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ATU Attendance

Ollscoil Teicneolaíochta an Atlantaigh
Atlantic Technological University

Project Description

Aim

The aim of this project is to modernise and improve on the standard method used to take roll-call, pen and paper. There is much room for improvement on something as basic as this so I wanted to develop something with a large scope in mind. It also assists the United Nations SDGs (Sustainability Development Goals) where paper waste is reduced. And efficient rollcall and more quality class time.

Summary

A student will scan in their tag and this will show up on a website that only the teacher can access. They will be able to see who scanned in and who didn't. The record for the roll call will be displayed on using a table on this site and the teacher can clear the results with a click of a button.

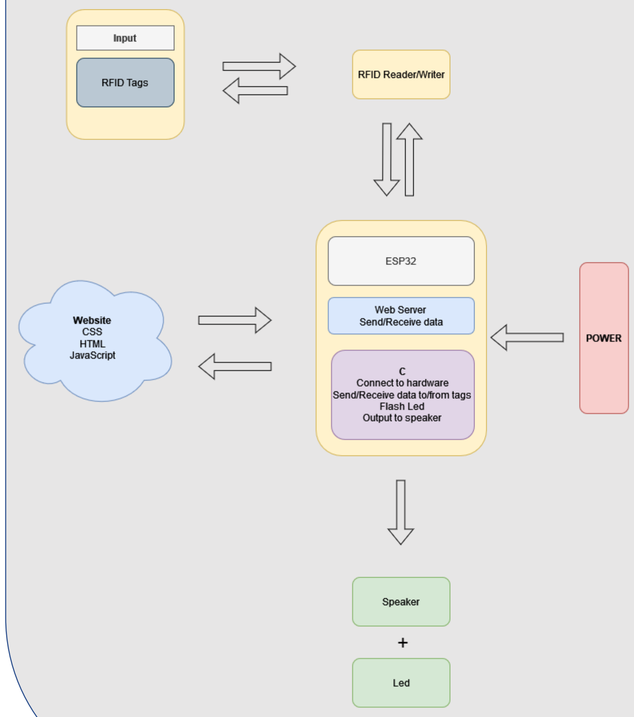
In order to achieve this I used a microcontroller (ESP32) and an RFID module to act as a scan in system that essentially takes attendance of a class. This then displays the results onto a webpage hosted on the microcontroller. With the use of an LED and a speaker, both of these outputs are used to confirm that a student has tagged in.

Improvements to this project would be to host the site on a server and use databases which will allow for recording of data for the school to access..

Technologies & Skills

- ESP32
- Multiple libraries
- RFID module
- RFID Tags
- Speaker and LED
- Multiple IDEs
- Website design, HTML/CSS/JS
- Twitter API implementation
- C programming
- Modern C++ programming (vectors/search algorithm)
- RFID data manipulation
- Problem Solving

Architecture Diagram



This diagram shows a high level of my project

RFID Tags are the input which are then read by the RFID Reader, this is connected to the ESP32.

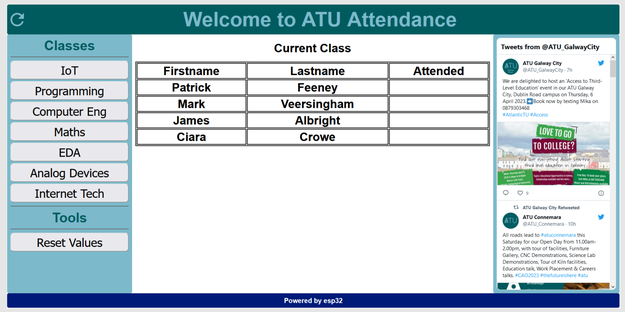
Data received is then displayed onto the website.

The website talks to the microcontroller which builds the site and changes depending on the data.

Once a tag is read, the LED flashes and a buzzer is sounded.

Power is supplied to the circuit and all peripherals.

Output



The website was developed using HTML/CSS/JS. This was to display my inputs from the RFID reader that I linked to the ESP32.

Included is a twitter feed API to show the latest tweets by ATU Galway and the ability to change which class is currently on., this is done by pressing the related class button.

There is also a tool to reset the values of the attendance recorded by the esp32