

RTOS (WinCE), BSP and Device Driver Development

About Course

This course is specially designed to fulfill the requirements of Mobile Software Developers of various telecom companies given below.

Real Time Operating Systems are the backbone of embedded systems. Developing software's on RTOS leads to new challenges for Software programmer. We have huge demand of WinCE experts from different segments of industrial world. Being a new technology, It's difficult to find the expert resources in WinCE platform. Which provides an opportunity to fresh graduates to learn this new O/S and enter into telecom world through an easy way We have excellent pool of trainers those have been working in WinCE platform since last 5-6 years. They are renowned in corporate segments because of their smart way of delivering the complex concepts of WinCE so easily.

Targeted Companies:

- L & T Software, Bangalore
- LGSoft, Bangalore.
- SASKEN, Bangalore.
- Stryker, Gurgaon
- Samsung India Software Operation, Bangalore.
- FreeScale, Noida
- Conexant, Noida
- Qualcomm, Hyderabad.
- Tata Elexi, Bangalore
- Persistent Systems
- ST Microelectronics, Noida
- Samsung India Software Center, Noida
- Jinvani Systech Inc. USA.
- Dilithium Networks, Noida.
- Mediatek Inc, Noida.
- Sirf Technologies, Noida.
- HCL
- Wipro

About WinCE

Microsoft Windows CE is a scaled-down operating system designed specifically for what Microsoft terms 'information appliances'. In Microsoft's vision, these appliances range from handheld computing devices to mobile phones to automobiles to industrial equipment.

Who is it for?

BE/B.Tech/MCA/MTech/MS in Computer Science, IT, Electronics, Electrical, Instrumentation and Communication Engg graduates.

This course is aimed at those wishing to enter into Mobile Application and System Software development world. In addition, the course will appeal to technical managers, analysts and strategists wishing to increase their technical understanding of the subject areas.

Course Contents

Introduction:

- ARM7/ARM9 Micro Processor Architecture
- Understanding Real-Time Operating Systems
- Overview of OMA, WAP, 3GP.
- Working on communication protocols such as USB 2.0, I2C, SPI, UART etc.
- Using Cross Compilers, Debuggers, Emulators, Clear Case.

BSP and Device Drivers.

- Embedded device drivers / RTOS porting on any RTOS (USB device driver, I2C driver, NOR/NAND drivers).
- Windows Device Driver
- Porting BSP and drivers to reference ARM hardware boards

Real Time Operating System Development (Windows CE)

- Windows CE Architecture
- Windows CE Features
- Windows CE Platform Development Cycle
- RTOS Architecture.

Configuring & Building with Platform Builder

- Configuring a Windows CE Platform
- Building a Windows CE Platform Image
- Downloading a Windows CE Image to Emulation/Hardware
- Configuring Connectivity Options

Windows CE Debugging Process

- Overview of the Debug Process
- Release Builds & Debug Builds
- Introduction to the Kernel Debugger
- Understanding Windows CE Remote Tools
- Using Breakpoints
- IDE Debug Commands

Kernel Features

- Real Time features
- Windows CE Kernel Features
- Handling Processes, Threads, & Fibers
- Protecting Applications
- Synchronization Objects
- Memory Model

Boot Loader & OEM Adaptation Layer

- Operating System Boot Sequence
- Role of the Boot Loader
- Boot Options
- OAL Architecture
- Required OAL Functions
- Optional OAL Functions
- Arrangement of Driver Libraries

Device Driver Architecture

- Architecture
- Built-In Vs. Installable Drivers
- Device Manager
- ActivateDeviceEx
- Interrupt Model
- Interrupt Service Routines (ISRs)
- Interrupt Service Threads (IST)
- Stream Drivers
- DMA

Microsoft CETK Framework

- Understanding CETK Framework.
- Writing CETK test code for Driver Testings.
- Executing CETK test cases for Display Driver.
- Compliance CETK execution for Wave Driver.

DSHOW Multimedia Framework

- Understanding DSHOW Multimedia Framework.
- Understanding COM/DCOM Architecture,
- Writing Application Using COM components.
- Understanding Multimedia Codec Plug-Ins.

Projects

- Developing WaveDriver for Sound Blaster IC.
- Developing Display Driver for X86 Platform.
- Developing Media Player Application for Pocket PC phone.
- Developing Camcorder Application for Pocket PC Phone.

Training Requirements

Minimum Hardware Requirements

- Pentium 4 – 2.4 to 3 GHz
- PCI 2.1 bus
- 512M – 1Gigabyte (GB) of RAM

Confidential

- 60GB hard disk
- 256-kilobyte (KB) L2 cache
- DVD or CD-ROM drive (12x or greater)
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Software Requirements

- Windows CE Utilities for Visual Studio .NET 2003 Add-on Pack 1.1 (must be installed before Platform builder)
- Microsoft Embedded Visual C++ V4.0 with SP4
- Microsoft Windows CE with Platform Builder V5.0

Software Installation

- Install the Windows XP operating system
- Install Visual Studio 2005
- Install the Embedded Visual C++ V4.0 and SP4
- Install Windows CE with Platform Builder V5.0

Training Features

- 70% of the training would be Hands on Learning through Real Time Exercises and Projects.
- Students will develop the Mobile Application and will run it on Real Mobile Phones.
- Guidance and Interaction with Corporate Leaders and Experts.
- Complete Placement Assistance.
- Recommendation to All Client Companies.
- Free Lifetime membership of Miracle Embedded Group (A network of already placed candidates)