

LabVIEW Intermediate I Course: Successful Development Practices

Overview

While the Basics courses introduce you to the LabVIEW environment and application development, the hands-on LabVIEW Intermediate I course teaches you structured practices to design, develop, test, and deploy LabVIEW applications. You learn recommended application development techniques such as hierarchical VI development, event-based architectures, appropriate user interface design, error handling strategies and effective documentation. After attending the course, you can analyze your application requirements, choose the correct design pattern and data structures for your application, and quickly test and deploy your design – reducing development time and improving application performance and scalability. By incorporating these design practices early in your development, you avoid unnecessary application redesign, increase VI reuse and minimize maintenance costs.

Duration – Three Days

Audience

- LabVIEW and NI Developer Suite users who need to increase performance, scalability, or reuse and reduce application maintenance costs
- LabVIEW users pursuing the Certified LabVIEW Developer certification

Prerequisites

- LabVIEW Basics I and II, or equivalent experience

NI Products Used During the Course

- LabVIEW Professional Development System Version 8

REGISTRATION

Register online at ni.com/china/training or call (800) 820-3622 ▪ Fax: 021-65556244
china.training@ni.com

Worldwide Contact Info: ni.com/global

NI can also hold this class onsite at your facility.

Ordering Information 910718-01

After attending this course you will be able to:

- Analyze your application requirements and choose the correct design patterns and data structures
- Implement good programming style to create efficient VIs
- Develop techniques to test and validate VIs
- Develop modular applications that are scalable, readable, and maintainable
- Use LabVIEW tools to evaluate VI performance
- Effectively document your VIs
- Use advanced features of the LabVIEW Application Builder to create a stand-alone application
- Use the LabVIEW Application Builder to create a professional installer to use on other platforms

Suggested Next Courses

- LabVIEW Intermediate II: Performance and Connectivity
- LabVIEW Advanced I: Architectures
- Data Acquisition and Signal Conditioning

Recommended Certification

- Certified LabVIEW Developer Certification

LabVIEW Intermediate I Course Outline

Day 1

Successful Development Practices

This lesson introduces strategies and programming techniques that enable you to create scalable, readable, and maintainable LabVIEW applications. You will learn problem-solving techniques and how to develop an effective development plan for your applications. Topics include:

- Creating Scalable, Readable, Maintainable VIs
- Successful Development Practices
- Course Project Overview

Analyzing the Project

This lesson describes the essential steps in the process of analyzing a project. You will learn to analyze specifications documents and define applications. Topics include:

- Evaluating the Customer's Needs
- Communicating with the Customer
- Developing the Requirements Document
- Defining the Application

Designing the User Interface

This lesson introduces key concepts to consider when designing a user interface for applications and for different audiences. You learn to design a user interface for a software project that you have analyzed.

Topics include:

- User Interface Design Issues
- User Interface Layout Issues
- Front Panel Prototyping
- User Interface Example
- Localizing User Interfaces

Designing the Project

This lesson introduces the different components of a software design - design patterns and architectures, data types, and error handling strategies. You will learn how to create and select a software design for your application requirements and to manage your project files in LabVIEW. Topics include:

- Design Patterns in LabVIEW
- Event-Based Design Patterns
- Advanced Event-Based Design Patterns
- Creating a Hierarchical Architecture
- Using the LabVIEW Project and Project Libraries
- Choosing Data Types
- Information Hiding
- Designing Error Handling Strategies

Day 2

Implementing the User Interface

This lesson introduces techniques to improve the way you implement user interfaces and their usability. You will learn a structured approach to developing a VI user interface and implement a user interface that you designed earlier in the course. Topics include:

- Implementing User Interface-Based Data Types
- Implementing Meaningful Icons
- Implementing Appropriate Connector Panes

Implementing Code

This lesson focuses on techniques and programming practices to create algorithms and modular VIs for your applications. You will learn common practices to manage your development efforts. Topics include:

- Configuration Management
- Implementing a Design Pattern
- Implementing Code
- Develop Scalable and Maintainable Modules
- Implement an Error Handling Strategy

Day 3

Implementing a Test Plan

This lesson introduces how to verify code, test individual VIs and their integration into a larger system, and test the entire system for functionality, performance, reliability, and usability.

Topics include:

- Verifying the Code
- Implementing a Test Plan for Individual VIs
- Implementing a Test Plan for Integrating VIs
- Implementing a Test Plan for the System

Evaluating VI Performance

This lesson describes recommended methods and tools in LabVIEW to evaluate and improve VI performance. You will learn to identify performance issues and how to fix them. Topics include:

- Steps to Improving Performance
- Using VI Metrics to Identify VI Issues
- Further Identifying VI Issues with VI Analyzer
- Identifying Performance Problems

Implementing Documentation

This lesson describes techniques to implement documentation for VIs and suggestions for documentation standards in organizations. Topics include:

- Designing Documentation
- Developing User Documentation
- Creating Help Files
- Describing VIs, Controls, Indicators

Deploying the Application

This lesson describes techniques to improve the process of building and deploying a stand-alone LabVIEW application. You will learn to improve stand-alone applications, create professional applications, and provide a professional interface for deploying the applications to other computers. Topics include:

- Implementing Code for Stand-Alone Application
- Building a Stand-Alone Application
- Building an Installer