SUPERIOR UNIVERSITY LAHORE

Faculty of Computer Science & IT

Final Year Project
PROJECT REPORT (Part-1)

TrueVit

Project ID: **[FYP-BCSM-F15-023]**

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Project Report

[Title of Project]

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
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APPROVAL

PROJECT SUPERVISOR

Comments: _____

_____

Name:_____

Date:_____ Signature:_____

PROJECT MANAGER

Comments: _____

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Date:_____ Signature:_____

HEAD OF THE DEPARTMENT

Comments: _____

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Date:_____ Signature:_____

Dedication

This work is dedicate to my family, friends and everyone who showered me With their love and support. I am especially thankful to those who presented Challenges to my work and I pray for them because without their resistance I Would never have been able to achieve what I did.

Acknowledgements

I am thankful to my supervisor who has guided us well throughout the semester. As well as the people, that provided us with their honest opinions and reviews. Who made time for us for conducting their interview from their busy schedules. I would also like to thank my friends and family that provided us with the opportunity and support for developing this project.

Executive Summary

This proposal is for our final year Project,"TrueVit". The purpose of this project is to create a onetime solution platform where users can submit, perform quizzes online, check plagiarism, download lectures, view grade sheet etc. This is helpful for Teachers and students in many ways, especially when teacher and student time is so precious. With this student and teacher will be on one platform where they can submit their assignments and download lectures of the subjects and did not need to rely on other students. Students will get updates of upcoming quizzes and assignments who are due. As well as teacher requires a significant amount of time to check plagiarism of student's assignments of one class and if they are doing this with some sort of software then they need to buy their license in order to use that software. Teacher need to check quizzes and compile their results, but with our product, these are all done automatically and this will save precious time of teachers so that they can concentrate on students, so that students can give maximum output.

The summary contain the following elements:

- Enable a teacher to perform a quiz online of students and result of that class will be generate on that time.
- Check plagiarism between assignments of that class.
- Students can view deadlines of quizzes and due assignments
- Students can download lectures

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Chapter 1

Introduction

Chapter 1: Introduction

In this chapter, the readers will be introduced to the basic idea of the documented product named **Truevit,** the motivation behind it. This chapter will provide the reader with the project plan that will carried out the development process of this product. It will include the responsibilities matrix, work breakdown structure. In addition, the Gantt chart. Finally, the chapter concludes with a brief outline of the document to prepare the reader for what has to come and what to expect.

Our solution is to provide facility to students and teachers on one platform by giving them authority in different ways. Students will submit their assignments, they can view deadlines of the assignments, and upcoming quizzes that are due as well as they can download lecture's data section wise that teacher has uploaded for students. Students can do quizzes online and the result compilation will be easy for teacher.

1.1. Background

Speaking from the experience, students faces many difficulties by using different websites for plagiarism checking and online quizzes and grade-sheet students check their plagiarism on different websites and for getting data, they normally look for cloud services where they can easily download the data but that consumes time. Students also searches for different websites where they can test their exams preparation by quizzes in form of **MCQS**. Therefore, we are providing one time solution to our users by checking plagiarism, online quizzes and view their grade-sheet on one website this can solve many problems of students and saves many time. We are making a solution that is according to user requirement. We are providing one time solution in form of a website named **Truevit**.

1.2. Motivations and Challenges

Many universities provides online portal for the ease of their students and faculty members. but ums didn't provides the functionalities of onlines quizzes and instant result compilation. Google form is one of the best online service available that we can use for conducting quizzes. There are many websites used for checking plagiarism but we inspired by Turnitin plagiarism technique

because its result is very accurate. And we are using third party API for checking plagiarism in documents. We are also providing lectures data to the students from where they can easily downloads the lecture data. If we give one time solution, in which these functionalities are perform. That can be a big challenge. Many difficulties may appears but this one time solution can solve many problems of students because there is site which is giving one time solution for these functionalities.

1.3. Goals and Objectives

To solve the above-mentioned problem, it is our goal to create a single platform for the students as well as for the teachers. Because teachers can take online quizzes and there will be auto-updated grade-sheet which can decrease their burden of work.

- Develop a website where students and the teachers can take benefits.
- Students can get lecture data easily
- Auto-updated grade-sheet for the teachers
- It aims to give the easiest way for users.
- Notifications alerts for the students if a new event appear.
- We will also provide the Key logging as well for security purpose.

Objectives of **Truevit** is to provide an efficient way to deal with the matters that came across in teacher and student life. As we know teacher needed to check quizzes maintains student semester data and provide them the helping material. Teacher also need to check many assignments that will consume lots of time checking how much plagiarism is in between assignments. Student also need reminders and sometime need to rely on svls to update them related to quiz and assignments that are due.

1.4. Literature Review/Existing Solutions

- **UMS:**

Superior university provides university management system for the ease of students and their faculty members. Most of the ums did not have the functionality of online quiz like superior university management system.

- **Digiskills:**

Virtual university is providing Digiskill learning management system for the students. In digiskill students can perform online quizzes and also there is a functionality of providing gradesheet of the quizzes.

- **Google form:**

Google form is a web-based app used to create forms for data collection purposes. Data gathered using in the form is typically stored in a spreadsheet. Although there are other online survey apps, google forms is an excellent free option.

- Feature 1: Online quiz
- Feature 2: Gradesheet

Websites	Feature 1	Feature 2
UMS	×	✓
DigiSkills LMS	✓	✓
Google form	✓	×

Table 1: Competitive analysis

1.5. Gap Analysis

The portal that are we are providing can take online quizzes. Students can download lectures and submit their assignments online. We are using an API for checking plagisirsim between assignments.

- Make it user-friendly and hassle-free to make the users stay.
- Assures the security of the data.
- Used a third party tool for check plagiarism.
- Quizzes for the students will be kept secret
- Generates alarming notifications of the upcoming quizzes and assignments.
- Test the system on multiple platforms and devices to make sure that it is free of bugs doesn't cause user any problem.
- Develop the online portal for the ease of students and teachers.

1.6. Proposed Solution

There are many solutions available for these types of situations but we are going to do this with the solutions that are as follows

The quiz is going to be upload in the specific format otherwise, quiz will not acceptable. With this type of solution, system does not need to rely on different situations instead only one format is available.

1.7. Project Plan

This product plan will be managed through following WBS and Gantt chart:

1.7.1. Work Breakdown Structure

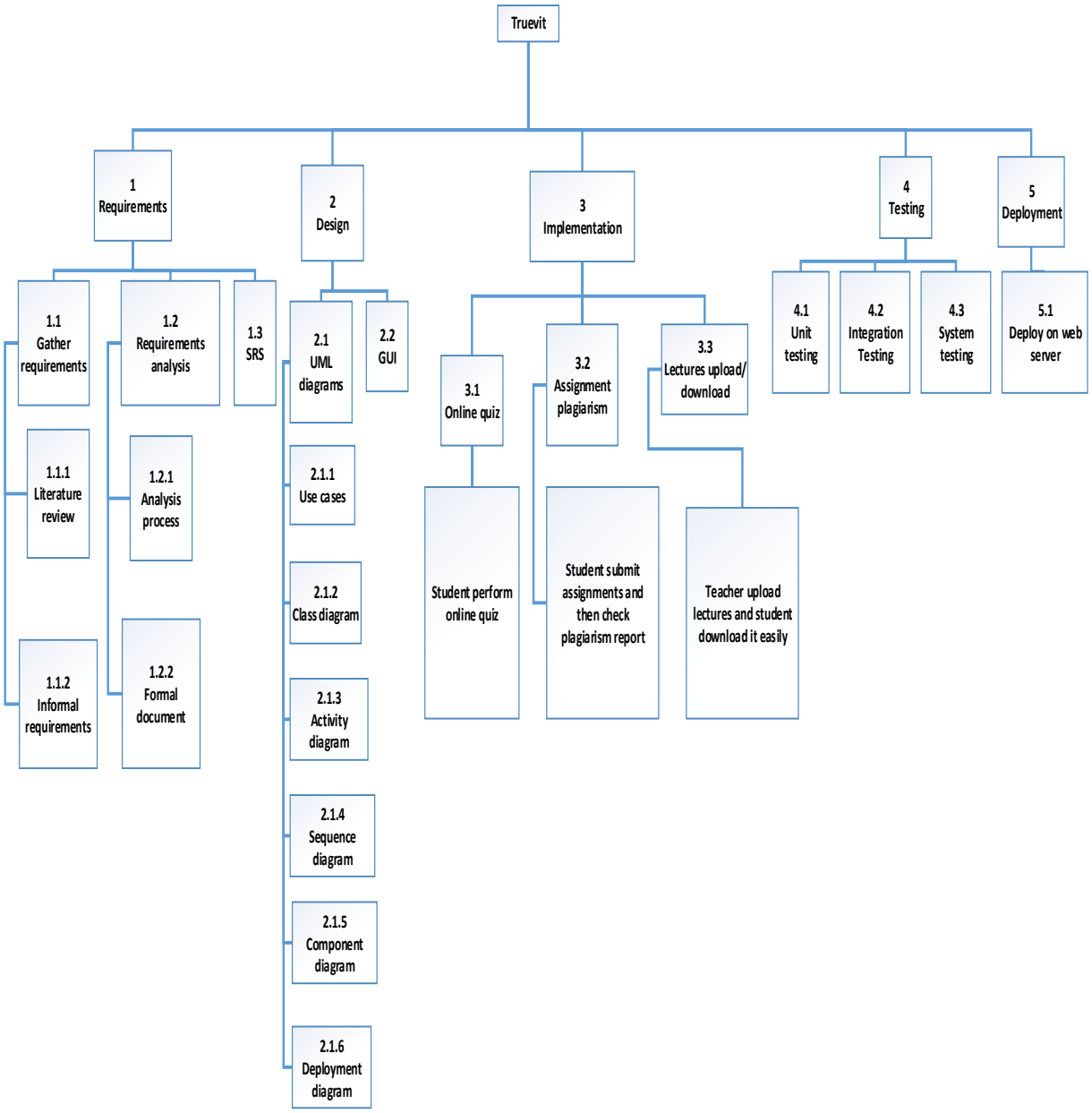

Figure 1:Work Breakdown Structure

1.7.2. Roles & Responsibility Matrix

WBS#	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
01	Requirement Gathering& Analysis and SRS	01	• Gather requirements • Lietrature review • Informal-requirements •requirement Analysis • Analysis process • Formal document • SRS	40 days	Requirements gathering and analysis done by all the team members Muzamil Rasheed, Suleman Taj, and Ahsan Elahi.
02	Design	02	• UML diagrams • use cases • class diagram • activity diagram • sequence diagram • component diagram • deployment diagram • GUI	50 days	UML diagrams done by the collaboration with all team members Muzamil Rasheed, Suleman Taj, and Ahsan Elahi. Muzamil Rasheed & Suleman Taj does implement that design through HTML, CSS, Bootstrap.

03	Implementation	03	• online quiz
			  • Student perform online quiz
			• assignment plagiarism
			  • Students check plagiarism
			• lecture upload and download
			  • Teacher upload lectures students download them.
				80 days	Suleman Taj & Ahsan Elahi does all the backend coding implementations.

04	Testing	04	• unit testing • integration testing • system testing	120 days	Muzamil Rasheed do unit testing. Suleman Taj do integration tesing. And checks efficiency and security. Ahsan Elahi do system testing.
05	Deployment	05	• deployment on web server	07 days	Deployment done by all the team.

Table 2: Roles and responsbility matrix

1.7.3. Gantt Chart

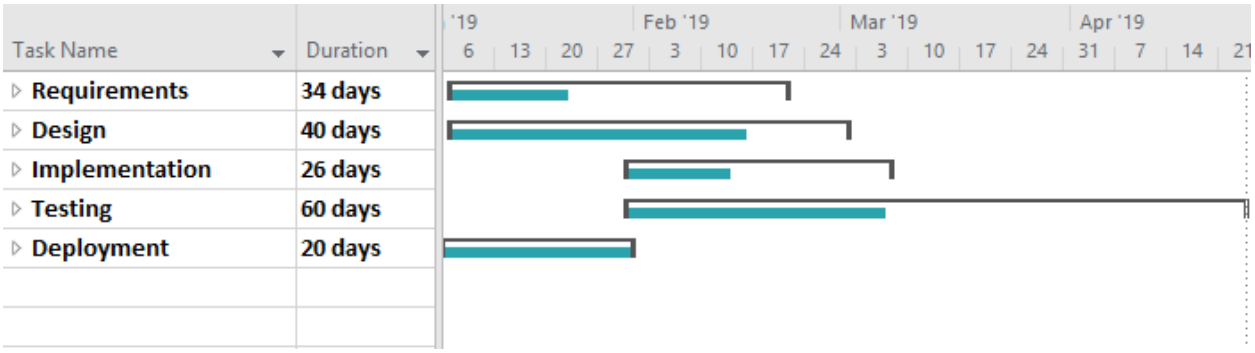

Figure 2: Gantt chart

Chapter 2

Software Requirement Specifications

2.1. Introduction

2.1.1. Purpose

The purpose of this documentation is to provide detailed knowledge about our software system requirements, functional and non-functional requirements. This document contains introduction, description of our project, External Interfaces that will explain the user interaction with our system, functional requirements, features our system will provide, and it contains the non-functional requirements section, which will explain the efficiency and effectiveness of system.

Our system provides a platform where user can easily interact with the system and can use the functionalities that provided. Our system will give you update with auto updated result-sheet and will check the plagiarism of student assignment documents. Our system will also take online quizzes of students and will also keep you update with new events. Another functionality of our system is to give students lectures data of the class. Our system will perform all of these functionalities in an efficient manner. A login will be given to all of the students through which user will login for the first time and then he can change his login to protect his data.

2.1.2. Document Conventions

This document follows Calibri format and the font size is 12. Bold-faced text has used to emphasize sections and italicized text has used to label and recognize diagrams and the all text are justified.

2.1.3. Intended Audience and Reading Suggestions

Many people like will read this document:

- Team Manager
- Team Leader
- Developers
- Testers
- Users

The documentation is organize approximately in order of increasing specificity.

- Scope of product

- Functional requirements
- Use cases
- DFDs
- Non-functional requirements

2.1.4. Product Scope

This is fully dedicated for the convenience of students and the university staff and faculty. Our goal is to make a system smart enough to solve the problems of the students and also provide him convenience about university related problems. Our goal is to solve as much problems of the students all the facilities that help him in education field.

2.1.5. References

This document is formed by helping from these sites and documents:

- https://www.scribd.com/doc/14649618/SRS-of-University-Management-System-by-Balwinder-Singh-Vehgal,

  Author name:

  Balwinder-Singh-Vehgal.

  Title:

  SRS of software university management system.

  Source:

  Scribd

- https://ieeexplore.ieee.org/abstract/document/7563123

  Author name:

  Fu Yue

  Title:

  Study of student information management software

  Source:

  IEEE

2.2. Overall Description

2.2.1. Product Perspective

Our system is like a university management system that can perform specific tasks. Our system has many functionalities like uploading lectures by the teachers to keep them up to date with the class activities. Students will not need to wait for the class representative to keep them update with class activities. Most important feature is plagiarism checking through which students will study more. Another important feature is online quizzes that system will check and gives back the result sheet. Result sheet will be generate by the system that automatically generates the result sheet in efficient manner. Our system is inspire by the different university management systems and the Turnitin tool used for checking the plagiarism of the documents inspires plagiarism feature of our system.

2.2.2. Product Functions

Our system will capable of performing the following tasks:

- Plagiarism checking

  Our system will check the plagiarism of the documents that has been upload. If the system found any plagiarism in the document, report will be directly, send to teachers as well as to students.

- Online quizzes

  Teachers will give the question paper to the system and mention the time. Our system will take that quizzes and generates the notification to the student accounts. In addition, the online quizzes will be perform by the system in the university lab.

- Lectures data

  Our system will also have the lectures data. The activities that had performed in the class will be upload on our system so that the students will not face any difficulty according to documents.

- Automated grade-sheet

Automated grade-sheet is another important feature of our system. Where the marks of paper and online quizzes will be mention. Online assignment and quizzes will be auto uploaded by the system and the teacher will upload remaining marks.

2.2.3. User Classes and Characteristics

There are two types of users interacting with the system:

- Students
- Teachers
- Admin

2.2.4. Operating Environment

This software will be easily implement on all of the systems, which have window 7, 8, 8.1 and 10. Our system is compatible with desktop browsers as well as mobile browsers.

2.2.5. Design and Implementation Constraints

The following are the constraints of implementation:

- Developers have to complete this system in minimum time say 6 months.
- The languages which will be used in this project is PHP, Bootstrap3, Html and CSS3.
- The Case tool to implement this product is Sublime text and xampp.
- For testing JMeter and Grinder will be used.

2.2.6. User Documentation

- We make a blog and help section in system for online help of users.
- We will give safety disclaimers for users.
- We will also provide the tutorials video that how to use the website on social media.
- Like YouTube and Facebook.

2.2.7. Assumptions and Dependencies

Following are the some

- The website will be that much simple (complexity level is low)
- Ambiguity must be minimize into the document
- Format for the quiz will be easy and understandable by the machine.
- Our research is authentic and according to the standards. The system would continue to get updating data from developer side.
- For plagiarism, we will use PHP API's.

2.3. External Interface Requirements

The user interface for the software shall be compatible to any browser such as INTERNET EXPLORER, GOOGLE CHROME or MOZILLA FIREFOX by which user can access to our website.

The user interface shall be implement by using HTML, CSS and bootstrap.

2.3.1. User Interfaces

The user interface of our website is simple. Currently, we design our GUI by using a cascading style sheet and bootstrap. Because our two main users one is a student and the second one is a teacher so we build our GUI by understanding the needs of both users.

As in our university ums, we just need 2 fields for login. In our website, we just type the ID and default password for both student and teacher. The student has different options in GUI and teachers has different options.

2.3.2. Hardware Interfaces

For developing a website, we need these hardware interfaces as we need a internet server and laptop. Our application must run over the internet, all the hardware must connect with internet so that our hardware communicates with each other.

2.3.3. Software Interfaces

Our website is develop on framework of PHP language called LARAVEL. LARAVEL is the famous and strong framework for developing websites.

For fetching data from our database, we use MySQL. Because we have strong command in MySQL.

2.3.4. Communications Interfaces

Our website uses the HTTP protocol for communication over the internet and for the intranet; communication will be through TCP/IP protocol suite.

2.4. System Features

In this section, we simply define the features of our website. The main features of our website are plagiarism checking, online quiz and lectures uploading.

2.4.1. System Feature 1

Plagiarism checking

2.4.1.1. Description and Priority

In this feature, student submit the assignment and after some time webiste generated the plagiarism report against the document.

2.4.1.2. Stimulus Response Sequences

When student login with their account, student will see the notification that assignments had been uploaded by the teacher. In response student will submit the assignment before due date, student will also see the plagiarism report generated by the website.

2.4.1.3. Functional Requirements

REQ-SF1-1: <Assignment upload> teacher upload the assignment and student just submit the assignment.

REQ-SF1-2: <Plagiarism checking> after the student submit their assignment website response against the assignment and tells the plagiarism of assignment.

2.4.2. System Feature 2

Online Quiz

2.4.2.1. Description and Priority

This section relates to both student and teacher. Teacher has option to upload a quiz document file and just or website convert it into quiz format.

2.4.2.2. Stimulus Response Sequences

The teacher just uploads the document and student perform online quiz. After some time, our website responds against the quiz and calculate marks of the correct answers.

2.4.2.3. Functional Requirements

REQ-SF2-1: <Teacher upload quiz> this requirement we need in our website. The teacher just uploads the document file and our website just change it into quiz format.

REQ-SF2-2: <Student perform quiz> after teacher upload quiz our website create a notification for student which tells the quiz has been uploaded. Student just open it and perform quiz.

2.4.3. System Feature 3 (and so on)

Lectures uploading and downloading

2.5. Other Nonfunctional Requirements

2.5.1. Performance Requirements

In plagiarism checking we are relaying on the API of plagiarism technique that will ensure us that it will produce effective results according to our requirement as well as maintaining grade sheet and saving data techniques to record semester wise data of students. The algorithm and techniques are need to be smart so that it will response time to time whenever it needed.

2.5.2. Safety Requirements

Providing the safety of data so that teacher essential information as well as maintain grade sheet information so that non-authorize user cannot access that data.

2.5.3. Security Requirements

Providing maximum security so that our data cannot be breach. For achieving maximum security, we are going to apply different checks that can assure the authorize user is accessing the require data.

2.5.4. Software Quality Attributes

- User friendly
- Easy to remember functionalities
- It can easily accommodate updates that can come time by time
- Fast and quick answers
- Responsive at any situation
- Reliable Response of answers
- Accurate Display of Information

- Maintainability of the system updates

2.5.5. Business Rules

Inter-operability is the need of the software for the commercial purpose.

2.6. Other Requirements

In order to use this website for better response and efficient way we require much better data set techniques for doing our work. As we know that on daily basis, new and new updates are coming. With that the efficiency of doing the work is also becoming more advance and for plagiarism, we are viewing different API and we are viewing different techniques for our quiz document that can upload in the require format so that teacher do not need to make many changes while uploading document.

Chapter 3

Use Case Analysis

Chapter 3: System Analysis

This chapter describe about system use cases and how the different actors are interacting with the system. In use case main functionalities of the system are defined that are divided in different modules e.g. major use case in which all functionalities of the system are defined is divide into renter, consumer and admin module and each actor interacting with module and performing his module functionalities.

3.1. Use Case Model

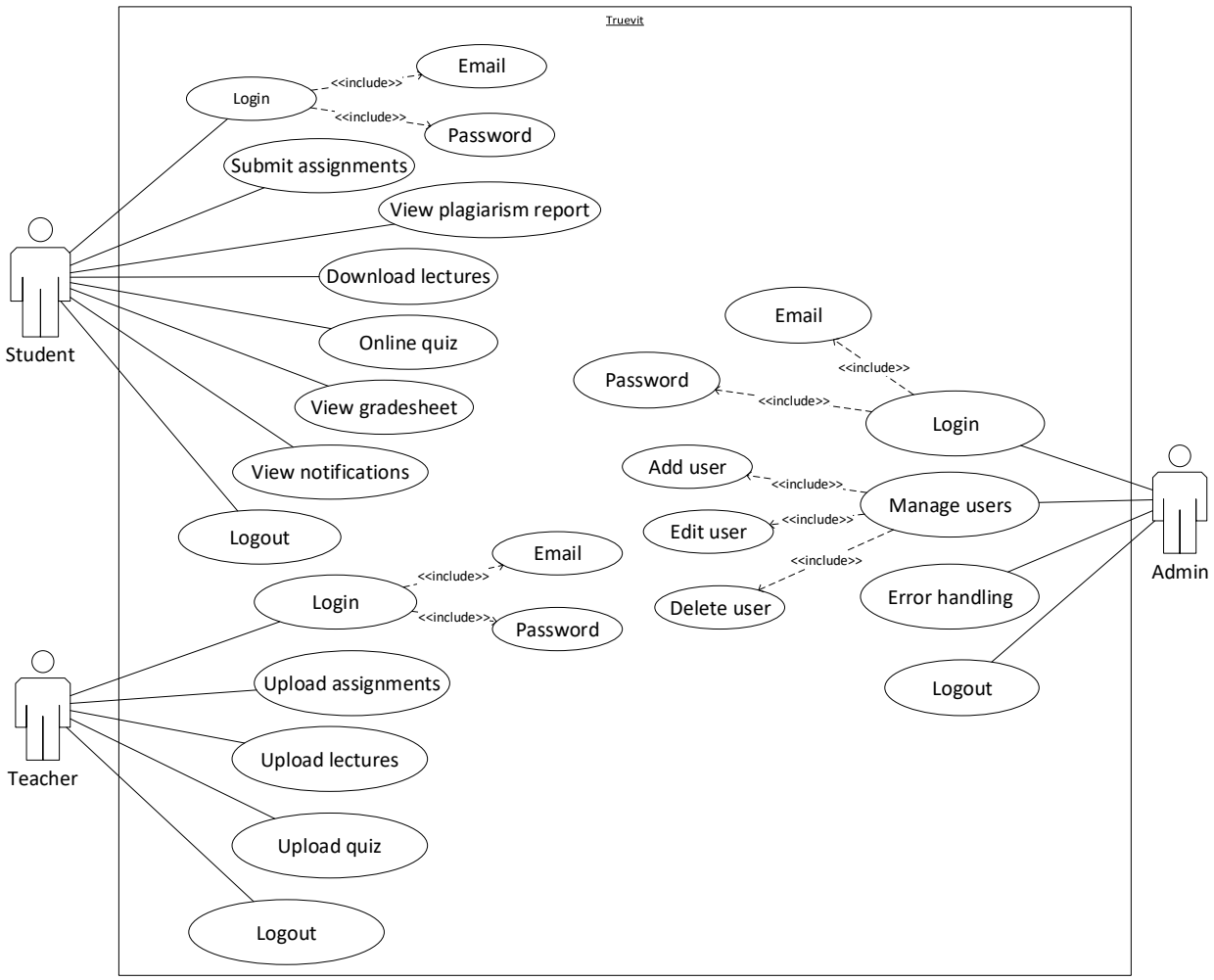

Figure 3: Use Case

3.2. Fully Dressed Use Cases

USE CASE FOR STUDENT

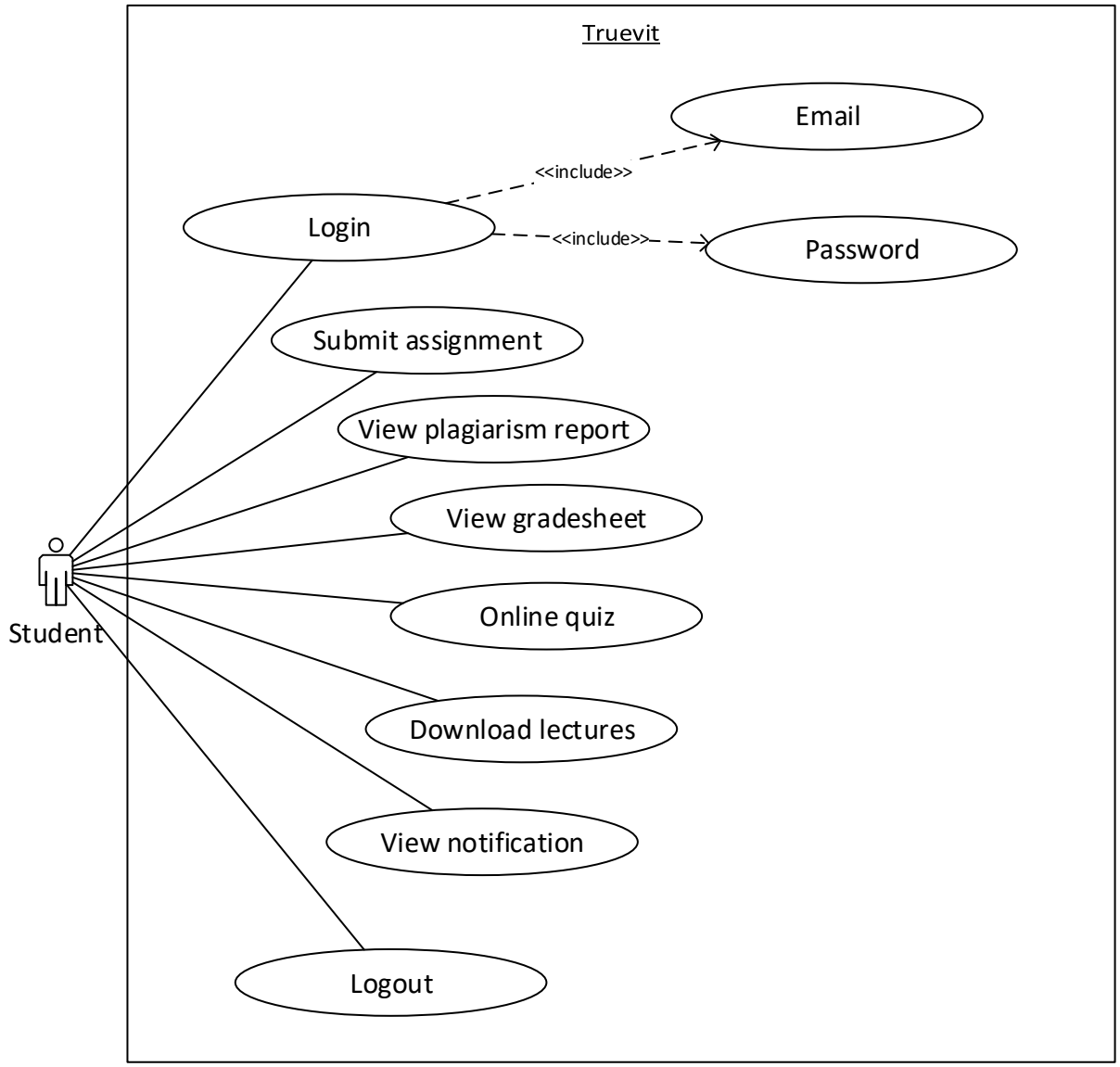

Figure 4: Use Case for student

USE CASE FOR TEACHER

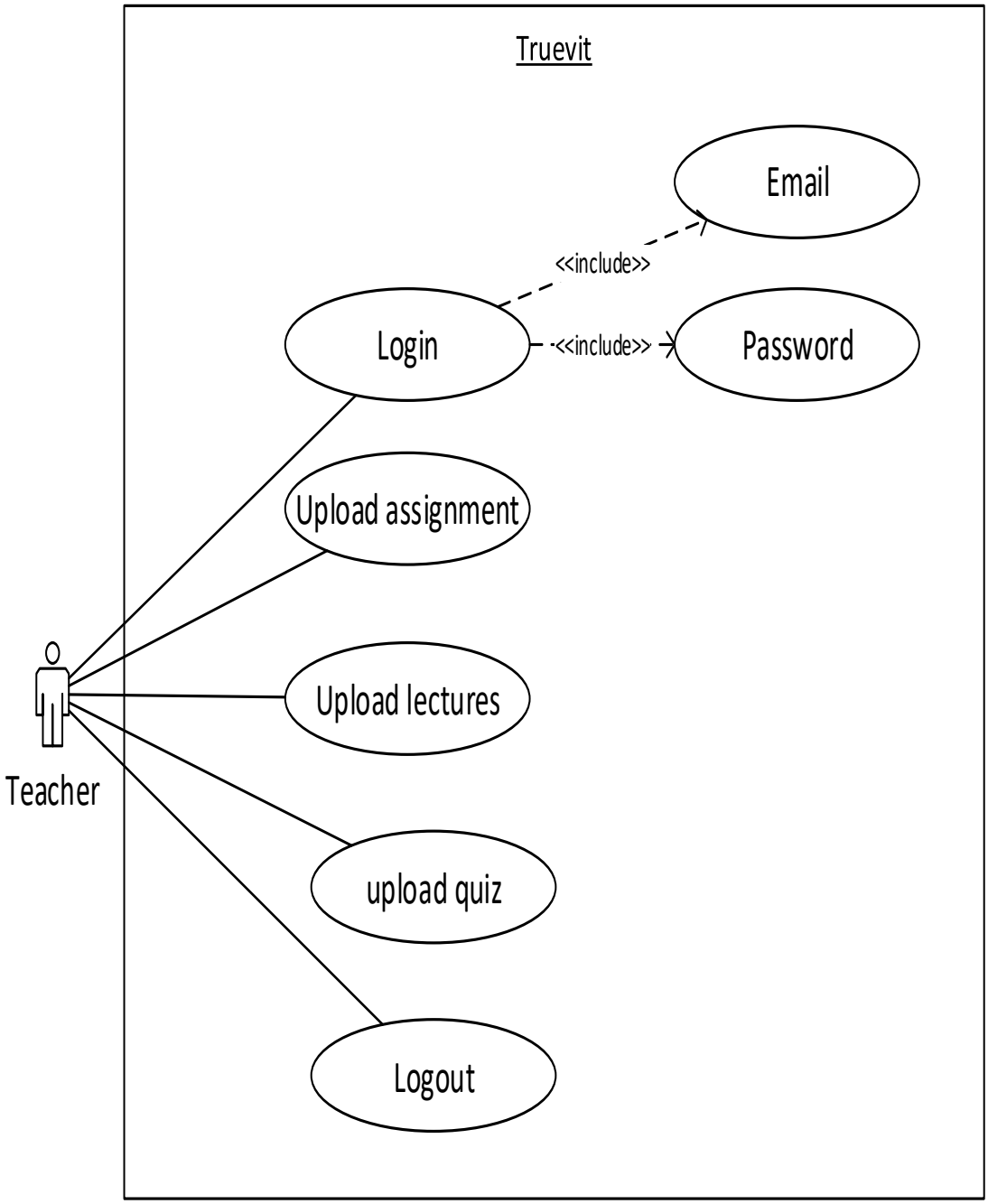

Figure 5: Use case for teacher

USE CASE FOR ADMIN

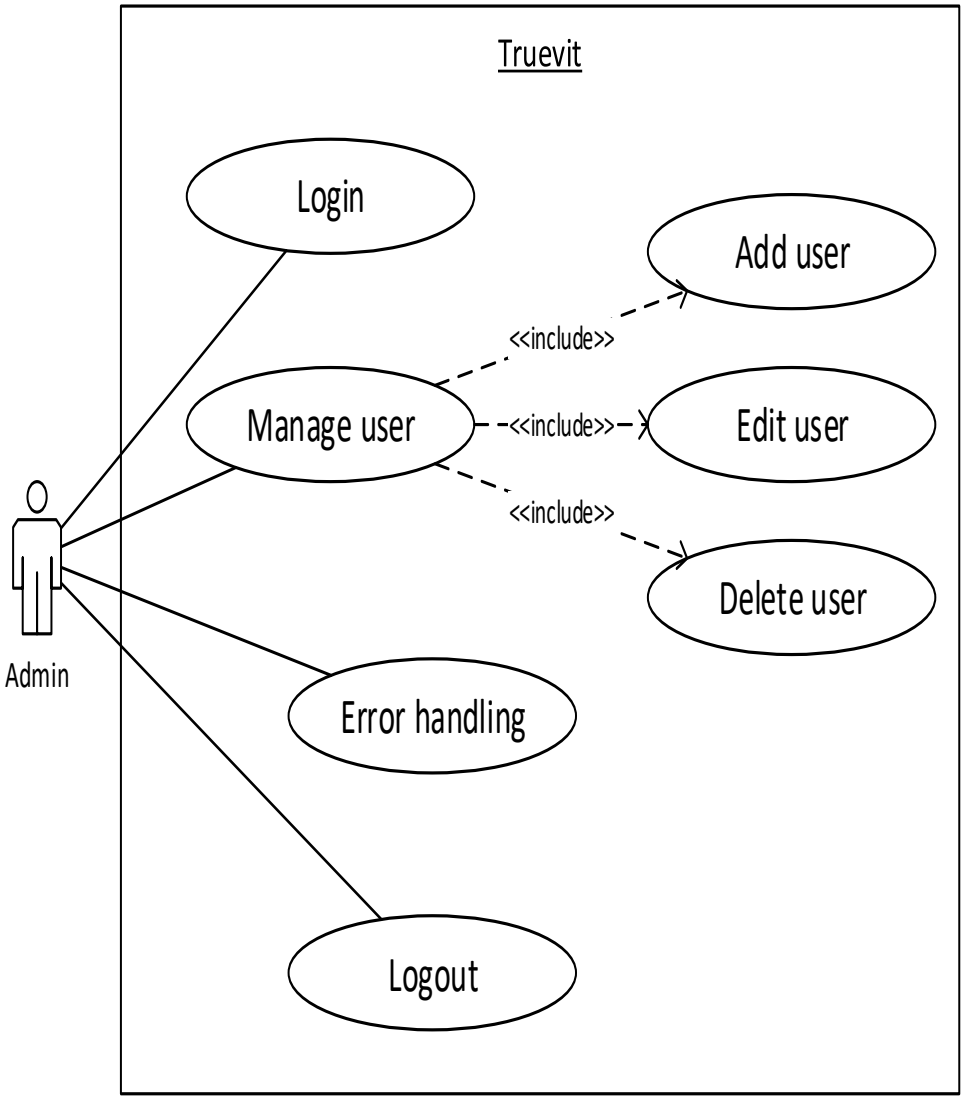

Figure 6: Use case for admin

Chapter 4

System Design

Chapter 4: System Design

This chapter contains the key-diagrams and models to visually represent the system. The system design has been briefed below:

The application will follow client server architecture. This is an online application and the server will manage the delivery of most of the resources.

4.1. Architecture Diagram

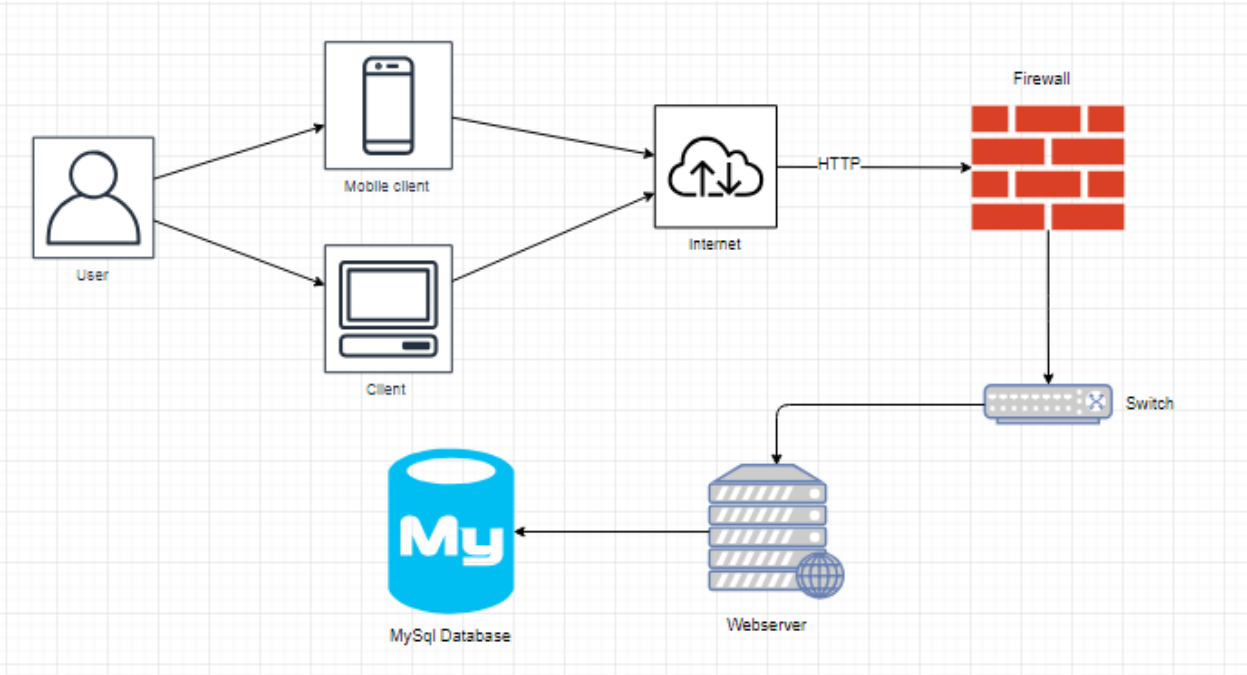

Figure 7: Architecture diagram

4.2. Domain Model

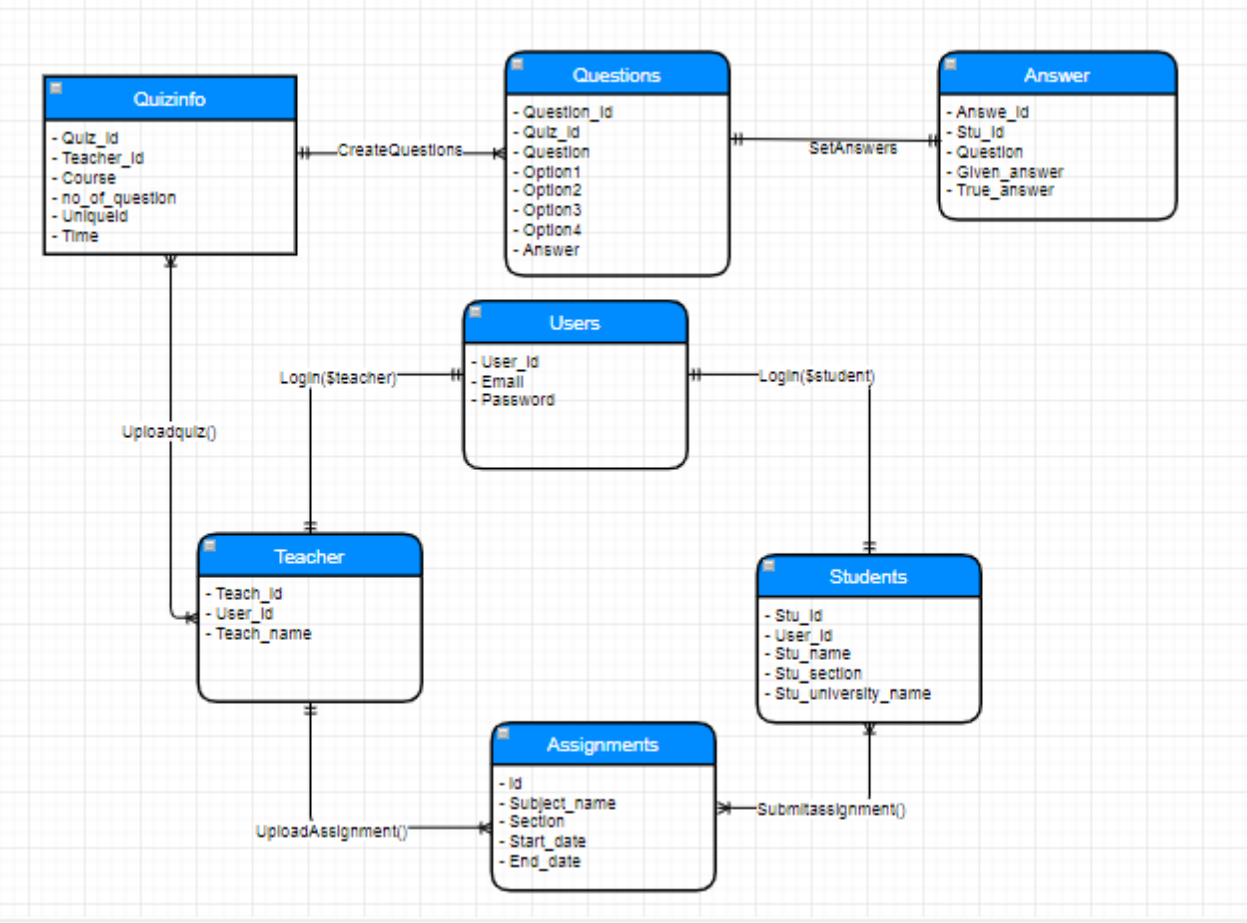

Figure 8: Domain model

4.3. Entity Relationship Diagram with data dictionary

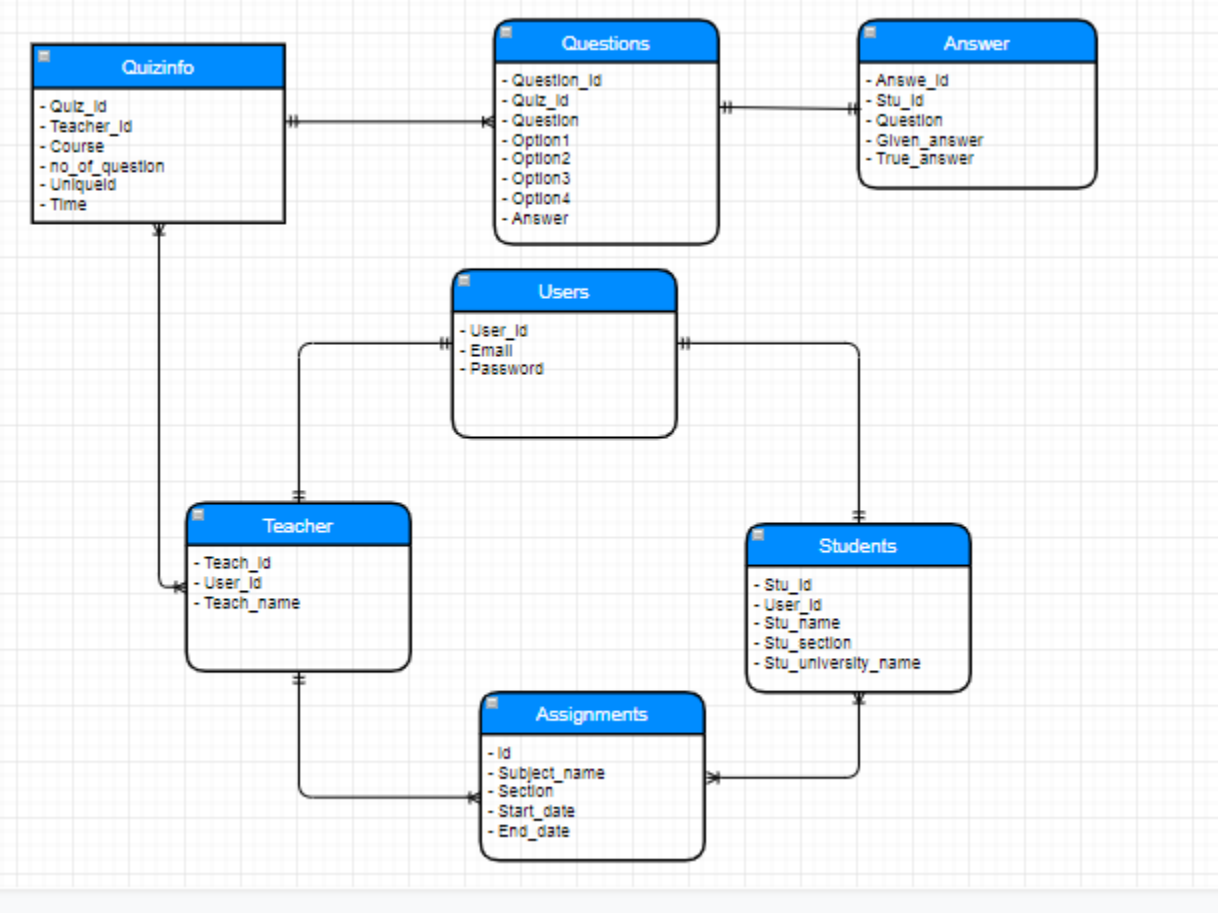

Figure 9: Entity relationship diagram

Student			
Attributes	**Data Types**	**Null-able**	**Description**
Login_ID (PK)	Int	No	The identity number of this entity
Password	varchar	No	The password required to login to admin account
S_name#	varchar	No	The name of this entity
S_Roll#	varchar	No	RollNo required of this entity
S_Section	varchar	No	Section required of this entity
S_Phone#	varchar	No	Phone number required of this entity

Table 3: ERD1 Student

Lectures			
Attributes	**Data Types**	**Null-able**	**Description**
Lecture_ID (PK)	Int	No	The identity number of this entity
Lecture_section	varchar	No	The section required for this entity
Lecture_subname	varchar	No	Subject name for this entity

Table 4: ERD2 Lectures

Assignments			
Attributes	**Data Types**	**Null-able**	**Description**
Assignment_ID	Int	No	The identity number of this entity
A_SecName	varchar	No	Section name required for the assignments
A_Subject	varchar	No	Subject name required for assignments
A_Marks	Float	No	Marks of the assignments.
A_Deadline	dateTime	No	DateTime for the assignments.

Table 5: ERD3 Assignments

Grade-sheet			
Attributes	**Data Types**	**Null-able**	**Description**
Gradesheet_ID (PK)	Int	No	The identity number of Grade-sheet
Gradesheet_SecName	varchar	No	Section name required for the gradesheet
Gradesheet_SubName	varchar	No	Subject name required for the gradesheet.

Table 6: ERD4 Gradesheet

Admin			
Attributes	**Data Types**	**Null-able**	**Description**
Admin_ID (PK)	Int	No	ID required to login to admin account.
Password	varchar	No	The password required to login to admin account

Table 7: ERD5 Admin

Quiz			
Attributes	**Data Types**	**Null-able**	**Description**
Quiz_ID (PK)	Int	No	The identity number of the quiz.
Quiz_SubName	Varchar	No	Subject name of the quiz.
Quiz_SecName	Varchar	No	section name required to conduct quiz.
Quiz_Marks	Int	No	Marks of the quiz.
Quiz_Deadline	DateTime	No	Time announced to students for the quiz.
Quiz_Time	DateTime	No	Time duration of the quiz.

Table 8: ERD6 Quiz

Teacher			
Attributes	**Data Types**	**Null-able**	**Description**
Teacher_ID (PK)	Int	No	Identity number of the teacher.
Password	varchar	No	The password required to login to teacher account.
Teacher_Name	varchar	No	Name required for this entity.
Teacher_Section	varchar	No	Teacher section number required for this entity.
Teacher_Email	Mail	No	Teacher Email required for this entity.

Table 9: ERD7 Teacher

4.4. Class Diagram

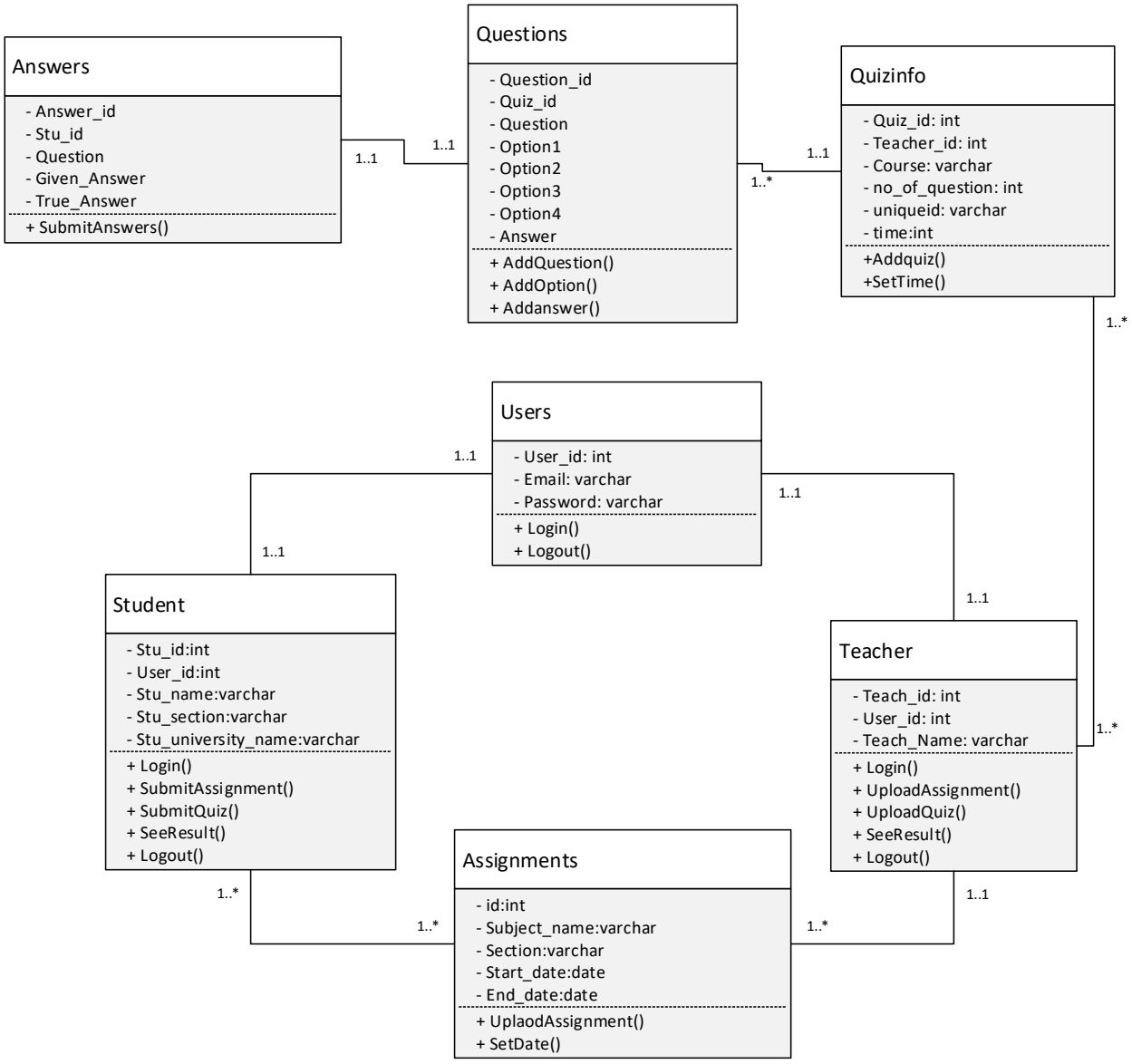

Figure 10: Class diagram

4.5: Sequence / Collaboration Diagram

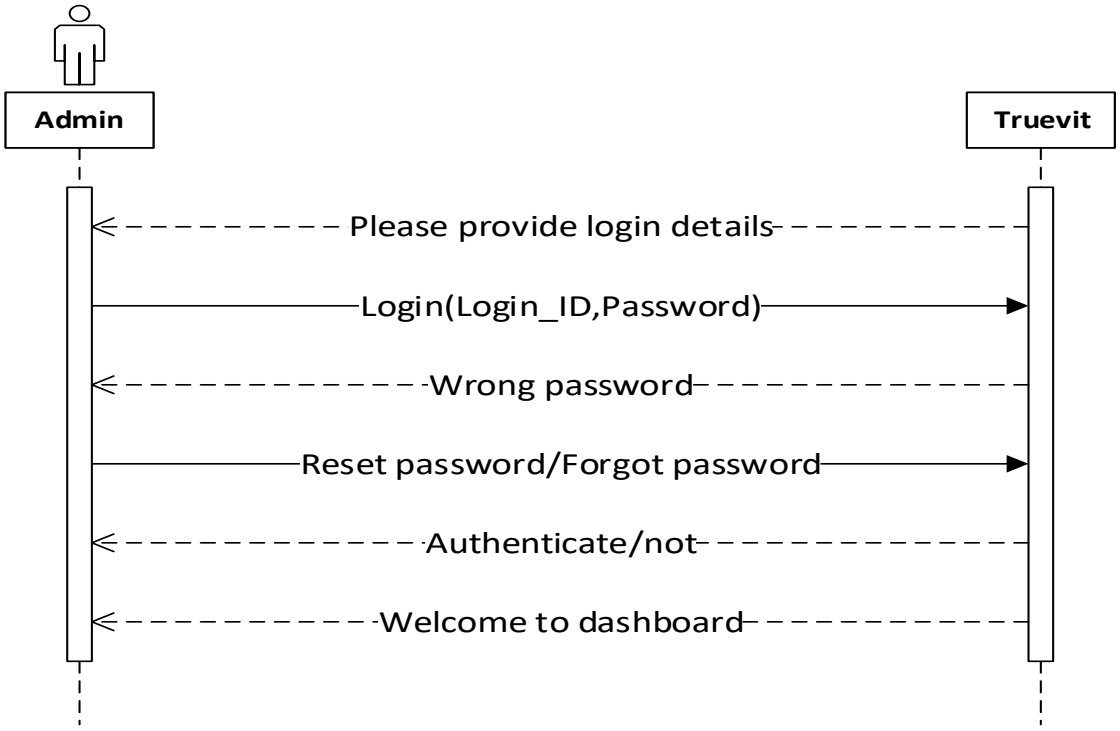

Figure 11: Login

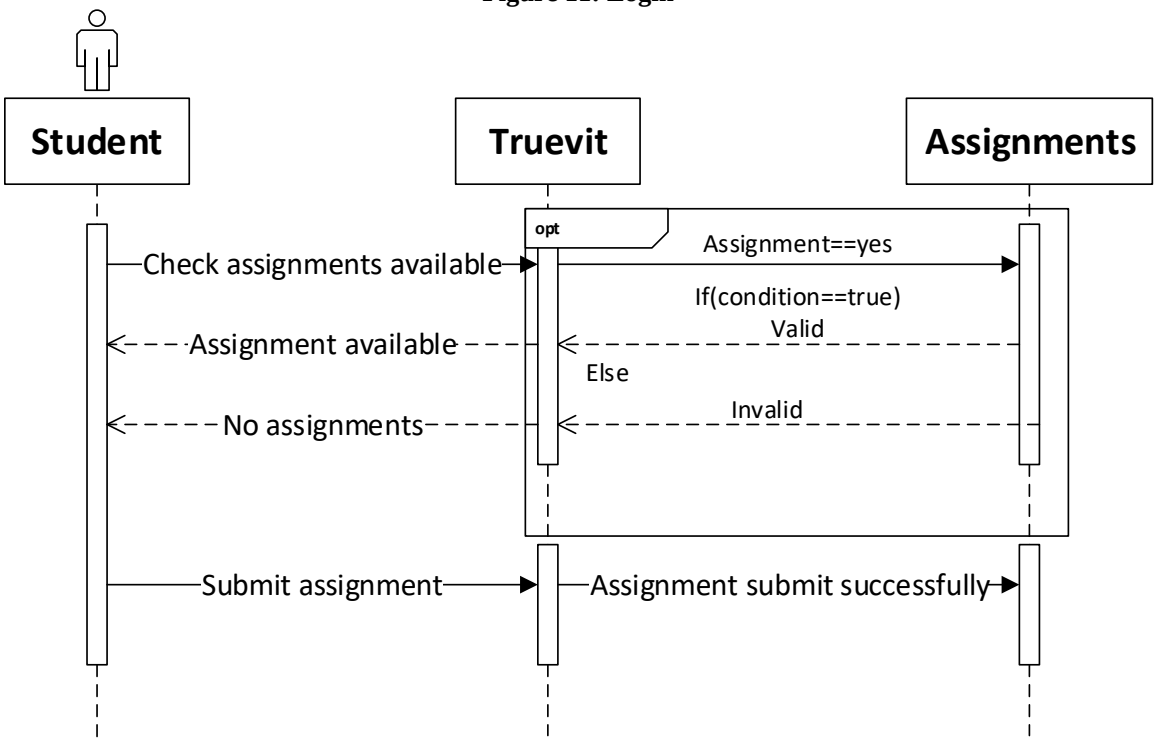

Figure 12: Assignments

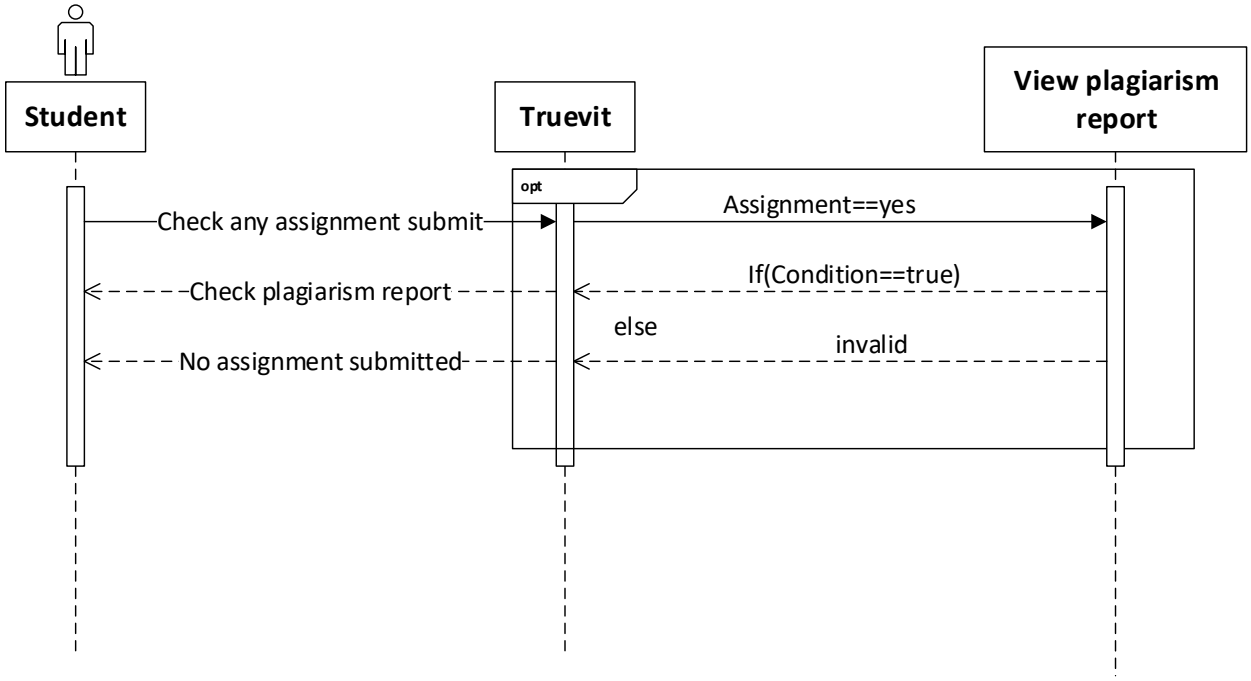

Figure 13: Plagiarism report

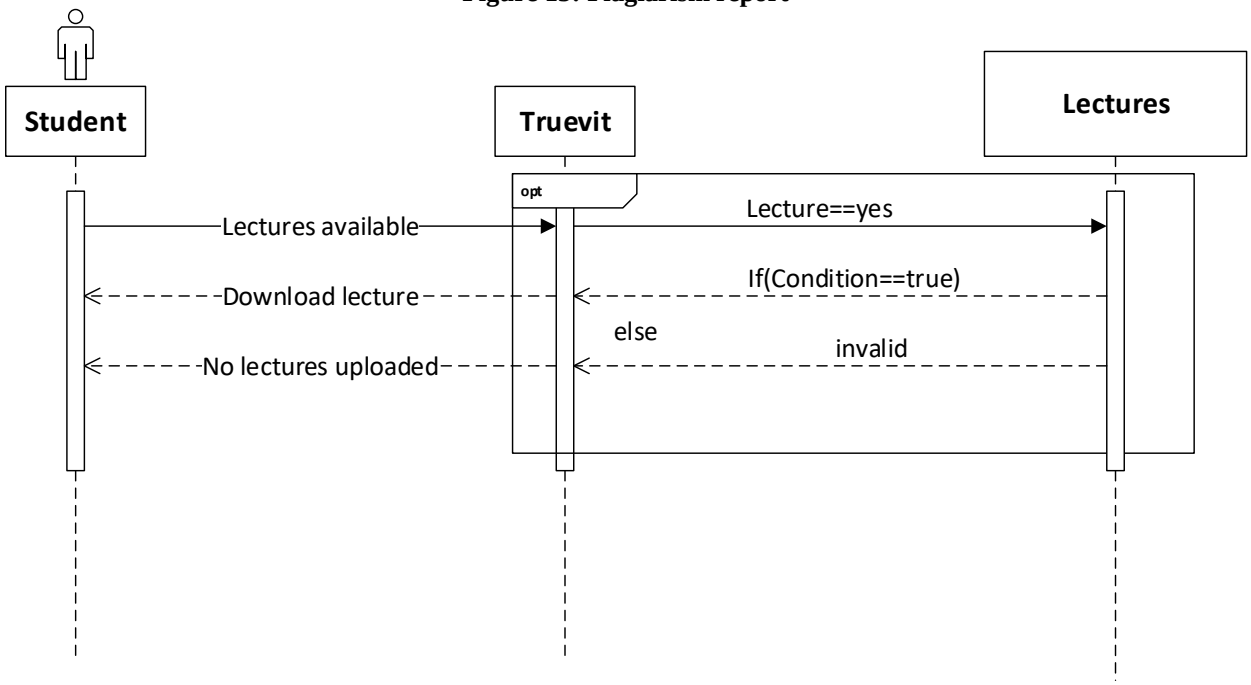

Figure 14: Lectures

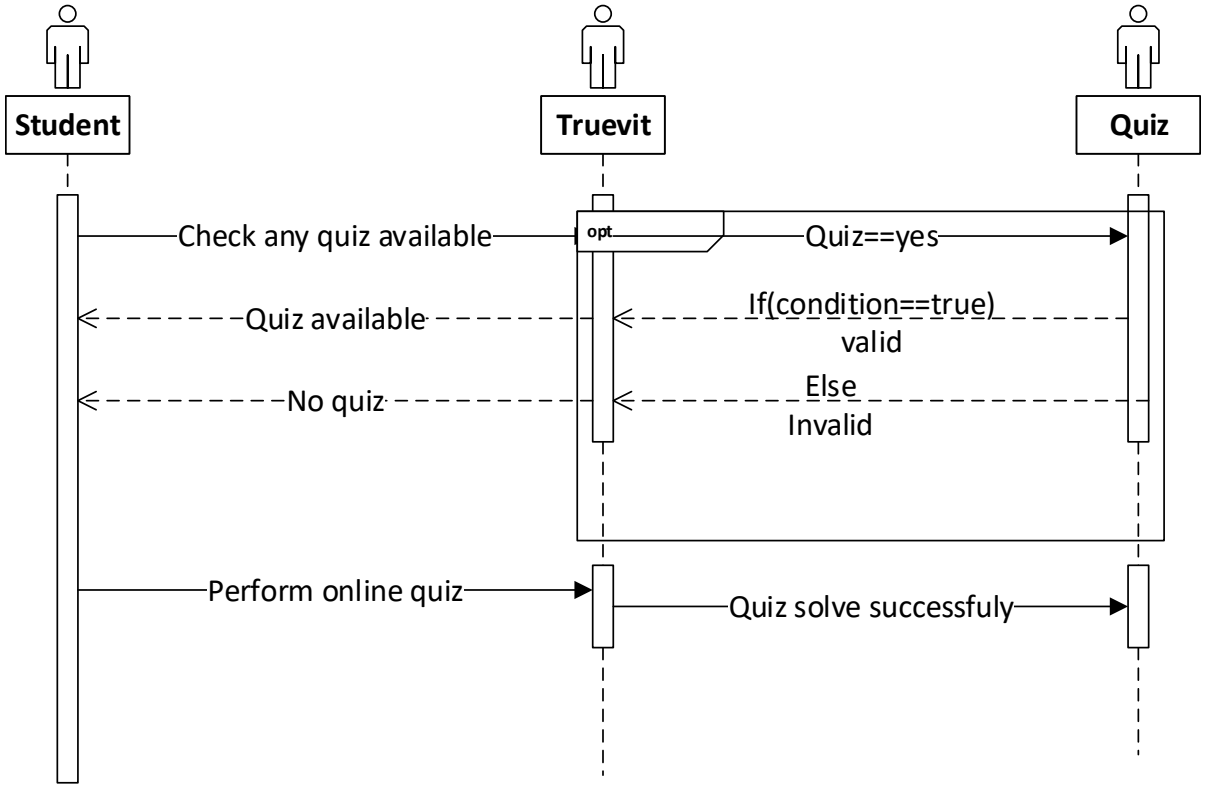

Figure 15: Quiz

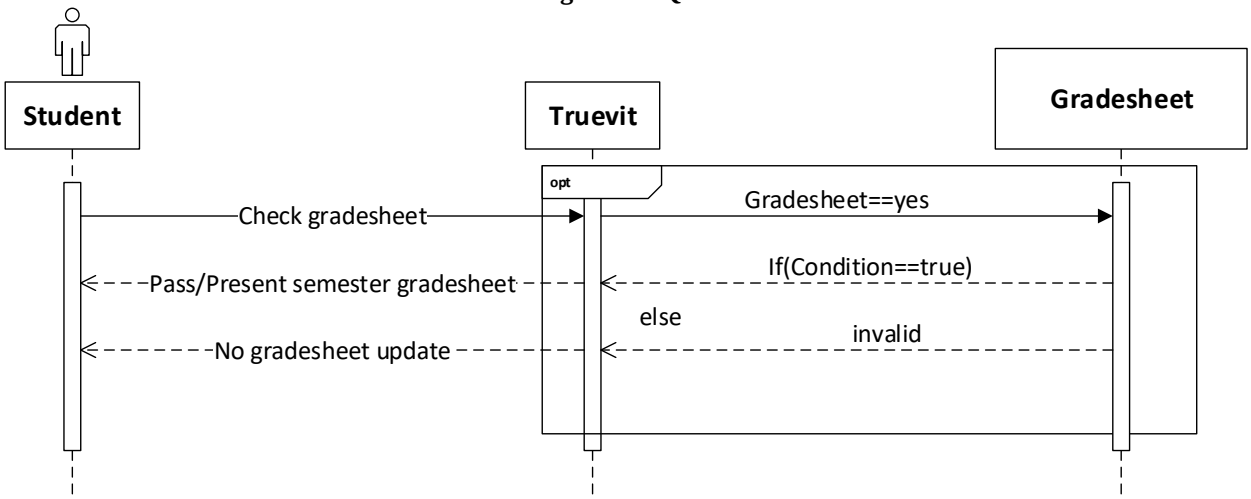

Figure 16: Gradesheet

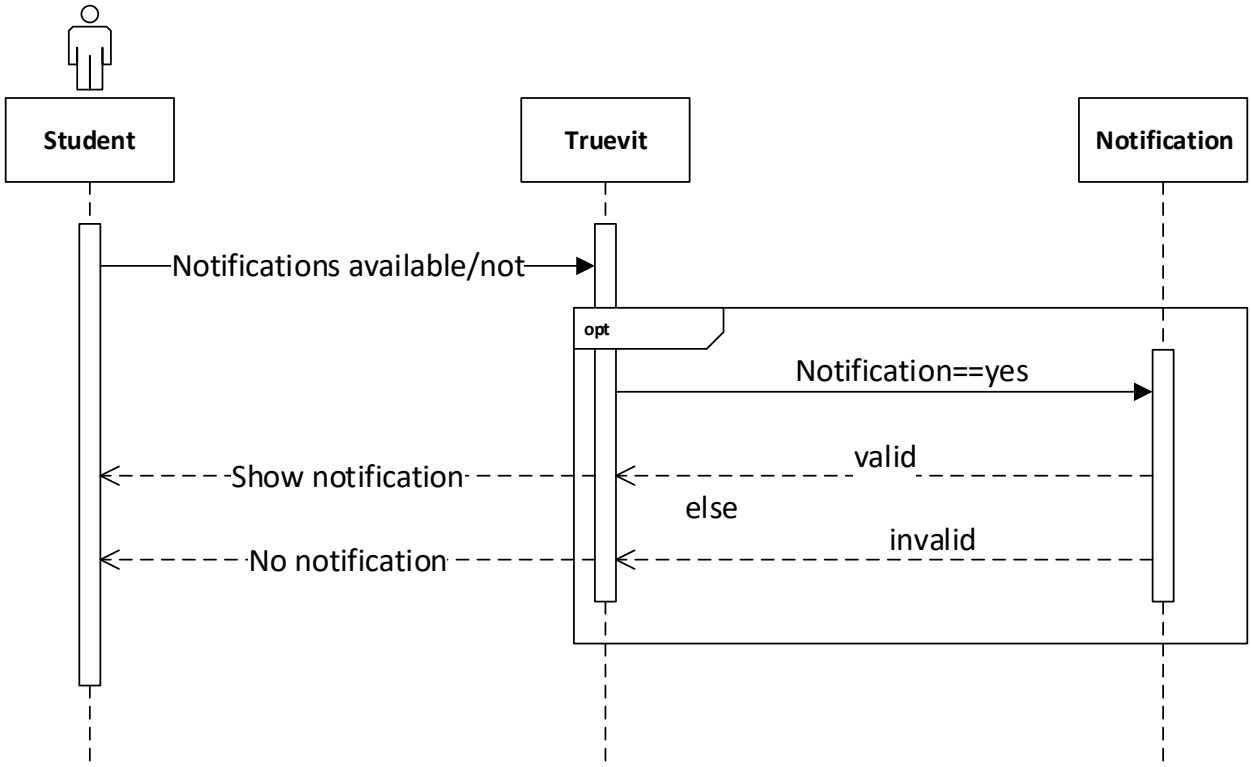

Figure 17: Notification

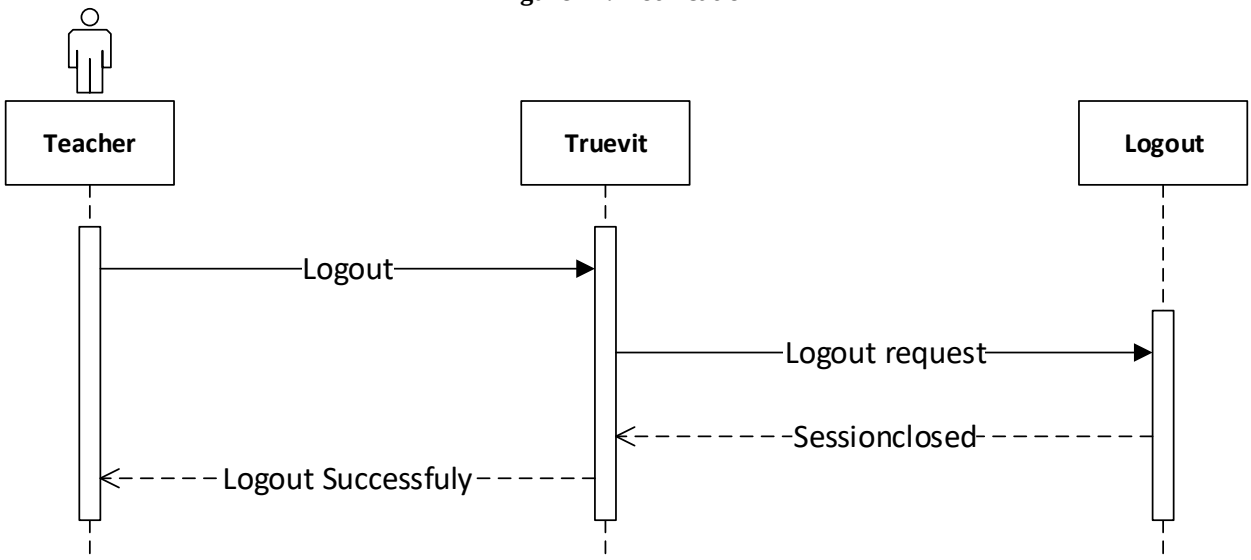

Figure 18: Logout

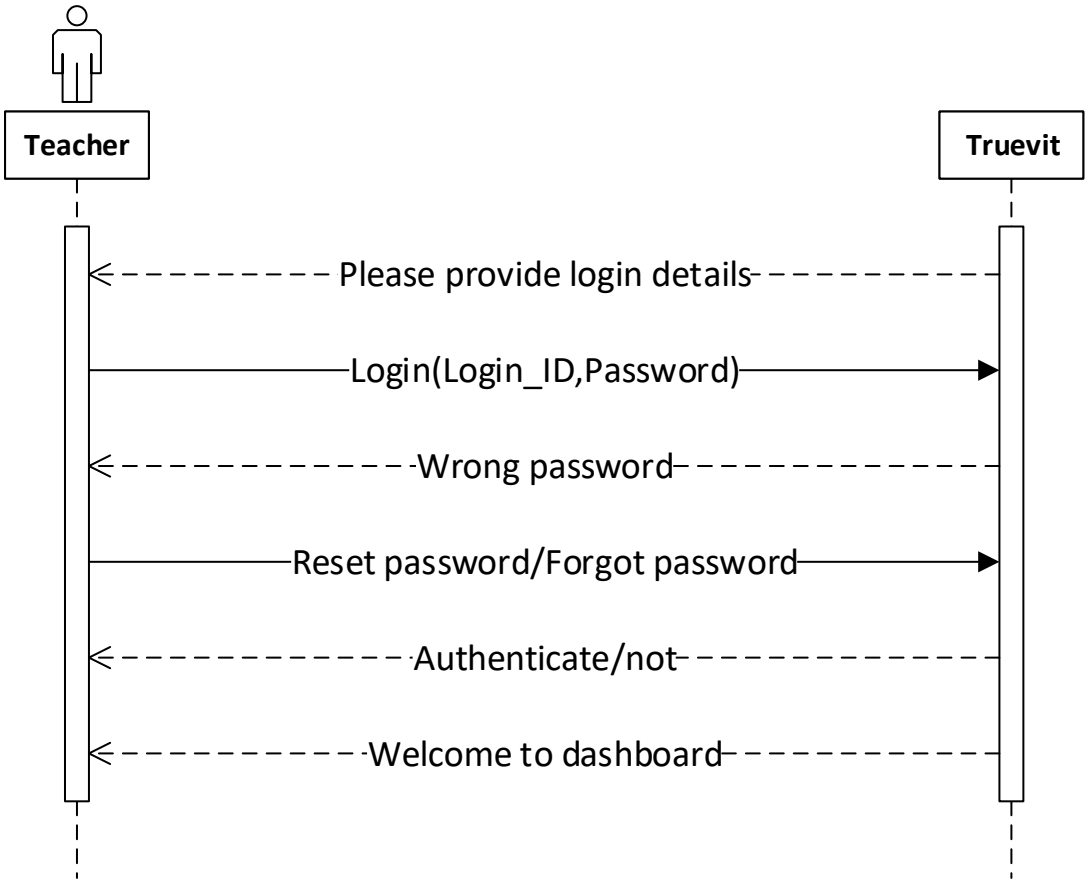

Figure 19: Login

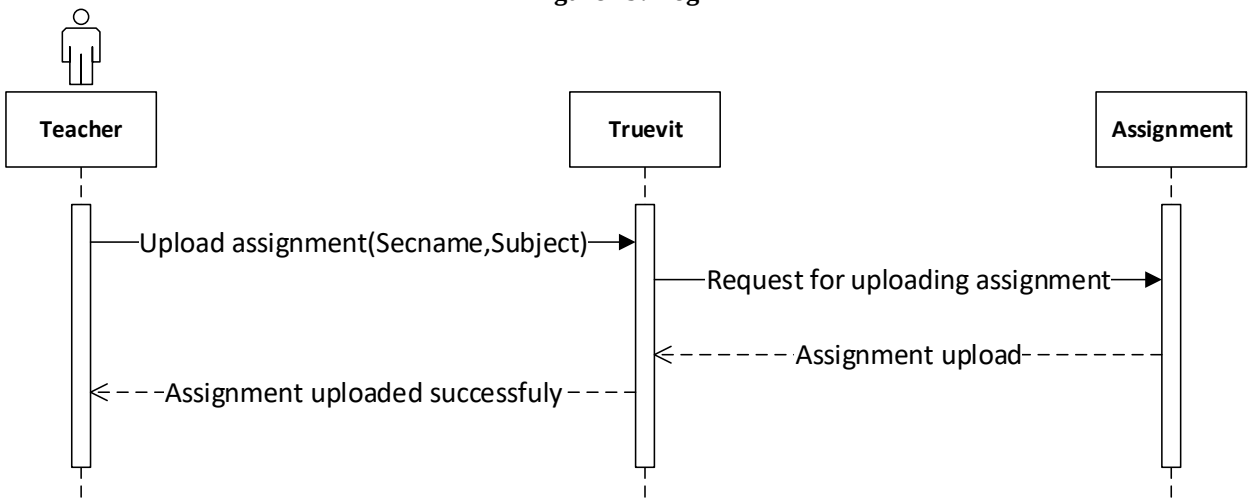

Figure 20: Upload assignment

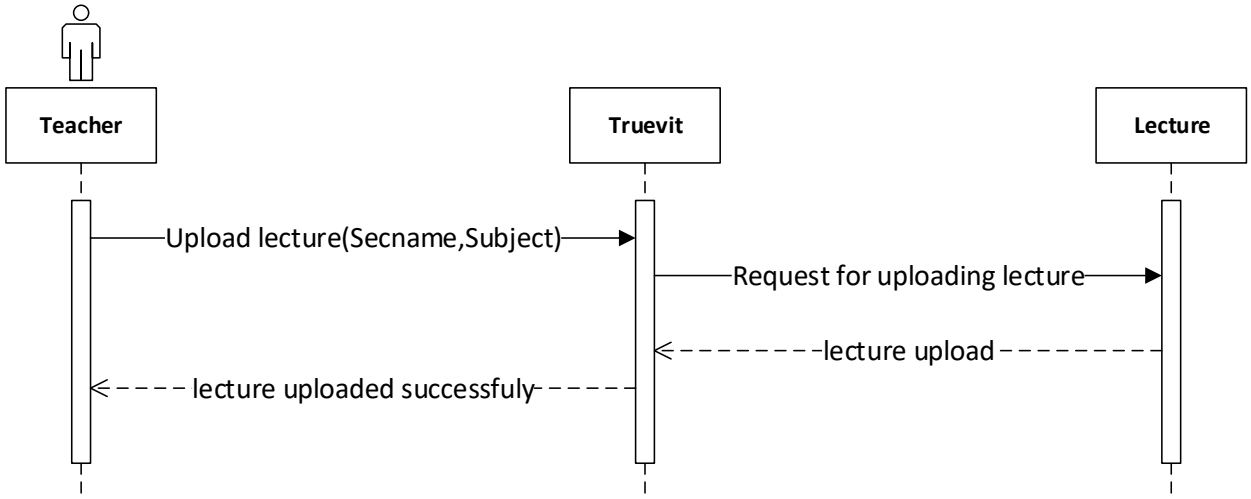

Figure21: Upload lecture

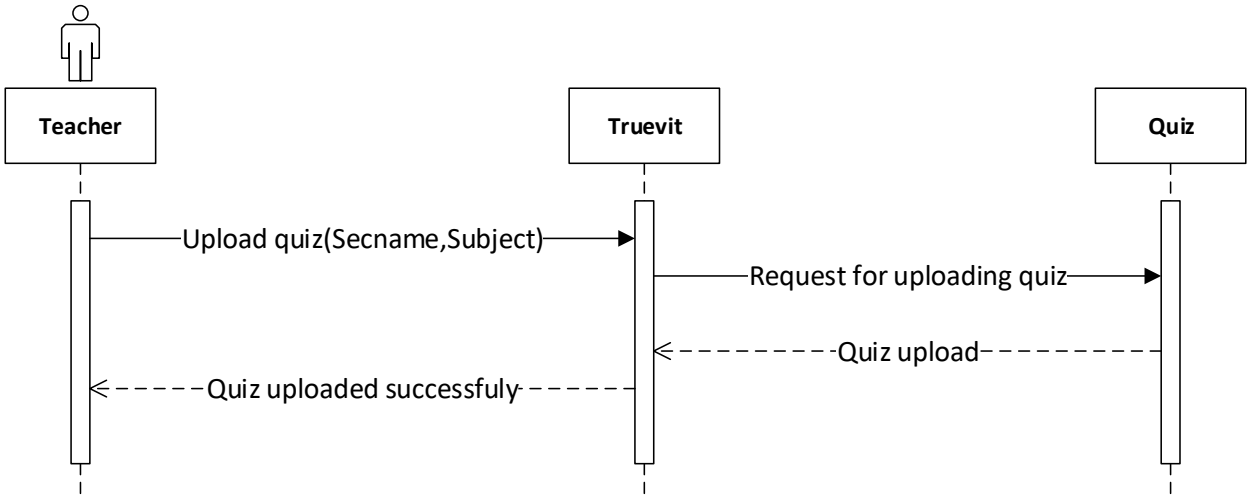

Figure 22: Upload quiz

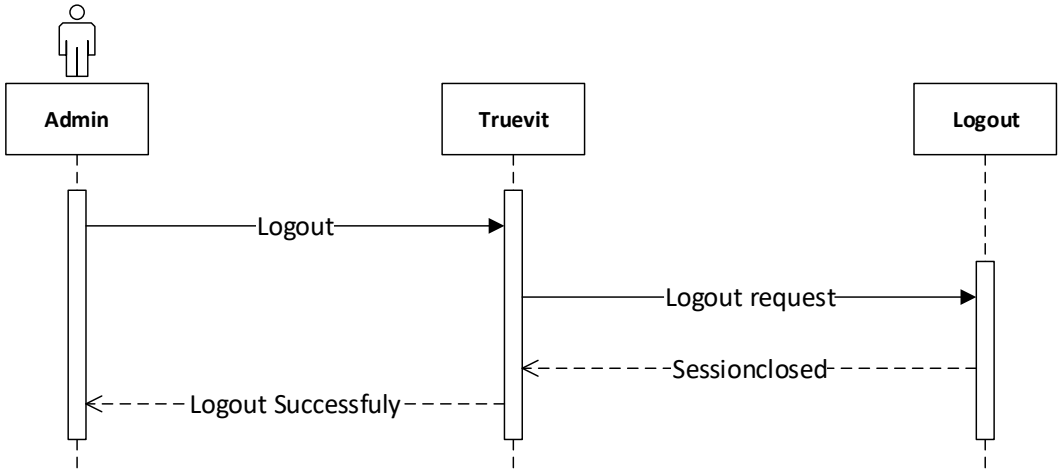

Figure 23: Logout

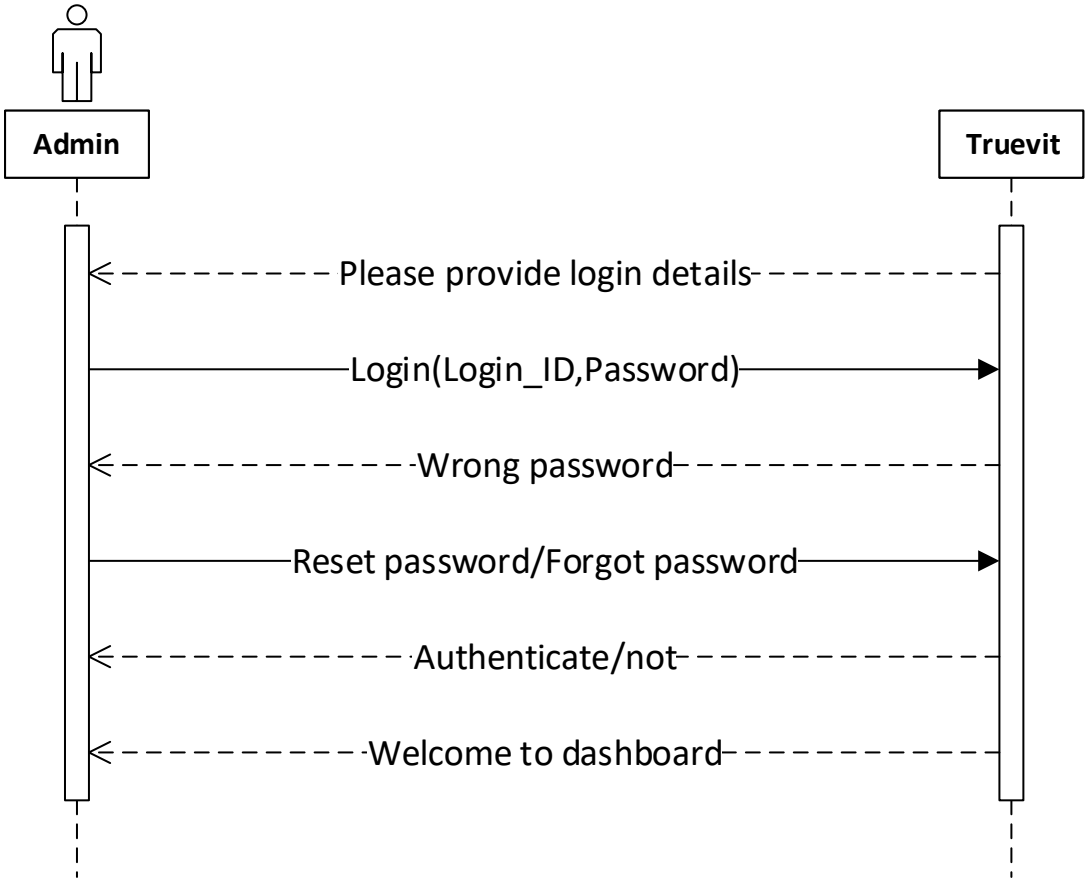

Figure 24: Login

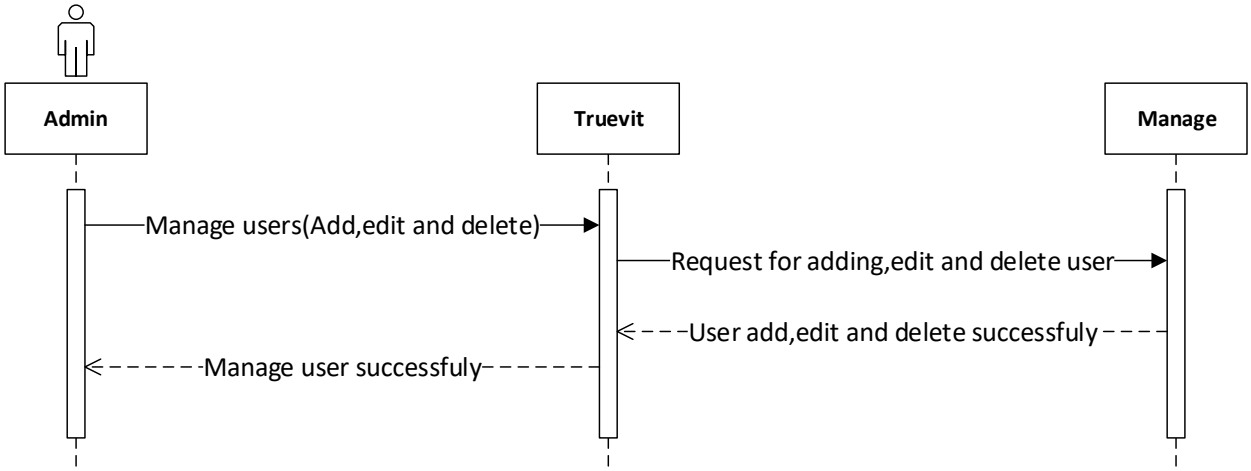

Figure 25: Manage users

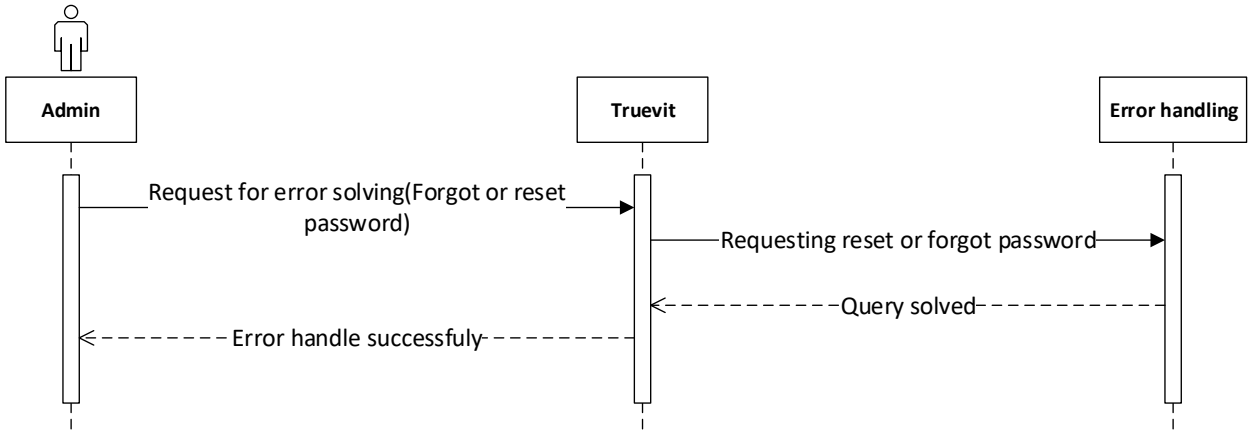

Figure 26: Error handling

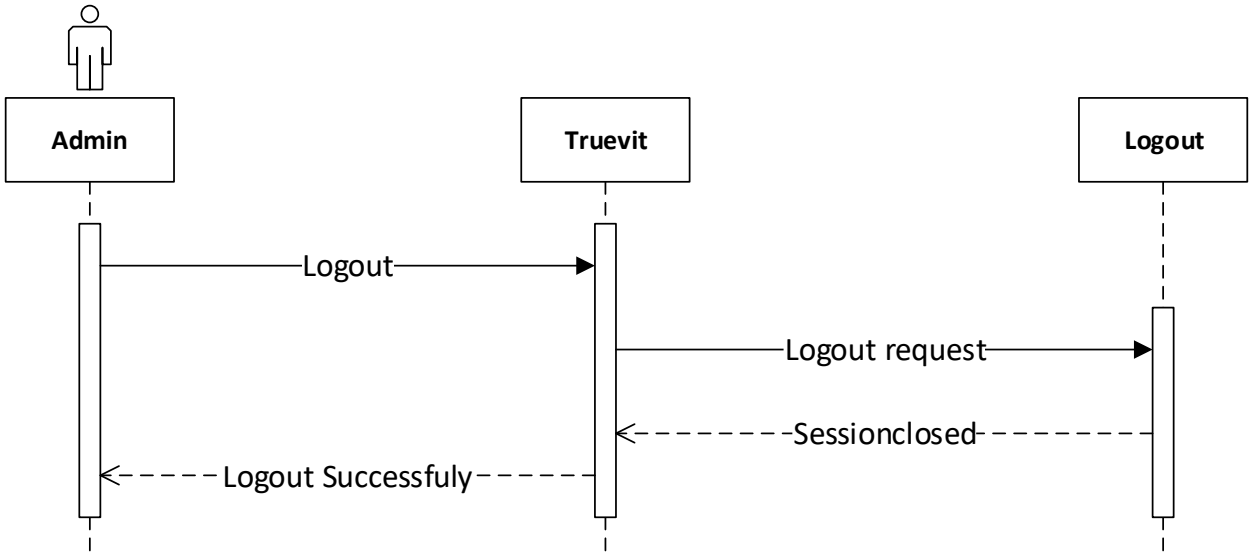

Figure 27: Logout

4.5. Operation contracts

OP1

Operation Name: login

Pre-conditions:

• User has provided the correct credentials.

• User is registered.

Post-Conditions:

• User is logged into his account.

• User can perform operation.

OP2

Operation Name: Submit Assignment:
Pre-conditions:

• Student must be login..

• Students submit assignments before time.

Post-Conditions:

• Student submit assignments.

OP3

Operation Name: view plagiarism reports:
Pre-conditions:

• Student must be login.

• Student should submit assignments first.

Post-Conditions:

• Student checks their plagiarism reports.

OP4

Operation Name: download lectures:
Pre-conditions:

• Student must be login.

Post-Conditions:

• Students will download lectures.

OP5

Operation Name: online quiz:
Pre-conditions:

• Student must be login..

• Teacher must upload quiz first.

Post-Conditions:

• Student attempts quiz in time.

OP6

Operation Name: Grade-sheet:
Pre-conditions:

• Student must be login.

• Students must attempts quizzes or assignments first.

Post-Conditions:

• Students checks their marks.

OP7

Operation Name: Notification Alert:
Pre-conditions:

• Student must be login.

• Teacher generates new events.

Post-Conditions:

• Student will read the alert and respond back.

OP8

Operation Name: logout:
Pre-conditions:

• Student must be login.

Post-Conditions:

• The student will be logged out of the system

OP9

Operation Name: login

Pre-conditions:

• Teacher has provided the correct credentials.

• Teacher is registered.

Post-Conditions:

• Teacher is logged in into his account.

• Teacher can perform operation.

OP10

Operation Name: upload assignments:
Pre-conditions:

• Teacher must be login.

• Teacher must assign to section or class.

Post-Conditions:

• Teacher upload assignments with deadline time.

OP11

Operation Name: uploads lectures:
Pre-conditions:

• Teacher must be login.

• Teacher must be assigned to section or class.

Post-Conditions:

• Teacher upload lectures with deadline time.

OP12

Operation Name: uploads quiz:
Pre-conditions:

• Teacher must be login.

• Teacher must be assigned to section or class.

Post-Conditions:

• Teacher upload quiz with deadline time.

OP13

Operation Name: logout:
Pre-conditions:

• Teacher must be login.

Post-Conditions:

• The Teacher will be logged out of the system

OP14

Operation Name: login

Pre-conditions:

• Admin has provided the correct credentials.

• Admin is registered.

Post-Conditions:

• Admin is logged into his account.

• Admin can perform operation.

OP15

Operation Name: Manage users

Pre-conditions:

• Admin must be login

• Admin must have users.

Post-Conditions:

• Admin manages different operations

OP16

Operation Name: Error handling.

Pre-conditions:

• Admin must be login

• Admin must have error requests.

Post-Conditions:

• Admin removed error handling requests of teachers and students.

• Admin solved successfully.

OP17

Operation Name: logout:
Pre-conditions:

• Admin must be login.

Post-Conditions:

• The Admin will be logged out of the system.

4.7: Activity Diagram:

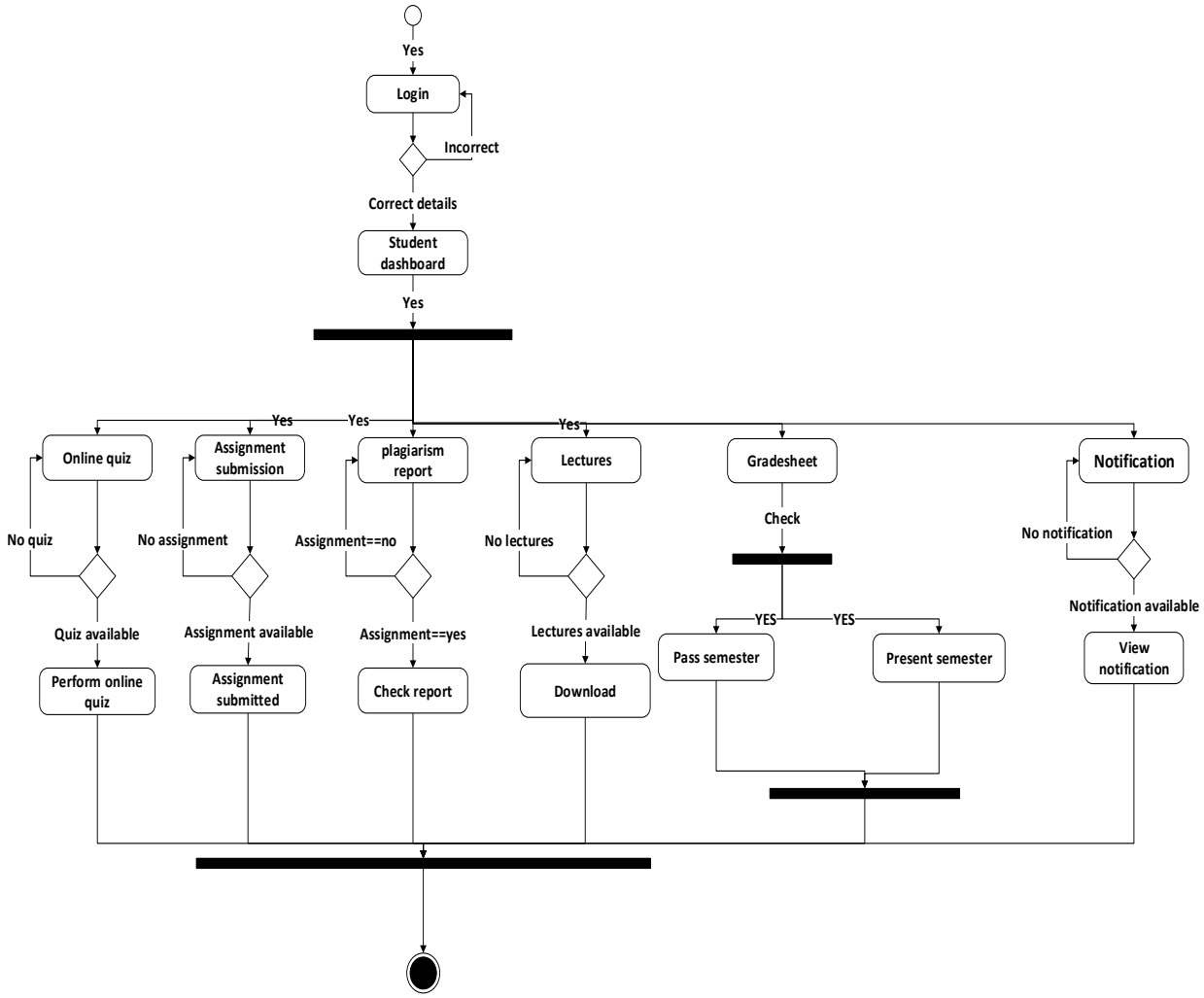

Figure 28: Activity diagram of student

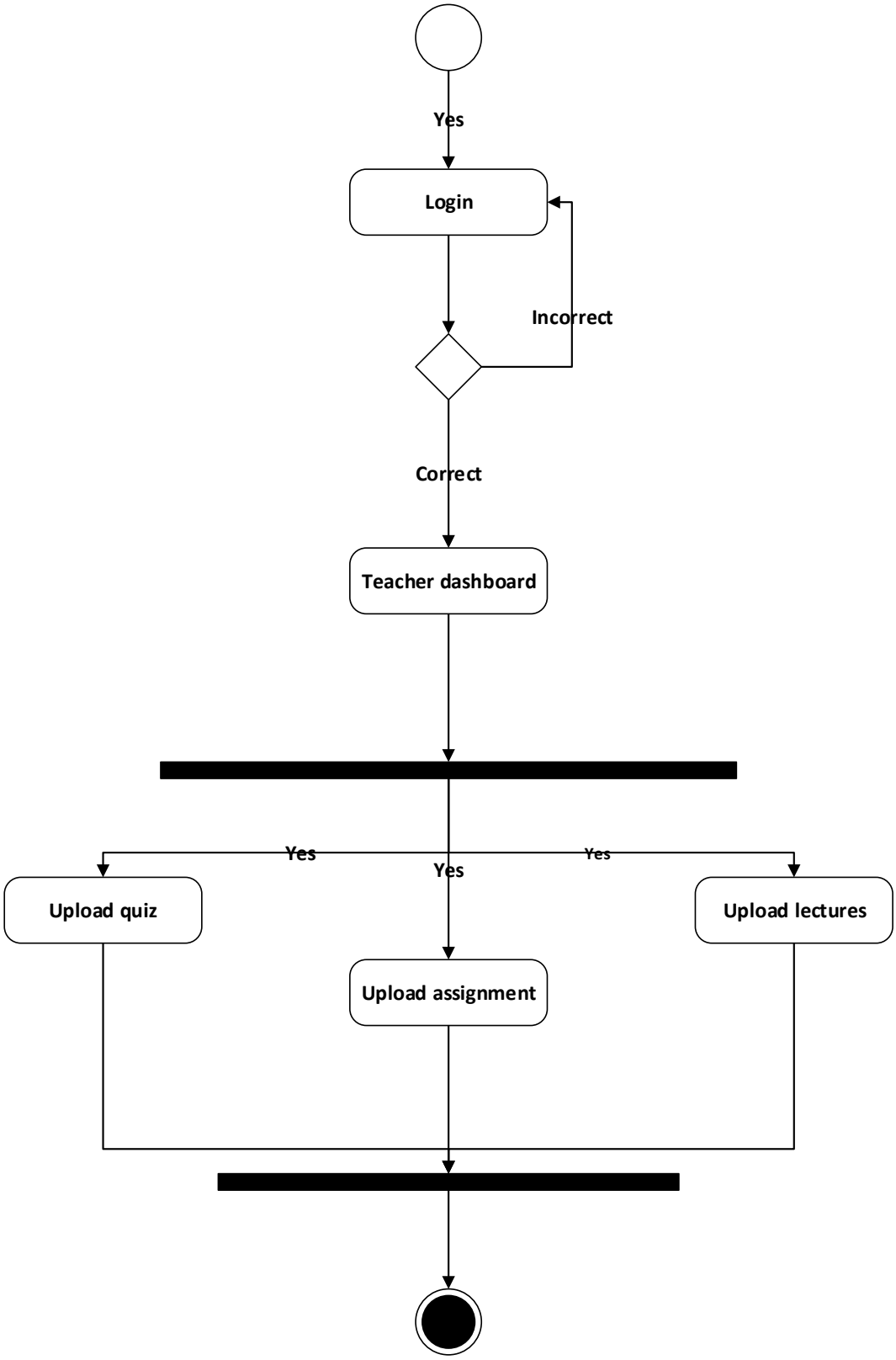

Figure 29: Activity diagram of teacher

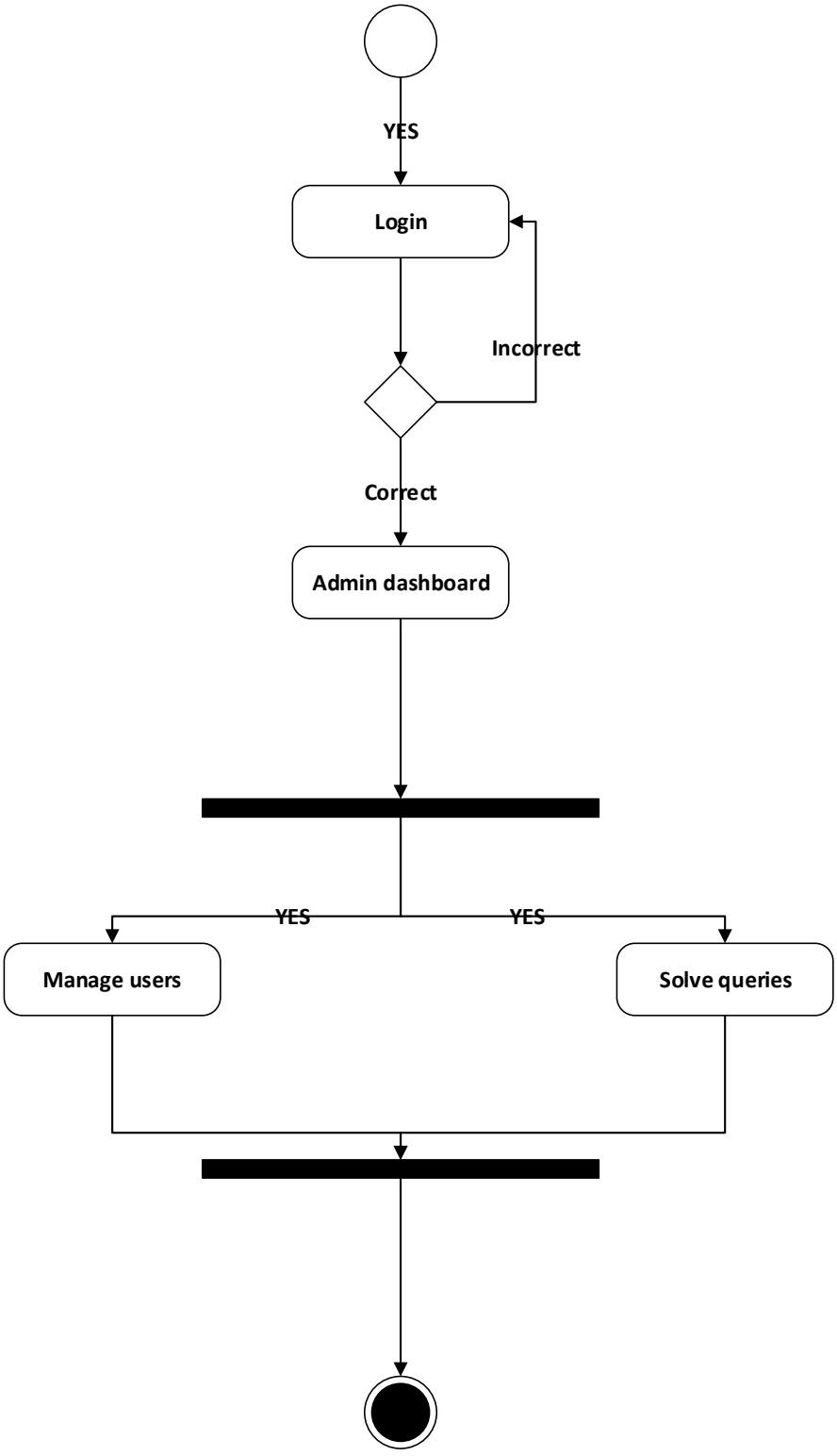

Figure 30: Activity diagarm of Admin

4.8: State Transition Diagram

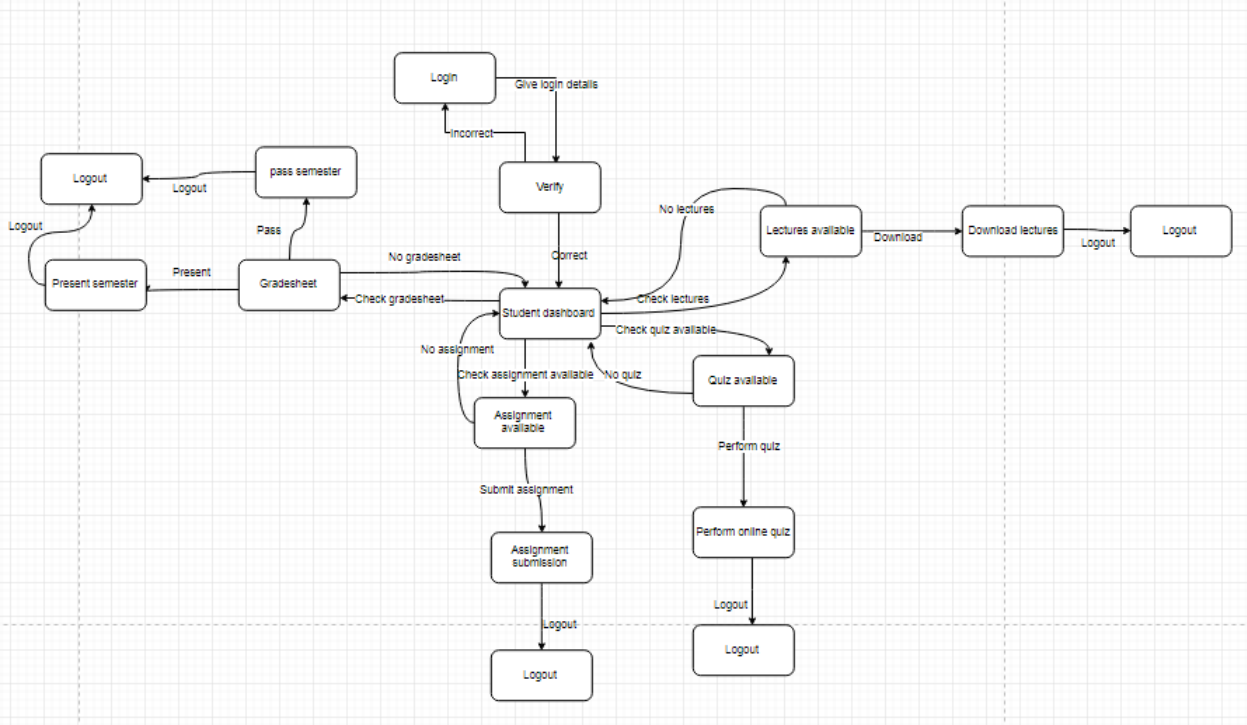

Figure 31: State diagram for Student

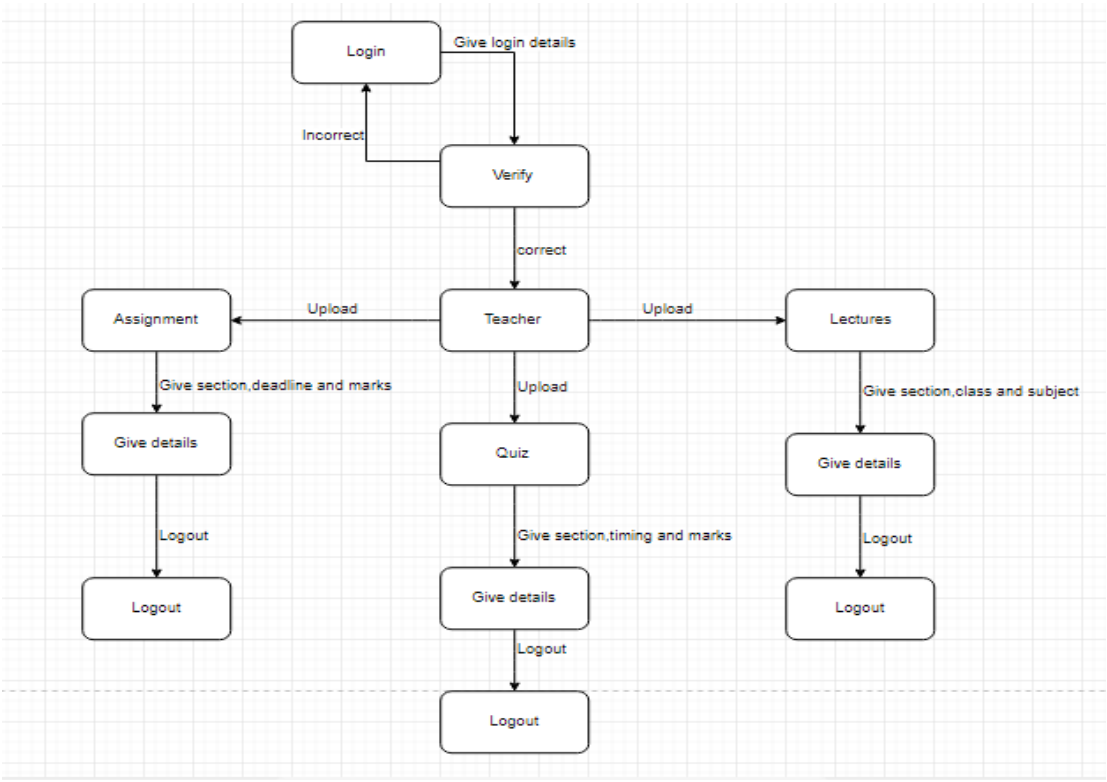

Figure 32: State diagram for teacher

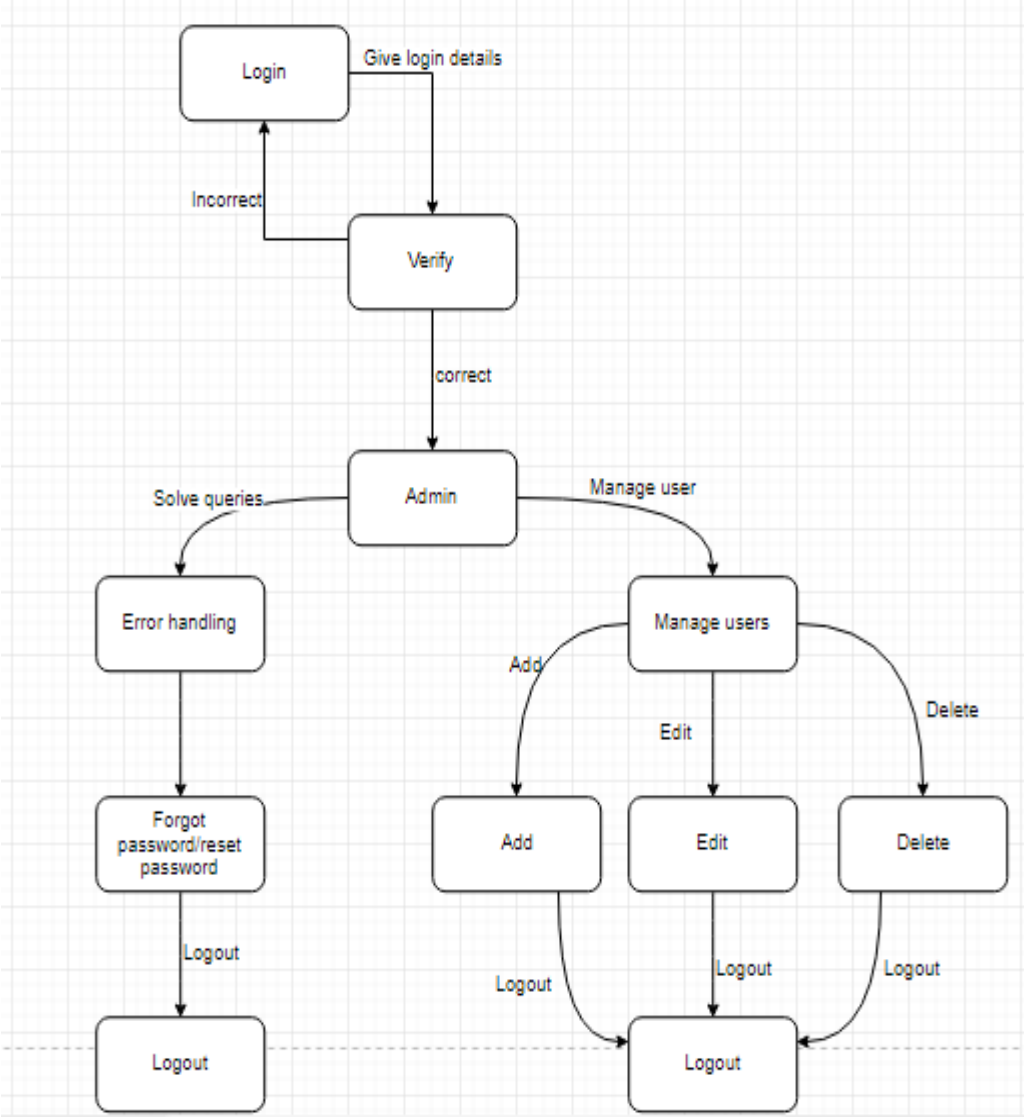

Figure 33: Activity diagram for admin

4.9: Component diagram

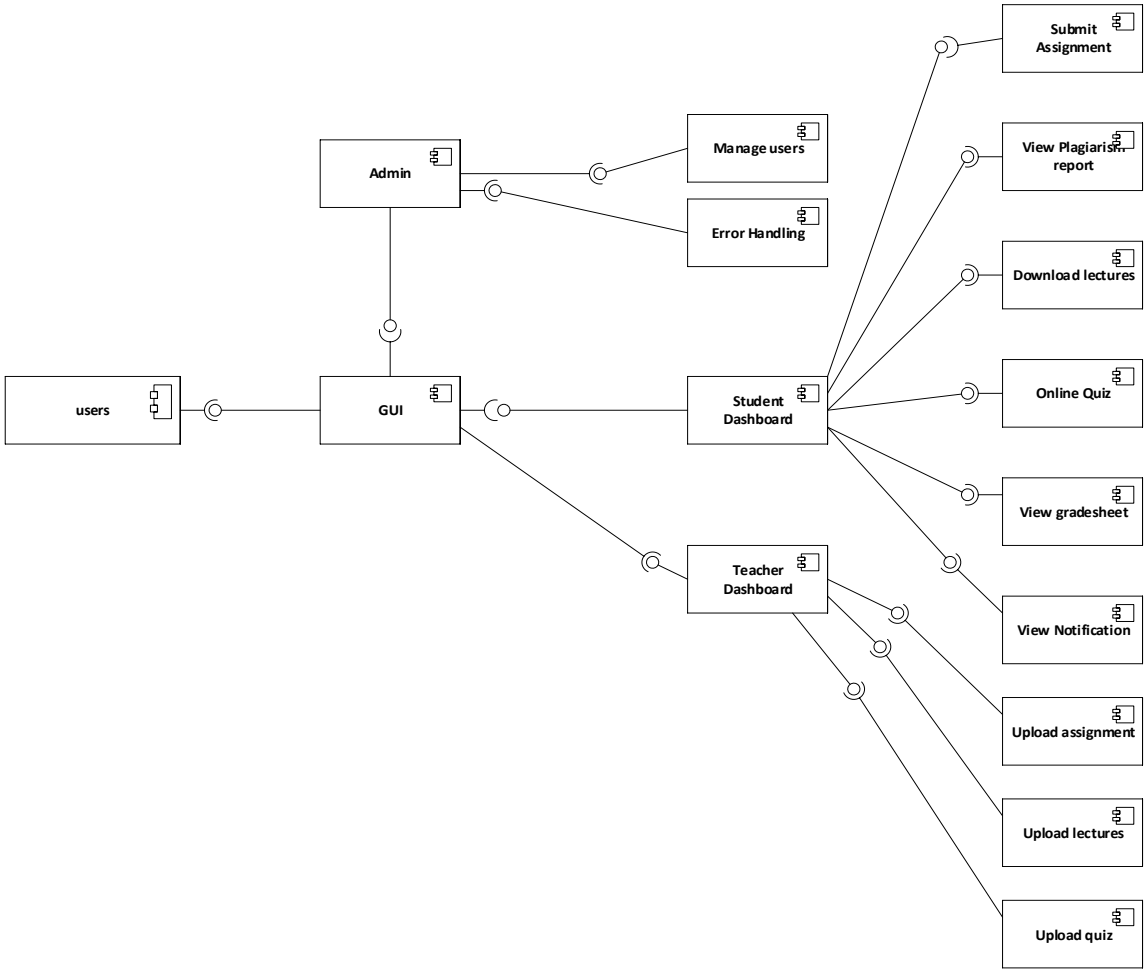

Figure 34: Component diagram

4.9: Deployment Diagram

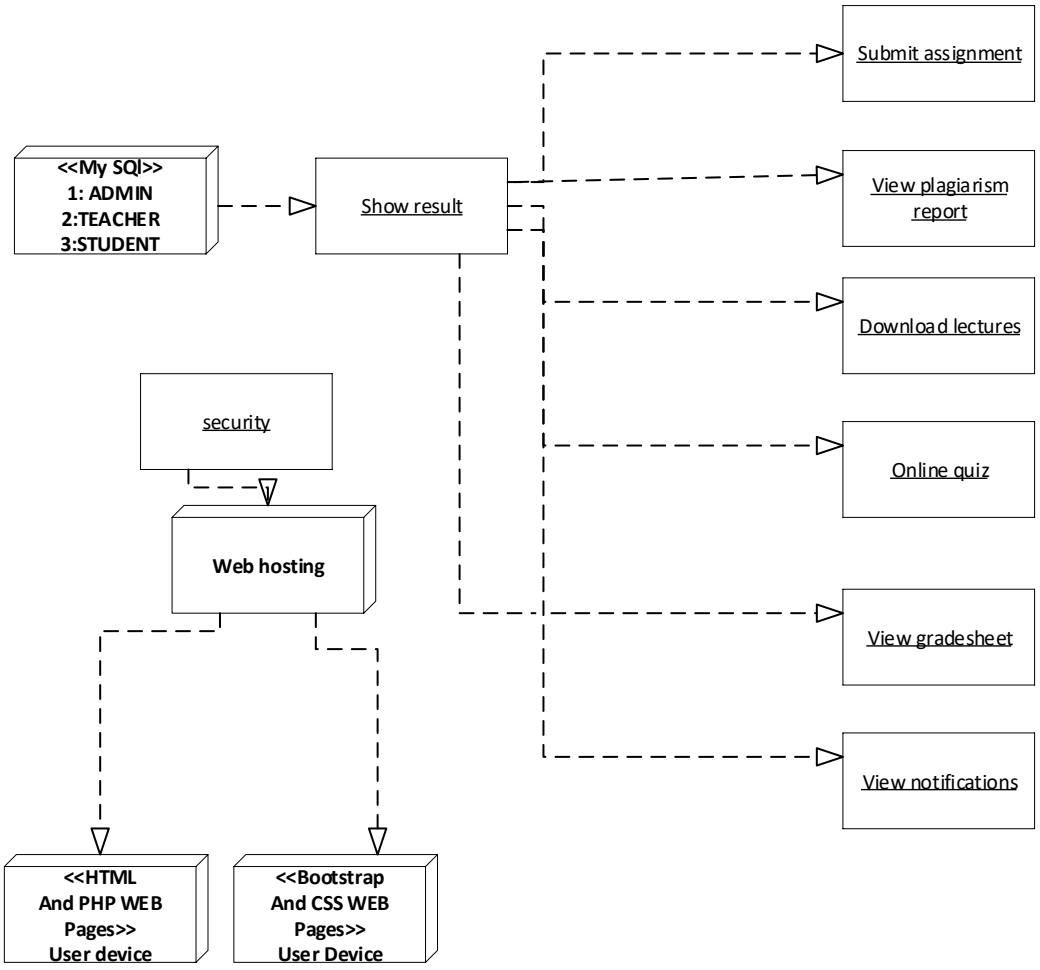

Figure 35: Deployment diagram

4.10: Data Flow Diagram

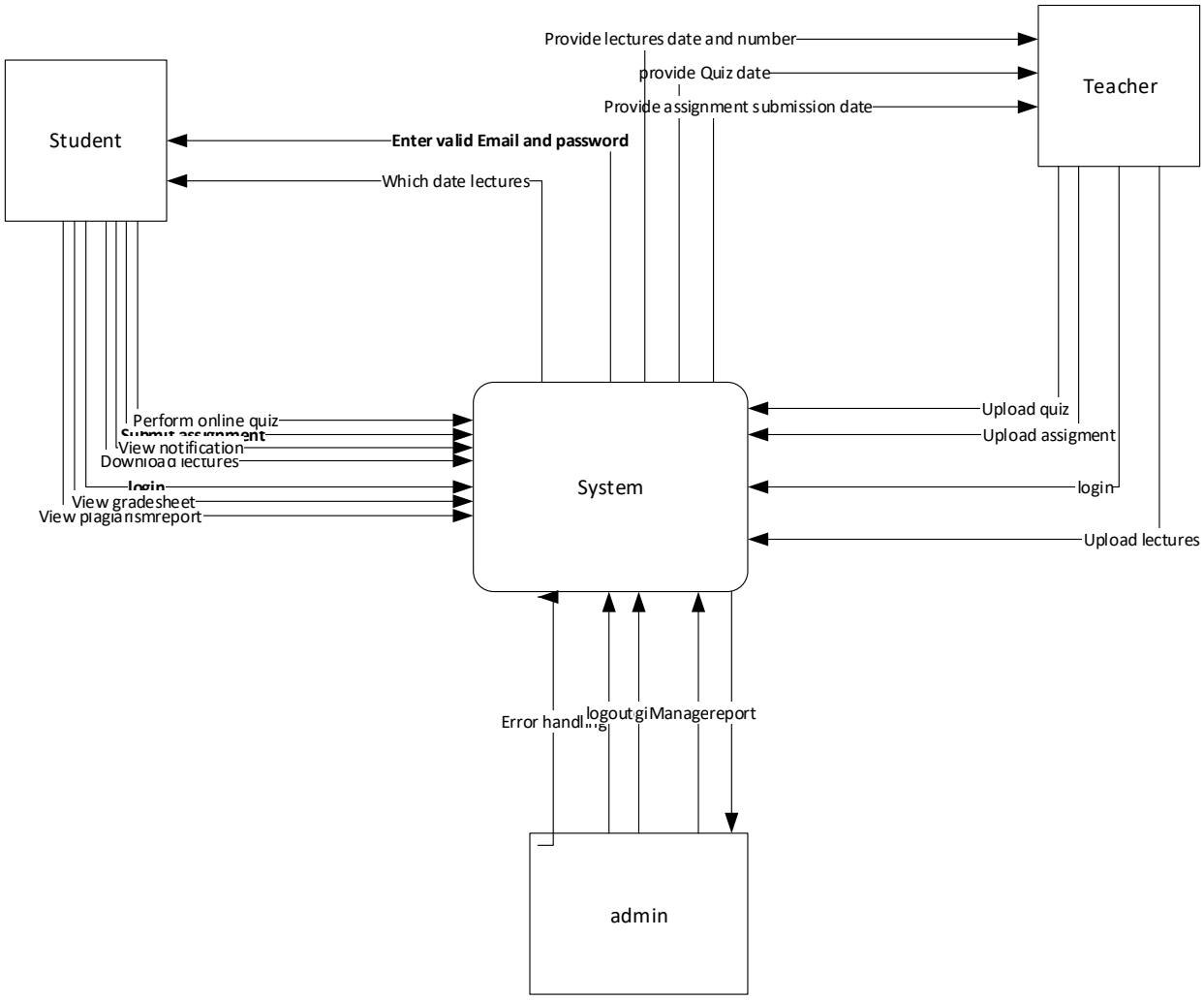

Figure 36: Data flow diagram Level 0

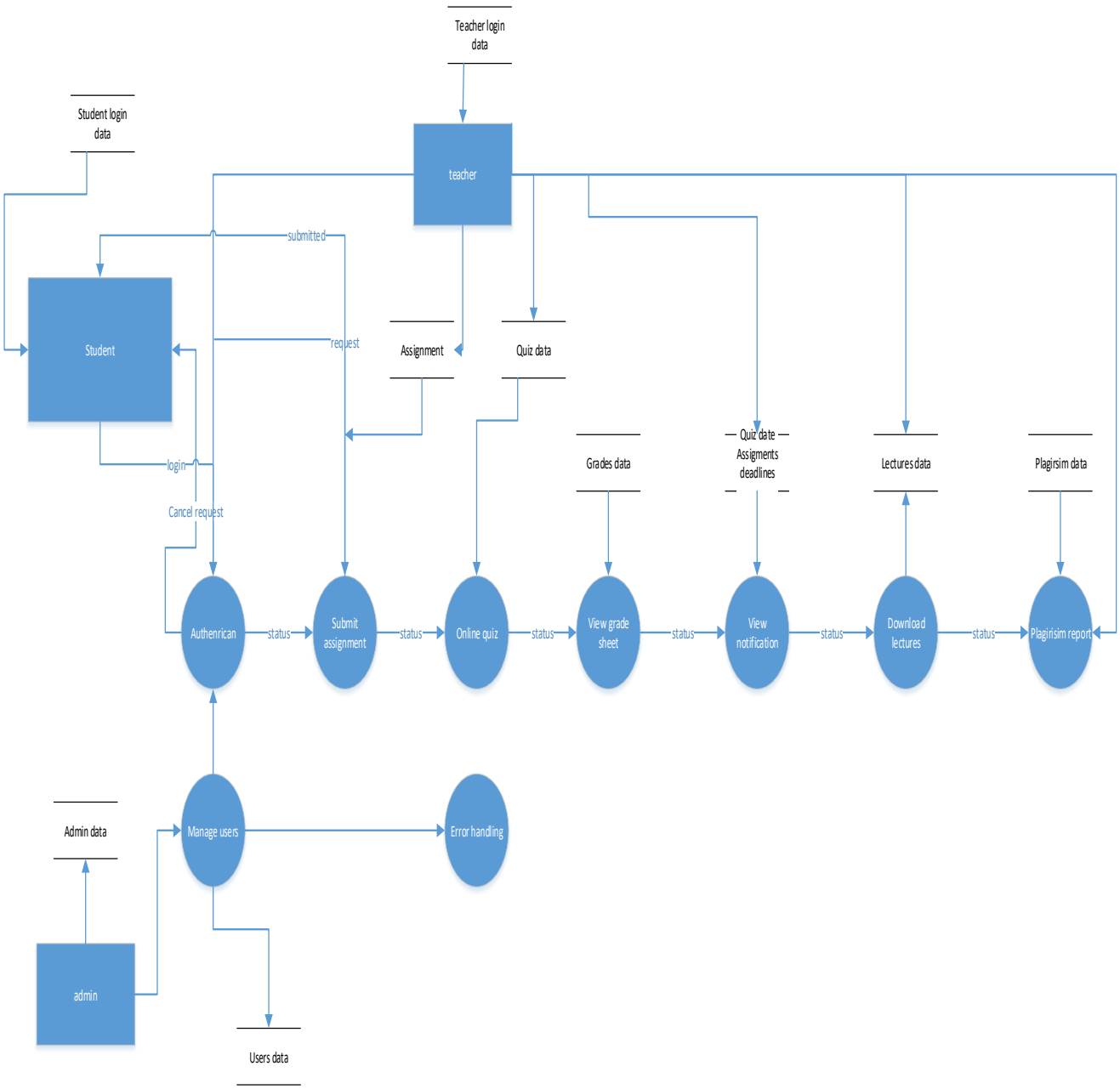

Figure 37: Data flow diagram level 1

Chapter 5

Implementation

Chapter 5: Implementation

The chapter is just a bird eye view on our project, which technologies, methods, best practices, and standards of code, third party libraries and tools we are going to use to complete our project. We will use Waterfall methodology for the Implementation of this system. We get all the necessary information of all the development phases including requirement gathering, analysis, design, implementation, testing and deployment. In implementation, we develop the platform and we check either the system fulfills the requirements.

Requirement Gathering & Analysis	In this phase, we will gather all of the important requirements and all the requirements and assets necessary are ready for analyzing. Errors and bugs are pinpoint during analysis and fixed. Then the feasibilities in the different areas of implementation are formulate (including time and cost).
Planning	In this phase plan will be establish on the basis on the analyzed data and requirements. The time and cost for each SDLC phase will also be decide.
Design	In this phase, development model will be select and database will be design. Supervisor will verify it.
Implementation	After design phase implementation according to the requirements.
Testing	Testing Is going to check requirements and functionality. Both dynamic and static testing will be perform. Dynamically through testing tools and statically to check every line of code manually. Static testing will reduce errors upon execution and allow us to find errors that otherwise are very difficult to find. V&V will be apply to check if the system fulfills the requirements.
Deployment	After tests are completed and no further errors are discover, the system will be deploy. A discovery of errors or in case a change are perform according to requirement, regression testing will be perform.

Table 10: Implementation

5.1. Important Flow Control/Pseudo codes

Admin Panel:

- Logs in
- Checks activity log
- View error-handling reports
- Decision Making, removes and verifies account
- Edit profile

Teacher Panel:

- Logs in
- Uploads assignments
- Uploads quizzes
- Publishes lectures data
- Updates quizzes data and time

Student Panel:

- Logs in
- View new events quizzes/assignments
- Submit assignments
- Check plagiarism reports
- Downloads lectures
- Views grade-sheet
- Perform quizzes

5.2. Components, Libraries, Web Services and stubs

Components, Libraries:

LARAVEL, Bootstrap4, PHP, JavaScript, HTML, CSS

Web services:

Web hosting and web services

5.3. Deployment Environment

Browser:

Safari

Chrome

Firefox

Operating system:

Window 7, 8, 8.1, 10.

5.4. Tools and Techniques

Sublime Text

Adobe Photoshop

Languages:

PHP, JAVA Script, HTML5, CSS3

5.5. Best Practices / Coding Standards

- Files must use only <? PHP and <? = tags.
- Files must use only UTF-8 without BOM for PHP code.
- Class constants must be declared in all upper case with underscore separators.
- Method names must be declared in Camel Case.
- Must use date time function for PHP

5.6. Version Control

GIT:

GIT is a version-control system for tracking changes in computer files and coordinating work on those files among multiple people. It is primarily use for source-code management in software development, but it will be use to keep track of changes in any set of files.

Chapter 6: Testing and Evaluation

Software testing is very important because of the many reasons; Software testing is required to point out the defects and errors that were made during the development phases. It's essential since it makes sure of the Customer's reliability and their satisfaction in the application. It is very important to ensure the Quality of the product. Quality product delivered to the customers helps in gaining their confidence. Evaluation can help you identify areas for improvement and ultimately help you realize your goals more efficiently.

6.1. Use Case Testing

Use Case Testing is a functional black box testing technique that helps testers to identify test scenarios that exercise the whole system on each transaction basis from start to finish.

- Use Cases capture the interactions between 'actors' and the 'system'.
- 'Actors' represents user and their interactions that each user takes part into.
- Test cases based on use cases and are referred as scenarios.

6.1. Use Case Testing

Use Case Name: TrueVit (UC-01)
Actor: Student
Description: How User can login to the system to access the portal
Pre-condition:

1. **Null**

   - Normal Workflow

1.	Student will enter Email in Email text box
2.	Student will enter its password in textbox
3.	System will login the student to dashboard.

Alternative workflow:

- If the Entered Email or Password is wrong?

1.	System will show Error Message that Entered Email or Password is wrong

- If Student Email and Password is not registered?

1.	System will show error message that this Email is not registered
2.	You must create your login id first

- If text box left Empty and ok button pressed.

1.	System will show Error Message please fill the both text boxes

Use Case Name: Student Assignment Submission (UC-02)
Actor: Student
Description: How Student can submit the assignment in the student portal

Pre conditional

1. Student Must be Login

- Normal Workflow

1.	Student click on submit assignment option
2.	See the time remaining of submitting the assignment
3.	Upload the assignment

Alternative Workflow

- If assignment uploaded after the deadline?

1.	When assignment upload after the deadline it will pop up the message the assignment uploaded has crossed the time limit.

- If teacher put a restriction that assignment will not submit after the deadline

2.	When student upload an assignment after the deadline.
2.	System will pop up the error message that you cannot upload the assignment because you crossed the time limit.

- If internet stops working while uploading the Assignment document?

1.	System will Pop up the error message that assignment cannot be upload.

Use Case Name: View Assignment Plagiarism report (UC-03)
Actor: Student
Description: Students and Teacher can View Plagiarism report of Assignment

Pre-conditional

Must be Login

- **Normal workflow**

1.	Student upload Assignment
2.	After Deadline Finished teacher log in to the system and click on check assignment plagiarism of class, which he wished to check.
3.	The plagiarism report will display to teacher of that class.
4.	Teacher will give authority to students to view plagiarism percentage of their assignments.
5.	Students will see the plagiarism report under their uploaded assignment.

- **Alternative Workflow**
- If assignments deadline is crossed

1.	When assignment upload after the deadline it will pop up the message the assignment uploaded has crossed the time limit.

- Teacher would not be able to check the assignments plagiarism before time.

2.	Before time teacher will be unable to check the assignments.

- If plagiarism report is not displayed to teacher?

3.	Before time teacher will be unable to check the plagiarism report.

Use Case Name: lectures upload and download (UC-04)
Actor: Teacher
Description: Teacher will upload the current and past lectures for students

Pre-conditional

Must be Login

- **Normal workflow**

1.	Teacher uploads lectures.
2.	Teacher can also delete previous lectures of class.

- **Alternative Workflow**
- Teacher will not be able to upload the lectures.

1.	If lectures data exceeds the memory teacher will be unable to upload the lectures.

Use Case Name: students download the lectures. (UC-05)
Actor: Student
Description: Teacher will upload the current and past lectures for students

Pre-conditional

Must be Login

- **Normal workflow**

1.	Students can download the lectures uploaded by the teacher.

- **Alternative Workflow**
- Student will not be able to download the lectures.

1.	Student can only download the lectures if teacher had uploaded the lectures.

6.2. Equivalence partitioning

Equivalence partitioning is a Test Case Design Technique to divide the input data of software into different equivalence data classes. Test cases are designed for equivalence data class.
A use of this method reduces the time necessary for testing software using less and effective test cases, while validating Sign up form we've set values:

- A text field permits text characters and symbolic characters (e.g. Alphabets & symbolic)
- Length must be 10-12 characters long including symbolic characters.

Alphabet characters from a-z are valid & And numbers from 0-999 are valid. Symbolic characters are @ , _ -

Test Scenario	Test Scenario Description	Expected Outcome
1	Enter 0 to 12 characters	System should accept
2	Enter 12 characters	System should accept
3	Enter symbolic character /	System should not accept

Table (6.2 Equivalence partitioning)

6.3. Boundary value analysis

Boundary value analysis is a test case design technique to test boundary value between partitions (both valid boundary partition and invalid boundary partition). A boundary value is an input or output value on the border of an equivalence partition, includes minimum and maximum values at inside and outside boundaries. While validating Sign up form we've set values:

- Email should only accept Gmail, Yahoo, and Hotmail.
- Password should be with a valid length of 8-20.

In test case 8, 9, 10 are the minimum values which are Boundary Values. And 17, 18, 19 are maximum values of Boundary Values.

Test Scenario Description	Expected Outcome
Boundary Value = 7	System should NOT accept
Boundary Value = 10	System should accept
Boundary Value = 11	System should accept
Boundary Value = 19	System should accept
Boundary Value = 20	System should accept
Boundary Value = 21	System should NOT accept

6.4. Data flow testing

Data flow testing is a family of test strategies based on selecting paths through the program's control flow in order to explore sequences of events related to the status of variables or data objects.

Data Flow testing is very important that can helps us to pinpoint many issues:

- A variable that is declared but never used within the program.
- A variable that is used but never declared.
- A variable that is defined multiple times before it is used.
- Deallocating a variable before it is used.

So, while data flow testing some undeclared variables shouldn't be the part of our project. It is better to be removed.

6.5. Unit testing

The unit testing was done after the coding phase. The purpose of the unit testing was to locate errors in the current module, independent of the other modules. Some changes in the coding were done during the testing phase. Finally, all the modules were individually tested following bottom to top approach, starting with smallest and lowest modules and then testing one at a time.

Testing

- Checked all the validations on each field.
- Wrong inputs in the fields of the forms.
- Database testing.
- Validation of HTML, CSS. Checked error e.g. syntax error.

Benefits of Unit Testing:

- Codes are more reusable. In order to make unit testing possible, codes need to be modular. This means that codes are easier to reuse.
- Unit testing increases confidence in changing/ maintaining code.

6.6. Integration testing

Integration testing is a level of software testing where individual units are combined and tested as a group. The purpose of this level of testing was to expose faults in the interaction between integrated units. Integration testing is an important part of the testing cycle as it makes it easier to find the defect when two or more modules are integrated.

Integration Test case:

Verifying the interface link between the login page and the home page i.e. when a user enters the credentials and logs it should be directed to the homepage.

6.7. Performance testing

Performance testing is the process of determining the speed or effectiveness of a computer, network, software program or device.

Software Performance testing is type of testing perform to determine the performance of system to major the measure, validate or verify quality attributes of the system like responsiveness, Speed, Scalability, Stability under variety of load conditions. It is very important to interact with the system.

- **Processor Usage -** amount of time processor spends executing non-idle threads.
- **Memory use -** amount of physical memory available to processes on a computer.
- **Disk time -** amount of time disk is busy executing a read or write request.
- **Bandwidth -** shows the bits per second used by a network interface.
- **Private bytes -** number of bytes a process has allocated that can't be shared amongst other processes. These are used to measure memory leaks and usage.

- **Committed memory -** amount of virtual memory used.
- **Memory pages/second -** number of pages written to or read from the disk in order to resolve hard page faults. Hard page faults are when code not from the current working set is called up from elsewhere and retrieved from a disk.
- **Page faults/second -** the overall rate in which fault pages are processed by the processor. This again occurs when a process requires code from outside its working set.
- **CPU interrupts per second -** is the avg. number of hardware interrupts a processor is receiving and processing each second.
- **Network bytes total per second -** rate which bytes are sent and received on the interface including framing characters.
- **Response time -** time from when a user enters a request until the first character of the response is received.
- **Throughput -** rate a computer or network receives requests per second.
- **Amount of connection pooling -** the number of user requests that are met by pooled connections. The more requests met by connections in the pool, the better the performance will be.
- **Maximum active sessions -** the maximum number of sessions that can be active at once.
- **Hit ratios -** This has to do with the number of SQL statements that are handled by cached data instead of expensive I/O operations. This is a good place to start for solving bottlenecking issues.
- **Hits per second -** the no. of hits on a web server during each second of a load test.
- **Rollback segment -** the amount of data that can rollback at any point in time.
- **Database locks -** locking of tables and databases needs to be monitored and carefully tuned.
- **Top waits -** are monitored to determine what wait times can be cut down when dealing with the how fast data is retrieved from memory
- **Thread counts -** An applications health can be measured by the no. of threads that are running and currently active.

- **Garbage collection -** It has to do with returning unused memory back to the system. Garbage collection needs to be monitored for efficiency.

Performance testing tool

Web Load: Web Load is a pioneer and leader in load testing, providing rich capabilities for managing large-scale performance tests in complex enterprise environments.

6.8. Stress Testing

Stress testing is used to test the stability & reliability of the system. This test mainly determines the system on its robustness and error handling under extremely heavy load conditions.

The goal of stress testing is to analyze the behavior of the system after failure. For stress testing to be successful, system should display appropriate error message while it is under extreme conditions.

Tool for Stress Testing

Stress Tester provides extensive analysis of the web application performance provides results in graphical format, and it is extremely easy to use. No high-level scripting is required and gives good return on investment.

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

We made a project that can be helpful for students as well as teachers In today's busy life no one have a time to search for different websites and complete their work. There is no single website where we can check plagiarism as well as gives online quiz and download our lectures which helps students a lot in their academicals work.

7.2. Achievements and Improvements

- Learnt to work in a team.
- Learnt time management.
- Learnt how to survive in a competitive business environment.
- We will try to improve & take care of our project, we will try to make it more secure, maintain its availability and it will be more responsive at a time.

7.3. Critical Review

We know our competitors and we've learnt how to survive in a market, for being stay in a market we must have to take a uniqueness to compete everyone in a business environment.

7.4. Lessons Learnt

Learnt how to make a successful project with absolutely no chances of failure & learnt how to survive in a market.

7.5. Future Enhancements/Recommendations

- Expanding its operation in other universities and major universities of Pakistan it is our main goal.

Truevit

Final Year Project

Session 2015-2019

A project submitted in partial fulfillment of the degree of

BS in Computer Science

Department of Computer Science

Faculty of Computer Science & Information Technology

The Superior College, Lahore

Spring 2019

Type (Nature of project)	[✓] **D**evelopment [ ] **R**esearch [ ] **R**&**D**
Area of specialization	

Project Group Members

Sr.#	Reg. #	Student Name	Email ID	*Signature
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*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

Plagiarism Free Certificate

This is to certify that, I _____ S/D of Muhammad Siddique, group leader of FYP under registration no _____at Computer Science Department, The Superior College, Lahore. I declare that my FYP proposal is checked by my supervisor and the similarity index is _____ that is less than 20%, an acceptable limit by HEC. Report is attached herewith as Appendix D.

Date: 22-08-2019 Name of Group Leader: Signature: _____

Name of Supervisor: Dr. ABC Co-Supervisor: Mr. XYZ

Designation: Professor Designation: Associate Professor

Signature: _____ Signature: _____

HoD:

Signature: _____