

Going Mobile

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(iOS, Android, WP7)

I am primarily be referencing iOS and Android but the concepts apply to Windows Phone as well and of course to MonoTouch and Mono for Android

Key Challenges vs Web and Desktop

- Screen Size Smaller
- CPU Slower
- Network Slower, Unreliable
- Memory Tiny
- User Expectation Much Higher

Why go mobile?

- Work with a powerful & capable device in your pocket
- Show everyone your app
- Rapidly changing, new innovation that posed new challenges
- New learning opportunities

Memory

- Constrained
- Varies by device
- Low Memory Warning

Memory Issue: Bugs

- Leaks (ios)
- Memory Overrelease (ios)
- Long lived references not garbage collected.
- How to detect these issues?
 - Instruments (ios)
 - Android Memory Profiling: http://www.youtube.com/watch?feature=player_embedded&v=_CruQY55HOk

Memory Issue: Bitmaps

- Image file size != in memory size
- iOS 320x480 * 4 = 614,400 bytes
- Retina 640X960 * 4 = 2,457,600 bytes
- Even larger if you want to allow pinch and zoom

Bitmaps (cont.)

- Decoding, Scaling and Cropping happens on main thread.
- Do it on a background thread.
 - UIImage Extensions (ios) Sample code (android)
- In Memory Caching
 - NSCache (ios) LRUCache (android)

UI / UX

- Screen real estate
- Different screen sizes and resolutions
- High user expectation

UI / UX Patterns

- Pull to refresh
- Slide Menu
- Show / Hide chrome
- Animations & Transitions
- Parallax effects



Network

- Slow
- 3G vs Wifi
- Connection status
- Use multiple network connections
- Caching / Offline mode
- Consider Pre-loading data

CPU

- Do performance intensive in the background and cache the results
- Explore using Graphics Processing Unit

DEMO

- Internet Photo Gallery (Kittens)
- <https://github.com/somya/GoingMobile>

Other Tips

- Test on real devices not just the simulator
- Use the worst spec'd device that your app needs to support

Credits / Links

- Facebook recent optimizations for native (<http://www.facebook.com/notes/facebook-engineering/under-the-hood-rebuilding-facebook-for-ios/10151036091753920>)
- Mike Ash Blog: <http://www.mikeash.com/pyblog/>
- iOS Image Manipulation Extensions: <http://vocaro.com/trevor/blog/2009/10/12/resize-a-uiimage-the-right-way/>
- Displaying bitmaps efficiently on Android: <http://developer.android.com/training/displaying-bitmaps/index.html>
- iOS Environment :<http://developer.apple.com/library/ios/#documentation/iphone/conceptual/iphoneosprogrammingguide/TheiOSEnvironment/TheiOSEnvironment.html>

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