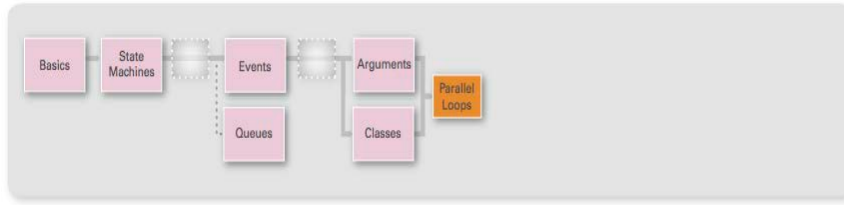


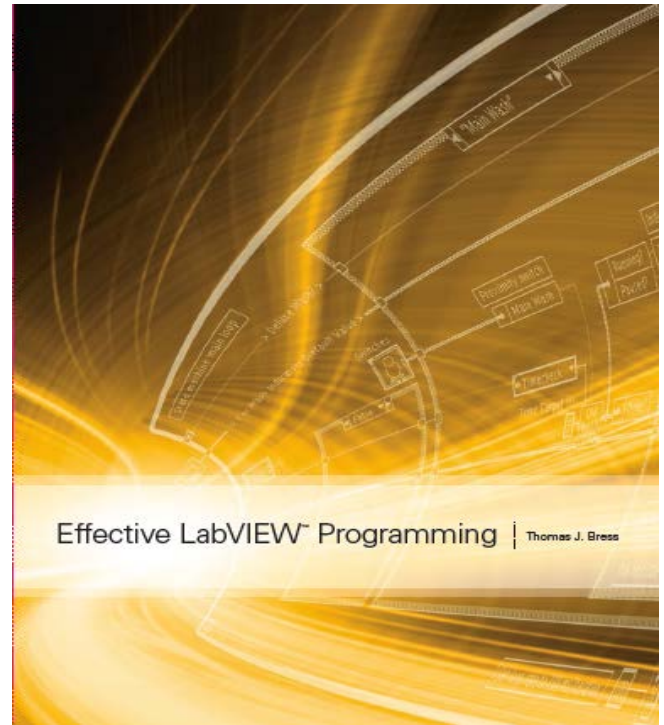
Learn To Think In LabVIEW

Good programming style and effective design patterns are not developed overnight



This book demonstrates what good LabVIEW programs look like by following a “teach by showing, learn by doing approach.” It does this using core LabVIEW functions and common design patterns and illustrates these through the use of a common project drawn from the Certified LabVIEW Developer exam. These patterns build on each other to provide a firm starting point for most beginning and intermediate projects.

- Shows how to use the dataflow paradigm of LabVIEW to create effective programs that are *readable, scalable* and *maintainable*
- Employs four colors in all block diagrams to help convey essential information.
- Provides many examples of state machine architectures using events, queues, and arguments.
- Provides examples of how to take advantage of data encapsulation, inheritance, composition, and dynamic dispatch when using LabVIEW classes.
- Covers parallel loop architectures and race conditions, as well as the example of how to use LabVIEW classes to extend the language.
- Concepts presented are reinforced by eleven chapter problem sets with full solutions.
- Contains full solutions for all previously published CLD exams.
- Provide tips on how to prepare for and take the CLD exam (Chapter 17).
- Website contains all of the programs presented in the main body of the text as well as solutions to the exercises presented in the problem sets.



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- **Annotated Table of Content**

- Ch.1: LabVIEW basics for the complete beginner
- Ch. 2: Functional specifications and state transition diagrams
- Ch. 3: Problem Set 1 (basic exercises, sub-VIs, etc.)
- Ch. 4: The classic state machine (no queues or event structures yet)
- Ch. 5: Action engines (functional global variables)
- Ch. 6: Building a timer action engine for the car wash VI
- Ch. 7: Problem Set 2 (action engine exercises)
- Ch. 8: Building a classic state machine car wash VI (uses the timer action engine developed in Chapter 6)
- Ch. 9: Problem Set 3 (classic state machine exercises)
- Ch. 10: Event structures
- Ch. 11: Upgrading the car wash VI developed in Chapter 8 by adding an event structure
- Ch. 12: Problem Set 4 (event structure exercises)
- Ch. 13: Queues
- Ch. 14: Upgrading the car wash VI from Chapter 11 by adding a queue
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- Ch. 17: Preparing for the CLD exam
- Ch. 18: Problem Set 6 (guided walkthrough of the sprinkler exam)
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- Ch. 20: Adding arguments to state machines
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- Ch. 23: LabVIEW classes and data encapsulation (replaces the action engine timer of the car wash controller from Chapter 21 with a timer class)
- Ch. 24: Problem Set 9 (LabVIEW classes exercises)
- Ch. 25: Inheritance and Composition (adds car wash cycle classes to the car wash controller from Chapter 23)
- Ch. 26: Problem Set 10 (inheritance and composition exercises)
- Ch. 27: Producer-Consumer state machines (builds a car wash producer-consumer VI)
- Ch. 28: Combatting race conditions (fixes a race condition in the car wash VI with semaphores, etc.)
- Ch. 29: Extending the language (fixing the race condition in the car wash by creating a custom class for handling the queue)
- Ch. 30: Problem Set 11 (more exercises with classes)
- Ch. 31: Wrapping it up (review)

- **Appendices**

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- B Sample CLD Exam—Security System

- C Sample CLD Exam Boiler Controller

- D Sample CLD Exam Car Wash Controller

- E Sample CLD Exam Sprinkler Controller

- F Sample CLD Exam ATM Controller

- G Problem Set 1 Solutions

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- I Problem Set 3 Solutions

- J Problem Set 4 Solutions

- K Problem Set 5 Solutions

- L Problem Set 6 Solutions

- M Problem Set 7 Solutions

- N Problem Set 8 Solutions

- O Problem Set 9 Solutions

- P Problem Set 10 Solutions

- Q Problem Set 11 Solutions