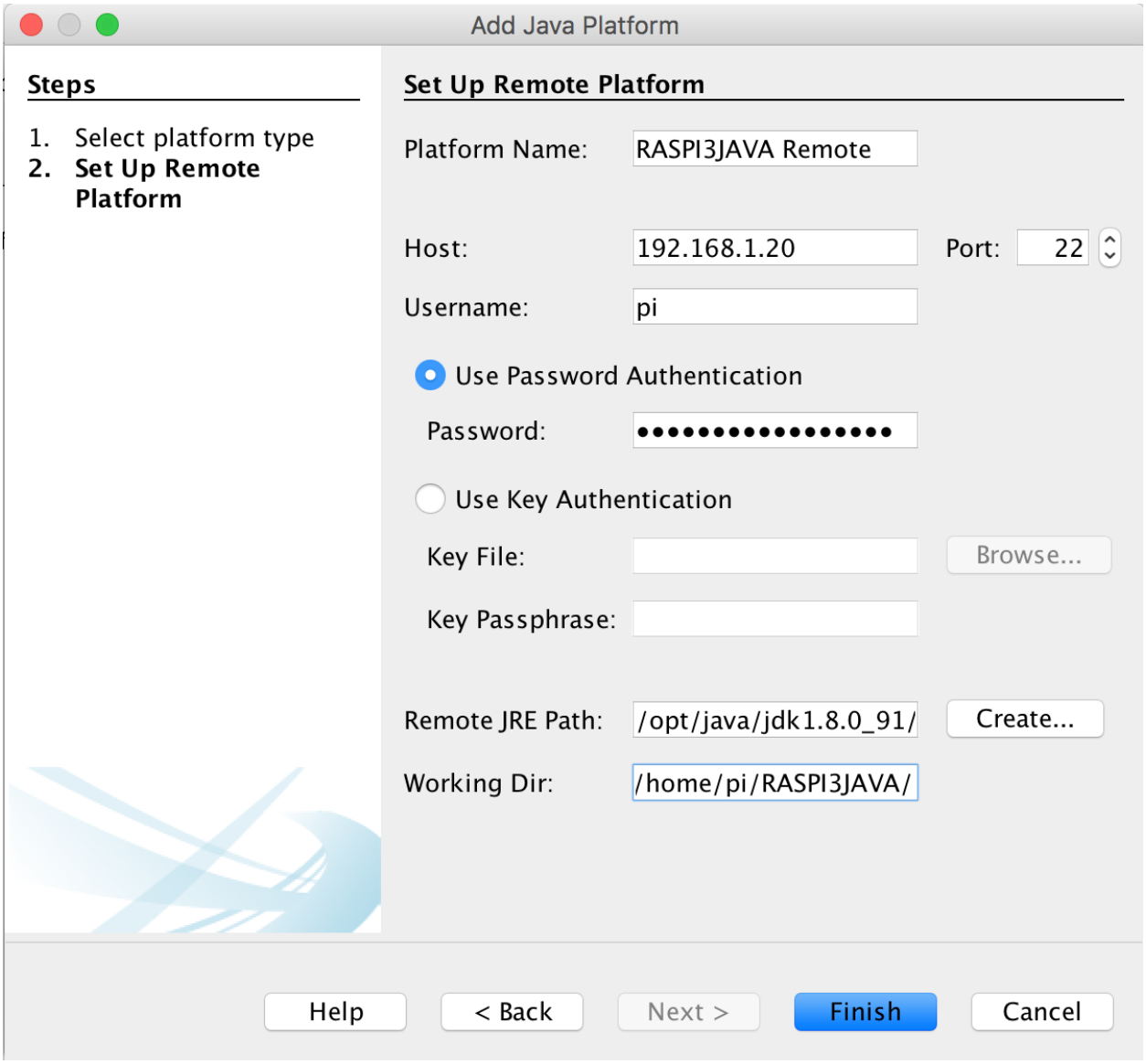

sftp://pi@192.168.1.20 - FileZilla
Host: sftp://192.168.1.20
Username: pi
Password:
Port:
Quickconnect
Status: Connecting to 192.168.1.20...
Status: Connected to 192.168.1.20
Status: Retrieving directory listing...
Status: Listing directory /home/pi
Status: Directory listing of "/home/pi" successful
Status: Deleting 5 files from "/home/pi"
Local site: /downloads/
builder
cores
dev
downloads
etc
home
log
net
opt
private
sbin
Remote site: /home/pi
/
home
pi
Filename
Filesize
Filetype
Last modified
..
jdk-8u91-linux-arm32-vfp-hflt.tar.gz
81491339
gzip compres...
06/14/16 21:40:58
1 file. Total size: 81491339 bytes
.cache
Directory
06/12/16 20:16:10
.config
Directory
06/12/16 20:40:10
.dbus
Directory
05/27/16 13:50:39
.gstreamer-0.10
Directory
05/27/16 13:50:49
.local
Directory
06/12/16 17:09:29
8 files and 16 directories. Total size: 6758 bytes
Server/Local file
Direction
Remote file
Size
Priority
Status
Queued files
Failed transfers
Successful transfers
Queue: empty

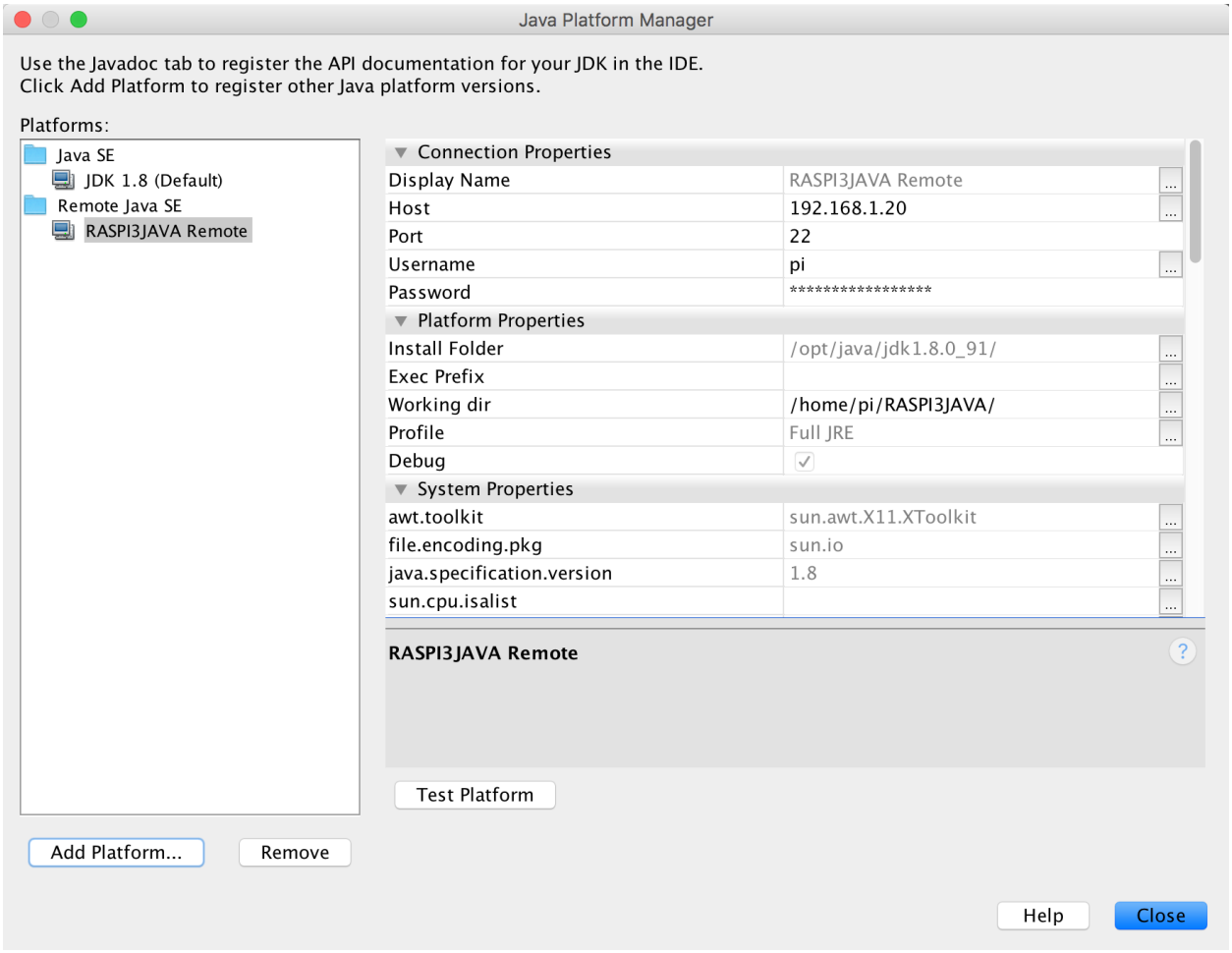

PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
Telnet
Rlogin
SSH
Serial
Basic options for your PuTTY session
Specify the destination you want to connect to
Host Name (or IP address)
Port
22
Connection type:
Raw
Telnet
Rlogin
SSH
Serial
Load, save or delete a stored session
Saved Sessions
Default Settings
Load
Save
Delete
Close window on exit:
Always
Never
Only on clean exit
About
Open
Cancel

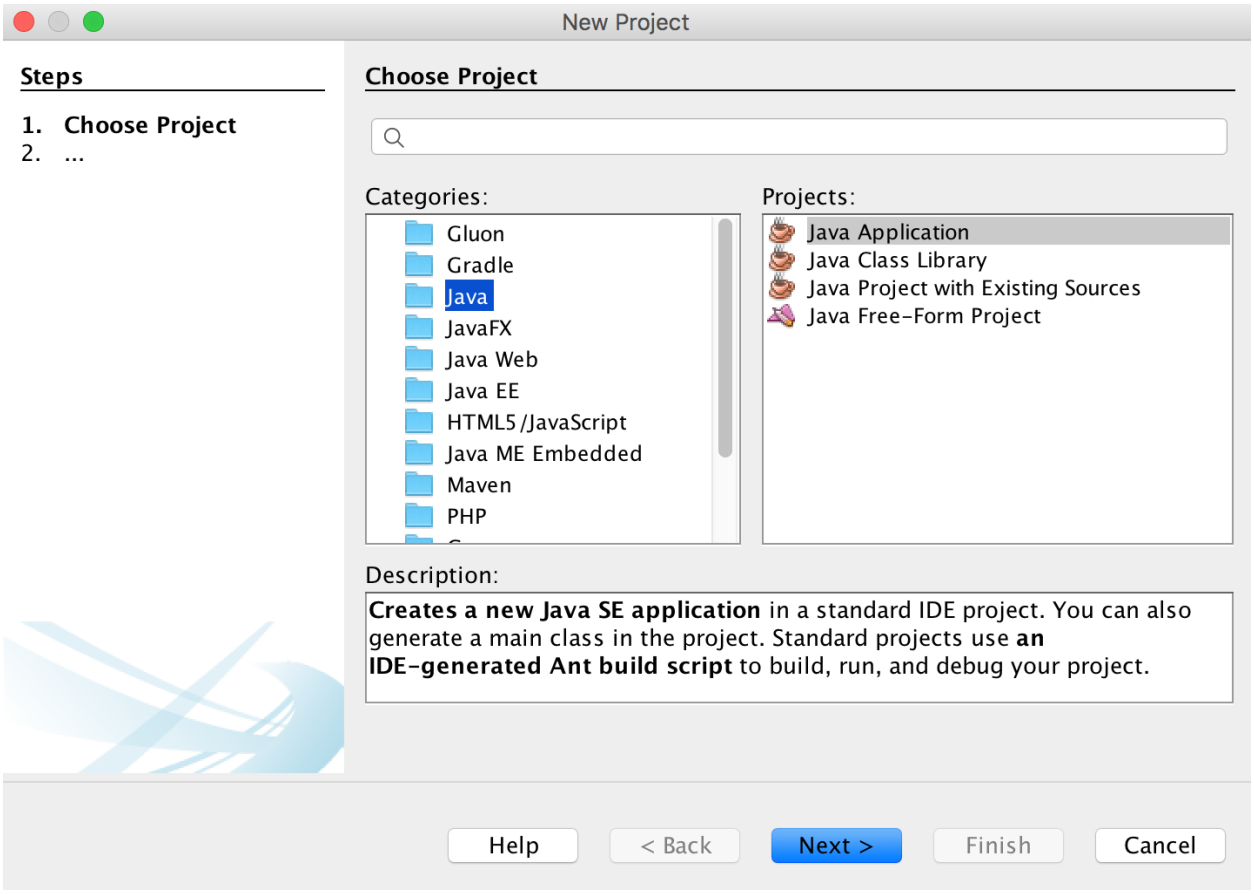

johnsirach — pi@RASPI3JAVA: ~ — ssh pi@192.168.1.3 — 112×39
pi@RASPI3JAVA:~ $ sudo mkdir /opt/java
pi@RASPI3JAVA:~ $ sudo tar -C /opt/java -xf jdk-8u91-linux-arm32-vfp-hflt.tar.gz
pi@RASPI3JAVA:~ $ ls -la /opt/java/
total 12
drwxr-xr-x 3 root root 4096 Jun 15 01:07 .
drwxr-xr-x 8 root root 4096 Jun 15 01:06 ..
drwxr-xr-x 8 root root 4096 Jun 15 01:07 jdk1.8.0_91
pi@RASPI3JAVA:~ $

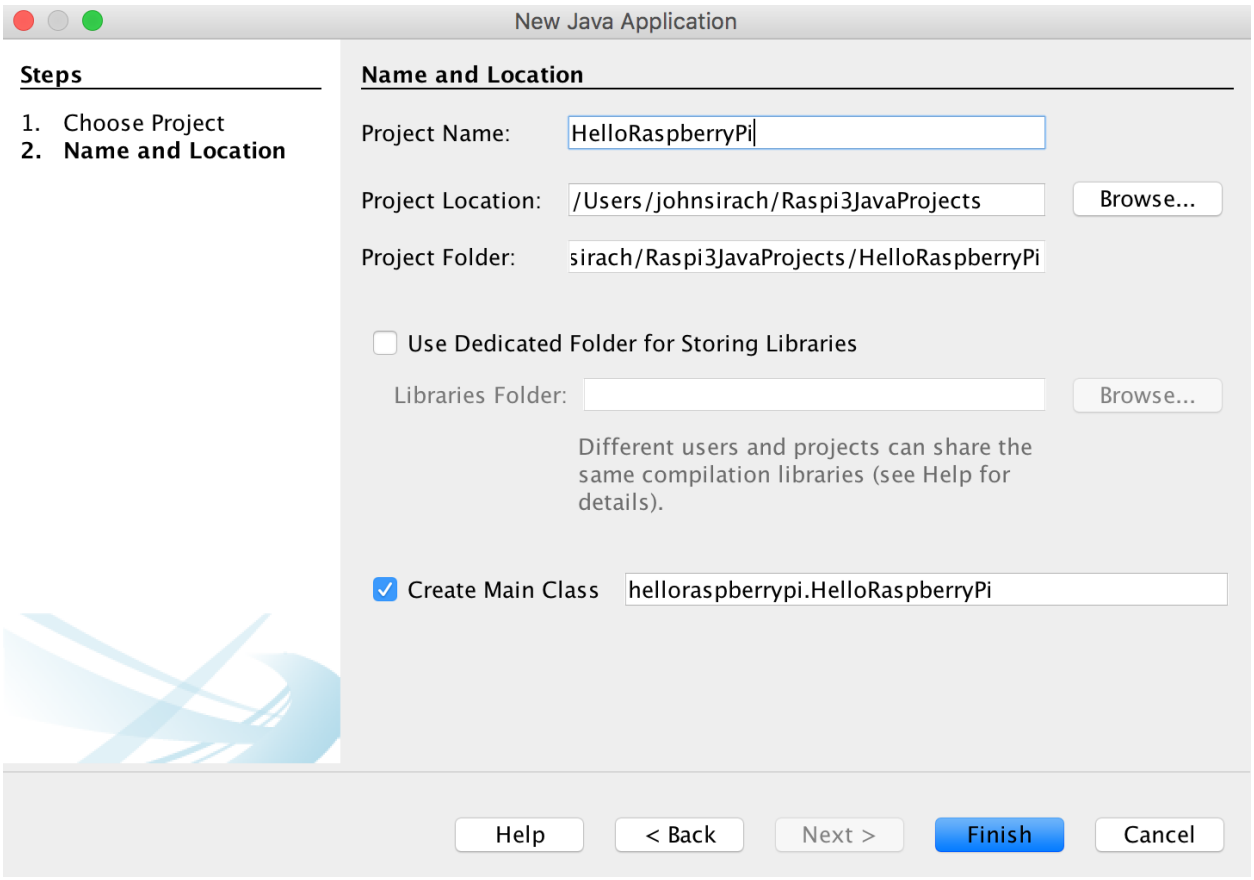

Java Platform Manager
Use the Javadoc tab to register the API documentation for your JDK in the IDE.
Click Add Platform to register other Java platform versions.
Platforms:
Java SE
JDK 1.8 (Default)
Platform Name: JDK 1.8 (Default)
Platform Folder: /Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home
Classes
Sources
Javadoc
Platform Classpath:
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/resources.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/rt.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/sunrsasign.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/jsse.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/jce.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/charsets.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/jfr.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/classes
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/ext/cldrdata.jar
/Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/jre/lib/ext/dnsns.jar
Add Platform...
Remove
Help
Close

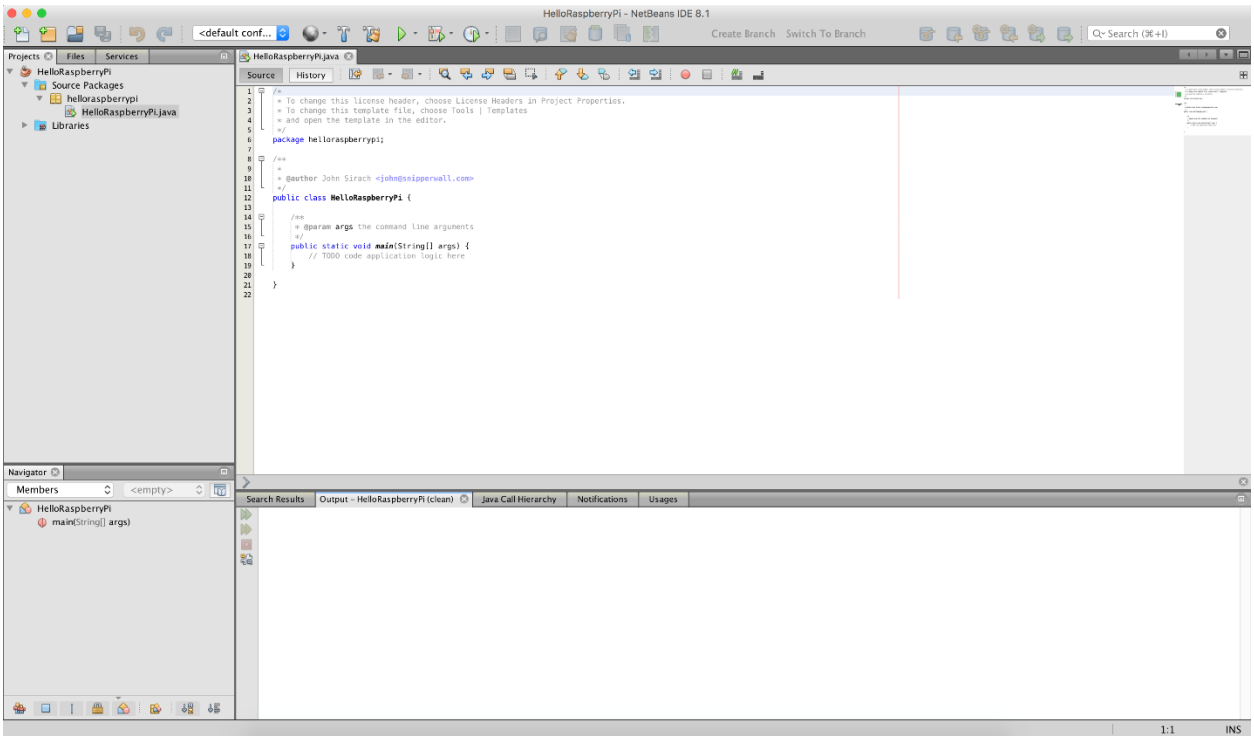

Add Java Platform
Steps
1. Select platform type
2. Set Up Remote Platform
Select platform type
Select platform type to install:
Java Standard Edition
Remote Java Standard Edition
Help
< Back
Next >
Finish
Cancel

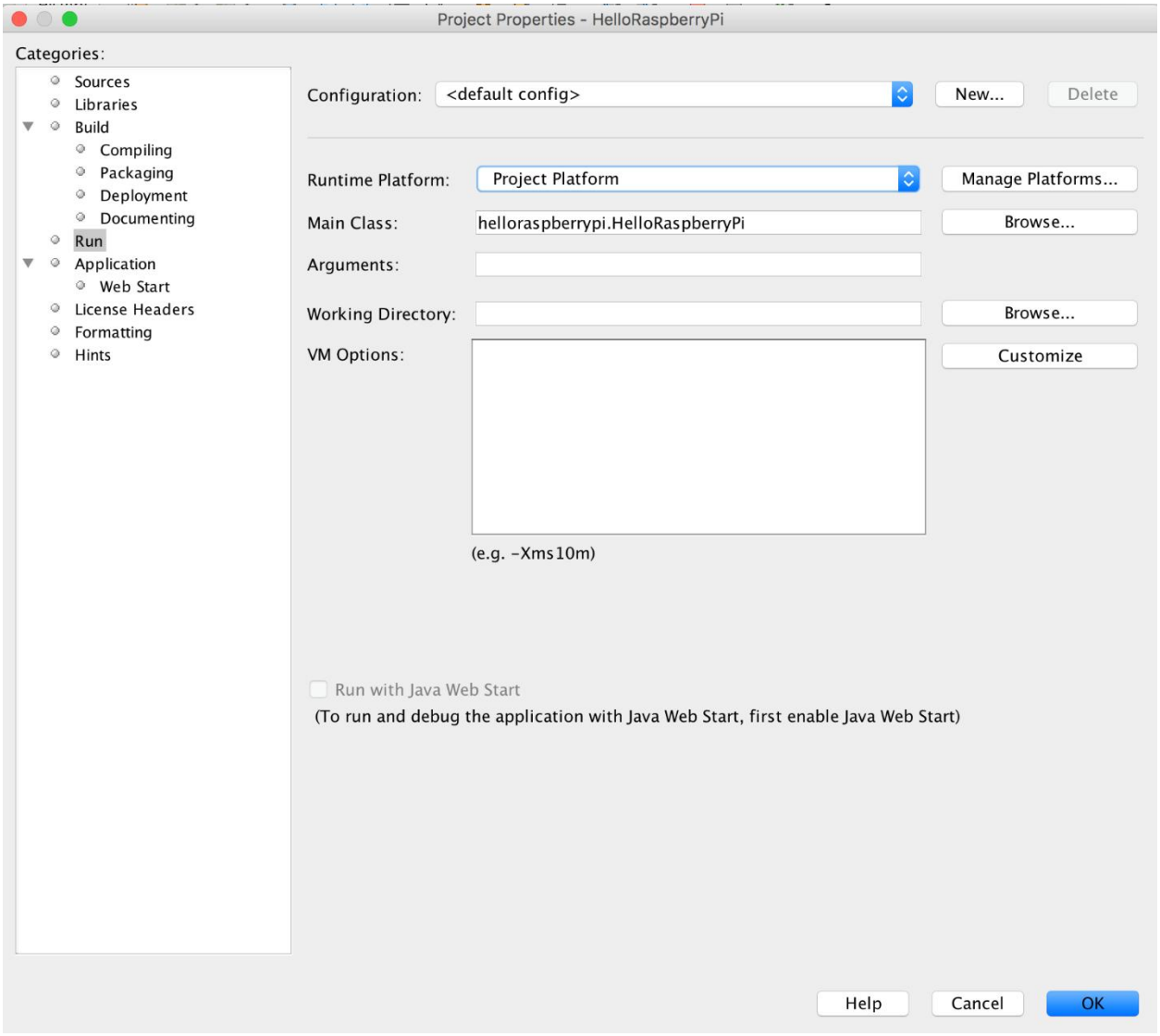

Add Java Platform
Steps
1. Select platform type
2. Set Up Remote Platform
Set Up Remote Platform
Platform Name:
RASPI3JAVA Remote
Host:
192.168.1.20
Port:
22
Username:
pi
Use Password Authentication
Password:
Use Key Authentication
Key File:
Browse...
Key Passphrase:
Remote JRE Path:
/opt/java/jdk1.8.0_91/
Create...
Working Dir:
/home/pi/RASPI3JAVA/
Help
< Back
Next >
Finish
Cancel

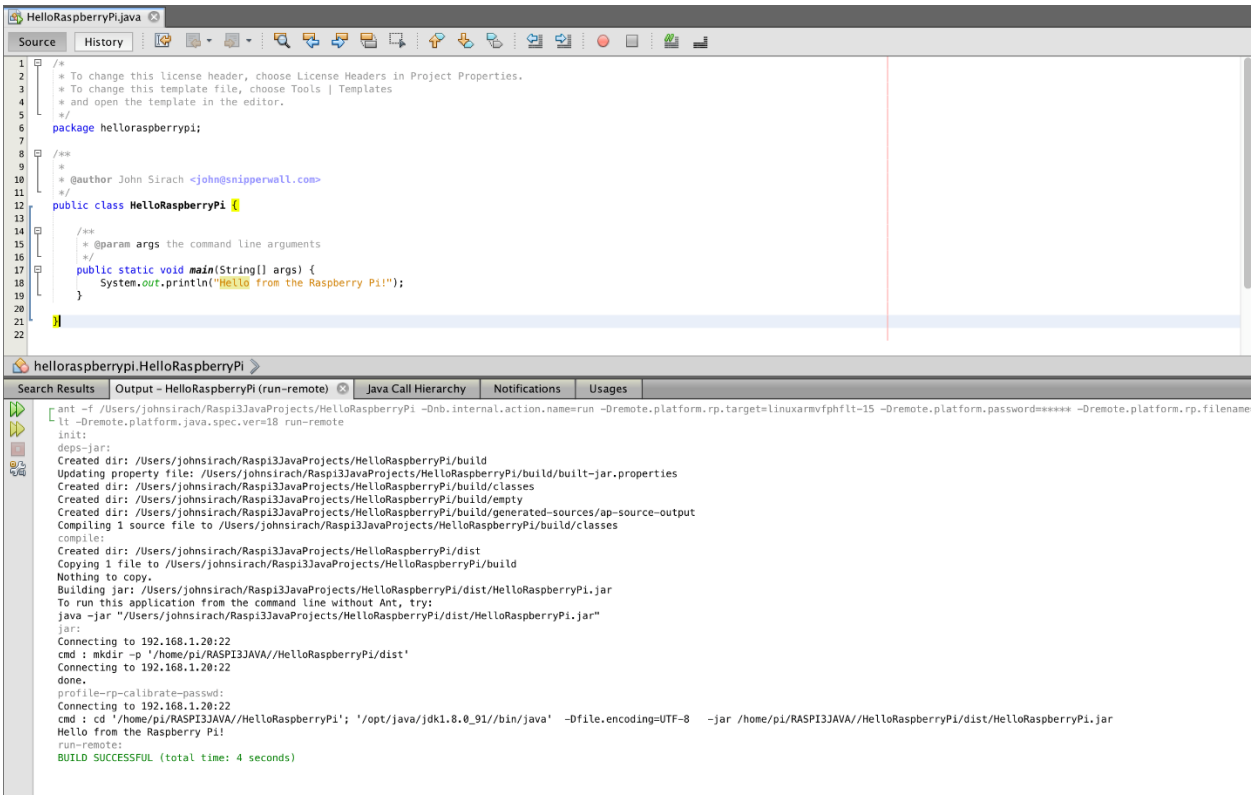

Java Platform Manager
Use the Javadoc tab to register the API documentation for your JDK in the IDE.
Click Add Platform to register other Java platform versions.
Platforms:
Java SE
JDK 1.8 (Default)
Remote Java SE
RASPI3JAVA Remote
Connection Properties
Display Name
RASPI3JAVA Remote
Host
192.168.1.20
Port
22
Username
pi
Password
Platform Properties
Install Folder
/opt/java/jdk1.8.0_91/
Exec Prefix
Working dir
/home/pi/RASPI3JAVA/
Profile
Full JRE
Debug
System Properties
awt.toolkit
sun.awt.X11.XToolkit
file.encoding.pkg
sun.io
java.specification.version
1.8
sun.cpu.isalist
RASPI3JAVA Remote
Test Platform
Add Platform...
Remove
Help
Close


New Project
Steps
1. Choose Project
2. ...
Choose Project
Categories:
Gluon
Gradle
Java
JavaFX
Java Web
Java EE
HTML5/JavaScript
Java ME Embedded
Maven
PHP
Projects:
Java Application
Java Class Library
Java Project with Existing Sources
Java Free-Form Project
Description:
Creates a new Java SE application in a standard IDE project. You can also generate a main class in the project. Standard projects use an IDE-generated Ant build script to build, run, and debug your project.
Help
< Back
Next >
Finish
Cancel

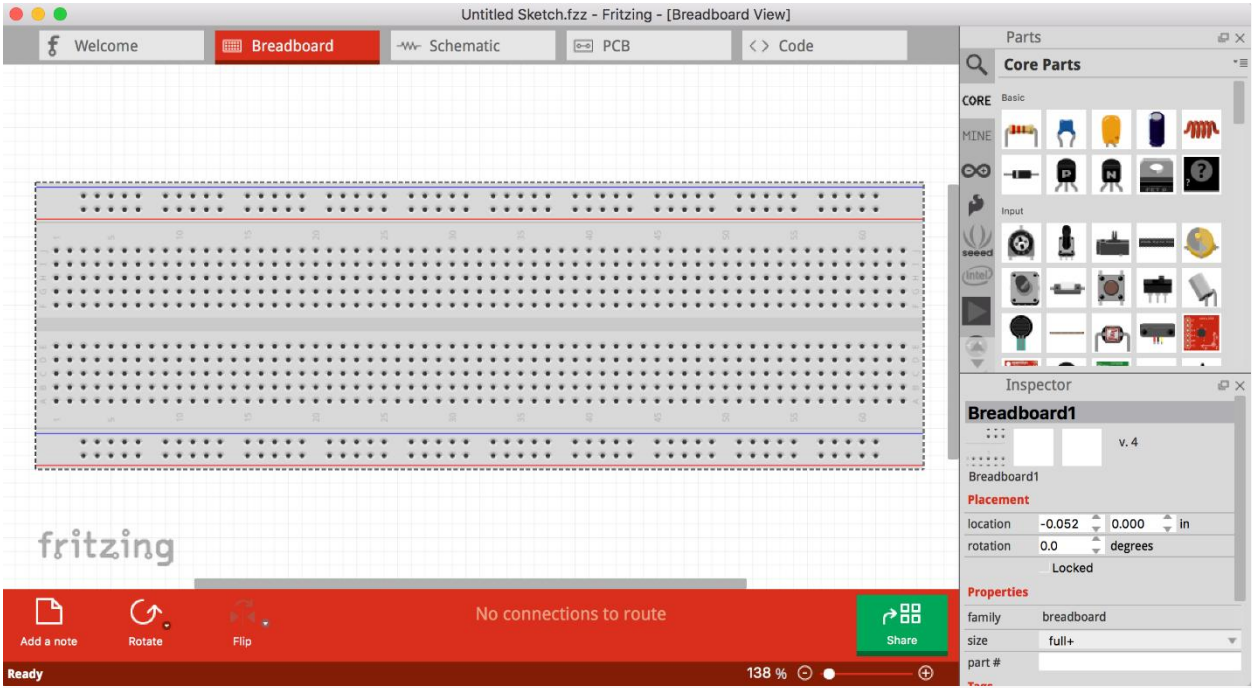

New Java Application
Steps
1. Choose Project
2. Name and Location
Name and Location
Project Name: HelloRaspberryPi
Project Location: /Users/johnsirach/Raspi3JavaProjects
Browse...
Project Folder: sirach/Raspi3JavaProjects/HelloRaspberryPi
Use Dedicated Folder for Storing Libraries
Libraries Folder:
Browse...
Different users and projects can share the same compilation libraries (see Help for details).
Create Main Class helloraspberrypi.HelloRaspberryPi
Help
< Back
Next >
Finish
Cancel

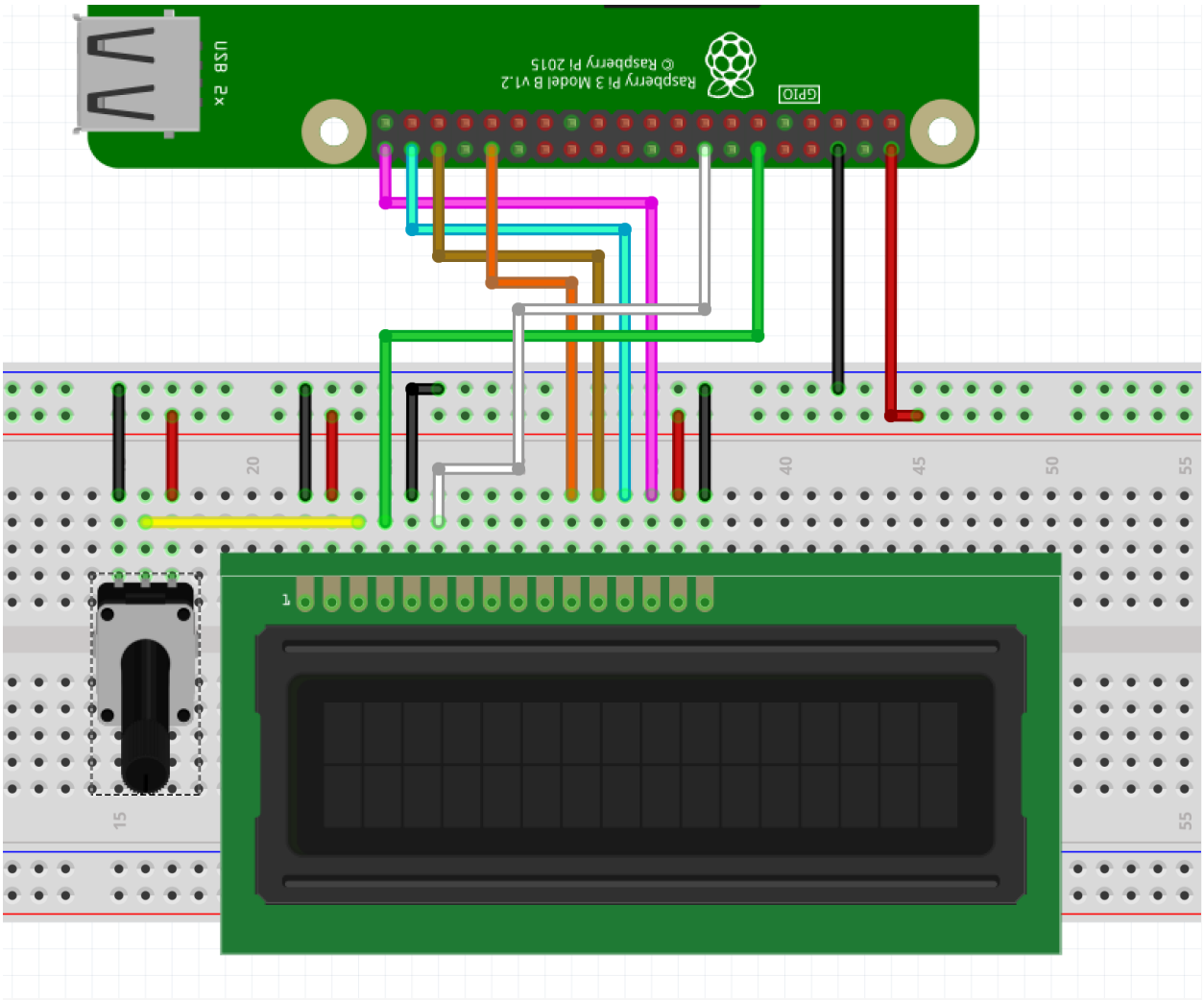

HelloRaspberryPi - NetBeans IDE 8.1
<default conf...
Create Branch
Switch To Branch
Search (⌘+I)
Projects
Files
Services
HelloRaspberryPi
Source Packages
helloraspberrypi
HelloRaspberryPi.java
Libraries
HelloRaspberryPi.java
Source
History
1 /*
2 * To change this license header, choose License Headers in Project Properties.
3 * To change this template file, choose Tools | Templates
4 * and open the template in the editor.
5 */
6 package helloraspberrypi;
7
8 /**
9 *
10 * @author John Sirach <john@snipperwall.com>
11 */
12 public class HelloRaspberryPi {
13
14 /**
15 * @param args the command line arguments
16 */
17 public static void main(String[] args) {
18 // TODO code application logic here
19 }
20
21 }
22
Navigator
Members
<empty>
HelloRaspberryPi
main(String[] args)
Search Results
Output - HelloRaspberryPi (clean)
Java Call Hierarchy
Notifications
Usages
1:1
INS

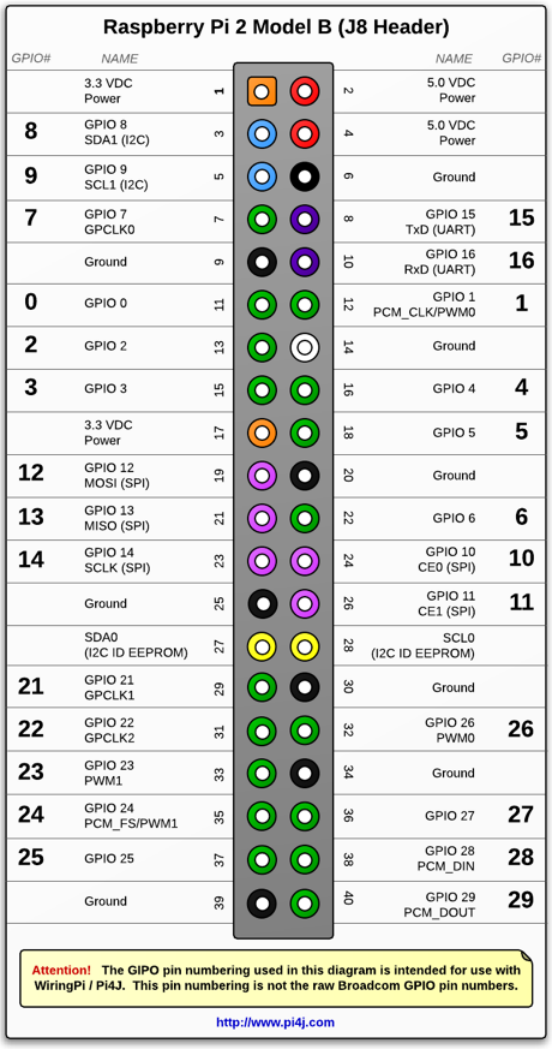

Project Properties - HelloRaspberryPi
Categories:
Sources
Libraries
Build
Compiling
Packaging
Deployment
Documenting
Run
Application
Web Start
License Headers
Formatting
Hints
Configuration:
<default config>
New...
Delete
Runtime Platform:
Project Platform
Manage Platforms...
Main Class:
helloraspberrypi.HelloRaspberryPi
Browse...
Arguments:
Working Directory:
Browse...
VM Options:
Customize
(e.g. -Xms10m)
Run with Java Web Start
(To run and debug the application with Java Web Start, first enable Java Web Start)
Help
Cancel
OK


HelloRaspberryPi.java
Source
History
/*
* To change this license header, choose License Headers in Project Properties.
* To change this template file, choose Tools | Templates
* and open the template in the editor.
*/
package helloraspberrypi;
/**
*
* @author John Sirach <john@snipperwall.com>
*/
public class HelloRaspberryPi {
/**
* @param args the command line arguments
*/
public static void main(String[] args) {
System.out.println("Hello from the Raspberry Pi!");
}
}
helloraspberrypi.HelloRaspberryPi
Search Results
Output - HelloRaspberryPi (run-remote)
Java Call Hierarchy
Notifications
Usages
ant -f /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi -Dnb.internal.action.name=run -Dremote.platform.rp.target=linuxarmvfphflt-15 -Dremote.platform.password=***** -Dremote.platform.rp.filename
lt -Dremote.platform.java.spec.ver=18 run-remote
init:
deps-jar:
Created dir: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build
Updating property file: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build/built-jar.properties
Created dir: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build/classes
Created dir: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build/empty
Created dir: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build/generated-sources/ap-source-output
Compiling 1 source file to /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build/classes
compile:
Created dir: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/dist
Copying 1 file to /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/build
Nothing to copy.
Building jar: /Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/dist/HelloRaspberryPi.jar
To run this application from the command line without Ant, try:
java -jar "/Users/johnsirach/Raspi3JavaProjects/HelloRaspberryPi/dist/HelloRaspberryPi.jar"
jar:
Connecting to 192.168.1.20:22
cmd : mkdir -p '/home/pi/RASPI3JAVA//HelloRaspberryPi/dist'
Connecting to 192.168.1.20:22
done.
profile-rp-calibrate-passwd:
Connecting to 192.168.1.20:22
cmd : cd '/home/pi/RASPI3JAVA//HelloRaspberryPi'; '/opt/java/jdk1.8.0_91//bin/java' -Dfile.encoding=UTF-8 -jar /home/pi/RASPI3JAVA//HelloRaspberryPi/dist/HelloRaspberryPi.jar
Hello from the Raspberry Pi!
run-remote:
BUILD SUCCESSFUL (total time: 4 seconds)

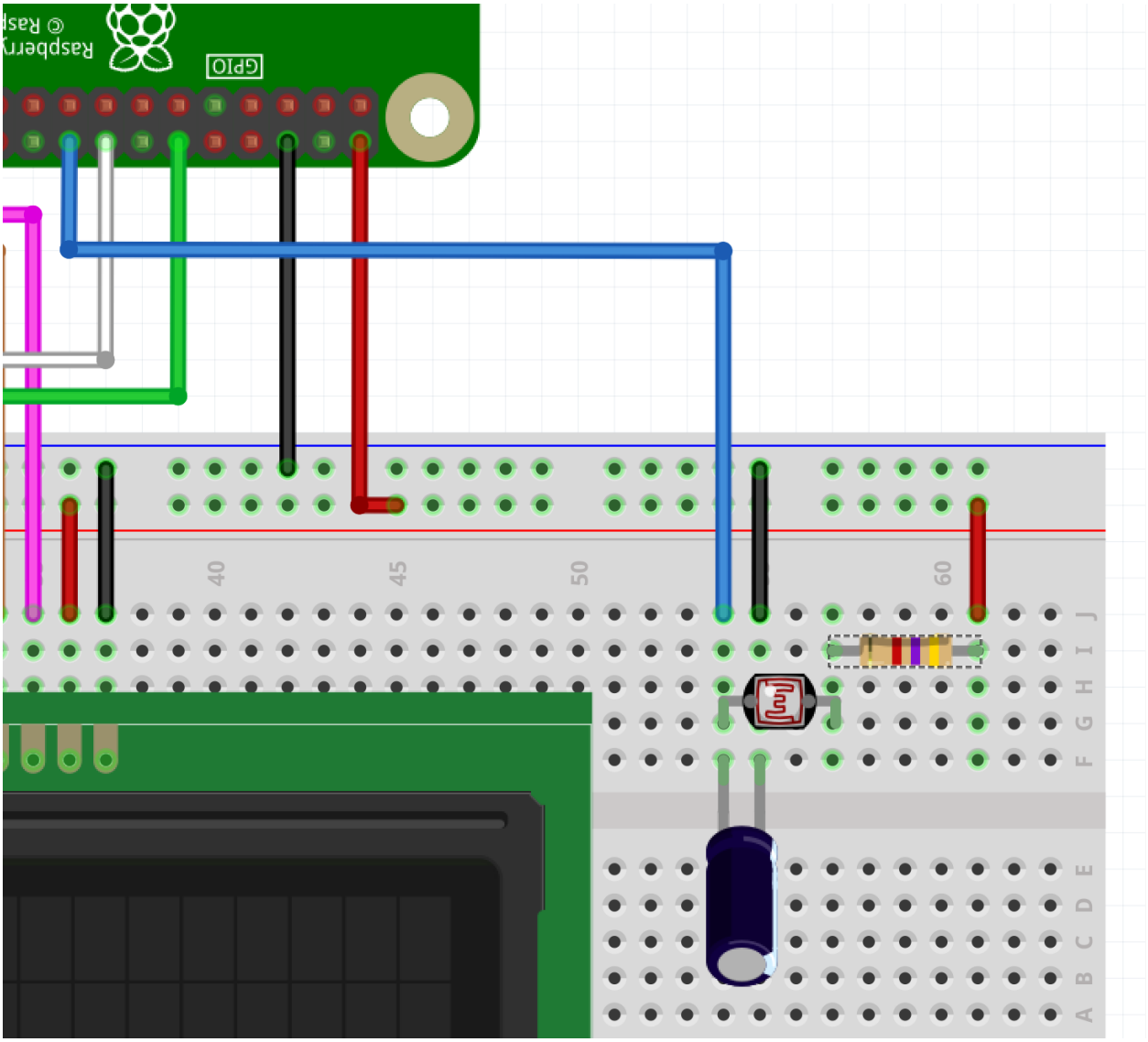
Chapter 2: Automatic Light Switch Using Presence Detection

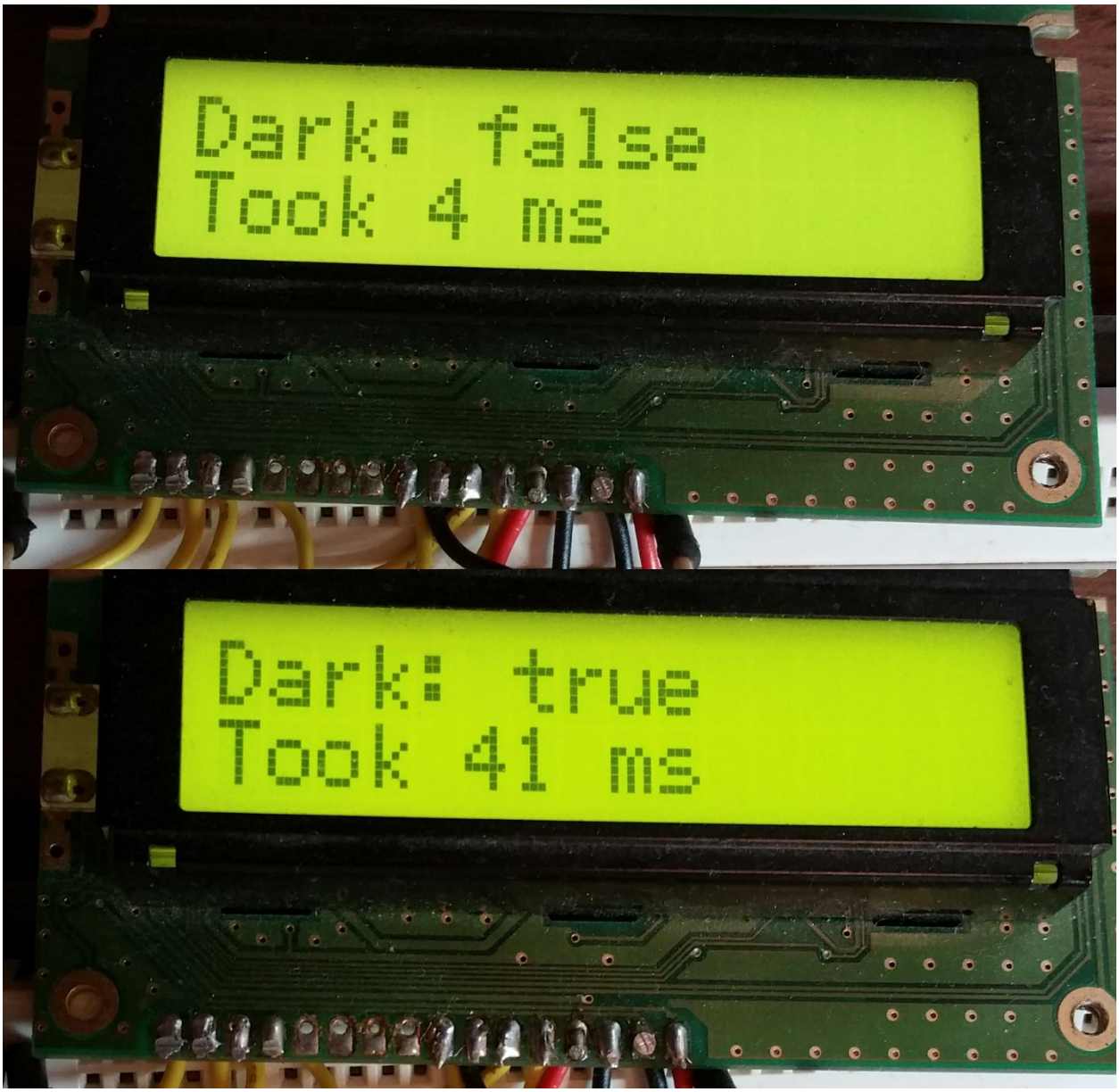


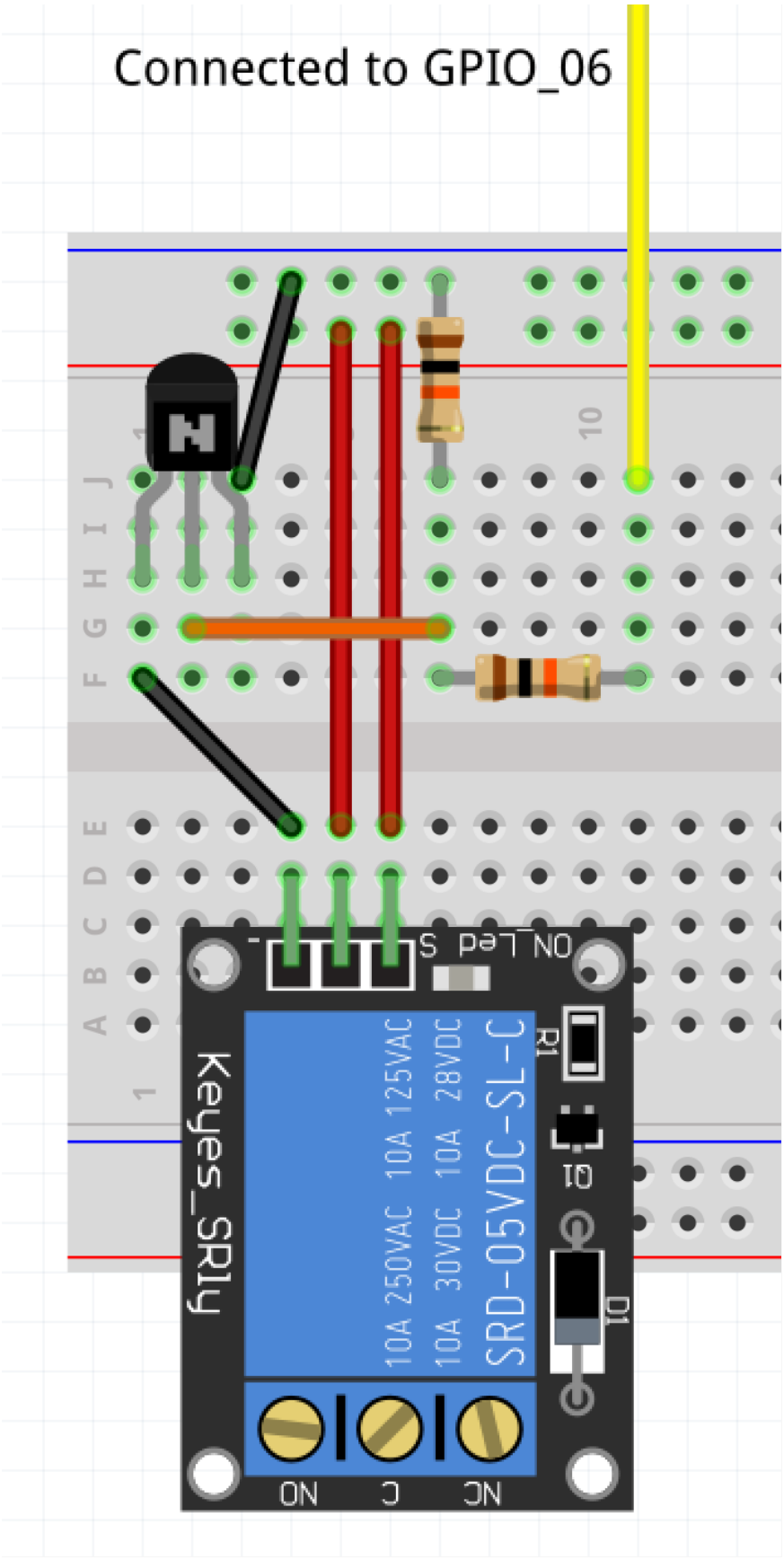

USB 2x
Raspberry Pi 3 Model B v1.2
© Raspberry Pi 2015
GPIO
20
40
45
50
55
15
55
1


Raspberry Pi 2 Model B (J8 Header)
GPIO# NAME 1 2 NAME GPIO#
3.3 VDC Power 1 2 5.0 VDC Power
8 GPIO 8 SDA1 (I2C) 3 4 5.0 VDC Power
9 GPIO 9 SCL1 (I2C) 5 6 Ground
7 GPIO 7 GPCLK0 7 8 GPIO 15 TxD (UART) 15
Ground 9 10 GPIO 16 RxD (UART) 16
0 GPIO 0 11 12 GPIO 1 PCM_CLK/PWM0 1
2 GPIO 2 13 14 Ground
3 GPIO 3 15 16 GPIO 4 4
3.3 VDC Power 17 18 GPIO 5 5
12 GPIO 12 MOSI (SPI) 19 20 Ground
13 GPIO 13 MISO (SPI) 21 22 GPIO 6 6
14 GPIO 14 SCLK (SPI) 23 24 GPIO 10 CE0 (SPI) 10
Ground 25 26 GPIO 11 CE1 (SPI) 11
SDA0 (I2C ID EEPROM) 27 28 SCL0 (I2C ID EEPROM)
21 GPIO 21 GPCLK1 29 30 Ground
22 GPIO 22 GPCLK2 31 32 GPIO 26 PWM0 26
23 GPIO 23 PWM1 33 34 Ground
24 GPIO 24 PCM_FS/PWM1 35 36 GPIO 27 27
25 GPIO 25 37 38 GPIO 28 PCM_DIN 28
Ground 39 40 GPIO 29 PCM_DOUT 29
Attention! The GIPO pin numbering used in this diagram is intended for use with WiringPi / Pi4J. This pin numbering is not the raw Broadcom GPIO pin numbers.
http://www.pi4j.com


--- RASPI3JAVA ---
---- 14:29:22 ----

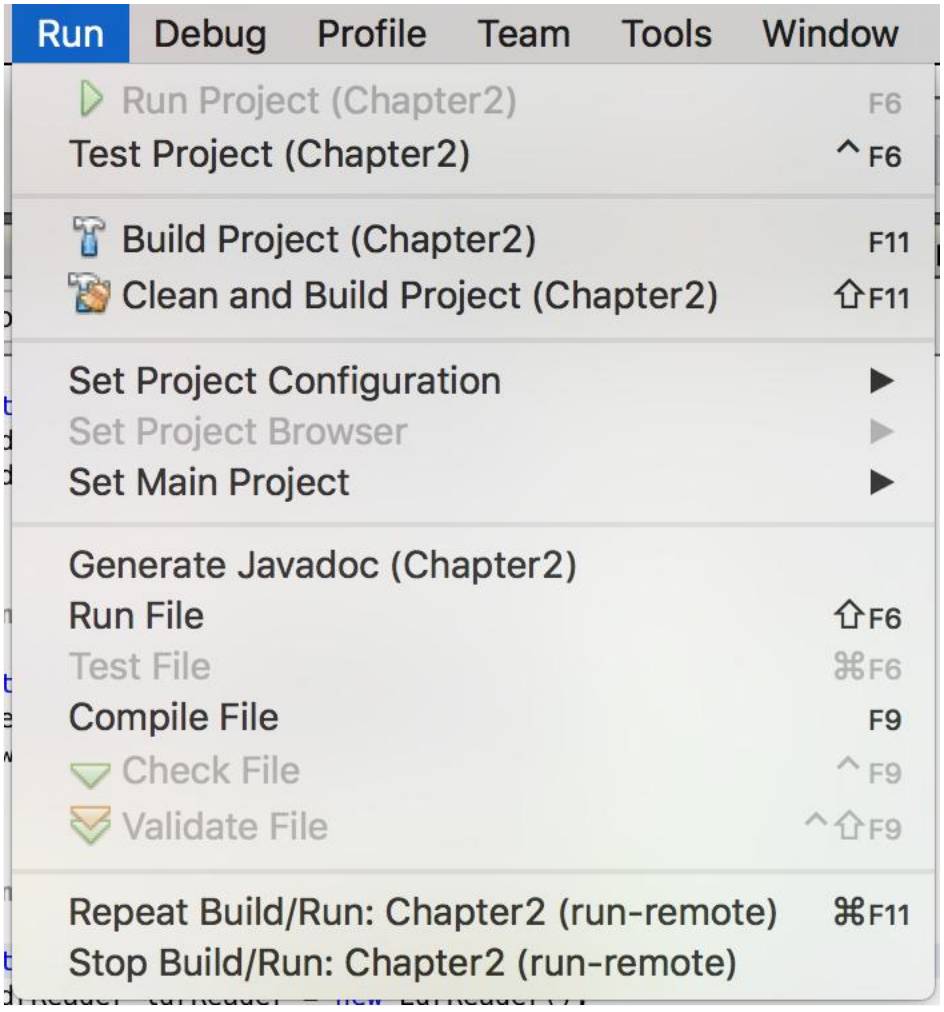

GPIO
40
45
50
60
A B C D E F G H I J

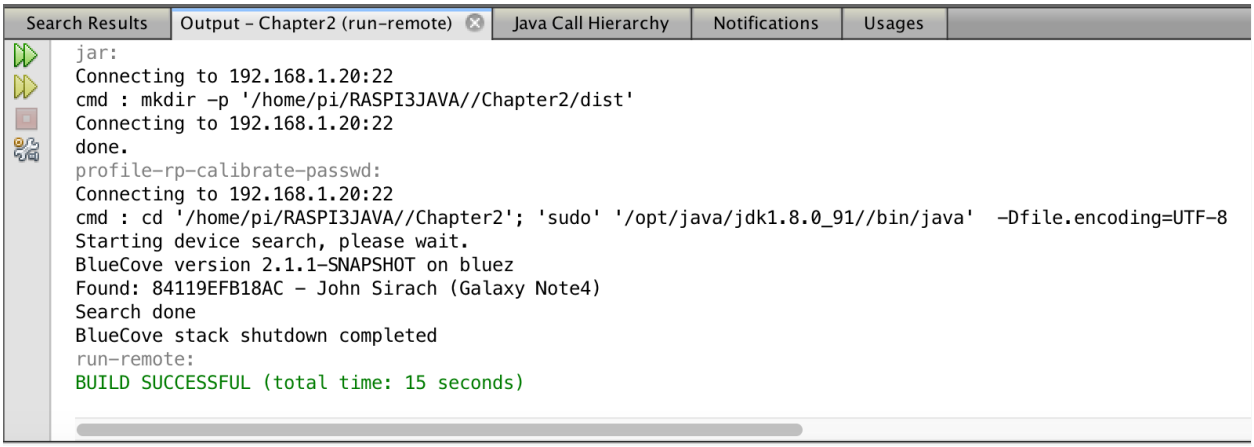

Dark: false
Took 4 ms
Dark: true
Took 41 ms


Connected to GPIO_06
ON_Led
S
Keyes_SR1y
SRD-05VDC-SL-C
10A 125VAC 28VDC
10A 250VAC 30VDC
R1
Q1
D1
NO
C
NC

```
g=UTF-8   -jar /home/pi/RASPI3JAVA//Chapter2/dist/Chapte
```

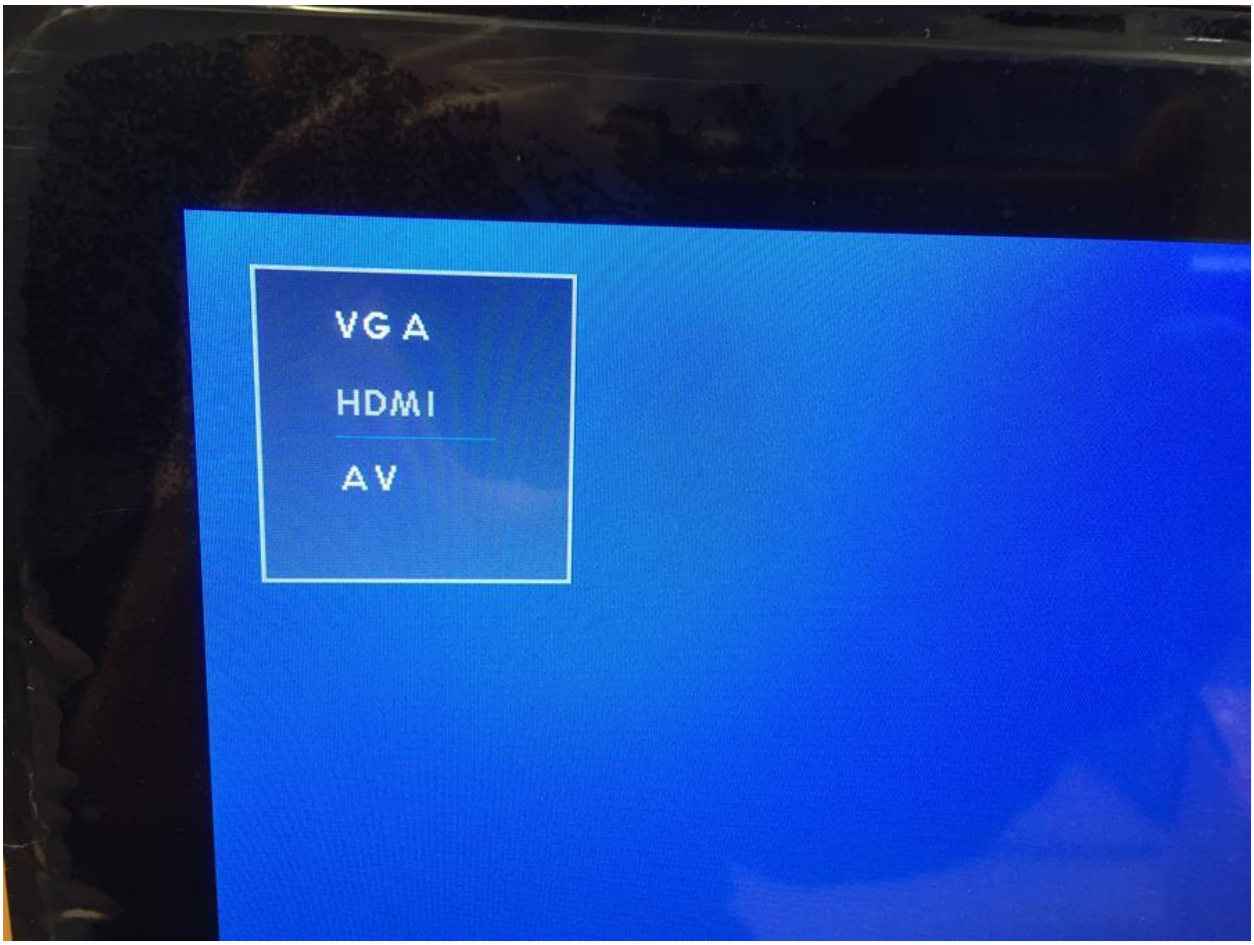
Chapter2 (run-remote)

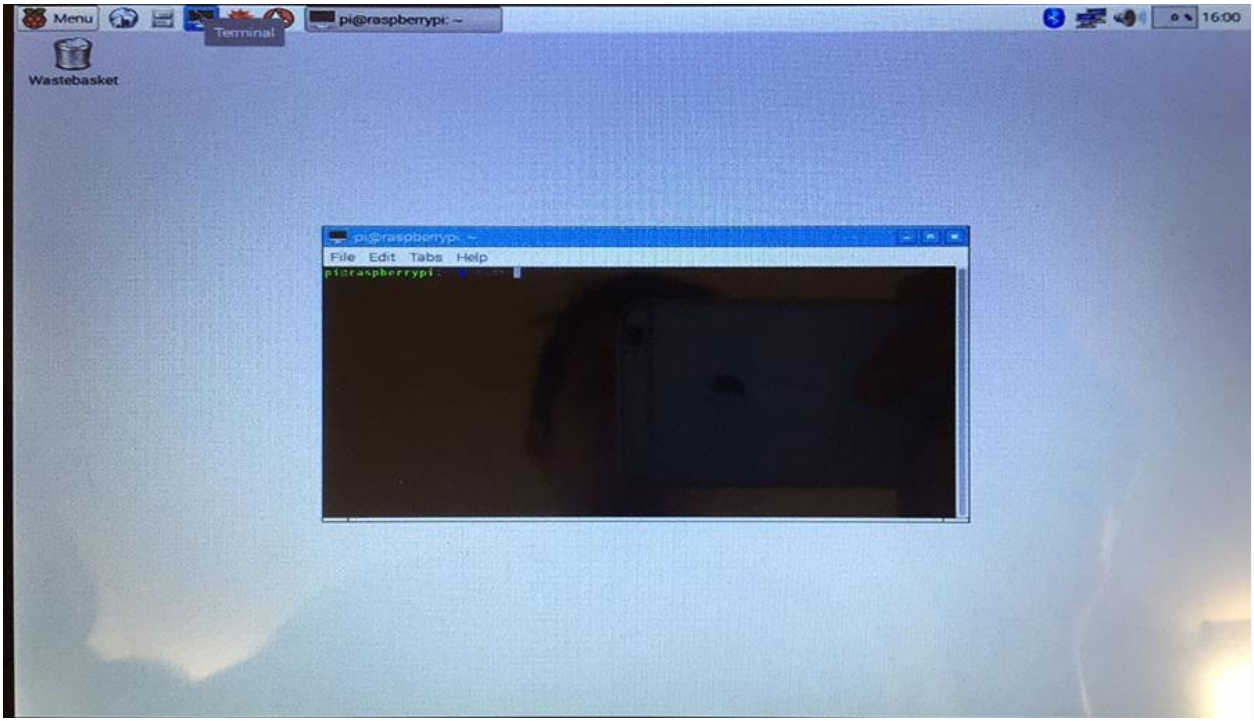


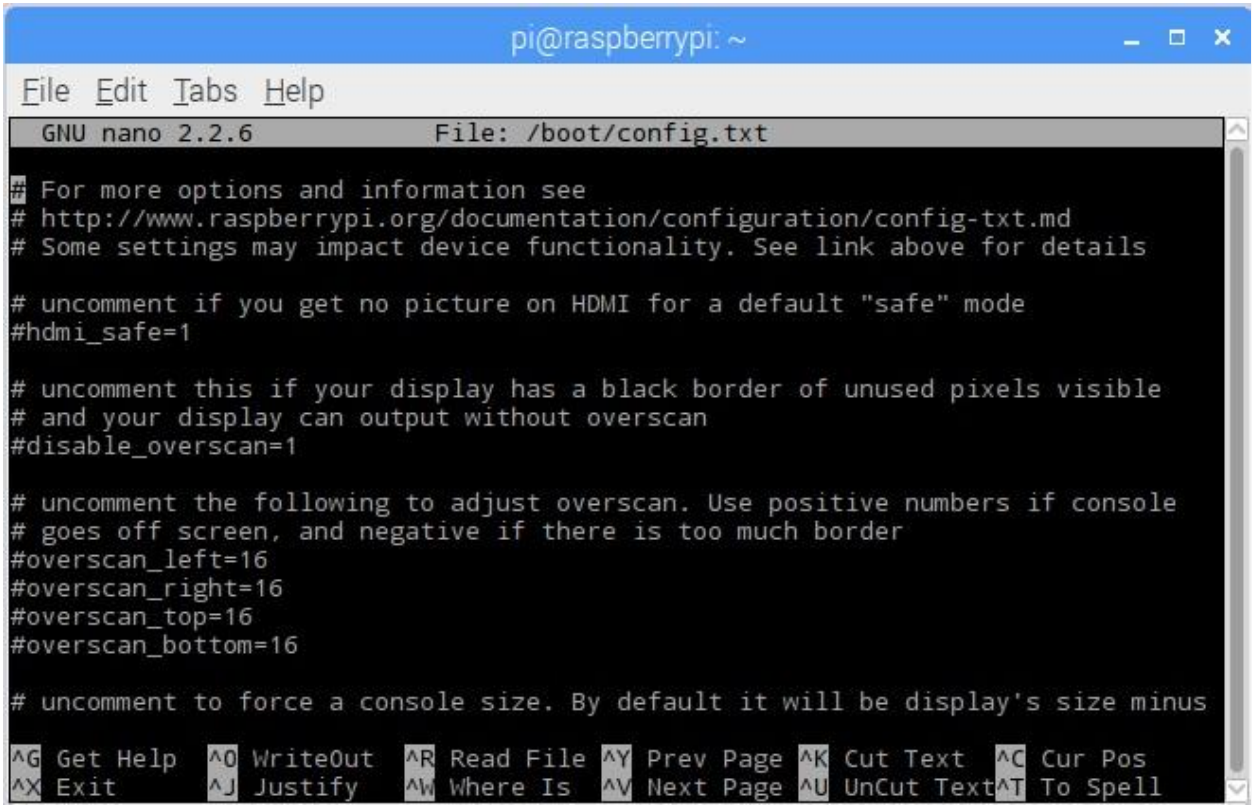

Search Results
Output - Chapter2 (run-remote)
Java Call Hierarchy
Notifications
Usages
jar:
Connecting to 192.168.1.20:22
cmd : mkdir -p '/home/pi/RASPI3JAVA//Chapter2/dist'
Connecting to 192.168.1.20:22
done.
profile-rp-calibrate-passwd:
Connecting to 192.168.1.20:22
cmd : cd '/home/pi/RASPI3JAVA//Chapter2'; 'sudo' '/opt/java/jdk1.8.0_91//bin/java' -Dfile.encoding=UTF-8
Starting device search, please wait.
BlueCove version 2.1.1-SNAPSHOT on bluez
Found: 84119EFB18AC - John Sirach (Galaxy Note4)
Search done
BlueCove stack shutdown completed
run-remote:
BUILD SUCCESSFUL (total time: 15 seconds)

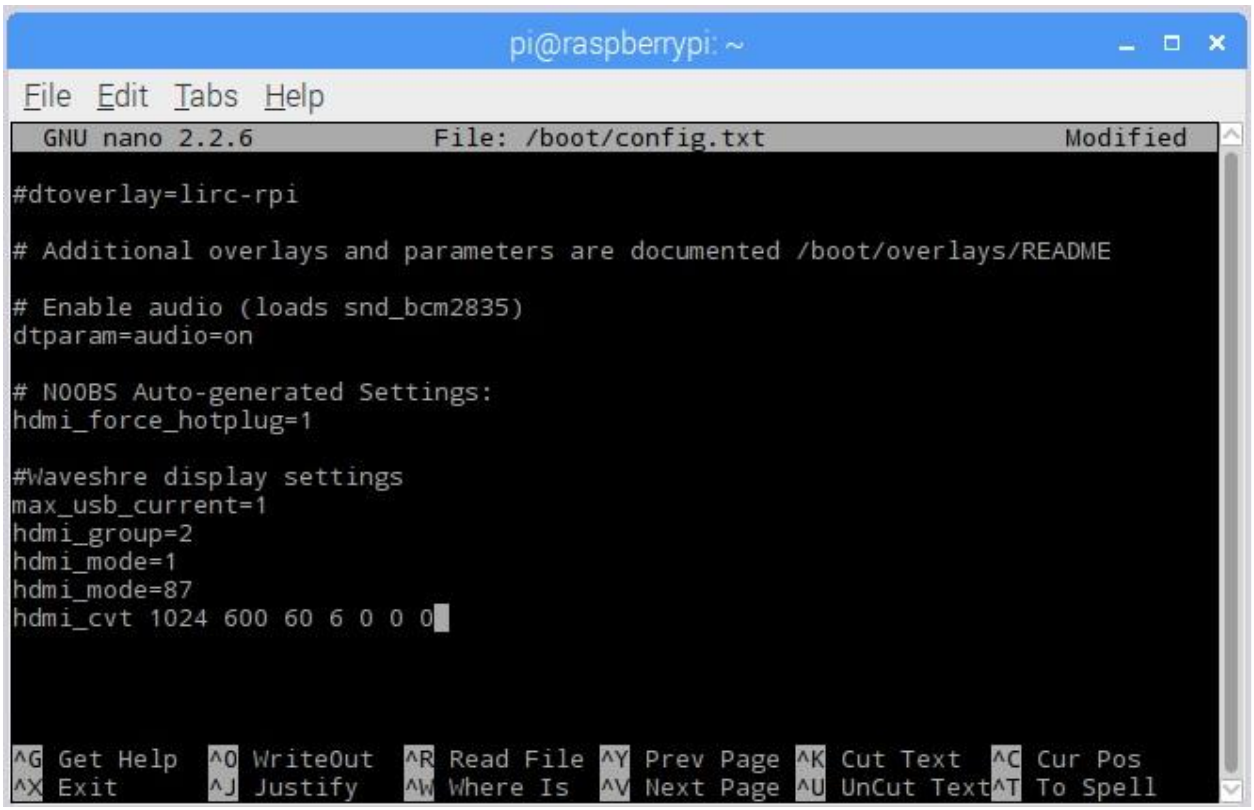
Chapter 3: A Social and Personal Digital Photo Frame

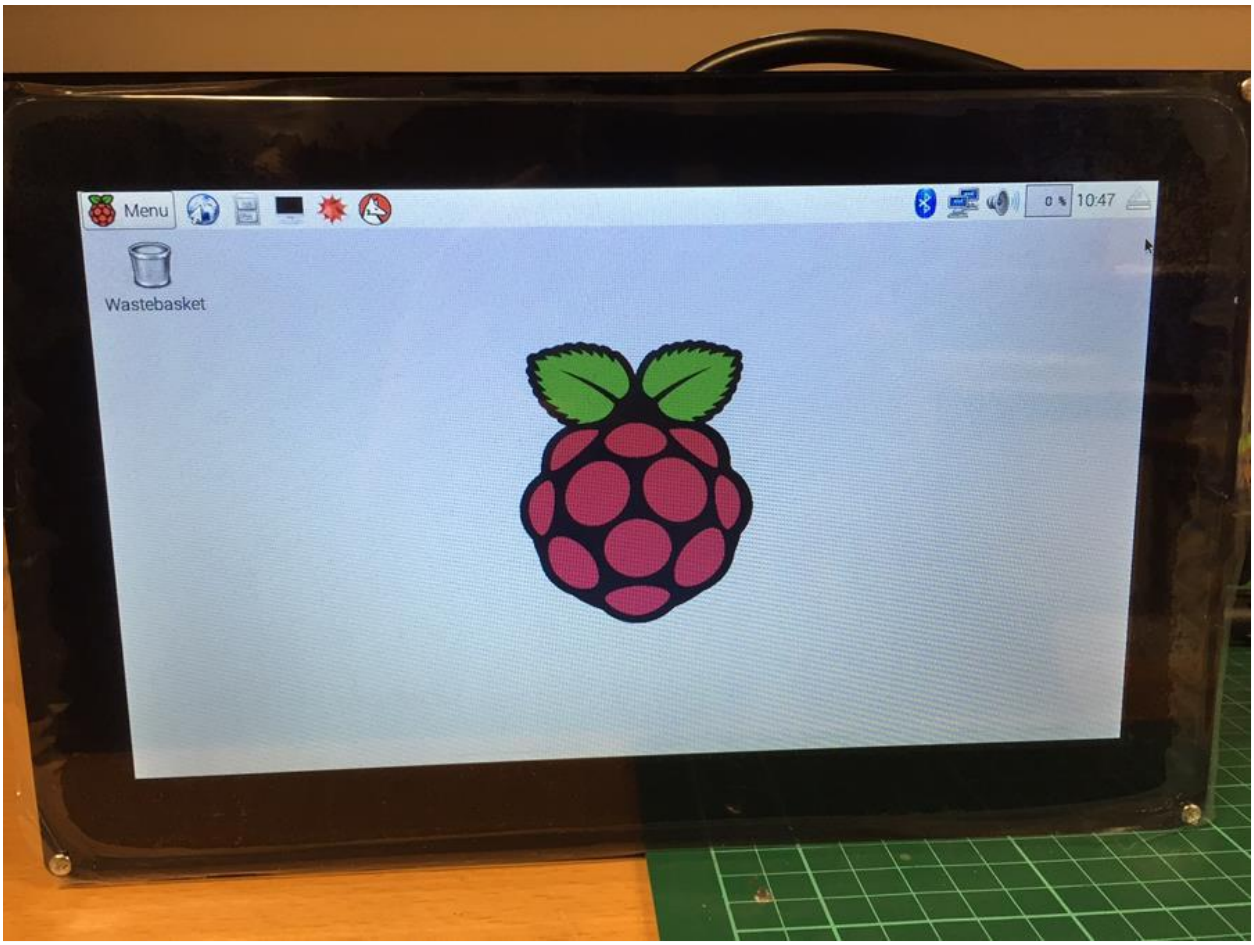

Power
Menu
Left
Right
Source

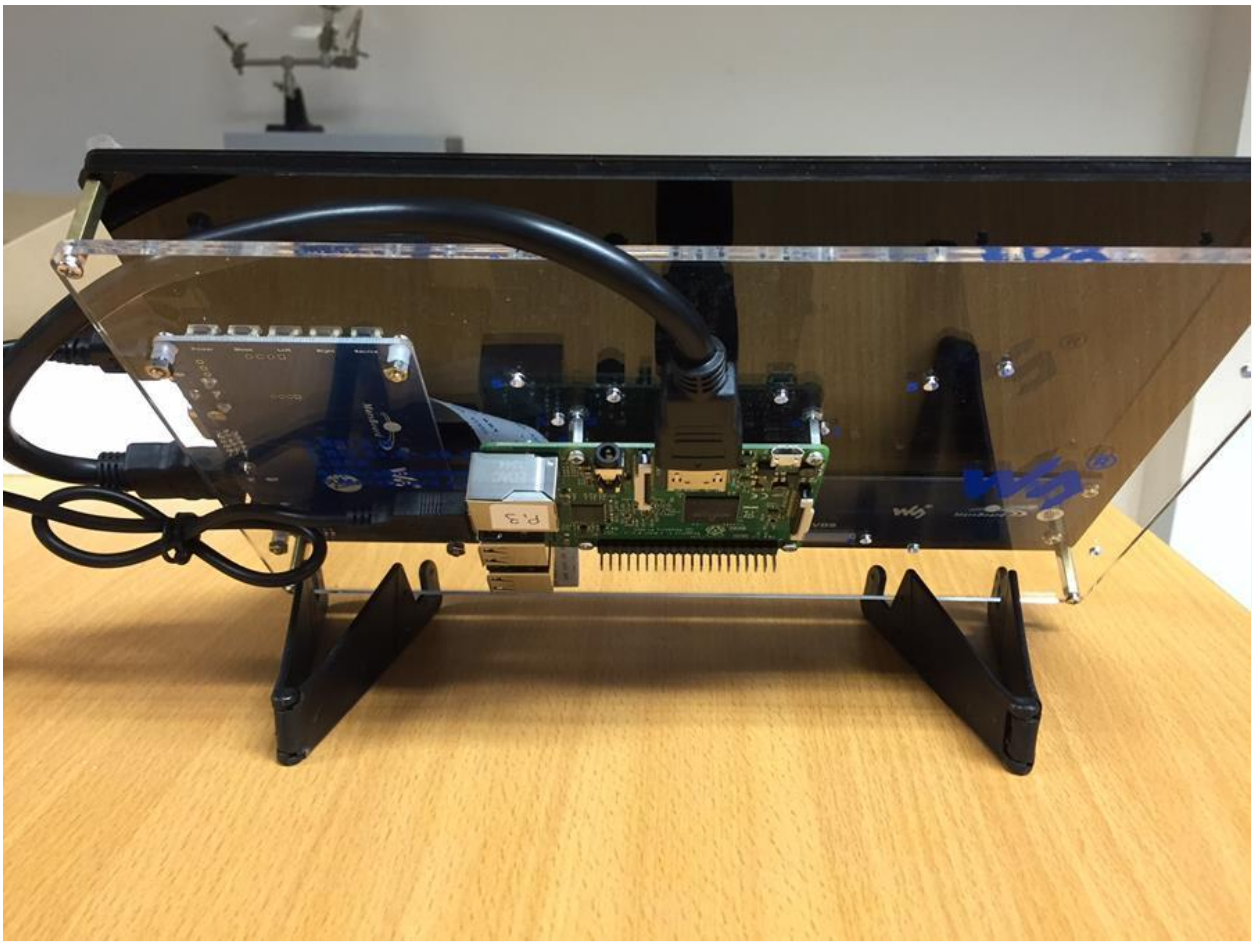

VGA
HDMI
AV

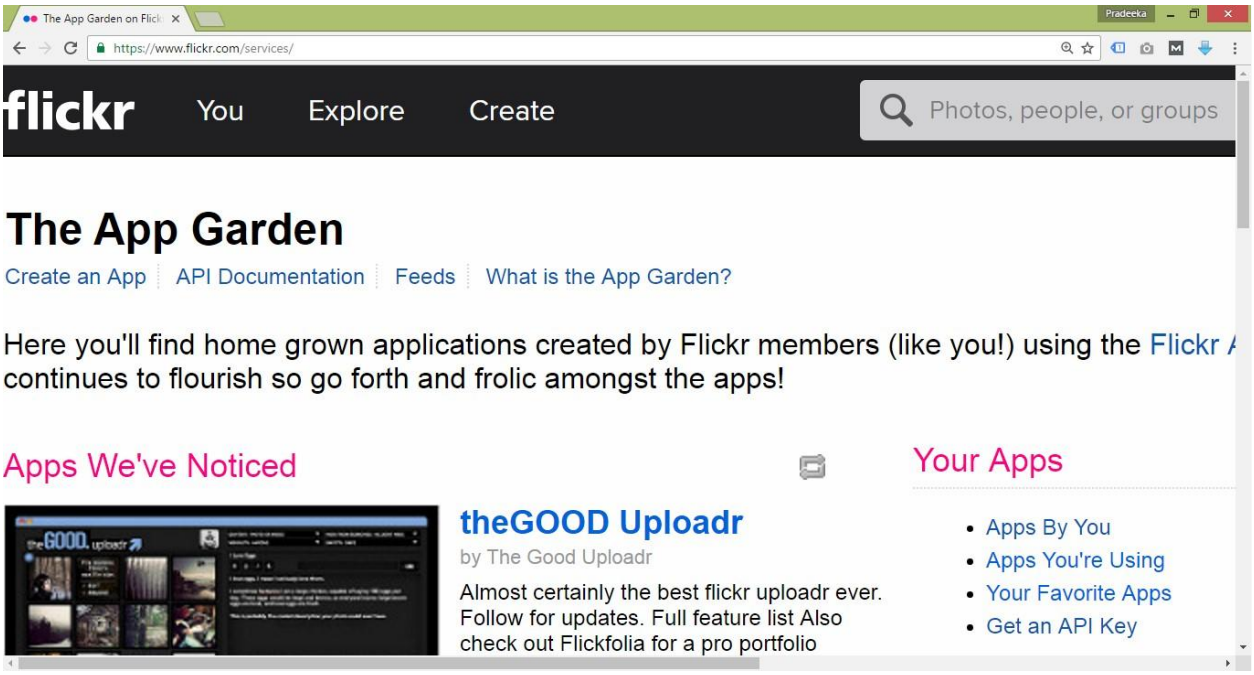

Menu
Terminal
pi@raspberrypi: ~
16:00
Wastebasket
File Edit Tabs Help

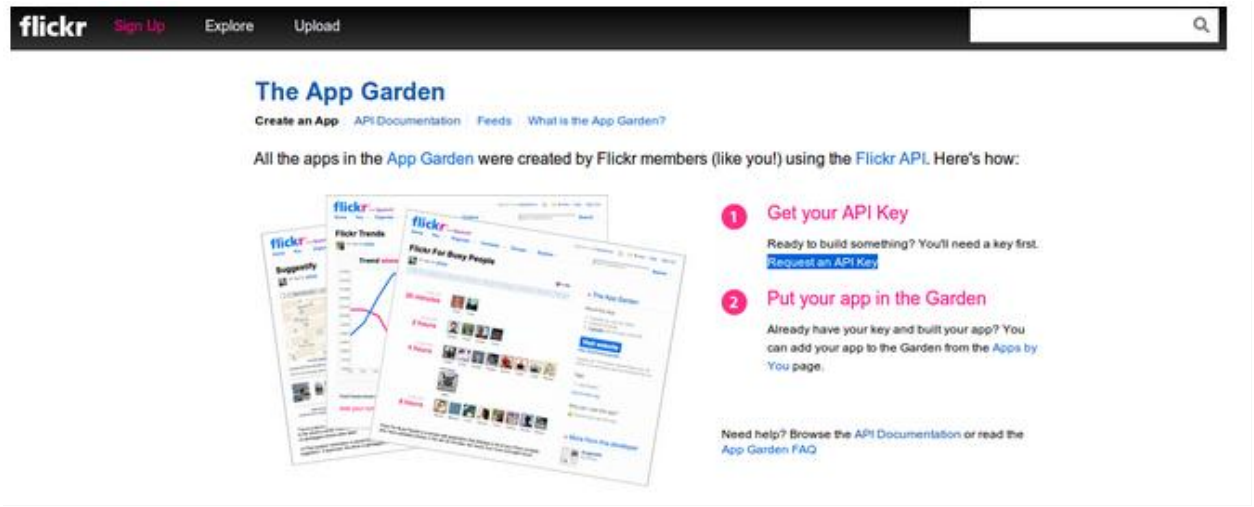

pi@raspberrypi: ~
File Edit Tabs Help
GNU nano 2.2.6 File: /boot/config.txt
For more options and information see
http://www.raspberrypi.org/documentation/configuration/config-txt.md
Some settings may impact device functionality. See link above for details
uncomment if you get no picture on HDMI for a default "safe" mode
#hdmi_safe=1
uncomment this if your display has a black border of unused pixels visible
and your display can output without overscan
#disable_overscan=1
uncomment the following to adjust overscan. Use positive numbers if console
goes off screen, and negative if there is too much border
#overscan_left=16
#overscan_right=16
#overscan_top=16
#overscan_bottom=16
uncomment to force a console size. By default it will be display's size minus
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell

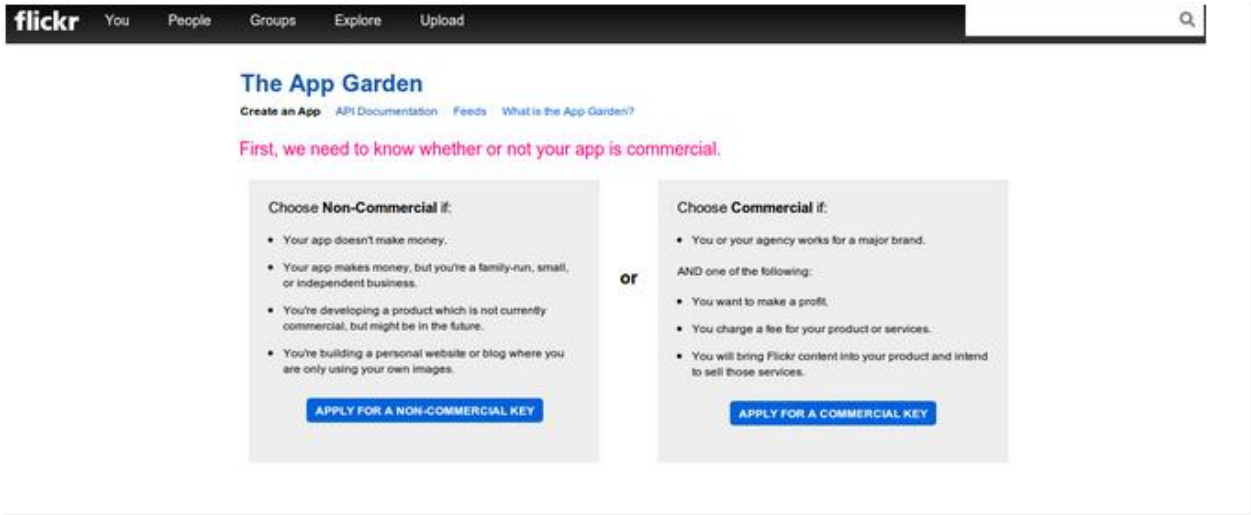

pi@raspberrypi: ~
File Edit Tabs Help
GNU nano 2.2.6 File: /boot/config.txt Modified
#dtoverlay=lirc-rpi
# Additional overlays and parameters are documented /boot/overlays/README
# Enable audio (loads snd_bcm2835)
dtparam=audio=on
# NOOBS Auto-generated Settings:
hdmi_force_hotplug=1
#Waveshre display settings
max_usb_current=1
hdmi_group=2
hdmi_mode=1
hdmi_mode=87
hdmi_cvt 1024 600 60 6 0 0 0
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell

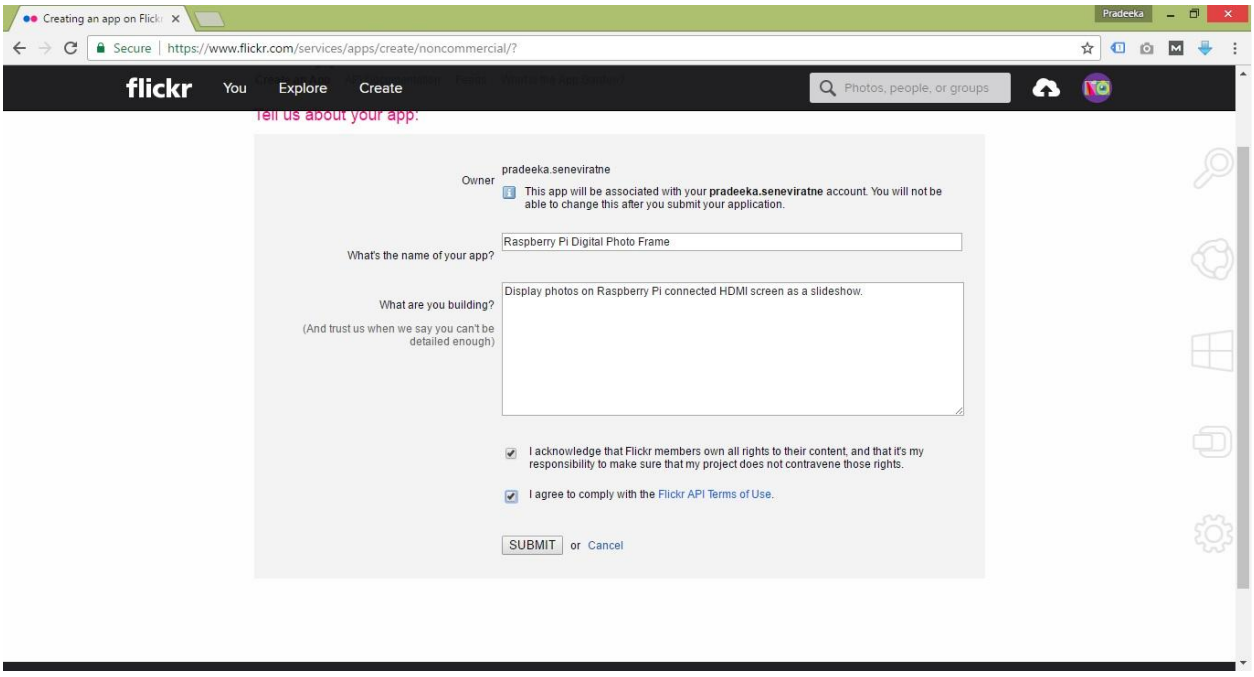

Menu
0 %
10:47
Wastebasket

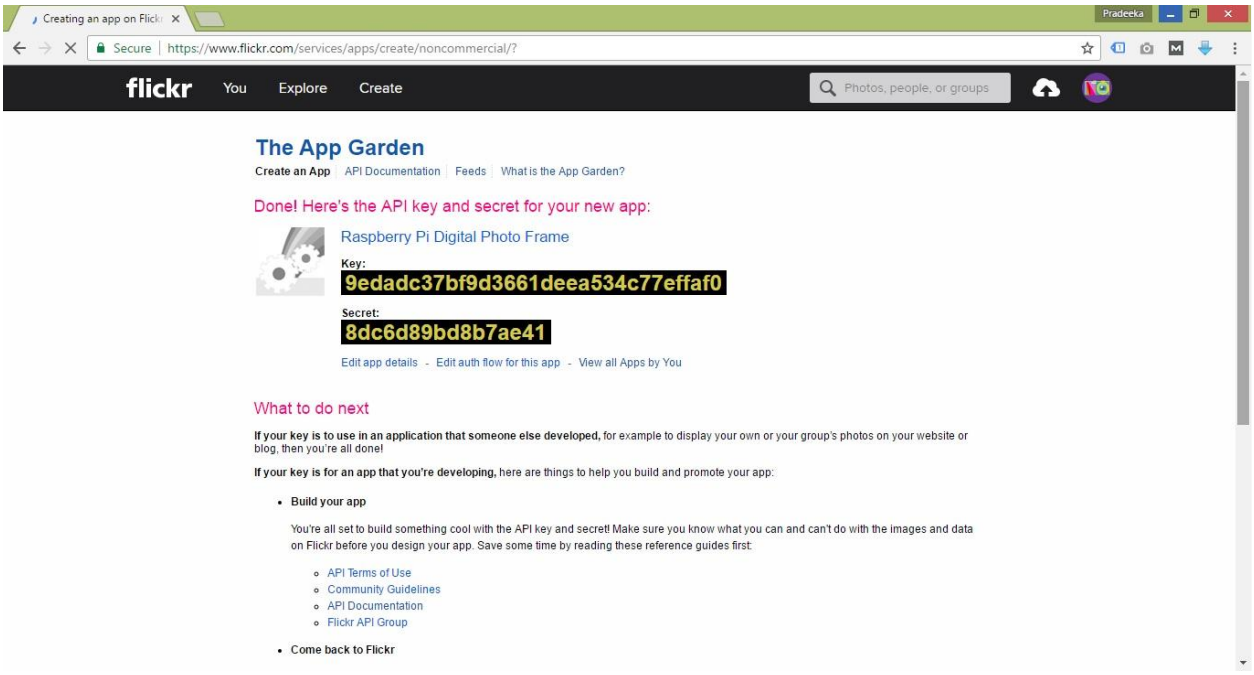


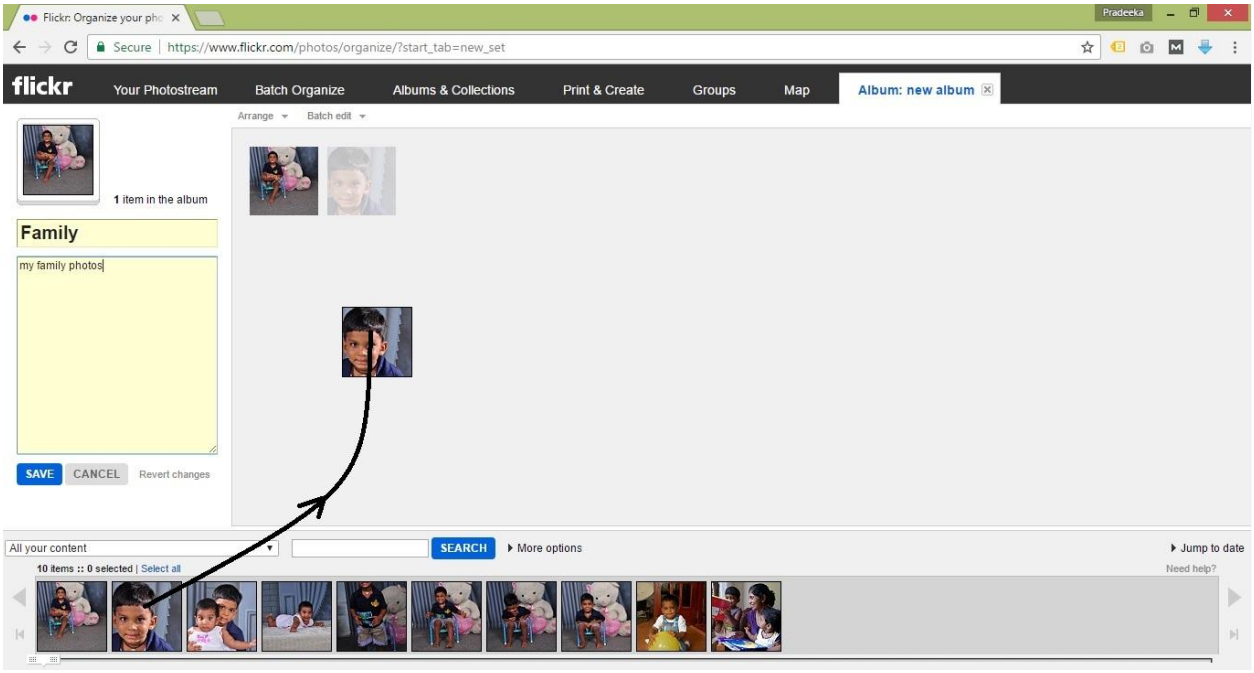

The App Garden on Flick
https://www.flickr.com/services/
flickr
You
Explore
Create
Photos, people, or groups
The App Garden
Create an App
API Documentation
Feeds
What is the App Garden?
Here you'll find home grown applications created by Flickr members (like you!) using the Flickr A
continues to flourish so go forth and frolic amongst the apps!
Apps We've Noticed
theGOOD Uploadr
by The Good Uploadr
Almost certainly the best flickr uploadr ever. Follow for updates. Full feature list Also check out Flickfolia for a pro portfolio
Your Apps
Apps By You
Apps You're Using
Your Favorite Apps
Get an API Key

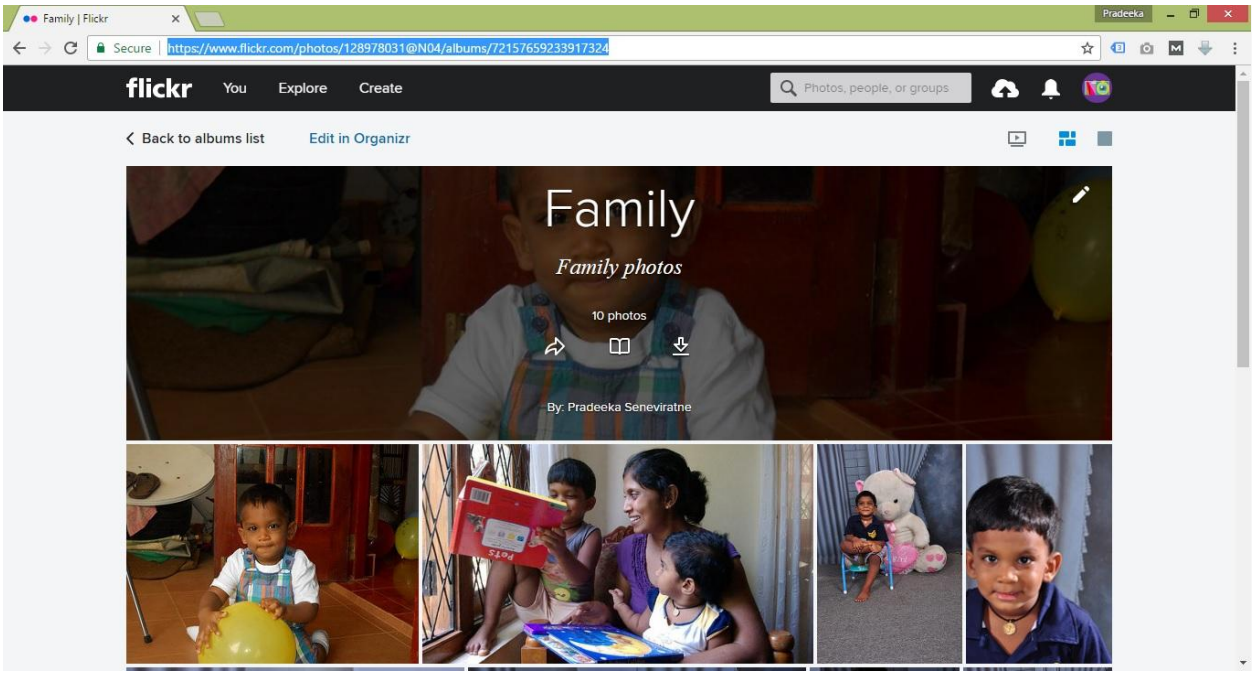

flickr
Sign Up
Explore
Upload
The App Garden
Create an App
API Documentation
Feeds
What is the App Garden?
All the apps in the App Garden were created by Flickr members (like you!) using the Flickr API. Here's how:
1
Get your API Key
Ready to build something? You'll need a key first.
Request an API Key
2
Put your app in the Garden
Already have your key and built your app? You can add your app to the Garden from the Apps by You page.
Need help? Browse the API Documentation or read the App Garden FAQ

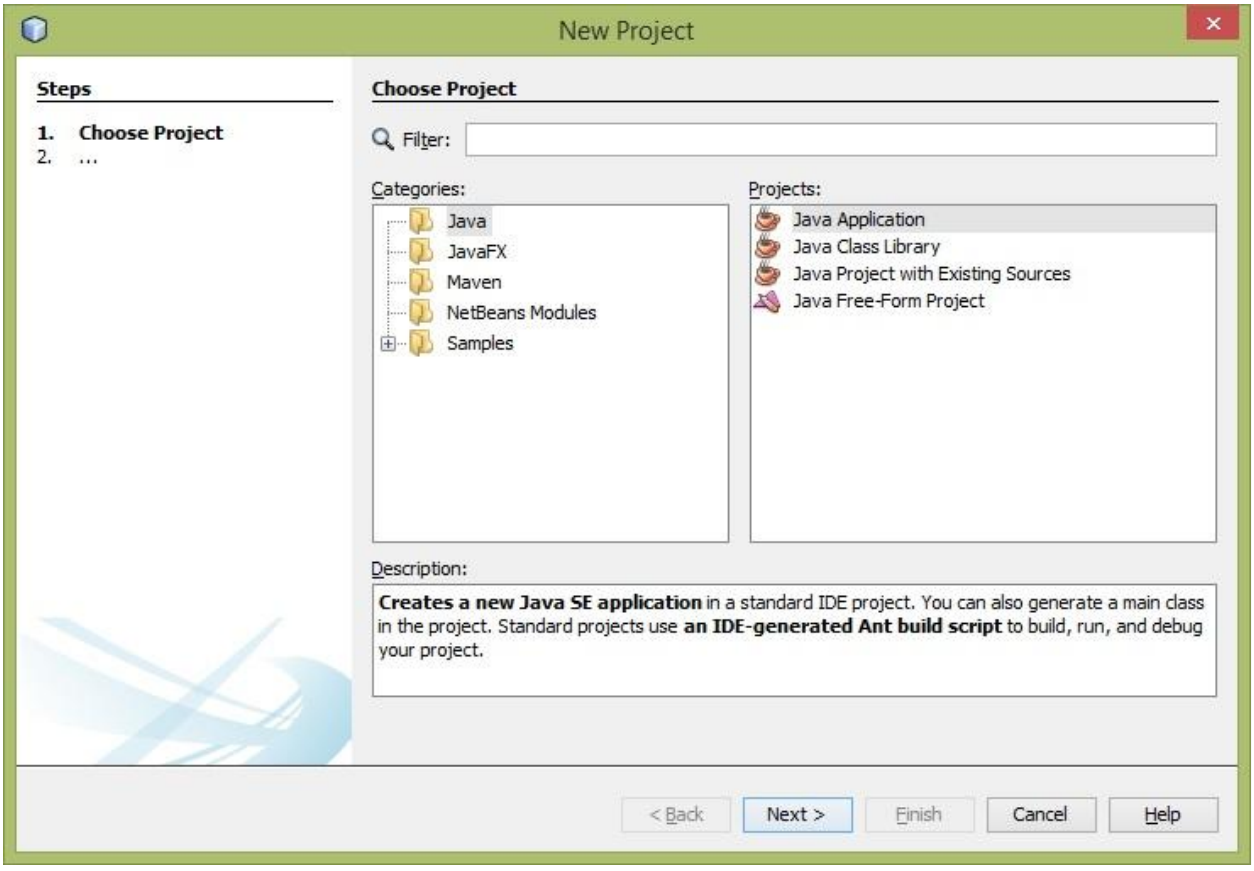

flickr
You
People
Groups
Explore
Upload
The App Garden
Create an App
API Documentation
Feeds
What is the App Garden?
First, we need to know whether or not your app is commercial.
Choose Non-Commercial if:
Your app doesn't make money.
Your app makes money, but you're a family-run, small, or independent business.
You're developing a product which is not currently commercial, but might be in the future.
You're building a personal website or blog where you are only using your own images.
APPLY FOR A NON-COMMERCIAL KEY
or
Choose Commercial if:
You or your agency works for a major brand.
AND one of the following:
You want to make a profit.
You charge a fee for your product or services.
You will bring Flickr content into your product and intend to sell those services.
APPLY FOR A COMMERCIAL KEY

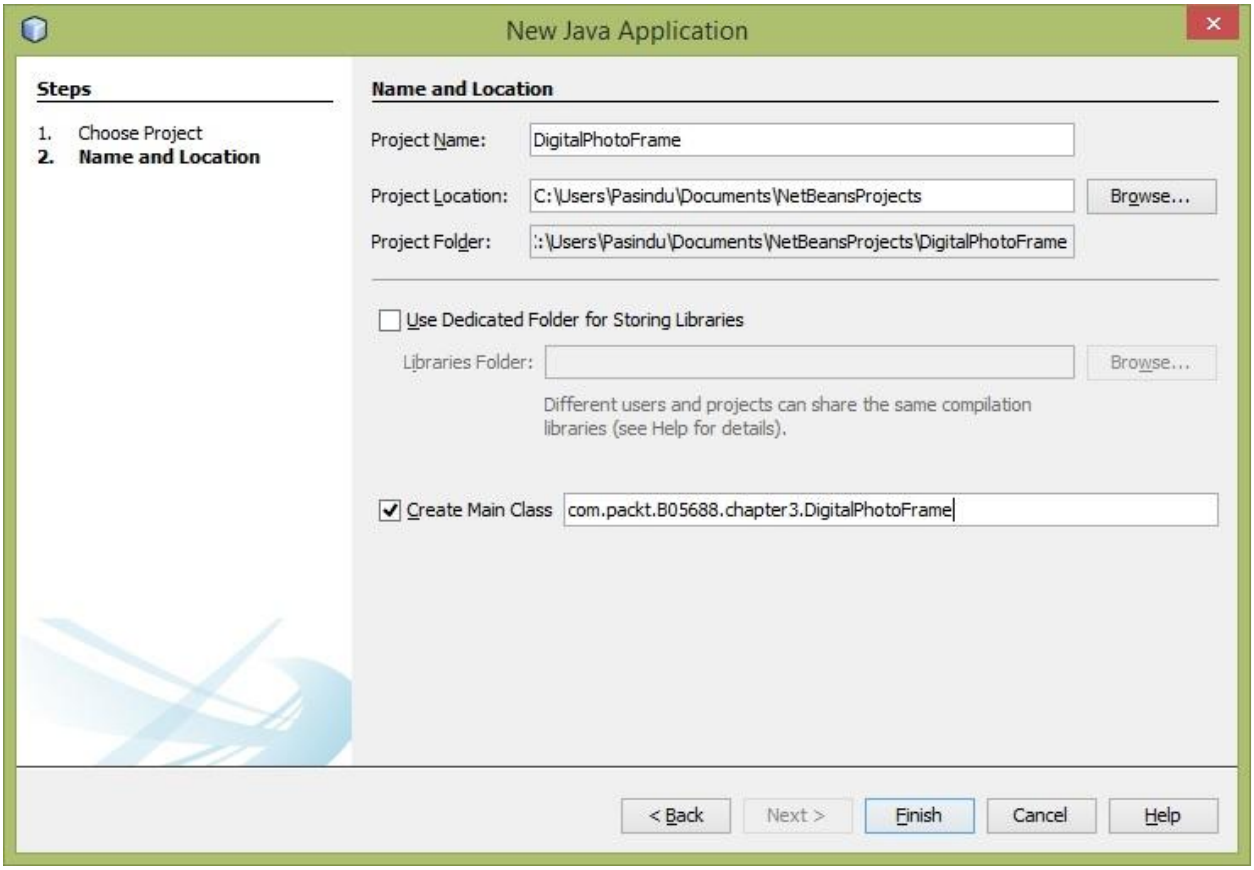

Creating an app on Flickr
Pradeeka
Secure
https://www.flickr.com/services/apps/create/noncommercial/?
flickr
You
Explore
Create
Photos, people, or groups
Tell us about your app:
Owner
pradeeka.seneviratne
This app will be associated with your pradeeka.seneviratne account. You will not be able to change this after you submit your application.
What's the name of your app?
Raspberry Pi Digital Photo Frame
What are you building?
(And trust us when we say you can't be detailed enough)
Display photos on Raspberry Pi connected HDMI screen as a slideshow.
I acknowledge that Flickr members own all rights to their content, and that it's my responsibility to make sure that my project does not contravene those rights.
I agree to comply with the Flickr API Terms of Use.
SUBMIT
or
Cancel

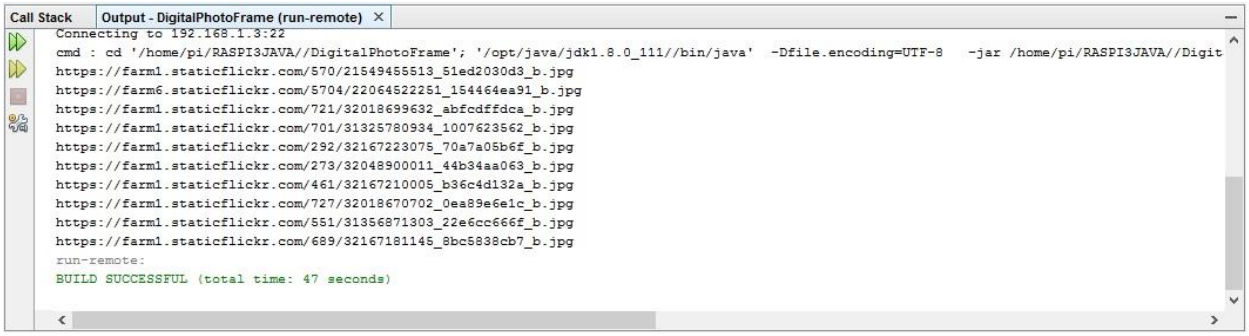

Creating an app on Flickr
Pradeeka
Secure | https://www.flickr.com/services/apps/create/noncommercial/?
flickr
You
Explore
Create
Photos, people, or groups
The App Garden
Create an App | API Documentation | Feeds | What is the App Garden?
Done! Here's the API key and secret for your new app:
Raspberry Pi Digital Photo Frame
Key:
9edadc37bf9d3661deea534c77effaf0
Secret:
8dc6d89bd8b7ae41
Edit app details - Edit auth flow for this app - View all Apps by You
What to do next
If your key is to use in an application that someone else developed, for example to display your own or your group's photos on your website or blog, then you're all done!
If your key is for an app that you're developing, here are things to help you build and promote your app:
Build your app
You're all set to build something cool with the API key and secret! Make sure you know what you can and can't do with the images and data on Flickr before you design your app. Save some time by reading these reference guides first:
API Terms of Use
Community Guidelines
API Documentation
Flickr API Group
Come back to Flickr

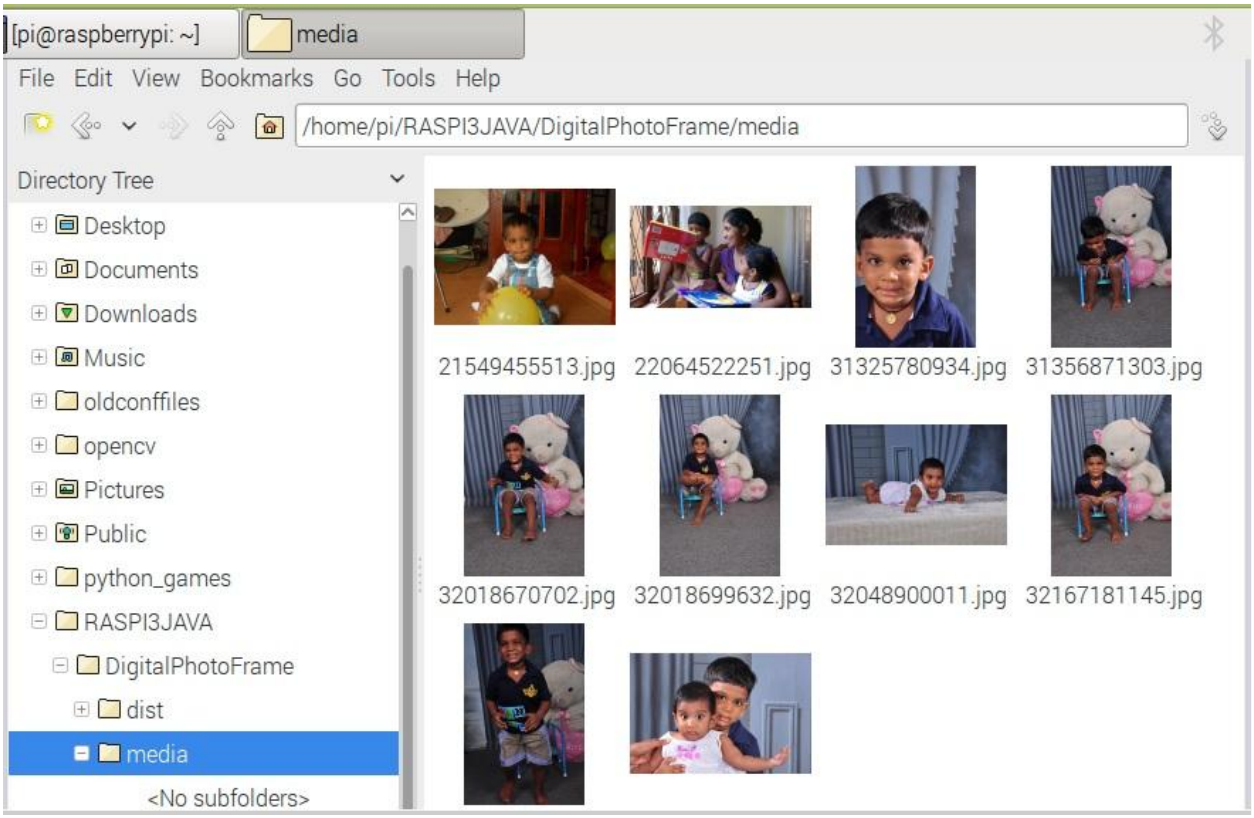

Flickr: Organize your pho
Pradeeka
Secure | https://www.flickr.com/photos/organize/?start_tab=new_set
flickr
Your Photostream
Batch Organize
Albums & Collections
Print & Create
Groups
Map
Album: new album
Arrange
Batch edit
1 item in the album
Family
my family photos
SAVE
CANCEL
Revert changes
All your content
SEARCH
More options
Jump to date
10 items :: 0 selected | Select all
Need help?

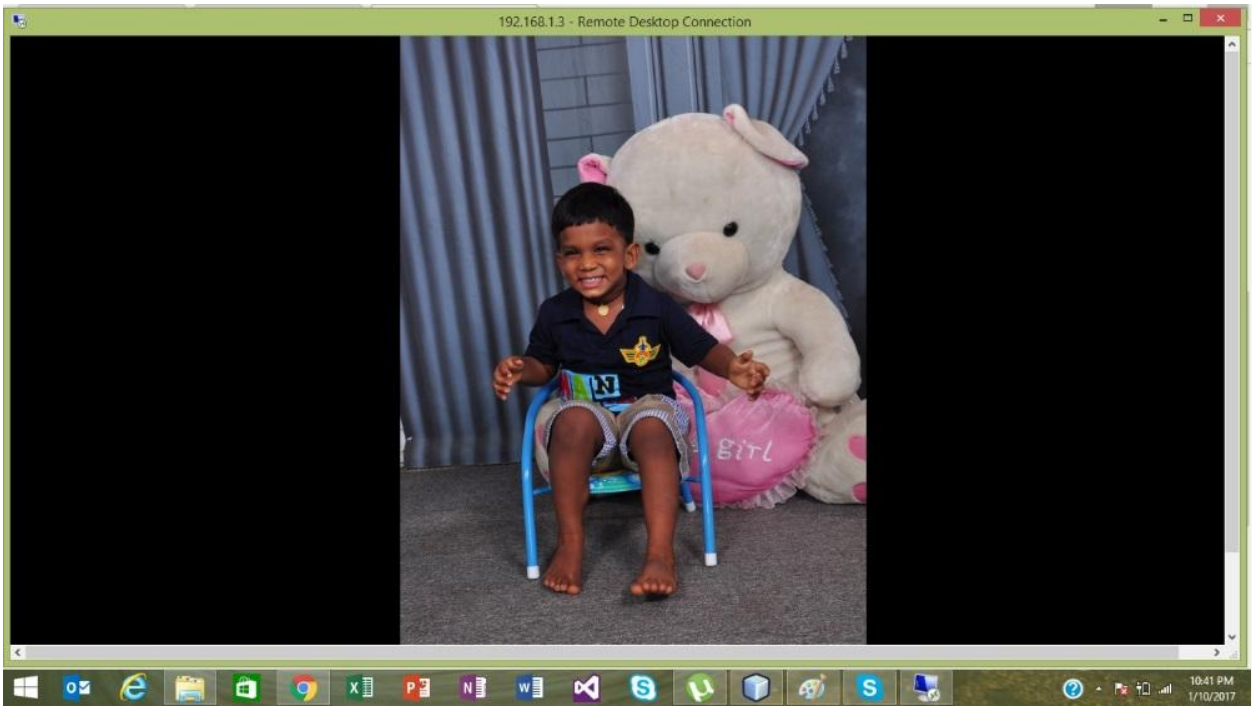

Family | Flickr
Pradeeka
Secure
https://www.flickr.com/photos/128978031@N04/albums/72157659233917324
flickr
You
Explore
Create
Photos, people, or groups
Back to albums list
Edit in Organizr
Family
Family photos
10 photos
By: Pradeeka Seneviratne

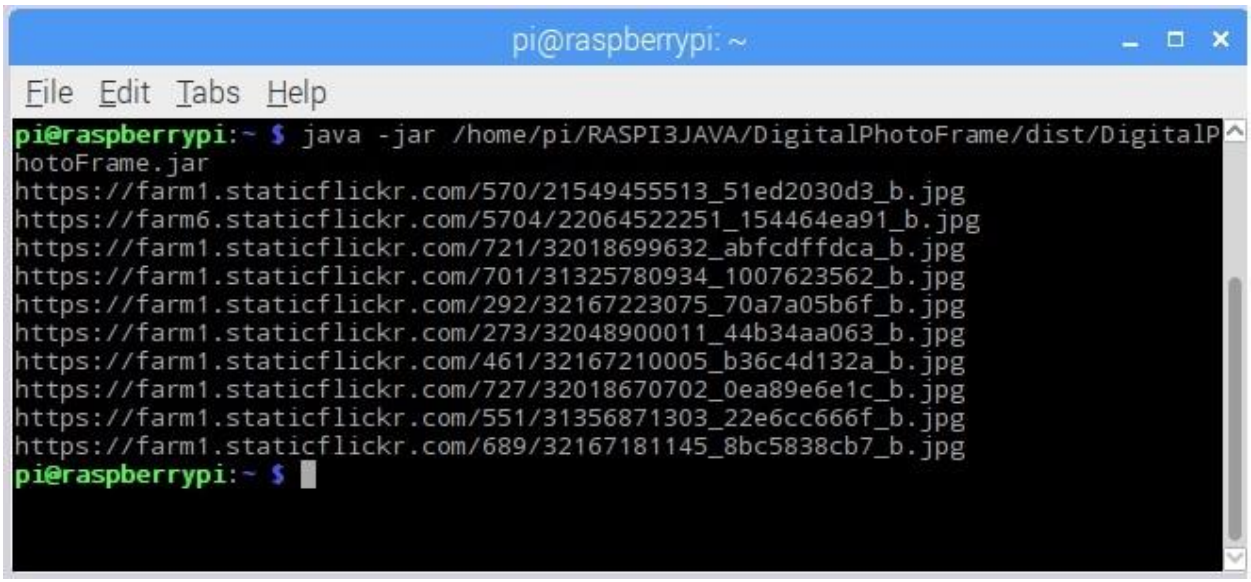

New Project
Steps
1. Choose Project
2. ...
Choose Project
Filter:
Categories:
Java
JavaFX
Maven
NetBeans Modules
Samples
Projects:
Java Application
Java Class Library
Java Project with Existing Sources
Java Free-Form Project
Description:
Creates a new Java SE application in a standard IDE project. You can also generate a main class in the project. Standard projects use an IDE-generated Ant build script to build, run, and debug your project.
< Back
Next >
Finish
Cancel
Help

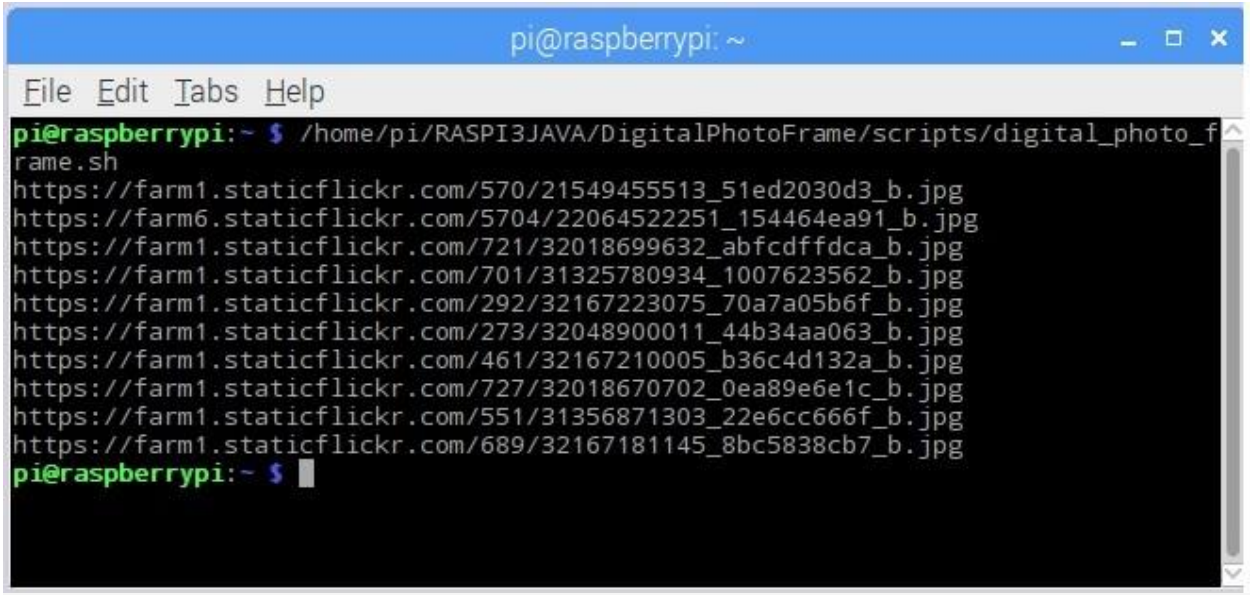

New Java Application
Steps
1. Choose Project
2. Name and Location
Name and Location
Project Name: DigitalPhotoFrame
Project Location: C:\Users\Pasindu\Documents\NetBeansProjects
Browse...
Project Folder: :\Users\Pasindu\Documents\NetBeansProjects\DigitalPhotoFrame
Use Dedicated Folder for Storing Libraries
Libraries Folder:
Browse...
Different users and projects can share the same compilation libraries (see Help for details).
Create Main Class com.packt.B05688.chapter3.DigitalPhotoFrame
< Back
Next >
Finish
Cancel
Help


Call Stack
Output - DigitalPhotoFrame (run-remote)
Connecting to 192.168.1.3:22
cmd : cd '/home/pi/RASPI3JAVA//DigitalPhotoFrame'; '/opt/java/jdk1.8.0_111//bin/java' -Dfile.encoding=UTF-8 -jar /home/pi/RASPI3JAVA//Digit
https://farm1.staticflickr.com/570/21549455513_51ed2030d3_b.jpg
https://farm6.staticflickr.com/5704/22064522251_154464ea91_b.jpg
https://farm1.staticflickr.com/721/32018699632_abfcdffdca_b.jpg
https://farm1.staticflickr.com/701/31325780934_1007623562_b.jpg
https://farm1.staticflickr.com/292/32167223075_70a7a05b6f_b.jpg
https://farm1.staticflickr.com/273/32048900011_44b34aa063_b.jpg
https://farm1.staticflickr.com/461/32167210005_b36c4d132a_b.jpg
https://farm1.staticflickr.com/727/32018670702_0ea89e6e1c_b.jpg
https://farm1.staticflickr.com/551/31356871303_22e6cc666f_b.jpg
https://farm1.staticflickr.com/689/32167181145_8bc5838cb7_b.jpg
run-remote:
BUILD SUCCESSFUL (total time: 47 seconds)

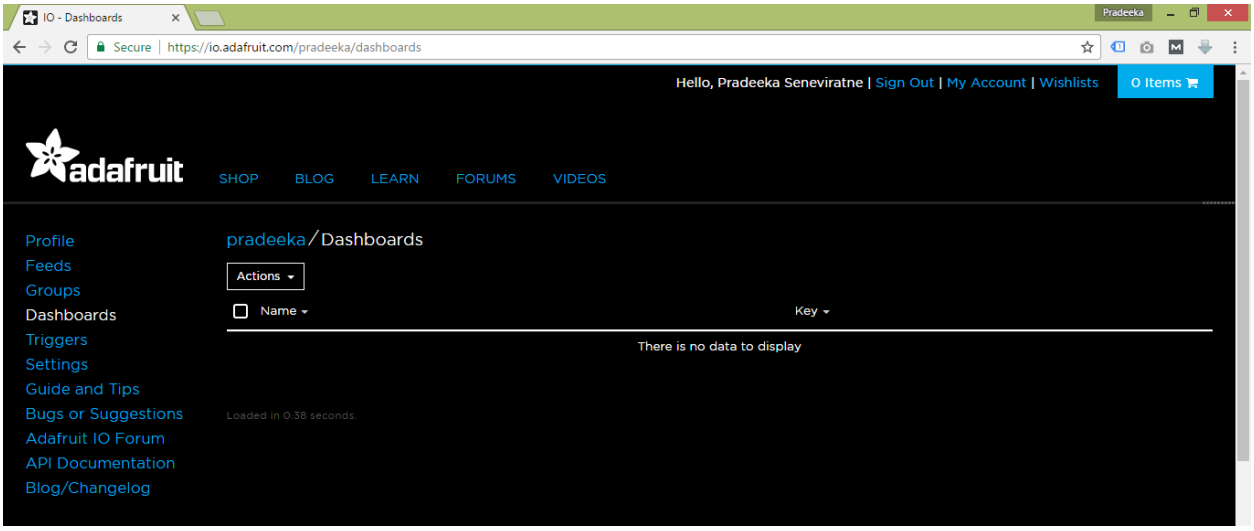

[pi@raspberrypi: ~]
media
File Edit View Bookmarks Go Tools Help
/home/pi/RASPI3JAVA/DigitalPhotoFrame/media
Directory Tree
Desktop
Documents
Downloads
Music
oldconffiles
opencv
Pictures
Public
python_games
RASPI3JAVA
DigitalPhotoFrame
dist
media
<No subfolders>
21549455513.jpg
22064522251.jpg
31325780934.jpg
31356871303.jpg
32018670702.jpg
32018699632.jpg
32048900011.jpg
32167181145.jpg

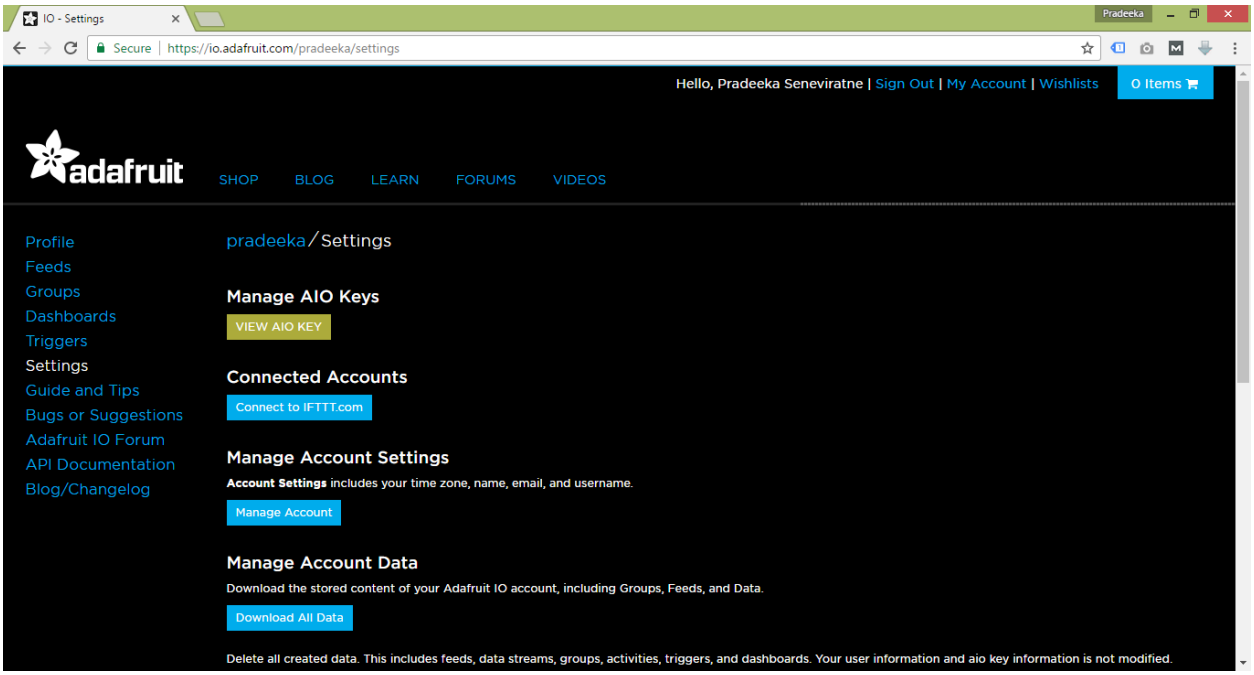

192.168.1.3 - Remote Desktop Connection
10:41 PM
1/10/2017

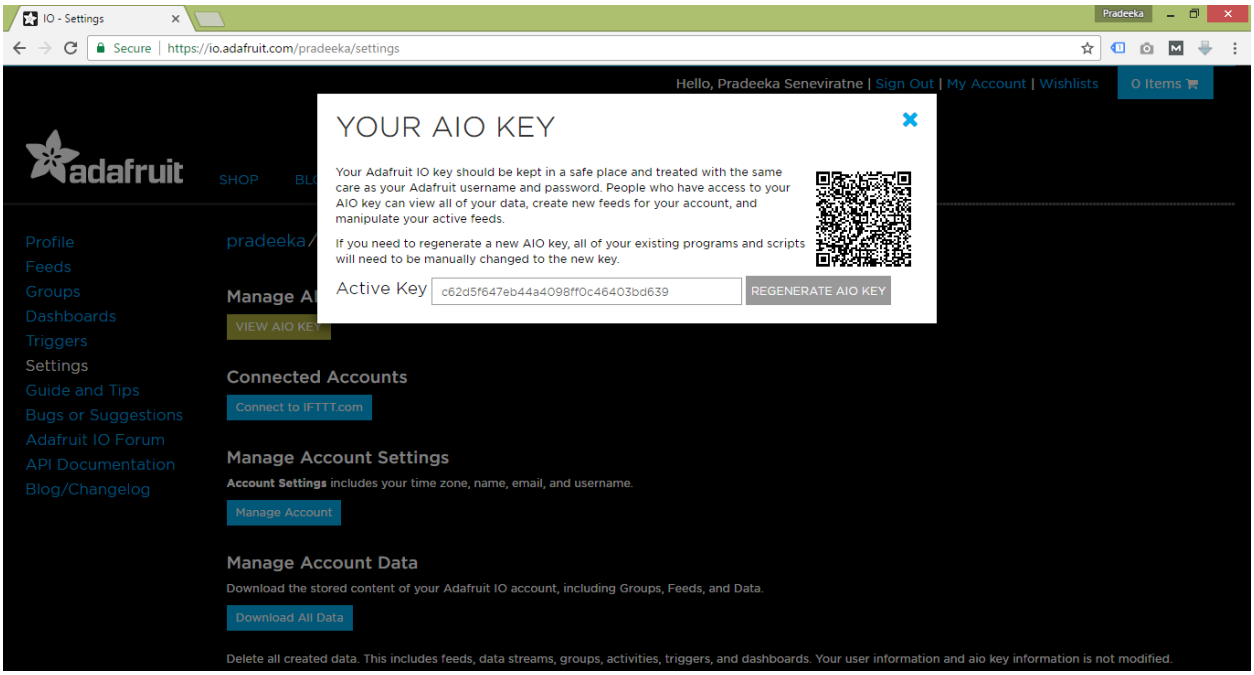

pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ java -jar /home/pi/RASPI3JAVA/DigitalPhotoFrame/dist/DigitalPhotoFrame.jar
https://farm1.staticflickr.com/570/21549455513_51ed2030d3_b.jpg
https://farm6.staticflickr.com/5704/22064522251_154464ea91_b.jpg
https://farm1.staticflickr.com/721/32018699632_abfcdffdca_b.jpg
https://farm1.staticflickr.com/701/31325780934_1007623562_b.jpg
https://farm1.staticflickr.com/292/32167223075_70a7a05b6f_b.jpg
https://farm1.staticflickr.com/273/32048900011_44b34aa063_b.jpg
https://farm1.staticflickr.com/461/32167210005_b36c4d132a_b.jpg
https://farm1.staticflickr.com/727/32018670702_0ea89e6e1c_b.jpg
https://farm1.staticflickr.com/551/31356871303_22e6cc666f_b.jpg
https://farm1.staticflickr.com/689/32167181145_8bc5838cb7_b.jpg
pi@raspberrypi:~ $

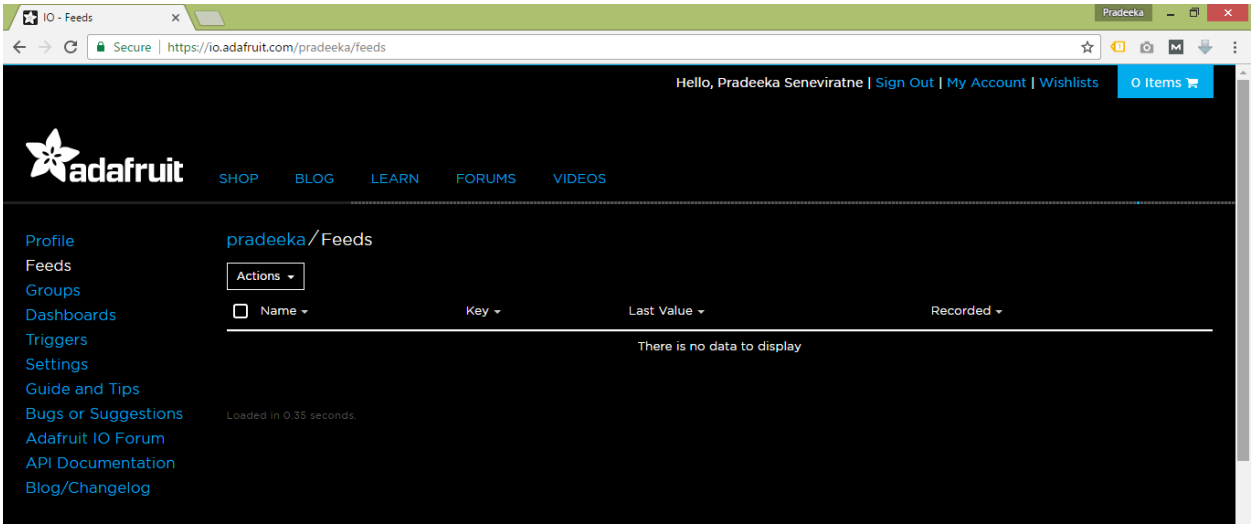

pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ /home/pi/RASPI3JAVA/DigitalPhotoFrame/scripts/digital_photo_frame.sh
https://farm1.staticflickr.com/570/21549455513_51ed2030d3_b.jpg
https://farm6.staticflickr.com/5704/22064522251_154464ea91_b.jpg
https://farm1.staticflickr.com/721/32018699632_abfcdffdca_b.jpg
https://farm1.staticflickr.com/701/31325780934_1007623562_b.jpg
https://farm1.staticflickr.com/292/32167223075_70a7a05b6f_b.jpg
https://farm1.staticflickr.com/273/32048900011_44b34aa063_b.jpg
https://farm1.staticflickr.com/461/32167210005_b36c4d132a_b.jpg
https://farm1.staticflickr.com/727/32018670702_0ea89e6e1c_b.jpg
https://farm1.staticflickr.com/551/31356871303_22e6cc666f_b.jpg
https://farm1.staticflickr.com/689/32167181145_8bc5838cb7_b.jpg
pi@raspberrypi:~ $

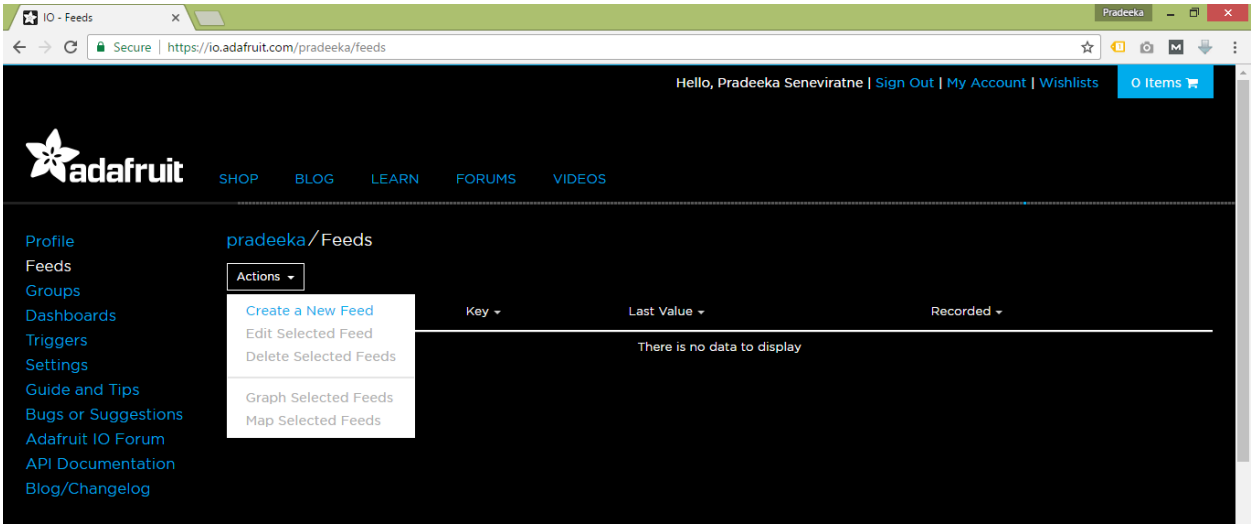
Chapter 4: Integrating a Real-Time IoT Dashboard






IO - Settings
Pradeeka
Secure
https://io.adafruit.com/pradeeka/settings
Hello, Pradeeka Seneviratne | Sign Out | My Account | Wishlists
0 Items
adafruit
SHOP
YOUR AIO KEY
Your Adafruit IO key should be kept in a safe place and treated with the same care as your Adafruit username and password. People who have access to your AIO key can view all of your data, create new feeds for your account, and manipulate your active feeds.
If you need to regenerate a new AIO key, all of your existing programs and scripts will need to be manually changed to the new key.
Active Key
c62d5f647eb44a4098ff0c46403bd639
REGENERATE AIO KEY
Profile
Feeds
Groups
Dashboards
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka/
Manage A
VIEW AIO KEY
Connected Accounts
Connect to IFTTT.com
Manage Account Settings
Account Settings includes your time zone, name, email, and username.
Manage Account
Manage Account Data
Download the stored content of your Adafruit IO account, including Groups, Feeds, and Data.
Download All Data
Delete all created data. This includes feeds, data streams, groups, activities, triggers, and dashboards. Your user information and aio key information is not modified.


IO - Feeds
Pradeeka
Secure
https://io.adafruit.com/pradeeka/feeds
Hello, Pradeeka Seneviratne | Sign Out | My Account | Wishlists
0 Items
adafruit
SHOP
BLOG
LEARN
FORUMS
VIDEOS
Profile
Feeds
Groups
Dashboards
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka/Feeds
Actions
Name
Key
Last Value
Recorded
There is no data to display
Loaded in 0.35 seconds.


IO - Feeds
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Hello, Pradeeka Seneviratne | Sign Out | My Account | Wishlists
0 Items
adafruit
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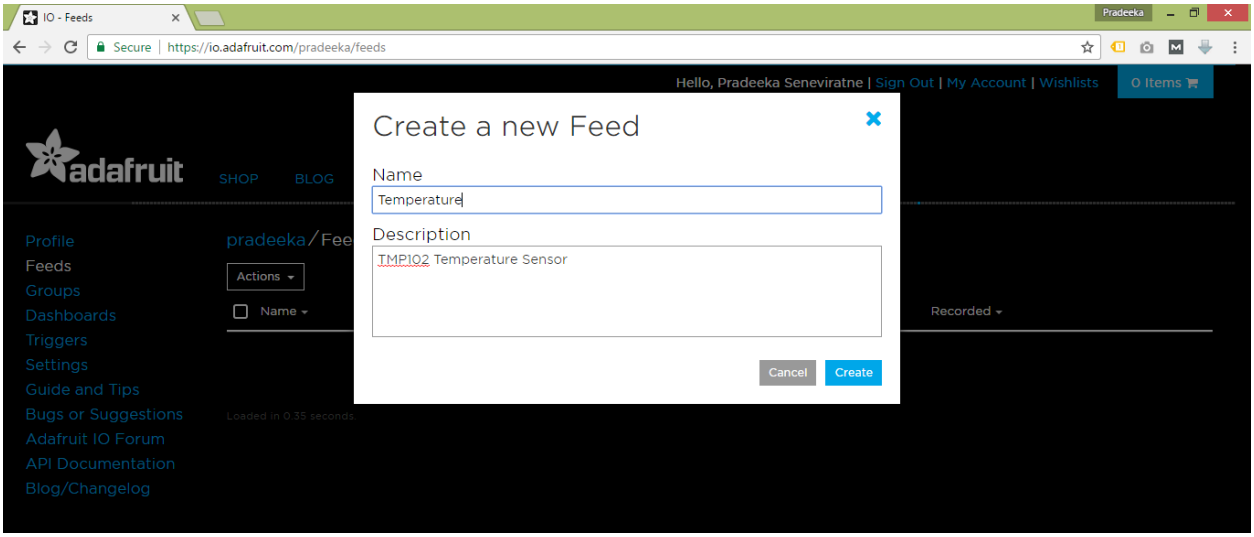
VIDEOS
Profile
Feeds
Groups
Dashboards
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka / Feeds
Actions
Create a New Feed
Edit Selected Feed
Delete Selected Feeds
Graph Selected Feeds
Map Selected Feeds
Key
Last Value
Recorded
There is no data to display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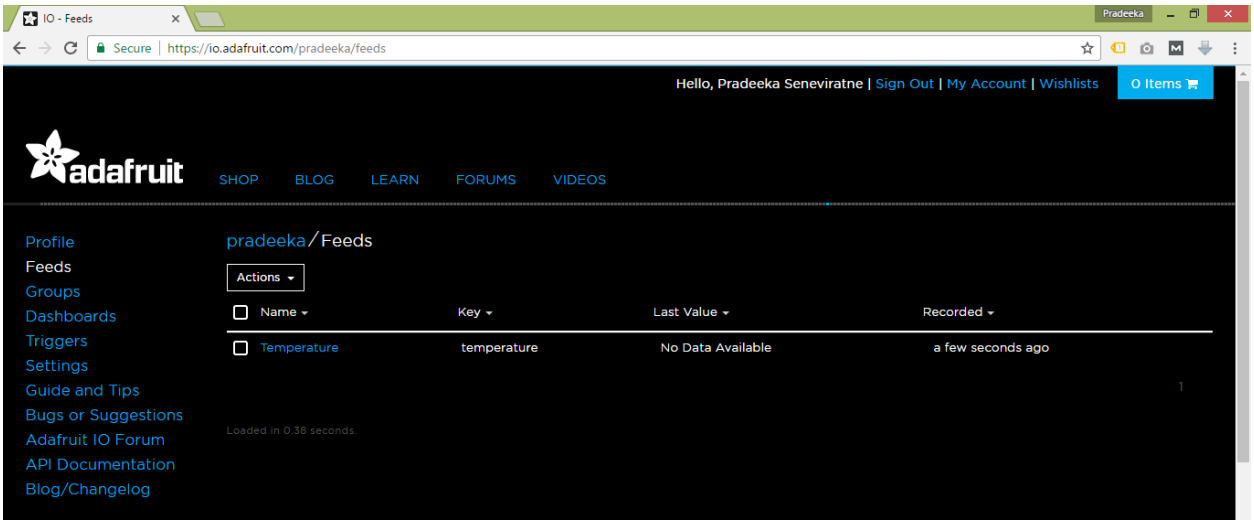
SHOP
BLOG
Create a new Feed
Name
Temperature
Description
TMP102 Temperature Sensor
Cancel
Create
Profile
Feeds
Groups
Dashboards
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
Actions
Name
Recorded


IO - Feeds
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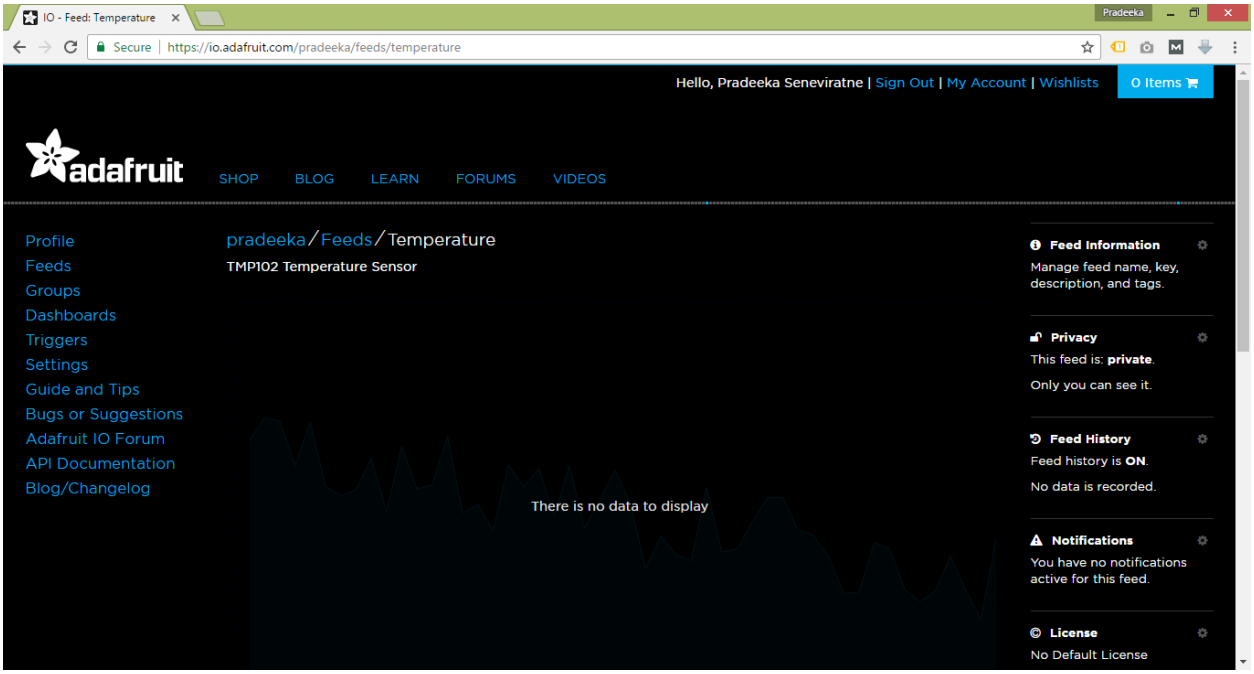
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka / Feeds
Actions
Name
Key
Last Value
Recorded
Temperature
temperature
No Data Available
a few seconds ago
Loaded in 0.38 seconds.


IO - Feed: Temperature
Pradeeka
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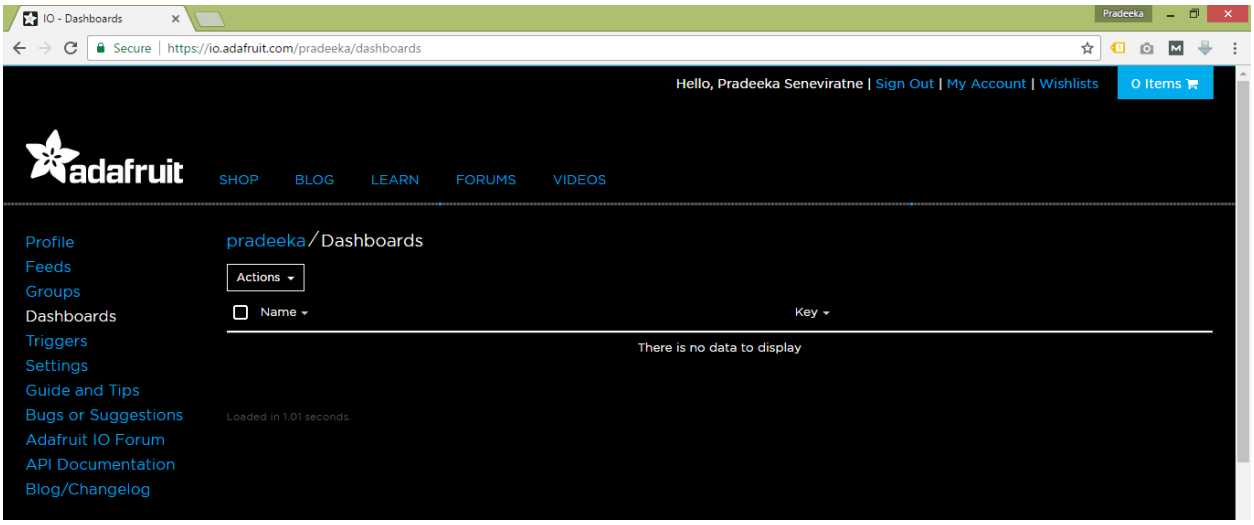
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka / Feeds / Temperature
TMP102 Temperature Sensor
There is no data to display
Feed Information
Manage feed name, key, description, and tags.
Privacy
This feed is: private.
Only you can see it.
Feed History
Feed history is ON.
No data is recorded.
Notifications
You have no notifications active for this feed.
License
No Default License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Bugs or Suggestions
Adafruit IO Forum
API Documentation
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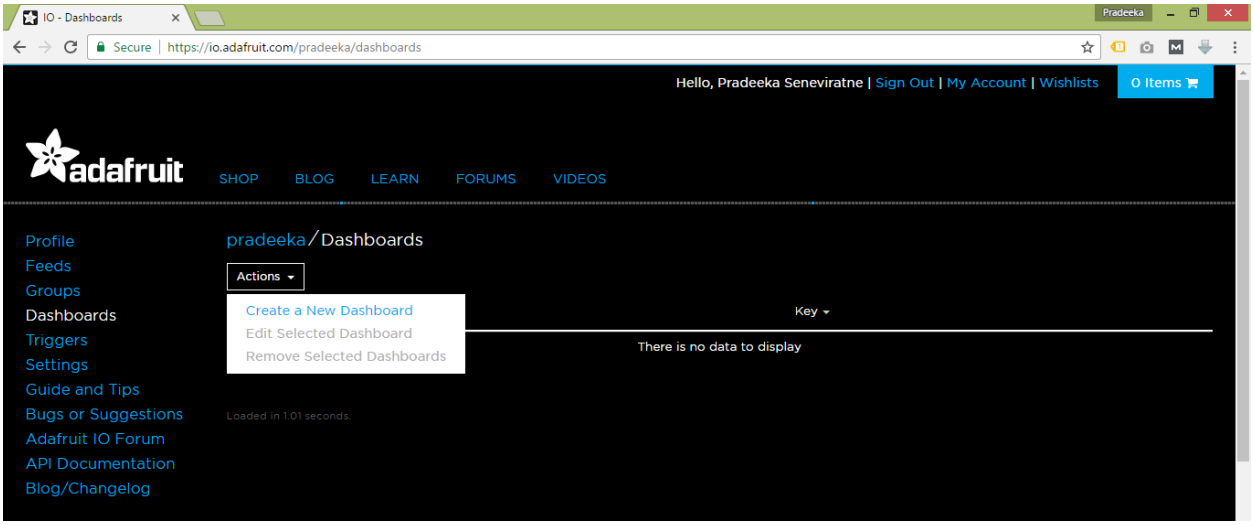
pradeeka / Dashboards
Actions
Name
Key
There is no data to display
Loaded in 1.01 seconds.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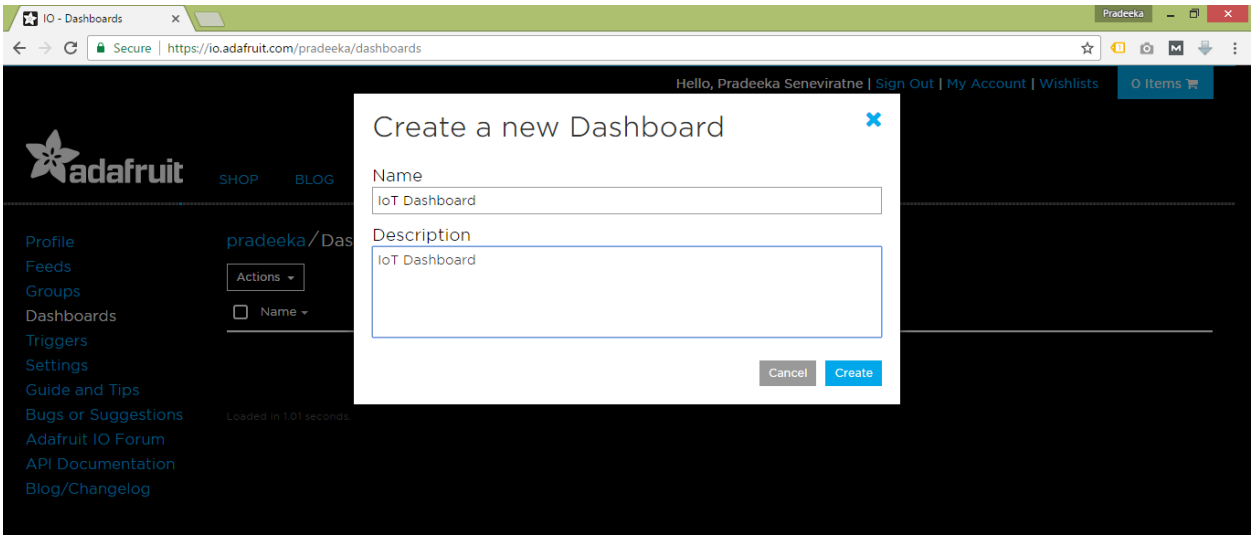
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka / Dashboards
Actions
Create a New Dashboard
Edit Selected Dashboard
Remove Selected Dashboards
Key
There is no data to display
Loaded in 1.01 seconds.


IO - Dashboards
Pradeeka
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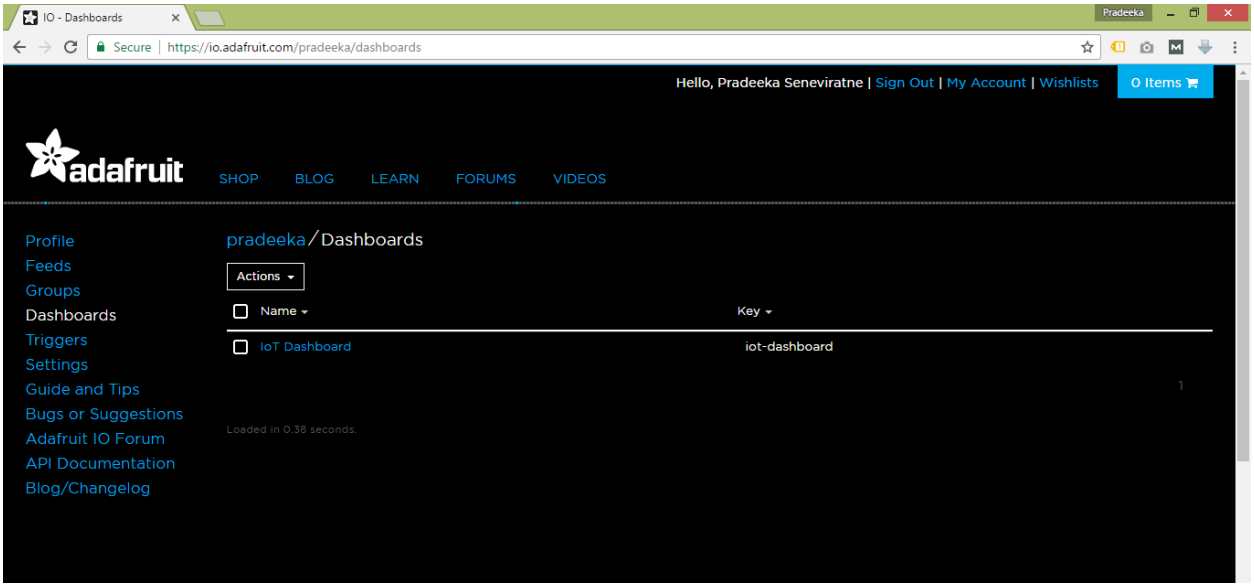
0 Items
adafruit
SHOP
BLOG
Create a new Dashboard
Name
IoT Dashboard
Description
IoT Dashboard
Cancel
Create
Profile
Feeds
Groups
Dashboards
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka/Das
Actions
Name
Loaded in 1.01 seconds.


IO - Dashboards
Pradeeka
Secure | https://io.adafruit.com/pradeeka/dashboards
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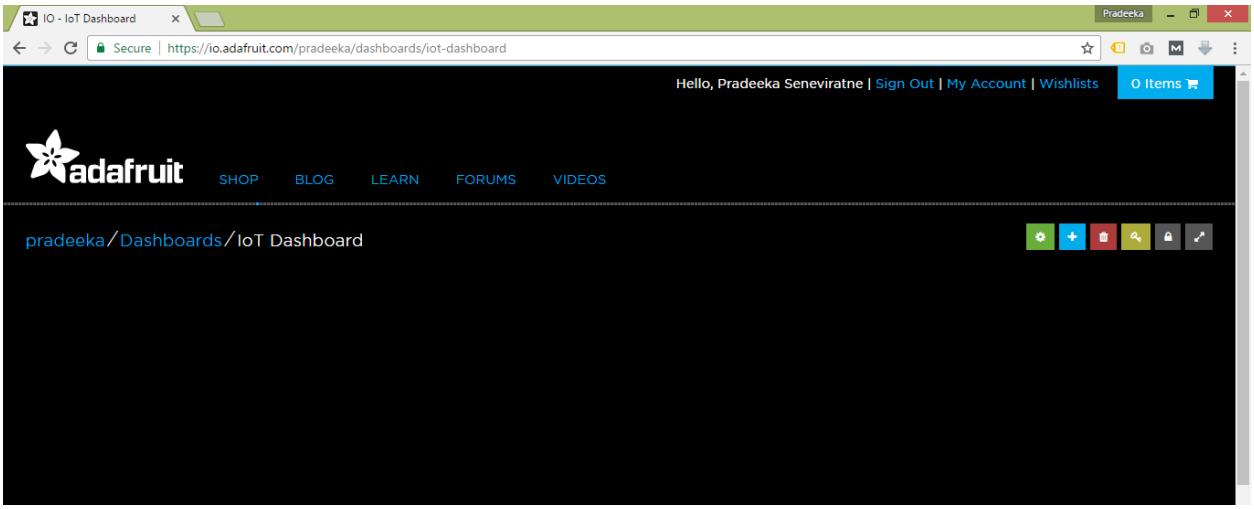
Dashboards
Triggers
Settings
Guide and Tips
Bugs or Suggestions
Adafruit IO Forum
API Documentation
Blog/Changelog
pradeeka/Dashboards
Actions
Name
Key
IoT Dashboard
iot-dashboard
Loaded in 0.38 seconds.


IO - IoT Dashboard
Pradeeka
Secure | https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
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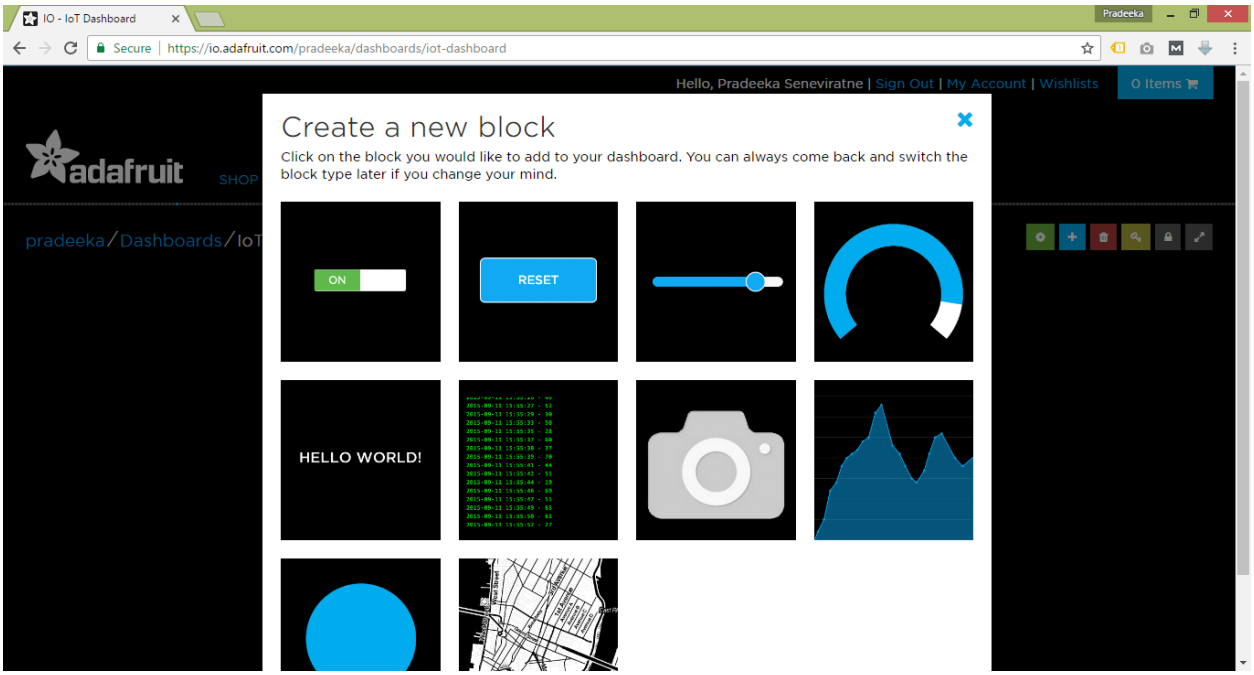
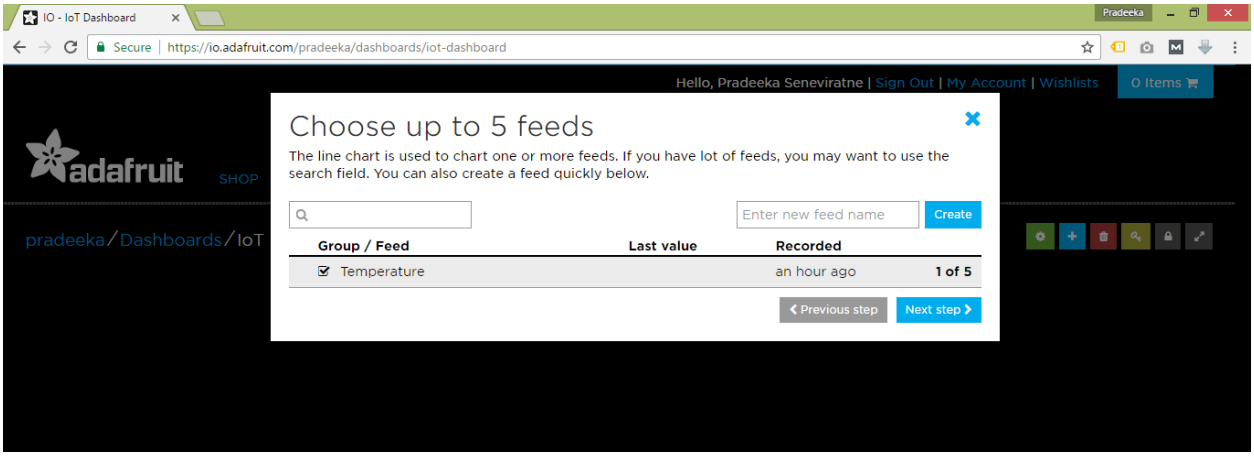
pradeeka / Dashboards / IoT Dashboard


IO - IoT Dashboard
Pradeeka
Secure | https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
Hello, Pradeeka Seneviratne | Sign Out | My Account | Wishlists
0 Items
adafruit
SHOP
pradeeka / Dashboards / IoT
Create a new block
Click on the block you would like to add to your dashboard. You can always come back and switch the block type later if you change your mind.
ON
RESET
HELLO WORLD!


IO - IoT Dashboard
Pradeeka
Secure | https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
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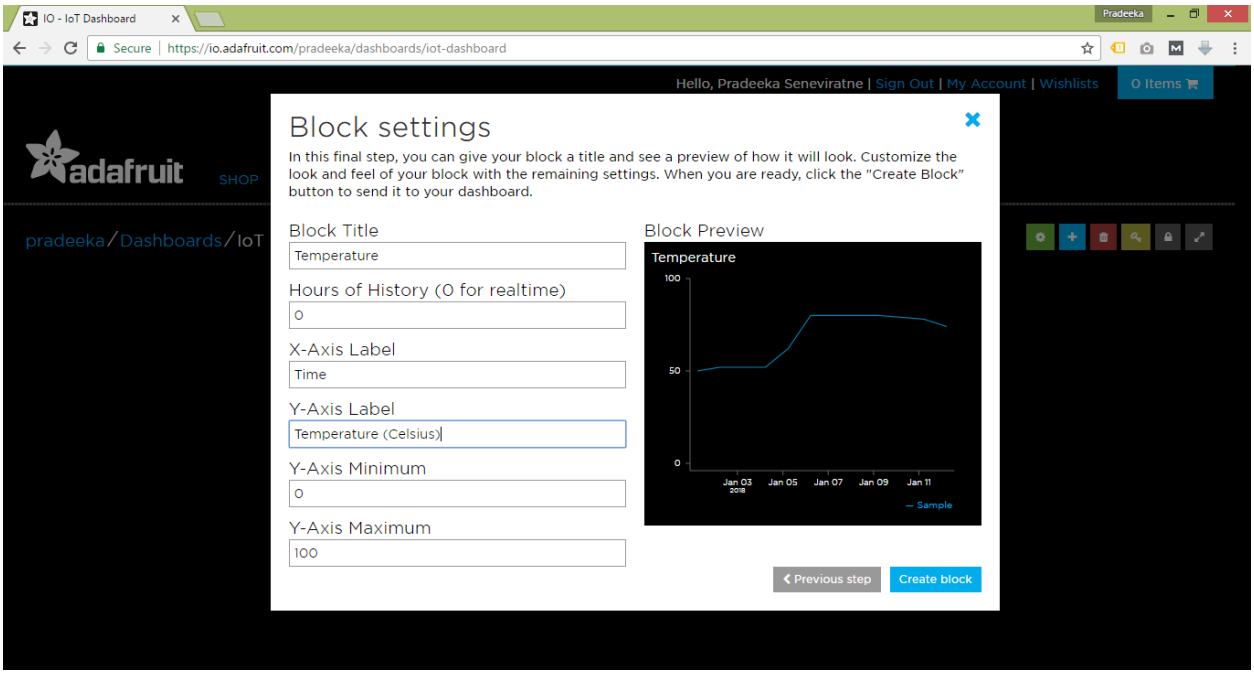
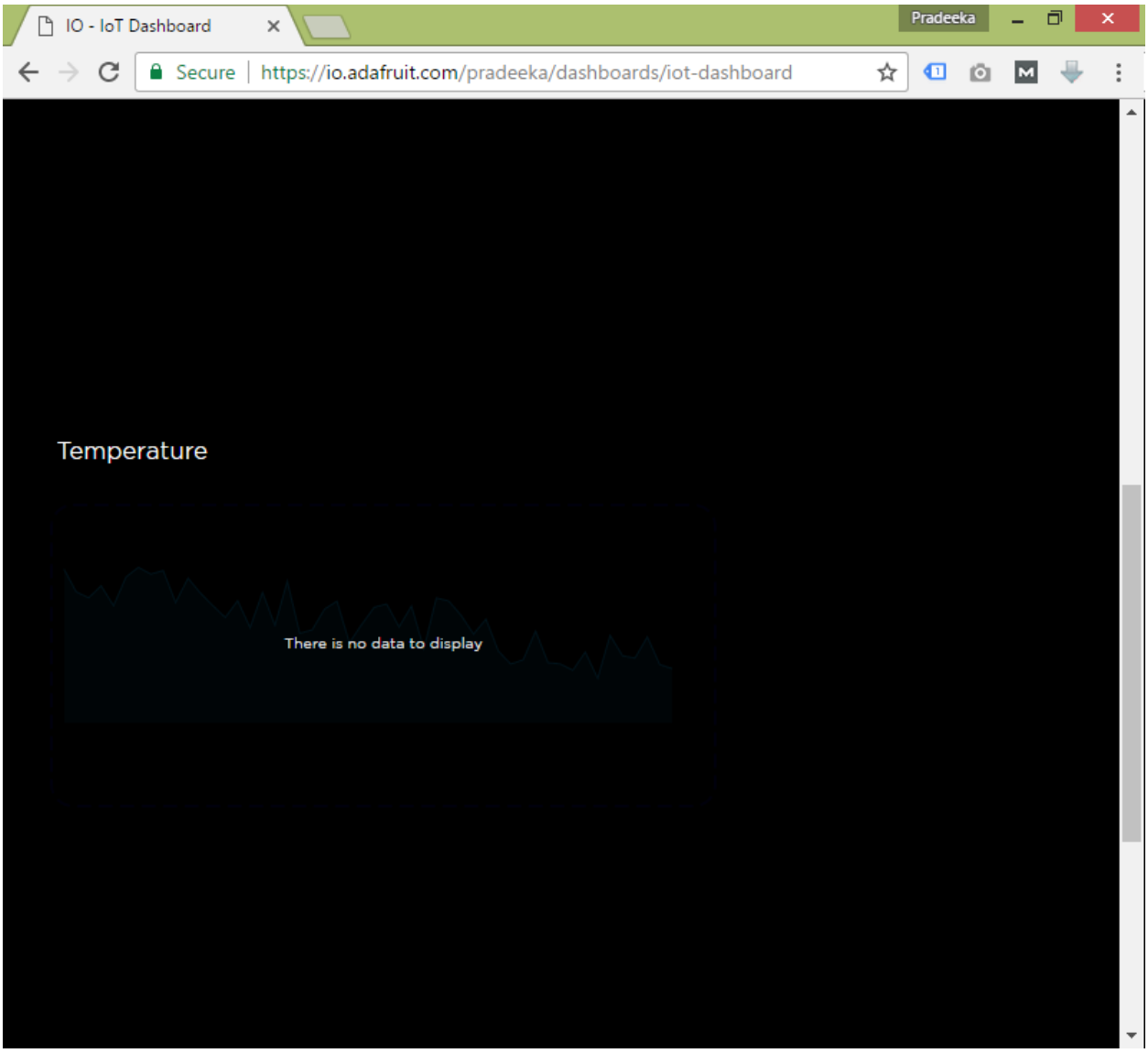
0 Items
adafruit
SHOP
pradeeka/Dashboards/IoT
Choose up to 5 feeds
The line chart is used to chart one or more feeds. If you have lot of feeds, you may want to use the search field. You can also create a feed quickly below.
Enter new feed name
Create
Group / Feed
Last value
Recorded
Temperature
an hour ago
1 of 5
Previous step
Next step


IO - IoT Dashboard
Pradeeka
Secure | https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
Hello, Pradeeka Seneviratne | Sign Out | My Account | Wishlists
0 Items
adafruit
SHOP
pradeeka/Dashboards/IoT
Block settings
In this final step, you can give your block a title and see a preview of how it will look. Customize the look and feel of your block with the remaining settings. When you are ready, click the "Create Block" button to send it to your dashboard.
Block Title
Temperature
Hours of History (0 for realtime)
0
X-Axis Label
Time
Y-Axis Label
Temperature (Celsius)
Y-Axis Minimum
0
Y-Axis Maximum
100
Block Preview
Temperature
100
50
0
Jan 03
2018
Jan 05
Jan 07
Jan 09
Jan 11
Sample
Previous step
Create block


IO - IoT Dashboard
Pradeeka
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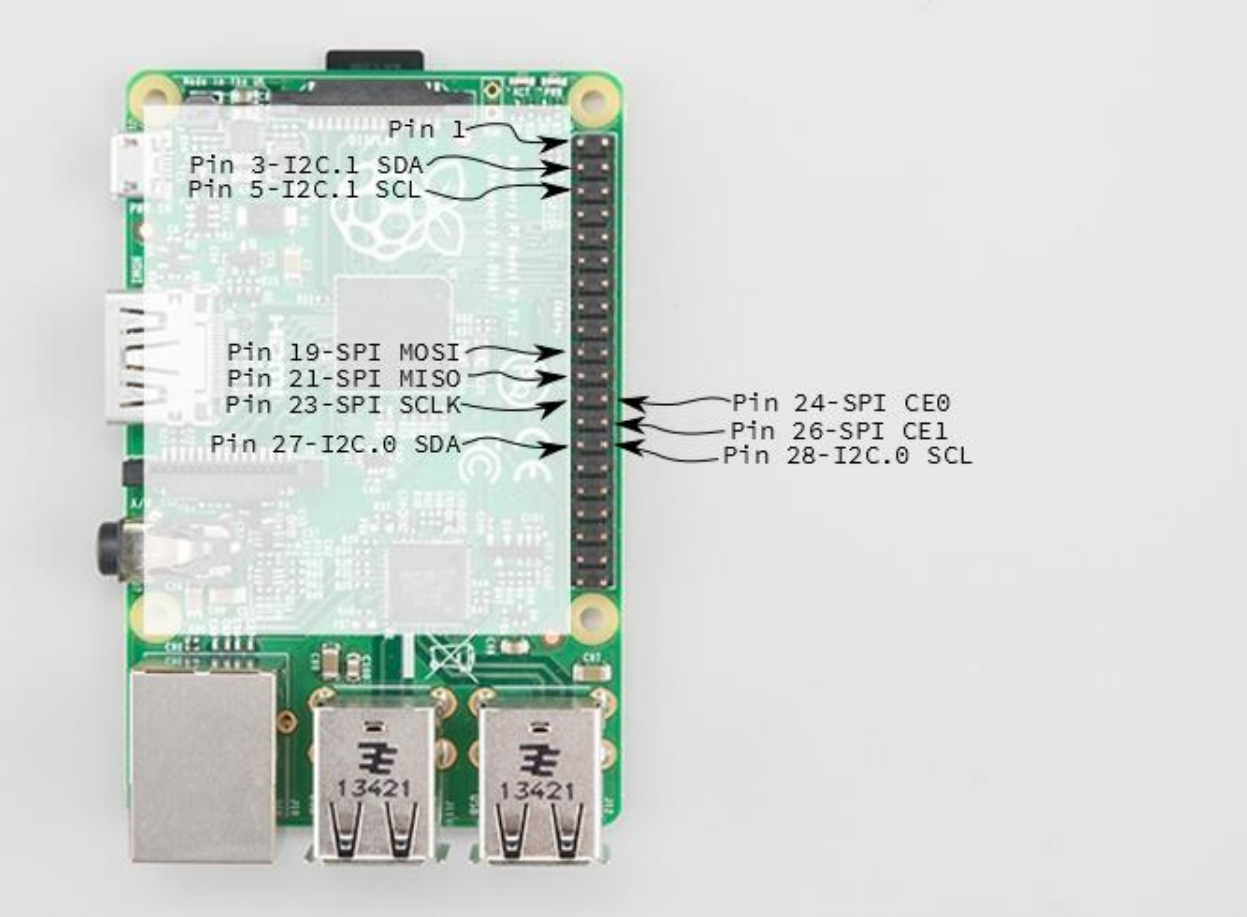
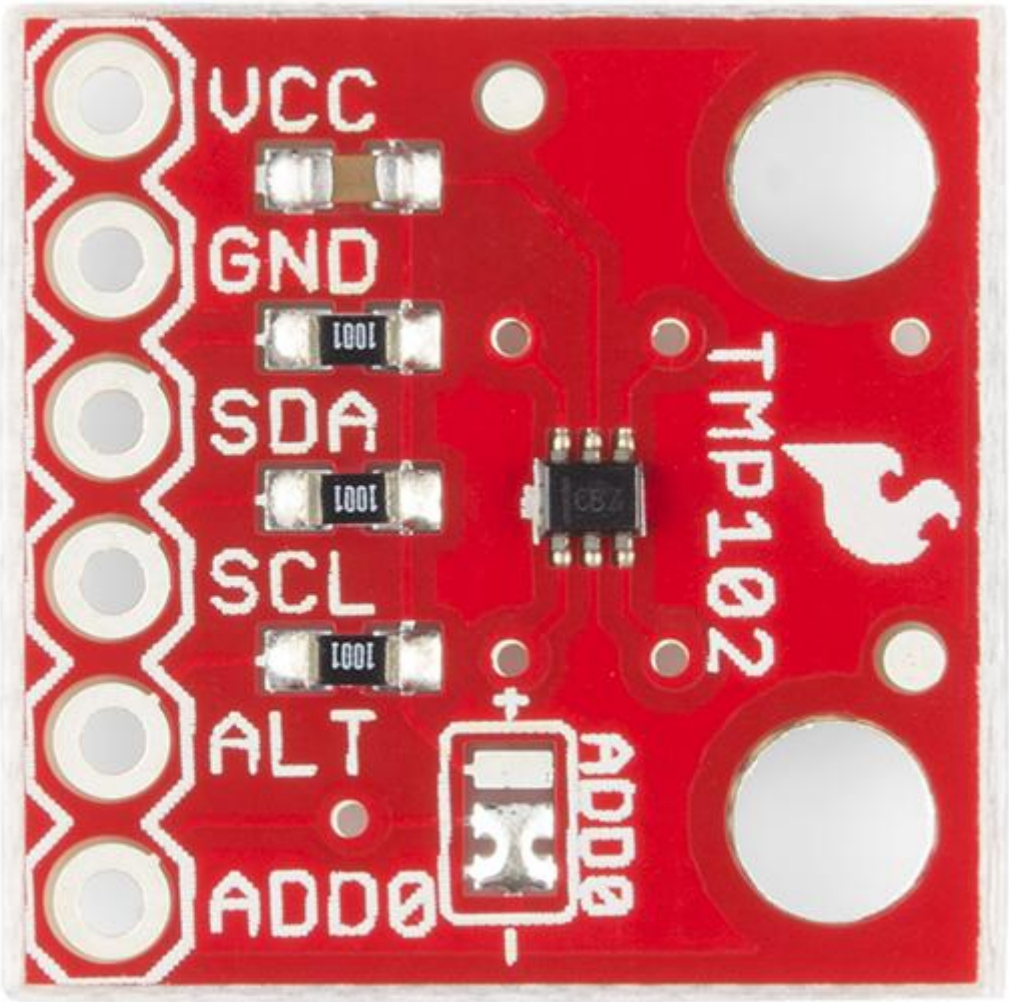
https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
Temperature
There is no data to display


Pin 1
Pin 3-I2C.1 SDA
Pin 5-I2C.1 SCL
Pin 19-SPI MOSI
Pin 21-SPI MISO
Pin 23-SPI SCLK
Pin 27-I2C.0 SDA
Pin 24-SPI CE0
Pin 26-SPI CE1
Pin 28-I2C.0 SCL
13421
13421


VCC
GND
SDA
SCL
ALT
ADD0
TMP102
ADD0

www.ti.com/product/TMP102

TEXAS INSTRUMENTS

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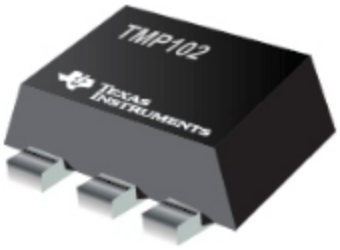
Recommendations from TI.com: Reference designs selected for you

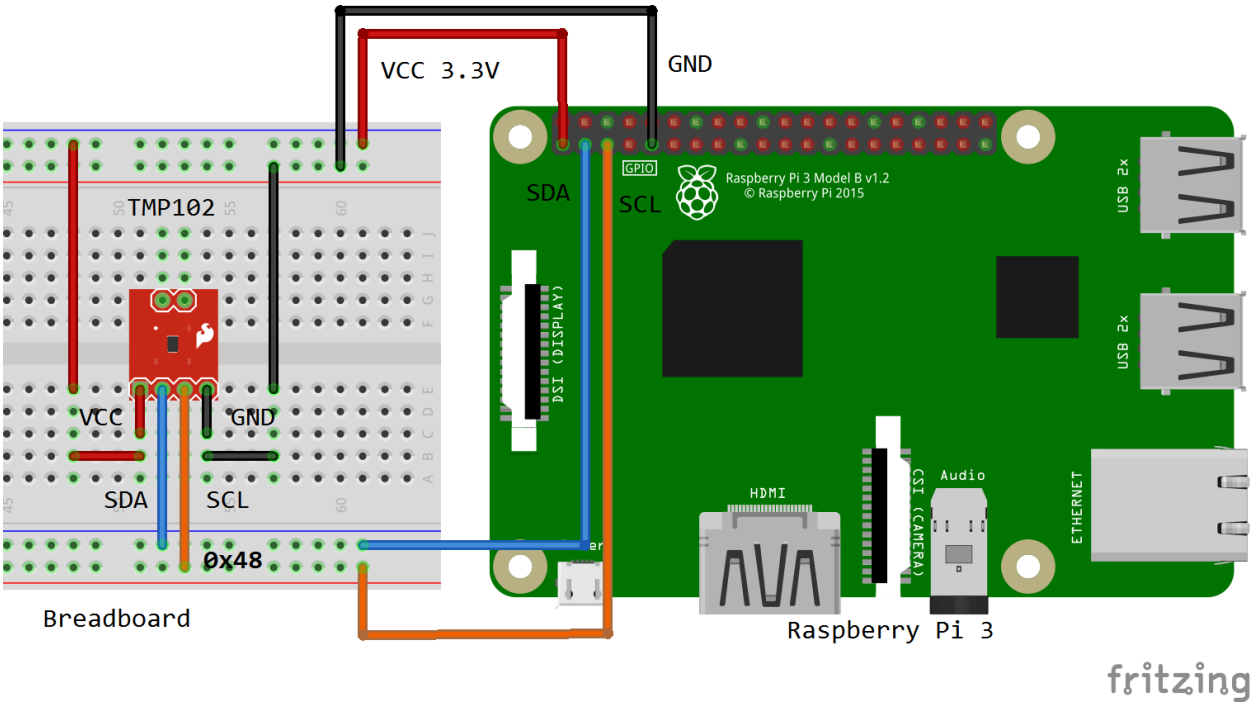


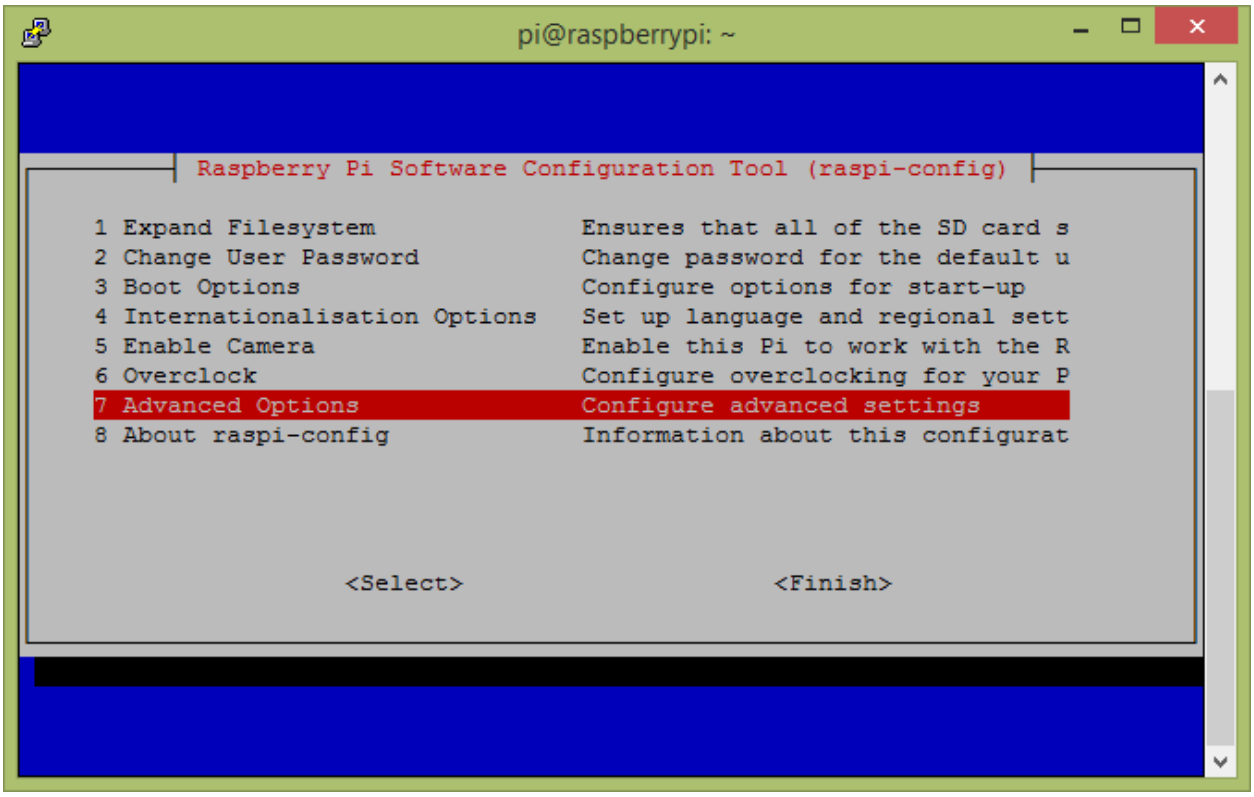
TI Home > Semiconductors > Sensing Products > Temperatu

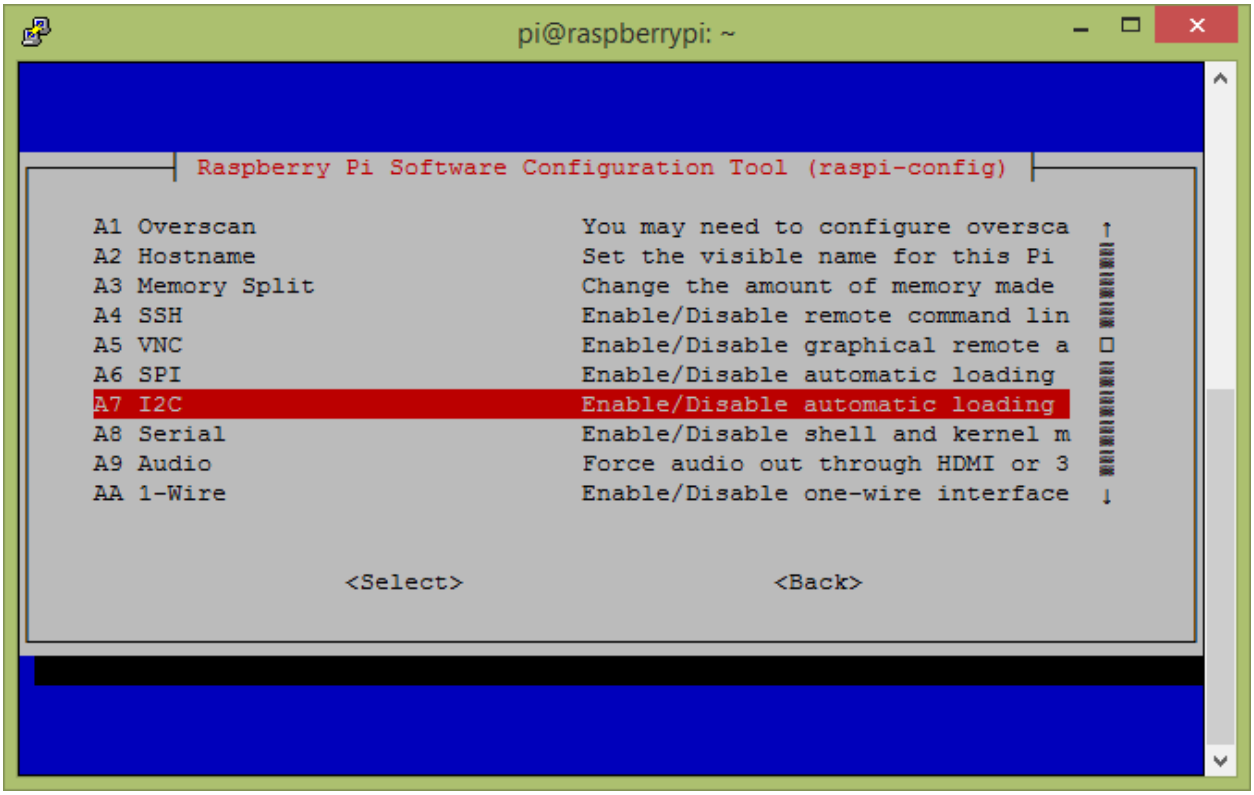
TMP102 (ACTIVE)

1.4V-Capable Temperature Sensor SOT-563

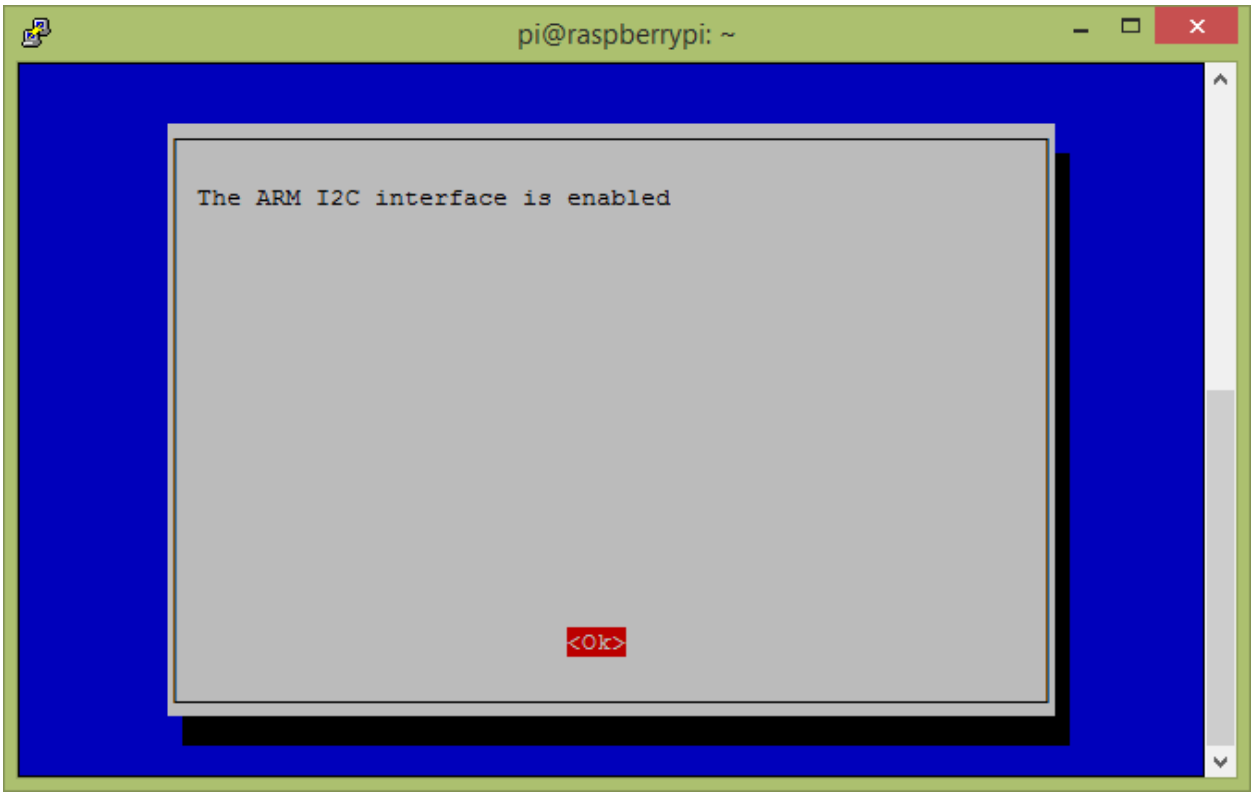
TMP102 Low-Power Digital Temperature S
F)

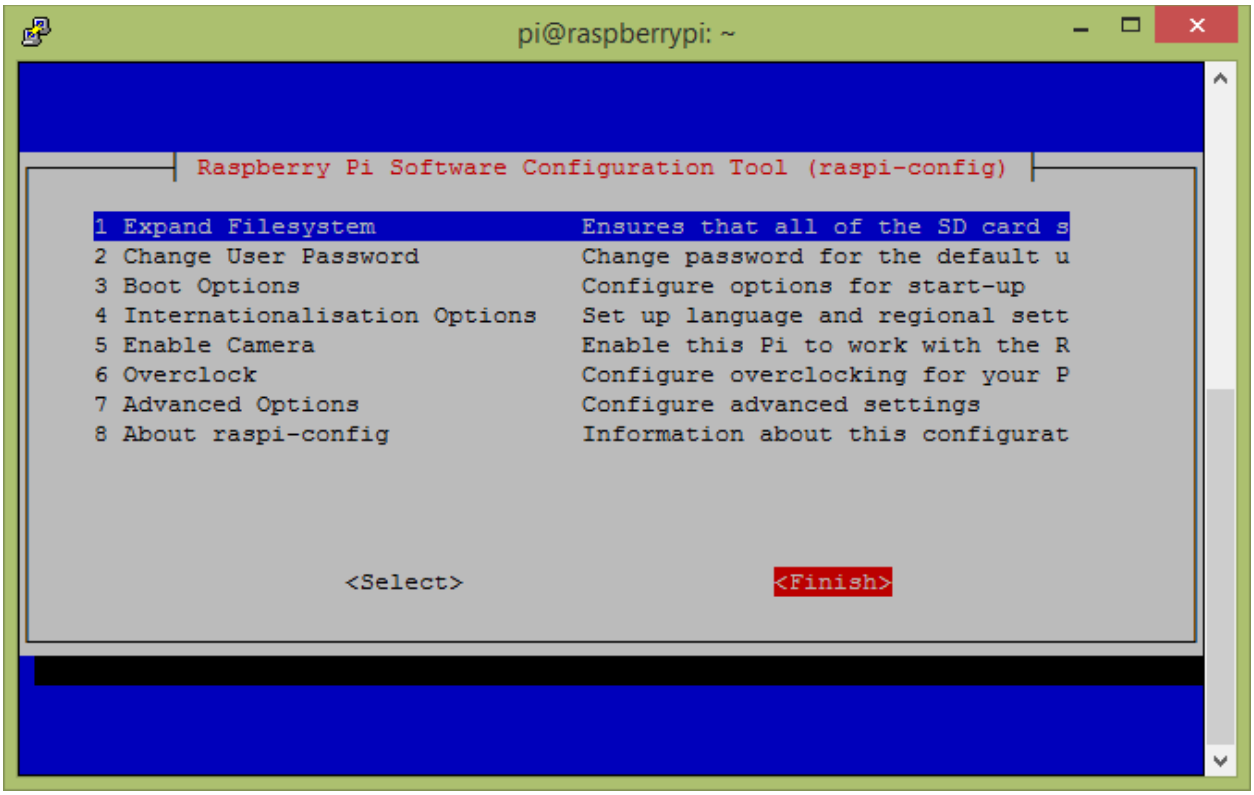

VCC 3.3V
GND
TMP102
VCC
GND
SDA
SCL
0x48
Breadboard
SDA
SCL
GPIO
Raspberry Pi 3 Model B v1.2
© Raspberry Pi 2015
DSI (DISPLAY)
HDMI
CSI (CAMERA)
Audio
USB 2x
USB 2x
ETHERNET
Raspberry Pi 3
fritzing

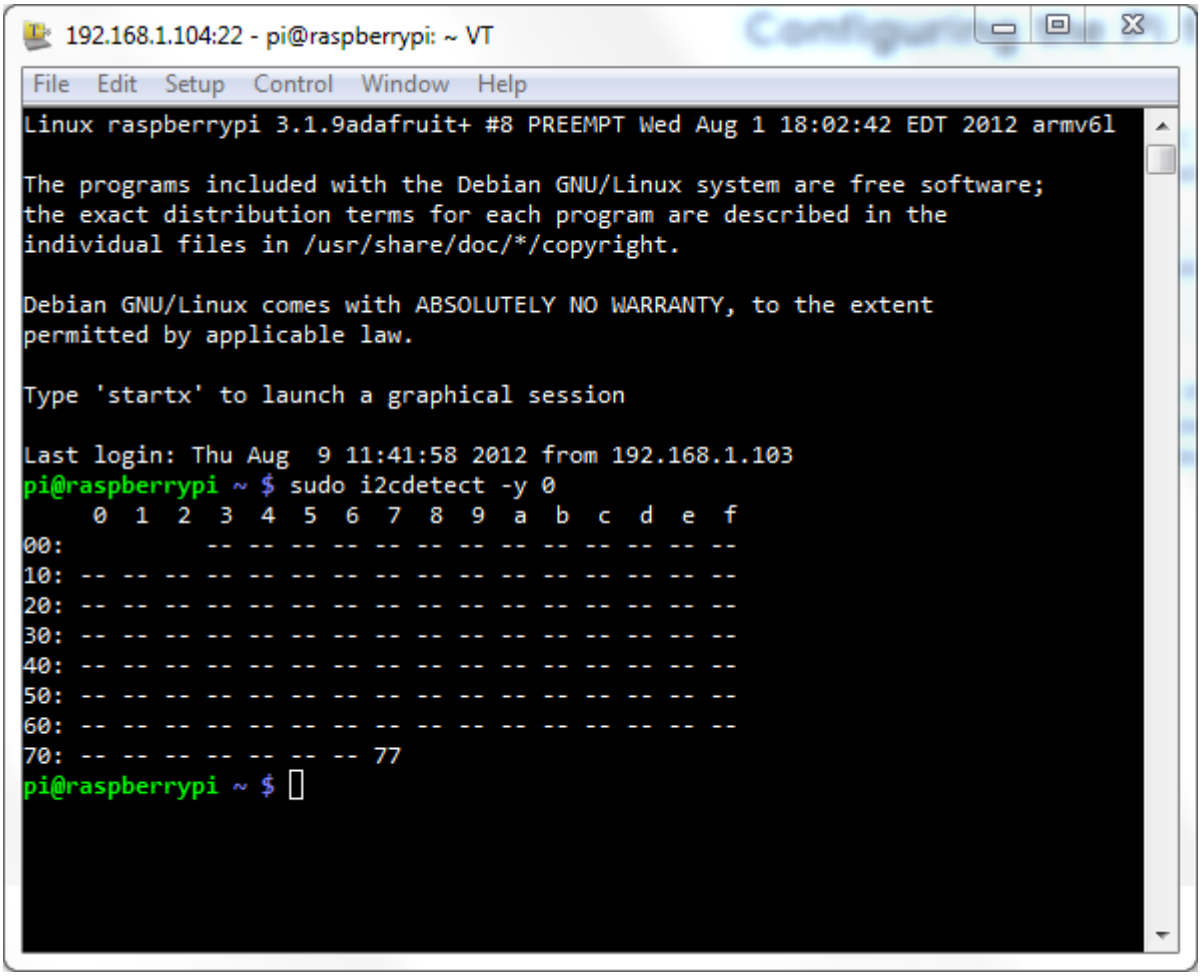

pi@raspberrypi: ~
Raspberry Pi Software Configuration Tool (raspi-config)
1 Expand Filesystem Ensures that all of the SD card s
2 Change User Password Change password for the default u
3 Boot Options Configure options for start-up
4 Internationalisation Options Set up language and regional sett
5 Enable Camera Enable this Pi to work with the R
6 Overclock Configure overclocking for your P
7 Advanced Options Configure advanced settings
8 About raspi-config Information about this configurat
<Select>
<Finish>

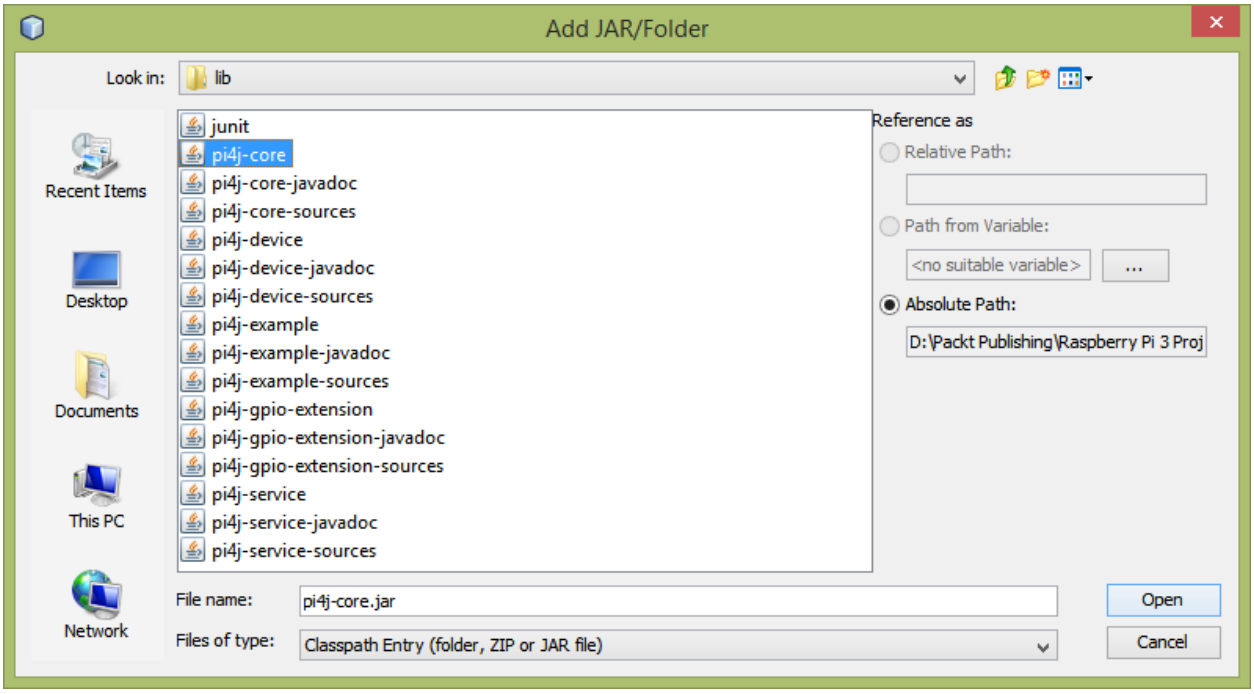

pi@raspberrypi: ~
Raspberry Pi Software Configuration Tool (raspi-config)
A1 Overscan
You may need to configure oversca
A2 Hostname
Set the visible name for this Pi
A3 Memory Split
Change the amount of memory made
A4 SSH
Enable/Disable remote command lin
A5 VNC
Enable/Disable graphical remote a
A6 SPI
Enable/Disable automatic loading
A7 I2C
Enable/Disable automatic loading
A8 Serial
Enable/Disable shell and kernel m
A9 Audio
Force audio out through HDMI or 3
AA 1-Wire
Enable/Disable one-wire interface
<Select>
<Back>

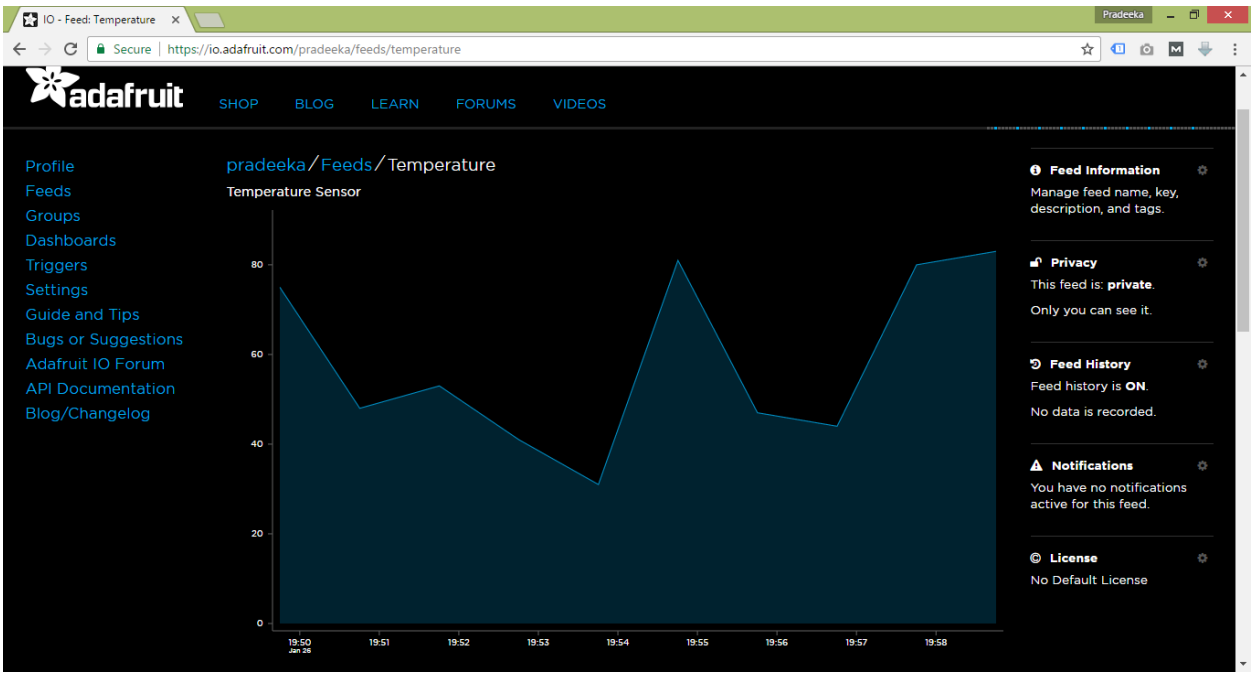

pi@raspberrypi: ~
Would you like the ARM I2C interface to be enabled?
<Yes>
<No>


pi@raspberrypi: ~
The ARM I2C interface is enabled
<Ok>


pi@raspberrypi: ~
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 Configure options for start-up
4 Internationalisation Options Set up language and regional sett
5 Enable Camera Enable this Pi to work with the R
6 Overclock Configure overclocking for your P
7 Advanced Options Configure advanced settings
8 About raspi-config Information about this configurat
<Select>
<Finish>


192.168.1.104:22 - pi@raspberrypi: ~ VT
File Edit Setup Control Window Help
Linux raspberrypi 3.1.9adafruit+ #8 PREEMPT Wed Aug 1 18:02:42 EDT 2012 armv6l
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Type 'startx' to launch a graphical session
Last login: Thu Aug 9 11:41:58 2012 from 192.168.1.103
pi@raspberrypi ~ $ sudo i2cdetect -y 0
0 1 2 3 4 5 6 7 8 9 a b c d e f
00: -- -- -- -- -- -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- 77
pi@raspberrypi ~ $


Add JAR/Folder
Look in:
lib
junit
pi4j-core
pi4j-core-javadoc
pi4j-core-sources
pi4j-device
pi4j-device-javadoc
pi4j-device-sources
pi4j-example
pi4j-example-javadoc
pi4j-example-sources
pi4j-gpio-extension
pi4j-gpio-extension-javadoc
pi4j-gpio-extension-sources
pi4j-service
pi4j-service-javadoc
pi4j-service-sources
Recent Items
Desktop
Documents
This PC
Network
Reference as
Relative Path:
Path from Variable:
<no suitable variable>
...
Absolute Path:
D:\Packt Publishing\Raspberry Pi 3 Proj
File name:
pi4j-core.jar
Files of type:
Classpath Entry (folder, ZIP or JAR file)
Open
Cancel


IO - Feed: Temperature
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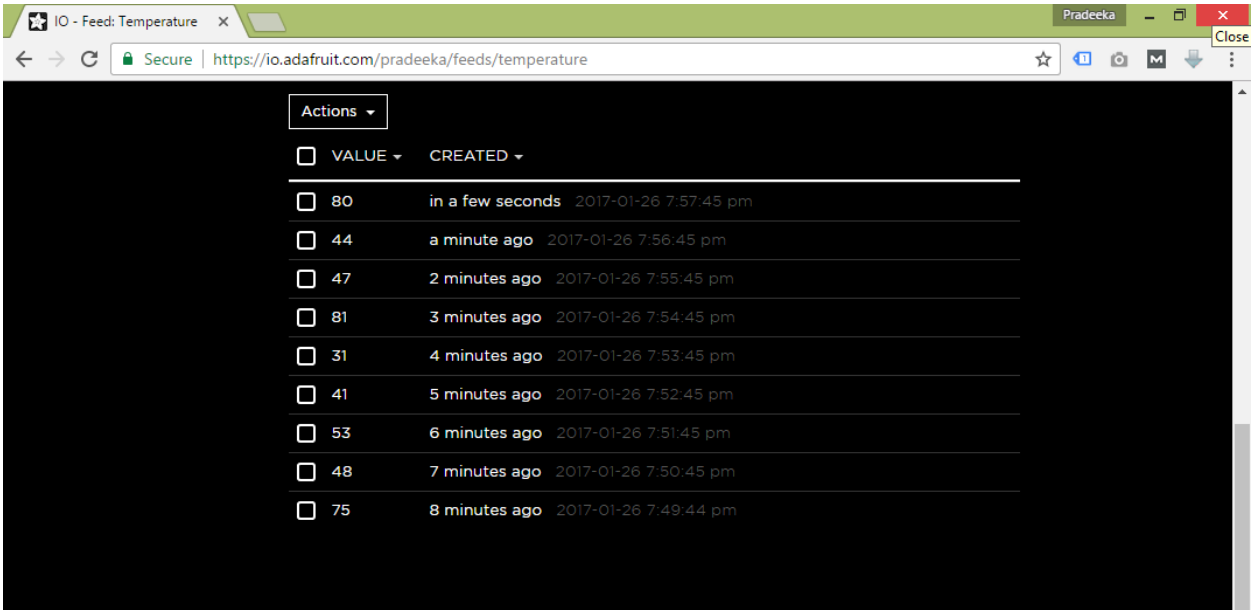
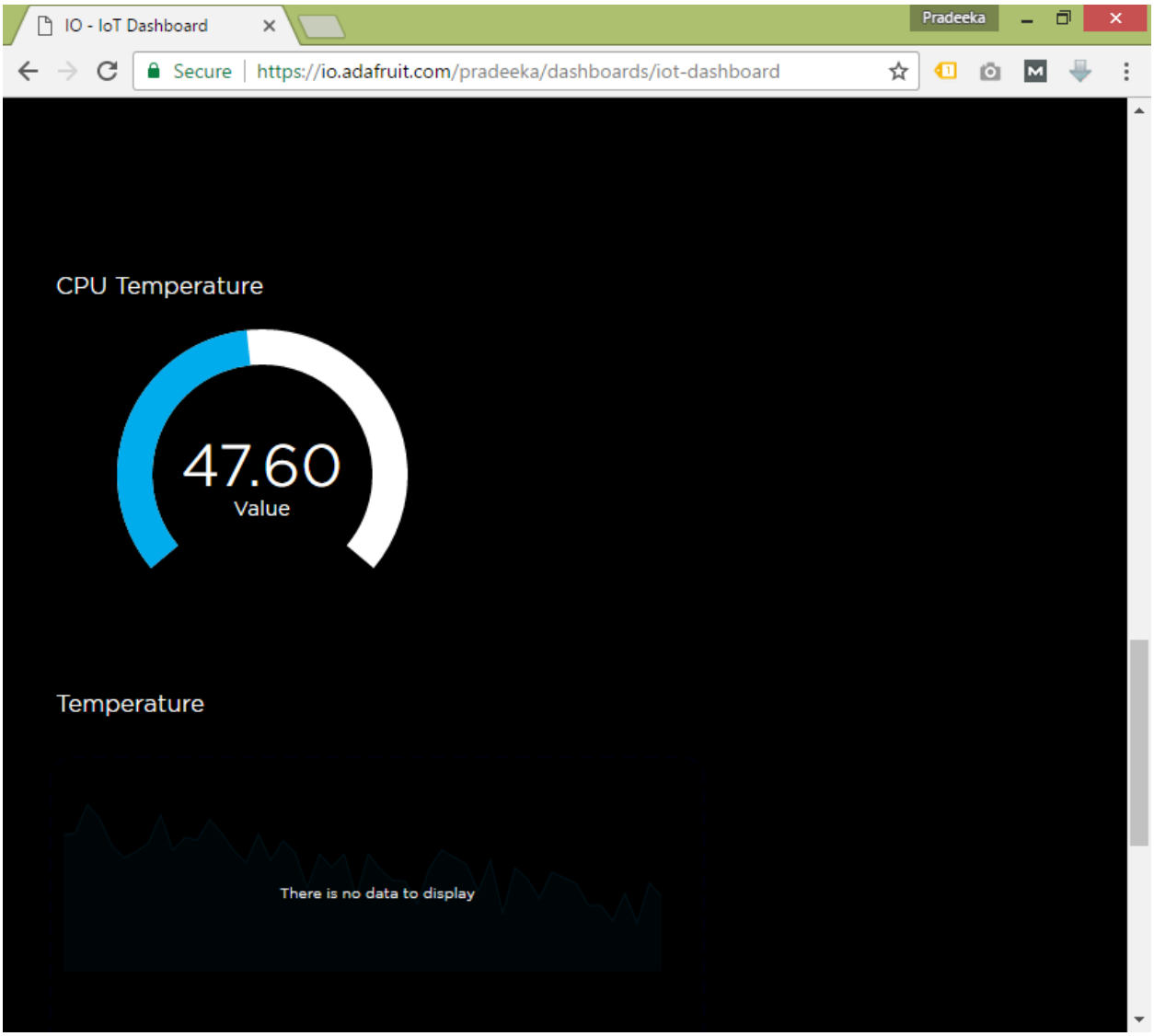
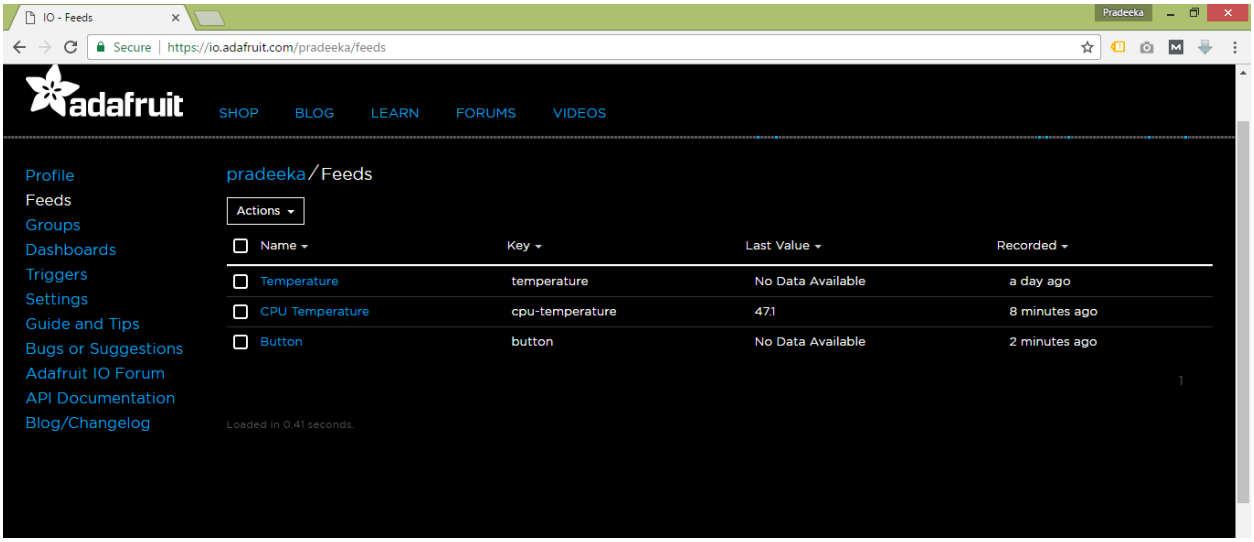
pradeeka / Feeds / Temperature
Temperature Sensor
80
60
40
20
0
19:50
Jan 26
19:51
19:52
19:53
19:54
19:55
19:56
19:57
19:58
Feed Information
Manage feed name, key, description, and tags.
Privacy
This feed is: private.
Only you can see it.
Feed History
Feed history is ON.
No data is recorded.
Notifications
You have no notifications active for this feed.
License
No Default License


IO - Feed: Temperature
Pradeeka
Close
Secure
https://io.adafruit.com/pradeeka/feeds/temperature
Actions
VALUE
CREATED
80 in a few seconds 2017-01-26 7:57:45 pm
44 a minute ago 2017-01-26 7:56:45 pm
47 2 minutes ago 2017-01-26 7:55:45 pm
81 3 minutes ago 2017-01-26 7:54:45 pm
31 4 minutes ago 2017-01-26 7:53:45 pm
41 5 minutes ago 2017-01-26 7:52:45 pm
53 6 minutes ago 2017-01-26 7:51:45 pm
48 7 minutes ago 2017-01-26 7:50:45 pm
75 8 minutes ago 2017-01-26 7:49:44 pm


IO - IoT Dashboard
Pradeeka
Secure
https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
CPU Temperature
47.60
Value
Temperature
There is no data to display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Bugs or Suggestions
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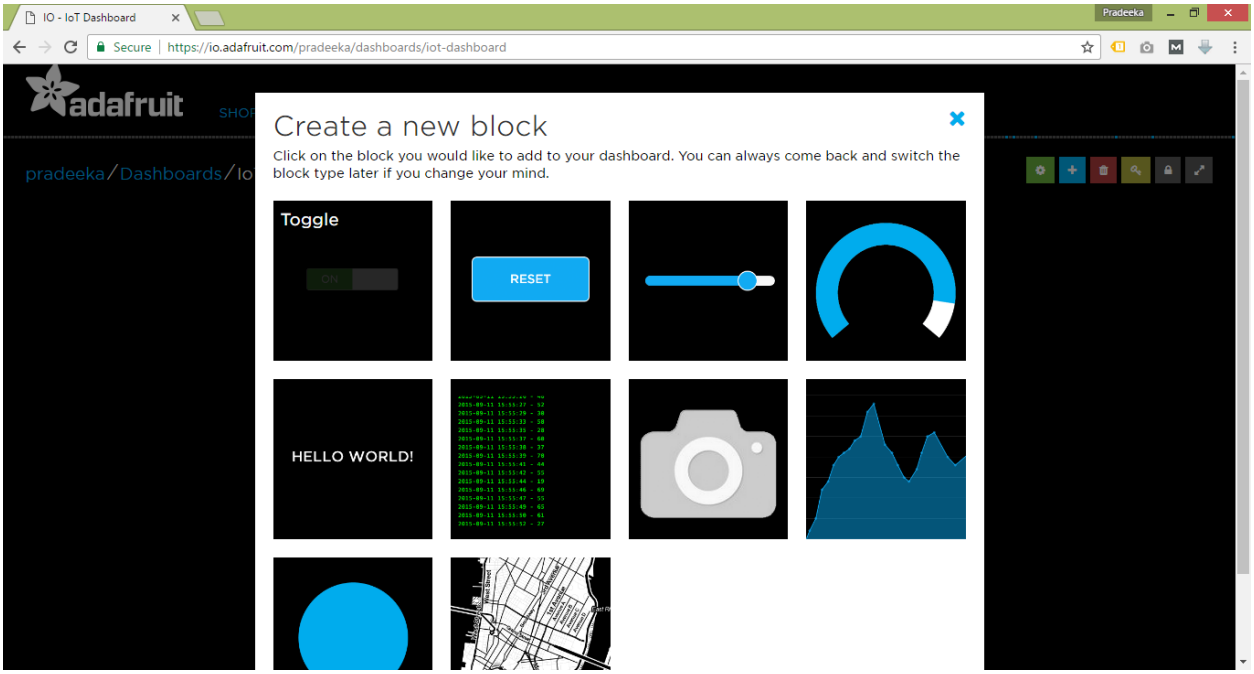
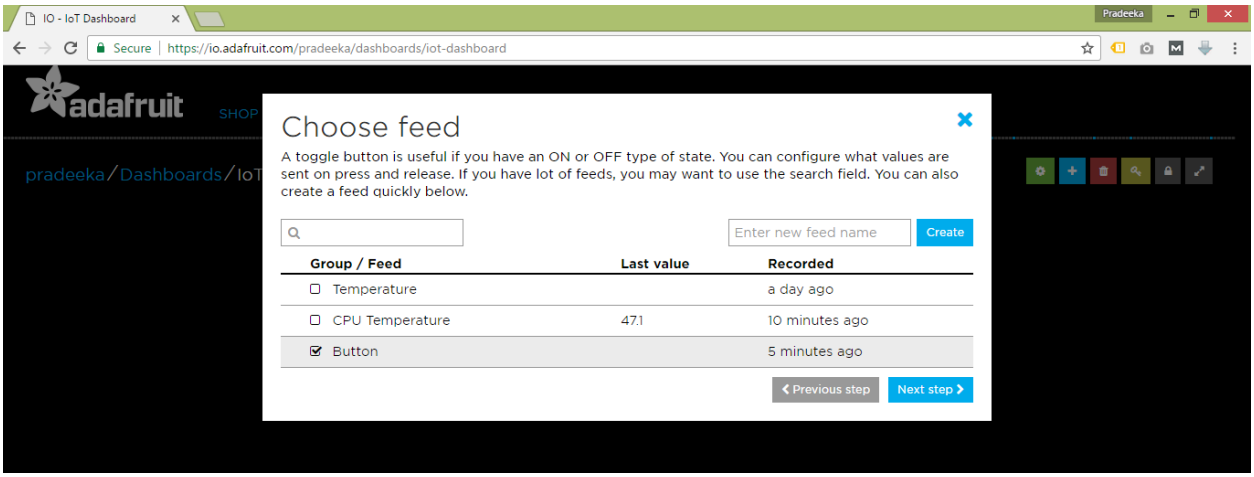
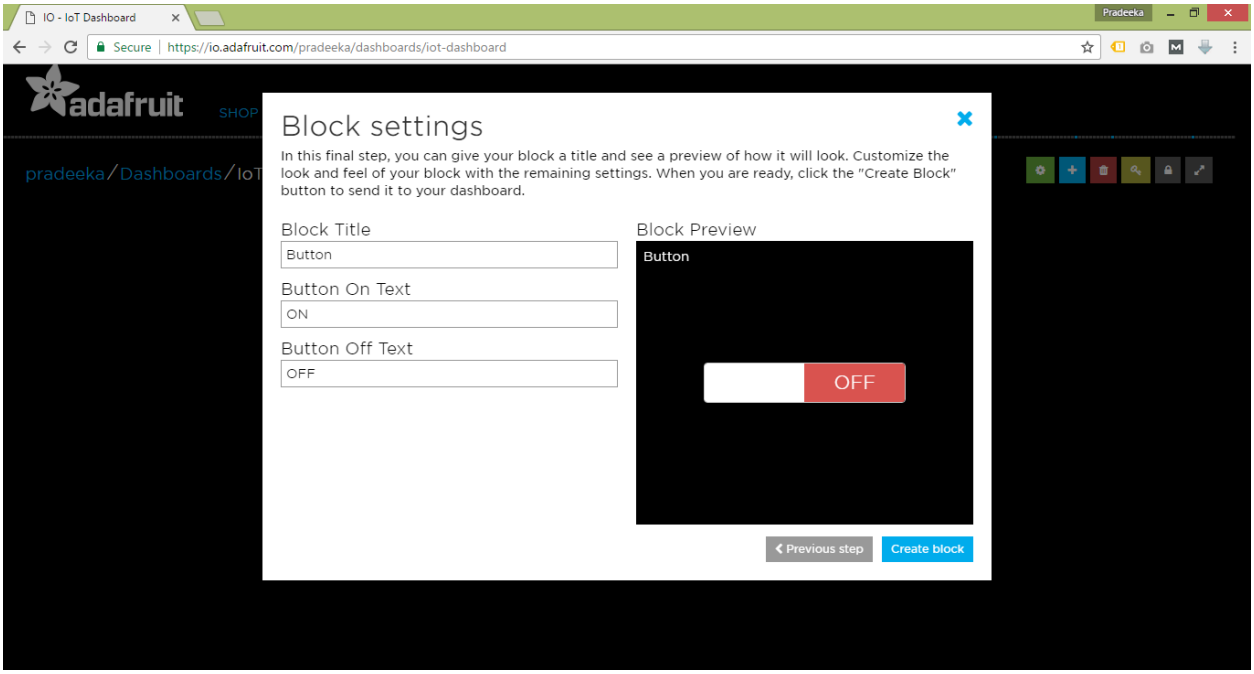
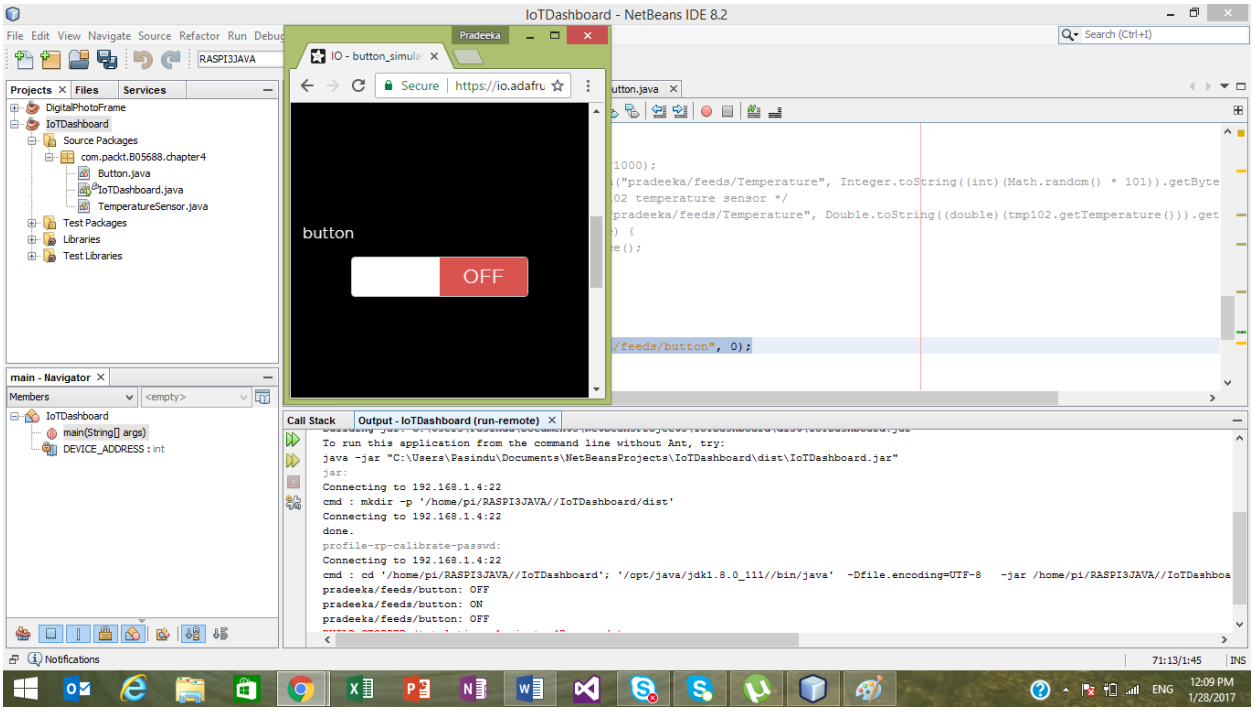
pradeeka/Feeds
Actions
Name
Key
Last Value
Recorded
Temperature
temperature
No Data Available
a day ago
CPU Temperature
cpu-temperature
47.1
8 minutes ago
Button
button
No Data Available
2 minutes ago
Loaded in 0.41 seconds.


IO - IoT Dashboard
Pradeeka
Secure
https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
adafruit
pradeeka/Dashboards/Io
Create a new block
Click on the block you would like to add to your dashboard. You can always come back and switch the block type later if you change your mind.
Toggle
ON
RESET
HELLO WORLD!


IO - IoT Dashboard
Pradeeka
Secure
https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
adafruit
SHOP
pradeeka / Dashboards / IoT
Choose feed
A toggle button is useful if you have an ON or OFF type of state. You can configure what values are sent on press and release. If you have lot of feeds, you may want to use the search field. You can also create a feed quickly below.
Enter new feed name
Create
Group / Feed
Last value
Recorded
Temperature
a day ago
CPU Temperature
47.1
10 minutes ago
Button
5 minutes ago
Previous step
Next step

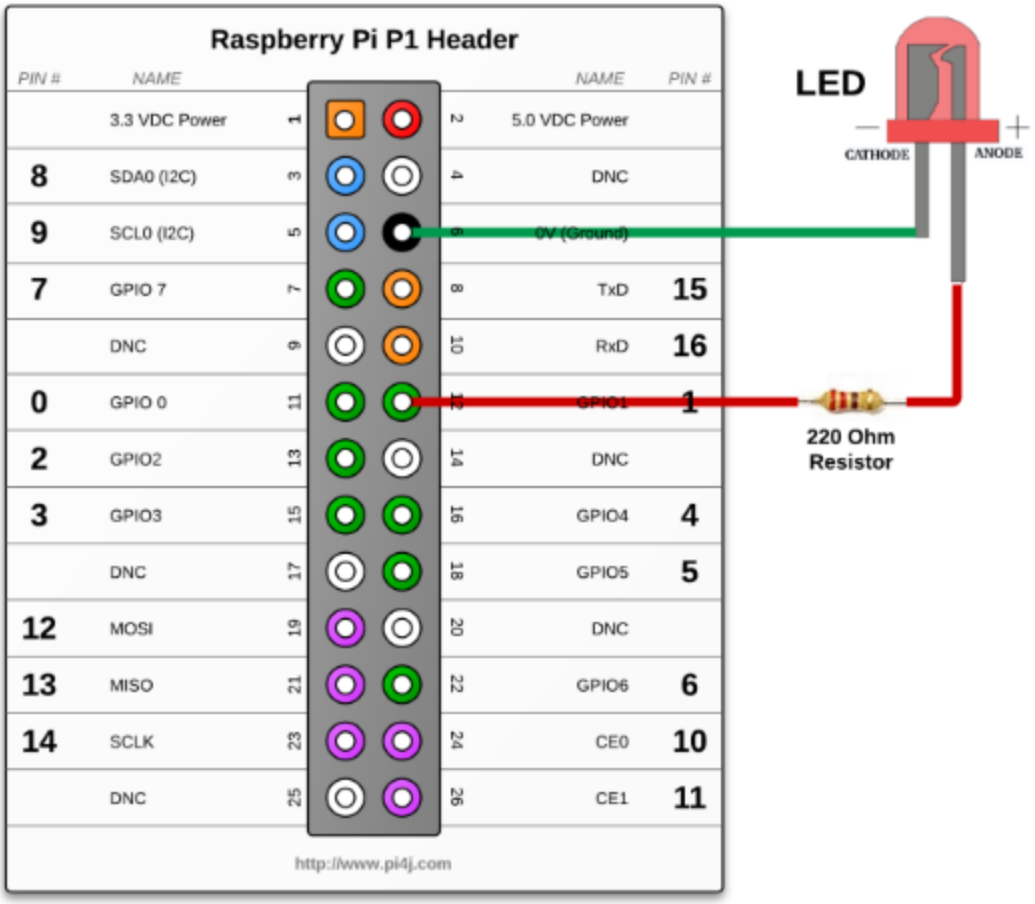

IO - IoT Dashboard
Pradeeka
Secure
https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
adafruit
SHOP
pradeeka / Dashboards / IoT
Block settings
In this final step, you can give your block a title and see a preview of how it will look. Customize the look and feel of your block with the remaining settings. When you are ready, click the "Create Block" button to send it to your dashboard.
Block Title
Button
Button On Text
ON
Button Off Text
OFF
Block Preview
Button
OFF
Previous step
Create block


IoTDashboard - NetBeans IDE 8.2
Pradeeka
IO - button_simula
Secure
https://io.adafru
button
OFF
Projects
Files
Services
DigitalPhotoFrame
IoTDashboard
Source Packages
com.packt.B05688.chapter4
Button.java
IoTDashboard.java
TemperatureSensor.java
Test Packages
Libraries
Test Libraries
main - Navigator
Members
IoTDashboard
main(String[] args)
DEVICE_ADDRESS : int
Call Stack
Output - IoTDashboard (run-remote)
To run this application from the command line without Ant, try:
java -jar "C:\Users\Pasindu\Documents\NetBeansProjects\IoTDashboard\dist\IoTDashboard.jar"
jar:
Connecting to 192.168.1.4:22
cmd : mkdir -p '/home/pi/RASPI3JAVA//IoTDashboard/dist'
Connecting to 192.168.1.4:22
done.
profile-rp-calibrate-passwd:
Connecting to 192.168.1.4:22
cmd : cd '/home/pi/RASPI3JAVA//IoTDashboard'; '/opt/java/jdk1.8.0_111//bin/java' -Dfile.encoding=UTF-8 -jar /home/pi/RASPI3JAVA//IoTDashboa
pradeeka/feeds/button: OFF
pradeeka/feeds/button: ON
pradeeka/feeds/button: OFF
Notifications
71:13/1:45
INS
ENG
12:09 PM
1/28/2017

- com.pi4j.io.gpio.PinState

Wiring Diagram

The following circuit can be used in conjunction with this sample code.

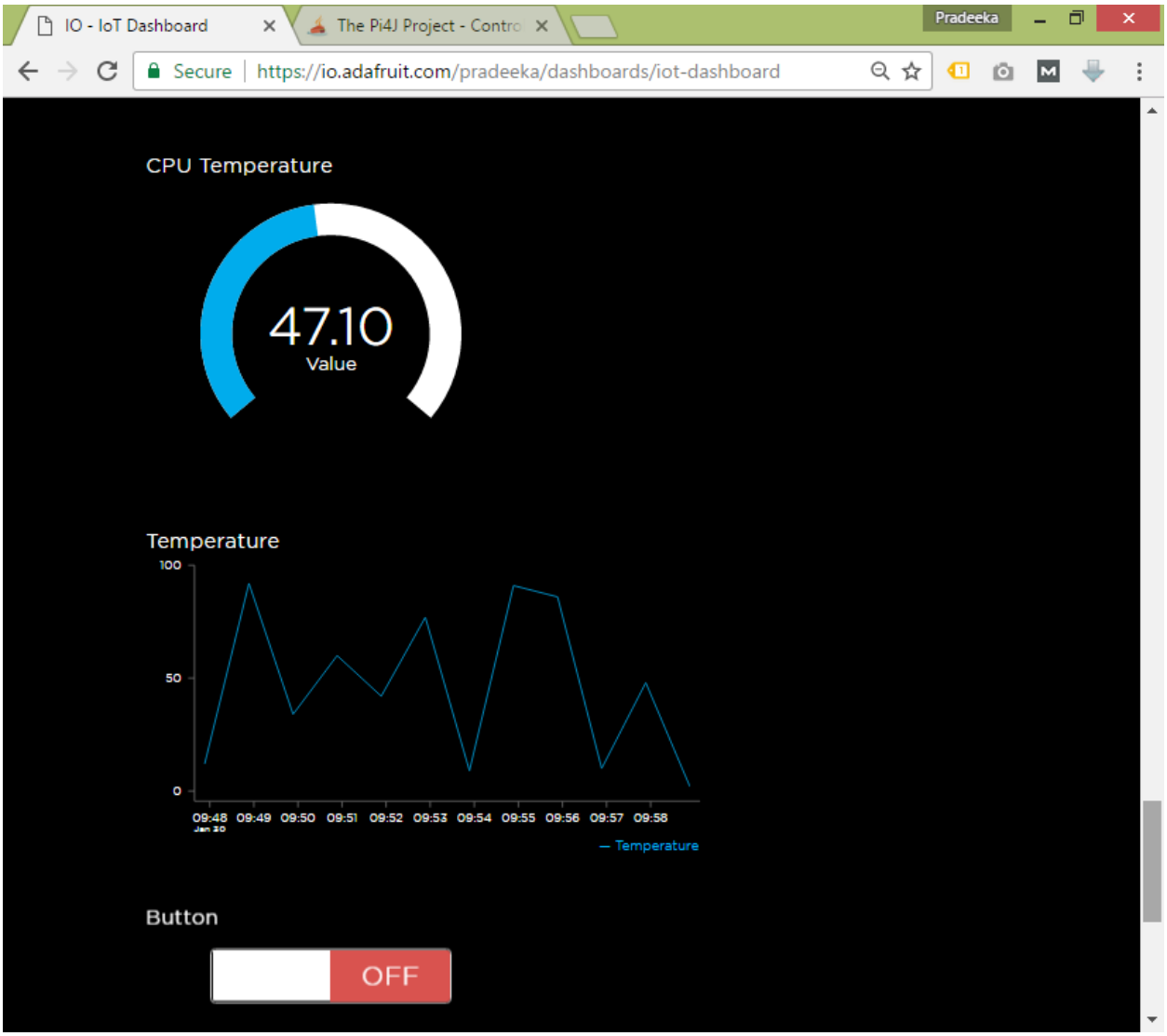


(click here for hi-resolution image)

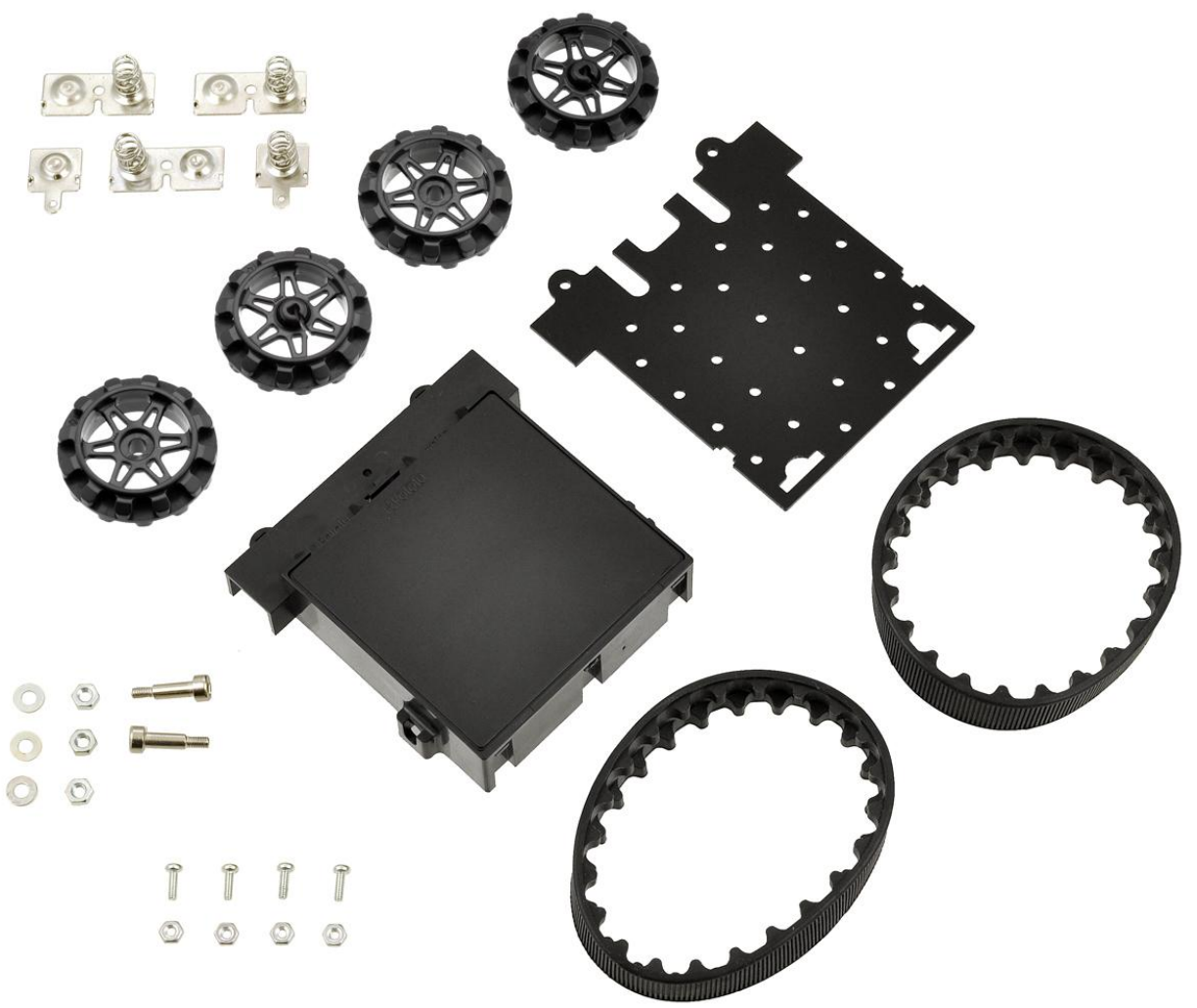
Navigate

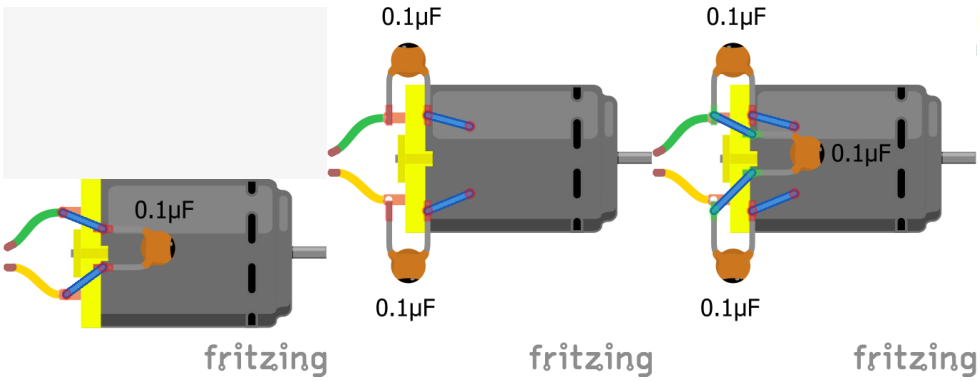
If you have not already downloaded and installed the Pi4J library on the RaspberryPi, then view this page for instructio

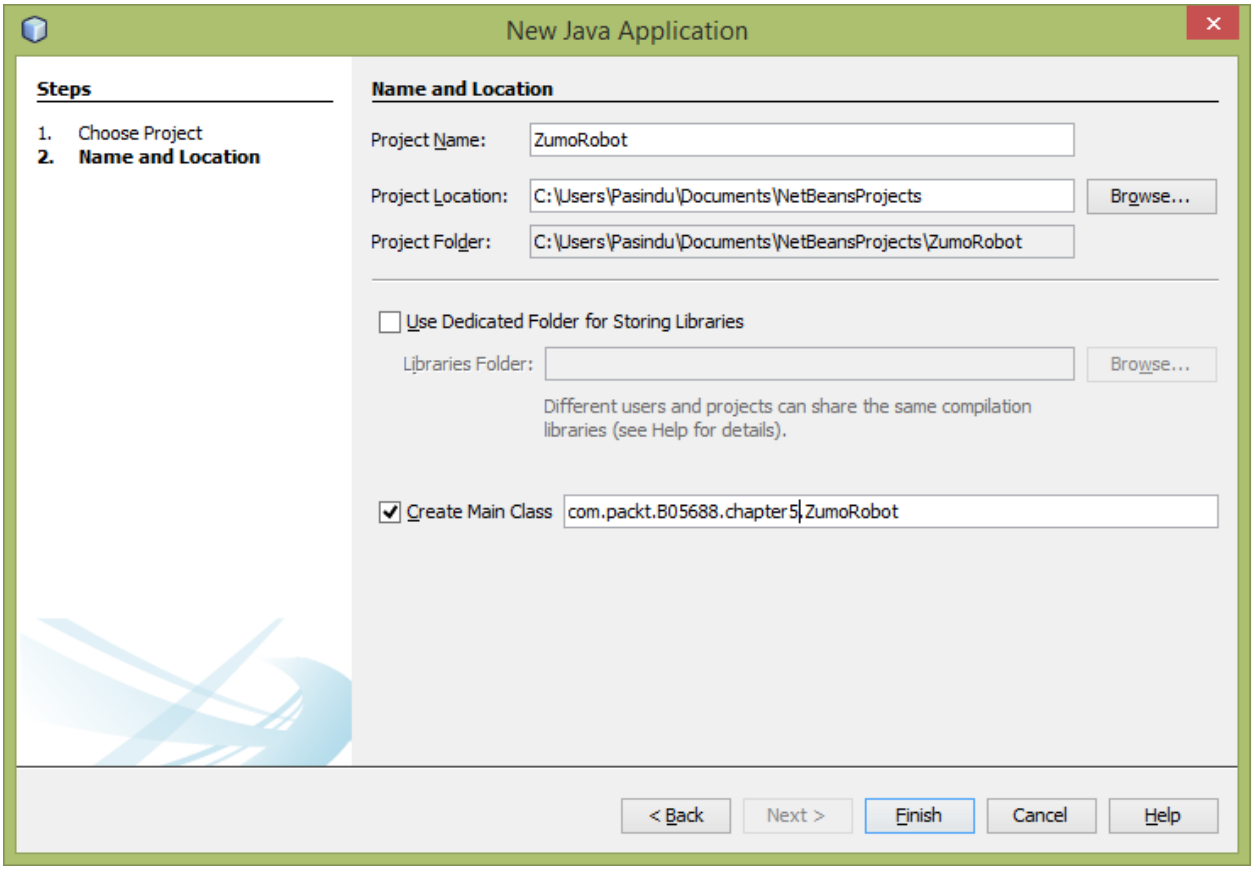
Download & Install Pi4J

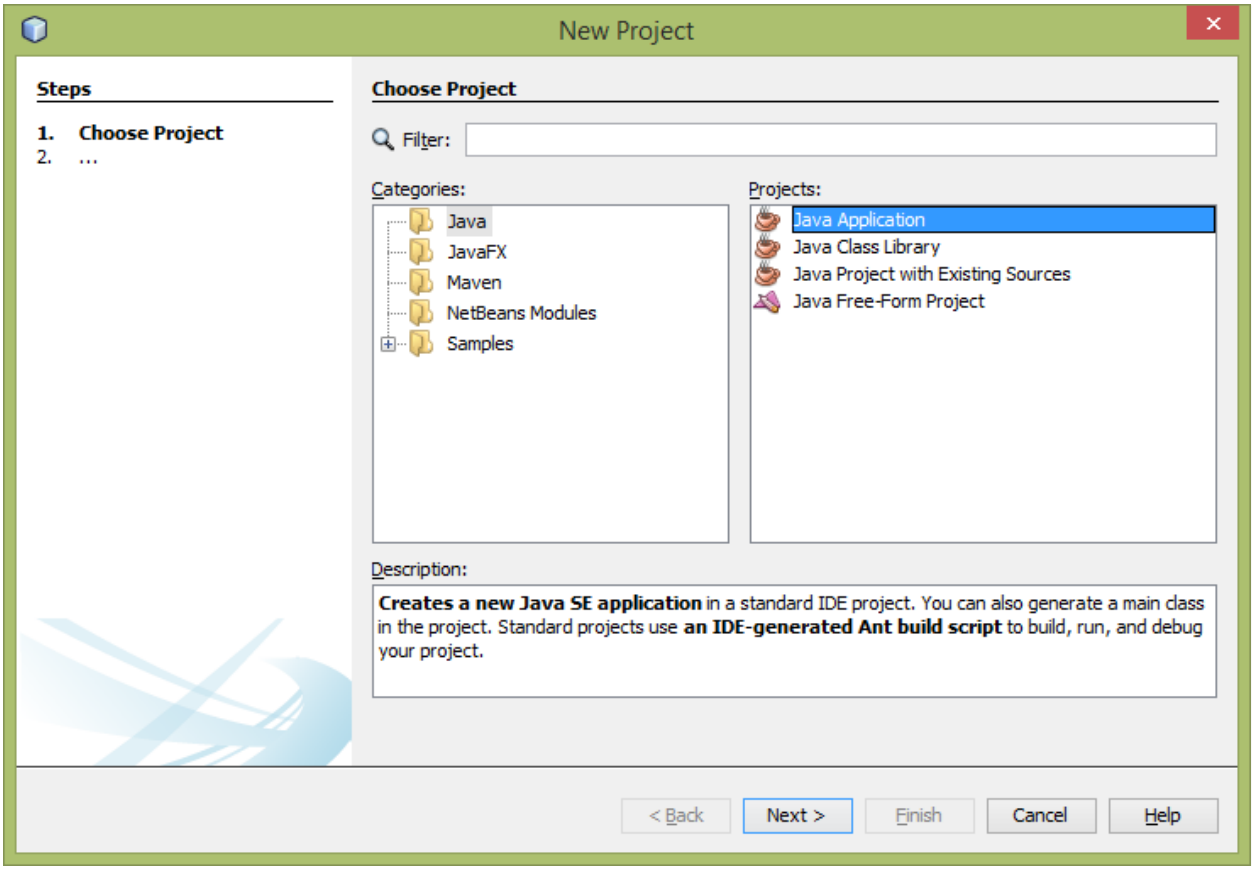

IO - IoT Dashboard
The Pi4J Project - Contro
Pradeeka
Secure
https://io.adafruit.com/pradeeka/dashboards/iot-dashboard
CPU Temperature
47.10
Value
Temperature
100
50
0
09:48
Jan 30
09:49
09:50
09:51
09:52
09:53
09:54
09:55
09:56
09:57
09:58
Temperature
Button
OFF

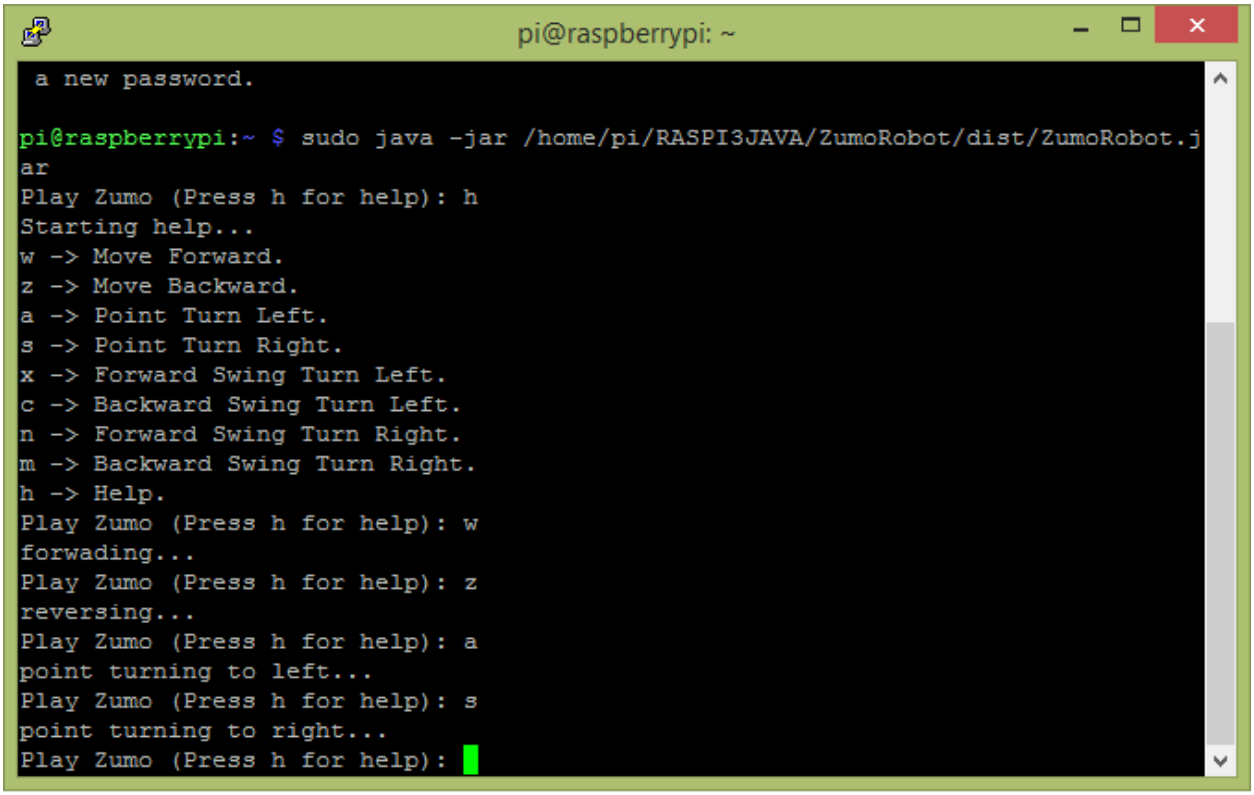
Chapter 5: Wireless Controlled Robot

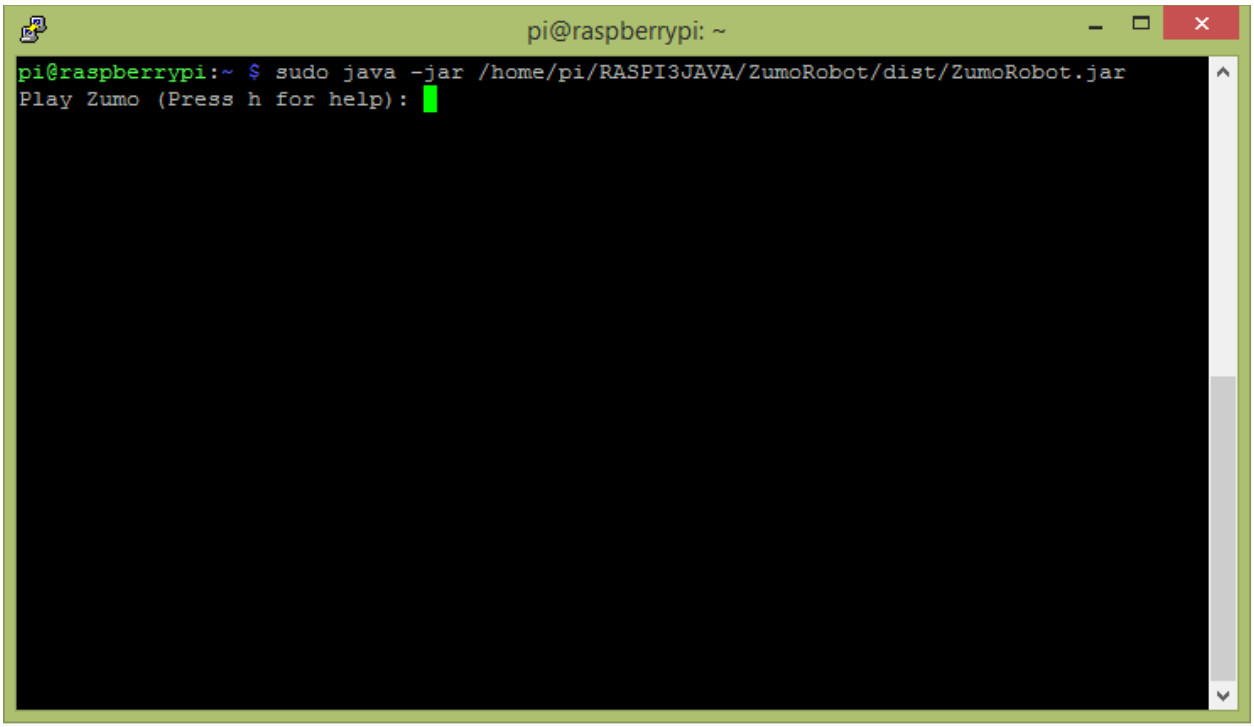


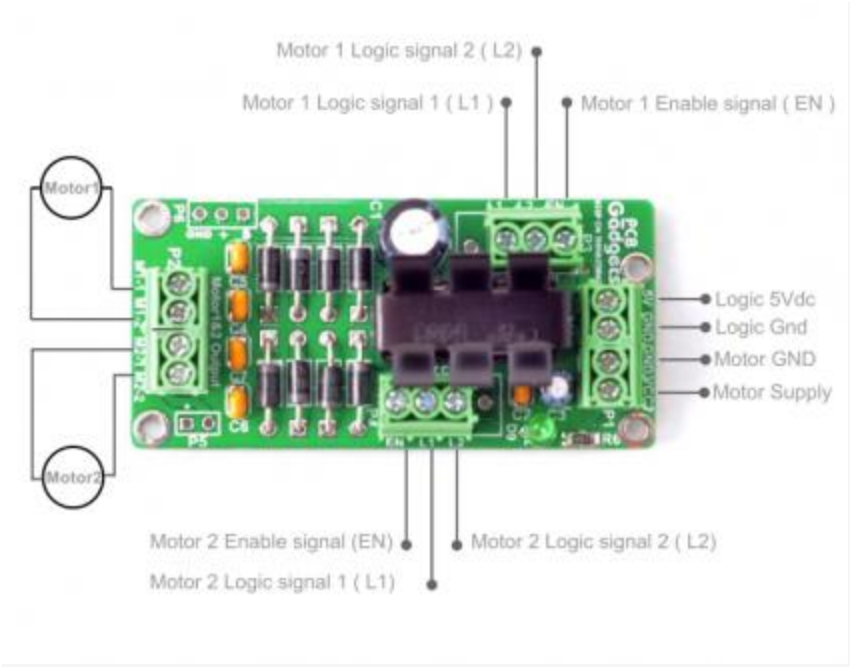

0.1µF
0.1µF
0.1µF
0.1µF
0.1µF
fritzing
fritzing
fritzing

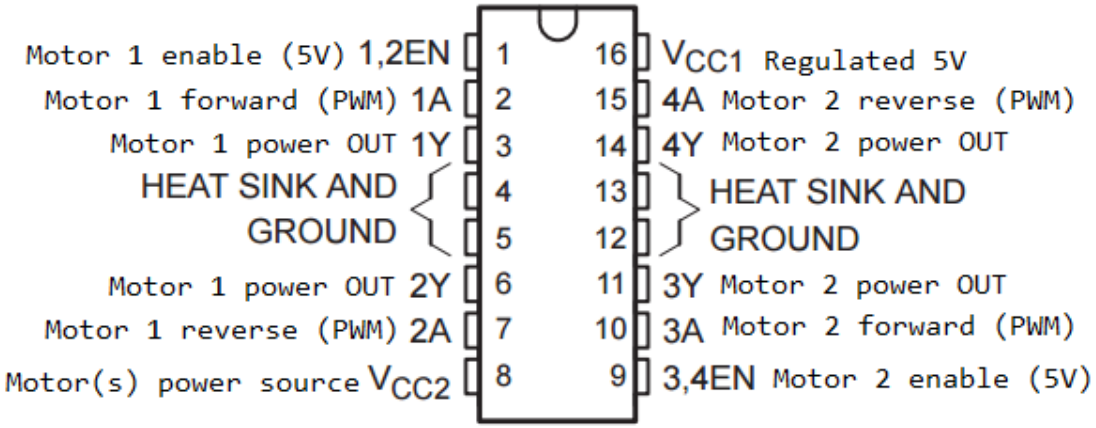

New Java Application
Steps
1. Choose Project
2. Name and Location
Name and Location
Project Name: ZumoRobot
Project Location: C:\Users\Pasindu\Documents\NetBeansProjects
Browse...
Project Folder: C:\Users\Pasindu\Documents\NetBeansProjects\ZumoRobot
Use Dedicated Folder for Storing Libraries
Libraries Folder:
Browse...
Different users and projects can share the same compilation libraries (see Help for details).
Create Main Class com.packt.B05688.chapter5.ZumoRobot
< Back
Next >
Finish
Cancel
Help

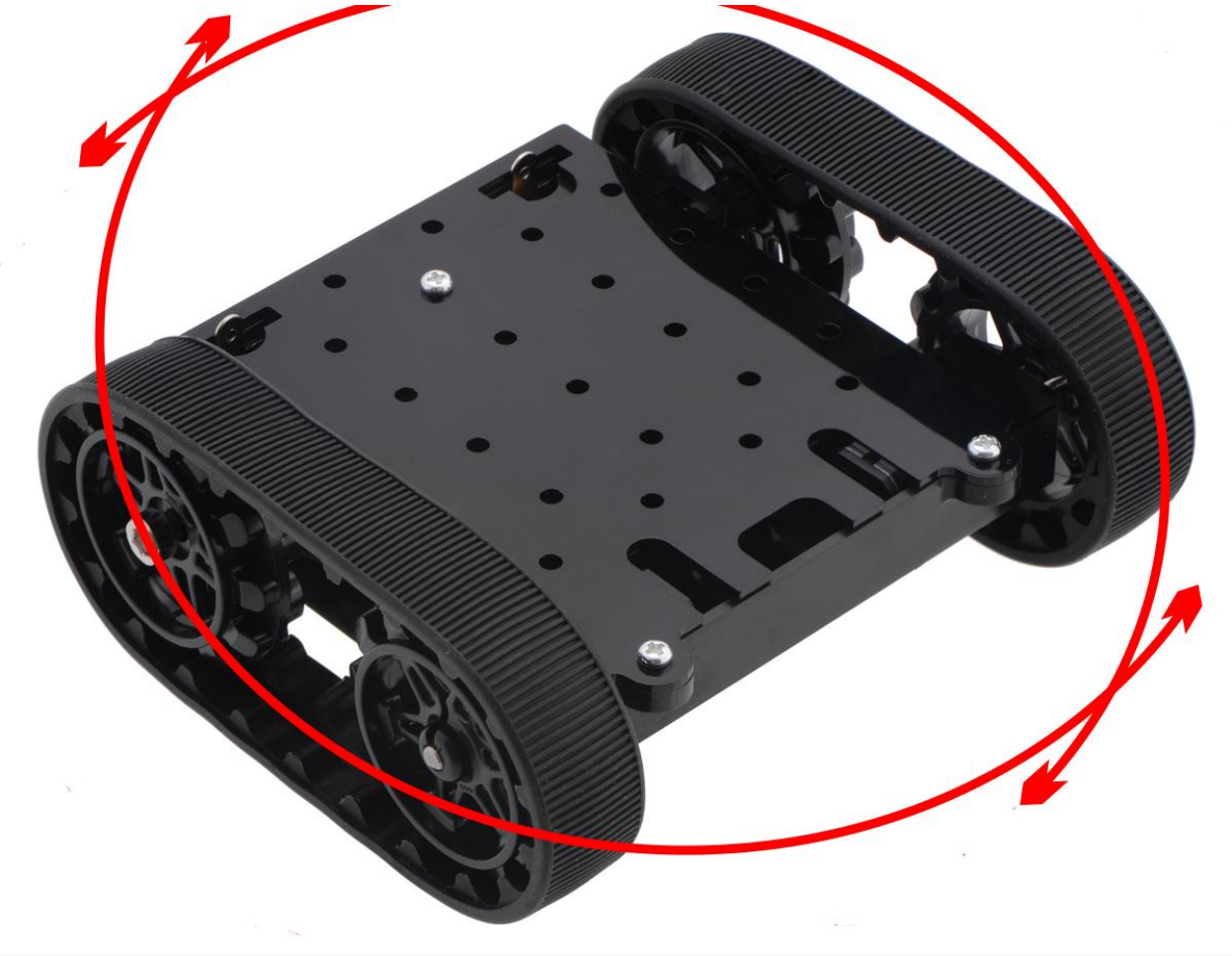

New Project
Steps
1. Choose Project
2. ...
Choose Project
Filter:
Categories:
Java
JavaFX
Maven
NetBeans Modules
Samples
Projects:
Java Application
Java Class Library
Java Project with Existing Sources
Java Free-Form Project
Description:
Creates a new Java SE application in a standard IDE project. You can also generate a main class in the project. Standard projects use an IDE-generated Ant build script to build, run, and debug your project.
< Back
Next >
Finish
Cancel
Help


pi@raspberrypi: ~
a new password.
pi@raspberrypi:~ $ sudo java -jar /home/pi/RASPI3JAVA/ZumoRobot/dist/ZumoRobot.j
ar
Play Zumo (Press h for help): h
Starting help...
w -> Move Forward.
z -> Move Backward.
a -> Point Turn Left.
s -> Point Turn Right.
x -> Forward Swing Turn Left.
c -> Backward Swing Turn Left.
n -> Forward Swing Turn Right.
m -> Backward Swing Turn Right.
h -> Help.
Play Zumo (Press h for help): w
forwading...
Play Zumo (Press h for help): z
reversing...
Play Zumo (Press h for help): a
point turning to left...
Play Zumo (Press h for help): s
point turning to right...
Play Zumo (Press h for help):


pi@raspberrypi: ~
pi@raspberrypi:~ $ sudo java -jar /home/pi/RASPI3JAVA/ZumoRobot/dist/ZumoRobot.jar
Play Zumo (Press h for help):


Motor 1 Logic signal 2 (L2)
Motor 1 Logic signal 1 (L1)
Motor 1 Enable signal (EN)
Motor1
Motor2
Logic 5Vdc
Logic Gnd
Motor GND
Motor Supply
Motor 2 Enable signal (EN)
Motor 2 Logic signal 2 (L2)
Motor 2 Logic signal 1 (L1)


Motor 1 enable (5V) 1,2EN 1
Motor 1 forward (PWM) 1A 2
Motor 1 power OUT 1Y 3
HEAT SINK AND GROUND 4 5
Motor 1 power OUT 2Y 6
Motor 1 reverse (PWM) 2A 7
Motor(s) power source VCC2 8
16 VCC1 Regulated 5V
15 4A Motor 2 reverse (PWM)
14 4Y Motor 2 power OUT
13 12 HEAT SINK AND GROUND
11 3Y Motor 2 power OUT
10 3A Motor 2 forward (PWM)
9 3,4EN Motor 2 enable (5V)




szoter.com


RIGHT
FRONT
LEFT
szoter.com

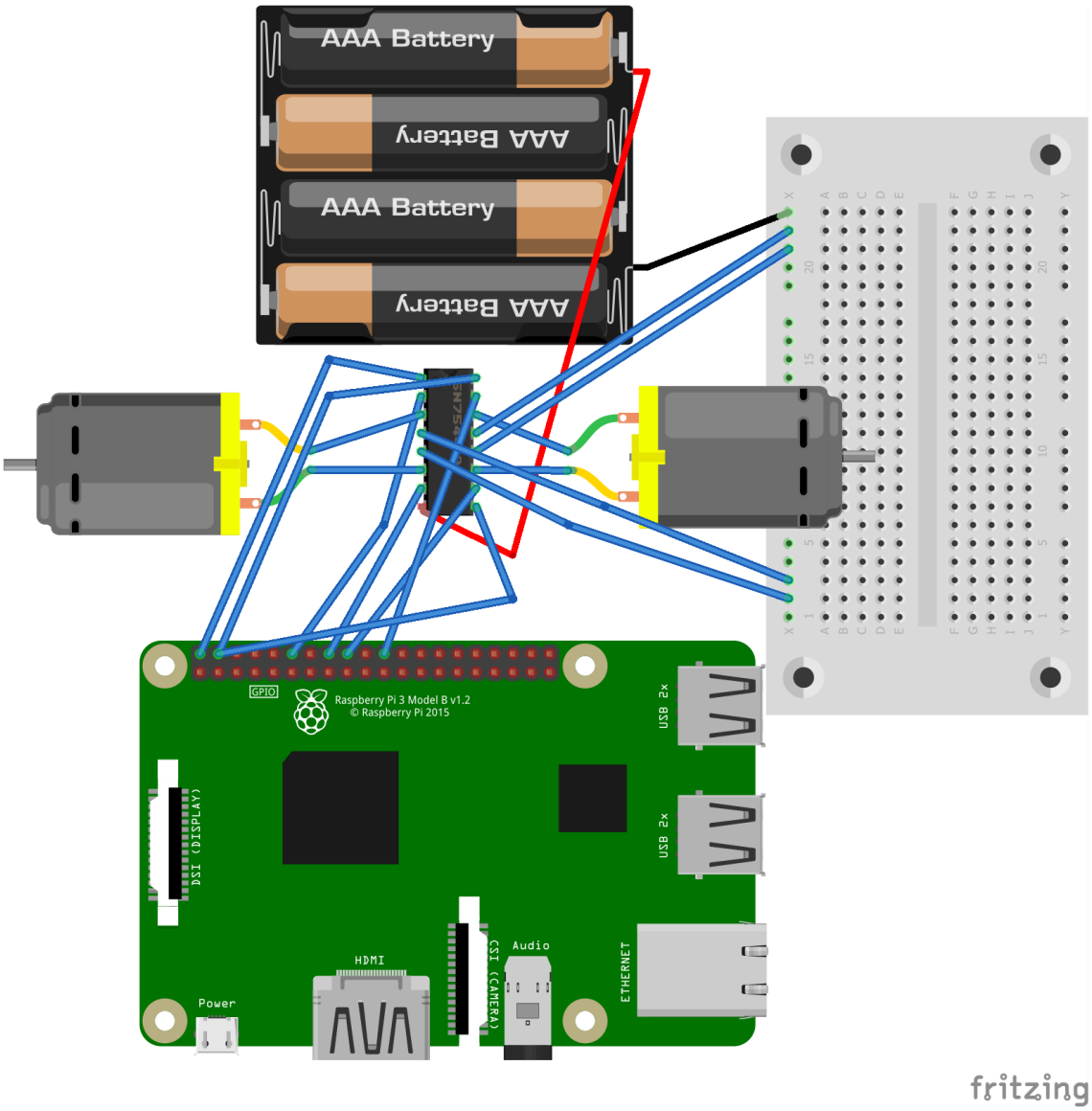

szoter.com


OFF
szoter.com

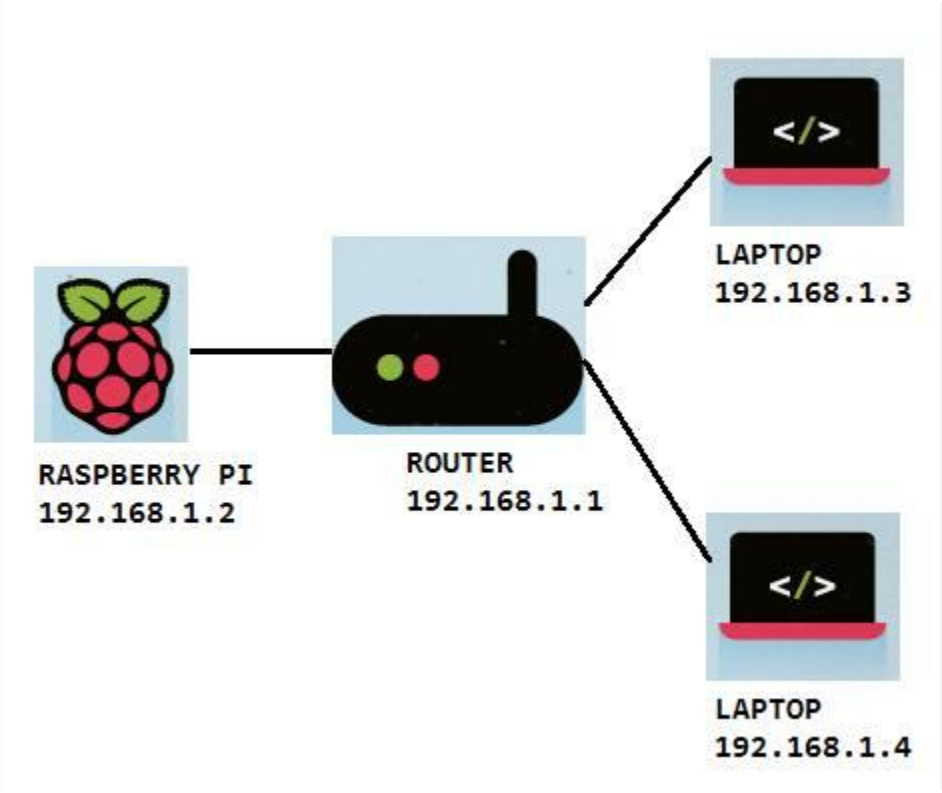

OFF
szoter.com

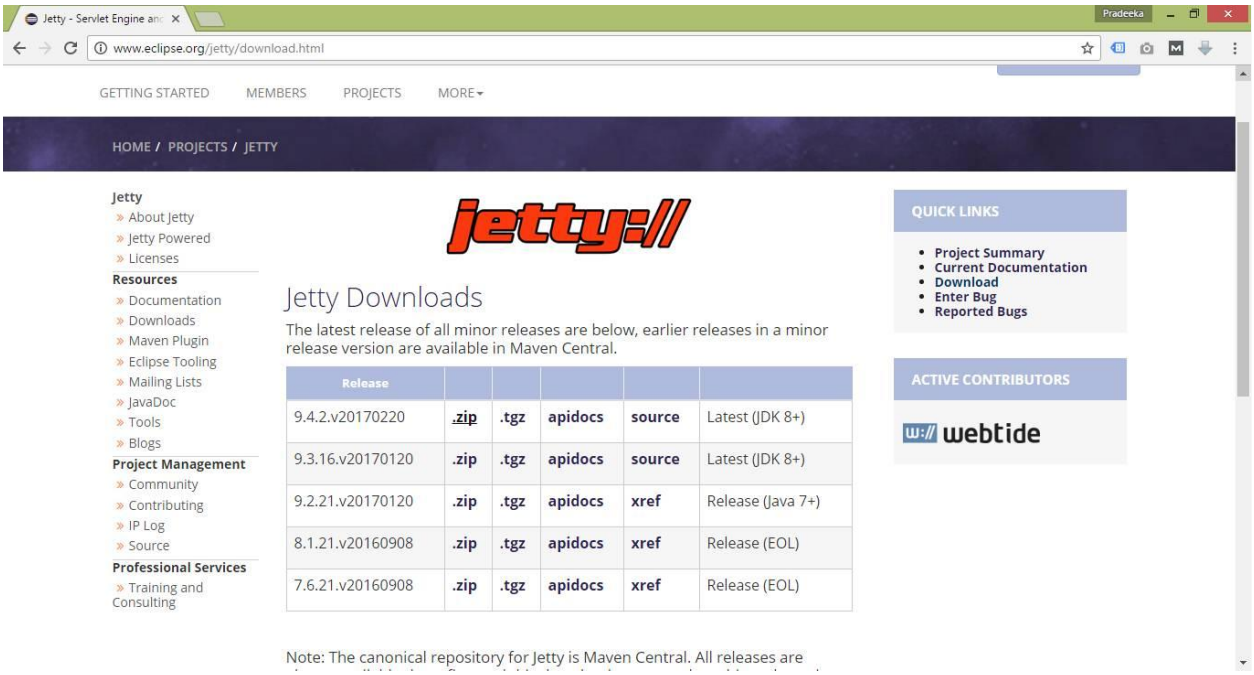

OFF
szoter.com


OFF
szoter.com

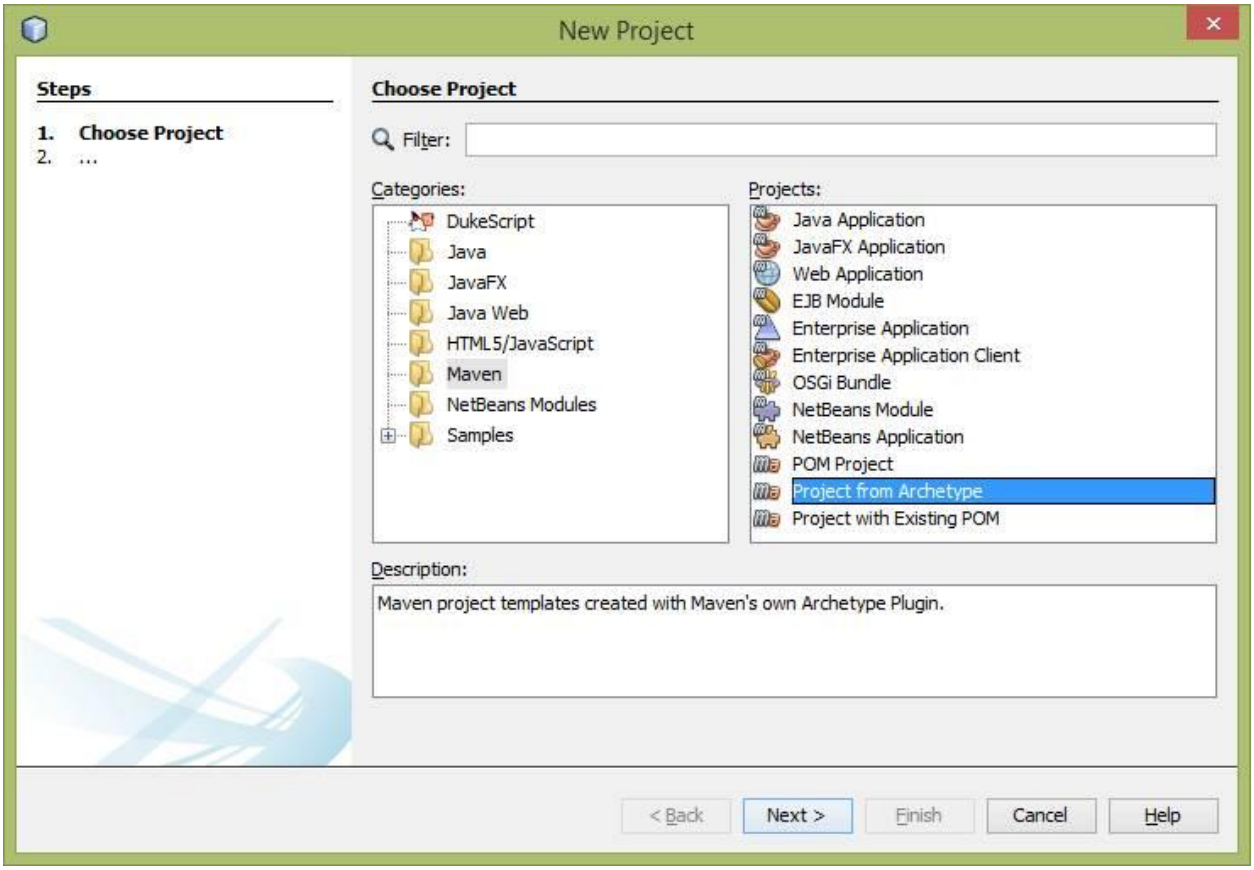

AAA Battery
AAA Battery
AAA Battery
AAA Battery
SN754
GPIO
Raspberry Pi 3 Model B v1.2
© Raspberry Pi 2015
USB 2x
USB 2x
DSI (DISPLAY)
HDMI
CSI (CAMERA)
Audio
ETHERNET
Power
fritzing

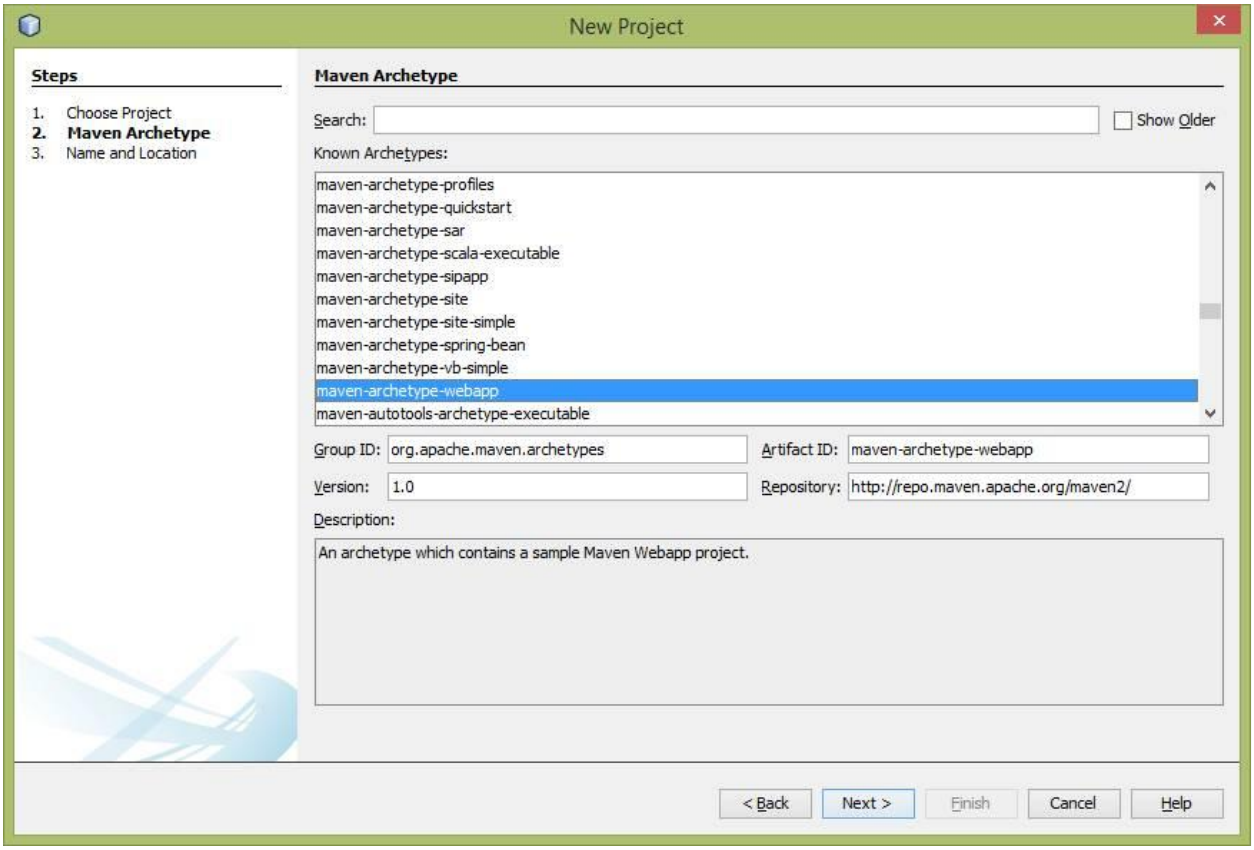
Chapter 6: Building a Multipurpose IoT Controller

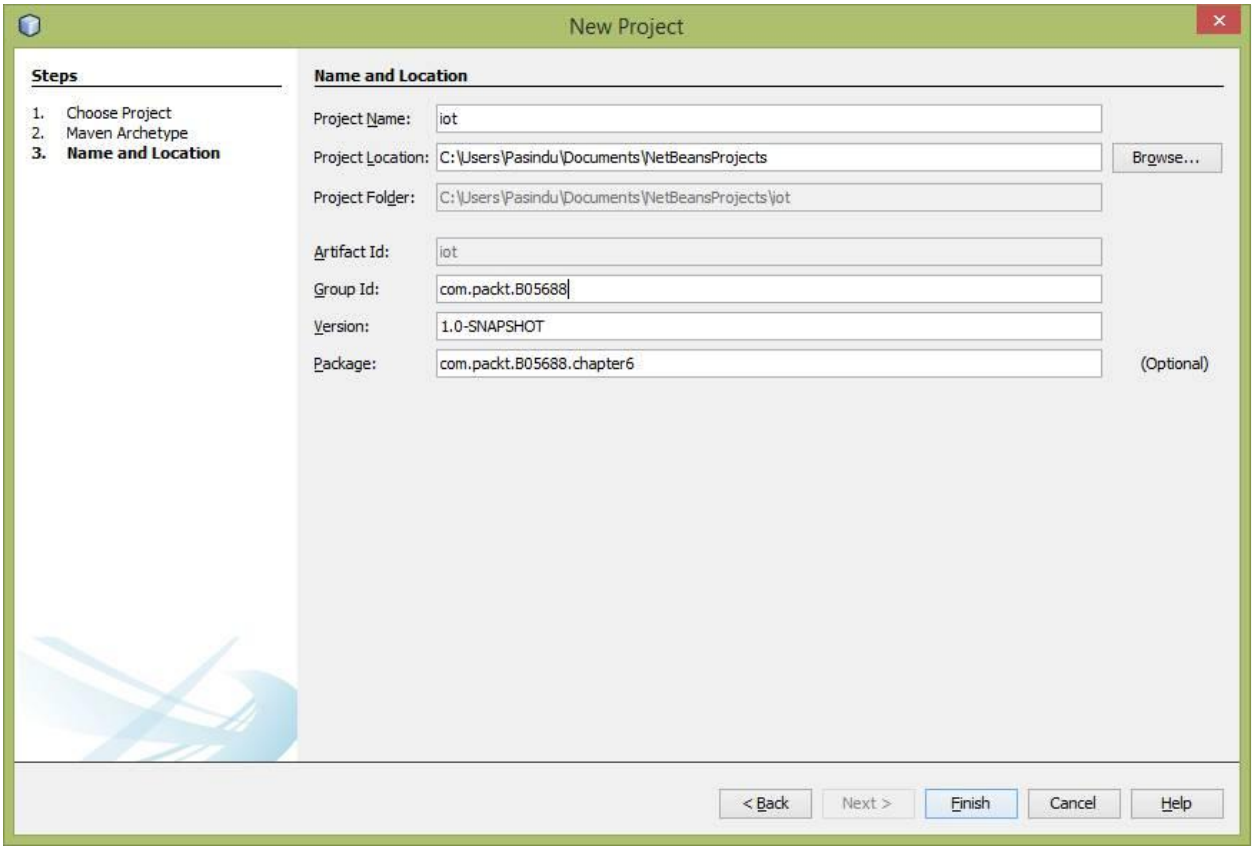


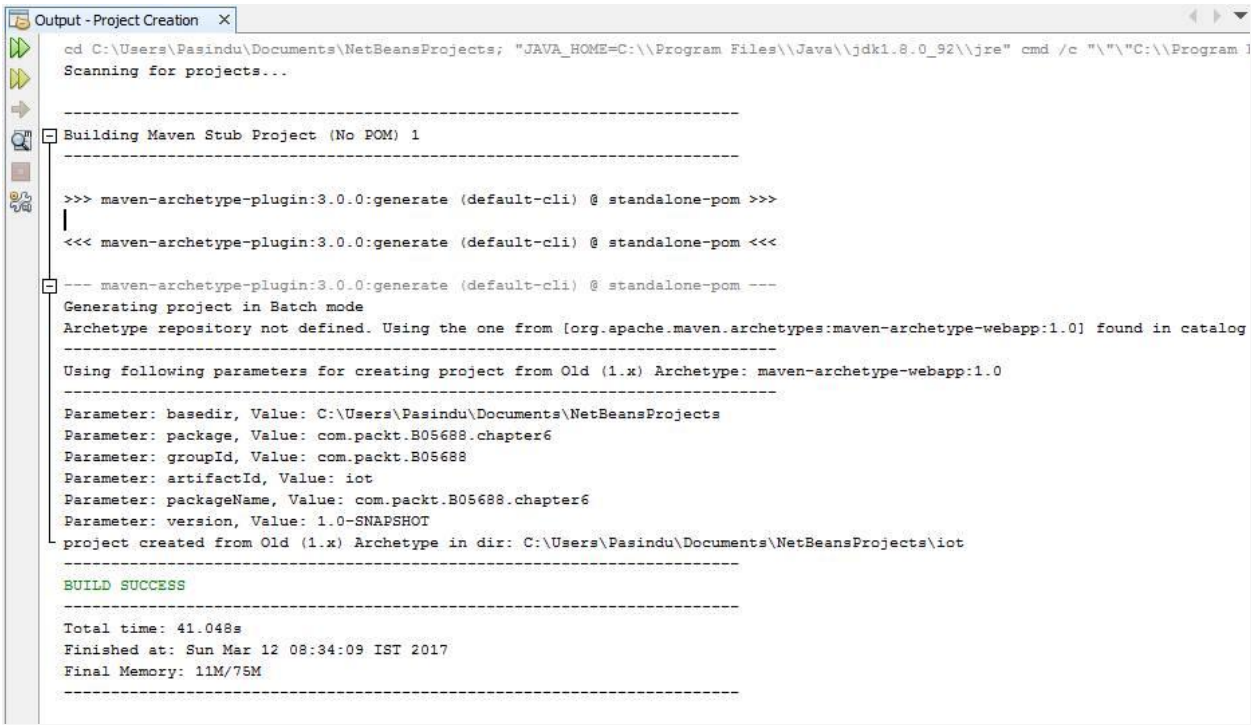

Jetty - Servlet Engine and
Pradeeka
www.eclipse.org/jetty/download.html
GETTING STARTED
MEMBERS
PROJECTS
MORE
HOME / PROJECTS / JETTY
Jetty
» About Jetty
» Jetty Powered
» Licenses
Resources
» Documentation
» Downloads
» Maven Plugin
» Eclipse Tooling
» Mailing Lists
» JavaDoc
» Tools
» Blogs
Project Management
» Community
» Contributing
» IP Log
» Source
Professional Services
» Training and Consulting
jetty://
Jetty Downloads
The latest release of all minor releases are below, earlier releases in a minor release version are available in Maven Central.
Release
9.4.2.v20170220 .zip .tgz apidocs source Latest (JDK 8+)
9.3.16.v20170120 .zip .tgz apidocs source Latest (JDK 8+)
9.2.21.v20170120 .zip .tgz apidocs xref Release (Java 7+)
8.1.21.v20160908 .zip .tgz apidocs xref Release (EOL)
7.6.21.v20160908 .zip .tgz apidocs xref Release (EOL)
Note: The canonical repository for Jetty is Maven Central. All releases are
QUICK LINKS
Project Summary
Current Documentation
Download
Enter Bug
Reported Bugs
ACTIVE CONTRIBUTORS
webtide

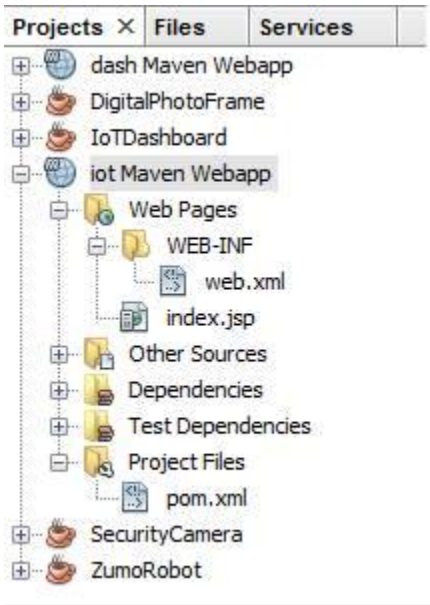

Error 404 - Not Found
Pradeeka
192.168.1.2:8080
Error 404 - Not Found.
No context on this server matched or handled this request.
Contexts known to this server are:
Powered by Jetty:// 9.4.2.v20170220

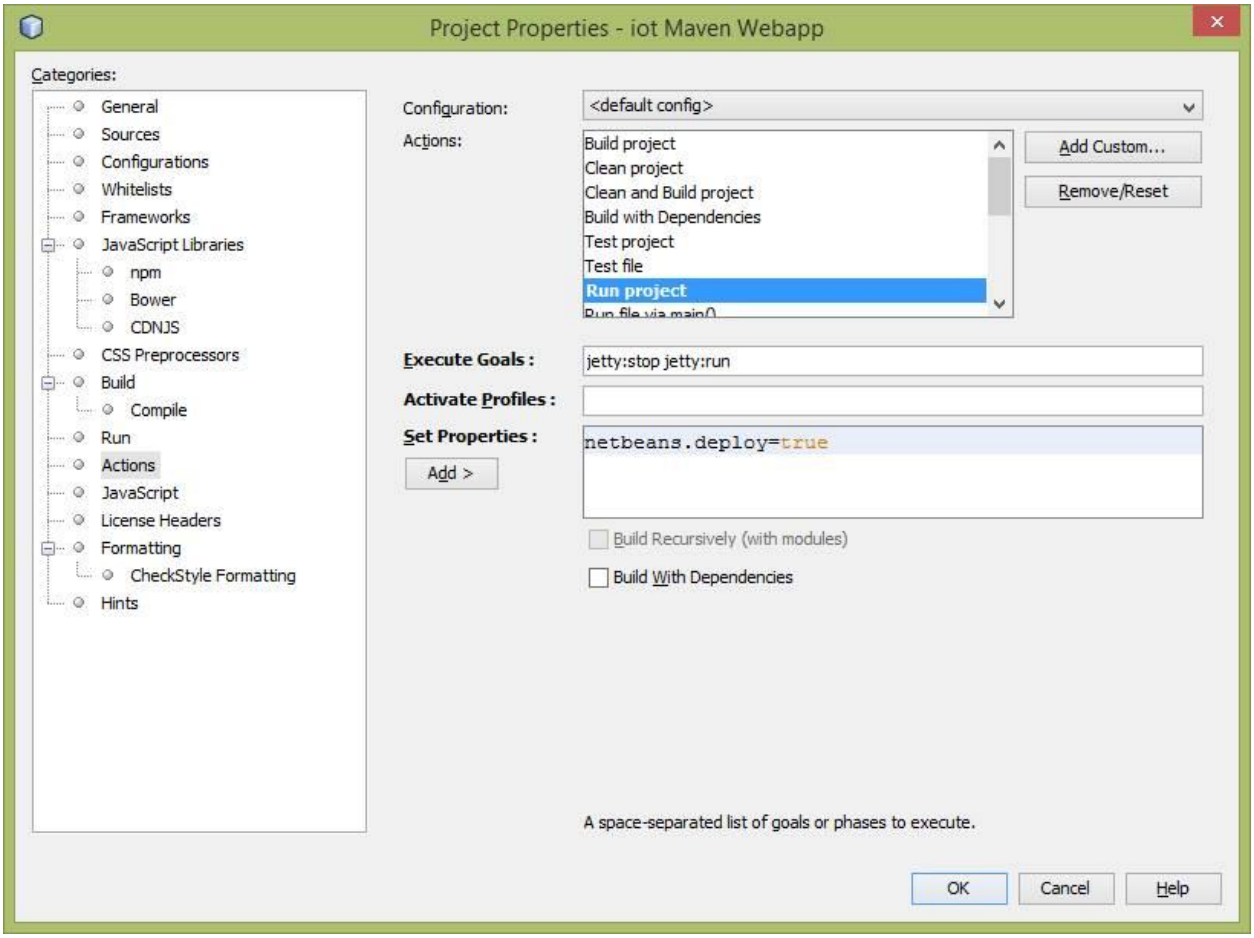

New Project
Steps
1. Choose Project
2. ...
Choose Project
Filter:
Categories:
DukeScript
Java
JavaFX
Java Web
HTML5/JavaScript
Maven
NetBeans Modules
Samples
Projects:
Java Application
JavaFX Application
Web Application
EJB Module
Enterprise Application
Enterprise Application Client
OSGi Bundle
NetBeans Module
NetBeans Application
POM Project
Project from Archetype
Project with Existing POM
Description:
Maven project templates created with Maven's own Archetype Plugin.
< Back
Next >
Finish
Cancel
Help


New Project
Steps
1. Choose Project
2. Maven Archetype
3. Name and Location
Maven Archetype
Search:
Show Older
Known Archetypes:
maven-archetype-profiles
maven-archetype-quickstart
maven-archetype-sar
maven-archetype-scala-executable
maven-archetype-sipapp
maven-archetype-site
maven-archetype-site-simple
maven-archetype-spring-bean
maven-archetype-vb-simple
maven-archetype-webapp
maven-autotools-archetype-executable
Group ID: org.apache.maven.archetypes
Artifact ID: maven-archetype-webapp
Version: 1.0
Repository: http://repo.maven.apache.org/maven2/
Description:
An archetype which contains a sample Maven Webapp project.
< Back
Next >
Finish
Cancel
Help


New Project
Steps
1. Choose Project
2. Maven Archetype
3. Name and Location
Name and Location
Project Name: iot
Project Location: C:\Users\Pasindu\Documents\NetBeansProjects
Browse...
Project Folder: C:\Users\Pasindu\Documents\NetBeansProjects\iot
Artifact Id: iot
Group Id: com.packt.B05688
Version: 1.0-SNAPSHOT
Package: com.packt.B05688.chapter6
(Optional)
< Back
Next >
Finish
Cancel
Help

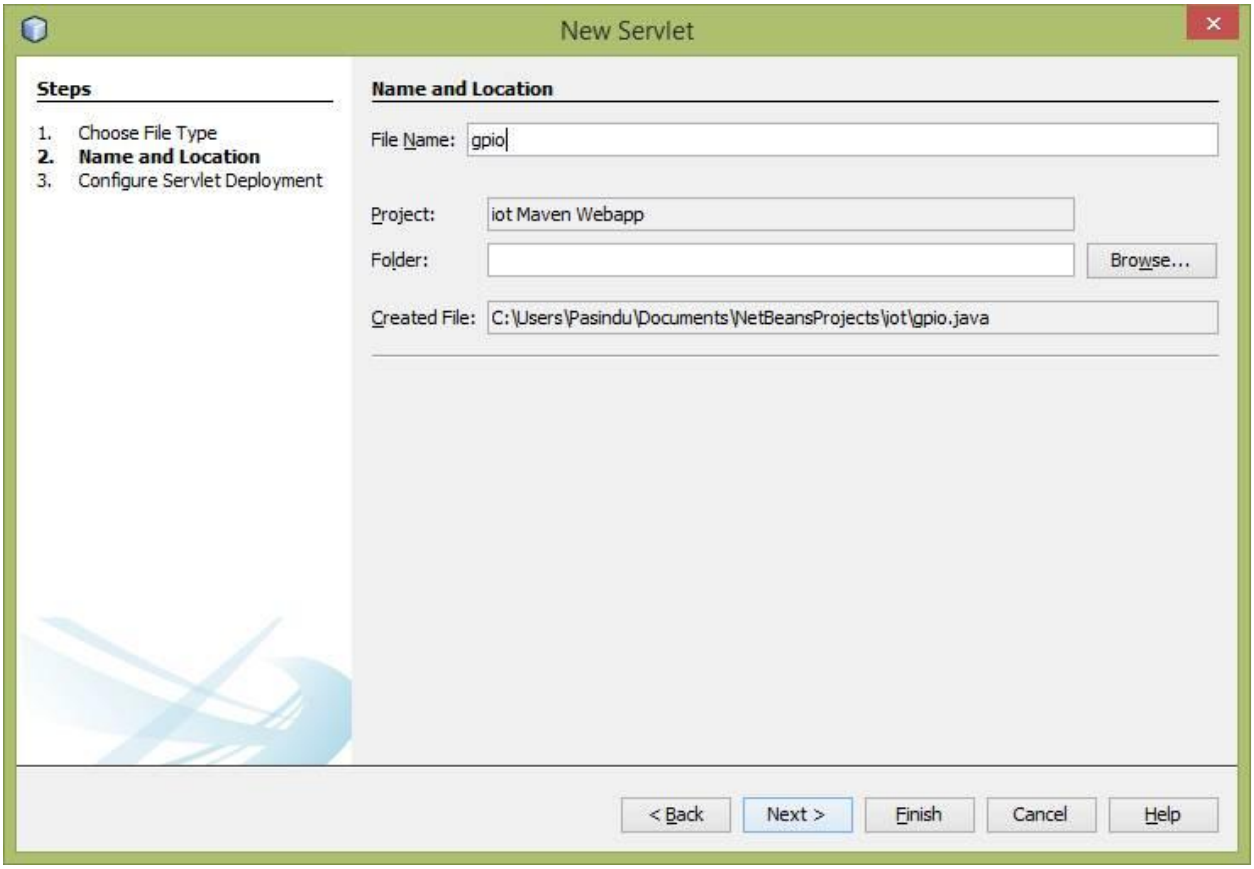

Output - Project Creation
cd C:\Users\Pasindu\Documents\NetBeansProjects; "JAVA_HOME=C:\\Program Files\\Java\\jdk1.8.0_92\\jre" cmd /c "\"\"C:\\Program
Scanning for projects...
Building Maven Stub Project (No POM) 1
>>> maven-archetype-plugin:3.0.0:generate (default-cli) @ standalone-pom >>>
<<< maven-archetype-plugin:3.0.0:generate (default-cli) @ standalone-pom <<<
--- maven-archetype-plugin:3.0.0:generate (default-cli) @ standalone-pom ---
Generating project in Batch mode
Archetype repository not defined. Using the one from [org.apache.maven.archetypes:maven-archetype-webapp:1.0] found in catalog
Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
Parameter: basedir, Value: C:\Users\Pasindu\Documents\NetBeansProjects
Parameter: package, Value: com.packt.B05688.chapter6
Parameter: groupId, Value: com.packt.B05688
Parameter: artifactId, Value: iot
Parameter: packageName, Value: com.packt.B05688.chapter6
Parameter: version, Value: 1.0-SNAPSHOT
project created from Old (1.x) Archetype in dir: C:\Users\Pasindu\Documents\NetBeansProjects\iot
BUILD SUCCESS
Total time: 41.048s
Finished at: Sun Mar 12 08:34:09 IST 2017
Final Memory: 11M/75M

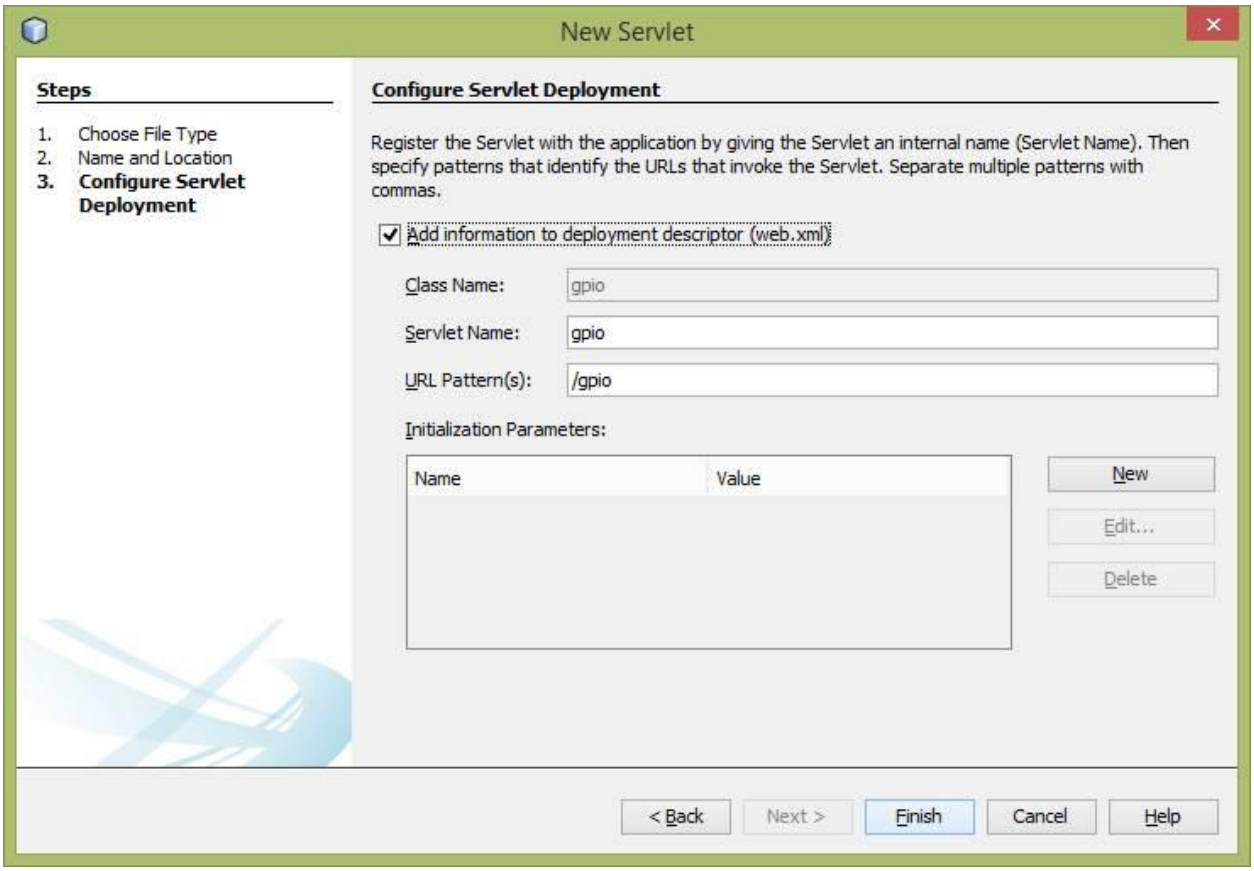

Projects
Files
Services
dash Maven Webapp
DigitalPhotoFrame
IoTDashboard
iot Maven Webapp
Web Pages
WEB-INF
web.xml
index.jsp
Other Sources
Dependencies
Test Dependencies
Project Files
pom.xml
SecurityCamera
ZumoRobot

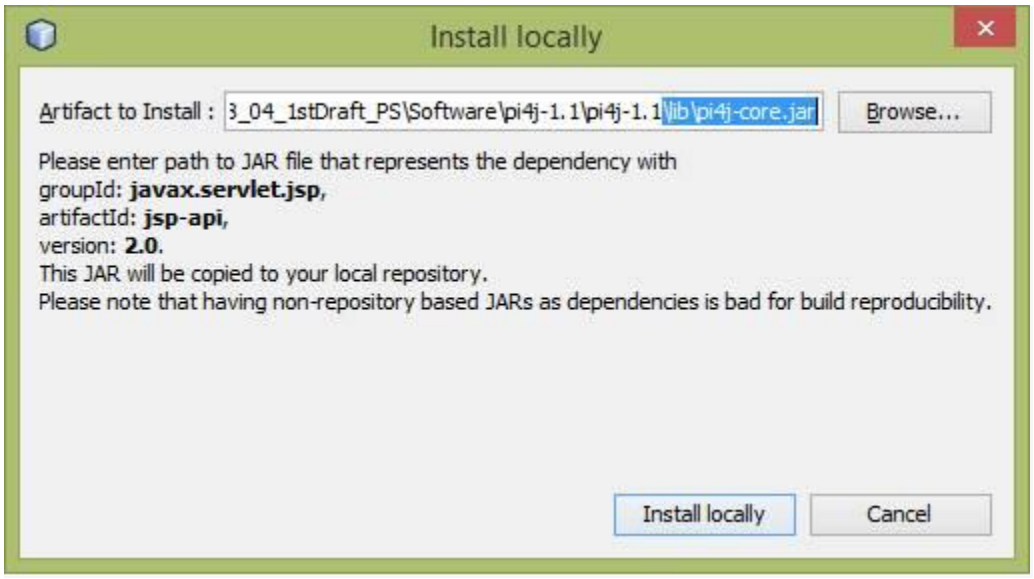

Project Properties - iot Maven Webapp
Categories:
General
Sources
Configurations
Whitelists
Frameworks
JavaScript Libraries
npm
Bower
CDNJS
CSS Preprocessors
Build
Compile
Run
Actions
JavaScript
License Headers
Formatting
CheckStyle Formatting
Hints
Configuration:
<default config>
Actions:
Build project
Clean project
Clean and Build project
Build with Dependencies
Test project
Test file
Run project
Add Custom...
Remove/Reset
Execute Goals :
jetty:stop jetty:run
Activate Profiles :
Set Properties :
netbeans.deploy=true
Add >
Build Recursively (with modules)
Build With Dependencies
A space-separated list of goals or phases to execute.
OK
Cancel
Help

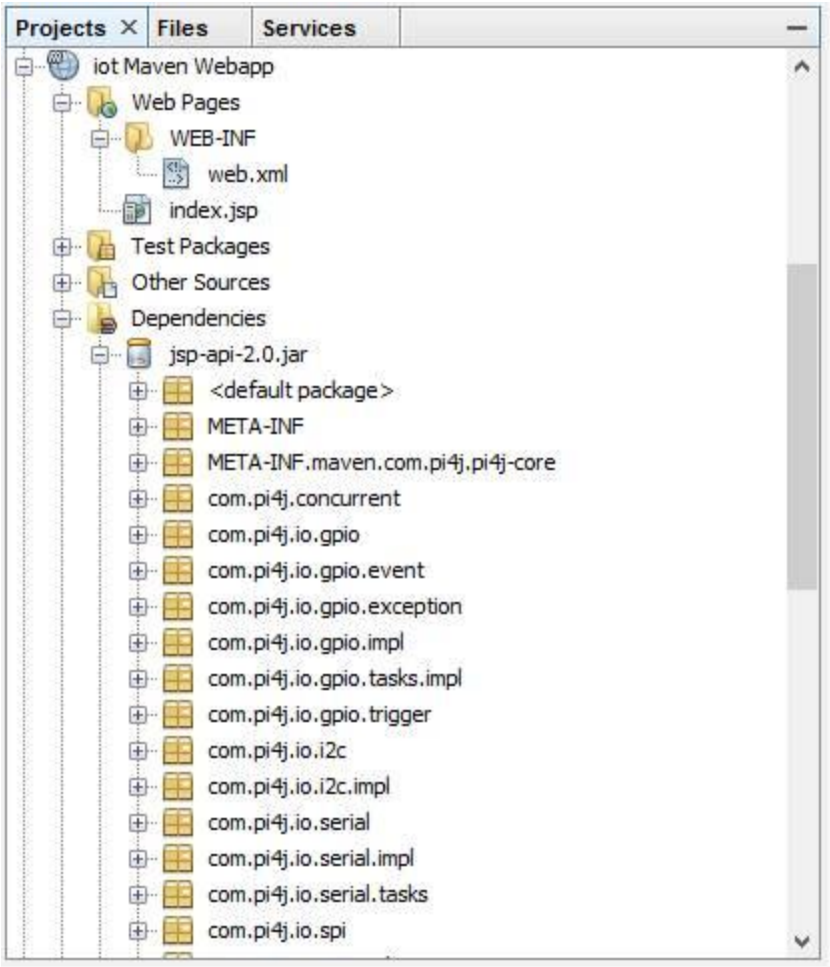

localhost:8080/iot/
Pradeeka
localhost:8080/iot/

Hello World!


New Servlet
Steps
1. Choose File Type
2. Name and Location
3. Configure Servlet Deployment
Name and Location
File Name: gpio
Project: iot Maven Webapp
Folder:
Browse...
Created File: C:\Users\Pasindu\Documents\NetBeansProjects\iot\gpio.java
< Back
Next >
Finish
Cancel
Help


New Servlet
Steps
1. Choose File Type
2. Name and Location
3. Configure Servlet Deployment
Configure Servlet Deployment
Register the Servlet with the application by giving the Servlet an internal name (Servlet Name). Then specify patterns that identify the URLs that invoke the Servlet. Separate multiple patterns with commas.
Add information to deployment descriptor (web.xml)
Class Name: gpio
Servlet Name: gpio
URL Pattern(s): /gpio
Initialization Parameters:
Name
Value
New
Edit...
Delete
< Back
Next >
Finish
Cancel
Help

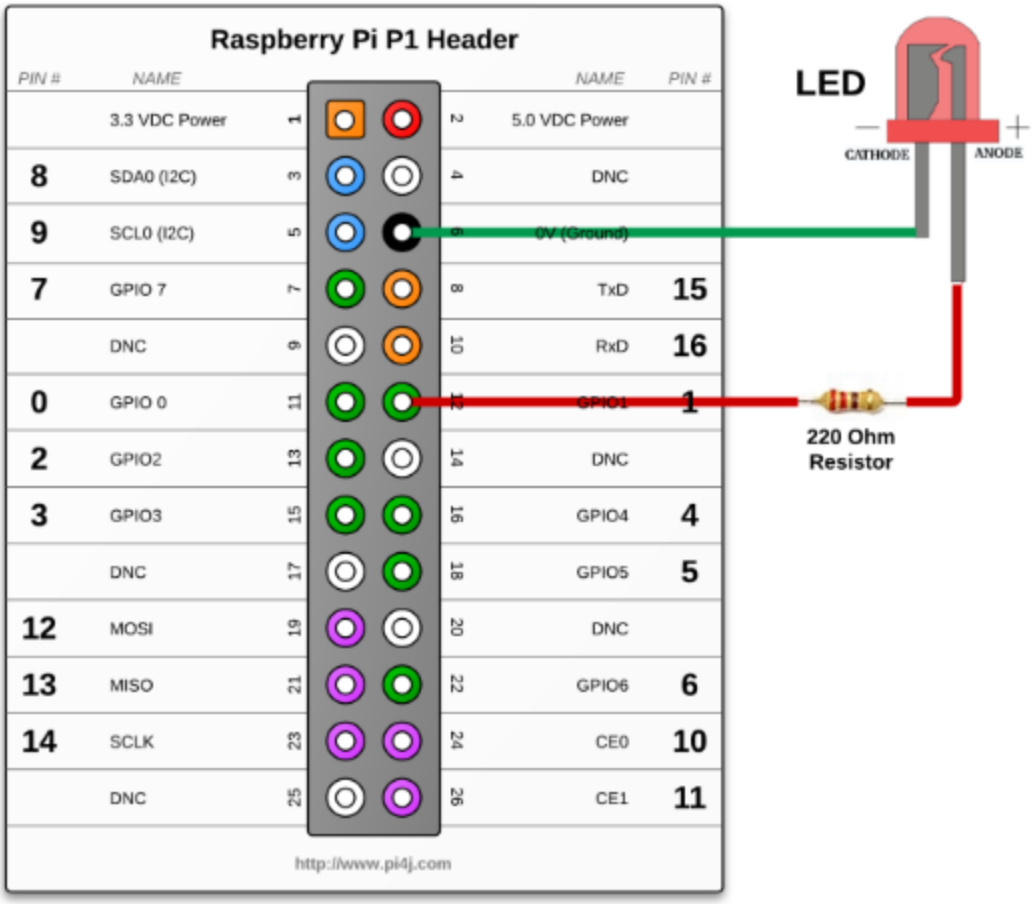

Install locally
Artifact to Install : 3_04_1stDraft_PS\Software\pi4j-1.1\pi4j-1.1\lib\pi4j-core.jar
Browse...
Please enter path to JAR file that represents the dependency with
groupId: javax.servlet.jsp,
artifactId: jsp-api,
version: 2.0.
This JAR will be copied to your local repository.
Please note that having non-repository based JARs as dependencies is bad for build reproducibility.
Install locally
Cancel


Projects
Files
Services
iot Maven Webapp
Web Pages
WEB-INF
web.xml
index.jsp
Test Packages
Other Sources
Dependencies
jsp-api-2.0.jar
<default package>
META-INF
META-INF.maven.com.pi4j.pi4j-core
com.pi4j.concurrent
com.pi4j.io.gpio
com.pi4j.io.gpio.event
com.pi4j.io.gpio.exception
com.pi4j.io.gpio.impl
com.pi4j.io.gpio.tasks.impl
com.pi4j.io.gpio.trigger
com.pi4j.io.i2c
com.pi4j.io.i2c.impl
com.pi4j.io.serial
com.pi4j.io.serial.impl
com.pi4j.io.serial.tasks
com.pi4j.io.spi

- com.pi4j.io.gpio.PinState

Wiring Diagram

The following circuit can be used in conjunction with this sample code.

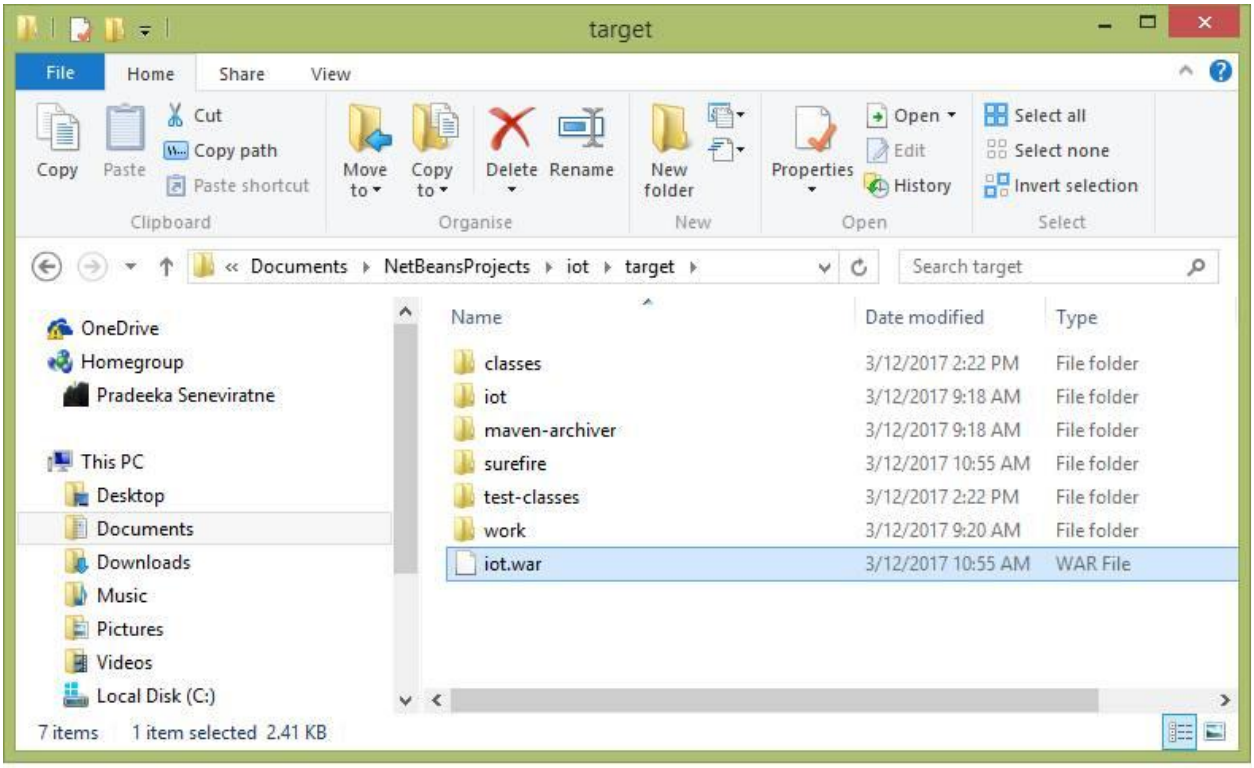


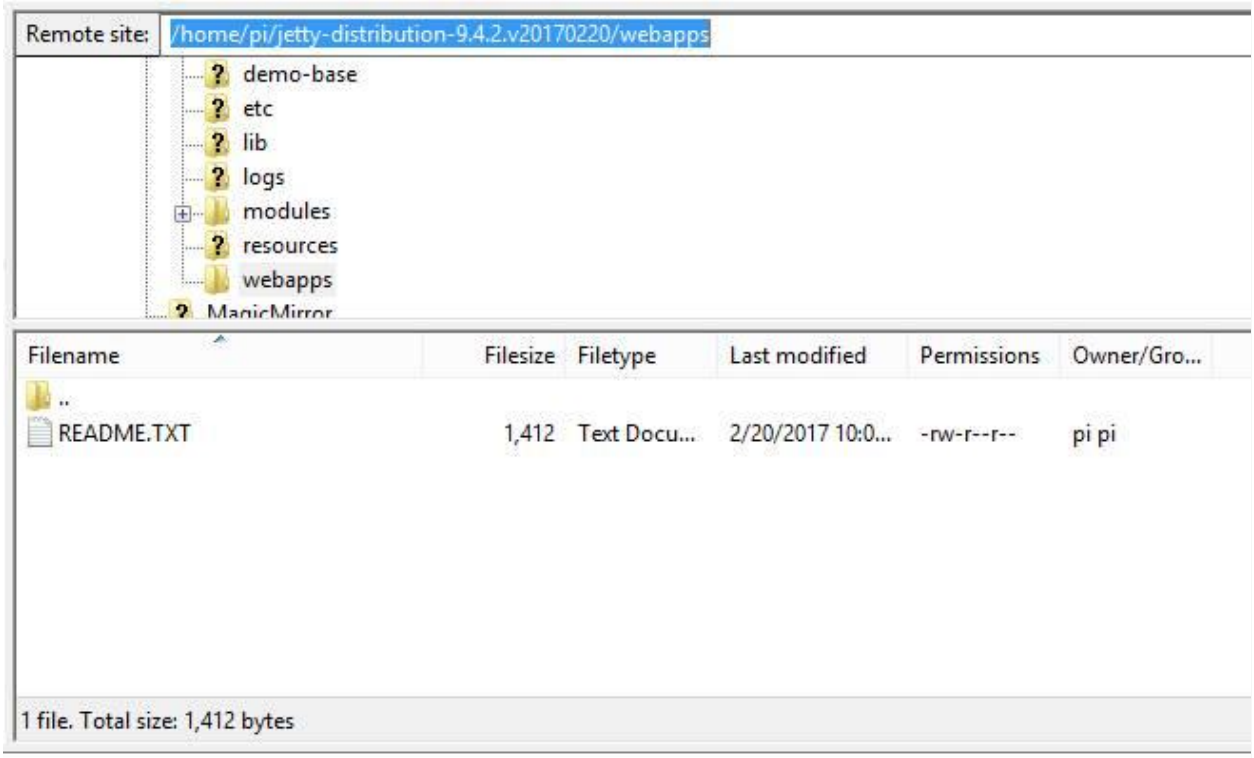
(click here for hi-resolution image)

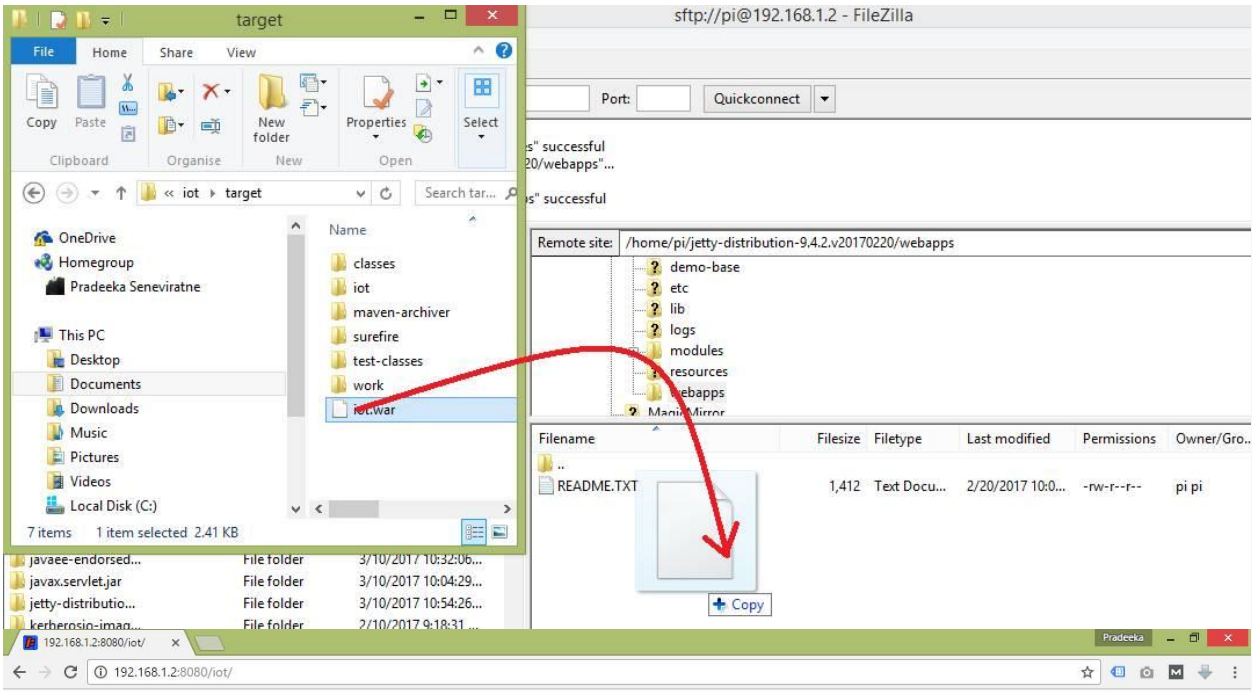
Navigate

If you have not already downloaded and installed the Pi4J library on the RaspberryPi, then view this page for instructio

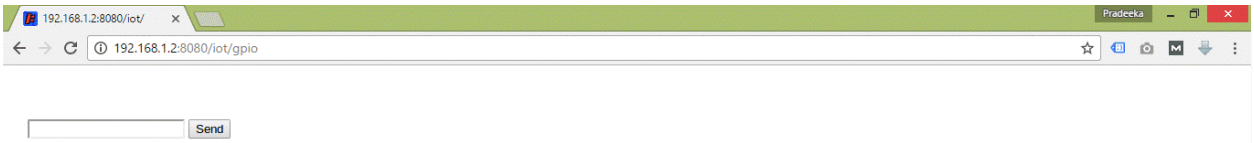
Download & Install Pi4J


target
File
Home
Share
View
Copy
Paste
Cut
Copy path
Paste shortcut
Clipboard
Move to
Copy to
Delete
Rename
Organise
New folder
New
Properties
Open
Edit
History
Open
Select all
Select none
Invert selection
Select
« Documents ▸ NetBeansProjects ▸ iot ▸ target ▸
Search target
OneDrive
Homegroup
Pradeeka Seneviratne
This PC
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Name
Date modified
Type
classes 3/12/2017 2:22 PM File folder
iot 3/12/2017 9:18 AM File folder
maven-archiver 3/12/2017 9:18 AM File folder
surefire 3/12/2017 10:55 AM File folder
test-classes 3/12/2017 2:22 PM File folder
work 3/12/2017 9:20 AM File folder
iot.war 3/12/2017 10:55 AM WAR File
7 items
1 item selected 2.41 KB


Remote site: /home/pi/jetty-distribution-9.4.2.v20170220/webapps
demo-base
etc
lib
logs
modules
resources
webapps
MagicMirror
Filename
Filesize
Filetype
Last modified
Permissions
Owner/Gro...
..
README.TXT
1,412
Text Docu...
2/20/2017 10:0...
-rw-r--r--
pi pi
1 file. Total size: 1,412 bytes

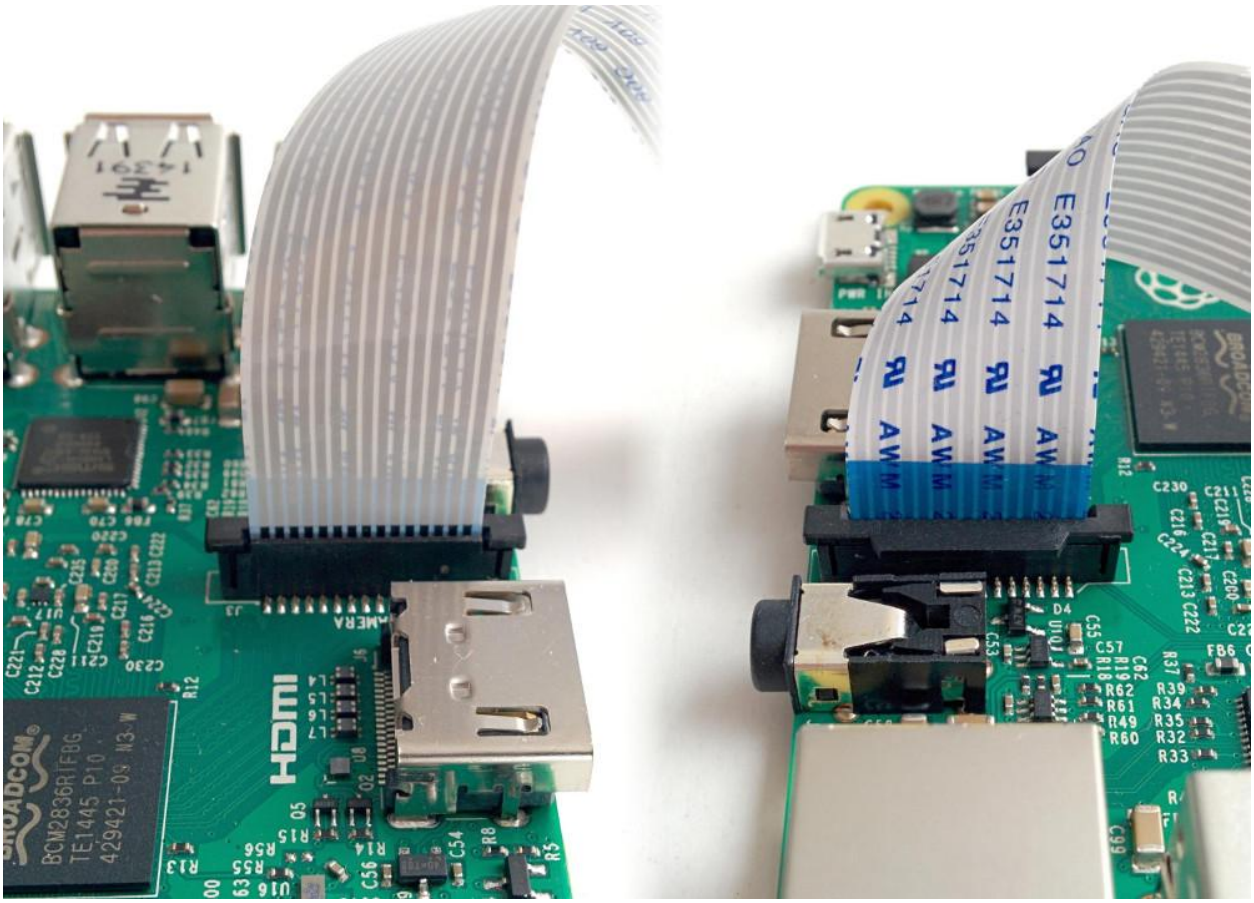

target
File
Home
Share
View
Copy
Paste
New folder
Properties
Select
Clipboard
Organise
New
Open
iot
target
Search tar...
OneDrive
Homegroup
Pradeeka Seneviratne
This PC
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Name
classes
iot
maven-archiver
surefire
test-classes
work
iot.war
7 items
1 item selected 2.41 KB
javaee-endorsed...
File folder
3/10/2017 10:32:06...
javax.servlet.jar
File folder
3/10/2017 10:04:29...
jetty-distributio...
File folder
3/10/2017 10:54:26...
sftp://pi@192.168.1.2 - FileZilla
Port:
Quickconnect
Remote site:
/home/pi/jetty-distribution-9.4.2.v20170220/webapps
demo-base
etc
lib
logs
modules
resources
webapps
Filename
Filesize
Filetype
Last modified
Permissions
Owner/Gro..
README.TXT
1,412
Text Docu...
2/20/2017 10:0...
-rw-r--r--
pi pi
Copy
192.168.1.2:8080/iot/
Pradeeka

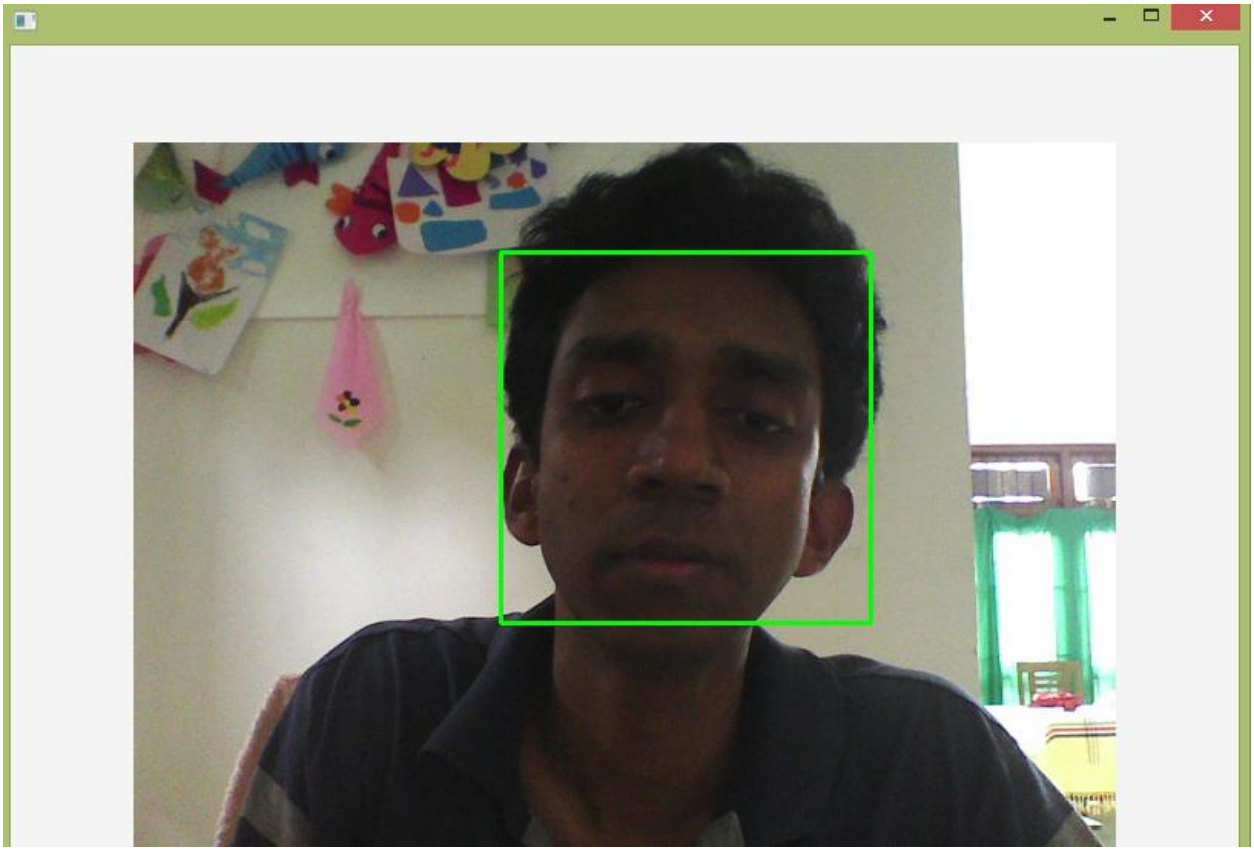
Hello World!

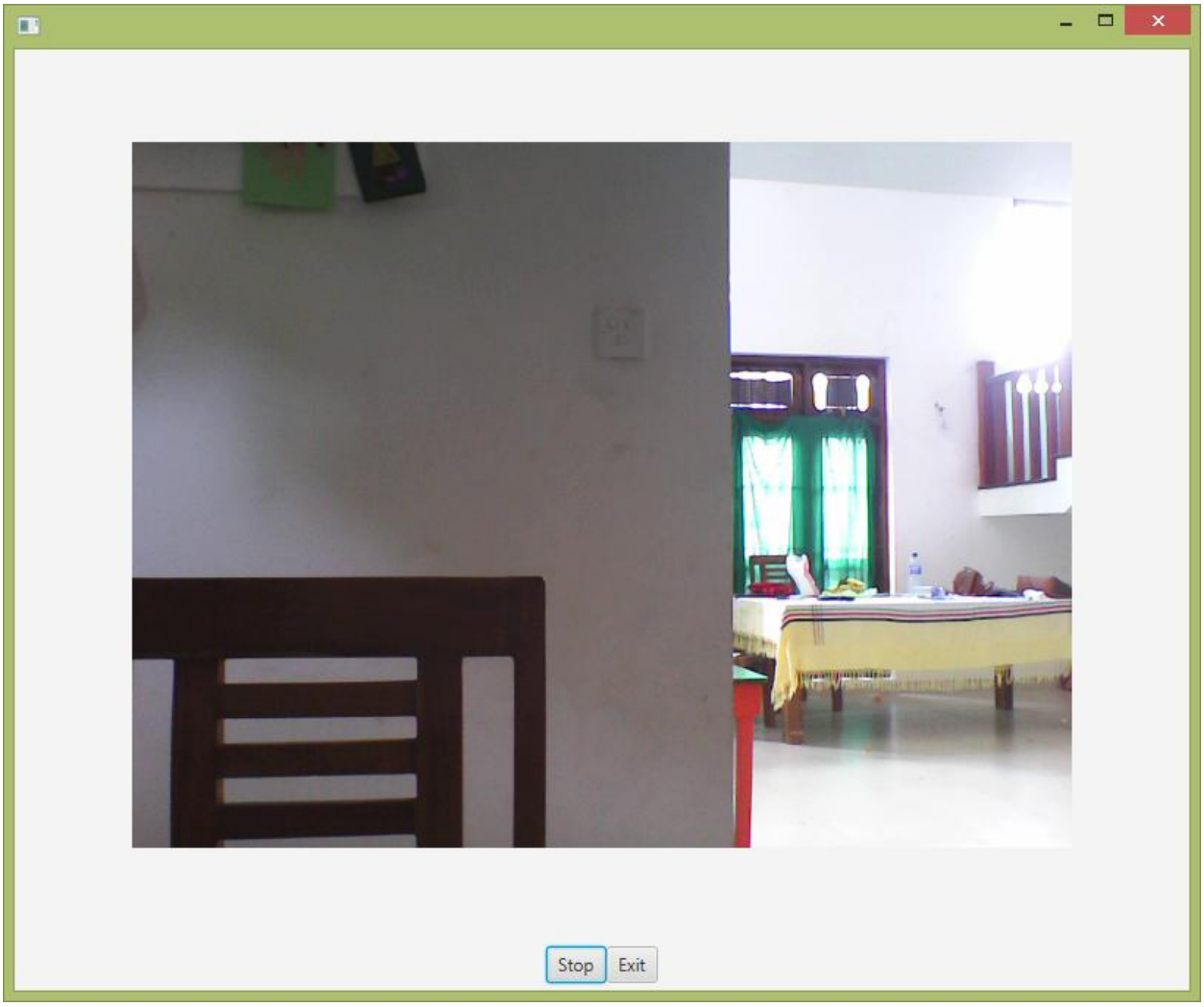


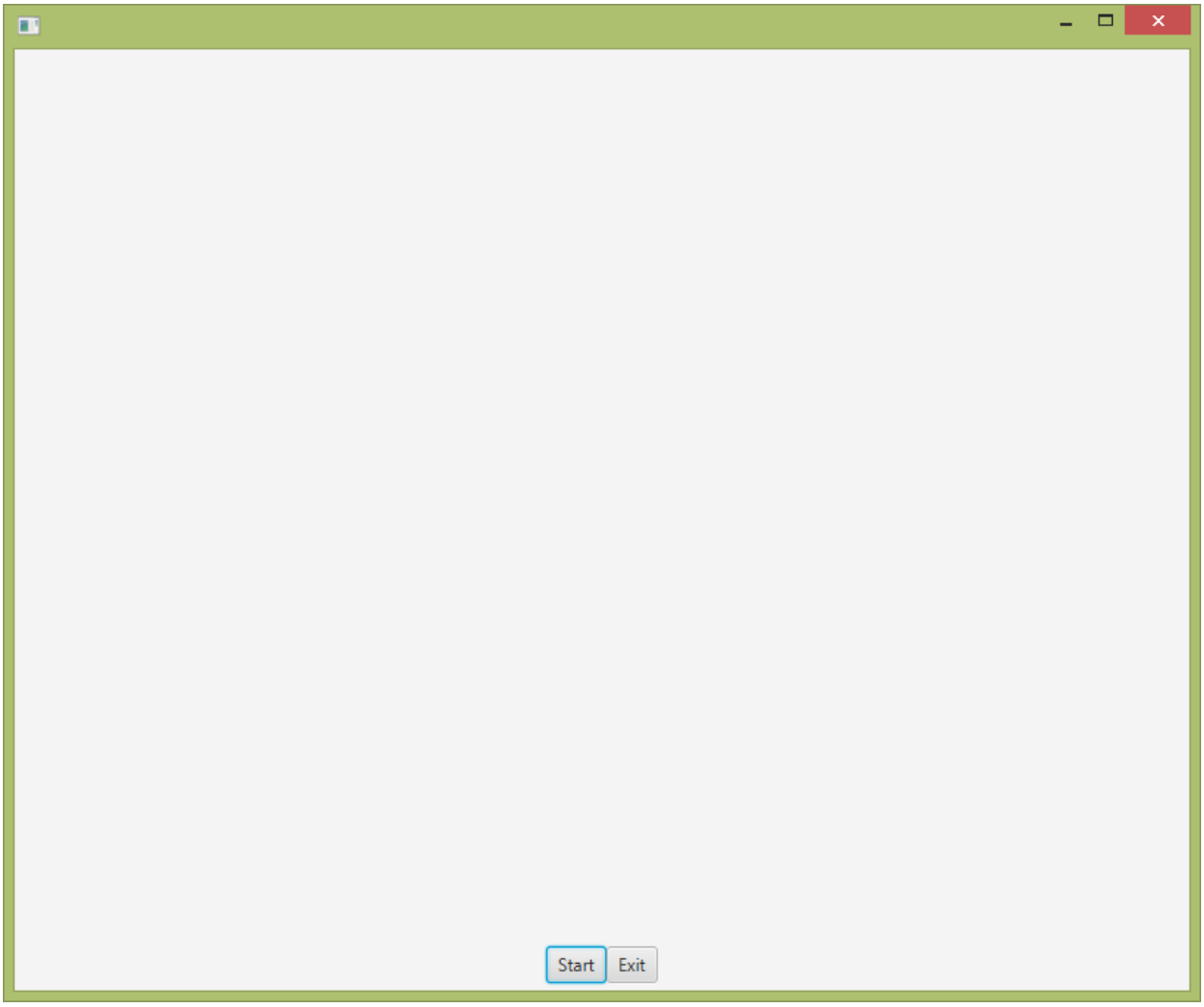
Send

Chapter 7: Security Camera with Face Recognition


BCM2836RIFBG
TE1445 P10
HDMI
E351714
AWM

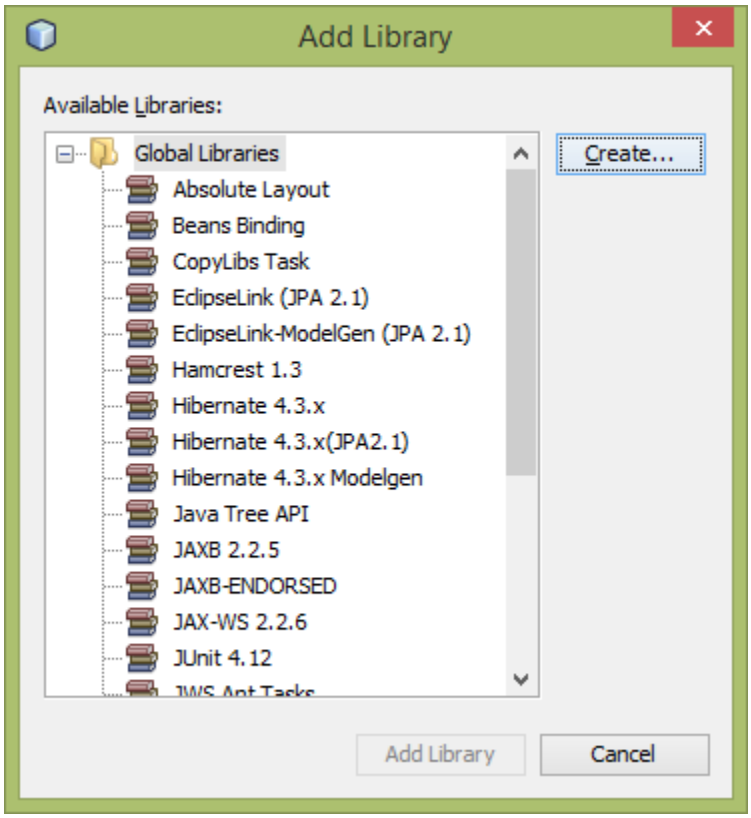


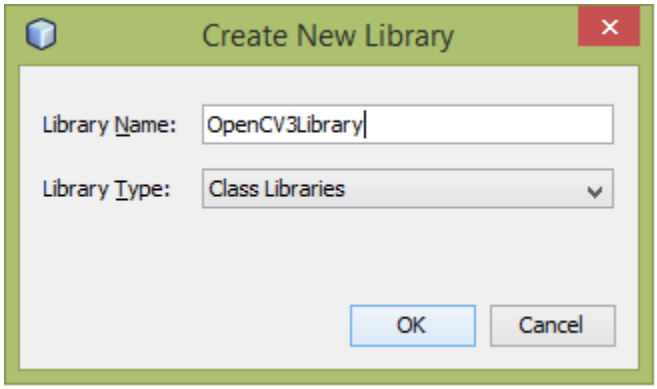

Stop
Exit

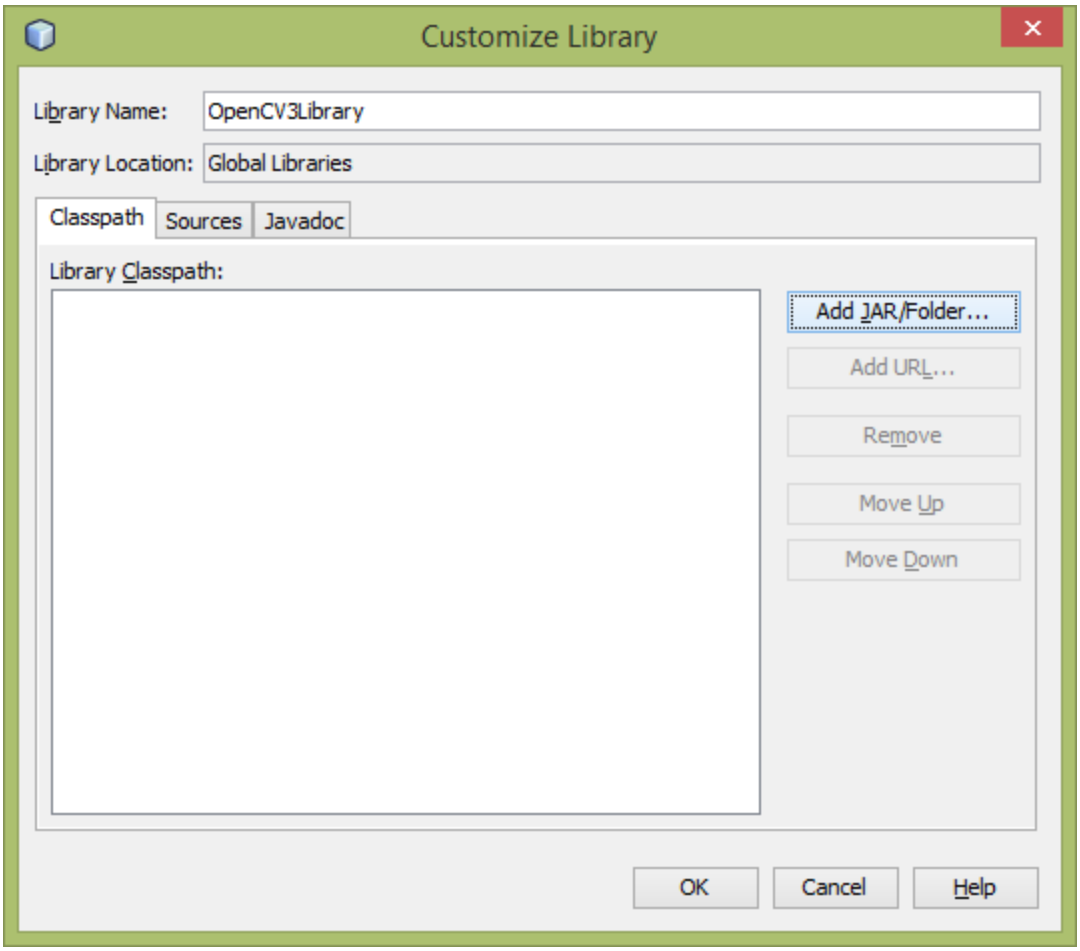


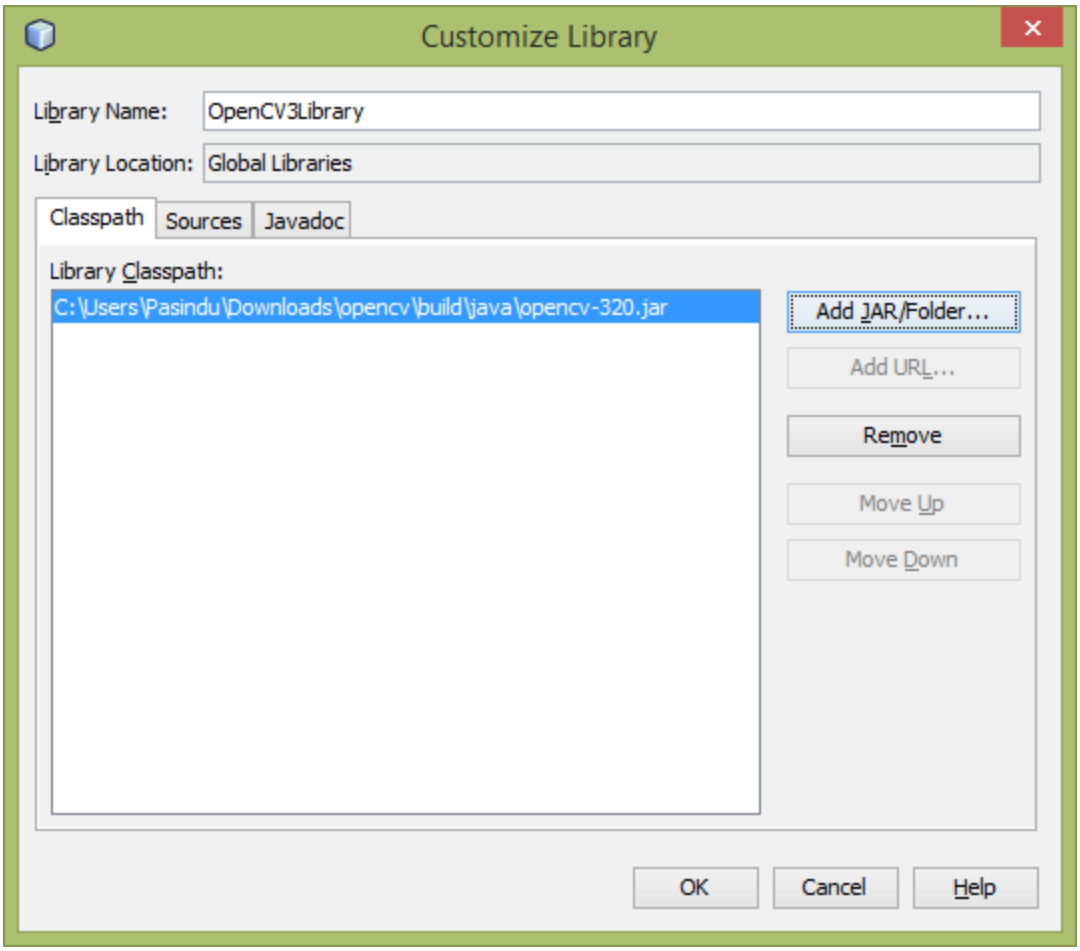
Output - SecurityCamera (run-remote)

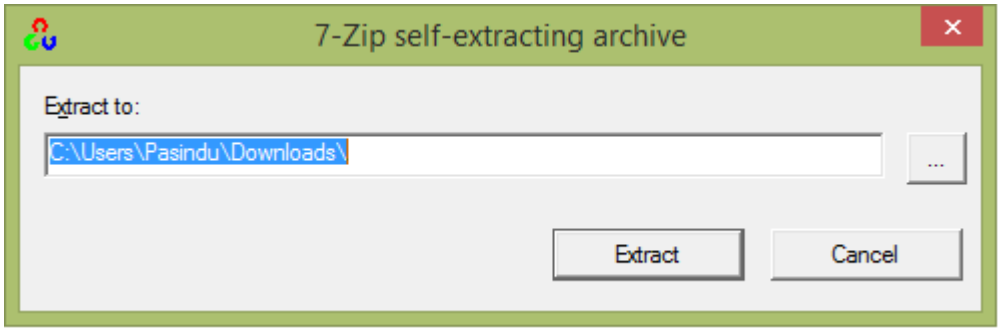
```
jar:
Connecting to 192.168.1.2:22
cmd : mkdir -p '/home/pi/RASPI3JAVA//SecurityCamera/dist'
Connecting to 192.168.1.2:22
done.
profile-rp-calibrate-passwd:
Connecting to 192.168.1.2:22
cmd : cd '/home/pi/RASPI3JAVA//SecurityCamera'; 'sudo' '/opt/java/jd
mat = [  1,   0,   0;
   0,   1,   0;
   0,   0,   1]
run-remote:
BUILD SUCCESSFUL (total time: 44 seconds)
```

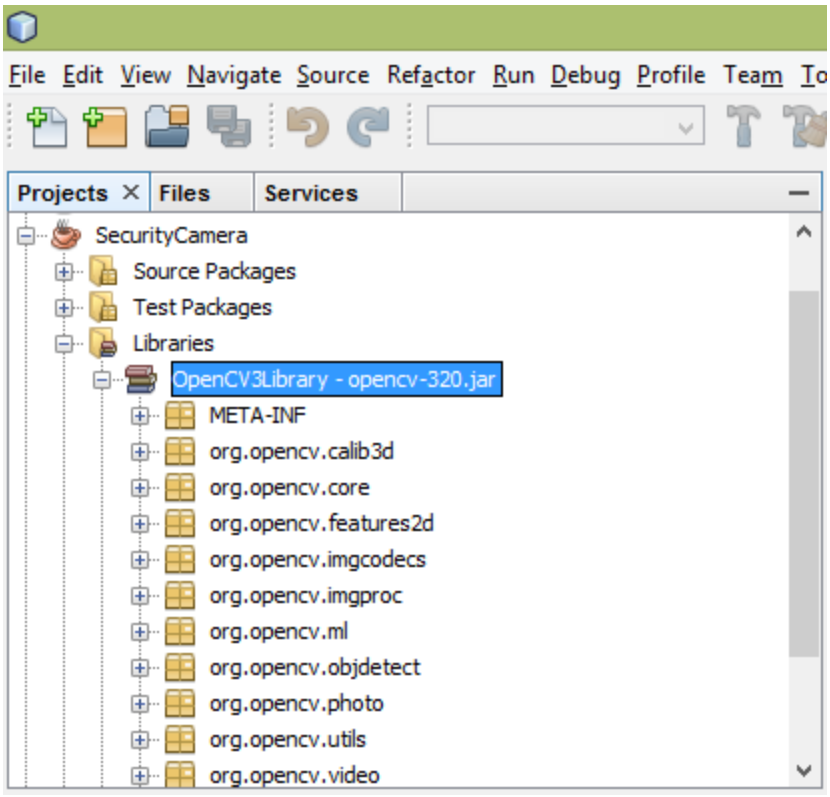

Add Library
Available Libraries:
Global Libraries
Absolute Layout
Beans Binding
CopyLibs Task
EclipseLink (JPA 2.1)
EclipseLink-ModelGen (JPA 2.1)
Hamcrest 1.3
Hibernate 4.3.x
Hibernate 4.3.x(JPA2.1)
Hibernate 4.3.x Modelgen
Java Tree API
JAXB 2.2.5
JAXB-ENDORSED
JAX-WS 2.2.6
JUnit 4.12
Create...
Add Library
Cancel

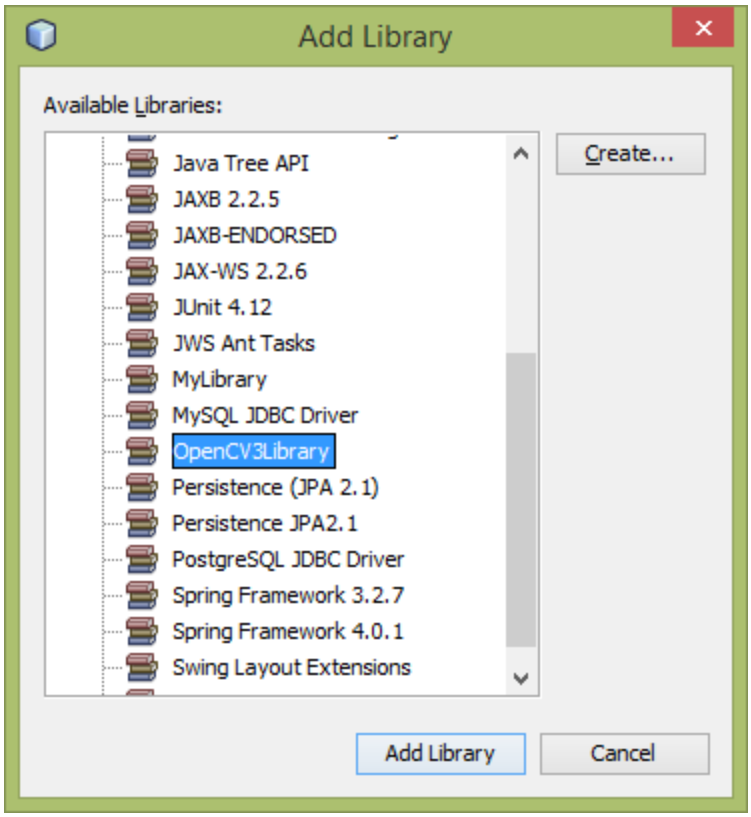

Create New Library
Library Name:
OpenCV3Library
Library Type:
Class Libraries
OK
Cancel

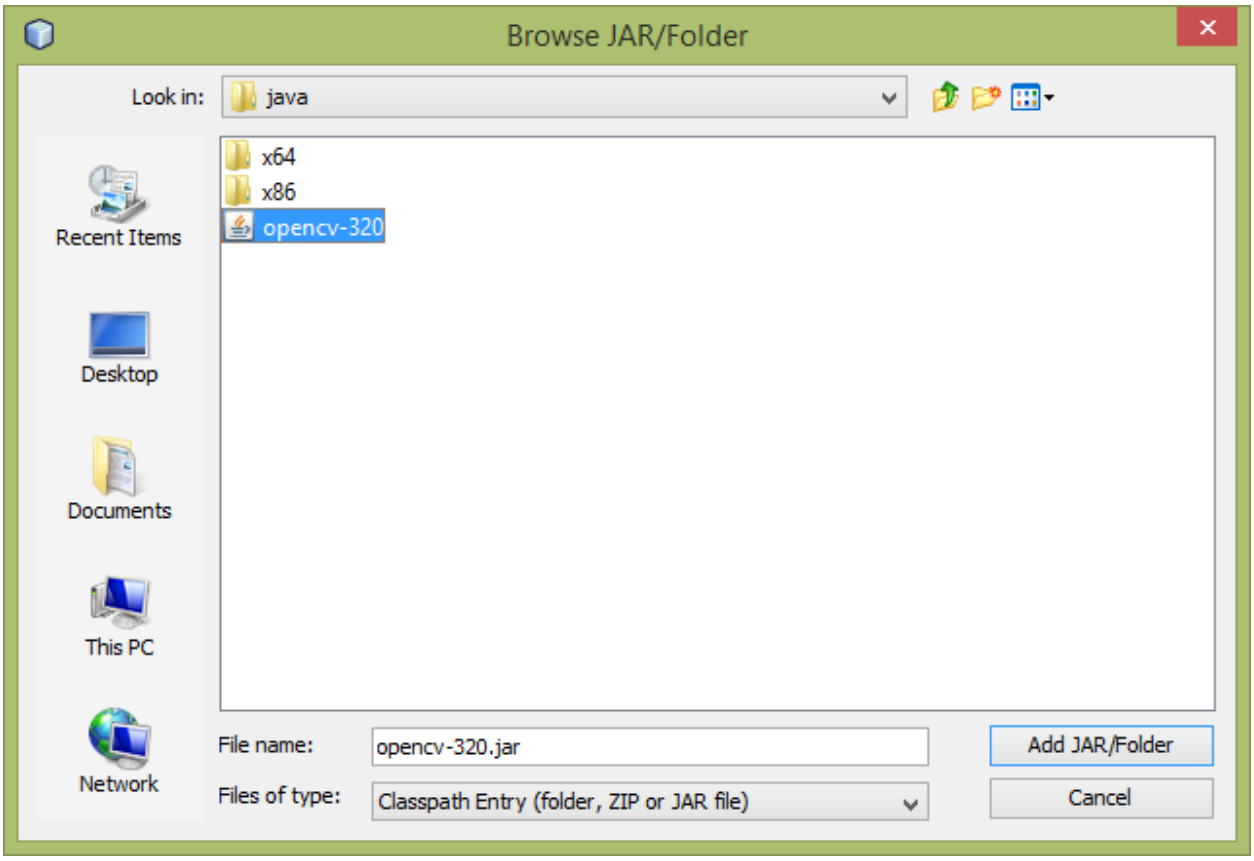

Customize Library
Library Name:
OpenCV3Library
Library Location:
Global Libraries
Classpath
Sources
Javadoc
Library Classpath:
Add JAR/Folder...
Add URL...
Remove
Move Up
Move Down
OK
Cancel
Help

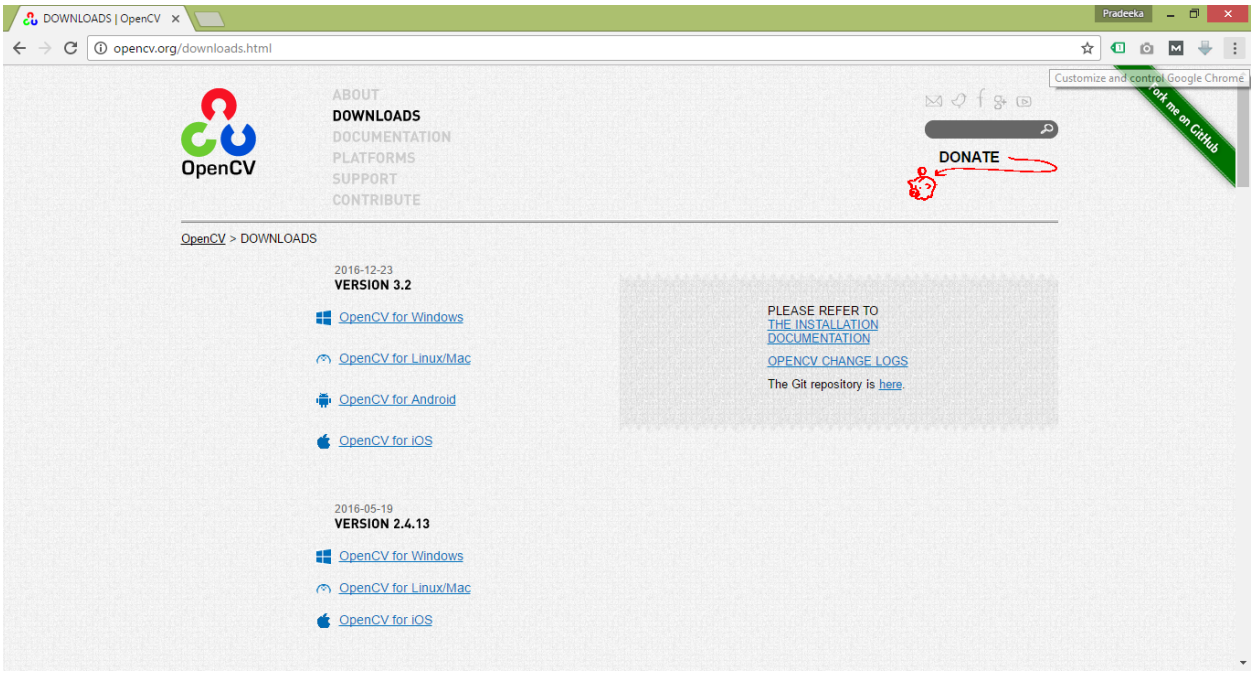

Customize Library
Library Name:
OpenCV3Library
Library Location:
Global Libraries
Classpath
Sources
Javadoc
Library Classpath:
C:\Users\Pasindu\Downloads\opencv\build\java\opencv-320.jar
Add JAR/Folder...
Add URL...
Remove
Move Up
Move Down
OK
Cancel
Help

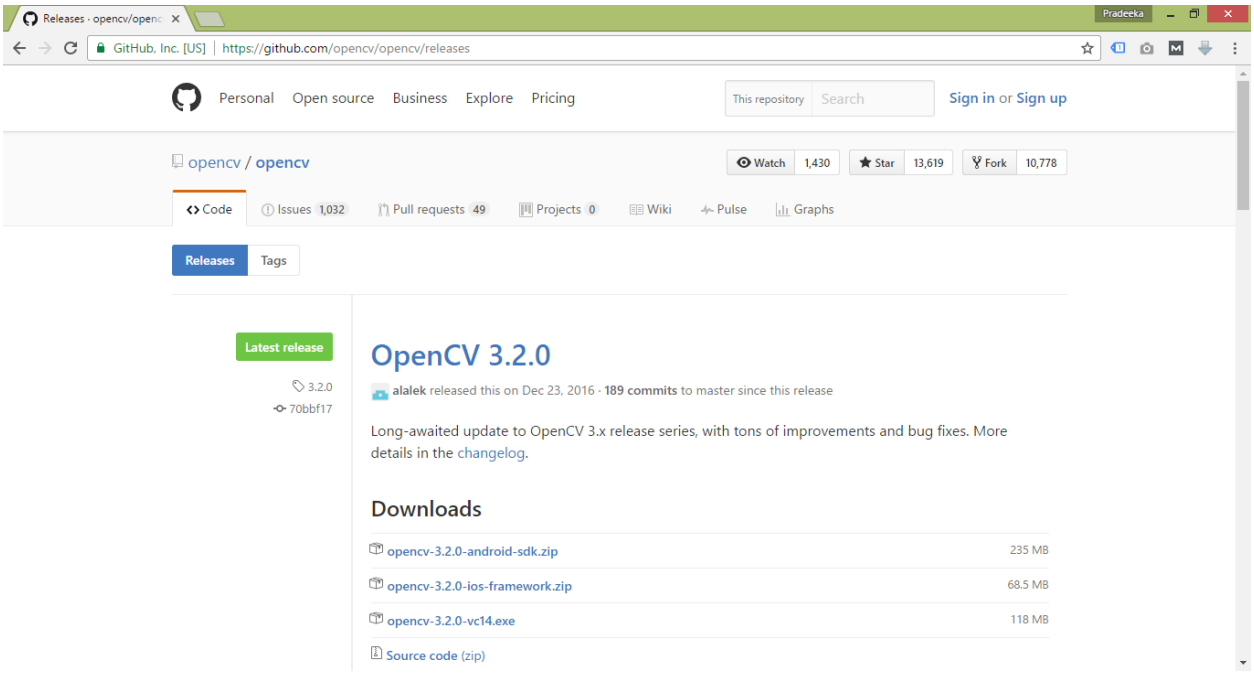

7-Zip self-extracting archive
Extract to:
C:\Users\Pasindu\Downloads\
...
Extract
Cancel

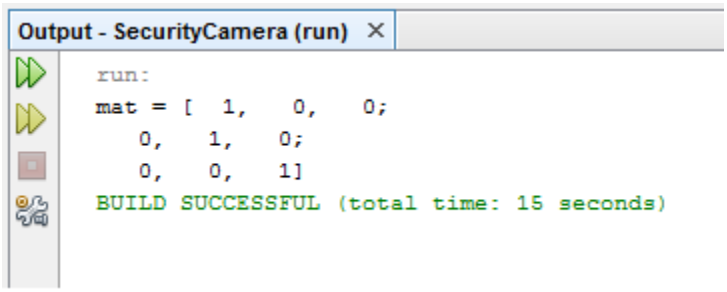

File Edit View Navigate Source Refactor Run Debug Profile Team To
Projects
Files
Services
SecurityCamera
Source Packages
Test Packages
Libraries
OpenCV3Library - opencv-320.jar
META-INF
org.opencv.calib3d
org.opencv.core
org.opencv.features2d
org.opencv.imgcodecs
org.opencv.imgproc
org.opencv.ml
org.opencv.objdetect
org.opencv.photo
org.opencv.utils
org.opencv.video

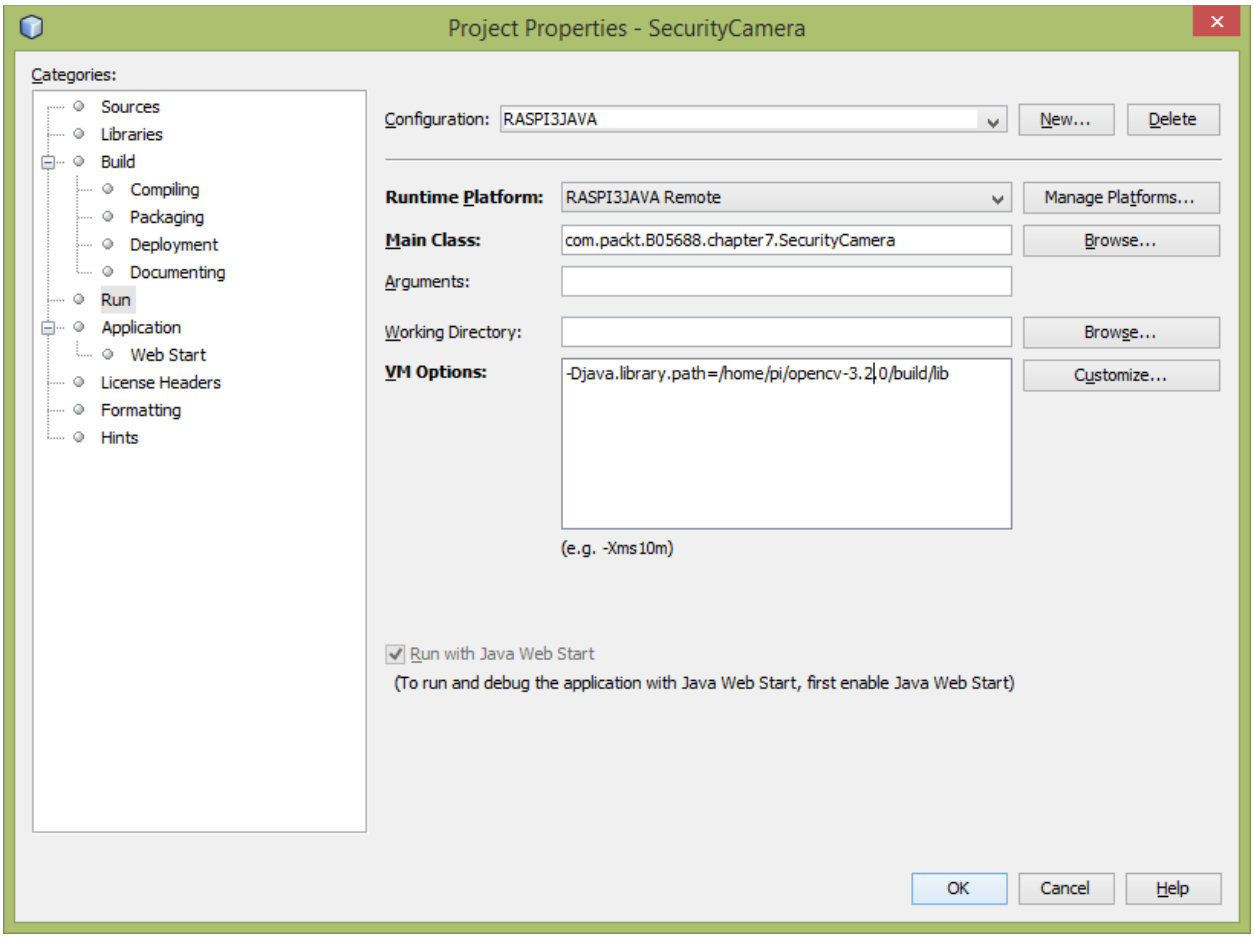

Add Library
Available Libraries:
Java Tree API
JAXB 2.2.5
JAXB-ENDORSED
JAX-WS 2.2.6
JUnit 4.12
JWS Ant Tasks
MyLibrary
MySQL JDBC Driver
OpenCV3Library
Persistence (JPA 2.1)
Persistence JPA2.1
PostgreSQL JDBC Driver
Spring Framework 3.2.7
Spring Framework 4.0.1
Swing Layout Extensions
Create...
Add Library
Cancel

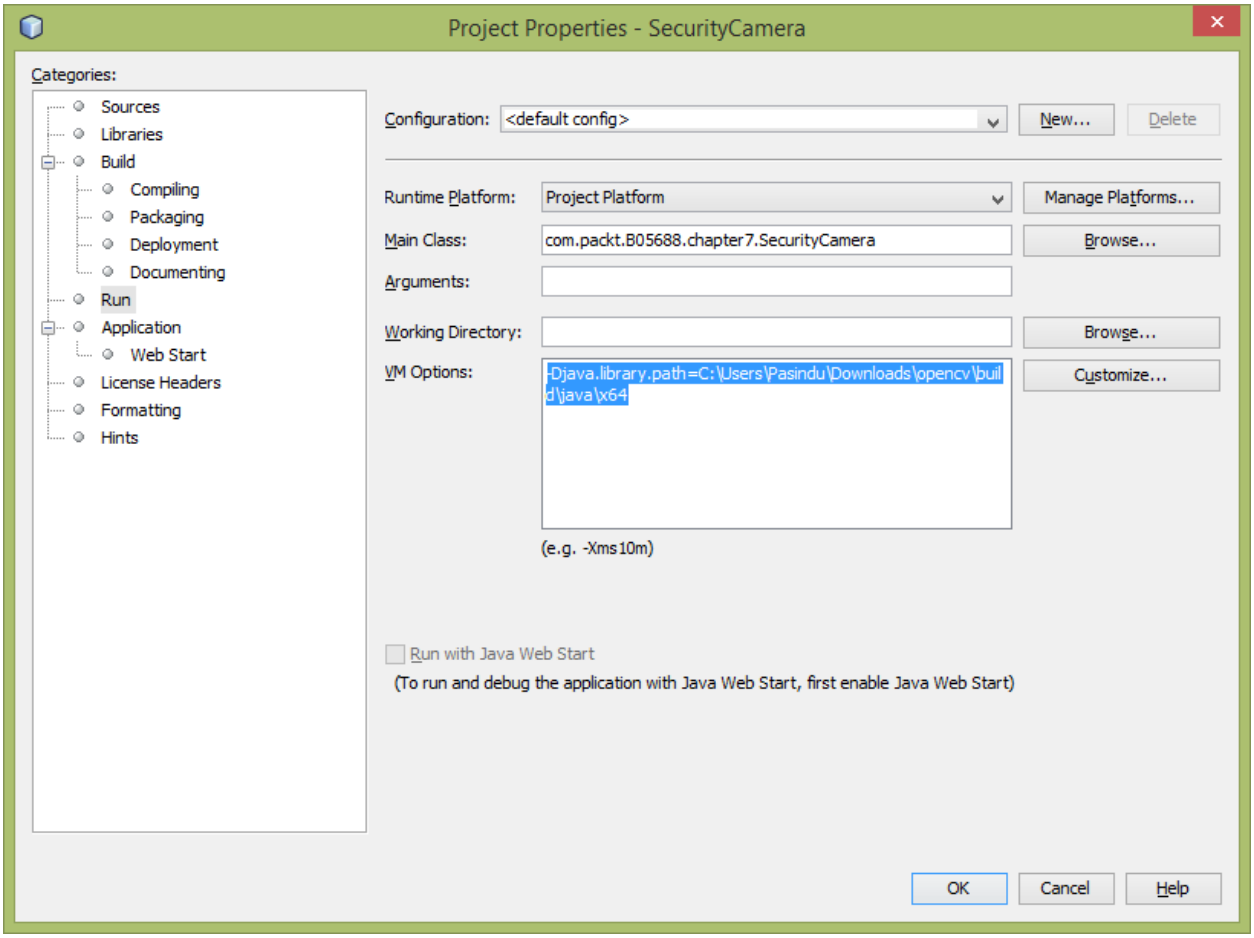

Browse JAR/Folder
Look in:
java
x64
x86
opencv-320
Recent Items
Desktop
Documents
This PC
Network
File name:
opencv-320.jar
Add JAR/Folder
Files of type:
Classpath Entry (folder, ZIP or JAR file)
Cancel


DOWNLOADS | OpenCV
opencv.org/downloads.html
OpenCV
ABOUT
DOWNLOADS
DOCUMENTATION
PLATFORMS
SUPPORT
CONTRIBUTE
DONATE
OpenCV > DOWNLOADS
2016-12-23
VERSION 3.2
OpenCV for Windows
OpenCV for Linux/Mac
OpenCV for Android
OpenCV for iOS
PLEASE REFER TO
THE INSTALLATION
DOCUMENTATION
OPENCV CHANGE LOGS
The Git repository is here.
2016-05-19
VERSION 2.4.13
OpenCV for Windows
OpenCV for Linux/Mac
OpenCV for iOS


Releases · opencv/opencv
Pradeeka
GitHub, Inc. [US] | https://github.com/opencv/opencv/releases
Personal Open source Business Explore Pricing
This repository Search
Sign in or Sign up
opencv / opencv
Watch 1,430
Star 13,619
Fork 10,778
Code
Issues 1,032
Pull requests 49
Projects 0
Wiki
Pulse
Graphs
Releases
Tags
Latest release
3.2.0
70bbf17
OpenCV 3.2.0
alalek released this on Dec 23, 2016 · 189 commits to master since this release
Long-awaited update to OpenCV 3.x release series, with tons of improvements and bug fixes. More details in the changelog.
Downloads
opencv-3.2.0-android-sdk.zip 235 MB
opencv-3.2.0-ios-framework.zip 68.5 MB
opencv-3.2.0-vc14.exe 118 MB
Source code (zip)


Output - SecurityCamera (run)
run:
mat = [1, 0, 0;
0, 1, 0;
0, 0, 1]
BUILD SUCCESSFUL (total time: 15 seconds)


Project Properties - SecurityCamera
Categories:
Sources
Libraries
Build
Compiling
Packaging
Deployment
Documenting
Run
Application
Web Start
License Headers
Formatting
Hints
Configuration: RASPI3JAVA
New...
Delete
Runtime Platform: RASPI3JAVA Remote
Manage Platforms...
Main Class: com.packt.B05688.chapter7.SecurityCamera
Browse...
Arguments:
Working Directory:
Browse...
VM Options: -Djava.library.path=/home/pi/opencv-3.2.0/build/lib
Customize...
(e.g. -Xms10m)
Run with Java Web Start
(To run and debug the application with Java Web Start, first enable Java Web Start)
OK
Cancel
Help


Project Properties - SecurityCamera
Categories:
Sources
Libraries
Build
Compiling
Packaging
Deployment
Documenting
Run
Application
Web Start
License Headers
Formatting
Hints
Configuration:
<default config>
New...
Delete
Runtime Platform:
Project Platform
Manage Platforms...
Main Class:
com.packt.B05688.chapter7.SecurityCamera
Browse...
Arguments:
Working Directory:
Browse...
VM Options:
-Djava.library.path=C:\Users\Pasindu\Downloads\opencv\build\java\x64
Customize...
(e.g. -Xms10m)
Run with Java Web Start
(To run and debug the application with Java Web Start, first enable Java Web Start)
OK
Cancel
Help