LabVIEW

LabVIEW is a data flow programming language which means it is written in graphical block diagrams. It still has loops, (while, if, case etc.) arrays and other common programming features. It is also a strictly type computer language and everything needs to be a data type (integer, floating point, string, Boolean switch). Every data type is displayed as a different colour, it is possible to convert data types from one to each other.

There are online courses available from NI (National Instruments), the most suitable are called Core 1,2 and 3. These courses cover important topics such as

* Navigating LabVIEW and introduction to dataflow programing and debugging
* Using loops, case structures and event structures for decision making
* Modularity (making sub VIs)
* Acquiring measurements from hardware using various different connections and protocols
* Accessing and creating files

When working with LabVIEW it is best to start with some example LabVIEW files found in the NI example folder within the help menu. This means you do not have to start from scratch yourself. Examples of these files include how to get information from an analogue voltage device.

To connect hardware to LabVIEW for either data acquisition or to give commands it is necessary to use one of the following three options; DAQ, DAQmx VIs or MAX. I think DAQ is the most basic option where you create the interface yourself, DAQmx VIs may be examples which have already been done for you and MAX (measurement and automation explorer) does things automatically for you.

To measure pressure from a pressure transducer/ temperature from a thermocouple you may need

* Signal conditioning (to make the signal bigger as it may be in the mV range)
* Data acquisition box for measuring the signal and sending it to the computer

You use the DAQ assistant to help you set up a measurement device. You get this in the block diagram, right click and find DAQ assistant to start the wizard.