VxWorks 6.x and Workbench Fundamentals

Wind River Education Services enables you to unleash the power of Wind River’s technology. Our training and mentoring empower developers with the knowledge and proficiency required to program and manage device software faster and more reliably. Reduce your project risks and shorten your development timelines by equipping your engineers with the right training by our experts.

Course Description

The VxWorks 6.x and Workbench Fundamentals training course provides engineers with a fast, cost-effective way to acquire the knowledge necessary to develop real-time applications with VxWorks 6.x and Wind River Workbench.

After this course, participants will be able to do the following:

- Build and configure a VxWorks real-time system
- Design real-time applications using the VxWorks API
- Analyze and debug real-time applications
- Develop synchronization solutions and protect shared resources
- Manage memory and inter-task communication
- Handle exceptions and interrupts
- Execute code periodically using timers

Products Supported

- VxWorks 6.7
- Wind River Workbench 3.1
- Earlier product releases (topics may vary)

Who Should Attend

- Developers who work with Workbench and VxWorks
- New project members on teams using Wind River products
- Senior engineers who will evaluate VxWorks technology

Prerequisite Skills

- One year of C programming
- Basic understanding of operating systems and debugging techniques
- Functional knowledge of UNIX/Linux

Prerequisite Courses

- Real-Time Programming for Embedded Systems

Related Courses and Mentoring

- Workbench On-Chip Debugging Fundamentals for VxWorks
- VxWorks 6.x Board Support Package

Course Title: VxWorks 6.x and Workbench Fundamentals
Duration: Four days
Format: Instructor-led lectures and hands-on lab sessions; instructor-led live remote delivery available
Price: Contact your local sales representative

- VxWorks 6.x Device Drivers
- Wind River Tilcon Graphics Suite Fundamentals
- Rapid Integration and Mentoring – Installation & Orientation VxWorks Bundle
- Rapid Integration and Mentoring – Workbench Integration Small Team Bundle

Course Format

- This four-day instructor-led course consists of lectures and lab sessions.
- Students receive personal guidance from expert Wind River instructors.
- Students use VxWorks 6.7 and Wind River Workbench 3.1 to gain experience with the topics presented.
- Lab sessions allow hands-on application of course concepts.

Global Reach of Wind River Education Services

With more than 20 years of device software experience, we provide education services in every region of the world. You can rely on our expertise—acquired by delivering hundreds of classes each year to thousands of students—to provide a highly effective learning experience, wherever your developers are located.

Private Classes

Private classes are conducted at your location, scheduled for your convenience. Private classes include the use of a preconfigured laboratory environment that may consist of a connection to a remote lab environment or equipment that we bring to your facility. Private classes can be tailored to your specific needs by adding or removing topics from multiple courses, maximizing the benefit of your time in class. Visit education.windriver.com for registration and schedule information.
Syllabus

Day 1

Getting Started
• Product Overview
• Workbench 3.1 Features
• Product Delivery, Installation and Licensing
• Host Support
• VxWorks 6.7 Features

Using the VxWorks Simulator
• Product Overview
• Introduction to VxSim
• Remote Systems Target Server Connections
• VxWorks Simulator Configuration
• Connecting to VxSim
• Wind Debug Agent (WDB)

Managing Projects in Workbench
• Introduction to VxWorks Projects
• Project Explorer Overview
• Application Projects
• Build Specifications
• Project Management Lab

VxWorks Source Builds (VSBs)
• Introduction and Purpose of VSBs
• Workbench Projects
• Command-Line Usage
• VSB Options
• VSB Projects and VxWorks Builds
• VSB Lab

Using VxWorks Shells
• Introduction to VxWorks Shells
• Host Shell and Shell Interpreters
• Kernel Shell
• Host Shell Lab

Day 2

Debugging
• Debugger
• Feature Overview
• Configuration
• GUI and Usage Overview (Setting Breakpoints, etc.)
• Kernel-Space and Application-Space Debugging
• Debugger Lab

Using Dynamic printf Event Points
• Introduction to printf
• Using printf in the C and cmd Modes
• Using printf with RTPs
• Applying printf Through Workbench
• printf Lab

Real-Time Multitasking
• Multitasking Environment Overview
• Task Creation and Deletion
• Other Task APIs (taskDelay(), Task Variables, Task Hooks, etc.)
• Nonexecutable Stack Pages
• NULL Pointer Dereference Detection
• Text Segment Write Protection
• System Tasks
• Real-Time Multitasking Lab

VxWorks Events
• Event Register
• Task Synchronization
• Events Lab

Day 3

Semaphores
• Semaphores and Synchronization
• Mutual Exclusion Semaphores
• Semaphores Lab

Intertask Communication
• Shared Memory
• Message Queues
• Pipes
• Intertask Communications Lab

Memory
• Memory Allocation
• Memory Partitions
• Memory Lab

Real-Time Processes (RTPs)
• RTP Overview
• RTP File Generation
• Starting an Application
• Shared Data Usage
• Shared Library Usage
• Real-Time Processes Lab

Overlapped RTP Virtual Memory
• RTP Virtual Memory Models
• RTP Code Regions
• Configuring VxWorks
• Identifying RTP Code Regions
• Building Absolutely Linked RTPs
• Memory Lab

Day 4

Exceptions, Interrupts, and Timers
• Exceptions
• Using Signals to Recover from Hardware Exceptions/Fatal Errors
• Interrupts
• Interrupt Flow Example
• ISR Stack, ISR Restrictions
• Timers
• Watchdog Interface and Polling
• Auxiliary Clock for Polling at Higher Speed
• Exceptions, Interrupts, and Timers Lab
Error Management
• Error Reporting Framework
• Persistent Memory
• Error Records
• Error Detection and Reporting Configuration
• Error Detection and Reporting Lab

System Viewer
• System Viewer
• System Viewer Configuration and Log Explanation
• Triggering
• User Events
• System Viewer Lab

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