The password as of now is: m49sr

This is supposed to be m94sr but was miss spelled and never changed.

Files:

All pertinent files are found in the /home/pi/Desktop/sr\_design folder on the Pi.

Script:

The main script that gets run is the arcchPlate.py this python script relies on python2 not python 3. This dependency comes from one of the python imports. There are a few custom packages such as the custom LED.py. The other package that was downloaded and then modified was the Adafruit\_BNO055 package the location of the .egg file, which is just a zip that python uses, is located /usr/local/lib/python2.7/dist-packages/Adafruit\_BNO055-1.0.2-py2.7.egg. The other package that was downloaded and then modified was the Adafruit\_BNO055 package the location of the .egg file, which is just a zip that python uses, is located @ /usr/local/lib/python2.7/dist-packages/Adafruit\_BNO055-1.0.2-py2.7.egg. Line 674 was changed from return (x/100.0, y/100.0, z/100.0) to return [x/100.0, y/100.0, z/100.0] and line 690 was changes from return [x\*scale, y\*scale, z\*scale, w\*scale ] to return [x\*scale, y\*scale, z\*scale, w\*scale]. These line numbers are as of 05/01/2018 on the github below.

Start on boot is done with a simple command you can view if you type ‘crontab –e’ while running a shell as the ‘pi’ user.

All documentation for the DAQC2 plates can be found @ http://pi-plates.com/daqc2r1/. The documentation for the Bosch BNO055 gyroscope/Accelerometer sensor can be found @ https://learn.adafruit.com/adafruit-bno055-absolute-orientation-sensor/overview and the code for the modified, noted above, package comes from the get repo @ https://github.com/adafruit/Adafruit\_BNO055.

This system is expecting the Bosch sensor and 4 DAQC2 plates to be connected at addresses 0, 2, 3. You can change the code in the archplate.py file if you would like to run with a different number of plates.

Most reading data calls are made on the same line to increase speed.

\*\*\*At the moment, you cannot make simultaneous calls to the DAQC2 plates that is why the interrupt feature of the plates is not being used\*\*\*

For example, if you make a call to the plates on 2 threads it results in an ‘index error’. If the ‘DAQ.getADCall(0)’ call is currently running an in interrupt is triggered it will ruin the data in that call and result in an error. This is being avoided by the offSignal variable is being checked for in each iteration and at the beginning of the script.

Communication:

I2C and SPI are turned on for this project. The Bosch sensor uses SPI and the DAQC2 plates are using I2C.

Copying the image of the system to a new sd card:

Use the app Etcher to write to a micro sd card that is at least 64GB large. The file should be called raspberrypi.dmg. It will be easier to do this on a Mac.

Documentation

The software is self-documenting with comments. The files that are important to this system are as ArchPlate.py, bootloader.sh and the log files called startupLog.txt and run.Log all located in the folder /home/pi/Desktop/sr\_design. The main script that gets run is the arcchPlate.py this python script relies on python2 not python 3. This dependency comes from one of the python imports. There are a few custom packages such as the custom LED.py. The other package that was downloaded and then modified was the Adafruit\_BNO055 package the location of the .egg file, which is just a zip that python uses, is located @ /usr/local/lib/python2.7/dist-packages/Adafruit\_BNO055-1.0.2-py2.7.egg. Line 674 was changed from return (x/100.0, y/100.0, z/100.0) to return [x/100.0, y/100.0, z/100.0] and line 690 was changes from return [x\*scale, y\*scale, z\*scale, w\*scale ] to return [x\*scale, y\*scale, z\*scale, w\*scale]. These line numbers are as of 05/01/2018 on the github below. The start on boot feature is done with a simple command you can view if you type ‘crontab –e’ while running a shell as the ‘pi’ user. On boot a command window appears where the script is started and errors are forwarded to the startupLog.txt log. All python errors are forwarded to run.Log. All documentation for the DAQC2 plates can be found @ http://pi-plates.com/daqc2r1/. The documentation for the Bosch BNO055 gyroscope/Accelerometer sensor can be found @ https://learn.adafruit.com/adafruit-bno055-absolute-orientation-sensor/overview and the code for the modified, noted above, package comes from the get repo @ https://github.com/adafruit/Adafruit\_BNO055. This system is expecting the Bosch sensor and 4 DAQC2 plates to be connected at addresses 0, 2, 3. You can change the code in the archplate.py file if you would like to run with a different number of plates. I2C and SPI are turned on for this project. The Bosch sensor uses SPI and the DAQC2 plates are using I2C. This can be done by running the command ‘sudo raspi-config’ and going down to ‘5 Interfacing options’ and turning on I2C and SPI and SSH.

Using the program VNC viewer with the detailed information below you can connect to the computer system (Raspberry-Pi). Once you connect the user is ‘pi’ and the password is ‘m49sr’. The data is stored in the ‘/home/pi/Desktop/sr\_design/Data’ folder and can be copied to a computer after a run using the VNC server on the Pi.

