TeamSwipe Employee Payment Manager

Course: BENG (H) In Software and Electronic Engineering

By Liam Nilan Year: 2021 - 2022

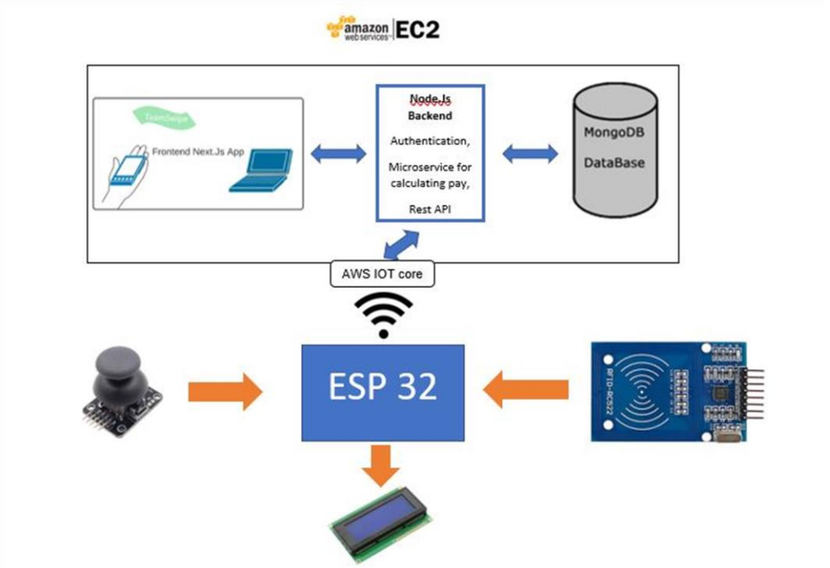
Project Summary

TeamSwipe Employee Payment Manager is a clock-in clock out machine with a website for managing hired employees. Businesses register for the service and add employees through the web app. They then can write the employee's data to a RFID card or key fob so the employee can tap into work.

This is a hardware and software project linked together by the cloud. The hardware side of things is an ESP32 microcontroller on a printed circuit board. On the software side of things there is a Next.Js frontend with a NodeJs backend connected to a mongoDb database.

I intend to host this project on an EC2 instance of Amazon Web Services and use the AWS IOT core to call and update data from the ESP32.

Architecture Diagram



Backend Design

The backend for this project consists of three parts. The main server, the authentication server and a mongodb database. The main server connects to the mongo database and hosts the microservices such as calculating the pay for each employee.

The authentication server manages login and the creation of JWT access tokens and refresh tokens.

Each business has a JSON on the database storing all their data. It contains the email and password an two sub arrays containing their employees and employee presets. Eg, pay rates and roles.

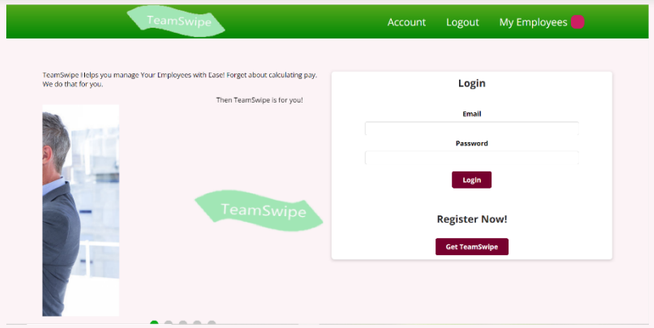
A valid access token is needed with any user data request to fetch data to the frontend.

Technologies

Languages

➢ C	➢ HTML
➢ JavaScript	➢ CSS

Screenshot of the TeamSwipe Webapp home page



Picture of the TeamSwipe Clock-in clock-out device

Conclusion

This project delivers in the goals I set to achieve. Through this project I designed developed and tested front end and back end website design. I Pushed the boundaries of the ESP 32 to successfully demonstrate the clock-in clock-out device in the lab.

All the calls to the backend and database have worked without flaws.

All code for this project can be found with this link: github.com/LiamNilan599/LN_Final_Year_Project