جامعة جدة
University of Jeddah

File Project: **Smart Attendance**

Submission for Software Engineering (CCSW 223) - YAL(10763)

Dr: Omnia Wajeha

Date: 11/02/2022

University of Jeddah - College of Computer Science and Engineering

Team Members:-

(Student's name): Lateefa Ali Alsfri
ID No.: 2110642

(Student's name): Majd Ahmed Khawjah
ID No.: 2110117

(Student's name): Jumana Mohammed Alsubhi
ID No.: 2110533

(Student's name): Reem Abdullah Alkthyri
ID No.: 2115561

(Student's name): Ajwan Ahmed Alharbi
ID No.: 2110574

Content

Introduction

Our project will be about a QR-Code Attendance system: in order to make taking the Attendance easier for students and lecturers. First, the lecturer chooses the class in which the lecture will be delivered through the university system. At the start of the class the lecturer shares a QR-Code and students will scan it to register their attendance. The registration of attendance only happens within the area of the class, so outsiders won't be authorized to register.

Lab 2

Majd Interview

Interview description:

I conducted an interview with a lecturer to get her point of view on the current attendance system and asked for her opinion on how our new smart attendance system would benefit lecturers.

A.Interviewer info

Interviewer: Dr.Hanan Nadeem.

Job: Lecturer at University of Jeddah (Computer Science and Engineering Department).

Date: 27/12/2022.

Email: hanadeem@uj.edu.sa

B. questions and answers

1Q/ What is your opinion on the current attendance system?

1A/ The current attendance system is very annoying, lacks credibility, and wastes time and effort.

2Q/ What is the biggest drawback of the current attendance system?

2A/ The biggest drawback in my opinion is the time wasted in reading the names to register attendance.

3Q/ From your point of view, how credible is the current attendance system?

3A/ It is certain that the current attendance system lacks credibility to a large extent.

4Q/ How can the idea of a smart attendance system benefit you as a lecturer?

4A/ The benefit lies in providing reliable electronic records that is easy to obtain information from without the effort of creating these records

5Q/ What are the improvements or features you would suggest for an excellent smart attendance system?

5A/ I suggest to shift from the traditional current attendance system to smart attendance system at the lowest cost possible, as in developing the available records in the current attendance system

c. Analyst comments:

So we see that even lecturers do not like the current attendance system and would prefer the smart attendance system because it is more efficient and credible.

Jumana Interview

A.Interviewer info

Interviewer: Dr.Safaa qahal.

Job: Lecturer at University of Jeddah

Date: 29/12/2022.

Email:shqahal@uj.edu.sa

B. questions and answers

1Q/ If there is an application that provides services that benefit the university, what advantages can you expect?

1A/ that it has everything that a student needs, from an entry card to a study schedule,knowing the number of days he missed.

2Q/ What are the pros and cons that you encountered while browsing the app?

2A/ the positives were easy to use, the sections were clear,and that he did not need the internet, the negatives that he supports a small area , which is the semester.

Q3/ Do you give us feedback or comments that might help us improve our app?

A3/ i do not have notes, but i hope to implement this program i feel it will be very useful,

Q4/ Would you recommend lecturers and teachers to use our app?

A4/ yes. because it is easy to use and saves them time and effort in collecting and counting the number of students who attended

Q5/ How do you think students will benefit from the application?

A5/ from my point of view, yes, i see that because it saves him knowing how many days they did not attend, and that they do not wait until the lecturer counts their number and makes them feel responsible.

c. Analyst comments:

so we see that the lecturers believe that it will facilitate the process of preparing students.

Ajwan Interview

A . Interviewer information

Interviewer**:** Lamia Alenazi

Job**:** Student at University of Jeddah

Date: 28/12/2022

Email**:** nmnah8882@gmail.com

B . Questions and answers

Q1) In your opinion, is the 10-day deadline for making excuses sufficient?.

A1) Yes.

Q2) Do you think that activating this system in universities will be effective and beneficial?.

A2) Yes.

Q3) What are the things you wish us to do in our application or avoid?.

A3) Continuous maintenance and periodic review of the system to ensure that there is no defect Also, it would be better if there were weekly reports of attendance sent to the email.

Q4) As a student in a public university, do you think that electronic preparation is better, or is preparation with names by the lecturer better? And why?.

A4) Electronic preparation is better to save time on lecturers and students and avoid mistakes.

Q5) In your opinion, as a student, what are the pros and cons of this application? If it is applied.

A5) Cons: A defect can occur at any time and attendance is not taken accurately Pros: The preparation becomes systematic, which greatly reduces the occurrence of errors, whether from the lecturer or the students.

Analyst comments:

After the interview took place with the student, it became clear that she did not mind implementing this plan and considered it good and fast and didn't waste time.

Lateefa Interview

Interview description:

I interviewed a junior software developer and asked about her experience using tools to build software and how time and cost involved are calculated.

A. Interviewer info:

Interviewer: Rimaz Arif.

Job: Junior Software Developer.

Date: 28/12/2022

Phone Number: 0546650730

B. Questions and Answers:

1Q: What is the best option for our system, an Application or a Website and why?

1A: It will make no difference whether it is a website or an Application. The most important thing is accessibility, So I think the Application is more suitable due to its easy access, the ability to receive notification to the user, and can easily make future modifications.

2Q: Is it better to continue on an existing program/website or do it ourselves from scratch?

2A: It is best that you do a market study for projects similar to yours, see their weaknesses and user complaints, and start with them. This will save you time, effort and

cost, and you will take a general view of how these programs work and benefit from them in your project.

3Q: What is the best programming language that we should use from your point of view?

3A: In terms of programming languages, there is no specific language that is the best, so depending on your experience, background, and capabilities, you can take a look at it before starting the project. For example, using React or Filters can save time and effort and make learning easier.

4Q: What is the expected duration and cost of completing the application?

4A: This is determined by you based on the size of the project, the requirements, the number of people in the group and their experience. There is no standard calculation or rule by which you can calculate.

C. Analyst Comments:

Therefore, there is nothing specific to do when building software, which is a large sea and has many methods and standards for the benefit of users and developers, but it must be done smartly and economically.

Reem Interview

I contacted a software engineering student to interview her to get her opinion on the smart attendance system and ask her some questions related to it.

A.Interview info

Interviewer: Ghaida AlJahdali
Job: Student in University of Jeddah (Software Engineering)
Date :24/12/2022
Email:Ghaida@gmail.com

B.questions and answers:

1-What do you think about the features of the application?
It is very special to have such an application as it helps students and doctors to save a lot of time and effort

2-Do you think that this application will help students and doctors to facilitate knowledge of attendance?
Yes, it will help a lot, as we have become in the time of technology, which is the time of speed, so it is excellent to make such applications to help

3-In your opinion, what are the additions that could make the application better?
It is possible to add services to raise excuses for absence

4-Do you have any suggestions for the application?
I don't think I have any other suggestions. It's a really successful application

C.Analyst comments:

First of all, I started with a brief introduction regarding the application. I explained the concept and the purpose of the program. Then I moved forward with asking one of the Student who was used the app, she is student in software engineering so she may have an idea about applications. I asked her what are her thoughts regarding the application. She replied: I think it is an amazing application, very easy to operate, and very organized. It saved me a great deal of time since all the information I needed was in one place. Furthermore, . The user suggested adding more services to the application that she saw

Lab 3

The Purpose of This Project:

A. Smart Attendance system will save a lot of time and effort for the students and lecturers.

1. **Content:** The project will be about the Attendance System using QR-Code: which makes registering attendance easier for students and lecturers. At the Beginning of every semester The administrator will choose the class in which the lecture will be delivered through the university system. Next, at the start of each class, the instructor shares a QR-Code with students so they can scan it to register their attendance. After 15 minutes, the lecturer will share another QR-Code to register the late students.

2. **Motivation:** Creating an easy-to-use smart attendance system.

3. **Consideration:** The problem of fraud and manipulation in registering attendance by QR code, many students may photograph the barcode and publish it on each other, and this is considered a big problem because many students will not attend the lecture and the system will register attendance so we tried to solve this problem by making the attendance range 8 meters and in the case of arrival To 30 meters is registered in the system came out with an excuse.

B. Our goal is to create a smart attendance system that is easy for lecturers and students to use, knowing the days of absence and raising excuses instead of the traditional system.

Preliminary Report:

1. **The Problem:**

   Students will be able to share the QR-Code with their friends, which will cause those who are absent from class to attend.

2. **Finding:**
   a. The student registers her attendance in the system and then leaves the lecture directly without attending.
   b. Network outage or unavailability.
   c. Excuses and how to present them.

3. **Recommendation or Proposed Solution:**
   a. The solution to the first problem is that the application automatically after 20 minutes has passed outside the class is calculated as a delay.
   b. The Internet is an important thing in our time, but what distinguishes our application is that it is available without the Internet to make it easier for students.
   c. The solution to this problem is We have created a field for attaching excuses for absence. You can attach your excuse only on the 10th of the day of absence, and then you will be placed absent.

4. Cost & Schedule Estimates:

The cost will be 10 thousand riyals, and the software will be delivered within a month and 10 days.

Phases	Description	Cost	Time
Specification	Customers and engineers determine what software is produced and the constraints to run it.	2,500 SR	10 Days
Development	The software is designed and programmed.	5,000 SR	20 Days
Validation	The software is checked to ensure that this is what the customer requested.	1,000 SR	4 Days
Evolution	The software is modified to reflect changing customer and market requirements.	1,500 SR	6 Days
	Total:	10,000 SR	40 Days

Lab 4

Feasibility Study:

1. **Problem Definition :**

   Having plenty of Qr-Codes,there is a qr-code for those that are present and a Qr-Code for those who are late.

2. **Scope Objectives of "new system":**

   Proposed name for the new system: Automatic Smart Attendance.

   Includes an automatic attendance system to facilitate the attendance registration process for students by using Bluetooth.

3. **Alternative Solutions:**

   Create a website - include it in "My Future" application - an already built in device inside the class.

4. Cost & Benefits of Alternatives:

The cost will be reduced by 3,750 riyals, and the program will be delivered in the same total number of days. Where the cost will be 6,250 riyals, and delivery within 40 days.

Phases	Description	Cost	Time
Specification	Customers and engineers determine what software is produced and the constraints to run it.	2,000 SR	9 Days
Development	The software is designed and programmed.	2,750 SR	20 Days
Validation	The software is checked to ensure that this is what the customer requested.	500 SR	4 Days
Evolution	The software is modified to reflect changing customer and market requirements.	1,000 SR	7 Days
	Total:	6,250 SR	40 Days

5. Software Impacts:

People would be pleased since it's going to make the attendance process easier, simpler, and very quick.

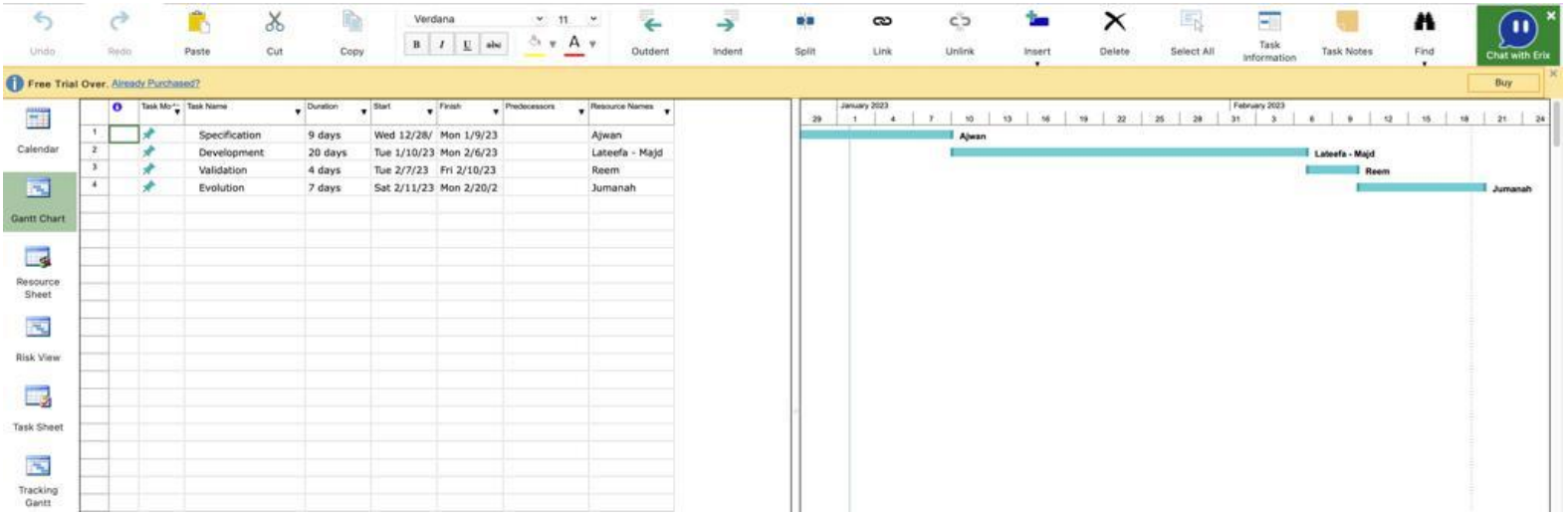
6. Potential Changes in the Organization:

It will save on costs and be more efficient to just update on the app instead of making a new one.

7. Recommended Alternative of the Course of Action:

Embedding it to My Future Application.

Screenshot of Project Plan:



Lab 5

1. Stockholder Definition:

A. The Client:

The investing client will be Jeddah University.

B. The Customer:

The students.

Students will be the customers that use the system for free to register attendance.

C. Other Stakeholder:

IT staff, administrators, and doctors.

All of them will be affected by the new attendance mechanism.

2. The scope of the work:

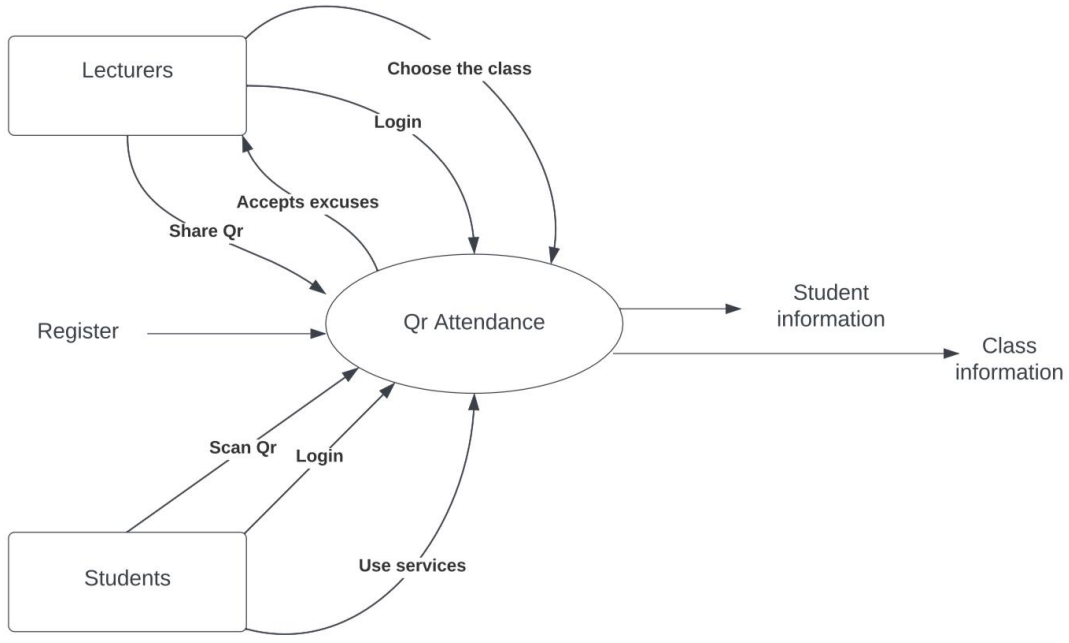
A. The Current Situation:

- **Content:**The current attendance system lacks credibility and wastes time due to reading every student name to register their attendance. so it is very annoying and unreliable.
- **Motivation:** in order to make Attendance easier and faster we will make a QR-Code based Attendance system. students will register their attendance by scanning a QR-Code.

B. The Context of the Work:

- **Content:** Registering attendance is quick and easy, with the QR code based attendance system. Students can register their attendance by scanning a QR code.
- **Motivation:** adding a few features will make the attendance system more reliable such as notification for absent and late students, informing users of the traffic situation before the first session, and warning students in case of canceled lectures.

3. Context diagram:



4. Business Event List:

Event Name	Input and Output	Summary
1. Services	Services(in)	The student uses services from the Qr Attendance.
2. Login	Login(in)	Entering requires logging in. ex: enter the id.
3. Share Qr	Share Qr(in)	The lecturer shares QRcode with students.
4. reporting Student	Student report(out)	The system produces a student's report for the user.
5. Class	Class (out)	The system produces a class report for the user.
6. Register	Register(in)	the Qr Attendance received the list of names from the designated party.
7. Accepts excuses	Accepts excuses(out)	The lecture accepts students' excuses from the Qr Attendance.
8. Scan Qr	Scan Qr(in)	The students scan the QRcode to register attendance.
9. Choose the class	Choose the class(in)	The lecturer chooses the class that holds the lecture.

Lab 6

Functional Requirement:

ID:	Requirement Definition:
FR1	**Login.**
FR1.1	All authorized persons have a password and id to enter the system.
FR2	**Select the class for a lesson.**
FR2.1	A system displays for the lecturer the classes available to take lessons in.
FR3	**Select language.**
FR3.1	The system shall allow all users to select the language they want.
FR4	**Attendance and absence report.**
FR4.1	The system should allow users to obtain weekly or monthly attendance and absence reports if they want.
FR5	**Edit profile page.**
FR5.1	The system should allow the user to edit the profile page ; contact information such as the email to which the report is to be sent, and the password.
FR6	**Share QR-Code.**
FR6.1	The system should enable the authorized lecturer to share the QR-Code.

FR7	**Scan QR-Code.**
FR7.1	The system shall enable the student user to scan the QR-Code.
FR8	**Submit excuses.**
FR8.1	the system must allow the user to submit excuses for absence.
FR9	**Conformation.**
FR9.1	The system shall enable the authorized lecturer to conform or deny the students' submitted excuses.

Non-Functional requirement:

- **User Interface:**

  UI1: Depending on the user's authorization, the system must make certain features available via the user interface.

  UI2: The system must have an easy-to-use user services interface.

  UI2.1: the system shall provide menu-driven user interface.

- **Hardware Interface:**

  HI1: The system is implemented in a unique and independent way, suitable for all users, and shall not depend on any specific hardware interfaces.

- **Software Interface:**

  SI1: The user name and password are required information that must be extracted from the UJ system database by the investment management system in order to verify the user's access to the investment management system.

- **Security Requirements:**

  SE1: An authorization login page via password must be provided by the system.

  SE2: The system must only let the user access authorized services.

  SE3: The system shall provide a lock out for 5-minutes after 10 failed access trials.

Lab 7

Use Case:

1. Modeling:

2. Description:

UC1: Login

Scope: University staff and students.
Level: Primitive.

Primary Actor: student
Precondition: Actors must be registered at UJ to have an account.
Stakeholders and Interests: Lecturers - Students.

Scenario of UC1:

1. When the actors have an account at UJ University.
2. They can access the application.

UC2: Select the class for a lesson

Scope: University staff.
Level: Primitive.

Primary Actor: Lecturer.
Precondition: Lecturer is assigned to give classes.
Stakeholders and Interests: Students, Lecturer.

Scenario of UC2:

1. Lecturer chooses from available classes.
2. The lecturer can teach in the selected class.

UC3: Select language

Scope: University staff and students.
Level: Conclusion of verify.

Primary Actor: University staff and student.
Precondition: Actors have an account at UJ.
Stakeholders and Interests: Lecturers and Students.

Scenario of UC3:

1. Go to settings, select the language section.
2. The language is changed to the desired language.

UC4: Attendance and absence reports

Scope: Students and lecturers
Level: View information.

Primary Actor: Students

Precondition: Student enrolled in class and lecturer assigned to class.
Stakeholders and Interests: Lectures and Students

Scenario of UC4:

1. After an authorized actor chose the report service.
2. The actor has a comprehensive report based on authorized ability.

UC5: Edit profile page

Scope: Students and staff.
Level: Control information.

Primary Actor: Students.
Precondition: Actors have an account at UJ.
Stakeholders and Interests: Students and lecturers

Scenario of UC5:

1. Go to setting and chooses edit profile page
2. Profile page edited

UC6: Share QR-Code

Scope: Lecturers and Students.
Level: Primitive.

Primary Actor: Lecturer.
Precondition: When lecturers show up for the lecture.
Stakeholders and Interests: Students.

Scenario of UC6:

1. After the authorization of the lecturer.
2. Lecturers are able to share the QR-Code with students.

UC7: Scan QR-Code

Scope: Lecturers and Students.
Level: Complete the attendance procedure.

Primary Actor: Student.
Precondition: The student is present in class.
Stakeholders and Interests: Lecturers and Students.

Scenario of UC7:

1. After the authorization of the students.
2. They are able to scan the QR-Code.

UC8: Submit excuses

Scope: Students.
Level: Submit for the lecturer.

Primary Actor: Student.
Precondition: Be a registered student at UJ and enrolled in classes.
Stakeholders and Interests: Students.

Scenario of UC8:

1. After logging in and selecting the service.
2. Students can submit excuses for absence via the attachment box.

UC9: Conformation

Scope: Lecturers.
Level: Approve the request.

Primary Actor: Lecturer.
Precondition: Lecturer assigned to the class to view submitted excuses.
Stakeholders and Interests: Students.

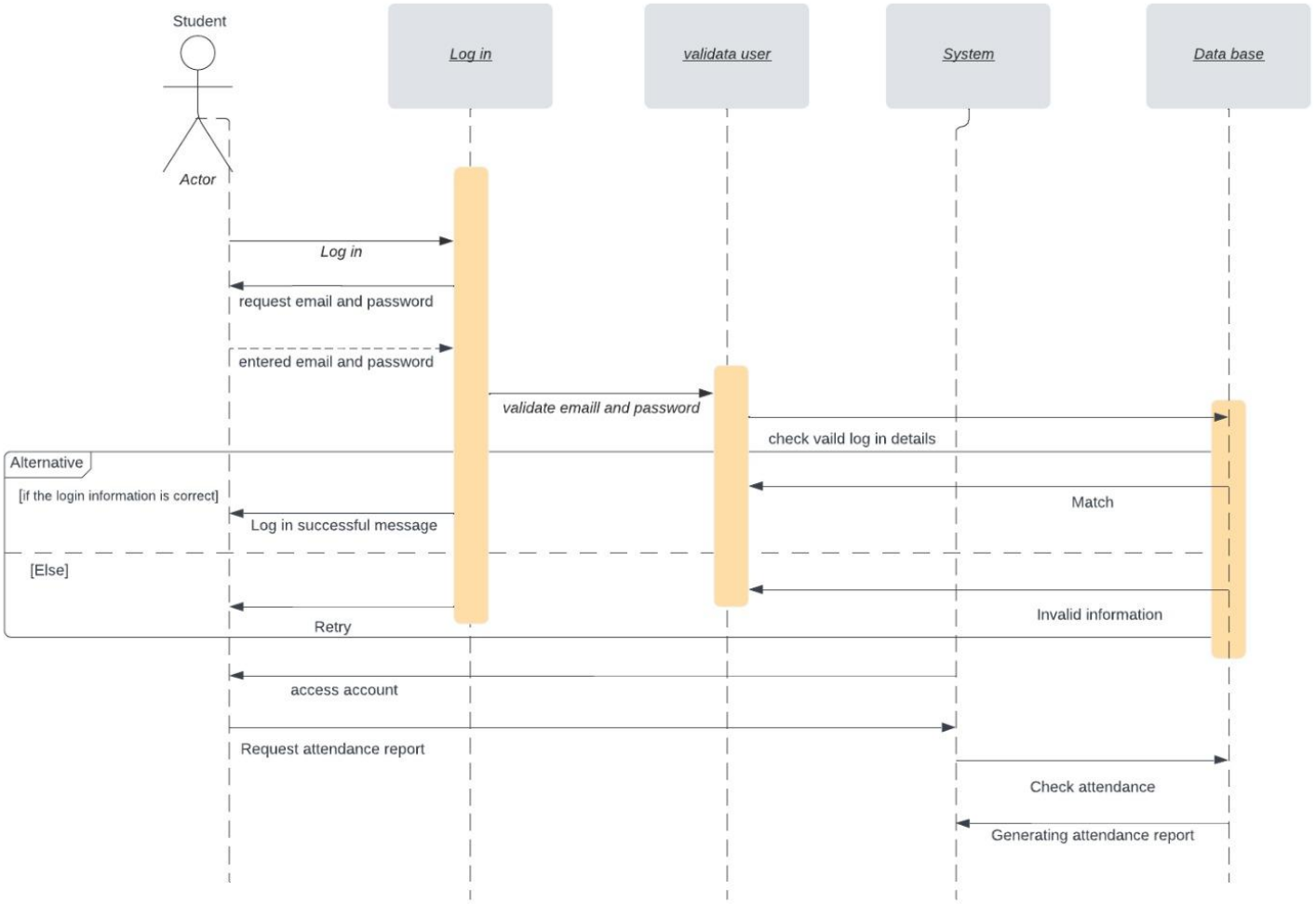
Scenario of UC9:

1. After accessing the attendance information of the class.
2. Lecturers can view submitted excuses, and then choose to confirm or deny.

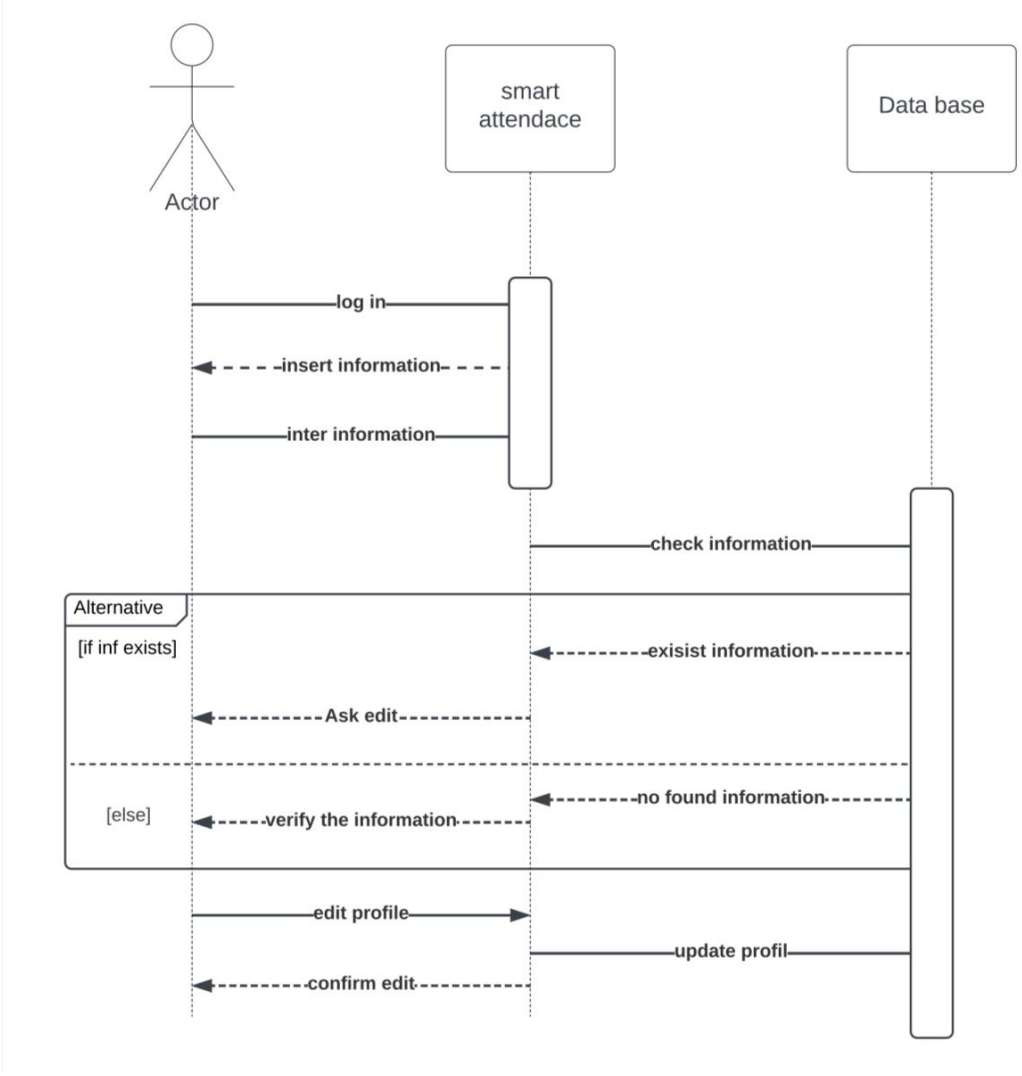
Lab 8

Sequence Diagram:

1. Attendance Report:



2. Edit Profile:



3. Sare & Scan QR-Code:

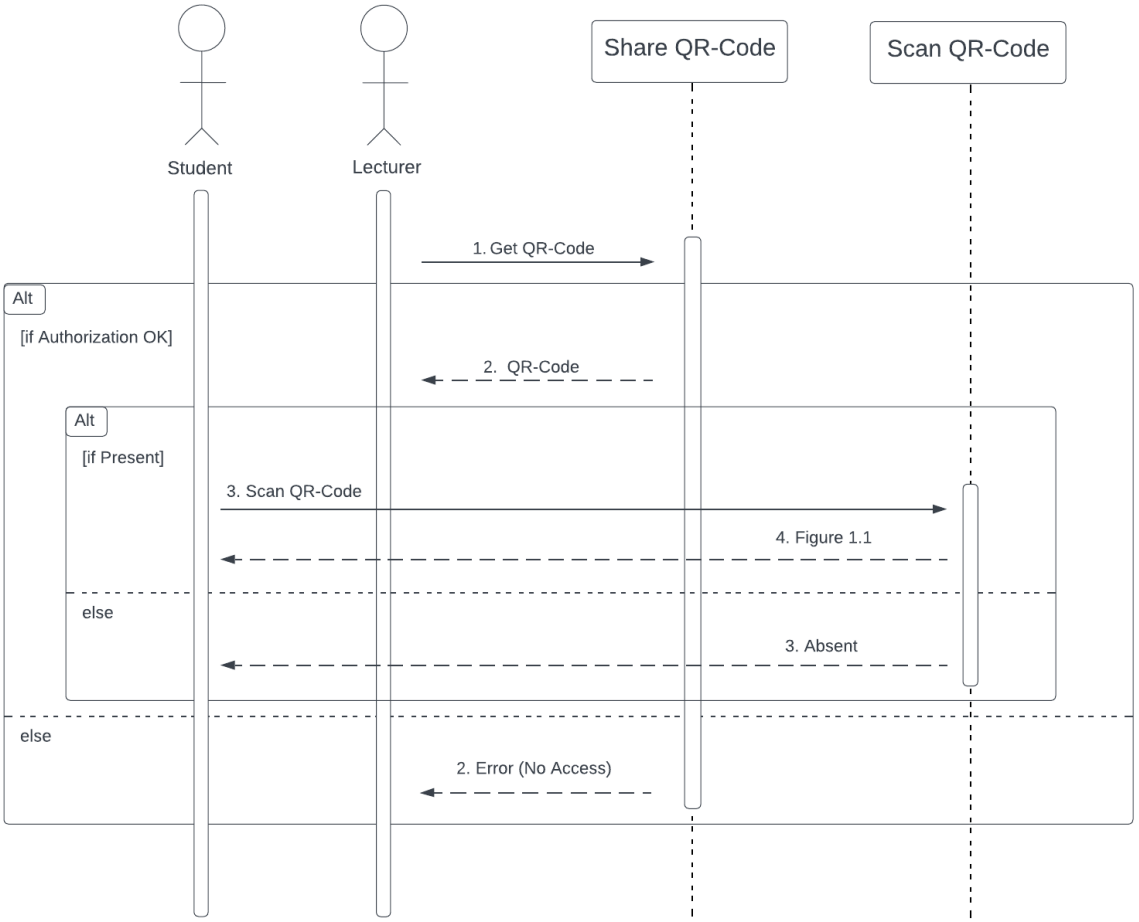
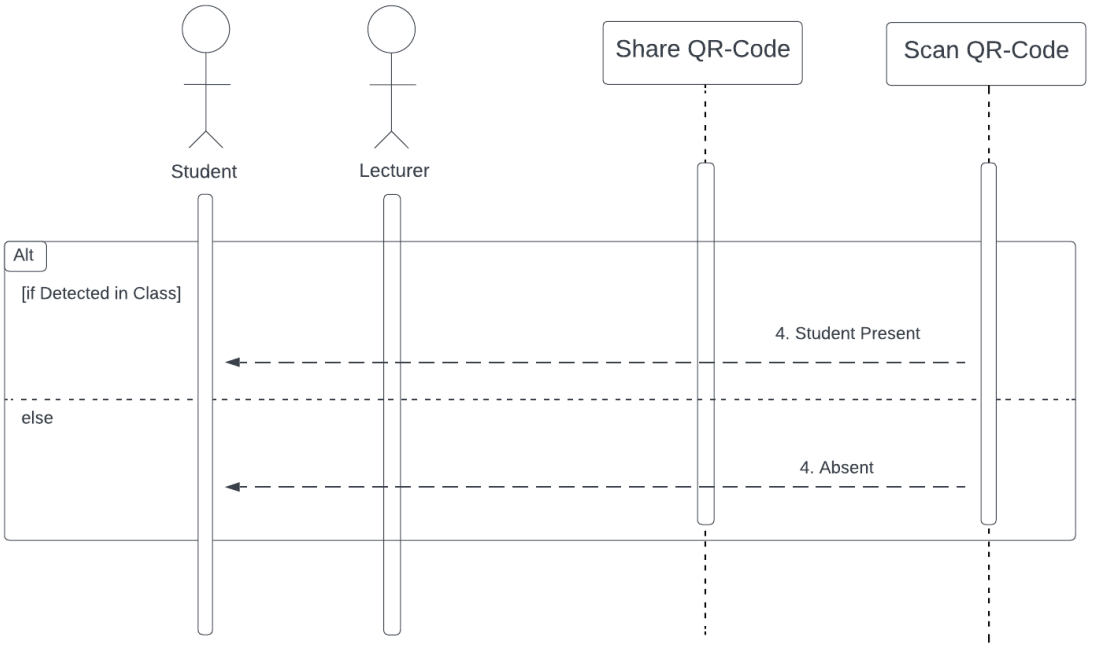
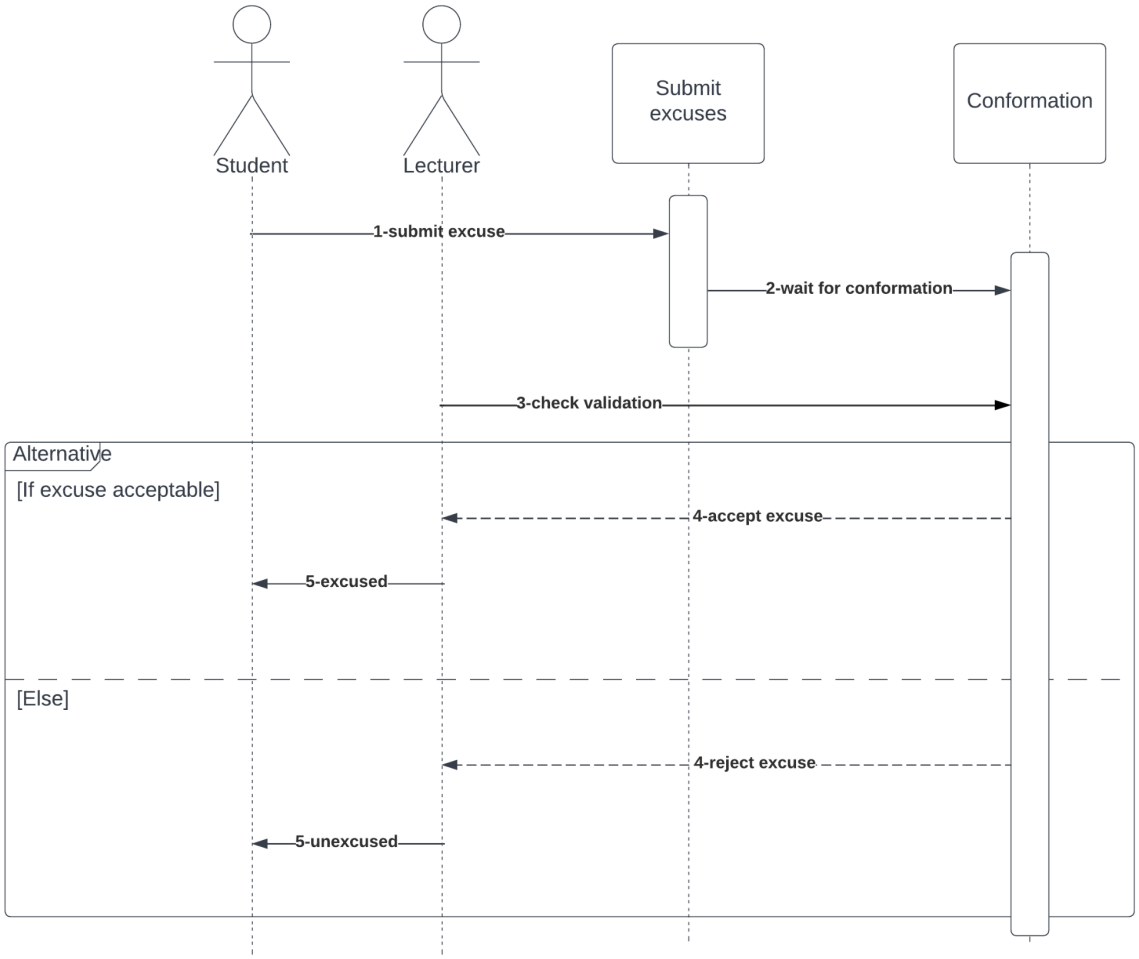


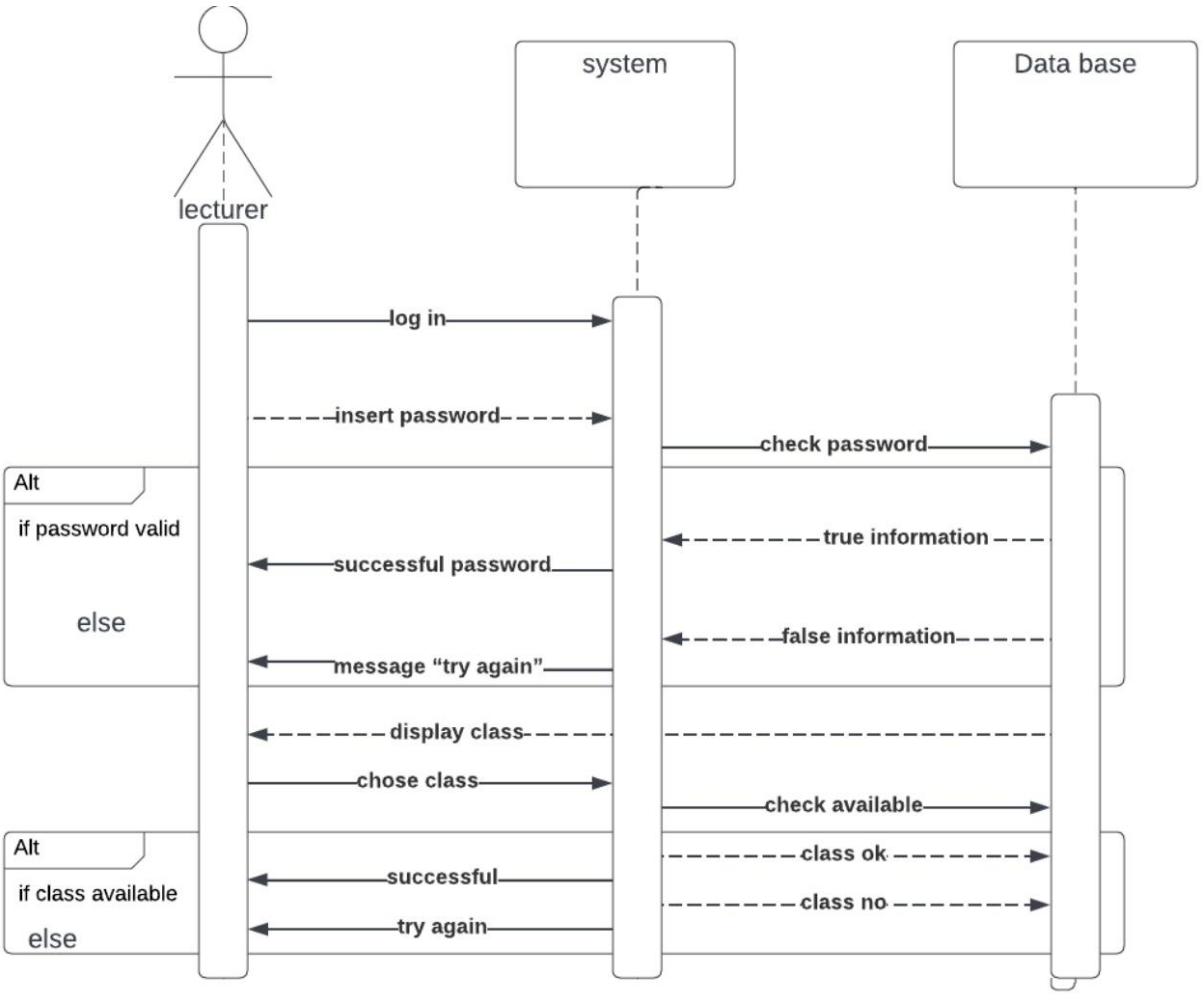
Figure 1.1:



4. Submit Excuse & Conformation:

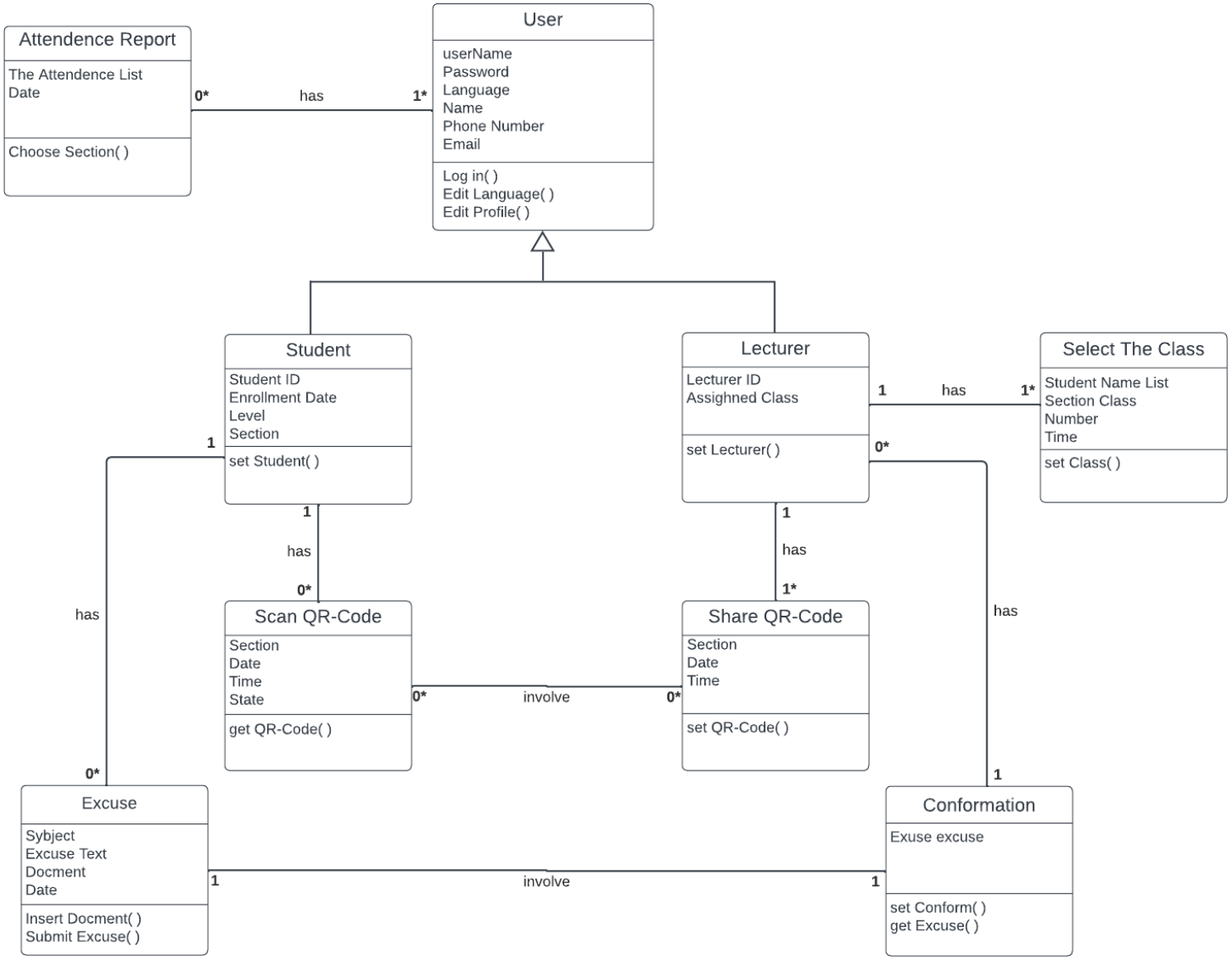


5. Select the Class:



Lab 9

Class Diagram:



Description:

Class:	**Description:**
Attendance Report:	Our system provides attendance reports for every user so that it provides a list containing the names of the attending students, the Section number, the day and the date of the lecture.
User:	Our system holds the information of all users such as, their names and numbers, so they can use it to log in to the system and modify settings by changing the language or editing the profile.
Lecturer:	Our system will hold a lecturer and their information: ID number, and assigned classes. In the system, a lecturer can be set or modified, the lecturer can choose one class or many classes. Also, the lecturer can share one or more QR codes with the students.
Select The Class:	Our system provides the selection of a class by the lecturer. The information about the class consists of : a list of students' names, class section , class number, and class time so the class can be set or modified. Each class will have only one lecturer at the allotted time.
Student:	our system will contain the student and their information: id number, Enrollment date, level, and section. In the system a student can be set or modified. The student can submit one excuse or no excuse for each absence. Also, the student can scan one qr code or not scan anything.
Share QR-Code:	Our system allows the lecturer to share a QR-code. The information that will be in the QR-code that was shared is: the section, date and time. The shared QR-code can be set or modified and it can only be shared by one lecturer.

Scan QR-Code:	Our system allows the student to scan the QR code that was shared by the lecturer. and the information that will be in the QR-code that was scanned is: Department, Date, Time and Status. a student can get the QR Code. The code can only be scanned by one student.
Excuse:	Our system provides the student with the ability to provide excuses and information that contains the text of the excuse, the document, and the date. The student can submit only one excuse for each absence.
Conformation:	Our system provides the confirmation of submitted excuses by the lecturer. The lecturer in charge of the lecture can get the submitted excuse to accept or deny the submitted student excuse.a submitted excuse can be conformed by one lecturer or not conformed at all.

Conclusion

In the end, our system focuses on easing the process of attendance via enabling students to scan a QR-code the lecturer has shared within the coordinates of the class. So by implementing the smart attendance system it will ensure that taking attendance is simpler, faster, and effortless for both students and lecturers.

Task Table

Name:	Tasks:
Lateefa	Lab3: Cost & Schedule Estimates. Lab4: Cost & Benefits of Alternatives. Lab5: The Context of the Work. Lab6: Non-Functional. Lab7: Description. Lab8: Share & Scan QR-Code. Lab9: Class Diagram. File Project: Cover Page - Content - Task Table. The Format for All Labs & Presentation.
Majd	Lab3: Content - The Problem. Lab4: Software Impacts - Potential Changes in the Organization - Editing. Lab5: The Current Situation. Lab6: Non-Functional - Editing. Lab7: Use Case - Editing. Lab8: Submit Excuse & Conformation. Lab9: Class Diagram - Editing. File Project: Introduction - Conclusion. Presentation: Editing.
Jumana	Lab3: Motivation - Goals of The Project. Lab4: Problem Definition. Lab5: Business Event List. Lab6: Functional. Lab7: Description. Lab8: Select the Class. Lab9: Description. File Project: Labs Merging.

Reem	Lab3: The User Business or Background of the Project Effort - Recommendation or Proposed Solution. Lab4: Alternative Solutions - Recommended. Lab5: Context diagram. Lab6: Functional. Lab7: Description. Lab8: Edit Profile. Lab9: Description. Presentation: Preparation.
Ajwan	Lab3: Finding - Consideration. Lab4: Scope Objectives of “new system”. Lab5: Stockholder Definition. Lab6: Functional. Lab7: Description. Lab8: Attendance Report. Lab9: Description. Presentation: Preparation.