Project – A forum called “GeekGathering”

CT30A3204 Advanced Web Applications - 1.6.2023-31.7.2023

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Table of contents

Features

Feature	**Max points**
Basic features (as stated in the previous chapter) with well written documentation	25
Utilization of a frontside framework, such as React, but you can also use Angular, Vue or some other	5
My own feature: User can edit their information, such as email, username, and password.	Suggested points: 2
Use of a pager when there is more than 10 posts available	2
Provide a search that can filter out only those messages that have the searched keyword	2
Test software for accessibility; can it be used only with keyboard / voice command? Can screen readers work with your application?	3
	Total. 39

I started the project by benchmarking existing solutions and planning how to build project base on these. All these pages are listed in the sources of this project.

Technology choices

Backend:

- Database: MongoDB was used to store all the information. A local host database was created at mongodb://localhost:27017/testdb using MongoDB Compass.
- Database Interaction: Mongoose was used to interact with MongoDB, allowing the use of schemas and models for data management.
- Server-Side Framework: Node.js and Express were used to code the backend server, handling API requests and responses.
- Password Hashing: Bcrypt was used to securely hash user passwords before storing them in the database.
- Request Body Parsing: body-parser was utilized to extract and handle data from incoming POST requests.
- Environment Variables: The dotenv library was used to load environment variables from a .env file.
- Authentication and Authorization:
    - JSON Web Tokens (JWT) were used for authentication and authorization.
- Server Development:
    - Nodemon was used to automatically restart the Node.js application when code changes were detected, saving time and manual effort during development.

Frontend:

- React was chosen as the frontend JavaScript library.
- React Router DOM version 5.3.3 was used for handling routing within the React application, resolving an issue related to automatic navigation that occurred in an earlier version (5.2.0).
- Axios was utilized to interact with the backend server when making HTTP requests.
- Styling:
    - Initially, I created custom styling for the elements in the frontend using CSS.
    - I wanted to Material-UI for displaying and sending comments.

Accessibility test

I performed accessibility tests using keyboard, voice commands, screen reader and colour contrast checker. The test can be seen in Table 1.

Test Description	Result
Website can be used with only keyboard	Partial Fail. Using Tab and Enter to navigate the page was successful, however in the home page where threads are listed there is no highlight to a thread. It is hard to know where to navigate in that page. Same thing in the “Profile” page buttons.
Website can be used by voice command	Partial Fail. I used Voice access in Windows 11. Voice access worked pretty good with the website. There was again issue with the “Home” page where all the threads are listed, as Voice access couldn’t recognize them.
Website can be used by a screen reader	Fail. I used Windows 11 Narrator to perform this test. Only thing the narrator could read was the page title and “Home”.
Website has sufficient colour contrast	I used WebAim Color Contrast Checker for this test. The contrast ratio was 6.87:1 with foreground colour of #3F51B5 and background colour of #FFFFFF. The website colours passed the other test, except WCAG AAA for Normal Text.

Table 1: Accessibility tests.

Based on these results there is work to do in enhancing the accessibility of the website. There should be a clear visual indication in the “Home”-page as to in what thread navigation is focussed, when using keyboard. This can be done by CSS styles, ensuring that keyboard-only users can easily identify their current navigation context. Also skip link at the beginning of the website can help user by allowing them to skip navigation menu and directly access the main content of the page.

Regarding voice commands the tests could be done with alternative voice command software as well. This could provide more insights into the main challenges users might face when using voice commands with the application. Adding ARIA roles and labels might help to improve voice-based interactions.

In the context of screen readers, the important elements on the page should be properly labelled with descriptive text or ARIA attributes. Semantic HTML elements also enhance the accessibility of the website when using screen readers.

As for colour contrast, optimizing the contrast ratio by darkening foreground colours could improve the readability and usability of the website.

Note: These tests were done by an individual, who doesn’t use any kinds of assistive technologies, so there might be things that I missed when conducting these tests. It would be best to conduct these tests with real users, who need these kinds of assistive technologies.

Installation guidelines

Server Installation

- You need to have MongoDB installed and running on your system.
    - Create a local database eg. ‘testdb’ using MongoDB Compass.
    - I created a local database at *mongodb://localhost:27017/testdb*
        - Remember to change this in .env file, if you decide to use some other address
- Clone the server repository from the project's GitHub repository
- Navigate to the server project folder using the command line
- Install the required dependencies by running *npm install*
- Start the backend server using the following command: *npm run dev*
- The server should now be running on the port 5000

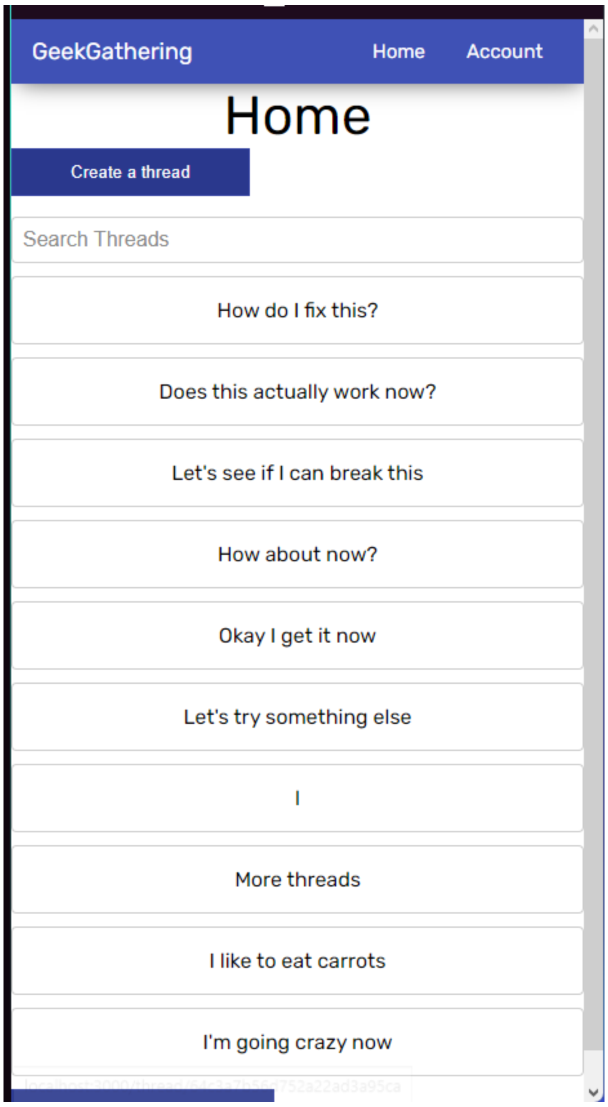
Client Installation

- Clone the client repository from the project's GitHub repository
- Navigate to the client project folder using the command line
- Install the required dependencies by running *npm install*
- Start the frontend server using the following command: *npm start*
- The development server should now be running, and the React application will be accessible in your browser.

User manual

Non-authenticated user

A non-authenticated user can see threads listed on the Home-page and can search thread with the search filter. The search filter filters the thread based on the keywords user inputs, as seen in Picture 2.



How do I fix this?

Does this actually work now?

Let's see if I can break this

How about now?

Okay I get it now

Let's try something else

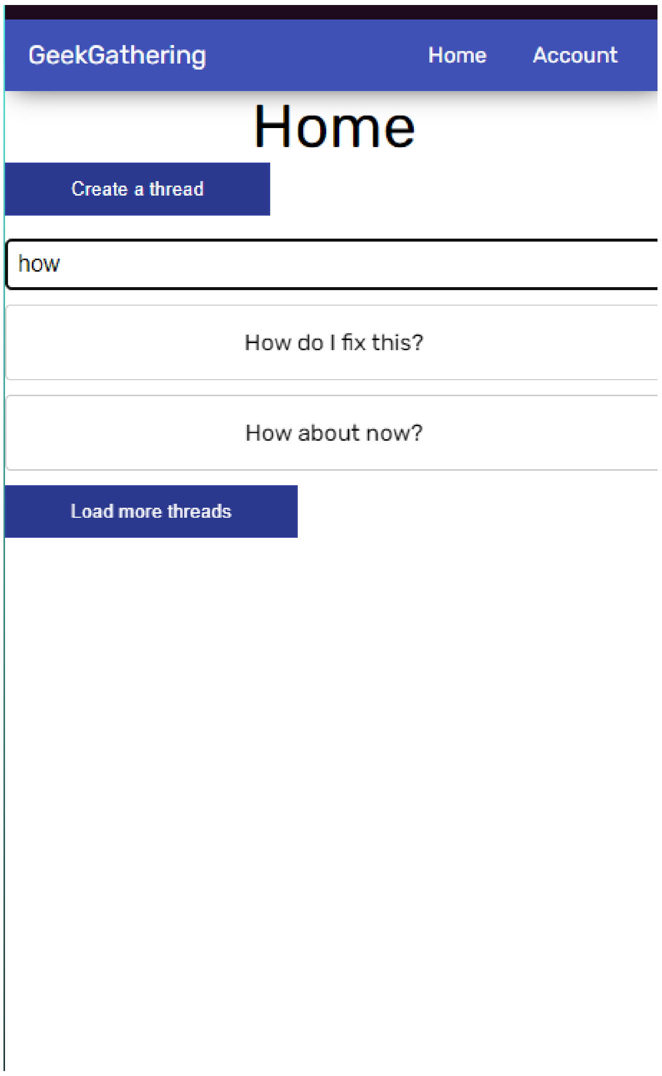
I

More threads

I like to eat carrots

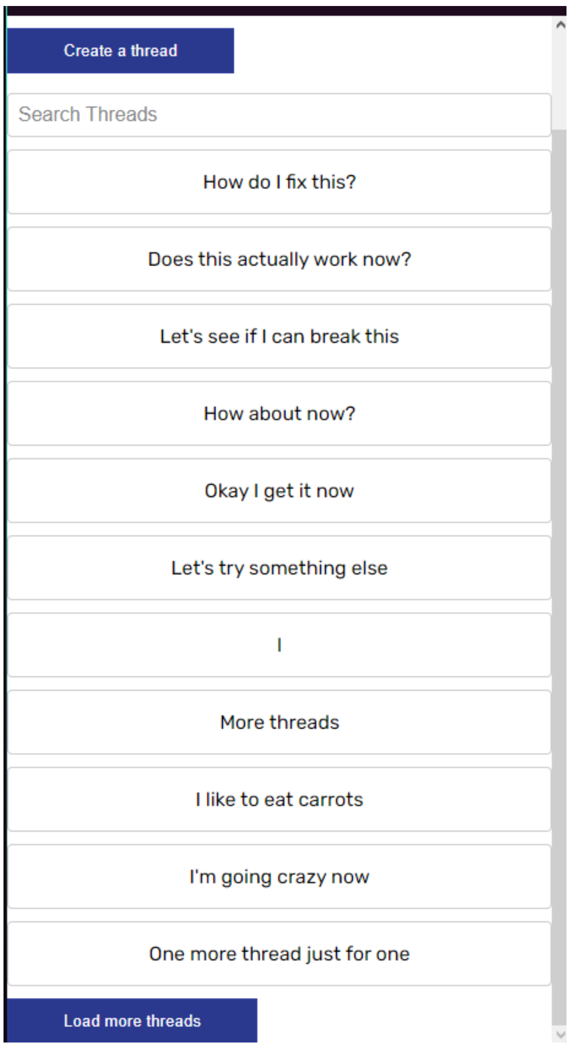
I'm going crazy now

Picture 1: The Home-page view for non-authenticated user



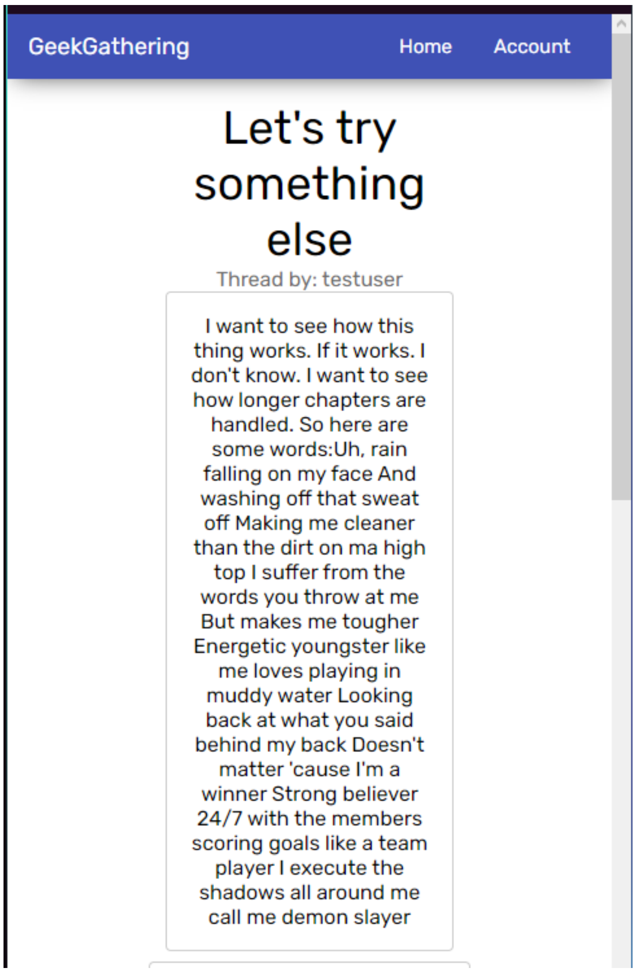
Picture 2: Search filter

The home page display 10 thread at a time and user can load more threads by pressing the “Load more threads” button, as seen in the Picture 3.



Picture 3: Loading more threads

When user clicks on the thread, there is a page where the thread title, creator of the thread and thread contents are displayed, as seen in Picture 4.



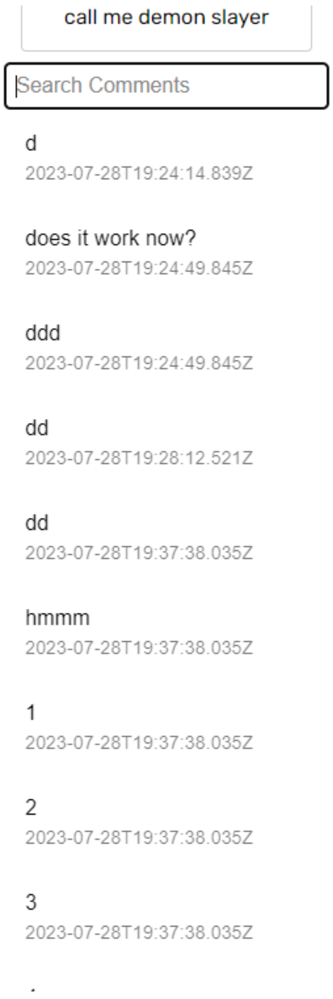
Let's try something else

Thread by: testuser

I want to see how this thing works. If it works. I don't know. I want to see how longer chapters are handled. So here are some words:Uh, rain falling on my face And washing off that sweat off Making me cleaner than the dirt on ma high top I suffer from the words you throw at me But makes me tougher Energetic youngster like me loves playing in muddy water Looking back at what you said behind my back Doesn't matter 'cause I'm a winner Strong believer 24/7 with the members scoring goals like a team player I execute the shadows all around me call me demon slayer

Picture 4: View of the Thread

Thread have comments and a search filter that work with the same logic as in the Home-page. The functionality is displayed at Pictures 5 and 6.


call me demon slayer

Search Comments

d
2023-07-28T19:24:14.839Z

does it work now?
2023-07-28T19:24:49.845Z

ddd
2023-07-28T19:24:49.845Z

dd
2023-07-28T19:28:12.521Z

dd
2023-07-28T19:37:38.035Z

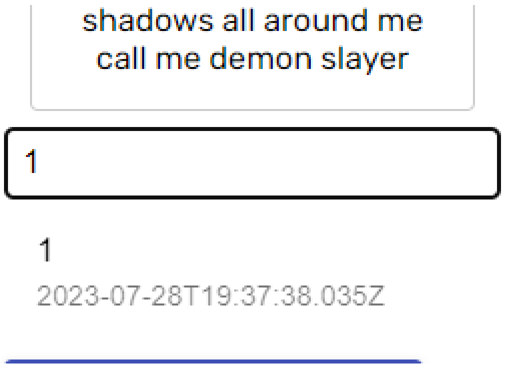
hmmm
2023-07-28T19:37:38.035Z

1
2023-07-28T19:37:38.035Z

2
2023-07-28T19:37:38.035Z

3
2023-07-28T19:37:38.035Z

Picture 5: Comment listing

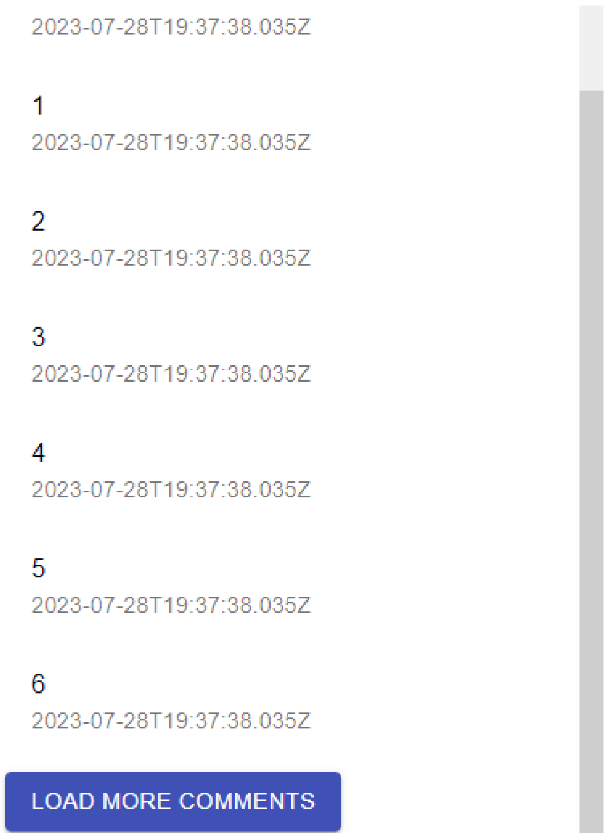

shadows all around me
call me demon slayer

1

1
2023-07-28T19:37:38.035Z

Picture 6: Filtered content

Just like in the Home-page amount of thereads displayed is 10 and user can load more comments by pressing the “Load more comments button” (Picture 7).


2023-07-28T19:37:38.035Z

1
2023-07-28T19:37:38.035Z

2
2023-07-28T19:37:38.035Z

3
2023-07-28T19:37:38.035Z

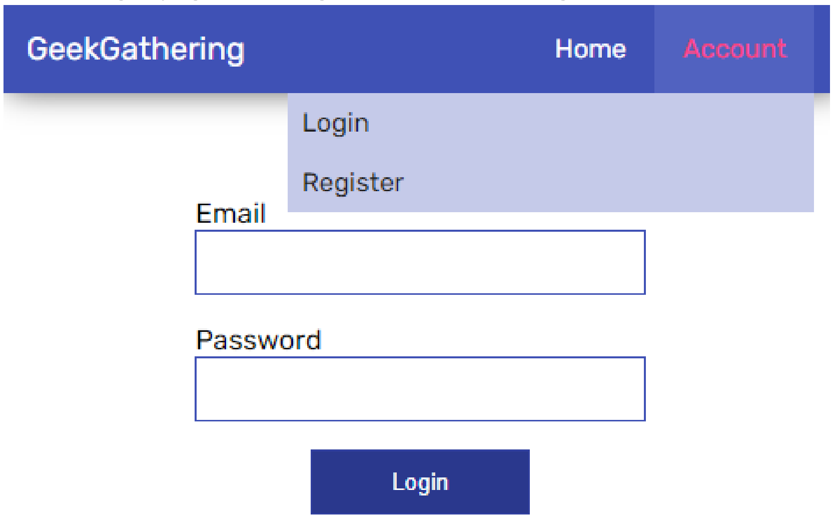
4
2023-07-28T19:37:38.035Z

5
2023-07-28T19:37:38.035Z

6
2023-07-28T19:37:38.035Z

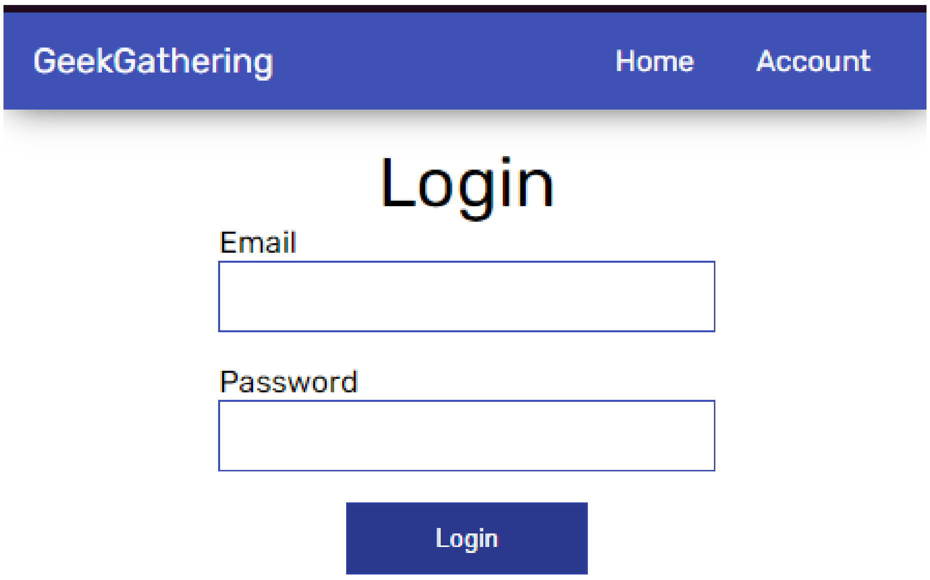
Picture 7: Loading more comments

Non-authenticated user can’t make comments or post threads. In the Home-page, if non-authenticated user clicks button “Create a thread” it takes user to the Login-page. Another way to access Login-page is through “Account” => “Login”, as seen on the Picture 8.



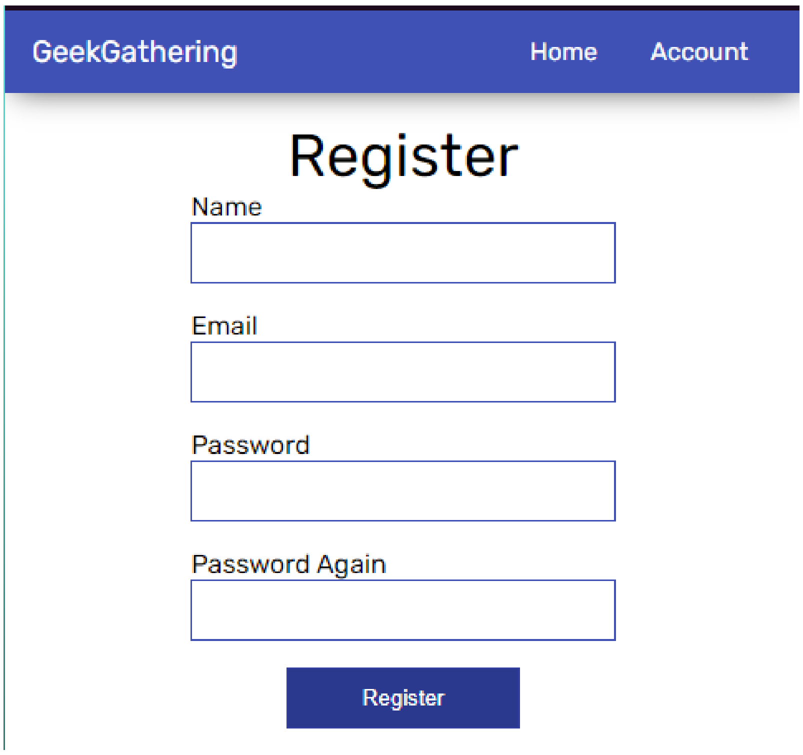
Picture 8: Account navigation

In the Login-page, user must provide an email and a password, as seen in Picture 9. If user doesn't have an account, they can register by navigating "Account"=>"Register".

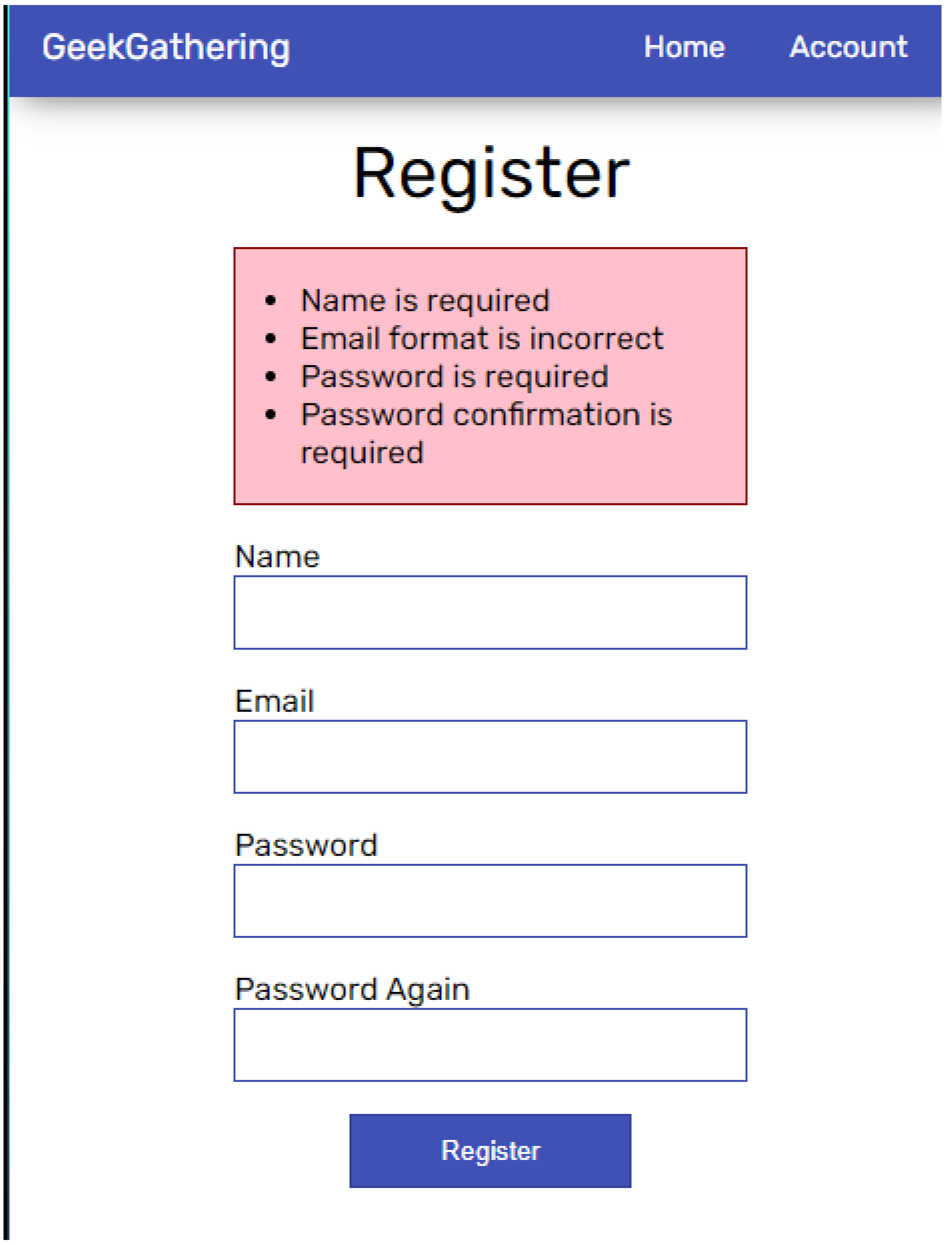


Picture 9: Login

In Register-page, user must provide a name, email, password and password confirmation, as seen in Picture 10. If user fails to provide these, errors are displayed (Pictures 11, 12 and 13). Same kind of error handling is done in Login.



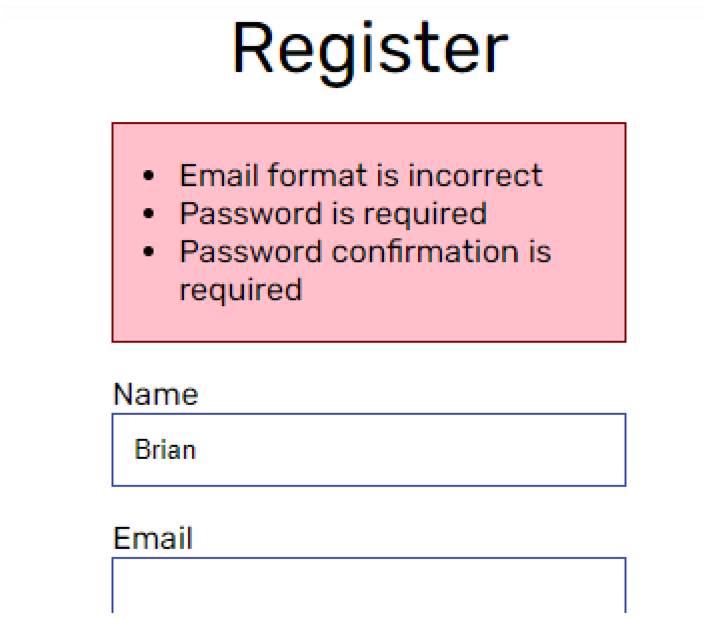
Picture 10: Register



Register

- Name is required
- Email format is incorrect
- Password is required
- Password confirmation is required

Picture 11: Errors in register


Register

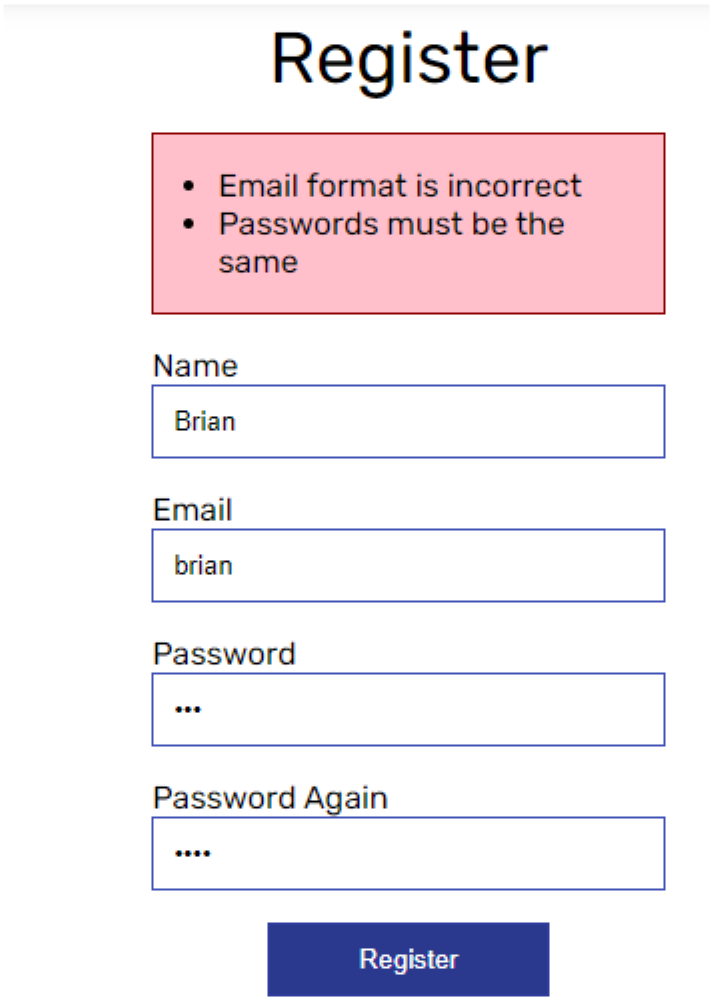
- Email format is incorrect
- Password is required
- Password confirmation is required

Name

Brian

Email

Picture 12: Register errors when missing only some fields


Register

- Email format is incorrect
- Passwords must be the same

Name

Brian

Email

brian

Password

•••

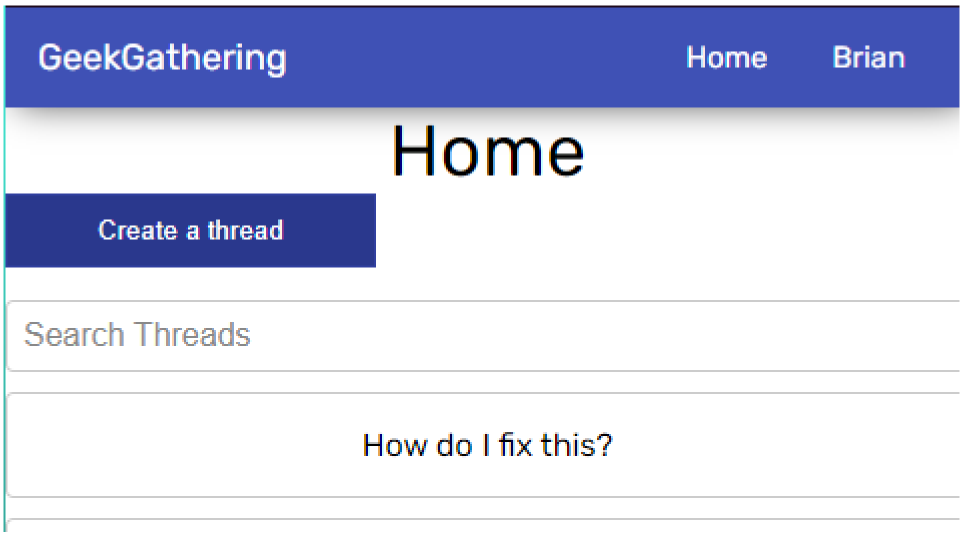
Password Again

••••

Picture 13: Register errors when passwords don’t match and email is not in correct format.

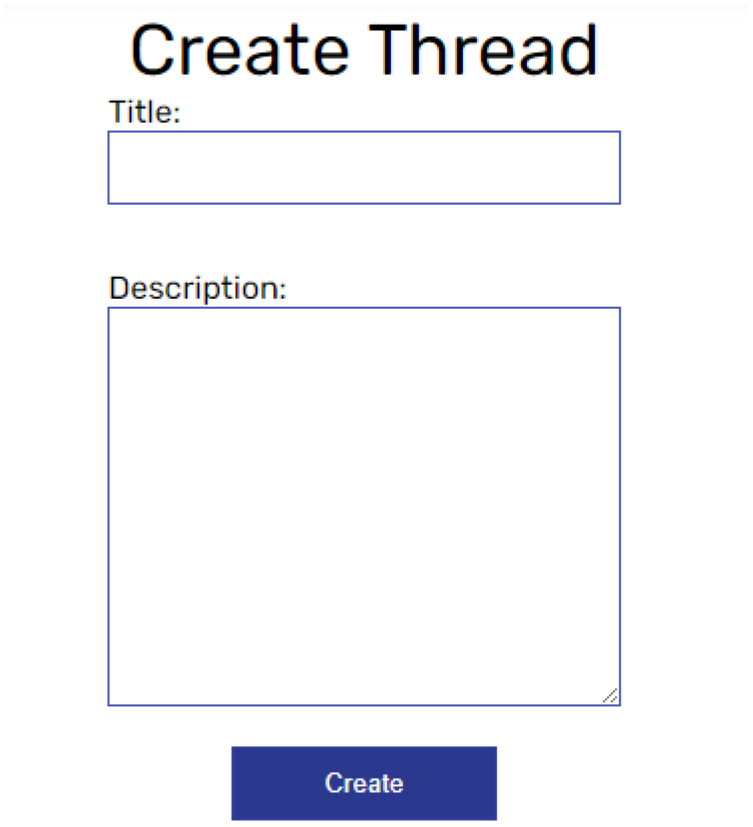
Authenticated User

Authenticated user can post threads, make comments and see their profile. User knows that they are logged in based on the display of their name in the navigation bar, as seen in the Picture 14.



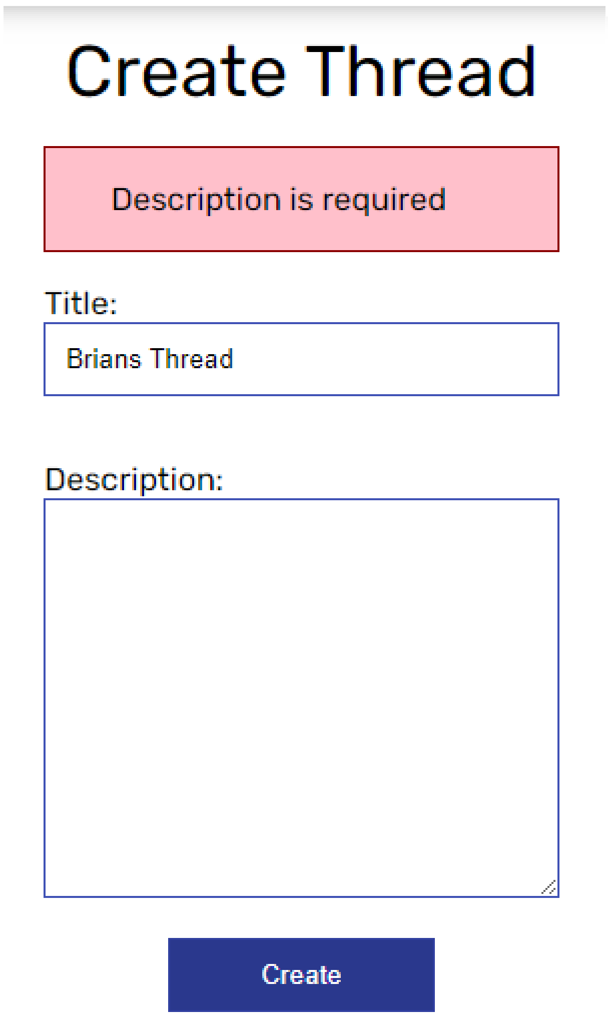
Picture 14: Logged in user

When authenticated user presses the "Create a thread"-button, a page where user can submit the thread opens (Picture 15).



Picture 15: Create Thread

When creating a Thread user has to provide a title and description, otherwise error messages are displayed (Pictures 16 and 17).


Create Thread

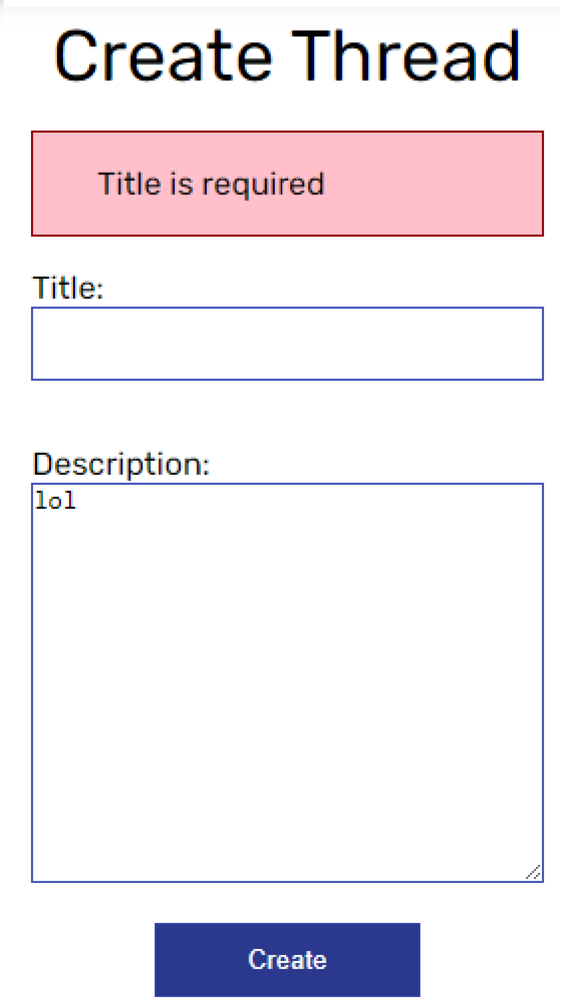
Description is required

Title:

Brians Thread

Description:

Picture 16: Create a Thread with no discription


Create Thread

Title is required

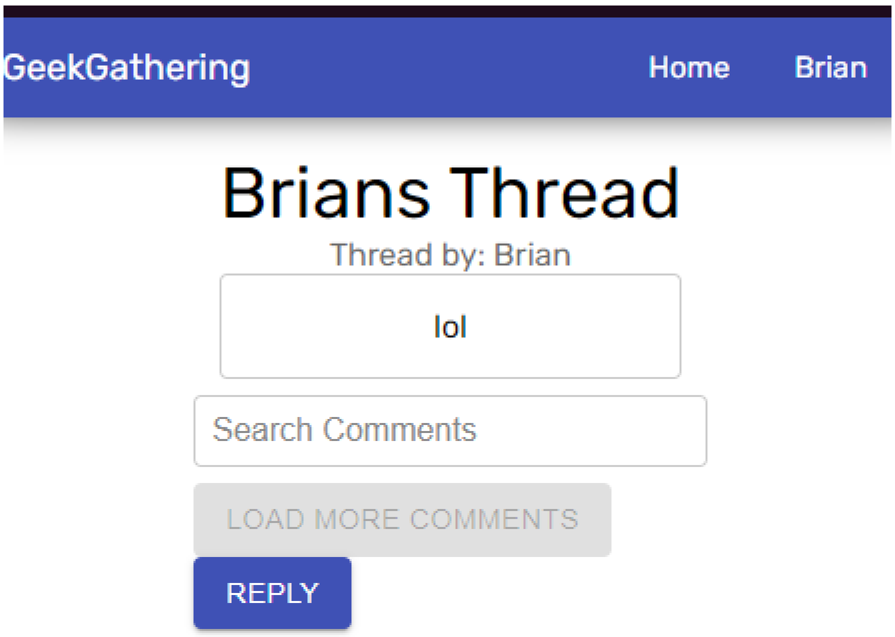
Title:

Description:

lol

Picture 17: Create a Thread with no title

After successfully posting the thread, user is taken on the page that displays the thread they just created (Picture 18).



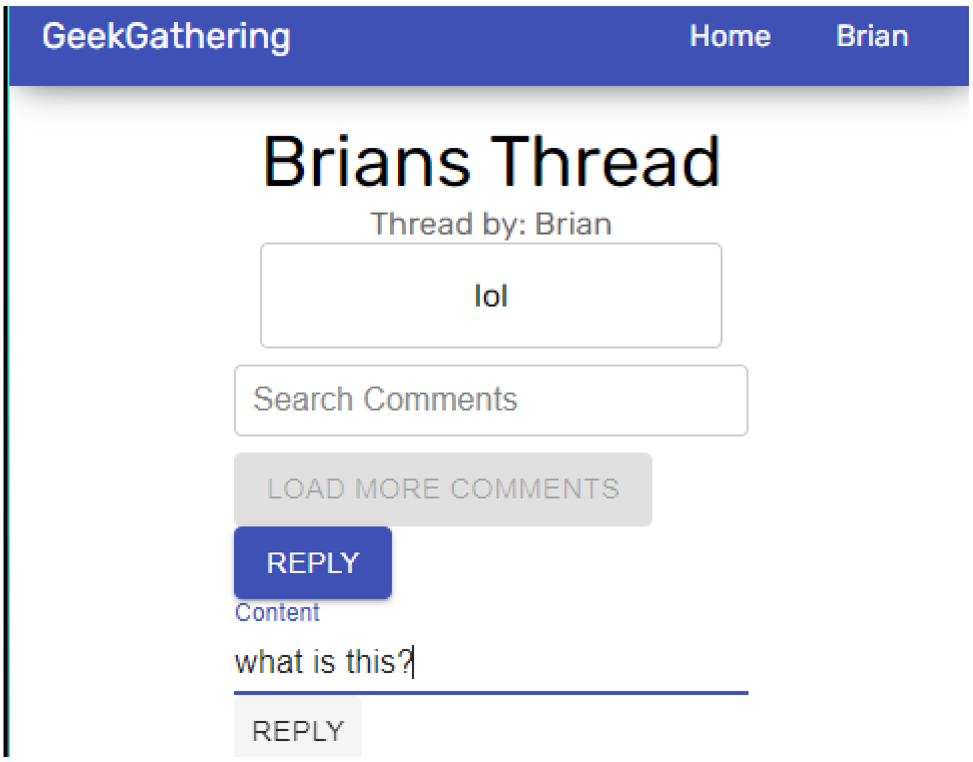
Brians Thread

Thread by: Brian

lol

Picture 18: Thread page

In the thread page authenticated user can post comments by pressing the button "Reply" and writing their comment (Picture 19).



Brians Thread

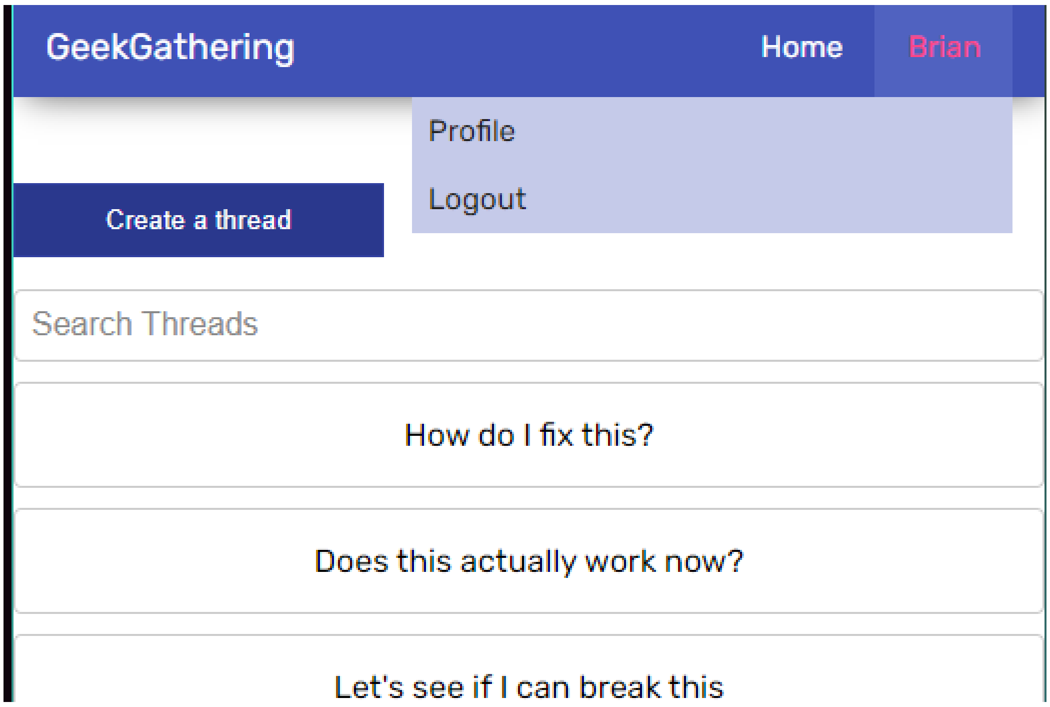
Thread by: Brian

lol

what is this?

Picture 19: Commenting

Authenticated user can also access their Profile page by navigating “Name”=>”Profile”(Picture 20). In the Profile user can change their username, email and password (Picture 12).

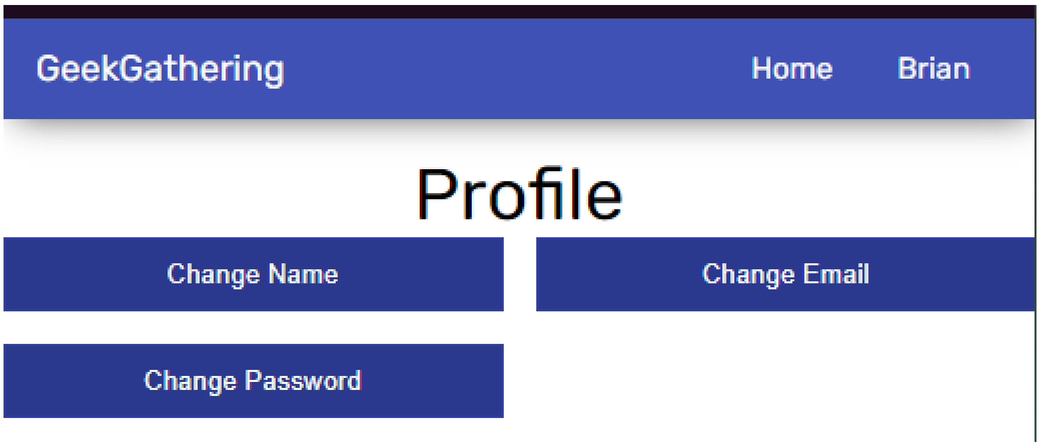


How do I fix this?

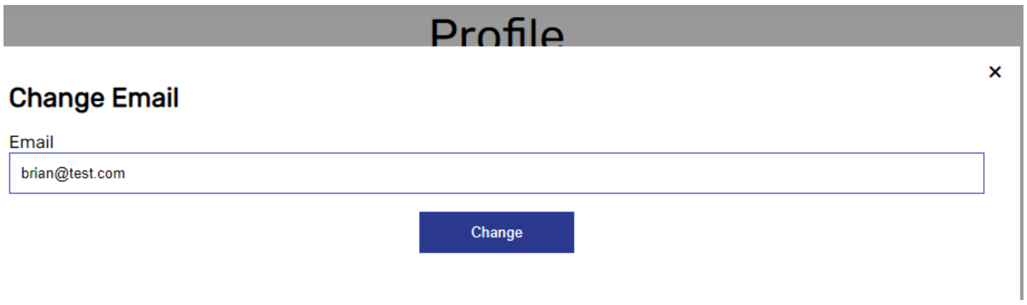
Does this actually work now?

Let's see if I can break this

Picture 20: Navigating to profile



Picture 21: Profile view

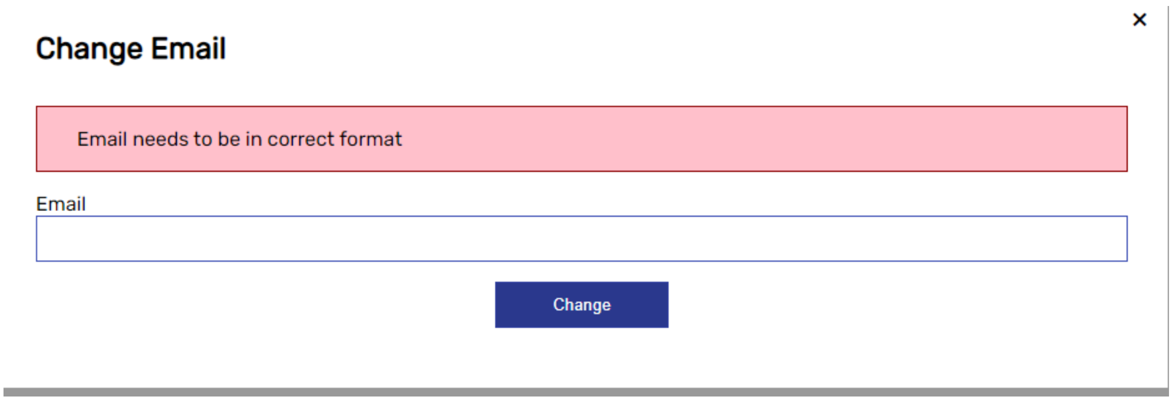


Change Email

Email

brian@test.com

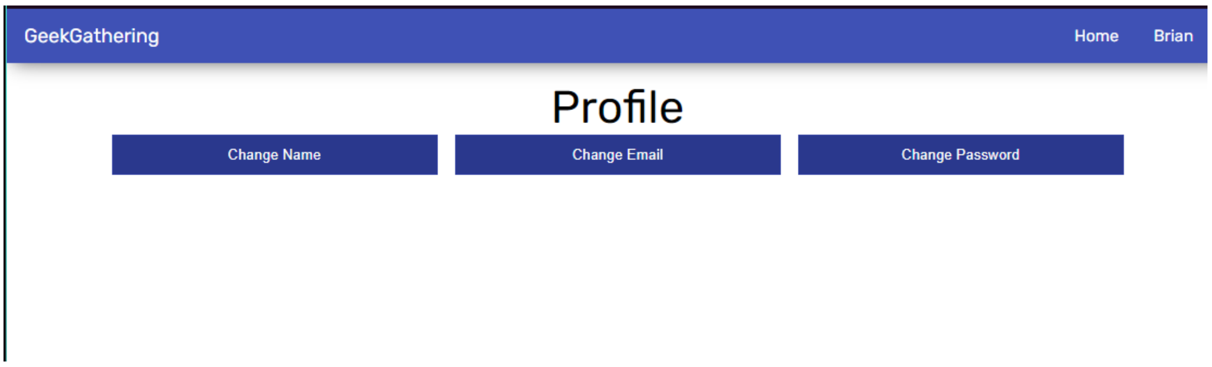
Picture 22: Change email

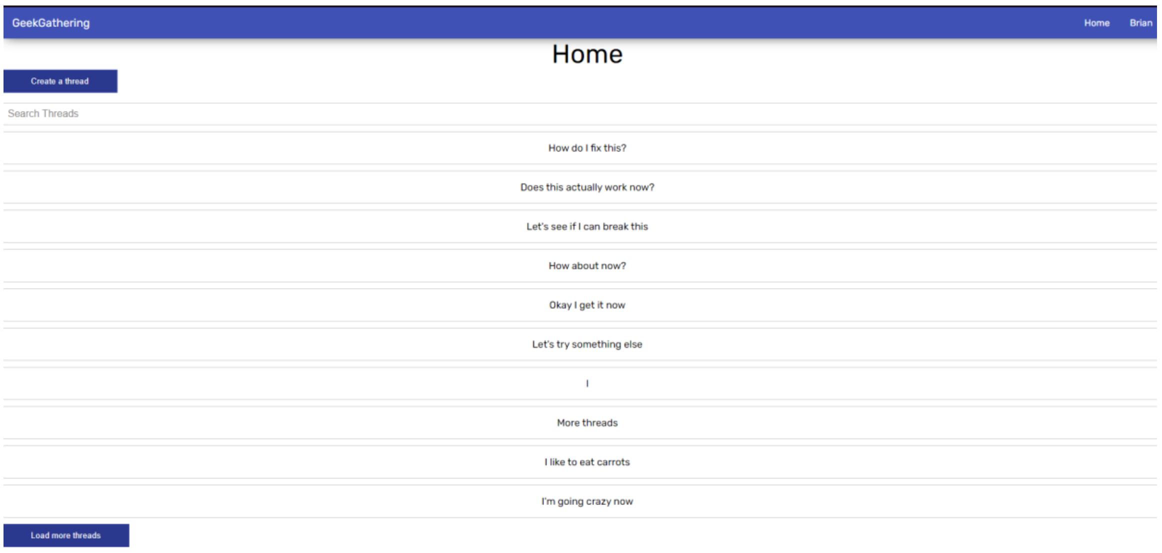


Picture 23: Change email errors

Responsive design

In this section there are picture on how the user interface changes, when viewing on bigger screen.





How do I fix this?

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How about now?

Okay I get it now

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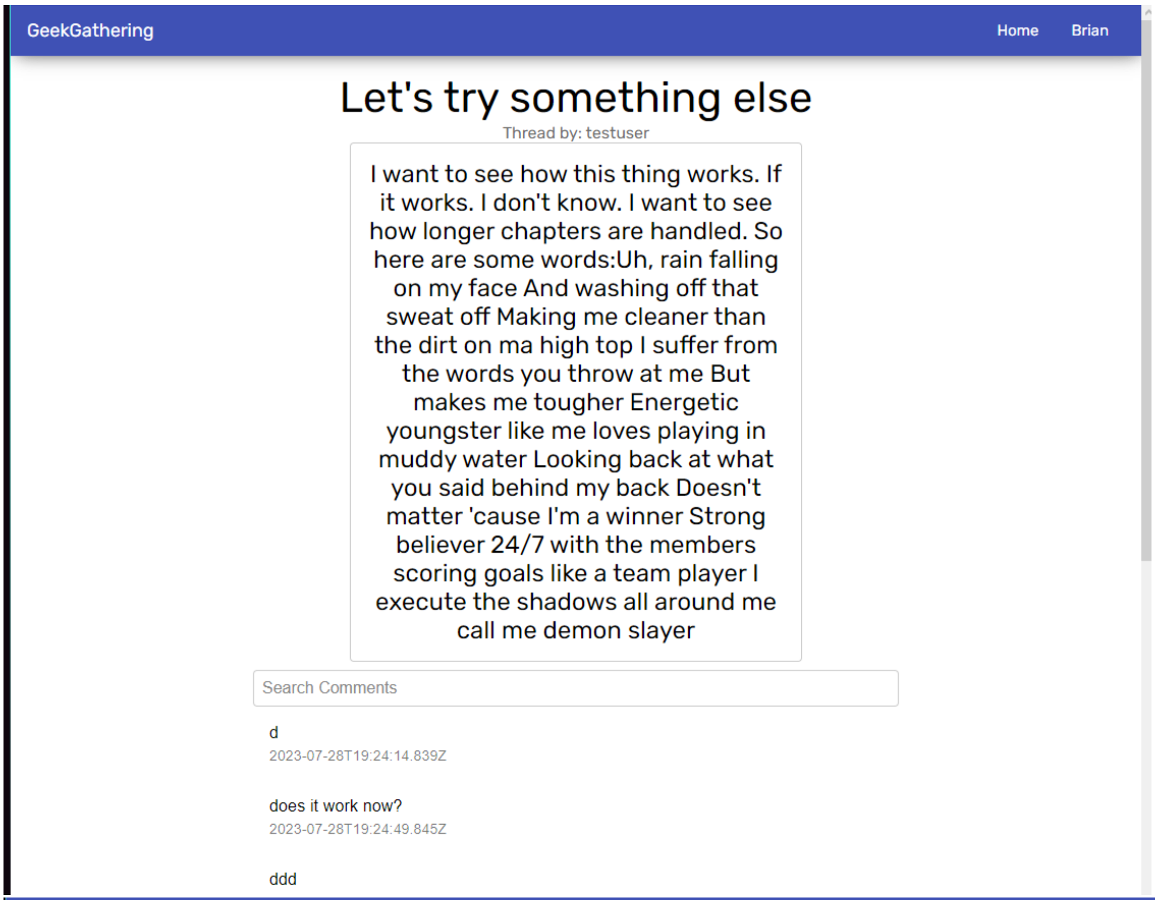
I

More threads

I like to eat carrots

I'm going crazy now



GeekGathering Home Brian

Let's try something else

Thread by: testuser

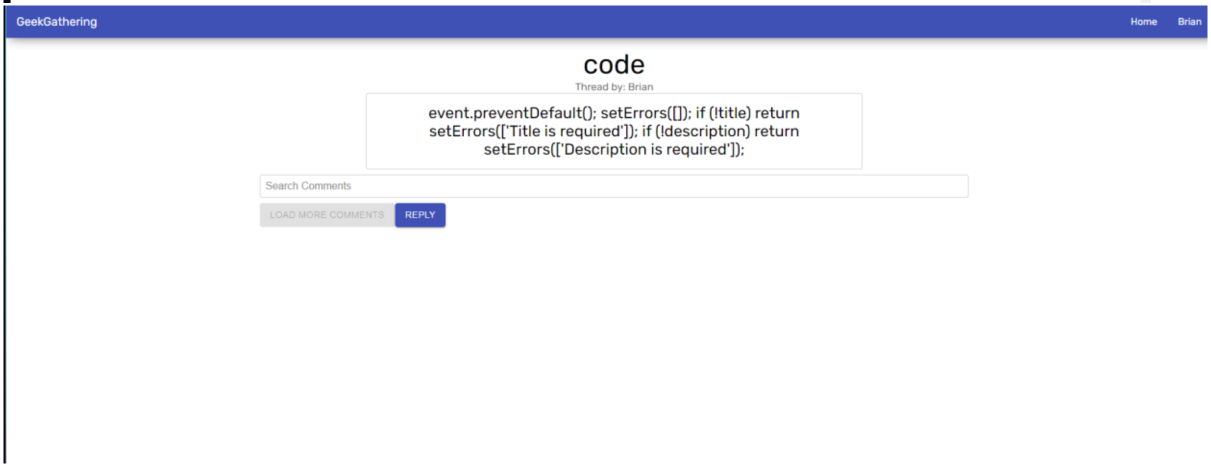
I want to see how this thing works. If it works. I don't know. I want to see how longer chapters are handled. So here are some words:Uh, rain falling on my face And washing off that sweat off Making me cleaner than the dirt on ma high top I suffer from the words you throw at me But makes me tougher Energetic youngster like me loves playing in muddy water Looking back at what you said behind my back Doesn't matter 'cause I'm a winner Strong believer 24/7 with the members scoring goals like a team player I execute the shadows all around me call me demon slayer

Search Comments

d
2023-07-28T19:24:14.839Z

does it work now?
2023-07-28T19:24:49.845Z

ddd



GeekGathering Home Brian

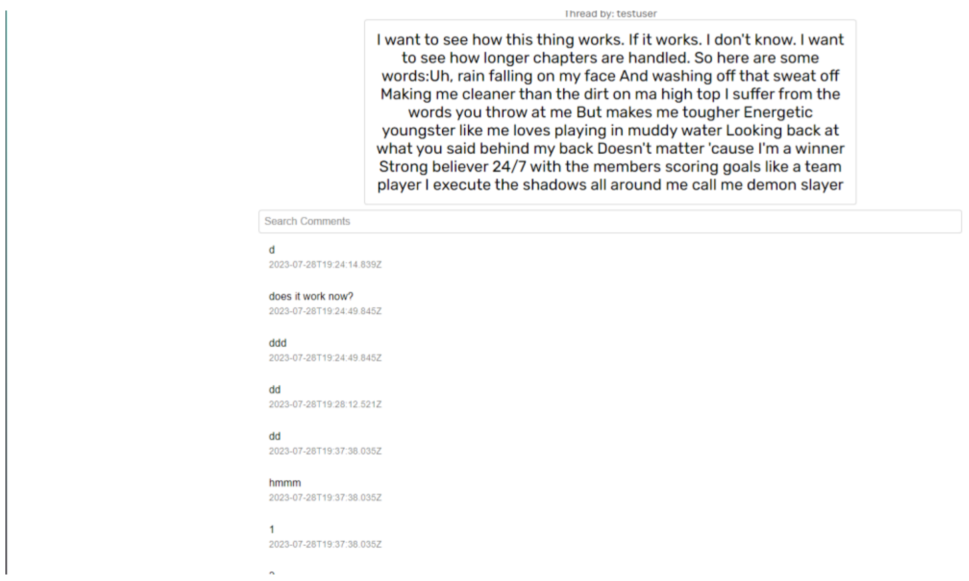
code

Thread by: Brian

```
event.preventDefault(); setErrors([]); if (!title) return
setErrors(['Title is required']); if (!description) return
setErrors(['Description is required']);
```

Search Comments

LOAD MORE COMMENTS REPLY


Thread by: testuser

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d
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ddd
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2023-07-28T19:37:38.035Z

hmmm
2023-07-28T19:37:38.035Z

1
2023-07-28T19:37:38.035Z

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