



TRAINING IN REAL-TIME
EMBEDDED DEVELOPMENT

RTOS-201 Fundamentals of Real-Time Operating Systems

Course Description

A two-day course providing an introduction to the theory, structure and practice of real-time operating systems. Particular emphasis is placed on issues relating to embedded applications. Nevertheless this course is still of significant value to engineers developing non-embedded real-time projects. The course covers basic concepts, practical issues and commercial implementations of modern operating systems. Approximately 50% of the time is given over to lectures, the remainder being split between course workshops and practical demonstrations.

This course is ideal for engineers who are new to the field of real-time. It is also applicable to both managers and engineers who are considering the use of Real-Time Operating Systems (RTOS) on future projects.

The course has been developed by the well-known real-time author Dr. J. E. Cooling.

It is available on-site and is also part of our public training schedule. We are always happy to discuss course customisation.

Overview

A two day course providing an introduction to the theory, structure and practice of real-time operating systems.

Course Objectives

After completing the course attendees will:

- Appreciate the use of multitasking techniques in real-time systems
- Understand the fundamental concepts of real-time operating systems
- Understand the features and structures of practical implementations
- Appreciate how application areas (e.g. safety-critical, desktop, etc.) impact on RTOS facilities
- Be competent to progress to vendor-specific detailed training

Please note: *This course does not set out to equip attendees with the skills, knowledge and expertise to design real-time operating systems or to program with a commercially available RTOS. To be able to program with a commercially available RTOS, vendor specific training should be taken. This course is a suitable precursor to that vendor specific training.*

Pre-requisites

- Knowledge of a high level language (e.g. Pascal, C, C++, etc.) although minimal expertise is required.
- An understanding of the fundamentals of computer-based systems.

Who should attend

Application programmers, software engineers, support engineers or technical staff new to the field of Real-Time Operating Systems (RTOS).

Duration

Two days

Course Material

Delegate handbook

Related Courses

- OO-503 Real-Time Software Design with UML 2.0
- C++-501 C++ for Embedded Developers
- C-501 C for Real-Time Developers
- EL-503 Developing for Embedded Linux
- EL-504 Developing Linux Device Drivers

Part 1: Real-Time Operating Systems – an introduction.

- Basic features of real-time operating systems
- Tasks and tasking
- Scheduling – concepts and implementation
- Control of shared resources – mutual exclusion
- Resource contention and deadlocks
- Intertask communication
- Memory management

Part 2: Practical aspects of real-time operating systems.

- OS structures from Nanokernels through Microkernels to full RTOSs
- Process, Memory, Filesystem, Device and Memory management aspects
- Performance and safety features
- Real-Time Posix issues
- Development support
- Real-Time benchmarking
- Overview of some modern OS's (e.g. VxWorks, RTKernel, OSE Delta, Windows CE)

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