Digitally connecting Bluetooth lights using a website

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The introduction

This project concerned a new smart and simple outdoor lighting system. Particularly, it focused on how to safely connect the lamps to each other using a website.

The main text

These smart lights are designed to be used outside and use Bluetooth to operate, a technology most people have heard of. Most people probably associate Bluetooth with headphones or speakers. And if your headphones are connected to your phone, and you walk away from it, your headphones lose connection and the sound becomes choppy. That does not sound like it would be suitable for outdoors with long distances, but this is not the type of Bluetooth this product is built upon. This Bluetooth is called Bluetooth mesh and, as the name suggests, here all the lights are connected in a network, or mesh, and everything within this network can communicate with each other. If we go back to the headphone analogy: Imagine your headphones, your phone and, for instance, your TV being part of the same network. You walk away from your phone, but the sound is still clear - the signal from your phone has been sent to the TV, the TV relays the signal, and it reaches your headphones. That is the same concept behind this product, but instead of sound, it is a signal to tell the light to turn on and off. The main goal of the thesis was to connect these lights into the same network using a website.

To be able to use a website to connect lights, or any Bluetooth device, through a website has not been done before and there lies the biggest obstacle in this thesis - there is no prior work to refer to. As to why even use a website if it is so much hassle? A website was deemed to be more user-friendly, compared to making the user download an app on their phone. A website would also work regardless of platform, be that a laptop, a phone or a tablet. Whereas an app would have to be adapted to a specific platform. The thesis was successful, and was able to add these lights to a network. But it is not limited to lights, if in the future one would like to add a wireless switch or a light sensor then it would be added in the same way.

The thesis did not only involve adding the lights to a network, it involved making a proper website with a login system. One thing that had been bothering everyone working on the project, was convoluted login systems, where you have to verify your email and all these unnecessary steps. To avoid all that, we chose to use people already existing accounts, such as their Google account, or their Apple account, to make an account for our website. All in order to keep the user experience as simple and easy as possible.