

IT314
Software Engineering
Group 17
Online Coding Learning Platform



Blackbox Testing Report
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Blackbox Testing By Sanyam Shah (202301137)

Features Covered - User Profile, Roadmap, Quizzes, Notes, Change Password

Summary

In this report, I have done a comprehensive blackbox testing of Roadmap and User Profile features which also included quizzes, notes and change password modules. I have divided the possible input fields into equivalence classes and have specified test values for each and analysed the system behaviour. While most features functioned correctly, the following edge cases were identified

Key Edge Cases Identified

Critical edge cases

1. When a user regenerates a new quiz, the options previously selected are automatically selected and submitted by the system.
2. The system failed to properly store and display user answers for past quizzes.
3. In the change password module, I was able to change passwords that were unsecure like (low complexity for eg aaaaaaaa) or overly long passwords (> 200 characters) which should not be valid.

Other Bugs

1. No limit in word count for explanation tab
2. No limit in word count for notes tab
3. Profile Photo/ Avatar failed to upload
4. Numbering and bullet points not visible in notes
5. System allows saving empty notes
6. After previewing a note, there is no button to go back to editor, need to manually click on note to open.
7. Roadmap on same topic can be generated multiple times.

User Profile

1. Bio

Class	Input Range	Test Value	Results	Expected Output
EC1	0–1000 characters	0	Valid (bio saved)	Valid
EC2	> 1000 characters	1001	Invalid (only saves first 1000 characters)	Invalid
EC3	Contains emojis/symbols	Random emoji	Valid (bio saved)	Valid

2. Location

Class	Input Range	Test Value	Results	Expected Output
EC4	Valid city name	Ahmedabad	Saved and displayed	Valid
EC5	Empty	[Blank]	Saved and displayed	Invalid
EC6	Contains numbers	12345	Saved and displayed	Invalid
EC7	Contains symbols	\$%#@	Saved and displayed	Invalid
EC8	A city that doesn't exist	Carpedoism	Saved and displayed	Invalid

3. Profile Picture/ Avatar upload

Class	Input Range	Test Value	Results	Expected Output
EC1	JPG/PNG 5MB	< 5MB	Upload failed	Valid (will upload)
EC2	Unsupported format (PDF, TXT)	Trying to select pdf file	System does not allow to select pdf/txt files	Invalid
EC3	> 5MB file	> 5MB	Upload failed	Invalid
EC4	Corrupted image file	Corrupted image selected	Upload failed	Invalid

There is a bug in this feature which is preventing valid formats too from not being uploaded.

4. Statistics

All of this are visible and correct

Total generated courses

Completed Courses

Current Streak

Max streak

5. Calender

Calender clearly highlights in which days I was active. Also the right and left buttons work properly and desired dates are visible.

6. Notes

All notes that I have made are clearly visible in the notes section. Note that new notes saved are displayed after refreshing page. Also note that testing of input of notes is present in roadmap section below.

7. Roadmaps

All roadmaps that I have made are also visible in the section. All pinned roadmaps are also visible.

Class	Input Range	Test Value	Results	Expected Output
EC1	1 or more roadmaps	N/A	Display list	Valid
EC2	0 roadmaps	N/A	Shows no roadmaps available	Valid
EC3	Roadmap item clicked	N/A	Opens roadmap	Valid
EC4	Pinned roadmap	N/A	Pinned roadmap visible	Valid

8. Links (for Github, Twitter, Linkedin etc)

Class	Input Range	Test Value	Results	Expected Output
EC1	Valid GitHub username	Example: sanyam-shah	Saved	Valid
EC2	Valid GitHub URL	My github URL	Saved	Valid
EC3	Empty field	[blank]	Saved	Valid
EC4	Invalid username (symbols, spaces)	user@123	Saved	Invalid
EC5	Invalid URL format	Example: htp/adj	Saved	Invalid

All things same for linkedin and twitter

EC4 and EC5 failed.

9. Change Password

9.1 Current Password

Class	Input Range	Test Value	Results	Expected Output
EC1	Correct current password	Correct password entered	Valid	Valid
EC2	Incorrect current password	Incorrect password entered	Invalid	Invalid
EC3	Current password field empty	[Blank]	Please fill all fields	Invalid

9.2 New password

Class	Input Range	Test Value	Results	Expected Output
EC1	6–50 characters (valid range)	6, 50	Valid (password accepted)	Valid
EC2	< 6 characters	5	Password must be at least 6 characters long	Invalid
EC3	> 50 characters	51, 200	Password accepted	Invalid
EC4	Contains uppercase, lowercase, number, symbol	Example: Abc@1234	Valid	Valid
EC5	Same as old password	Example: aaaaaaaa	Password accepted	Invalid (should display same as old password)
EC6	Empty field	Blank	Please fill all fields	Invalid

Verdict: EC3 and EC5 failed

9.3 Confirm New Password

Class	Input Range	Boundary Value	Results	Expected Output
EC1	Matches new password exactly	eg abcd ddd	Password changed successfully	Valid
EC2	Does not match new password	eg agc ddd	Shows doesn't match new password	Invalid
EC3	Empty confirm password	[Blank]	Shows please fill all fields	Invalid

10. Download Notes

On clicking download notes, all notes in that roadmap is downloaded successfully.

Roadmap

1. Create Roadmap (Topic Input)

Class	Input Range	Test Value	Results	Expected Output
EC1	Valid Topic	Python	Roadmap generates successfully.	Valid. Roadmap generates successfully.
EC2	Valid Topic with special characters	C++ or C#	Roadmap generates successfully.	Valid. Roadmap generates successfully.
EC3	Empty Input	[Blank]	The system shows you to first enter text	Invalid. Error message displayed
EC4	Input without meaning	asdfjkl;	The system shows that the topic is not related to programming	Invalid. Error message displayed
EC5	Massive input	> 500 chars	While you could paste as much text you want, when you click to generate roadmap, it does show 500 char limit.	Invalid. Error message displayed
EC6	A roadmap is generated which already exists	Eg generating TypeScript two times	Generates another roadmap	Invalid. Should display roadmap already exists

Verdict: All test cases except EC6 passed

2. Module Explanation

Class	Input Range	Test Value	Results	Expected Output
EC6	Empty Input	[Empty]	The system generates explanation in default style	Valid. The system generates explanation in default style
EC7	Valid Prompt	Explain like I am 5	The system generates response according to prompt	Valid. The system generates response according to prompt
EC8	Specific Context type prompt	Focus on code examples	The system generates response according to prompt	Valid. Explanation generates with a heavier emphasis on code blocks.
EC9	Non English Input	Explicar en Español	The system does explain the topic in spanish	Valid. AI should detect language and provides the explanation in Spanish.
EC10	Massive input (>500 lines)	10000 word lorem ipsum	Unlike roadmap generation, the system does not have a word limit here	Invalid. System shows error message that word limit exceeded.

Verdict: EC10 failed, all others passed (can add big input)

3. Quiz

Class	Input Range	Test Value	Results	Expected Output
EC11	Generate Quiz	Clicking Generate Quiz button	Quiz generated successfully	Valid. Quiz is generated
EC12	Tab Navigation	Clicking Past Quizzes tab	Past quizzes visible	Valid. View displays previous quiz attempts
EC13	View Past Quiz	Clicking quiz 1	Previous quiz is displayed but previous results not shown	Valid. Previous quiz and its results should be displayed
EC14	Submit Answer (Per Question)	Eg select option A, then submit	Correct/ Incorrect shown	Valid. Immediate answer provided (Correct/Incorrect) for that specific question.
EC15	Empty state	Click past quizzes when no quiz has yet been generated	No past quizzes found.	Valid. Shows No past quizzes found.

Critical Bug

There is a critical bug here is that when we generate quiz, select all options and then submit, when we again generate new quiz all options that we previously selected are displayed by default. Also our answers to the previous quiz are not stored.

4. Notes

Class	Input Range	Test Value	Results	Expected Output
EC16	Text Formatting (bold/ italic/ underline etc)	Clicking on Bold/ Italic etc icons	The text is properly formatted as per input	Valid. Text is formatted.
EC17	Code Block Formatting	Clicking Code icon <> and then type code	The code is formatted properly in gray box	Valid. Text is formatted in a box (markdown style).
EC18	Bullet and Numbering List	Adding numbering, bullet and check list	Bullet and numbered list are not visible, while you cannot check in checklist	Valid. Appropriate output should be displayed
EC19	Preview Toggle	Clicking Preview button	Editor displays notes clearly	Valid. Editor displays notes clearly
EC20	Images	Adding images URL	Image is displayed	Valid. Image is displayed
EC21	Images	Adding incorrect image URL	Image is not displayed only dummy icon displayed	Invalid. System should display a dummy icon
EC22	Import Functionality	Select valid file	Note imported successfully	Valid. Content of the file is populated into the editor area.

EC23	Import Invalid File	Importing pdf or image	The system prompts you to file manager and you can not select invalid files.	Invalid. You should be able to select invalid files or error message must be displayed
EC24	Save Empty Note	Save note without typing anything	You can save empty notes	Invalid. Button should be disabled or error message must be displayed
EC25	Save Valid Content	Enter text and save note	Notes saved successfully	Valid. Notes saved successfully
EC26	Comments	Adding comment in markdown format	Not displayed in preview.	Valid. Not displayed in preview.
EC27	Massive input	Adding lorem ipsum 10000 words	Note saved	Invalid. System should display error message saying exceeded word limit

Verdict: EC19, EC24 and EC27 failed

Bugs identified

1. Numbered and bullet lists not displayed properly.
2. You can save empty note, the system does not show error message.
3. After clicking preview note, there is no back button, you have to click on note to get back.
4. There is no word limit in saving notes.

5. Articles and videos

There aren't any equivalent classes here but basically relevant videos and articles are fetched for the module. Sometimes the AI does hallucinate and gives invalid URL but this happens less often.

6. Timer and Stop Watch

Class	Input Range	Test Value	Results	Expected Output
EC28	Valid Time	05:00	Timer successfully counts down from five.	Valid. Timer starts counting down from 5 minutes.
EC29	Boundary Zero	00:00	Start button is disabled	Invalid. Start button disabled or nothing happens.
EC30	Negative Numbers	-5:00	The system does not allow to make timer negative	Invalid. Input should prevent typing negative signs or autocorrect to 0.
EC31	Seconds Boundary (Upper)	00:60	The system indeed does not allow to make it more than 59 seconds	Invalid. System should allow more than 59 seconds.
EC32	Reset button in stopwatch	At 02:57 click reset	The system resets time	Valid. The system should reset time.

Verdict: All test cases passed.

7. Saved Status

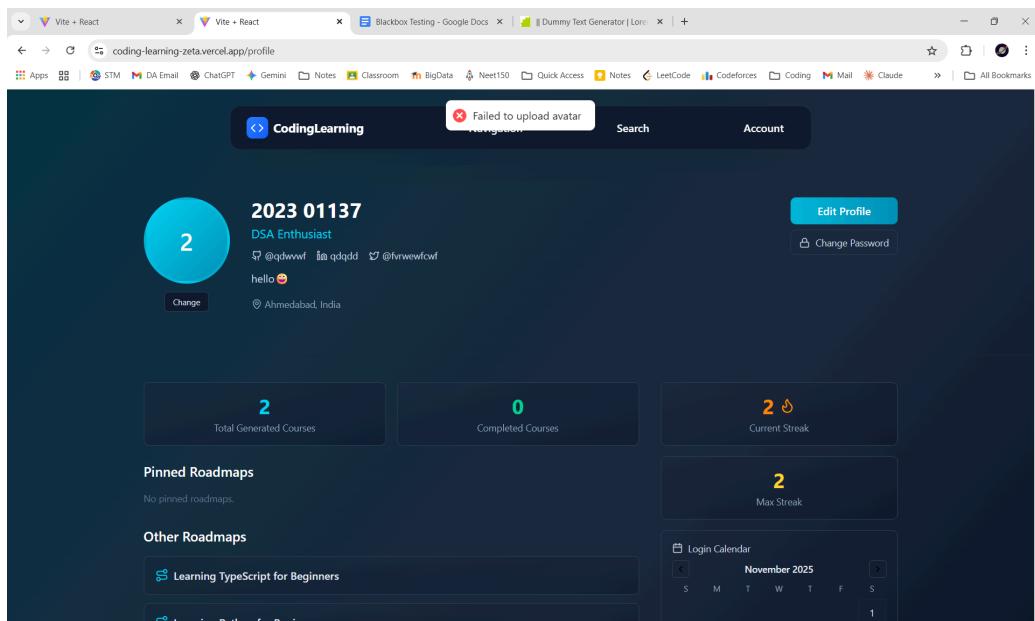
On refreshing everything is saved successfully including notes and explanations.

8. Progress Bar

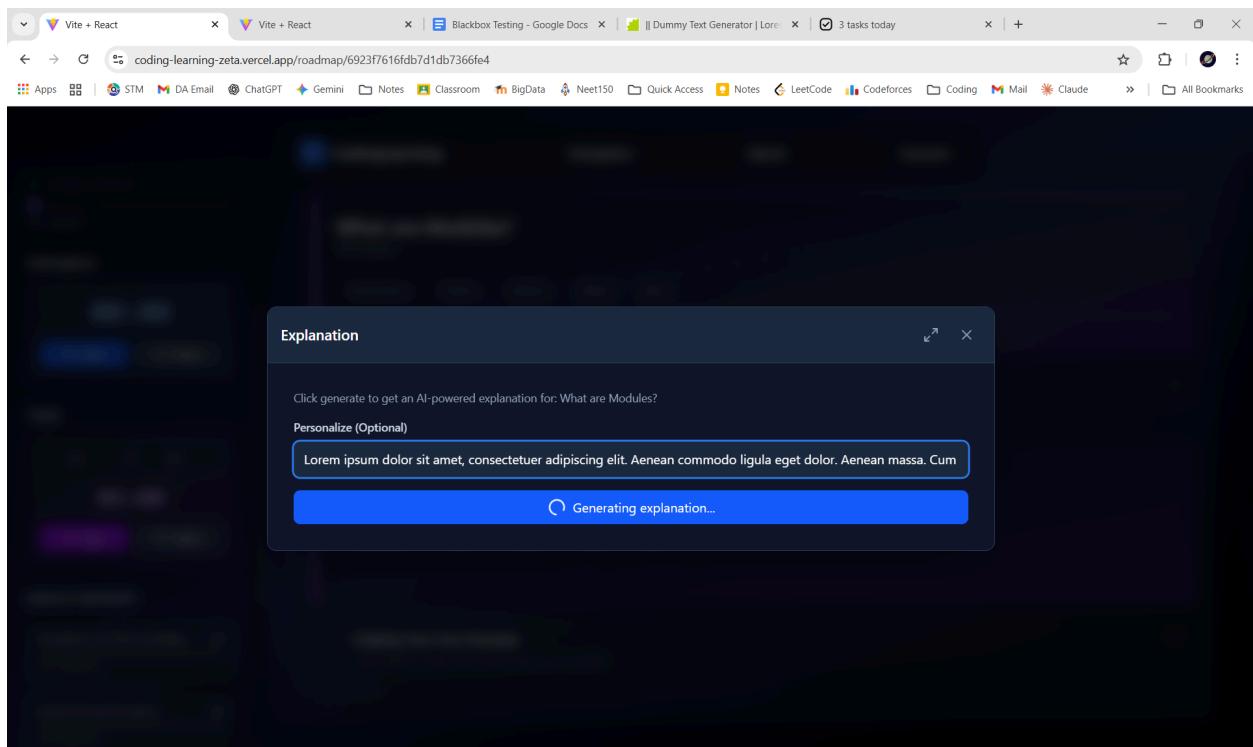
On selecting module as completed, status bar is updated accordingly.

Evidence

1. Avatar not being uploaded

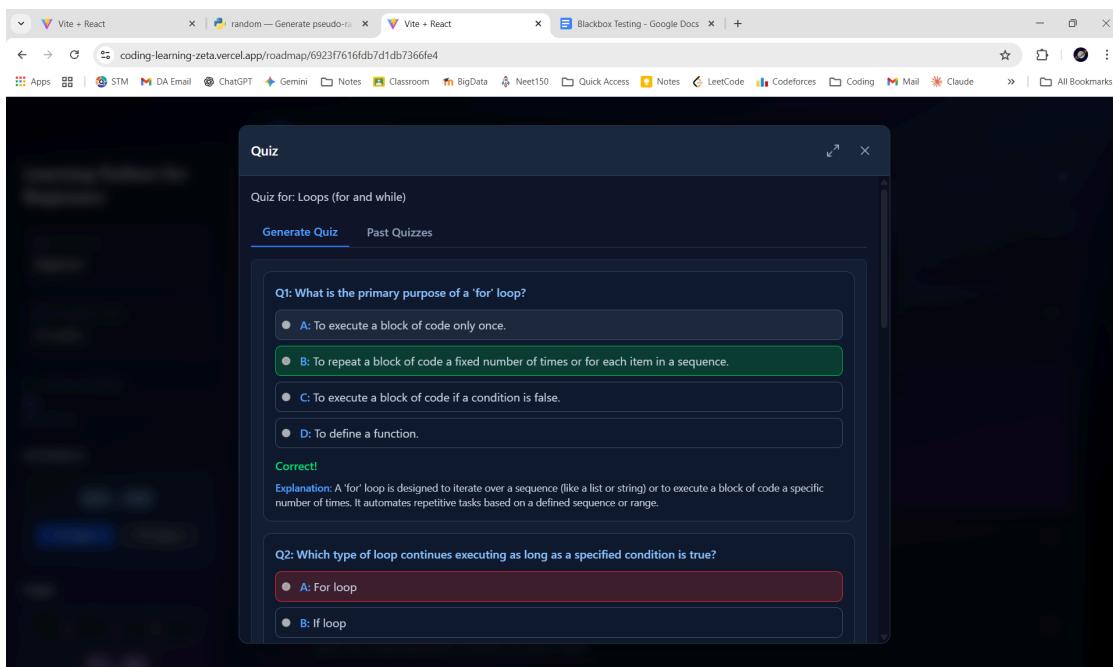
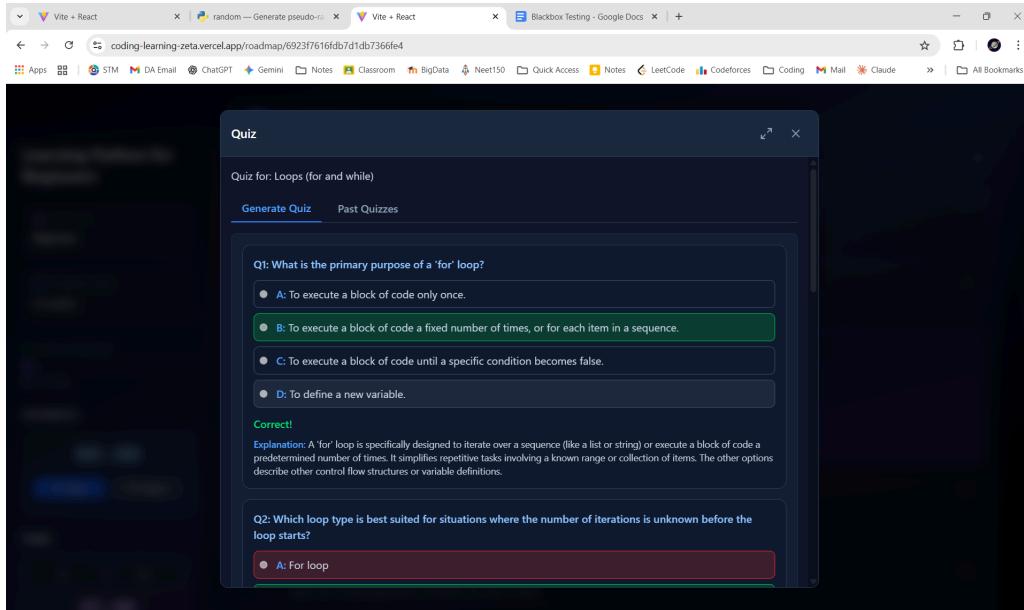


2. Can add any number of words in explanation tab (still LLM generates proper output)



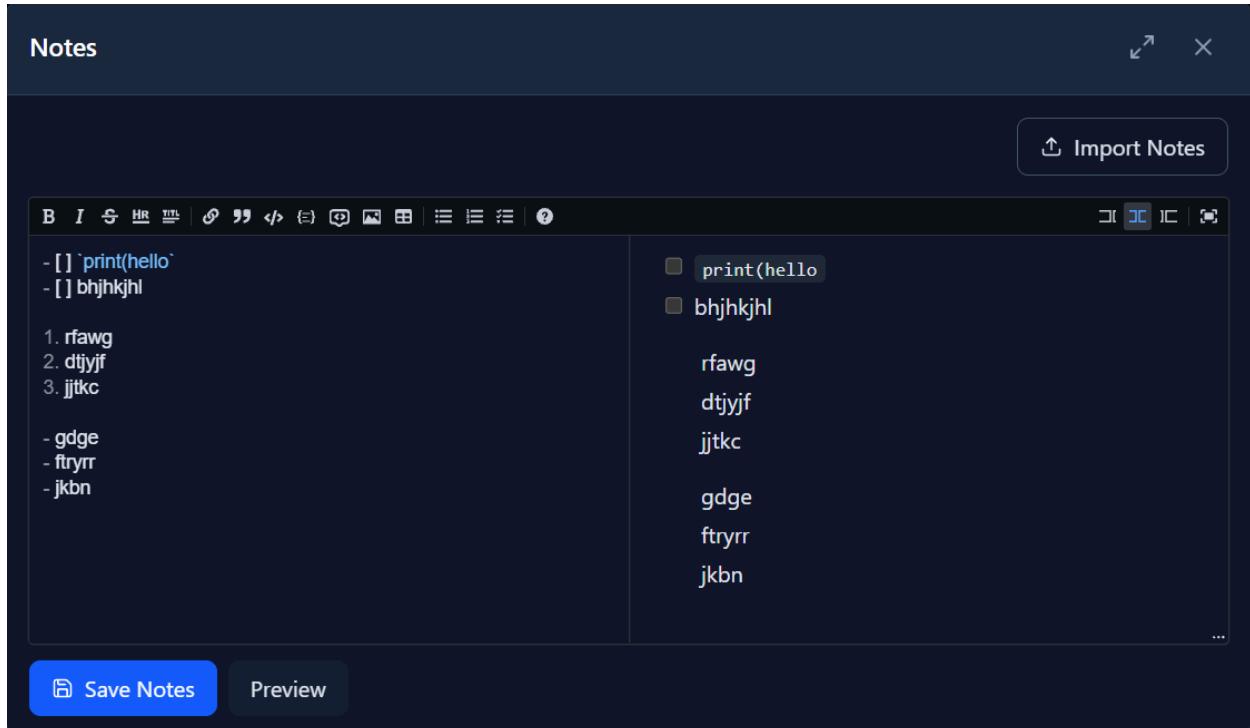
3. Critical bug in quiz

A major bug has been identified. After generating the quiz and selecting options and submitting, when I regenerate the quiz, the options are automatically selected and submitted by itself.



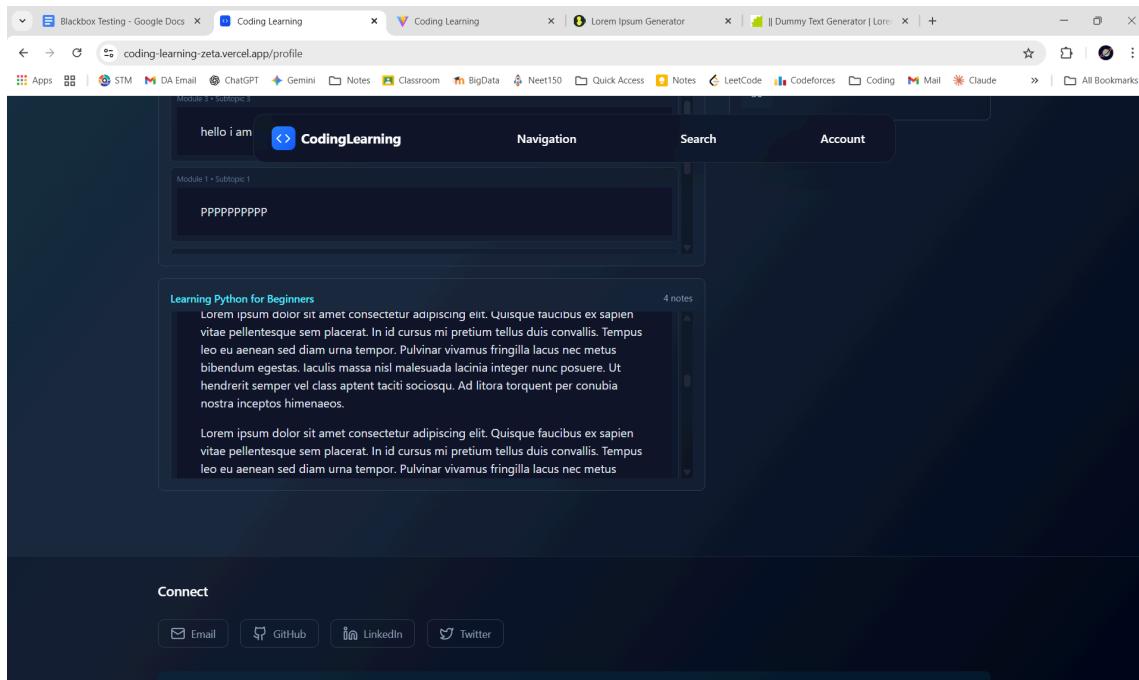
Also another thing is while the quiz is generated, even before attempting it, it can be stored in past quizzes. Past quizzes don't remember the answer and even I can select another option different from the one i selected in the original quiz.

4. Bullet , numberline and checklist in notes not being displayed

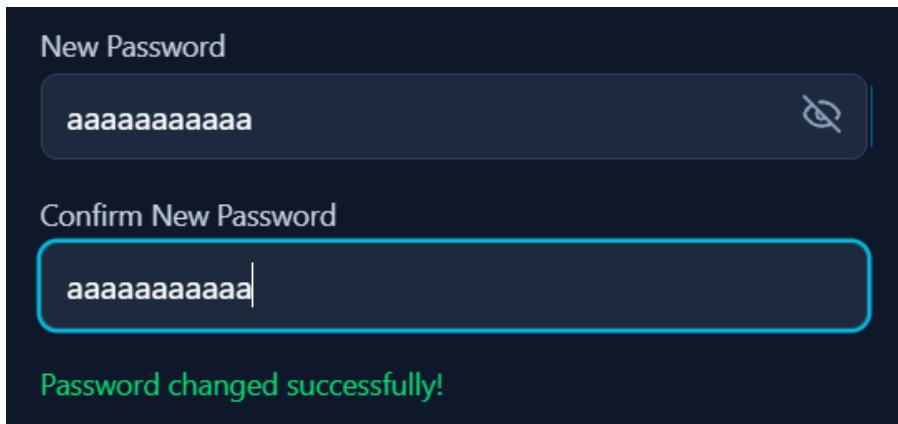


Also no option to go back from preview mode in notes, need to click randomly to get back

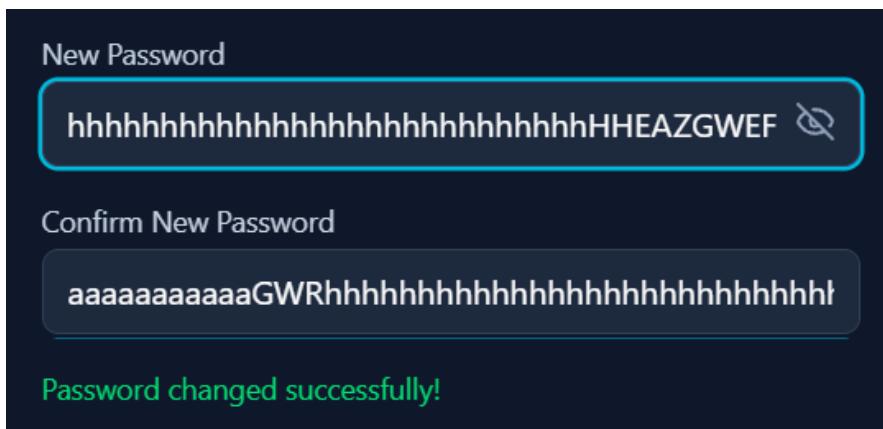
6. No word limit on notes (saved over 10000 characters)



7. Password does not have any proper checks to be secure
(my current password hasn't been shown here for security reasons)
Weak password



Very huge password



8. System allows saving empty notes



Acceptance Testing Verdict

Here is a acceptance level verdict for each core feature

Feature	Status	Remarks
Roadmap Generation	Pass	Topic inputs, edge case handling (nonsense requests or too long), and special characters work properly. All modules are generated and save properly
Statistics & Timer	Pass	Streak tracking, progress bars, stopwatch, timer and calender function correctly without any error.
Edit Profile	Almost Pass	All features work properly except uploading profile picture
Notes	Almost Pass	All main functionality works, minor bugs include saving empty notes, no limit of words in notes and bullet and numeric list not visible clearly.
Quizzes	Fail	There are critical bugs regarding regenerating quiz as past options are already selected and submitted, which is unacceptable.
Change Password	Fail	Password update logic misses input validation

Atleast the two critical bugs needs to be fixed in order to make this website production grade. It will be even better if all minor bugs are also fixed.