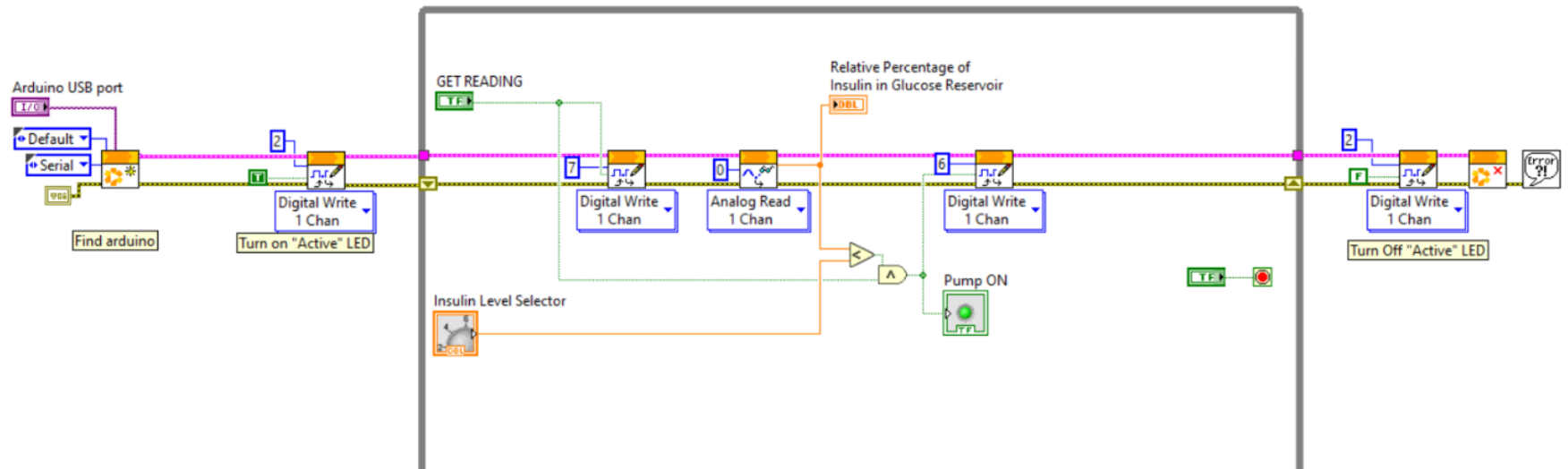


# BioMEMS Kit Containing Glucose Monitor and Insulin Micropump

Ivy Tech Community College  
Fort Wayne, IN

## Block Diagram for the Baseline BioMEMS Kit



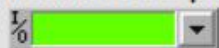
Run 1 Arduino with LINX, Baseline No Wireless (1 PC).vi

File Edit Operate Tools Window Help



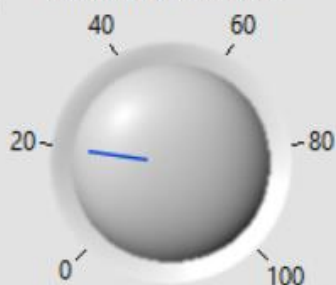
## Glucose Monitoring and Insulin Pump Emulator Control Program

Arduino USB port



Pinout

Insulin Level Selector



Relative Percentage of  
Insulin in Glucose Reservoir



GET READING



Pump ON



Help

How to use:  
Select Glucose USB port  
Select Insulin USB port  
Click "Run" (Arrow) in upper left  
Click "STOP" to stop program.

Musbiha Binte Wali  
Emily L Kwolek  
7-15-22

**STOP**

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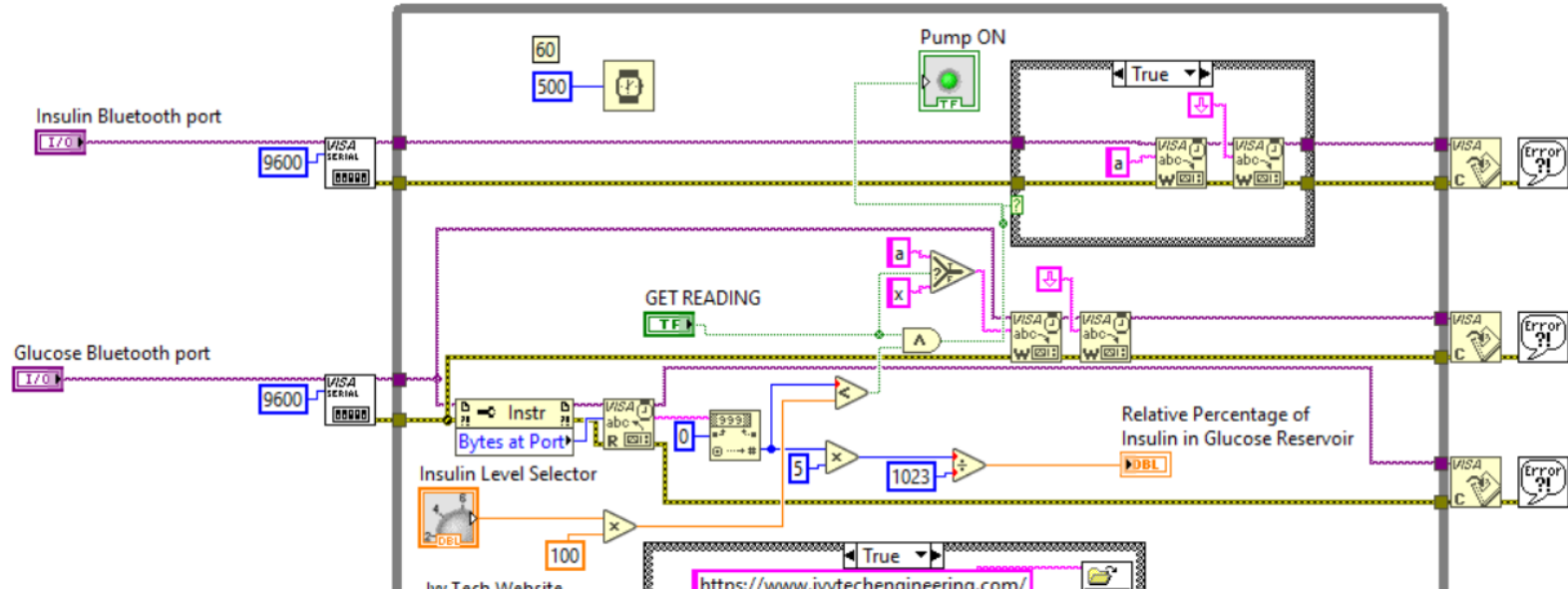
A Baseline Arduino based BioMEMS Kit will be connected to the PC via USB cable.

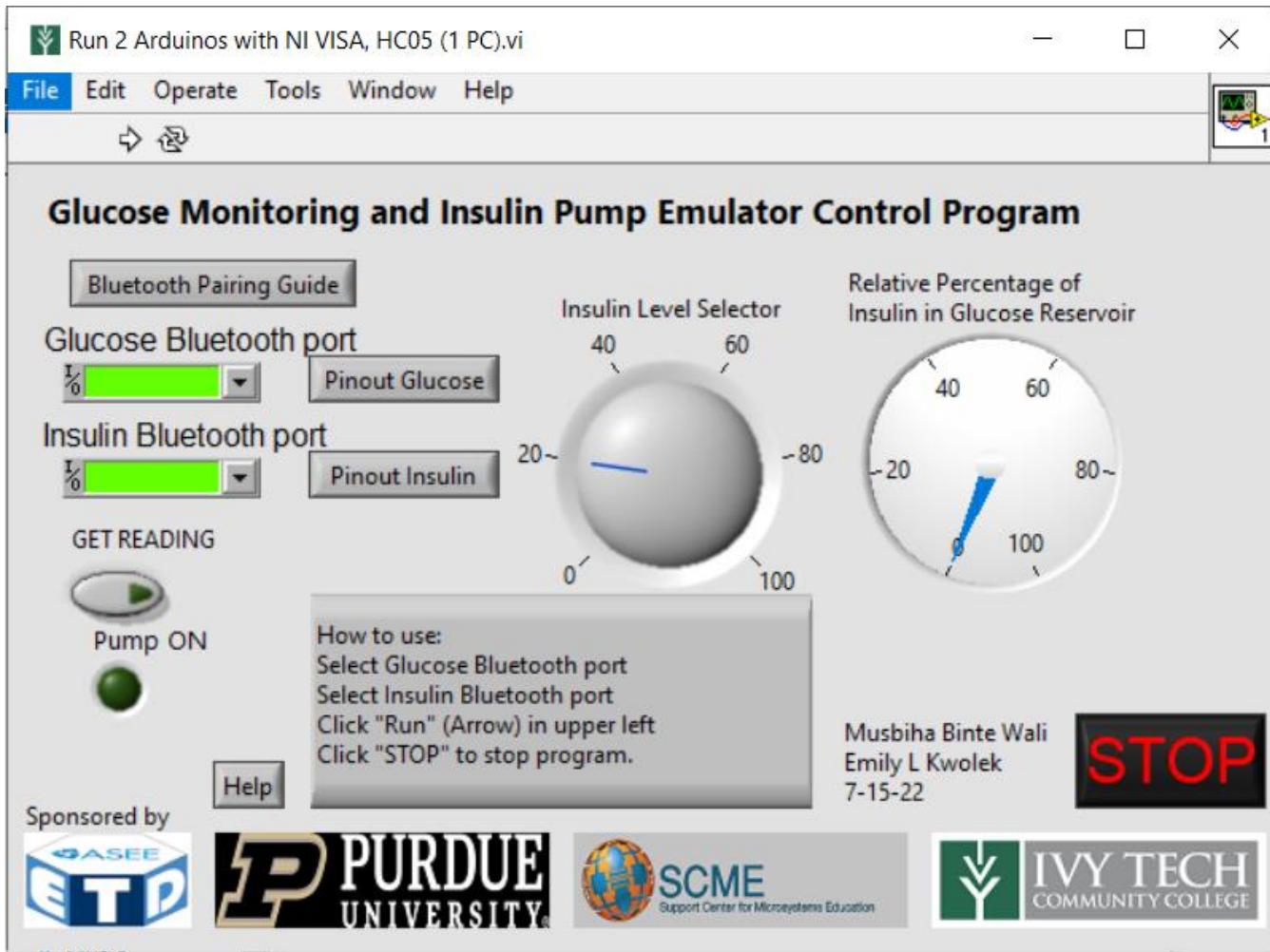
From the PC's Control Panel > Hardware and Sound > Devices and Printers > Device Manager option, The relevant Arduino USB Com port number will be found and recorded.

Once the correct USB port is selected, this labview application will be enabled to be run by the kit user.

In a running application, the 'GET READING' option enables the glucose sensor. The 'Insulin Level Selector' option lets the user choose a desired insulin level threshold. Based on this threshold value, the micropump will energize or de-energize.

## Block Diagram for the Bluetooth Communication based BioMEMS Kit





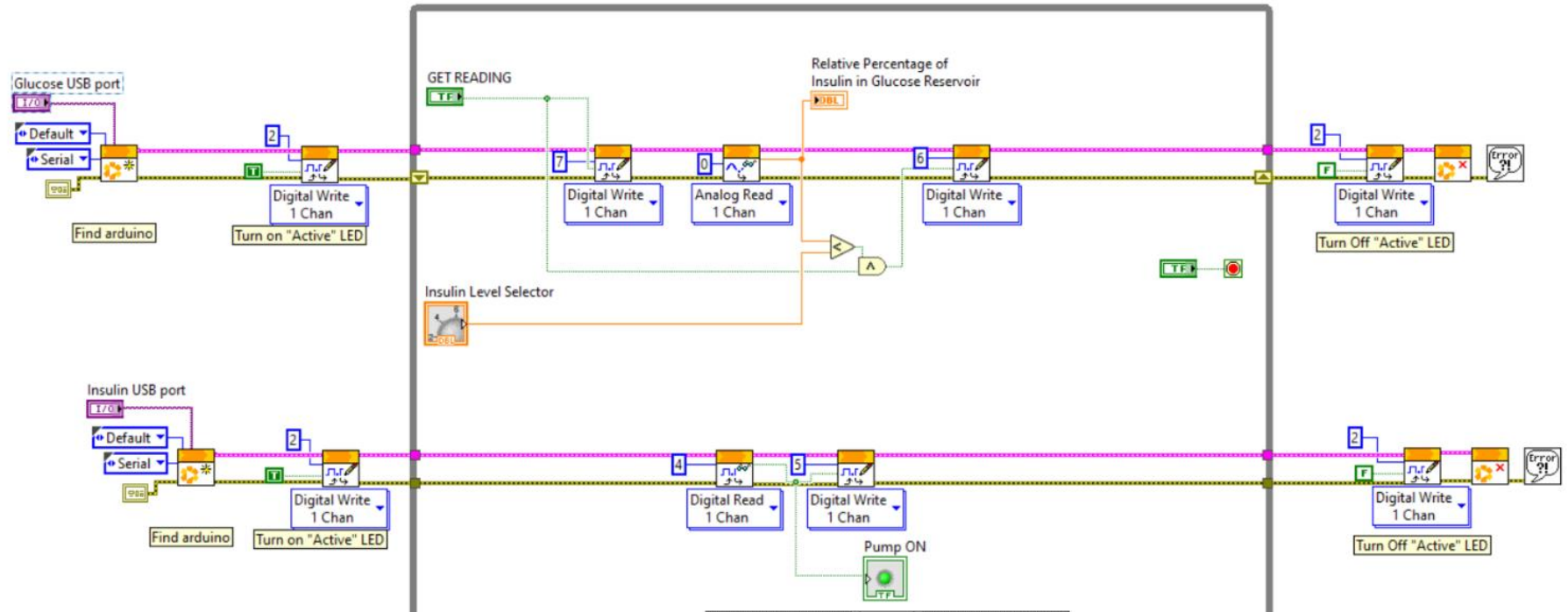
An HC-05 + Arduino based BioMEMS Kit will be connected to the PC via Bluetooth (wirelessly).

From the PC's Settings > Devices >Bluetooth >More Bluetooth Options >COM Ports, The relevant Bluetooth Com port number will be found and recorded.

Once the correct bluetooth ports are selected, this labview application will be enabled to be run by the kit user.

In a running application, the 'Bluetooth Pairing Guide' will contain initial instruction for the kit user. The 'GET READING' option enables the glucose sensor. The 'Insulin Level Selector' option lets the user choose a desired insulin level threshold. Based on this threshold value, the micropump will energize or de-energize.

## Block Diagram for the RF Transmission and Reception based BioMEMS Kit





## Glucose Monitoring and Insulin Pump Emulator Control Program

Glucose USB port



Pinout Glucose

Insulin Level Selector

Relative Percentage of  
Insulin in Glucose Reservoir

Insulin USB port



Pinout Insulin

GET READING



Pump ON



Help

How to use:  
Select Glucose USB port  
Select Insulin USB port  
Click "Run" (Arrow) in upper left  
Click "STOP" to stop program.

Musbiha Binte Wali  
Emily L Kwolek  
7-15-22

**STOP**

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An Arduino based BioMEMS Kit involving 315 or 433 MHz Transmitter Receiver pair module will consist of two Arduino boards and they will both be connected to the PC via two USB cables. One Arduino will be connected with the Glucose monitor (Transmitter side) and the other connected with the insulin micropump (Receiver side).

The relevant Arduino USB Com port numbers will be recorded from the 'Device manager section'.

Once the correct USB ports are selected and the application is run by the kit user, the 'GET READING' option enables the glucose sensor. The 'Insulin Level Selector' option lets the user choose a desired insulin level threshold. Based on this threshold value, the micropump will energize or de-energize.