"STUDENT PROJECT ALLOCATION AND MANAGEMENT WITH ONLINE TESTING SYSTEM"

A

Project Report

submitted

in partial fulfillment

for the award of the Degree of

Bachelor of Technology

in Department of Computer Science and Engineering

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Session 2021-2022

Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that Mr Jinendra Jain, a student of B.Tech (Computer Science & Engineering) VIII semester has submitted his Project Report entitled "Student project allocation and management with online testing system" under my guidance.

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This is to certify that Mr Kshitij Kumawat, a student of B.Tech(Computer Science & Engineering) VIII semester has submitted his Project Report entitled ”Student project allocation and management with online testing system” under my guidance.

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DECLARATION

We hereby declare that the report of the project entitled ”Student project allocation and management with online testing system” is a record of an original work done by us at Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur under the mentorship of ”Mrs.Deepa Modi” (Dept. of Computer Science and Engineering) and coordination of ”Mrs.Anjana Sangwan” (Dept.of Computer Science and Engineering). This project report has been submitted as the proof of original work for the partial fulfillment of the requirement for the award of the degree of Bachelor of Technology (B.Tech) in the Department of Computer Science and Engineering.It has not been submitted anywhere else, under any other program to the best of our knowledge and belief.

Team Members **Signatures**

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1.
Project Chapter

1.1 Problem Statement and Objective

This project is aimed at developing a web-based system, which manages the activity of "Student Project Management" and "Online Testing". This system will manage the database and maintain a list of all student groups that have registered on this site, conduct their online test with project allocation and submission and shortlist those students who have passed the eligibility criteria as set by the professors.

1.2 Literature Survey

"A Case Study of an Online Assignment Submission at UOMV. Ramnarain-Seetohul, J.Abdool Karim,A. Amir"- This paper explains that how the assignments given to the students can be managed online. This paper provides a platform for students as well as teachers for proper assessment regarding the assignment. It also shows that how this online submission can help in removing the traditional process of manually submitting the assignments and it is very tedious to maintain all of the assignments of the students.

"Web-based assignment submission and Electronic Marking"- The article describes that the system is used by students and teachers as a replacement for the old manual system. It describes that the students find

it convenient to use the system to submit assignment from home and later retrieve their marked assignments through the web rather than having to collect hard copies from the university. It also describes that though traditional way is a good process of communication with the professor for the proper guidance but at often times it is not possible for the students to report to the professor and submit the assignment. Hence this system is used the automate the traditional process of submitting the assignments and get it evaluated by the professor and marked it return. Even the teachers can able to maintain the submitted assignments at one place so that it will be easy to evaluate about the grades to be allotted to the particular student. Hence from this survey we get the idea of making the record of all the students who have being allotted the projects so that the students will get the complete progress report at the end of the project submission and for doing this manually will consume a lot of time. And also this will be helpful for the professors to maintain the record of all of the student at one single page.

Many authors have tended to confer very detailed questions about systems operations. They often include checklists, paperwork flow analysis dealings, flowcharting, and other techniques which are used to analyze the clerical or operating subsystems of an organization. The approach tends to be ad hoc in nature and it presumes the type of improvements which are needed.

1.3 Introduction to Project

This project is aimed at developing a web-based system using Django at back end and basic html, css and JavaScript at frony end . which manages the activity of “Student Project Management” and “Online Testing”. This system will manage the database usnig SQLite3.

1.4 Proposed Logic

We Proposed a rapid web application development using django in which we propose to use django authentications(allauth) with all the functionalities of django framework . For frontend development we propose HTML,CSS and Javascript . For storage of data we propose to use SQLite3 database.

1.5 Scope of the Project

The scope of the project is :

1. The main Purpose of the system is to efficiently evaluate the candidate thoroughly through a fully automated system that not only saves time but also gives fast results and saves paper.
2. It is a cost-effective and popular means of mass - evaluation system.
3. The faculty prepares the test and questions for each exam.
4. The faculty can create and assign different projects to different students and students can submit their projects as well.
5. The candidate can login through the client computers with their email address and can take the quiz and submit projects.

2.

Software Requirement Specification

2.1 Overall Description

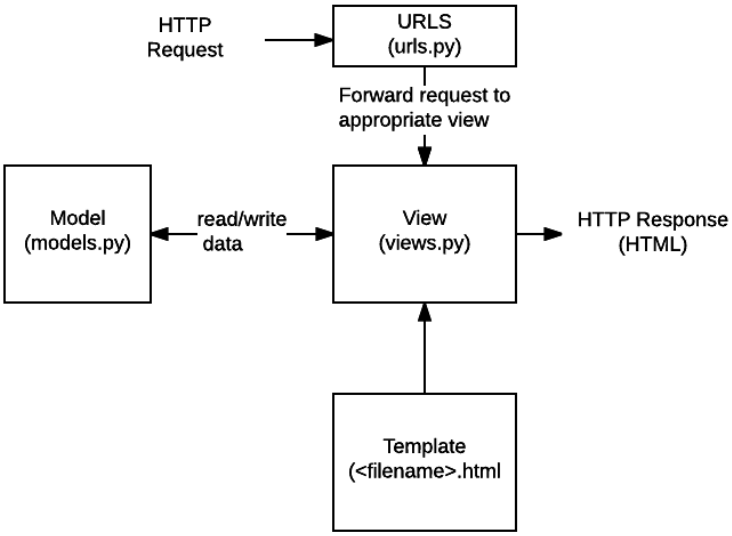

Figure 2.1: Life Cycle of Project

Working:

1. Client will request for some data through web application for this he will use URLS this request will be handled by urls.py file on the server side.

2. Then Appropriate view will be triggered on the server side using views.py file which works as an encapsulation layer of the project.

3. Views work as database queries and they will retrieve the data needed from models which can be viewed as the tables in the database Models.py on the server side works as an Abstraction layer of the project.

4. Requests in Views will get the appropriate data and this data will be shown to the user through some Html template .

5. Now Response of the request will be sent to the Client.

2.1.1 Product Perspective

2.1.1.1 Hardware Interfaces

At the beginning following will be the Hardware Requirements for our Project:

1. 1 GB RAM
2. 1 CPU Core
3. 24 GB SSD Storage
4. 2 TB Transfer
5. 40 Gbit Network In
6. 125 Mbit Network Out

2.1.1.2 Software Interfaces

Following will be the Software Requirements for our Project:

1. Client on Internet

Web Browser, Operating System (any)

2. Client on Intranet

Web Browser, Operating System (any)

3. Database Server

SQLite 3 , Operating System (any)

4. Development End

Python , Django , HTML ,CSS , JavaScript , SQLite 3 , OS (Windows)

2.1.1.3 Communications Interfaces

Following will be the Communications Interfaces for our Project:

1. Clients(customers) on the Internet will be using the HTTP/HTTPS protocol.

2. Clients (system users) on the Internet will be using the HTTP/HTTPS protocol.

2.1.1.4 Constraints

Following are the Constraints of our Project:

1. GUI is only in English.

2. Login and password is used for the identification of users.

3. Only registered students and teachers will be authorized to use the services.

4. Limited to HTTP/HTTPS.

3.

System Design Specification

3.1 System Architecture

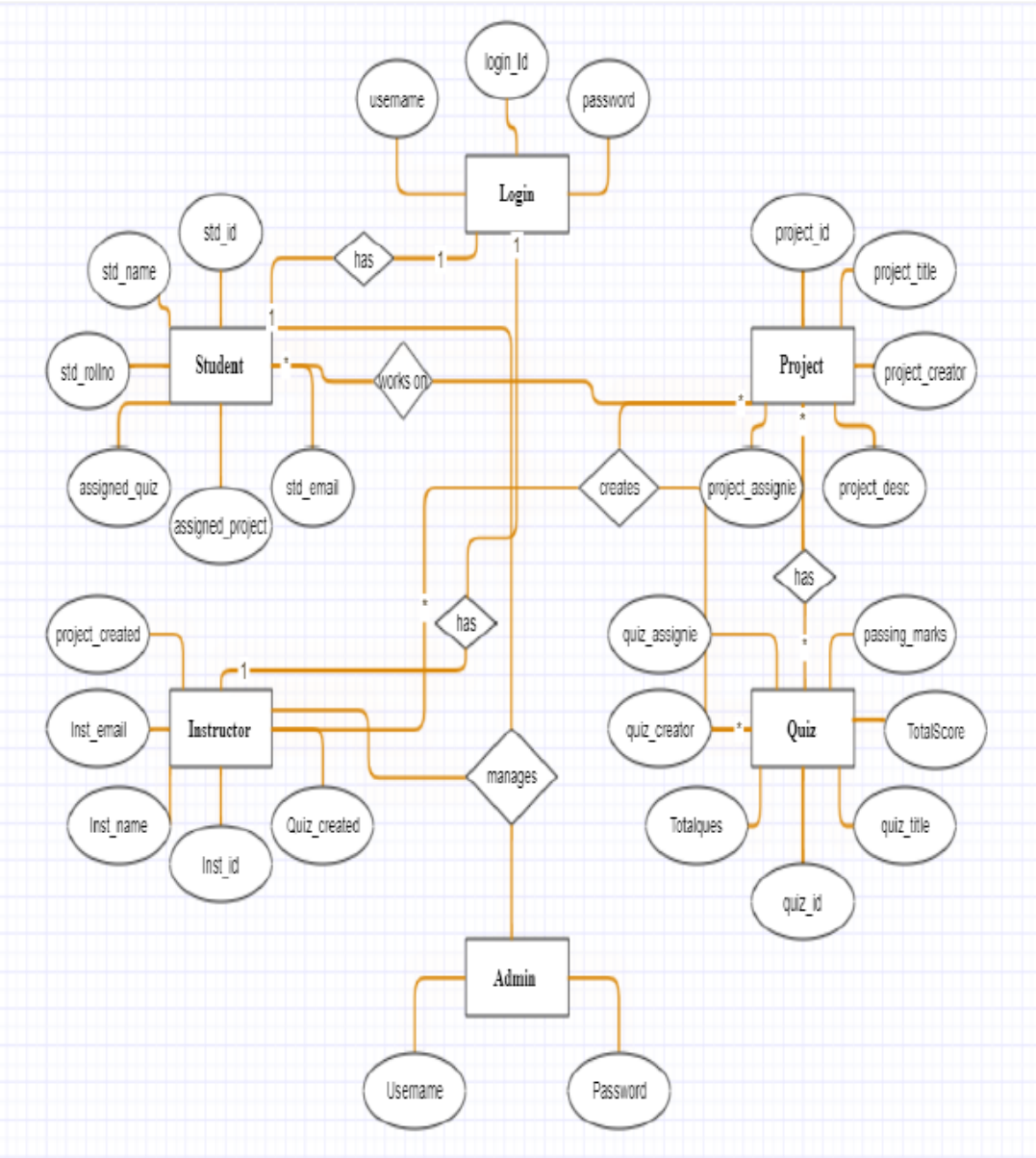

Figure 3.1: Entity Relationship Diagram

3.2 Module Decomposition Description

This Project is mainly divided into two modules:

1. Courses App/module :
2. Quiz App/module :

There are 3 main users of this project :

1. Student
2. Instructor
3. Admin

All of the users can use both the modules and perform certain tasks.

3.3 High Level Design Diagrams

3.3.1 Use Case Diagram

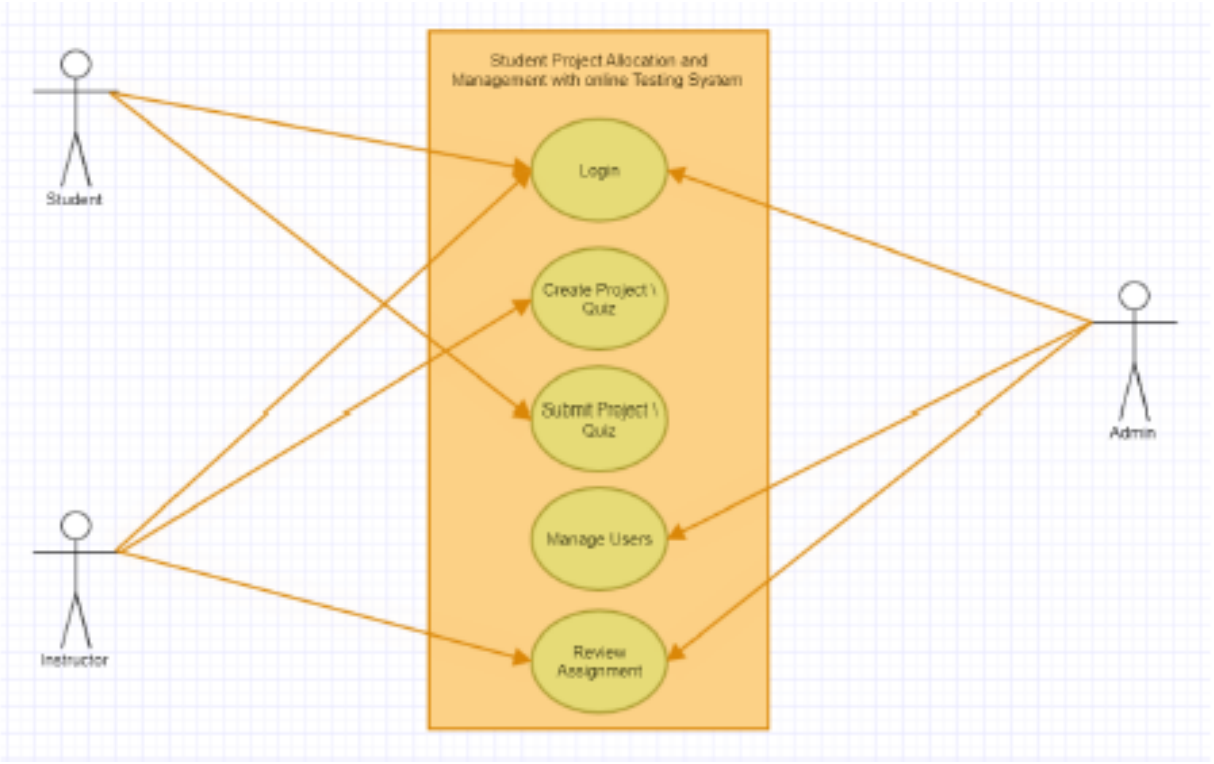

Figure 3.2: Use Case Diagram

Use Case	Student	Instructor	Admin
Login / Logout	✔	✔	✔
Create Project / Quiz		✔	
Submit Project / Quiz	✔		
Manage Users			✔
Review Assignment		✔	✔

Figure 3.3: Use Cases for different users

3.3.2 Activity Diagram

1. User Activity Diagram :

   Initially the user will login into the system using his/her credentials . After that he can do the assigned work and submit that work. At the next step either he can logout or check his marks. If satisfied he can exit the system or retake his assignment .

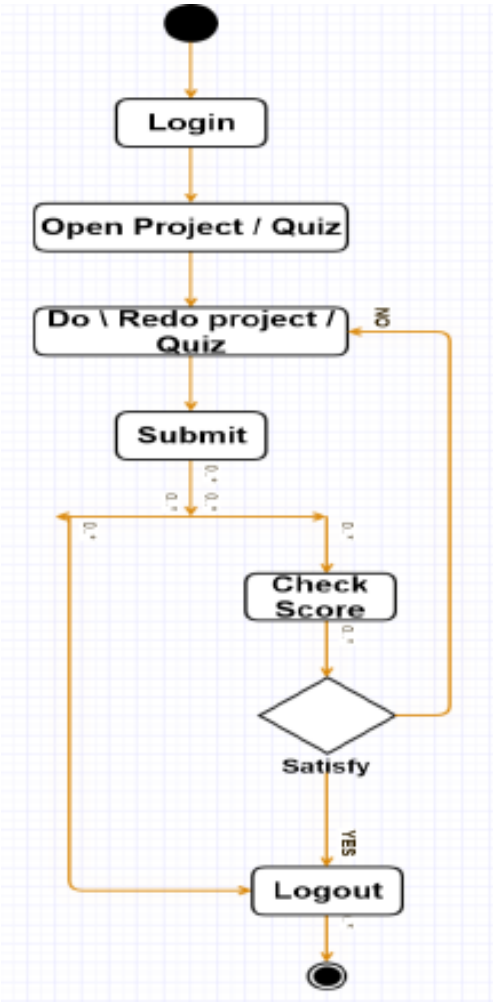

Figure 3.4: Activity Diagram for User

2. Instructor Activity Diagram :

   Initially Instructor will login then either he can create a new assignment or check submissions. After that he can assign the projects or quizzes to students, or if he is checking the submissions he can grade them. If he is satisfied with the grades he can mark complete assignments and logout otherwise he can reassign the assignments.

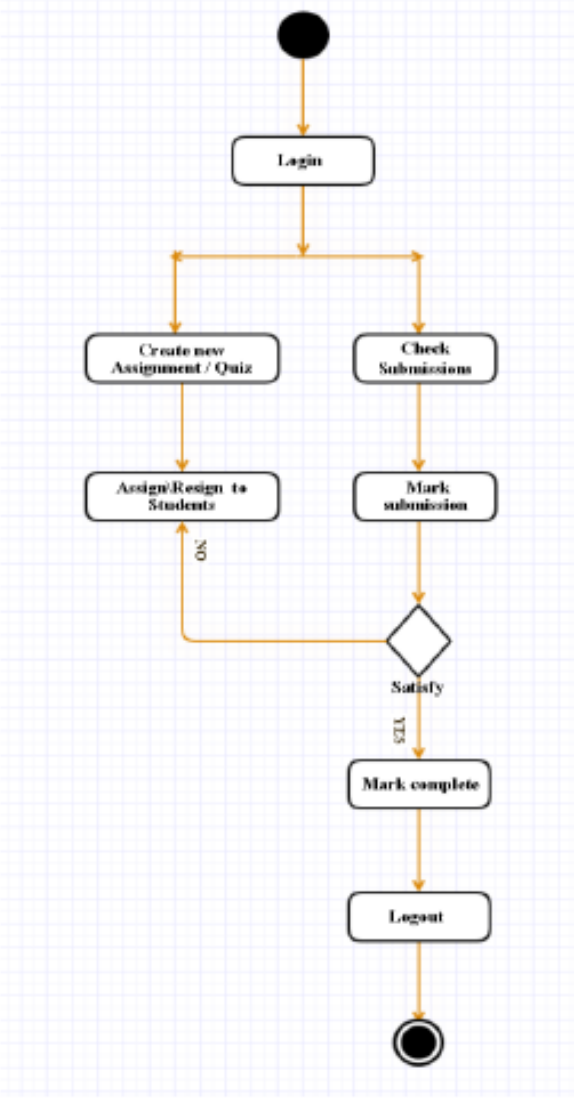

Figure 3.5: Activity Diagram for Instructor

3. Admin Activity Diagram :

Admin can login through his username and password . He can create , edit or delete teachers and students. He can either switch between the activities or logout.

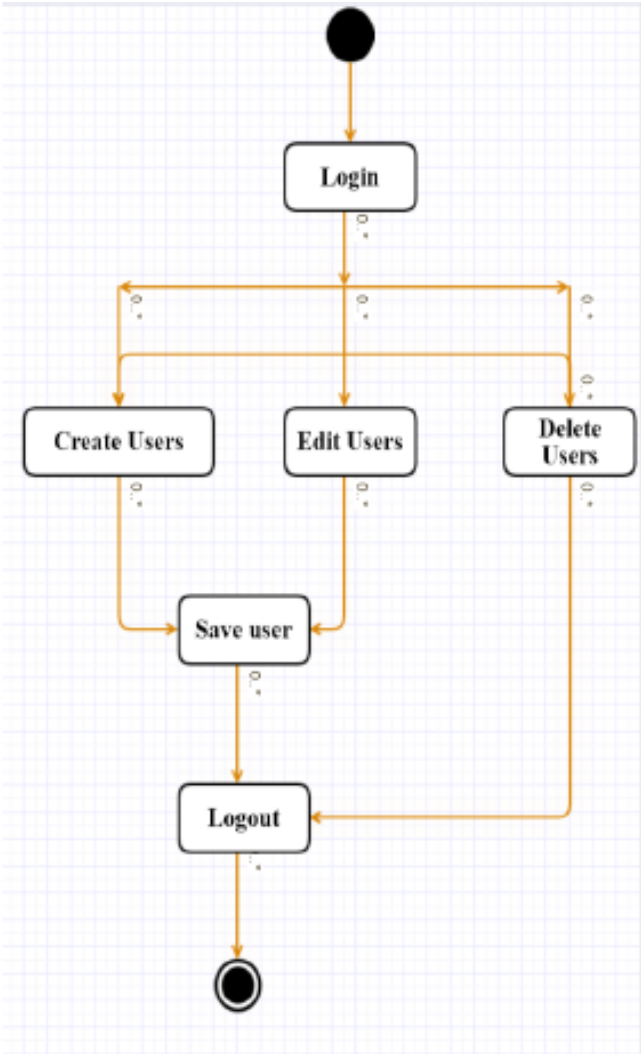

Figure 3.6: Activity Diagram for Admin

3.3.3 Sequence Diagram

1. Student Sequence Diagram :

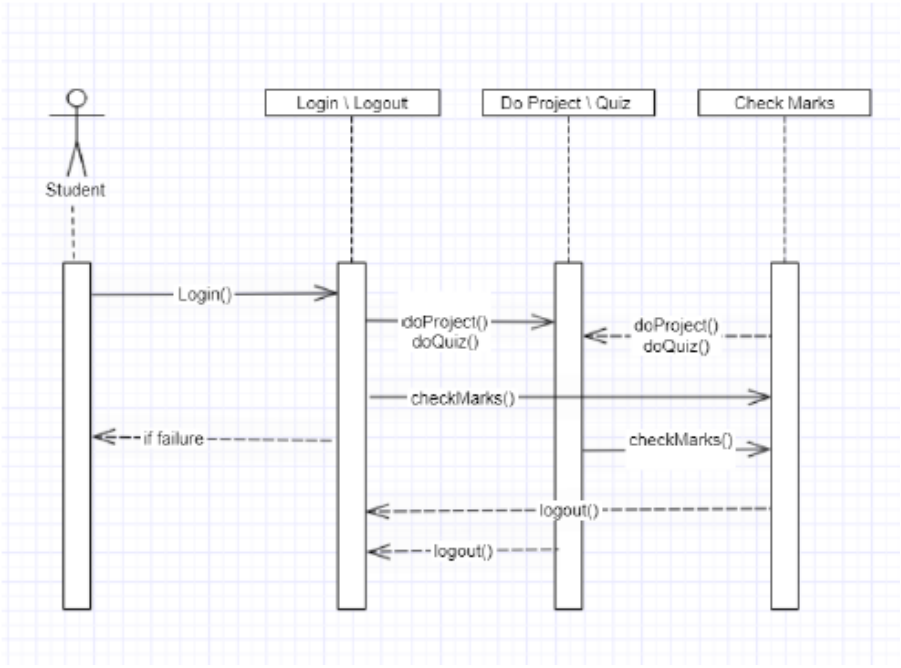

Figure 3.7: Sequence Diagram for Student

2. Instructor Sequence Diagram :

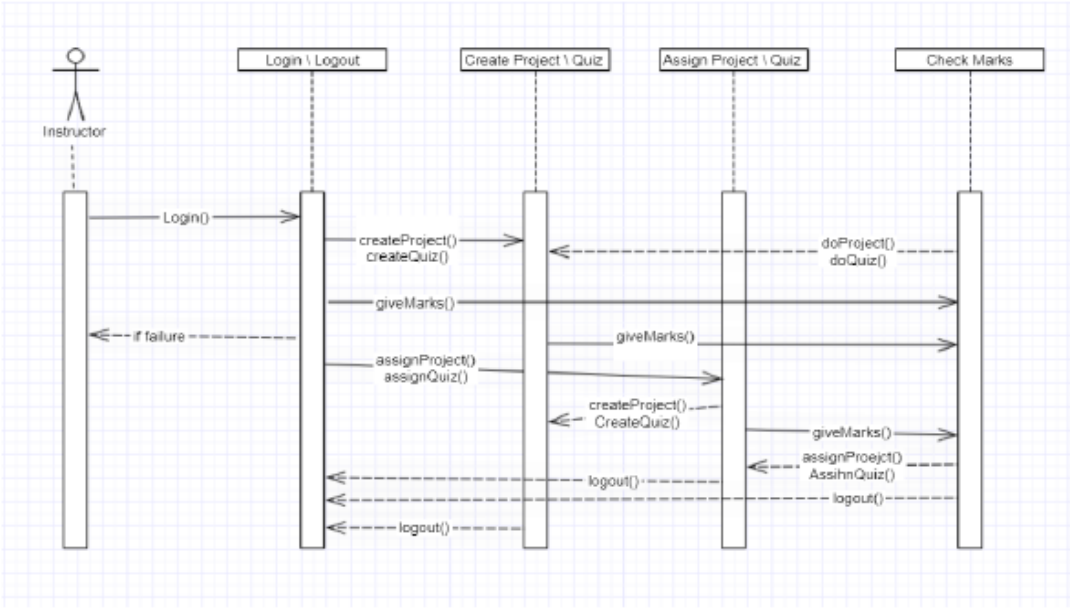

Figure 3.8: Sequence Diagram for Instructor

3. Admin Sequence Diagram :

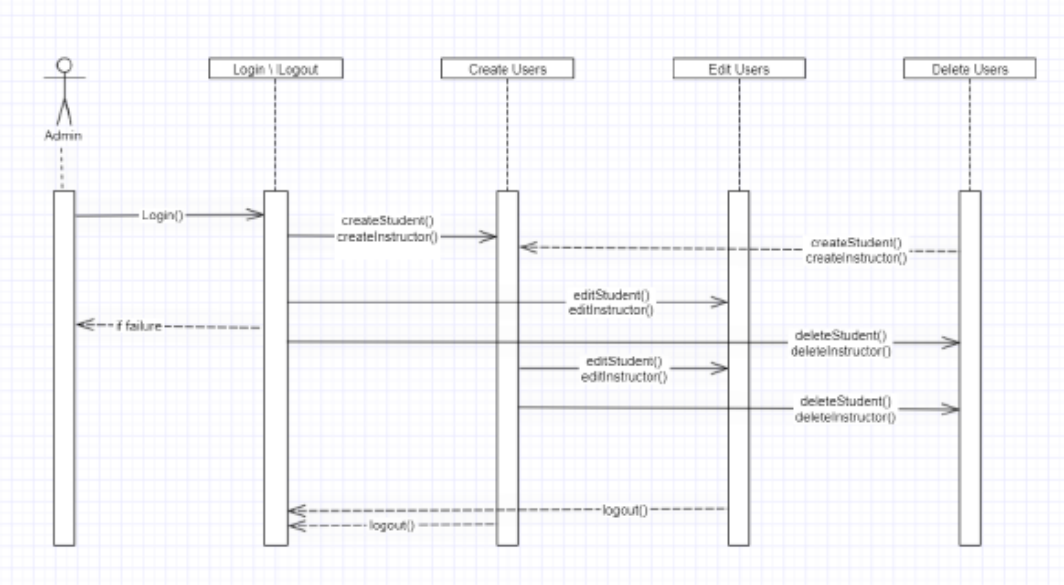

Figure 3.9: Sequence Diagram for Admin

3.3.4 Class Diagram

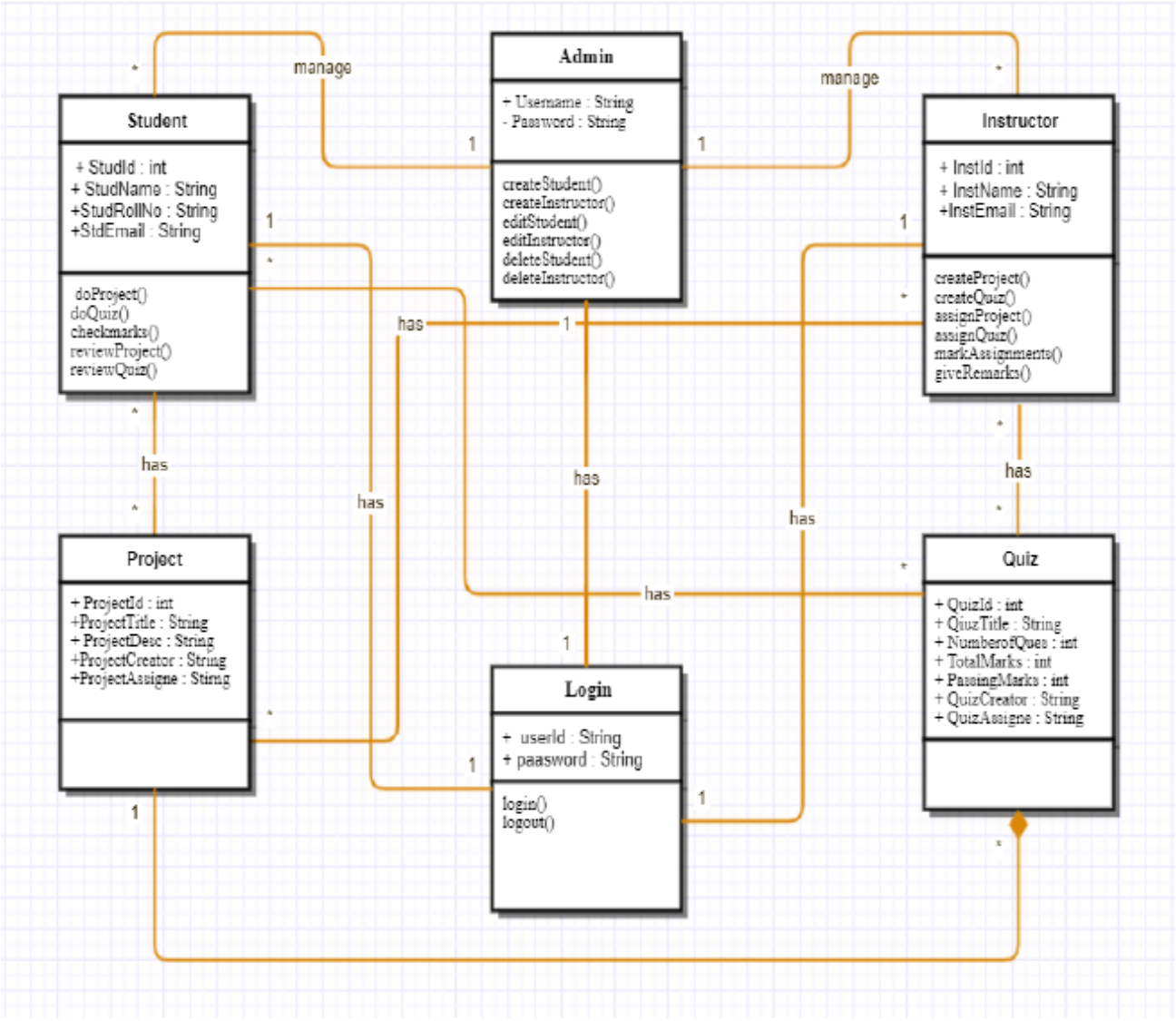

Figure 3.10: Class Diagram

4.
Methodology and Team

4.1 Introduction to Rapid application development model (RAD)

The Rapid Application Development Model was first proposed by IBM in 1980's. The critical feature of this model is the use of powerful development tools and techniques. A software project can be implemented using this model if the project can be broken down into small modules wherein each module can be assigned independently to separate teams. These modules can finally be combined to form the final product. Development of each module involves the various basic steps as in the waterfall model i.e analyzing, designing, coding and then testing, etc. as shown in the figure.

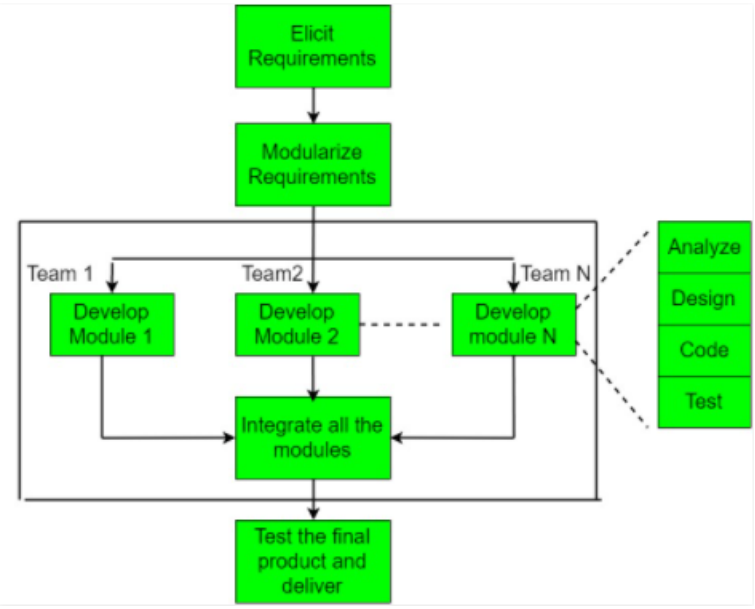

Figure 4.1: RAD model

This model consists of 4 basic phases:

1. **Requirements Planning:** It involves the use of various techniques used in requirements elicitation like brainstorming, task analysis, form analysis, user scenarios, FAST (Facilitated Application Development Technique), etc. It also consists of the entire structured plan describing the critical data, methods to obtain it and then processing it to form a final refined model.

2. **User Description:** This phase consists of taking user feedback and building the prototype using developer tools. In other words, it includes re-examination and validation of the data collected in the first phase. The dataset attributes are also identified and elucidated in this phase.

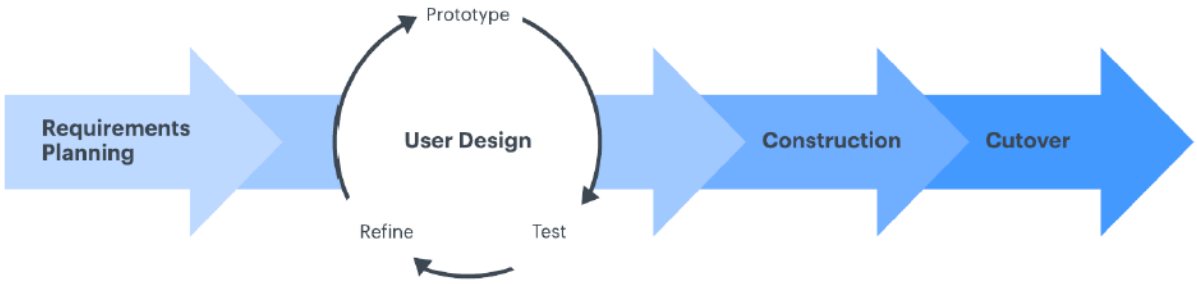

Figure 4.2: Steps of RAD model

3. **Construction:** In this phase, refinement of the prototype and delivery takes place. It includes the actual use of powerful automated tools to transform process and data models into the final working product. All the required modifications and enhancements are too done in this phase.

4. **Cutover:** All the interfaces between the independent modules developed by separate teams have to be tested properly. The use of powerfully automated tools and subparts makes testing easier. This is followed by acceptance testing by the user.

Advantages and Disadvantages of RAD model:

Advantages:

1. Flexible and adaptable to changes
2. It is useful when you have to reduce the overall project risk
3. It is adaptable and flexible to changes
4. It is easier to transfer deliverables as scripts, high-level abstractions and intermediate codes are used
5. Due to code generators and code reuse, there is a reduction of manual coding
6. Due to prototyping in nature, there is a possibility of lesser defects

Disadvantages:

1. It can't be used for smaller projects
2. Not all application is compatible with RAD
3. When technical risk is high, it is not suitable
4. If developers are not committed to delivering software on time, RAD projects can fail
5. Reduced features due to time boxing, where features are pushed to a later version to finish a release in short period 6. Reduced scalability occurs because a RAD developed application begins as a prototype and evolves into a finished application

4.2 Team Members, Roles & Responsibilities

Roles and Responsibilities				
Domain	Jinendra Jain	Khushboo Rathore	Krati Chauhan	Kshitij Kumawat
ORM	YES	YES	NO	NO
Django Framework	YES	YES	NO	NO
Django-allauth	YES	NO	NO	NO
HTML , CSS	NO	NO	YES	YES
Javascript	NO	NO	YES	YES
Bootstrap	NO	NO	YES	YES

Table 4.1: Roles and Responsibilities of Team Members

5.
Centering System Testing

The designed system has been testing through following test parameters.

5.1 Functionality Testing

In testing the functionality of the web sites the following features were tested:

1. Links

   (a) Internal Links: All internal links of the website were checked by clicking each link individually and providing the appropriate input to reach the other links within.

   (b) External Links: Till now no external links are provided on our website but for future enhancement we will provide the links to the candidate's actual profile available online and link up with the elections updates online etc.

   (c) Broken Links : Broken links are those links which so not divert the page to specific page or any page at all. By testing the links on our website, there was no link found on clicking which we did not find any page.

2. Forms

   (a) Error message for wrong input : Error messages have been displayed as and when we enter the wrong details (eg. Dates), and when we do not enter any details in the mandatory fields. For example: when we enter wrong password we get error message for acknowledging us that we have entered it wrong and when we do not enter the username and/or password we get the messages displaying the respective errors.

   (b) Optional and Mandatory fields : All the mandatory fields have been marked with a red asterisk (*) and apart from that there is a display of error messages when we do not enter the mandatory fields. For example: As the first name is a compulsory field in all our forms so when we do not enter that in our form and submit the form we get an error message asking for us to enter details in that particular field.

3. Database Testing is done on the database connectivity.

5.2 Performance Testing

In a web project, response time is usually the most important metric, as it doesn't let users get bored while waiting for a response and switch to another tab in their browser.

In programming, analyzing project performance is called profiling. In order to profile the performance of our API endpoint, we used the following approach :

1. Optimizing Database Queries

   The source of this problem is the fact that, in Django, query sets are lazy. This means that a query set is not evaluated and it does not hit the database until you actually need to get the data. At the same time, it gets only the data you told it to, making subsequent requests if any additional data is needed.The solution is very simple, though. In order to extract all required data for serialization, we can used the selectrelated() method on the query set.

2. Optimizing the Code

   We optimized our code by following manner :

   (a) Simplifying our code

   (b) Update/substitute third-party packages

   (c) Refactor our own code

5.3 Usability Testing

There are numerous types, levels, and classifications of tests and testing approaches. The automated tests that we used are:

1. Unit tests

   Verify functional behavior of individual components, often to class and function level.

2. Regression tests

   Tests that reproduce historic bugs. Each test is initially run to verify that the bug has been fixed, and then re-run to ensure that it has not been reintroduced following later changes to the code.

3. Integration tests

   Verify how groupings of components work when used together. Integration tests are aware of the required interactions between components, but not necessarily of the internal operations of each component. They may cover simple groupings of components through to the whole website.

6.
Test Execution Summary

Execution Test Summary Report is an overall view of Testing Process from start to end. Test Plan comes at the starting of project while Test Summary Report comes at the end of the testing process. This report is given to the client for his understanding purpose.

The Test Summary Report contents are :

1. Functions Performed
2. Description of functions
3. Executed Test cases
4. Passed Test Cases
5. Pending Test Cases

Function	Description	Test case Executed	Passed Test Case	Pending Test Case
New User	Check if new user is created	100 Per	100 Per	0
Assign Course	Check if Course id Assigned	100 Per	100 Per	0
Assign Quiz	Check if Quiz is Assigned	100 Per	100 Per	0
Create new Assignments	Check if new assignments are created	100 Per	100 Per	0
Delete the Account	Check if the account is deleted	100 Per	100 Per	0

Table 6.1: Testing Report

7.
Project Screen Shots

7.1 Landing Page of Application

This is the first screen of the application . One is required to sign-in to use the application which can be done by an existing user by their email address and password. New users can user the sign-up option for account creation . If any user has forgotten their password they can also reset it by Forget Password link.

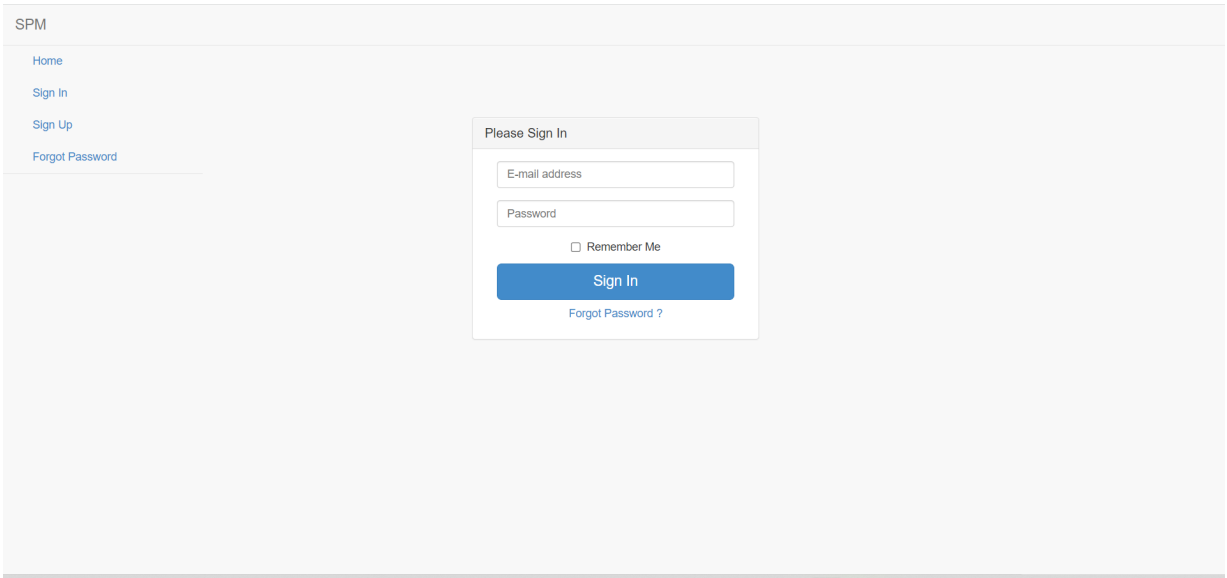

Figure 7.1: Landing Page

7.2 Sign-Up Page of Application

This is the sign-up page of the application which is used by new users to create an account in the application. One can create the account by entering their email address and setting up a password. After conforming their password a verification email will be sent to them , after verifying their email account they can login by their email address and password.

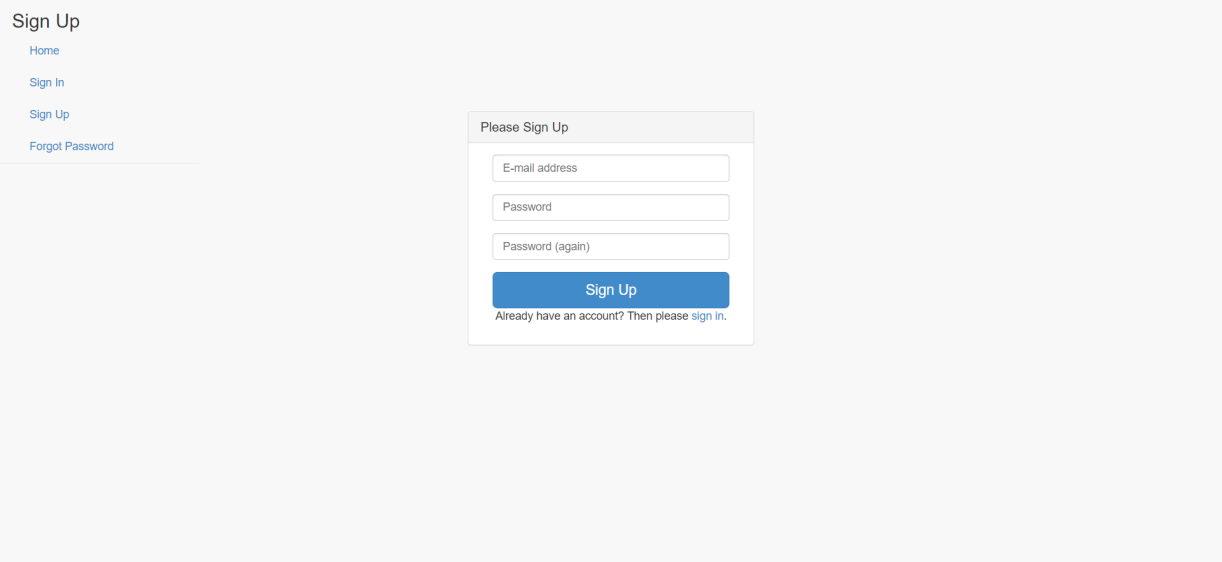

Figure 7.2: Sign-Up Page

7.3 Reset Password Page

This page shows when a user choose the forget password option at the time of login. Here one can enter their email address and a link for resetting password will be shared to them .

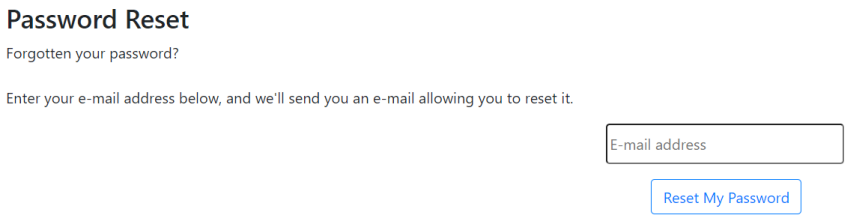

Figure 7.3: Forget Password Page

7.4 Dashboard

This is the first screen that come after a user login into application . It contains all the assigned quizes and projects . It also gives the option of log out and change password to the user.

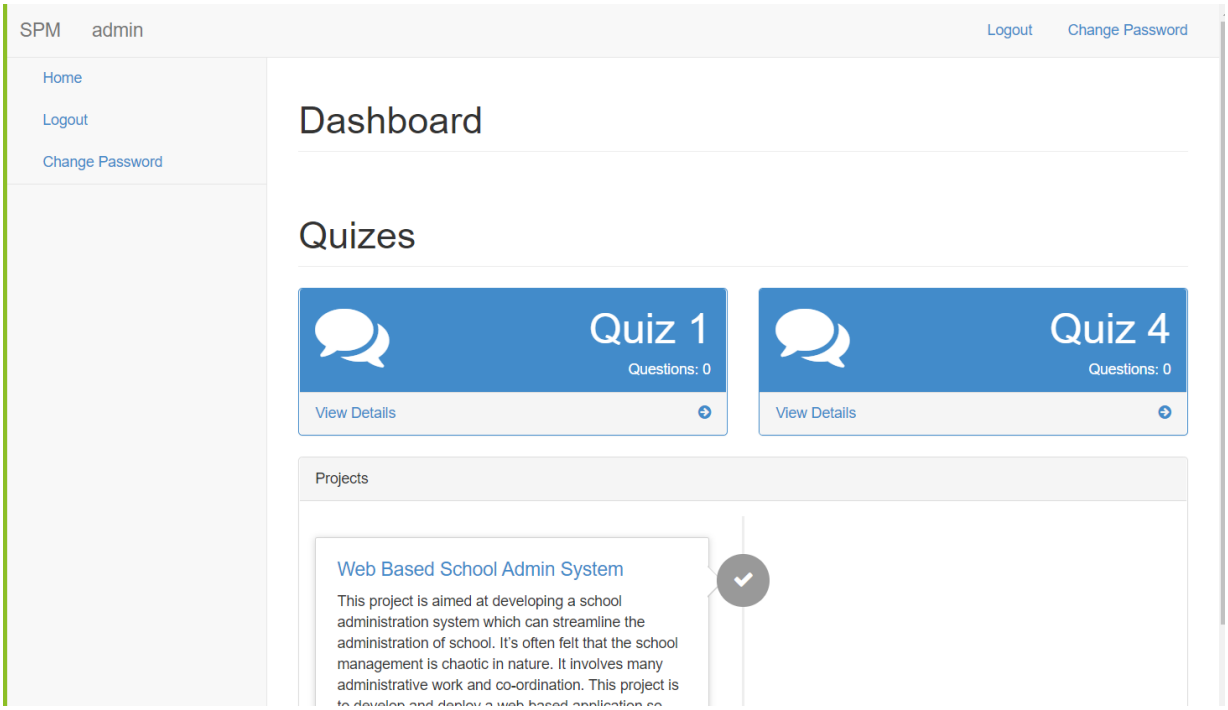

Figure 7.4: Dashboard

7.5 Quiz Details view

This snap shot shows the quiz detail page of application. It has the start quiz button and all the details about the quiz attempt.

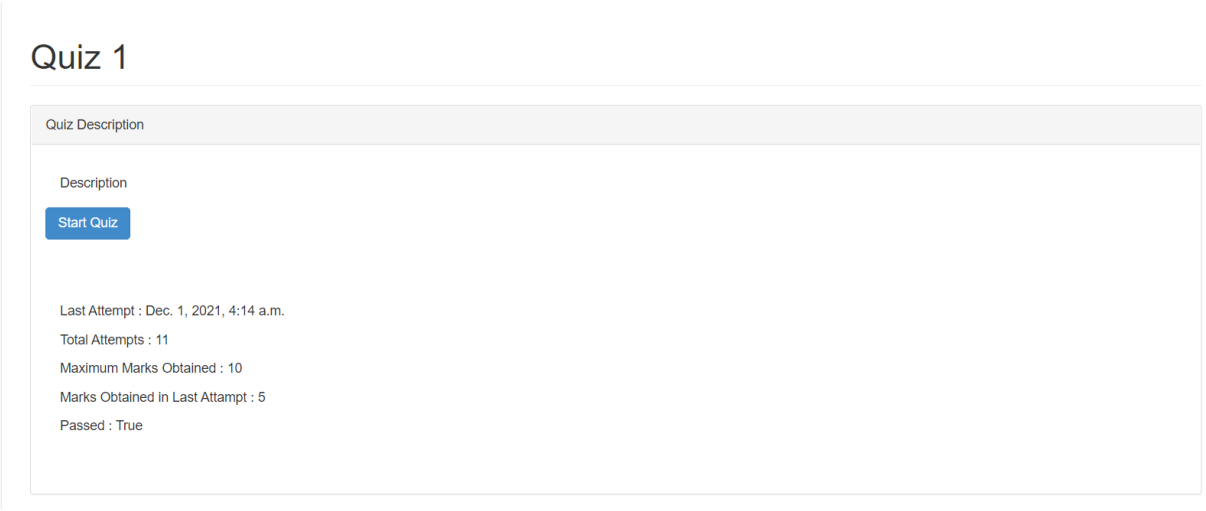

Figure 7.5: Quiz Details View

7.6 Quiz format

This snap shot shows the quiz format of the application. It shows the quiz title and each questions with it's options and in the end there is two buttons , one for submitting the quiz and other for resetting it.

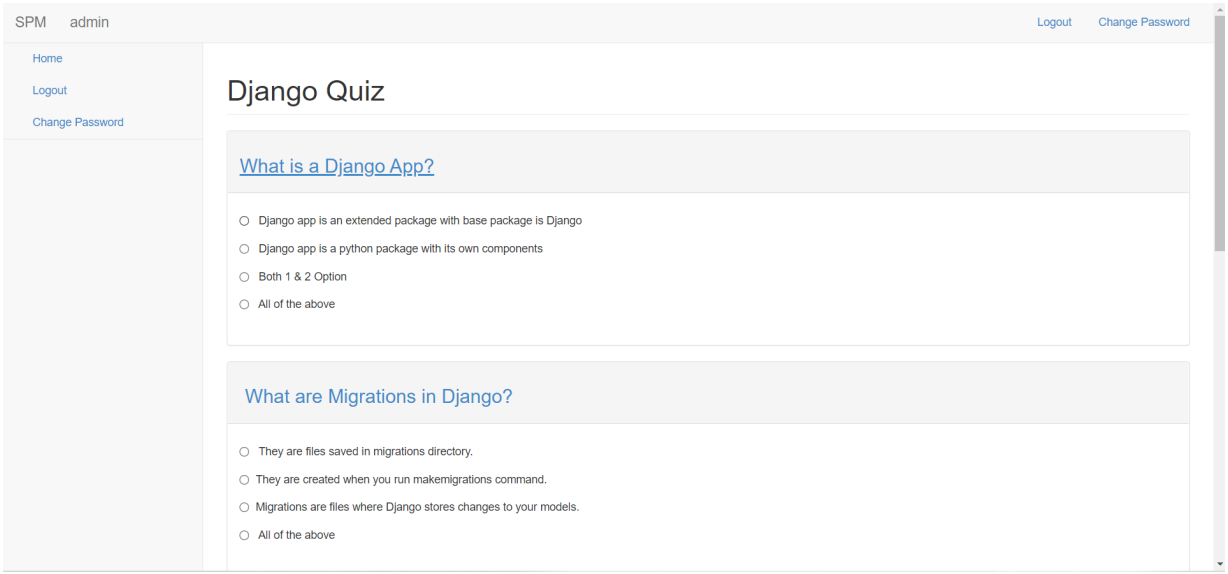

Figure 7.6: Question Format of Quiz

7.7 Application Project Details View

This snap shot shows the project details page of application. It shows Project name , Project description , List of teammates with their first name , last name and user name and a window to see the status and to upload the project documents.

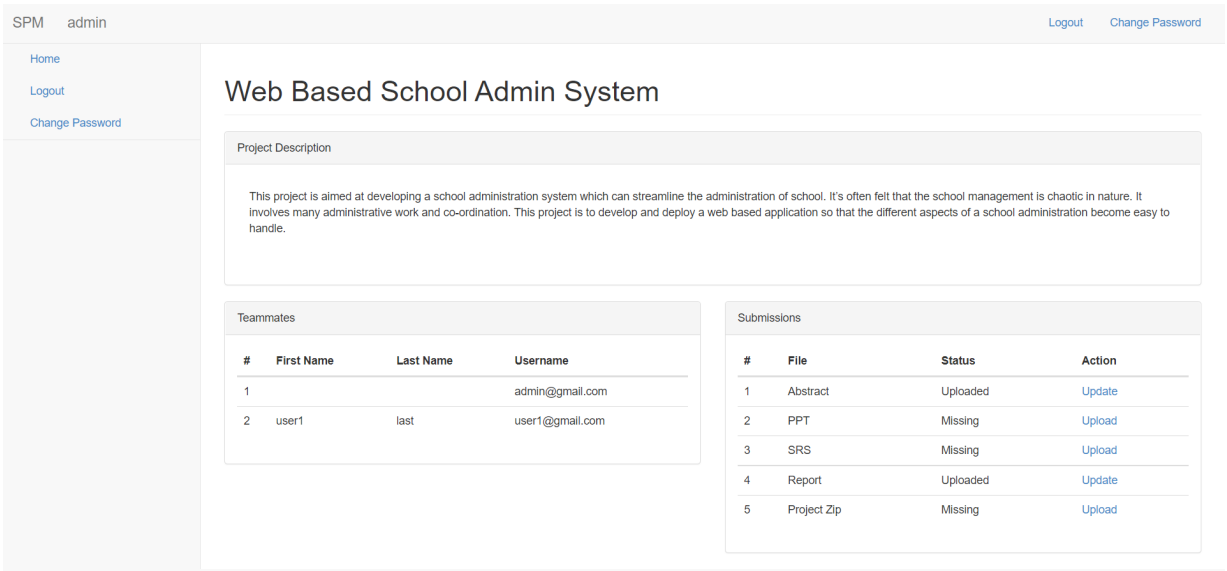

Figure 7.7: Project Details View

7.8 Application sign out page

This snap shot shows the sign out page that renders when a user logout from the application.

Figure 7.8: Sign Out Page

7.9 Admin/Instructor Login Page

This snap shot shows the Login page for admin/instructor. Here one can Login by using their username and password.

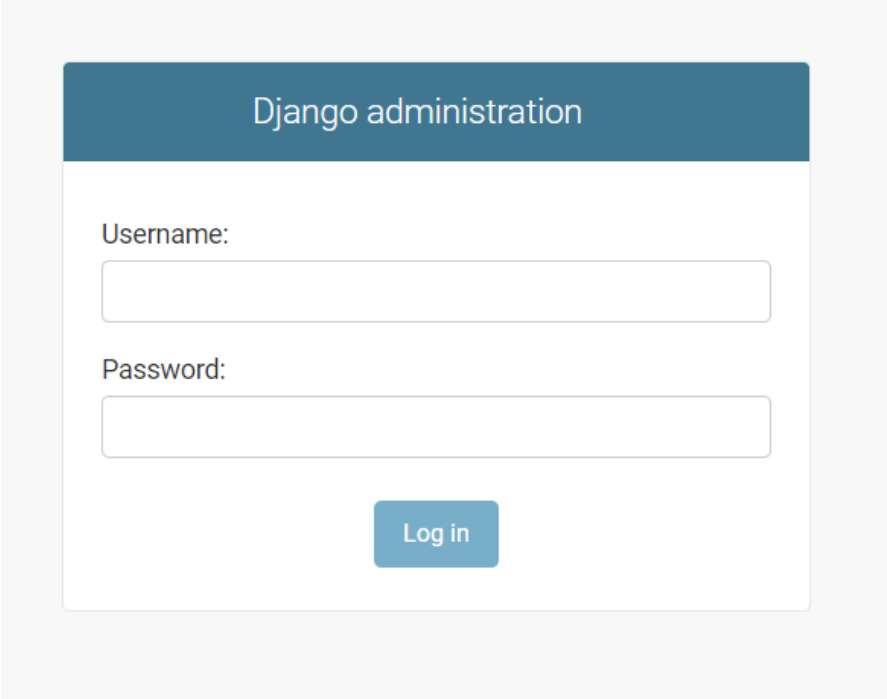

Figure 7.9: Admin Login Page

7.10 Database Structure

This snap shot shows the database structure if the project. It includes all the accounts of the platform, all tables with their data and relationships and all the user groups.

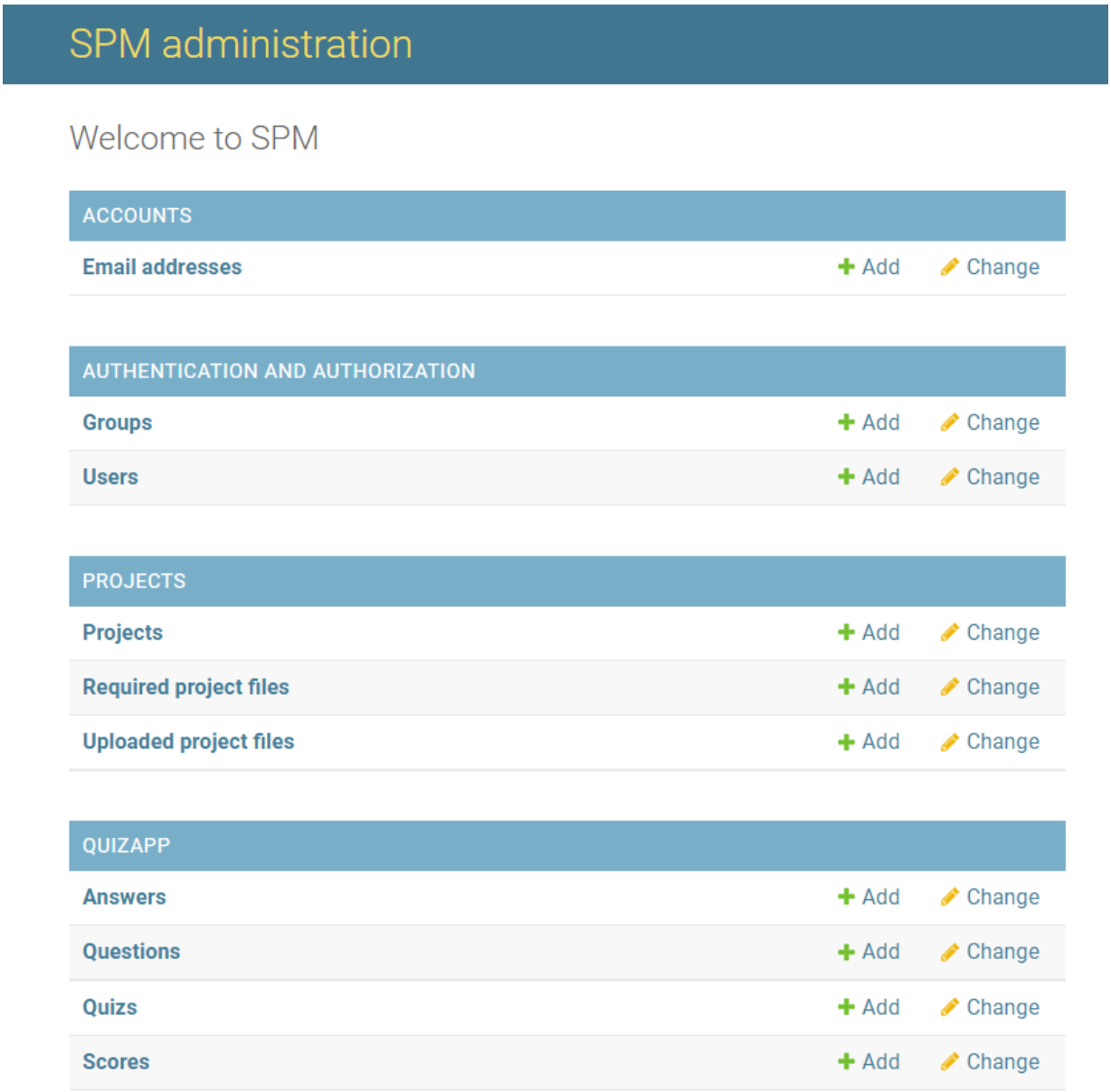

Figure 7.10: Database Design

7.11 Question Creation

This snap shot shows us page of Questions creation . It has the Following fields :

1. Creator
2. Question Text
3. Marks
4. Answers
5. Correct Answer

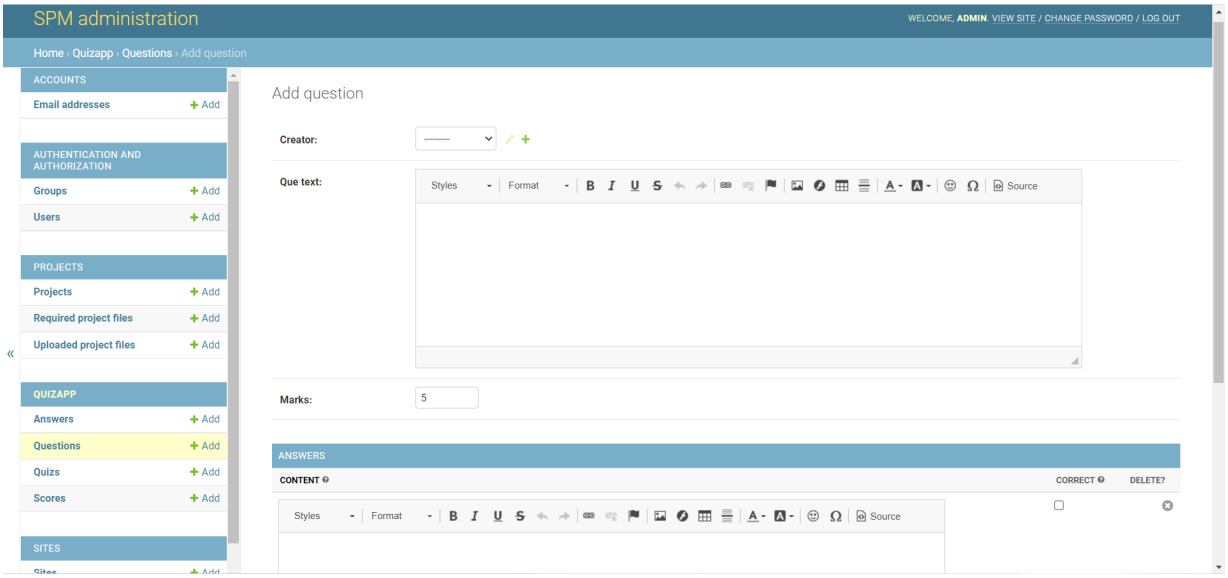

Figure 7.11: Question Creation

7.12 Quiz Creation

This snap shot shows us page of Quiz creation . It has the Following fields :

1. Creator
2. Title
3. Description
4. Questions
5. Allocated to
6. Passing Marks

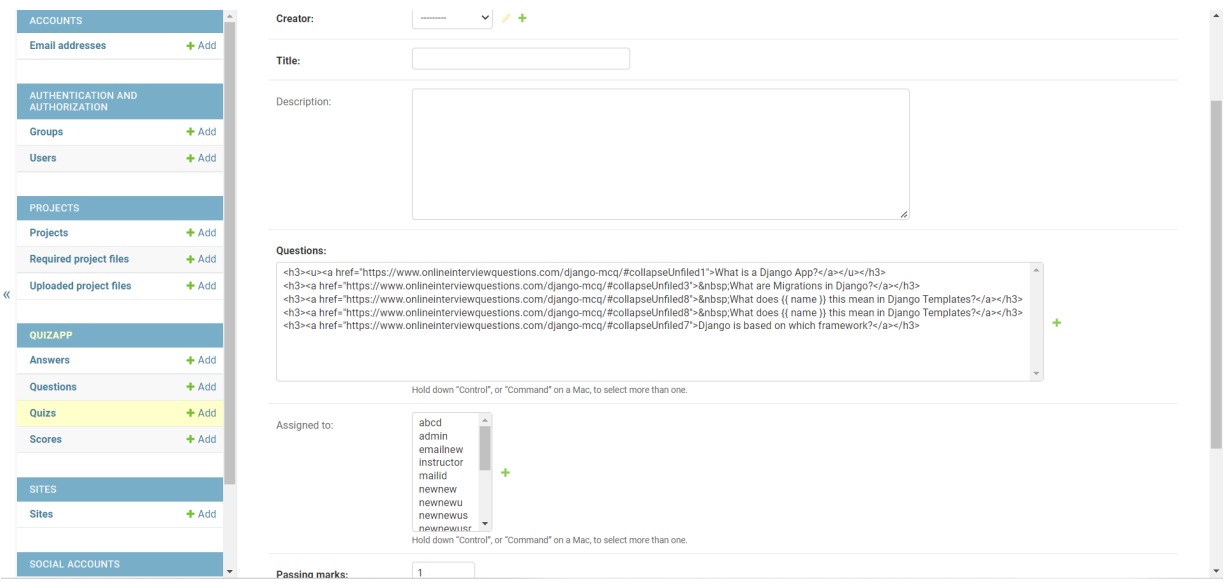

Figure 7.12: Quiz Creation

7.13 Project Creation

This snap shot shows us page of project creation . It has the Following fields :

1. Title
2. Description
3. Allocated to

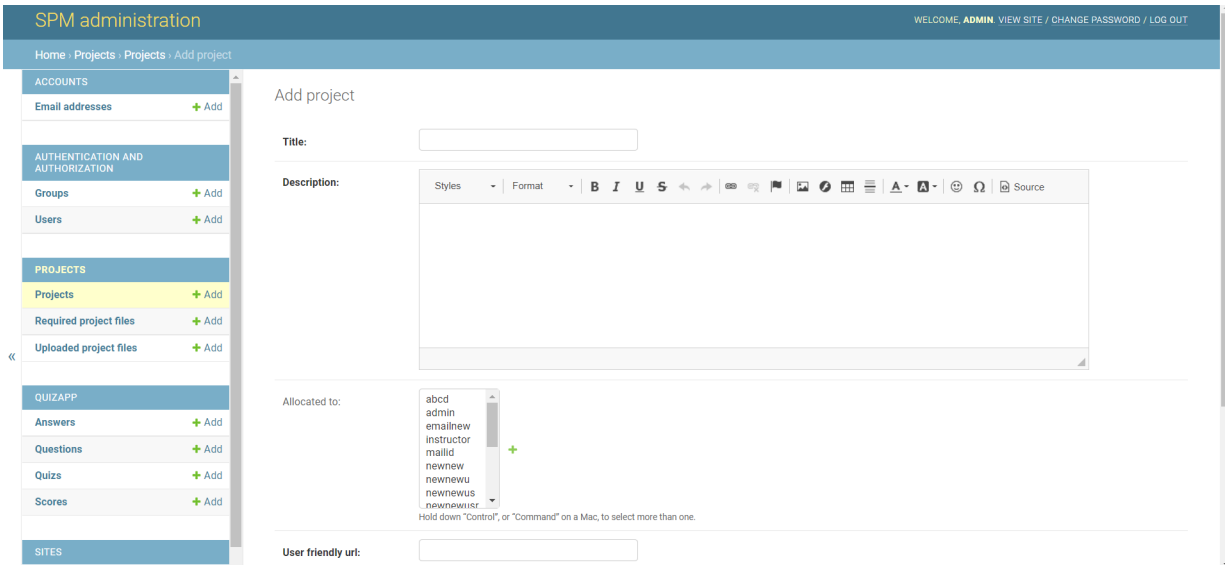

Figure 7.13: Project Creation

7.14 Uploaded Project Documents

This snap shot shows us the files uploaded by the students in that particular project. It has the following fields :

1. Project Id
2. Project Name
3. File Name
4. Uploaded By

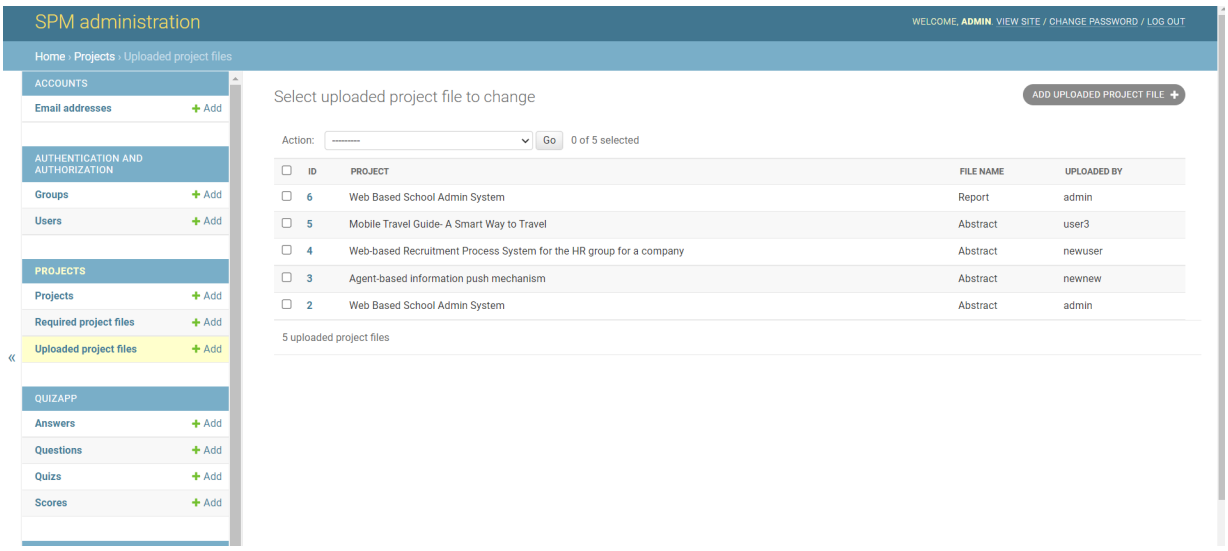

Figure 7.14: Uploaded Project Documents

7.15 Quiz Result storage

This snap shot shows us how the quiz scores are stored in the database and shown to the signed in instructor. It has the following fields :

1. Student Name
2. Quiz number
3. Maximum Marks
4. Total Attempts
5. Status(Pass/Fail)

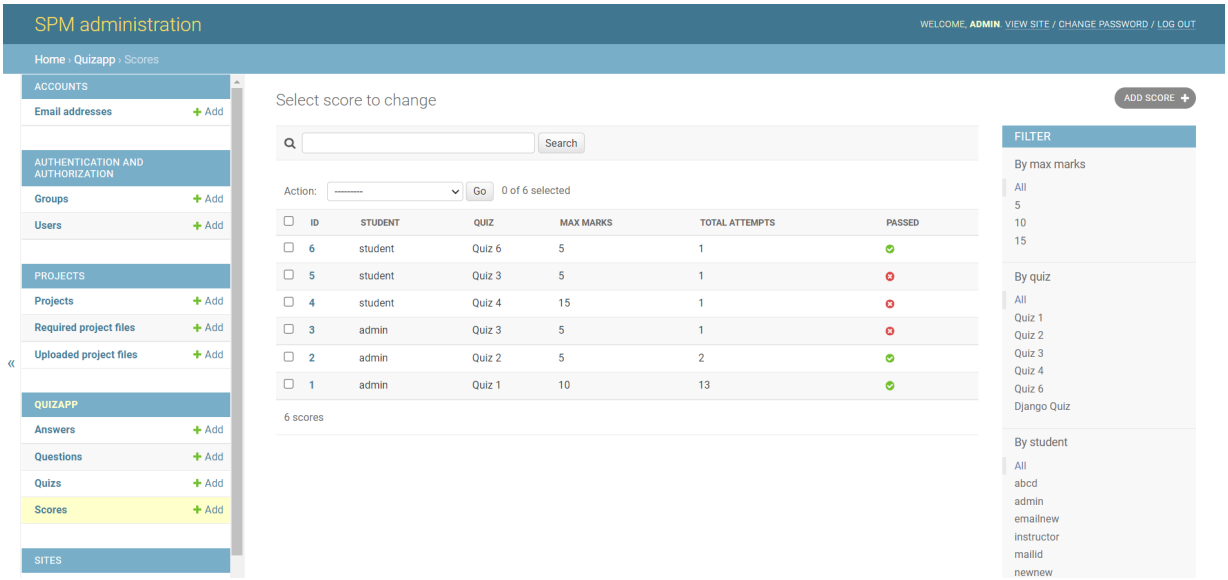

Figure 7.15: Result Storage

8.
Project Summary and Conclusions

8.1 Summary

This system will help you to manage the database and maintain a list of all student groups that have registered on this site, conduct their online test and shortlist those students who have passed the eligibility criteria as set by the professors.
The Student Project Allocation contains various options such as login/logout, data management by grouping same type of data, online test, etc. Which will give an interactive experience to users. It will be secure with a password so the data can be used by only those who have an id and password.

8.2 Conclusion

The proposed Student Project Allocation And Management with Online Testing System is based on the internet so that data can be accessed by any system and from any place.
It will also take the test of student and will make a list of students who all pass in the exam so that it will be easy for any institute to keep records while at the a student can check their results and class rank.

9.
Future Scope

The project has a very vast scope in future. The project can be implemented on intranet in future. Project can be updated in near future as and when requirement for the same arises, as it is very flexible in terms of expansion. With the proposed software of database Space Manager ready and fully functional the client is now able to manage and hence run the entire work in a much better, accurate and error free manner.

The following are the future scope for the project:

1. Total aggregate calculation on the basis of all assignments and quiz.
2. Bar code Reader based attendance system
3. Individual Attendance system with photo using Student login