

NFC Based Students Attendance System

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Abstract-In India almost in every colleges student's attendance process is recorded by circulating a paper, so that they can note down their names or they can do validate signature in front of their names. In case if there is shortage of attendance register paper, lecturer have to call out the names of each and every student. This whole attendance process is actually a time consuming process which nearly takes 5 to 10 minutes depending on the strength of the class. Because of this process most of the lecturer's time is always wasted performing the same. After that lecturer have to manually enter each and every student's attendance in their attendance register which is again headache for them and also after every 5 to 6 weeks they have to enter the no of lectures attended by students, so that they can be able to calculate the average percentage of the students who attended theory lectures and practical's. After that they also have to manually check the each and every student's percentage so that the defaulter list can be generated as per their attendance record. In this lengthy process there might be chance of making mistakes as it is done by humans which will also affects the student's academic percentage. so to reduce this whole lengthy process and issues created due to the same, we invented one technology which is "NFC based students attendance system". In this we will get the attendance records and automatically generate the defaulter list. In this project we introduce a smart attendance system using NFC that will simplify the attendance process, by just tapping the students NFC based identity card on lecturer's NFC enabled mobile phone that will automatically record that specific student's attendance in the database so it reduces the time as well as effort of the lecturer.

Keywords:NFC,NFCCard, Attendance, NFC card number, NFC tag.

I. INTRODUCTION

For the conventional day to day attendance practice a professor enters the classroom usually and verbally calls out student names in order to mark the student's attendance or pass a sheet of paper where students have to mark their name or sign on it. Both practices have their own disadvantages. In the first case, if the entire strength of the students attend the lesson then verifying individual students by their name and last name might reduce the intended lecture time; also friends of absent

students may try to mark their attendance. These practices place lecturers or professors and their colleges at considerable disadvantages when it comes to taking attendance. To correct these flaws, we decided to put the NFC tag into use here. Each NFC tag has a unique ID which cannot be duplicated. These NFC tags are then given to students of every faculty and department in college. While students who enter classrooms touch these tag on lecturer's NFC enabled mobile phone, NFC readers program on the lecturer's mobile phone will read individual tags, identify and verify the students from their respective NFC tag and send the attendance data to the lecturer's smart phone. Smart phone, in turn, sends all the attendance data it has collected to the main server by the end of the lecture, or by day end according to the preference of professor. This results into saving of precious lecture time of the professor.

NFC is a new, short range, high frequency, low bandwidth, and wireless communication technology. NFC communication is activated by touching two NFC enabled devices together, or bringing them into close range. The range is usually few centimeters, and it operates at the frequency of 13.56 MHz the maximum data transfer rate is 424kbit/s. NFC support three modes of operation they are: reader/writer mode, card emulation mode, and peer to peer mode. The communication in reader/writer mode is between NFC device and a tag in which device either read from a tag or write to a tag. Peer-to-Peer mode involves exchange of data between two NFC devices. While in card emulation mode the NFC device acts as a tag which will appear to an NFC reader as a contact-less smart card. One popular application of NFC is Smart Poster. The concept of Smart

Poster is to keep information like URL, phone number, SMS into a tag and attached the tag to a physical object. This information can be accessed by touching the tag with NFC enabled device. The Smart Poster has some actions that can Initiate a phone call, can launch a URL, or can send an SMS.

II. PROPOSED SYSTEM

In the proposed system we will try to minimize most of the flaws of the existing system. In the proposed system we use a NFC card as an Identity-Card for students. By using this NFC card we will mark attendance of students. Attendance record of

each student with the lecture is stored on main server side. The steps in the proposed system are as follows[1]:-

NFC card of every individual student will be registered with an Admin. A unique Identity-Card will be assigned to individual student. Chances of duplication will be overcome primarily itself[1].

- Then lecturer will go for lecture with an NFC enabled phone and the proposed attendance android application preinstalled in it[1].
- Lecturer will login in the application using his/her username and password. After successful login lecturer will set class time and duration for the attendance record[1].
- Lecturer passes the smart phone to every individual student. Student has to scan their NFC card on the lecturer’s smart phone. When a student scans card on mobile then the application reads card number from NFC card. Android application will send the NFC card number to main server. At main server side student's attendance is recorded for that respective lecture[1].

III. DESIGN AND IMPLEMENTATION

A. Modules

a). Admin Module:-

- The admin module is one of the important module in this system it has total control over the system, various functionalities are managed by the person which is the admin.
- The admin can be any trusted person within that organization.
- The web interface and the database is managed by the admin.

b). Attendance Marking Module:

- *Mobile Attendance (Android Mobile App):*
 - The android mobile which is NFC enabled is the main System requirement for this application
 - The attendance is recorded via the NFC enabled mobile phone which has our developed android application preinstalled.
- *Mark Attendance:*

The faculty/lecturer will have the NFC enabled mobile phone on Which she’ll run our application by using some validation like login or password. On successful validation; he/she would trigger the feature of start attendance. During this phase students need to come forward to mark their attendance or the

mobile phone can be passed on to the students for marking attendance.

- *Student Verification:*

The students need to tap their NFC card on the NFC enabled mobile phone. By this the student data will be retrieved from the NFC tag which is embedded inside the NFC card and attendance of that particular student will be marked accordingly in the database.

c). Faculty Module:-

- Faculty will tap their NFC card in the mobile app .then in that app the faculty can start the attendance process and pass the mobile to the students
- The students have to tap their NFC card and their attendance process will be successfully completed.
- The faculty can access the student’s attendance record.

d). Students Module:-

- Students can check their attendance detail ,their parents will be notified in case of low attendance.

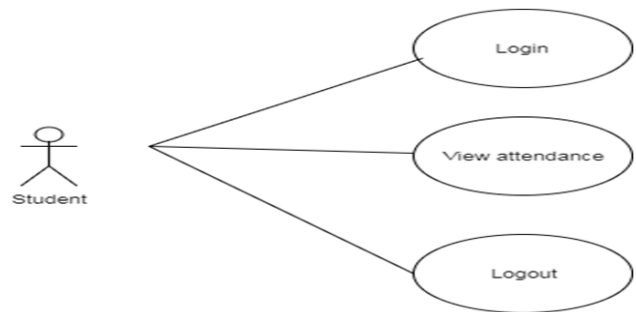


Fig 1: Use Case for Student Module

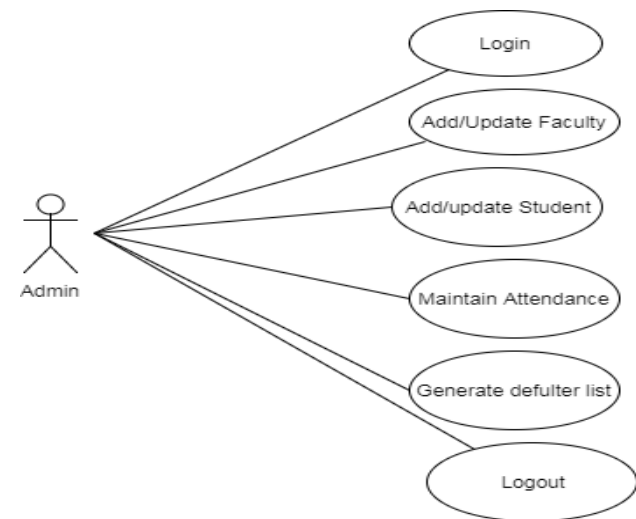


Fig 2: Use Case for Admin Module

IV. SYSTEM FEATURES

A. Scanning students NFC card:-

The application program(android app) which will be installed in the NFC enabled mobile is responsible for scanning the NFC tag and send its details to the database server.

B. Recording student's attendance:-

Based on the details received form the mobile application the attendance is marked in the database.

C. Generating defaulter list:-

By analyzing the data stored at the server the administrator can generate the list.

D. Sending notification to parent's:-

Helps the parents to track the current progress of students attendance.

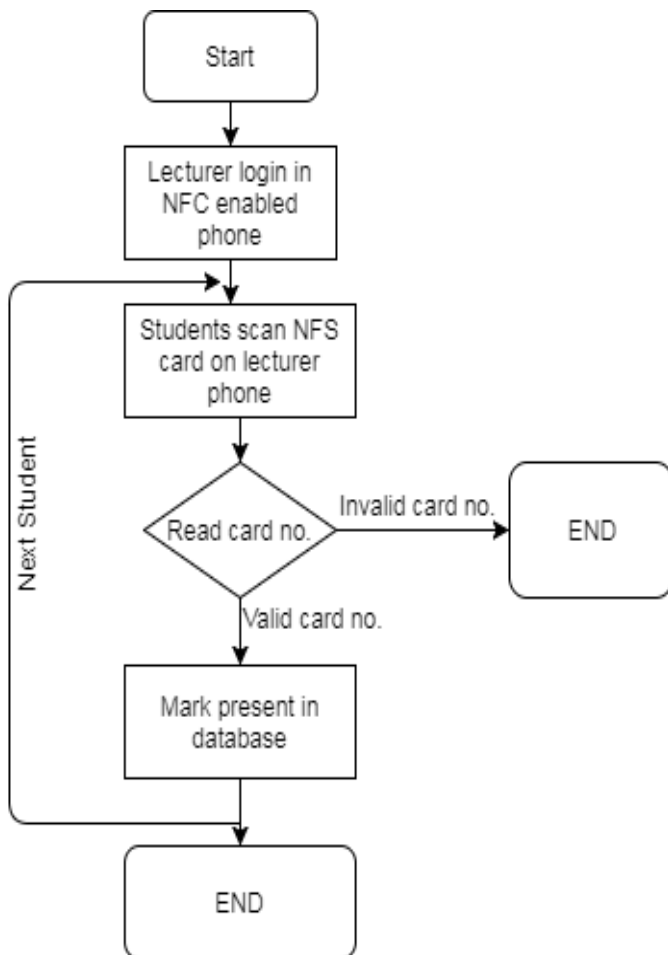


Fig. 3: Flowchart of Student

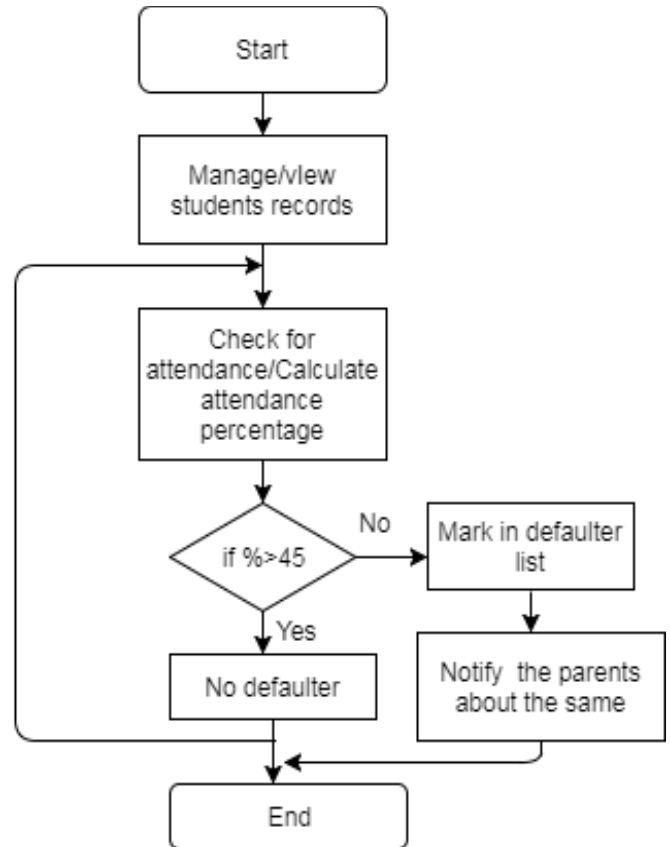


Fig. 4: Flowchart of Admin

V. ADVANTAGES

- Defaulter list will automatically be generated from the application.
- Reduced manual paper work.
- Chances of data lost is reduced.
- Reduces the chances of proxy attendance.
- Provides a facility to handle large amount of data.

VI. CONCLUSION

The NFC system is flexible, that is by adding more modules it can also be extended. In NFC based student attendance system are using NFC technology within our college or organization but the system could be extended in the future by functions aiding the examination process at the university or in various application. In our proposed system we are providing a platform for both students and faculty. The students can view the attendance using web site and to the faculty prospective it helps them to save time as well as manual work. The tags employed for the proposed system are NFC tags, and the coding has shown reliable and stable outcomes. Also, this application has secured important data that we have stored in these tags.

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