EE 250 Final Project Writeup

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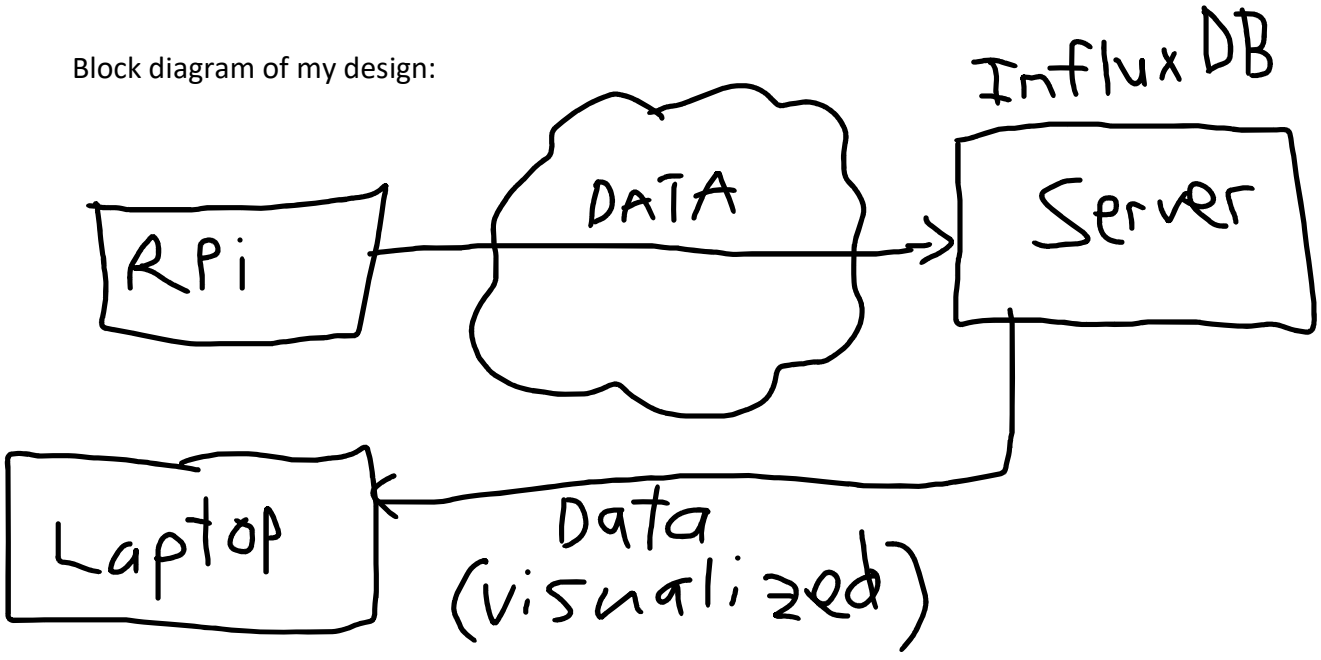
The project I decided to go with is a network speed analyzer. I'm using a RPi to collect data over my network (upload, download, ping, and jitter) and I'm sending that data to a database. From the database, I can use another IoT device to process the data. I used Grafana to process the data and graph it to show the change in my network speed over 24 hours. I used crontab to automate my Python script to ensure it runs at a set interval that I choose, and I don't have to run the script manually.

Block diagram of my design:



As mentioned, the components of this project are my RPi, a database, and my laptop to process and visualize that data. For this project, the sensors I'm using are all virtual and I'm

using Speedtest CLI to gather this data. The data is being processed from InfluxDB and is being visualized as a graph over an interval of time. I chose to use InfluxDB because it made the most sense to store the project on a database that is directly sent from my RPi. Also, Grafana makes it easy to access this data and process it, which I was having issues with for other methods I used.

When I initially decided to do this project, I wanted to use Microsoft Azure to store my data from my RPi then write a separate script to proces that data on my laptop (or another IoT device). I ran into a lot of issues when trying to do it this way. My RPi wasn't retrieving the data correctly. I had a lot of library issues with this as well which was time consuming to figure out what the issue was. I scrapped Microsoft Azure and then tried Google Drive and ran into similar issues. My script wasn't processing the data from Google Drive in the way that I wanted it to. I also ran into a problem where the script would crash while trying to collect data. This is why I decided to simplify the script and scrap the server idea alltogether. Using Grafana was MUCH easier to process the data. There's so many videos on how to use it and it made the most sense to use this for my probject because the main idea of the project is the ability to process the data on any IoT device; Grafana makes that process very simple. InfluxDB also made collecting the data a lot simpler compared to Microsoft Azure and I haven't had issues with it since I've been running the script. If I were to do this project again, I would try to find a server that worked and made two separate scripts that were automated with crontab. However, I believe Grafana is just as good and it allows me to see my network speed on any device while my RPi retrieves the data every hour.