Wrap Up

CSE 5236: Mobile Application Development
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Essence of a Mobile Device

• The **dominant** end-user device
• Available to serve everywhere, any time.
• Interwoven into daily life – live, work, play, study
• Represents and intimately “knows” the user
• Brings in the outside world – sensing, location, communication
Varied Shapes, Sizes, Capabilities
Mobile Application Development Challenges

- Competitive, fluid vendor landscape (Apple, Android consortium including Amazon, RIM, HP) means apps need to be multi-platform for wide adoption
- No “standard” device
- Low input bandwidth (in most cases)
- Limited screen size
- Unreliability in connectivity and device (network access, power, ambient light, noise)
- Integration tradeoffs with cloud and enterprise services
Application Development Support

• Java
• Integrated into “frameworks” specifically for mobile application development
• **Cross-platform frameworks:** Titanium, RhoMobile, PhoneGap
• C++ and C
Framework Support (e.g. Android)
Framework Concepts, Capabilities and Add-Ons

• Concepts:
  – Loose-coupling (Intents)
  – Built-in reusability (Activities, Broadcast Receivers)

• Built-In Services:
  – Standard Java libraries
  – GUI, **Fragments, Skins, OpenGL**
  – OS services (file I/O, threads, device management), Graphics
  – Device access (camera, music and video players)
  – Sensors – GPS, accelerometer, light, magnetic, **NFC**
  – Web-services, **Networking**
  – XML processing
  – Security – via access management, isolation, **usual security concerns and techniques** (*Bluetooth hacking, DDoS attacks, privacy of location information*)

• Add-ons:
  – Maps
  – Database support (SQLite)
  – **Gaming**
  – **WebKit/Chromium**
  – Various app stores
IDE Support

• Android Studio and Eclipse: Windows, Mac, Linux
• Xcode: Mac only (for iOS development)
• Visual Studio: Windows only (for Windows Phone development)
• Testing tools (test management, unit tests)
• Performance profiling tools
• SCM integration (Git, SVN, CVS)
• Emulator
• Sensor injection (GPS, other sensors)
Questions?