

Symbian OS Internals

Details

Level:	Advanced
Duration:	4 days
Development language:	C++
Experience:	The course is designed for engineers with a good understanding of C++ and a reasonable understanding of OO. Participation in the Symbian OS Essentials (OSE) and Symbian OS Application Engine (AE) development courses, or equivalent knowledge, is assumed.



Target audience

For experienced Symbian OS developers, system and porting engineers wishing to gain an insight into the new real-time Symbian OS kernel (EKA2) as introduced in Symbian OS v8.1b.

Description

The 4-day Symbian OS Internals course has been revised and is based now completely on the new realtime EKA2 kernel architecture of Symbian OS. It explores the core techniques used within the Symbian operating system and covers four areas: operating system basics; software organization and tools; device driver model and porting overview. This knowledge will enable the development of advanced applications, system services, device drivers and device ports.

Objectives

Symbian OS Internals explores the core techniques used within Symbian OS (EKA2). Knowledge of this area of Symbian OS will enable the development of advanced applications, system services, device drivers and device ports. The participants will gain an operating system perspective on Symbian OS and be able to practically demonstrate their understanding. Upon completing this course, participants will be able to:

- Explain the key features of the Symbian OS kernel and their impact on user side developers
- Demonstrate key EKA2 features using C++ code fragments
- Use a useful collection of low level Symbian OS tools.
- Develop simple device drivers and understand the device driver model
- Appreciate the key aspects of Symbian OS base porting

Tools

This is a hands-on course consisting of approximately 60% lectures and 40% practical work.

Exercises are run on Psion Series 5MX Pro devices running a Symbian OS EKA2 text shell or using TI OMAP1623 development boards. The Symbian OS Internals course uses a special training kit OSI6 which is a derivative product from the Symbian OS DevKit.

Platform

Symbian OS v9.x

Agenda

Day 1

Operating Systems Basics

1. Symbian OS EKA2 Overview
2. Processes and threads and handles
3. Memory allocation
4. Memory organization
5. Context switching

Day 2

Operating Systems Basics ... continued

6. Symbian OS services
7. Interthread/process communication
8. Client/server – kernel side architecture

Code organization and tools

1. Symbian OS organization
2. ROM Building
3. Debugging

Day 3

Writing Device Drivers

1. Device drivers – Basic Concepts
2. Device drivers – Component details
3. Device drivers – Implementation details
4. Device drivers – Interrupts, IDFCs & DFCs
5. Device drivers – Data Transfer
6. Device drivers – Platform Security

Day 4

Writing Device Drivers ... continued

7. Device drivers – Common development issues
8. Power management
9. DMA

Porting

1. Hardware abstraction
2. Simplified base porting process
3. File Systems