LabWindows™/CVI Core 2

Overview
A follow-up to the LabWindows/CVI Core 1 course, the LabWindows/CVI Core 2 course is ideal for new and intermediate users. After attending the course, you can design applications that use network communication, DLLs, and ActiveX. You will learn how to create powerful user interfaces using menus and toolbars. You will be able to take full advantage of the PC with your application by learning how to program a multithreaded application.

Duration
Classroom: Two (2) Days
Online: Three (3) 4-hour sessions, plus homework

Audience
• New and intermediate LabWindows/CVI users and users preparing to develop applications
• LabWindows/CVI Core 1 course attendees
• Users and technical managers evaluating LabWindows/CVI in purchasing decisions
• Users pursuing the Certified LabWindows/CVI Developer (CCVID) certification

Prerequisites
• LabWindows/CVI Core 1 course or equivalent experience

NI Products Used During the Course
• LabWindows/CVI Full Development System Version 2010
• LabWindows/CVI Execution Profiler Toolkit
• GPIB interface and cable (optional)
• NI Instrument Simulator (optional)

After attending this course, you will be able to:
• Create toolbars and menus for user interfaces
• Use ActiveX within the LabWindows/CVI environment
• Compile your modules as DLLs you can use with other applications
• Use LabWindows/CVI to access DLLs
• Develop efficient multithreaded applications

Registration
Register online at ni.com/training or call (800) 433-3488 Fax: (512) 683-9300
email info@ni.com

Outside North America, contact your local NI Office.
Worldwide Contact Info: ni.com/global

Part Number
910813-xx
-11 Regional
-21 Onsite (at your facility)
-69 Online

Suggested Next Courses
• NI TestStand I: Introduction and NI TestStand II: Customization
• Instrument Driver Development Course (for developing IVI-compliant instrument drivers)

Suggested Certification
• Certified LabWindows/CVI Developer (CCVID)
LabWindows/CVI Core 2 Course Outline

Day 1
Review of Core 1 Concepts
This short lesson reviews important concepts from the LabWindows/CVI Core 1 course. Topics include:
• Operation of the callback function model in LabWindows/CVI
• Operating system messaging and LabWindows/CVI
• Structure and use of instrument drivers

User Interface Programming
This lesson describes additional user interface features that are in LabWindows/CVI and uses the features in hands-on exercises. Topics include:
• Changing the appearance and function of user interface objects
• Creating custom menus with the menu editor
• Programmatically controlling complex menus
• Adding table controls to your user interfaces
• Using a tree control to display hierarchical data
• Displaying complex multi-dimensional data in an intensity graph
• Adding predefined custom controls such as toolbars, path controls, progress bars, color pickers, and combo boxes to your user interfaces

Day 2
Interoperability and Network Communication
This lesson describes technologies for implementing interoperability and network communication, including .NET, ActiveX, network variables, TCP and UDP. Topics include:
• Interacting with .NET assemblies using LabWindows/CVI
• ActiveX technologies and using LabWindows/CVI as an automation client to control external applications
• Building applications that can pass data over the network using network variables
• Using TCP/IP for complex Internet communication
• Using UDP to broadcast data

Creating and Using Dynamic Link Libraries (DLLs)
This lesson describes techniques to create and use Dynamic Link Libraries (DLLs). Topics include:
• Developing code that is modular and reusable
• Compiling your modules as a DLL so other applications can take advantage of your development
• How to easily debug your DLLs

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Multithreading and Interface to Win32 API
This lesson teaches advanced programming techniques in LabWindows/CVI. You will learn how to create a multithreaded application and use thread safe queues to safely pass data between threads. You also learn to use the Interface to Win32 API (Application Programming Interface) functions to add flexibility to your LabWindows/CVI applications. Topics include:
- Building efficient multithreaded applications
- How LabWindows/CVI uses threads
- Using thread safe queues to safely transport information between threads
- How to protect critical sections in your threads
- Using the Interface to Win32 API functions to expand the functionality of LabWindows/CVI
- Additional features in LabWindows/CVI to improve code performance

LabWindows/CVI Toolkits and Modules
This lesson teaches powerful features to further decrease your development time and costs. Topics include:
- Using the LabWindows/CVI Execution Profiler Toolkit to identify bottlenecks and inefficient code and optimize run-time performance
- Additional LabWindows/CVI toolkits and modules

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