Comp 388 / Comp 422
Software Development for Wireless and Mobile Devices

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Introduction to Mobile Device Development

• Real Time Device Operating Systems and Applications
  – System Architecture and Application Use
  – Device Software Development
  – Connectivity to the Mobile World
• Embedded Software and Systems
  – What’s different?
  – Software development issues to understand
• Understand Mobile voice and data networks
  – How does it work?

What?

• Programming Device Software
  • Make new applications
  • Modify existing applications
• Using Devices and Applications
  • Gain knowledge of the user experience
  • Understand why these things happen
How?

• Understand Big Picture - Concepts
  • Make new applications
  • Modify existing applications
• Explore and Report Results
  • Programming
  • Reading Other’s Programs
  • Use Windows Mobile, Android, Symbian
  • Anyone wish to explore iPhone OS?

Inside the Embedded Software World

Applications, Services (The Product)

Functionality (trend)

Processor

Operating System

Device Control and Diagnostics

Special Hardware

“Cross” Development

• How do you develop software for a small embedded device?
  • Need text editor, file storage,… (all normal services)
  • Need to generate machine code for some other processor
• Use a Standard PC and Network
  • And a “Cross Compiler” and related tools
    – Runs on PC and generates machine code (or whatever) for the embedded system.
My Embedded Software Background

• Products (aka Applications)
  – Voice Data Switches (central office, PBX, open systems)
  – Packet Data Switches (X.25, network control, QOS)
  – Satellite Communication Networks (testing systems)
  – Mobile Phone Infrastructure (CDMA, services)

• Specialized Hardware (including processors)
  – Custom processors for reliability (and performance)
  – Continuously available systems
  – Commercial chip processors eventually
  – Home grown and OTS operating systems
  – Specialized Software Development Tools (languages, simulators)

A little about me…

• Industry Background
  – Voice and data telecommunications, wireless systems and applications, packet switching, network applications, satellite systems
  – Research and Development
  – Leading large teams of software developers
  – Creating new systems (sometimes)
  – Global experience (Europe, Asia)
  – Hired hundreds of new college graduates

• Bell Laboratories, ITT, GTE, USWEST, Motorola