

ROLLCALL MARKER – THE APP THAT MAKES YOUR PRESENCE MARKED !!

Problem Statement Title : An app that makes the process of marking the attendance hassle free through QR .

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Institute Name : DIT University

Theme Name: ROLLCALL MARKER



MOTIVATION

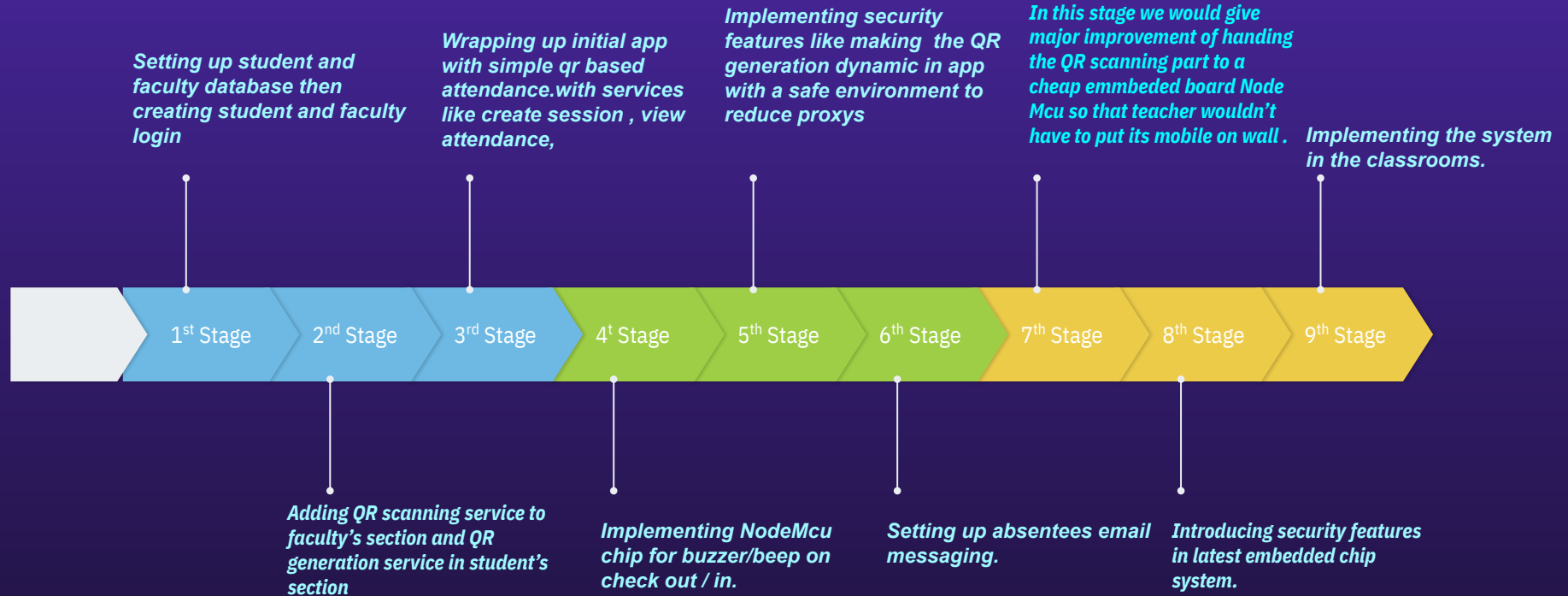


Going everyday to class to witness classmates marking proxys , teachers being frustrated due to confusion in marking attendance of a class with over 150 students , was really difficult for all of us. Usually 10-20 minutes before or after the lecture were wasted just in marking attendance of the students by taking each of ours names. So one day sitting in a computer class we 4 came together to develop an app that makes the process somehow faster and easier both for students and professors. Then of course this DITU – BuildAThon gave us the golden opportunity to keep our ideas before our professors.

SOLUTION

- After analyzing all aspects we came up with a solution of automating attendance system by implementing QR based attendance system.
- This would change the traditional method of manually recording attendance by calling names into fully automated and efficient system.
- RollCall Marker contains three interfaces one for faculty,another for student and one for admin.
- The faculty interface lets professor to create a session according to subject code and section of current class.
- On the other hand the student interface after successful login creates a QR that is unique for every SAP ID.
- When the scanner in the faculty interface scans QR of students ,it accordingly marks attendance in database of the particular day.
- The students now are able to mark their attendance all by themselves which saves a hefty amount of time ,is easy to operate and saves wastage of resources.
- Also for the purpose of preventing proxys, our app doesn't allow taking screenshot of the QR code page.

TIMELINE



Build-A-Thon Application technology stack

User Interface



(used for creating the frontend interface of the application)



(used for creating, scanning and dealing with the QR codes and scanner interface)

KARUMI



(used for managing the run-time user permissions)

Application Funtionality



(Used for managing all the funtionality work, managing all the buttons, textviews, edittexts, and what will they do when pressed or when updated)

Major Java functions used:

1. Intent (Used for switching between activities)
2. OnClickListener (used to give buttons life)
3. AutoCompleteTextView and ArrayAdapter<String> (For Creating list views)
4. BitMatrix, BarcodeEncoder and Bitmap (For generating barcode)
5. ZXingScannerView (For creating scanner)
6. DatabaseReference (For database linking)

Database management

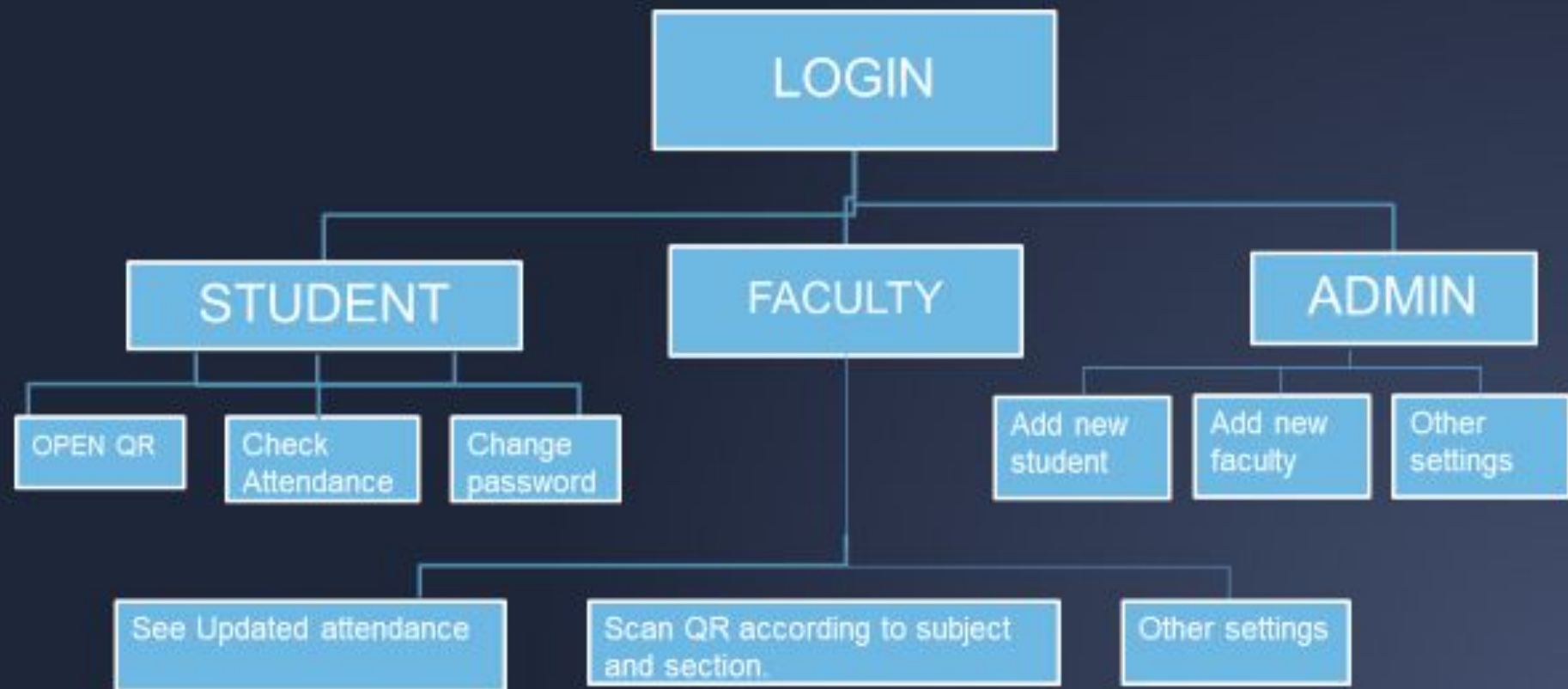


(Firebase online database is used for storing Various kinds of data like student info, Lecturter info, The module and course info, And majorly storing, managing, the attendance)

Function used for attendance storing:

```
DatabaseReference dbref;  
dbref = FirebaseDatabase.getInstance()  
    .getReference("qr_attendance");  
@Override  
public void handleResult(Result rawResult) {  
    String data = rawResult.getText().toString();  
    dbref.push().setValue(data)  
        .addOnCompleteListener(new OnCompleteListener<Void>()  
        {  
            @Override  
            public void onComplete(@NonNull Task<Void> task) {  
                Toast.makeText(scannerFac.this,  
                    "Data Inserted Successfully", Toast.LENGTH_SHORT  
                    scannerView.stopCamera();  
            }  
        })  
}
```

FLOW OF THE IDEA



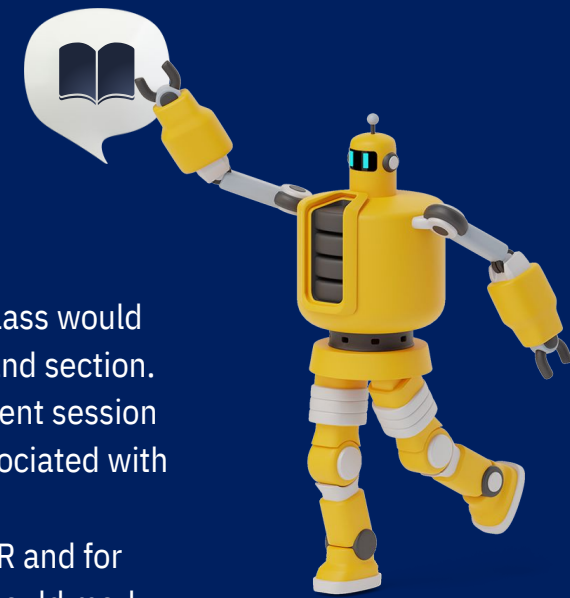
HOW WILL WE IMPLEMENT IT?

Mobile App

- We are using Firebase for storing data in database on cloud.
- The mobile app would recognise credentials and open the student ,teacher,admin interface accordingly.
- The Mobile App is based on Java with XML as frontend designing tool.
- The student interface has open Qr functionality and teacher interface has create session to scan QR according to subject and section as the key to select table from database.
- App also has other functions like show attendance ,change password ,etc.

Working

- The teacher on the beginning of class would create session with subject code and section. This would create file for the current session with credentials and also time associated with it.
- After which App starts scanning QR and for every valid QR scanned the App would mark attendance of the linked SAP ID in the file for the session.
- For student interface students can open their app and can click on generate QR .
- This will generate a QR that will be unique for each SAP ID and would act as the primary key for selecting required record from table in database.

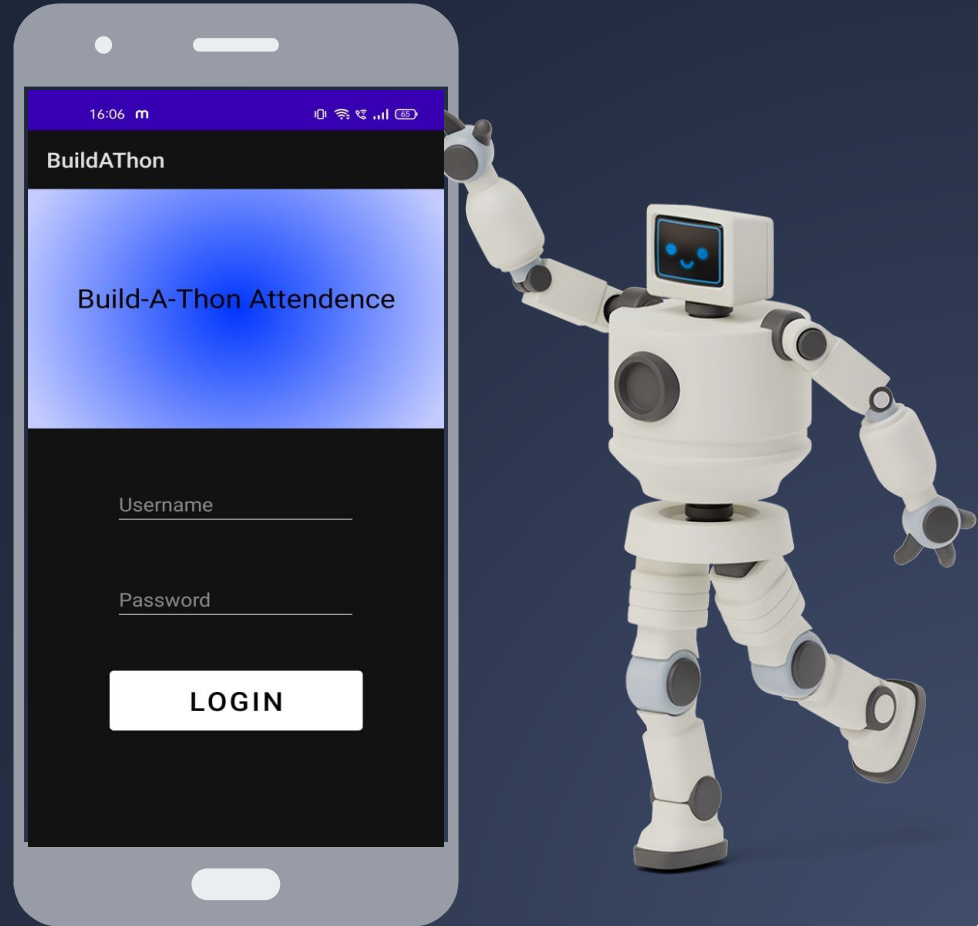


WHAT OUR APP LOOKS LIKE?

(AS OF NOW)

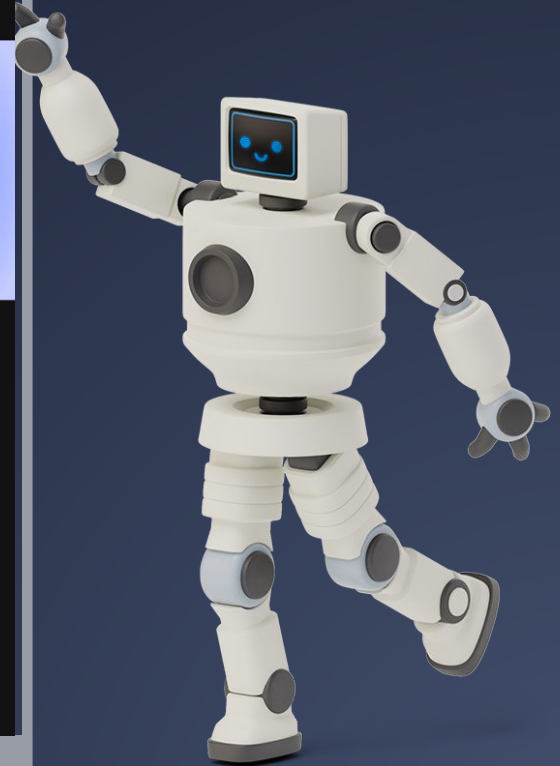
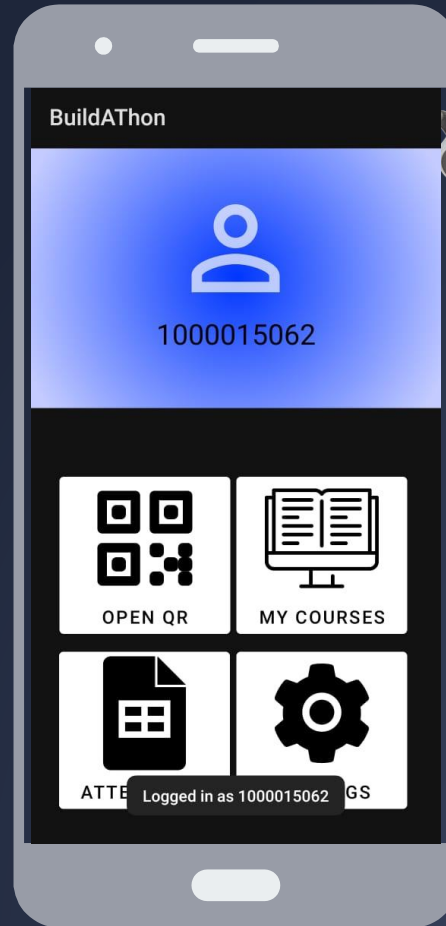
The android app is the main part of the project. Till now, we have come up with some basic UI that shows three tabs of logging in as student, faculty or admin . As soon as we enter the correct login credentials as per saved in the admin system we go into respective interface.

App is in its build phase and soon it would be ready for use.



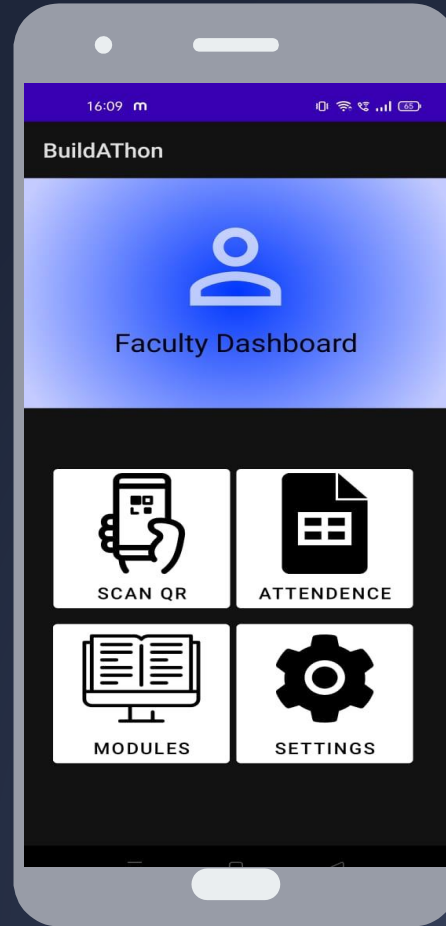
WHAT STUDENT INTERFACE LOOKS LIKE? (AS OF NOW)

As soon as we enter the correct login credentials as per saved in the admin system we go into student interface where we see options to generate QR and check attendance along with other settings like password changing.



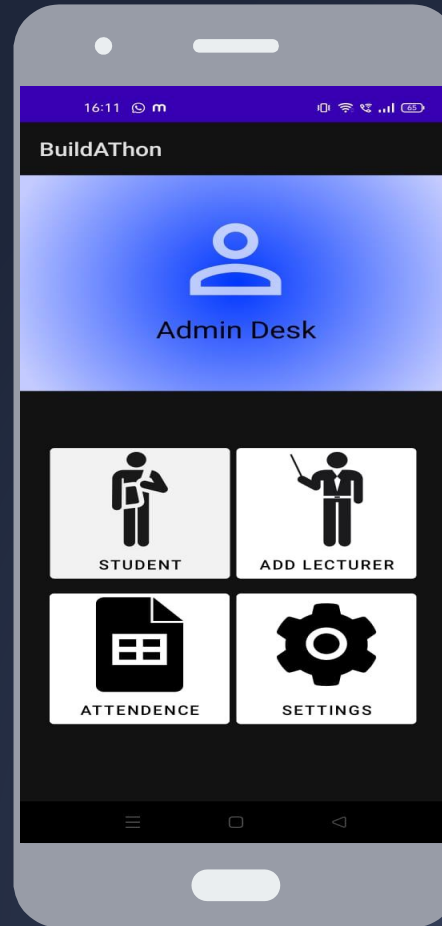
WHAT FACULTY INTERFACE LOOKS LIKE? (AS OF NOW)

As soon as we enter the correct login credentials as per saved in the admin system we go into faculty interface where we see options to scan QR and check attendance along with other settings like password changing.

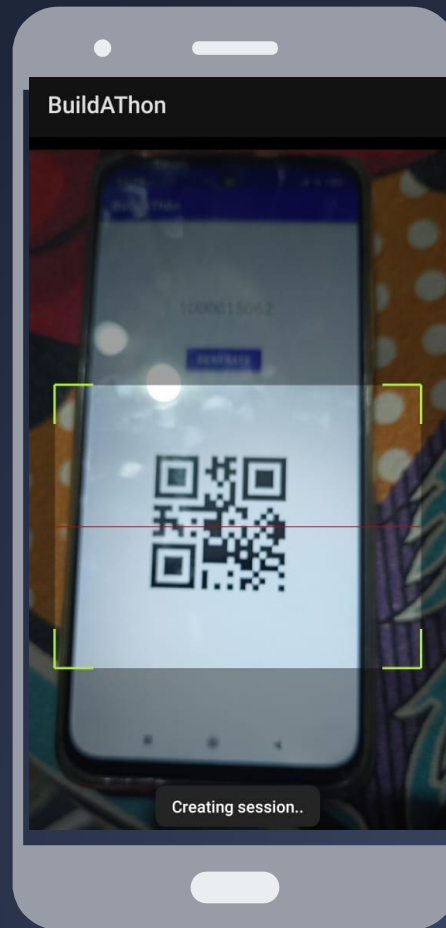
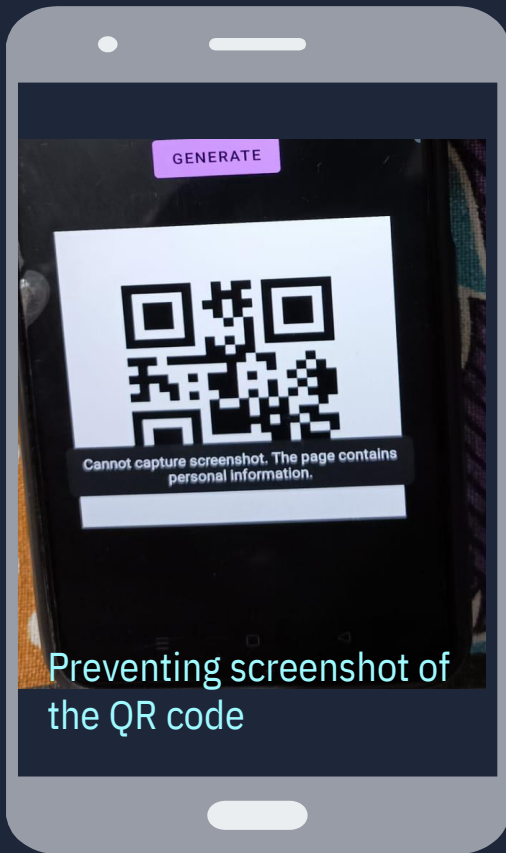


WHAT ADMIN INTERFACE LOOKS LIKE? [AS OF NOW]

As soon as we enter the correct login credentials as per saved in the admin system we go into admin interface where we see options to add new student, faculty and check attendance along with other settings like password changing .etc.



WHAT APP LOOKS LIKE? (AS OF NOW)



Scanning

Major Problems Faced



1. While working in a team at far places coming up to a single UI design was tough.
2. Thinking of a ways of making our app safer to prevent proxys was hard. Preventing taking of screenshot and one device one login is what we have come up till now.
3. Linking the QR code to SAP and further linking it to mark the attendance in database was one of the task that really took all our sweat.
4. Different team members knew different languages such as java,flutter,etc . Working together on one language was hard.
5. While using the additional dependency while integrating it sometimes is not compatible with the AndroidSDK version, that case we have to try all the recent or older version of the module and then rebuild the application again so that it is compatible with the SDK version.

Future Plan



In the current stage our App works fine and is able to scan QR to mark attendance

But for our future plan we would soon be implementing embedded chip in the current system.

This system is especially designed fully automate the current system removing the need of teacher to put the smart phone on stand instead now a cheap embedded device with micro scanner would be mounted in every class to scan QR and mark attendance . The teacher now would only have to create session with on extra info of room no to start recording attendance. The embedded device known as Node MCU which is wifi enabled would be connected to server and would now scan QR and send data to server.

Advantages :

- The teacher now wouldn't have to put its smartphone on wall therefore now teacher can initiate attendance prior to entering the class.
- This device can be attached to some display peripherals to cross check attendance.

WHAT MAKES OUR APP STANDOUT FROM OTHERS

- There are already existing models available on play store like attendance tracker, mark me present ,etc.
- Such apps have 10k+ downloads on Playstore .The success of these apps show need of such ideation of marking attendance which saves time.
- Our app is not only just a manager of attendance with methods such as biometric, but uses the idea of QR which makes it different from other apps.
- RollCall Marker makes the process of marking attendance not only time saving but hassle free and user friendly.
- It's basic interface makes it easier for any type of student and faculty to handle.
- With just some clicks the attendance of all the students will be marked within 5 minutes for however large the class maybe.
- One such feature of app that makes it different from others is the inability of the user to take screenshot of the QR thus preventing marking of fake attendances through friends.

