CS346 ASSIGNMENT-2

(GROUP 5A)

EDUCATIONAL SOFTWARE FOR CHILDREN

<u>USER MANUAL</u>

USER AUTHENTICATION

Logging In

To access the features and content of our educational software, users are required to log in using a unique username and password. Follow these steps to log in:

1. The first screen that users encounter is the log in screen. Enter your username and password in the designated fields.
2. Click the "Login" button to authenticate your credentials. If the provided username and password match an existing account, you will be successfully logged in and granted access to the software.

If you're accessing the software for the first time, a new account will be created for you. Keep in mind that the username has to be unique and the password must follow strong password norms: one uppercase, one lowercase, one number, one special character, no spaces and minimum 8 characters.

BASIC MATH MODULE

Choose the **operation** you want to perform (Addition, Subtraction, Multiplication, Division). Once you choose the operation you will be navigated to a page where the corresponding operation will be performed.

Two text boxes will be seen on the screen to enter inputs. After entering the inputs click on the result button. The result of the two inputs will be displayed on the screen.

Click on the next button to visualise the process.

A clear button is used to clear the screen. Enter new inputs after clearing the screen then repeat the process with new inputs.

Click on exit if you want to change the operation.

Limitations

1. If you enter negative integers as inputs then the result will be shown as invalid input.
2. For subtraction make sure that number1 is greater than number2.
3. For division make sure number2 is not 0.

ABACUS MODULE

A. **TAKING INPUTS:**
   METHOD-1: ENTERING NUMBERS IN THE TEXT BOXES:

   Enter a positive integer in Text box for input-1 and the text box for input-2 and press corresponding enter button placed below the text box.
   In case special characters/negative integer/fraction/integer/whitespace characters containing more than 8 digits is(are) entered then an error prompt warning the same is displayed WHEN CORRESPONDING ENTER BUTTONS ARE PRESSED
   Else if a valid input was entered and the corresponding enter button click did not generate any error then the adjoining abacus is update to display the input

   METHOD-2: CLICKING ON THE BEADS (OVAL SHAPES) TO ENTER INPUTS

   THE RESULT ARRAY BEADS(OVAL SHAPES) ARE NOT CLICKABLE
   Click the beads to cause it to move up or down , a bead in the lower half can only move up if all beads above it are up**.**

B. **PERFORMING COMPUTATIONS**
1. Once the entered inputs are accepted and /or the input abacii are updated then press   a) Perform Addition Button to perform addition
       b) Perform Subtraction Button to perform subtraction
2. In both the cases once either of the buttons is pressed then **all the input abacii, all text boxes, all the enter buttons, all the clear buttons and both the computation buttons and the reset button are disabled throughout the computation so that no side effect is introduced into our program.**

3. **THE RESET BUTTON IS ENABLED ONCE THE COMPUTATION GETS OVER THUS PREVENTING SIDE EFFECTS.**
4. **THE ABOVE BUTTONS CAN ONLY BE TURNED ON AFTER THE RESET BUTTON IS PRESSED, DETAILS REGARDING WHICH IS APPENDED BELOW.**

B. CLEAR BUTTONS

1. The clear buttons are placed beside the two input abacii and a click on them resets the corresponding input abacii to all 0's and clears the text boxes above them.
2. This button is disabled once a computation button is placed and then can only be made clickable upon clicking the RESET BUTTON.

C.RESET BUTTON

1.When the reset button is clicked it:
   a) Clears both the input abacii, both the text boxes, (performs the functionality of reset button)
   b) Resets the Result Abacus to all 0's.
   c) Re enables all the buttons
   d) Essentially it resets the program state to as it is when the program is first run.

EDGE CASES:

When an invalid input is written into the text box (dealt in subsection A.1.2)

When Enter Button(s) is(are) clicked without entering any input in text box/clicking a bead:

It treats the input(a) as zero(es).

When reset button is clicked inside an iteration (dealt in subsection B.3)

VIDEO TUTORIAL MODULE

The **first screen** shows you a combo box to choose the topic/module to watch videos on. When you choose a topic and click on the show button, it directs you to the second screen which shows 5 videos relate to that particular topic.

The **functionalities of the second screen** are-

1. **'back' button** on the top left, that'll take you back to the first screen, so you can choose the topic again.

2. **Multiple videos** related to that topic are displayed which are fetched from a table in the database that has 2 columns topic and link and consist of relevant data entries that are configured by me.
3. For each video we have, a **watched or not watched tag** is displayed for the current active user. These details are fetched from table we have maintained in our local database that shows which user has watched what particular link.
4. Total number of videos of that topic that have been watched by the current user are displayed on the top right corner. This data can be fetched from the database similar to that of the previous point.
The above two functionalities help the user to **monitor their learning progres**s.
5. For each video, there is also a **play button** located on the top or bottom of the corresponding Web Browser window, when you click on that the 3rd screen appears.

The **functionalities of the third screen** are-

1. **'back' button** on the top left, that'll take you back to the previous screen, so you can choose what video to watch again.
2. It **displays the video** you chose on the previous screen on a larger window.

QUIZZING MODULE

There are two types of quizzes in our software, shapes quiz and mathematics quiz.

Shapes Quiz:

The user is presented with a few questions regarding different shapes and they're supposed to identify them and enter their names in the designated space. Once they're done attempting the quiz, they can click on the check button and check their score. Along with whether their answer is correct or not, they'll also get to see the correct answer and the explanation. They can use the clear button to clear their answers and the solutions.

Mathematics Quiz:

The user has a choice to choose from 5 types of quizzes: addition, subtraction, multiplication, division and mixed quiz. They'll get any 5 random questions from a pool of questions, stored in the database. They're supposed to enter the answers in the designated space and once they're done attempting the quiz they can click on the check button and check their score. Along with whether or not their answer is correct, they can also see the correct answer. They can use the clear button to clear their answers and the solutions.

Also, each user's data about every quiz is stored. So they can always see how many times they've attempted a quiz from a certain topic and what has been their maximum score in that particular topic.

FURTHER IMPROVEMENTS

For Login part:

1. We can consider adding forgot password functionality, if we use oauth. But currently if the user forgets it's password it's lost.

For basic math module:

1. We can further add a feature that shows step by step display of counting sticks for addition and subtraction.
2. We can add a feature to track the history of previous calculations performed, allowing users to review their activity.

For abacus module:

The implementation can be further extended to include the following:
1. Support for multiplication and division
2. Dynamically setting the size of the beads, buttons etc and thereby allowing a smoother scrolling.

For Video Tutorial module:

The implementation can be further extended to include the following:
1. Having proper tracks of videos for each topic that the user has to go through to complete a particular module.

2. We can also maintain how much duration of each video has been watched by the user and display that as well so he/she knows about their progress.

For quizzing module:

1. We can store quiz wise and question wise history of the user. Currently it just stores the progress as of how well you have performed in a certain topic
2. Provide animated explanations to the quiz solutions.
3. Set a timer for each quiz so that the user can time themselves.