For this project I made an app that checks the ambient conditions of an area and determines factors that could damage the storage of high value commodities (for now wine and cigars however this would eventually be expanded.) The factors deemed to pose the greatest risk were that of temperature, humidity, and light. Humidity and temperature must be within specific parameters for each commodity, while light is simply damaging in excess.

When this app starts the light sensor, thermometer, and hygrometer are started. Whenever one of the values changes the new value is captured and the data, along with the time in milliseconds that it was retrieved, is put into a sensor data object and is sent to the server using an asynchronous task. The server takes the data and stores it into an arraylist. The main serverlet uses this data along with the Google visualization API and creates a line graph of the data over time.

The values of each sensor can be viewed along with the recommendations for those set of values on whether or not it is safe conditions. This is shown using a fragment displayed using a tabbed view. The other two tabs are to set the server address and port and to view the graph of the data.

The data can be accessed for use by going to http://[server address]:[server port]/data. There it is displayed as a JSON array for other developers to use if they plan to add and improve to this application or just to view the sensor data. The JSON data is formatted as follows.

{"datapoints":[{"time":(long time in milli), "temperature": (int temperature in degree C), "humidity": (int humidity in per cent), "light":(int light in lux)},...]}

The graph is accessed by going to http://[server address]:[server port]/ and displays the graph of the data and information on how to use the server can be viewed at http://[server address]:[server port]/api.

Improvements in this app could be scheduled intervals to take readings and to stretch the graph over a longer time set with a longer interval between data points. I would also like to fully implement a feature that allows multiple sets of values to exist, so that it could map conditions in the places that the commodities are kept as well as the values for the area around it (for example their house.) It could then take measurements and recommend how often that they check on their commodities. It could also take additional measurements such as location and allow the user to take pictures and store them on the server.