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SOFTWARE REQUIREMENT SPECIFICATION [SRS] OF DyslexiaAid

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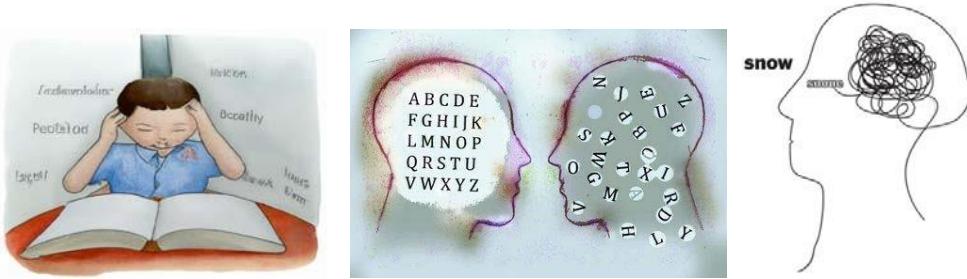
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I. Introduction

Dyslexia is a learning disorder that affects reading, spelling, writing, and sometimes speaking [1]. It is a neurological disorder that is caused by a difference in the way the brain processes language. People with dyslexia have normal intelligence, but they may have difficulty connecting the letters they see to the sounds those letters make. This can make reading and writing difficult and frustrating.

Our educational software application is designed to address this need, providing dyslexic children with a supportive and engaging learning environment.



1.1 Purpose

DyslexiaAid is an educational software designed to support dyslexic children by providing an engaging and accessible learning environment. It incorporates features such as alphabet tracing with audio support, quizzes, and progress monitoring. The software utilizes technologies like text-to-speech and speech-to-text to assist with reading and writing challenges. It emphasizes user-friendly design, collaboration among teachers, doctors, and parents, and ensures data security through rigorous testing and quality assurance[2]. The goal is to enhance the educational experience and progress of dyslexic children.

1.2 Intended Audience and Intended Use

Intended Audience:

The intended audience for DyslexiaAid includes dyslexic children, teachers, parents, and doctors. Dyslexic children benefit from tailored educational content, while teachers guide their learning and monitor progress. Parents actively engage with progress reports, and doctors use the software for specialized advice on a child's development[3].

Intended Use:

DyslexiaAid aims to provide an interactive and supportive learning environment for dyslexic children, incorporating assistive technologies, fostering collaboration among stakeholders, and ensuring data security.

1.3 Scope

The scope of DyslexiaAid encompasses the development and implementation of an educational software application tailored to the unique needs of dyslexic children. Key components of the scope include:

- **Holistic Learning:** Comprehensive focus on reading, spelling, and writing skills.
- **Accessibility:** User-friendly design for effective engagement.
- **Technological Support:** Integration of assertive technologies (text-to-speech, speech-to-text).
- **Structured Learning:** Organized courses and lessons for a clear learning path.
- **Data Security:** Robust measures for confidentiality and safety.
- **User Roles:** Defined roles and permissions for effective participation.
- **Quizzes and Assessments:** Evaluation of understanding through various question formats.
- **Progress Monitoring:** Tools for parents, teachers, and doctors to monitor a child's progress.
- **Testing and Quality Assurance:** Rigorous testing for error-free performance.

1.4 Document Conventions

1	Convention	Meaning
2.	SRS	Software Requirements Specifications
3.	TTS	Text To Speech
4.	STT	Speech To Speech
5.	Bold	Sub heading points
6.	Italics	References
7.	Font: 16	Main Headings
6.	Font: 14	Sub-Headings
7.	Font: 12	Paragraph Writing

1.5 References

[1] Jane A. Miller

(2015). "Understanding Dyslexia: A Comprehensive Case Study Analysis." Doctoral dissertation, Department of Education, University of Cityville, Cityville, USA.

[2] Dylan C. Richards

(2017). "Effective Interventions for Adolescent Dyslexia: A Longitudinal Study."

Published in the Journal of Learning Disabilities, 42(3), 215-230.

[3] Ethan R. Chang

(2018). "Exploring Multisensory Approaches in Dyslexia Education: A Comparative Case Analysis."

Presented at the International Conference on Learning Disabilities, Sydney, Australia.

[5] <https://www.behance.net/gallery/120570291/Kidzoo-App>

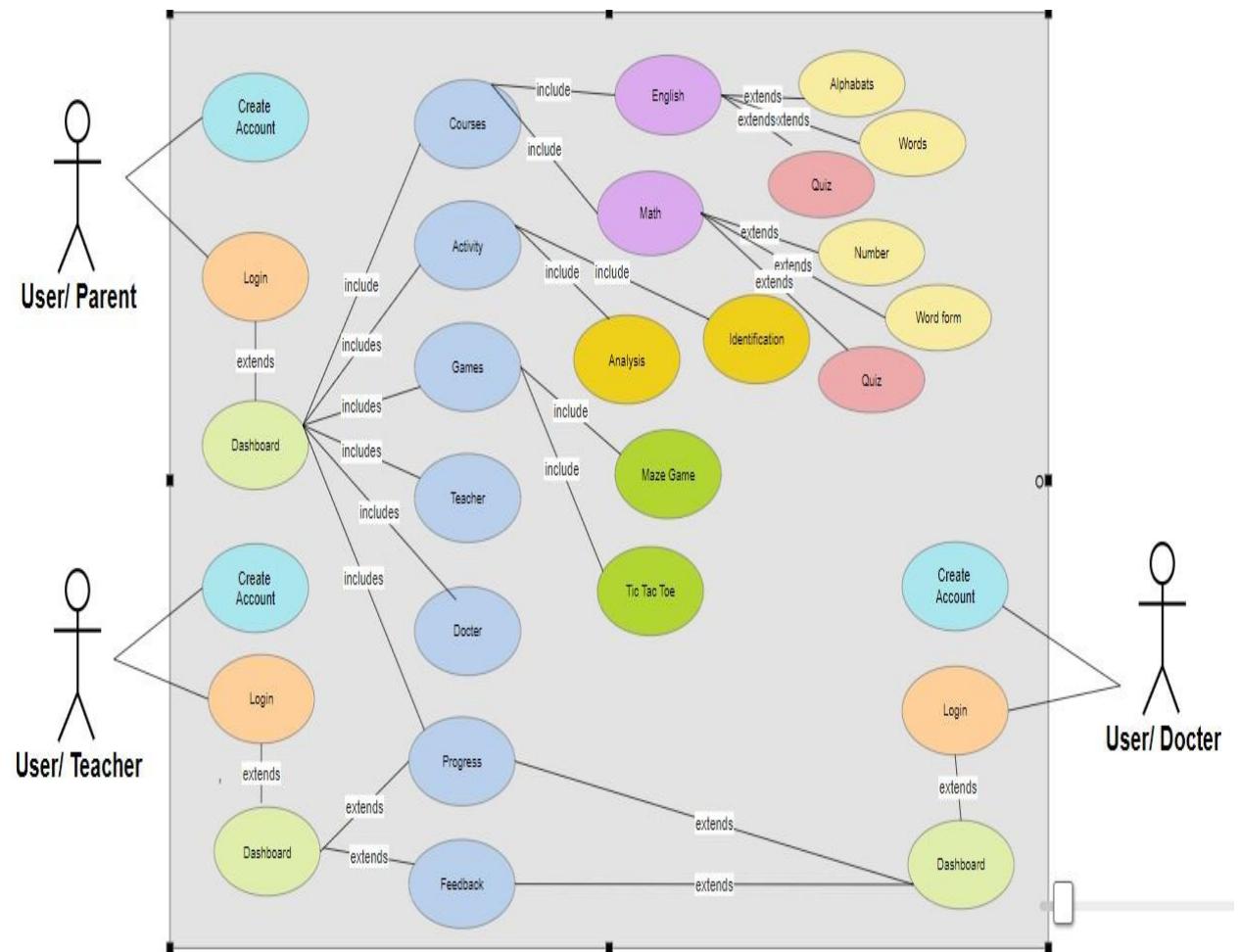
[6] <https://www.youtube.com/watch?v=RaS2jRSphGY&t=1s>

[7] <https://dribbble.com/shots/15500536-Kids-Education-Mobile-Apps>

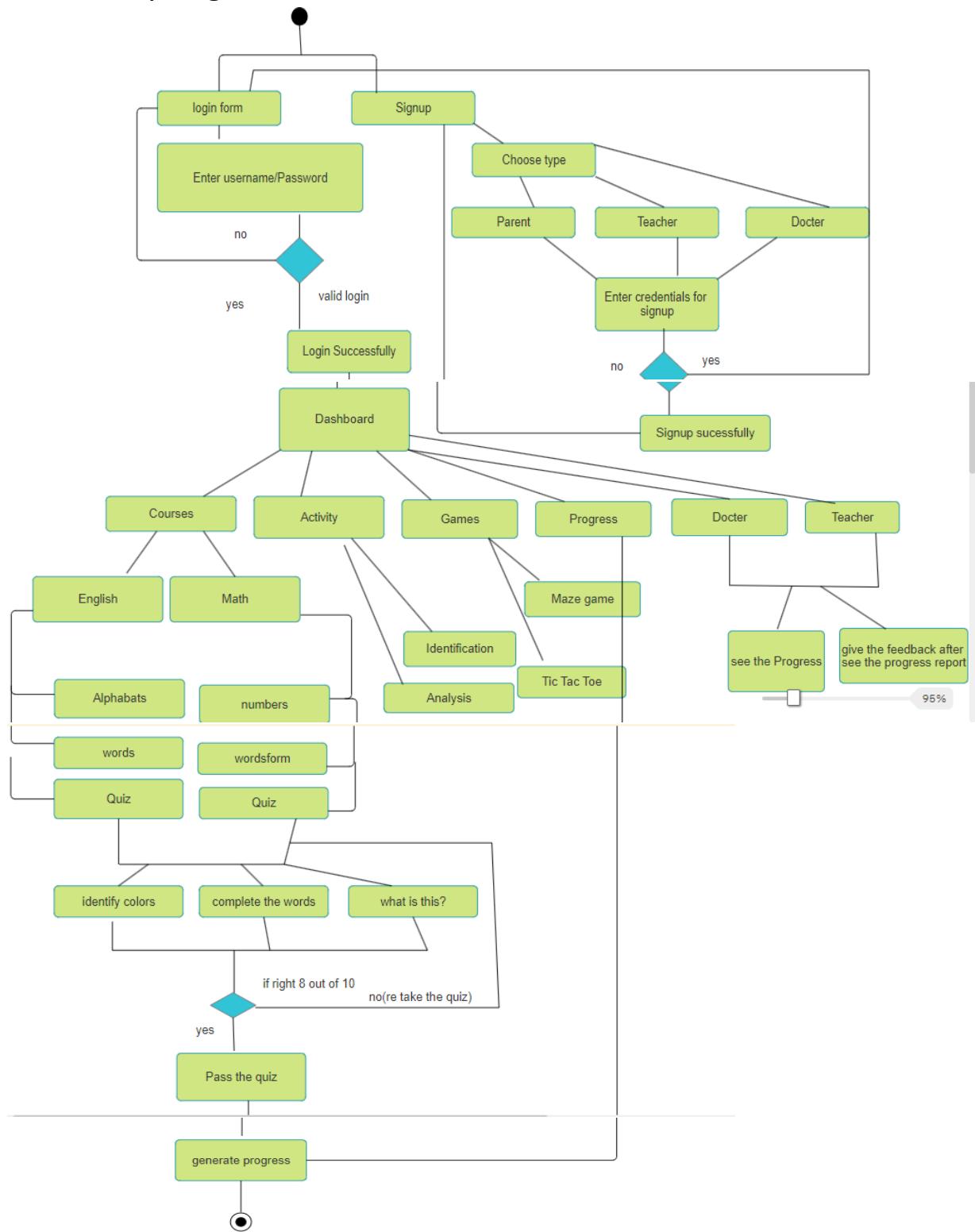
2 Overall Description

DyslexiaAid is an educational software designed for dyslexic children, teachers, parents, and doctors. It provides a comprehensive and user-friendly learning experience, incorporating assistive technologies, collaboration tools, and progress monitoring features. The software ensures data security, offers structured courses, and functions seamlessly online and offline, contributing to a supportive environment for dyslexic children's education.

2.1 Use Case Diagram



2.2 ActivityDiagram



3 System Features and Requirement

3.1 Functional Requirement:

I. User Registration and Authentication:

Actor: New User

Scenario:

- User accesses DyslexiaAid for the first time.
- User provides necessary information for registration.
- System validates information and creates a new user account.
- User logs in with registered credentials.

II. Alphabet Tracing with Audio Support:

Actor: Dyslexic Child

Scenario:

- Dyslexic child selects the alphabet tracing feature.
- System displays the selected alphabet for tracing.
- Child traces the alphabet on the screen with guidance from audio instructions.
- System provides feedback on tracing accuracy.

III. Quizzes:

Actor: Dyslexic Child

Scenario:

- Dyslexic child selects the quiz feature.
- System presents a set of multiple choice, true/false, or short answer questions.
- Child answers the questions, and the system provides immediate feedback.
- Results are stored for progress tracking.

IV. Course-Level Structure:

Actor: Dyslexic Child

Scenario:

- Dyslexic child navigates through the course structure.
- System displays lessons within a course.
- Child marks completion of each lesson, and progress is tracked.

V. Progress Monitoring Tools:

Actors: Parents, Teachers, Doctors

Scenario:

- Parents view progress reports and task completion statistics.
- Teachers monitor student progress and provide targeted guidance.
- Doctors analyze developmental data and offer specialized advice.

VI. Text-to-Speech (TTS):

Actor: Dyslexic Child

Scenario:

- Dyslexic child selects the TTS feature while reading.
- System converts written text into audible speech, aiding comprehension.

VII. Speech-to-Text (STT):

Actor: Dyslexic Child

Scenario:

- Dyslexic child selects the STT feature for writing.
- System converts spoken words into written text, assisting in writing tasks.

3.2 Non-Functional Requirement:

i User-Friendly Design:

The user interface must be designed with dyslexic accessibility in mind, incorporating suitable fonts, high contrast, and intuitive navigation to enhance user experience.

ii Fast Response Times:

The system should respond to user interactions promptly to maintain engagement, with response times kept within acceptable limits.

iii Scalability:

The software architecture should be designed to accommodate a growing user base and increasing data volume without compromising performance.

iv Reliability:

The software must exhibit high reliability, minimizing system downtimes, crashes, or errors during usage.

v Data Backup:

Regular automated data backups should be performed, and a robust recovery mechanism should be in place to safeguard against data loss.

vi Testing and Quality Assurance:

Rigorous testing practices, including unit testing, integration testing, and user acceptance testing, must be employed to ensure the software's functionality and performance.

vii Documentation:

Comprehensive documentation, including user manuals and technical documentation, should be provided to assist users, administrators, and developers.

viii Training Support:

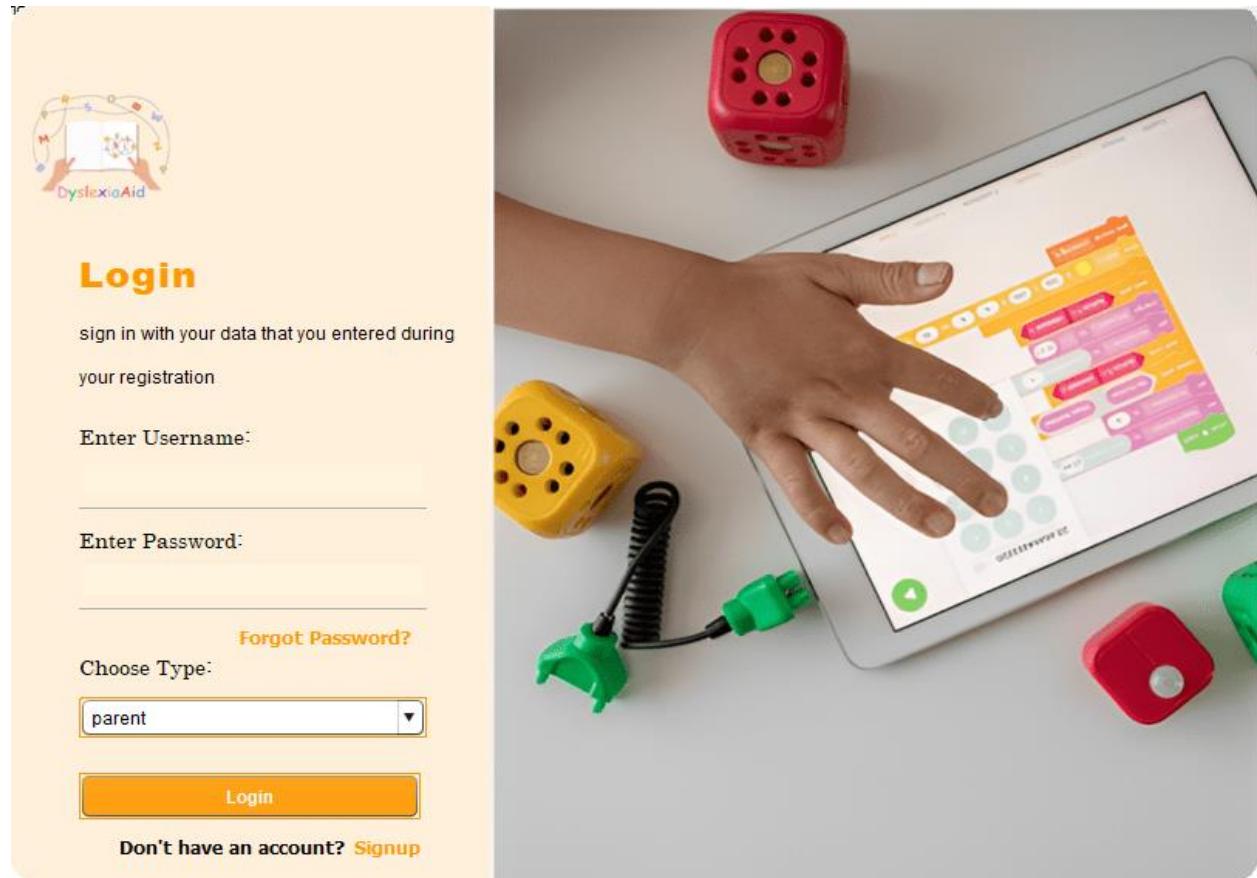
Support materials and resources, such as tutorials or guides, should be available to assist users, particularly teachers and parents, in effectively utilizing DyslexiaAid.

ix Audit Trails:

The system should maintain audit trails to log important events and actions, aiding in monitoring and troubleshooting.

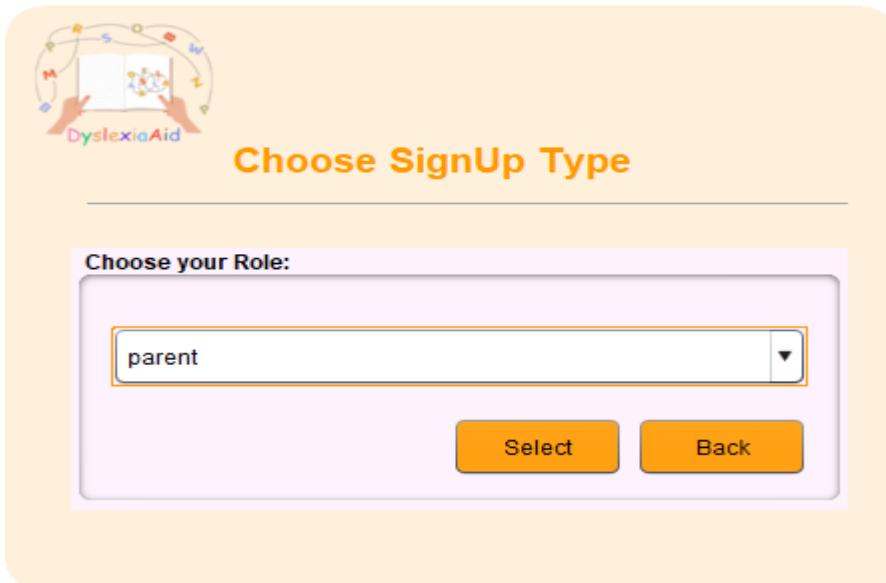
3.3 System Interfaces

1. Login Interface



The image is a composite of two photographs. On the left, a screenshot of the DyslexiaAid login page is shown. It features a logo at the top with a stylized brain and the word 'DyslexiaAid'. Below it, the word 'Login' is displayed in large orange letters. A text instruction reads: 'sign in with your data that you entered during your registration'. There are input fields for 'Enter Username:' and 'Enter Password:', both with placeholder text. Below these is a 'Forgot Password?' link. A dropdown menu labeled 'Choose Type:' contains the option 'parent'. At the bottom are 'Login' and 'Signup' buttons. On the right, a child's hand is shown interacting with a tablet screen. The tablet displays a Scratch-like programming interface with various blocks and a character. A red Bee-Bot robot is positioned above the tablet, and a yellow Bee-Bot is connected to it via a black coiled cable. A green Bee-Bot is also visible on the surface.

2. Choose Signup Type



A screenshot of the DyslexiaAid 'Choose SignUp Type' page. At the top, there is a logo featuring a stylized brain and the word 'DyslexiaAid'. Below it, the title 'Choose SignUp Type' is centered. A section titled 'Choose your Role:' contains a dropdown menu with the option 'parent'. At the bottom of this section are 'Select' and 'Back' buttons. The background of the page is light yellow.

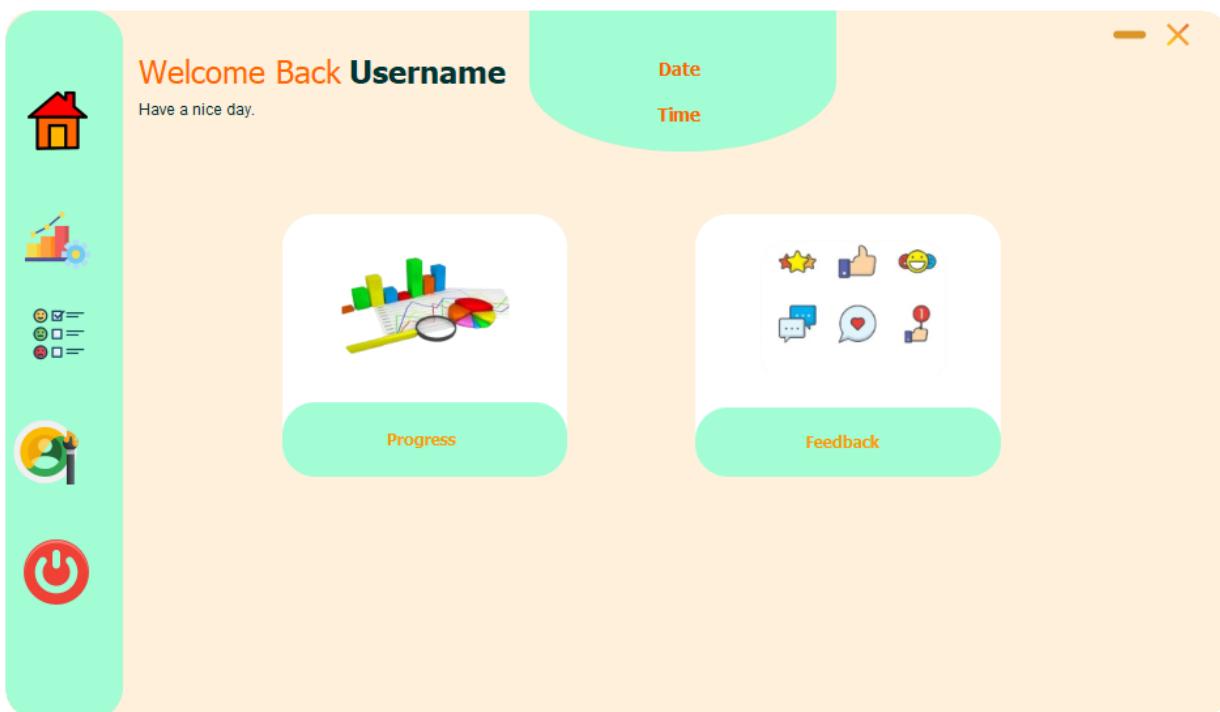
3. Signup Interface

The image shows a web-based sign-up form for DyslexiaAid. The header features the brand name "DyslexiaAid" in a stylized font with a magnifying glass icon. Below the header is a logo depicting a hand holding a pencil over an open book, with letters like R, S, O, A, W, M, B, P, E, L, S, I, A, X, Z, and Q floating around it. The main form area contains fields for "Full Name", "User Name", "Password", "Confirm Password", and "Phone". Below these is a section for "Choose your security Question" with a dropdown menu showing "what was your first car?". There is also a field for "Answer of security Question". At the bottom are "Sign Up" and "Already have an account? login" buttons.

4. Parent Dashboard

The screenshot shows a user interface designed for young children. At the top left, there is a vertical sidebar with five icons: a house, a pencil and eraser, a teacher at a desk, a doctor with a stethoscope, and a recycling bin. The main title "Welcome Back Username" is displayed prominently at the top center, with a placeholder "Username" where a user's name would normally appear. Below the title is a message "Have a nice day.". To the right of the title is a green rounded rectangle containing the text "Date" and "Time". At the top right corner of the screen are standard window control buttons for minimize and close. The central area features three large, rounded rectangular buttons arranged horizontally. The first button, labeled "Courses", contains an illustration of four children playing with colorful building blocks. The second button, labeled "Activity", contains an illustration of a pair of blue-handled scissors positioned over several pieces of paper in shades of pink, purple, and green. The third button, labeled "Games", contains an illustration of a golden trophy cup surrounded by a laurel wreath. The background of the main area is a light beige color.

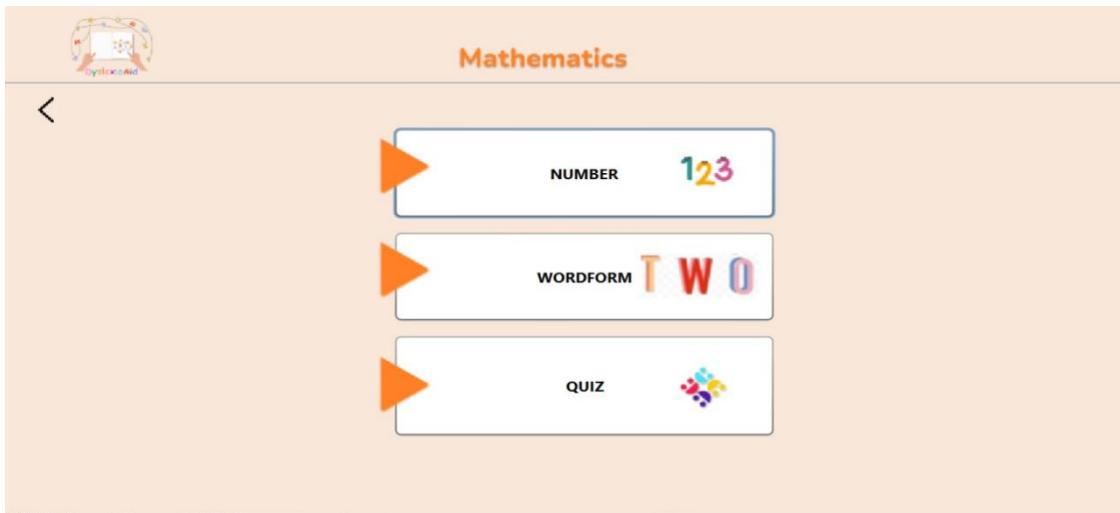
5. Teacher Dashboard and Doctor Dashboard



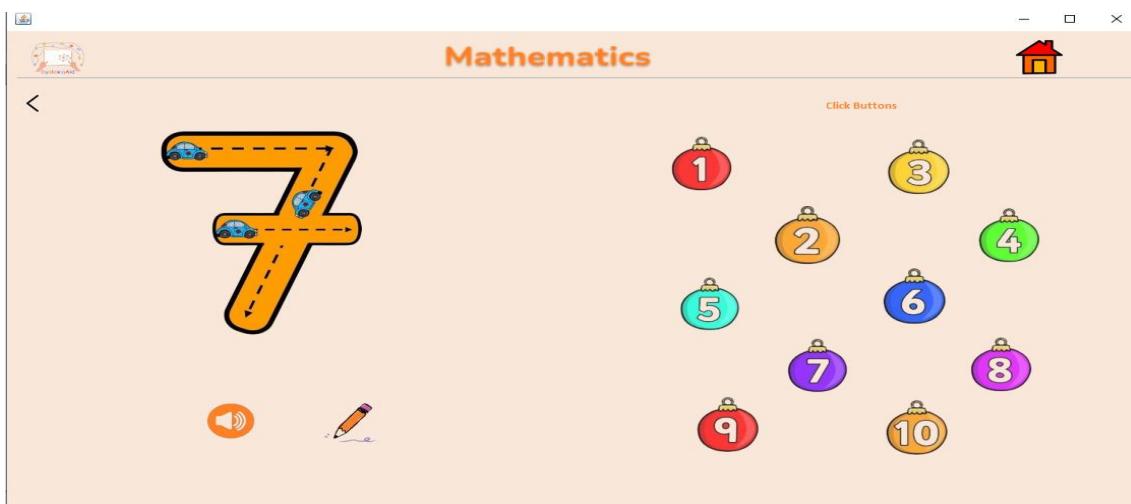
6. Courses Interface

The Courses Interface has a header with a logo and the word "COURSES". Below are two main sections: "ENGLISH" (with a train icon and the text "Trace along the lines to master English") and "MATHEMATICS" (with a train icon and the text "FOLLOW THE TRAILS TO TRACE NUMBERS"). Each section has an orange circular button labeled "01" and "02" respectively.

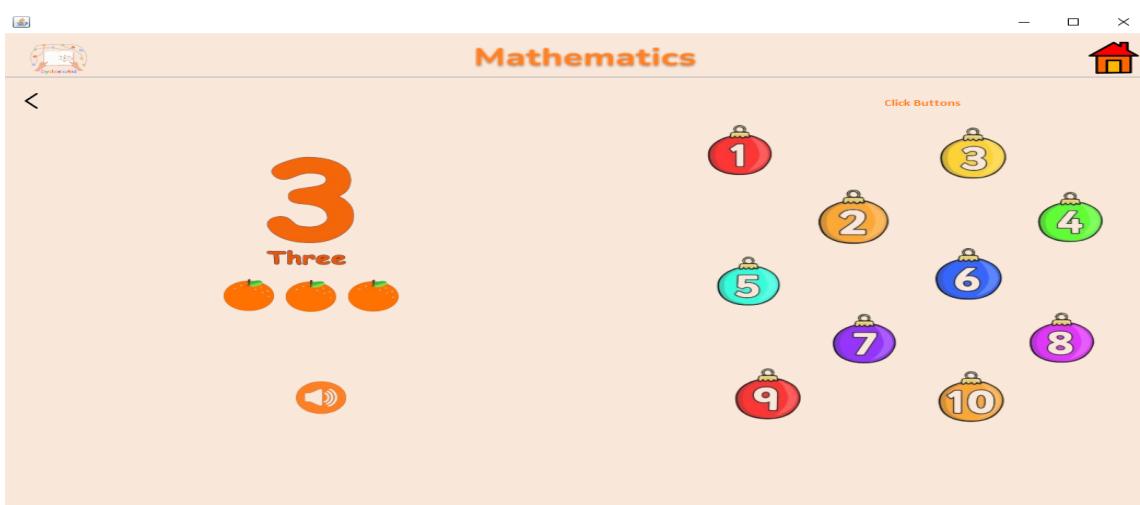
Math:



Numbers:

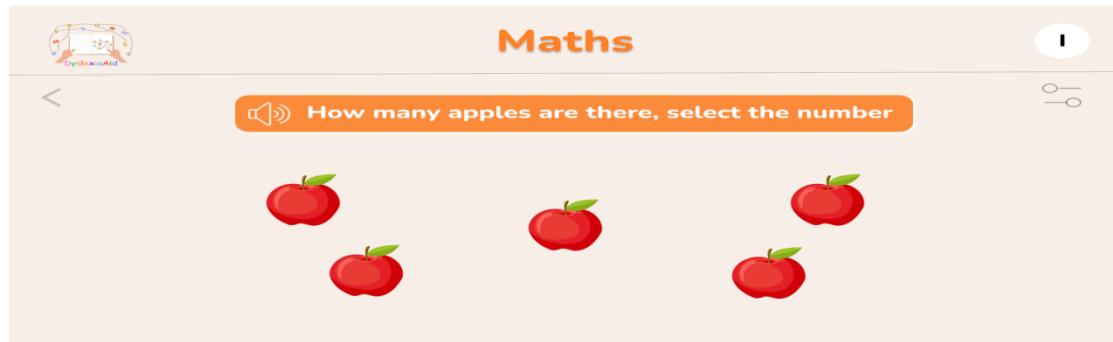


Wordform:



Quiz:

Counting apples:



1 3 6 5 2

EXCELLENT!
YOU DID RIGHT!

QUESTION:1 5

QUESTION:2 circle

QUESTION:3 3

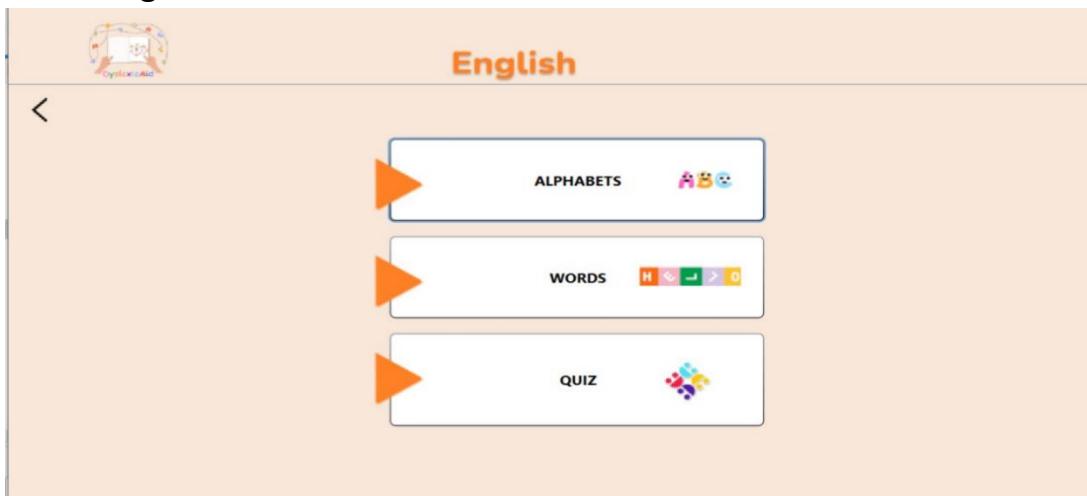
QUESTION:4 6

QUESTION:5 square

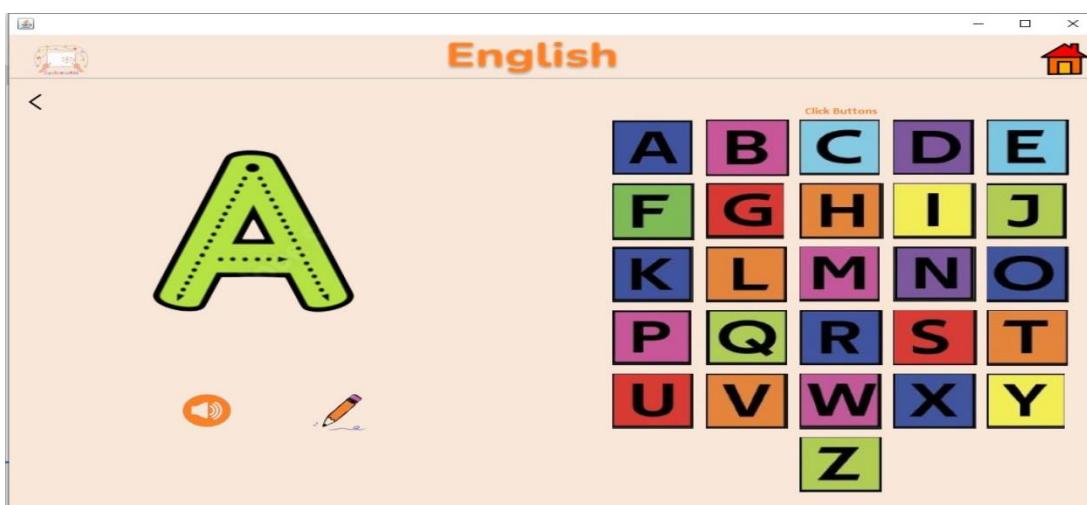
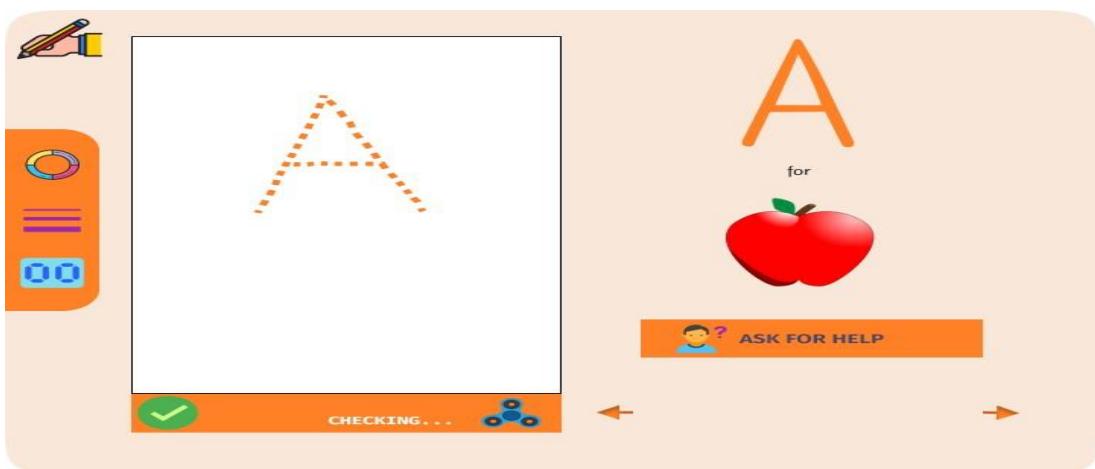
DONE

Question	Answer	Correct
1	5	Yes
2	circle	No
3	3	Yes
4	6	Yes
5	square	No

English:



Alphabets:



Words:

A screenshot of a Windows-style application window titled "English". The title bar includes standard window controls (minimize, maximize, close) and icons for a cartoon character and a house. On the left, the large letters "Mm" are displayed in red. Below them is a cartoon monkey sitting and smiling. The word "Monkey" is written in black text below the monkey. To the right of the letters is a 4x6 grid of colored squares labeled with letters A through Z. The grid is organized into four rows: Row 1 (A, B, C, D, E), Row 2 (F, G, H, I, J), Row 3 (K, L, M, N, O), and Row 4 (P, Q, R, S, T). A single green square labeled "Z" is positioned below the fourth row. An orange speaker icon is located at the bottom left of the main content area. The background is light beige.

A screenshot of a Windows-style application window titled "English". The title bar includes standard window controls (minimize, maximize, close) and icons for a cartoon character and a house. On the left, the large letters "Gg" are displayed in red. Below them is a bunch of purple grapes with a green leaf. The word "Grapes" is written in black text below the grapes. To the right of the letters is a 4x6 grid of colored squares labeled with letters A through Z. The grid is organized into four rows: Row 1 (A, B, C, D, E), Row 2 (F, G, H, I, J), Row 3 (K, L, M, N, O), and Row 4 (P, Q, R, S, T). A single green square labeled "Z" is positioned below the fourth row. An orange speaker icon is located at the bottom left of the main content area. The background is light beige.

Quiz :

Complete animal name

 ENGLISH

 What insect is this? complete the spelling 



N C I 

A J C N D 

 English

< What insect is this? complete the spelling. > 

EXCELLENT!
You did right ! 

DONE

J N C A

7. Activity Interface

The image shows a digital activity interface titled "Activity". At the top left is the "DyslexiaAid" logo. Below the title, there is a left arrow icon. Two rectangular boxes are displayed vertically. The top box is labeled "IDENTIFICATION" and features a group of colorful cartoon faces. The bottom box is labeled "ANALYSIS" and features a cartoon character with a blue head and orange body. Both boxes have orange arrows pointing towards them from the left.

Identification

The image shows a digital identification activity for the vegetable "BRINJAL". At the top left is the "DyslexiaAid" logo. Below it, a left arrow icon is on the left and a right arrow icon is on the right. In the center, the word "VEGETABLES" is written in a yellow box. To the left of the word is a large, detailed illustration of a purple eggplant. To the right is a colorful illustration of three children playing with letters and shapes. A sound icon is positioned between the eggplant and the play area. Below the eggplant, the word "BRINJAL" is written in a colorful, bubbly font. The background is light orange.

 Activity

< FRUITS |



MANGO



→

Analysis

 Activity

< RAINBOW COLORS

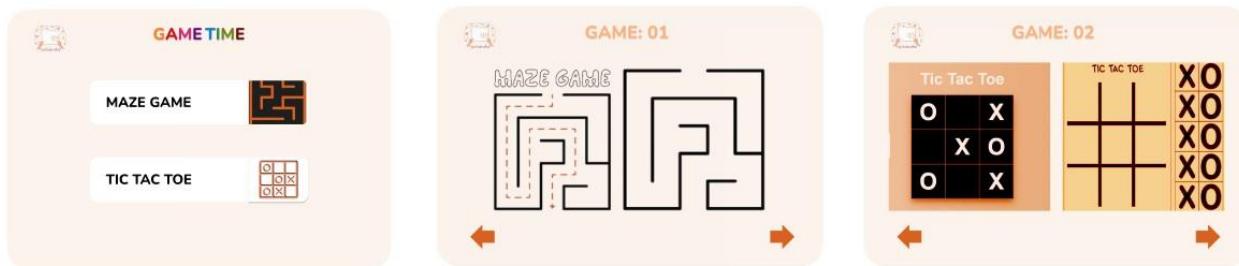


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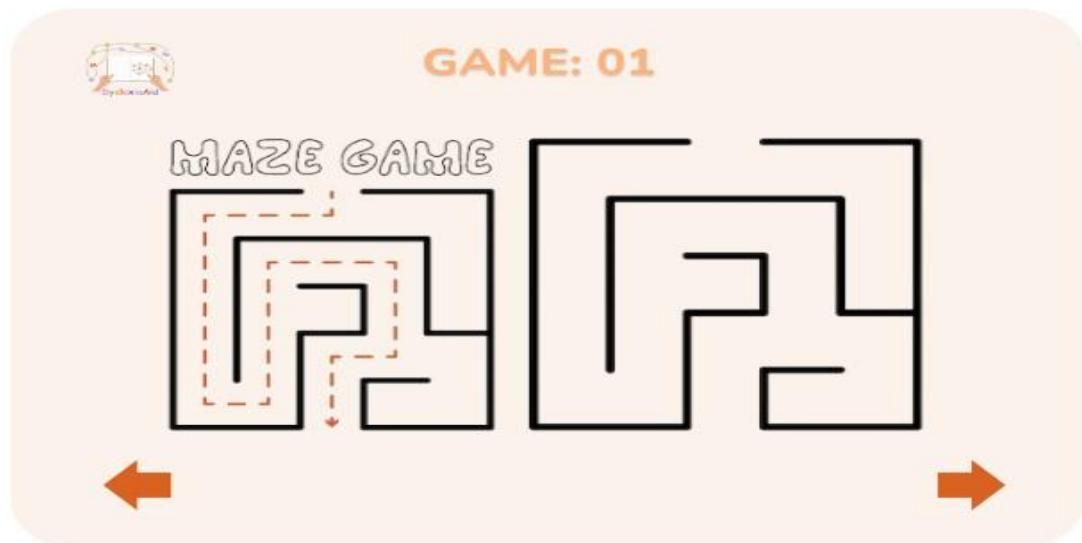


RED	ORANGE	YELLOW	GREEN	BLUE	VIOLET	INDIGO
-----	--------	--------	-------	------	--------	--------

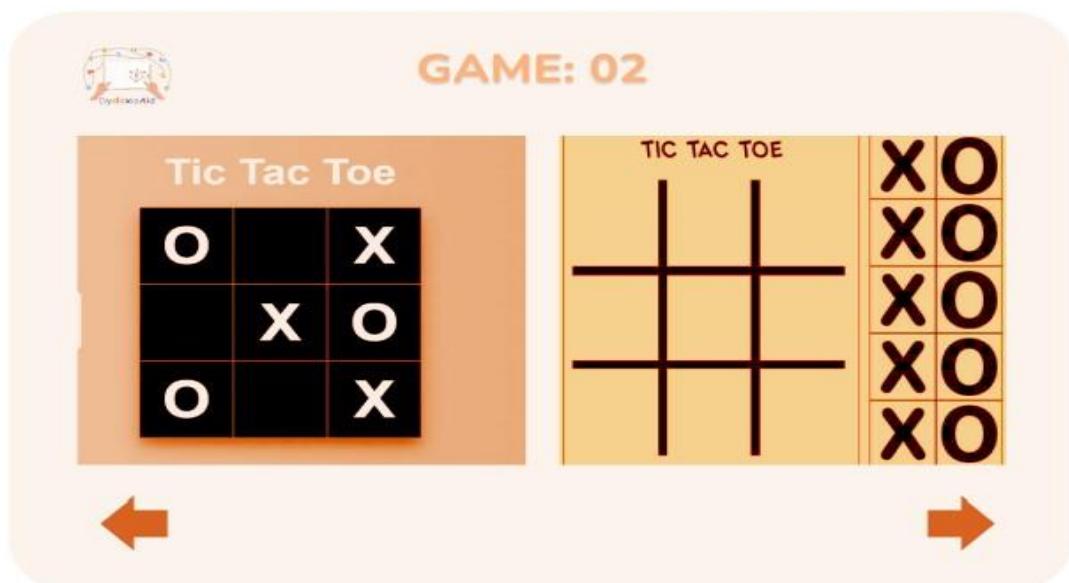
8. Game Interface



Game 1:



Game 2:



9. Progress Interface

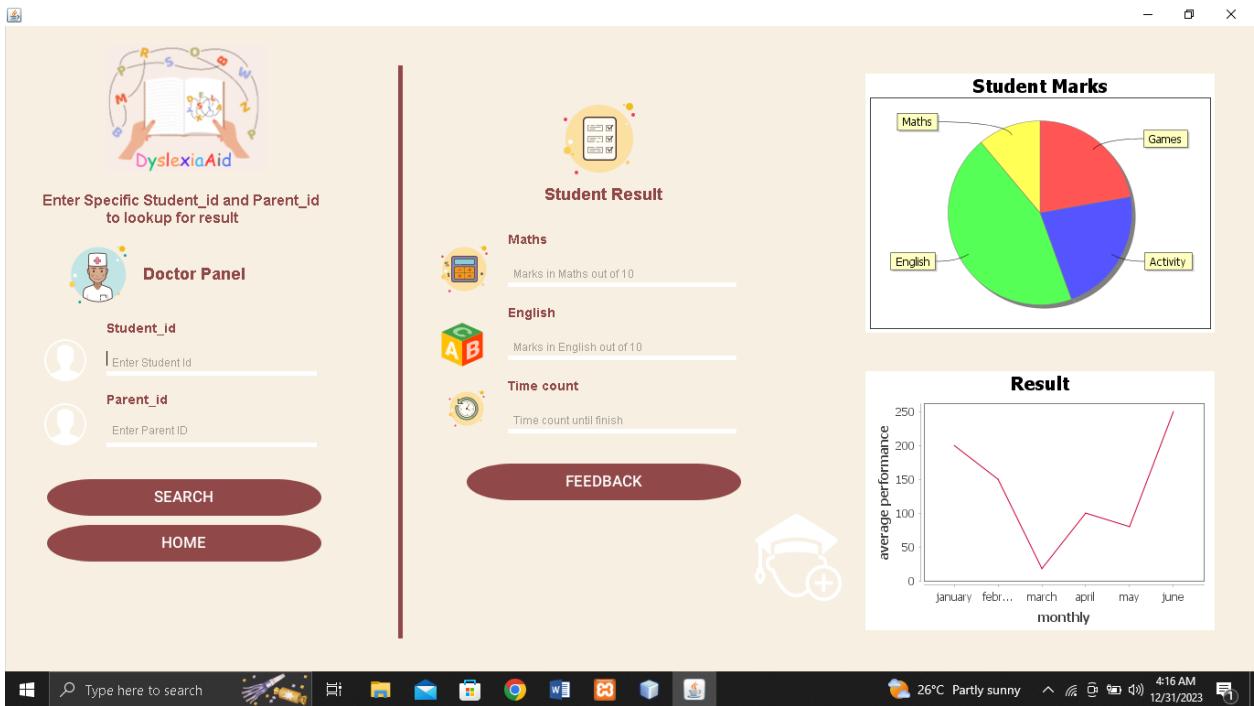
Parent panel:

The Parent panel interface includes a logo for 'DyslexiaAid' featuring a stylized book and letters. A message prompts the user to enter specific Student_id and Parent_id. On the left, there's a 'Parent Panel' section with fields for Student_id and Parent_id, and buttons for SEARCH and HOME. In the center, there's a 'Student Result' section with icons for Maths, English, and Time count, each accompanied by a progress bar. To the right, there are two charts: a pie chart titled 'Student Marks' showing proportions for Maths, Games, English, and Activity, and a line graph titled 'Result' showing average performance over time from January to June.

Teacher Panel:

The Teacher panel interface is similar to the Parent panel but includes additional buttons for PROGRESS and FEEDBACK. The layout is identical to the Parent panel, featuring the DyslexiaAid logo, a search bar for Student_id and Parent_id, and sections for Student Result, Student Marks, and Result chart.

Doctor Panel:



4 Risk Table

<i>Risk Description</i>	Likelihood(L)	<i>Impact(I)</i>	<i>Risk Level(L*I)</i>	<i>Mitigation Strategy</i>
System Downtime	low	high	Low-medium	Implement redundant servers and a robust backup system.
Low User Adoption	medium	medium	medium	Conduct user training programs and gather feedback for improvements.
Lack of User Engagement	medium	medium	medium	Introduce gamified elements, rewards, and interactive features.
Inadequate Testing	low	high	Low-medium	Implement rigorous testing procedures, including user acceptance testing.
Dependency on Third-Party Services	medium	medium	medium	Have backup plans and alternative providers for critical services.

5 Test Cases

5.1 Test Case 1

- User Login: Failed [due to enter wrong information]

B



Login

sign in with your data that you entered during
your registration

Enter Username:

Enter Password:

[Forgot Password?](#)

Choose Type:

Username or Password is Incorrect

[Don't have an account? **Signup**](#)



- User Login: Successful [due to enter right information]

B



Login

sign in with your data that you entered during
your registration

Enter Username:

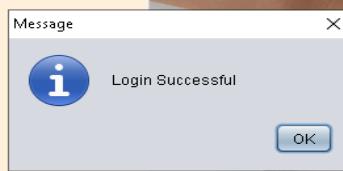
Sara123

Enter Password:

[Forgot Password?](#)

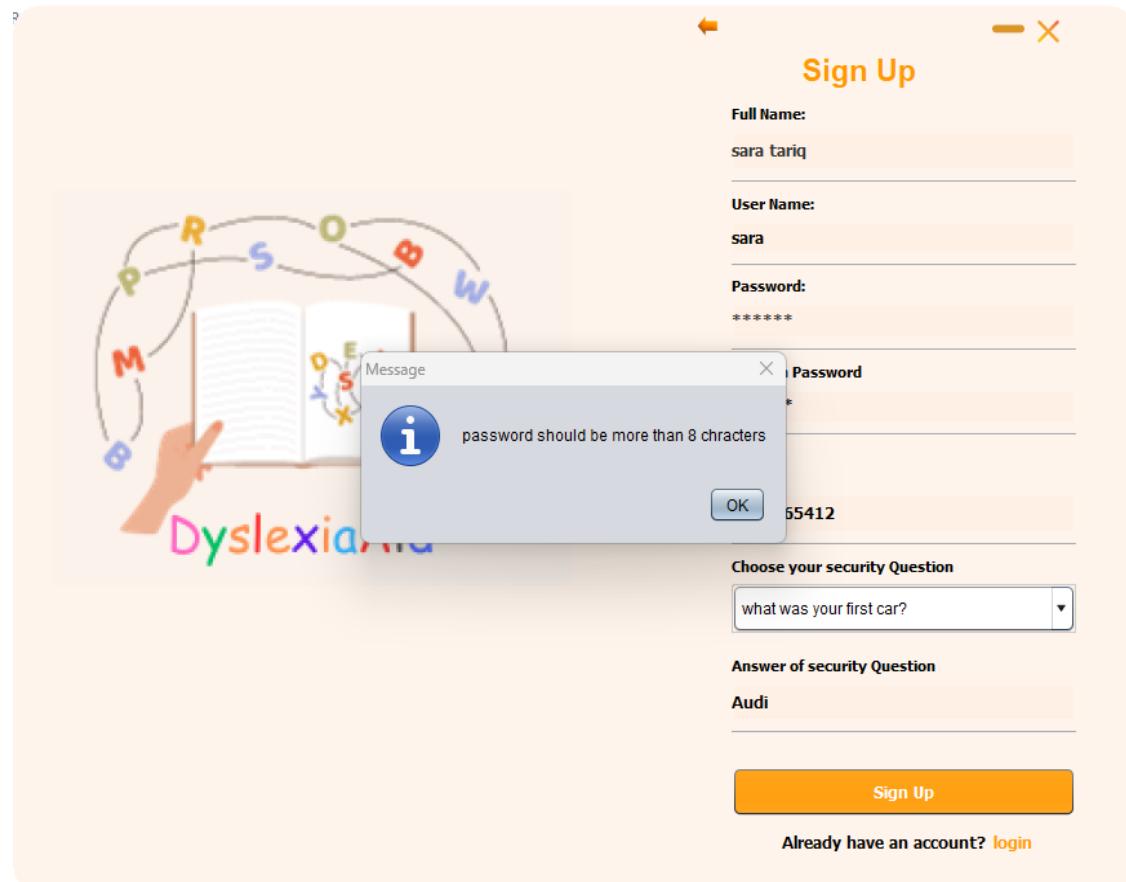
Choose Type:

[Don't have an account? **Signup**](#)



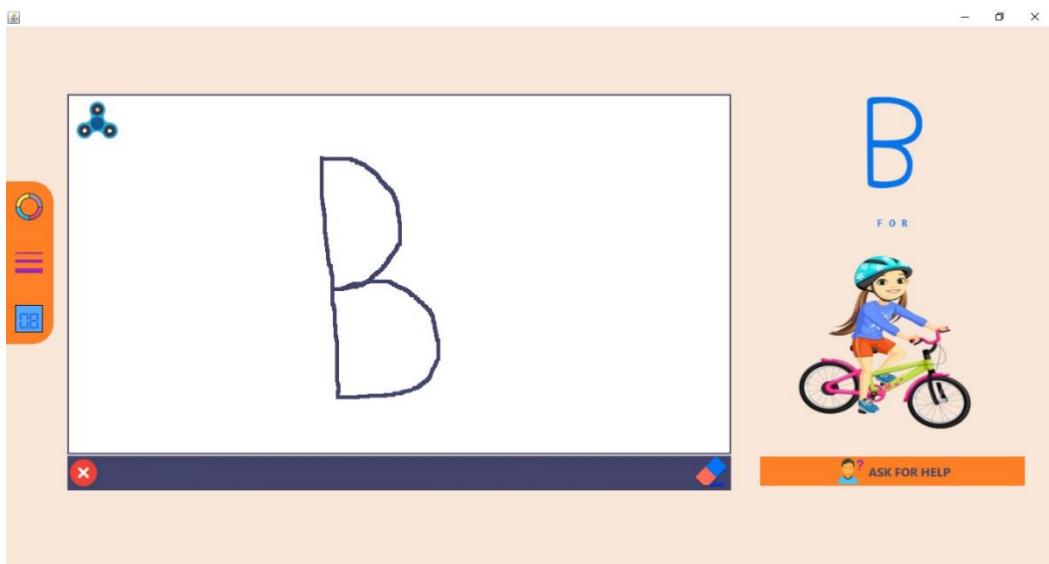
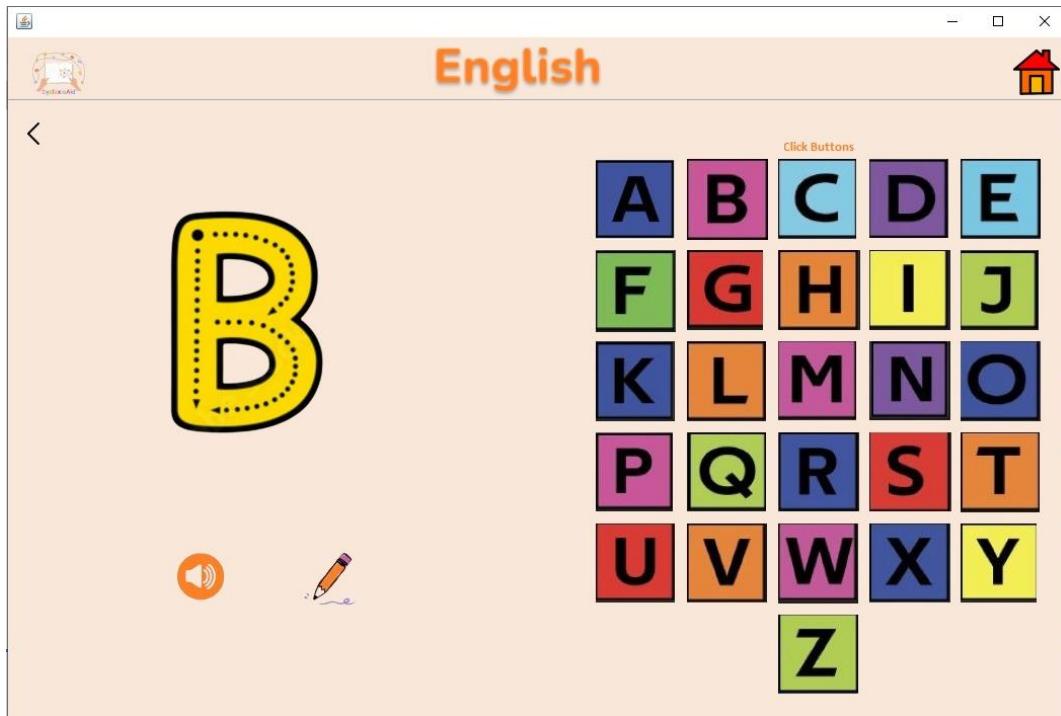
5.2 Test Case 2

- User Signup: failed [due to enter less 8-digit password]



5.3 Test Case 3

- Tracing: Successful [if he/she identify right]

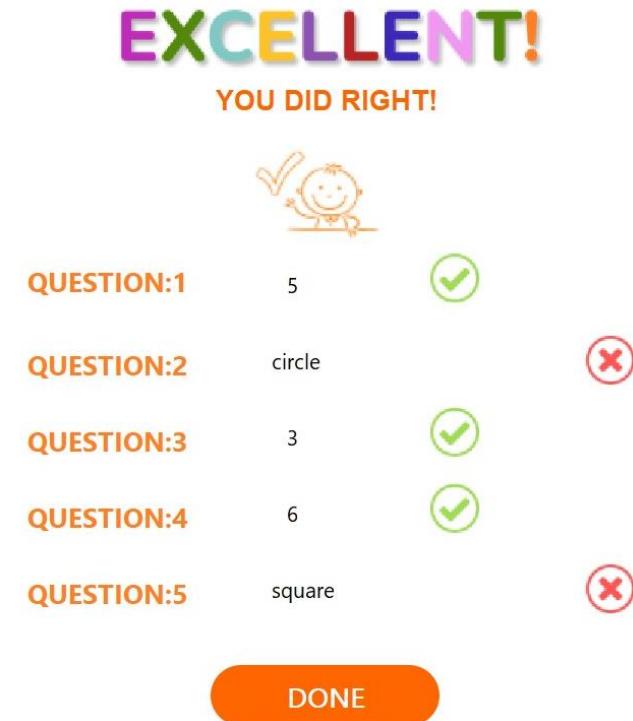


5.4 Test Case 4

- Complete the Spelling: if the blank filled display message you have already fill the blanks

The screenshot shows a mobile application interface for a spelling game. At the top, the word "ENGLISH" is displayed in orange. Below it, a header bar contains a back arrow, a speaker icon, the text "Which Alphabet Comes Next?", and a replay button. The main area displays a sequence of letters: A, B, C, D, E. Below this sequence, a row of letters B, J, C, N, D is shown, with an "NEXT" button to its right. A pop-up window in the center says "YOU HAVE ALREADY FILLED THE BLANKS" with a small character icon. At the bottom, another row of letters A, J, C, N, D is shown, with an "NEXT" button to its right.

- Quiz completion: display the result which shows right and wrong answers



5.5 Test Case 5

- progress Generate: if he/she pass the quiz then show particular student pass the quiz otherwise show retake the quiz and also Teacher give the feedback according to the student progress.

The screenshot shows the DyslexiaAid software interface. On the left, the "Teacher Panel" section has fields for "Student_Id" (026) and "Parent_Id" (52), with "SEARCH" and "HOME" buttons below. In the center, the "Student Result" section displays scores for "Maths" (8), "English" (9), and "Time count" (5). It also has "PROGRESS" and "FEEDBACK" buttons. To the right, there are two charts: a pie chart titled "Student Marks" showing proportions for Maths, English, Games, and Activity, and a line graph titled "Result" showing average performance from January to June. The taskbar at the bottom includes icons for search, file, mail, and other applications, along with system status indicators like battery level and date/time.

