

RD53 Module QC

Progress

Lauren Osojnak

Lawrence Berkeley National Laboratory

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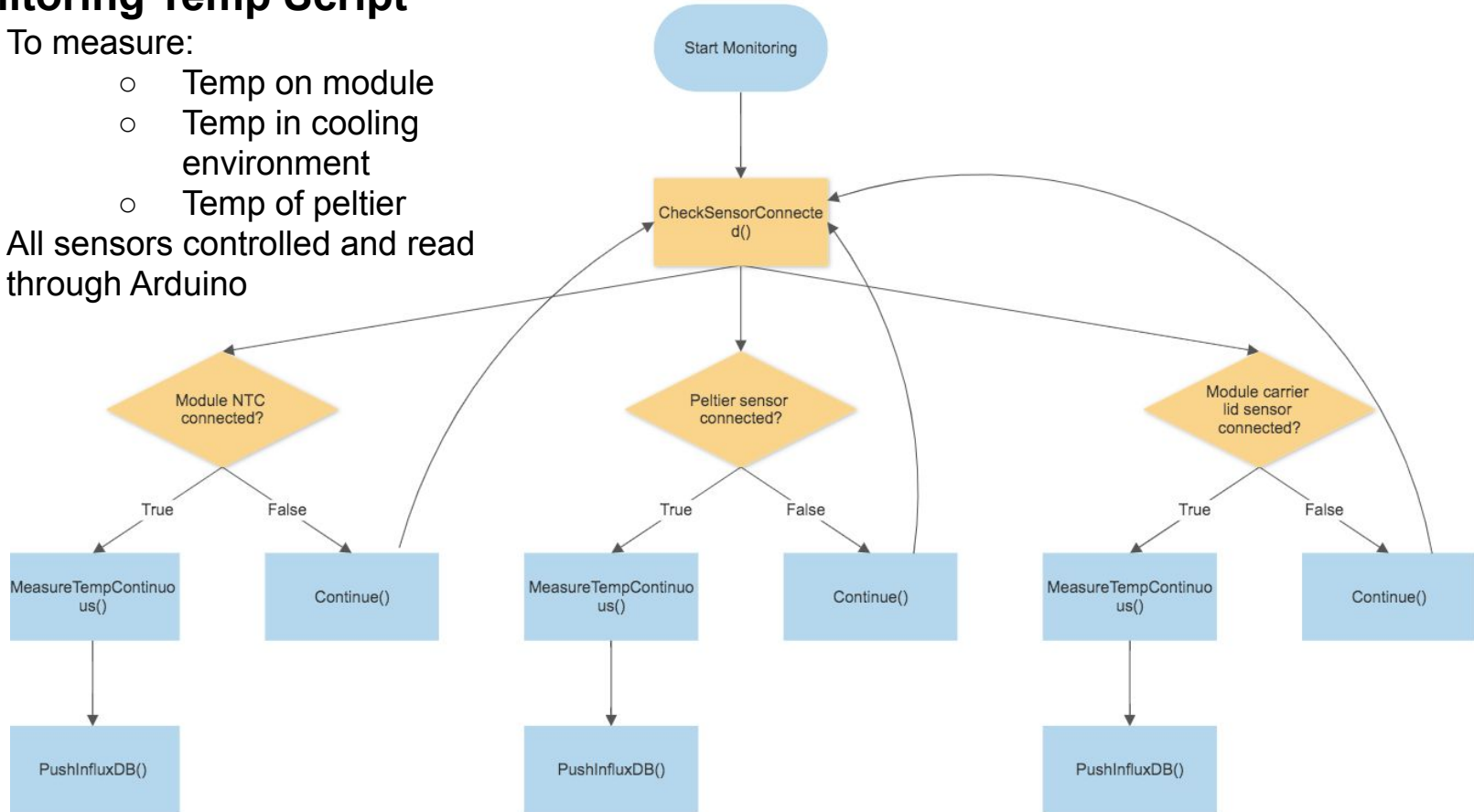
Student Instrumentation Meeting

Flow Charts for Pixel Module QC

- Based on QC document by Lingxin Meng:
<https://cds.cern.ch/record/2702738/files/ATL-COM-ITK-2019-045.pdf>
- MonitorTemp: This script will run continuously and read out temperature/humidity sensors. Will measure and push to InfluxDB
- MonitorPS: This script will and read out Power Supply current and voltages. Will measure and push to InfluxDB
- Cooling Unit: This script will be used to change the temperature of the cooling unit based on what is required for specific tests. Uses Chiller script to check temperature before powering on chip.
- Electrical Tests: one script for the SLDO test and one script for the remaining tests; Sensor IV, Chip configuration, Tuning and Bump Bond Quality.

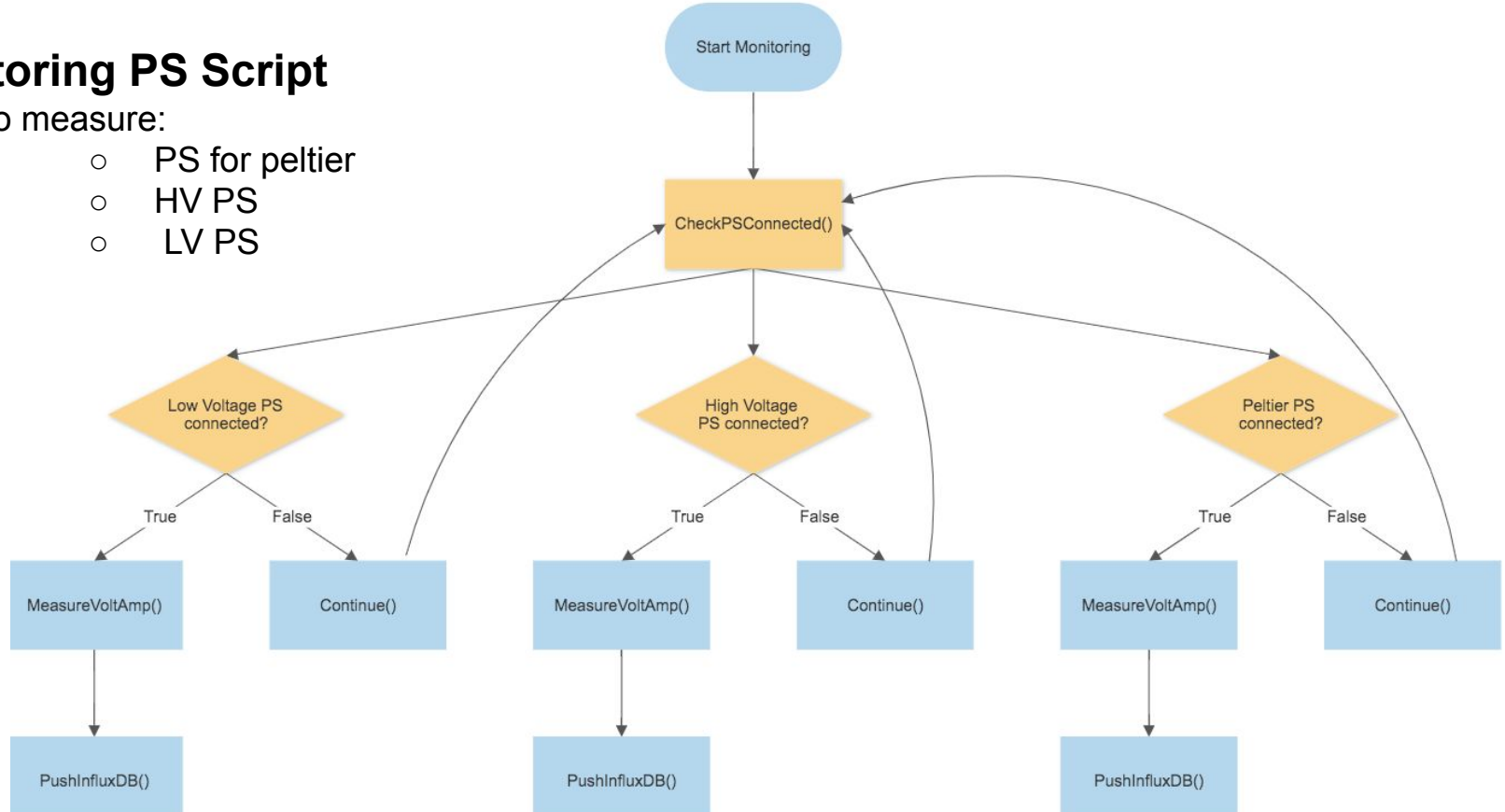
Monitoring Temp Script

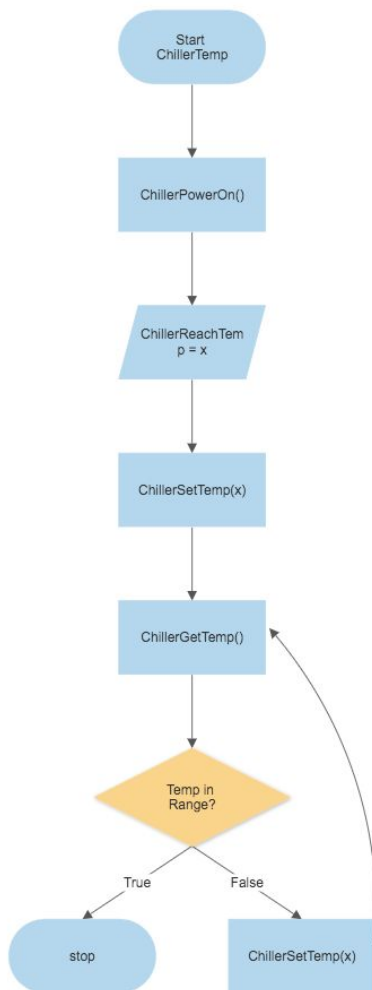
- To measure:
 - Temp on module
 - Temp in cooling environment
 - Temp of peltier
- All sensors controlled and read through Arduino



Monitoring PS Script

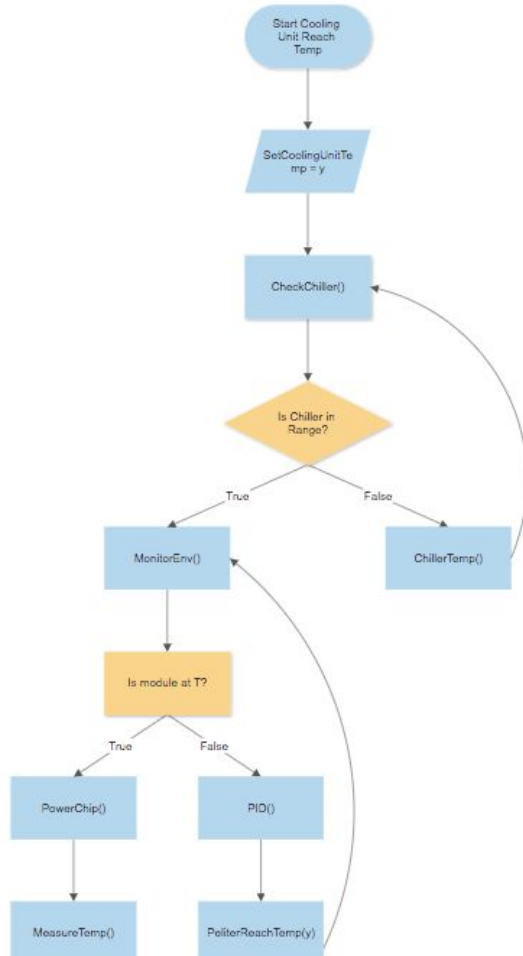
- To measure:
 - PS for peltier
 - HV PS
 - LV PS





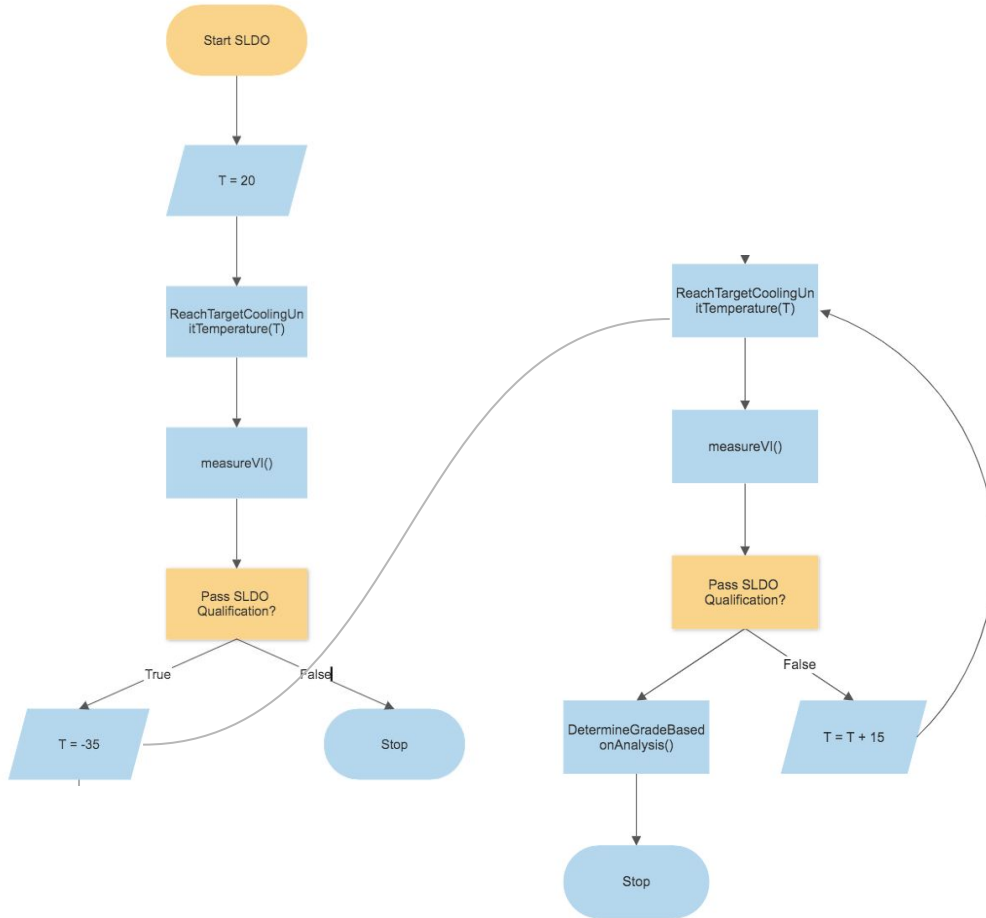
Chiller Script

- Need to test if Chiller library works
- To be used with Cooling Unit script



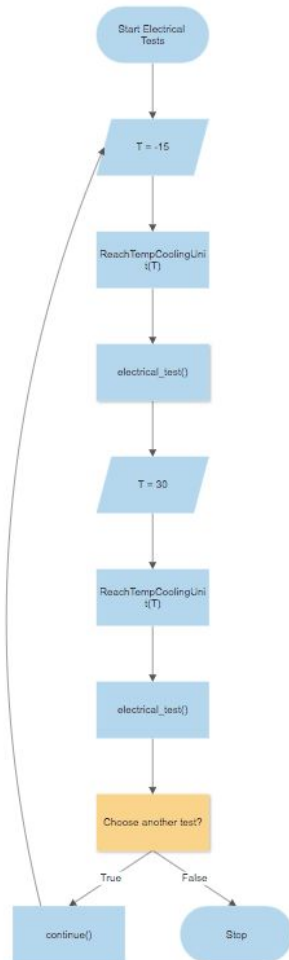
Cooling Unit Script

- Need to implement IPowerSupply to Peltier Code
- Need to update PID code
- Discuss Interlock TBD



SLDO Script

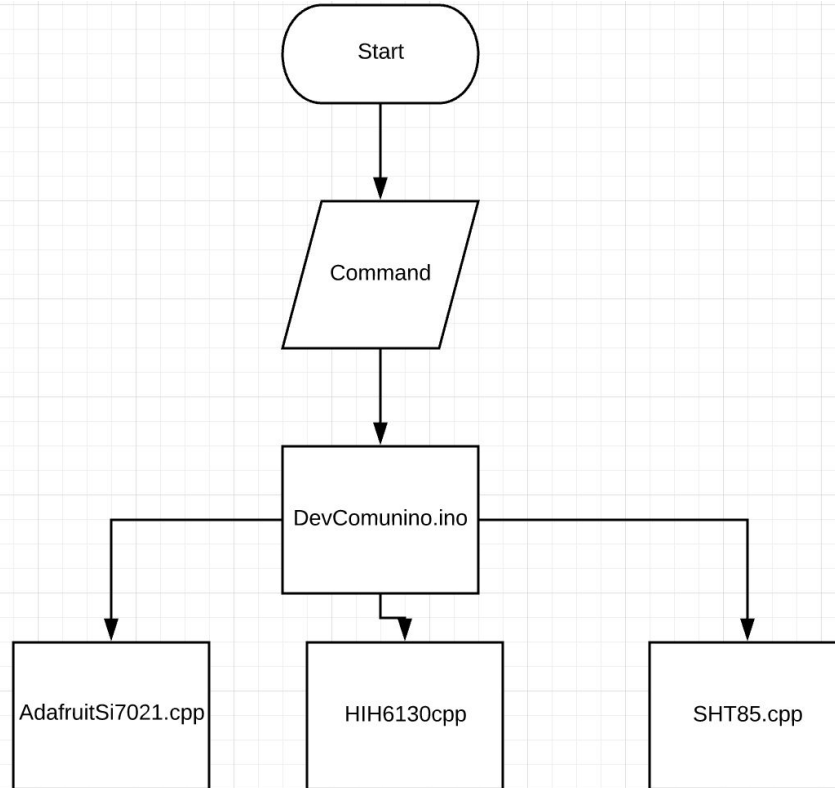
- Measure VI script by Elodie
- Need to make code to analyze Slope



Electrical Test Script

- This script will have 4 options of `electrical_test`:
 - Sensor IV
 - Chip Configuration
 - Tuning
 - Bump Bond Quality
- Elodie has tuning script and Sensor IV
- Need script for other 2 tests

Arduino I2C



- Command read in from json or command line user input
- Command contains: device, addr, nbytes, read/write, ect.
- Arduino file (DevComuino.ino) calls device specific cpp files to process generic data

Conclusion:

- One main script for Pixel Module QC
- Single Arduino code to run no matter what is connected to the Arduino/what data needed
- Can now have different types of sensors for QC reading from one Arduino
- To do: write specific devices
- To do: abstract further
 - Climate Sensor
 - Voltages