



Java SE 8 for Tablets, Pis, and Legos

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Java Technology Ambassador

JavaOne Content Chair



@steveonjava

An abstract background on the right side of the slide, consisting of overlapping, semi-transparent geometric shapes in shades of blue and gold, creating a complex, crystalline structure.

MAKE THE
FUTURE
JAVA

ORACLE®





Lego
Mindstorms



Digital
Signage



Dev
Boards



DukePad



iOS



Android

World Population 6.3 Billion 6.8 Billion 7.2 Billion 7.6 Billion

Connected Devices 500 Million 12.5 Billion 25 Billion 50 Billion

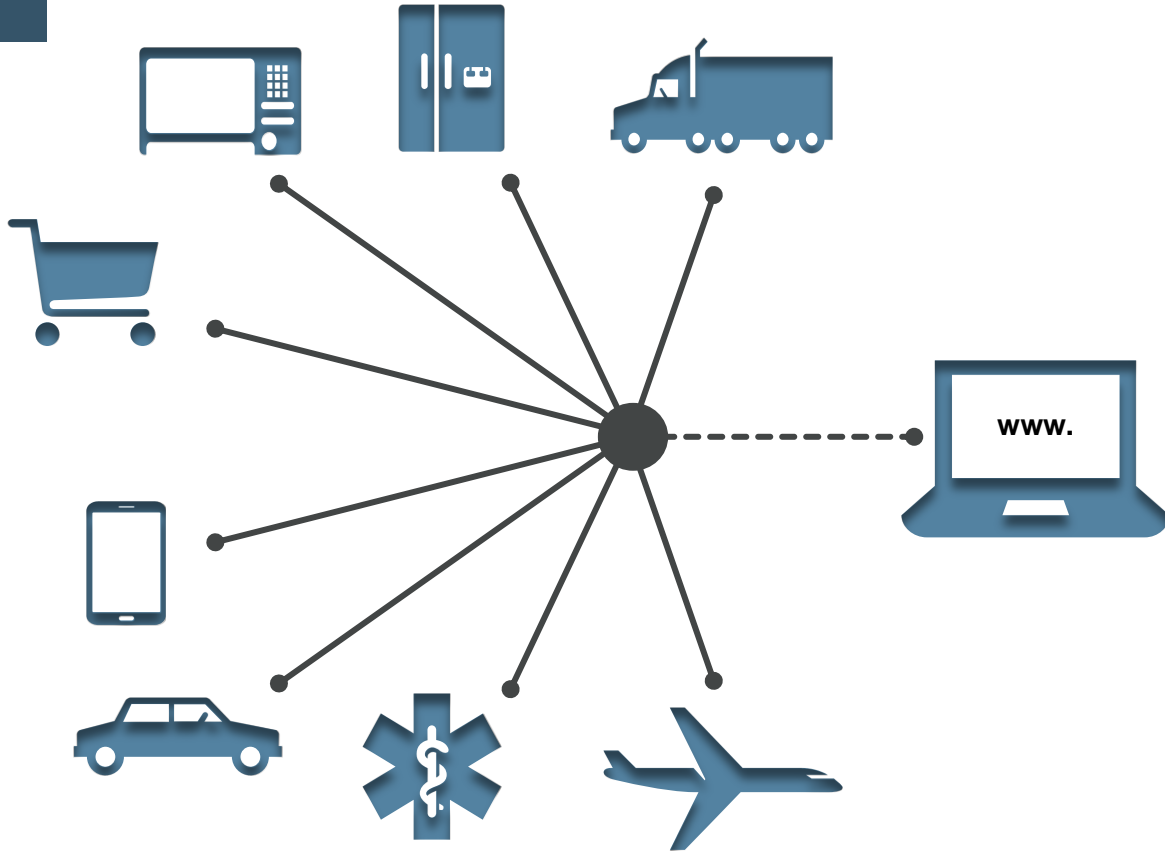


Connected Devices per Person 0.08 1x 1.84 3x 3.47 5x 6.58

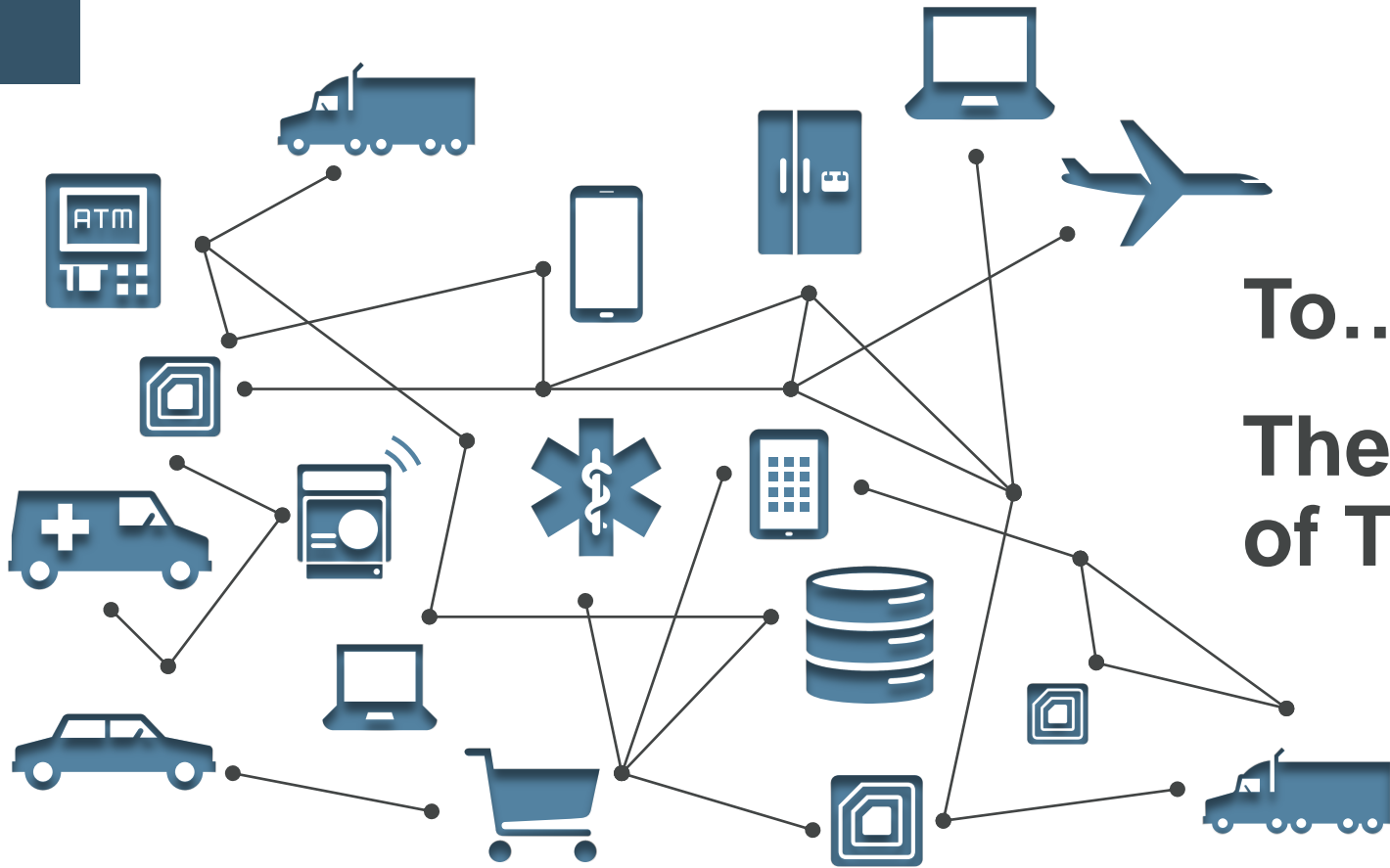
2003 2010 2015 2020



Source: Cisco



From...
Things
Connected to
the Internet

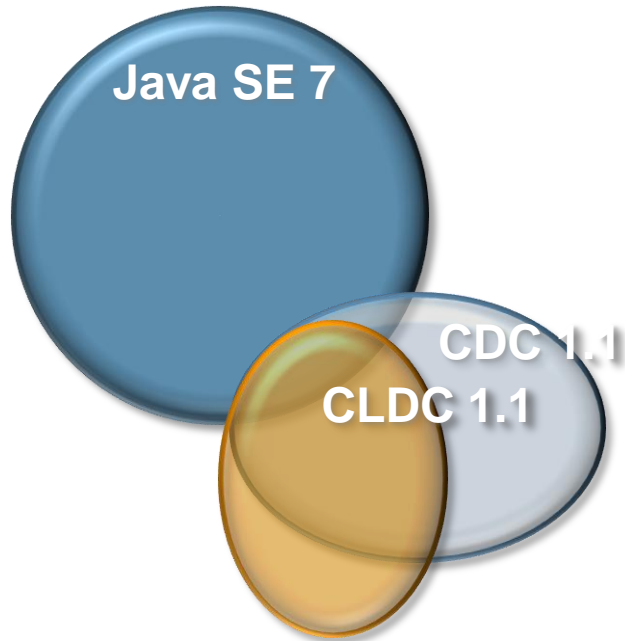


To...

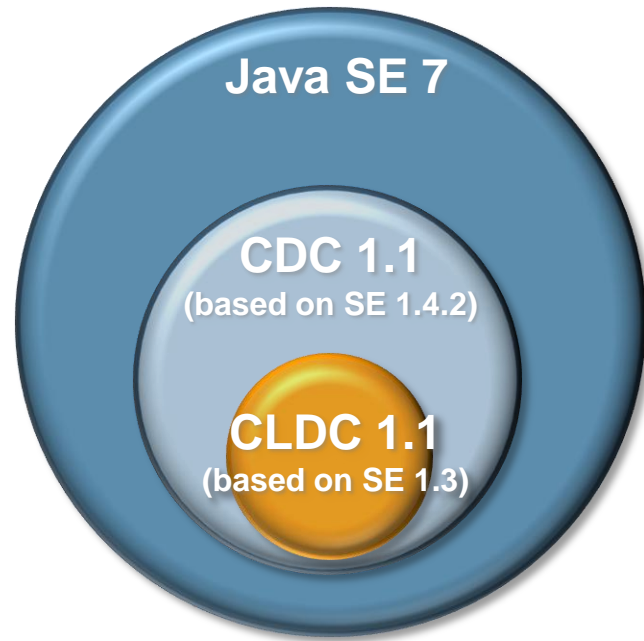
The Internet
of Things

Today

APIs

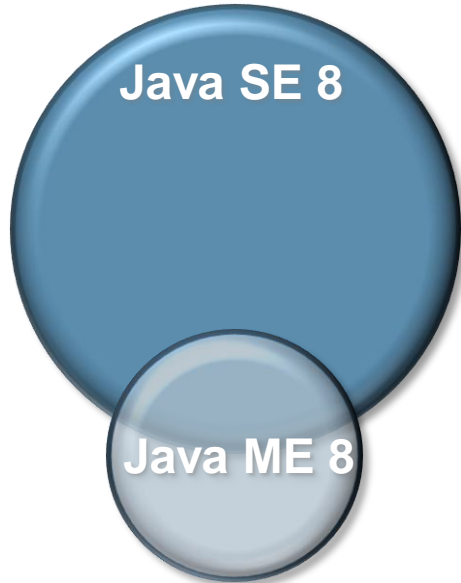


Language

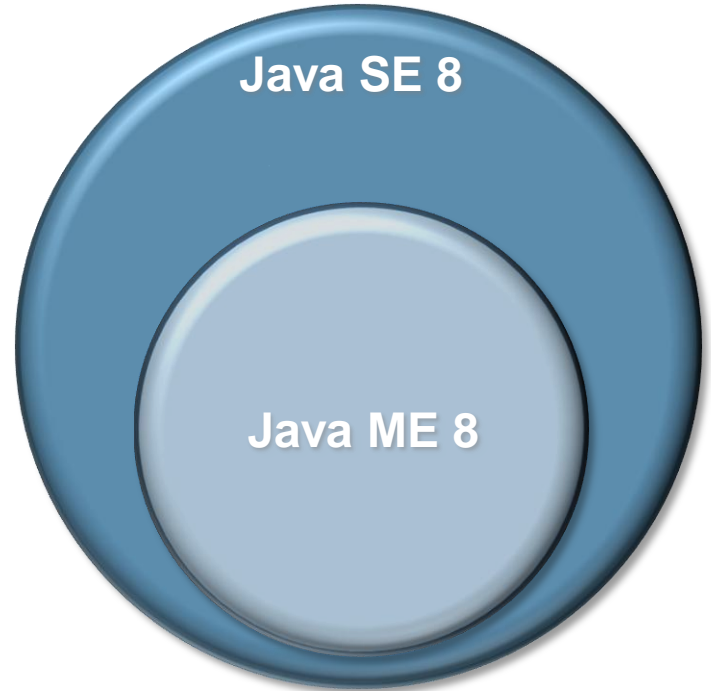


Java 8

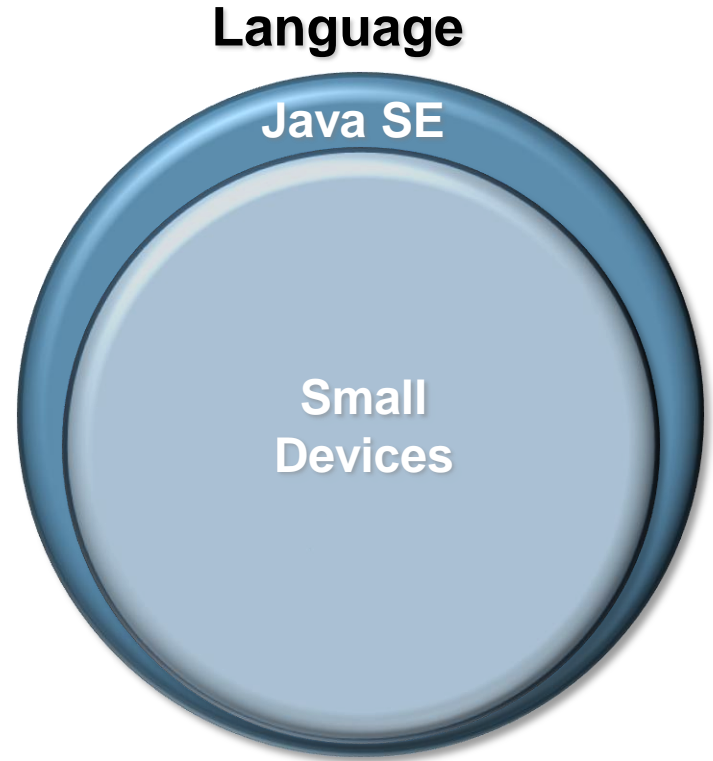
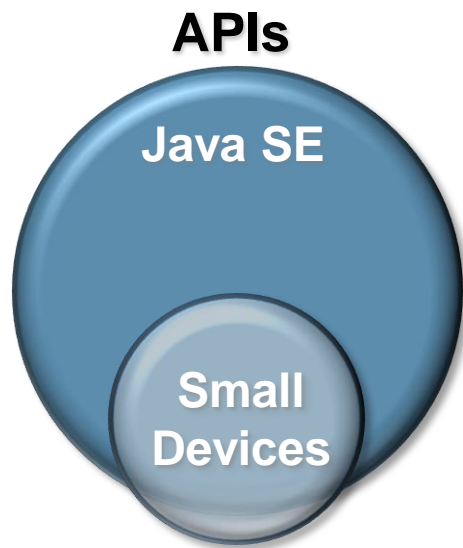
APIs



Language



Beyond Java 8



	Java Embedded	Native/C/C++
Cross-platform/multi-architecture/	Yes	No
Sandbox security model	Yes	No
Robustness	Excellent	Varied
Multi-tasking/multi-threading	Built-in	Add-on, platform-specific
Automatic memory management	Yes	No
Pre-integrated and customizable	Yes	Varied
Performance	Optimized	Varied
Code updatability	Excellent	Varied
Efficient, scalable development model from small embedded to large systems	Yes	No
Developer community	Large	Fragmented

LeJOS

How it works on the EV3



The Heart of the EV3

- TI Sitara AM1808
 - ARM9, 300Mhz
- 64MB RAM / 16MB Flash
- Analog to Digital Converter
- 4 Motor Ports
- 4 Sensor Ports
- Bluetooth / USB
- MicroSD



EV3 Motors



EV3 Sensors



Color and Light Sensor



Color Mode



Ambient Light Intensity Mode



Reflected Light Intensity Mode

Ultrasonic Sensor



Measuring mode Vs Presence Mode

Infrared Sensor



Proximity Mode



Beacon Mode

Remote Control



Getting Started with LeJOS

Creating Your SD Card

- Micro SD Card (> 2GB)
- Compatible WIFI adapter
 - NetGear WNA1100
 - EDIMAX EW-7811Un
- Linux (or a Linux VM)
- Details here:

<http://sourceforge.net/p/lejos/wiki/Home/>



Getting Started with LeJOS

Setting Up Your Dev Environment

- IDE
 - Eclipse Kepler (needed to compile LeJOS source)
- Jars you need:
 - OpenJDK Java 7 Runtime
 - Java Native Access (libjna)
- Download/compile LeJOS Code
 - Repo: [git://git.code.sf.net/p/lejos/ev3](https://git.code.sf.net/p/lejos/ev3)

Creates ev3classes.jar

Simple LeJOS Application

```
import lejos.nxt.Button;
import lejos.nxt.LCD;
public class EV3FirstProgram {
    public static void main(String[] args) {
        LCD.clear();
        LCD.drawString("First EV3 Program", 0, 5);
        Button.waitForAnyPress();
        LCD.clear();
        LCD.refresh();
    }
}
```



Running on Device

Copy your jar to device:

```
Desktop$ scp EV3FirstProgram.jar root@<ev3 ip>:~
```

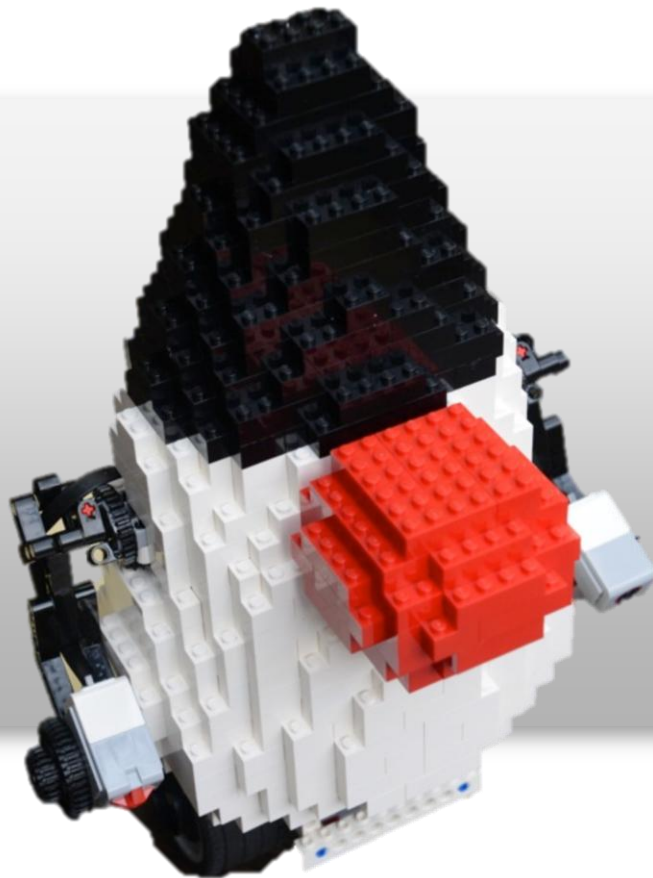
SSH to device (password is blank):

```
Desktop$ ssh root@<ev3 ip>
```

Run program:

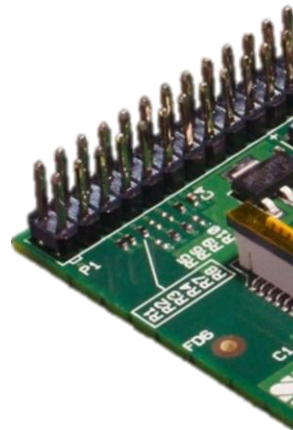
```
EV3$ jrun -cp EV3FirstProgram.jar EV3FirstProgram
```

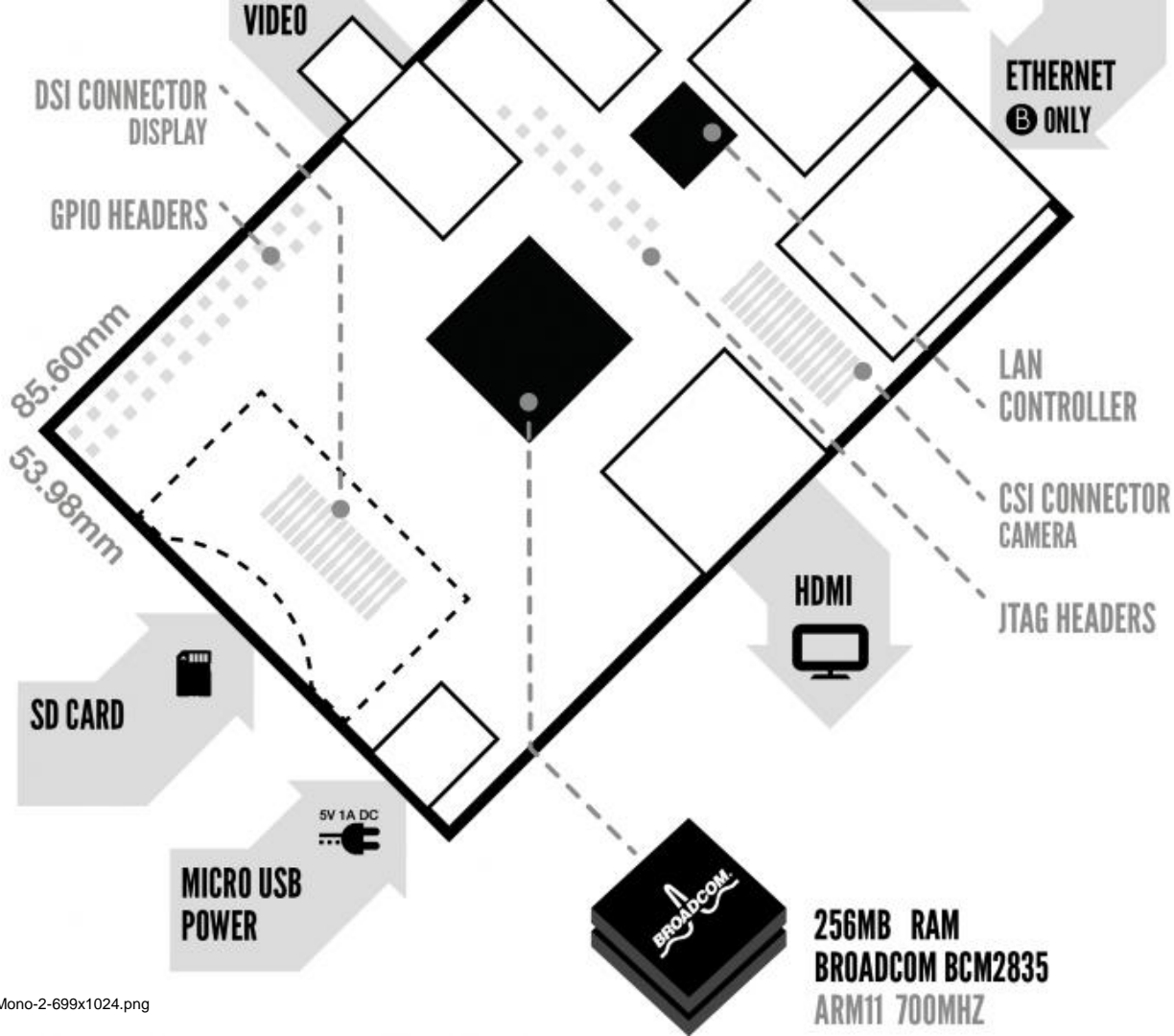
Lego Duke Segway



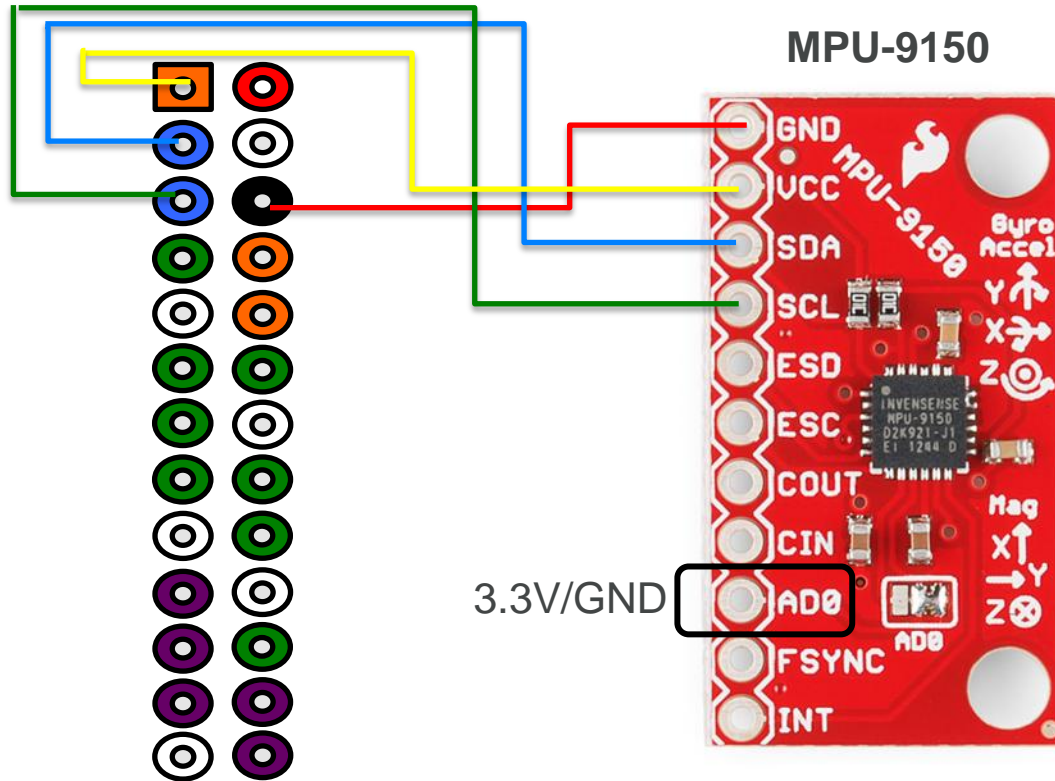
Have Java With Your Dessert

Raspberry Pi

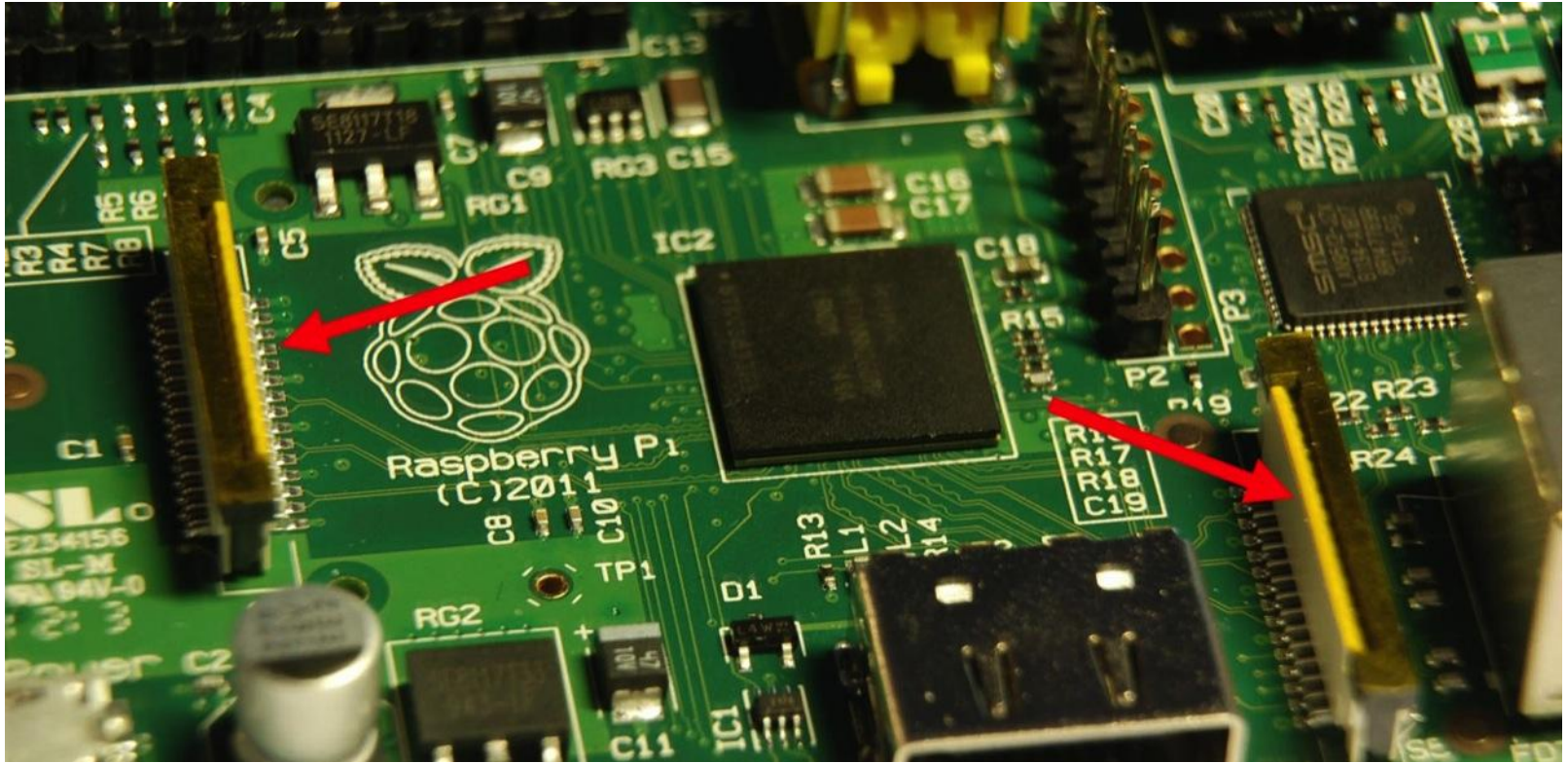




I²C Hardware via Pi4J



And what are these for?



Chalkboard Electronics Touchscreen

- 10" or 7" Form Factor
- Connects via HDMI/USB
- Tested with JavaFX 8
- 10% Exclusive Discount:

G1F0U796Z083



Chalkboard
Electronics

JavaFX on Raspberry Pi Gotchas



WebView



Media

And you can do cool stuff like this...

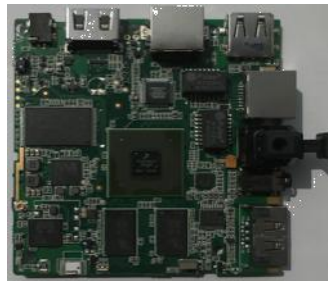
<https://bitbucket.org/stephanj/tweetwall>

The screenshot shows a 'Session Room 6' interface. At the top left is the 'DEVOXX™' logo. At the top right, it says 'SESSION ROOM 6'. The main content area is divided into three sections:

- Session Title:** 'HOW TO DO KICK-ASS SOFTWARE DEVELOPMENT' (on an orange background).
- Description:** 'With Kick-Ass Software Development you actually get stuff done. Feedback cycles are short, code quality is awesome and customers get the features they lust after. Less managers managing, less testers testing and less IT-operators operating. The developers take the power back, making them much happier. Sound like paradise? It is!'.
- Speaker:** A circular profile picture of Sven Peters with the name 'SVEN PETERS' below it.
- Current Time:** 'CURRENT TIME: 17:27' (on a teal background).
- Sessions List:** 'SESSIONS:' followed by two items:
 - '12:00 - 13:00 How To Do Kick-Ass Software Development' (with an orange triangle icon)
 - '13:10 - 13:25' (partially visible)



ARM



freescale



QUALCOMM



gemalto
security to be free



ST

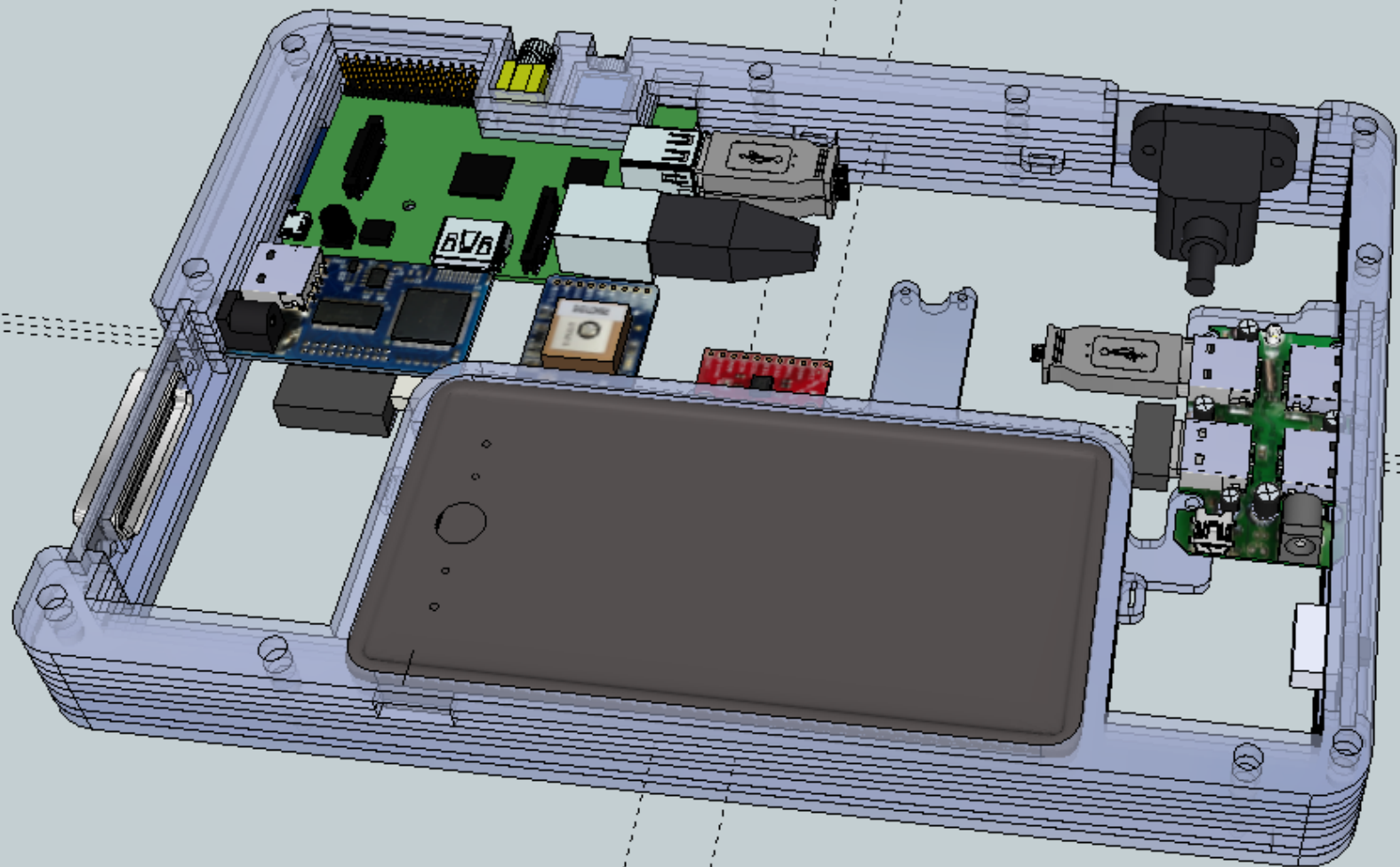
Example device that run Java SE Embedded

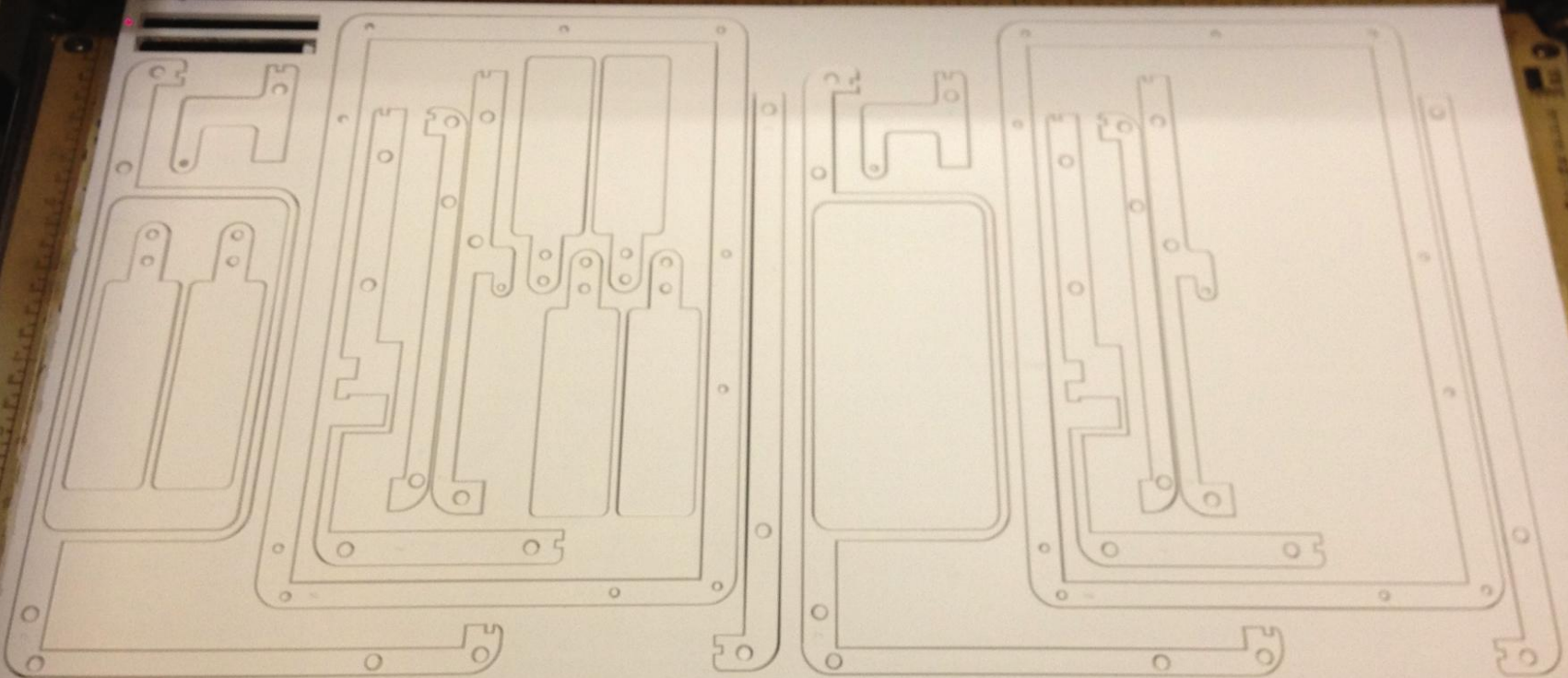
- Trimslice
- Plugcomputer
- Beaglebone Black
- Raspberry Pi
- HDMI Stick (white one)
- iMX6 Saberlite / Platform Kit
- iMX53 Tablet
- ST Micro Snowball

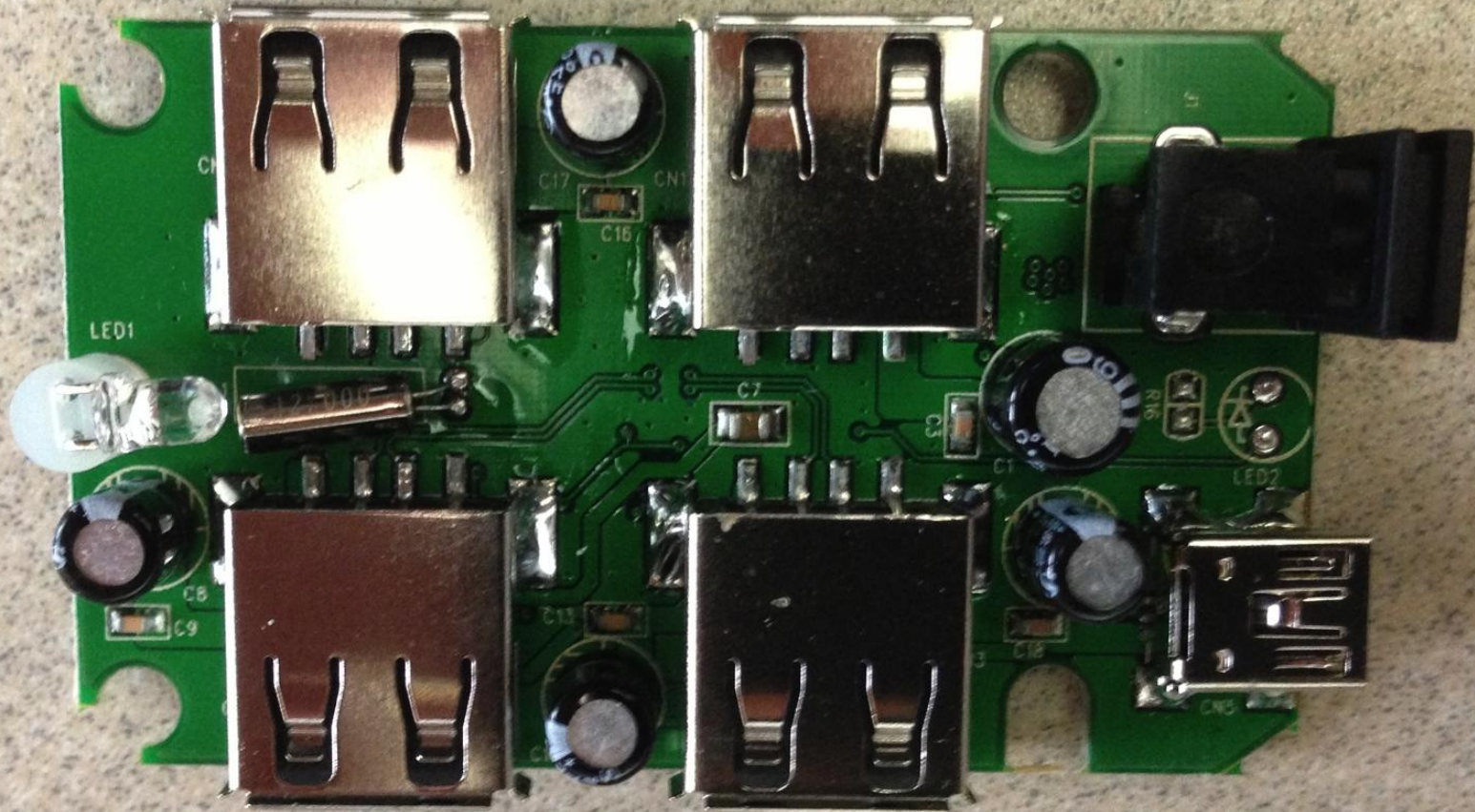
DukePad

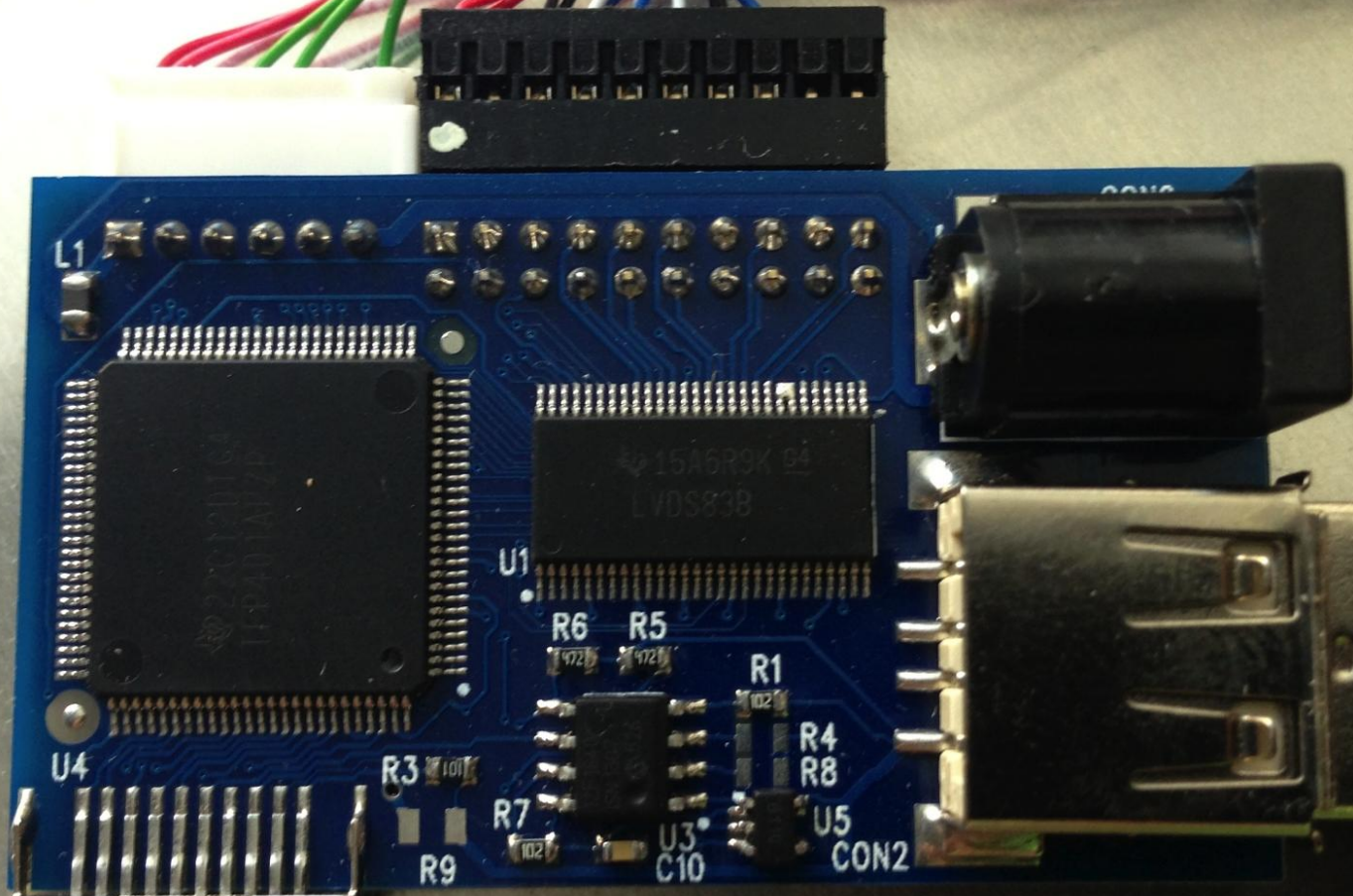


<http://j.mp/dukepad>









L1

U4

U1

R6

R5

R1

R3

R7

R4

R8

U3

U5

R9

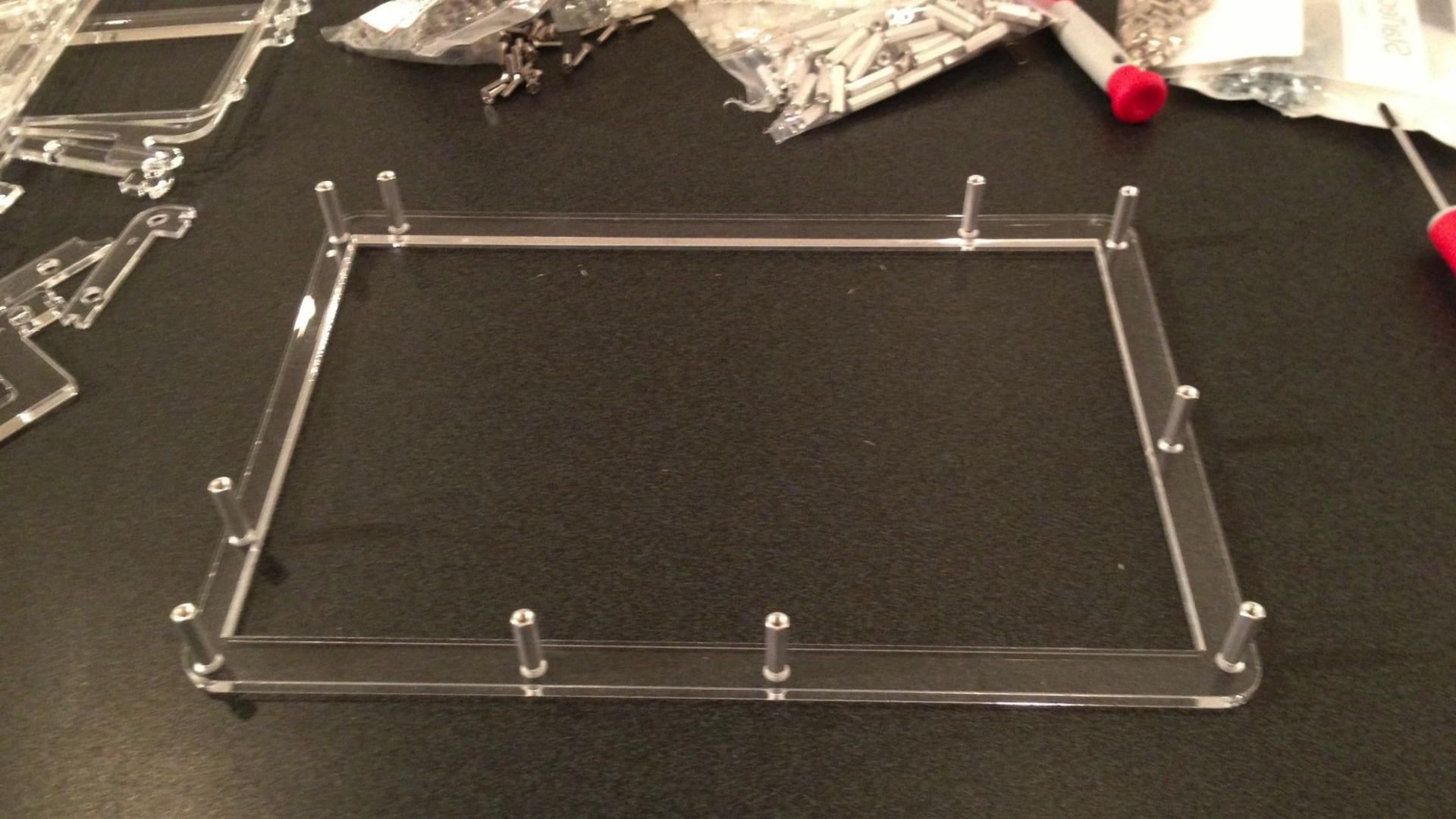
C10

CON2

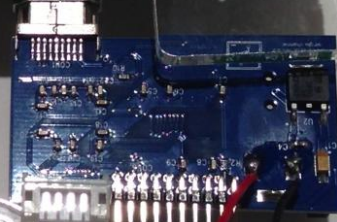
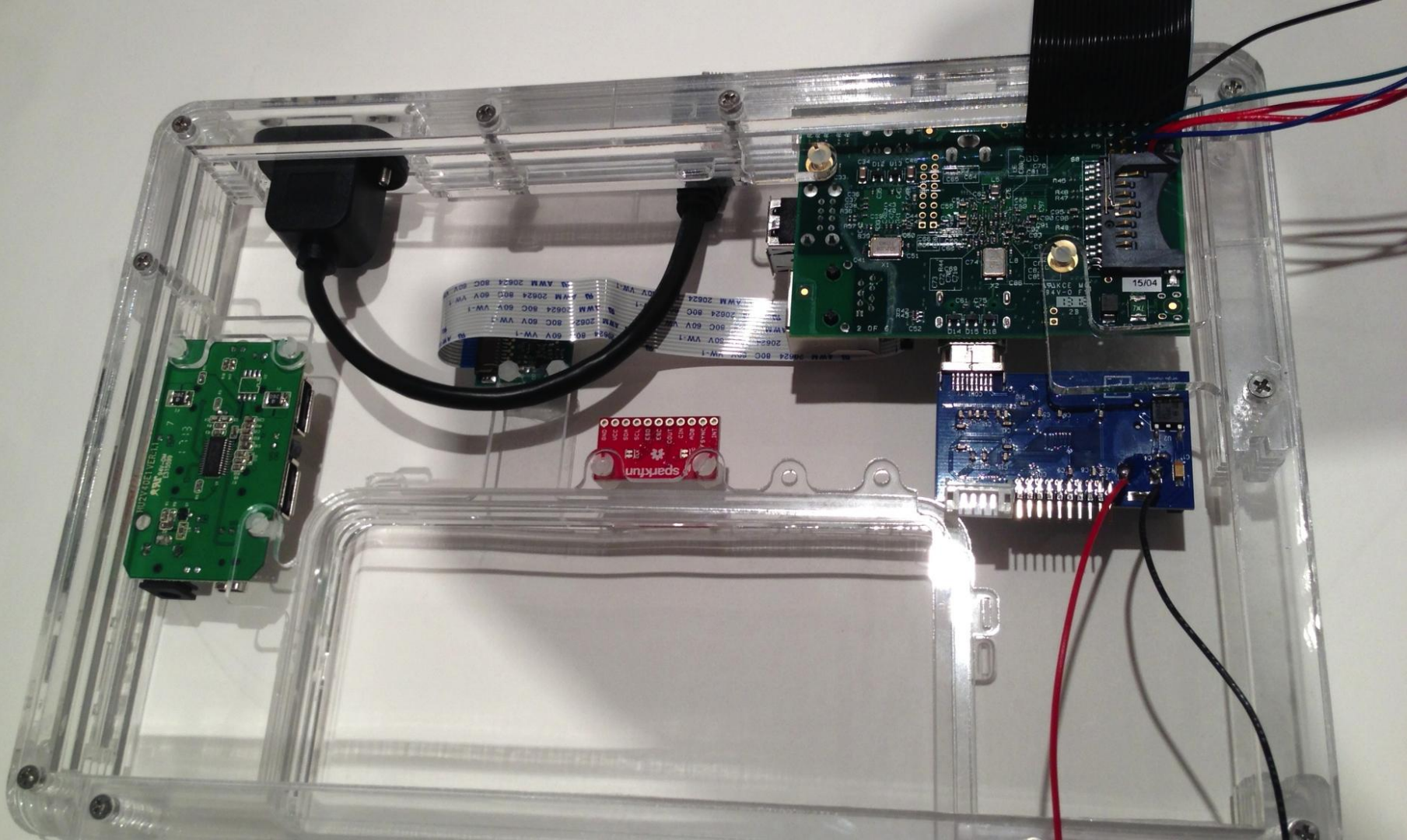
15A6R9K 25
LVDS83B

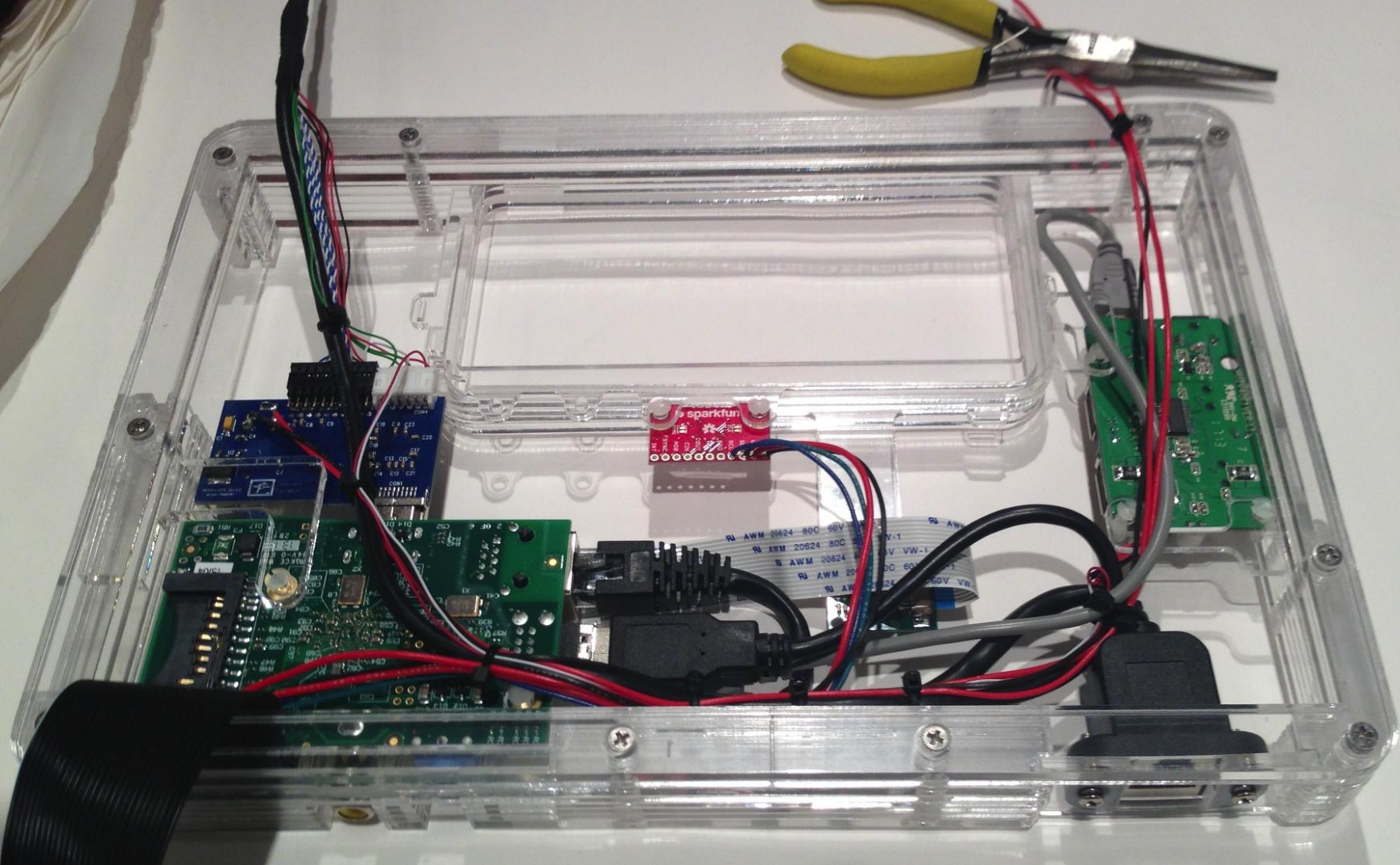
ANKER[®]











sparkfun
USB-C to UART

AWM 20624 80C 80V VW-1
AWM 20624 80C 80V VW-1
AWM 20624 80C 80V VW-1
AWM 20624 80C 80V VW-1



Java™

Post-it

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Exact Pad

Getting Involved

<http://j.mp/dukepad>

OpenJDK Wiki

- About
- Adopt OpenJDK
- Build
- Code Tools
- Coin
- Compiler
- Graal
- HotSpot
- JDK 8
- Multi-Language VM
- Nashorn
- OpenJFX

- ▼ Main
 - > Community
 - ▼ Getting Started
 - Building OpenJFX
 - > Developing OpenJFX
 - ▼ Platforms
 - OpenJFX on Android
 - OpenJFX on iOS
 - ... OpenJFX on the

Dashboard > OpenJFX > Main > ... > DukePad

DukePad

Attachments: 7 • Added by Richard Bair, last edited by Richard Bair on Sep 21, 2013 (view change) • Labels None



RoboVM

JavaFX on iOS

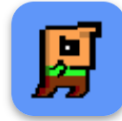




Twisted Flowers
Margarita Leskova
★★★★★



Candy Popper
Margarita Leskova
★★★★★



GDx Super Jumper
SpamDrain AB
★★★★★



Formula Car Game Premium
for iPh...
Matti Vilola
★★★★★



Gravity Robot
Nemanja Komar
★★★★★



AntiVirus -The super duper accur...
Vision90
★★★★★



Dark Night Avenger : Magic Ride
CreatioSoft Solutions Private Limited



Space Bubble Shooter
Tomasz Kuczka
★★★★★



123 Kids Fun Christmas Tree
RosMedia
★★★★★



Oh My Goat
CremaGames S.L.
★★★★★



Gesto: Levels
Huxi Games
★★★★★



Ichigu
Mehmet Atas
★★★★★



Tiny Hope Free
Blyts
★★★★★



NagiQ 2: Treasure Hunt
Jose Brito
★★★★★



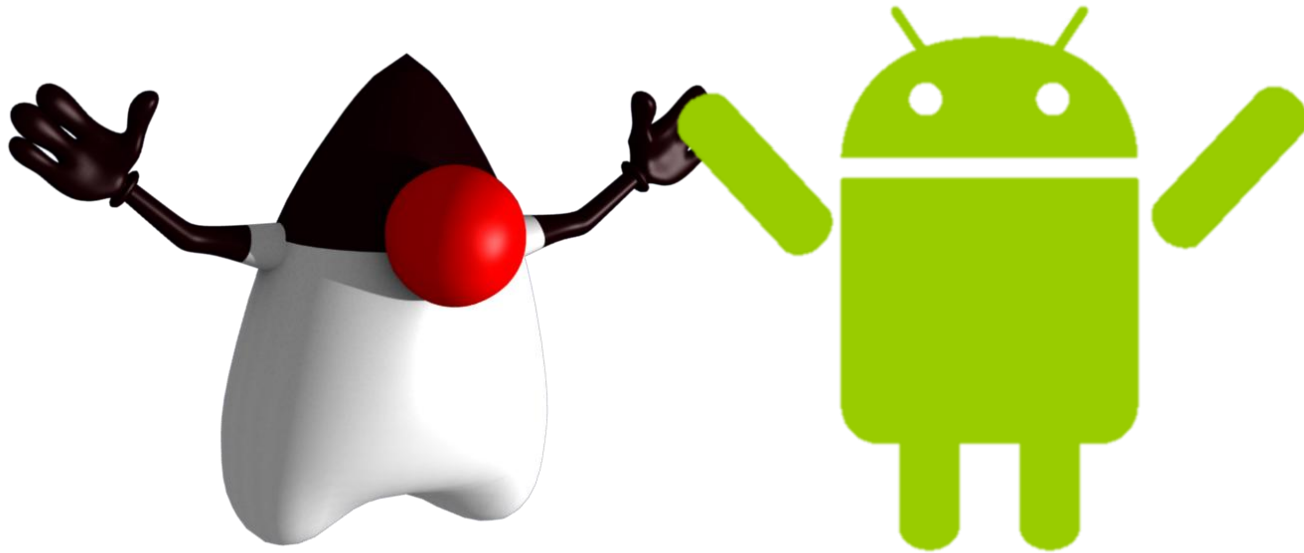
Max the Gold Hunter Plus Free
Joao Ignacio da Silva Neto
★★★★★



Dark Night the Game
Joao Ignacio da Silva Neto
★★★★★

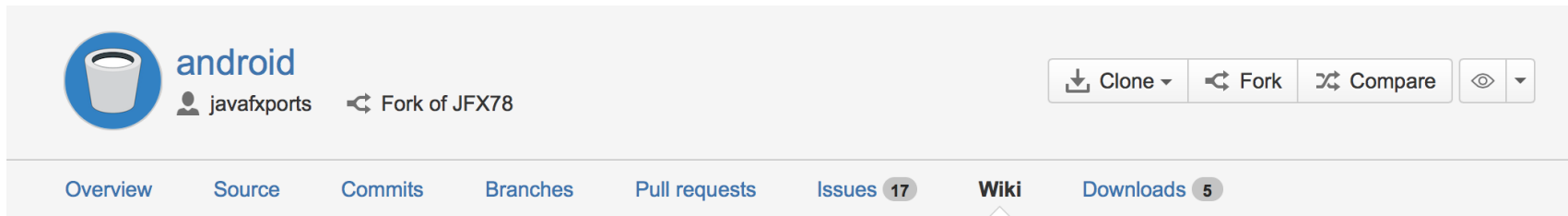
JavaFX on Android

It is about time!



Open Source Effort

<https://bitbucket.org/javafxports/android/wiki/Home>



The screenshot shows the Bitbucket repository header for the 'android' project. On the left is the Android logo (a blue circle with a white cup) and the text 'android' in blue. Below it, a user icon and 'javafxports' are shown, followed by 'Fork of JFX78'. On the right, there are buttons for 'Clone', 'Fork', 'Compare', and a visibility dropdown. Below this is a navigation bar with links for 'Overview', 'Source', 'Commits', 'Branches', 'Pull requests', 'Issues 17', 'Wiki' (which is highlighted with a white underline), and 'Downloads 5'.

Home

Clone wiki ▾ Edit Create History

Welcome to the JavaFX on Android Porting Community

Creating JavaFX Applications that also run on Android devices is not that hard. This project contains everything that is required to build a Java(FX) runtime for Android devices, along with instructions on how to create an Android project based on an existing Java Project. You can choose to either build the runtime yourself, or download one in the Downloads section of this project. The brave ones can build their own runtime. We provide instructions for building the runtime on Linux and MacOS -- [follow the instructions](#).

Download Runtime (or create one yourself) and build applications

MemeQuest: End-to-end JavaFX



- Animations, Images, Binding, Controls on the Client
- DataFX (<http://www.javafxdata.org>) for communication with DaliCloud back-end
- User Interface: We need to stop Johan from doing User Interfaces. Who wants to help?
- Code + downloads at <http://bitbucket.org/lodgon/memequestfx>



Stephen Chin

tweet: @steveonjava

blog: <http://steveonjava.com>

NightHacking Tour



Real Geeks

Live Hacking

nighthacking.com

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