Group 10

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Github Project Repository

Online Attendance System

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Problem Statement

Online Attendance Management System is an innovative tool to maintain and manage the attendance of students. These tools can be software to monitor attendance details. Also this provides transparency in the system so that each student can view their attendance from anywhere, anytime.

Functional Requirements

1. **User - Professor :**

    a. The professor must be able to log into his account and create a new course and add a list of eligible students to the course.

    b. Inside every course, the professor can create an entry for a new lecture and send links for attendance to every eligible student's email which the student needs to click to mark the attendance for that particular lecture.

    c. The link will be active for a certain period of time and will be unique for every student.

d. The professor must be able to see a dashboard where he can see the attendance of all the students for the course that he conducts.

e. The professor should be able to remove students from the course.

f. The professor should be able to change the attendance criteria.

g. The professor should be able to download a CSV file with the attendance of all the students in the descending order of their attendance percentage.

2. **User - Student:**

a. Students must be able to see courses which they are attending along with the percentage criteria of attendance set by the professor.

b. Students must be able to see whether they are above par i.e. above the attendance criteria set by the professor in every course which they have taken.

c. Upon receiving the link from the professor, students need to click on the link to mark their attendance for that particular lecture.

Non-Functional Requirements

1. **Security**- The system should provide access to registered users only.
2. **Performance**- The application will process attendance information as fast as possible from the moment of submission.
3. **Operability-** The web app can be accessed easily on a computer as well as a mobile device via a responsive web app design.
4. **Scalability**- All students enrolled in a particular course, irrespective of their number should be able to mark their attendance.
5. **Maintainability-** The professor should be able to add/delete students from the course of a semester.

Elicitation Techniques

Interview:

Roleplay

Interview between developer of the system and Professor(User)

Q: What do you expect from an online attendance system in which students can mark their attendance in virtual classes?

A: There should be an option to create a course and I should be able to create lectures for different dates .There should be data about all student's attendance in all lectures which also displays whether a student is above attendance criteria or not**.**

Q: What do you think can be done to ensure security or prevent any kind of outside interference in the system?

A: System's access can be granted with only institutional email id whether the the user is a Professor or a student. This will ensure that misuse of the system do not occur.

Q: What are the ways which you feel would be sufficient to prevent proxy?

A: I feel sending a unique link to the registered user id (i.e. email id) in an an ongoing lecture at a particular time can solve the problem to much extent.

Q: Can you tell me about some extra feature that we can add into the system?

A: You can add the feature that professors can remove students from the course who have very low attendance.You can also provide the facility of changing the attendance in between the course.

Interview between developer of the system and Student(User)

Q: What do you expect from an online attendance system?

A: I should able to see my attendance report for all the lectures of different courses In which I have registered.It should be able to show whether student's attendance is above the minimum criteria or not.

Q: Professor suggests that a unique link can be sent via mail to each and every student so that the student can mark the attendance. What are your views on it?

A: Only thing which concerns me is that we should be at least provided a minimum amount of time to mark us present as sometimes we have to login again, sometimes there can be a net issue so it would be better if a suitable time is given to mark the attendance.

Summary

An option to create a course will be provided to the professor in which the professor will be able to create lectures for different dates. Also the data about all student's attendance in all lectures will also be displayed providing details regarding attendance of each and every student. System will be institution specific and a unique link will be provided to every student for marking attendance to ensure no proxy.

And from the student's perspective it will be ensured that a suitable amount of time is given to mark the attendance and the stats of attendance will also be visible to the student.

Brainstorming

To ensure institutional integrity we can add G Suite login for the login system. We thought to send unique links to all the registered students of the course during the lecture period to make the system reliable and no student can make attendance of any other student.Then we thought that our system should give the facility to professors to set the attendance criteria for the course so that he can see the students fulfilling that requirement and it will also be lot more easier to student.Also the right to create course and to send invite to students as well as to remove a student from the course will be only limited to a professor.

Process Model - Waterfall

1. Our requirements, design and implementation are well defined and they do not need to change.
2. We can test and debug problems in later stages of development.

Use Case Models -

Use Case Name - Login
Description: The user comes to the homepage and clicks the sign-in button and is logged into the system by Google authentication.
Precondition: The user must be on the homepage and must have a google account.
Postcondition: User is logged in and taken to the dashboard

Basic Flow: User clicks the sign in by google button and selects a google account and is taken to the dashboard

Use Case Name - Enroll Into Course

Description: The user clicks the invitation link in his mail and is enrolled into the course.

Precondition: The user must be eligible to enroll in that course and must have a valid invitation in his email.

Postcondition: The user is enrolled in the course

Basic Flow: The user clicks the invitation link and is shown a success or failure screen depending upon whether enrollment was successful or not.

Use Case name - Create Course

Description: The user can create new courses through options given in the dashboard by setting details such as name, number of lectures, and attendance criteria.

Precondition: Users must be on the dashboard and have logged in to the website.

Postcondition: Users can see the details about a particular course which they've created.

Basic Flow: The user clicks the create course button and sets details about the course.

Use Case name - Send Attendance links

Description: The professor will be able to send unique links to every student enrolled in the course for a particular lecture.

Precondition: Students must be registered for the course.

Postcondition: The student has received the link in his email.

Basic Flow: Professor will login and create a new lecture in a course and send the attendance links.

Use Case Name - Mark Attendance

Description: The user clicks the attendance link in his email and marks his attendance.

Precondition: The user must be logged into his email and must be eligible to attend the course and the link needs to be clicked in the valid time period.

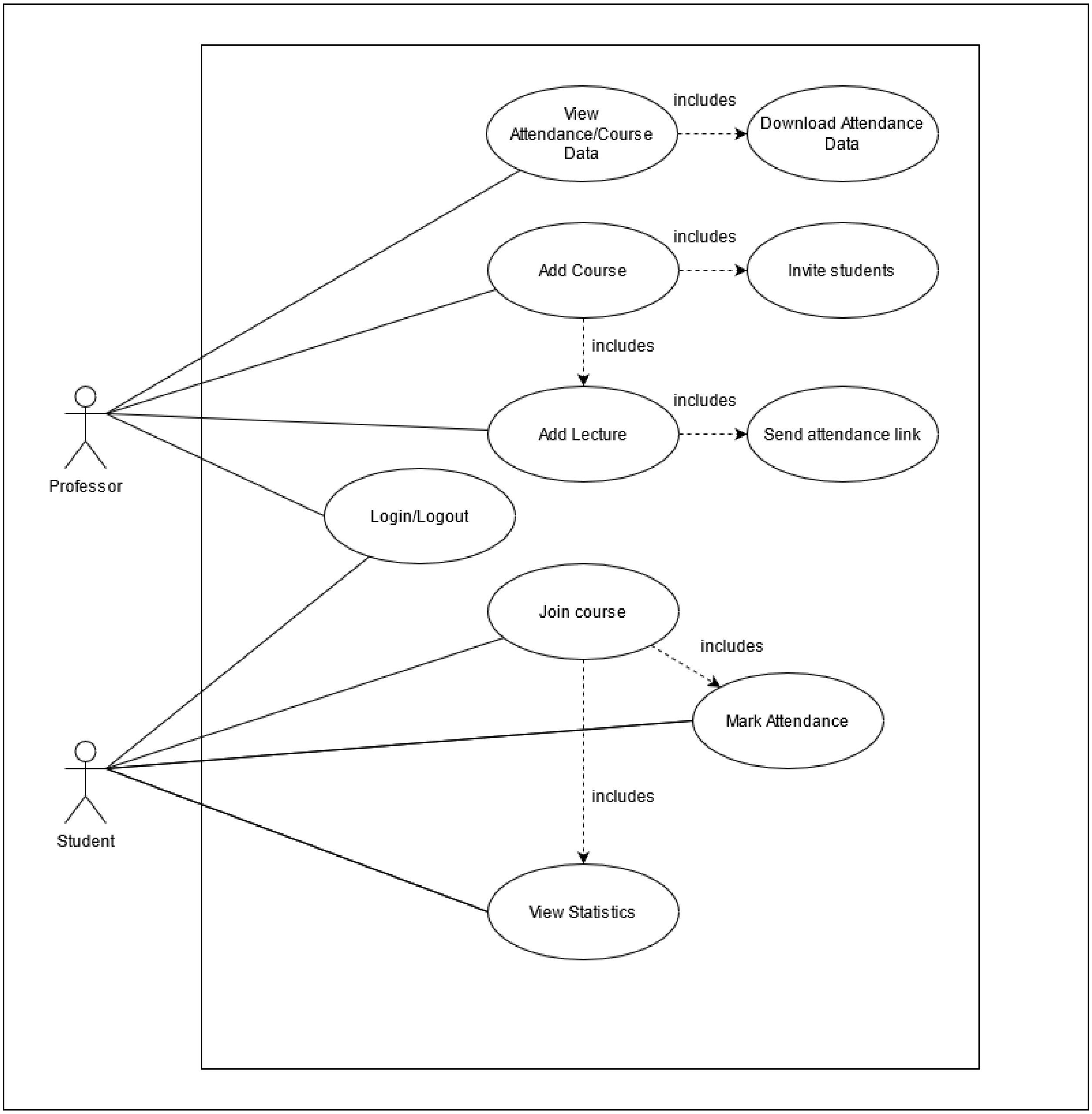
Postcondition: The user's attendance is marked
Basic Flow: The user clicks the attendance link in his email and is shown a success or failure screen depending on if the attendance is marked or not.

Use case name - View attendance statistics(Student)
Description: The user(student) will be able to view the attendance record of his/her particular that he/she has enrolled.
Pre-condition: The user must be logged in to the system.
Post-condition: The user can view statistics of attendance of a particular course.
Basic Flow: The user can view attendance statistics from the system by clicking on the view data button of a course.

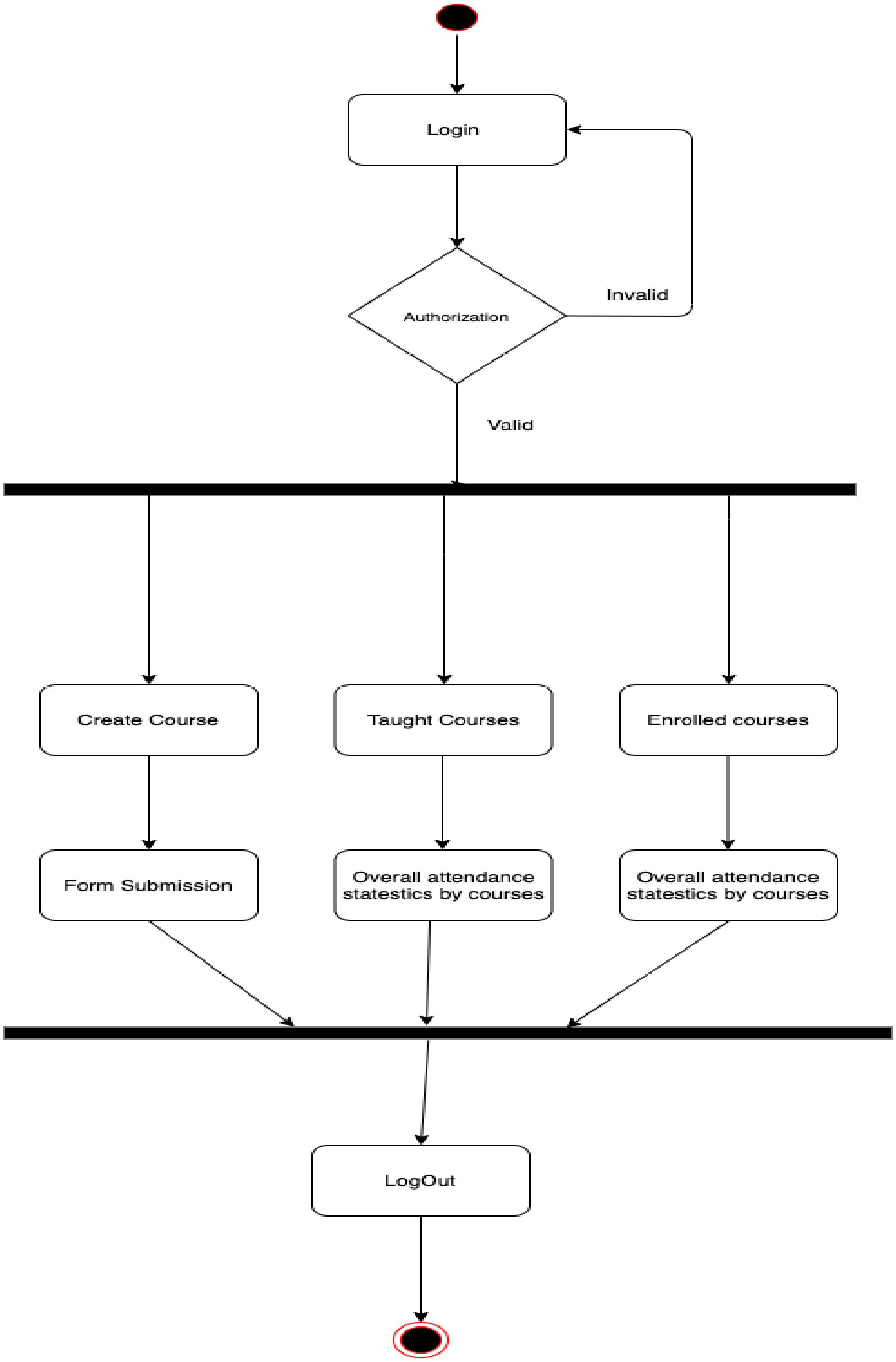
Use case name - View attendance statistics(Professor)
Description: The professor will be able to view the attendance Record of all students and/or particular students for a particular course.
Pre-condition: Professor must be logged in to the system.
Post-condition: Professor can see the attendance data of a student or multiple students.
Basic Flow: Professor can see the attendance data of the student by searching the username/email of the student.

Use case name - Download attendance Records
Description: The professor will be able to download the attendance Record of all students in CSV format for a particular course.
Pre-condition: Professor must be logged in to the system.
Post-condition: Professor receives a CSV file with student attendance data in it for a particular course.
Basic Flow: professor can Download the CSV file from the system by clicking on the export data button of a course.

Use Case Diagram



Activity Diagram



Planning for further Development

We plan to complete the following tasks for future development:

1. Create User, Course and Lecture models for basic CRUD operations on data.
2. Create a mechanism to send enrollment emails to all students when a new course is created by a professor.
3. Create endpoints and user workflows for attendance data aggregation.
4. Create a user friendly frontend which can be easily used by the professors and students.
5. Create an informative dashboard containing all the aggregated attendance data.
6. Test the application for bugs and problems.
7. Deploy the web app so that it can be accessed by anyone.