Android Application Development

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Background

- Software platform from Google and the Open Handset Alliance
- July 2005, Google acquired Android, Inc.
- November 2007, Open Handset Alliance formed to develop open standards for mobile devices
- October 2008, Android available as open source
- December 2008, 14 new members joined Android project

Update History

- April 30, 2009: Official 1.5 Cupcake release
- September 15, 2009: 1.6 SDK Donut release
- October 26, 2009: 2.0 SDK Éclair release
  - Updates to the Éclair release:
    - 2.0.1 on December 3, 2009
    - 2.1 on January 12, 2010

Platform Versions
Android and the Hardware

- Built-in Apps ≡ Apps created in SDK
- Leverage Linux kernel to interface with hardware
- Open source platform promotes development from global community

Android Features

- Reuse and replacement of components
- Dalvik virtual machine
- Integrated browser
- Optimized graphics
- SQLite
- Media support
- GSM Telephony
- Bluetooth, EDGE, 3G, and WiFi
- Camera, GPS, compass, and accelerometer
- Rich development environment

Android Architecture

- Apps are written in Java
- Bundled by Android Asset Packaging Tool
- Every App runs its own Linux process
- Each process has its own Java Virtual Machine
- Each App is assigned a unique Linux user ID
- Apps can share the same user ID to see each other’s files
DEMO
- Login Form
- Success Form (if login successful)

Speaking web
HTML/CSS/JS

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HTML Background
- Tim Berners-Lee
- CERN

Hyper Text
**HTML Background**

### Markup Language

```html
<!DOCTYPE html>
<html>
<head>
  <title>My First Heading</title>
</head>
<body>
  <h1>My First Heading</h1>
  <p>My first paragraph.</p>
</body>
</html>
```

---

**Basic HTML Structure**

- `<html>` tag indicates that this web page is written in HTML.
- `<head>` tag contains information about the web.
- `<body>` tag contains the content of the web page.
- `<html>` marks the end of the web page.

```
<html>
  <head>
    <title>Title of the web page</title>
  </head>
  <body>
    Content of the page
  </body>
</html>
```
Question: PROCESS HTML??

Answer: BROWSER

Interactive Web? Live Updates??

A pinch of script...

- JavaScript created by Netscape
- JScript created by Microsoft
- IE and Netscape renderings are slightly different
- Standardized by European Computer Manufacturers Association (ECMA)
General Format

```html
<html>
  <head>
    <title> Name of web page </title>
  </head>
  <body>
    ...body here: text, forms, tables...
  </body>
</html>
```

JavaScript's Uses Include:

- "Dynamic" web-pages
- What's DHTML? (in a second)
- Image manipulation
  - Swapping, rollovers, slide shows, etc.
- Date, time stuff (e.g. clocks, calendars)
- HTML forms processing
  - Verifying input; writing output to fields

Events

- JavaScript can execute a statement (typically, call a function) when an event occurs
- `<... oneventname="javascript stmt;">`
- `<BODY ... ONLOAD="func();">`
- `<INPUT TYPE="submit" ... ONSUBMIT="f();">`

Events

- `onsubmit` - call when submit button is clicked
- `onclick` - call when this button is clicked
- `onreset` - call when the reset button is clicked
- `onload` - call after page loads
- `onmouseover` - call when mouse pointer enters image area
- `onmouseout` - call when mouse pointer leaves image area
- `onfocus` - call when control receives focus
- `onblur` - call when a control loses focus
- `onchange` - call when a control loses focus and the value of its contents has changed
- many more
The good, the bad and the... ugly!

CSS

<p><font face="Arial">Slashdot. News for <b>nerds!!</b> You will never, <u>EVER</u> be <font size="+4" color="red">BORED</font> here!</p>

Why is this bad?

- Tags such as <i>, <b>, <u>, and <font> are discouraged in strict XHTML
- Why is this bad?

Cascading Style Sheets (CSS)

- Describes the appearance, layout, and presentation of information on a web page
- HTML describes the content of the page
- Describes how information is to be displayed, not what is being displayed
- Can be embedded in HTML document or placed into separate .css file

Grouping styles

- A style can select multiple elements separated by commas
- The individual elements can also have their own styles
Example 1

Code:
```
1 <html>
2 <head>
3 <title>Example Title</title>
4 </head>
5 <body>
6 <h1>Hello There</h1>
7 <p>Hey there.</p>
8 </body>
9 </html>
```

Output:
```
Hello There
Hey there.
```

Example 2

Code:
```
1 function clickFunction() {
2   console.log('Hello world!');
3 }
4 document.getElementById('example').addEventListener('click', clickFunction);
```

Output:
```
Hello world!
```