

# Controlling laboratory experiments in LabVIEW

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In this practical session, we introduce the basic concepts of the graphical programming language LabVIEW (LV) from National Instruments. LV aims at the rapid development of software for control and measurement technology by scientists and engineers without a strong background in programming. This session is dedicated to students who are new to LV or are on a beginner level. Particular emphasis will be the development of software with graphical user interface for the automation of laboratory devices.

**The first part of the session** will cover the following concepts theoretically and practically:

1. Introduction to LV development environment
2. Data types and their graphical representation in user interfaces
3. Control structures: loops, if/case structures, user events, ...
4. Multithreading and data communication via queues and notifiers
5. Hardware I/O and interfaces: VISA, DLLs, ...

**In the second part of the session** we will use these concepts for the

1. control of real laboratory devices with different hardware interfaces
2. data acquisition with laboratory devices and data visualization
3. data storage in different formats
4. cross-device measurements with your modules

**The third part of the session** is interactive and reserved for your questions as well as discussions and programming examples of (advanced) topics of your choice.

**Recommended reading** (not required for participation in this practical session):

- [1] [LabVIEW](#) by National Instruments
- [2] [Introduction to LabVIEW](#) by National Instruments