Simulating blood pressure meter in Labview

If you do not have experience in program labview, please visit this link below and practice. If necessary, look for other examples on the web for training.

Get starting with LabView: http://www.ni.com/pdf/manuals/373427j.pdf

1. Starting the development of your blood pressure meter

1 – You will need elaborate the logical of your program. For example:

How and when you will full and empting the Balloon ?

How I will organizing my program?

What the time delay I will use between each events?

What kind of logical structure I will use?

Hint 1: All buttons and the logical steps that need access during the measurement should be placed into the main structure.

   a) Read the pressure signal;
   b) Calculation of pressure level (mmHg) from output signal and calibration factor;
   c) Open and close electromagnetic key of the pressure transducer device;
   d) Reading and save the pressure signal;
   e) Processing the pressure signal and obtain the systolic and diastolic pressure;

2. Simulating the Experimental setup

   a) Using a signal generator to simulating the pressure transducer. Set the function generator to a sinusoidal signal with amplitude of 100 mV and frequency of 60 Hz;
   b) Start you Labview program, creating a *while Loop Structure*. All parameter you need to set while the program is running, should be inside of this structure (bottom, case, etc);
   c) Using the USB 6009 NI board, configure a VI acquisition with single referenced acquisition, maximum and minimum amplitude of 1 V (-1:+1) and use the pin AI0 and GND as input.
   d) Sampling frequency of 1KHz
   e) Number of points by time of 100 points.
   f) Applying a low-pass filter with cut off frequency of 10 Hz to remove the 60 Hz;
   g) To simulation the pressure signal from the transducer, using the offset knob of signal generator adding, manually. Use the maximum dc offset level of the generator as full scale. But, no more than 10 volts;

h) Transform this information in Pressure level (mmHg). For example, 0 V correspond to 0 mmHg and 10 V correspond 250 mmHg.

i) Now, from this pressure information, create a logical program in Labview environment to: 1- full the balloon using a mechanical bottom; 2- close automatically when the pressure level was equal or bigger than 250 mmHg; 3 – open the key to empting the balloon ; 4 reading the simulating Pressure signal;

3. Processing the signal

a) Building a data processing program according to information in the Arterial Blood Pressure project.

b) Download the signal from the link in the page in the STOA to develop and evaluate your program;

c) Using your pressure transducer platform, acquire and processing the arterial pressure from the all members of your team.