

Play with HTML Games

Huan Du (杜欢), MagnetJoy Games
Twitter: @huandu



The “HTML”

- ▶ When I Say HTML Here...
 - Not only talk about the mark-up language itself, but also refers to all related web technologies
 - Including features listed on <http://www.w3.org/standards/webdesign/>
 - HTML and CSS
 - Audio and Video
 - Scripting and AJAX
 - Graphics
 - Etc...



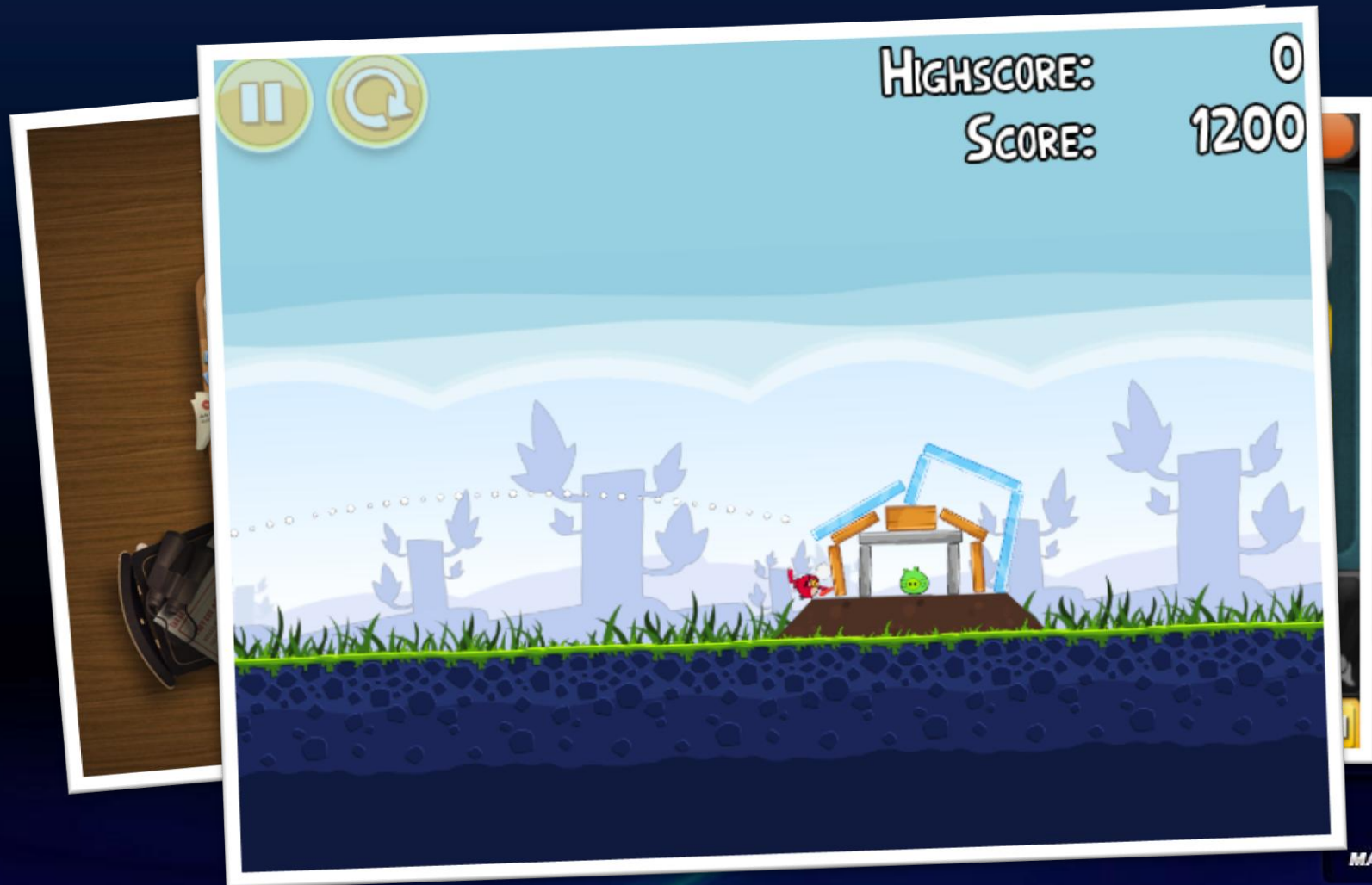
HTML and Games

- ▶ See what HTML can do with game now
 - Angry Birds: <http://chrome.angrybirds.com/>
 - The Pop Star Defense on Google I/O 2011
 - <http://agent8ball.com/>
 - <http://www.benjoffe.com/code/games/torus/>
 - And more...

**More and more people create
HTML games now**



HTML and Games



Why HTML?

- ▶ Portable
 - Based on public standard
 - Same API on different devices
 - Supported by all major browser vendors
- ▶ Light weight and easy to play
 - No installation required
 - Seamless integration with existing web sites



Let's See What You Can Use In Game



Canvas

▶ Create and Use 2d Canvas Context

◦ Quick start

```
var canvas = document.getElementById('the-canvas-id');  
var context = canvas.getContext('2d');
```

```
// start to draw something on context  
context.font = '20pt Tahoma';  
context.fillText('Hello, world!', 10, 50);
```

◦ Tutorial

- https://developer.mozilla.org/en/Canvas_tutorial



Canvas Performance

- ▶ Ways to improve 2d canvas performance
 - Use it less
 - More image, less stroke()/fill()
 - Reduce number of calls to stroke()/fill()
 - Use getImageData()/putImageData()
 - Use other technology
 - 3d context (webgl) if available
 - Fallback to CSS or DOM animation



CSS3 Animation

▶ A Timeline-based Animation

- Spec: <http://www.w3.org/TR/css3-animations/>
- Must add -webkit- prefix in webkit based browser

```
@-webkit-keyframes move {  
    from {top: 10px;}  
    to {top: 100px;}  
}  
.move {-webkit-animation: move 1s; top: 100px;}
```
- DOM Events:
webkitAnimationStart/End/Iteration



Audio and Video

▶ Audio quick start

- `<audio src="sample.mp3" autoplay></audio>`
or

```
var audio = new Audio();  
audio.src = "sample.mp3"; // or data URL
```

```
// always play from beginning  
audio.currentTime = 0;  
audio.play();
```

▶ Video is similar to audio



Audio in iOS Safari

► Problem

- Cannot keep more than one audio object

- Sample code

```
var a1 = new Audio(),  
    a2 = new Audio();  
// assign different values to a1.src and a2.src  
// play a1, then play a2, and then a1  
a1.play();  
a2.play(); // a1 will be stopped automatically  
a1.play(); // iOS Safari fails to play it
```

► Solution?



Web Fonts

▶ Web fonts quick start

- Spec:

<http://www.w3.org/TR/css3-fonts/#font-resources>

- Sample

```
@font-face {  
    font-family: 'VT323';  
    src: local('VT323'), url('the-url') format('woff');  
}
```

▶ Benefits

- Enrich system fonts – Important on mobile device
- International



Web Fonts Resource

▶ Resource

- Google Web Font

<http://www.google.com/webfonts>

```
<link  
href='http://fonts.googleapis.com/css?family=VT323'  
rel='stylesheet' type='text/css'>
```

36px

The quick brown fox jumps over the lazy dog



Data URL

- ▶ Stringify everything
 - All media can be stored/transferred as string
 - Audio
 - Video
 - Image
 - Embed small images to files to save download cost
 - Possible to generate dynamic media files



Web Storage

- ▶ Local & Session storage
 - Key-value storage
 - Storage features
 - Persistent
 - Traceable – thru DOM event “storage”
 - More than 5 MB space (Vary in different browsers)
- ▶ Usage
 - Game auto-save/high score/...
 - Cache media resource thru data url



Offline Application

- ▶ Pretends to be a native app
 - Spec: <http://www.w3.org/TR/html5/offline.html>
 - Quick start
 - In HTML

```
<html manifest="your-app-cache.manifest">
```
 - In manifest file (served as text/cache-manifest)

```
CACHE MANIFEST
CACHE:
  your.html
  your.css
  your.js
NETWORK:
  *
```



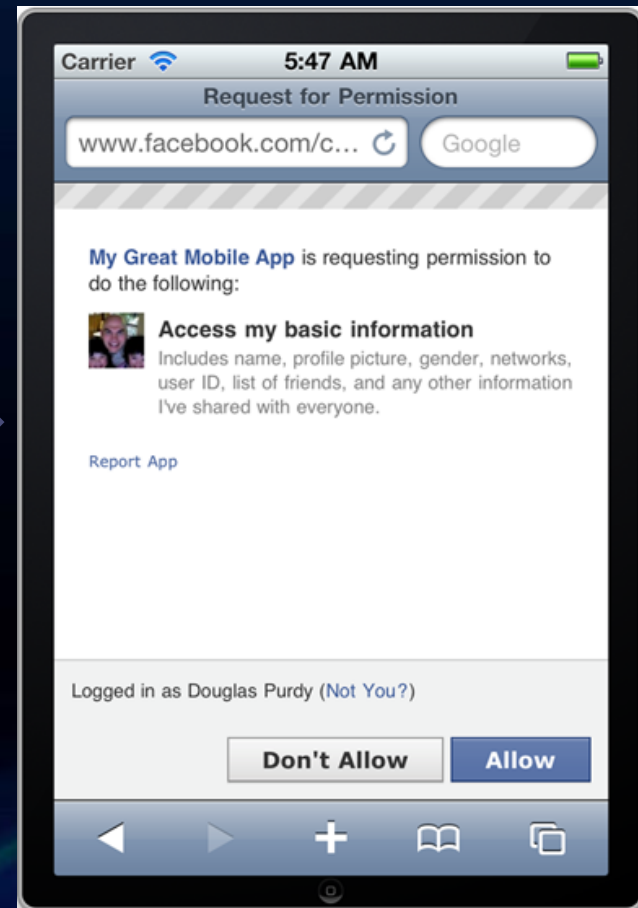
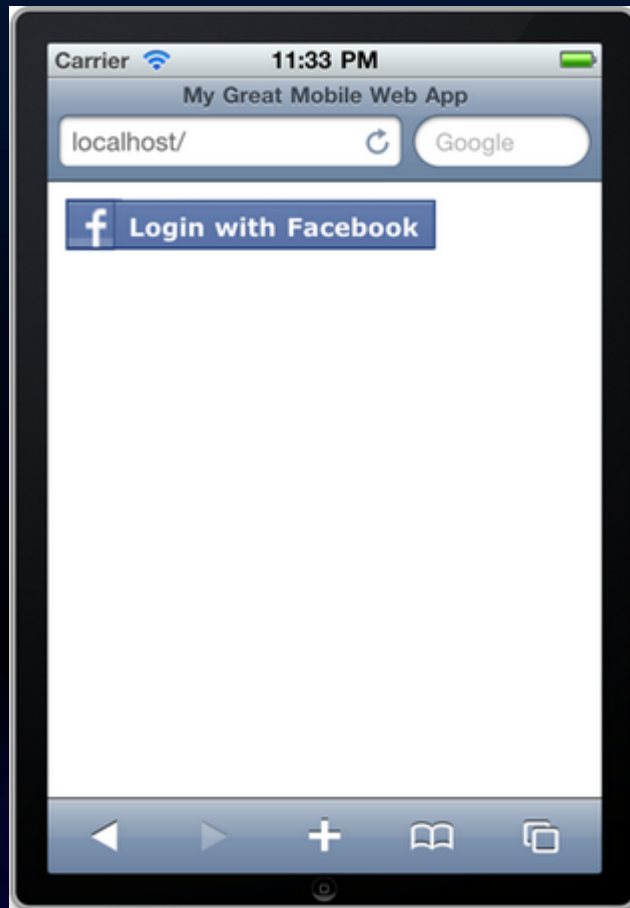
Offline Application

- ▶ Detect offline status
 - Check online status
 - `navigator.onLine`
 - `window.ononline` and `window.onoffline`
 - Application cache object
 - Global app cache object
`window.applicationCache`
 - Listen events
 - `progress/cached/checking/...`
 - Update cache
 - `applicationCache.update()/swapCache()`



Social Network Integration

▶ Facebook integration



Understand The Reality

▶ HTML Weakness

- Overall performance isn't good enough
- Many standard specs are partially implemented

▶ When to Use HTML

- Casual game without complex UI or game logic
- Want to integrate into some mobile web sites
- Design for Chrome Market



What Can I Use?

	2D Canvas	3D Canvas	CSS Animation
Firefox 4	Yes	Partial	No
IE9	Yes	No	No
Chrome 11	Yes	Partial	Yes
Safari 5	Yes	No	Yes
Opera 11.1	Yes	No	No
iOS Safari 4.2	Yes	No	Yes
Android 2.2	Yes	No	Yes

Data from <http://www.caniuse.com/> on May, 2011



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Data from <http://www.caniuse.com/> on May, 2011



What Can I Use?

	Data URL	Storage API	App Cache
Firefox 4	Yes	Yes	Yes
IE9	Yes	Yes	No
Chrome 11	Yes	Yes	Yes
Safari 5	Yes	Yes	Yes
Opera 11.1	Yes	Yes	Yes
iOS Safari 4.2	Yes	Yes	Yes
Android 2.2	Yes	Yes	Yes

Data from <http://www.caniuse.com/> on May, 2011



What Can I Use?

	Messaging	HTTP Origin	Web Socket
Firefox 4	Yes	Yes	Yes
IE9	Yes	Partial	No
Chrome 11	Yes	Yes	Yes
Safari 5	Yes	Yes	Yes
Opera 11.1	Yes	No	Yes
iOS Safari 4.2	Yes	Yes	Yes
Android 2.2	Yes	Yes	No

Data from <http://www.caniuse.com/> on May, 2011



Thank You!

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