Linux For Embedded Systems

For Arabs

Course 101:

Introduction to Embedded Linux

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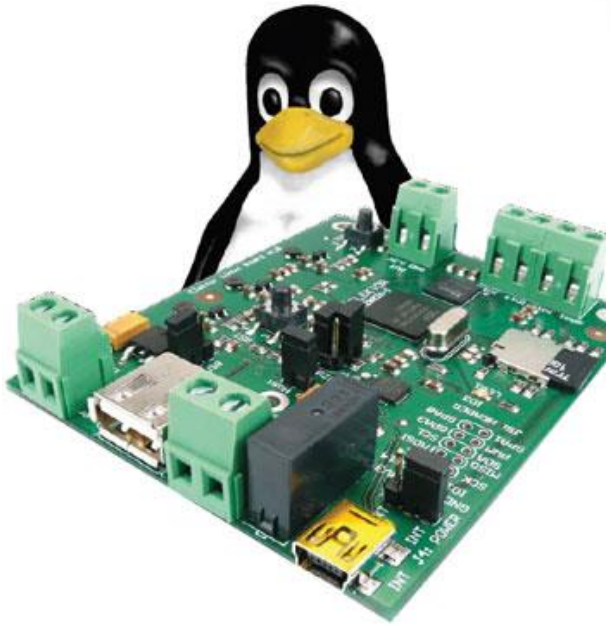
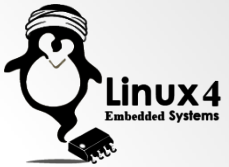


Lecture 1:
Introduction to Embedded Systems

What is an Embedded System ?

- An embedded system is a computer system embedded in a device with a dedicated function
- This is different from the traditional, general purpose computer systems



EXAMPLES OF EMBEDDED SYSTEMS

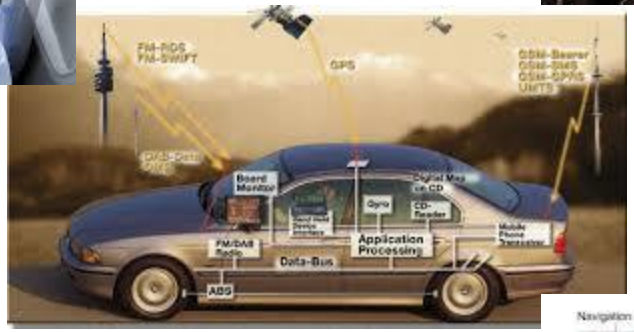
Phones and Tablets

- Communication Processor (s)
  - Wifi
  - GSM/3G/LTE
  - Bluetooth/NFC
- Audio/Graphics Processor (s)
  - Audio Processing
  - Graphics and Video Processing
- Application Processor
  - Android
  - Windows Phone
  - iOS

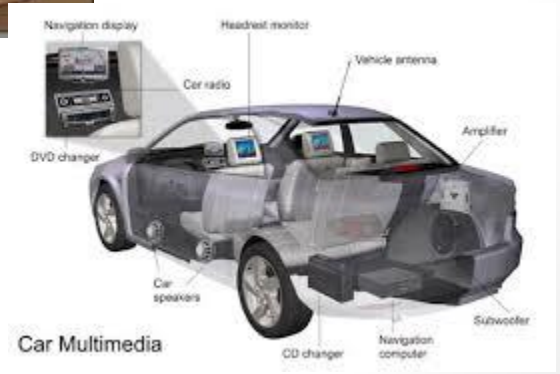
Robotics

Automotive


THE VERGE


FM-RDS
FM-SWIFT
GPS
Board Monitor
Gyro
CD-Reader
FM/DAB Radio
Application Processing
Data-Bus
ABS

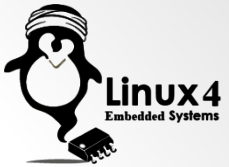

Full-Graphical Instrument Panel
Navigation
Camera
MB86298
DVD Viewing
TV Viewing
Rear-Camera Video Stream


Navigation display
Headrest monitor
Vehicle antenna
Car radio
Amplifier
DVD changer
Car speakers
Subwoofer
CD changer
Navigation computer
Car Multimedia

Networking Devices

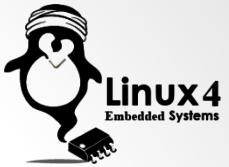
And Other Gadgets

So Why is it different from Desktop Development



- Embedded Systems normally come with constraints in hardware resources
  - Processing
  - Memory
  - Storage
  - Power
  - Display
  - Input/Output devices
- Also, embedded system applications often comes with real time system constraints
  - Latency
  - Throughput
- The system has a strong association between the HW and SW

OK ….. So What ??



- The developer has to deal with all of these constraints
  - Development should take into consideration, code efficiency, and code foot print
  - Debugging tools are “closer to the metal”
  - Special attention to power consumption in some cases

Linux4
Embedded Systems

Develop

Compile

Unit Test

Deploy

Debug

Improve

Run

Cross-Platform Development

- Development Environment is different from target environment
- Need for cross platform development and debugging tools

Linux 4 Embedded Systems

http://Linux4EmbeddedSystems.com