

ONLINE QUIZ WEBSITE

Project report submitted in partial fulfillment of the requirement for the degree of Bachelor
of Technology

in

Computer Science and Engineering

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ABSTRACT

Online Quiz Website is an intelligent prototype developed as a multiple choice question examination system which is built as a Web based application scalable to run on both intranet and internet. Online Quiz Website is intelligent enough and equipped with a level of automation to guide the students to get proficiency/become subject matter experts by taking the tests. The core underlying automation of the Online Quiz Website will generates questions and options on the fly basis and captures the answers from students into the database. It ensures that students will have the Mock Tests for practice, and can get the results displayed in their panel The main objective of the Online Quiz Website is to efficiently evaluate the student using a fully automated system that not only saves a lot of time but also gives fast results. Technologies used to develop this website are HTML, CSS, and JavaScript for client side validation Firebase Server is used as a data base server for this application The system has been seeded with about 300 questions that would allow generation of multiple choice questions of tester selected topics from an undergraduate class in relational databases. Grading can be done immediately, for student practice purposes, or if the exam is given simultaneously to student of a class, grading can be delayed until everyone is done with the quiz.

Chapter 1

Introduction

1.1 INTRODUCTION

This project deals with use of web technology in the field of e-learning. Nowadays e-learning platform are encouraged as lot of manual work is not done and also it helps in saving time. People anywhere in the world with an internet connection can easily use these platforms. Not only in this field but anyone connected to an internet connection can use internet from any place in the world to shop online, pay bills, read books or newspaper, book movie tickets, reservation of buses or railway and many more.

Although the project is not exactly about teaching or studying but it is about testing students' knowledge on particular topic with the help of some objective type questions with some options. Though some set of questions cannot completely judge anyone's knowledge but this project aims to help students to evaluate themselves so that when after studying any particular topic they can correlate their concepts and some concepts that were not clear to them or those one which they have skipped can be presented to them in the form of questions by their teacher. Thus, teacher can also know about which concepts he or she should focus on as students are more often to give wrong answers on it.

To build the web application JSP technology is used with HTML and CSS with it. JSP stands for Java Server Pages which is a server-side technology for programming. JSP enables the creation of dynamic (to be built on run time) and platform independent method for building various Web-based applications. With the help of JSP we can access a wide variety of Java APIs which also

include JDBC API to access databases. JSP have extension .jsp. Like Servlet, JSP files also need to be executed on a web server. In simple terms we can say that HTML + Java is JSP which implies that a JSP file have both HTML and Java code.

1.2 Problem Statement

The objective of Online Quiz application is to facilitate user friendly platform by reducing the manual effort. In past days we have seen that quiz were taken manually but with rise of technology we are able to conduct them and generate scores automatically. Especially in the time of this pandemic use of such applications is highly appreciated as schools and colleges are very much affected.

1.3 Objective

The main objective of this Online Quiz Application is to provide an online platform for both teachers and students so that teacher can take various tests or assignments in the form of quiz and students after going through a concept can assess him/herself by the quiz questions being uploaded by teacher thus also reducing the manual paper work.

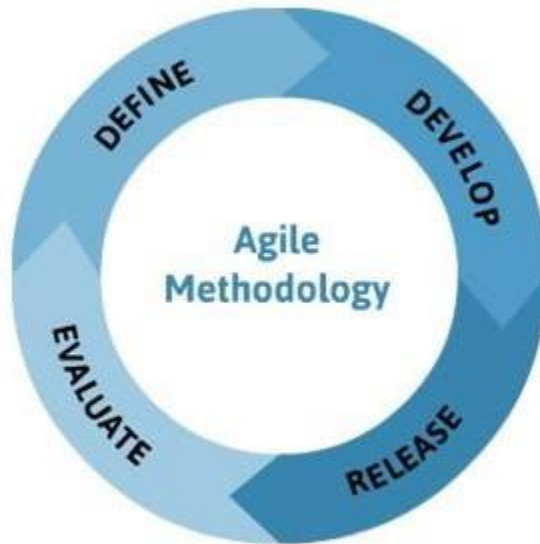
The project presents the following features:

- Making of a quiz.
- Taking of quiz.

- Registration of teachers and students.
- Any type of queries from users.

1.4 Methodology

The methodology used in this project include repetition of design, code and implementation then testing and analyzing the result. Further when repeating the phases again, new functionalities are added to the project. This methodology is called agile methodology.



For example, while creating the basic structure and less of focus on creative interface first iteration of the phases was done. After evaluation in each cycle more focus on interface and debugging was done.

1.5 Organization of Report

Chapter 1 gives a general introduction about the JSP

Chapter 2 gives the literature survey related to Java Server Pages, HTML, CSS and other technology used.

Chapter 3 deals with how the various design and development.

Chapter 4 deals with the type of model used for making the product and what are the performance of the product and how can further improvement be made on that product

Chapter 5 finally conclude this report with a conclusion and also specifying the future vision for the product

CHAPTER 2

Literature Survey

Web in simple terms means a network of Internet servers that are ready to support some formatted documents and can be accessed by a web browser. About these formatted documents these are formatted in HTML (Hypertext mark-up language). Not these formatted documents create their links to their type but they also support links to some documents including video, graphics and audio files. Terms Web and Internet are interchangeably used but they are not same. While Internet refers to global network of servers that makes sharing of information, Web is the collection of information being accessed via Internet. Also, we can say that Web is a service and Internet is an infrastructure where web is a service on top of it. Alternatively, we can say Web is just a portion of the Internet.

Particularly whenever a client surfing web makes a request to web server, it first find resources and then sends some return response in HTML to the browser and a web browser know how to display them to client. Web pages are the documents written in HTML which provides meaning and some structure to any web content and collection of these web pages is called a website which consists of static files. A web application however is same as a website but with dynamic functionality like where user can manipulate the restricted data. A website seems to be too informational while a web application is interactive. User spend more of its time reading, listening or viewing a website but in a web application like social media applications where user spend a lot of interaction or banking application that performs

transactions on customer's input. Authentication can also be a point of difference between website and web application. Since in a web application, interaction of user is high and manipulation of data is there, therefore user accounts must be secured in order to prevent unauthorized access and any leakage of sensitive data. Most of the web application requires authentication but for the informational websites it is not obligatory. An example for this can be that while reading any news or article you don't need to go through any authentication process but to comment on it that includes interaction you have to go through a log in process.

HTTP which is Hypertext Transfer Protocol is a set of protocols that is used by clients and servers to communicate on web. HTTP protocol defines how messages are to be formatted and transmitted between client and the server and what actions should be taken by Web servers and browsers in response to various commands. Basically, HTTP is a TCP/IP based communication protocol, that is used to deliver data which includes HTML files, image files, query results, etc. on the World Wide Web. HTTP is the foundation of data communication for the World Wide Web since 1990.

HTTP represents Hyper Text Transfer Protocol. WWW is about correspondence between web customers and servers. Communication between customer PCs and web servers is finished by sending HTTP Requests and accepting HTTP Responses

- A client (a program or browser) sends a HTTP request to the web
- A web server gets the solicitation
- The server runs an application to process the request
- The server restores an HTTP response.
- The client gets the response.

HTTP is a simple and powerful protocol because:

- **Connectionless:**

An HTTP client which might be a browser will initiate an HTTP request to the server. The server processes the request and sends a response back after which client disconnect the connection. In this way we can say that client and server only know about each other only during the current request is initiated and response is received. For further requests new connection is made like client and server are new to each other.

- **Media Independent:**

It means, any type of data can be sent by HTTP as long as both the client and the server know how to handle the data content.

- **Stateless Protocol:**

By Stateless Protocols we mean the type of network protocols in which Client send request to the server and server response back according to current state. For the execution of server response, it does not require the server to retain session information or a status about each other.

Some examples of Stateless Protocol are

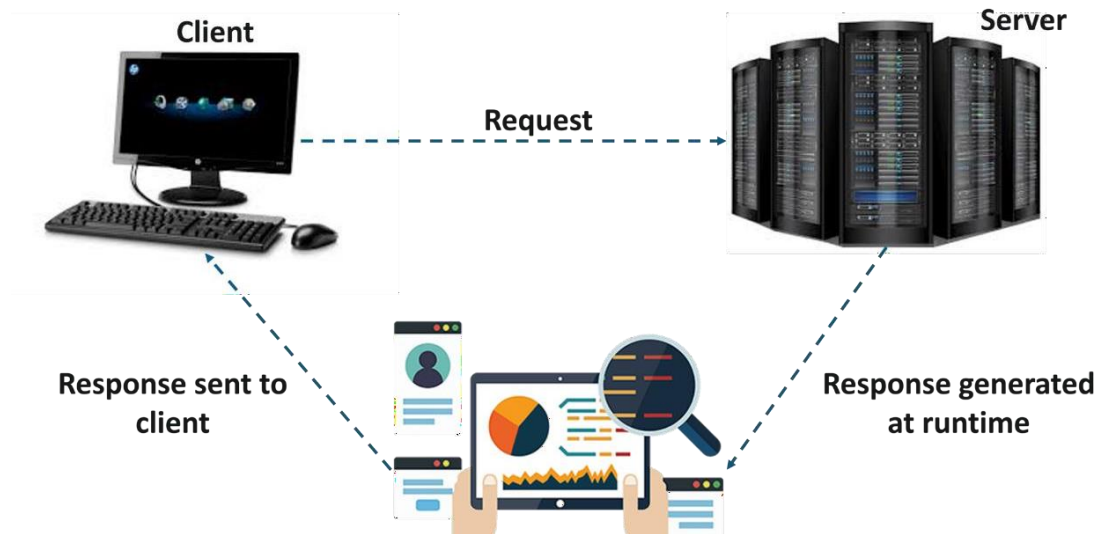
HTTP (Hypertext Transfer Protocol), UDP (User Datagram Protocol), DNS (Domain Name System)

As HTTP is connectionless and it is because HTTP is a stateless protocol. Each command is executed independently, without any knowledge of the commands that came before it. The server and client are known about each other only during a particular request. After execution of that request/response both of them forget each other.

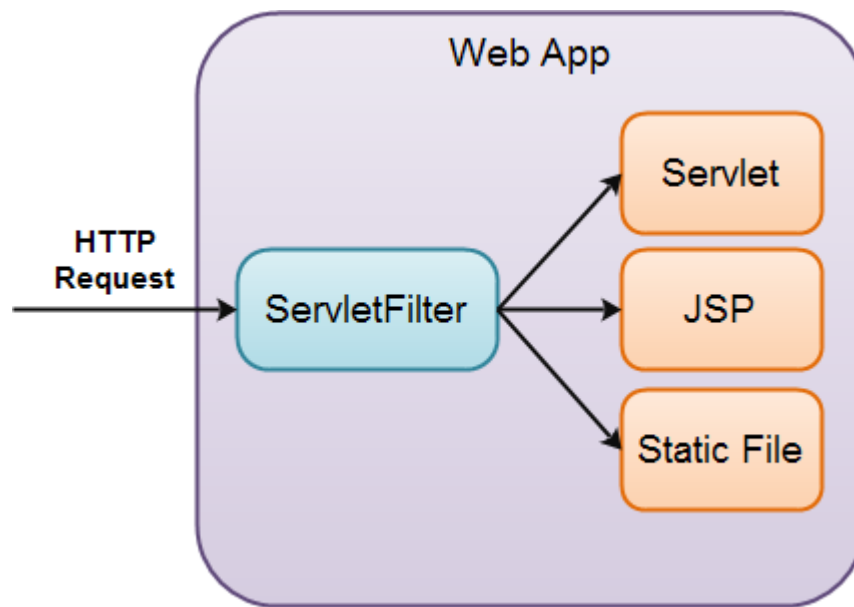
Servlet

Servlet can be defined in different ways. In simple language we can say that it is a

technology which resides on the server side and is used to create web application. Because of the Java language it is robust and scalable.



It is also an API which provides many different classes as well as interfaces. The most important feature of servlet is that it extends capabilities of the server thus creating dynamic web pages. They are also able to handle complex requests that is obtained from the web server.



When a client requests a file from the server then the server can respond in two ways. If the file that the client is asking is static then it is already built. Server will already have that file and send it in response. But in case the file that client seeks for is dynamic then it has to be built during run time. In that case server goes to a helper application called Web container that contains servlets which is a java file that which take request and process it and provides response in form of an HTML page. Some examples of Web containers are Apache Tomcat, Glassfish, Web spheres etc. But requesting an Html file and in response of it using a java file

i.e. a servlet can't be done without the help of a special file within the web container. This file is called Deployment descriptor which is a web.xml file. This file provides a mapping that for which request which servlet should be called.

Servlet is a class which extends Http Servlet which provides many different features to the class and some of them include taking request from the client, processing of the request etc.

Execution of Firebase Server:

Firebase is a Backend-as-a-Service (BaaS) that provides developers with a suite of tools and services to build high-quality applications, grow their user base, and earn more money.

When you execute Firebase, you are essentially running code that is hosted on Google's servers. This code can be used to perform a variety of tasks, such as storing data, sending notifications, and processing payments.

There are a few different ways to execute Firebase code. One way is to use the Firebase CLI. The CLI is a command-line tool that allows you to interact with Firebase from the command line.

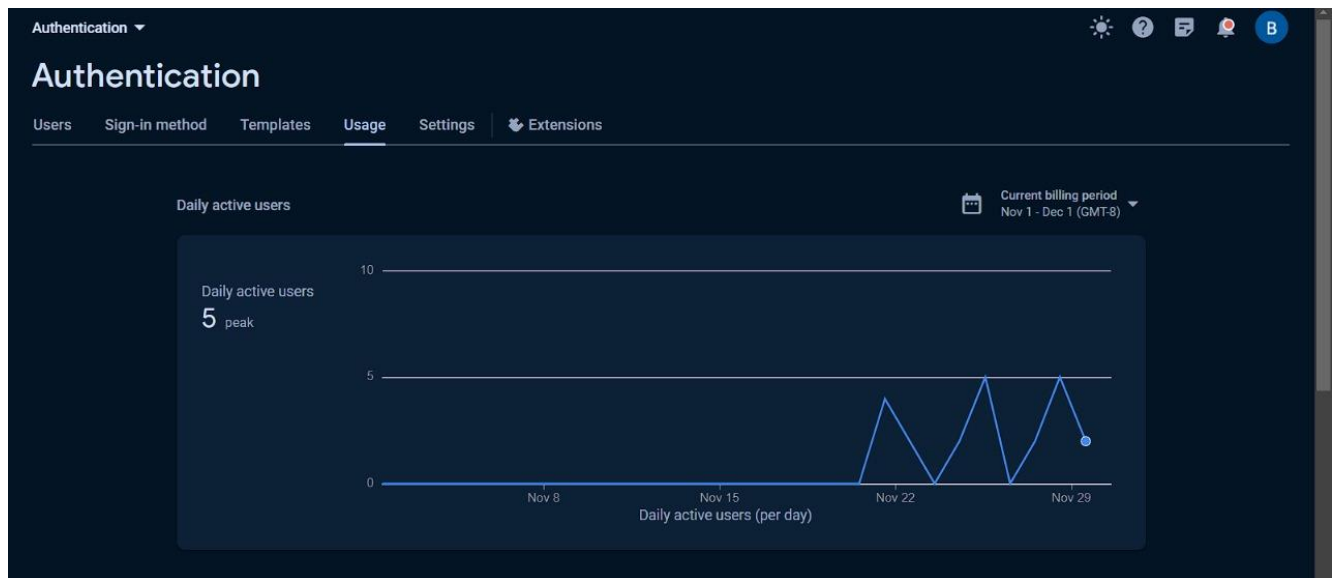
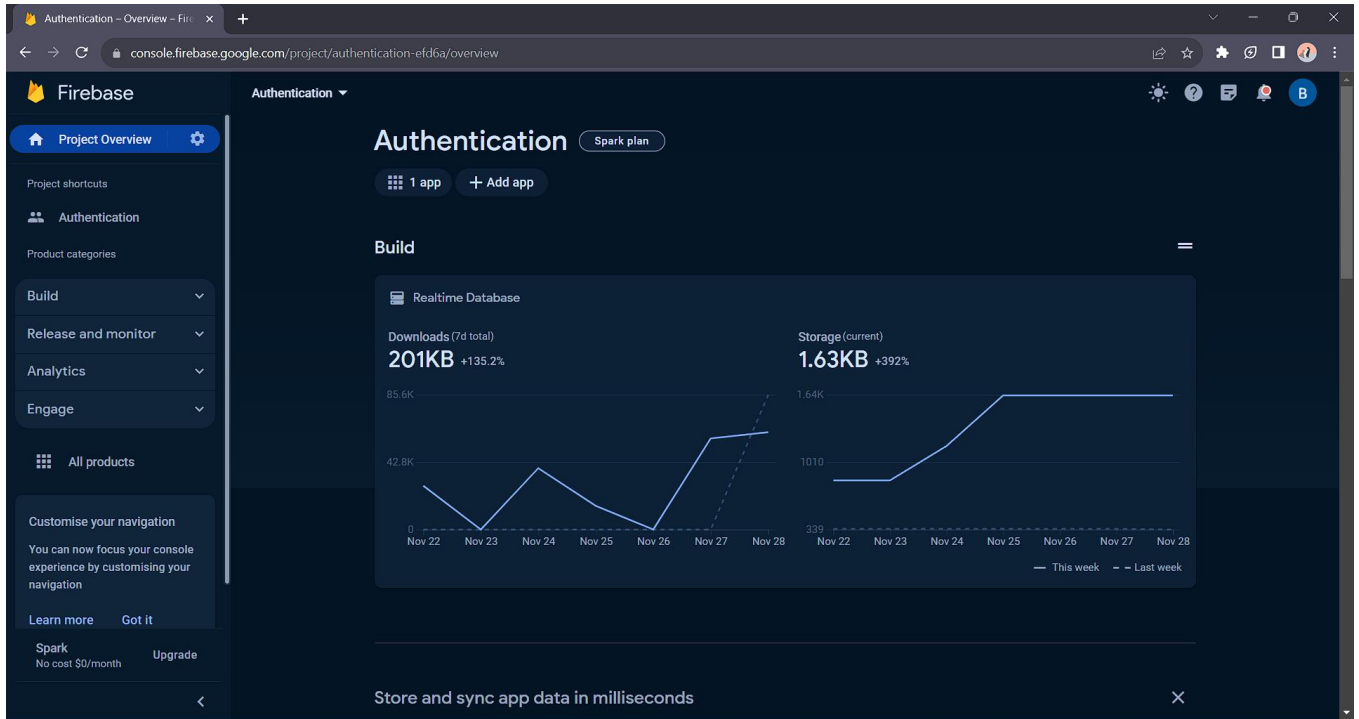
Another way to execute Firebase code is to use the Firebase SDKs. The SDKs are libraries that provide APIs for interacting with Firebase from within your application.

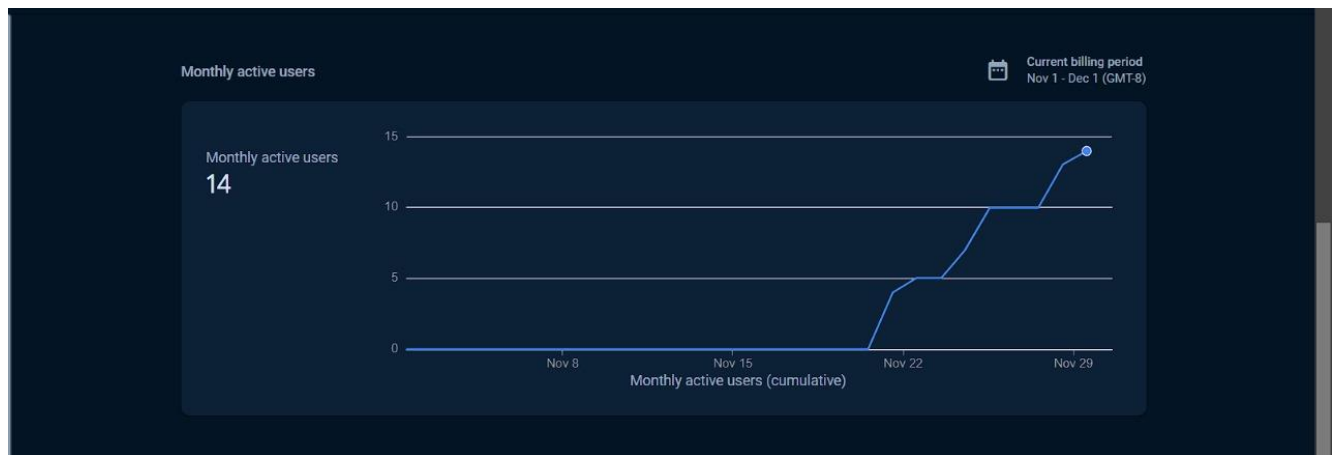
Finally, you can also execute Firebase code directly from the Firebase console. The console is a web-based interface that allows you to manage your Firebase projects and interact with Firebase data.

Whichever method you choose, executing Firebase code is a relatively straightforward process. Once you have your code written, you simply need to compile it and then run it on Google's servers.

Here are the steps on how to execute Firebase:

- ❖ Create a Firebase project.
- ❖ Install the Firebase CLI.
- ❖ Initialize your project.
- ❖ Add the required modules and initialize an app.
- ❖ Add your code.
- ❖ Deploy your functions to a production environment.
- ❖ For more detailed instructions, please refer to the Firebase documentation.





Authentication - Realtime Data: x +

console.firebase.google.com/project/authentication-efd6a/database/authentication-efd6a-default-rtdb/data

Authentication

Realtime Database

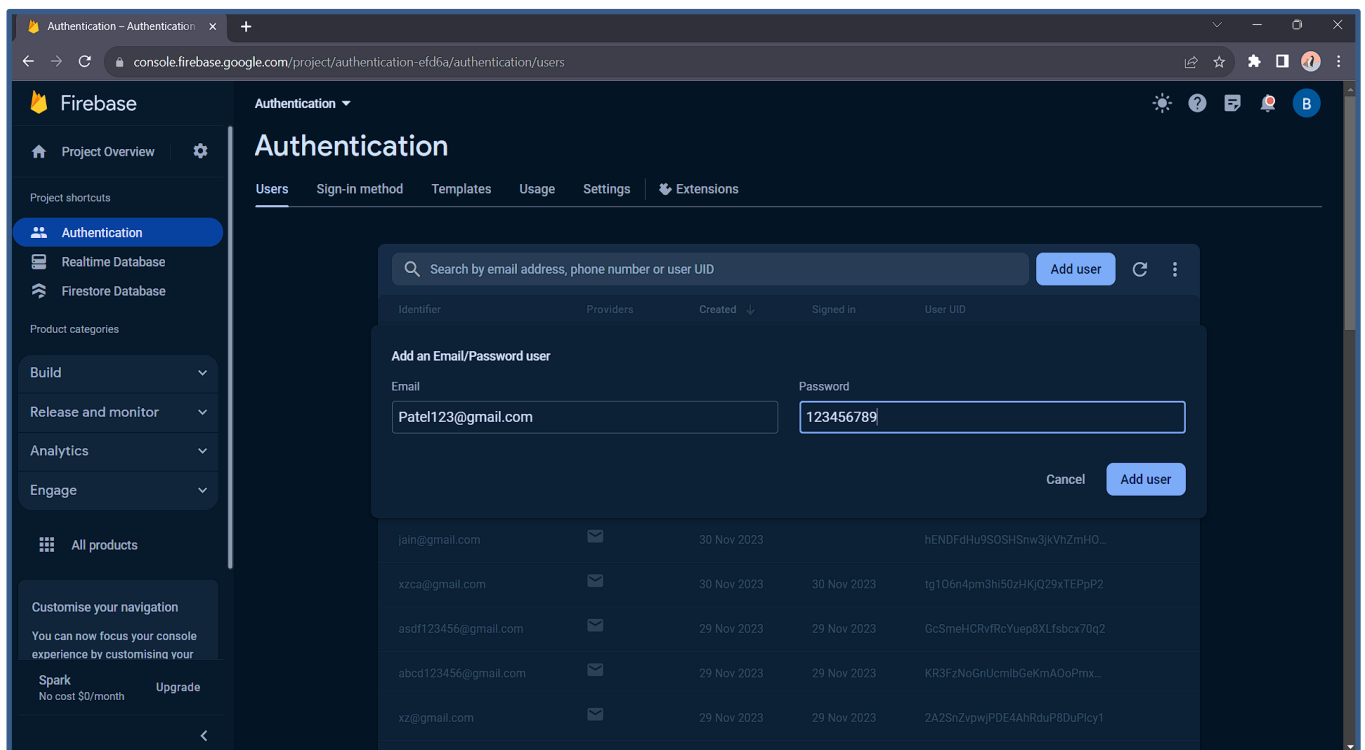
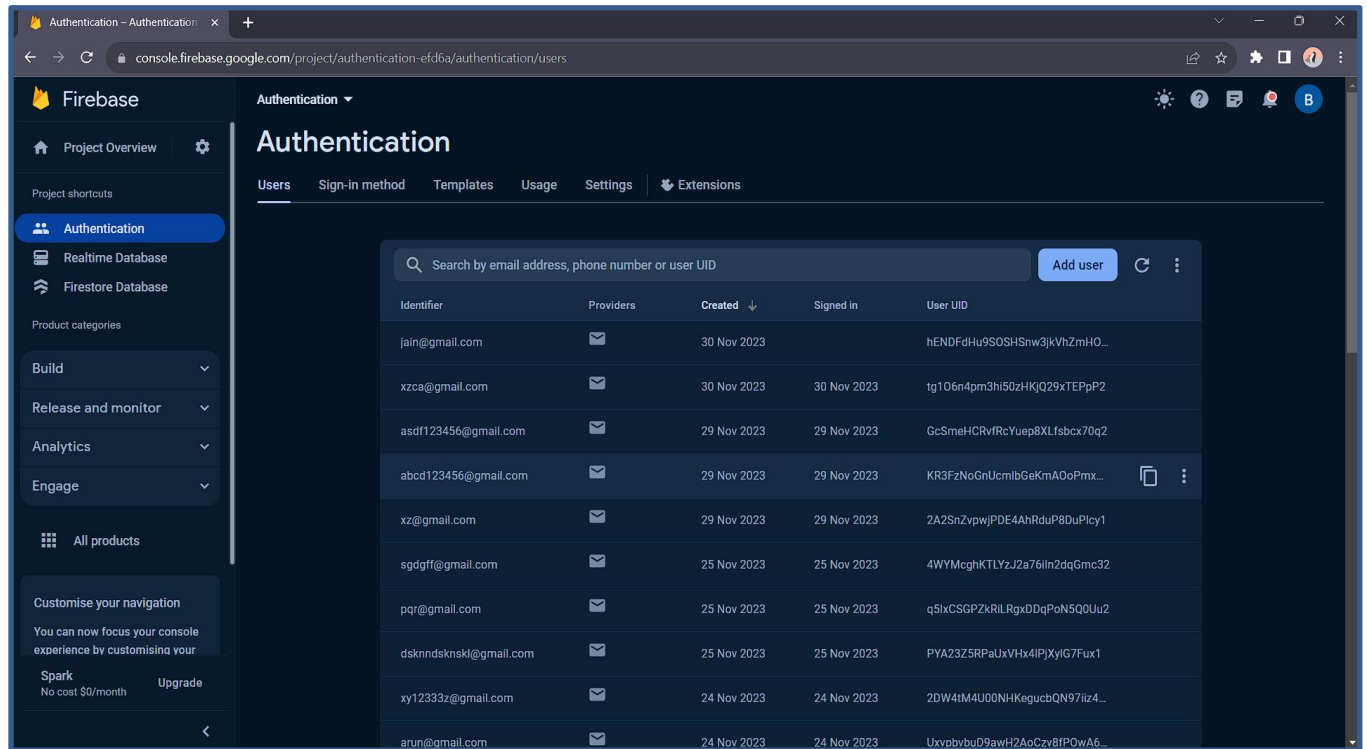
Data Rules Backups Usage Extensions

https://authentication-efd6a-default-rtdb.firebaseio.com

https://authentication-efd6a-default-rtdb.firebaseio.com/

users

Database location: United States (us-central1)



The screenshot shows the 'Users' tab in the Firebase Authentication console. At the top, there is a search bar with the placeholder text 'Search by email address, phone number or user UID' and an 'Add user' button. Below this is a table with the following columns: Identifier, Providers, Created, Signed in, and User UID. The table contains eight rows of user data. The 'Created' and 'Signed in' columns have a downward arrow icon next to the header, indicating they are sortable. The 'Providers' column shows an envelope icon for each user, indicating they are email-based users. The 'User UID' column shows the unique identifier for each user. A copy icon is visible next to the User UID for the second user.

Identifier	Providers	Created ↓	Signed in	User UID
patel123@gmail.com	✉	30 Nov 2023		JOn12BF8HvX39G6ktzY2j5piq4k2
jain@gmail.com	✉	30 Nov 2023		hENDFdHu9S0SHSnw3jkVhZmHO...
xzca@gmail.com	✉	30 Nov 2023	30 Nov 2023	tg106n4pm3hi50zHKjQ29xTEPP2
asdf123456@gmail.com	✉	29 Nov 2023	29 Nov 2023	GcSmeHCRvfRcYuep8XLfsbcx70q2
abcd123456@gmail.com	✉	29 Nov 2023	29 Nov 2023	KR3FzNoGnUcmlbGeKmA0oPmx...
xz@gmail.com	✉	29 Nov 2023	29 Nov 2023	2A2SnZvpwjPDE4AhRduP8DuPlcy1
sgdgff@gmail.com	✉	25 Nov 2023	25 Nov 2023	4WYMeghKTLyZJ2a76iln2dqGmc32

Chapter-3

System Development

1.1 Description of the Online Quiz Website :

This project aims to solve the problem of manual work of teachers that is done during checking and testing of the students and help in saving the time. In this era of technology, our aim is always to build something that is efficient and saves time.

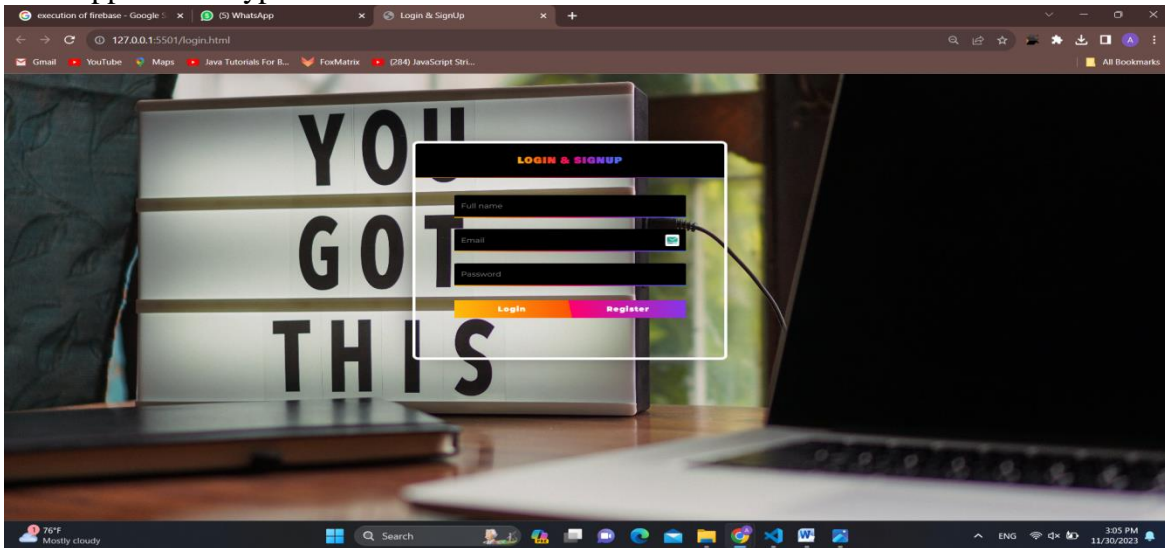
This project tries to solve both these issues and the users whether he or she is a teacher or a student who are using it don't need any special kind of skills to use it. Thus like any other web application or social media application this application is also built so that user can deal with it in an interactive way.

Different functionalities provided by this application are:

- Examiner or teacher can put questions on it.
- Students are required to answer these questions.
- Also, students can see their result
- Calculation of result by calculating correct answers.

As it is very clear that when the home screen is first shown to the user the first thing that he or she is required to do is to select the type of user as this application

supports two types of user i.e. Teacher or Student.



If the user is logged in as a teacher then he or she is able to upload multiple choice questions on the system whereas if he or she is logged in as student then the user is able to select any test and after completion of the test user is able to see his or her result on the screen.

The login screen is opened in index.jsp. If user proceeds without giving any credentials a message will be displayed asking for credentials. If a new user wants access then he or she needs to register first. By clicking on Register user will be redirected to register.jsp where user have to provide certain details. After going through the registration process user can type his or her username and password and can proceed further.

When the teacher logged in successfully, he will be able to go to various pages by performing various functions. Firstly, teacher will be moved to the page where he or she can read some sort of instructions related to the test. In makequiz.jsp he or she will be able to make test for students and upload them.

Also teacher will be able to view which student has scored most in the test as the

mark list will be accessible to the teacher.

When the user is logged in as student, then student will get the options of which test he or she wants to take. Accordingly, student will be redirected to the quiz under takequiz.jsp. After the completion of the test by the student he or she will be able to see result of the test. Also, student has option to raise certain queries.

1.2 Functional and Non-Functional Requirement

3.2.1 Functional Requirement

Functional requirements for this project

- Firebase of the database
- Visual Studio Code
- Web browser used is Google Chrome

3.2.2 Nonfunctional Requirement

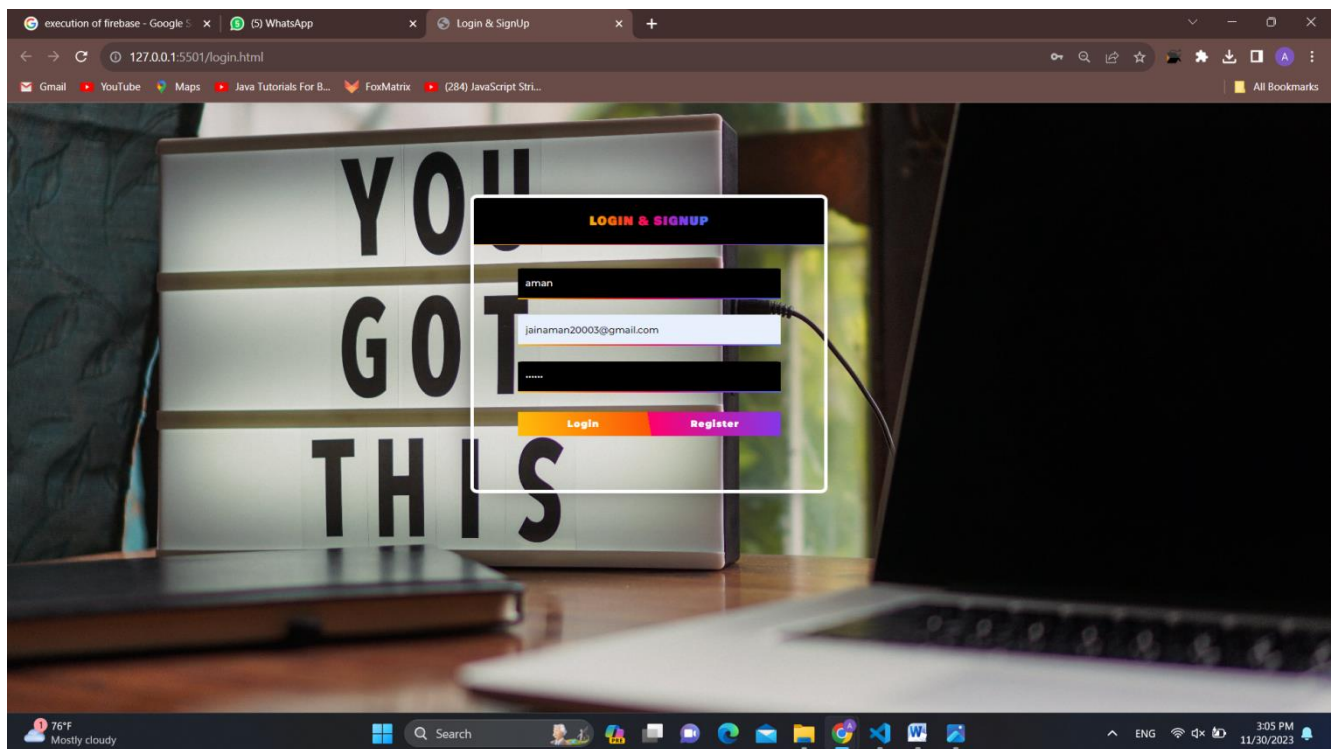
Some Nonfunctional requirements are:

- Compatibility in different web browsers.
- Usability which defines that the ease in using the product by the client.
- To use the application user must be registered.
- Security is another issue which must be keeping in mind as user's personal data should not be put on the stake.

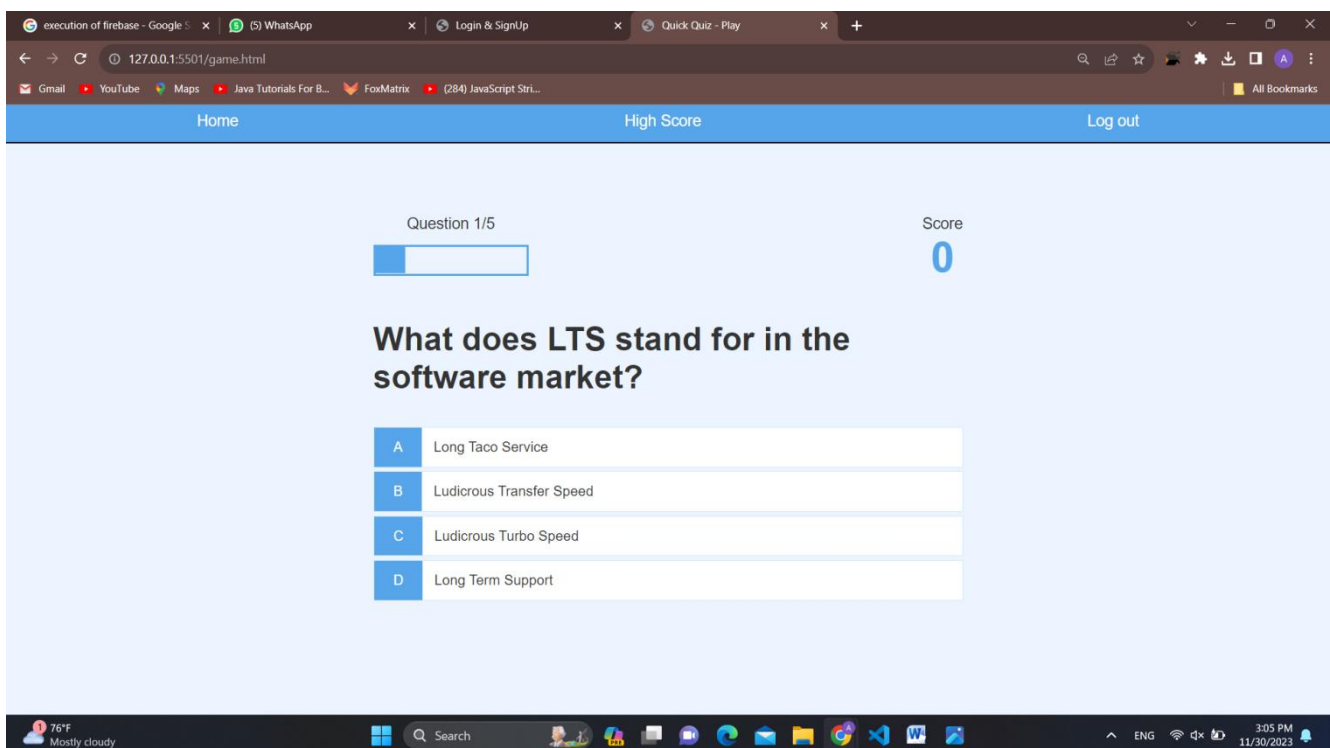
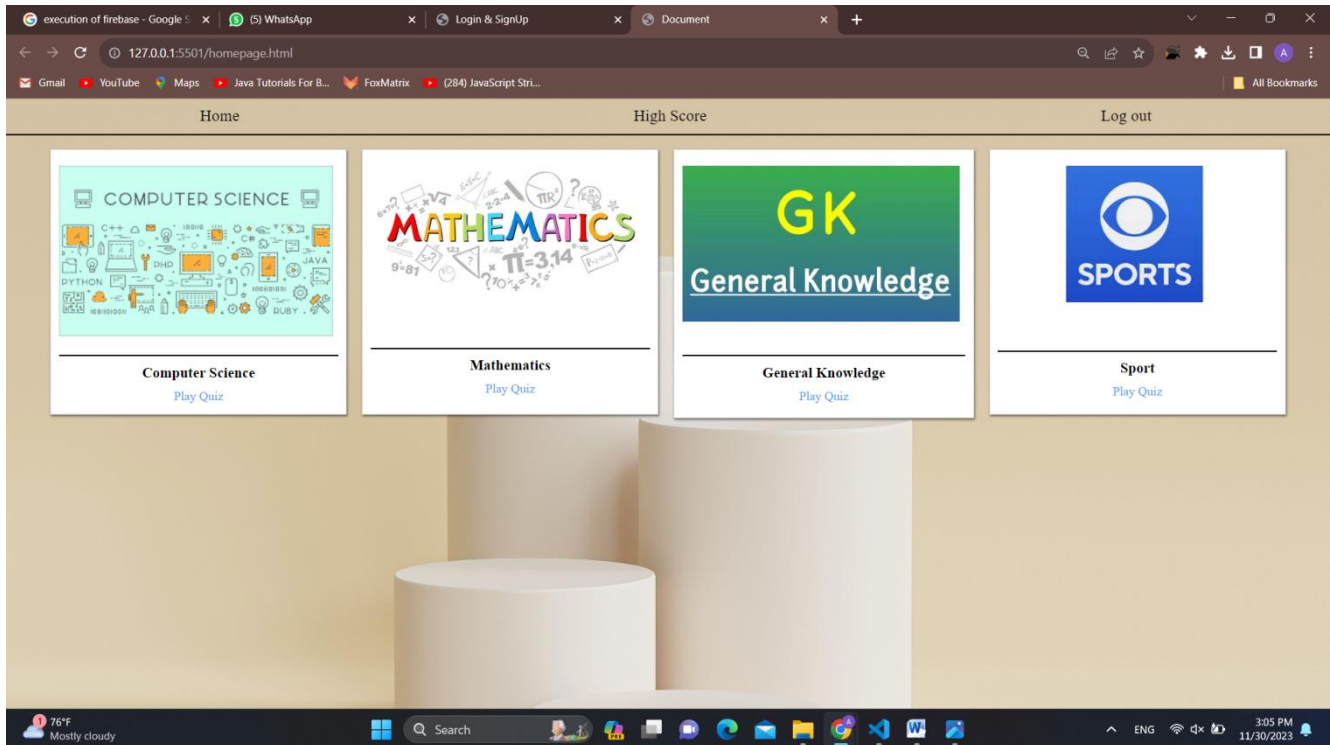
1.3 Implementation Detail and Issue

Implementation Detail

The website starts with the display of the login page. As discussed in earlier chapters that user have to select its category whether he or she is a student or a teacher. Then user will be asked for his or her username and password and after completing the login process he or she will be directed to the homepage according to user's category. For a new user the user have to go through the registration process by clicking register and by filling the details asked in the registration page under register. jsp file user can him or herself.



Student can see the following page while searching for quizzes related to any subject by searching the name of the subject.



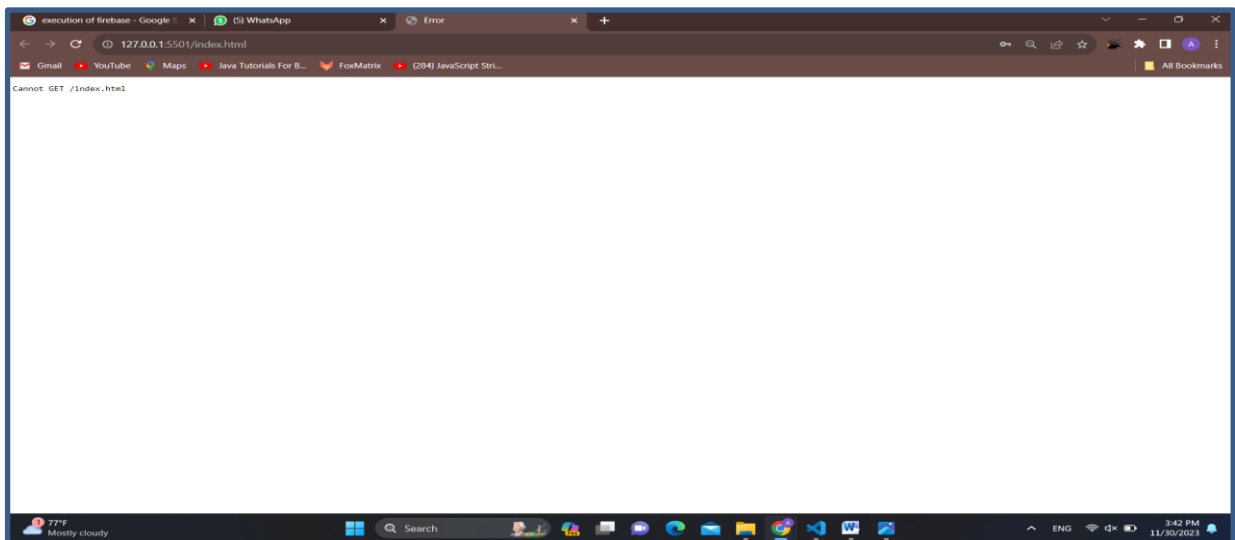
For teacher to make any quiz above type of form will be displayed on the screen. Firstly teacher have to put the question followed by the 4 options and then the correct answer of the question followed by a subjective description if any about the answer so that if the students wants further description of the correct answer he or she can refer to it. Also in the decription refernce can be written for example page number of the book or internet resources so that student can refer to it.

If user not able to understand or is facing any kind of problem irrespective of the category of the user he or she can contact the admin by clicking [Contact Us](#) and user will be moved to [contact.html](#) page which looks as following:

3.4.1 Implementation Issue

The various issue faced in implementation were related to the application are following:

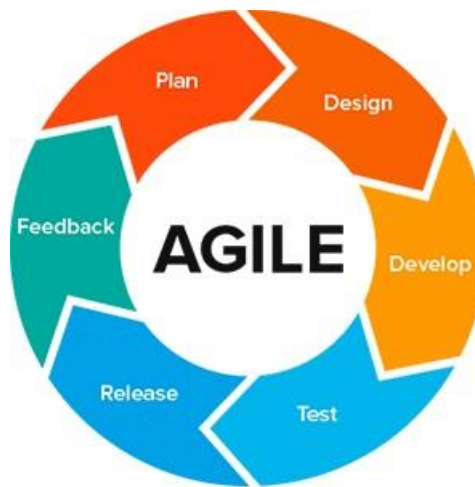
- User have to log in first to do any kind of interaction with the applicationif not a user he or she need to register first.
- To attract more users to the application, it should be more interactive and theme should be matching to the type of application. For example, this site quizzes are on state's general knowledge so various images that are used should be related to that.
- Since there is no time limit in completing the quizzes which is also a future scope of the application, students can search on internet to find the answer thus they will not be evaluated in an honest way.
- User may sometime hesitate to provide details like email and contact especially while putting their queries.



Chapter 4

Performance Analysis

4.1 Agile Methodology



During making of this project Agile methodology was used. We already know that there are many advantages of agile method in comparison with the waterfall method. Client describe its need and expectations in the beginning and with the constant evaluation and iteration of several phases it works better to meet customer's expectation. Any kind of modification can be easily achieved by following this methodology. In making of this project initially more emphasis was given to the basic structure that is simple login page then redirection to the quiz and then the scores. By constant iteration of different phases,

many functionalities were added to the application like more interactive interface, various articles in the form of blogs, a portal to put queries by user to the administrator etc.



4.2 Performance Analysis

While analyzing the performance of any web page speed is a very important criterion. Because if your user find that your web page is taking longer time to load then he or she might not visit your page or will look for an alternative. A recent study by google suggest that 53% of the visit to the web pages are not preferred if the web page takes more than three seconds to get loaded.

Also, various studies have shown that human patience level is decreasing in this world of technology. So, keeping in mind these facts on should keep in mind the speed analysis while analyzing performance of a web page. Analyzing the speed by which the home page of the web application gets loaded we found that most of the images, CSS and JSP files took less than 900ms which is even less than 1second. One important point to be noted here that before loading the home page cache memory was cleared so that it could be more specifically analyzed that without the use of cache how much time is being taken by each file to get loaded.

Chapter 5

Conclusion

After completion of this project we have concluded that this web application works as per the need and requirement of the client and is user friendly. Also this mini project helped me to understand the design, code and implementation processes which are performed while making any project. Many concepts were revised and many of them were very new which were learnt in making of this web application.

5.1 FUTURE SCOPE

This project has a vast scope as many other functionalities can be added to it. In first place a timer can be added to each quiz. Due to no limited time for the test students can find answers to the questions anywhere else which ultimately will not be an honest evaluation of their result. Also, to prevent this many other functionalities can be added to the user side especially to the student like restricting any kind of switching of tabs in the browser and introduction of webcam for more honest evaluation of the students. More creative way of showing result and deletion of test by adding an administrative part to the system can be done. In the administrative part addition and deletion of user can be done.

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- <https://guru99.com/servlets/>
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