

# Building Mobile Apps with Java on non-Java platforms using GWT & PhoneGap

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webOS Developer Relations  
HP / Palm

# About Josh

- "Swing Hacks" O'Reilly, co-author
- Sun: Swing, NetBeans, JavaFX
- HP Palm
- Java.net blogger, open source project founder
- 
- JoshOnDesign.com
- @joshmarinacci

# Mobile Apps Are Awesome

- Targeted Functionality
- Portable
- App marketplaces
- Cool Sensors
  - Cameras
  - Accelerometer
  - Compass
- Something to show your mom

# The Problem with Mobile Apps

- Multiple platforms
- Multiple screen sizes
- Multiple programming languages

# The Problem with Mobile Apps

- Decide which platforms to support
- Duplicate Coding
- Might use a language you don't like.
- Java not available everywhere

# The Solution: GWT & PhoneGap

- Code in Java with GWT
- Turn into app with PhoneGap
- Install into phone or tablet
- Knock off early and grab a beer

# GWT Overview

- Java to JavaScript compiler
- Building & debugging tools
- UI controls
- Client <---> Server components

# GWT Overview

- Google Web Toolkit
- Open source
- Widely used for internet applications
- Very hackable
- Lots of extensions
- [\[link to GWT\]](#)

# Key Features

- Code in pure Java (static typing FTW!)
- Compiles to client side JavaScript
- No-client side Java at run time. 100% JavaScript (no applets!)
- Can be hosted on static webserver
- Can work with common JS libs

# Getting Started with GWT

- Download SDK & Install (IDE builds available)
- Build project
- Test on desktop browser
- Put generated HTML, JS, CSS onto webserver

# GWT Example

```
webAppCreator -out TestApp com.joshondesign.TestApp
```

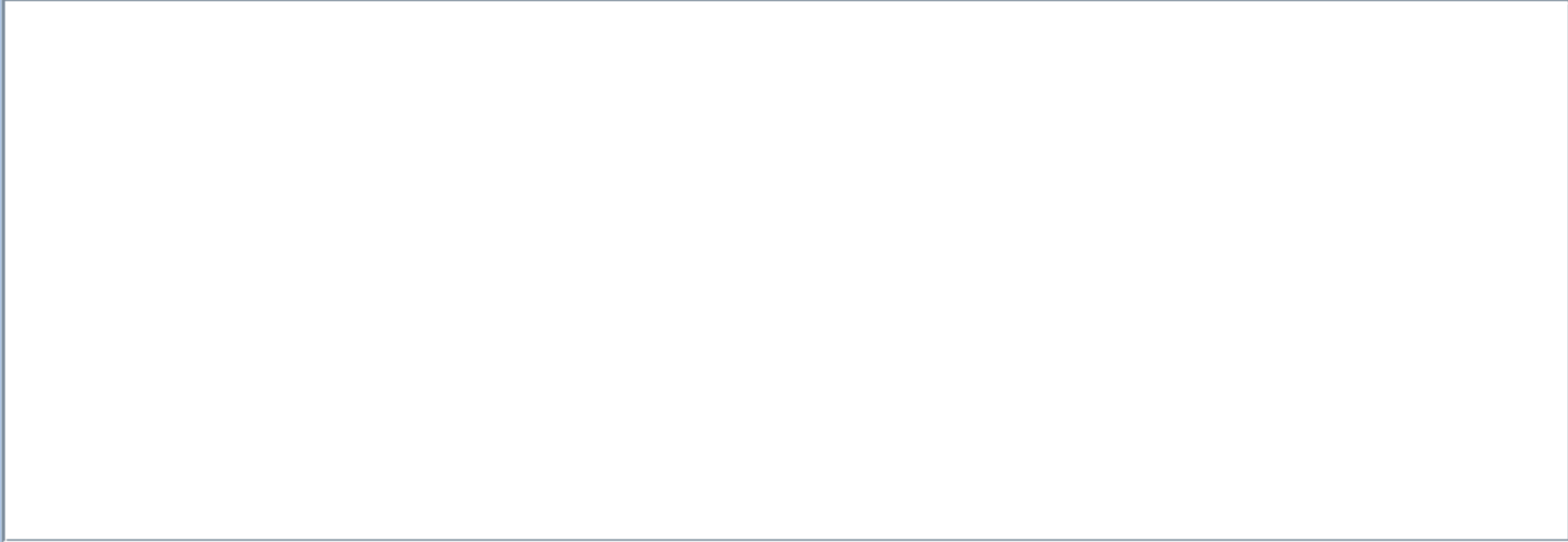
```
Created directory TestApp/src
Created directory TestApp/war
Created directory TestApp/war/WEB-INF
Created directory TestApp/war/WEB-INF/lib
Created directory TestApp/src/com/joshondesign
Created directory TestApp/src/com/joshondesign/client
Created directory TestApp/src/com/joshondesign/server
Created directory TestApp/src/com/joshondesign/shared
Created directory TestApp/test/com/joshondesign
Created directory TestApp/test/com/joshondesign/client
Created file TestApp/src/com/joshondesign/TestApp.gwt.xml
Created file TestApp/war/TestApp.html
Created file TestApp/war/TestApp.css
Created file TestApp/war/WEB-INF/web.xml
Created file TestApp/src/com/joshondesign/client/TestApp.java
Created file TestApp/src/com/joshondesign/client/GreetingService.java
Created file TestApp/src/com/joshondesign/client/GreetingServiceAsync.java
Created file TestApp/src/com/joshondesign/server/GreetingServiceImpl.java
Created file TestApp/src/com/joshondesign/shared/FieldVerifier.java
Created file TestApp/build.xml
Created file TestApp/README.txt
Created file TestApp/.project
Created file TestApp/.classpath
Created file TestApp/TestApp.launch
```

```
cd TestApp
```

```
ant devmode
```

Launch GWT Module

Startup URL:



Web Application Starter Project - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://127.0.0.1:8888/TestApp.html?gwt phone gap

News Reader Palm Mail Gmail

Get Started with the GWT ... Web Application Starter P...

# Web Application Starter Project

Please enter your name:

Done

[demo]

# Phone Gap Overview

- Open source build tools
- Converts HTML → native app
- Native launchers
- Native API wrappers
- webOS, iOS, Android, Blackberry, WinMo (7?)
- Multi-vendor support (including HP)

# Getting Started with PhoneGap

- Download SDK
- Make copy of 'webOS' dir
- GWT project dir: ant build
- Copy war/\* into framework/www
- Rename testapp.html → index.html
- make js; make copy\_js;

# Modify Markup

- Remove Mojo and PhoneGap.js
- Add snippet:

```
<script language="JavaScript">  
  function onLoad() {  
    if(window.PalmSystem) {  
      window.PalmSystem.stageReady();  
    }  
  }  
</script>  
<body onload="onLoad();">
```

...

- make package
- palm-install com.foo.myapp\_0.0.1.ipk



# [demo]

- Build default PhoneGap app
- Build gwt app

# PhoneGap Details

- Each platform requires it's own SDK
- PhoneGap gives you project w/ build scripts

# webOS SDK

- Next generation OS from Palm / HP
  - (*webOS, not Palm OS, no Treos!*)
- Built entirely on web technologies
- All apps are HTML, JS, & CSS
- Mojo / Enyo libraries are optional
- Bring your own framework
- Most HTML 5 specs supported (ex: Canvas)
- Nice App Catalog

**Palm is still here**

**HP = Huge Palm**

# I'm Giving Away Two of These!

prē 2

Get more done.  
Have more fun.  
Now with HP webOS 2.0.

[Learn more >](#)

 **verizon**wireless

 **Unlocked**  
GSM device

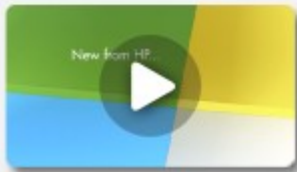
Now available from Verizon Wireless or unlocked.



# Future Devices

HP webOS.  
Now in S, M, L.

Introducing HP Veer, Pre<sup>3</sup>, and TouchPad.



# webOS SDK

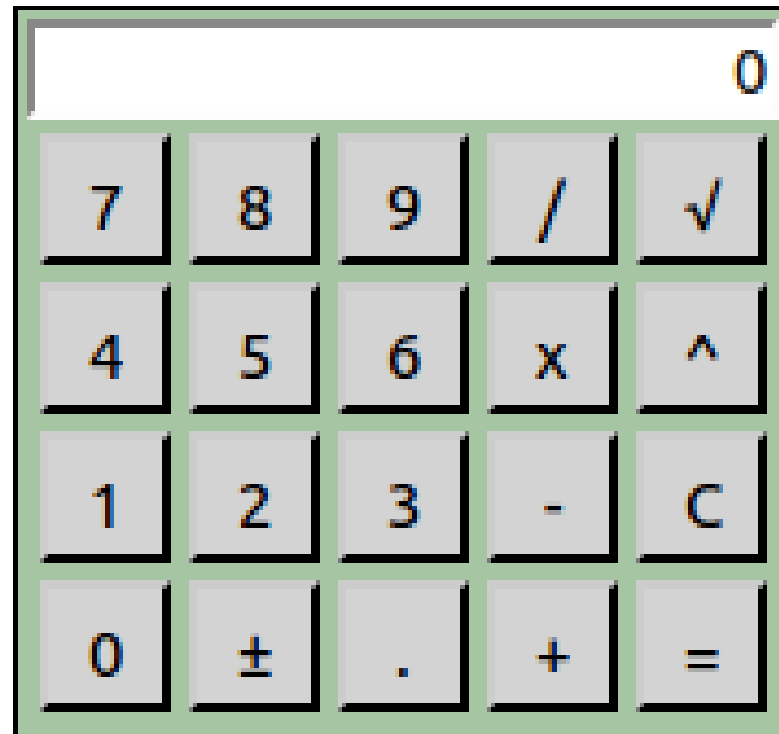
- <http://developer.palm.com/>
- webOS SDK 2.1
  - build tools & Eclipse plugin
  - API & GUI Toolkit docs
  - x86 emulator
  - Completely free!
- Forums, articles & blogs
- App Catalog Portal

# Advanced Demo: Calculator

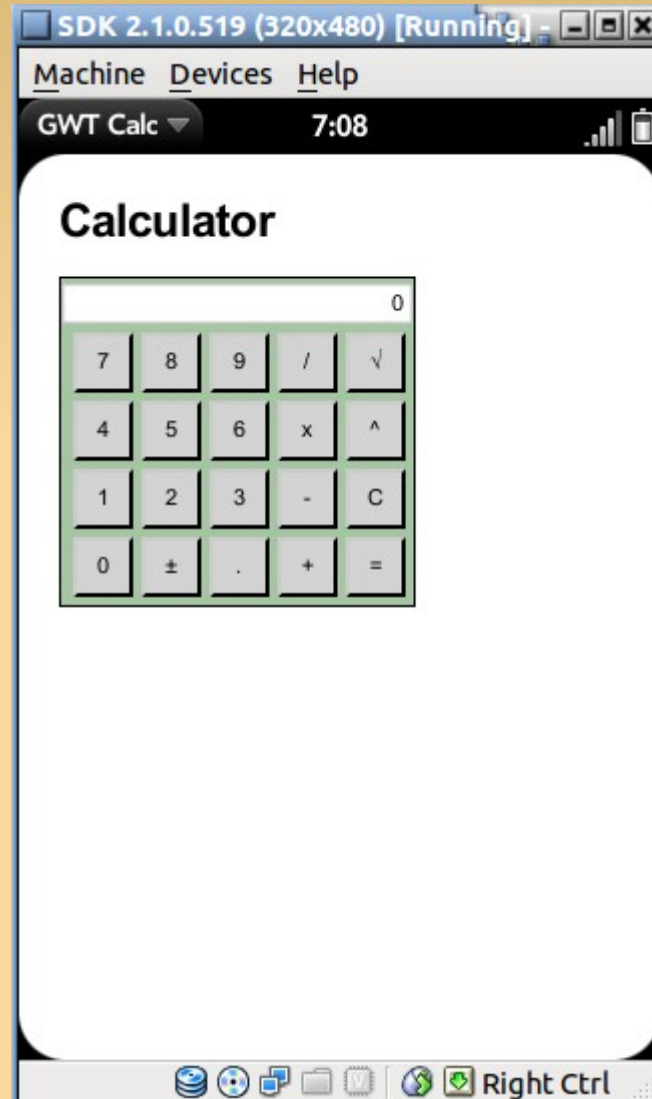
- <http://www.manning.com/cooper/>
- Robert Cooper and Charles Collins

# Calculator in Desktop Browser

## Calculator



# Calculator in webOS Emulator



# Customize for Phone

```
body {  
    background-color: white;  
}  
.calc-Panel {  
    background-color: white;  
    border-radius: 10px;  
}  
.calc-Button {  
    border: 1px solid black;  
    border-radius: 8px;  
    width: 60px; height: 60px;  
    font-weight: bold;  
    font-size: 30pt;  
}  
.gwt-TextBox {  
    font-size: 30pt;  
}
```

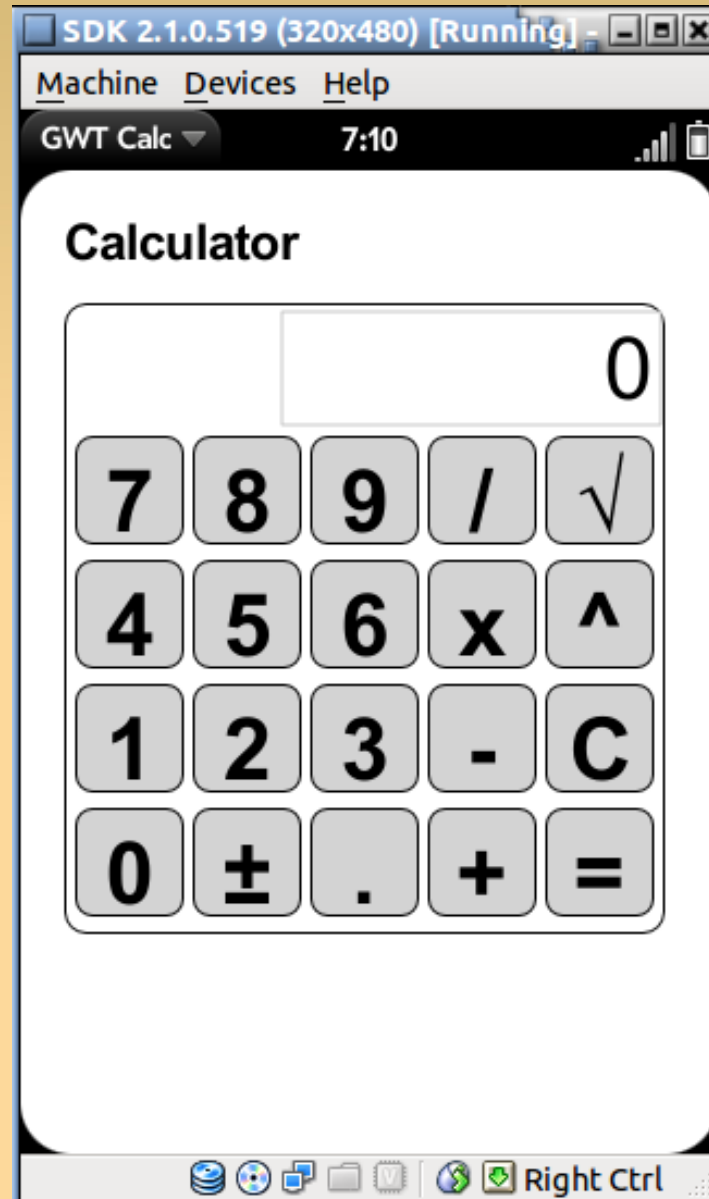
# CSS 3 Media Queries

- Part of CSS 3
- Most desktop & mobile browsers support it (even IE9)
- Make a block of css conditional
- device-width, device-height
- dpi, orientation
- Media type (print vs screen)
- Boolean operators

# Phone Only

```
@media only screen and (max-device-width: 480px) {  
  body {  
    background-color: white;  
  }  
  ...  
}
```

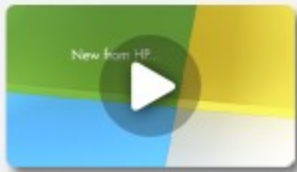
# Calculator Restyled



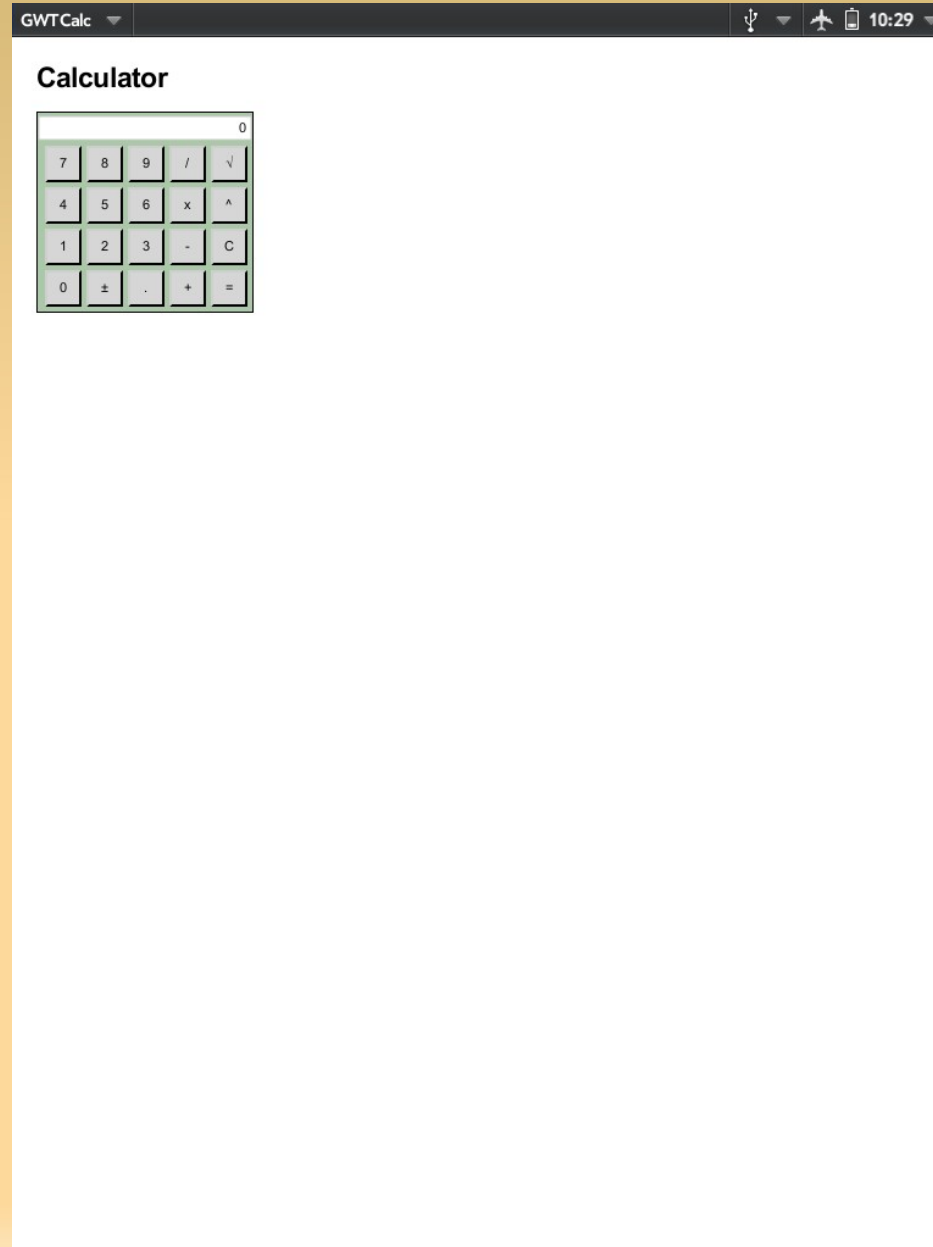
# HP TouchPad

HP webOS.  
Now in S, M, L.

Introducing HP Veer, Pre<sup>3</sup>, and TouchPad.



# Calculator on TouchPad



# Problems on TouchPad

- Buttons are too small
- Doesn't take advantage of extra space
- Few features

# Restyle for TouchPad

- Add extra buttons for graphing
- Add graphing component
- Conditional CSS

GWT Calc 12:14

### Calculator

0

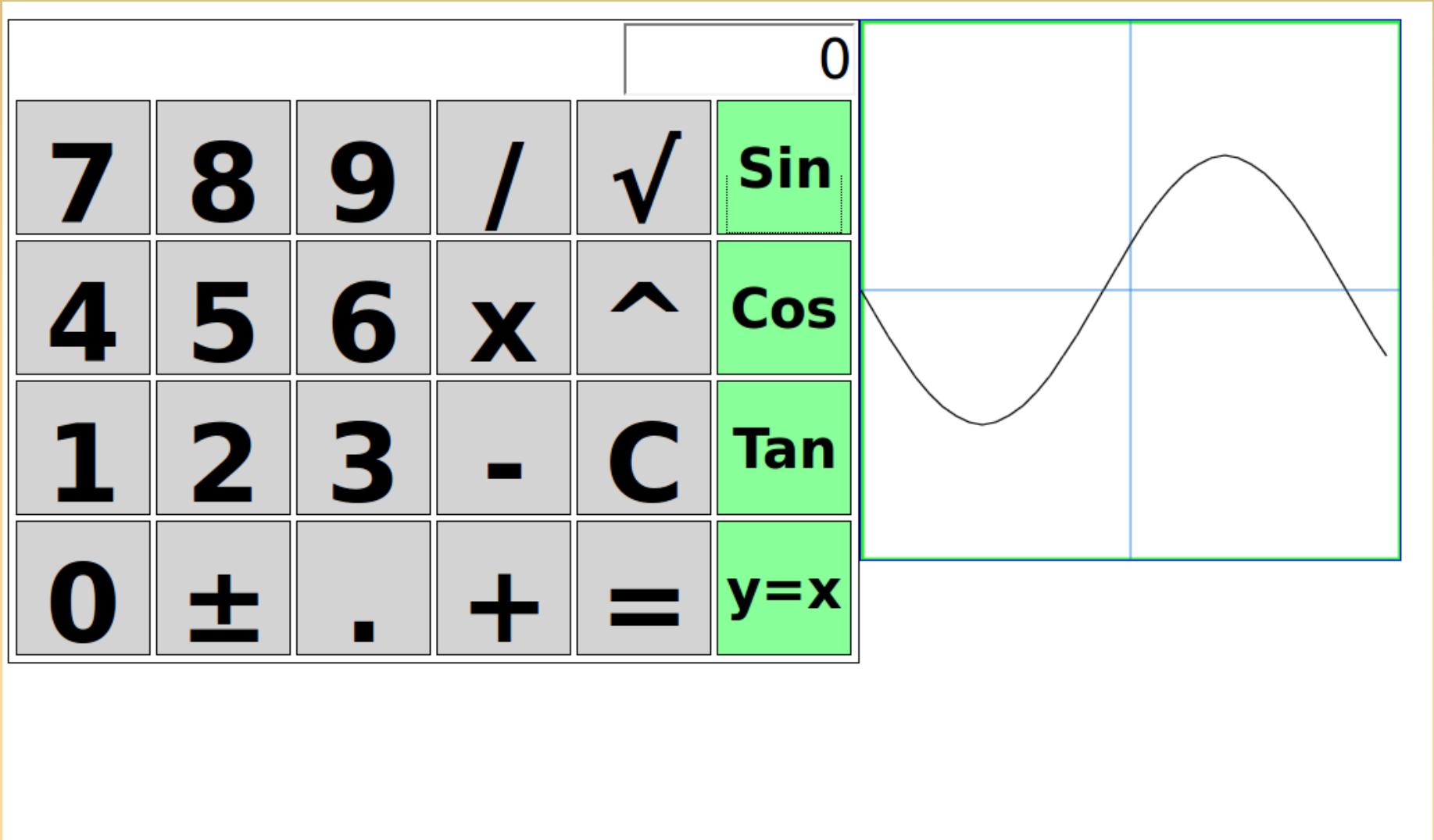
7	8	9	/	$\sqrt{\quad}$	Sin
4	5	6	x	$\wedge$	Cos
1	2	3	-	C	Tan
0	$\pm$	.	+	=	y=x

# Orientation Change

- Query on orientation to reveal more content

```
.tablet-button {  
    background-color: #88ff99;  
    font-size: 30pt;  
}  
.graph {  
    display: none;  
}  
@media only screen and (orientation:landscape) {  
    .graph {  
        border: 1px solid blue;  
        display: block;  
    }  
}
```

# TouchPad in Landscape Mode



# Conclusion

- Java is great for mobile app development
- Code in Java
- Compile with GWT
- Package with PhoneGap
- Customize with CSS

# Links

- CSS Media Queries
  - <http://www.w3.org/TR/css3-mediaqueries/>
- GWT: [code.google.com/webtoolkit/](http://code.google.com/webtoolkit/)
- PhoneGap: [phonegap.com](http://phonegap.com)
- WebOS development
  - [developer.palm.com](http://developer.palm.com)
  - (this whole presentation will be there)
- Twitter: [@joshmarinacci](https://twitter.com/joshmarinacci)

# One More Thing...

- Free unlocked GSM Pre2 to the first **two** people who show me an existing GWT app on the webOS Emulator
- Deadline: 4:00 PM Today (Monday)
- Tweet @joshmarinacci to claim your phone
- Include #devnexus

