Assignment 8

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Overview of the Presentation

- Showcase system functionality.
- Explain metadata usage and limitations.
- Perform data analysis and unit conversions.
- Gain experience with system integration and cloud deployment.
- Highlight challenges and solutions.
- Provide feedback on Dataniz.com.

System Functionality & Work Flow

1. Monitors IoT sensors using:
- Moisture sensors.
- Water consumption sensors.
- Power consumption sensors.
2. Provides key insights:
- Average moisture levels (%RH) in the past 3 hours.
- Average water consumption (gallons) per dishwasher cycle.
- Device with the highest power consumption (watts).
3. Real-time client-server interaction.

- Client sends a query to the server.
- Server uses metadata to identify the device (assetUid).
- Database is queried for relevant sensor data.
- Calculations are performed (e.g., averages, conversions).
- Results are sent back to the client.

DEMO!

Use of Metadata

Our approach was minimal and simplistic: we query the metadata collection within mongodb to find the assetUid of the device we need, and use that Uid to find the associated documents for further query processing. Use of tags could've given us some additional tools to work with to make searches a bit more efficient.

Challenges

While our approach made implementing the logic for query processing fairly straightforward and painless, not utilizing indexing and aggregation features added some additional steps that increased the complexity. This also made pulling sensor data a bit more challenging as it pertained to properly using cursor objects. We can associate this with a relative lack of experience of with pyMongo and MongoDB. Knowing how to use .find() properly made up for this, although making it a bit clunkier in the process.

Feedback for Dataniz

In previous assignments, when we copied the dishwasher, I wish they had given the option to choose the name instead of doing it automatically with random names for sensors.

manually have to put the min/max for sensors, I wish it was automated

Not being able to edit or delete old/redundant metadata

Not being able to data generated in seconds as opposed to full minutes

Not enough of the sensors have what they do displayed with their name, making finding the correct one tedious. *A* 'filter by category' would also suffice

Thank you