VOICE-BASED ONLINE EXAMINATION SYSTEM FOR VISUALLY IMPAIRED STUDENTS

A PROJECT REPORT

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Technology

in

COMPUTER SCIENCE AND ENGINEERING

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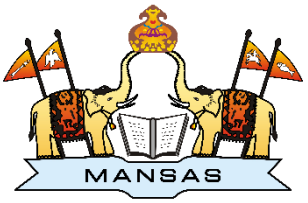

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CERTIFICATE

This is to certify that the project report entitled "**VOICE-BASED ONLINE EXAMINATION SYSTEM FOR VISUALLY IMPAIRED STUDENTS**" being submitted by K.Sowmya(21331A0588), M.Pallavi(21331A05C1), K.Mrudula(21331A0598), K.Deepak Mahesh(21331A0585), in partial fulfillment for the award of the degree of "Bachelor of Technology" in Computer Science and Engineering is a record of bonafide work done by them under my supervision during the academic year 2024-2025.

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We hereby declare that the work done on the dissertation entitled **"VOICE-BASED ONLINE EXAMINATION SYSTEM FOR VISUALLY IMPAIRED STUDENTS"** has been carried out by us and submitted in partial fulfillment for the award of credits in Bachelor of Technology in Computer Science and Engineering of MVGR College of Engineering (Autonomous) and affiliated to JNTUGV, Vizianagaram. The various contents incorporated in the dissertation have not been submitted for the award of any other institution or university degree.

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Project Objectives

- Enable visually impaired students to take exams independently using speech synthesis for question dictation and speech recognition for answering.
- Automate result generation and ensure fairness in online assessments with accurate voice-based responses.
- Provide an intuitive platform for educators to create, update, and manage multiple-choice questions effortlessly.

Project Outcomes

- Successfully developed a voice-based online examination platform that enables visually impaired students to take exams independently.
- Implemented **speech synthesis** to read questions aloud and **speech recognition** to capture spoken answers, eliminating the need for manual input.Ensured real-time answer recording and automated result generation
- Provided an easy-to-use interface for examiners to create, update, and manage multiple-choice questions seamlessly.

Domain of Specialisation

Assistive Technology in Education

How your solution helping the domains?

Our solution makes online examinations accessible for visually impaired students using speech synthesis to read questions and speech recognition to capture answers. It promotes inclusive education by enabling independent exam participation without external assistance. Additionally, it ensures efficiency and fairness through automated response processing and result generation.

List the Program Outcomes (POs) that are being met by doing the project work

PO1:Engineering Knowledge	Applied knowledge of programming, databases, and web technologies to develop an accessible online examination system.
PO2:Problem Analysis:	Identified challenges faced by visually impaired students in existing online exams and designed a voice-based solution..
PO3:Development of Solutions	Developed an inclusive system using **speech synthesis** and **speech recognition** to enhance accessibility.
PO4:Team Work	Worked collaboratively to design, develop, and test the system, ensuring efficiency and usability.

End Users of Your Solution

Visually Impaired Students,Educational Institutions &Teachers,Organizations for Disabled Education

ABSTRACT

The COVID-19 pandemic has accelerated the adoption of online methods like e-learning and online exams. However, visually impaired students face significant challenges in online examinations as they rely on the Braille system for reading and writing. They struggle to read questions displayed on the screen, making it difficult to participate effectively. To address this issue, a voice-based online examination system is essential. This system will read questions aloud and accept student responses through voice commands, ensuring seamless navigation. By enabling students to interact solely through voice, it creates a comfortable and accessible exam environment. This approach enhances inclusivity in education and helps visually impaired students take exams independently. Additionally, it boosts their confidence and improves their overall exam experience.

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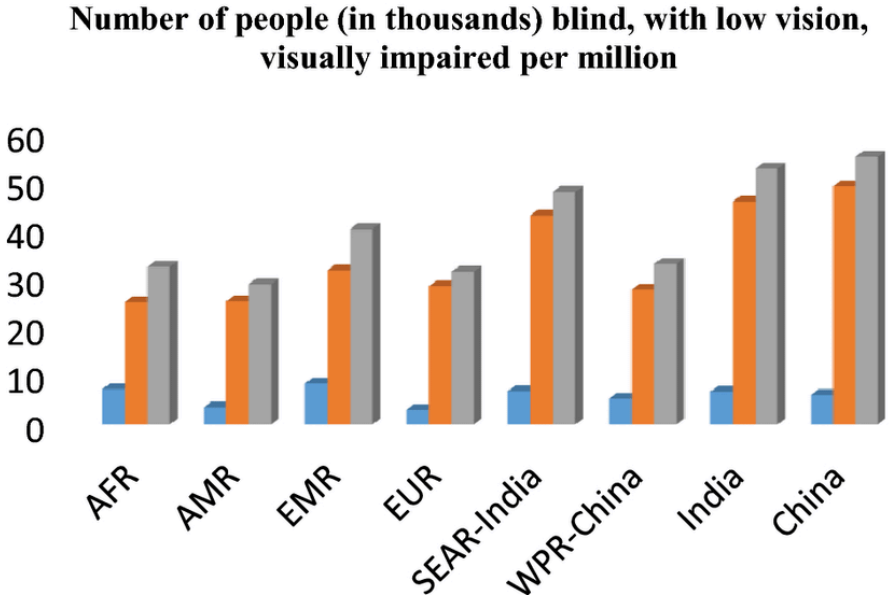
CHAPTER 1

INTRODUCTION

The Internet has become one of the basic needs for day-to-day life. Every human being is widely accessing knowledge and information through the Internet. Visually impaired individuals encounter challenges not only in accessing textual materials but also in navigating and utilizing internet-based services. The advancement in computer-based accessible systems has opened up many avenues for the visually impaired across the globe in a wide way. Audio feedback-based virtual environments like screen readers have helped blind people access internet applications immensely.

The policy states that every child from the age of five to sixteen has the right to free education. However, some children are unable to carry on their studies due to a poor economy or physical impairments. There are many applications and technologies introduced for the physically impaired to make their daily routine comfortable and reduce the difficulty in their life. The advantages of these technologies should be equally divided among all the students.

Fig-1: Population of blind people in the world, with low vision, visually impaired per million



Visually impaired cannot see the world using their eyes like normal people. But technology has made them see the world as we do and made them hear the word, and feel the world (Laabidi, Jemni, Ayed, 2014). Blind students face many struggles while performing their academic activities and participating in examinations. There are existing examination systems for students in schools, universities, and institutes. However, the features of these systems are inapplicable and non-flexible for visually impaired people. To develop the standard of life of visually impaired students, special attention needs to be paid to their education.

The "E-blind Exam Portal" is an MCQ-based assessment system. It provides a user-friendly atmosphere for both test organizers and students taking exams. More so, there is a reasonable level of security and integrity in the conduct of the examination. The implementation of the system efficiently provides teachers and students with an interaction platform and improves the management level as well. The primary objective of the E-blind Exam Portal is to offer all of the functionality of an Examination System. needs while also providing "interfaces that don't scare its users!".The COVID-19 pandemic has taught everybody the importance of adaptability, flexibility, efficiency, and also multitasking.

The "E-blind Exam Portal" is a technology proposed in this study to assist visually impaired pupils. Using the text-to-speech synthesizer, the system will be able to read text on the screen, a web page, a document, or text input in a text box. By evaluating and processing the text with Speaker Recognition, the text will be turned into a speech. Visually impaired people can hear a large amount of words more easily using speech or voice. The user can see their results after completing the paper.

As a result, the application will aid in the creation of an atmosphere in which all students have equal access to competitive exams. Saving time is one of the perks of having an Online Examination System . This will help to improve the current educational system for blind people who want to work. Promising effects have been acquired through the use of this approach, which displays huge development over the present techniques. We will add subjective-type questions to this project.

Of the total estimated 30 million blind persons in the world, 6 million are in India.The recent development trends in computer make it possible for the blind people to take an examination in an independent manner. There is no need for them to rely on other persons to do their exams. The development of such system requires the usage of two technologies namelyText to Speech and Speech to Text.

A Text to speech (TTS) also called as Speech synthesis should be capable of reading the any text aloud. Speech synthesis is an artificial production of human speech. The computer system used for this purpose is said to be speech computer or speech synthesizer. This can be implemented in hardware as well as software.In recent few years speech recognition has become a strong medium to translate spoken words into text. Speech recognition is not only used as an assistive tool for blind but also for the people with partial vision and other impairments

1.1 1.1 Survey of the project

All India Survey on Higher Education (AISHE) shows the persisting dismal condition, exclusion, and discrimination that students with disabilities have been facing to access education. As per the AISHE data (from 2017-2018 to 2021-2022), the enrolment of students with disabilities in higher education hovers between 0.19-0.22 % of the total students enrolled in the higher education system. 5 The dismal condition of the enrolment of students with disabilities persists despite policy level interventions for their inclusion in the higher education system in India.

The online method of the application process has received mixed responses from students with disabilities. 68% of students have shared the inconvenience they encountered during the online mode of filling out entrance examination forms and the admission process.
“During my JEE Mains and advanced examination which was computer-based, I requested my invigilator to arrange and adjust the monitor of the computer at a lesser distance as I was unable to see clearly due to low vision. However, the invigilator turned a blind ear to my request. Also, when the invigilators were giving us instructions before the examination, I was unable to understand him as he was speaking too fast” - By a student with low vision

CHAPTER 2

LITERATURE SURVEY

A review of completed and outgoing research has been conducted to identify current knowledge or methodologies that may be appropriate for predicting the prerequisites for the proposed system.

Online examination system for blinds

B.Shanmuga Sundari, Essaki Durai.k, Srinivasa.S proposed a web-based examination system. Here, the test can be taken using a personal computer, the fingerprint is used for login purposes. The questions and options are given through speech synthesis. The answer will be received from the users with the help of limited keys on the keyboard. The results will also be delivered through voice. The major drawback is that the answer will be given by the blind candidate only through limited buttons on the keyboard. This system supports only multiple-choice questions.

E-blind examination system

Akshay Naik, Kavita Patil, Vishal Patil, Ajinkya Tandel, and Manjiri Pathak proposed an online examination system designed using Natural Language Processing. This system allows a particular company or an institute to conduct and manage examinations online. This can be done through the Internet or Local Area Network. Candidates can answer his/her examination paper on the computer and submit their answers. The examination software evaluates the submitted answers and the results will be available immediately after the completion of an examination. The disadvantage of this system is that it cannot support long answers other than MCQs.

Voice operated tool-Examination portal for blind persons

Akriti Vats, Apoorv Tandon, Deepan Varshney, and Amit Sinha proposed a system where the user is provided with the headphone equipment(headphones and microphone) along with the system. Authentication is provided by recognizing the thumb impression. The result of the test is generated and saved in the user's database and the result is also spoken to the users. The demerit of this system is that it is designed only for aptitude-type questions.

Online examination for visually challenged people

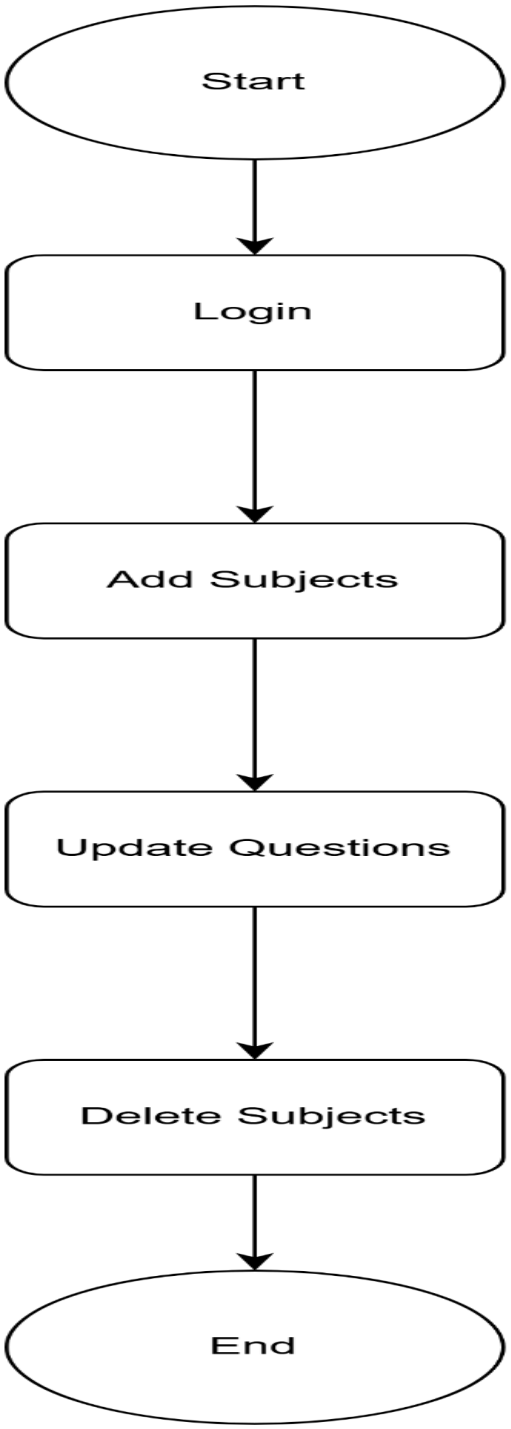
J.Kanimozhi, A.Karkuzhali, and K. Suresh Kumar proposed an online examination system using the Internet Of Things(IOT).In this system, the textual content is to the voice board that can convert the text to voice using a cellphone. After listening to the query the answers were pressed by means of the blind men and women using a keypad. The disadvantage is that the answer to the queries can be given only through limited keys in the keypad.

Ghosalar and Pandey (2014) introduced a Voice-based mobile application for examination using speech technology. Implemented only for MCQ-type questions. The system has a timer for set time intervals for the exam and each question has an allocated time interval for answering. The system will display the result immediately after the exam is finished. Speech-to-text, text–to–speech converters are used for implementing oral communication. Users can also get to know the remaining time as well in the middle of the exam through the speaking clock in the system. Srinivas et al. (2019) proposed an examination system for blind students. In this, all the instructions and questions are delivered via voice.

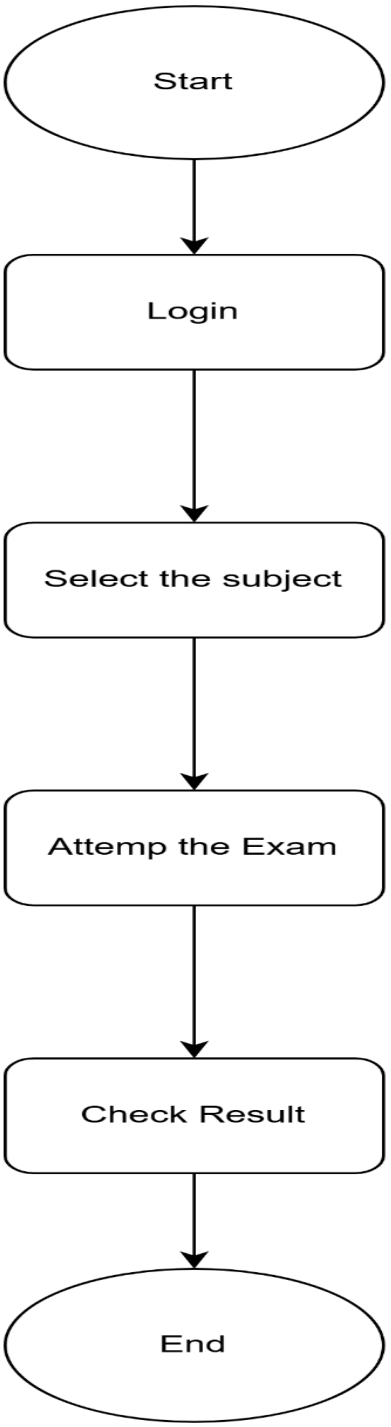
CHAPTER 3

DESIGN & ANALYSIS

Admin Workflow



User Workflow



Admin Workflow:

- Admin logs into the system.
- Admin adds subjects.
- Admin adds tests to a subject.
- Admin can delete tests and questions.
- Admin can update tests, timing, and questions.

User Workflow:

- If the user is new, they create an account.
- If the user already has an account, they log in to the system.
- The user chooses a subject and selects a test.
- The user attempts the exam using voice input.
- The system analyzes the result and displays the score.

CHAPTER 4

THEORETICAL BACKGROUND

HTML

HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript).

"Hypertext" refers to links that connect web pages to one another, either within a single website or between websites.

HTML uses "markup" to annotate text, images, and other content for display in a Web browser. HTML markup includes special "elements" such as <head>, <title>, <body>, <header>, <footer>, <article>, <section>, <p>, , , <img>, <aside>, <audio>, <canvas>, <datalist>, <details>, <embed>, <nav>, <search>, <output>, <progress>, <video>, <ul>, <ol>, <li> and many others.

An HTML element is set off from other text in a document by "tags", which consist of the element name surrounded by < and >. The name of an element inside a tag is case-insensitive. That is, it can be written in uppercase, lowercase, or a mixture. For example, the <title> tag can be written as <Title>, <TITLE>, or in any other way. However, the convention and recommended practice is to write tags in lowercase.

Basic HTML Code Example

```
<!DOCTYPE html>
<html>

<head>
   <title>My First Webpage</title>
</head>

<body>
   <h1>Welcome to My Webpage</h1>
   <p>This is my first paragraph of text!</p>
</body>
</html>
```

CSS

CSS stands for Cascading style sheets. It describes to the user how to display HTML elements on the screen in a proper format. CSS is the language that is used to style HTML documents. In simple words, cascading style sheets are a language used to simplify the process of making a webpage.

CSS is used to handle some parts of the webpage. With the help of CSS, we can control the colour of text and style of fonts, and we can control the spacing between the paragraph and many more things. CSS is easy to understand but provides strong control on the Html documents.CSS is combined with HTML.

CSS (Cascading Style Sheets) is a language designed to simplify the process of making web pages presentable.

- It allows you to apply styles to HTML documents by prescribing colors, fonts, spacing, and positioning.
- The main advantages are the separation of content (in HTML) and styling (in CSS) and the same CSS rules can be used across all pages and not have to be rewritten.
- HTML uses tags and CSS uses rule sets.
- CSS styles are applied to the HTML element using selectors.

CSS Syntax:

CSS consists of style rules that are interpreted by the browser and applied to the corresponding elements. A style rule set includes a selector and a declaration block.

- Selector: Targets specific HTML elements to apply styles.
- Declaration: Combination of a property and its corresponding value.

// HTML Element

<h1>Sample</h2>

// CSS Style

h1 { color: blue; font-size: 12px; }

Where -

Selector - h1

Declaration - { color: blue; font-size: 12px; }

PHP

PHP is an open-source general-purpose scripting language, widely used for website development. It was developed by Rasmus Lerdorf. PHP stands for a recursive acronym PHP: Hypertext Preprocessor. PHP is the world's most popular server-side programming language. Its latest version, PHP 8.3.13, was released on October 24th, 2024.

PHP is a server-side scripting language that is embedded in HTML. PHP is a cross-platform language, capable of running on all major operating system platforms and with most web server programs such as Apache, IIS, Lighttpd, and nginx.

A large number of reusable classes and libraries are available on PEAR and Composer. PEAR (PHP Extension and Application Repository) is a distribution system for reusable PHP libraries or classes. Composer is a dependency management tool in PHP.

Features of PHP

- **Open-Source and Free**: PHP is firstly open source which means anyone can use PHP code without any licensing. Along with this one can run PHP on any operating system like Windows, macOS, Linux, Unix and more.
- **PHP Server-Side Scripting**: PHP code executes on the server before sending HTML content to the user's browser, allowing for the dynamic generation of web pages and handling user interactions.
- **Interpreted language**: PHP code is interpreted line by line, eliminating the need for compilation and simplifying development and testing processes.
- **Database connectivity**: PHP integrates seamlessly with various databases like MySQL, PostgreSQL, and Oracle, facilitating data storage and retrieval for web applications.
- **Object-oriented programming (OOP)**: PHP supports OOP concepts like classes, objects, inheritance, and polymorphism, enabling better code organization and modularity.
- **Built-in functions**: PHP comes with a rich set of built-in functions for various tasks such as string manipulation, date and time handling, file handling.
- **Session management**: PHP allows for user session management, enabling personalized experiences and storing user data across multiple page visits.

- **Security features**: PHP offers several built-in security features and best practices to help mitigate vulnerabilities.

Sample Example:

```
<?php
  echo "Hello, World!";
?>
```

MYSQL

MySQL is an open-source relational database management system. As with other relational databases, MySQL stores data in tables made up of rows and columns. Users can define, manipulate, control, and query data using Structured Query Language, more commonly known as SQL. MySQL's name is a combination of "My," the name of MySQL creator Michael Widenius's daughter, and "SQL".

A flexible and powerful program, MySQL is the most popular open-source database system in the world. As part of the widely-used LAMP technology stack (which consists of a Linux-based operating system, the Apache web server, a MySQL database, and PHP for processing), it's used to store and retrieve data in a wide variety of popular applications, websites, and services.

Queries in MySQL:

Next, create the database by running:

```
CREATE DATABASE `dbname`;
```

Then select this database by typing:

```
 USE dbname;
```

Query for Table Creation

```
CREATE TABLE table_name(
Column_name datatype
);
```

Insert the data into Table

INSERT INTO table_name(column_names)

VALUES ();

Retrieve data from table

SELECT * FROM table_name;

JAVASCRIPT

JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages. It is an interpreted programming language with object-oriented capabilities.

JavaScript is a single-threaded programming language that we can use for client-side or server-side development. It is a dynamically typed programming language, which means that we don't care about variable data types while writing the JavaScript code. Also, it contains the control statements, operators, and objects like Array, Math, Data, etc.

Client-Side JavaScript

Client-side JavaScript is the most common form of the language. The script should be included in or referenced by an HTML document for the code to be interpreted by the browser.

It means that a web page need not be a static HTML but can include programs that interact with the user, control the browser, and dynamically create HTML content.

Server-Side JavaScript

In the early days, JavaScript was used for front-end development to add behaviors to HTML pages. Since 2009, JavaScript is also used as a server-side programming language to build scalable and dynamic web applications.

Node.js is one of the best and most popular JavaScript runtime environments for building the server of applications using JavaScript.

- HTML adds Structure to a web page, CSS styles it and JavaScript brings it to life by allowing users to interact with elements on the page, such as actions on clicking buttons, filling out forms, and showing animations.
- JavaScript on the client side is directly executed in the user's browser. Almost all browsers have JavaScript Interpreter and do not need to install any software. There is also a browser console where you can test your JavaScript code.
- JavaScript is also used on the Server side (on Web Servers) to access databases, file handling, and security features to send responses to browsers.

Sample Example:

Hello World Program
This JavaScript Compiler is completely free and easy to use. Here, you can practice various JS Exercises.

```
console.log("Hello World!");
```

BOOTSTRAP

Bootstrap is a popular front-end framework for building responsive and mobile-first websites. It provides pre-designed CSS, JavaScript components, and utility classes to quickly create modern and consistent user interfaces.

- Bootstrap is the most popular HTML, CSS and JavaScript framework for developing a responsive and mobile friendly website.
- It is absolutely free to download and use.
- It is a front-end framework used for easier and faster web development.
- It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many others.
- It can also use JavaScript plug-ins.
- It facilitates you to create responsive designs.

MOZILLA'S SPEECH SYNTHESIS API

Mozilla's Speech Synthesis API is a web-based Text-to-Speech (TTS) technology that allows web applications to convert written text into spoken words. It is part of the Web Speech API and uses the SpeechSynthesis interface to generate speech output.

This API provides control over various speech parameters such as pitch, rate (speed), volume, and voice selection. Since it relies on the browser's built-in speech synthesis engine, it can work offline without requiring an external service. However, the available voices depend on the operating system and browser support.

How Does It Work?

The API processes text input and converts it into speech using a SpeechSynthesisUtterance object. Developers can specify different voices (if available), adjust speech properties, and use event listeners to track speech progress.

Example:

```
const synth = window.speechSynthesis; // Get speech synthesis instance
const utterance = new SpeechSynthesisUtterance("Hello, welcome to the exam!");
utterance.rate = 1;  // Set speech speed (default is 1)
utterance.pitch = 1; // Set pitch (range: 0 to 2)
utterance.volume = 1; // Set volume (0 to 1)
synth.speak(utterance); // Speak the text
```

GOOGLE WEB SPEECH API

Google's Web Speech API is a Speech-to-Text (STT) technology that enables web applications to convert spoken words into text. It is part of the Web Speech API and uses the SpeechRecognition interface to process voice input. This API allows users to interact with applications using voice commands or dictation, making it useful for hands-free control and accessibility features. Unlike Mozilla's Speech Synthesis API, this requires an internet connection as it sends audio data to Google's servers for processing.

How Does It Work?

The API captures voice input through the microphone, converts it into text, and returns the result to the application in real time. It supports multiple languages and can recognize continuous speech, making it useful for applications like virtual assistants, dictation tools, and voice-controlled exam systems.

Example Usage:

```
const recognition = new webkitSpeechRecognition() || new SpeechRecognition();
recognition.lang = "en-US";  // Set language
recognition.continuous = false; // Stop after one result
recognition.interimResults = false; // Get final results only
recognition.start(); // Start speech recognition
recognition.onresult = function(event) {
   console.log("You said:", event.results[0][0].transcript); // Output recognized text
};
recognition.onerror = function(event) {
   console.error("Error occurred:", event.error); // Handle errors
};
```

XAMPP

XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience. It consists of Apache HTTP Server, MariaDB, and interpreter for the different programming languages like PHP and Perl. It is available in 11 languages and supported by different platforms such as the IA-32 package of Windows & x64 package of macOS and Linux.

XAMPP is an abbreviation where X stands for Cross-Platform, A stands for Apache, M stands for MYSQL, and the Ps stand for PHP and Perl, respectively. It is an open-source package of web solutions that includes Apache distribution for many servers and command-line executables along with modules such as Apache server, MariaDB, PHP, and Perl.

CHAPTER 5

APPROACH DESCRIPTION

5.1 Approach Flow

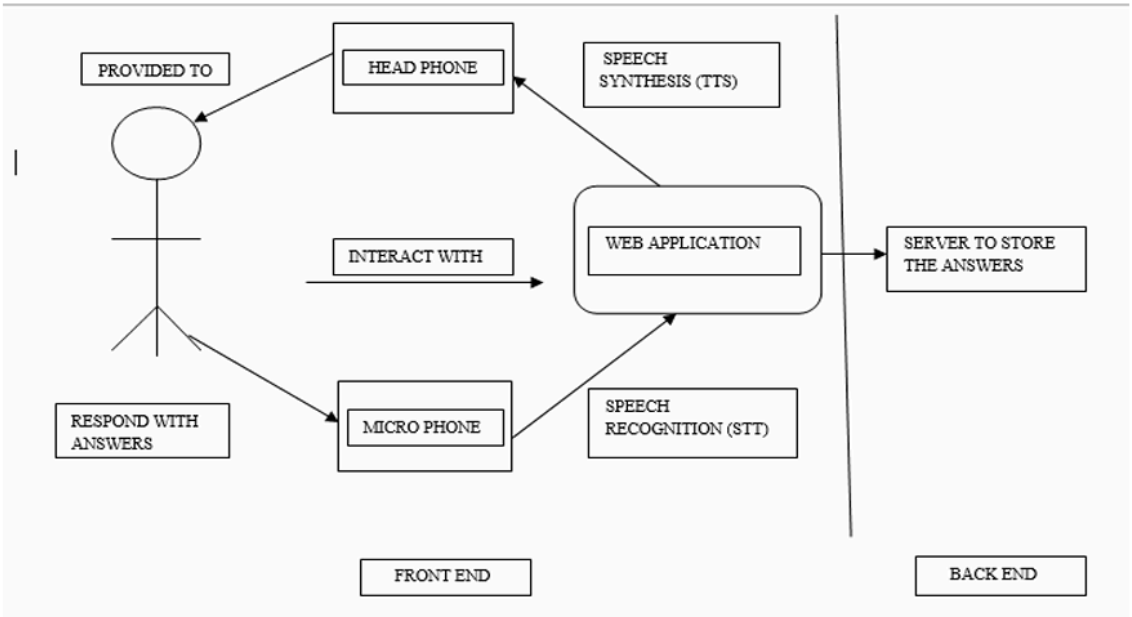
1. Admin can add exams, delete tests, update questions, and update final marks
2. An invigilator assists blind users in logging in, as they cannot do it independently.
3. Uses Mozilla Speech Synthesis API to read out MCQ questions and answer options.
4. Captures spoken answers using Google Web Speech API and validates the response.
5. Supports only multiple-choice questions (MCQs) with predefined answer options.
6. Users can repeat questions, select answers, and confirm responses using voice commands.
7. Automatically evaluates Marks after the Exam ends.
8. Provides a voice-controlled, hands-free exam experience for blind students.

CHAPTER 6

RESEARCH METHODOLOGY

This section provides a brief description of our approach to creating a voice-based examination system for visually impaired students. This part includes a description about what are the methodologies we used and how we embrace the technology to overcome the problems in existing systems.

Following figure 2 shows the basic architecture of our proposed system.



Here the process will be taken through the following steps :

1. **User Authentication**
    - If the user is new, they must sign up for an account.
    - Existing users can log in directly.
    - The invigilator enters the user's credentials for authentication. If verification fails, the user is redirected to the login page.
    - Different users have different privileges:
        - **Students:** Can take exams.
        - **Admin:** Manages user accounts, examination details, event scheduling, question uploads, answer script submissions, and result access.

2. **Subject and Test Selection**
    - The system reads out a list of available subjects.
    - The user selects a subject by speaking its name.
    - If the spoken subject is invalid, the system responds with "No such operation." Users can say "Repeat" to hear the subject list again.
    - After selecting a subject, the system reads out the available tests for that subject.
    - The user selects a test by speaking its name.
    - Before starting, the system asks, "Do you want to listen to the instructions?"
    - If the user says "Instructions," the system lists the exam guidelines.
    - The system then prompts, "Can I start your exam?" The user must say "Start" to begin.
3. **Exam Instructions**
    - The system reads each question aloud along with answer options.
    - The user selects the correct answer by saying "Option [1-5]."
    - To repeat a question, the user must say "Repeat question."
    - Users can navigate between questions by saying "Question [number]."
    - At any point, the user can say "Submit" to end the test and view results.
    - If the user says anything other than "Instructions" when prompted, the system responds with "No such operation" and repeats the prompt.
4. **Exam Progression**
    - Once started, the system continuously reads questions and verifies responses.
    - This process continues until the last question is reached.
    - The system then asks, "Do you want to repeat any questions or submit your answers?"
    - If the user says "Submit," the test is finalized, and results are displayed.
5. **Scoreboard Details**
    - Number of questions attempted
    - Number of unattempted questions
    - Number of correct and incorrect answers
    - Total marks obtained

6. **Exam Completion**
    - The system asks, "Do you want to stop the exam or return to the menu?"
    - If the user says "Stop," the exam ends.
    - Otherwise, the user is redirected to the main menu to take another test.

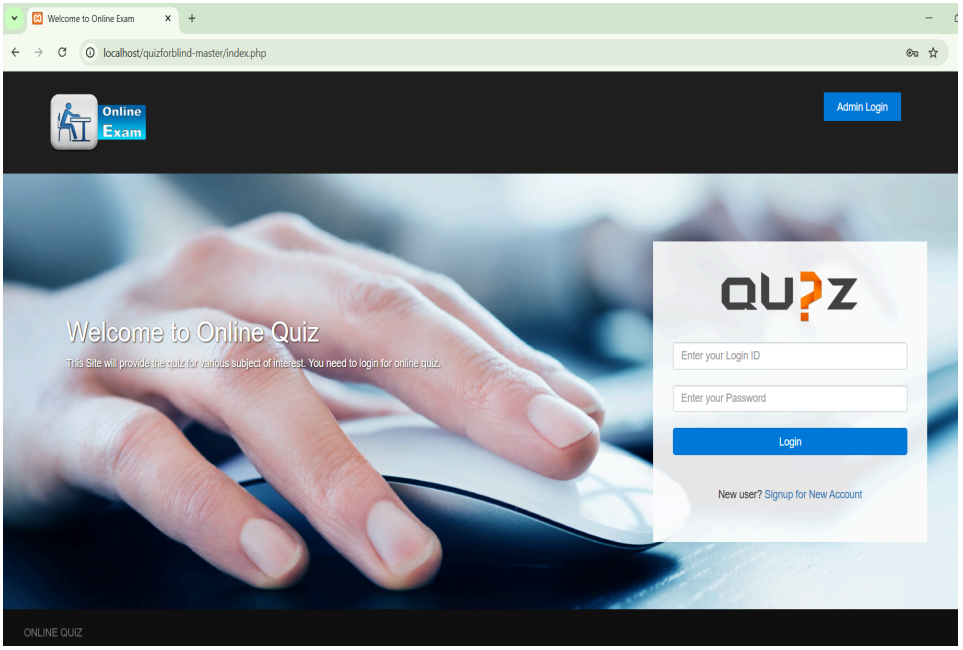
This system ensures an accessible and efficient examination process for visually impaired students through voice interactions, making education more inclusive and technology-driven.

CHAPTER 7

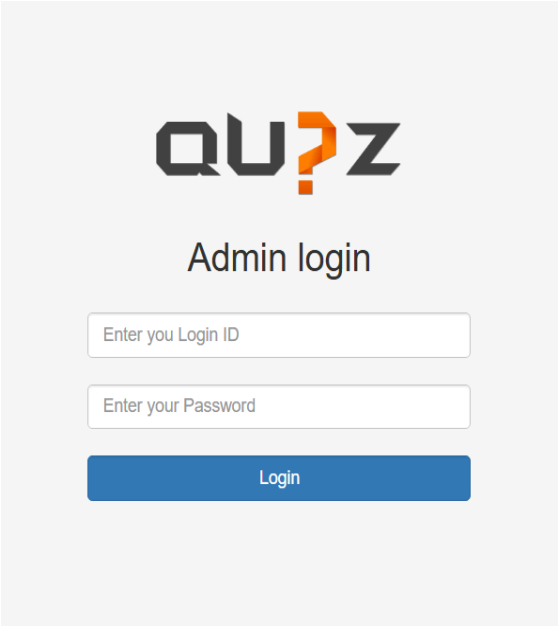
RESULTS AND CONCLUSIONS

7.1 Results

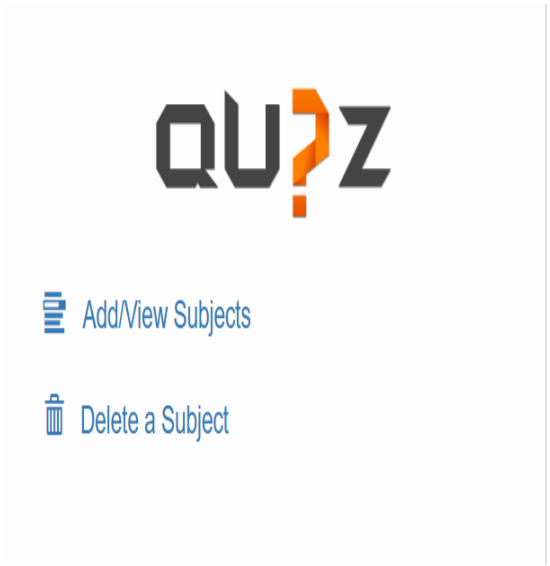
1. It is a Home Page of My Website



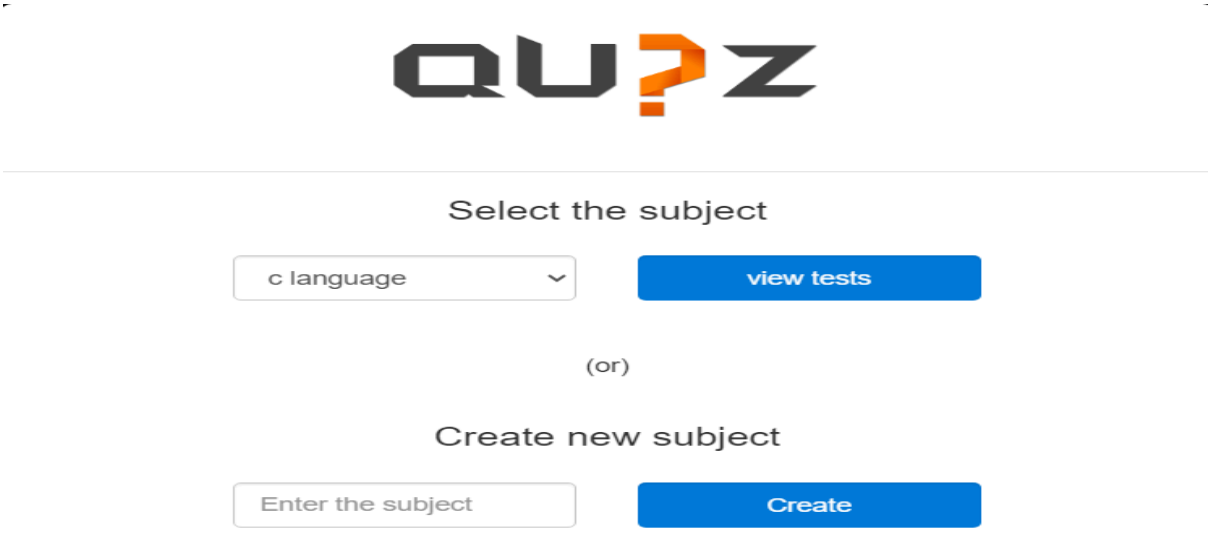
2. It is For Admin Login .



3. Admin Can add/view/Delete Subject

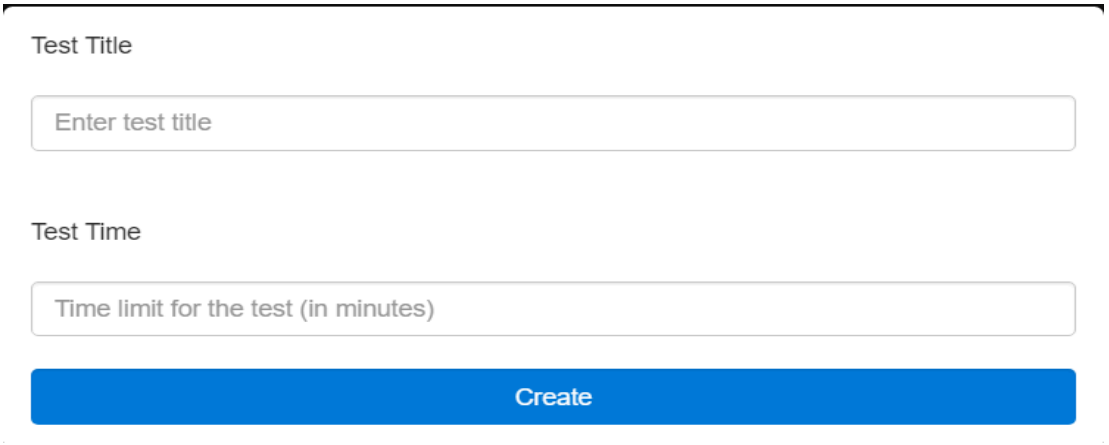


4. Admin view Tests of Subject or Admin can create new Subject

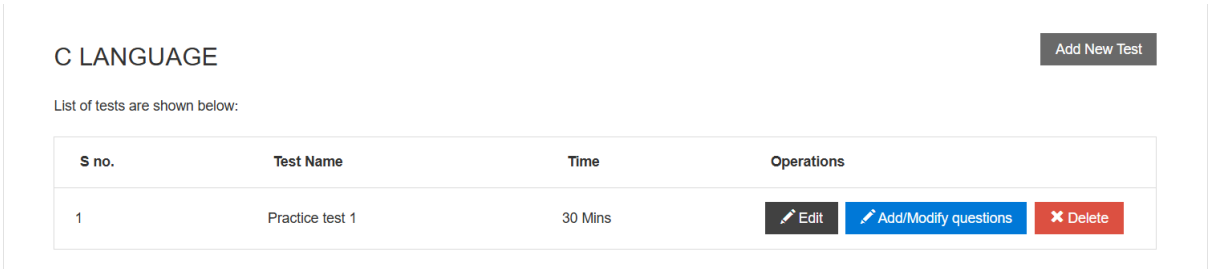


5. After Entering the Subject name and clicking create it will give like

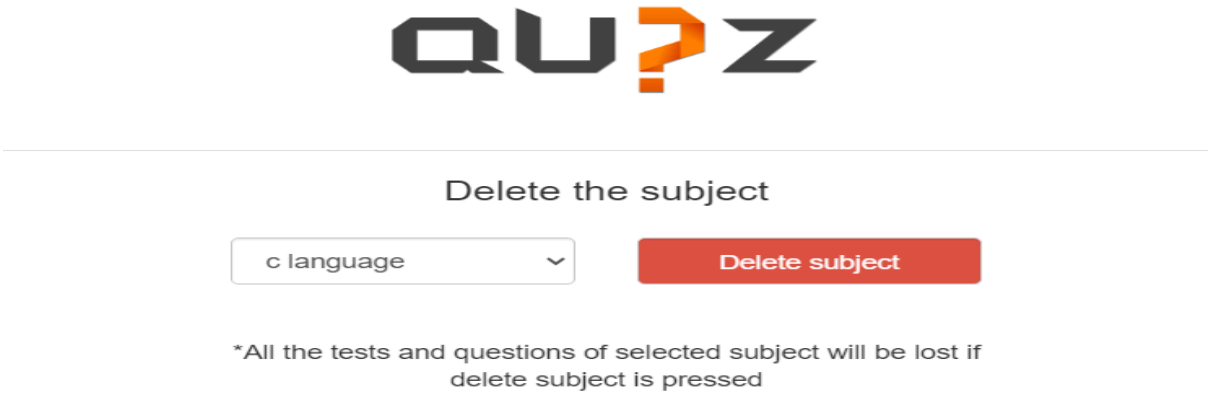
6. Add new test By this



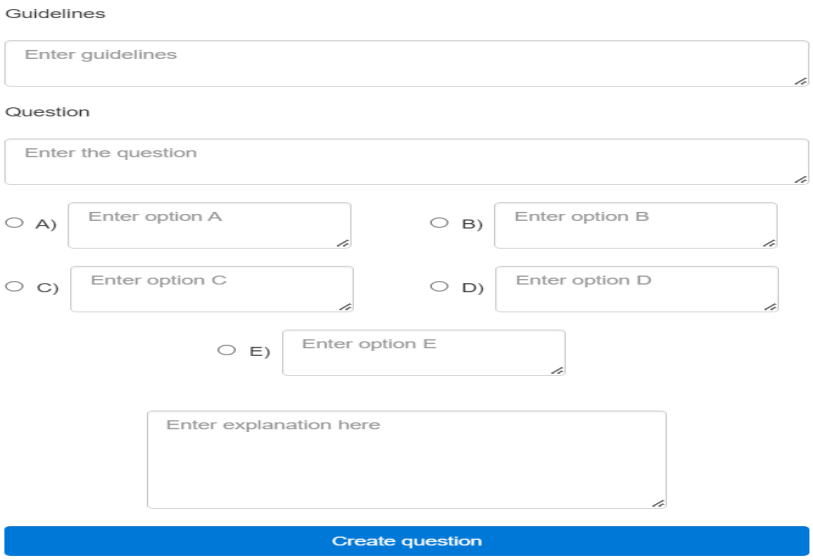
7. View the Existing Subject



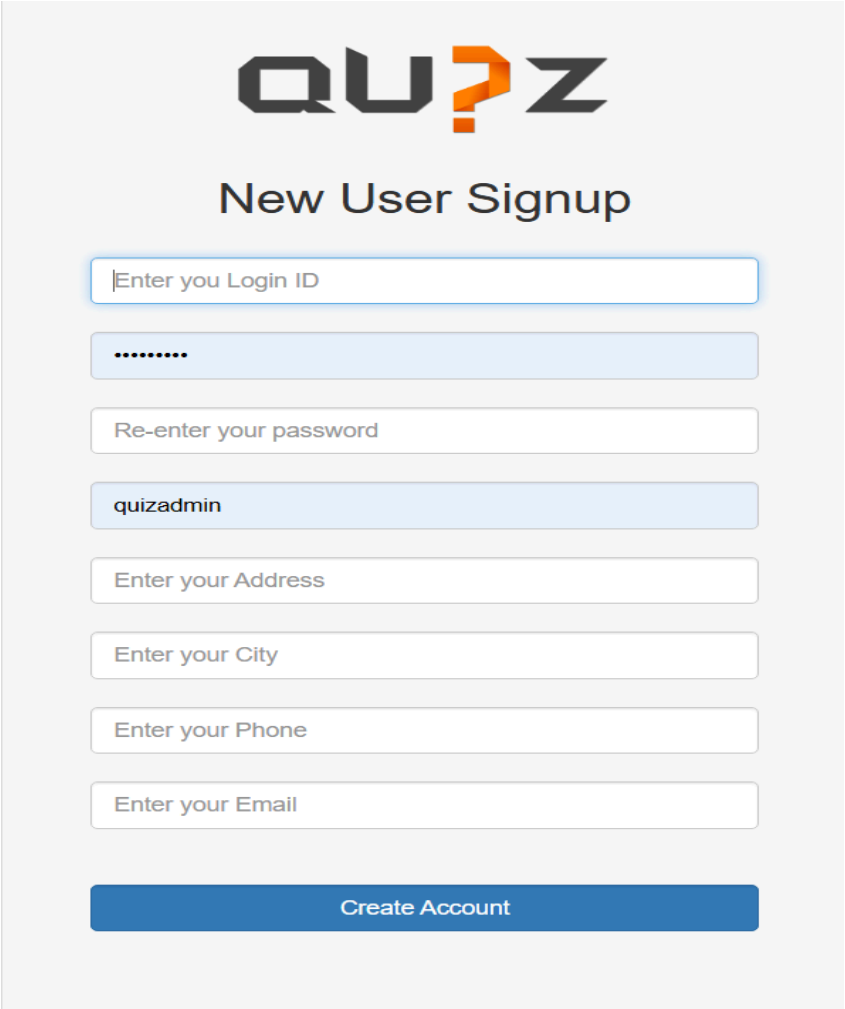
8. Delete the Subject



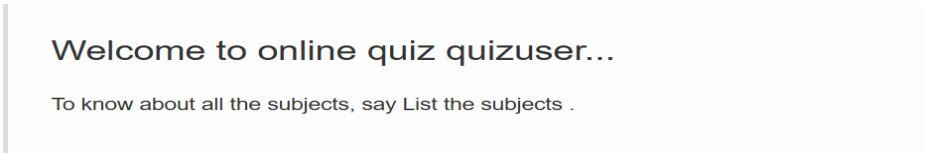
9. Enter Questions by this form



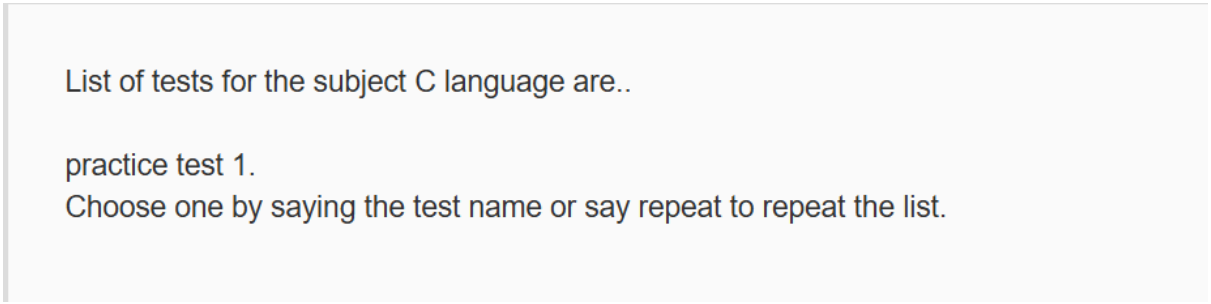
10 New Account Creation



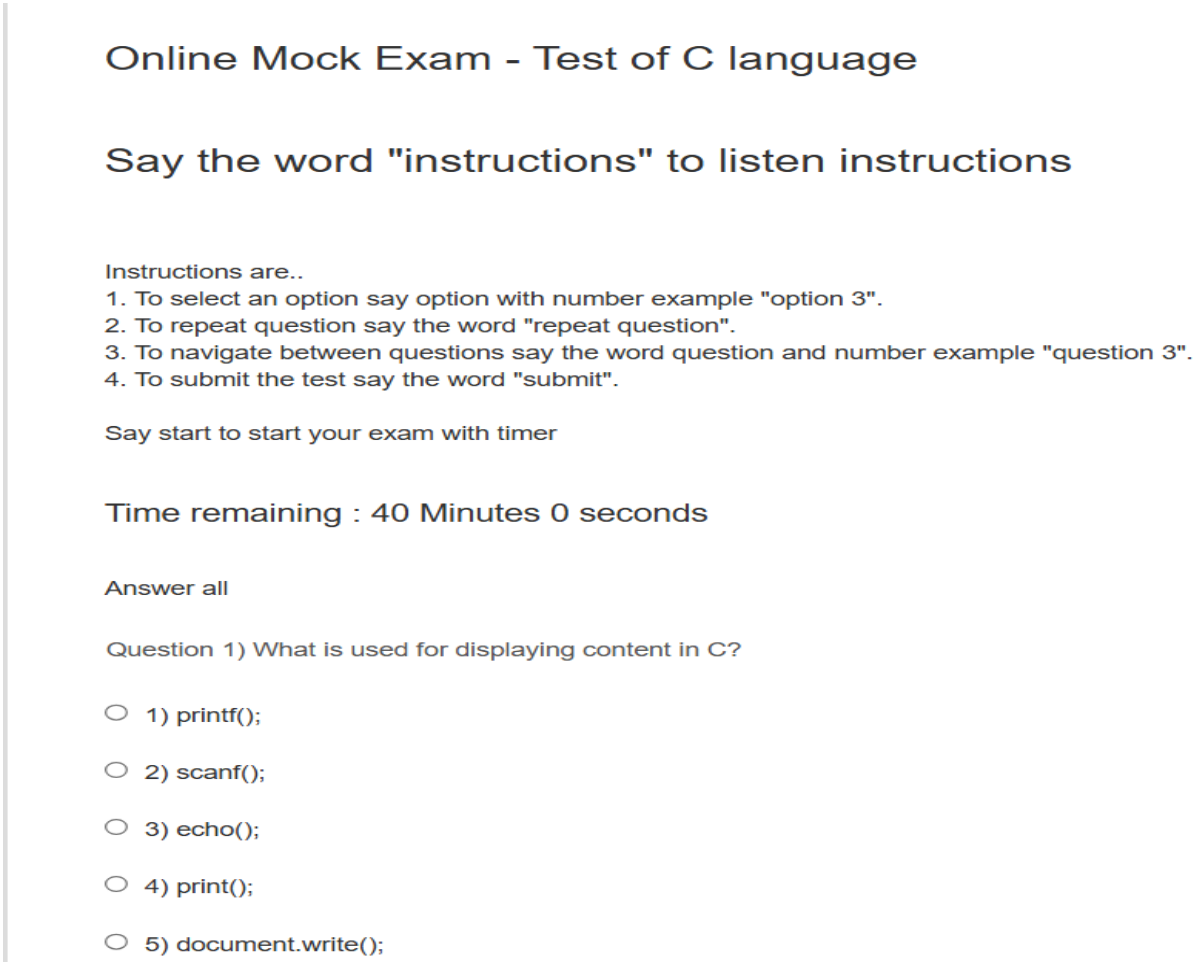
11. After the user Enter the Account



12. Display The test names in the Subject



13. Exam Screen



14. Score Board

Your score : 3

Number of wrong answers are: 0

Number of unanswered questions: 0

Correct answered questions are: Question 1 Question 2 Question 3

Unanswered questions are: none

Wrong answered questions are: none

To take another test say the word "Menu" or say the word "STOP" to stop.

7.2 Conclusion

The Voice-Based Online Examination System for Visually Impaired Students is a step toward making digital education more inclusive by enabling blind individuals to take exams independently through voice interaction. By integrating Mozilla's Speech Synthesis API for text-to-speech conversion and Google Web Speech API for speech recognition, the system provides an accessible and efficient examination process. It reduces reliance on external assistance, ensuring fairness and self-reliance for visually impaired users. With features like real-time response recording and an intuitive interface for examiners, this system enhances accessibility in online education. Future enhancements, such as multi-language support and AI-driven voice recognition, can further improve its effectiveness, making examinations more inclusive for all.

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APPENDIX

Sample Source Code

Dbconfig.php

```
<?php
   $conn = mysqli_connect('localhost','root','','bquiz');
   if($conn){
      //echo "connected";
   }
   else{
      // die("Failed to connect to the server");
      echo "not connected";
   }
?>
```

This PHP script establishes a connection to a MySQL database named bquiz using the MySQLi (MySQL Improved) extension.

Admin.php

```
<?php
session_start();
require_once('dbconfig.php');
$fail = 0;
if(isset($_POST['login'])){
   $aid = $_POST['adminid'];
   $apass = $_POST['adminpass'];


   $password = md5($apass);

    $result = mysqli_query($conn,"SELECT * FROM admin WHERE loginid = '$aid' AND
pass = '$apass'");
   if(mysqli_num_rows($result) > 0){
         $_SESSION['adminsession'] = $aid;
         header("Location: adminmenu.php");
   }
   else{
      echo "error ".mysqli_error($conn);
      $fail = 1;
   }
}
```

```
if(isset($_SESSION['adminsession'])){
   header("Location: adminmenu.php");
}
?>
<!DOCTYPE html>
<html>
   <head>
      <title>Welcome to Online Exam</title>
      <link rel="stylesheet" type="text/css" href="css/bootstrap.css">
      <link rel="stylesheet" type="text/css" href="main.css">
            <link  href="https://fonts.googleapis.com/css?family=Fira+Sans|Josefin+Sans"
rel="stylesheet">
      <meta charset="UTF-8">
      <meta name="description" content="Online Exam">
      <meta name="viewport" content="width=device-width, initial-scale=1.0">
      <?php
         require_once('dbconfig.php');
      ?>
   </head>
   <body>
      <div class="oq-header">
         <div class="container-fluid">
            <div class="row">
               <div class="col-md-4">
                     <div class=""><a href="index.php"><img src="images/examlogo.webp"
class="oq-logo"></a></div>
               </div>
               <div class="col-md-6"></div>
            </div>
         </div>
      </div>
      <div class="oq-adminloginBody">
         <div class="container-fluid">
            <div class="row">
               <div class="col-md-4 col-md-offset-4">
                  <div class="oq-adminlogin text-center">
                     <img src="images/quiz_1.png" class="oq-logo"><br><br>
                     <span class="oq-signupHead">Admin login</span><br><br>
                     <?php if($fail == 1){
                           echo "<span class='oq-error'>*Invalid details</span><br><br>";
                           }
                     ?>
                     <form class="form" action="" method="post">
                        <input type="text" class="form-control" placeholder="Enter you Login
ID" name="adminid" required autofocus><br>
                        <input type="password" class="form-control" placeholder="Enter your
Password" name="adminpass" required><br>
                                 <input type="submit" class="form-control btn btn-primary"
```

```
value="Login" name="login"><br><br>
                    </form>
                  </div>
                </div>
              </div>
            </div>
        <div class="oq-footer">
          <div class="container-fluid">
            <div class="row">
                      <div class="col-md-6"><span class="oq-footerText">ONLINE QUIZ
2017</span></div>
              <div class="col-md-6"></div>
            </div>
          </div>
        <script src="js/jquery-3.1.1.min.js"></script>
        <script src="js/bootstrap.js"></script>
    </body>
</html>
```

This PHP script implements an admin login system using session handling and MySQLi database connection. It starts by including the database configuration file and initializing a session. When the admin submits login credentials, the script retrieves the input values and checks them against the database. If the credentials match, the admin session is created, and the user is redirected to the admin panel. Otherwise, an error message is displayed.

Createquestions.php

```
<?php
session_start();
require_once('dbconfig.php');


$test = $_SESSION['test'];  // Test name (e.g., "test1")
$lang = $_SESSION['lang'];  // Language name (e.g., "java")


if (isset($_POST['newques'])) {
    $guide = $_POST['guidelines'];
    $ques = $_POST['title'];
    $time = time();
```

```
    $ques_id = "question_" . $time;
    $o1 = $_POST['option1'];
    $o2 = $_POST['option2'];
    $o3 = $_POST['option3'];
    $o4 = $_POST['option4'];
    $o5 = $_POST['option5'];
    $ans = $_POST['answer'];
    $explain = $_POST['explain'];


    // Constructing the actual table name
    $addtest = $lang . '-' . $test; // Example: "java-test1"


    // Debugging: Check the actual table name
    echo "Using table: $addtest<br>";


    // Use `$addtest` instead of `$test` in the SELECT query
        $res = mysqli_query($conn, "SELECT * FROM `$addtest` WHERE questions =
'$ques'");


    if (mysqli_num_rows($res) > 0) {
        header("Location: viewquestions.php?test=$test&error");
    } else {
        // Use `$addtest` in the INSERT query
            $insertQuery = "INSERT INTO `$addtest`(q_id, guidelines, questions, option1,
option2, option3, option4, option5, answer, exp)
                        VALUES('$ques_id', '$guide', '$ques', '$o1', '$o2', '$o3', '$o4', '$o5', '$ans',
'$explain')";

        if (mysqli_query($conn, $insertQuery)) {
            header("Location: viewquestions.php?test=$test");
        } else {
            echo "Error: " . mysqli_error($conn);
        }
    }
}
?>
```

This PHP script handles the insertion of new questions into a dynamically named test table based on the selected language and test name. It starts by retrieving the test and language details from the session. When an admin submits a new question, the script collects the question, options, correct answer, and explanation from the form.

The script dynamically constructs the table name using the language and test name (e.g., "java-test1") and checks if the question already exists in the table. If a duplicate is found, it redirects to the view questions page with an error. Otherwise, the question is inserted into the table, and the admin is redirected to the view questions page upon successful insertion. Error handling is implemented to display any database-related issues.

Createtest.php

```
<?php
session_start();
   require_once('dbconfig.php');
   $lang = $_SESSION['lang'];
   if(isset($_POST['newtest'])){
      $test = strtolower($_POST['title']);
      $guide = "";
      $addtest = $lang.'-'.$test;
      $timelimit = $_POST['testtime'];
      $time = time();
      $test_id = "test_".$time;
      $res = mysqli_query($conn,"SELECT * FROM `$lang` WHERE tests = '$test'");
      if(mysqli_num_rows($res) > 0){
         header("Location: viewtests.php?testlang=$lang&error");
      }
      else{
            if(mysqli_query($conn,"CREATE TABLE `$addtest` (id INT(6) UNSIGNED
AUTO_INCREMENT PRIMARY KEY,q_id VARCHAR(50),guidelines TEXT,questions
TEXT,option1 VARCHAR(100),option2 VARCHAR(100),option3
VARCHAR(100),option4 VARCHAR(100),option5 VARCHAR(100),answer
VARCHAR(50),exp TEXT)") && mysqli_query($conn,"INSERT INTO
`$lang`(t_id,tests,testtime) VALUES('$test_id','$test','$timelimit')")){
            header("Location: viewtests.php?testlang=$lang");
         }
         else{
            echo "error".mysqli_error($conn);
         }
      }
   }
?>
```

This PHP script handles the creation of new tests in an online exam platform. It retrieves the selected language from the session and processes the test creation request when the form is submitted.

The script converts the test name to lowercase and constructs a dynamic table name using the selected language and test title (e.g., "java-test1"). It checks if the test already exists in the database. If a duplicate is found, it redirects to the test view page with an error message.

If the test does not exist, the script creates a new table for storing the test questions and inserts the test details (test ID, name, and time limit) into the main language-specific test list. On success, the admin is redirected to the test management page. If an error occurs, it is displayed using MySQL error handling.

Userresult.php

```
<?php
   session_start();
   require_once('dbconfig.php');
   $userid = $_SESSION['usersession'];
   $lang = $_SESSION['lang'];
   if($userid == null){
      header('Location: index.php');
   }
?>
<!DOCTYPE html>
<html>
   <head>
      <title>Welcome Online Exam</title>
      <link rel='stylesheet' type='text/css' href='css/bootstrap.css'>
      <link rel='stylesheet' type='text/css' href='main.css'>
      <link rel='stylesheet' type='text/css' href='css/font/flaticon.css'>
                  <link   href='https://fonts.googleapis.com/css?family=Fira+Sans|Josefin+Sans'
rel='stylesheet'>
      <meta charset='UTF-8'>
      <meta name='description' content='Online Exam'>
      <meta name='viewport' content='width=device-width, initial-scale=1.0'>
   </head>
   <body>
      <div class='oq-header'>
         <div class='container-fluid'>
            <div class='row'>
               <div class='col-md-4'>
                           <div class=''><a href='index.php'><img src='images/examlogo.webp'
class='oq-logo'></a></div>
```

```
            </div>
            <div class='col-md-8'>
               <div class='oq-userArea pull-right'>
                                                  <a href='menu.php'><span class='glyphicon glyphicon-home'></span>  Home</a>     
                  <a class='oq-btn' href='logout.php?logout'>Logout</a>
               </div>
            </div>
         </div>
      </div>
      <div class='oq-userResultBody'>
         <div class='container-fluid'>
            <div class='row'>
               <div class='col-md-8 col-md-offset-2'>
                  <div class="oq-userResult">
                        <h5>Following consists of tests scores along with the subject name:</h5><br>
                    <table class='table oq-table'>
                       <tr class="usertable">
                          <th>Sno.</th>
                          <th>Subject name</th>
                          <th>Test name</th>
                          <th>Score</th>
                       </tr>
                       <?php
                          if($res = mysqli_query($conn,"SELECT * FROM `$userid`")){
                             if(mysqli_num_rows($res) > 0){
                                $i = 1;
                                while($row = mysqli_fetch_assoc($res)){
                                                                                    echo "<tr class='usertable'><td>".$i."</td><td>".$row['sub']."</td><td>".$row['test']."</td><td>".$row['score']."</td></tr>";
                                   $i++;
                                }
                             }
                          }
                       ?>
                    </table>
                  </div>
               </div>
            </div>
         </div>
      </div>
      <div class="oq-footer">
         <div class="container-fluid">
            <div class="row">
                  <div class="col-md-6"><span class="oq-footerText">ONLINE QUIZ
```

```
</span></div>
                <div class="col-md-6"></div>
            </div>
        </div>
    </div>
    <script src="js/jquery-3.1.1.min.js"></script>
    <script src="js/bootstrap.js"></script>
  </body>
</html>
```

This PHP script is responsible for displaying a user's test scores in an online exam platform. It starts by retrieving the user session and selected language from the session variables. If the user is not logged in, they are redirected to the homepage.

The page features a responsive Bootstrap-based layout with a navigation bar that includes a home button and a logout option. The script queries the database using the user's session ID to fetch the test scores, subject names, and test names. The results are then dynamically displayed in a table format.