

SEADS Test Documentation

Overview

Due to unclear instructions at the beginning of the project, we did not have a consistent testing style. We did not make use of unit testing in most cases, nor did we implement a testing suite of any kind. Instead, we tested most of our code through trials and with demo users. We found this effective although sometimes more time consuming and tedious.

This strategy was applied for most areas of the code. Below is a list of the areas we tested and the kinds of things we tested for.

Areas Tested and Tests Performed:

- Database
 - Is the the database up and running?
 - Is there current data in the database?
 - Is the data corrupt or inaccurate?
- API queries
 - Query for hourly energy data:
`http://db.sead.systems:8080/466419817?start_time=1445756400&end_time=1445842800&list_format=energy&granularity=3600&device=Panel1&type=P`
 - Query for minute data:
`http://db.sead.systems:8080/466419817?start_time=1445756400&end_time=1445842800&list_format=energy&granularity=60&device=Panel1&type=P`
 - Query for event detection:
`http://db.sead.systems:8080/466419817?diff=1&start_time=1445756400&end_time=1445842800&list_format=event&events=1.5&type=P&device=Panel3`
 - Try above queries with different timestamps
- Website
 - Can a user log in?
 - Can a new user register?
 - Can a user add a device?
 - Can a user delete a device?
- Visualizations
 - Can a user visualize with test data for a particular device?
 - Can a user visualize with test data for multiple devices?
 - Can a user access visualizations with actual data from the API?
 - Can a user visualize power usage for a particular day?
 - with hour granularity
 - with minute granularity
 - Can a user visualize power consumption vs generation for a day?
 - for multiple days?

Issues Encountered During Testing:

- The SEADS Plug which is sending data to the database is sometimes out. This leaves holes in the database. We dealt with this issue by not using data for visualizations during those intervals.
- Because the data fields in the database are cumulative, when data was not written consistently each second, following the data point after the hole would be larger than expected. This turned out to not be an issue for the visualizations because the timestamp compensates for this change
- We encountered errors with JSON while testing. JSON requires all values to be in double quotes.
- Finding an efficient way to query for the information that we wanted.

Known Problems:

- Lack of useful error messages
- Some unit conversions are off by a factor of 3 or 4 for visualization
- Backend database (db.sead.systems) may be unreliable, as development is ongoing and upgrades are being made regularly.