Introduction to Mobile Apps

CSE 5236: Mobile Application Development
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Essence of A Mobile Device?

• (Potentially) available to serve everywhere, any time.
• Interwoven into daily life – live, work, play, study
• Represents and intimately “knows” the user
  – Much more than just a small computer, it represents the user
• Brings in the outside world – sensing, location, communication
• Now the dominant end-user device
Varied Shapes, Sizes, Capabilities

Sources: Apple, Google, Nintendo/Nvidia, Digital Trends
Mobile Application Development Challenges

- Competitive, fluid vendor landscape (Apple, Android consortium incl. Amazon, RIM, HP) means apps need to be multi-platform for wide adoption
- No “standard” device (what about iOS, Windows Phone devices?)
- Low bandwidth input (in most cases – what about tablets?)
- Limited screen size (tablets?)
- Unreliability in connectivity and device (network access, power, ambient light, noise, at least for now)
- Integration tradeoffs with cloud and enterprise services
Application Development Support

- 3<sup>rd</sup> Generation Object-Oriented Languages (iOS – Objective C, Android – Java, Windows Phone – C#)
- Scripting languages (JavaScript, Ruby)
- Cross-platform frameworks – Titanium, RhoMobile, Xamarin, PhoneGap
- C and C++
- Integrated into “frameworks” specifically for mobile application development
Framework Support (e.g. Android)

Blue background:
Java
Other colors: C/C++
Framework Capabilities and Add-Ons

• Built-In Services:
  – GUI, OS services (file I/O, threads, device management), Graphics, Device access (GPS, camera, music and video players, sensors), Web-services, Networking, XML processing, standard language libraries

• Add-ons:
  – Maps
  – Database support (SQLite)
  – WebKit
IDE Support

- Open IDEs – Eclipse/Android Studio for Android
- Proprietary (Xcode for iOS, MS Visual Studio)
- Testing tools (test management, unit tests)
- Performance profiling tools
- SCM integration (Git, SVN, CVS)
- Software emulators
- Sensor injection (GPS, accelerometer, others)
Thank You

Questions and comments?