

## **Assignment 1: Grab Image from a USB camera**

In this assignment, you are required to write a LabVIEW code to grab images from a camera and save a AVI video file than contains 100 frames of images. The code must display the video one frame after the other. It must show the total frame number of the video, the number of the frame being displayed, as well the average intensity of each image (you need convert each image to a array: use IMAQ ColorImageToArray).

### **Instruction**

**Go the following fold to find an example:**

C:\Program Files\National Instruments\LabVIEW 2018\examples\Vision Acquisition\NI-IMAQdx\Low Level

## **Assignment 2: USB-6008 DAQ Device Programming**

### **Sequence Led control**

In this assignment, you are required to write a LabVIEW code to control 3 LEDs with the USB-6008 DAC device in this sequence:

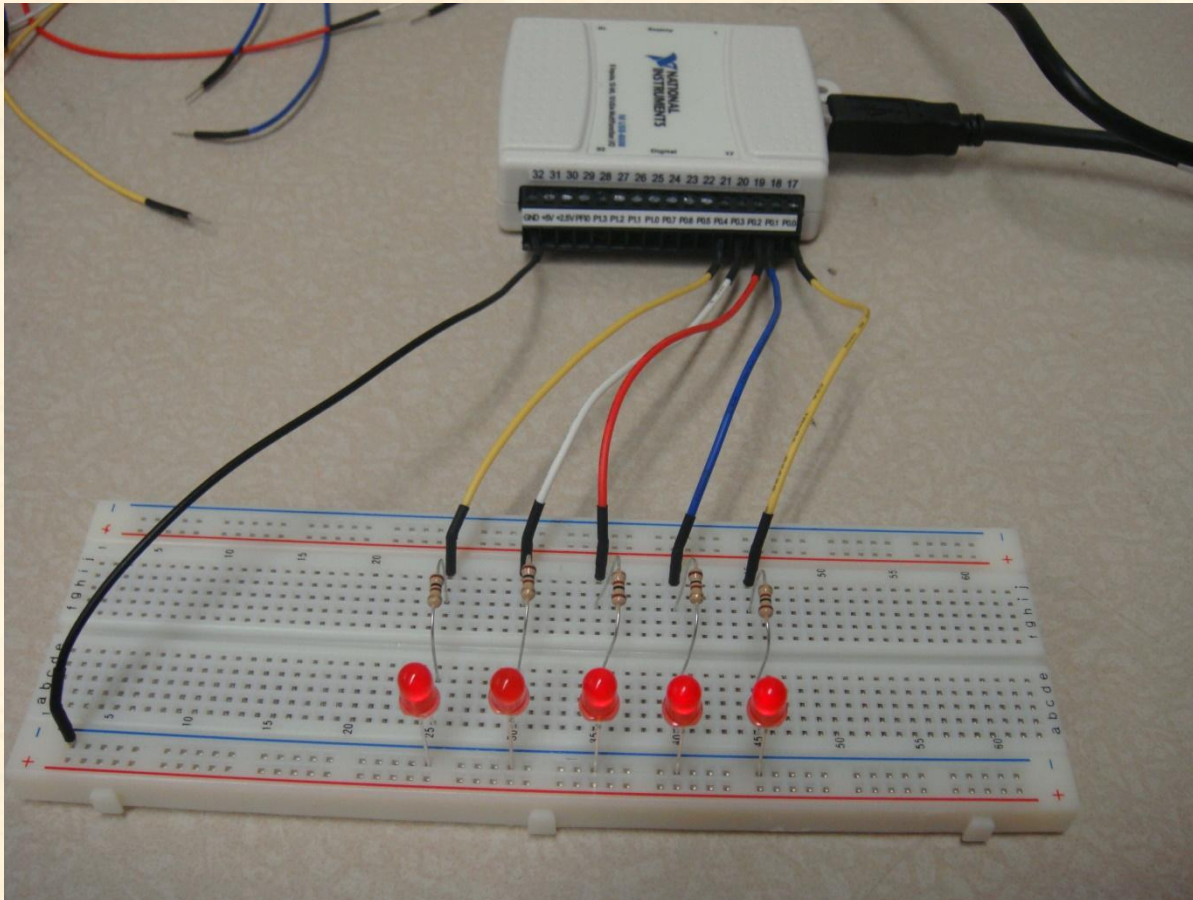
- (1) All 3 LEDs switch on for one second.
- (2) Only the first and second LEDs switch on for one second.
- (3) Only the first LED switches on for one second.
- (4) All 3 LEDs are switch off for one second
- (5) Iterate (1) to (4) with a while loop

**See online documents for the USB-6008 DAC programming**

## **LabVIEW Instruction**

- (1) Choose “Measurement I/O NI-DAQ DAQ-Assistant”**
- (2) To control 3 LED light, in “DAQ-Assistant”, choose :  
“Generate Signals Digital Output Line output”, Then choose  
3 output lines/terminals.**
- (3) In the “Front Panel”, create an “Array”. Define the array  
element type as Boolean by dragging a Boolean button in the  
array.**
- (4) Select 3 elements by highlighting three Boolean buttons ONLY.  
You can deselect them late.**
- (5) The hardware connection is shown in the pictures.**

# Hardware Layout



### **Assignment 3: USB-6008 DAQ Device Programming**

In this assignment, you are required to write a LabVIEW code to read data from a hardware sensor via the USB-6008 data acquisition (DAQ) device. You need a diagram to show the data reading from the sensor as a function of time.

**Light sensor**

**Magnetic sensor**

**Motion sensor**

**Sound sensor**

**Temperature sensor**

**Force sensor**

**Accelerometer**

**( Laser module)**

**Each sensor has 3 terminals:**

- Signal
- Power voltage
- Ground