



ATTENDANCE TRACKING SYSTEM USING BLE BEACON AND ANDROID PLATFORM

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Abstract

In most universities, tracking the attendance in lectures is processed by sheets that include students' id numbers, names, surnames, and signs but this method has many disadvantages. Mostly, students sign for their friends which do not attend to the lectures and if the lecturers do not count the class and compare the number of signs with the number of students in the class, students who not attend the lectures may be calculated as they are in class. Our system is designed to track the attendance with the Bluetooth Low Energy (BLE) signals which are embedded into the BLE Beacon device and the mobile application which will be developed in Android platform and catches the BLE signals and process these signals to decide whether the student is in the lecture or not.

Keywords: Bluetooth Low Energy (BLE), BLE Beacon, Android Studio, MySQL, Java, EddyStone, Android, BLE Signals, PHP Web Services

Solution

Used Technologies:

- Android Studio, PHP, JSON, Java, HTML5, CSS3, JavaScript, PHP Web Services, MySQL, BLE Beacon (Eddystone, AltBeacon, iBeacon supported)

System Features & Capabilities

- Tracking real-time attendance with BLE Beacon and Android Application.
- Tracking real-time attendance in secure mode by taking students' photos.
- Show attendance reports for both student and lecturer for each lecture of course.
- Show attendance report for each student on given courses by the lecturer.
- Providing a feature that the user reports a problem to the administrators.
- Web panel for the lecturer to see detailed reports and upload a student list for given courses.
- Easy to use interface

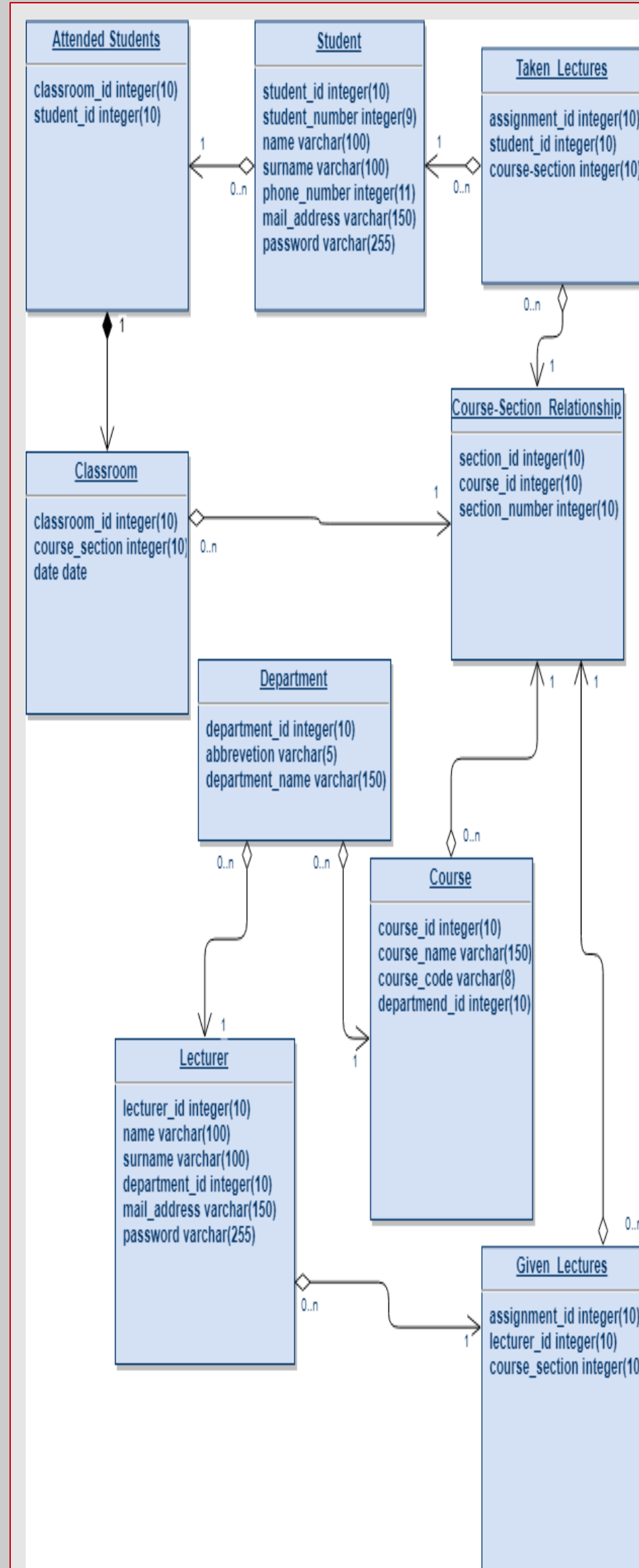


Figure 2 – Database

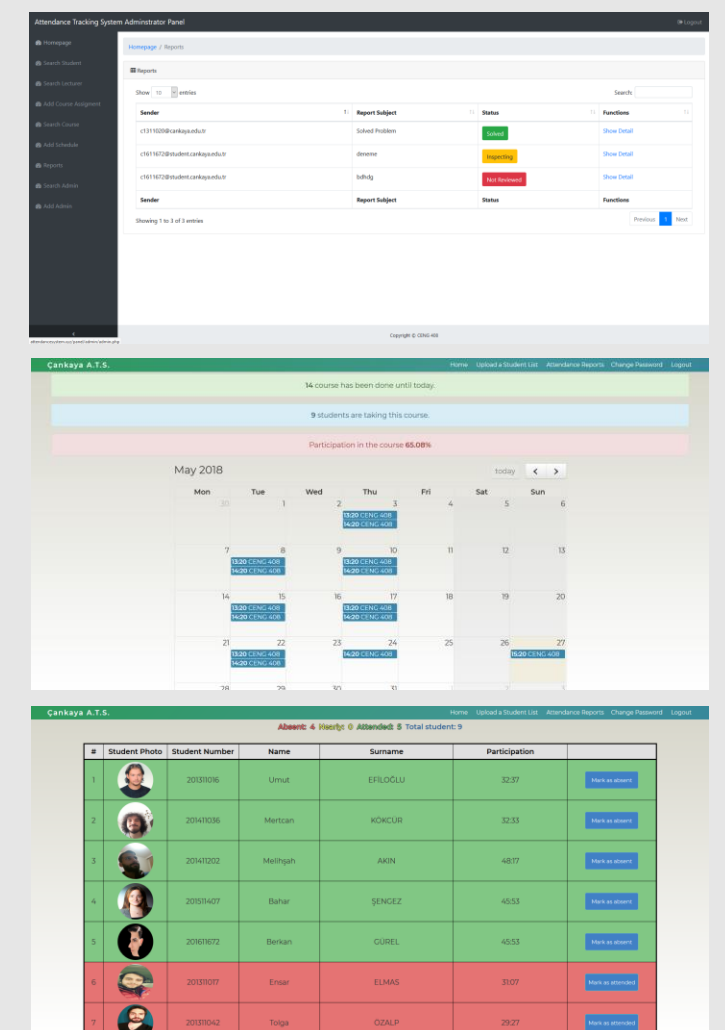


Figure 4 – Lecturer Web Panel and Admin Panel

Results & Conclusion

In this project, we learned how to build an Android application and interact with BLE Beacon. Besides, we enhanced our existing experience on web development while developing the lecturers' web panel and we gain an excellent experience on handling big projects.

Test Results:

- We can track the attendance duration with 96% accuracy rate in lectures for each student.
- All of our test cases are passed. Hence, we have 100% accuracy rate on our test cases.

Acknowledgement

We are very grateful to our advisor Dr. Instructor Murat SARAN for providing his excellent background information and guidance on this project. His contribution and experiences make our tasks much more comfortable during the development.

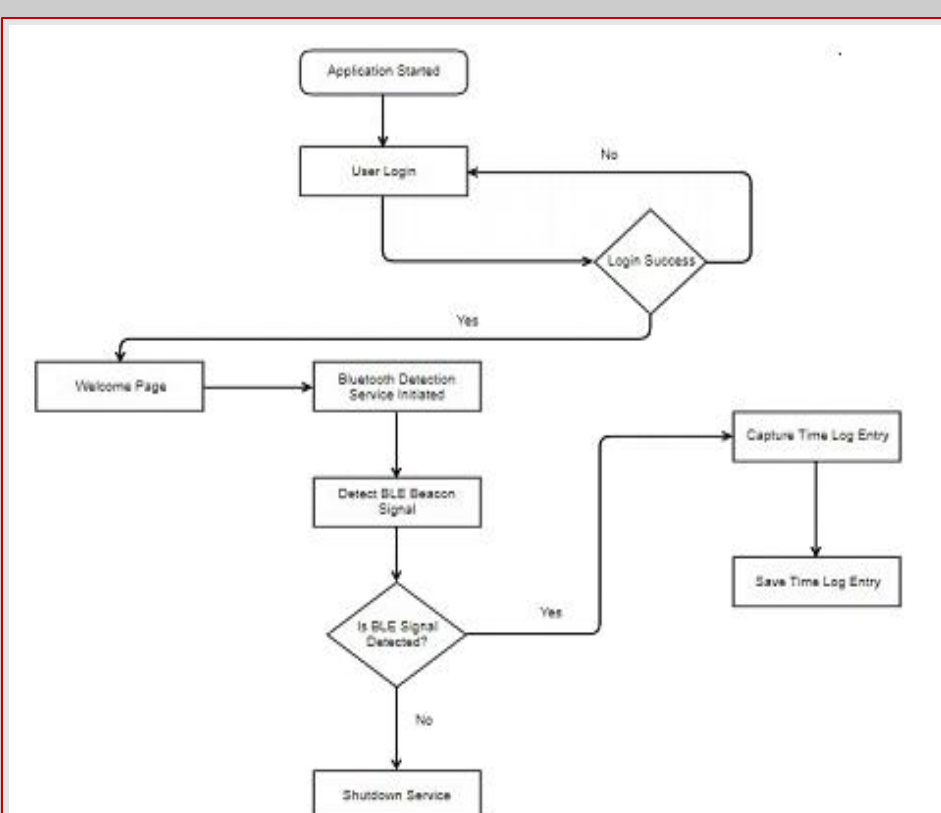


Figure 1 - Flowchart

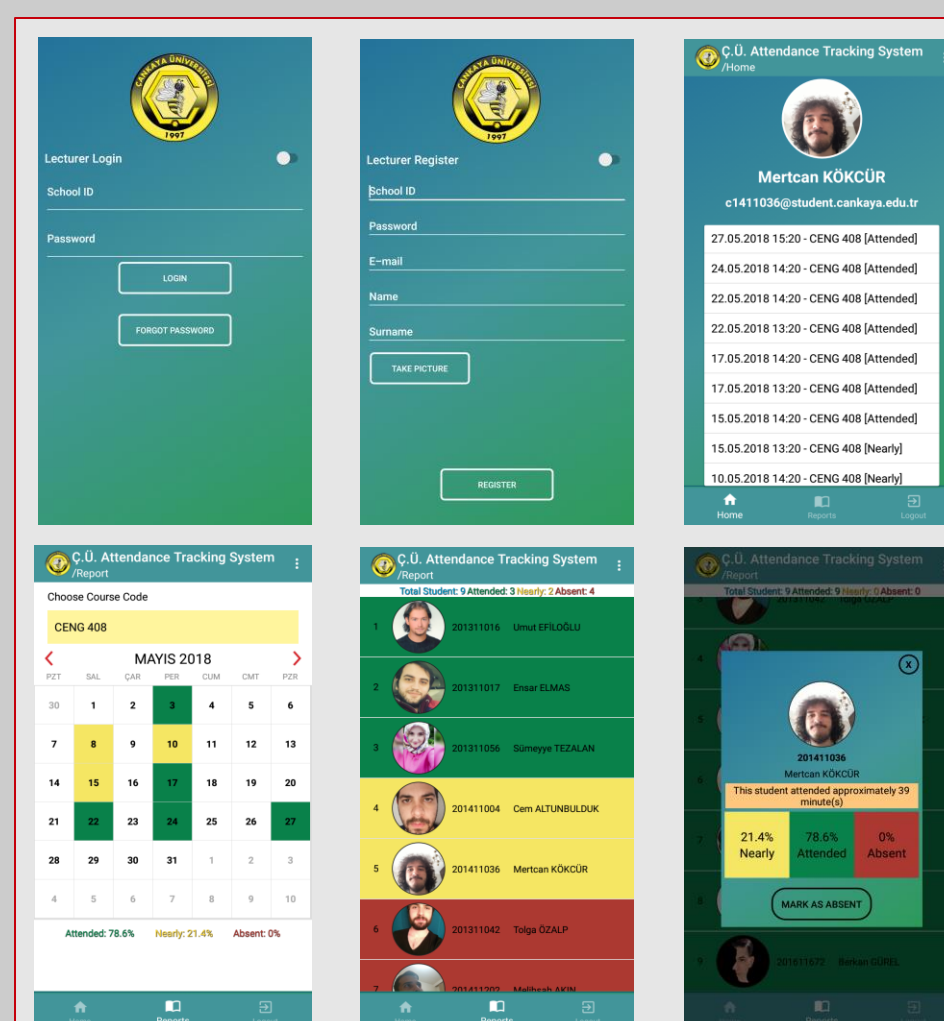


Figure 3 – Mobile Application



Figure 5 – Project Team