

Year 4 Project Proposal Form

Project Title

NFC attendance tracker

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Proposal Description

NFC (Near Field Communication) is a set of communication protocols that enable two electronic devices, one of which is usually a portable device such as a mobile phone, to pass data to one another by touching them or putting them very close together. My proposal is to use this NFC technology to keep attendance at particular events, such as lectures or project supervisor meetings. A lecturer would own a personal NFC tag and students would use the mobile app to scan the tag and record their attendance.

Background

Keeping track of attendance can be very useful in a number of scenarios. Some college lecturers like to award students who have high attendance records. Secondary schools have mandatory attendance and need to be aware of truancy. Keeping record of meetings and numbers of attendees is important in any educational or work environment.

This project seeks to make this easy, with zero configuration other than the user's details. It does not need timetables, student lists, lecture locations. A simple scan of a NFC chip to show that the student and lecturer were at the same event.

Achievements & Justification

In a university situation, the lecturer would have an NFC tag, programmed to belong to him. In a class, the tag would either be passed around or placed at a point in the room, and students would use their mobile device to scan the tag. This will record the student's attendance to this particular time slot, and it can be assumed that if 10 people scan the tag at the time time period, they were all at the same event. This info would be recorded and stored in a database so that the lecturer can then look at a web interface that shows a timetable with the events and how many people were in attendance. Clicking into the event will show more detail such as individual student names.

This technology would also be used in the recording of the mandatory project supervisor meetings. A tag could be set up in the supervisor's office which the student would scan and record the meeting with the supervisor, removing the need for paper supervision forms.

Programming language(s)

Java, JavaScript, HTML, CSS, Database handling language to be decided

Programming tools / Tech stack – e.g. compiler, database, web server, etc.

NFC tag

NFC technology

Database

Android JDK

Android Studio

Web interface

Learning Challenges

Programming an NFC tag

Retrieving information from NFC tag and scans

Storing information to a Database

Manipulating NFC functionality in a mobile device

Hardware / software platform

NFC tag

Android mobile application

Web interface

Special hardware / software requirements

NFC chip/tag

NFC mobile technology