Ollscoil Teicneolaíochta an Atlantaigh

Atlantic Technological University

Attendance System with RFID Technology

Internet of Things Project Proposal

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Project Description

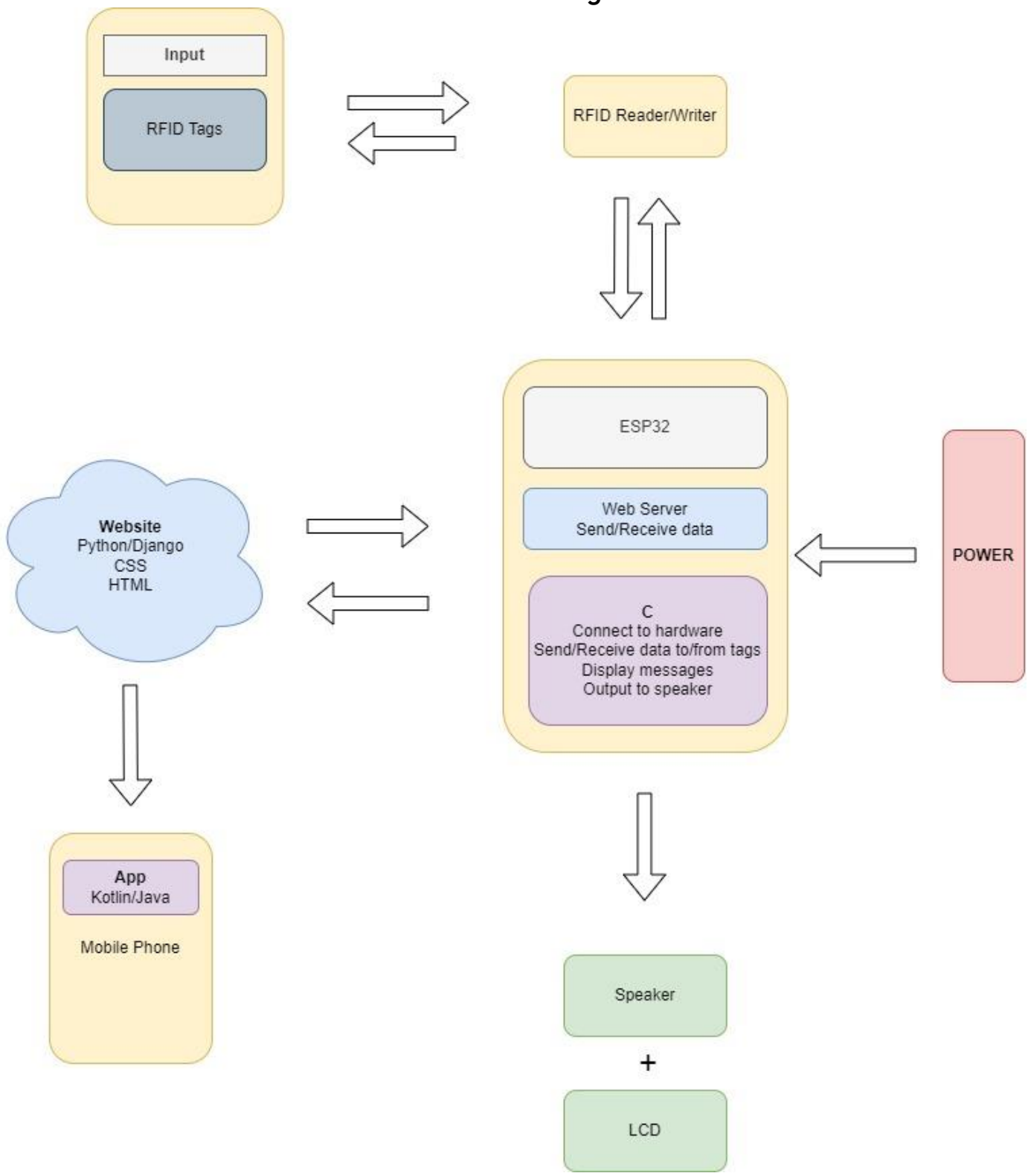
I am James Albright and I study Software and Electronic engineering in ATU Galway. In this proposal I will offer up an attendance system which will improve a day-to-day process that every school uses, roll call. The project is a simple to use system in which lecturers can take a roll call by students just swiping a tag. I decided on this idea because I see in both school and University we still use the basic system of pen and paper. A chance at modernising this was a good project idea to me.

I will use the following, an RFID reader/writer, Esp32 and user input. These are the only components needed to build this system making it efficient. After setting up, the teacher need not worry about wasting paper on roll call again.

The concept is this: A student will scan in their tag, 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. Students who arrive late will be shown as such as they will scan in as they walk through or be marked down as absent if not there. Teachers can manually change each students status. The record for the roll call will be saved on a server which can also be accessed by the teacher. And there will be an app that students can use to view their attendance and see which classes they have missed. Teachers may leave a note for those who were absent.

In order to build this project I will have to do the following: Connect up the ESP32 to the RFID reader/writer and speaker. Tests revolving around scanning the RFID tags and saving that data to the ESP32. Add an LCD to display messages. Build a website from scratch, communicate with it from the ESP and display basic data. Build an Android app to also receive the data outputted to the website. At this point I will be spending time cleaning up the presentation of the app and website, as well as troubleshooting the process of roll call until consistent. If I have time I will add an iPhone app too.

Architecture Diagram



Feasibility

Scope is too large maybe, my inexperience with programming may affect projects capability. This is why I have made use of very few hardware components so I can still achieve my goal with more focus on software.

United Nations' Sustainability Development Goals

While my project is not inherently aimed at being more sustainable and a better choice for the environment, it still assists in the United Nations 17 goal by doing the following:

Quality Education (4): It allows the teacher to efficiently take roll and allows for more total teaching time and focused learning.

Responsible Consumption and Production (12): The project I am making is made of items that are reusable and cheap. The school wastes paper on ticking a box for every class, every day. This reduces paper waste.

Schedule

October: Gather components, build the base of an Esp32, speaker and LCD. Have the two components working.

November: Attach RFID scanner and writer, run tests with these and be able to store that RFID tags data to show someone signed in and be able to write to the tags to populate the classroom.

December: Build website. Send data to website from Esp32. Display information. Be able to scan in as student and show on website for December demo.

January – March: Clean up website. Build Android app and have it cleaned up and functional. Troubleshooting stage from here on to ensure everything is working.