A Project Report on

Smart Attendance Management System

Submitted in partial fulfilment of the requirements

in

Computer Science

by

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UNIVERSITY OF MUMBAI

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Approval Sheet

This Project Report entitled ***"Smart Attendance Management System"*** Submitted by ***"Komal Lonkar (17102029), "Veda Kowale" (17102052), "Apurva Patil" (17102049)*** is approved for the partial fulfillment of the requirement in ***Computer Science Engineering*** from ***University of Mumbai.***

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Place: A.P.Shah Institute of Technology, Thane

Date: 12/12/2020

CERTIFICATE

This is to certify that the project entitled ***"Smart Attendance Management System"*** submitted by ***"Komal Lonkar (17102029), "Veda Kowale"(17102052),"Apurva Patil"(17102049)*** for the partial fulfillment of the requirement for award of a degree ***Bachelor of Engineering*** in ***Computer Science Engineering***, to the University of Mumbai, is a bonafide work carried out during the academic year 2020-2021.

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Thane Date: 12/12/2020

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

_____

(Signature)

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(Komal Lonkar, 17102029)
(Veda Kowale, 17102052)
(Apurva Patil, 17102049)

Date: 12/12/2020

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Project Conception and Initiation

1.1 Abstract

In the world of modern technologies phones play a vital role in our life. It’s a device which everyone has no matter if it's high-end or cheap. The basic functionalities are fulfilled by each and every smartphone. Smartphones can be used to speed-up the process of taking attendance. This project ‘Smart Attendance Management System’ focuses on the problem of how the process of taking attendance could be simplified. The project proposes a system which is based on using a QR code. QR stands for ‘Quick Response’ they can be read quickly by cell phone. It stores information such as the lecture number, name of professor, etc, which is used in this proposed system. It will be displayed by the professor on a projector so students can scan that QR using their cell phone.

1.2 Objectives

Taking student’s attendance is the most important and crucial part of academics. This process cannot be skipped and cannot be taken lightly. Professors spend their time from the lecture to take attendance and to verify that no student which isn’t should be marked as present. This procedure is repeated for every lecture. Now that technology has improved and everything is getting digital, there is a need for this process of taking attendance to be modernised.

The Smart Attendance Management System uses a QR code, which will be displayed by the teacher in the lecture. The students have to scan using the QR code using a smartphone application. The system uses location tracking to confirm that the students are present in the vicinity where the QR is displayed i.e., classroom and that students away from the classroom will not be considered for marking the attendance. Also, to confirm that only the present students are marked present they will have to go through fingerprint authentication.

For this attendance system we have created an android application and a website. Students are required to login to the application and go through the authentication procedure and scan the QR which will be displayed by the professor using the website. Teacher can also review her attendance report using the website.

1.3 Literature review

Automated Attendance Management System can help schools and colleges in many ways. It will help save time and money by eliminating a great amount manual processes involved in attendance entry and calculations.

The first paper we have studied, named as “Smart Attendance System using QR Code” (Asri Nuhi, Florinda Imeri, Agon Memeti and Betim Cico, 2020). This paper addresses the attendance systems which had been used previously and provides methodology for the attendance system using QR Code. The proposed paper comprises of a device to be installed in a classroom which is connected to a camera and the internet. The lecture is registered once the processor reads the QR code and the students are required to scan the code using their mobile displayed on the device at the end of the lecture.

The second paper named as “Enhancement of QR code Student’s Attendance Management System using GPS” (Hussam Elbehiery, 2019), makes use of two applications. One application is a Desktop application which is used for storing attendance of students and the other application is a mobile application. This paper also makes use of GPS (Global Positioning System) to avoid false registrations. The desktop application is used by the teacher to generate and display the QR code.

1.4 Problem Definition

Time taken by the instructors to take attendance may sometimes be viewed as a waste of the lecture time, especially when classes are big. For that, we have proposed a way to automate this process using the students’ devices rather than the instructor’s device. In other words, the instructor need not do anything extra during the class beyond presenting the slides of the subject to be taught to the students.

Even though similar platforms are already developed, we believe that the proposed platform will be more attractive for several reasons: It has a great advantage, among all types of code scanning technology; the QR Code attendance system is the most accurate and efficient method of maintaining the attendance in a database and controlling it from any intelligent device rather than wasting paper. Since it is online, there is no need to keep a track of attendance sheets which may get misplaced.

1.4 Scope

The Smart Attendance Management System will be use in Schools and Colleges. Currently, manual track of attendance of the students has to be kept. However, with the help of the proposed system, the time and paperwork will be reduced. This saved time will instead be used for teaching the students.

1.5 Technology stack

Frontend

- HTML
- CSS
- Bootstrap
- JavaScript

Backend

- MySQL
- PHP
- Java

1.6 Benefits for environment and society

- An integrated attendance management system can provide good visibility of all data, wherein the chances of attendance records getting misplaced is almost negligible**.**
- As, humans are prone to errors, automated attendance management systems ensure accurate time records and minimize the errors with manual data entry.
- The digitized system allows marking attendance instantly from a mobile phone or laptop. The data updated from the teacher's laptop or mobile phone will be instantly available across all relevant users in the system.
- With all reports and tools available in digital form, there is no need to print the attendance registers and make copies of the reports to be stored at different offices. This saves paper wastage and requires less storage space.
- Because of the digital nature of the data being stored and retrieved the attendance reports can be generated instantly by the administrators of the system.

Project Design

2.1 Proposed system

The proposed solution offers a QR code and fingerprint verification for the students to scan it via a specific smartphone application. The code along with the student identity taken by the application will confirm the students' attendance. The proposed system also takes care of preventing unauthorized attendance registration using multi-factor authentication.

The Smart Attendance Management System comprises of two applications. One application is a web application through which the professors will generate the QR code by entering the lecture details. The web application will also display the attendance status of the students which will also be available for downloading. The mobile application will be used by the students to scan the code which will be displayed by the teacher. The mobile application will also notify the students that they have marked their attendance online successfully.

A QR code (short for "quick response" code) is a type of barcode that contains a matrix of dots. It can be scanned using a QR scanner or a smartphone with built-in camera. Once scanned, software on the device converts the dots within the code into numbers or a string of characters. This QR will be storing lecture details which will be an efficient way to store rather than wasting a sheet of paper every day.

QR code will speed up the process reducing the taken by traditional procedure significantly. It will eliminate the need for storing the paper. Less maintenance is required in this system.

Since the system uses online applications, the use of external devices like QR scanner or biometric scanner is eliminated. Hence the maintenance and expenses for these devices is eliminated.

2.2 Design (flow of modules)

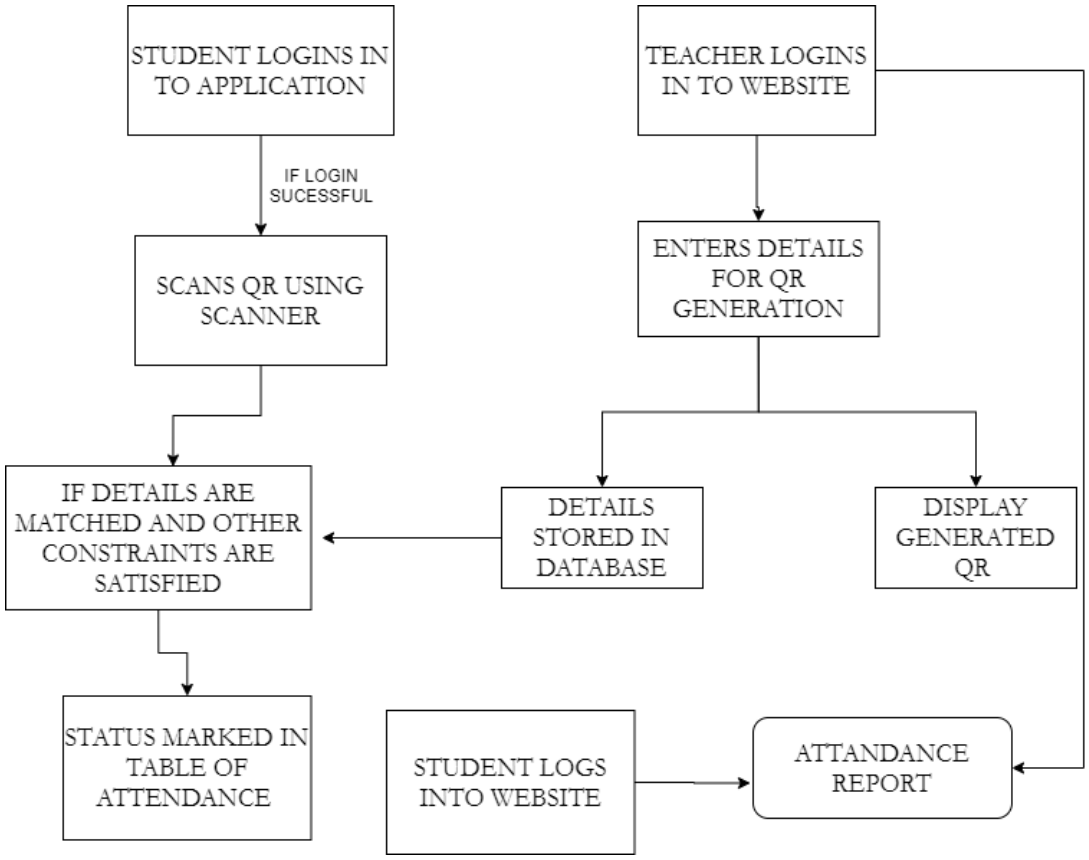
• Student: The student has to login to the system by using the credentials provided to them. After successful login, they have to scan the code displayed using the respective mobile application.

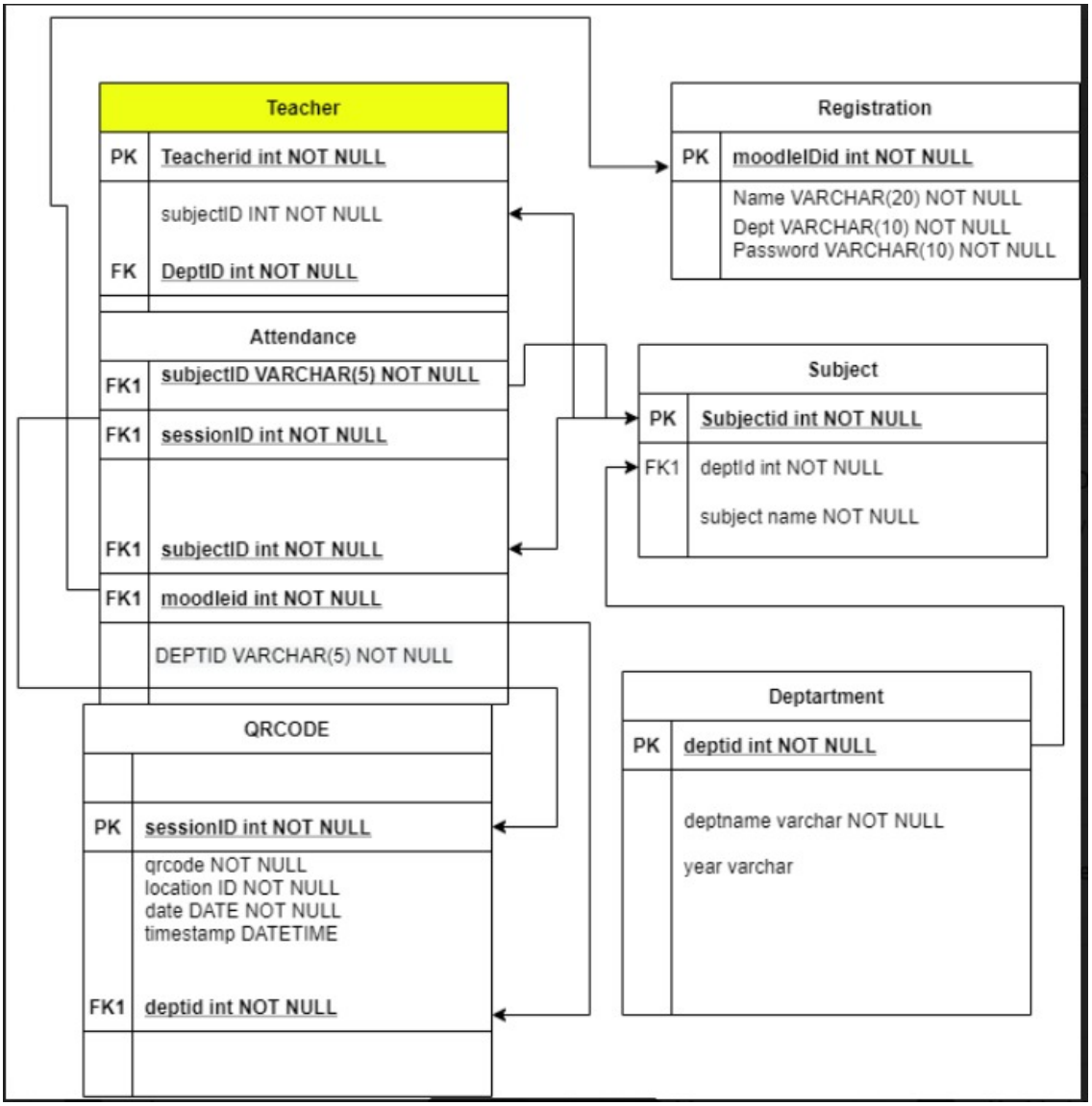
• Instructor/Faculty: The professor has to login to the web application and generate the QR code by entering the details of the lecture, which will be displayed to the students.

• Attendance Details: The instructor can view and download all the student details and the attendance list.

• Update data: The system also has an option to mark the attendance manually, in case the student is not able to scan the QR code.

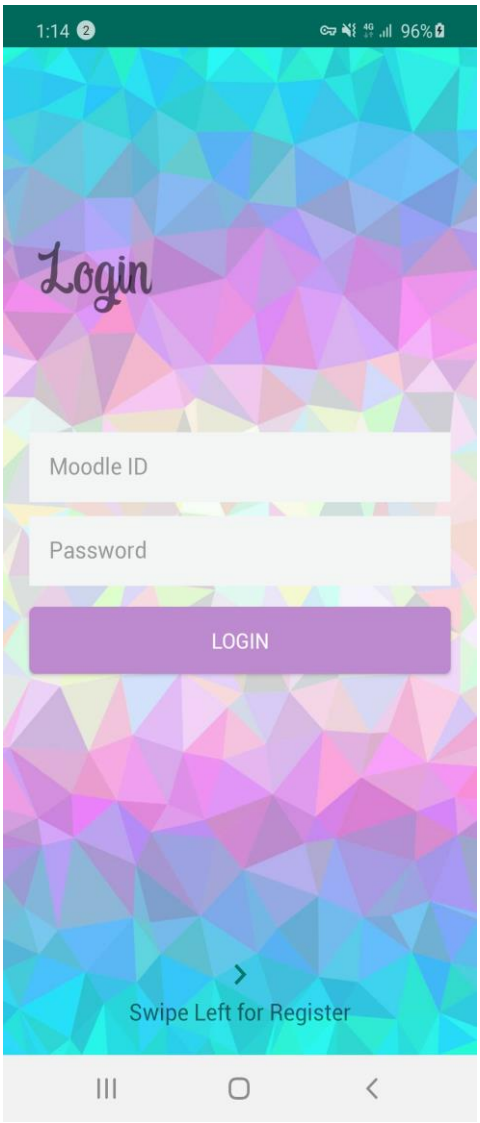
2.3 Class diagram

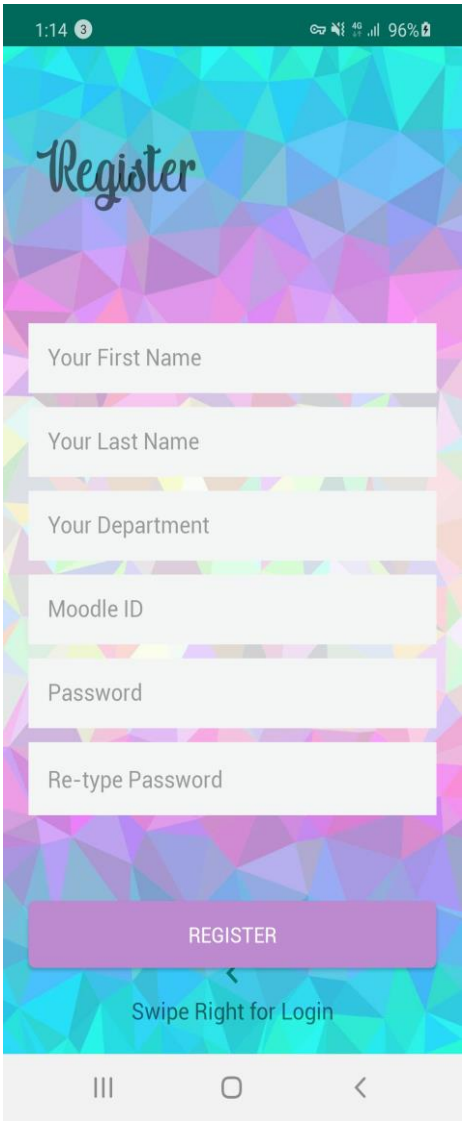


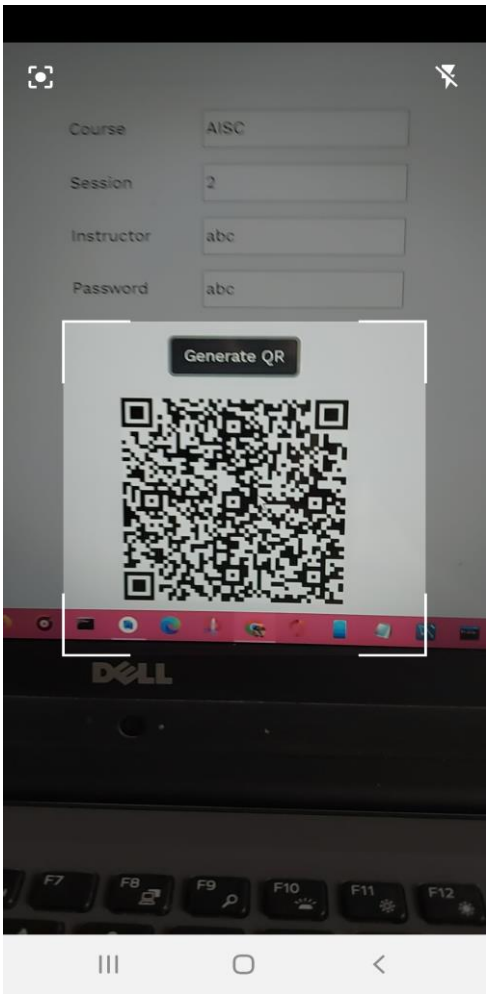

Teacher
PK
Teacherid int NOT NULL
subjectID INT NOT NULL
FK
DeptID int NOT NULL
Registration
PK
moodleIDid int NOT NULL
Name VARCHAR(20) NOT NULL
Dept VARCHAR(10) NOT NULL
Password VARCHAR(10) NOT NULL
Attendance
FK1
subjectID VARCHAR(5) NOT NULL
FK1
sessionID int NOT NULL
FK1
subjectID int NOT NULL
FK1
moodleid int NOT NULL
DEPTID VARCHAR(5) NOT NULL
Subject
PK
Subjectid int NOT NULL
FK1
deptId int NOT NULL
subject name NOT NULL
QRCODE
PK
sessionID int NOT NULL
qrcode NOT NULL
location ID NOT NULL
date DATE NOT NULL
timestamp DATETIME
FK1
deptid int NOT NULL
Deptartment
PK
deptid int NOT NULL
deptname varchar NOT NULL
year varchar

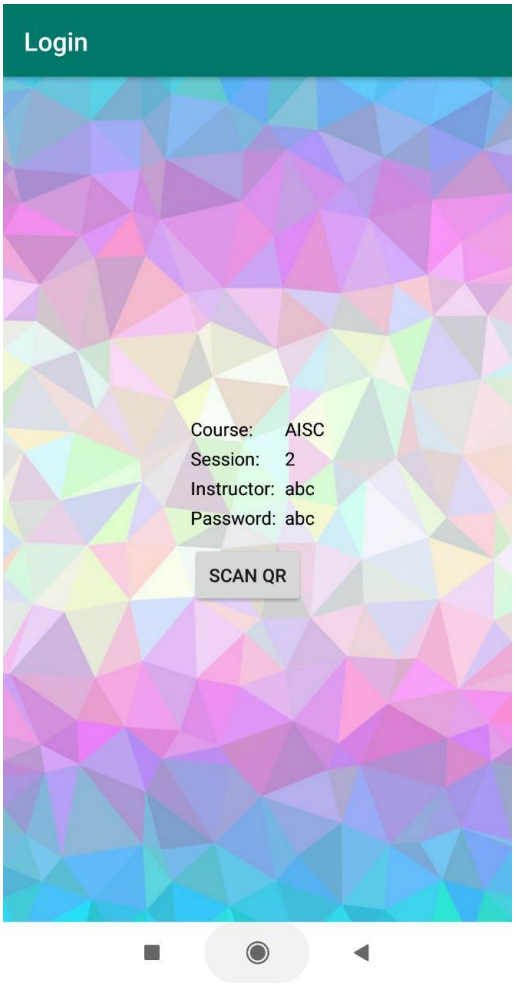
2.4.1 MODULE 1

ANDROID APP:



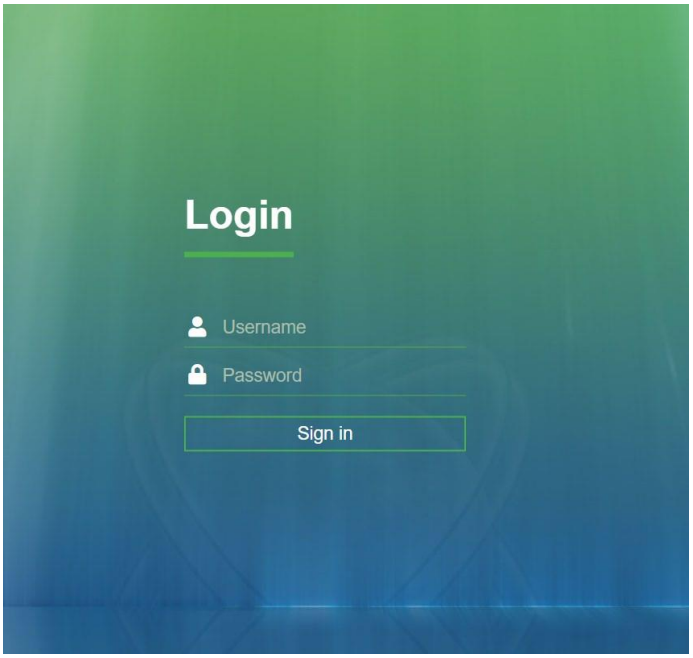


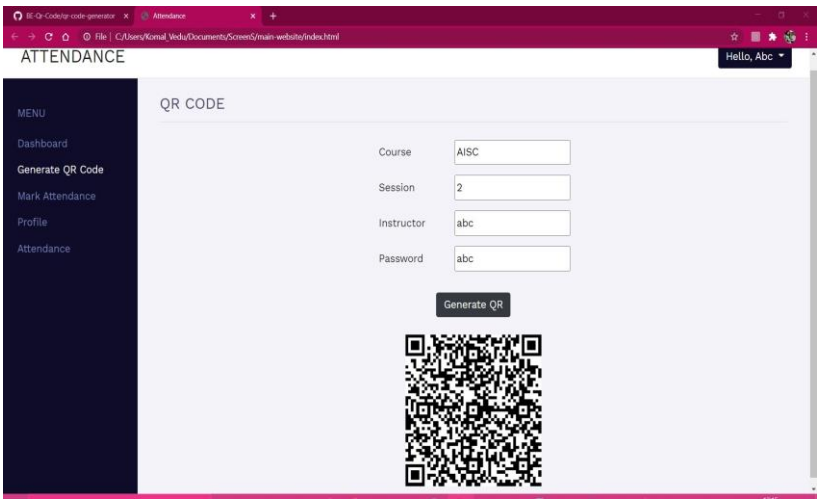




2.4.2 MODULE 2

WEBSITE:





Planning for next semester

- Adding the functionality to track the geolocation of the students.
- Adding Fingerprint authorization.
- Displaying the attendance of the students on the website.

References

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