Web Application for Aqualab Sensor Monitoring and Analysis
Gregory Thompson - gthompson2022@my.fit.edu
Haley Hamilton - hamiltonh2021@my.fit.edu
Ruth Garcia - ruth2021@my.fit.edu

Faculty advisor from CSE: Dr. Slhoub - kslhoub@fit.edu
Client: Dr.Turingan - Ocean Engineering and Marine Sciences

Progress of Current Milestone

Task	Completion	Greg	Haley	Ruth	To do
Implement, test, and demo *all sensor implementations*	40%	0%	100%	0%	Needs to be completed with real sensors or arduino simulation is made more complete for demoing.
Implement, test, and demo *program recovery after shutdown*	90%	80%	20%	0%	Needs Testing
Implement, test, and demo *backing up data/disk space management*	60%	60%	40%	0%	Needs to be much easier and more intuitive
Implement, test, and demo user notifications	100%	80%	20%	0%	N/A
Implement, test, and demo user roles and permissions	50%	0%	0%	100%	Needs more concrete implementation and testing, including error handling when a user doesn't have access.
Home and analysis page additions and updates	90%	0%	90%	10%	Some final additions left to make in the final GUI.

Conduct evaluation and analyze results	50%	33%	33%	33%	Continue analysis into M6.
Create poster for Senior Design Showcase	80%	0%	10%	90%	Need pictures of tank setup and sensors (if they come in ever).

Discussion of each accomplished task (and obstacles) for the current Milestone:

- Implement, test, and demo all sensor implementations
    - As sensors did not come in during this milestone, sensors were simulated using an arduino and virtual serial com port tools. We were able to connect to, read from, and display the data from the arduino. If sensors do not come in by the next week, an official arduino demo needs to be finalized.
- Implement, test, and demo program recovery after shutdown
    - The system will see and utilize user settings, sensor configuration, previous sensor readings, etc… from the database when started. We have not yet tested many edge cases for this implementation.
- Implement, test, and demo backing up data/disk space management
    - This is doable with operating system and database tools, however the process is difficult and requires substantial refinement.
- Implement, test, and demo user notifications
    - The system now sends emails to known users when detected values are out of range. The details (maximum number of emails per user, which users receive emails, other email triggers, etc…) will be discussed with clients.
- Implement, test, and demo user roles and permissions
    - A user role and permission framework was implemented to allow certain features and displays to be restricted from certain roles. This needs to be implemented on the frontend and needs additional testing.
- Home and analysis page additions and updates
    - Several user interface features were added and tweaked. Data can be downloaded into a csv on the analysis page, time can be filtered by selected dates via a calendar, the data read frequency can be updated in the settings page, the tank tabs now display the name of the sensor, the sensor value, and display out of range data points in a clear red.
- Conduct evaluation and analyze results
    - We are looking through the documentation and the features we have completed. We are making plans to update documentation to correctly describe the features of the current system and informing the client about what functionalities will have to be completed in the next project iteration.
- Create poster for Senior Design Showcase
    - Poster has been made, waiting for photos of tanks and sensors to add.

Discussion of contribution of each team member to the current Milestone:

- Gregory Thompson:
    - Created and implemented the system to send emails to users when sensor values are out of range. Enabled recovery after restart. Designed a primitive disk management approach.
- Haley Hamilton:
    - Made updates to the analysis tool including csv downloading, date filtering using a calendar, and displaying the names of the sensors in the tool.
    - Made updates to the home page and tank tabs including adding a configure sensors page to start a run with a sensor configuration, fixing some issues with the time and sensor displays, adding the current value and some outstanding bugs in the settings page and with change range functionality.
    - Simulated 6 sensors using arduino and virtual serial com port tools.
    - Integrated backend/frontend/database more (start run after sensors are configured and re-pull database to update range values after they are changed)
- Ruth Garcia:
    - Implemented user roles and permissions in the backend using flask, created the showcase poster, made additional error messages for the UI, and corrected some accidental styling changes.

Task matrix for Milestone 6

Task	**Greg**	**Haley**	**Ruth**
Implement, test, and demo final UI	0%	20%	80%
Implement, test, and demo user roles and permissions	0%	10%	90%
Final system updates and error handling	60%	40%	0%
Test/demo of the entire system	30%	50%	20%
Conduct evaluation and analyze results	33%	33%	33%

Create user/developer manual	80%	20%	20%
Create demo video	0%	20%	80%
Make App Accessible Remotely	33%	33%	33%
Create a User Logging Feature	10%	10%	80%

Discussion of each planned task for the next Milestone

- Implement, test, and demo final UI
    - This task includes final UI tweaks including adding calculated relationships to the analysis page, adding clearer range values on the home page, formatting the data in the CSV files, and cleaning up the appearance of charts and the GUI. Also included any needed changes following user permissions implementation and any last minute client request.
- Implement, test, and demo user roles and permissions
    - Includes completely implementing and testing user roles and permissions and ensuring there are error messages when a user does not have access to a page or function.
- Final system updates and error handling
    - Includes final system updates including implementing sensors when they arrive or preparing an arduino system for demoing purposes, program recovering after shutdown, and data management functionality. Also includes error handling if a sensor gets disconnected or cannot read measurements.
- Test/demo of the entire system
    - Includes all required testing listed in the test plan.
- Conduct evaluation and analyze results
    - This task includes continuing to look at our documentation and identify elements to be completed in the next planned project iteration.
- Create user/developer manual
    - Create substantial documentation for a potential future senior design project.
- Create demo video
- Make App Accessible Remotely
    - Includes discussion about the best way to ensure the app is available to access and implementation to satisfy the client.
- Create a User Logging Feature
    - This task includes a feature where the admin can see a log of users that have logged into the system and what they did/looked at.

Date(s) of meeting(s) with Client during the current milestone: 3-3-25
Client feedback on the current milestone:

- The GUI was demoed for the client and they were satisfied. They requested a change for the analysis tool to allow time filtering to be changed into selectable dates using a calendar.
- We discussed the showcase and plans for demoing the product with regards to Dr. Turingan's research plans. We also discussed sensor setup further and are still waiting on things to come in and the tanks to be properly set up.
- We discussed what we were working on for the milestone and some things that we originally planned to have completed, but would have to be included in the second iteration of the project.

Date(s) of meeting(s) with Faculty Advisor during the current milestone: Communicated via email.
Faculty Advisor feedback on each task for the current Milestone:

- Implement, test, and demo all sensor implementations (Satisfied)
- Implement, test, and demo program recovery after shutdown (Satisfied)
- Implement, test, and demo backing up data/disk space management (Satisfied)
- Implement, test, and demo user notifications (Satisfied)
- Implement, test, and demo user roles and permissions (Satisfied)
- Home and analysis page additions and updates (Satisfied)
- Conduct evaluation and analyze results (Satisfied)
- Create poster for Senior Design Showcase (Satisfied)

Faculty Advisor Signature: ___Dr Slhoub_____ Date: _____3/26/2025_____

Evaluation by Faculty Advisor
Faculty Advisor: detach and return this page to Dr. Chan (HC 209) or email the scores to pkc@cs.fit.edu

Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Gregory Thompson	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Haley Hamilton	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Ruth Garcia	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature: _____ Date: _____