GUI Block Validation

Block Owner: David Chen
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Design Details

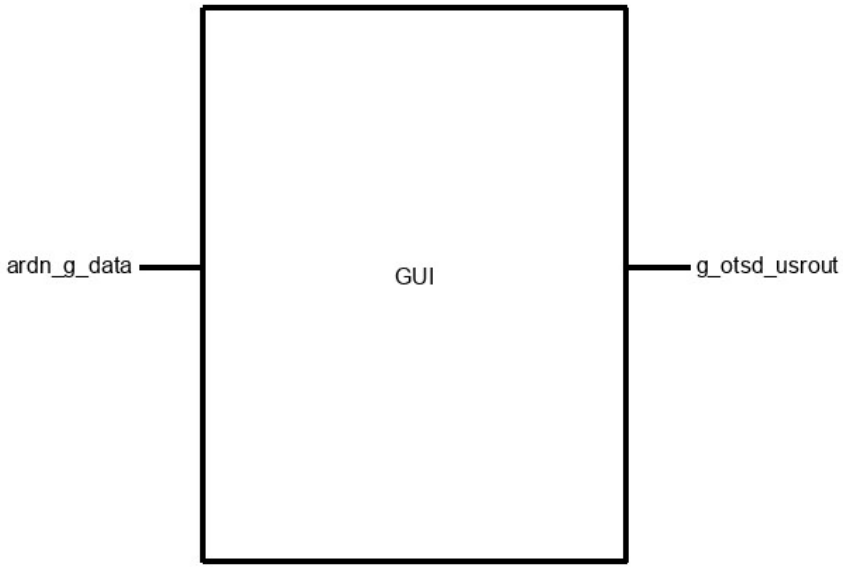

Figure 1:Black Box for GUI Block

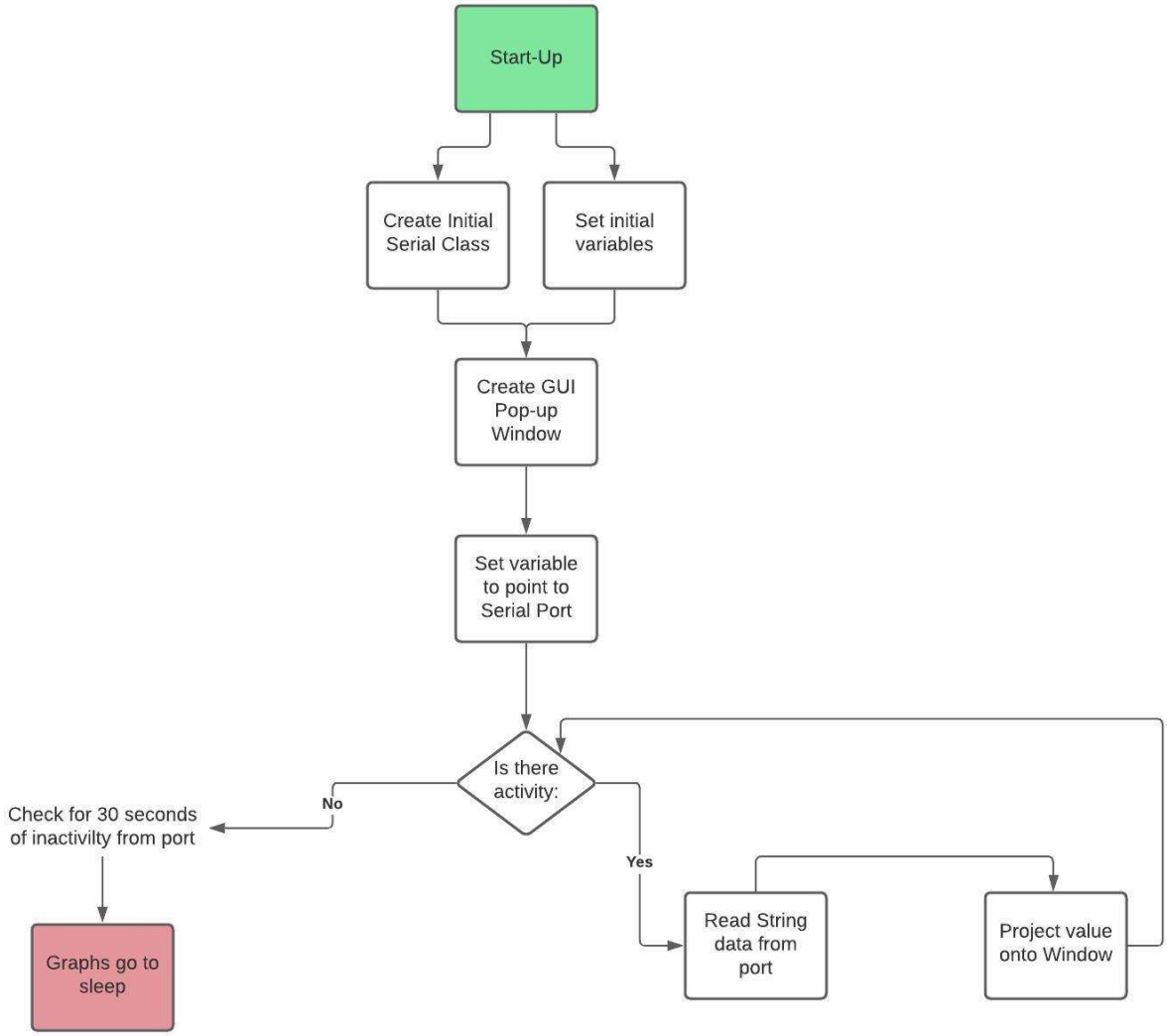

Figure 2: Flow Chart for the GUI

Design Validation Overview

This is the code for creating the GUI for two of the sensors: the moisture and the temperature sensor. The system first starts up when the code us run using the Processing3 IDE. The Arduino code for the sensors should be already uploaded onto the Arduino microcontroller.

Once started up, it will start the initial set up, which includes creating the Serial class from an imported library and setting the initial variables for the start of the graph. It then creates a pop-up window and sets a pointer to point to the serial port. Once the pointer is set, it detects whether there is activity coming through the serial port. If there is, then the code takes the value from the port and processes it to be projected into the pop-up window (the value should be within a certain range on the graph's axis). It continually checks for any activity through the ports and projecting the value when there is.

If there is not any, it checks how long the inactivity is. If the inactivity is longer than 30 seconds, then the graphs disappear and the GUI goes to sleep.

Design Validation Interface Table

Interface Property	Why is this interface this value?	Why do you know that your design details <u>for this block</u> above meet or exceed each property?
ardn_g_data : Input		
Datarate: Data gets sent to the GUI every 1/10th of a second (10 Hz)	This interface is this value because that is the standard rate of data transfer for the Arduino IDE	The Processing3 IDE has a similar formatting to the Arduino IDE, so at the very least it has 10 Hz since Processing3 is capable of simulations and animations
Messages: Data Transmitted: temperature and moisture sensor values	This interface is this value because it's what's being sent into the GUI from the serial port to the code to be processed into graph form	The input from the port is from the Arduino microcontroller, which only really needs one line
g_otsd_usrout : Output		
Other: Output Refresh Rate: Data gets sent to the GUI every 1/10th of a second (10 Hz)	This interface is this value because that is the standard rate of data transfer for the microcontroller	The Processing3 IDE has a similar formatting to the Arduino IDE, so at the very least it has 10 Hz since Processing3 is capable of simulations and animations
Other: Messages: Data Transmitted: temperature and moisture sensor graphs	This interface is this value because it's the output from the code of the sensor values	The GUI is coded to produce graphs
Type: Type of Output: Graphs/Numerical Values	The output for this interface is graphs	I know that the output of the GUI will produce a graph because of how it's coded
Usability: Usability: 9 out of 10 users can read the graphs	The GUI should be easily usable to all possible consumers, so 90% seems like a good benchmark	The GUI is in its initial stages, so there's nothing but a graph for now, which is easy to read

References