LabWindows™/CVI Core 1

Overview
The NI LabWindows/CVI Core 1 course prepares you to create applications using LabWindows/CVI. After completing this course, you will be able to create basic solutions using many of the built-in features of LabWindows/CVI. By the end of the course, you will know how to develop applications using the LabWindows/CVI programming environment. The hands-on format of the course enables you to apply skills learned in the course to your applications.

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

Audience
- New users and users preparing to develop applications using LabWindows/CVI
- Users and technical managers evaluating LabWindows/CVI in purchasing decisions
- Users pursuing the Certified LabWindows/CVI Developer (CCVID) certification

Prerequisites
- Experience with C programming

NI Products Used During the Course
- LabWindows/CVI Professional Development System Version 2010
- NI-DAQmx 9.1.5
- NI-488.2 2.73 (GPIB) board
- NI Instrument Simulator
- BNC-2120

After attending this course, you will be able to:
- Develop applications within the LabWindows/CVI environment
- Create professional user interfaces
- Understand the fundamentals of event-driven programming
- Create and use an instrument driver

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
910812-xx
  -11 Regional
  -21 Onsite (at your facility)
  -69 Online

- Develop and distribute stand-alone LabWindows/CVI applications
- Configure and use data acquisition within LabWindows/CVI
- Control a GPIB and serial instrument

Suggested Next Courses
- LabWindows/CVI Core 2
- NI TestStand I: Introduction and NI TestStand II: Customization
- Instrument Driver Development Course (for developing IVI-compliant instrument drivers)
LabWindows/CVI Core 1 Course Outline

Day 1
Introduction to LabWindows/CVI
This lesson introduces LabWindows/CVI. You will learn how to navigate within the integrated environment to develop, compile, and debug C code. Topics include:

- Features of the LabWindows/CVI environment, including built-in function libraries
- Advantages to writing code inside the LabWindows/CVI environment
- Creating function panels and accessing help and examples for function panels
- Using Interactive Execution to test code functionality
- Building and linking your projects within the integrated environment
- LabWindows/CVI data types and variables
- Techniques to debug your application, including breakpoints, single-stepping, and resource tracking

Graphical User Interface
This lesson describes how to design and build a graphical user interface. You will be introduced to the components of a user interface and how the user interface can be used to control your code with event-driven programming. You will learn how easy it is to use LabWindows/CVI to create “skeleton code” that can be modified for your own application. Topics include:

- Developing professional user interfaces in the User Interface Editor
- Using CodeBuilder to quickly generate “skeleton-code” based on the user interface you designed
- Using callback functions to process user interface data
- Creating efficient applications that use and process events
- Building applications that plot data on charts and graphs
- Using the User Interface Library functions to interact with the user interface programmatically

Day 2
Instrument Drivers
This lesson describes the use of instrument drivers. You will learn how to create function panels for your own functions that can be accessed similarly to a shipping LabWindows/CVI function. Topics include:

- Creating an instrument driver with function panels for your custom functions to take advantage of the capabilities of LabWindows/CVI
- Create help that you can distribute with your instrument driver

Distributing LabWindows/CVI Applications
This lesson describes how to distribute an application developed in LabWindows/CVI. Topics include:

- Developing stand-alone applications that can be released without the development environment
- Using LabWindows/CVI to create an installer for your stand-alone applications, and the implications of a stand-alone executable
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Day 3
Data Acquisition
This lesson describes how you can use LabWindows/CVI and the NI-DAQmx driver to perform data acquisition. You will learn how to use LabWindows/CVI to take advantage of the primary functions on a BNC-2120 data acquisition device. Topics include:
• Data acquisition overview
• Data acquisition within the LabWindows/CVI environment
• Configuring your data acquisition system
• NI-DAQmx architecture and how to use tasks and channels to perform data acquisition
• Functions needed to program a data acquisition system
• Performing single-point, multiple-point, and continuous analog input and analog output
• Performing digital input and output to monitor switches or control relays
• Using counters to perform edge counting
• Using the DAQ Assistant to perform data acquisition in 90 seconds without writing any code

Instrument Control
This lesson teaches you how to use LabWindows/CVI to perform instrument control using GPIB and serial communication. You will learn powerful programming techniques that can be used to control the latest instruments. Topics include:
• Introduction to instrument control
• Overview of GPIB communication
• GPIB hardware specifications
• Configuring a GPIB board and GPIB instruments
• Virtual Instruments Software Architecture (VISA) as a high-level, easy-to-use programming method for communicating with instruments
• Using VISA to program a GPIB instrument
• Using the Instrument I/O Assistant to communicate with an instrument in 90 seconds without writing any code
• Using a pre-built instrument driver to communicate with an instrument
• Serial communication overview
• Using serial communication to communicate with instruments through RS-232

Note: In-depth training on building IVI-compliant instrument drivers is covered in the Instrument Driver Development Course.

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