

UCLL Team 6 2020

Final Report

Aquaponics – Physiochemical Parameters

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During the course of the past 6 weeks, we have been actively developing our solution to the Aquaponics project. We divided the work into 3 parts – 3 iterations lasting 2 weeks each. At the start of each iteration, we had a Zoom meeting to discuss our plans and share ideas. At the end of the meeting, we added entries to our Kanban chart (in *Kanbanflow*) and got to work. Throughout the project, we used GitHub to upload our code to a central repo and collaborate. WhatsApp aided us in communicating with each other often. We are making use of AfriHost to host the frontend, database and scripts.

This is how our journey looks:



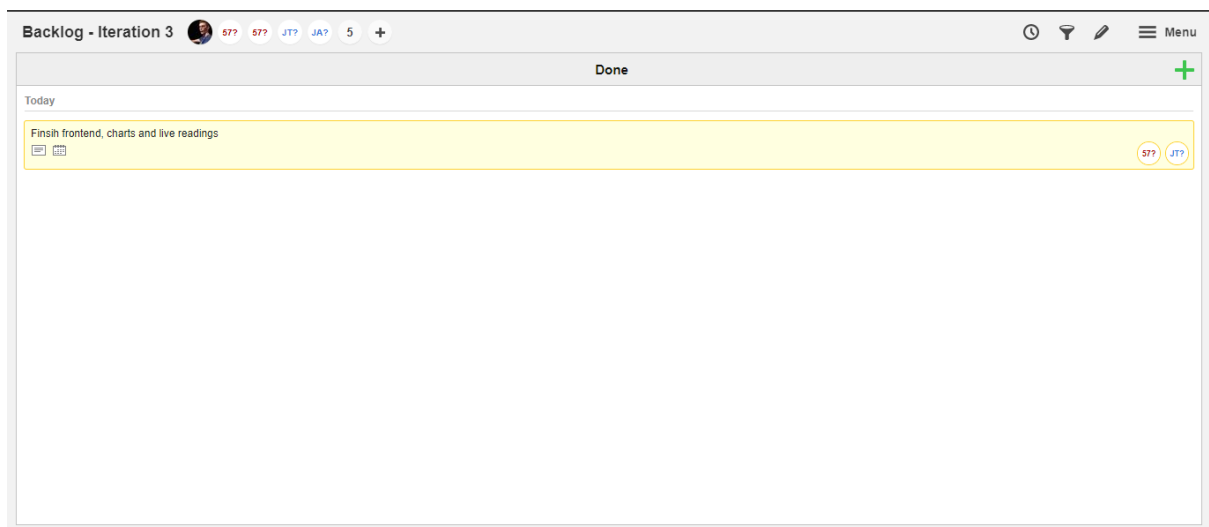
During our first iteration, we decided to develop everything required to make the sensor array work:

- The code needed to retrieve readings from the Arduino's attached server and send them to the server; written in C++ (**Matthys van Rooyen**)
- As COVID-19 threw us a curveball, we decided to try and work around it. A console interface written in C# was made by **Marius Smit** to receive the readings from the Arduino's C++ program and send it to the server. However, we were not aware that we could not run the Arduino's C++ code without the Arduino itself; so for now this part of the project remains largely uncertain.
- A few simple PHP scripts to receive the readings as URL parameters and write them to a MySQL database (**Marius Smit**)
- The queries to design and populate the MySQL database (**Jonna Jääskeläinen**)



Our second iteration started a little late as all of our studies demanded attention at that point. During the second iteration, we focused on getting the front end finished. This included:

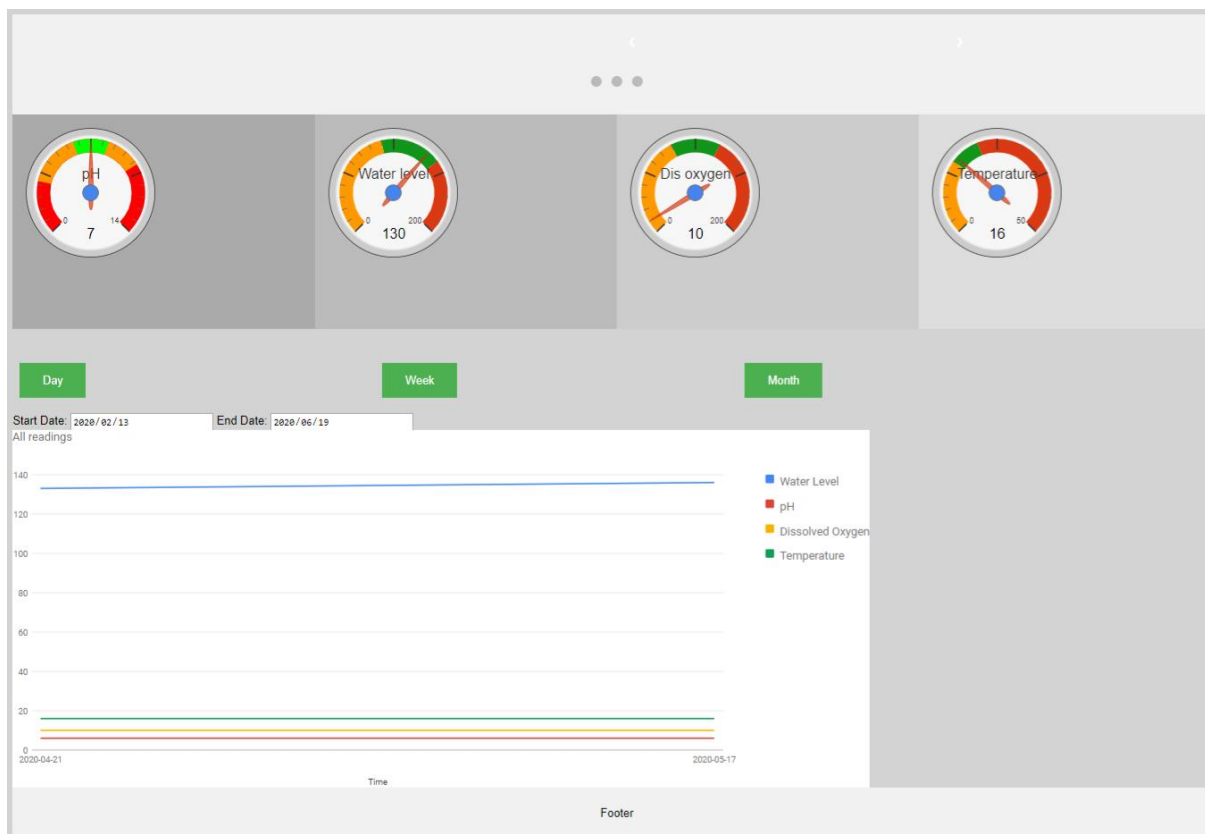
- PHP scripts to read the readings from the server and send it to the front end (**Jonna Jääskeläinen**)
- The JS required to call the PHP scripts and pass it over to the DOM elements on the HTML page (**Marius Smit**)
- The design and structure of the HTML homepage itself with relevant design and scripting as required (**Lesedi Mmola**)



Due to the second iteration's late start, our final iteration was only a week long. This proved to not be a problem, as we were mostly left with finishing touches and a few bug fixes. **Marius Smit, Jonna Jääskeläinen and Lesedi Mmola** were involved with these final steps.

Needless to say, COVID-19 has thrown all of us a curveball. As stated before, we are extremely uncertain as to whether or not the sensor array's code works properly because we don't have an Arduino to test it on. Matthys van Rooyen wrote it regardless and as best as he could though. You will also notice that Jose Armando Aguilar's name isn't mentioned in the development. This is because he was supposed to help out with the actual sensors: configuring them and writing the code and giving instructions to help us get it set up. But seeing as this was impossible, he couldn't help much. He did participate, though (like everyone else), and was present during every meeting.

You can visit h2o-ponics.site to see our website. It displays a bit of dummy data. If you want to see entries on a line chart, make sure the date start datepicker is before the 21st of April and the dateend picker is after the 17th of May.



Finally, our cloned repository contains readmes that explain what each of the scripts/libraries do. You will find our cloned repo attached to the email.