WIND™

VXWORKS APPLICATION DEBUGGING USE CASES

COURSE DESCRIPTION

The VxWorks® Application Debugging Use Cases course provides development and test engineers with a solid foundation in the use of Wind River® Workbench debugging tools in a variety of situations.

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

- Identify when VxWorks has generated an exception
- Use the information VxWorks produces as a result of an exception to identify the location and instruction that caused the exception
- Identify a deadlock condition using System Viewer
- Use VxWorks facilities to identify the location of a race condition
- Identify the location and cause of a buffer or stack overflow
- Use System Viewer to track down the cause of a bug in an interrupt service routine
- Use the System Mode debug feature in Workbench to trace a problem ISR and fix the bug
- Use System Viewer to debug a problem that causes a warm boot of VxWorks
- Add data logging code to an application to be used in conjunction with the System Viewer debugging tool

PRODUCTS SUPPORTED

- Wind River VxWorks 6.9
- Wind River Workbench 3.3
- Wind River Simics 4.6

COURSE FORMAT

- One-day set of hands-on use cases covering six topics, with technical assistance and individual guidance available from an expert instructor
- Use of VxWorks 6.9, Workbench 3.3, and Simics 4.6 to gain experience with the topics presented

Course title:	**VxWorks Application Debugging Use Cases**
Duration:	One day
Format:	Hands-on use case sessions with support from an instructor
Content:	**Day 1:** Debugging an Application Generating an Exception; Discovering and Fixing a Deadlock Condition; Debugging a Memory Scribbler; Debugging an Interrupt Service Routine; Using System Viewer in Postmortem Mode to Detect an MMU Violation; Using System Viewer Programmatically

AUDIENCE

- Application developers and test engineers faced with diagnosing the cause of an exception
- Application developers and test engineers needing a way to identify and correct deadlock conditions in VxWorks
- Engineers, application developers, and test engineers needing a method to diagnose the causes of warm-start events in VxWorks
- Engineers needing information on how to debug an ISR using Workbench tools
- Application developers requiring highly customized System Viewer data collection schemes

PREREQUISITE SKILLS

- Two to three years of C programming experience
- Solid understanding of VxWorks and the VxWorks kernel programming environment
- Proficiency in the use of the Workbench tool suite, especially Workbench projects and target servers
- Functional knowledge of UNIX/Linux

INNOVATORS START HERE.

SYLLABUS

Day 1

USE CASES

DEBUGGING AN APPLICATION GENERATING AN EXCEPTION

- Understand how VxWorks reports exceptions
- Interpret the exception message and use it effectively in debugging

DISCOVERING AND FIXING A DEADLOCK CONDITION

- Use System Viewer to identify and locate the cause of a deadlock condition
- Identify the resources involved in a deadlock without seeing the source code
- Fix the deadlock condition

DEBUGGING A MEMORY SCRIBBLER

- Use an exception message to identify a race condition
- Use the exception message to locate the problem instruction
- Examine the source code associated with the race condition and provide a fix

DEBUGGING AN INTERRUPT SERVICE ROUTINE

- Build and boot a defective application
- Identify the location and context under which the defect manifests
- Perform system-mode debugging to determine where the algorithm can be modified to eliminate the problem

USING SYSTEM VIEWER IN POSTMORTEM MODE TO DETECT AN MMU VIOLATION

- Configure a VxWorks image to set aside memory not to be initialized on a warm start
- Configure System Viewer to acknowledge and place data into the configured memory
- Examine the System Viewer log obtained from the configured memory and determine the location of the offending instruction

USING SYSTEM VIEWER PROGRAMMATICALLY

- Configure and build a VxWorks image that supports System Viewer data collection utilities
- Write a custom application that makes use of System Viewer instrumentation
- Run the application to collect and upload data for examination

PREREQUISITE COURSES

- VxWorks 6.x and Workbench Essentials

RELATED COURSES

- VxWorks Build and Configuration Use Cases
- VxWorks Intermediate Application Development Use Cases

GLOBAL REACH OF WIND RIVER EDUCATION SERVICES

With more than 30 years of device software experience, Wind River provides education services in every region of the world. Our private classes can be tailored to your needs by adding or removing topics from multiple courses. If you have more specific project challenges, Wind River Mentoring provides coaching by experienced engineers to help you integrate Wind River solutions into your environment. And when you're too busy to attend a whole class, our On-Demand Learning options provide around-the-clock access to advanced and specialized topics. All of our education services are led by expert engineers who are closely connected to the Wind River technical community for access to specific expertise.

CONTACT US

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