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Assignment 8 Report

Our project is a server and client implementation that uses Python. The server side of the

project uses MongoDB to store and query the data from the IoT sensor data, along with the

metadata from the devices. The client side of our project communicates using TCP sockets to

request the queries. Our server processes the data from the MongoDB collections and performs

calculations. After the calculations are completed, the results are sent to the client. Our server has

3 queries which contain data on the average moisture in the fridge, the average water

consumption levels per dishwasher cycle, and the device with the highest electricity

consumption. The average moisture in the fridge query calculates the average humidity inside a

fridge using data from the moisture sensors. The average water consumption per dishwasher

cycle query calculates the average water usage per cycle using the dishwasher sensors. The

device with the highest electricity query finds the device with the maximum electricity usage in

the list of devices. It is important to have moisture meters in fridges in order to identify whether

the parameters are optimal for standard fridge levels to ensure safety. Water consumption levels

are also important to take into account for dishwashers because we need to find out how much

water is being used per cycle to figure out if it is energy efficient or water efficient. Observing

electricity usage levels is crucial because we need to figure out which device saves the most

electricity and uses the most in order to save money. The metadata was crucial when utilizing it

for our queries. It allowed us to compute the necessary things in order to return what we needed in our queries. Without the metadata our queries would not be able to retrieve and return the requested data. Timestamps and the units of measurement were a big help which allowed us to identify requested information. Some of the challenges we encountered were making sure we got correct data that is relevant to our device. For example, the timestamps were coming in but not in order. We had to import datetime into our project along with other imports related to the metadata. Another challenge we had was figuring out how to actually find and filter through the data on our server.py. Using MongoDB's methods helped us find the data we were looking for to help with our queries. Dataniz metadata was a good pipeline for our data to MongoDB. It displays a real life scenario where we would need to use metadata in order to run queries that would help a customer figure out which products are best for them based on the requested parameters. The data comes in every minute or so which could possibly be improved. I am not sure how I would personally do that but it could be an option.