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Comprehensive Exam Preparation

In partial fulfilment of the requirements for the degree of
Bachelor of Science in Information Technology

Supervisor: Zia Ul Rehman

Department of Computer Sciences
Bahria University, Lahore Campus

4th June 2018

Certificate



We accept the work contained in the report titled
“COMPREHENSIVE EXAM PREPARATION”,

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June 4th, 2018

DECLARATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

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Specially dedicated to
My beloved Parents and family for their love, support and encouragement throughout
my life.

(Hamza Raheel)

My beloved mother and father thank you for giving me such a splendid
opportunity.

(Muhammad Hamza Khan)

My beloved Mother, father and sister for supporting a lot in my graduating career
(Ali Islal)

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In addition, we would also like to express my gratitude to our loving parent and friends who had helped and given me encouragement.

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COMPREHENSIVE EXAM PREPARATION

ABSTRACT

Comprehensive exam preparation is an mobile application that provides learning facility to students. It provides a competitive platform where students can improve their knowledge and skill at the same time. Exam preparation can take test of a candidate and display score card & solution online at same time. No restriction that examiner has to be present when the candidate is attempting the quiz. They can attempt the exam anytime, anywhere with interactive interface. Candidate attempting the quiz have flexibility of attempting the quiz into first half, second half and full book. Candidates can select test mode where he can attempt test on the basis of difficulty level that are “easy mode, medium mode and difficult mode”. Another feature of this app is to display past papers according to the subject and year. The purpose of this document is to make design easy to understand and having less chances of fault.

Primary objective of this project is to take online quiz for students through internet. User must attempt multiple quiz to get prepare for the board examination.

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LIST OF SYMBOLS / ABBREVIATIONS

OS	Operating System
MCQs	Multiple Choice Questions
HTTP	Hyper Text Transfer Protocol
RAM	Random Access Memory
JDK	Java Development Kit
SDK	Software Development Kit
REST	Representational State Transfer
API	Application Program Interface
PDF	Portable Document Format
SQL	Structured Query Language
MVC	Model View Controller

CHAPTER 1

INTRODUCTION

1.1 Background

This application is providing a package of study material for the student who face difficulties in education and getting prepare the examination. In some areas, female students find it difficult to go to the academical places and afford monthly academical fees for test session. Most students have to buy expensive model papers and past papers to get prepare for important sessions of exams. This application will provide a package of attempting mcqs and students can view past papers to prepare the exams.

Attempting mcqs at home in very interactive display is very helpful and interactive for the students to prepare the exams through modern way without wasting them to pay for the academies and transport facility.

1.2 Problem Statements

This is the modern way of preparing exams because earlier before this application students find it difficult for having the financial means to afford institute fees and afford the transport facility to go the academies. This method of preparing exam is innovative in its way and more interactive for the students for preparing the exam in a very comfortable environment.

1.3 Aims and Objectives

The objectives of the project are shown as following:

- i) To display the past papers of different boards according to the subject and class.
- ii) To provide quizzes for the students according to class and subject.
- iii) To shuffle the mcqs whenever student attempt the same quiz.
- iv) To view the result of attempted quizzes and show the right answers.
- v) Test mode on the basis of difficulty level.

1.4 Scope of Project

Our project is related to exam preparation through internet that provides the sign in and sign up facility. If user is not registered on the application, then sign up the account by providing its related information accordingly. Sign in the account by giving email account and password if user have forgot the password then click on the forget password activity. When you are sign in the application you can see main page where user have option of user profile maintenance where he can update his related information. User can attempt the mcqs according to selected class and subject he/she can select the board where he/she can start attempting the quiz by reading the mcqs and selecting the right option in the given time. This application also allows the user to select test mode to attempt the quiz on the basis of difficulty level that is Easy mode, medium mode and difficult mode. When the mcqs quiz is finished in the given time, result is shown which displays all the correct options of the mcqs and how many attempted mcqs are correct. Another functionality of this application is when you attempt the same quiz again it will shuffle the mcqs options according to the previous attempt through a shuffling algorithm. Students find it difficulty in finding past papers

and afford expensive past papers of multiple examination board yearly so there will also be an option to display the past papers of multiple subjects according to the subject class and year.

CHAPTER 2

LITERATURE REVIEW & SRS

2.1 Literature Review Purpose

This application is for the students to prepare for their exam using this application, previously few applications and web pages were developed but they were not related directly to help the students to prepare for exam either there were many bugs in the applications or data was not corrected related to the subjects. [1]

Our application is most different from others because when you attempt questions in other application they are so much predictable. [1] Their structure of attempting a question is predictable due to again and again attempt of same quiz but in our application questions and their options shuffles itself when they are attempted multiple times.

Some application does not allow the full preparation of subjects, but our application allows full preparation of every subject and class from any board division according to full paper, first half and second half preparation of exams. It allows the flexibility for students to prepare the exam by selecting the quiz mode i.e. easy, medium and difficult. [1]

Another benefit of our application is that it is a package that allows multiple students to prepare their examination from one platform. There is no need to download multiple applications according to class subjects and board division.

It also provides a platform to get prepare examination from past papers because previously some application does not allow this functionality and students get difficulty in getting prepare and searching for related previous board papers. It saves the time and money of the students to visit market and buy expensive books.

2.2 Operating Environment

2.2.1 Web Application

It will require with PC hardware specification and any operating system from window 8 or 10 and browser will be supported by Google Chrome, Internet Explorer or other.

2.2.2 Mobile Application

This application will be developed in android studio environment hence any mobile device with hardware specifications and android version higher than 4.3 Jelly Bean.

2.3 Interface Requirements

2.3.1 Hardware Interface

Our web application requires a PC system with window 8 or 10 with having dual core or above processor 4 GB RAM or a system compatible to use web browser with required internet connection. Our mobile application requires an android operating system with android version 4.3 or above. It requires with 1 GB RAM or above to use application.

2.3.2 Software Interface

This application is to be developed in android studio for android operating system.

2.4 Other Non-functional Requirement

2.4.1 Safety Requirement

Following are the safety requirements that should be needed to prevent our software from any possible loss or action:

- Database should be such as to minimize the crash time.
- Design of the system should be easy to handle not complex.
- No data should be loss.
- Previous records should be maintained.

2.4.2 Software Quality Attributes

Availability: It is easy to available on any smart phone even with minimum specification because it is mostly designed for students.

Maintainability: Database designed is maintained regularly as the course is changed according to the Punjab board of examination.

2.5 Use Case Diagram

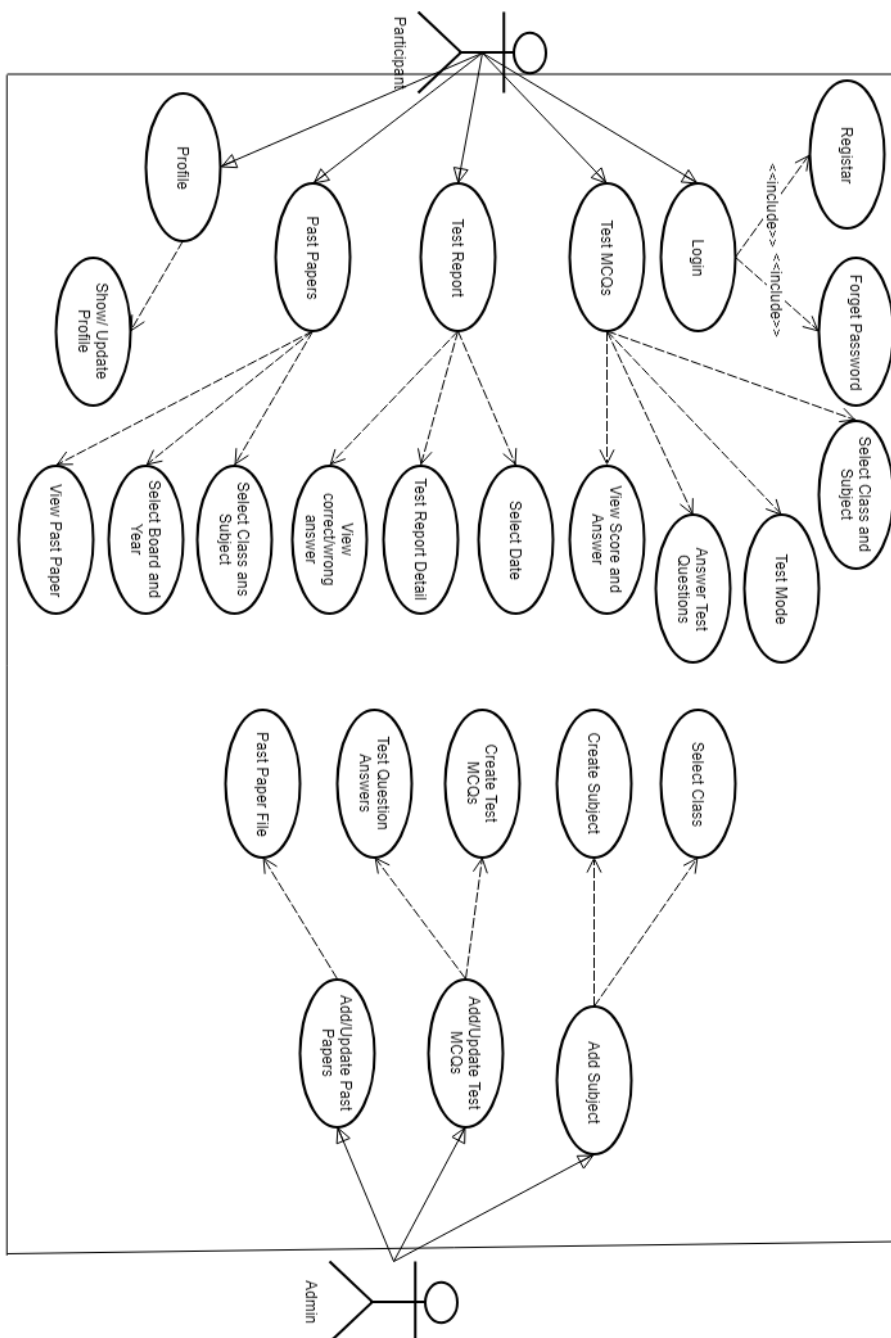


Figure 1:Use Case Diagram for CEP

2.5.1 Use Case Description

Participant Side

Login/Register
Participant must have to register and login through app in which participant would ask to enter his/her email and password.
Brief description
Firstly, the participant need to register for login. The participant will click on sign up button and enter the name, email, institute, city, address, phone and password for registration then participant click for login and enter the email and password correctly. If participant forget his password, then he/she can enter email address for password detail after login.
Preconditions
Participant must have valid email, password and mobile no for registration.
Participant must have valid email and password for login.
Basic flow
Participant enter their info for register.
Participant enter the email and password.
Admin/system validates the login info.
Participant can enter email addresses for forget password after login.
Alternate flows
Incorrect email and password.
Invalid Email address for forget password
Server/internet is not connected.
Post conditions
Participant successfully registered.
Participant successfully login app.
Participant successfully enter email forget password.

Table 1: Participant Login UseCase Description

Test MCQs
Participant must select the test mcqs to attempt the exam test.
Brief description
Firstly, participant click on Test mcqs button and select the class and subject for test mcqs. Participant will choose option for Test mode (easy, medium and difficult).
Preconditions
Participant must use app when internet is available.
Participant must attempt to answer all questions before the given time.
Basic flow
Participant will select the class and subject for test mcqs.
Participant will choose option for test mode which are easy, medium and difficult.
Participant answering the test questions.
Participant will see the test result after attempt the test mcqs.
Actor
Actor is Participant or User (Student/ admin).
Alternate flows
System will give error due to server/internet lost.
Cannot use application in offline mode.
Post conditions
Participant successfully completed test mcqs.
Test result displayed successfully.
Test report will show the score of user attempt.

Table 2: Test MCQs UseCase Description

Test Report
Brief description
User will view his past attempted test report and previous attempts. User can view his attempted test in a time period from starting date to the last date and what was the success percentage of user from attempting several mcqs time by time.
Preconditions
User must enter a starting date and ending date.
User must select a test report to view the detail of attempted mcqs.
Basic flow
User click on the test report to view the attempted test.
User enter the starting date and last date so that only those test reports are generated in that time period given.
User can click on the test to further view the detail of attempted mcqs.
User compares his previous attempts on the basis of his success percentage.
Actor
Actor is Participant or User (Student/ Admin).
Alternate flows
Starting date and last date should not be same.
Starting date must be before the last date.
Server connection is needed.
Post condition
Test report shown is between the given time period.
Previous test attempted are given on the basis of respected time day and date.
Success percentage is given on the basis of attempted mcqs.

Table 3: Test Report UseCase Description

Past Papers
Participant must select the option to show the past paper according to Punjab board.
Brief description
Participant click on past paper button. There will be class, subject, board and year. Participant will select the class and subject. Select the Punjab board and year to show past paper.
Preconditions
Participant must use app when server/internet is online.
Past Paper displayed successfully.
Basic flow
Participant will select class and subject to show past paper according to Punjab board.
Participant can view the past paper by selected year.
Actor
Actor is Participant or User (Student/ Teacher).
Alternate flows
System will give error due to server lost.
Cannot use application in offline mode.
Post conditions
Participant successfully show/display past paper.

Table 4: Past Paper UseCase Description

Profile
Participant must select the option to show the user profile.
Brief description
Participant click on user profile button. Details of participant are given about his full name, name of institute, postal address, city name, phone number and password of the user to login the application.
Preconditions
Participant must use app when server is online.
Participant must have sign up in the application before.
Participant must sign in with his login email and password to view the user profile.
Basic flow
Participant should login with his valid email and correct password.
Participant can update his login password.
Participant can update his details from there.
Participant can view the profile by selecting user profile from the menu.
Actor
Actor is Participant or User (Student/ Teacher).
Alternate flows
System will give error due to server lost.
Cannot use application in offline mode.
Valid email and password is required
Post conditions
Participant successfully view updated profile.

Table 5: Profile UseCase Description

Admin Side

Add Subject
Brief description
On web application, after login email and password we add subjects given on the list. When we click on the subject's category, we are given the options to select class then we add subjects to the class respectively. By entering the submit, we are given the option to add mcqs for that subject. We can also update or change the subject name with class respectively.
Preconditions
Admin must enter the valid email and password for login.
Internet connection is required.
Basic Flow
Admin will select the class to enter subject name.
Admin will add the subjects with class respectively.
Admin can also update/change the subject name.
Actor
Anyone who has the authority to add test mcqs on server site.
Alternate Flow
System will give error due to server/internet connection is lost.
System will give message that subject is already added by class.
Post conditions
Subject name added successfully.
Subject name update/change successfully.

Table 6: Add Subject Admin UseCase Description

Add/Update Test MCQs
Brief description
<p>On add/update test, we select the class and test mode (1st Half, 2nd half book or full book) then click the submit button. On submit, it will show the subject name with test mode. Below will be given the functionalities to add rows and delete the rows. On add rows, mcqs question with option are added. In question, Mcqs question is added and multiple correct/wrong options are added in option A, B, C, D. Correct answer is added in the answer space and a column of weightage should be filled to assign weightage to each mcqs. Each question is assigned a weightage from 1 to 10. For easy mode, each mcqs is assigned a weight from 1 to 3. For medium, each mcqs is assigned a weightage from 4 to 7 and for difficult mode, each mcqs is assigned a weightage from 8 to 10. We can add multiple mcqs as per required by clicking add new row. When we click the add new row, new row is added to enter mcqs. Then we submit the rows that will create a test mcqs. If the admin wants to update or change any mcqs then he will go to the update mcqs and update the mcqs.</p>
Precondition
Must add subject name, class and test mode.
Internet connection is required.
No empty rows are added.
Assign weightage to each mcqs.
Basic Flow
Admin will select the class and subject.
Admin will select the test mode option.
Admin can add test mcqs question with options and correct answer.
Admin can also update/change test mcqs.
Actor
Anyone who has the authority to add test mcqs on server site.
Alternate Flow
System will give message due to class and subject test mcqs is already added.
System will give message the required validate the empty question mcqs row.
System will give error due to server/internet connection is lost.

Post conditions
Test Mcqs question with options added successfully.
Test Mcqs question with options update/change successfully.

Table 7: Add Test MCQs Admin UseCase Description

Add/Update Past Paper
Brief description
On add/update past paper, we can select the class then select the subject, board/region and year. On upload past paper, we add the past paper file by class, subject, board and year. The past paper file will be uploaded by PDF and submit it. After submitting it will added the past paper file. Admin can also update the past paper by selecting class, subject, board and year.
Preconditions
Admin must add the subject, class, board and year.
Size of PDF file must be minimum 5MB.
Internet connection is required.
Basic Flow
Admin will select the class then submit it.
After click submit, we can add subject, board and year.
Admin must upload the pdf file by select upload past paper button.
Actor
Anyone who has the authority to add test mcqs on server site.
Alternate Flow
System will give error due to connection lost.
System will show message that past paper is already added.
Post conditions
Past paper added successfully
Past paper updated successfully

Table 8: Past Paper Admin UseCase Description

CHAPTER 3

DESIGN AND METHODOLOGY

3.1 Purpose of the project

We have used agile methodology because we wanted to develop thing from the initial but whenever a change is needed then we have planed the activities for the project and collected the desired requirement and then we have integrated things together. When there is change needed for some modules then we had incremented those modules and worked to achieve our desired goal.

The main purpose of this project is to develop online exam application "Comprehensive Exam Preparation". This application will provide Test MCQs, Test Report, Past Paper and user Profile. User can select test mode on the basis of difficulty level. The application will support android based operating system for participant. On web application admin will add/update subject, test mcqs and past paper by using web browser any window operation system.

3.2 Domain Model

In this project, main products are test mcqs, test mode, test report, past papers and profile. Participant can view the past papers and prepare the exam for attempting test mcqs to score good marks and view test report details previous attempted mcqs.

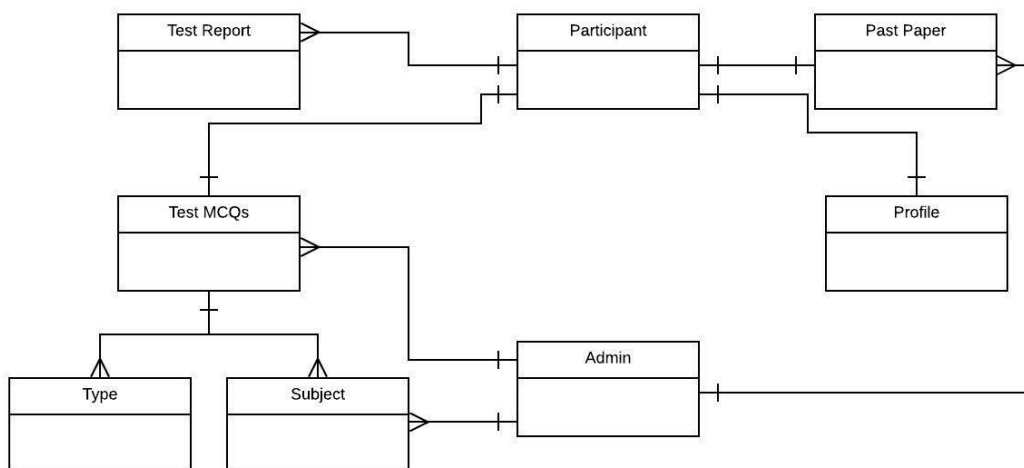


Figure 2: Domain Model Diagram

Definition of scope for the domain

Students can prepare exam easily with interactive interface.

Information or objects

- Past paper module is used for helping student to prepare previous exams.
- Participants profiles are maintained time to time that makes interesting to tally the score with previous attempts.
- Test mcqs uses a shuffling algorithm that shuffles the mcqs questions and mcqs options itself.

Features, including factors that lead to variation

- Login of participant profile is used that allows only the registered participants to allow further actions.
- In test mcqs shuffling algorithm is used that makes innovative and interesting that whenever participant attempts the exam multiple times it will shuffle the mcqs questions and its options.
- In test mcqs, a test mode is introduced to make it interesting that allows the participant to select test mode on the basis of test difficulty level that is easy, medium and difficult.
- In test report module is used that participant can view his/her previous attempted test mcqs. Participant can check the correct/wrong answer mcqs.
- Past paper module is used so that participant can view past papers and prepare for test exam board.
- Profile module is used to view/update the participant information.

3.3 Sequence Diagram

In this diagram, participant is an actor which is performing login action, admin/system checks the login functionality from the database to validate whether the email and password both are correct or not, when it is verified from the database admin/system will allow the participant to perform further actions. Participant will view past papers according to class, year and subject that will be generated from database. Participant can select test mode that will generate test according to their mode and can attempt test mcqs that will also be generated from database and verify that how many of his

answers are correct and incorrect after validating. Display the results at the end of test. Participant can view test report for previous attempted test mcqs score and check correct/wrong answer mcqs. Also, participant can view/change the profile information using the mobile application as per required.

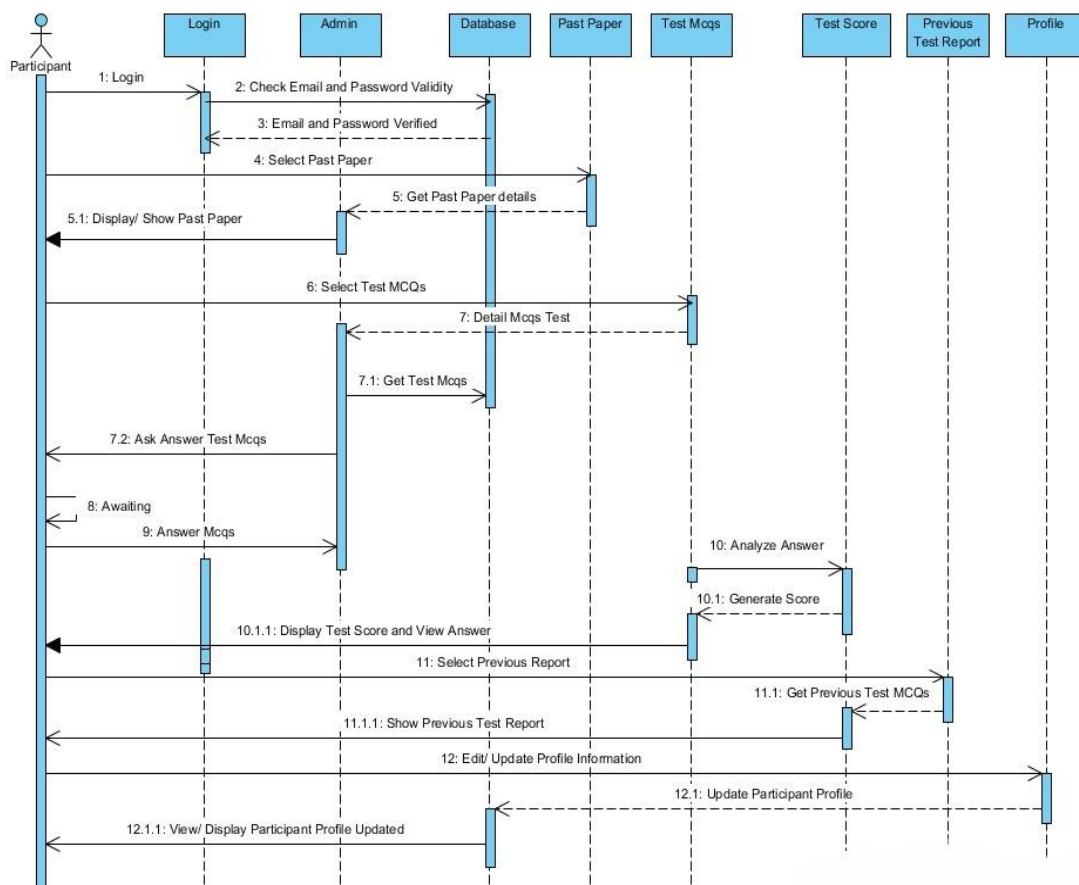


Figure 3: Sequence Diagram for CEP

3.3.1 Test MCQs Sequence Diagram

When participant select the class and subject accordingly and choose the test mode on the basis of difficulty level (easy, medium and difficult) and it will assign the weightage to test mcqs. The time to attempt test mcqs will be specific and participant must complete the test in given time when it is finished then it will generate test report so that participant will know how many test mcqs are correct and the score results will be displayed on the screen. Participant can also view answer mcqs for correct/wrong answer.

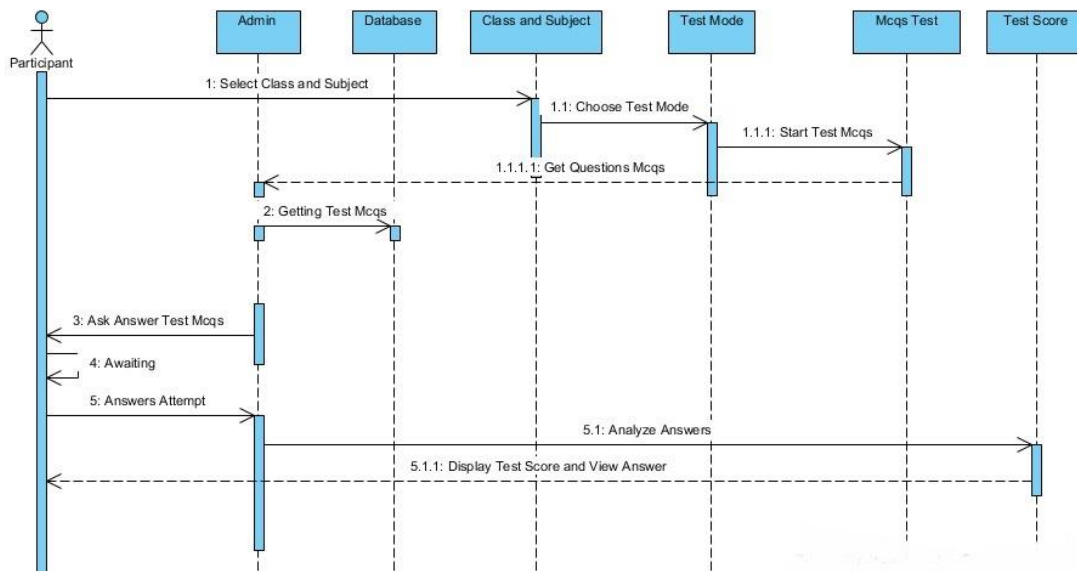


Figure 4: Sequence diagram for test mcqs

3.3.2 Past Paper Sequence Diagram

When participant is logged in the app he/she can select the past papers functionality/module to view past paper, so he/she can prepare himself/herself for the test. He/she can select class and Punjab board division then he can enter the subject and which year he wants to display then participant request will be forward to the admin and admin will display the desired past paper as per requested by the participant.

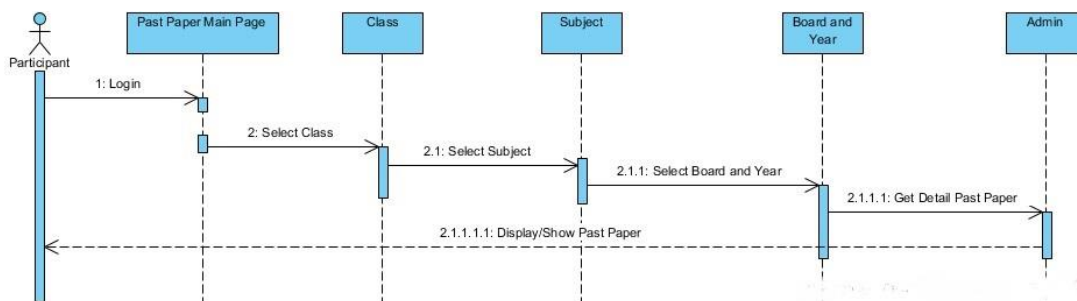


Figure 5: Sequence diagram for past paper

3.3.3 Test Report Sequence Diagram

When participant select the test report module then he/she can select the date from and to option for previous test mcqs report. When result is displayed the he/she can view details previous test mcqs from admin/database. Participant can check score test mcqs and view correct/wrong mcqs answers.

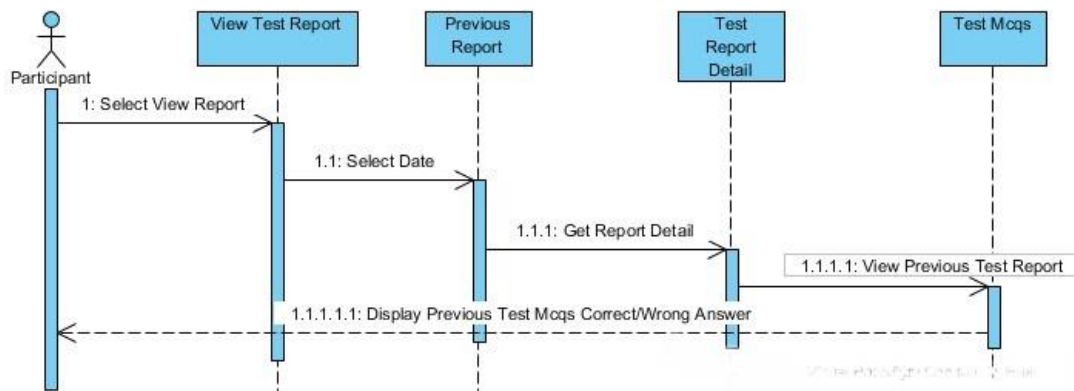


Figure 6: Sequence diagram for Test Report

3.3.4 Profile Sequence Diagram

Participant can select the profile from menu. Participant can view or change the profile information from database. When the profile information is updated it will be saved from database.

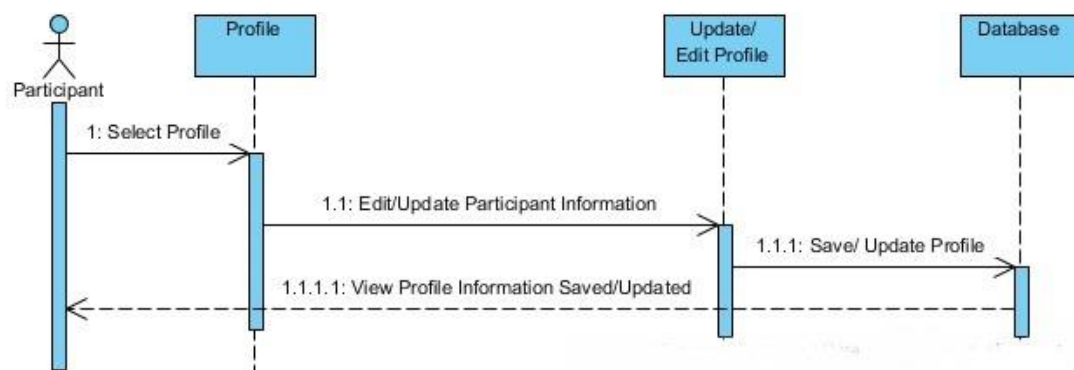


Figure 7: Sequence diagram for Profile

3.4 Data Model (ER Diagram)

The Data flow diagram is graphical representation of the flow of the data through information system this diagram is showing the overall flow of the information that how it will be performed and accessibility.

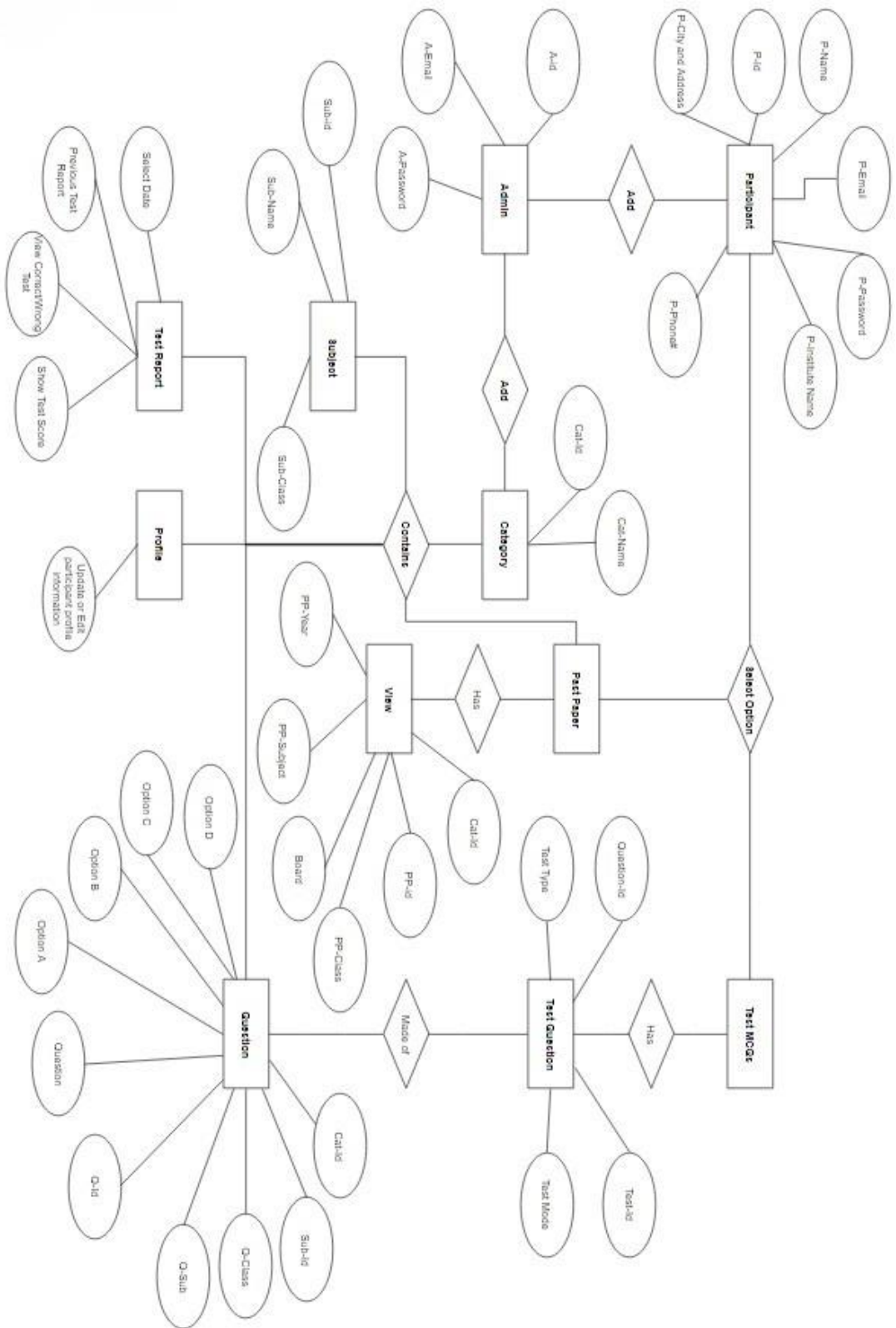


Figure 8: Data Model/ ER Diagram for CEP

3.5 Design Class Diagram

In the UML, a class diagram is used to represent domain model. The domain model of Comprehensive Exam Preparation is shown in the following figure

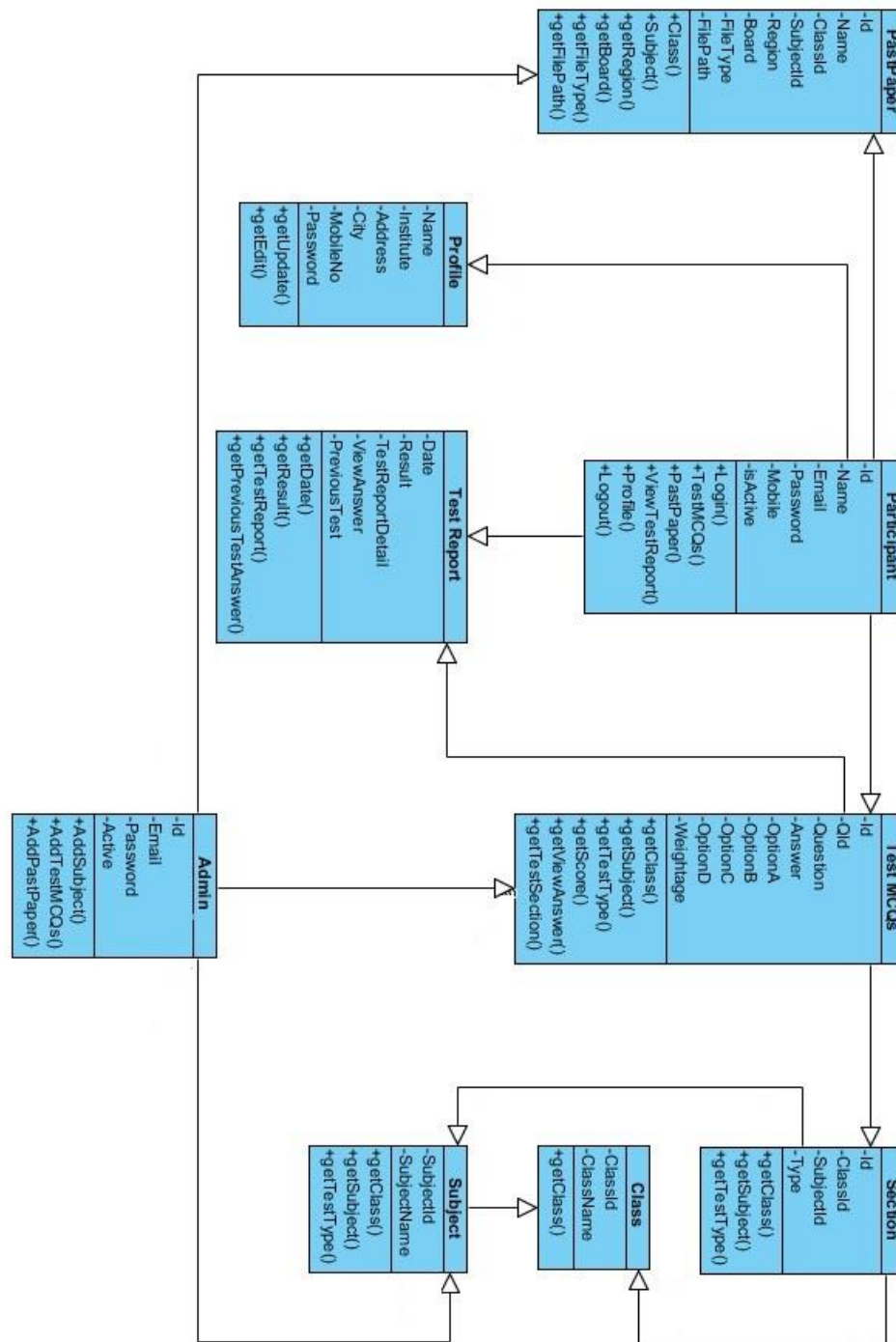


Figure 9: Design Class Diagram

3.6 Design Description

With this application participants can perform action.

Participant Role

- Test MCQs
- Test Mode
- Test Report
- Past Paper
- Profile

Admin Role

For add, update or edit for test mcqs and past paper only Admin can use it. This application will use perform in web application using Microsoft visual studio (MVC 4.0 in ASP.Net). With this application admin can perform action.

3.6.1 Test MCQs

Select class and subject which he/she wants to give exam test mcqs. Select the test mode option. One participant can give test mcqs only for one time. Once a test mcqs has finished, Participant submit it. Finally, Result score can be shown considering the test mcqs has been taken from any participants. As a result, following tasks are define as participant role.

- Log into the app and select test mcqs.
- Select class and subject from test mcqs
- Select Test mode option (Easy, Medium and Difficult)
- Answer questions within set time
- Finish Test Mcqs
- Show result score card
- View Answer

3.6.2 Test Report

When participant attempted the test mcqs then he/she can view the test report by selecting the date. When result is displayed then participant can view details of previous test mcqs score by date and time. When select the previous report participant can check the correct/wrong answers mcqs.

- Log into the app and tap test report.
- Select date from and to.
- View test report detail
- Check correct/wrong answer mcqs

3.6.3 Past Paper

Participant can select the past paper option to show past paper from any class. Past paper will be displayed in PDF file. It will have displayed when server is active. As a result, following tasks are define as participant.

- Log into the app
- Select class and subject from past paper
- Select region from Punjab board
- Select year
- Past Paper displayed in PDF

3.6.4 Profile

Participant can set update the profile from main menu. You can set update the details profile by name, school, address, city, mobile number and password. All information will be saved in database.

3.6.5 Admin

There is two part of test mcqs and past paper. Admin can add and update for test mcqs by classes and subject. Admin can add past paper by classes, subject and year according to Punjab board for display past paper from web application. As a result, the following tasks are defined as admin role.

- Log into the web application (<http://examsystemadmin.starbuy.pk>) as Admin
- Add or Update/Edit class and subject.
- Add, Edit or Update Question and Answer for Test Mcqs
- Assign weightage to each mcqs.
- Add Past Paper from Punjab board

3.7 Client Server Architecture

Following figure 10, show the client server view for “Comprehensive Exam Preparation” application. Participant login to the application from any android platform which is define as Client side and Admin can login into Web application. On the other hand, application server or database server are defined as server site. Application communicates with the database server with Rest API Web Service.

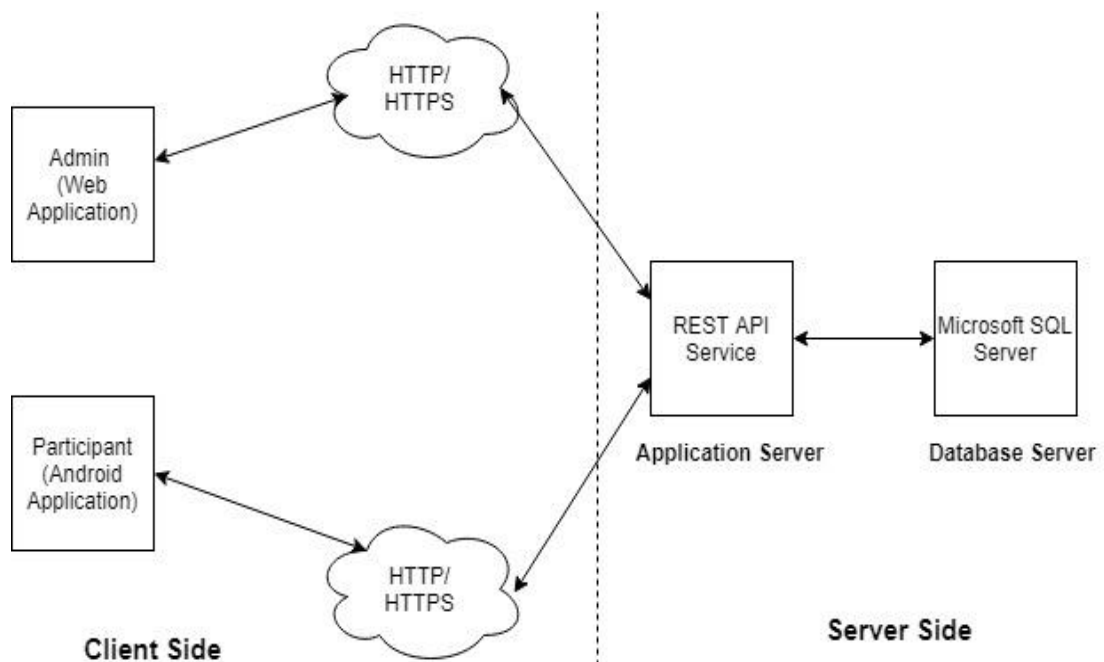


Figure 10: Client and Server Connectivity Diagram for “Comprehensive Exam Preparation”

3.8 Flowchart

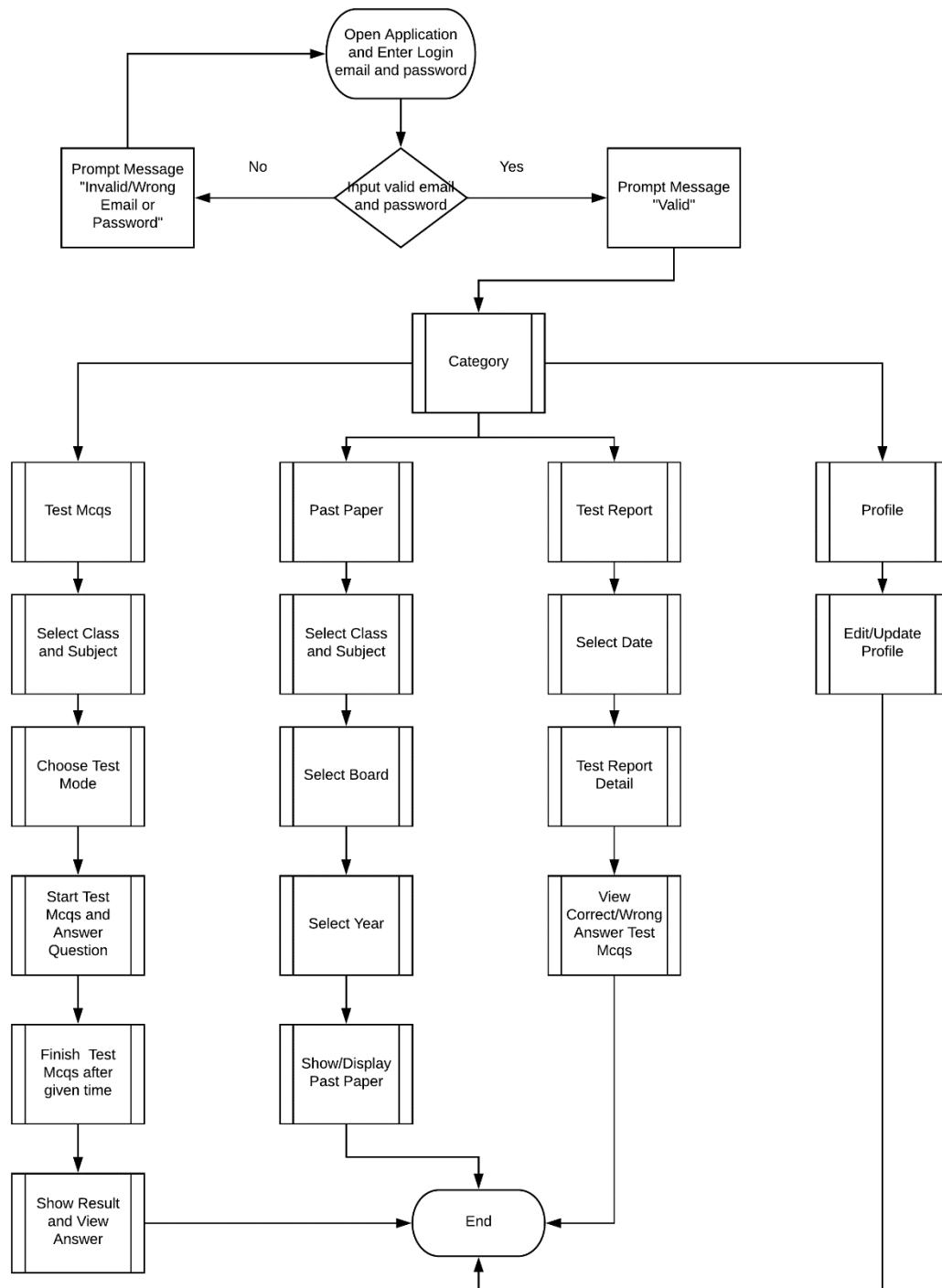


Figure 11: Participant Role Flowchart for “Comprehensive Exam Preparation”

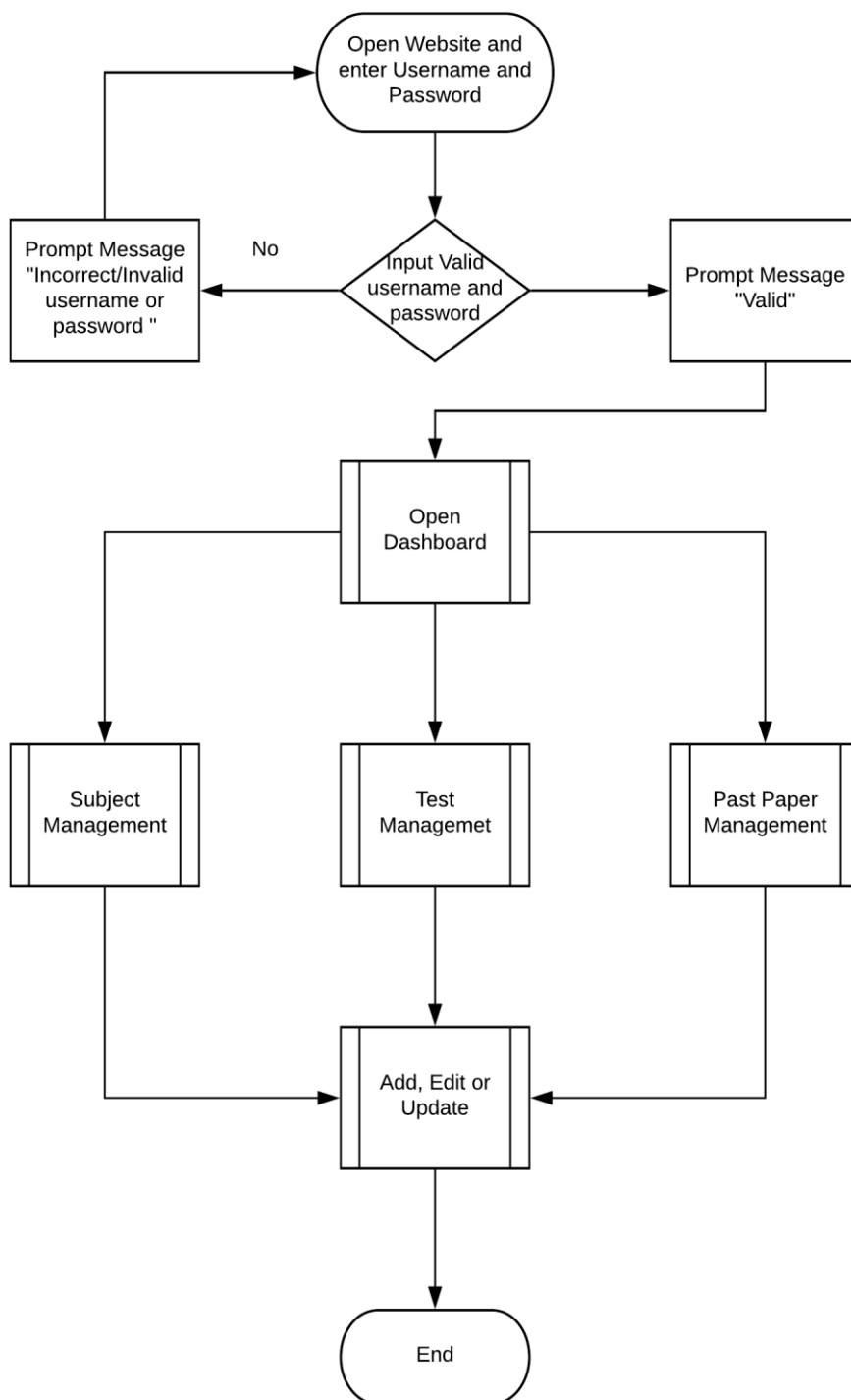


Figure 12: Admin Role Flowchart for “Comprehensive Exam Preparation”

3.8.1 Description of Flowchart

1. After login with email and password, Role for that participant and admin will verify from server database.
2. If role is Admin, following options shall be managed
 - Test Subject
 - Test Question and Answer
 - Past Paper

Three options can be add and update by admin.

3. If role is Participant, all active test mcqs detail will enable for giving test mcqs. Test Mcqs will execute within certain time limit. Test Mcqs will finish after that time or all question answered. Result score will show to participant after finishing quiz. Participant check the previous test mcqs from the test report by date. Past paper will display to participant. Profile change or update the participant information.

3.9 Summary

Both Admin and others work can be executed through web and mobile application. Add, edit or update are belonging to admin. Participant can select for test mcqs, test mode, test report or past paper. One test mcqs appear only one time to any participant. Timer has been set by admin and result score card will be visible. Past paper can be view and can also be downloaded through Pdf.

CHAPTER 4

IMPLEMENTATION

4.1 Tools and Technologies Used for Mobile Application

- Android Studio
- Postman API Testing Tool

4.1.1 Android Studio

Android studio is an android application development platform used for creating android applications based on integrated development environment (IDE).[2]

Android SDK

It is another software development tool that is used to create android application. The android SDK includes development tools, an emulator and required libraries to build android application. Android application are written in Java (programming language) and XML (Extensible Mark-up language) in android studio.

4.1.2 Postman API Testing Tool

The Postman API has several ends points to help you integrate Postman with your development toolchain. You can add new collection, update existing collections, update environment adds and run monitors through the API. [3]

This API enables you to programmatically access data stored in Postman account with ease. Therefore, we have used Postman API request for the configuration of our mobile and web application. [3]

4.2 Tools and Technologies Used for Web Application

- Visual Studio 2013
- ASP.Net MVC
- Microsoft SQL 2012
- Rest API Web Service
- Postman API Testing Tool

4.2.1 Visual Studio 2013

Visual Studio is a suite of applications created by Microsoft to give developers a compelling development environment for the Windows and .NET platforms. [4]

4.2.2 ASP.Net MVC

It is a web application framework developed by Microsoft which uses the model view controller (MVC) pattern. It is an open source software platform that allows to bring innovation and changes within itself with the passage of time and requirements. [5]

In this project, we have used developed web application by Asp.Net MVC version 4.0 using visual studio 2013. [5]

4.2.3 Microsoft SQL 2012

It is a relational database management system (RDMS). It is a set of programming extension to enhance the SQL (Structured Query Language) an interactive and programming language for getting information from add and update a database. [6]

It is used to perform tasks such as update or retrieve data on database. Some common relational database management systems that use Microsoft SQL Server and Oracle. [6]

4.2.4 Rest API Web Services

A REST web service is a web service implemented using HTTP and the principles of REST. REST API defines a set of function which we can perform requests and receive responses via HTTP protocol such as GET and POST. Because REST API uses HTTP, they are used by programming language and easy to use test. [7]

It is requirement of REST API that the client and server are independent of each other allowing to be coded in any language. [7]

REST

REST stand for Representative State Transfer which provides a web architecture that has many characteristics the behaviour of clients and server. [7]

REST API

REST API helps to interact with parse from anything that can be send an HTTP request.

4.2.5 Postman API Testing Tool

The Postman API has several endpoints to help you integrate Postman with your development toolchain. You can add new collection, update existing collections, update environment adds and run monitors through the API.

This API enables you to programmatically access data stored in Postman account with ease. Therefore, we have used Postman API request for the configuration of our mobile and web application.

4.3 System Design

4.3.1 Log into the mobile application

- Open the mobile application
- Provide email and password. Email is defined as the email address to concern participant.
- After click on login application communicate with server and verify whether the provided email and password is valid or not.
- If information provided found at server match with participant.
- He/she can select for test mcqs or past paper. If all test mcqs are active, then he/she will appear to start quiz by select test mode and subject. If you want to show the past paper from Punjab board then you will select option class, subject and year.

4.3.2 Forget Password

If any participant forgets his/her password, then participant should input email after send to server. If participant found at database, then system will send password detail to concern's participant email address.

4.3.3 Admin Panel

Admin has privilege to access three options. They are

1. Subject
2. Test MCQs
3. Past Paper

1. Subject

Admin can add or update subject for all classes. Subject can be added by total number of subject in each class. Admin can edit or update the subject for all classes.

Class

First admin can create the class then subjects is added for each class.

2. Test MCQs

Admin can add or update the MCQs question and answer by class, subject and test mode.

Test Mode

There are three test mode options that contains Easy, Medium and Difficult in which mcqs are assigned a weightage from 1 to 10. Easy mode contains mcqs that has weightage around 1 to 5. Medium mode contains mcqs that has weightage around 6 to 7 however Difficult mode contains mcqs that has weightage around 8 to 10.

Question and Answer

Question is written with four multiple options A, B, C and D will be entered. Correct answer will also be entered by Admin. Admin has the rights to assign weightage to each mcqs to assign the test mode.

Admin can add more questions and answer by the adding number of rows. Admin can also delete the row. Admin can also update/edit the test mcqs. For update or edit any question, Admin need to choose any test mcqs from class. All questions will be visible to admin for that test mcqs.

Show Result

Show result mark option is "Submit" when participant attempt finishes the quiz in time or time is up then he/she will see the result score. After submit tap button result score will display that he/she is passed or failed. Participant can also check the correct/wrong answer.

3. Past Paper

Admin can add the past paper by class, subject and board. Past paper will be added in pdf file. All pdf files will have stored in database storage/server.

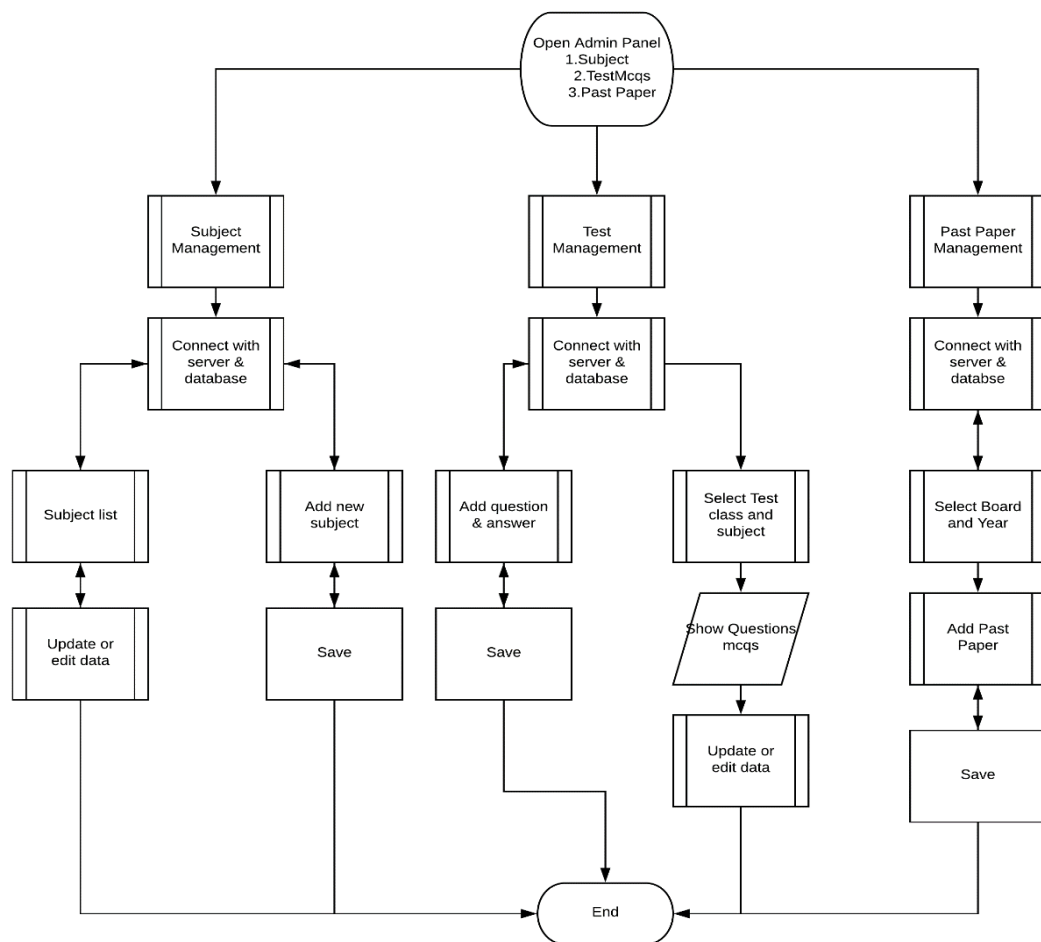


Figure 13: Admin Panel System Design Diagram

4.3.4 Participant Panel

- Any participants can access to this application when server is active after login.
- You can choose option for test mcqs, test report, past paper or profile.
- Participant will choose the test mcqs for attempt quiz. Quiz will active when server is connected. You will select the class, subject and test mode then start the quiz in time. If you want to skip the quiz you have to select option finish or resume option.
- After finished any quiz, participant can see the result score. Result status will have displayed if he/she is passed or failed.
- Participant can view answers for correct/wrong option.
- Participant can check the previous test mcqs score and answer from the test report.

- Participant will choose the past paper for preparing exam. You can select the class, subject and board. Past paper will display in PDF file.
- Participant can set update the profile in setting menu from the main home.

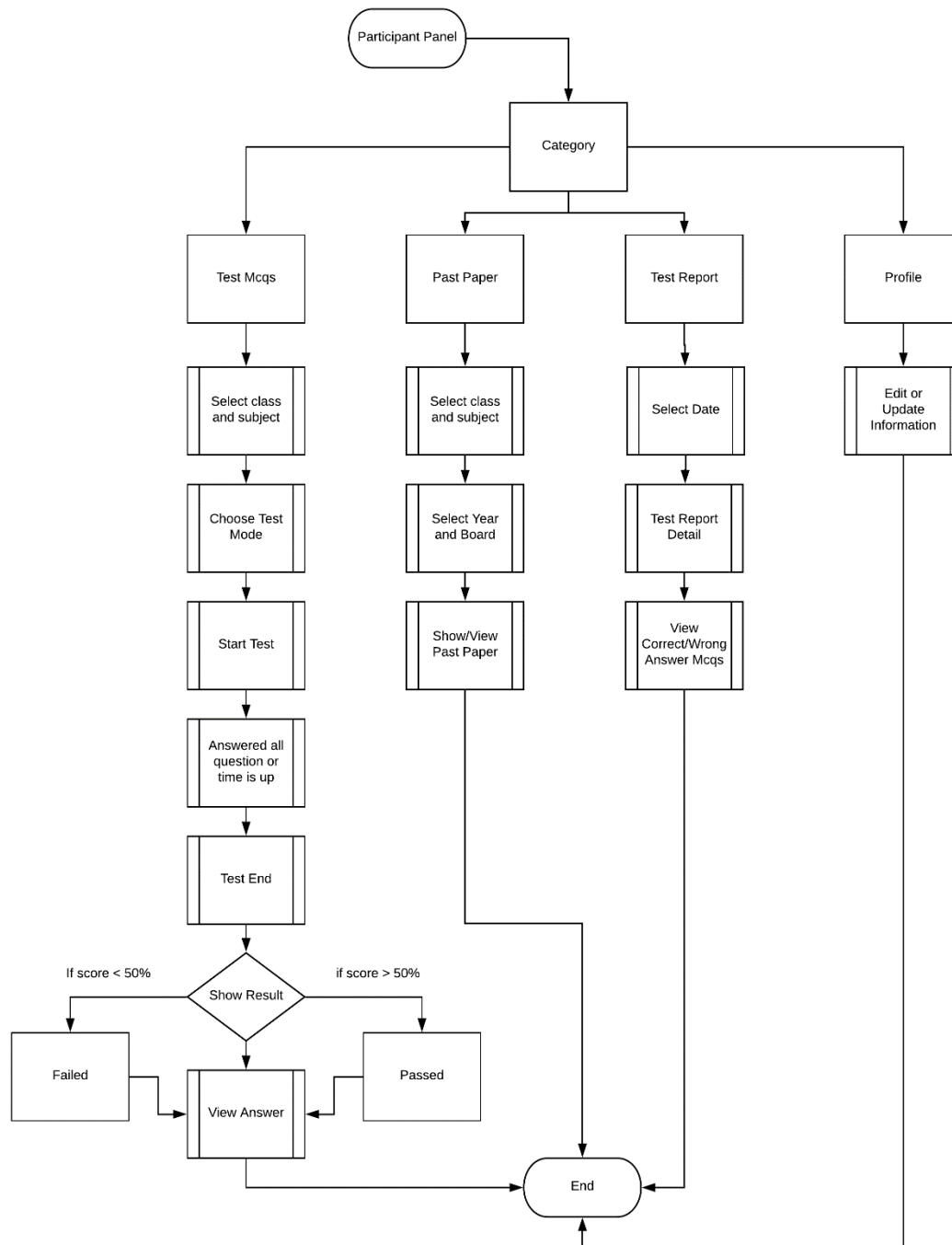


Figure 14: Participant Panel System Design Diagram

4.4 Database Design

4.4.1 Table Schema

There are six tables configure for web application.

Class

Column	Type
ClassId	Int
ClassName	Nvarchar

DetailsQuestion

Column	Type
Id	Int
QuestionId	Int
Question	nvarchar (max)
Answer	nvarchar (max)
OptionA	nvarchar (max)
OptionB	nvarchar (max)
OptionC	nvarchar (max)
OptionD	nvarchar (max)
weightage	Int

LoginUser

Column	Type
UserId	Int
Name	Nvarchar
Email	Nvarchar
Mobile	Nvarchar
Password	Nvarchar
isActive	Bit
CreatedOn	Datetime

Section

Column	Type
ID	Int
ClassId	Int
SubjectId	Int
Type	Nvarchar

PastPaper

Column	Type
ID	int
ClassId	int
SubjectId	int
Region	nvarchar
Year	nvarchar
FileName	Nvarchar
FilePath	Nvarchar

Subjects

Column	Type
SubjectId	int
ClassId	int
SubjectName	nvarchar

4.4.2 Table Relationship/EER Diagram

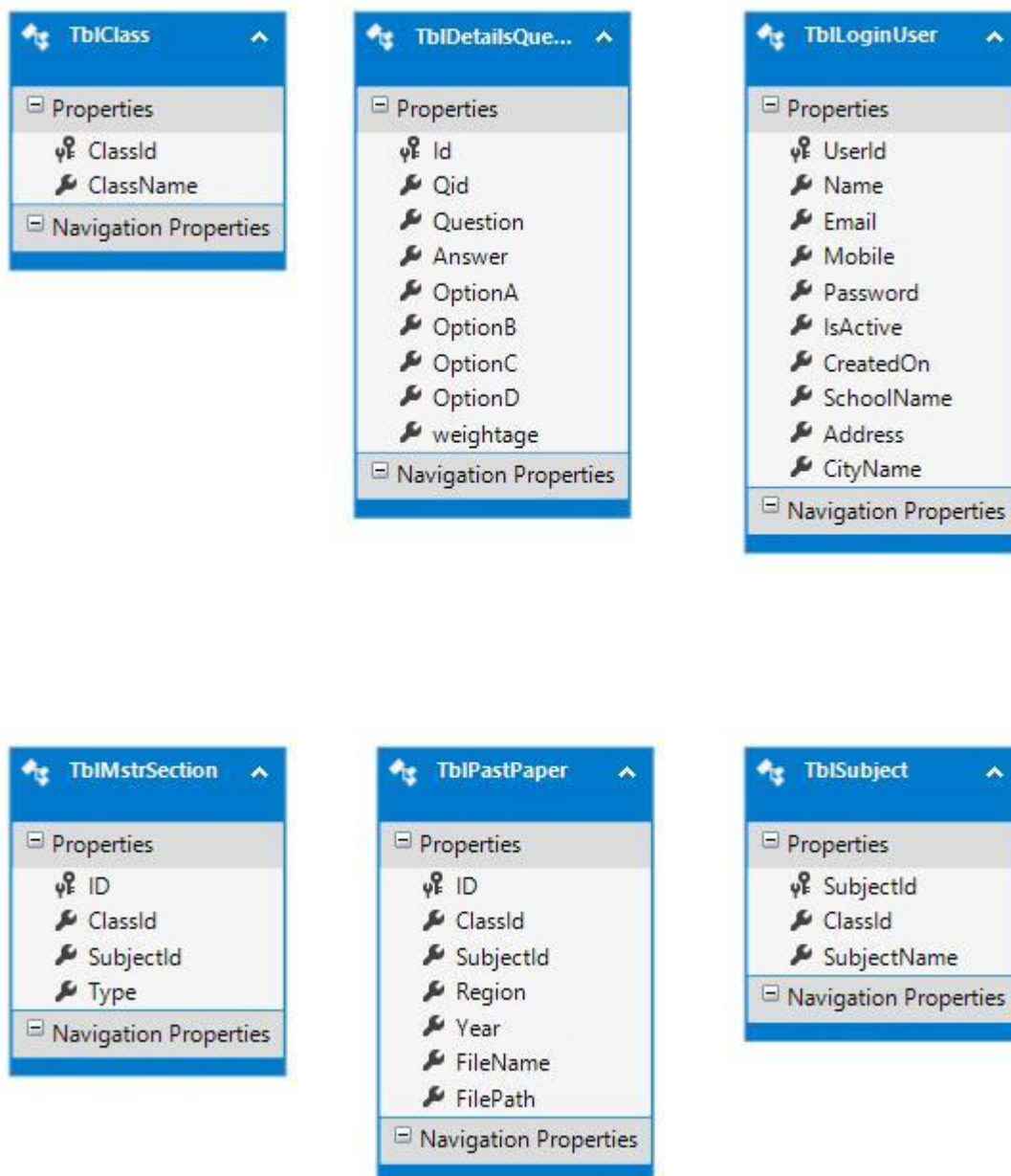


Figure 15: Database Table Relationship

CHAPTER 5

USER MANUAL

5.1 System Requirement

Device	Operating System (OS)	OS Version	RAM	Disk Space
Android Mobile/Tablets	Android	4.3 or higher	1 GB or higher	18 MB

Table 9: Minimum System Requirement

5.2 Prerequisite

- Internet connection must be connected.
- Valid Email with password must require using this application.

5.3 Installation

To install the application in android mobile device or tablet device participant needed to run the setup package named as “cep-version.apk”. This package can store both in android device memory and external memory card (micro SD card that connect with android device). Package need maximum 10 Mb space. Following steps should be followed:

- Tap the folder where the “cep-version.apk” is store.
- Tap the application package “cep-version.apk”.
- After selecting the package, application lets participant to install
- Tap install
- Installation is done, and application is ready for use.

5.4 Getting Started

Tap the icon to open the application.

5.5 Open mobile app for Participant

After clicking the icon on android desktop, the application will open. When you open the application, it will show the application logo and splash screen “Comprehensive Exam Preparation”.

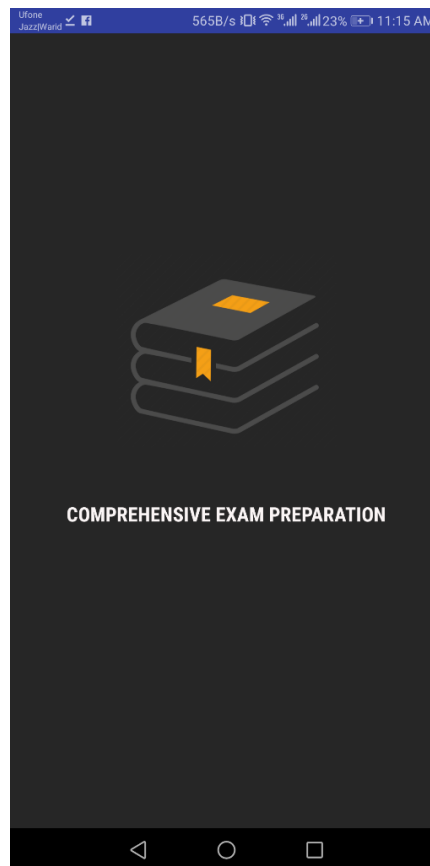


Figure 16: Open Screen App for participant

5.6 Participant Login

Login screen will appear. Enter email and password to the desire field. Hint text indicates where you want to input email and password. Tap the continue button after filling the required validation fields.

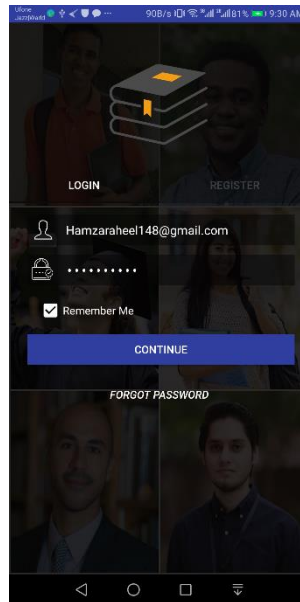


Figure 17: Participant Login View

5.7 Forget Password

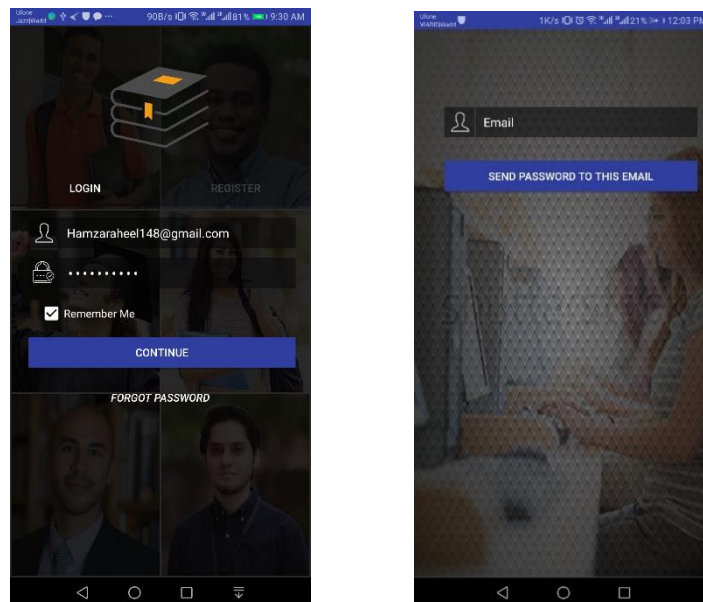


Figure 18: Forget Password View

If you have forgot the password, then tap the ‘Forget password’ button. Another screen will appear where you provide your email. After providing the email tap the “send password to this email” button. Check the email address which one is tag with participant ID. Password will be sent to that Email.

5.7.1 Register

If you haven't account for login then go to click register. Register screen will appear. Enter name, password, email, school name, address, city and mobile number. Hint text indicates where you want to input here. Tap the sign up after register profile.

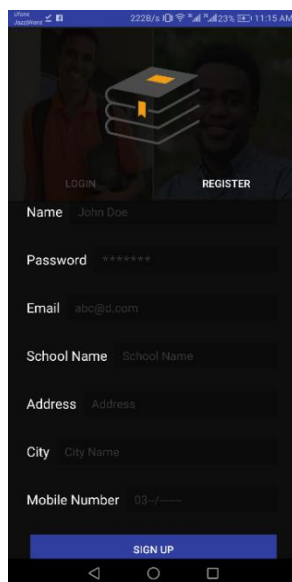


Figure 19: Register for participant view

5.7.2 Category

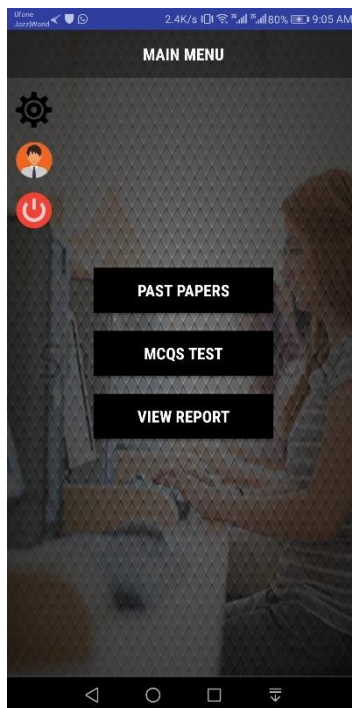


Figure 20: Category View

- After Login, Category/ Home will appear.
- Select Category for Test Mcqs, View Test Report or Past Paper.
- Tap or Click the setting menu option for profile or logout.

5.7.3 Test MCQs

- Select Class and Subject
- Choose Test Mode which are Easy, Medium and Difficult.
- Tap the button to start the test mcqs.
- Select the radio button for correct answer
- If answer has given up, tap on next arrow button. If next button has pressed, then next question at that time will consider after selected the correct answer.
- Tap “previous arrow” button, if you need to change answer any question later.
- Time will indicate for remaining time for particular test mcqs.

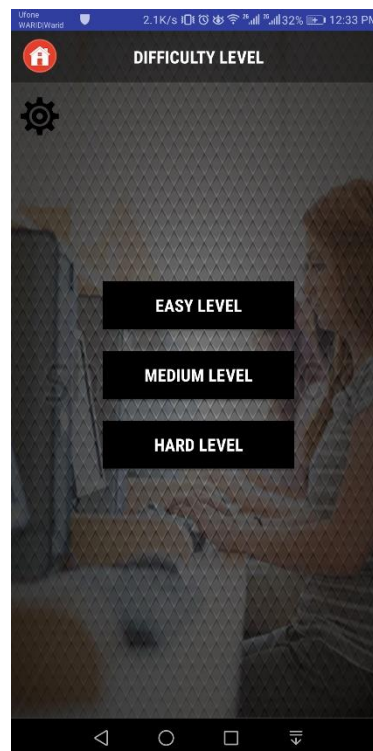


Figure 21: Test Level Screen View

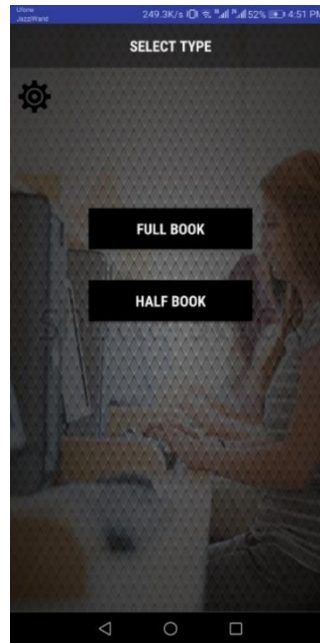


Figure 22: Test Mcqs Mode Screen View

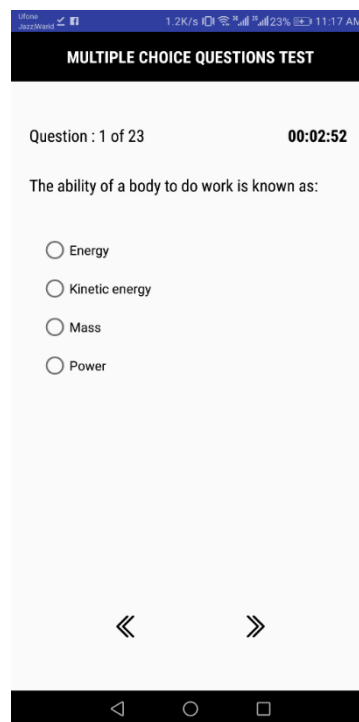


Figure 23: Start Test Mcqs Screen View

- Tap the “Finish” button. If you want to finish or reject the test mcqs.
- Tap the “Resume”, if you want to continue the test mcqs.
- Tap the “Submit” button, when time up or attempted all answered questions.

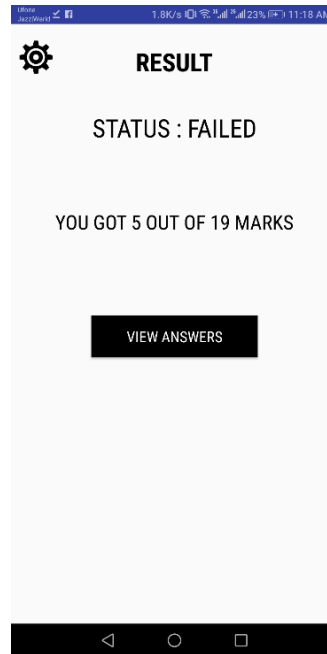


Figure 24: Test Mcqs Result Screen View

- After clicking the “Submit” button, Result will display here. It will display score and status whether you are pass or fail.
- Tap the “View Answer” button, it will show all correct/wrong answer questions.

5.7.4 Test Report/View Report

- Tap the “View Report” in Category.
- Select date from and to.
- Tap the button “Get Result”.
- Previous Test report details by date
- Click to view score and correct/wrong answers.
- Score will show by no of questions attempted and percentage.
- Participant can check the right/wrong mcqs answers.

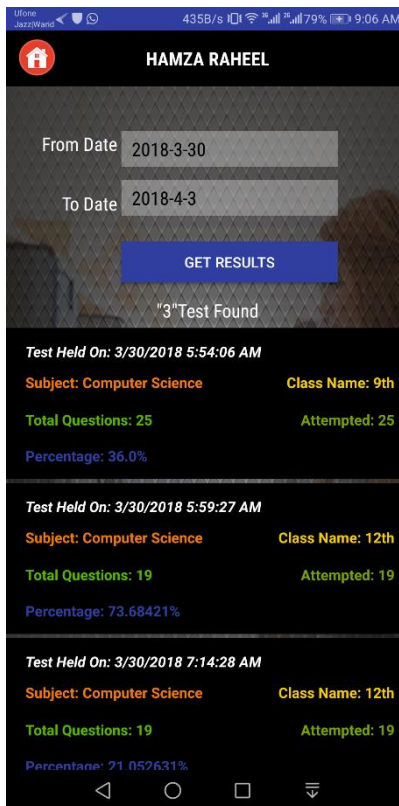


Figure 25: Test report details screen view

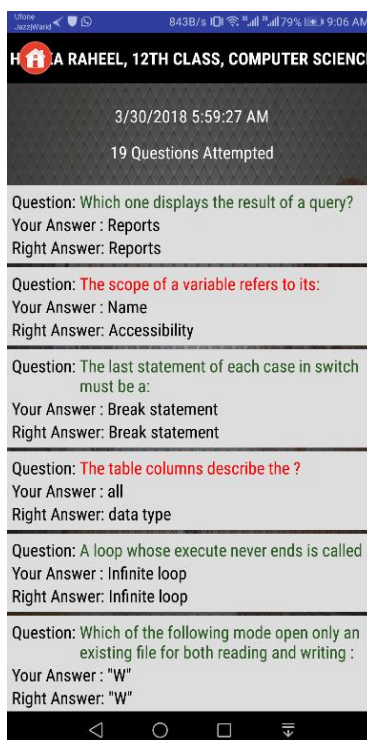


Figure 26: Test report correct/wrong answers screen view

5.7.5 Past Paper

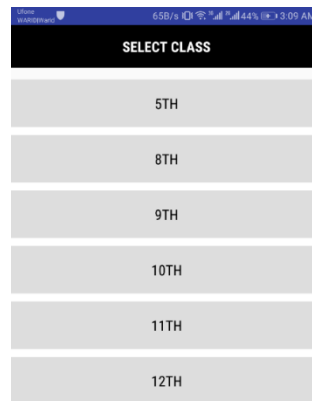


Figure 27: Past Paper Class Screen View

- Select Class and Subject
- Select region from Punjab Board
- Select Year
- After clicking the year, Past Paper will display through pdf.

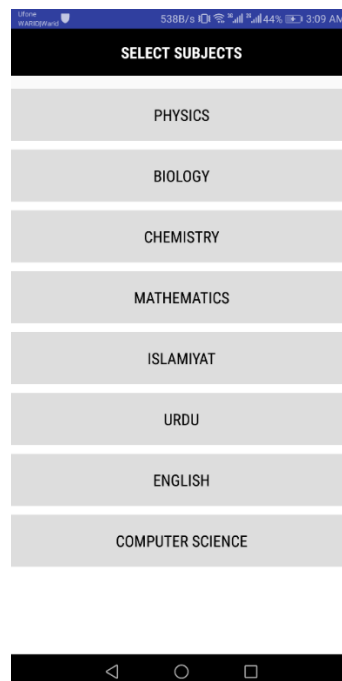


Figure 28: Past Paper Subject Screen View



Figure 29: Past Paper Region or Board Screen View

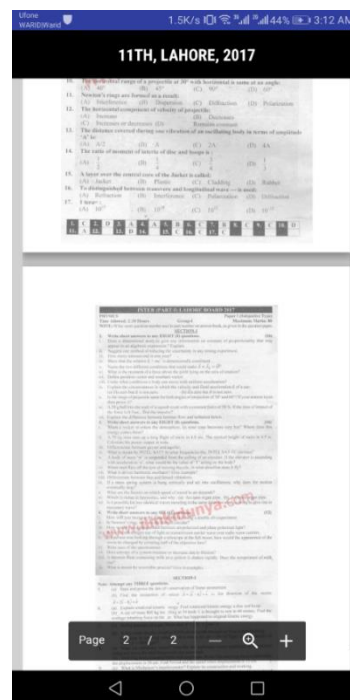


Figure 30: Past Paper PDF Screen View

5.7.6 Profile

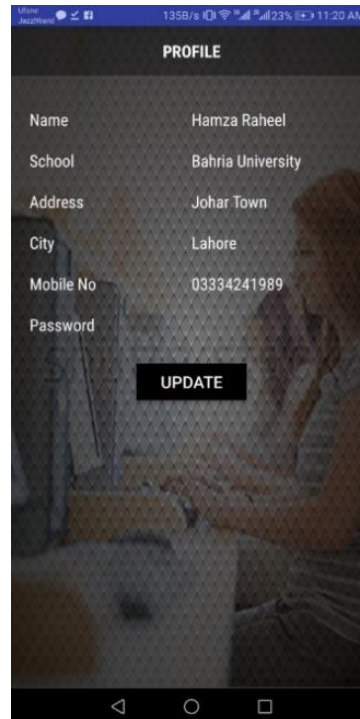


Figure 31: Profile for participant Screen View

- Tap the menu option for “Profile” from category main.
- Edit or change the profile information.
- Tap the “Update” button, it will update the information and saved from database server.

5.8 Open Web application for Admin

- Open the browser
- Enter the website <http://examsystemadmin.starbuy.pk/>. When you enter the website and Welcome page will show here.
- Web Application name for Admin is “**Comprehensive Exam Preparation**”.

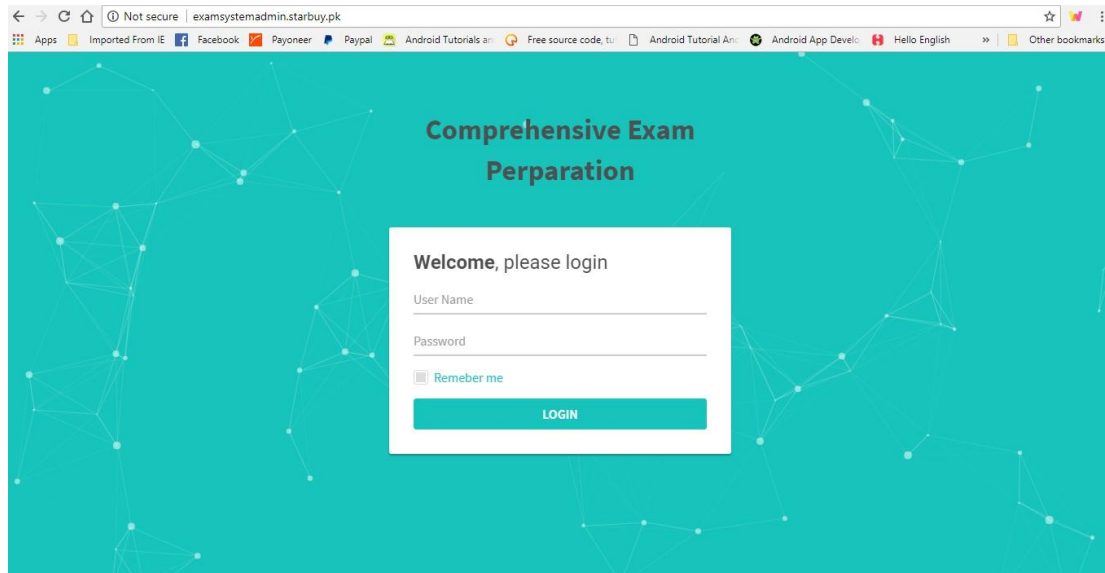


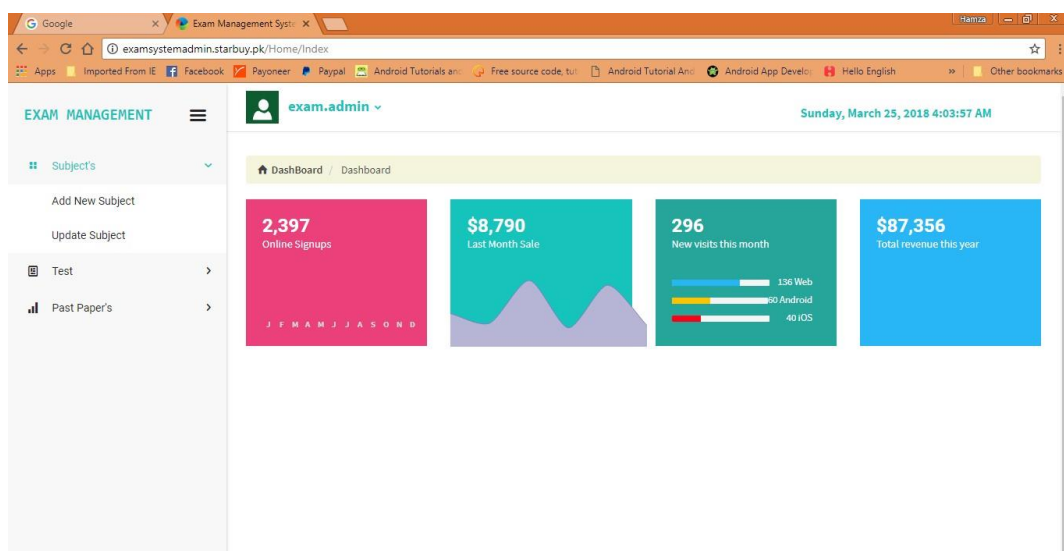
Figure 32: Admin Main/Login View

5.9 Admin Login

- Enter valid username and password.
- Tap the “Login” button, after enter username and password.
- If username or password is incorrect or wrong. Error message will display here.

5.9.1 Subject Management

1. Add Subject



- Go to dashboard
- Select Subject management.
- Select the class and enter the subject name.
- Tap the “Submit” button to save the subject name.

2. Update Subject

- Go to Update Subject
- Select the class from subject detail and tap the “Search” button.
- After clicking the button, all classes list will display here.
- You can edit or update the subject name from class.
- Tap the “Update” button to save for each subject.
- You can click the entries number to display all subjects for class from the choose class.

5.9.2 Test Management

1. Add Test Mcqs

The screenshot displays the 'Add Test Mcqs' interface for an administrator. The browser address bar shows the URL: `examssystemadmin.starbuy.pk/TestQuestion/AddTest?ClassId=48&Mode=2ndHalf`. The user is logged in as 'exam.admin' on Wednesday, May 9, 2018, at 1:45:00 PM. The page title is 'COMPREHENSIVE EXAM PERPARATION'. The sidebar contains navigation links for 'Subject's', 'Test', and 'Past Paper's'. The main content area, titled 'Test Details', features a form with a 'Select Subject' dropdown menu (currently showing 'English') and a 'Subject Mode' dropdown menu (currently showing '2ndHalf'). Below the form are two buttons: 'ADD NEW ROW' and 'DELETE ROW'. A table with the following structure is present:

Question	Option A	Option B	Option C	Option D	Answer	Weightage
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

A 'SUBMIT' button is located at the bottom right of the form area.

Figure 33: Add Test Question for admin View

- Tap any row one row.
- Tap 'Add New Row' for modify any row.
- Tap 'Delete Row' for delete any row.
- Select the subject name and test mode.
- Fill up the "Question" field for any question.
- Fill up 'Option A', 'Option B', 'Option C', 'Option D' for input answers respectively.
- Assign weightage to each mcqs out of 10.
- Fill up the 'Answer' which is right side of the answer for correct answer.
- Tap 'Submit Button' to update it.

2. Update Test Mcqs

- Go to update test from test mcqs.
- Select class and subject mode.
- Tap the Submit button.

The screenshot shows a web browser window with the URL `examssystemadmin.starbuy.pk/Quiz/ChooseSubjectUpdate`. The page title is "EXAM MANAGEMENT" and the user is logged in as "exam.admin". The current date and time are "Sunday, March 25, 2018 4:07:02 AM". The main content area is titled "Test Details" and contains the following form fields:

- Class Name ***: A text input field containing "8th".
- Subject Mode ***: A text input field containing "1st Half".
- Select Subject ***: A dropdown menu with "English" selected.

A green "SUBMIT" button is located below the form fields.

Figure 34: Update Test Detail View

- Go to update test from test mcqs.
- Select class and subject mode.
- Update or edit the question with four option answers and correct answer.
- Tap the submit button to save test mcqs update.

5.9.3 Past Paper Management

1. Add Past Paper

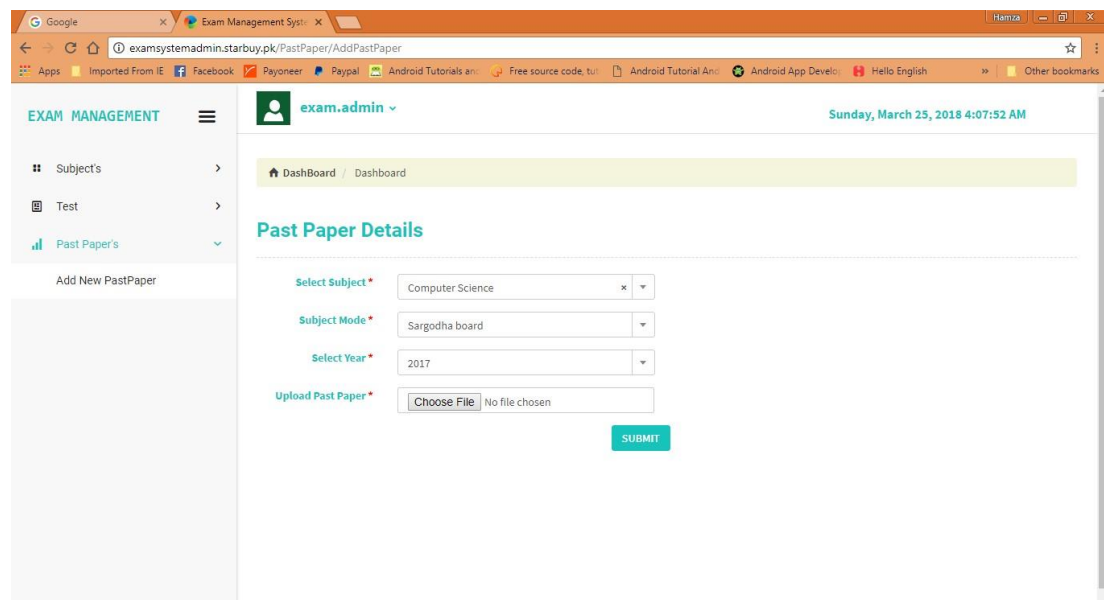


Figure 35: Admin Add Past Paper Detail View

- Enter the add past paper management from dashboard.
- Select class and tap the submit it.
- Select subject, region and year.
- Choose pdf file.
- Upload pdf file for past paper according to class, subject year and board.
- Minimum pdf file size is 5Mb.
- Tap the 'Submit' button to save the past paper from database server.

CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the project

Basic purpose of this project is to make works easier for the students and change the previous manual system into modern way where maintaining records have becomes easier and much more time saving.

It brings flexibility from the administrative site to evaluate the exams in no time and there will be minimum chances of error in evaluating the result. If internet is available, then any student gets a chance to prepare for his examination free of cost.

5.2 Future work

We hope to expand our work for more students from different levels and categories of subject. Currently this application is provided in android system, but we hope to provide this application for iPhone user.

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Thesis or Research Report:

- [1]. Higashinaka, R., Dohsaka, K., Amano, S. and Isozaki, H., 2007. Effects of quiz-style information presentation on user understanding. In *Eighth Annual Conference of the International Speech Communication Association*.

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