

Experiment: 13

Introduction to Lab View.

INTRODUCTION

Lab VIEW is a “G” language-based platform enabling users to integrate hardware and software to build systems for measurement and control purposes.

Lab VIEW is a shortcut from Laboratory Virtual Instrumentation Engineering Workbench. It is a system design platform and development environment for a visual programming language from National Instruments.

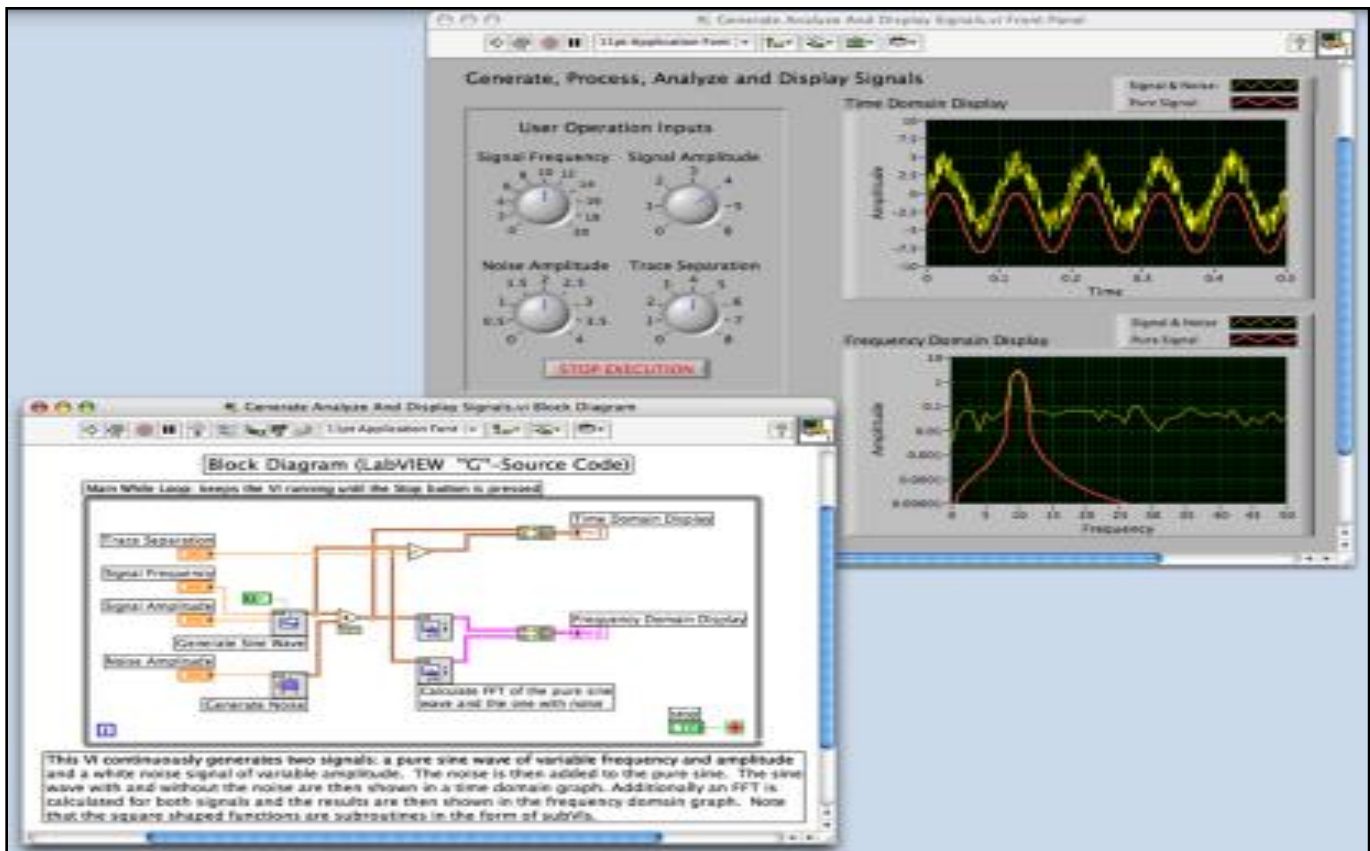


Figure 13.1 (LAB VIEW Software)

Why was Lab VIEW introduced?

National Instruments (NI) once realized that all measurement devices are basically composed of the same building blocks with different kinds of processing behind them: analog input, analog output, digital input and output, counters and timers. Almost all those measurement instruments can be defined by linking these blocks with processing. That is why NI made up a “Virtual Instrument” often referred to as “VI”. VI is a set of software that links together basic hardware elements to form different instruments.

VI can be defined just as real instruments are. It has a Front Panel, which consists of:

- Controls (they make things happen)
- Indicators (represent status information)

- Graphics (provide labels to interpreting controls and indicators).

VI also has Block Diagram. The Front Panel and Block Diagram are two basic programming modes of Virtual Instrument in Lab VIEW. Lab VIEW is an example of Virtual Instrument. Lab VIEW was firstly released for Apple Macintosh in 1986 and is commonly used for data acquisition, instrument control and industrial automation.

Lab VIEW is an object-oriented programming language (OOP). Programming is performed by linking objects or creating new objects with certain attributes. Execution is controlled by the dataflow expressed in diagrams on which the programmer connects different function-nodes by drawing wires. These wires propagate variables and any node can execute as soon as all its input data become available

Application of Lab VIEW:

- Acquiring Data and Processing Signals
- Controlling Instruments
- Automating Test and Validation Systems
- Measuring and Controlling Industrial Systems
- Designing Embedded Systems
- Teaching Engineering Concepts and Innovating on Research

