Building Embedded Solutions using Windows CE 5.0

COMPUTER TRAINING
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WINDOWS

Course No. 2540N

5 Days

Target Audience:
The goal of this course is to provide developers and system integrators practical assistance with building embedded platforms using Microsoft Windows CE 5. The course is designed for system integrators and developers using existing BSPs/OALs or developers building their own BSPs. The labs comprise many examples of system programming with hands on experience using the Platform Builder.

Pre-requisites:
Before attending this course, students must have the following pre-requisites:

- Working knowledge of C or C++.
- Some knowledge of Embedded platforms including interrupt handling and hardware programming is useful. (This may be gained by attendance on Course 2530, Introduction to Windows CE).
- Some knowledge of Win32 API programming is also helpful.

Purpose:
After completing the course, students will be able to create an advanced build of a Windows CE image; describe the concepts of advanced debugging; describe the Windows CE kernel features; provide an overview of driver development in Windows CE; describe the networking and communications technologies used in Windows CE; learn about the shell options included in Windows CE; describe the application development environment for building a Windows CE operating system image; build a headless device.

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At the end of the course the delegate will be able to complete the following:

Overview and Architecture

- Overview of Windows CE
- New Features of Windows CE V5.0
- Introduction to Platform Builder and the Windows CE Build Process
- Pocket PC, Smart Phone, Auto PC SDKs
- Overview of Application Development Tools
- Building in the Integrated Development Environment
- The Build Process and SYSGEN
- Building the Release Directory
- Modifying Configuration Files and making an image
- Application Development Tools - eMbedded Visual C / C++
- Smart Device Extensions for Visual Studio .NET (C# .NET, VB .NET, the .NET Compact Framework)
- OS Architecture
- Processes, Threads, and Virtual Memory

Skills:

- Lab: Create a new Board Support Package from an existing BSP
- Lab: Create and customize a new OS design from a template
- Lab: Configure connection to a target device and download a run-time image
- Lab: Prepare an OS Design for Third Party Development
- Lab: Create a distributable SDK for your OS design
- Lab: Use Visual Studio to develop a managed C# code application for your design.
- Lab: Develop a C++ application for your design using eMbedded Visual C++.
- Lab: Create a console application using Platform Builder
- Lab: Using the Remote Tools to Examine Memory and Process Layout

System Programming

- Memory Architecture
- Kernel Core Features
- Synchronization Objects
- Windows CE Interrupt Model
- The Real World: Debugging Process
- Using Remote Tools
- IDE Debug Commands
- Debug Zones
- Additional Debugging Techniques
- eXDI (Extended Debug Interface)

Skills:

- Lab: Minimal Kernel Configuration
- Lab: Exploring Memory, Heaps, and Stacks
- Lab: Exploring Threads
- Lab: Exploring Synchronization Objects
- Lab: Exploring Interrupts in Windows CE
- Lab: Debug Techniques

Stages of the Build Process

- Building Dirs and Sources
- Compiling with Build.exe
- The Catalog, CEC Files, and SYSGEN Variables
- Extending the Build in Sysgen
- Using the Private Branch
- Understanding PBPXML Projects

Skills:

- Lab: Building with DIRS and SOURCES
- Lab: Creating and Importing CEC Files
- Lab: Creating Filtered Modules and Components
- Lab: Making Source Code Private
- Lab: Using PBPXML Projects

System Initialization and Startup

- System Initialization and Startup Overview
- Driver Loading and the Registry
- Loading Drivers at Boot Time
- PnP Notification System
- Using Standard Shell Startup Application Folder
- Using the Standard CETK Tests

Skills:

- Lab: Replacing the Shell with a Custom Full Screen Browser Based UI
- Lab: Use of ActivateDeviceEx
- Lab: Boot Time Driver Load Order Dependencies
- Lab: Using the PnP Notification System to Create an AutoRun "Service"
- Lab: Creating a Run Application
- Lab: Using the CETK

Advanced Configuration

- Web Technologies
- Networking Options
- Component Services
- Networking Security
- Real-Time Communications
- Multimedia Communications

Skills:

- Lab: Enabling a Web Server
- Lab: Implementing Microsoft Message Queuing

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Cost:
£1990 plus VAT

Prices are subject to change without prior notice. Please see the course page on www.f1comp.co.uk, or call 01225 336096, to verify the current price of this course.

Numbers:
Maximum of 6 people on each course at F1's training facilities in London and Bath