



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

E- Hall ticket Using NFC

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DOI: 10.29322/IJSRP.X.X.2018.pXXXX <http://dx.doi.org/10.29322/IJSRP.X.X.2018.pXXXX>

Abstract— Candidates seeking to take part in any examination that is held in India must use hall tickets as their entry ticket. Unfortunately, due to their lack of proficiency, many candidates seek the assistance of illegal individuals to pass the exam. The proposed system utilizes state of the art innovation to guarantee that personality extortion is defeated effectively. The system suggested does away with the traditional hall tickets embedding them with an NFC (Near Field Communication) tag and scanning the NFC tag as a medium of verification of the identity of the candidate. In today's Indian education system, candidates receive Hall Tickets in addition to their identity cards from the institution they attend in order to indicate and verify their identity before entering the examination hall. These identity cards and hall tickets are frequently forged to illegally represent a candidate's false identity. Large number of trees are being cut down just to make hall tickets which are not necessary. The aim of the developed system is to identify these loopholes and plug them wherever possible.

Keywords— NFC, Examination, Hall ticket, Web application, Mobile application, smart card

I. Introduction

For peoples who are taking exams, hall tickets are essential documents. It functions as a means of identification that authenticates the student's identity. Traditional paper hall tickets, however, have a number of drawbacks, including the possibility of loss or harm, the possibility of counterfeiting, and the inconvenience. By utilising contemporary technology, Electronic Hall Passes, or E-Hall tickets, can get around these restrictions. NFC, also known as near field communication, is one such device. This study examines the idea of an electronic hall

tickets using NFC, along with its benefits, drawbacks and practical application. IOT is a recent internet revolution that uses the internet to connect various items to a large network. IOT innovations are urgently needed. IOT is used in a variety of industries and disciplines, including health, travel, education, business, and others. It aids in the digitization of physical items. There are numerous ways to establish communication between these things. NFC is used in the designed system, which is built into the identity card of student.

II. Background

A. NFC (Near Field Communication)

NFC is a short-range wireless communication technology that allows two devices to communicate when they are brought close to each other. NFC-enabled smartphones and smart cards can store and exchange data with each other. The technology is widely used for contactless payments, ticketing, access control, and information exchange. Although NFC technology was originally designed for applications like payment and ticketing, a new trend on applying NFC technology in entertainment and social applications receives more and more attention.

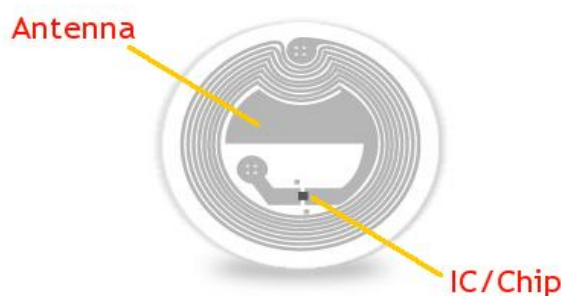


Figure 1. NFC chip

B. E-Hall ticket

A digital version of hallticket is an E-hallticket. It is an electronic document that contains all the necessary information about the student, such as name, roll number, exam date, time, and centre. It is issued by the exam conducting authority and can be accessed and verified electronically.

C. NFC-based E-Hall Ticket:

NFC technology can be used to create secure and convenient e-hall tickets. The process involves encoding the student's information on an NFC chip or tag, which can be embedded in a smart card or sticker. The student can then tap the NFC-enabled device, such as a smartphone, against the NFC tag to access the e-hall ticket.

III. Literature review

In contrast to the systems currently in use in Romanian hospitals, the solution described in this paper is based on a web platform that makes use of a NoSQL MongoDB. Based on readings from an NFC chip and the placement of beacons in hospital rooms, the MongoDB database and a mobile application can be used to manage medical records at a hospital and preview records from a mobile device. The purpose of this essay is to emphasize the benefits that technology has given to the medical industry for all parties concerned [1].

There is an integrated, water-, heat-, dust-, and pressure-resistant micro-NFC chip. The production process itself writes a unique ID into the chip. For protection purposes, the ID is encrypted. It makes it possible for users to send and receive emails without disclosing personal information. The cross media smart postal application automates a significant portion of the traditional mailing procedure, including registration, payment, distribution, tracking, and receipt authentication, by utilizing NFC-enabled mobile handhelds and RFID-enabled envelopes, stamps, and parcel packages. [2].

IoT enables the notion of a setting in which Tags are added to the objects. With the aim of obtaining information and services, those Tags store encoded data in a standard format, or at the very least in a format that is known by the objects or devices that communicate with them. In keeping with the idea of a smart hospital, surveillance video cameras can take pictures and videos of the hospital to evaluate the state of the equipment, rooms, hallways, and offices from a maintenance and hygiene perspective for future development and improvement. [3].

The Abstract NFC Reader module is a hardware abstraction layer that interfaces to different NFC readers and can recognise an RFID when it is nearby. The interaction with the objects from a scenario could be more or less complex regarding some parameters as the type of "sensor": whether is active (it has its own autonomous power) or passive, or the information and services associated to the object [4].

IV. Proposed model

A developed model consist a app built using Django and react native. INFC is an app that store student information about academics and hallticket. To reduce use of paper for hallticket and easy access to hallticket at exam center INFC is developed.

A. Working overview

Earlier we used NFC in mobile but with the emerging technology we are going to use it in wearable. The proposed model is to make a model which plans to present how we utilize NFC innovation and implant encoded chips inside the card. After loading required data in the NFC band, an app with a centralized database will scan the band to load the saved information about a particular student. NFC chip will contain a unique key for a unique student which redirects to the associated record of student in the database. Scanner will scan a card and hall ticket will be displayed on app of supervisor. Exam candidates can simply tap their NFC-enabled device against an NFC reader at the entry point, eliminating the need for manual verification of hall tickets. The real-time application of e-hallticket using NFC (Near Field Communication) technology is to enable secure and fast access to hall tickets for students or exam candidates. NFC-enabled e-hall tickets can be stored on smartphones or other NFC-enabled devices, which can then be used to gain access to exam halls or testing centres.

B. Architecture

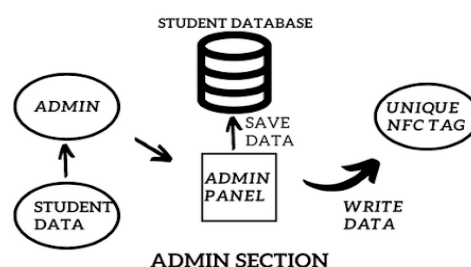


Figure 2. Architecture of Admin section

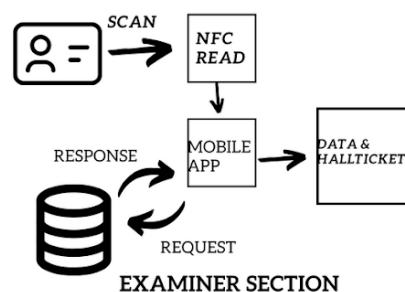


Figure 3. Architecture of Examiner section

C. Project functions

The following functions were programmed for the e-hall ticket using NFC project:

Users can create an account or log in to their existing account using their email address. Once logged in, users can add student information. Student information contains iprn, prn, name, department, year, pattern. User can add single student or multiple student at a time. The information is stored in the sqlite database server. Upload hall ticket pdf from this functionality. Hall tickets will be attached to particular students. The generated hall ticket information is written onto the NFC tags or chips using the INFC app. The NFC tags or chips are placed on the smart card reader, and the hall ticket information is written onto the tag or chip. The user can place their NFC-enabled smartphone or NFC reader hardware near the NFC tag or chip to read the hall ticket information. The application reads the information from the NFC tag or chip and displays the hall ticket on the user's smartphone.

D. Database structure

A powerful open-source relational database management system (RDBMS), PostgreSQL is also known as Postgres. It is known for its unwavering quality, versatility, and high-level elements. PostgreSQL organizes data in tables with rows and columns in accordance with the relational model. It gives you a structured way to store, query, and manage data. The application manages a database with the following structure: The Users collection stores data regarding the different types of users for the application: admin, departmental staff. It shows which person has authority to manipulate data of student of particular department. The studentInfo collection saves student data such as IPRN, PRN, name, department, year, pattern, hallticket image, and NFC tag id. uploadPdf collection saves year, department and pattern along with hallticket pdf. It allows to upload a complete hallticket pdf.

V. Execution

A. Algorithm

- Step 1: Start.
- Step 2: Set up the necessary configurations and permissions for the app.
- Step 3: Verify the user's authentication details against the database.
- Step 4: Grant access to the app upon successful authentication.
- Step 5: Add student details and save it to database
- Step 6: Upload hallticket pdf or attach hallticket manually.
- Step 7: Add tag id to each student/ Write to NFC card
- Step 8: Scan NFC card. When an NFC tag is detected, read the tag data.
- Step 9: Stop

B. Pseudo code

read- request:
READ response

COMPUTE with hardware module
CALL Read-NFC
PRINT response.json

write-request:

BEGIN
READ response
COMPUTE get response
CALL write-NFC
EXCEPTION
PRINT e

C. Graphical User Interface

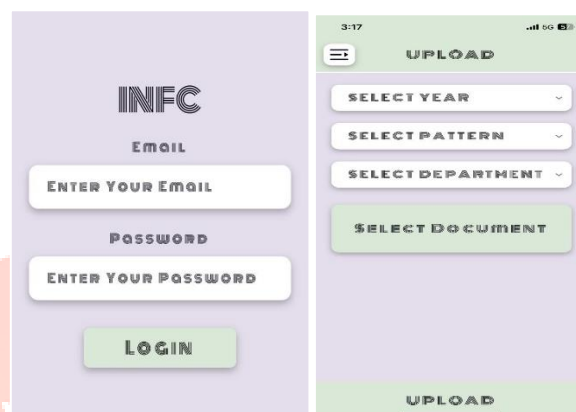


Figure 4: Login Page

Figure 5: Upload Hallticket

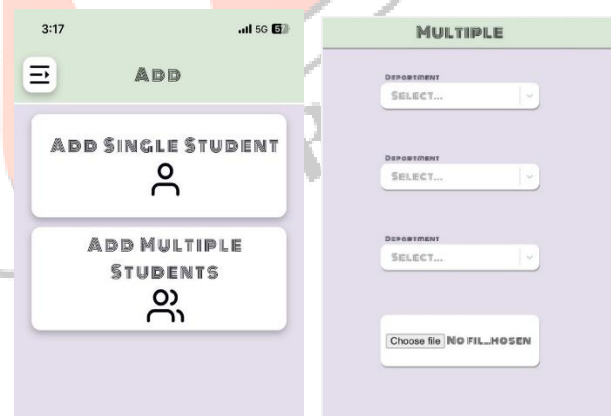


Figure 6: Add student

Figure 7: Add multiple student

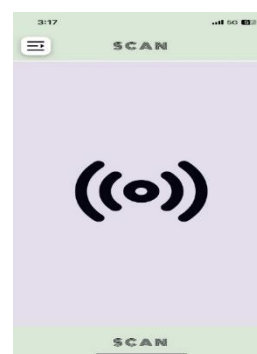


Figure 8: Scan Page

VI. Conclusion

This INFC app can overcome all drawbacks of existing system. The system provides adequate security and reduces manual work. The current system has several shortcomings and many other difficulties. To work well, the developed system tries to eliminate or reduce those difficulties. In some way, designed system helps the user to reduce the workload and mental conflict. The developed system helps the user to work in a user-friendly way and to do their job easily and quickly. This system saves tons of paper that saves a huge number of trees, this is the main purpose of this system. Proposed system provides accurate result within less response time.

VII. References

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