Kortrijk, België   +32471264811   andreas.maerten@student.howest.be

My Portofolio
Andreas Maerten

Private: Project 1 Overview

By Andreas Maerten   June 15, 2020   Leave a Comment

The beginning of the end

What?

For my project-1 assignment, I made a water fountain that can detect if someone put their glass under the water output. I was inspired to make this project with the Covid-19 outbreak (I was tasked to make this right before it went global), that's why I chose to make a device that would pour water in your glass without having to push any buttons. This is to prevent the spreading of any bacteria or viruses with any contact surfaces, it also proved to be a nice challenge for me, working on something that combines everything I learned in the last year.

The end product

The end product can detect if a cup or glass is under the water output, the original plan was to make the fountain stop filling the glass when pulling it away. This proved to be difficult with the inaccuracy of the distance sensor and the delay in detecting if the glass has been pulled away which would cause the water to go everywhere. That's where a friend of mine came with the suggestion to make the fountain fill 100ml every time, the output as stated by the manufacture was 100ml / minute. A user would then have 5 seconds to pull away their glass before the device would try to fill again.

Assembly

I have a lot of experience working on large projects and have gotten used to splitting everything up properly, nonetheless there were still some hiccups here and there as I'm not as familiar with Python as I am with other languages. Coding went smoothly and I was mostly able to make things work quickly, the electronic side of the project was something else though. With the experience I gathered throughout the year I was able to make do and I only had struggle wiring up really complex things but there was nothing that I couldn't make work in the end.

Building the case was easy, I went with my dad to a local hardware store (it was still like a 10 km drive), I had drawn all the panels on scale on a piece of paper, the guy responsible for the wood section asked us what kind of wood I was going to use and started cutting everything for us. After only 30 minutes we were already out of the store, the next day I visited my grandma with all the stuff to build my casing. I spent the entire weekend working out the details, the start was rough but with all the tools I had at my disposal the task was pretty easy.

Problems

Luckily I have never encountered any catastrophic events, I did have a moment where I had incorrectly wired my MCP3008 and while trying to read data from it would always return 0, which I found really strange so after some time I checked the wiring of the chip to notice that I had wired it the wrong way around. I turned the chip around and with no luck it still kept returning 0, at this point I had assumed there was a problem with my MCP3008 "driver" so I tried several different ones from people online and even from a friend that used the same chip but again with no success. The next day I woke up and started my project to work on something else because I had assumed that I had fried the MCP3008 by incorrectly wiring it, to my surprise I suddenly saw other values than 0 appear in the console window, no idea what fixed the issue…

Aside from that I had some implementation mistakes because I was not familiar with the way Python works with multi threading, for example I had one instance where I needed to check if a variable was true but for some reason the variable was in a "super position" (if you aren't familiar with quantum physics/computers this means that a the state of something is between 1 and 0), so sometimes this variable was true and sometimes it was false while it should have been impossible to change because there was nothing changing it. It was a strange but funny problem that I had to resolve.

What I learned

I saw that I still like to procrastinate while I was working on this project, as bad as this seems I've been able to keep it a minimum because of all the tips my teachers gave me.

As much as I hated doing it and having to always think about it, we had to use this program called Toggl, it's a way of taking note how long you spend on something (although you need to manually start and end it). This gave a really good overview of how much time I was going to spend on similar things that I had Toggl'ed before.

During the 3 weeks that I was working on it we had these so called "MVP Moments", in these we had 2 of the many teachers we had take a look at how far we had gotten with our projects, they would give us advice on ways to improve our project. The entire class group was also there to observe and give tips if they had any. Some might see this as a thing that's annoying or stressful (which it was for me), it also helped me set a mental deadline. That way I could force myself every week to try and continue working until I had hit the quota that I was somewhat supposed to hit that week.

In the end if I hadn't had these two things I would have definitely underestimated the given time and gotten myself in a lot of trouble.

I noticed that a lot of this behavior is recurring, that I would start off strong but over a long period end up wasting a lot of my time without clear deadlines. As well as working together in group, the feeling of being in this "together" gives me the power to keep on working.

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