

**Human Computer Interaction ICT 4049      FISAC      2024**

Team	Reg No	Name	Branch and Section	Individual Contribution
2	210953070	Joshita Bolisetty	CCE-A	<ul style="list-style-type: none"> <li>• Ideation of features according to golden rules</li> <li>• Analytics module with graph implementation</li> <li>• Features like text resizing and dark mode</li> <li>• Database creation and management</li> <li>• Storing user logs to decide if walkthrough is required</li> <li>• Progress bar implementation</li> </ul>
	210911084	Pediredla Venkata Satya Prasanth	IT-B	<ul style="list-style-type: none"> <li>• Ideation of features according to user support</li> <li>• Quiz module and score calculation</li> <li>• Walk through module of entire application</li> <li>• Text-to-speech and Speech-to-Text features implementation</li> <li>• Pop-up messages implementation</li> <li>• Feedback features</li> </ul>
	210953334	Nallamilli Naga Venkata Reddy	CCE-B	<ul style="list-style-type: none"> <li>• Ideation and formulation of rules for the quiz</li> <li>• Collection of user evaluation details</li> <li>• Application testing and recording</li> </ul>
	210911302	Yarakam Shiva Chaitanya Reddy	IT-C	<ul style="list-style-type: none"> <li>• Home page design</li> <li>• Application aesthetics like color selections, confetti and shaking animations and other effects</li> <li>• Documentation procedure</li> </ul>

**Title:** Quiz app

**SDG:** #4

**SDG addressed:** Quality Education

**Sub SDG:** 4.a - Safe and Inclusive Learning Environments

**Type of App:** Web Application

# 1. Brief description of the app

This Quiz App is a user-friendly platform built with Django as backend and uses HTML, CSS, and JavaScript for dynamic frontend experience. It offers quizzes on a wide range of subjects with easy option selection and dynamic question loading. To make it accessible, the app has dark and light mode, text resizing options, speech recognition, and text-to-speech functionality for the needy users. Users can easily track their progress through real-time score calculations and visualize their performance with detailed marks vs subject graphs. The app also provides the ability to clear the whole quiz data, allowing users to retake quiz. Integrating app with dynamic animations and intuitive popups, the user interface is both attractive and responsive. A full walkthrough is provided to make user understand more about the features and functionalities of the application. Overall, Quiz App combines effective functionality with interactive design and accessibility to deliver an engaging and inclusive educational experience.

## 2. Interface design

<b>Ben Schneiderman's Golden Rule</b>	<b>Description of implementation and corresponding reference screens</b>
Strive for consistency	The color scheme and font size selected on a screen is consistent throughout the application. (present in all screens)
Enable frequent user to use shortcuts	Walkthrough is given implicitly to first time users only. Experienced users have an option to take a walkthrough explicitly. (present in Homepage)
Offer informative feedback	Correct and incorrect answers are represented using the standard green and red colors and in case if no selection, an alert message is displayed, asking the user to select an option. (present in quiz page)
Design dialog to yield closure	Display of final score after attempting the quiz in a subject. (present in screen after completion of quiz)
Offer simple error handling	Appropriate alerts for cases like not selecting an option in quiz or clearing data. (present in quiz page and analytics page)
Permit easy reversal of actions	Availability of clear button on quiz page to undo any selections and reset button is provided to restore original theme of application. (clear button present on quiz screen and reset button present on all screens)
Support internal locus of control	Many controls are provided for the user which makes the user always feel in control of the system and situation. (present in home page)
Reduce short term memory load	Presence of progress bar to indicate number of questions completed and immediate display of answer after submission of a question. (present in quiz page)

## **3. User support**

### **3.1. Quick reference**

The tooltip feature in the quiz app gives users quick, helpful hints about each option, so they can easily get more information without leaving the main screen. When users hover over an option, the tooltip pops up to provide context, making it easier to understand each choice right away. This feature keeps things simple and helps users to understand more about a particular feature of the application, creating a smoother and more intuitive experience overall.

### **3.2. Task specific help**

The app provides a Info (i) button to in the quiz page which can be used to view the rules and guidelines of quiz anytime while attempting the quiz. This feature makes user to understand more about the guidelines hence preventing user to make any mistakes during the quiz and this features clears the ambiguity of the user about the guidelines of quiz. Integrating this feature in the application makes the quiz experience smooth and intuitive for users

### **3.3. Tutorial**

The app provides a full Walkthrough of the application for both first time users and experienced users. For the first time user application implicitly prompts user to go through a quiz walkthrough of the application which shows him all the features and functionalities of application. The experienced users a tutorial button is provided on the home screen, so that user can take the walkthrough anytime whenever a quick refresher is required.

## 4. Evaluation process

### 4.1. Hypothesis

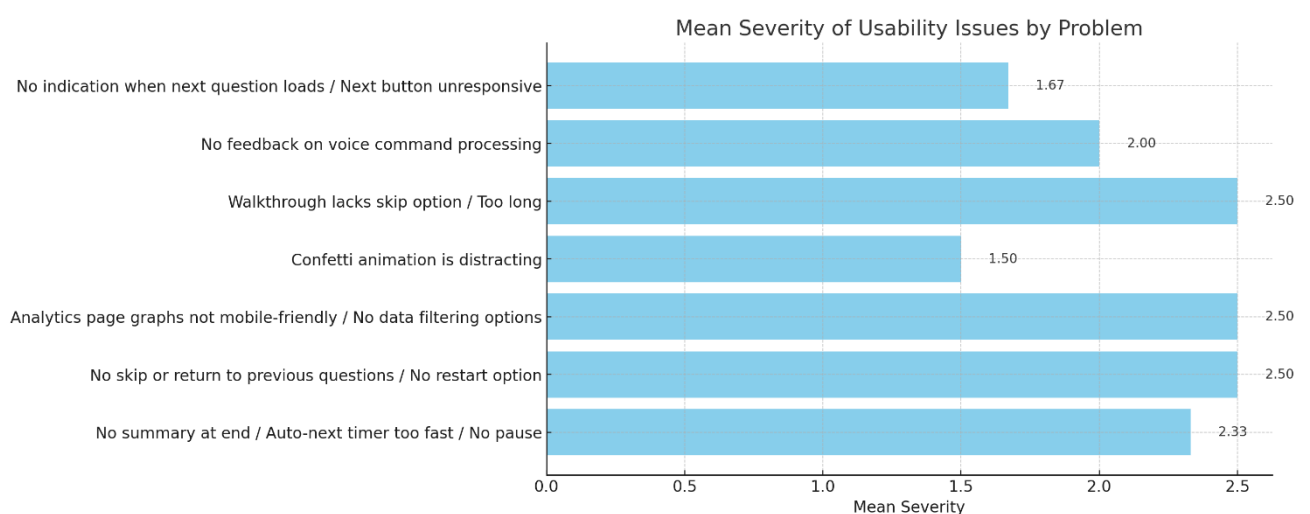
Users of the quiz application will complete the quiz tasks more efficiently and with higher accuracy when provided with features like tooltips, task-specific help, text-to-speech, speech-to-text, walkthrough etc., compared to a version of the app without these features.

### 4.2. Identified heuristics

S.No.	Heuristic	Observation	Implication
1.	<b>Visibility of System Status</b>	The application provides immediate feedback when users select answers and navigate between questions.	This transparency keeps users informed of their progress and actions, enhancing their sense of control and engagement throughout the quiz.
2.	<b>Match Between System and the Real World</b>	The language used in the app aligns with common quiz terminology, making it intuitive for users.	By using familiar terms and concepts, users can easily understand the application, leading to a more comfortable and efficient experience.
3.	<b>User Control and Freedom</b>	The application allows users to review their answers before submitting the entire quiz, providing an option to confirm their choices.	This capability enhances user confidence and reduces the likelihood of errors, as users can verify their selections before finalizing their responses.
4.	<b>Consistency and Standards</b>	The app maintains consistent button placements, colours, and fonts throughout the interface.	Consistency helps users learn the interface quickly, as they do not have to relearn navigation or interaction patterns from one section to another.
5.	<b>Error Prevention</b>	The app prompts users to confirm their answers before proceeding to the next question.	This proactive approach minimizes the chances of accidental submissions, reducing frustration and improving the overall user experience.
6.	<b>Recognition Rather Than Recall</b>	The app displays tooltips and help icons that provide contextual information about options and actions.	By making information readily available, users can make decisions without having to remember details, enhancing usability, especially under time constraints.

7.	<b>Flexibility and Efficiency of Use</b>	The application allows users to view their score at the end of the quiz, providing a summary of their performance across all questions.	This feature enables users to reflect on their answers and understand their strengths and weaknesses, encouraging improvement in future quizzes and enhancing user engagement with the app.
8.	<b>Aesthetic and Minimalist Design</b>	The interface uses a clean design with a simple colour scheme and minimal distractions.	Aesthetic appeal and a clutter-free layout help users focus on the quiz content, making the experience more enjoyable and less overwhelming.
9.	<b>Help Users Recognize, Diagnose, and Recover from Errors</b>	The application requires users to select an answer for each question before they can proceed to the next one, preventing any unanswered questions from being submitted.	While this design ensures users engage with all questions, it may cause frustration if they are uncertain. Adding a prompt to remind users to select an option would improve clarity and reduce anxiety during the quiz.
10.	<b>Help and Documentation</b>	The app features a help section that is easily accessible and provides detailed instructions on using the application and answering quiz questions.	Access to help documentation supports users in navigating the app and enhances their confidence, especially for first-time users who may need additional guidance.

### 4.3. Graphical representation of usability evaluation inferences



<b>Problem</b>	<b>Heuristics Violated</b>	<b>Severity Ratings</b>	<b>Mean Severity</b>
No clear indication of when the next question will load / No indication that the question has been submitted when pressing "Next" / The "Next" button feels unresponsive on certain slower networks	Feedback, Visibility of system status	2, 1, 2	1.67
No feedback when a voice command is successfully processed / No real-time feedback on voice commands on the quiz page	Visibility of system status, Feedback	2, 2	2.0
The walkthrough lacks an option to skip sections / The walkthrough for the quiz app is too long and cannot be skipped	User control and freedom	2, 3	2.5
Confetti animation is distracting or too prominent and slows down the app on weaker devices	Aesthetic and minimalist design	1, 2	1.5
Analytics page graphs are not mobile-friendly and hard to read on smaller screens / Analytics page lacks data filtering options	Flexibility and efficiency of use	3, 2	2.5
No way to skip questions or return to previous ones / No option to restart the quiz from the middle	User control and freedom	3, 2	2.5
The quiz doesn't show a summary of all answers at the end / The countdown timer for auto-next feels too fast / No way to pause or stop the auto-next timer	User control and freedom, Feedback	3, 2, 2	2.33

## 5. Additional implementations/concepts used in application

Universal Design Principles	Description of implementation and corresponding reference screens
Equitable use	Accessibility features like dark mode, alternative text(present in all screens), text-to-speech and speech recognition (present in quiz page) is provided.
Flexibility in use	Allow for the sizing up and down of text in different layouts. (present in all screens)
Simple and intuitive to use	Use of standard color palette and styles for representation like the use of red and green for incorrect and correct answer and font of 'i' in information button. (present in quiz page)
Provide perceptible information	Use of graphs for score analysis. (present in analytics screen)
Tolerance of error	Next button is provided instead of submitting an option as soon as it is selected to prevent user's accidental clicks. (present in quiz page)
Low physical effort	No repetitive prompts like "are you sure?" after every question. (present in quiz page) Accessibility features like dark mode, text resizing and reset are grouped together to minimize mouse dragging and thumb stretching. (present in all screens)
Size and space for approach and use	Dynamic resizing of application front-end according to device used.

## 6. Appendix:

### 6.1. Numbered screenshots of each screen design

#### 6.1.1. Home page



Fig. 6.1.1.1 Home page

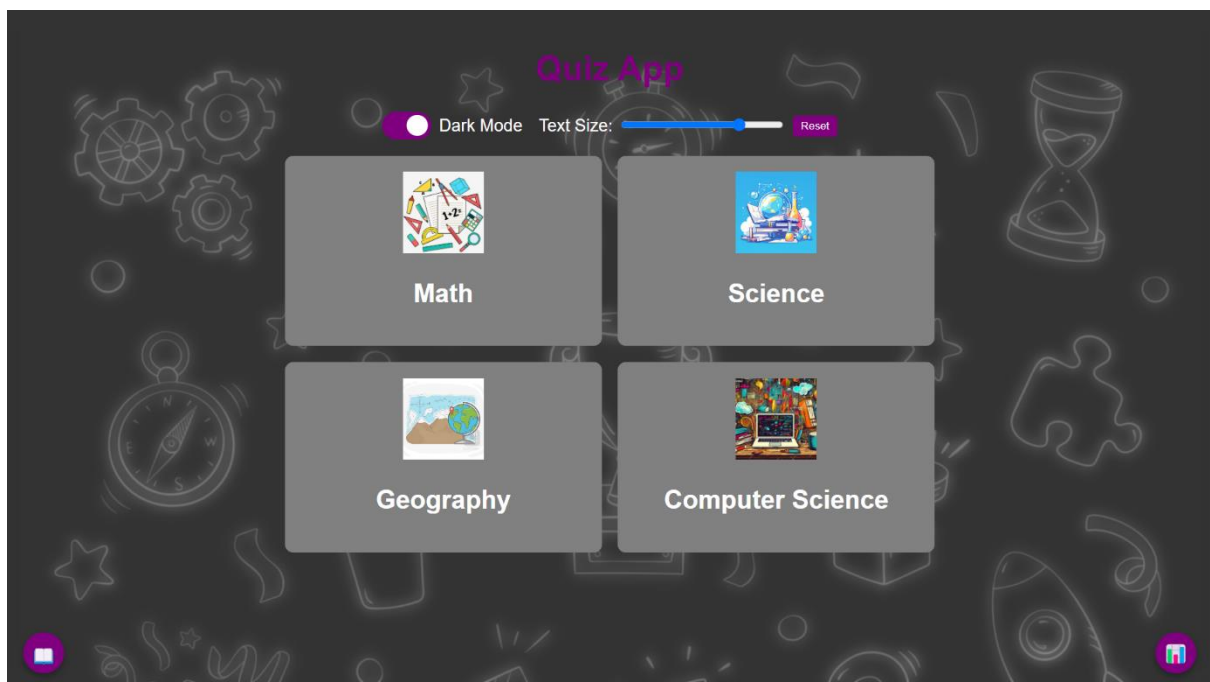


Fig. 6.1.1.2 Home page with dark mode and enlarged text



### 6.1.2. Quiz page

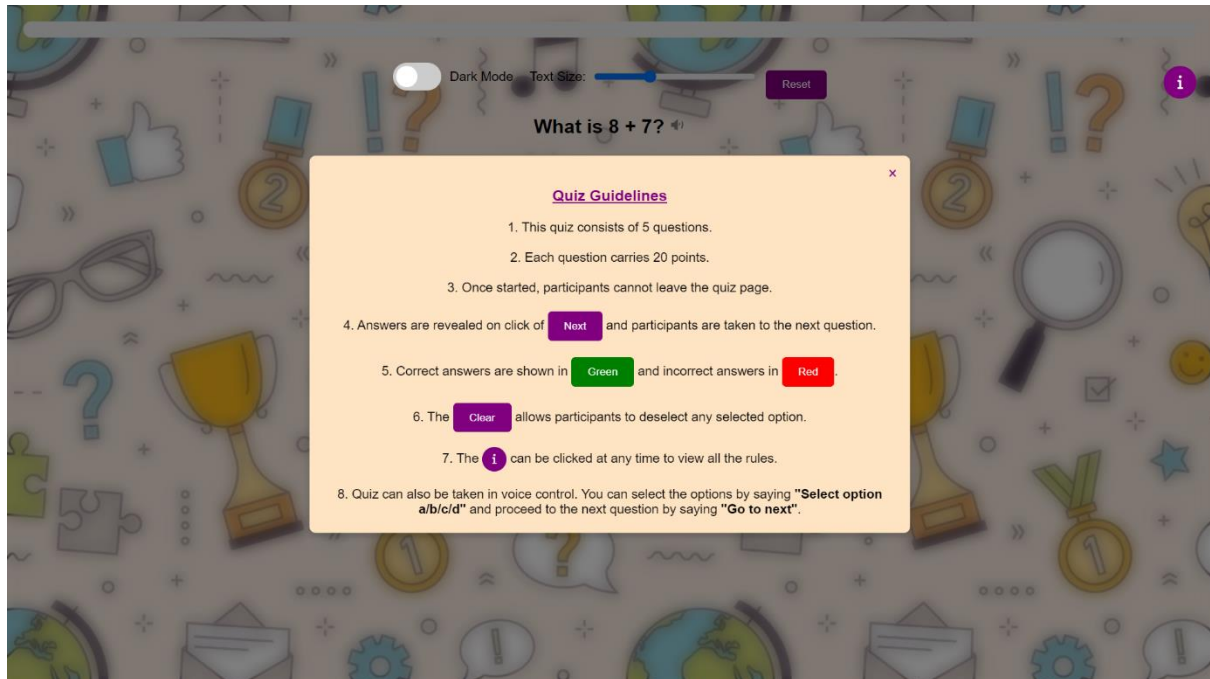


Fig. 6.1.2.1 Quiz guidelines pop-up

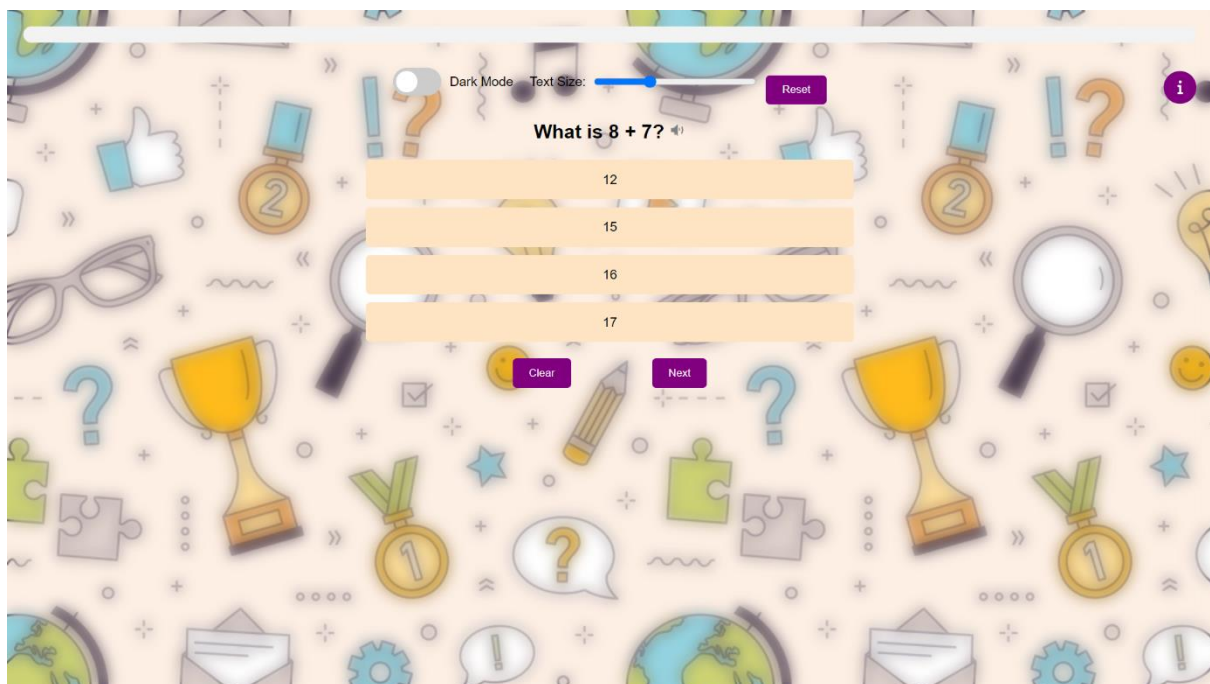


Fig. 6.1.2.2 Display of question and options

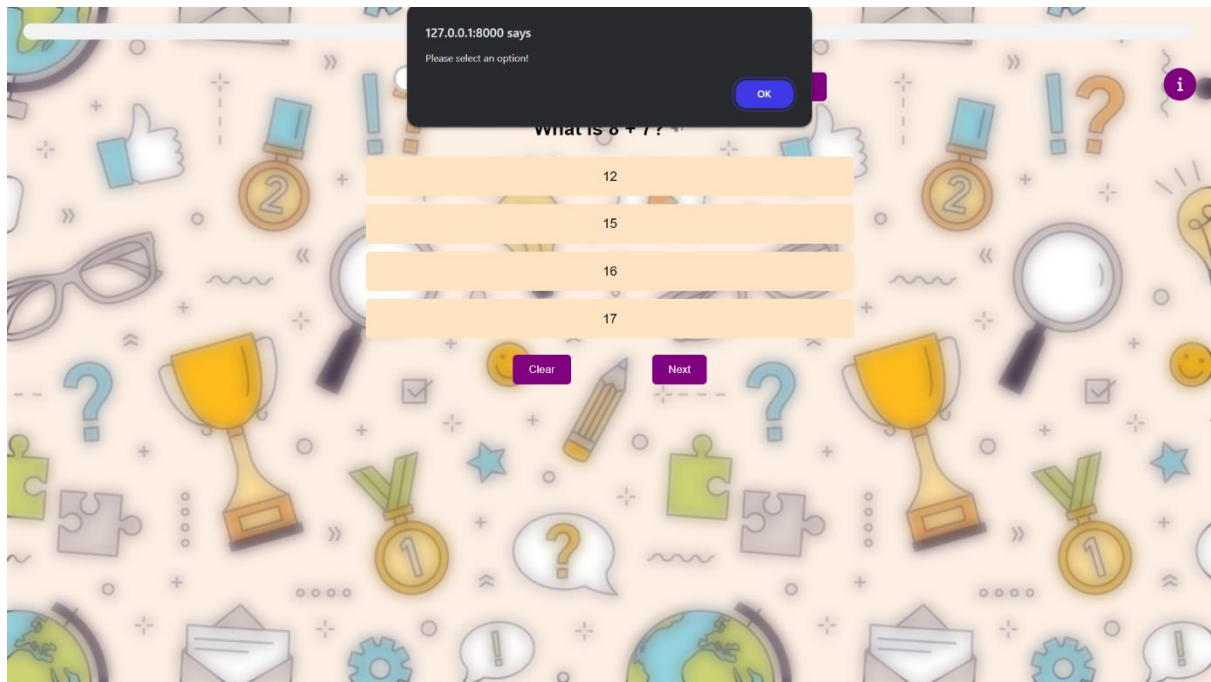


Fig. 6.1.2.3 Prompting user to select an option



Fig. 6.1.2.4 Selection of option



Fig. 6.1.2.5 Incorrect option selected



Fig. 6.1.2.6 Correct option selection and progress bar



### 6.1.3. Quiz completion page

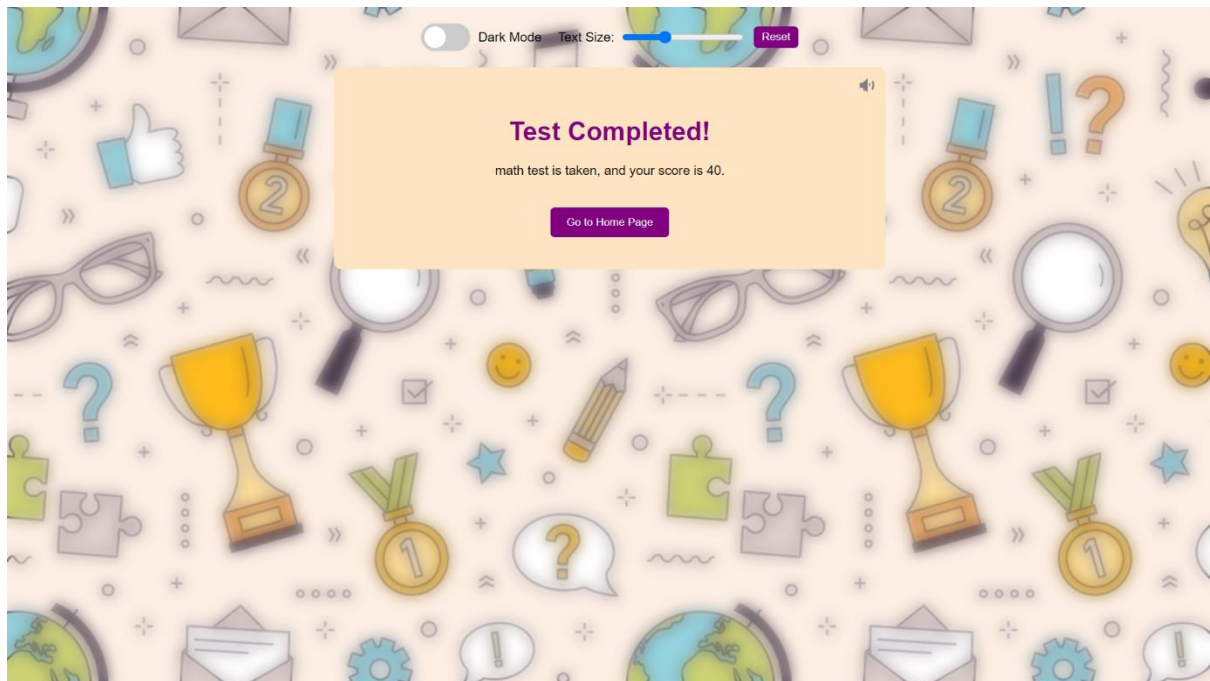


Fig. 6.1.3.1 Quiz completion and display of score

### 6.1.4. Analytics page

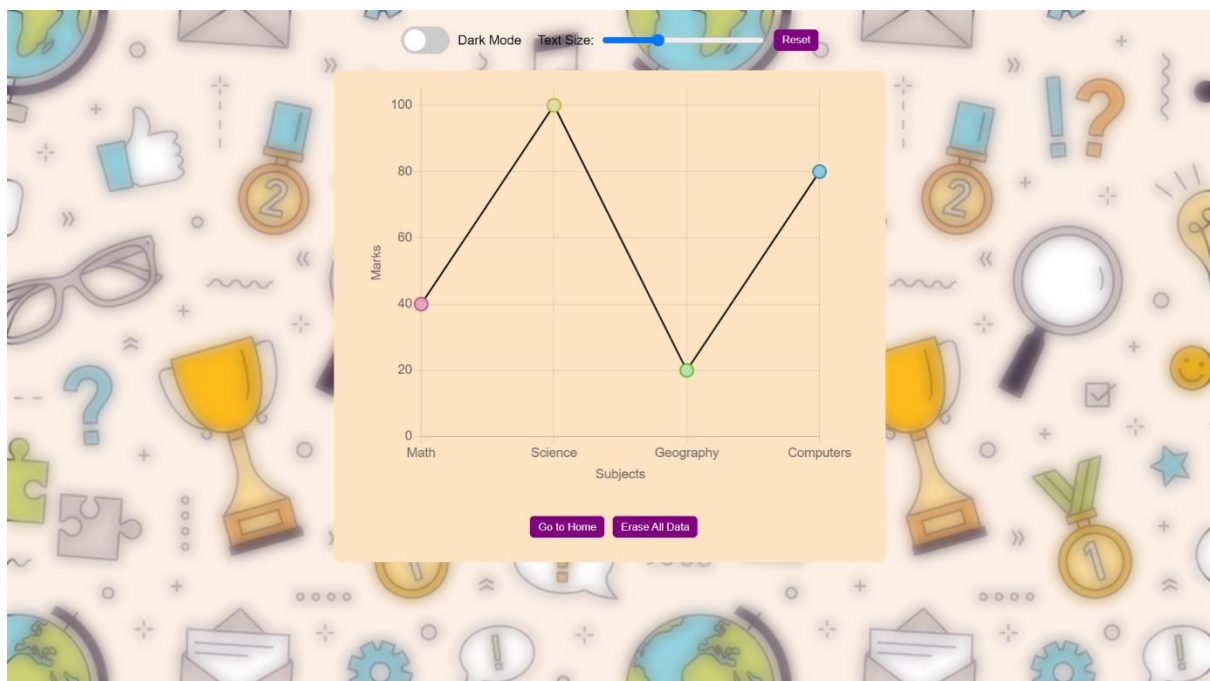


Fig. 6.1.4.1 Graph to show subject-wise marks

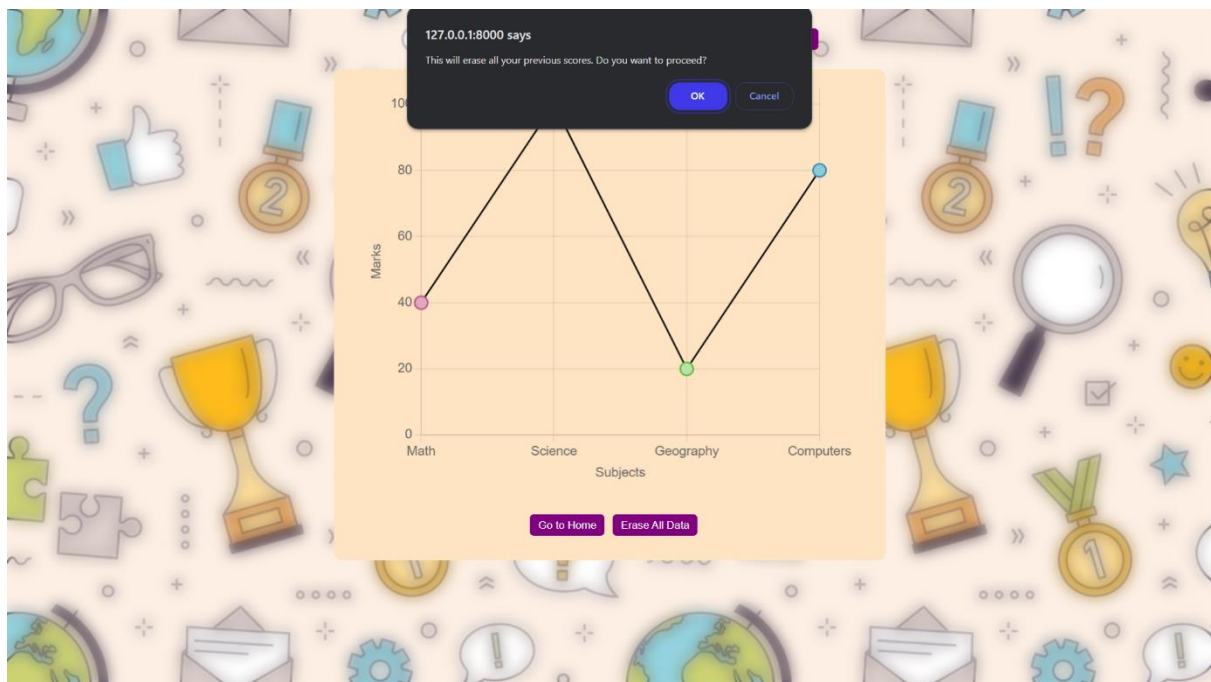


Fig. 6.1.4.2 Warning message before clearing data

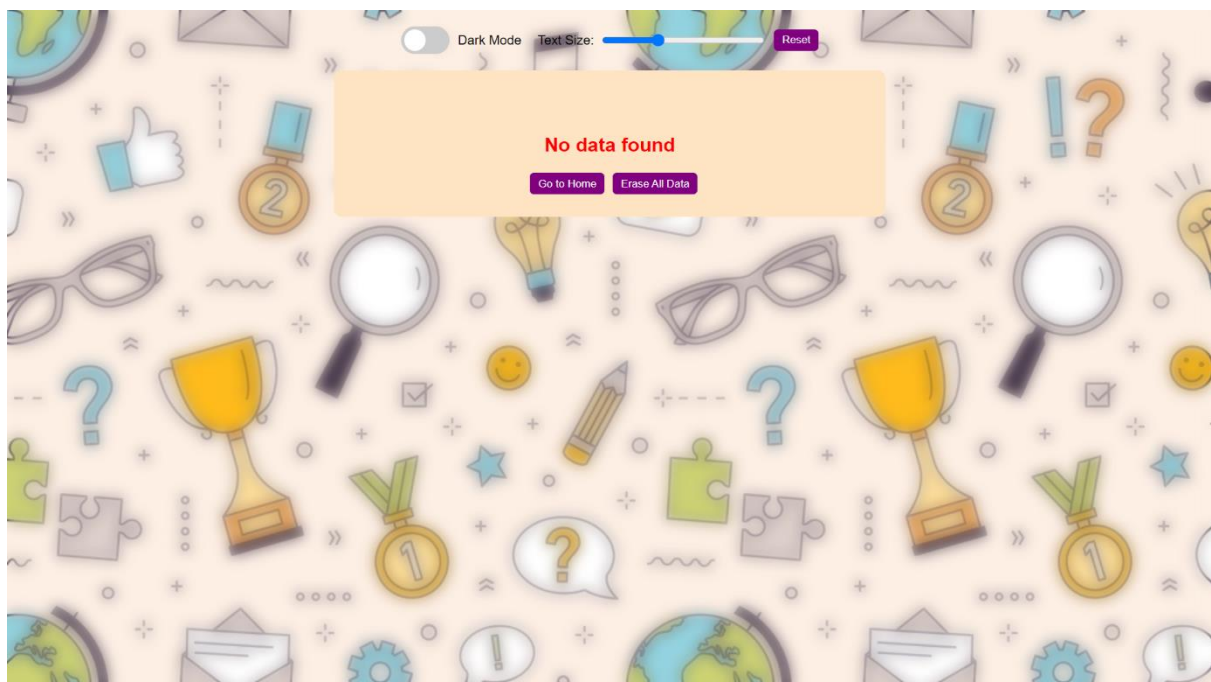


Fig. 6.1.4.3 Screen when no test is taken or history is deleted

## 6.1.5. Walkthrough



Fig. 6.1.5.1 Walkthrough startup

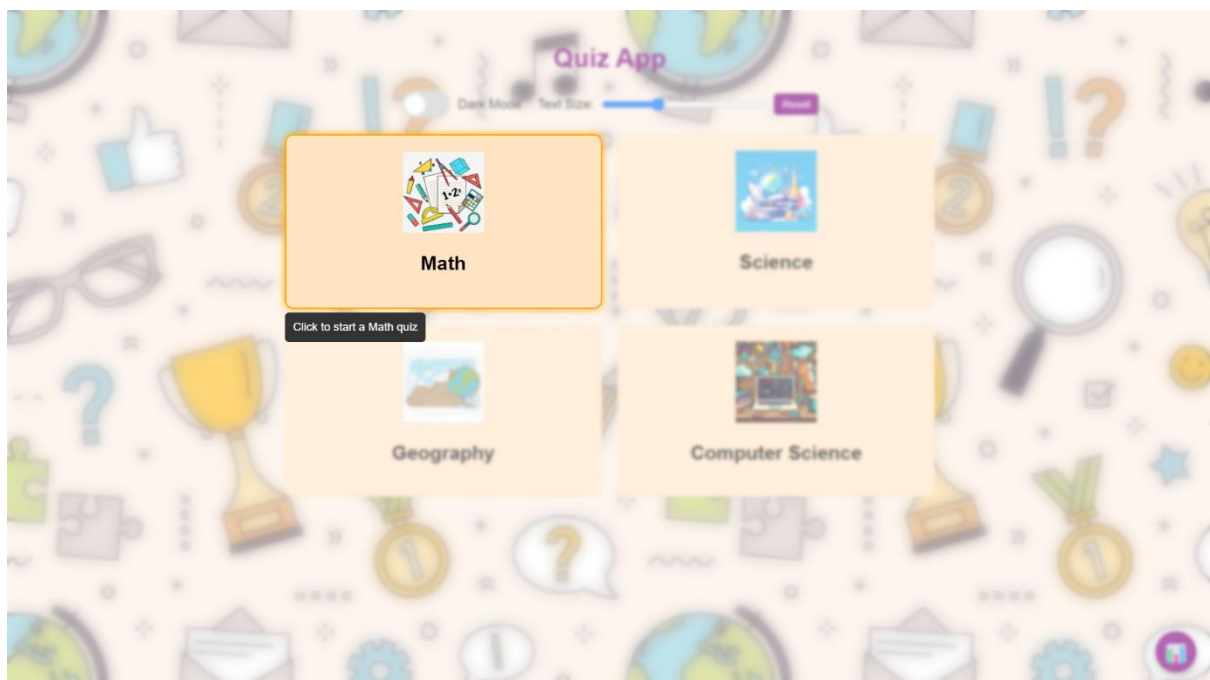


Fig. 6.1.5.2 Detailed step-by-step prompts

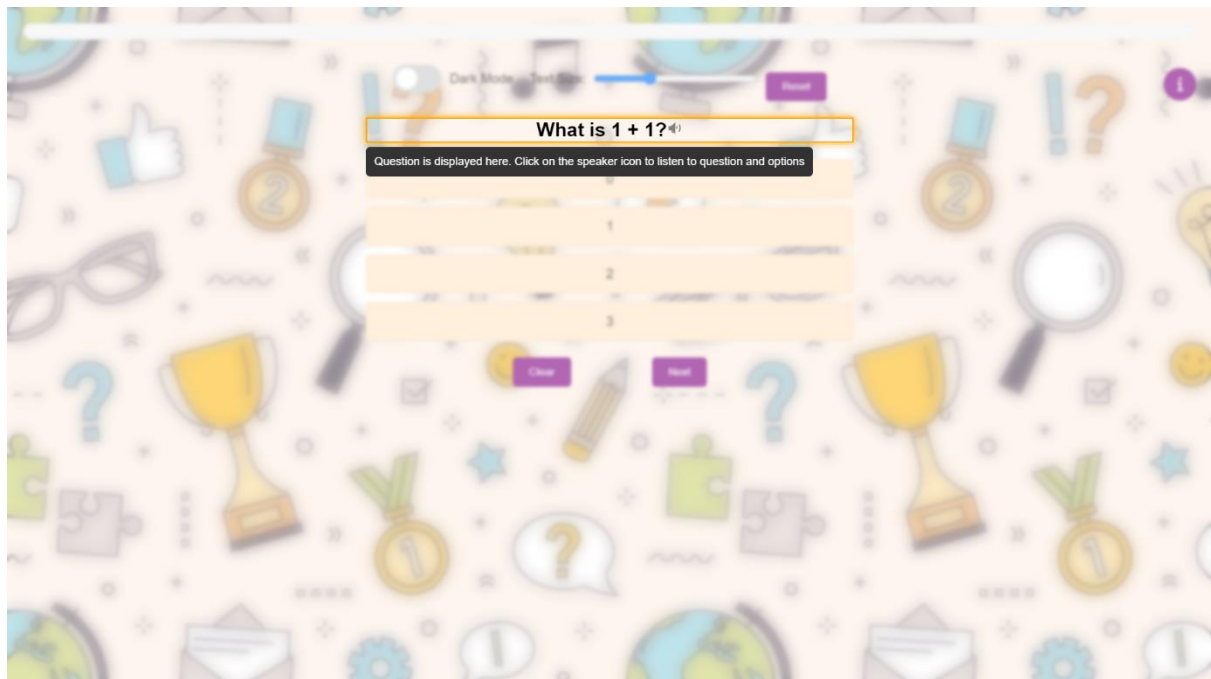


Fig. 6.1.5.3 Speaker icon for text-to-speech

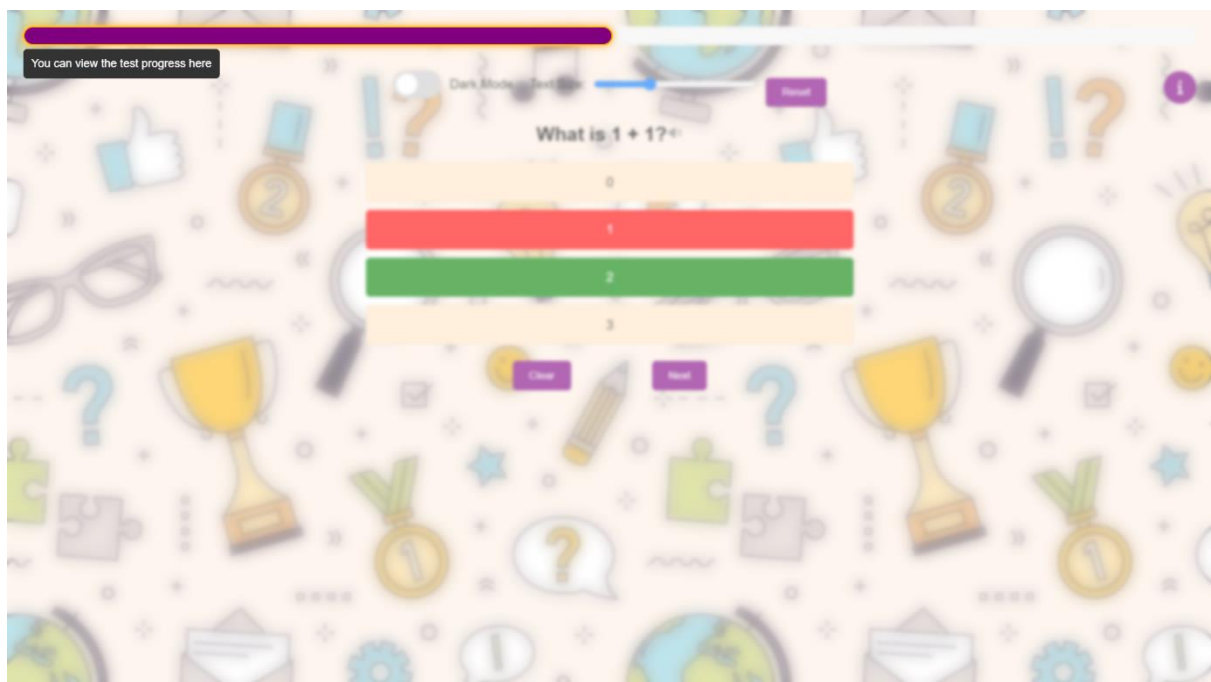


Fig. 6.1.5.4 Progress bar



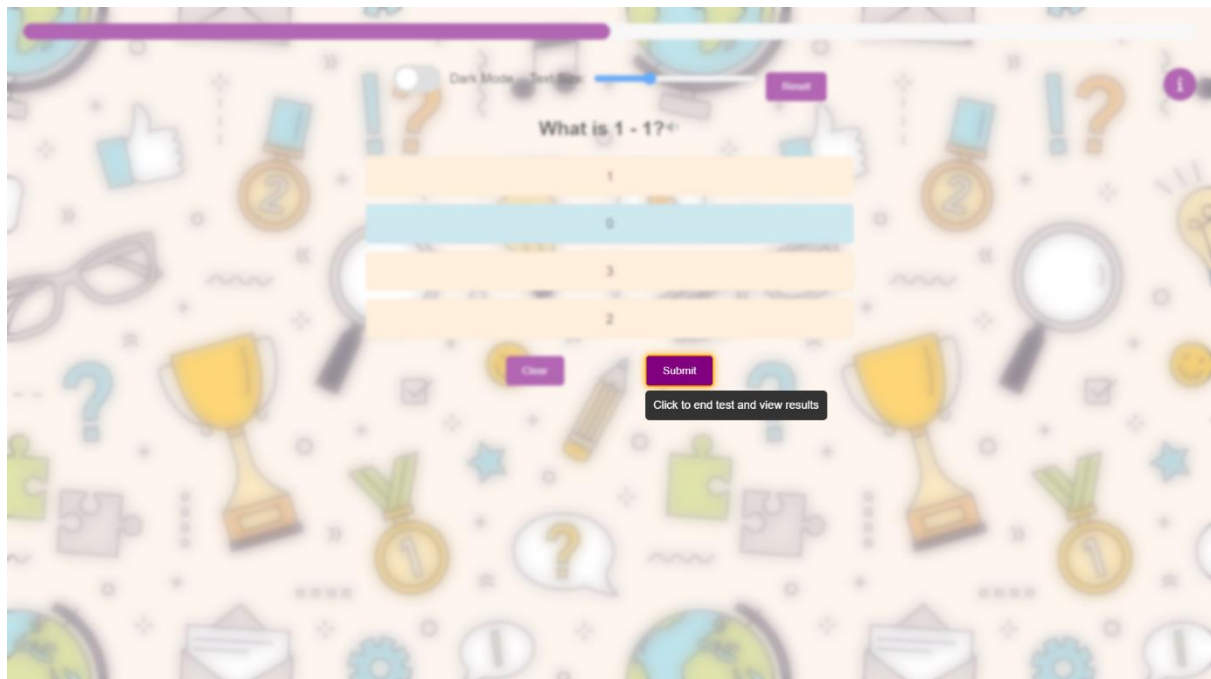


Fig. 6.1.5.5 Demonstrating functionality of buttons

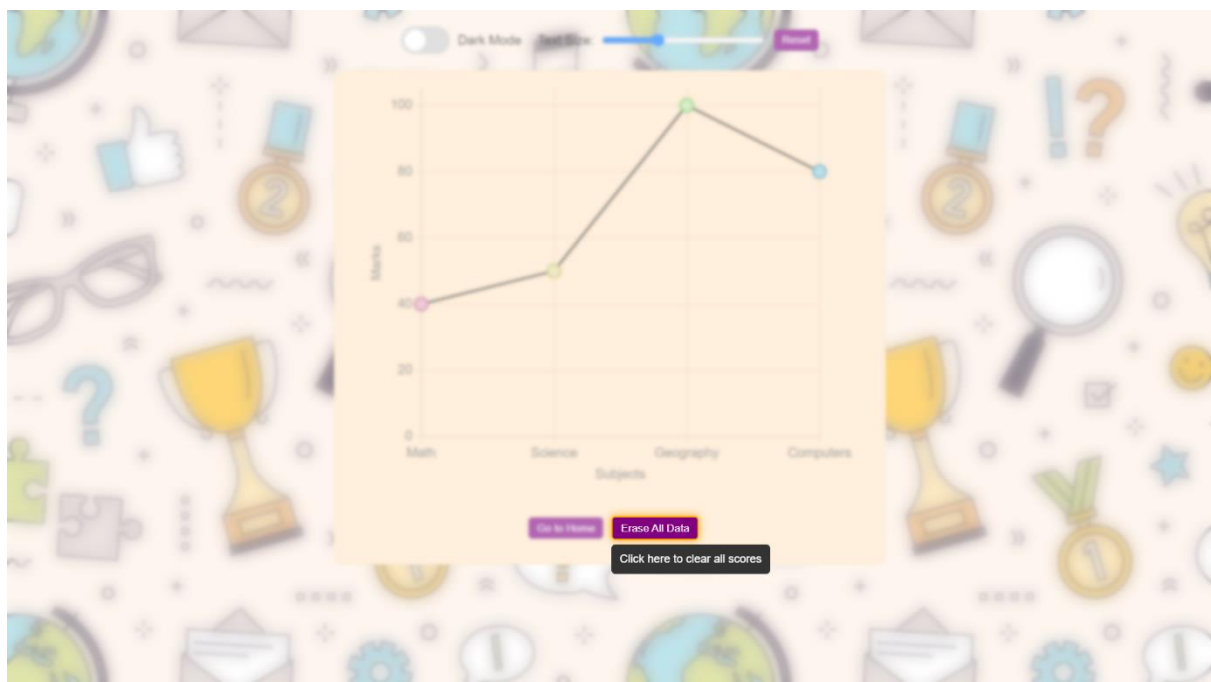


Fig. 6.1.5.6 Introducing user to the available options



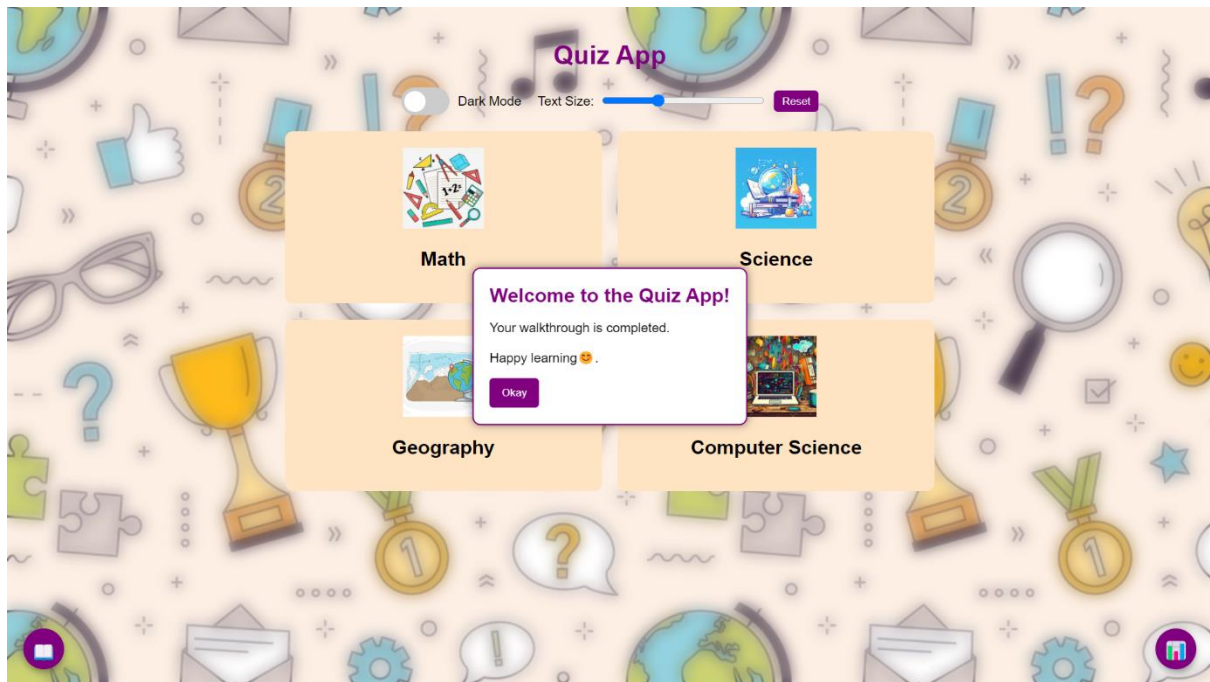


Fig. 6.1.5.7 Walkthrough completion

## 6.2. User evaluation sheets with name and contact info

Sahith Magalaof  
210953154  
CCE-B

Problem No.	The Problem	Heuristics that the design violates	Severity (2: Major, 1: Minor)
1.	The "Next" button feels unresponsive on certain slower networks	Performance visibility of system status	2
2.	No way to pause or stop the auto-next time	User control and freedom	2
3.	No real-time feedback on voice commands on the guide page	Visibility of system status	2
4.	Voice commands only works with the text provided in the text guidelines	User control and freedom.	1

Name: Pradhan Reddy Anthireddy

Reg no: 210953142

CCE - C

Prob no.	The Problem	Heuristics that the design Violates	Severity (3: major, 2: disturbs, 1: minor)
1	Analytics page graphs are not mobile friendly and hard to read on smaller screens	Flexibility and efficiency of use	3
2	NO way to skip Questions or return to previous ones	User Control and freedom	3
3	The countdown timer for auto-next feels too fast	User control and freedom	2
4	There's no indication that the question has been submitted when pressing "Next".	Visibility of system status	1

Name: Varadha Aamruth Kumar  
 Reg no: 210911220  
 Sec: IT - C

Problem No.	The Problem.	Heuristics that the Design Violates	Severity (3: major, 2: disturbs, 1: minor)
1.	No option to Restart the Quiz from the middle.	User Control and Freedom	2
2.	The Voice Detection does not function well in noisy environments.	Prevent Errors	1
3.	The Walkthrough for the Quiz app is too long and cannot be skipped.	User control and Freedom.	3
4.	There is no indication that when the App is listening.	Visibility of System Status.	1

(3)

Name: Nitish Kumar Reddy  
 Reg no: 210913092  
 CCE B

Prob no.	The Problem	Heuristics that the design violates	Severity (3: major, 2: disturbs, 1: minor)
1.	The quiz doesn't show a summary of all answers at the end	Feedback, User control and freedom	3
2	The confetti effect is too prominent and slows down the app on weaker devices	Aesthetic and minimalist design	2
3	The walkthrough forces the user to go through all steps without skipping	User control and freedom	2

(4)

V. Likith Reddy

210911146

ITB

Prob No.	The Problem	Heuristics that the design violates	Severity (3: major, 2: disturbs, 1: minor)
1	No clear indication of when the next question will load	Feedback, visibility of system status	2
2	No feedback when a voice command is successfully processed	visibility of system status, Feedback	2
3	The walkthrough lacks an option to skip sections	User Control and freedom	2
4	The confetti animation is distracting after every correct answer	Aesthetic and minimalist design	1

P. Althiram  
210963150  
CCE 'B'

Prob no	The problem	Heuristics that the design violates	Severity (3: major, 2: disturbs, 1: minor)
1	Walkthrough is little longer	User control and freedom	2
2	No feedback when a voice command is successfully processed.	Visibility of system status, feedback.	2
3	The confetti animation lags when internet is slow	Aesthetic and minimalist design	1
4	The analytics page lacks export functionality to share or download performance data	flexibility and efficiency	2

(6)

M Bharath Reddy  
210911308  
IT, sec G

Problem number	The problem	Heuristics that the design violates	Severity (3: major, 2: disturbs, 1: minor)
1.	Voice recognition is not working on brave browser.	user control and freedom	1
2.	The time to view the answer is little low	user control and freedom	2
3.	no feedback for voice commands	Feedback, User control and freedom	1.

(7)



Yeldi Ajay Kumar  
210953286  
CCE-B

Prob No	The Problem	Heuristics that the design violates	Severity (3: major, 2: disturb, 1: minor)
1	No option to restart quiz from middle	User control and freedom	2
2.	The voice detection does not function well in noisy environments	Prevent errors	1
3	The walk through for quiz app is too long and can't be skipped	User control and freedom	3
4.	Graph contents are small in mobile	Flexibility and efficiency of use	2

(8)

NANDINI ANAND  
210953318

PROBLEM No.	PROBLEM	HEURISTICS THAT THE DESIGN VIOLATES	SEVERITY [3-max - 1-minor]
1	Restart of the quiz in between is not provided	User control and freedom	3
2	Next button is always enabled even though option is not selected	Performance, visibility of system status	1
3.	Only final score is shown but not the score for individual question	Feedback, user control and freedom	2
4.	There is no indication that when the app is listening	Visibility of system status	1

(9)

Varikati Madhurima  
C210953314)  
CCE-B

Problem no	The Problem	Heuristics that the design violates	Severity (3: major, 2: disturbs, 1: minor)
1	Walkthrough doesn't allow skipping steps, which some users may prefer	User control and freedom	2
2	Voice commands accuracy varies, especially for accents	Accessibility, Error prevention	1
3	Confetti effect doesn't perform smoothly on all device, affecting the quiz's flow	Aesthetic and minimalist design	1
4	The background color on the home page is slightly too bright, making it hard on eye	Aesthetic design	2