

# Developer internship at Planon

**Table Levelling Project**

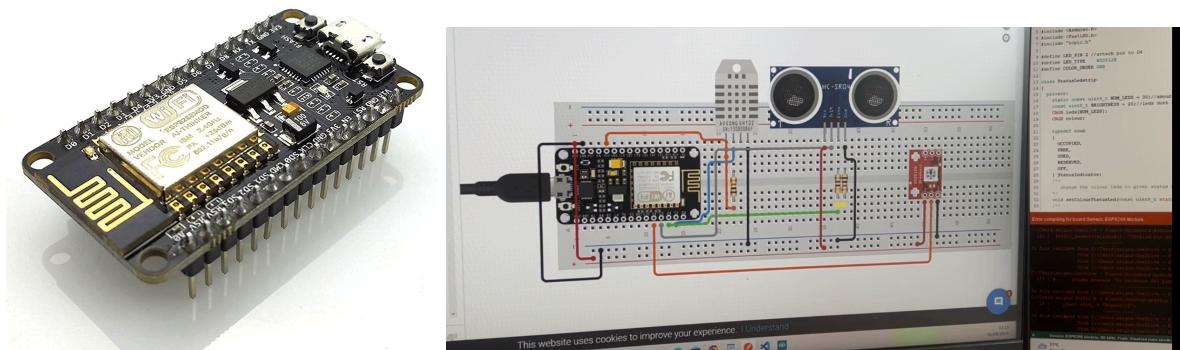
**Jul 2024 - Aug 2024**

I enjoyed working at Planon a lot, so I came back for another second internship, working for Thomas, my boss.

When I started the internship, previous versions of height self-adjusting tables were made, but failed on successfully communicating with the server to successfully retrieve the user's preferred height to self-adjust itself to the needed table height.

The tables had QR codes which could be scanned to book a specific table for a given time on the company's server. Since the users could book specific tables on Planon's server, they could also set a preferred height to automatically adjust the table once it was booked, which would show up as an integer sent to the ESP8266 microcontroller. I was tasked with creating a circuit which could read the table height and adjust it based on the user's preferred table height which would be retrieved from the server using a HTTPS communication protocol rather than MQTT protocol which was previously used. First I read through the documents explaining the programs used by previous interns to communicate with the sensors on the circuit.

When looking at the previous circuits, I noticed that they were really messy and had wires jumbled up all together, preventing me from understanding which sensors were used and where they were connected. Instead I created my own circuit from scratch made up from: an echo pin to check the distance between the floor and the table, a LED strip to light up differently for testing, an Arduino ESP8266 module to upload code for HTTPS server communication, an ethernet cable connecting to the table motors and resistors to adjust the voltage supplied to the sensors.



After soldering all the pieces together, I started understanding the code left by previous development teams in order to start writing my own.

The code was composed mostly C++ as it was written on Arduino. In order to make the ESP8266 to be able to talk to the server, I needed to first use the WIFI library to connect the ESP8266 microcontroller to the company's WIFI and then use the HTTPS library to be able to send out GET request to the company's server to read the preferred table height. Once the microcontroller received the target value it needed to compare the distance between the echo pin and the floor and activate the motors till it reached the target value within an error range, so that the table wouldn't keep going up and down trying to achieve a very specific target height. I collaborated with the junior software engineer who showed me how he used Java to manage the company's server and generate the integers for the specific tables when they were booked. By replacing the MQTT protocol with the HTTPS protocol, my coworkers were able to book tables and have them set to their height without anyone touching the table, this tool was then shown off to investors.