

Topic: QR code based Online Attendance System – Final Report

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1. Introduction

Attendance website where Instructor can manually mark attendance of students OR can display a QR code in the class so that Students with their android phone can scan the code and get the Attendance.

Instructor and Student can create their account by filling signup form. Instructor can create course and student can enrol in those courses.

Student can also view their Attendance status of every course enrolled and Instructor can view attendance status of student enrol in their courses.

Admin can create or delete any users.

2. Implementation Overview

- **Database Design**
 - **Relation database design**
- auth user

Column	Data Type	Constraints
id	Integer	Primary key, not null
Password	Var char	Not null
Is superuser	Boolean	Not null
username	Var char	Not null, unique
First name	Var char	Not null
Last name	Var char	Not null
email	Var char	Not null

- auth group

Column	Data type	Constraints
Id	integer	Primary key, not null
name	Var char	Not null, unique

- auth user group

Column	Data type	Constraints
Id	integer	Not null, primary key
User id	integer	Not null, unique, foreign key (auth user(id))
Group id	integer	Not null, unique, foreign key (auth group(id))

- Course

Column	Data type	Constraints
Id	Var char	Primary key, not null
Title	Var char	Not null

- Takes

Column	Data type	Constraints
Id	Var char	Primary key, foreign key (auth user(username))
Course	Var char	Primary key, foreign key(course(id))

- Teaches

Column	Data type	Constraints
Id	Var char	Primary key, foreign key (auth user(username))
Course id	Var char	Primary key, foreign key (course(id))

- Class

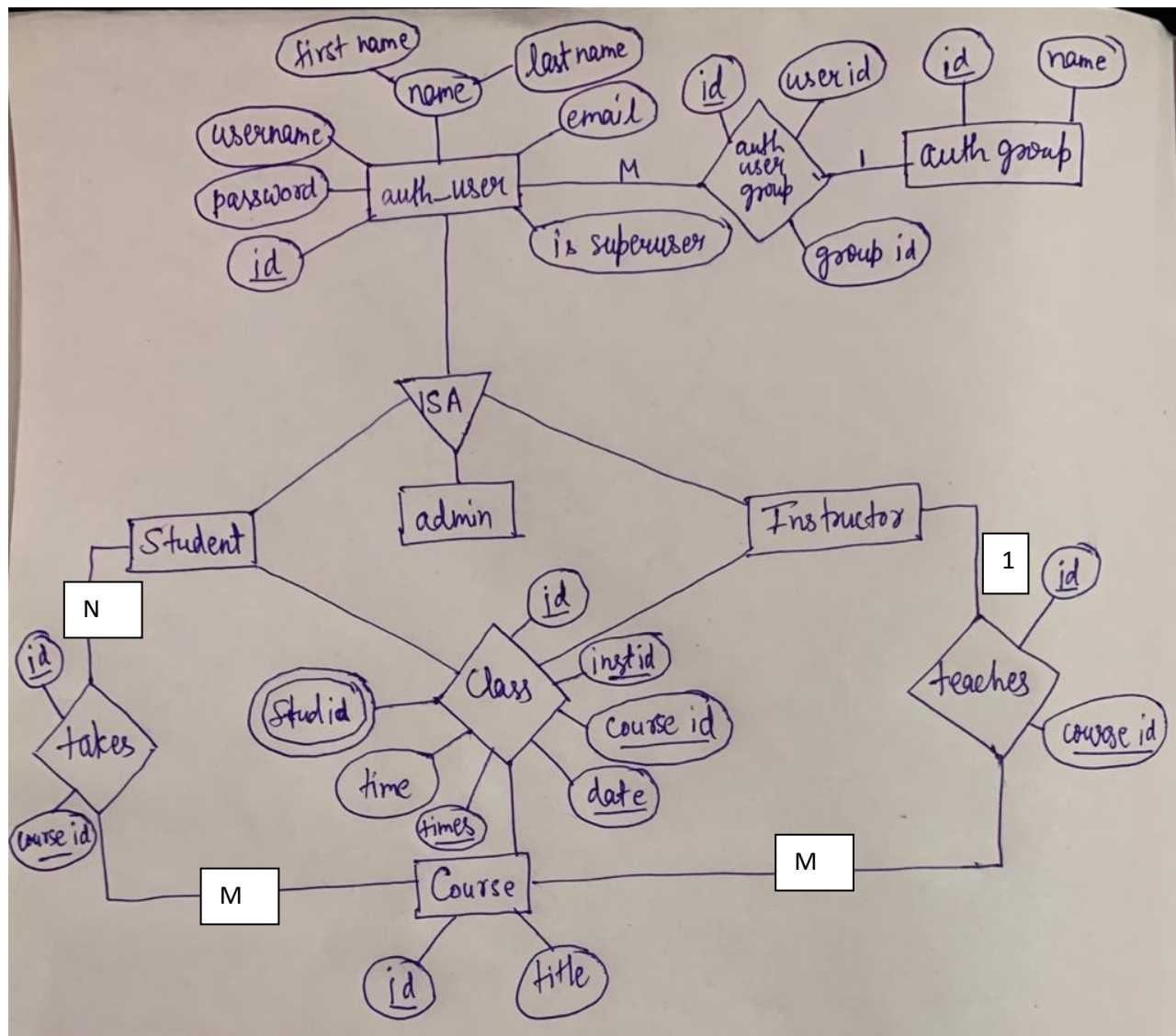
Column	Data type	Constraints
id	Integer	Primary key, unique
Inst id	Var char	Primary key, foreign key (auth user(username))
Course id	Var char	Primary key, foreign

		key(course(id))
Date	date	Not null, primary key
time	time	Not null, primary key
times	integer	Not null, primary key

- Attendance

Column	Data type	Constraints
id	integer	Foreign key(class(id)), not null
Student id	Var char	Foreign key (auth user(username)), not null

○ ER Model



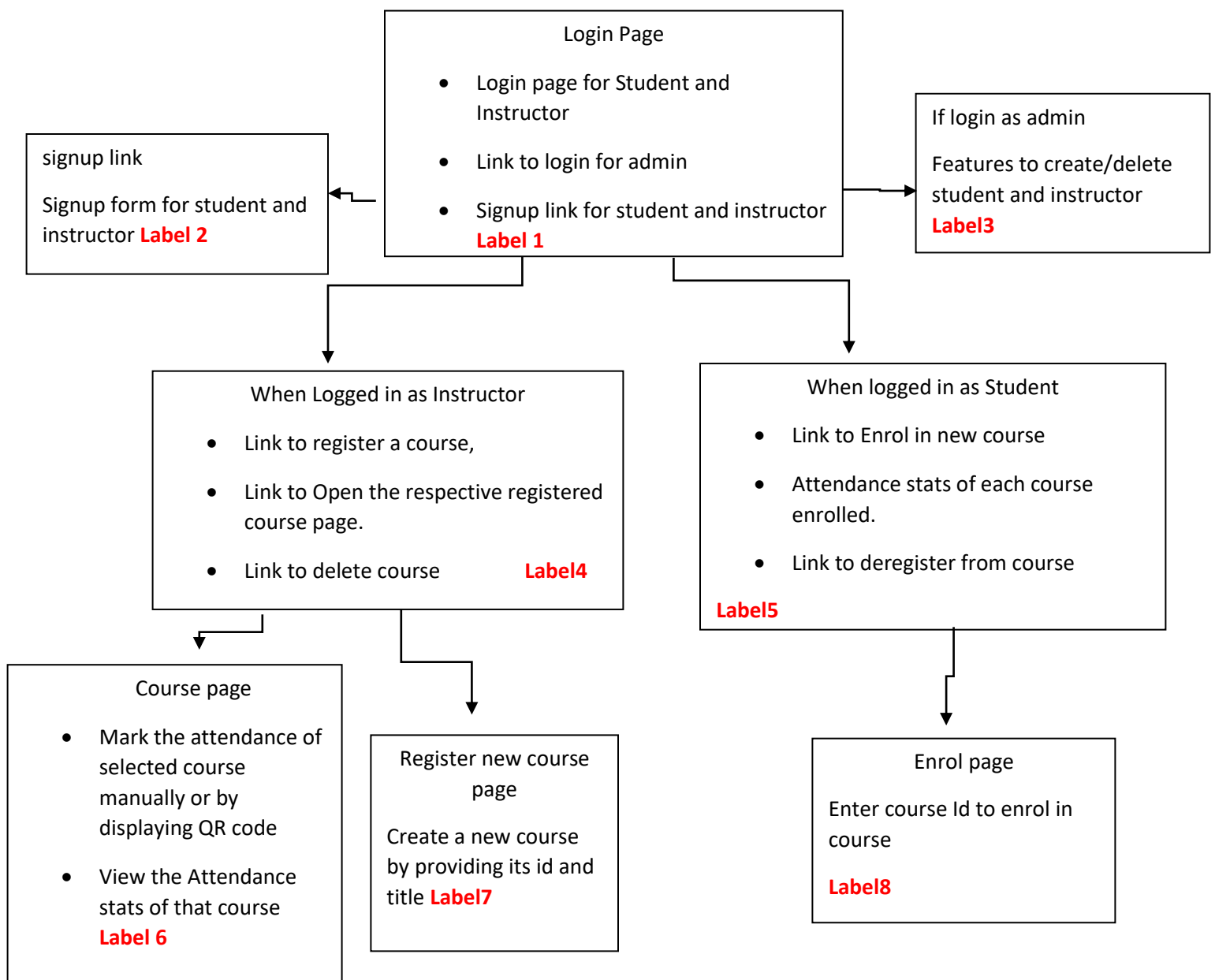
- **View**

- view to show attendance percentage of all the students and for all their courses

Column	Data type
Course	integer
instructor	Var char
Student	Var char
Total class	integer
Class attended	integer

- **Module Design**

- **Web App**



Label 1: auth user and auth user group table is accessed to authenticate the user credential and to identify role of user as student or instructor.

Label 2: type the details of new user then auth user, auth group, auth user group table is accessed to create a new user.

Label 3: admin has given access to auth user and auth user groups tables through which admin and can create or delete instructor or student.

Label 4: show the dashboard of logged in instructor (list of courses under him) from the table teaches.

Label 5: show the dashboard of logged in student from the table takes and the attendance stats from 'stat' view.

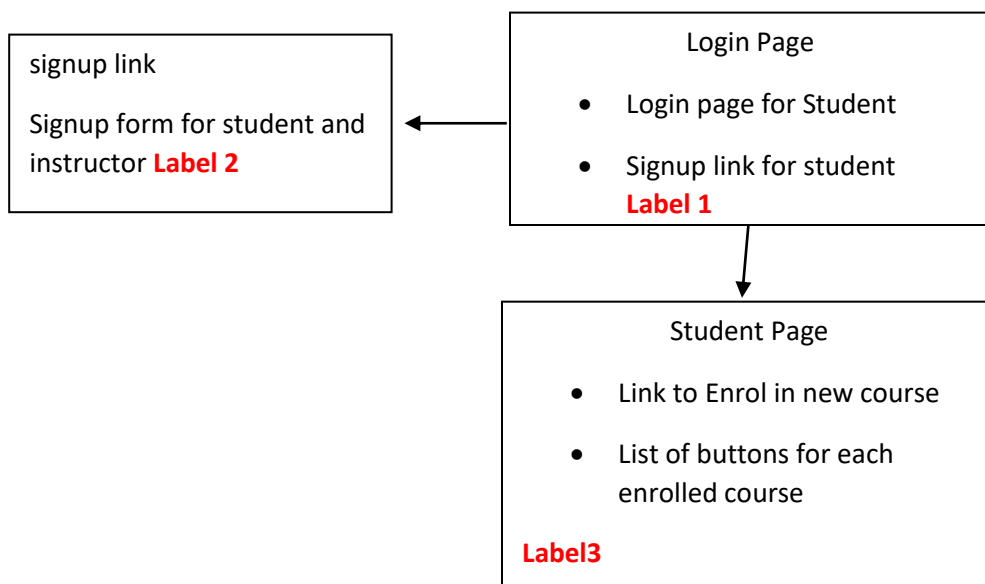
Label 6: access the class table to create an object of class and generate QR code for attendance. And also access the stat view table to see attendance statistics.

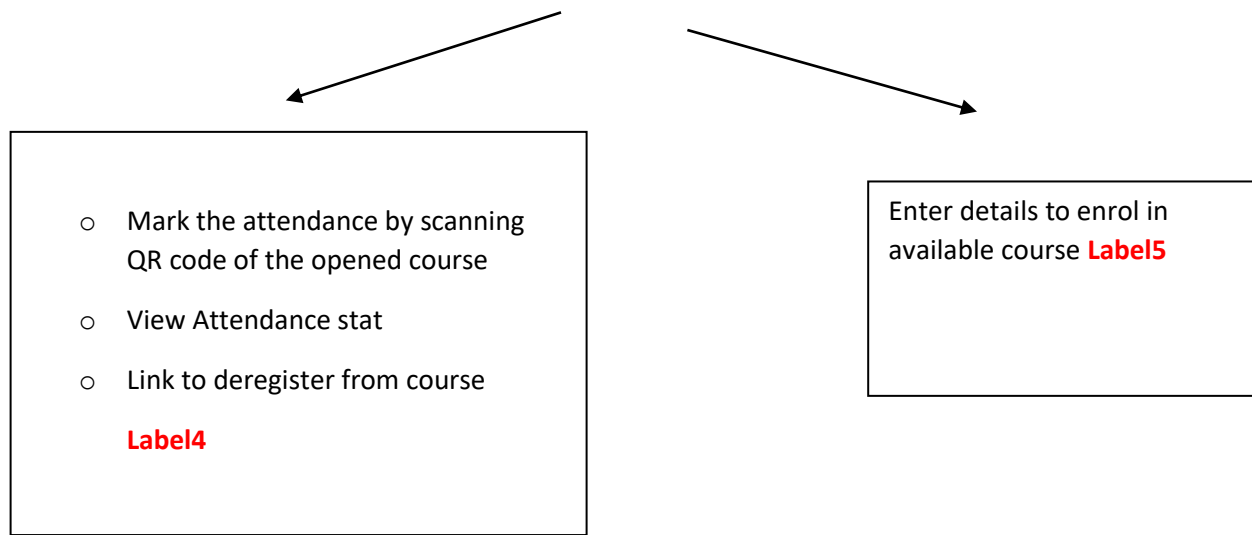
Label 7: access the course and teaches table to insert a new course and also insert in teaches table.

Label 8: access the takes table to insert a new required course.

*logout button on each page

○ Android App





*logout button on each page

Label 1: auth user and auth user group table is accessed to authenticate the user credential and to identify role of user as student or instructor. Only students can login

Label 2: type the details of new user then auth user, auth group, auth user group table is accessed to create a new Student.

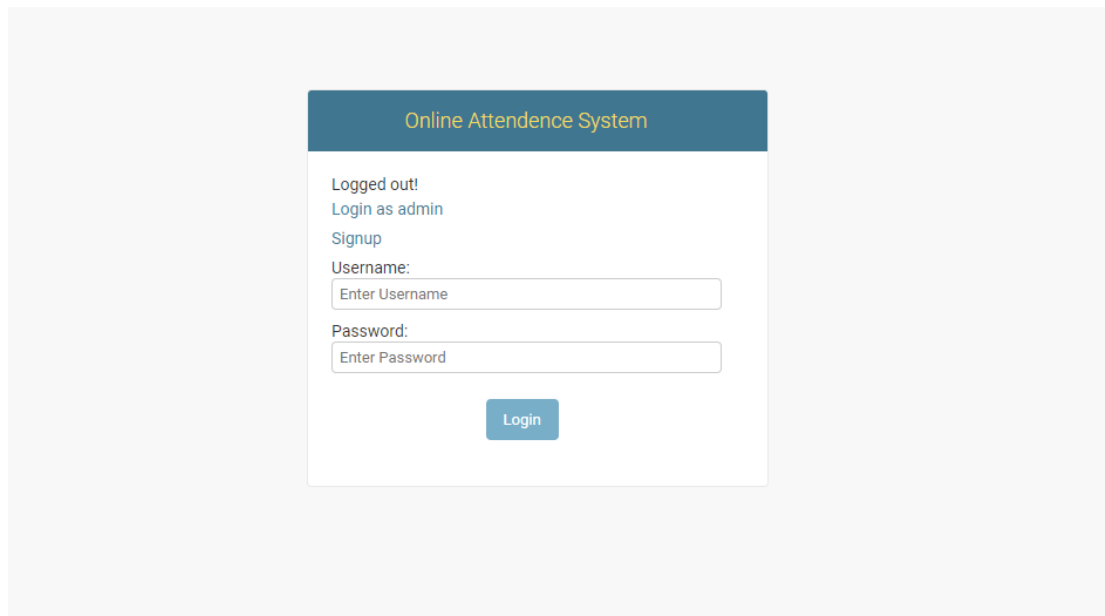
Label 3: show the dashboard of logged in student (list of courses enrolled) from the table takes.

Label 4: get the access of class table as student and compare the scanned QR code with the code present in database inserted by instructor. And also access the class and attendance table to see attendance stats.

Label 5: access the takes table to insert a new enrolled course.

- **Screen shots**

1. Login page



The screenshot shows a web application titled "Online Attendance System". It features a login form with the following elements:

- A header bar with the text "Online Attendance System".
- Links for "Logged out!", "Login as admin", and "Signup".
- A "Username:" label followed by a text input field containing the placeholder "Enter Username".
- A "Password:" label followed by a text input field containing the placeholder "Enter Password".
- A blue "Login" button.

2. Instructor page



The screenshot displays the "Instructor page" of the system. It includes a top navigation bar with the text "WELCOME, SANDEEP REGISTER NEW COURSE/LOG OUT". Below this is a sidebar with a "Home" link. The main content area is titled "Courses" and lists three items:

1. CS101 -----Delete this course
2. CS201 -----Delete this course
3. CS202 -----Delete this course

3. Course detail

Online Attendance System

WELCOME, SANDEEP REGISTER NEW COURSE/LOG OUT

Home

CS201

Generate QR Code for Attendance

Today's Class No. :

1

Generate

List of Students Enrolled

S.No	Roll Number	Total class Attended	Total Class	Percentage	<div>1</div> <div>Class No.</div>
1	180010001	0	5	0.00	<input type="radio"/> Present
2	180010002	0	5	0.00	<input type="radio"/> Present
3	180010008	3	5	60.00	<input type="radio"/> Present
4	180010019	4	5	80.00	<input type="radio"/> Present
5	180020024	2	5	40.00	<input type="radio"/> Present
6	180030007	0	5	0.00	<input type="radio"/> Present

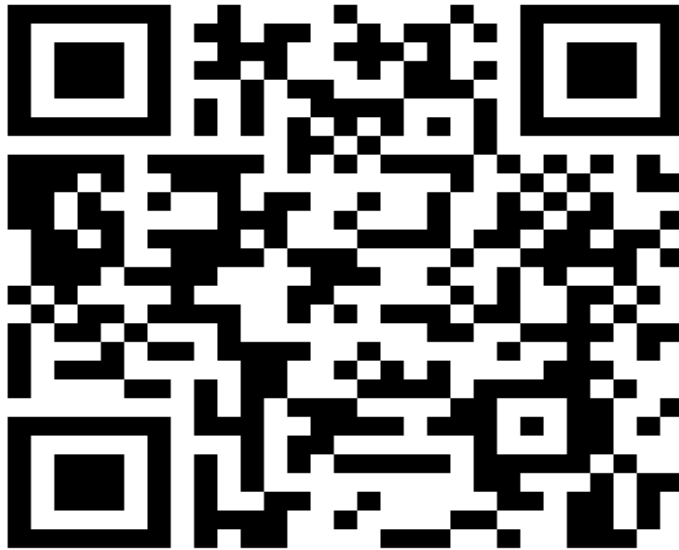
Save Attendance

4. QR

CS201

Generate QR Code for Attendance

Today's Class No. :



5. Register new Course

Online Attendance System

WELCOME,SANDEEP [REGISTER NEW COURSE/LOG OUT](#)

Home

Course Code :

Course Title :

6. Successfully added course

✔ Course Registered Successfully

Courses

1. CS101 ----Delete this course
2. CS102 ----Delete this course
3. CS201 ----Delete this course
4. CS202 ----Delete this course

7. Student page

S. No.	Course	Total class Attended	Total Class	Percentage	Remove Course
1	CS101	0	0	-	Deregister
2	CS201	4	5	80.00	Deregister
3	EE201	0	0	-	Deregister

8. Enrol new course

Online Attendance System

Home

Course code:

9. Enrolled successful

✓ Successfully Registered in Course

S. No.	Course	Total class Attended	Total Class	Percentage	Remove Course
1	CS101	0	0	-	Deregister
2	CS102	0	0	-	Deregister
3	CS201	4	5	80.00	Deregister
4	EE201	0	0	-	Deregister

10. Login

7:55

QRCodeAttendance

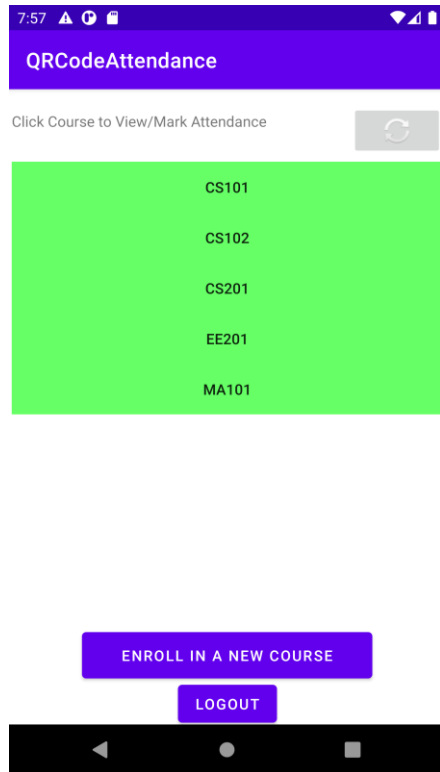
Enter Username

Enter Password

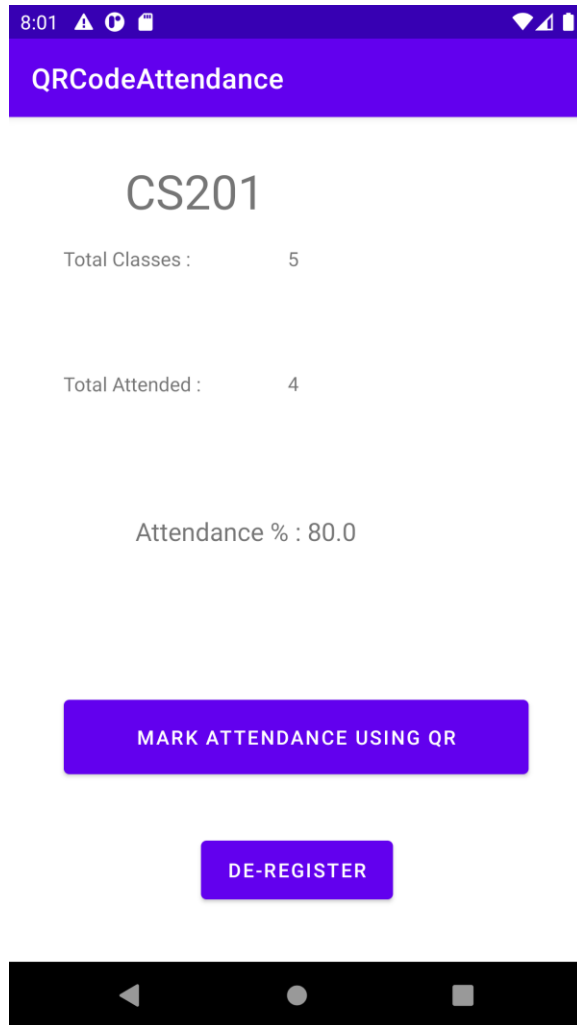
LOGIN

NEW? REGISTER HERE

11. Student dashboard



12. Course stats



3. Data Used for execution

- Auth user

Columns=(id,password,is_superuser,username, first_name, last_name,email)

21

"pbkdf2_sha256\$216000\$LhrojPmTGxAr\$+QqgkS9X6+MYVsTAroUCVz7LYYiahF
MleQCs92f2/t0=" false "180010008" "Balsher" "Singh"
"180010008@iitdh.ac.in"

22

"pbkdf2_sha256\$216000\$ibn9gE5oGxNx\$4hX/i/SehDJLP3K9JDtlattaihNU4AJIU

W+CXXnRjao=" false "180020024" "Mrinal" "Rana"
"180020024@iitdh.ac.in"

32

"pbkdf2_sha256\$216000\$rDEUDD9OvJxt\$JqcByudVytVIFPX7TBdC+g8bMzShFW
L48CuZnu17Pvs=" false "180010001" "Student1"
"180010001@iitdh.ac.in"

23

"pbkdf2_sha256\$216000\$bXrut7rcKdwo\$xsGfDSQF4i0hm1rZPlm150JXK/A6XKG
F8fntAxbwUM=" false "180030007" "Ashish" "Bharti"
"180030007@iitdh.ac.in"

34

"pbkdf2_sha256\$216000\$SSDnBSdCAIEh\$ayN40rGafvDzkA22ybDfKmGPtKVRy2
G3ZQIrlMF/bSk=" false "180010003" "Student3" "L."
"180010003@iitdh.ac.in"

36

"pbkdf2_sha256\$216000\$cw59I0tj5dqE\$ckqEaf+y0E+tNZyCFknUnPTR+W/mfJ/A
hKI0doTx64s=" false "180010005" "Student5" "I."
"180010005@iitdh.ac.in"

18

"pbkdf2_sha256\$216000\$WJ97WKpcAcv6\$jYKR38zWShtcM+MDd0h93sJ4RHUr
1Zk2I7ftK179YcQ=" false "rajshekhar" "Rajshekhar" "K."
"rajshekhar@iitdh.ac.in"

19

"pbkdf2_sha256\$216000\$C3DP6fjOuwAR\$a+7Wginiv/xeO3VvVZQGgWh/Y6BciX
n9OtNPaxxjOqU=" false "varun" "Varun" "Sharma"
"varun@iitdh.ac.in"

35

"pbkdf2_sha256\$216000\$O5HEbF0xRRiw\$R/uKhXOeIFSkFDt5mXp6lGJrZvHGW
CU8iYSqK5UWStY=" false "180010004" "Student4" "L."
"180010004@iitdh.ac.in"

37

"pbkdf2_sha256\$216000\$Xjx0wxFBrsMo\$TZMHfOMr/DMdTK/nG58APdMj+7lu
W9Os8eAV1391rIY=" false "180010006" "Student6" "L."
"180010006@iitdh.ac.in"

33

"pbkdf2_sha256\$216000\$mmOZILC6B1X7\$j5srK2dYwhSAGi+RIj9smGU8qmeFH

0r7EBsOOjW2q00=" false "180010002" "Student2" "L."
"180010002@iitdh.ac.in"

38

"pbkdf2_sha256\$216000\$pXVTkKrreCmk\$XJh0Ys2NcNEnG3+bQd6QHvA29+EAL
Jp0uxnZ8rPTbio=" false "inst1" "Instructor1" "L." "inst1@iitdh.ac.in"

39

"pbkdf2_sha256\$216000\$DUUpGjWJRKYT\$oDfHGUTBSVsuzOrNMIOpp3BmITdU
UFClnEYCE9Swsbk=" false "inst2" "Instructor2" "L." "inst2@iitdh.ac.in"

1

"pbkdf2_sha256\$216000\$ktYinyXUqAdO\$tzeRuiK5C5UViljVX4s2EGeWnCyjvkwR
iR4clJ3/Peg=" true "admin" "admin@iitdh.ac.in"

17

"pbkdf2_sha256\$216000\$IdaS8K7muO2K\$alE+rxUJ7Rs2WzJ3Y/ZZTGo0gCNW6E
SGRPsKQ/Y4XRI=" false "sandeep" "Sandeep" "R."
"sandeep@iitdh.ac.in"

20

"pbkdf2_sha256\$216000\$fxci4AvANwfG\$Y/Cc+E9j0SxjzgV2whnCtSeM2vuqPZCx
vpMrZ4d0mlw=" false "180010019" "Karan" "Sharma"
"180010019@iitdh.ac.in"

- **Auth group(id, names)**

1 "instructor"

2 "student"

- **Auth user group(id, user_id, group_id)**

6 17 1

7 18 1

8 19 1

9 20 2

10 21 2

11 22 2

12 23 2

18	32	2
19	33	2
20	34	2
21	36	2
22	35	2
23	37	2
24	38	1
25	39	1

- **Course(id, title)**

"CS101"	"Introduction to Programming"
"CS102"	"Lab"
"CS201"	"DSA"
"CS202"	"DSA Lab"
"CS301"	"COA"
"CS311"	"COA Lab"
"EE101"	"Circuits"
"EE201"	"Communication"
"MA101"	"Calculus"

- **Takes(stud_id, course_id)**

"180010019"	"CS101"
"180010019"	"CS102"
"180010019"	"CS201"
"180010019"	"EE201"
"180010019"	"MA101"

- **Attendance(class_id, stud_id)**

1	"180010008"
1	"180010019"
1	"180020024"
2	"180010019"
3	"180010019"
4	"180010008"
4	"180010019"
5	"180010008"
5	"180020024"

- **Class(id, inst_id, course_id, date, time, times)**

1	"sandeep"	"CS201"	"2020-11-30"	"21:18:52"	1
2	"sandeep"	"CS201"	"2020-11-30"	"21:19:23"	2
3	"sandeep"	"CS201"	"2020-11-30"	"23:06:02"	5
4	"sandeep"	"CS201"	"2020-11-30"	"23:13:53"	4
5	"sandeep"	"CS201"	"2020-12-01"	"15:36:29"	1

- **Teaches(inst_id, course_id)**

"rajshekhar"	"CS301"
"rajshekhar"	"CS311"
"sandeep"	"CS101"
"sandeep"	"CS102"
"sandeep"	"CS201"
"sandeep"	"CS202"
"varun"	"EE101"
"varun"	"EE201"

- **View 'stat' (course, student, inst_id, total_classes, class_attended)**

"CS101"	"180010019"	"sandeep"	0	0
---------	-------------	-----------	---	---

"CS201"	"180010019"	"sandeep"	5	4
"EE201"	"180010019"	"varun"	0	0
"CS201"	"180010008"	"sandeep"	5	3
"CS201"	"180020024"	"sandeep"	5	2
"CS201"	"180030007"	"sandeep"	5	0
"EE101"	"180030007"	"varun"	0	0
"CS201"	"180010001"	"sandeep"	5	0
"CS201"	"180010002"	"sandeep"	5	0
"CS102"	"180010019"	"sandeep"	0	0

4. Deviations from design document

- 'qrcode' attribute is not added in class cause whole tuple concatenated by \$ sign is used as qrcode for that particular class.
- Time is removed from primary key in class table.
- Times is new attribute added in class table to distinguish between multiple class on same day.
- Features like Deregister from course as student and delete course as instructor is added.
- Password hashing is used
- Single view is formed for both instructor and student to see attendance stats.

Code for creating view:

```
SELECT t5.course,
       t5.student,
       t5.inst_id,
       COALESCE(t1.total_classes, 0:) AS total_classes,
```

```

COALESCE(t5.classes_attended, 0:) AS classes_attended
FROM (( SELECT takes.course_id AS course,
          takes.stud_id AS student,
          teaches.inst_id
        FROM teaches,
          takes
        WHERE teaches.course_id = takes.course_id) t3
LEFT JOIN ( SELECT t0.stud_id,
                  t0.course_id2,
                  t0.classes_attended
        FROM ( SELECT attendance.stud_id,
                      class.course_id AS course_id2,
                      count(class.course_id) AS classes_attended
                FROM class,
                  attendance
                WHERE class.id = attendance.class_id
                GROUP BY class.course_id, attendance.stud_id)
        t0) t2 ON t3.student = t2.stud_id AND t3.course = t2.course_id2) t5
LEFT JOIN ( SELECT class.course_id AS course_id1,
                  count(class.course_id) AS total_classes
        FROM class
        GROUP BY class.course_id) t1 ON t1.course_id1 = t5.course;

```

5. **Work distribution among group members**

- **Karan Sharma(180010019)**
 - ER model

- Base table design
- Django backend
- REST API
- **Balsher Singh(180010008)**
 - Android app backend
 - View table design
 - Report
 - REST API
- **S Suraj Mukundh (180010036)**
 - Frontend of website
 - Frontend of Android app
 - Report
 - Database design

6. Conclusion

As there are two different platforms here involved in this project, i.e., Web App and Android App, so, it is impossible to connect them without a database. Database comes with feature of efficient storage and access of data. With database different platform are in always sync and have the latest information of any data. In present modern world where everything is being done on computers and everything is automated, attendance can be so easily maintained and viewed using database.