BlackBerry Development
(for Web Developers)

Kevin Falcone
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• Perl developer
• Request Tracker
• Hiveminder
• BlackBerry owner
• Severely lapsed Java programmer
• Hiveminder has an API
  • json
  • xml
• It also has a mobile site
Welcome back, Kevin Falcone.

Create tasks

Tag cloud

Review

Todo
Mobile Site

- The BB Browser through OS 5.0 is terrible
- 6.0 looks sexy... in the videos
My Assumptions

- API
- Java
- Better mobile experience
Java

Your App
Java ME
RIM APIs
JVM
Device OS
Java

- Can't use the new shiny
- J2ME (now Java ME)
- MIDP and CLDC
Choose Your Targets
Choose Your Targets

- Many screen resolutions
- Different carriers
  - Carrier assisted location
- Different keyboard layouts
  - Pearl (2 letters to a key)
- Small Flash storage (app storage)
Choose Your Targets

- 4.3
- 4.5
- 4.6 and 4.6.1
- 4.7.1
- 5.0
- 6.0?
Choose Your Targets

- 4.3
- 2007 vintage
- old Curves, Pearls
- Hopefully you can avoid supporting this
- Simulator restarts are really fast
Choose Your Targets

- 4.5

- Lots and lots of older cheap curves

- Verizon / T-Mobile
Choose Your Targets

- 4.6
  - original Bold
  - larger screen/cpu/ram
Choose Your Targets

• 4.7
  • Original Storm
    • First touchscreen, parallel development
Choose Your Targets

- 4.6.1
  - Curve
- 4.7.1
  - Javelin
Choose Your Targets

- 5.0
  - Storm2, Bold2, Pearl and Curve 3g
  - Trackpad devices
  - At least 10 devices able to upgrade
Choose Your Targets

• 5.0
• SQLite
• Location services
• Better browser, still not great
• New layout managers
• ConnectionManager
Choose Your Targets

- 6.0
- Webkit browser
- Who knows what else
Choose Your Targets

• Different point releases per-carrier
  
  BlackBerry® Device Simulators v5.0.0.621 (9650)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.621 (9650 Sprint)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.607 (9550)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.607 (9550 Verizon)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.607 (9520 Vodafone)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.607 (9520 Vodafone EastAsia)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.607 (9520 EastAsia)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.604 (9105)
  › Download Software

  BlackBerry® Device Simulators v5.0.0.604 (9100)
  › Download Software
Choose Your Targets

- Networking
  - BES
  - BIS-B
  - Direct TCP (APN)
  - WAP2
Choose Your Targets

- Simulators
  - simulate the hardware
  - simulate some failure modes
  - can only do some networking modes
  - location testing
Getting Started
• Eclipse - cross platform
• Simulators - older ones run under wine
• Code Signing - mostly cross platform
• Building/signing is automatable
  • bb-ant-tools
• I just use VMWare
• share my document dirs back to OS-X
• manage git from OS-X
• Eclipse
  • One enormous bundle from RIM
• JDE
  • Older technology
• Stable
• Eclipse ships with a specific JDK (5.0)

• Download other versions from the normal updater

• Includes demos

• Leverages some of the Eclipse magic for building bb package com.rim.samples.device.helloworlddemo;
• rapc
  • compiles into .cod files
• simulator
• mds simulator
• cod signer
Hello World Again
package com.sample.helloworlddemo;

public class HelloWorldDemo extends UiApplication {
    public static void main(String[] args) {
        HelloWorldDemo theApp = new HelloWorldDemo();
        theApp.enterEventDispatcher();
    }

    public HelloWorldDemo() {
        pushScreen(new HelloWorldScreen());
    }
}

final class HelloWorldScreen extends MainScreen {
    HelloWorldScreen() {
        setTitle("Hello World Demo");
        add(new RichTextField("Hello World!", Field.NON_FOCUSABLE));
    }

    public void close() {
        Dialog.alert("Goodbye!");
        super.close();
    }
}
package com.rim.samples.device.helloworlddemo;

public class HelloWorldDemo extends UiApplication
{
    public static void main(String[] args)
    {
        HelloWorldDemo theApp = new HelloWorldDemo();
        theApp.enterEventDispatcher();
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    public void close()
    {
        Dialog.alert("Goodbye!");
        super.close();
    }
}
Hello World Demo
Hello World!
Hello World Demo
Hello World!

Goodbye!
OK
• Incredibly basic demo

• TextField

• Almost always need to subclass

• Simple things can be done from the API

• Fun math vs Images
final class MyEditField extends BasicEditField {

    String _text;
    int _width;

    public MyEditField(String label, String initialValue) {
        super();
        _text = initialValue;
    }

    protected void paint(Graphics g) {
        super.paint(g);
        doDecoration(g);
    }

    private void doDecoration(Graphics g) {
        int _height = this.getHeight();
        if (_width == 0) {
            _width = this.getWidth();
        }

        for (_x = _width; _x >= 0; _x = _x - 2) {
            g.drawPoint(_width - _x, _height - 1);
        }
    }
}

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• ActiveAutoTextEditField

• corrects text entry for users
• AutoCompleteField

• define autocompletion behavior

• make your owner field pull email addresses from the contact book
BasicFilteredList filterList = new BasicFilteredList();
filterList.addDataSource(
    1,
    BasicFilteredList.DATA_SOURCE_CONTACTS,
    BasicFilteredList.DATA_FIELD_CONTACTS_EMAIL |
    BasicFilteredList.DATA_FIELD_CONTACTS_EMAIL,
    BasicFilteredList.DATA_FIELD_CONTACTS_NAME_FULL,
    BasicFilteredList.DATA_FIELD_CONTACTS_NAME_FULL,
    -1,
    null);
AutoCompleteField autoCompleteField = new AutoCompleteField(filterList);
add(autoCompleteField);
Managing your Screen
• FlowFieldManager
• VerticalFieldManager

• MainScreen is a VerticalFieldManager
• HorizontalFieldManager
HorizontalFieldManager buttons = new HorizontalFieldManager
    (Field.FIELD_HCENTER | Field.USE_ALL_WIDTH);
buttons.add(new SimpleButton("Button 1"));
bbuttons.add(new SimpleButton("Button 2"));
add(buttons);
• 5.0

• GridLayoutManager

• EyelidLayoutManager
• TableLayoutManager

• Works back to 4.3

• Knowledge Base #DB-00783
_table = new TableLayoutManager(new int[] { 
    TableLayoutManager.USE_PREFERRED_SIZE,
    TableLayoutManager.USE_PREFERRED_SIZE }, 0);
• YourCustomManager
  • pixels
  • autofill
  • scrolling
• query the screen size

• Display.GetWidth
• Buttons

• you can figure out buttons

• you click on them
• Lists

• You're pulling from a web api

• I have lists of tasks
• ListField Class

• RichTextField
- ListField

- vector of items

- small static class to read the vector

- callbacks to update the list from another thread
Feeling like a BB app
Menus
• Users live in the menu

• They expect to be able to trigger actions
private MenuItem _viewItem = new MenuItem("More Info", 110, 10) {
    public void run() {
        _infoScreen = new InfoScreen();
        UiApplication.getUiApplication().pushScreen(_infoScreen);
    }
};
Trackball
Trackpad
(if you have a fancy new device)
• Users have to scroll to get somewhere

• (unless they're using a storm)

• Don't make it hard for them
Predicted Arrival Delay

Los angeles (LAX) - New york (JFK)
American Airlines 2
9:30 am - 6:15 pm

Predicted Arrival Delay:

Arrived

Official Airline Status:

<table>
<thead>
<tr>
<th>Departure</th>
<th>Arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:57 am</td>
<td>7:46 pm</td>
</tr>
<tr>
<td>Gate T4-49A</td>
<td>Gate 8-C41</td>
</tr>
</tbody>
</table>
new LabelField("Stuff",
LabelField.NON_FOCUSABLE | LabelField.READONLY
Networking
Netnotworking
(HttpConnection) Connector.open ("http://hiveminder.com");

(StreamConnection) Connector.open ("socket://hiveminder.com:993");
• Heavy Corporate use

• Sell control from the BES
  • wiping handsets
  • blocking access

• pushing data/software
• All your data passes through the
  • BES
  • MDS
• BIS

• BIS-B
• "http://hiveminder.com;deviceside=true"

• "http://hiveminder.com;deviceside=false"
• direct tcp

• WAP2
If you're not using MDS/BIS-B, RIM suggests you test data access on every network you're going to support.
Good luck with that
Split-pipe
• APN info for Direct TCP/IP

"deviceside=true;
apn=internet.com;
tunnelauthusername=user165;
tunnelauthpassword=user165password"
- ServiceBooks api
- WAP2 automated
- ";ConnectionUID=uid"
• Wifi

• ";interface=wifi"
• You also need one of these

private class ConnectionThread extends Thread
• CoverageInfo class

• Lets you ask about what network are available, so you can fall back to ServiceBooks to get info if you need it.

• Can tell you about wifi availability

• Best availability is 4.5 or later, but you have it in 4.2/4.3 also
BES Admins can still block your service
Launch Mobile Data System Connection Service (MDS-CS) with simulator
Launch app or URL on startup:
HTTPDemo
Device:
BlackBerry-SDK - 9550
Automatically use default values for all prompts
Specify the number of seconds to wait before the automated response is selected:
Parsing
• RIM provides SAXParser

• javax.*.xml if you want
String serverResponse = XMLString;
SAXParserFactory factory = SAXParserFactory.newInstance();
SAXParser saxParser = factory.newSAXParser();
InputStream in = new ByteArrayInputStream(XMLString.getBytes());
InputSource inputSource = new InputSource(in);
saxParser.parse(in, new HiveminderXMLHandler());

static class HiveminderXMLHandler extends DefaultHandler {

    public void startElement(String uri, String name, String qName, Attributes atts){
        // track current element
    }

    public void endElement(String uri, String name, String qName){
        // you have all the data
    }

    public void characters(char buf[], int offset, int len) throws SAXException {
        // read in your data
    }
}

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• json

• there is no built-in library

• no generics, so something that uses one of the android protocol buffer libraries is out
• If you google, you'll find this url

• http://www.json.org/java/org.json.me.zip

Multiple Choices

The document name you requested (/java/org.json.me.zip) could not be found on this server. However, we found documents with names similar to the one you requested.

Available documents:

• /java/org (common basename)

Please consider informing the owner of the referring page about the broken link.
• https://edge.launchpad.net/j2me-json

• works, went with xml for my uses
A brief interlude

Code Signing
• browser
• registering as a plugin
• user data
• messaging
• persistent storage
• pay RIM your $25

• Install Code Signer

• Eclipse can sign .cod when building
Persistence
• 5.0

• SQLite

• all versions

• implements Persistable
• implements Persistable

• most often, storing a vector

• you give your store a unique id, collisions can happen

• over upgrades, make sure you can read the old data
Integration
Application type: BlackBerry Application
Name of main MIDlet class:
Application argument: init
Auto-run on startup

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public static void main(String[] args) {
    boolean startup = false;
    for (int i = 0; i < args.length; ++i) {
        if (args[i].startsWith("init")) {
            startup = true;
        }
    }
    if (startup) {
        // stuff FolderListener into RuntimeStore
    } else {
        // start gui and read from RuntimeStore
    }
}
• implements FolderListener

• RuntimeStore.getRuntimeStore();

• Object obj = store.get(0xDEADBEEF);
• Adding yourself to foreign apps
ApplicationMenuItem mi = new ApplicationMenuItem(placement) {
    public Object run(Object context) {
    }
    public String toString() {
        return "Assign task to this user";
    }
};
ApplicationMenuItemRepository mir = ApplicationMenuItemRepository.getInstance();
mir.addMenuItem(ApplicationMenuItemRepository.MENUITEM_ADDRESSCARD_VIEW, ami);
Distribution
• JavaLoader

• Desktop Manager

• OTA Download

• IE plugin

• AppWorld

• 17 competing markets
Questions?


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