Software Document

for

OneSchool Management

Beta Version

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20-May-2020

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Introduction about phases

The process of software development services in India goes through a series of stages in step wise fashion that almost every developing company follows. Known as the 'software development life cycle,' these six steps include planning, analysis, design, development & implementation, testing & deployment and maintenance. Let's study each of these steps to know how the perfect software is developed.

1. **Planning**: Without the perfect plan, calculating the strengths and weaknesses of the project, development of software is meaningless. Planning kicks off a project flawlessly and affects its progress positively.

2. **Analysis**: This step is about analyzing the performance of the software at various stages and making notes on additional requirements. Analysis is very important to proceed further to the next step.

3. **Design**: Once the analysis is complete, the step of designing takes over, which is basically building the architecture of the project. This step helps remove possible flaws by setting a standard and attempting to stick to it.

4. **Development & Implementation**: The actual task of developing the software starts here with data recording going on in the background. Once the software is developed, the stage of implementation comes in where the product goes through a pilot study to see if it's functioning properly.

5. **Testing**: The testing stage assesses the software for errors and documents bugs if there are any.

6. **Maintenance**: Once the software passes through all the stages without any issues, it is to undergo a maintenance process wherein it will be maintained and upgraded from time to time to adapt to changes. Almost every software development Indian company follows all the six steps, leading to the reputation that the country enjoys in the software market today.

1. PHASE 1: REQUIREMENT SPECIFICATION

1.1 Introduction

1.1.1 Purpose

This product can be used by Institutions, Student clubs and Companies for conducting competitive exams, placements and other lab exams. The product can be used by these community people, either for conducting exams in an easy way or practice questions available and evaluate using a common interface.

1.1.2 Document Conventions

Administrator: A login id representing a user with user administration privileges to the software

Client: Intended users for the software (teachers/students)

1.1.3 Product Scope

- The major benefit of this application is making an evaluation easy for the clients and helping users to improve their aptitude and programming skills via this application.
- This is basically an interactive coding platform.
- Can be used anywhere any time as it is a web based application.

1.1.4 References

This web application has been prepared on the basis of discussion with Team members, faculty members and also taken information from following website

1. www.google.com
2. www.wikipedia.org

1.2 Description

1.2.1 Product Perspective

The proposed **OneSchool** is an application where client(student) practice and analyse his performance has following stages-

Login: There is a quality login window where the client(teacher/student) has their specific logins where they can login using their credentials and perform their own tasks.

Performance: Performance page is the most creative and important page in this project. The client(student) takes up the questions either prepared by the client(teacher) or administrator and monitors his performance in the result section.

1.2.2 Product Functions

The features that are available to the Administrators are:

- The administrator has the full-fledged rights over the system.
- Can create/delete an account.
- Can view the accounts.
- Can change the password.
- Client privileges can be changed

The features that are available to the Clients are:

- Client(teacher) can insert many questions for many tests.
- Client(student) can view a list of test names and take any of them.
- Can view the different categories of marks available in their account.
- Can view the various reading material.
- Can view their profile and also modify it to an extent.

1.2.3 User Classes and Characteristics

There are various kinds of users for the product. Usually web products are visited by various users(client) for different reasons.

The users include :

- Teachers will have access over the database i.e. to add the questions into it and create new tests.

- Students can take up the tests given by teacher and aptitude questions given by the administrator using the application.

1.2.4 Operating Environment

Most of the features will be compatible with the Mozilla Firefox, Chrome, Safari & Opera. The only requirement to use this online product would be the internet connection.

1.2.5 Design and Implementation Constraints

The whole implementation is done in three modules. The first one is Administrator, second one is Teacher and the third is Student.

Module I

- In this module it shows how the admin can log into the system with a valid password and can remove and change client privileges.
- This module also focuses on preparing the practice questions that might be aptitude questions or coding questions making it available to Clients.

Module II

- This second module tracks the path of the Client(teacher). In this module it shows how the Client(teacher) can log into the system with a valid password.
- He has the access to create new tests in the database.
- Also he can manipulate his database and add new questions in his database from the web application itself. It also displays how many questions are in the database.

Module III

- This third module tracks the path for the Client i.e. examinee/student. The examinee can log into the system with valid credentials.
- After successfully logging into the system the examinee moves to the instruction web page where he will get the questions of the particular test selected. In this manner the examinee can take up the test and click the submit button, to finalize his answer. He will get the result of the test in the result section immediately. At the end system displays the initial web page.
- In case if the Client is not taking any test and wants to practice, he will login with the valid password and username and can select the level of complexity of questions and can then proceed with his practice session created by the administrator.

1.2.6 User Documentation

The product will include a user manual. The user manual will include product overview, complete configuration of the used software, technical details, backup procedure and contact information which will include email address**.**

1.2.7 Assumptions and Dependencies

Assumption:

In general it has been assumed that the user has complete knowledge of the system that means the client is not a naive user. Any data entered by him/her will be valid.

Dependencies:

It depends that one should follow the international standards for generating the User ID & should fill the related information in the proper format.

1.3 External Interface Requirements

1.3.1 User Interfaces

Application will be accessed through a Browser Interface. The interface would be viewed using the best resolution setting. The software would be fully compatible with the operating systems mentioned earlier. No user would be able to access any part of the application without logging on to the system.

1.3.2 Hardware Interfaces

Server Side:

- Operating System: Windows 9x/xp ,Windows ME/Vista
- Processor: Pentium 3.0 GHz or higher
- RAM: 256 Mb or more
- Hard Drive: 10 GB or more

Client side:

- Operating System: Windows 9x or above, MAC or UNIX.
- Processor: Pentium III or 2.0 GHz or higher.
- RAM: 256 Mb or more

1.3.3 Software Interfaces

Client Side : .HTML, Web Browser, Windows

Web Server: .HTML, Windows

1.3.4 Communications Interfaces

The Customer must connect to the Internet to access the Website

- Broadband Internet
- Dialup or Broadband Connection with an Internet Provider.

1.4 System Features

1.4.1 Database Storage

1.4.1.1 Description and Priority

Proposed Database is intended to store, retrieve, update, and manipulate information related to client which include

- Profile of both clients(teacher and student)
- Test results
- Questions database

1.4.1.2 Stimulus/Response Sequences

Responses for Administrator: The system will check for validity of login .If the Login and password are valid, the response to this action is the administrator will be able to modify, view, add, delete and all other functions that can be performed on the database.

Marks Analysis: The client can log on with login id and can view his marks and analysis depending

upon his marks. After logging in the client can select a particular test name to analyse his performance by viewing the correct answer.

1.4.2 Functional Requirements

This section gives the list of Functional requirements which are applicable to the OneSchool.

Functional requirements are nothing but the services provided by the system to its end users.
There are three sub modules in this phase.

- Student module.
- Teacher module.
- Administrator module.

The functionality of each module is as follows.

Student module: The student will logon to the application and can practice or take the exam and view his marks. He can also check his previous exam marks and his details.

Teacher module: The Questions are prepared & loaded into the database. Selections can be done viewing the client(student) result.

Administrator module: The administrator prepares aptitude questions for the client(student) and monitors the access of the client and modifies the database.

1.5 Other Nonfunctional Requirements

1.5.1 Performance Requirements

Some Performance requirements identified is listed below:

- The database shall be able to accommodate a minimum of 10,000 records of students.
- The software shall support use of multiple users at a time. There are no other specific performance requirements that will affect development.

1.5.2 Safety Requirements

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup

1.5.3 Security Requirements

Some of the factors that are identified to protect the software from accidental or malicious access, use, modification, destruction, or disclosure are described below.
1. Keep specific log or history data sets
2. Assign certain functions to different modules
3. Restrict communications between some areas of the program
4. Check data integrity for critical variables
5. Communication needs to be restricted when the application is validating the user.

1.5.4 Software Quality Attributes

The Quality of the System is maintained in such a way so that it can be very user friendly to all the users. The software quality attributes are assumed as under:

1) Accurate and hence reliable.

2) Secured.

3) Fast speed.

4) Compatibility.

1.5.5 Business Rules

- Clients should not misuse the additional functionalities given.
- Clients should function under the rules set by the Administrator.
- Both clients should not work against ethics.
- No breach of information.

2. PHASE 2: DESIGN PHASE

2.1 Introduction

2.1.1 Purpose

The purpose of this document is to outline in detail the software architecture and system design of OneSchool website. This document will provide the data flow diagram of OneSchool to give a better understanding of how information will be processed with regards to the application. In addition, images will show a comparison of each view of the web application to give a better idea of the system's user interface design.

2.1.2 Scope

This document provides the architecture and design of OneSchool. It will show how the application's functionalities work by explaining each of the system's components. The major scope of this product is to ease the evaluation and help students improve their aptitude and also their coding skills via using the environment which will be embedded in the application in later days.

2.1.3 Overview

This document will cover the basic functionality of the application ,its context and its design. It will cover how data flows within and into the database. The system architecture will cover each of the modules of the application and its relation to system functionality.

2.2 System Overview

This project developed a self-learning website for students. It is a web site/ web application which provides an interface where students can login using their credentials and has several options like take tests given by several teachers, practise aptitude questions and view their results also. In the same way teachers can login using their credentials and find various options like prepare questions where they provide test names and prepare questions for the same. They can also see the results of their students for each test separately. This web application provides a list of no. of students registered for each test.

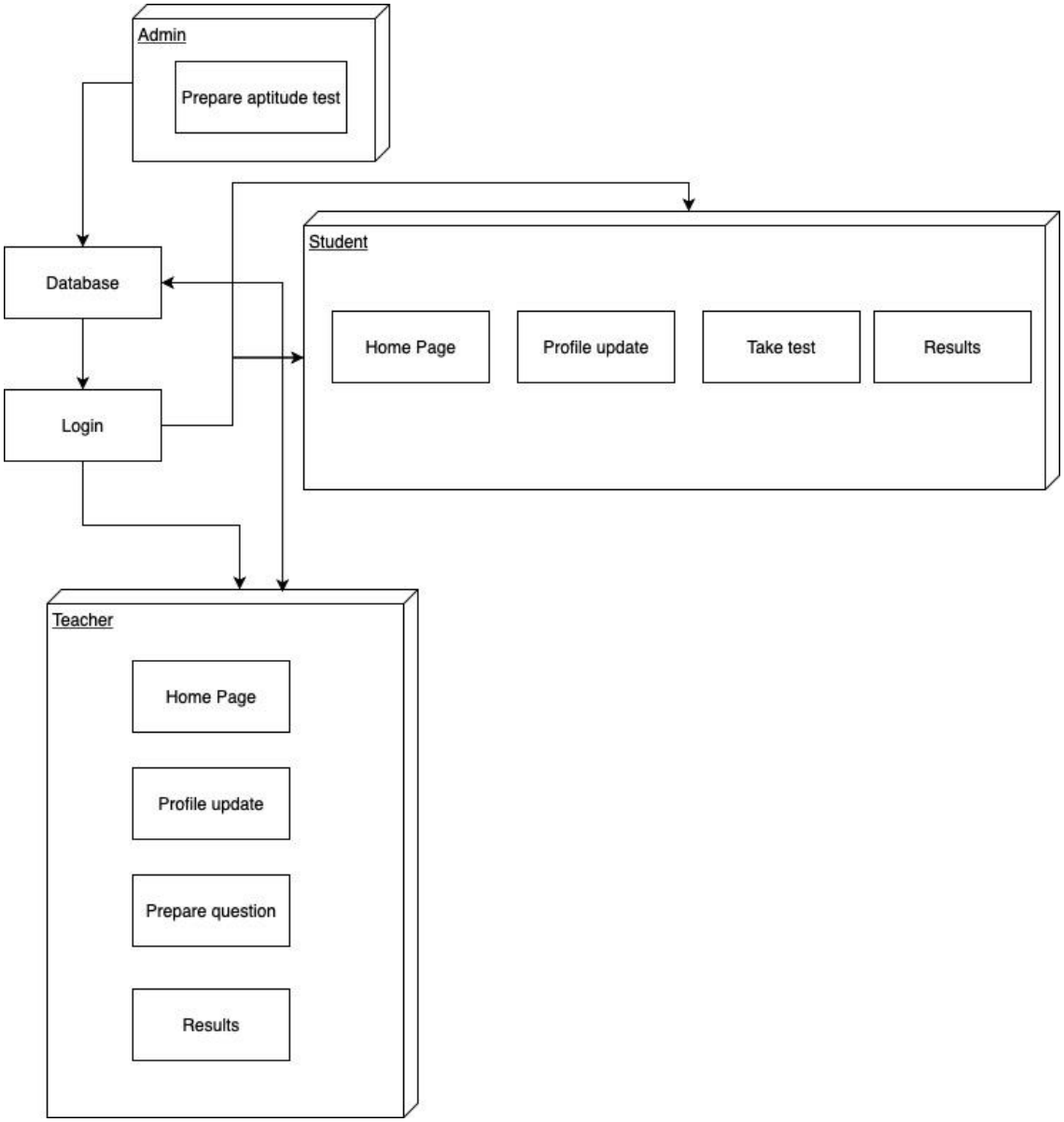
2.3 System architecture

2.3.1 Design Model

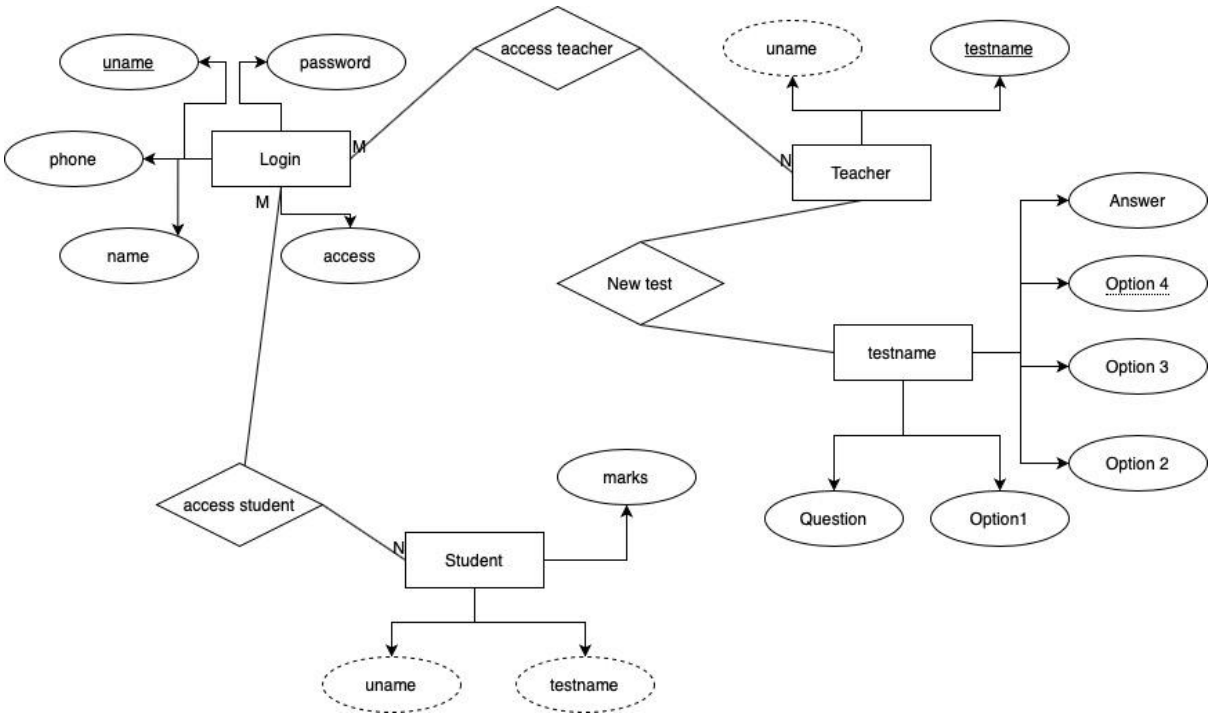
This web application which is a client server model, has 2 types of clients Teacher and Student.

Client(Teacher) uses the application to add data to the server(Database) and can use the application to raise requests on different queries like viewing results, profile update etc.

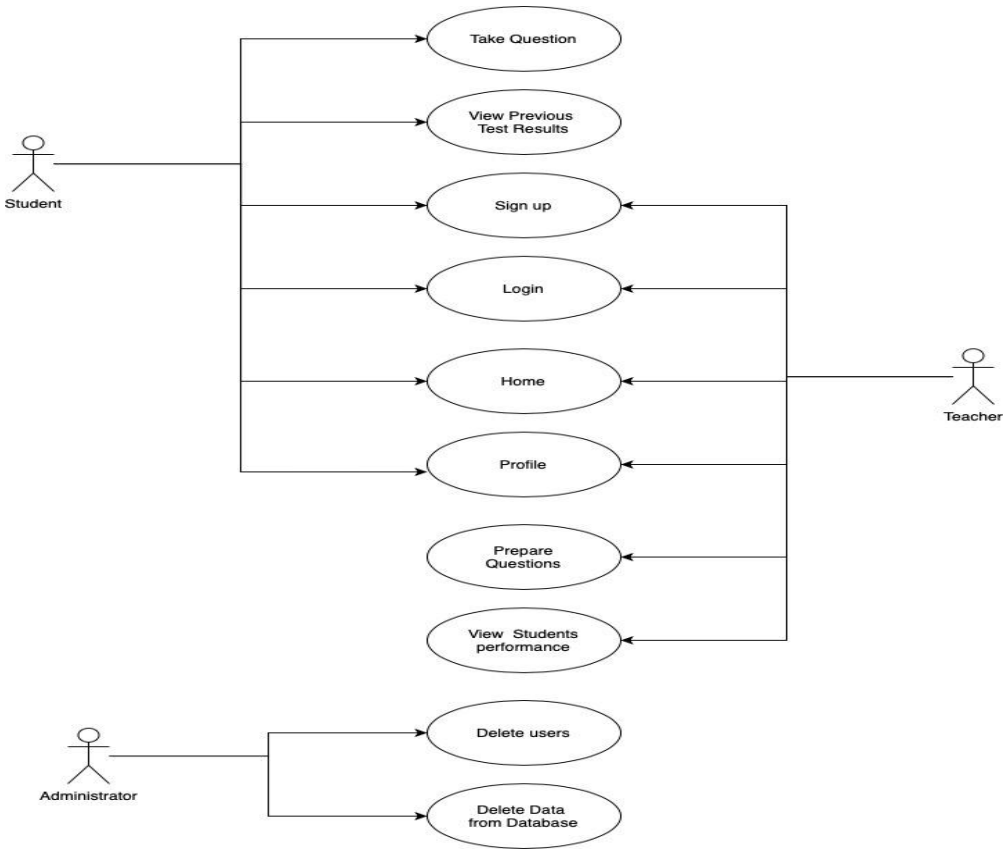
Client(Student) uses the application to retrieve the data from the server that is posted by other clients , client updates the server with the results of the test taken, can update profile and can view his results with appropriate request to the server.



2.3.2 ER Diagram



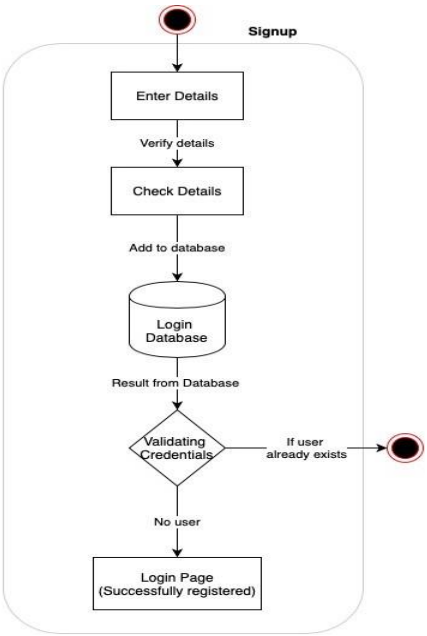
2.3.3 Use Case Diagram



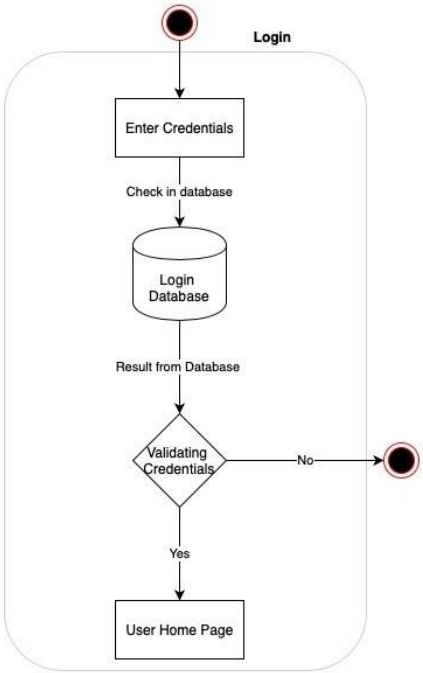
This figure briefly explains the scope of three different modules briefly. As shown above teacher, student and an admin have their own use-cases. A student login performs the tasks as shown and followed by viewing his result and his profile. Same with the case of a teacher, he can give tests which distinguish him from students.
Admin has direct access to the database where he can add or remove users(student/teacher), delete unwanted data from the database.

2.3.4 Subsystems State models

1. Sign Up



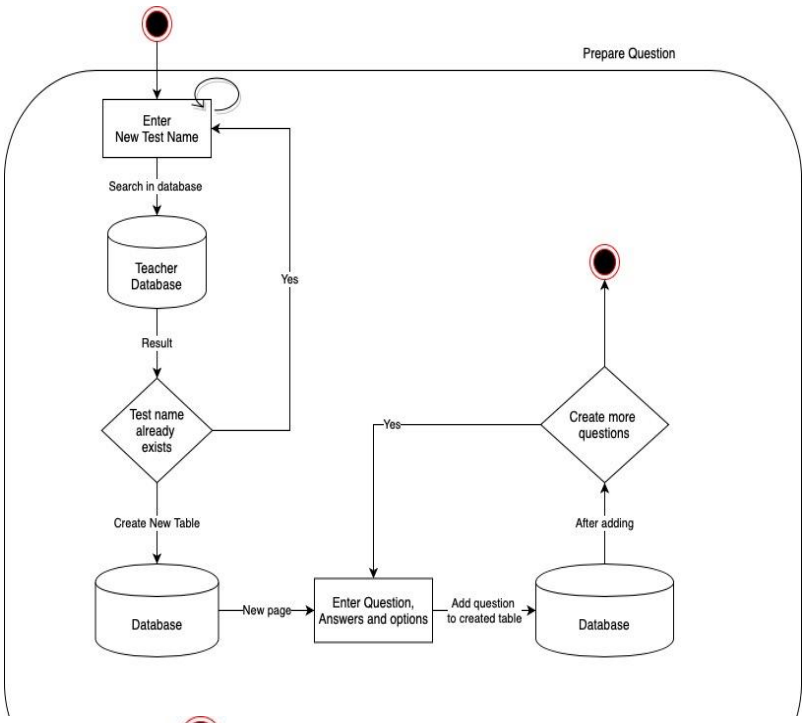
Sign-up sub-system gives an user an interface where he can register to OneSchool and use the facilities given, where he gives his details and these details are added to the database.



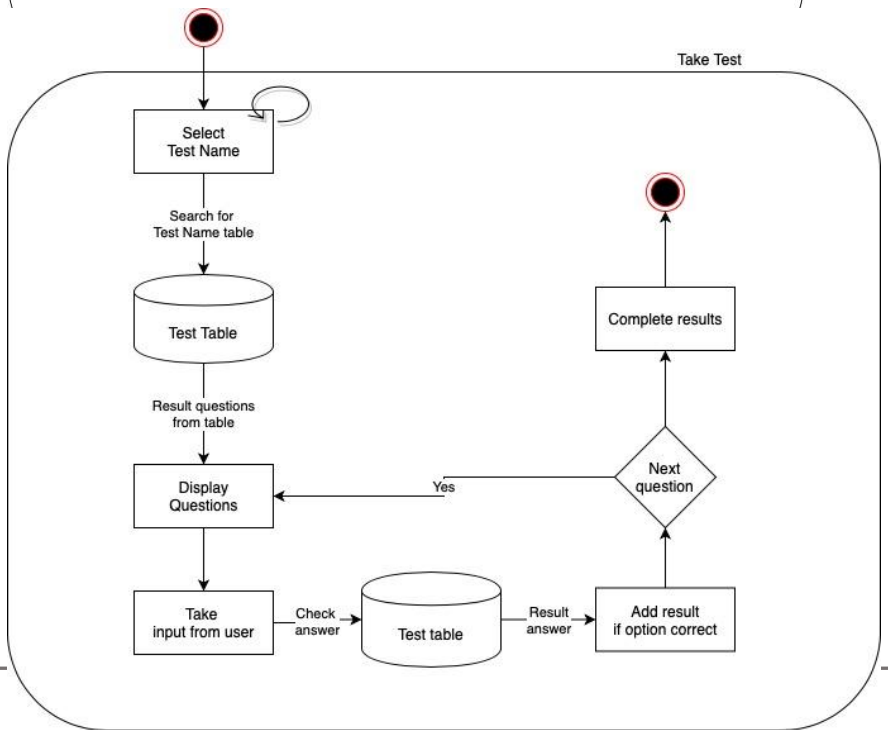
2. Login

User login if already register else he should
register and login. In this sub-system, it verifies the credentials with the database and gives access accordingly.

3. Prepare questions



This sub-system model gives the user(teacher) the option to create test questions and make it available to the user (students),by first creating a new test-name which is unique and also creates a table in the database, where he can add questions along with the answers to the table.

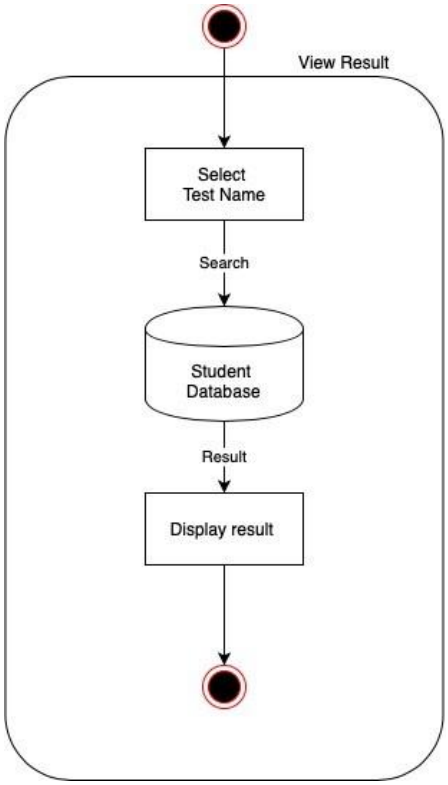


4. Take Test

The test sub-system deals with an interface where students can select the test they want to appear for and take the test where they are automatically evaluated

and results are updated in the results section.

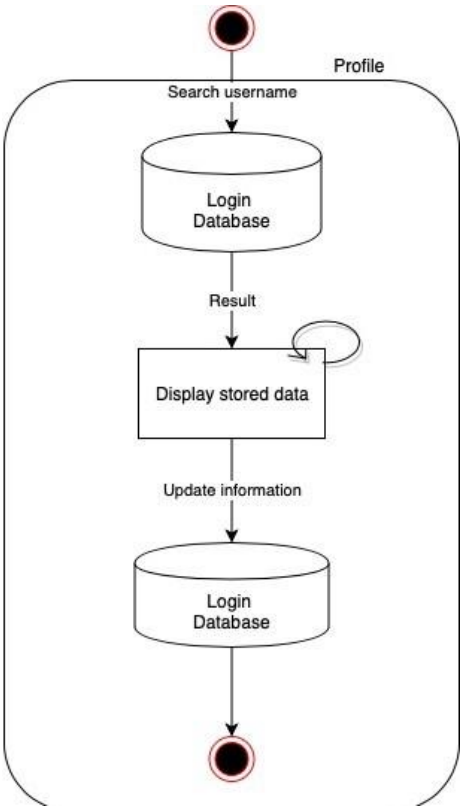
5. Result



Once the students take test, results are stored into database. This mode deals with allowing the user to view the results of his test he attended earlier.

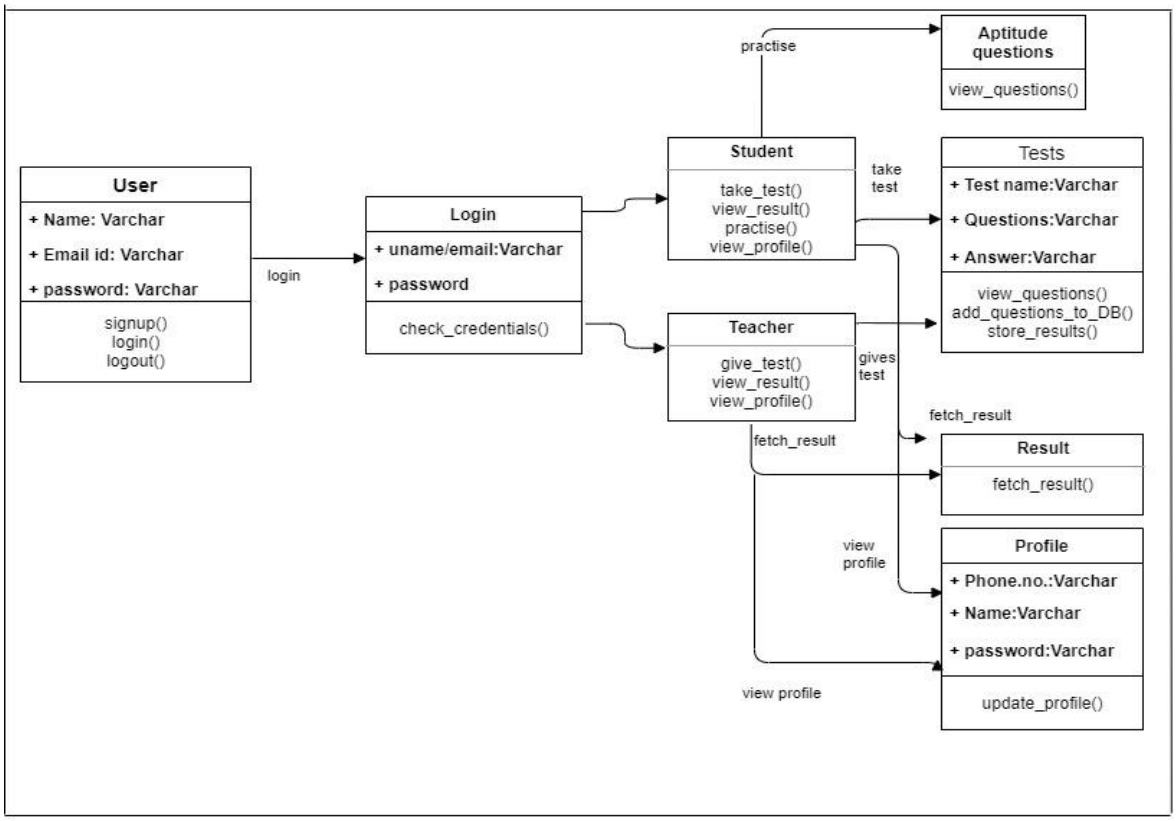
Teacher – Views the results as test wise and student wise
Student – Views the results as only test name wise

6. Profile

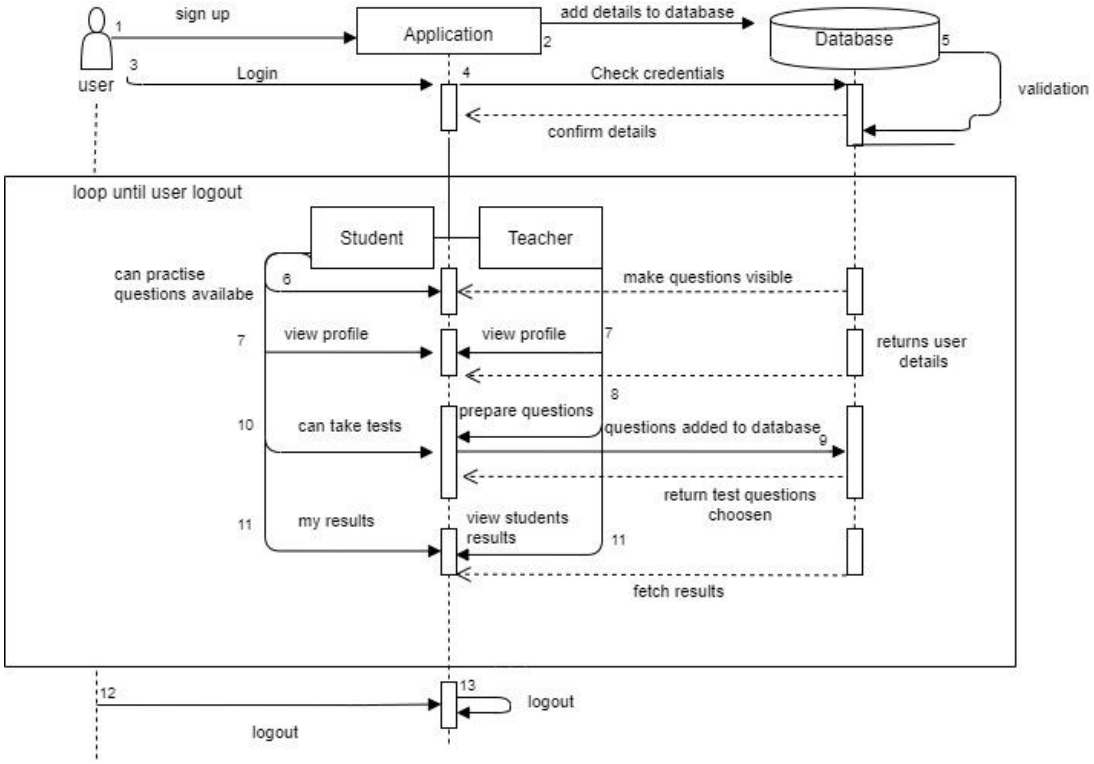


This model allows the user to change some attributes like password, name and can add phone number if required, which is updated and is stored in the database and can be used by the students to contact particular teachers.

2.3.5 Class diagram



2.3.6 Sequence diagram



As seen in the sequence diagram, the user signs up to the application and his details are stored in the database. Next when he logins into the application, his credentials are checked and after verification from the database he logins in into the application.

If the user is a student, he gets many options to choose his task and work with the same. The sequence diagram shows the options he gets. . He has an option of Aptitude questions in which he practises the questions added by the administrator. On choosing a viewing profile, he should be able to get his details from the database and an edit option is available where he can update his details. Next he can take tests, when he chooses an exam option, list of exams are listed and he can choose the test, questions from the database which are previously updated by the teacher are visible. At last he views his results.

If the user is a teacher, he gets a distinct interface from a student. . On choosing a viewing profile, he should be able to get his details from the database and an edit option is available where he can update his details. Next he can add tests, when he chooses that option he gets a space where he adds questions under the test name into the database for students. At last he can also view the results of students.

2.4 Graphical User Interface Design

2.4.1 Overview of user interface

When a user opens the website, the sign up page is opened. This sign up page has 4 options on top: ‘Home’, ‘Student’, ‘Teacher’ and ‘Programs’. ‘Student’ and ‘Teacher’ option opens the login page for

both of them respectively. To sign up into the application, the user provides their Full name, email id, password and their designation i.e. they are whether student or teacher.

Login page for students and teachers has two 2 text fields where they enter their email and password and login.

Teacher Interface description

Once teacher login, home page is opened and at left side he has 4 options i.e.
'Home', 'Profile', 'Prepare Questions', 'View Results'.

1. 1. 'Home' option brings the teacher back to the home page; it is the starting page which just welcomes the user into the application.
2. 2. 'Profile' option views the profile of the teacher and he can also update his profile by updating phone number, changing his name and password. But he cannot edit his uname(email) and designation.
3. 3. 'Prepare Questions' is a page where he can add test names and questions to test for students. There is a large text field where he can add questions and four options for it to add answers with radio buttons to choose the right answer.
4. 4. 'View Results' fetch the results from the database. This option opens a page that has a table with 3 columns, Test name, Student and Result in which results are printed accordingly.

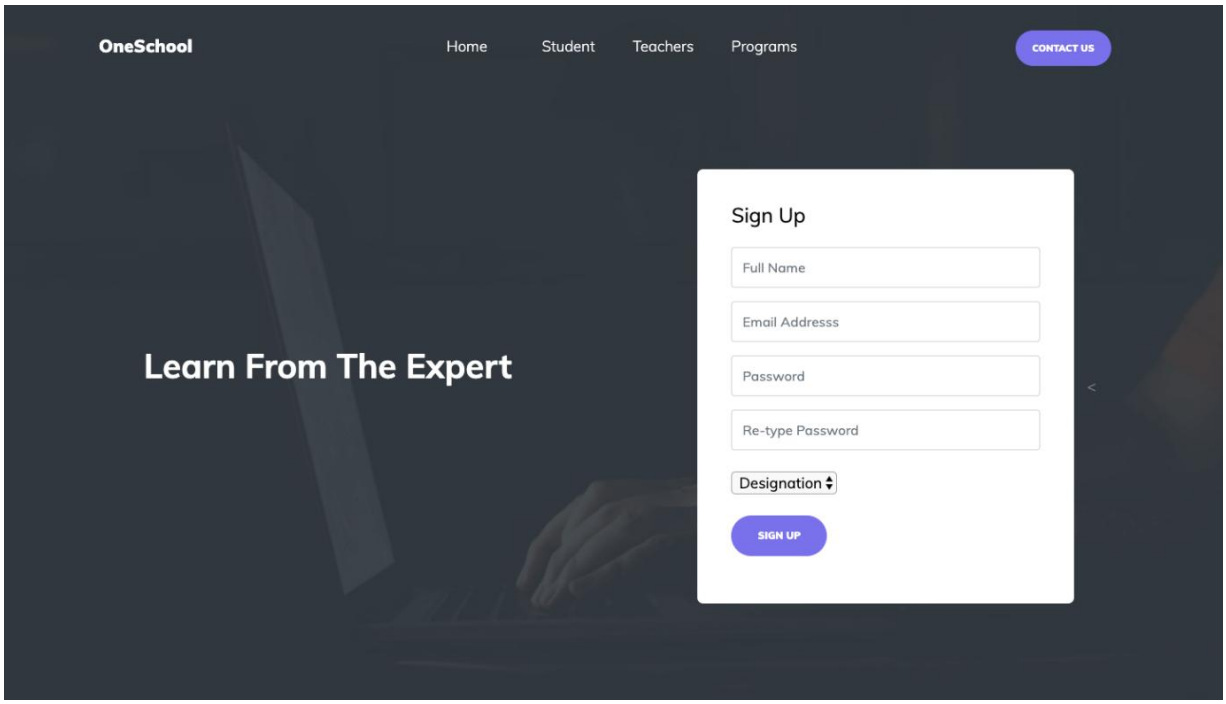
Student Interface description

Once teacher login, home page is opened and at left side he has 5 options i.e.
'Home', 'Profile', 'Aptitude Questions', 'Exams', 'My Results'.

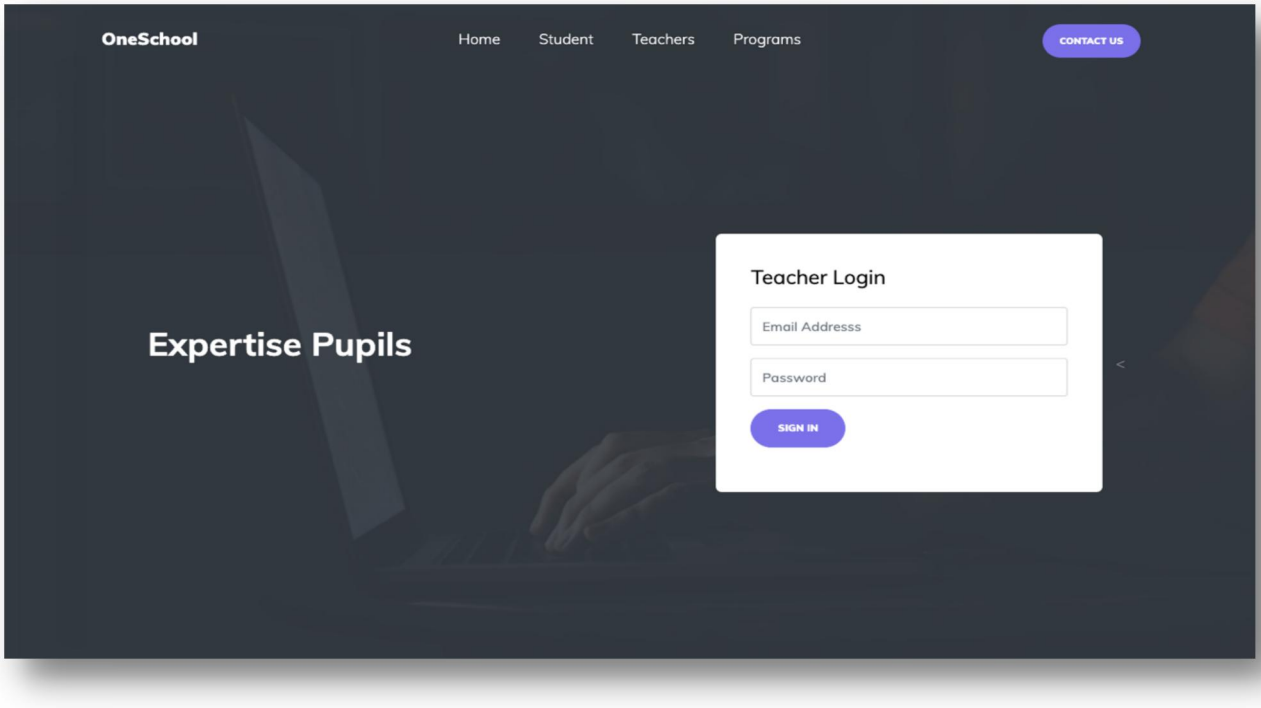
1. 'Home' option brings the Student back to the home page; it is the starting page which just welcomes the user into the application.
2. 'Profile' option views the profile of the Student and he can also update his profile by updating phone number, changing his name and password. But he cannot edit his uname(email) and designation.
3. 'Aptitude Questions' this option directs to the Questions page. In this, multiple choice questions which are prepared by the administrator are displayed and students can practise these apti questions.
4. 'Exams' option opens the page with a list of exams with a teacher name. He has to choose among the list. Once the exam/ test is selected, questions are displayed with multiple answers. Answers has the radio buttons. He has to select one answer and submit the test.
5. 'My results' gives the result in tabular form. Table has 2 columns with test names and results.

2.4.2 Screen image

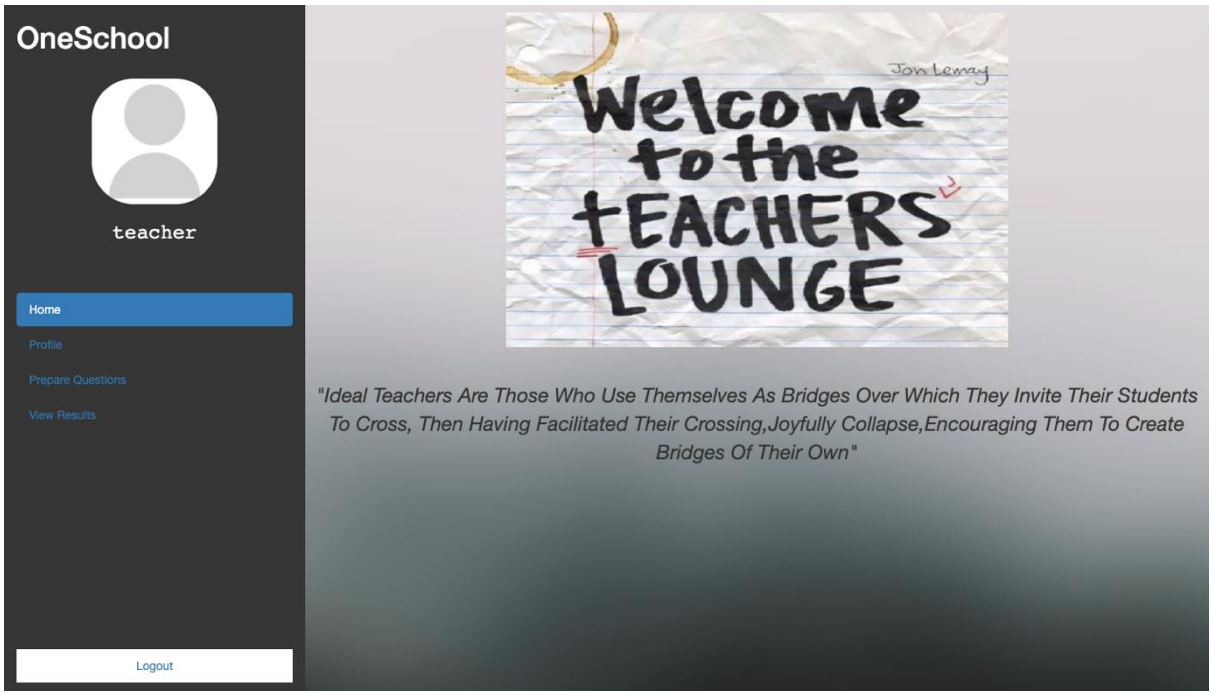
Home Page



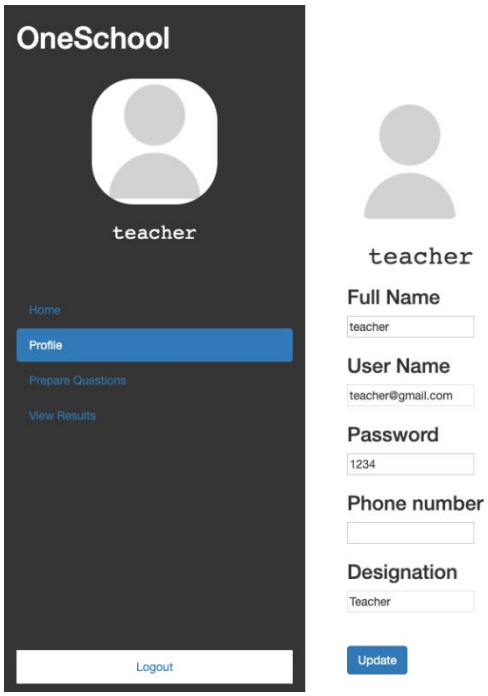
Teacher
login



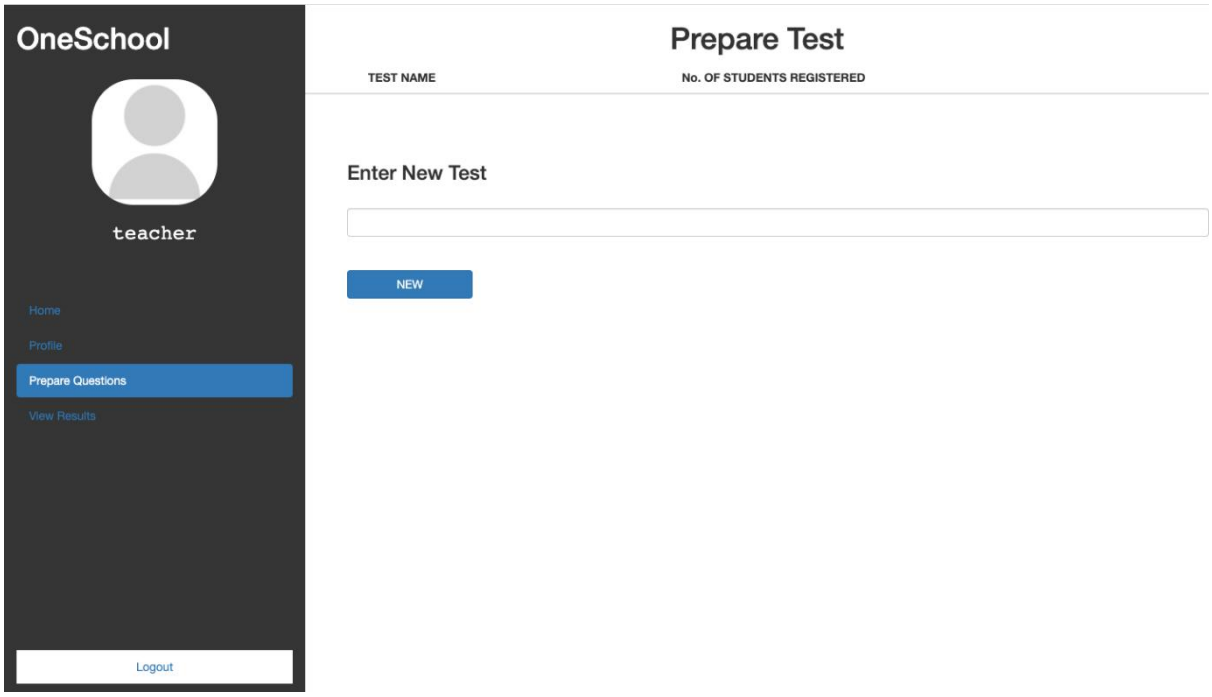
Teacher Home Page



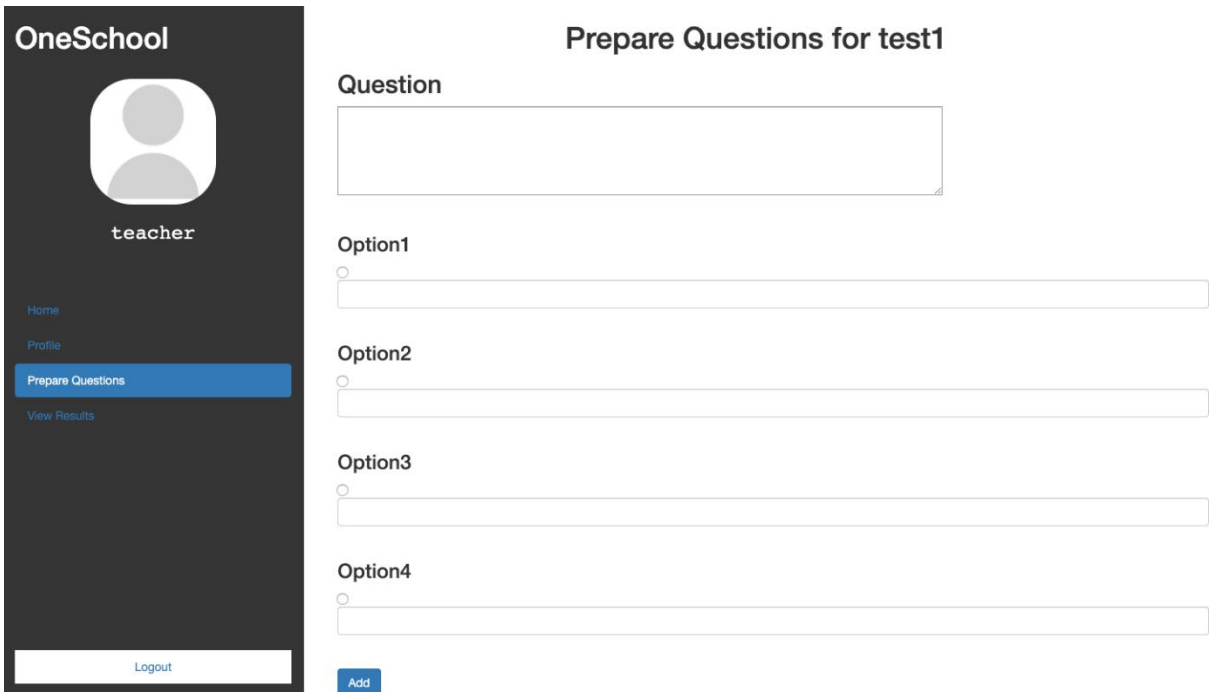
Teacher Profile



Create New Test

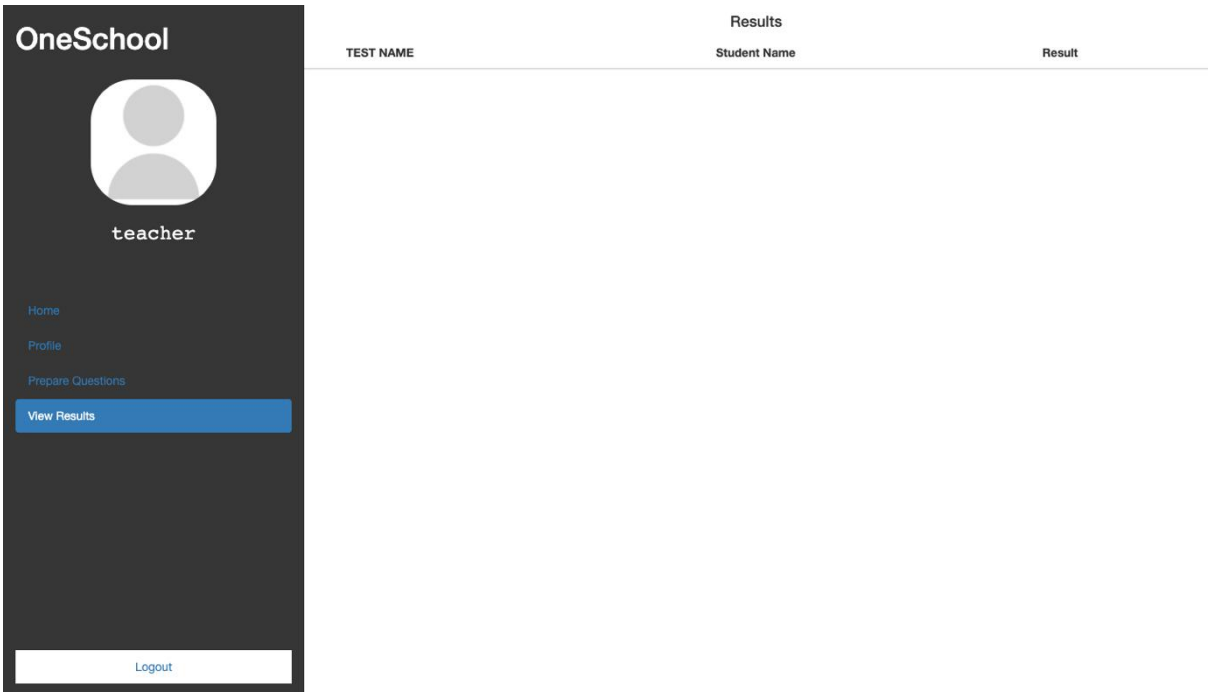


Add questions to test

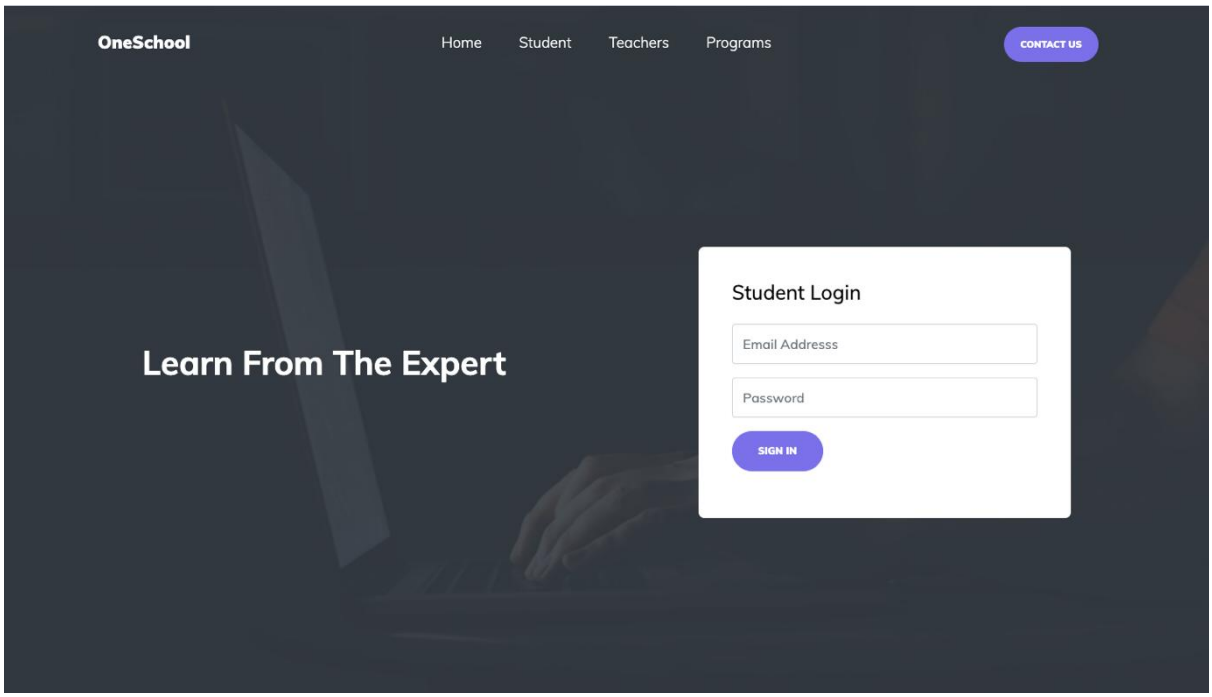


Question	Option1	Option2	Option3	Option4	Answer
Question1	o1	02	03	04	3
Question2	021	o22	o23	o24	2

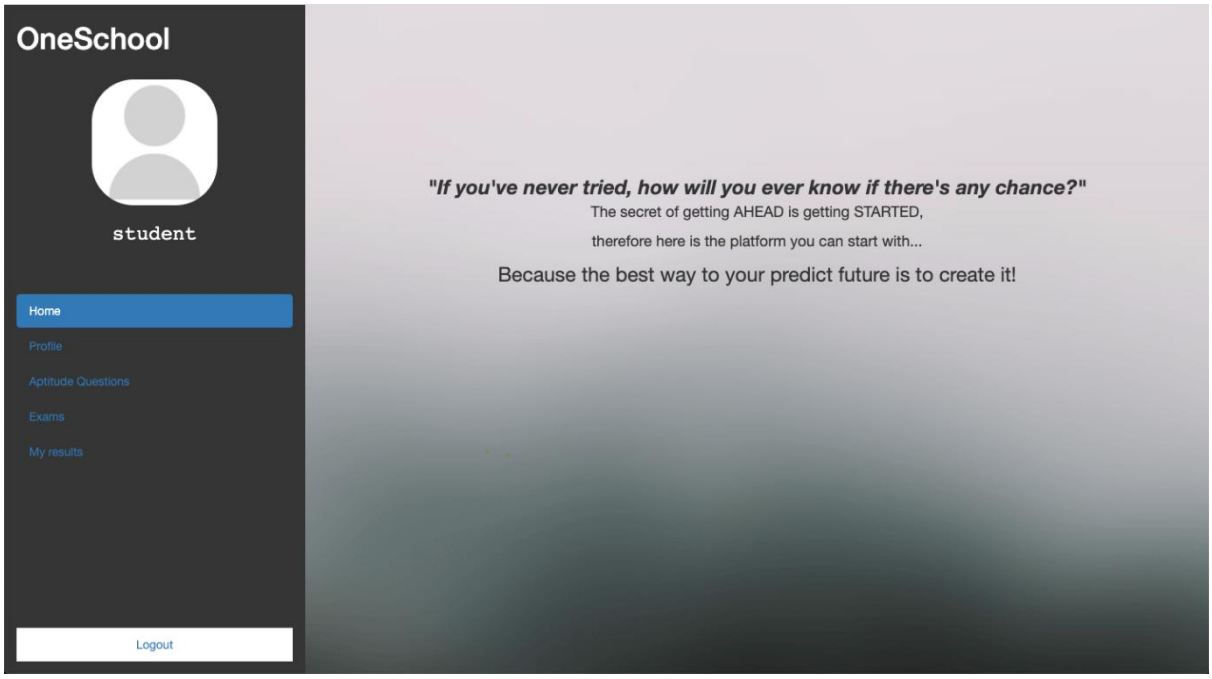
View Test Results



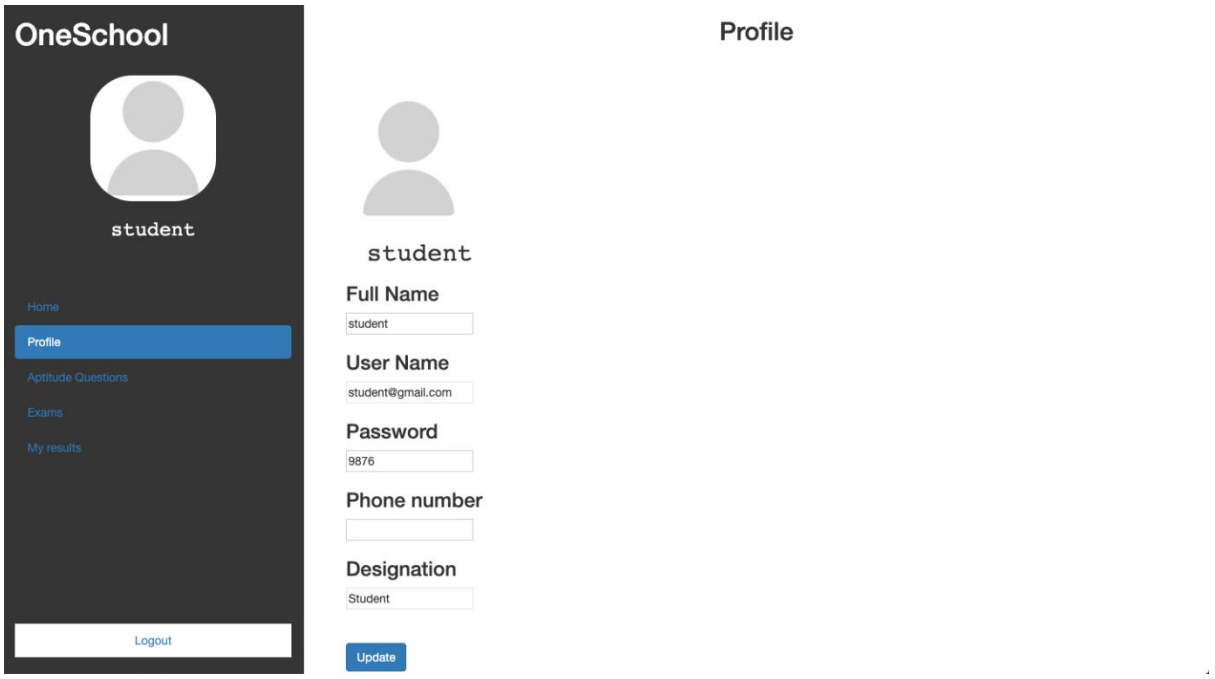
Student Login



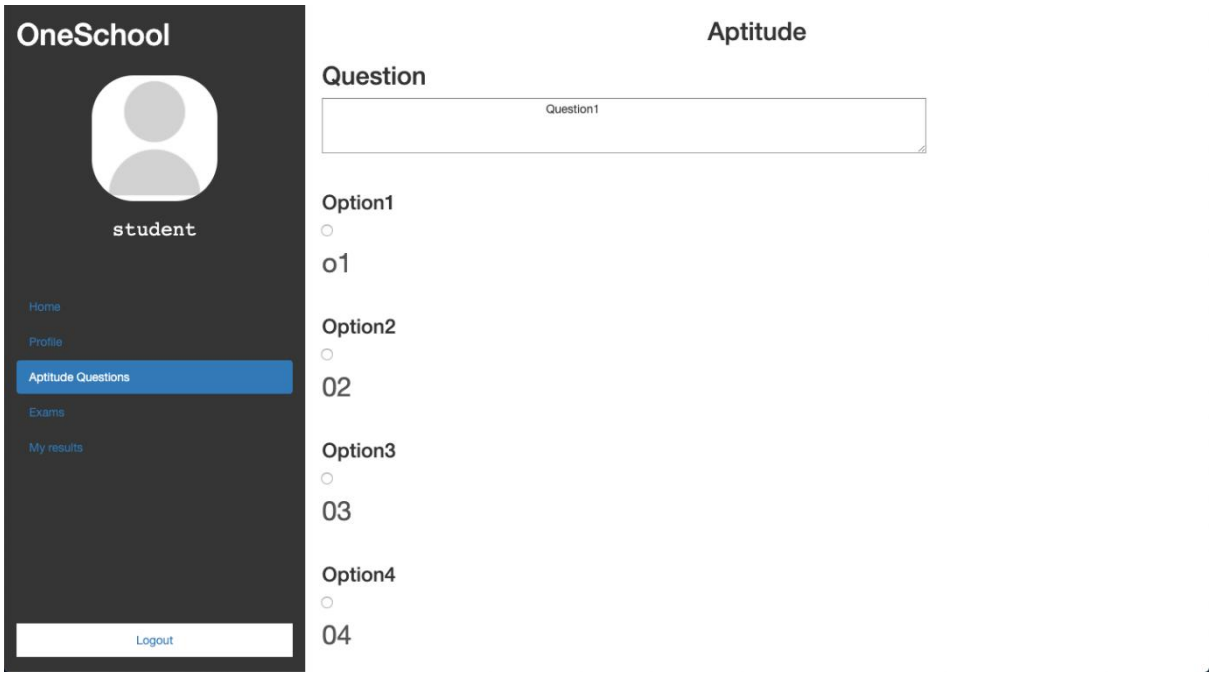
Student Home Page



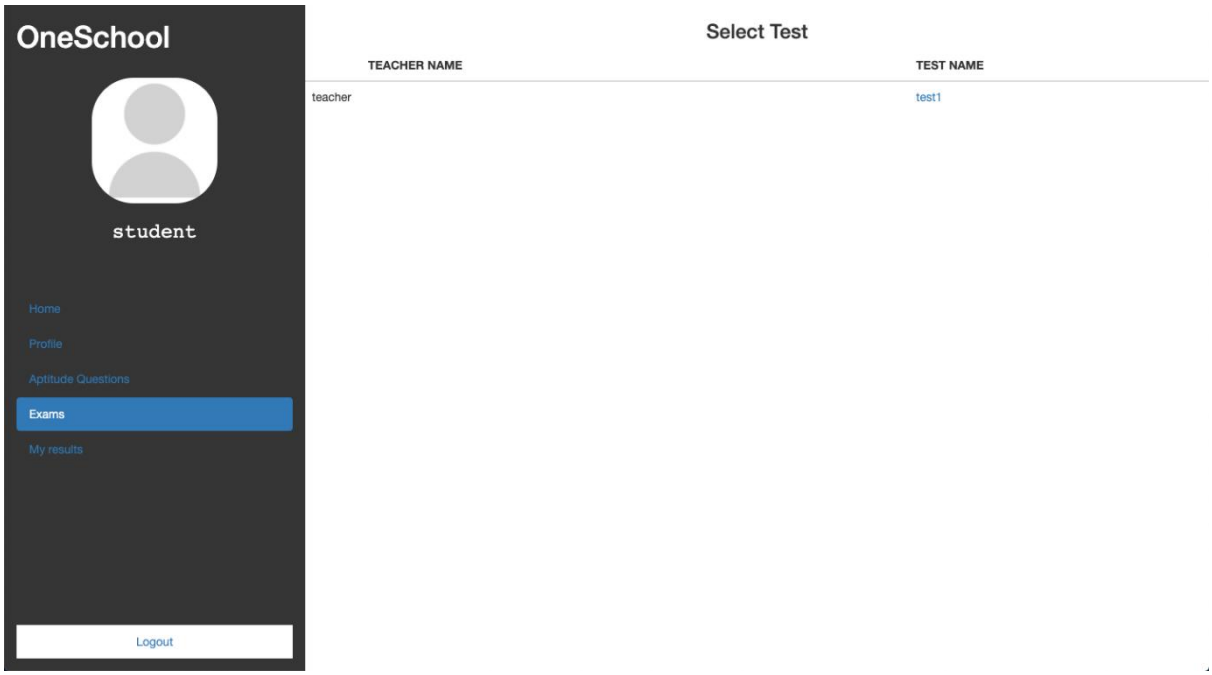
Student Profile



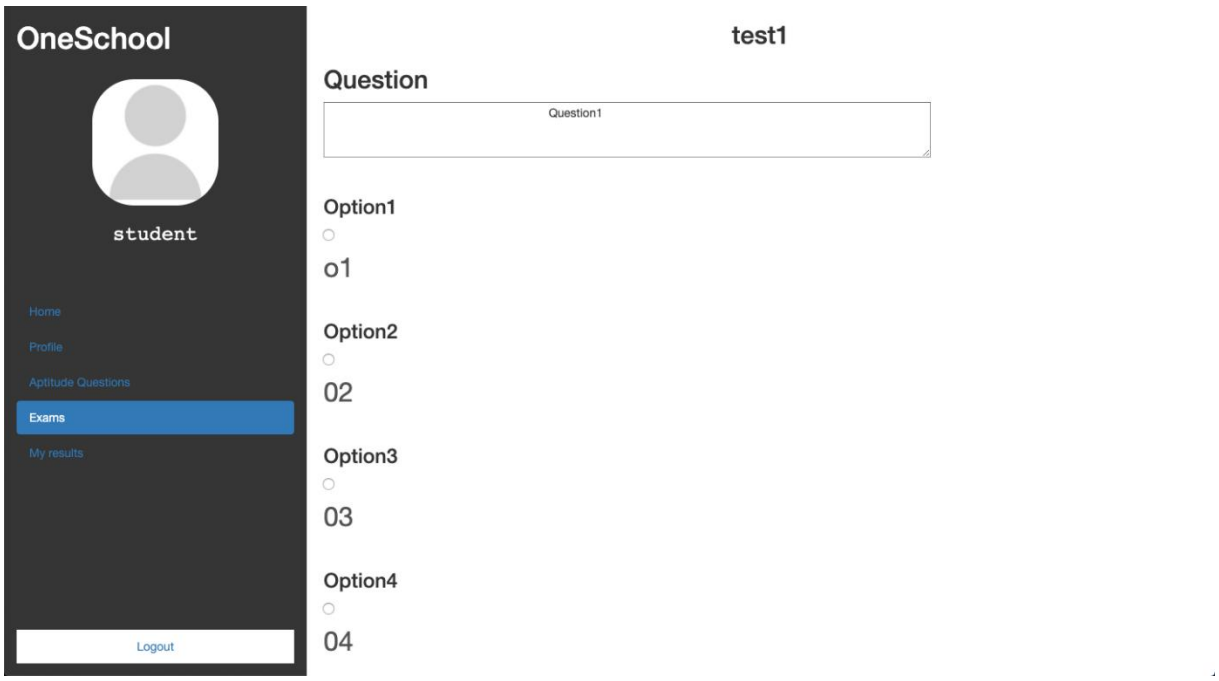
Take Aptitude Test

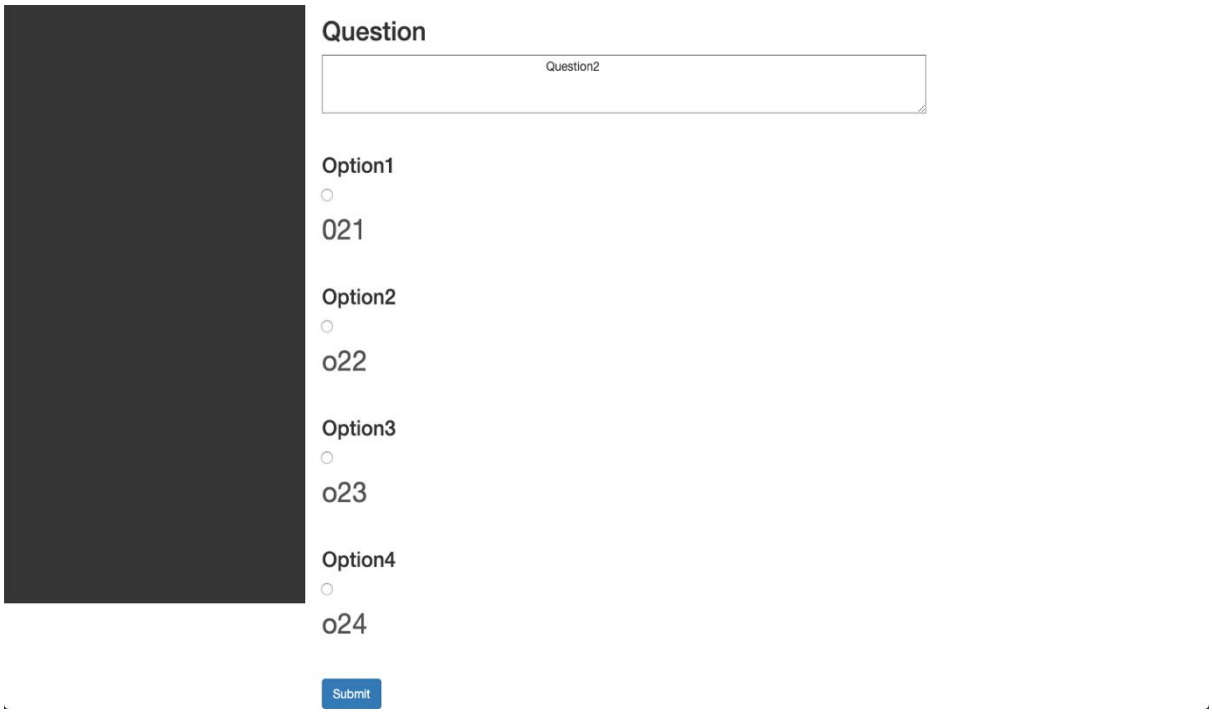


Choose Test

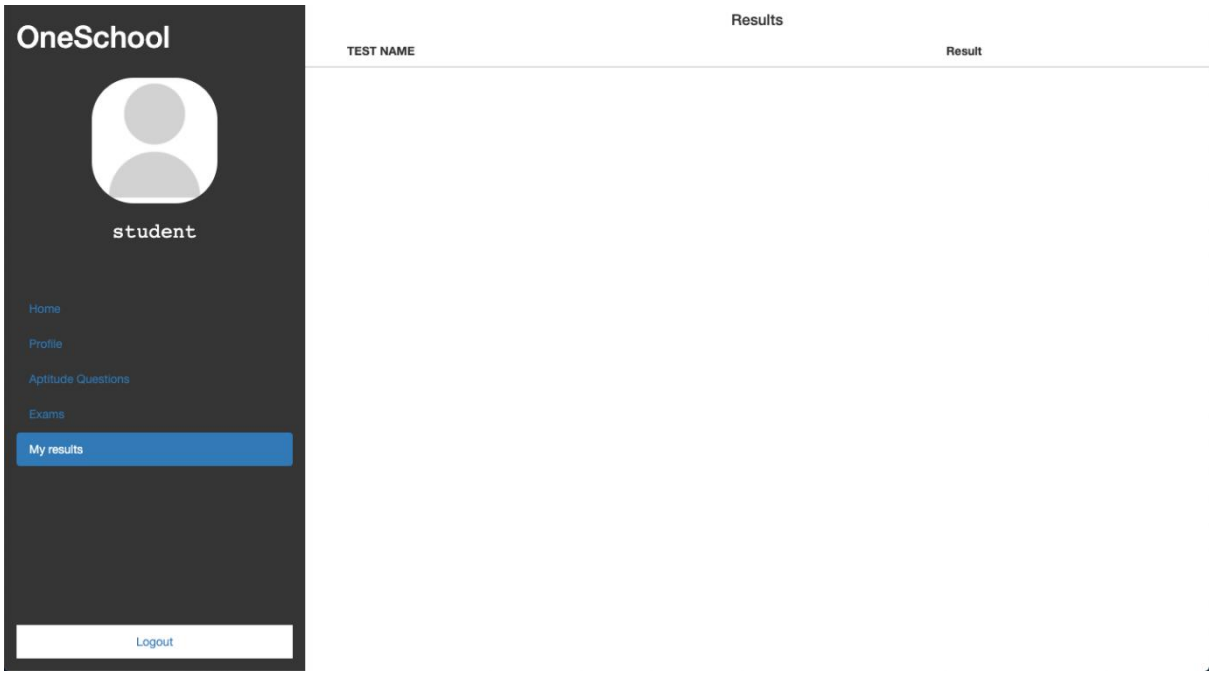


Attending Test





View Results of Tests

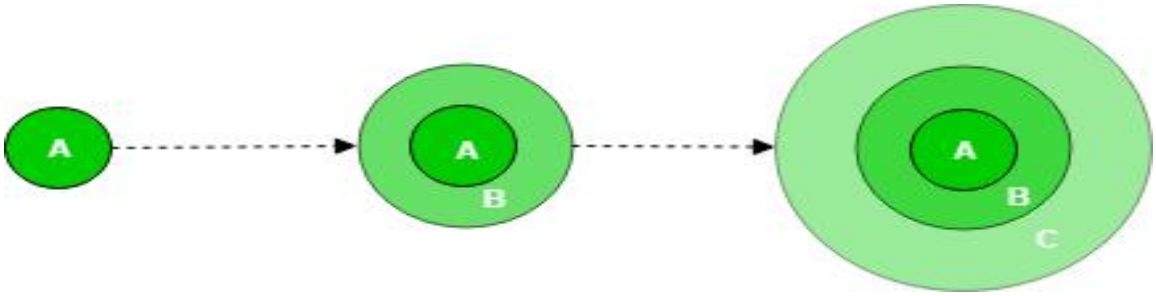


3. PHASE 3: DEVELOPMENT PHASE

3.1 Process Model

The process model used in this project is the **Incremental Model.**

3.1.1 What is Incremental Model?



A, B, C are modules of Software Product that are incrementally developed and delivered.

Once the core features are fully developed, then these are refined to increase levels of capabilities by adding new functions in Successive versions. Each incremental version is usually developed using an iterative waterfall model of development.

As each successive version of the software is constructed and delivered, now the feedback of the Customer is to be taken and these were then incorporated in the next version. Each version of the software has more additional features over the previous ones.

3.1.2 Why is this model used?

We have used this kind of model as the initial requirements of the application are fixed. Later based on the requirements of the users the application is developed according to their needs such as if they need any add ons like coding platform or reading section or descriptive questions, etc.

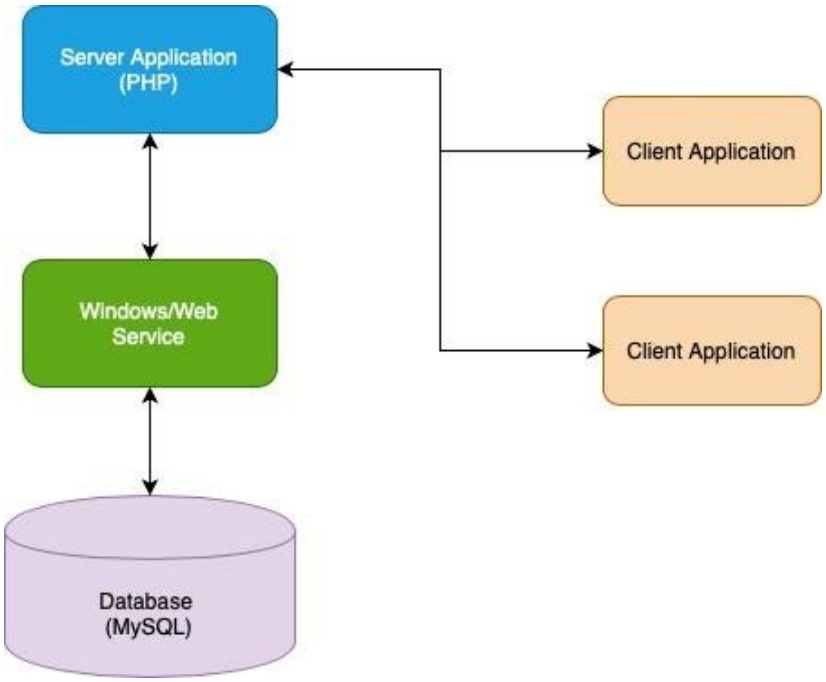
3.2 Architecture

The architecture implemented in the project is the **Client-Server Architecture.**

3.2.1 What is Client-Server Architecture?

Client/server architecture is a computing model in which the server hosts, delivers and manages most of the resources and services to be consumed by the client. This type of architecture has one or more client computers connected to a central server over a network or internet connection. This system shares computing resources.

Client/server architecture is also known as a networking computing model or client/server network because all the requests and services are delivered over a network.



Client/server architecture works when the client computer sends a resource or process request to the server over the network connection, which is then processed and delivered to the client. A server computer can manage several clients simultaneously, whereas one client can be connected to several servers at a time, each providing a different set of services. In its simplest form, the internet is also based on client/server architecture where web servers serve many simultaneous users with website data.

3.2.2 Why is this architecture used?

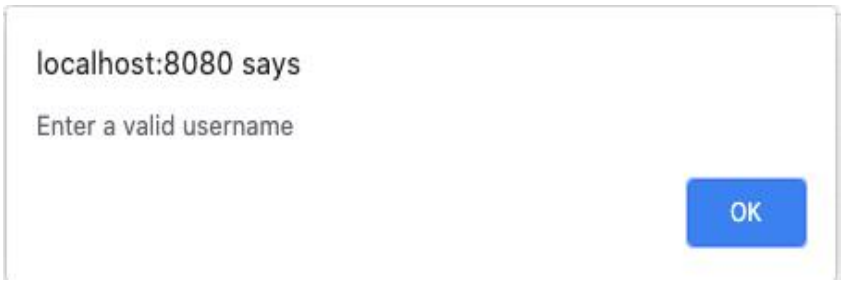
We have used this kind of architecture as the teacher or the administrator upload the questions to Server and students view those questions as a client.
The client i.e Teacher requests the server for any queries like results of the students and the server responds with an appropriate response requested by the client.
Similarly the Students raises a request to the test and the server responds with the question prepared by the teachers by displaying the appropriate question fed by the teacher to the database.
Students can also raise similar requests like viewing the results of their test, update information to the database etc with an appropriate request to the server.

4. PHASE 4: TESTING PHASE

4.1 Signup Page

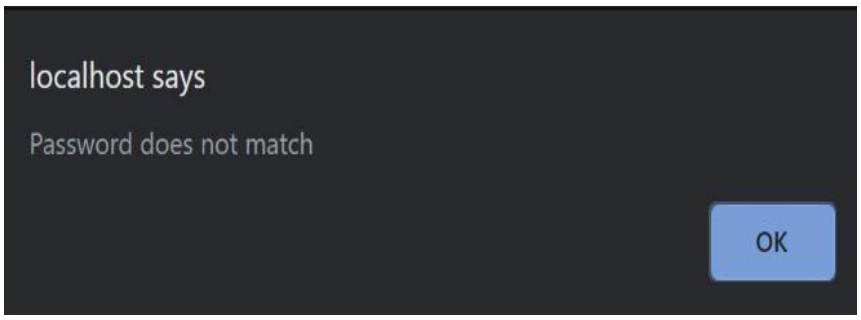
4.1.1 Invalid Username

If a user does not enter the username in the email format i.e. with an '@' symbol and '.com' then the system generates an error saying "Enter an valid username.



4.1.2 Password Mismatch

When a user tries to sign-up into the application, if the password in the password field and re-type password field does not match then this below shown error is popped up.



4.1.3 User already Exists

If a new user try to sign-up with an already registered username i.e. email then the system doesn't allow the user to sign-up displaying an error "user exists".

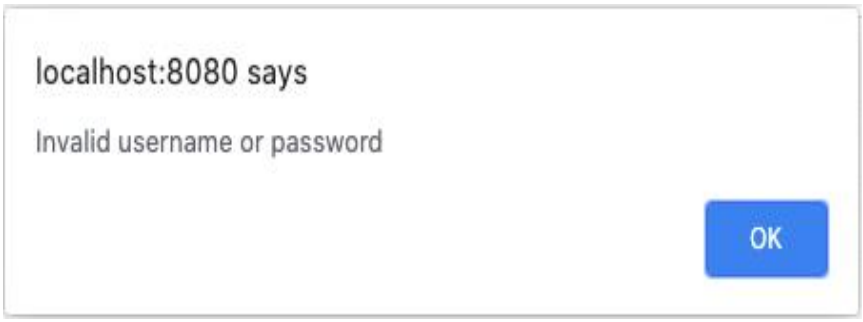
4.1.4 Registered Successfully

If a user enters all the credentials correctly with proper formats then the user is registered to OneSchool application and a successful registration message is displayed.

4.2 Login Page

4.2.1 Username or Password

If a user doesn't not enter the credentials correctly or if the user is not registered to the application then an invalid username or password is displayed.



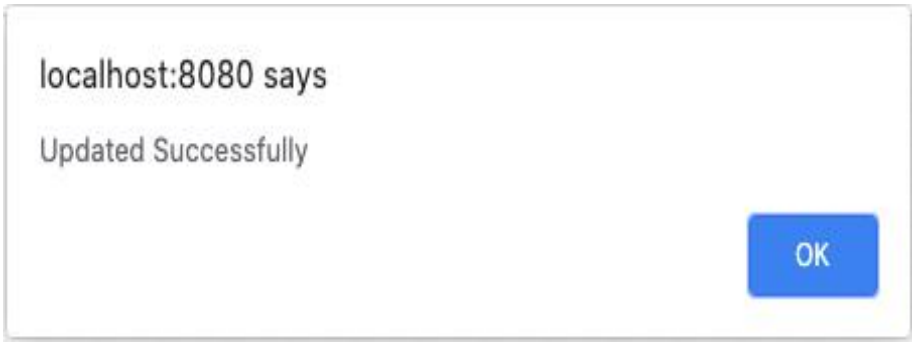
4.2.2 Login Successful

If a user enters all his credentials correctly i.e. used previously while registering then a successful message is displayed and the user is redirected to respective home page.

4.3 Update Page

4.3.1 Update Successfully

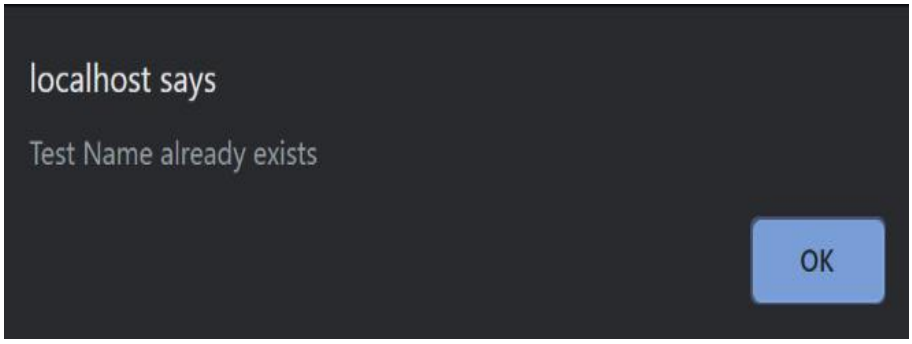
If a user wants to update his details like phone number and his full name, he can update in the profile section. After adding details he clicks the update button all the fields are updated in the database and a message is displayed on successful updating of database.



4.4 Preparing Test Page

4.4.1 Test name already exists

If a user i.e. teacher in this case when tries to create a new test but if the name already exists in the database, then an error message is displayed so the teacher chooses a different test name and creates a new test.



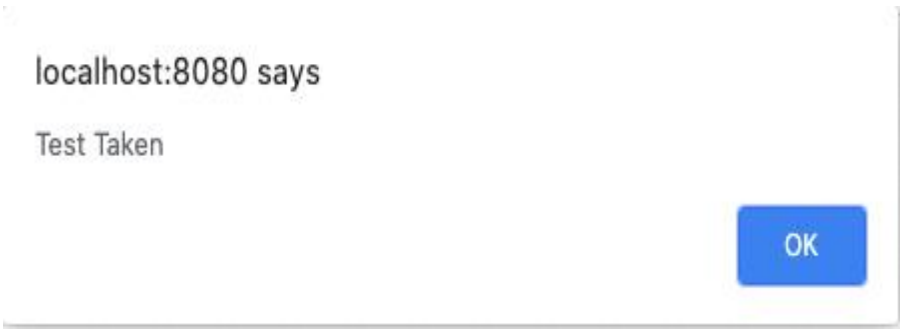
4.5 Student Test Page

4.5.1 Test Score of Aptitude Test

Once the user i.e. student attends the questions in the aptitude test and clicks on the submit button the application calculates the results and displays the results to the user in a dialogue box as shown below.

4.5.2 Test Taken

If the user i.e. student tries to take the test which is already taken by him/her earlier and again try to attempt, then an error message is displayed saying that "Test taken" not allowing him to take the test.



5. PHASE 5: MAINTENANCE

5.1 Scope & Future Work

Many schools, colleges and universities are also offering their own virtual learning centres to offer online courses and online degrees from their institutions. These online learning centres and virtual universities allow students as well as adult learners to gather knowledge and acquire/update relevant work skills.

This is a modern era of technology where everything becomes online. The Internet is connecting more people at a faster rate than ever before. From purchasing of apparels to cosmetics every small item is available online and the consumers are enjoying it.

Developments in software technology are continuing dynamically. This has forced developers to look into new approaches to design and development. In order to face this situation, modules need to be upgraded.

These modules are subjected to further enhancements. Such as-

1. Develop a user profile that has a fetcher of upload profile pictures, view notifications by the teacher and updates about the exam.
2. Add a timer for the test.
3. An option to add descriptive types questions and answers.
4. Add a coding platform, where students get a chance to enhance their coding skills. Also teachers can give coding tests.
5. Approach to make this web application available for other companies to hire students i.e. for placements and other institutes to take online exams.
6. Create an ecosystem for an institution in particular for easy access to students and teachers to conduct their assessments and communicate with each other easily.

6. CONCLUSION

This system is developed to meet the objectives of the system for which it has been developed. OneSchool application is basically an education website or a platform where teachers and students can communicate with each other. This platform can also be used to conduct examinations of various types like multiple choice questions, descriptive and coding questions. This web-application not only eases the way of conducting exams but it has the inbuilt feature of auto correcting the answers and displaying the spot results in the results section.

OneSchool also provides an interface for companies to conduct their placement exams and select their students from different institutions.

This web-application can also be used by students to develop their aptitude skills by practicing the questions in the aptitude section which is set by different professors or admin.

OneSchool also provides a reading section where users can read articles provided with links in that section. This also helps users to increase their general knowledge.

This above given is the brief of the website which satisfies the basic needs of the user.