General Purpose Platform, VxWorks Edition 3.6 for New Users (Workbench/VxWorks 6)

Wind River Education Services enables clients to unleash the power of Wind River’s tools by creating developers skilled in Wind River technology. For developers, Education Services provides the knowledge you need to meet your commitments and exceed your company’s expectations. With Wind River Education Services, you will develop, run, and manage your application software faster, better, at lower cost, and more reliably.

Course Description
The General Purpose Platform, VxWorks Edition for New Users course (Workbench/VxWorks 6) provides engineers with a fast, cost-effective way to acquire the knowledge necessary to develop real-time applications with Wind River Workbench. After this course, students will be able to do the following:

- Design and develop real-time applications in kernel and user modes
- Debug, build, and test real-time applications in a target-host development environment with Workbench and VxWorks

Products Supported
- Wind River General Purpose Platform, VxWorks Edition 3.6

Who Should Attend
- Everyone who will receive Wind River products within 60 days
- Developers who work with Workbench and VxWorks
- New project members on teams already using Wind River products
- Senior engineers who want to 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
- Introduction to Real-Time Programming

Course Title: General Purpose Platform, VxWorks Edition for New Users (Workbench/VxWorks 6)
Duration: Four days
Format: Instructor-led lectures and hands-on lab sessions
Price: Contact your local sales representative

Related Courses
- Workbench, On-Chip Debugging Edition
- General Purpose Platform, VxWorks Edition Board Support Package (VxWorks 6 BSP)
- Platform for Network Equipment, VxWorks Edition

Course Format
- Our four-day instructor-led courses consist of lectures and lab sessions that allow hands-on application of course concepts.
- Students receive personal guidance from expert Wind River instructors.
- Students examine details of the Workbench environment, focusing on the most commonly used areas.
- Specific questions are addressed.

Global Reach of Wind River Education Services
- 4,000 students per year
- 400 classes delivered per year
- 36 instructors worldwide
- Access to 200 subject-matter experts
- 24 training centers worldwide
- More than 20 years of device software experience

Onsite courses are conducted at your location and include the use of preconfigured laptops and target boards, plus shipping and travel costs. Visit education.windriver.com for registration and schedule information.
Topics

- Building and Configuring a VxWorks Real-Time System
  - General Purpose Platform Component Overview
  - Setting Up a Cross-Development Environment
  - Using the Application Development Perspective
  - Managing Projects
  - Building Applications

- Debugging and Analyzing Real-Time Applications
  - Using Host Shell Interpreters for Interacting with the Target
  - Debugging Applications Using the Embedded Debug Perspective
  - Using Wind River System Viewer for Analyzing Applications
  - Detecting and Reporting Errors

- Using the VxWorks API to Design Real-Time Applications
  - Real-Time Processes Programming Model Usage
  - Multitasking Environment Overview
  - Task API Usage
  - Synchronization Solutions
  - Protecting Shared Resources
  - Intertask Communication
  - Interprocess Communication Using Message Channels
  - Basic Memory Management
  - Exception Handling
  - Interrupts
  - Timers for Periodic Code Execution

Debugging

- Debugger
- Feature Overview
- Configuration
- GUI and Usage Overview (setting breakpoints, etc.)
- Kernel-Space and Application-Space Debugging
- Debugging Lab

Day 2

Using VxWorks Shells

- Introduction to VxWorks Shells
- Host Shell and Shell Interpreters
- Kernel Shell
- VxWorks Shell 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

Agenda

Day 1

Preface

- Prerequisites
- Objectives

Getting Started

- General Purpose Platform Components Overview
- Available Tools
- General Purpose Platform Feature Overview
- Directory Structure
- Help Resources
- Setting Up the Host Environment
- Booting a Target
- Connecting Host and Target
- VxWorks Simulator
- Getting Started Lab

Project Management

- Introduction to VxWorks Projects
- Project Explorer Overview
- Application Projects
- Build Specifications
- Project Management 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

Wind River System Viewer

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

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