



W4 - BSPs and drivers CE 6.0

Writing BSP and drivers for Windows CE 6.0

Windows Embedded CE is a registered trade mark of Microsoft

Goals

- Master the cross development tools
- Bring the system on the target
- Accessing I / O
- Install kernel interrupt routines and applications
- Develop drivers and Board Support Packages

Course material

- A windows PC and an Atmel target board for two trainees
- Platform Builder for CE 6.0
- Visual Studio 2005
- A Lauterbach probe, with the Windows CE kernel awareness module
- Printed course material and labs solutions

Prerequisite

- Good knowledge of the C language
- Knowledge of application programming on Windows CE 6.0 (as described in [cours W3](#)) is mandatory.

Plan

Overview of WindowsCE

- Architecture and versions of Windows CE
- What's new in version 6.0
- Technologies and processors supported
- Embedded specific settings
- Shared source code and licensing system
- Comparison with Windows XP Embedded.
- Comparison with Windows Mobile
- Development tools for Windows Embedded CE

Windows CE architecture

- The Windows CE Kernel

- The Device Manager
- The Graphical Windowing and Events System (GWES)
- Communications services
- Timers, Watchdog timers.
- Interruptions,
 - IRQs (Interrupt ReQuest)
 - ISR (Interrupt Service Routine)
 - The IST (Interrupt Service Thread)
 - Interruption APIs
- Memory architecture.

Platform Builder in brief

- Steps to build a Windows Embedded CE platform
- Creating projects and source Workspaces
- Modules and components of the OS
- The source code configuration files
 - DIRS
 - SOURCES
 - Makefile
 - Module definition
- Build phases
 - Compile
 - Sysgen
 - Release copy
 - Make image
- Configuring Debug and Release configuration

Test and debug

- Kernel Debug
- Debug areas
- Just In Time Debugging (JIT)
- Kernel Profiler, Remote Kernel Tracker, Remote Call Profiler.
- Exception handling
- CETK Tests
- Using remote tools

Developing the Board Support Package (BSP)

- Bootloader development
- Develop the OEM Abstraction Layer (OAL)
- Configuration files

Exercise : Development of a serial line KITL

Exercise : Debug using the Lauterbach probe

Device driver development

- Introduction
- Driver types
- Stream drivers
 - interface
 - installation (static and dynamic)
- User mode drivers
- Access to physical memory
- Interrupt management

- Parameter marshalling
- Power management
- Test and debug

Exercice : Writing a fully functional button driver - driver installation - physical memory access - interrupt management - asynchronous access to the user buffer - registration of a button as an alarm source - writing a CETK test

Exercice : Writing a LED driver - management of power states

Exercice : Demonstrating the use of hardware traces (captured by the Embedded Trace Macrocell) for error detection and fix, using a Lauterbach probe.

Renseignements pratiques

Duration : 3 days

Cost : 1750 € HT



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