IOT FINAL PROJECT

INDOOR CONTACT TRACING SYSTEMS

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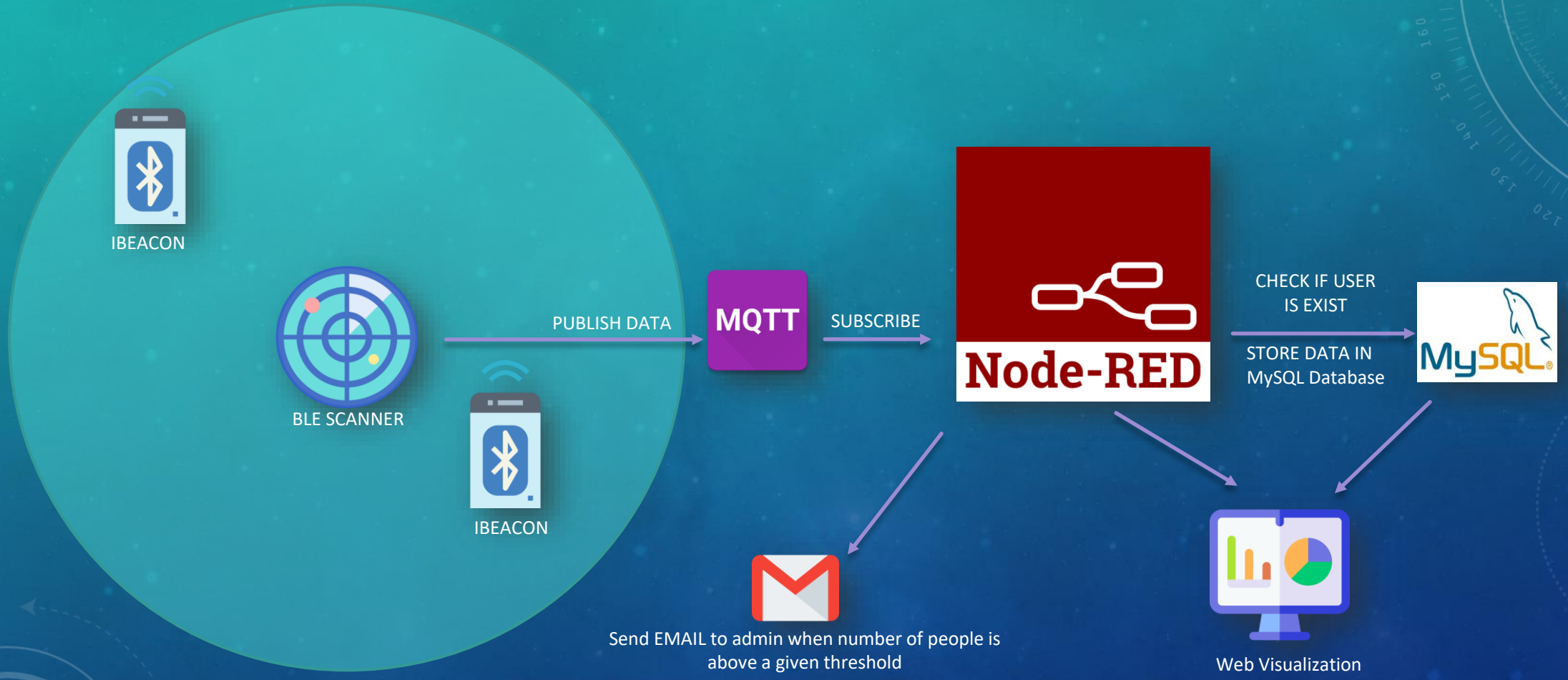
INTRODUCTION

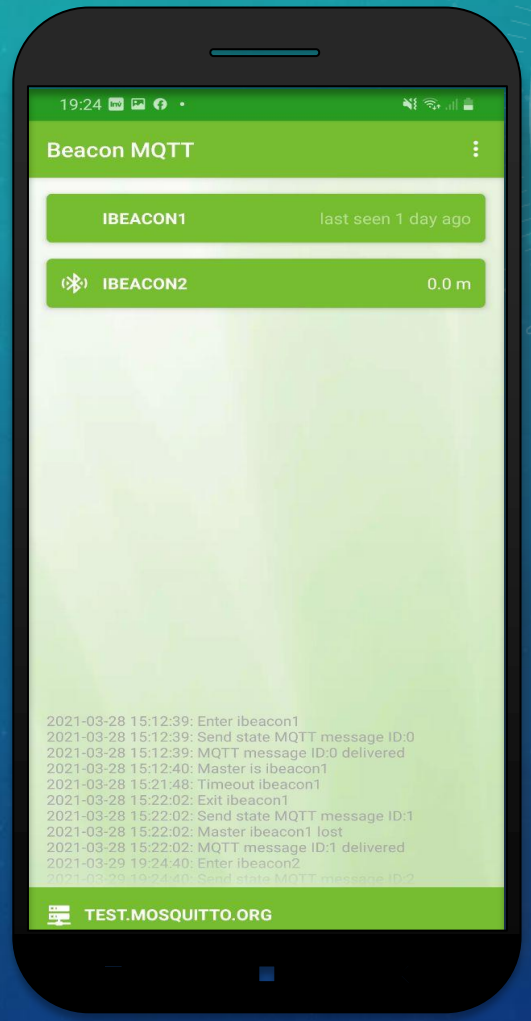
The goal of the project is designing a prototype of an indoor contact tracing system to be used to produce an estimation of the number of students and teachers inside the building in incorporate a completely web-based user interface, assuming we have registered users with two types(teacher/students), MQTT on the entrance of the rooms, or two MQTT if there is entrance and exit of that room, when a student with beacon walks inside the range of the beacon sensor, we check the ID of that user if exist the data would be saved in the database, with state(enter/exit) On the dashboard we get some data on the real time, and it allows the user to filter by date. When we have many people in the room the user will be notified by an EMAIL.

THE PROJECT ARCHITECTURE



CLIENT SIDE

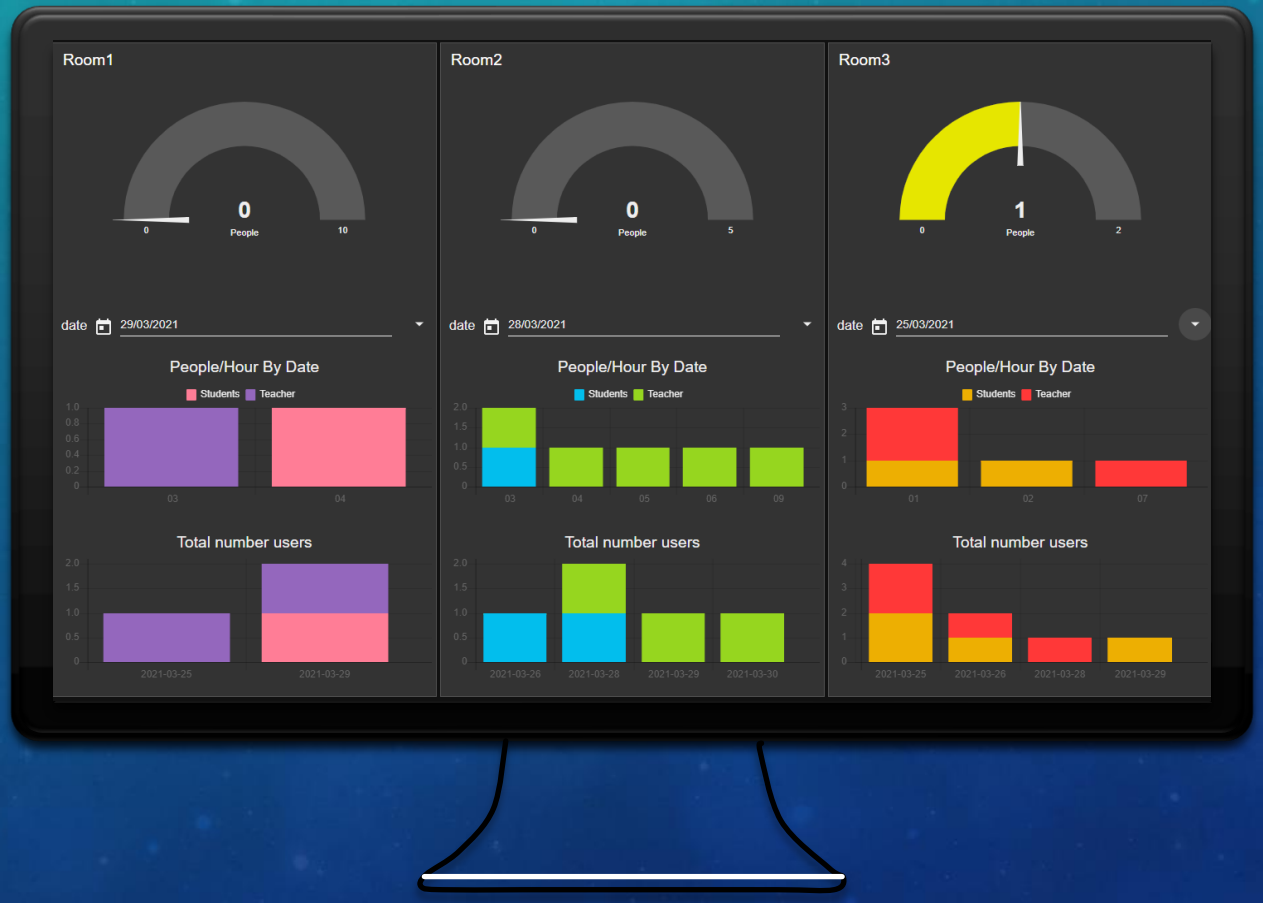
Using “Beacon MQTT” android app which works as beacon scanner, in the configuration you can add the topic of the room. The app publish the data to notify the MQTT server when iBeacon is in range or lost. The app will send the ID of the beacon and state (enter/exit).



PS: I tried to use Bleacon library to emulate beacon and scanner in Node-red, I tried in two different OS but both have issues with BLE and when I deploy the flow node red crash.

CLIENT SIDE

Node-RED Dashboard is a module that provides a set of nodes in Node-RED to quickly create a live data dashboard. The dashboard display three columns for the rooms that we have in the building.

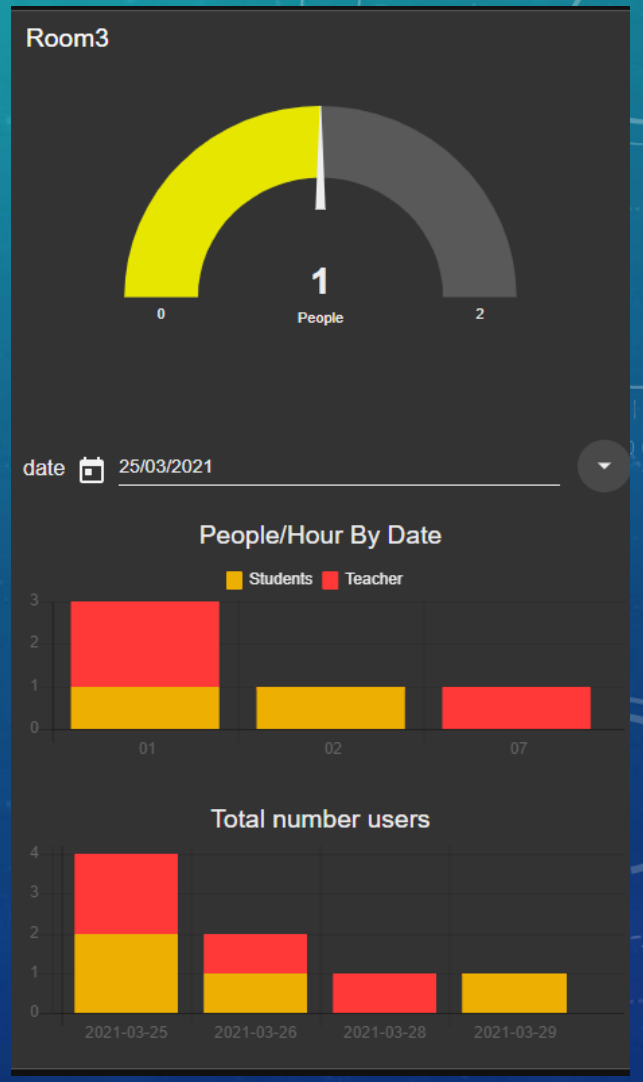


DASHBOARD

1. The first chart(Gauge) shows the max number of people in this room, and number changes based on the number of people inside the room in the real-time, When the number of people is above than the capacity of this room, the Admin will be notified by an EMAIL.

2. The second chart by default display the number of teachers and students inside the room per hour in current date, however the user can pick a date to check the number of people in that day.

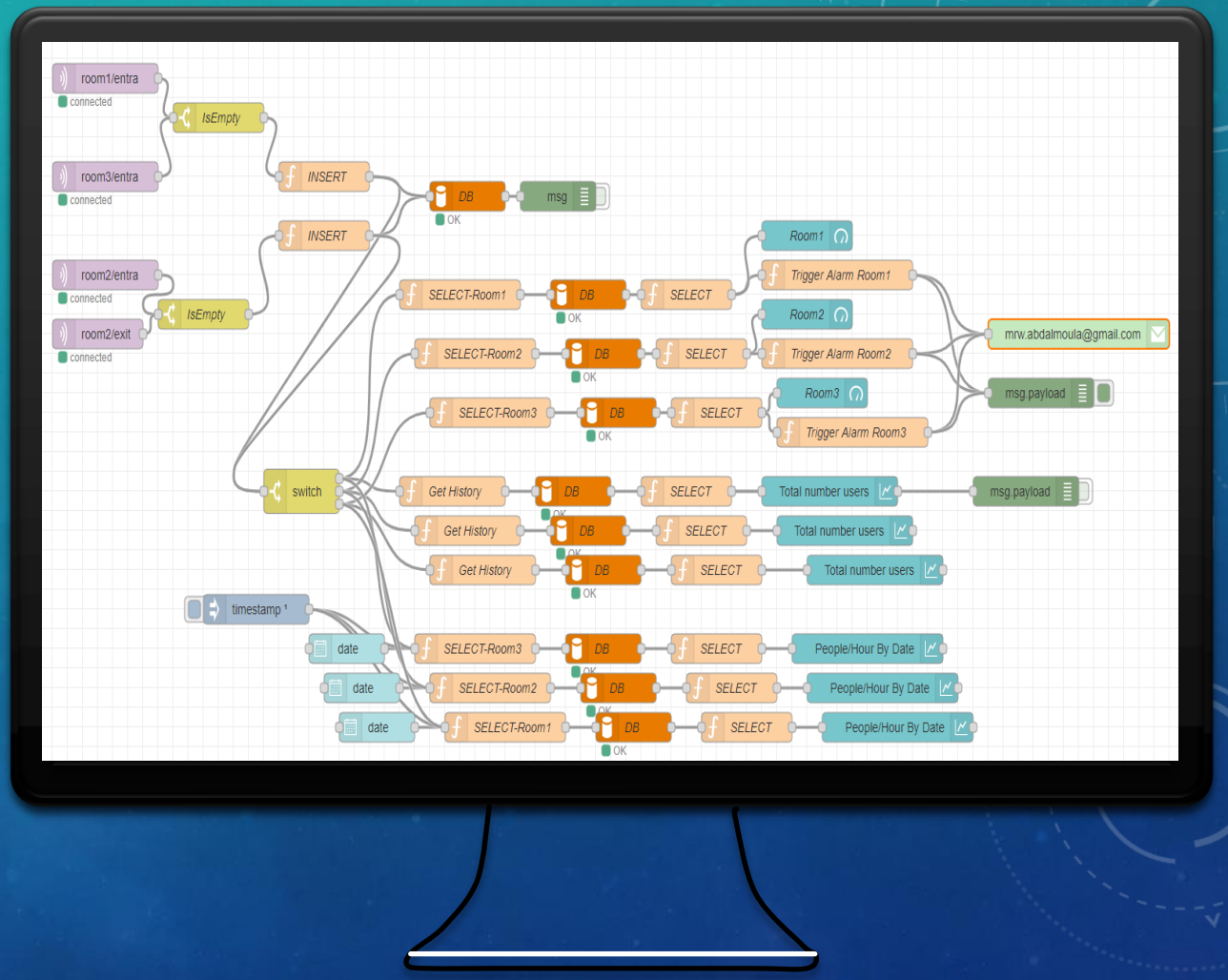
3. The third chart display the max number of teachers and students in each day to give the user an overview of the activates in this room.



SERVER SIDE

In this project Node red server is used with MQTT broker to deduct the users inside the rooms.

Sensor send the data to be published to MQTT, the subscribed data will be saved in MySQL database if the user is exist, and The email will be send by NODE RED.



SERVER SIDE

MYSQL DB: