Students Discussion

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1. Introduction

Forum has become more and more popular in recent years, this may be due to the rise of learners who are willing to raise their hand and pose a question for the sake of knowledge. Therefore, the forum has taken advantage of it and gained more currency. In this coursework, a forum for student discussion will be developed with some requirements such as allowing users to post questions, delete and answer them and users can send a message to the admin. Besides, having a function to connect the user to their post can be the register/login function which creates a session for their posting freedom. Module management is a function that may be conducted by admin, therefore admin account could be created to fulfil. Moreover, some diagrams to inform about the ideation phase of the design process will be shown, subsequently, testing and evaluation of the website will be conducted to certify the web usability. In short, the web needs to meet the requirements and ensure any additional functionality is fully developed.

2. Design Process

2.1. Page design

The forum keeps everything simple for users, especially students from technology backgrounds, where they can have freedom of discussion and have their answers immediately from others. Therefore, utilising HTML and CSS is obvious in this project, moreover, some implementations of Bootstrap will be added to make the website attractive and yet usable for students, and some javascript functionality will also be implemented for a few buttons.

At the back end, PHP will be the primary choice of development, as it provides secure and built-in functionality for web development. Besides, some libraries such as PHPMailer are considered to be set up to create a contact form for users to send emails to the admin.

The users will be presented with a welcome page from which they can access to login and register page to access the homepage where all questions will be displayed with a comment section for answers from users. There will be a top navigation bar for users to switch between different tabs of different functionalities, which will be shown in the navigation diagram (Figure 2.2-1). There will also be pages not shown in the navigation and can only be accessed via buttons such as the update button.

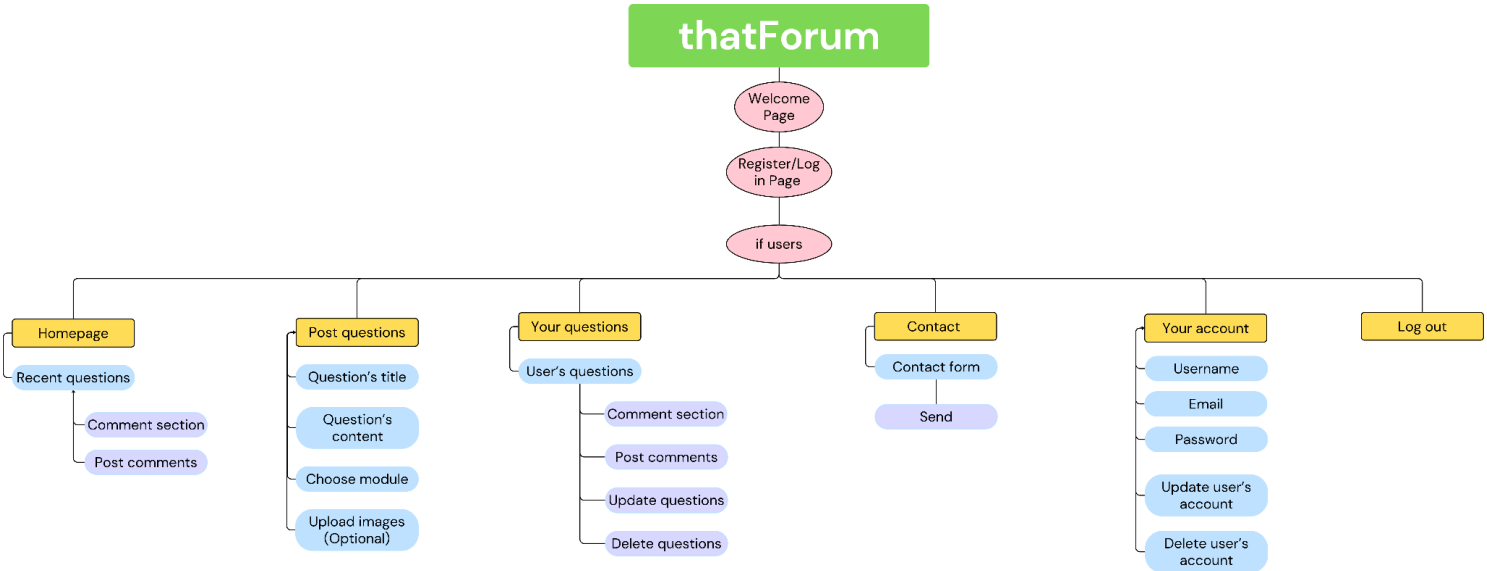
Furthermore, each page will be first presented with a left-to-right aligned title to inform users of the page they are in. Simultaneously, questions will be attached with the title, authors, and the time created at the header. Each section of a question will be partitioned to improve the clarity when users see each question.

2.2. Navigation Structure

First of all, the information architecture will be a hierarchical structure with a breadth of organisation because the pages give users minimal features so, applying pervasive architecture would make the website more intuitive. With a task-based scheme, the main features of the website would be illustrated on the taskbar. the global navigation of the website would be a list of different functionalities to minimise the complexity of wasting time on navigating instead of asking questions. Moreover, the workflow when users interact with the website should be considered to organise the features to properly fit the user's workflow (Kalbach, 2007).

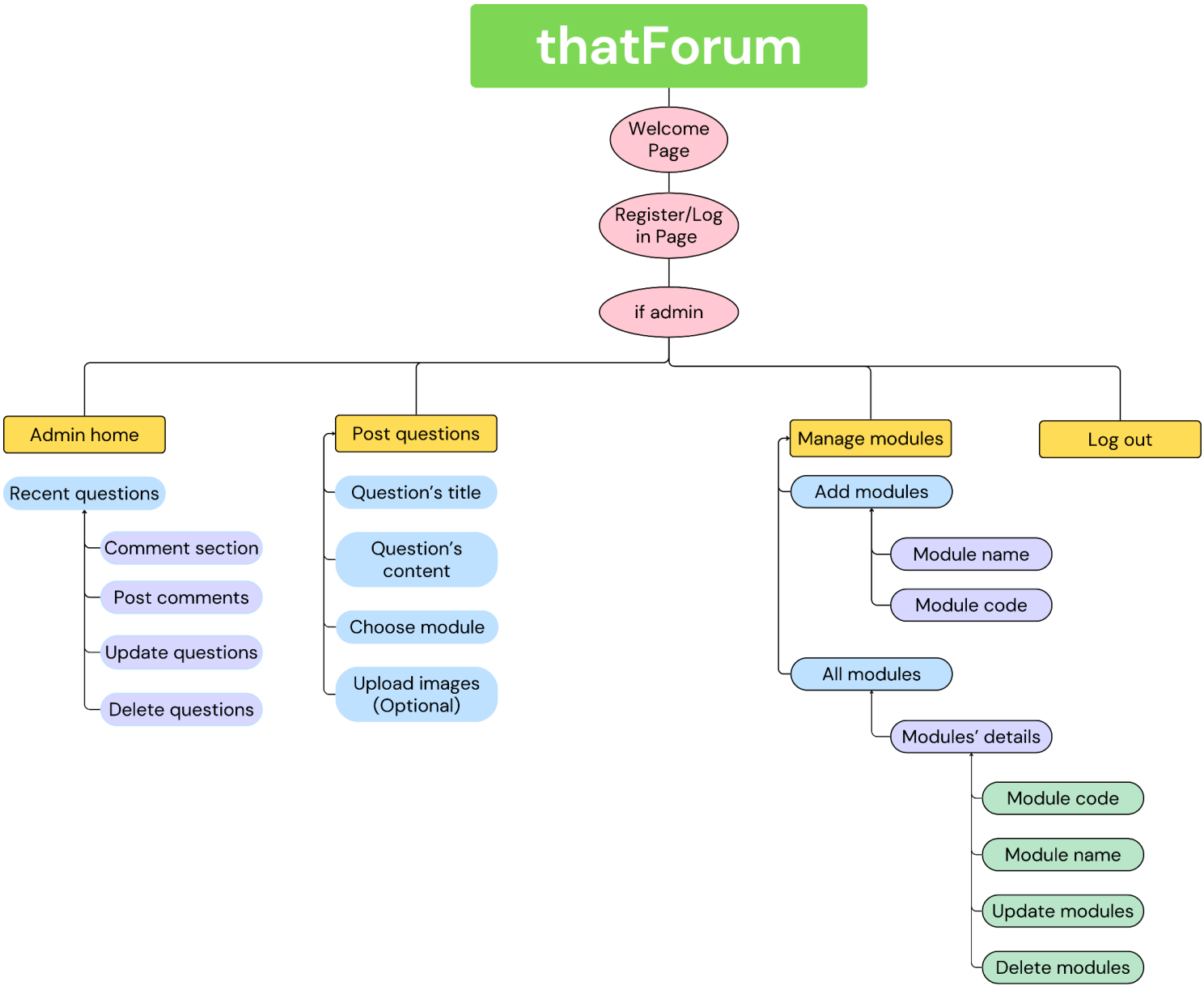
The users' pages will have the ability to view recent questions, post a question, manage their questions and accounts, and lastly, send a contact form to the admin. From that, a new functionality to let users comment on each other post is needed so that they can easily discuss together.

Figure 2.2-1: User's Navigation



Similar to the User's navigation, the admin will be able to view questions, and each question is associated with an update and delete button, therefore admin can easily manage the question. Likewise, the manage modules function is given to the admin so that they can add, update or delete modules to fully match the requirements.

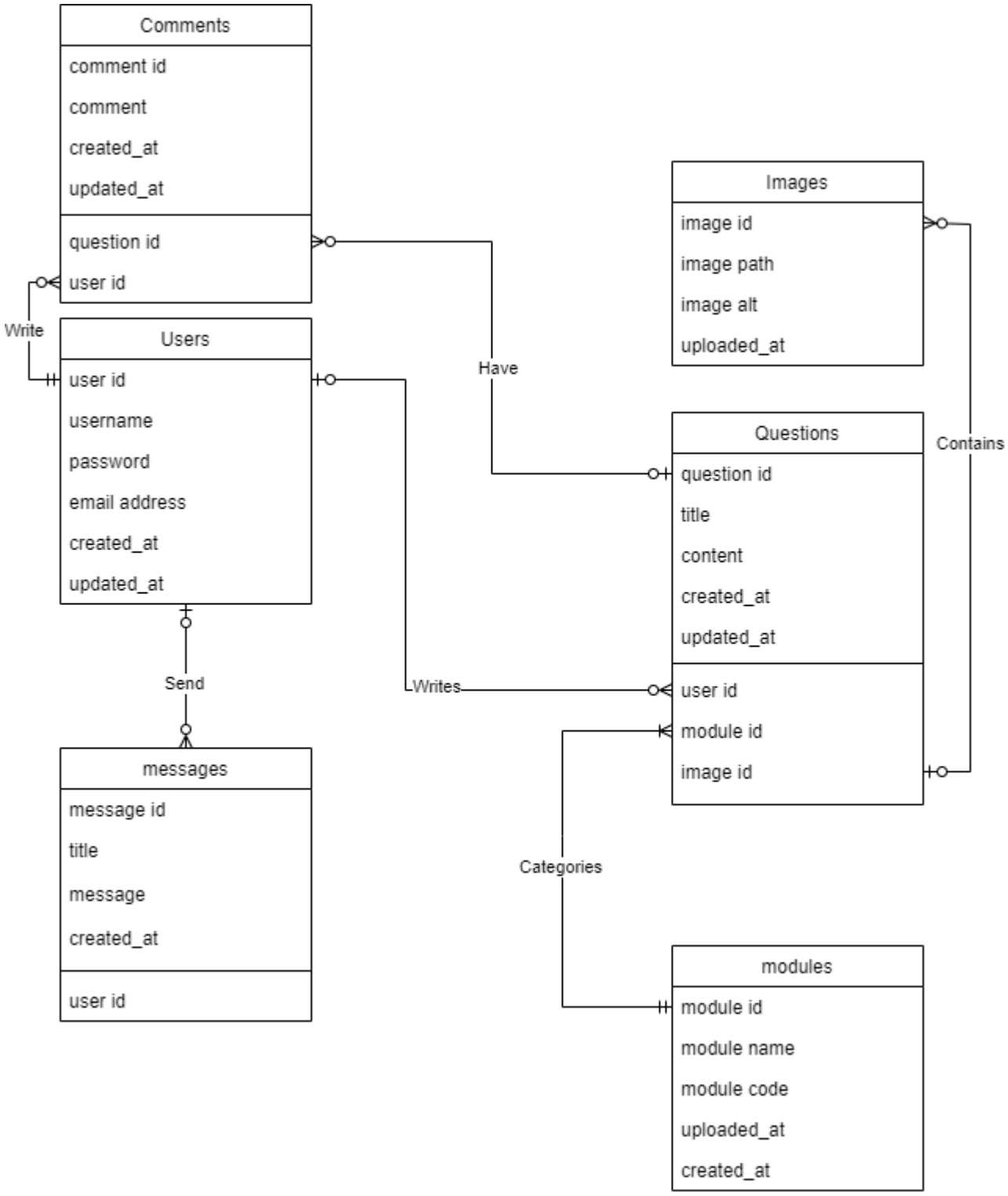
Figure 2.2-1: Admin's Navigation



2.3. Data Diagrams

For the first part, ERD is created to form the concept of the relational database, specifically, the conceptual data model stage is used, from this stage, each table and their conceivable records will significantly affect the physical data model which will be transformed into a database schema in the MySQL database.

Figure 2.3-1: Conceptual data model

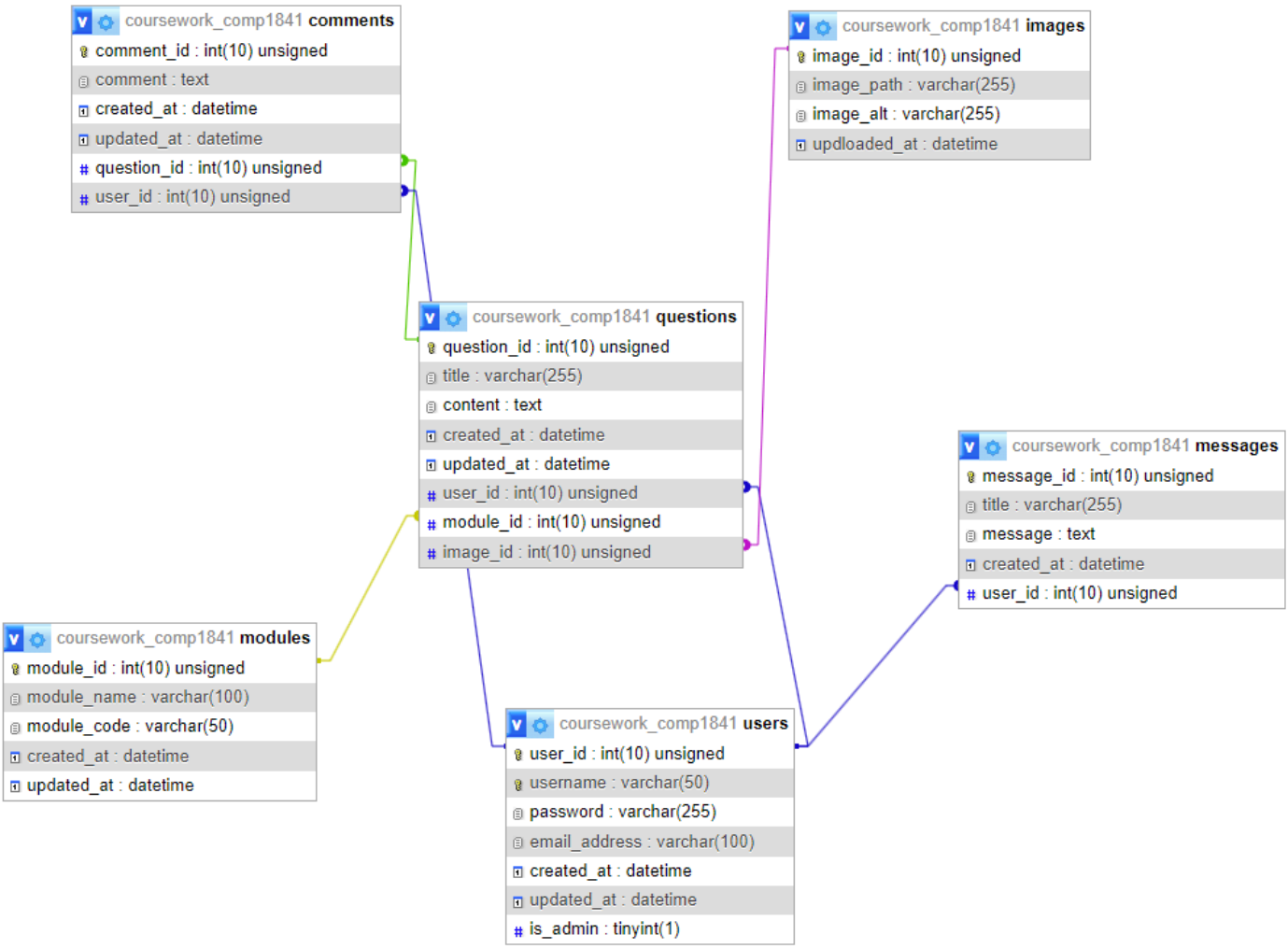


For the database, each record is shown with data type and extra constraints to form a comprehensive database schema.

Moreover, in the database, the index for each foreign key is implemented to improve the query inside the database. A disc

drive's database files can have their records efficiently and rapidly accessed with the help of an index; by acting as an orderly lookup table with indices to the desired data's location, it maximises the speed of database queries, according to www.solarwinds.com (no date).

Figure 2.3-2: Database schema



3. Technology discussion

Overall, the technologies used were popular in web development such as PHP, Javascript, CSS, and HTML, as well as MySQL for the database; they were all basic, yet comprehensive regarding website development. As they provide, layout content, styling, security and notification. Moreover, creating the interaction and improving user experience and usability.

Regarding PHP, an old programming language, though still holding a large amount of usage, it can be capable of enforcing website performance to bear the website traffic (Vidjikant, 2024; Lingo, 2023). Likewise, the provision of different built-in functionalities to handle form validation, session management, etc; additionally, PHP can connect to different databases, for example, MySQL, and PostgreSQL (Lingo, 2023). Furthermore, PHPMailer which is a library from a third party, is considered to be more reliable and sufficient compared to the mail function in PHP, like the STMP protocol of PHPMailer has encryption and authentication when sending mail; while the mail function lacks or absence of secure protocol (Ali, 2023).

The CSS frameworks have been great tools for developers to create quick and responsive websites, though the most salient factor that distinguished Bootstrap from the others is the mobile-first approach then scaling up to a larger screen size such as a table or laptop, which makes them possibly fits almost any viewport (Fitzgerald, 2021). Similar to the context of the project, having a community for discussion is also an advantage of Bootstrap, an open-source framework, therefore, Bootstrap is contributed by many developers and discussed by many users on platforms such as StackOverflow, according to Fitzgerald (2010). However, websites using plain Bootstrap can be monotonous and have a similar look as others built by Bootstrap, which can affect the identity of a business or commercial project(Abdaladze, 2023; Alvarado, 2024).

Javascript in this project is rarely used, due to Bootstrap giving an excessive advantage in interactivity, though there are a few announcements that need JS interference. JavaScript(JS) is used by web developers to incorporate features and interactions that enhance user experience and make using the internet more pleasurable, as noted by Ozanich (2022). Consequently, adding Javascript aid the project in terms of interactivity and confirm users' actions.

HTML is the backbone of a website because the developer can determine the outline of their contents and from that any development further can be executed, a website without HTML will be a clutter of images and words. BYJU'S FutureSchool (2023) wrote that beyond aesthetics, HTML is essential for enhancing a website's search engine optimisation (SEO); thereby, HTML makes it easier for search engines to crawl and index a website by incorporating the right tags and titles, which increases the likelihood that the site will appear in relevant search results.

The database will be the last consideration, MySQL can have many benefits such as ease of use because users can download it in a few minutes; additionally, attributes of a sufficient website such as security, performance and connectivity are ensured by MySQL (Oracle, no date).

In conclusion, this project will make use of all these technologies to develop a website that meets the requirements. In addition, ensure that the forum has not only a usable and appealing interface but also adequate features with help so that users can contact, whenever they needed.

4. Legals Discussion

First of all, the consent form, in this project, won't be created due to the lack of understanding of what a consent form is and its requirements. However other aspects discussed below will try to illustrate the most important aspects of legal issues of the forum.

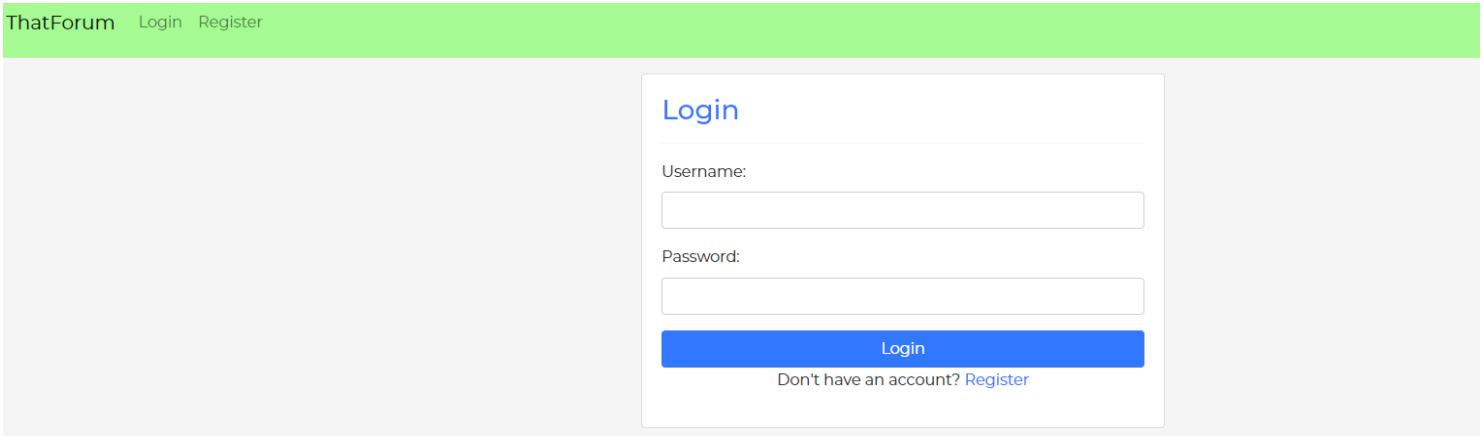
In the project, collecting email addresses will only be the information needed for posting a question, it will be accountable for creating a user account. Moreover, notifications to users will be sent via their email from admin, so they can be informed of changes or problems about the forum. Therefore, personal data collection will be minimised to ensure the forum can function normally. Moreover, users will be able to access and view the personal information that they provided for the website; additionally, records such as questions can be accessed by users, though there will be limitations, such as users can only delete or update their questions. Lastly, users can delete their account, therefore, they will be forced to create a new one to continue, any records that are associated with that user account will also be deleted.

Data security is a considerable factor, therefore admin will only the person access and delete all the records. Moreover, passwords will be encrypted so that even the administrator can not view and access users' accounts. Consequently, users' data will be secured from other users.

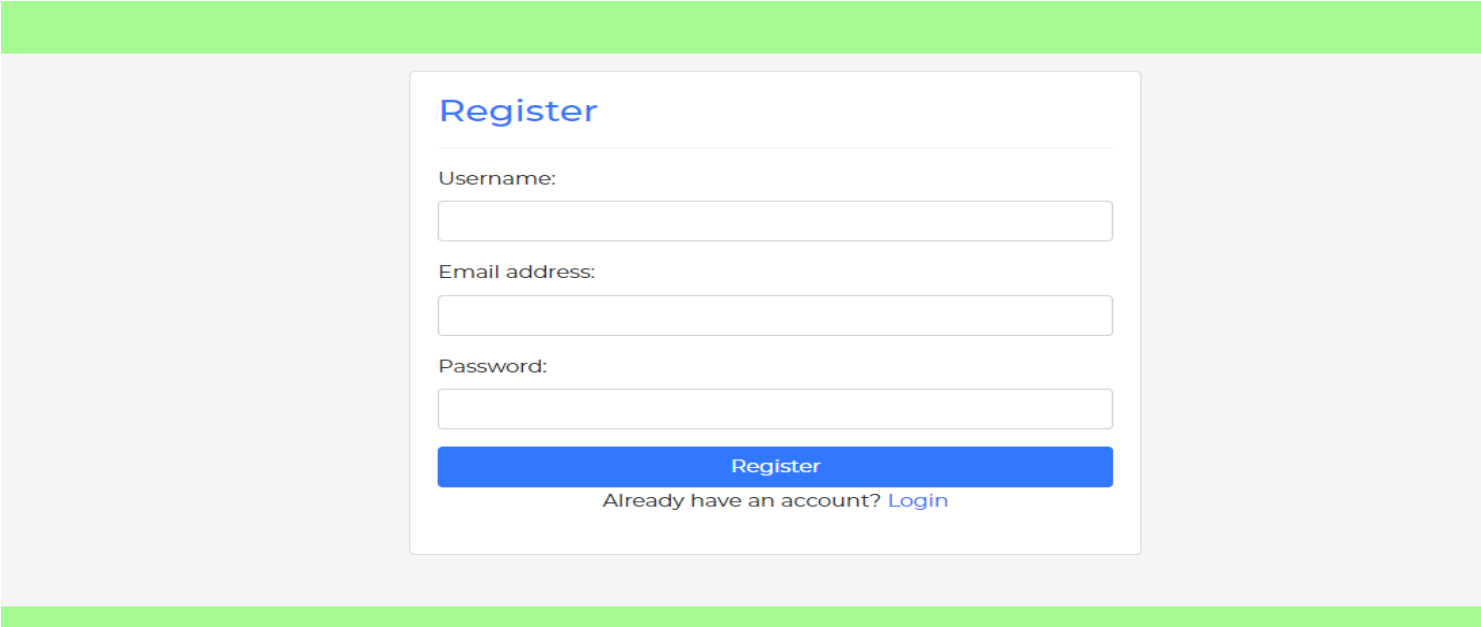
Briefly, even though the website security remains some problems and users' rights are not well informed through a consent form or documentation. Moreover, the security of the website may not developed appropriately to handle intricate hacks or illegal data access. As a result, their personal information is reduced to a minimum to avoid any violation that can affect their privacy.

5. Functional Requirements

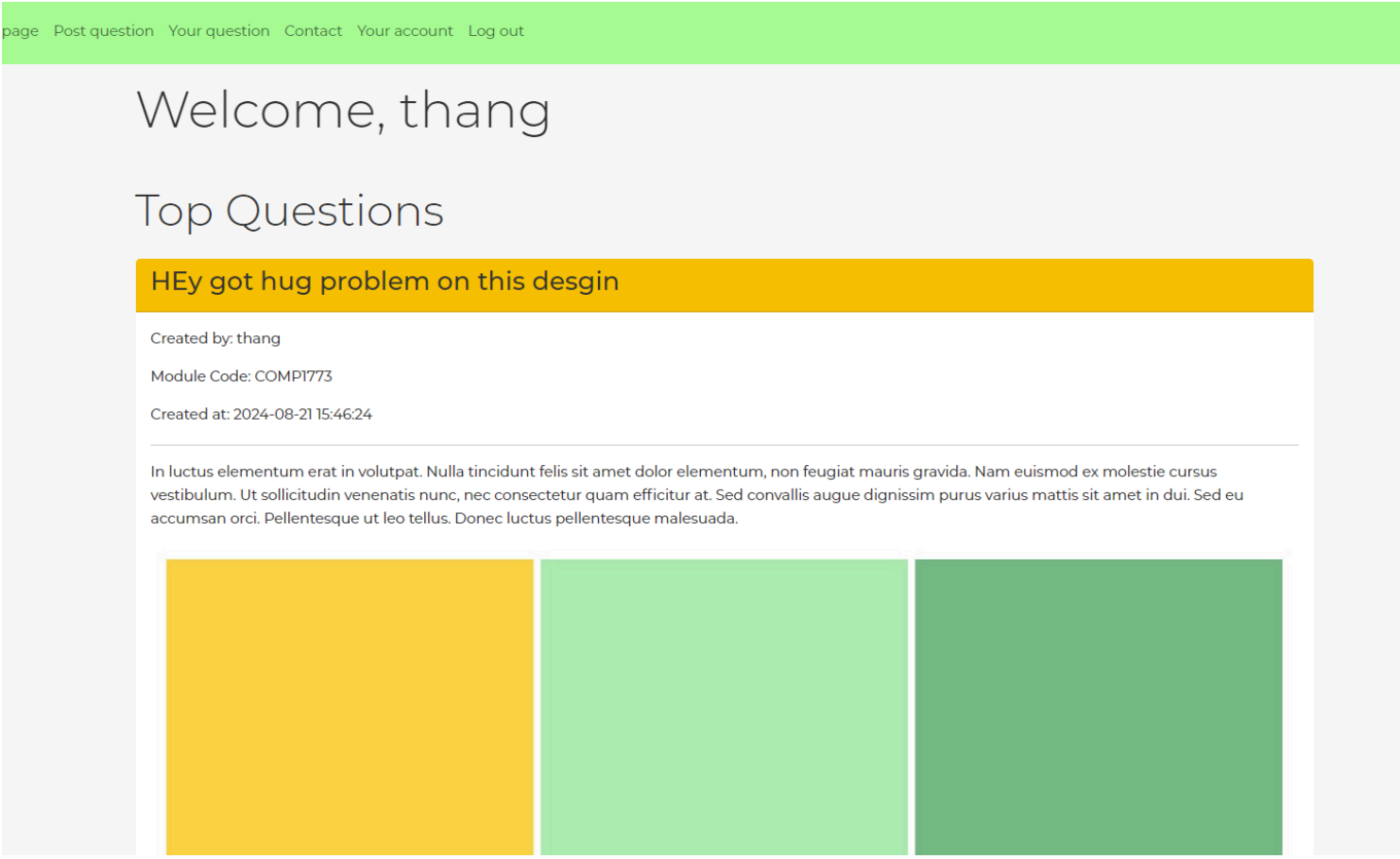
Overall, the system fulfils the requirements, as well as a new comment system for users to answer other questions. First of all, a login page gives the user the ability to go back to their accounts without the need to create a new one. So, there will be two types of users, which are admin and user, in terms of admin, there will be only one admin which will be shown in the database in the column is_admin and represented with the number 1, normal users will be number 0. In this report pages of users will be shown before admin's pages.



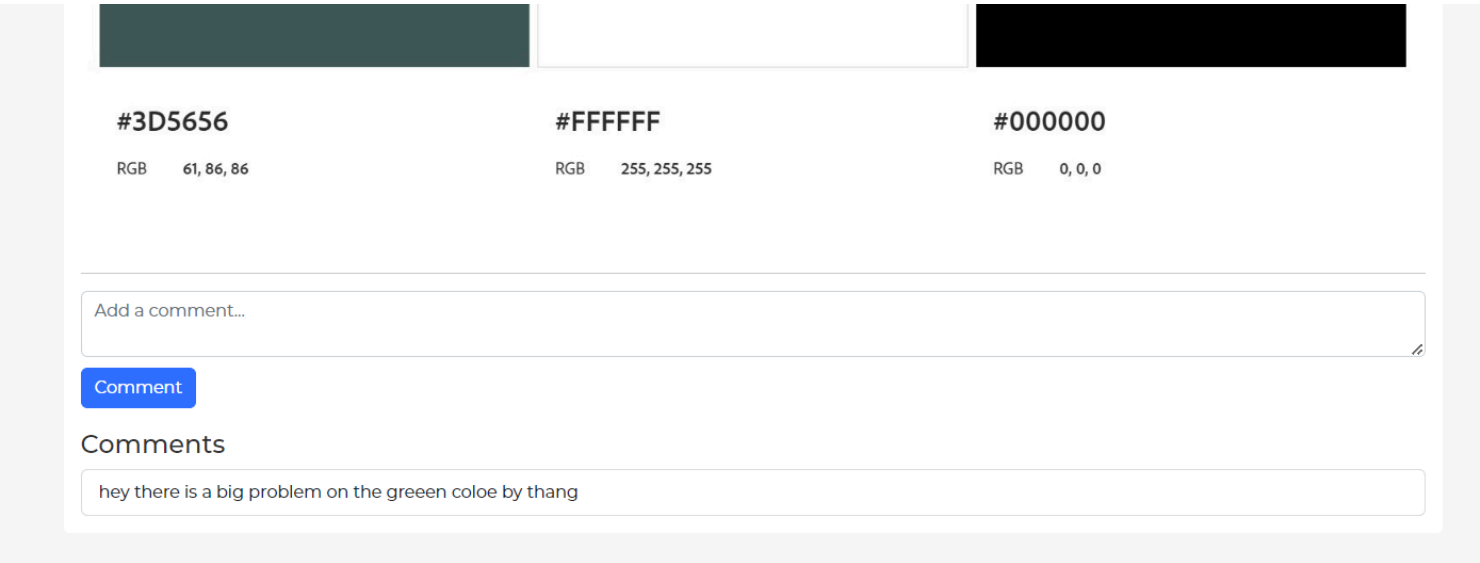
Regarding the registration, it requires users to enter three different fields username, email and password. From this functionality, users can connect to their posts via this account.



After registering or logging into the website, there will be a welcome screen, with top questions below.



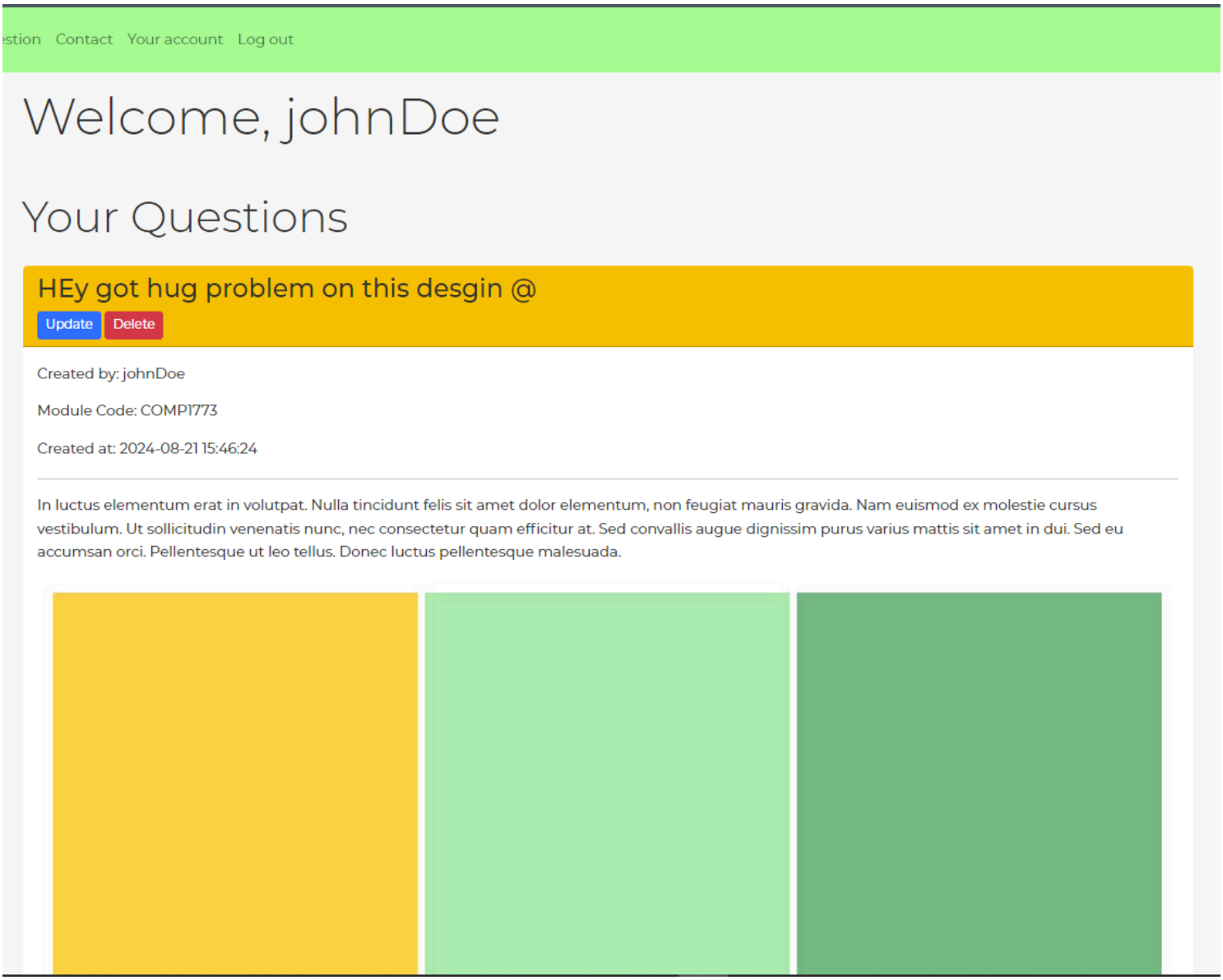
The title of the question will have a different background to make it more distinguished, and other information will be shown below it. Then the content will be separated by a line from the header. Below is the additional functionality which is the comment section.



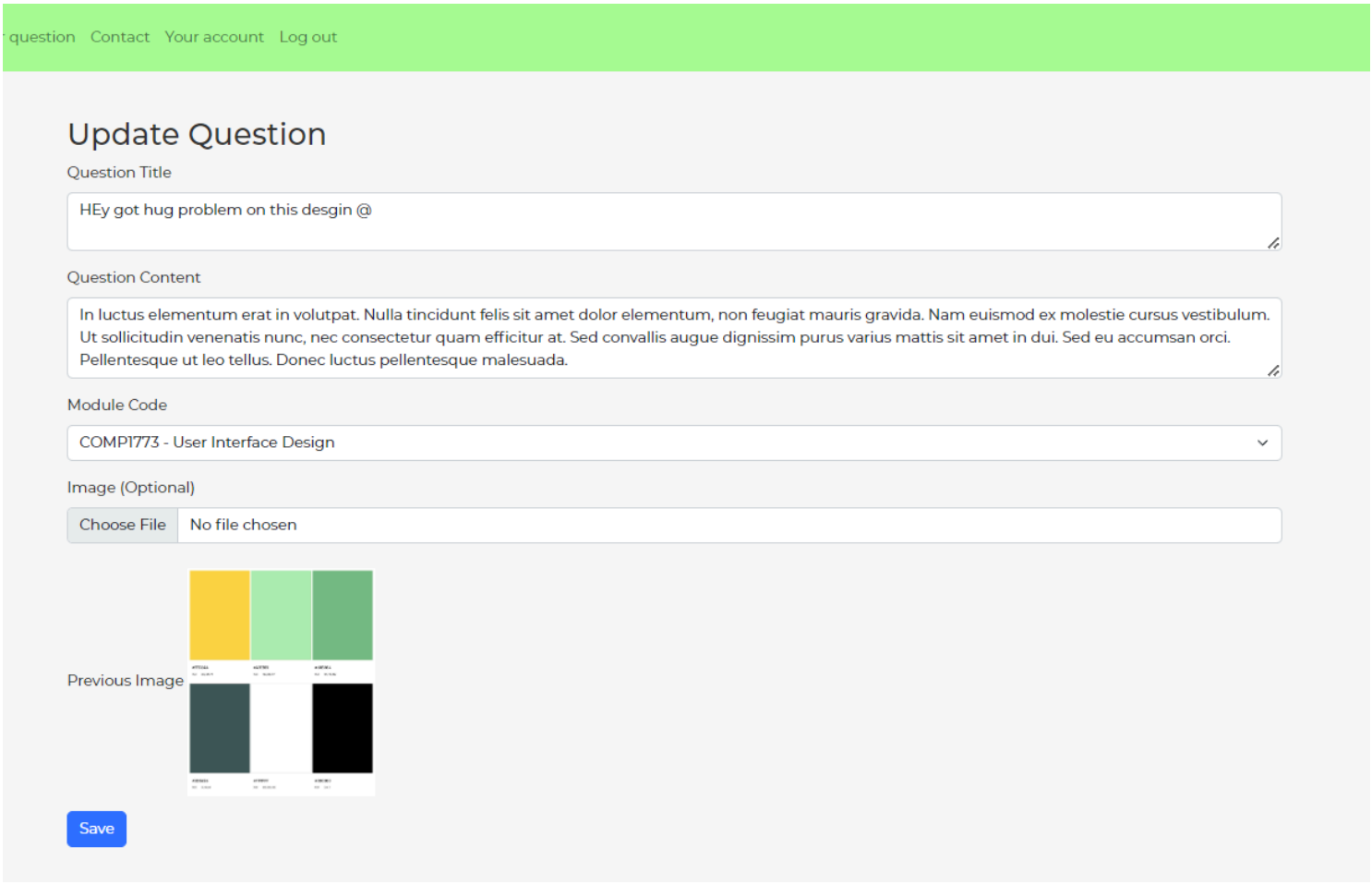
Post questions will be next page where users can post their inquiries about a module that they have to choose in the module code section. The image section will be optional, because many users may want to elaborate their questions with pictures, while others may want to ask questions with words only.

Gather onto the next page, your questions page displays all of the questions of users, ordered by the latest one. Moreover, to give users freedom, questions on this page will be attached with two buttons update and delete. The delete button will demolish any record inside the questions, from title to images, excluded the module which is not data that can be accessed by

users.

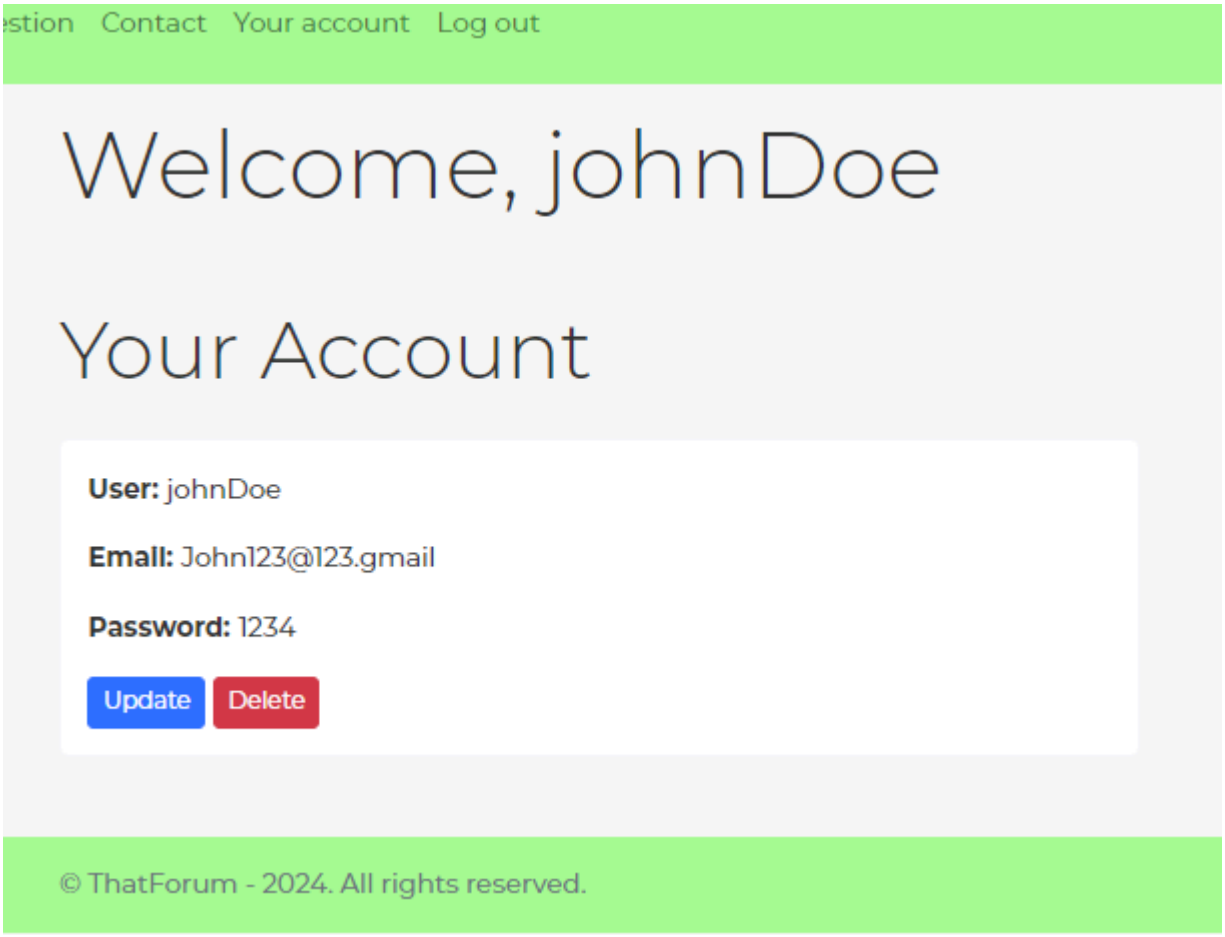


Pressing the update button will lead to the next page. The updated question page will have similar fields compared to the post question page. However, the hallmark that makes it different is, that the page will show current data on each section, so that users can see and adjust small details, instead of filling in new data from top to bottom.



The next item on the global navigation will be the contact form, which aids users in sending emails to the admin, specifically via Gmail. Users will need to enter the title and message and then send it directly to the admin's email.

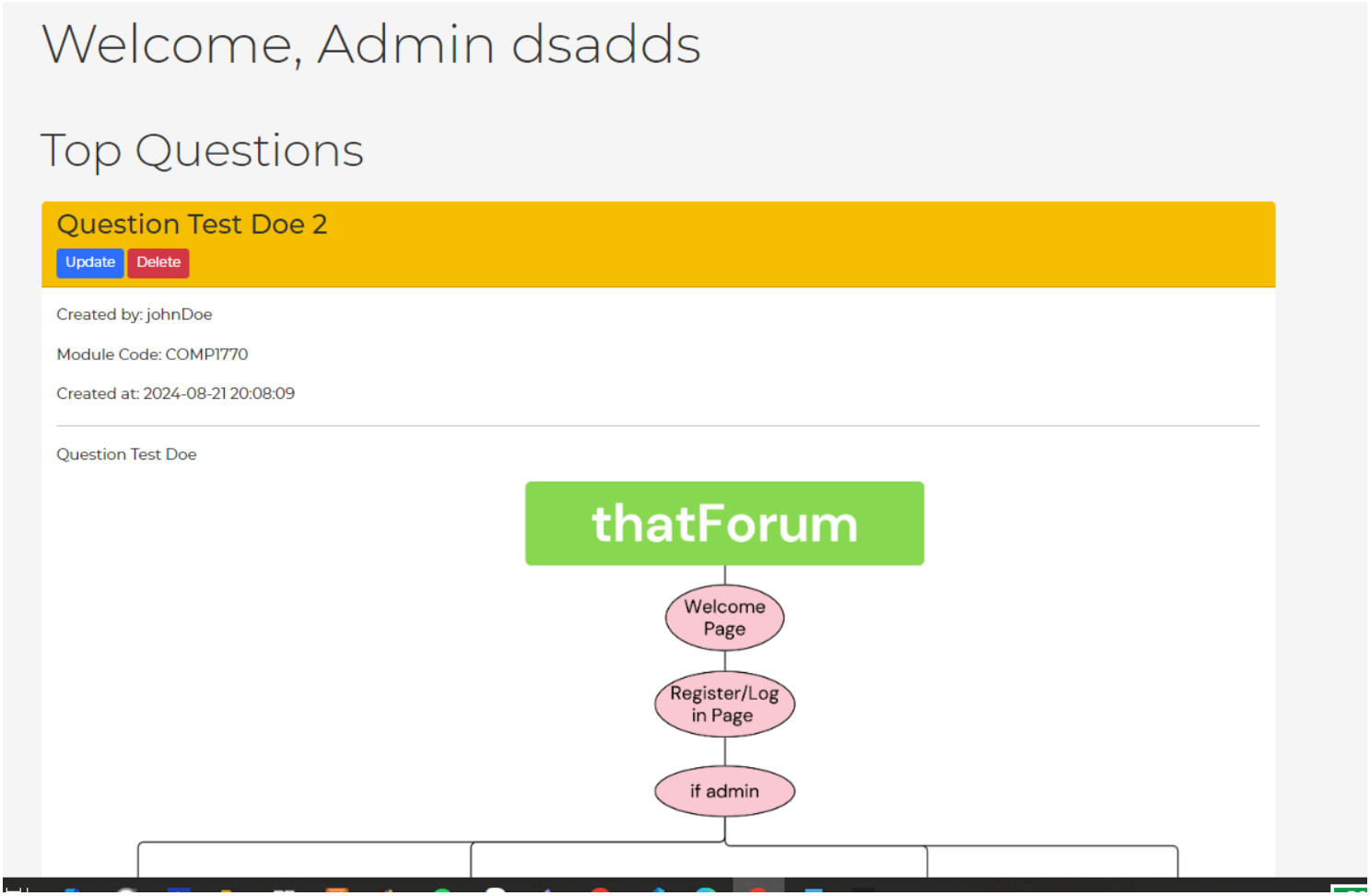
For the next function on the navigation bar, the account details are shown for adjustment if users desire to. The two buttons will navigate to the same as the update and delete buttons above.



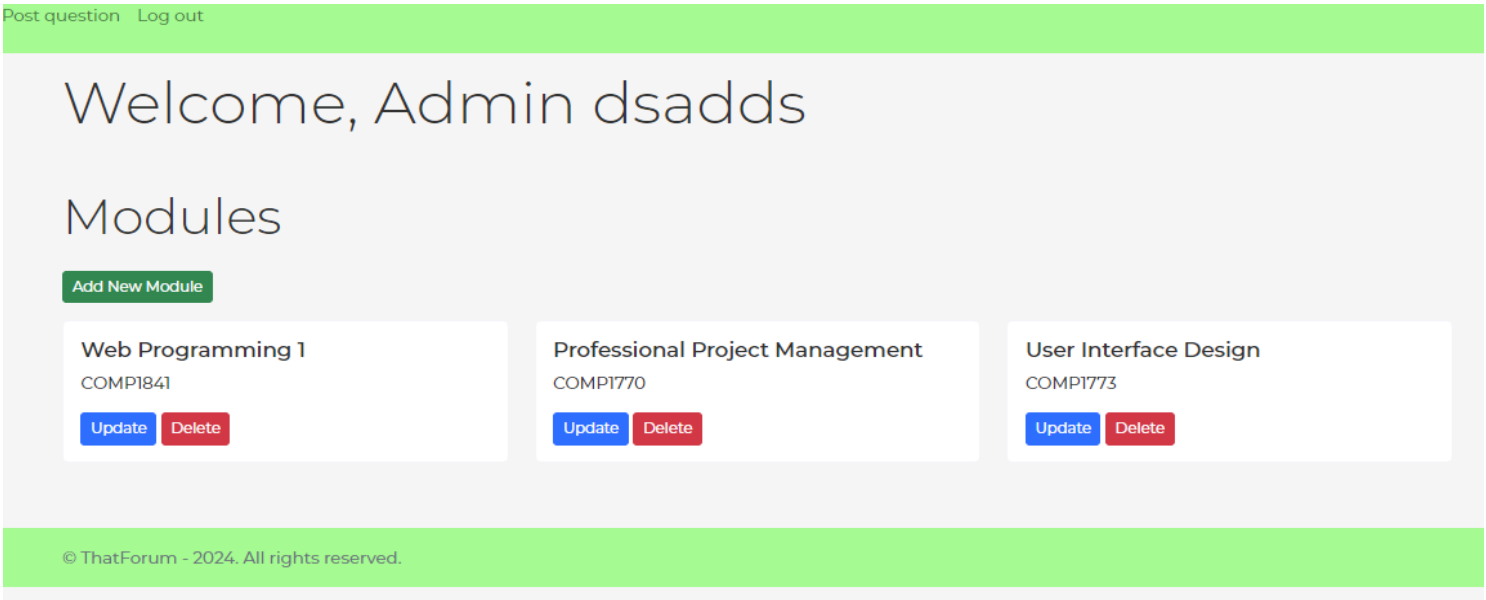
The update account page shows 3 input fields for users to enter, with current data displayed. Then click the save button, to store their new records.

Lastly, the log-out will just simply move users back to the welcome page and remove all user sessions.

Moving to the admin's pages, the admin page has similar functionality to the user question page, with delete and update buttons, comments section and post a comment field.



Focusing on the manage module functionality, the admin will be able to add new modules, update, and delete them.



First of all, click on the add new module button. This will move to a new page, which allows the administrator to store new modules. Two fields are associated with two records which need to be filled in this page.

Moving to the update button, identical to all the update pages, the current data and required fields are shown to easily adjust.

In short, the required functionalities are fully developed with an elaboration that users can comment on questions. The objective of the forum is to allow users to discuss technical issues and inquiries during their academic period and maybe further on their career path. Therefore, all the vital functions such as posting questions and managing their questions are created to fulfil these specific tasks, and in general, achieve all the requirements of the coursework.

6. Testing

For this testing process, each function that has a form will have a test case to have an overview of each functionality that the users will interact with.

Following the same order as the above, the homepage with the functionality to post comments.

Table 6-1: Table test case for Homepage

Function	Sample Input	Sample Action	Expected output	Actual output as expected
Post comment	Empty input in all fields	"Comment"button pressed	"Please fill in comment" below the navigation bar	yes
Post comment	"Hey your problem is in the color palette" in the comment field	"Comment"button pressed	"Comment successfully" below the navigation bar	yes

Figure 6-1: Test case for Homepage

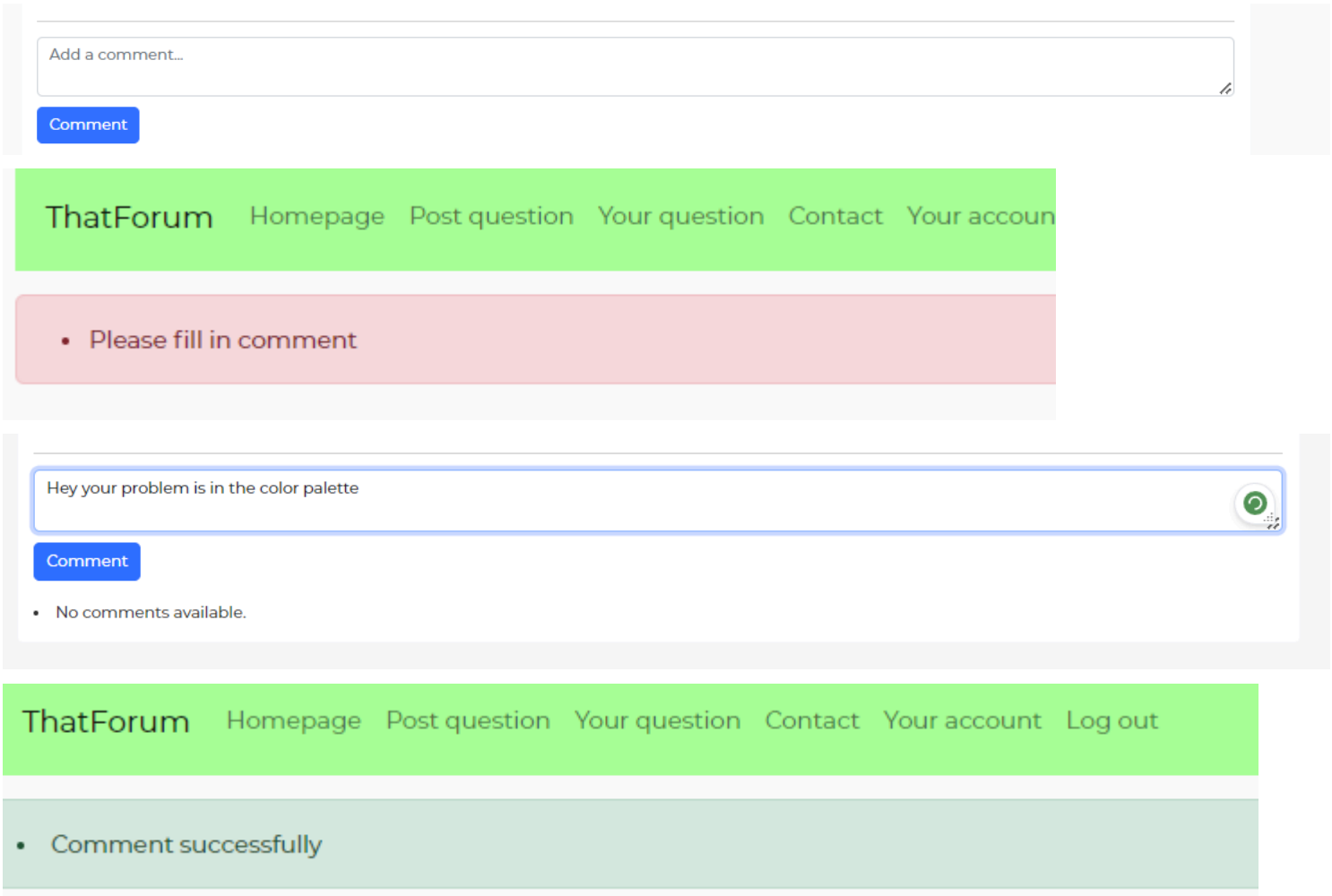
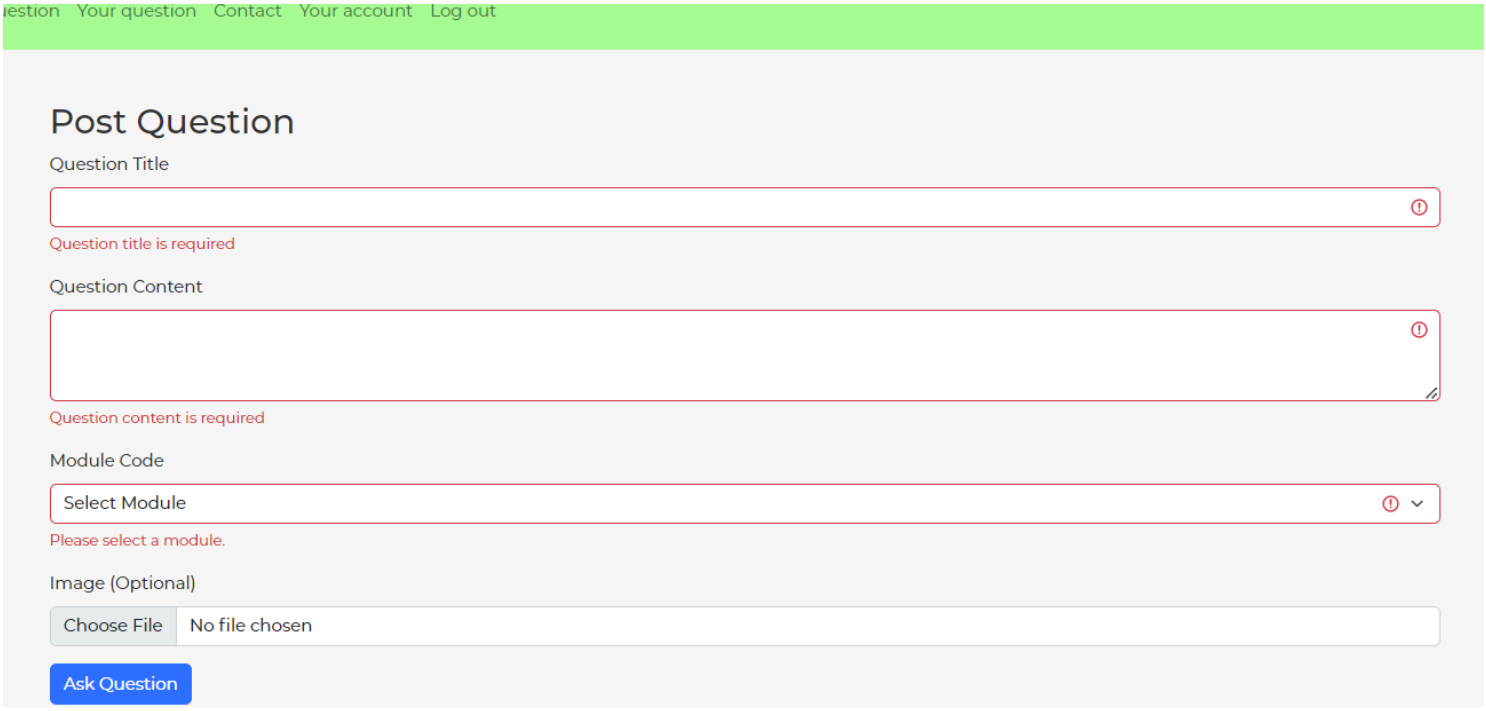
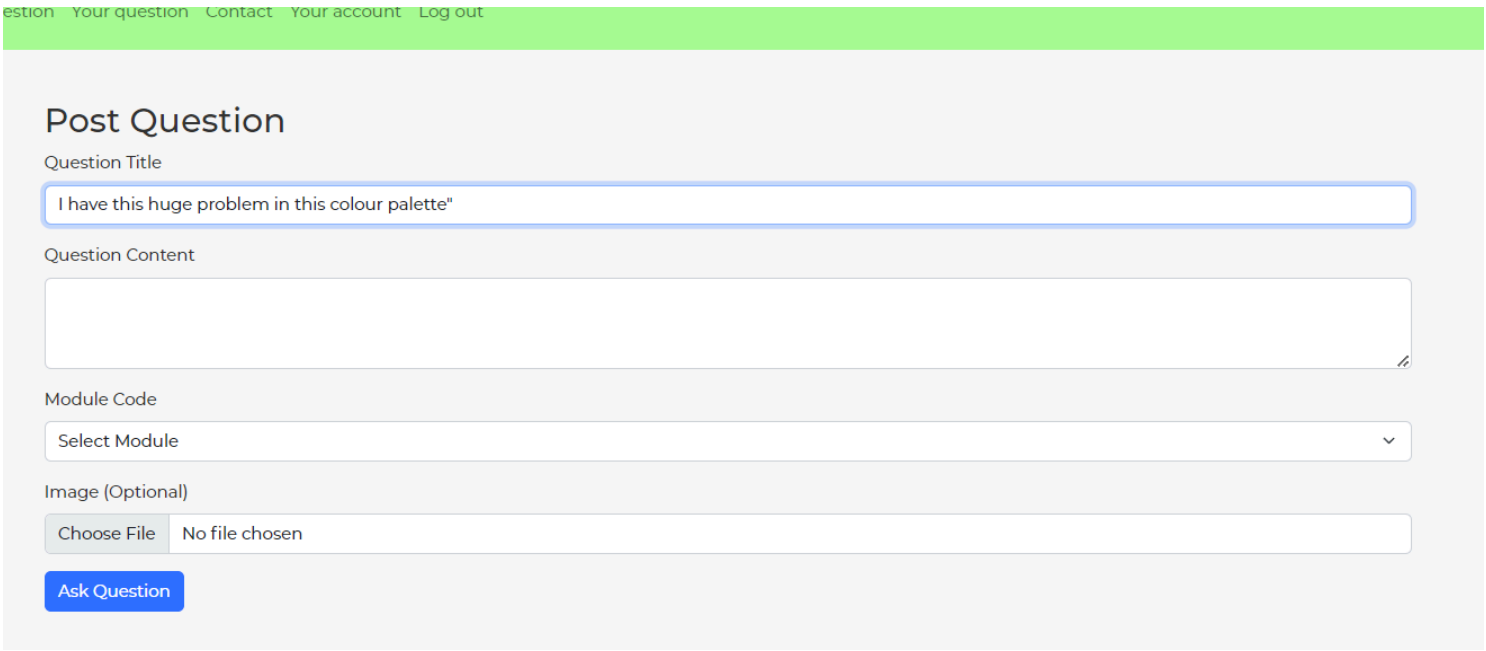


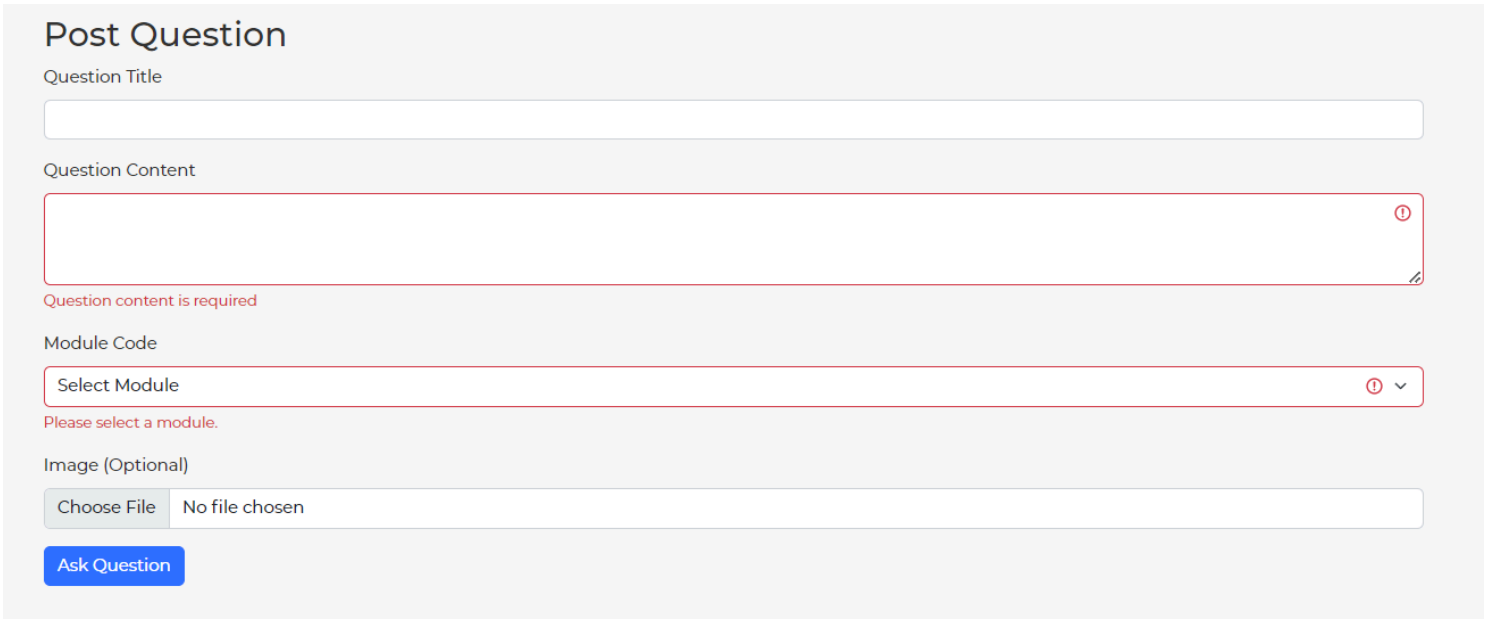
Table 6-2: Table test case for Post question

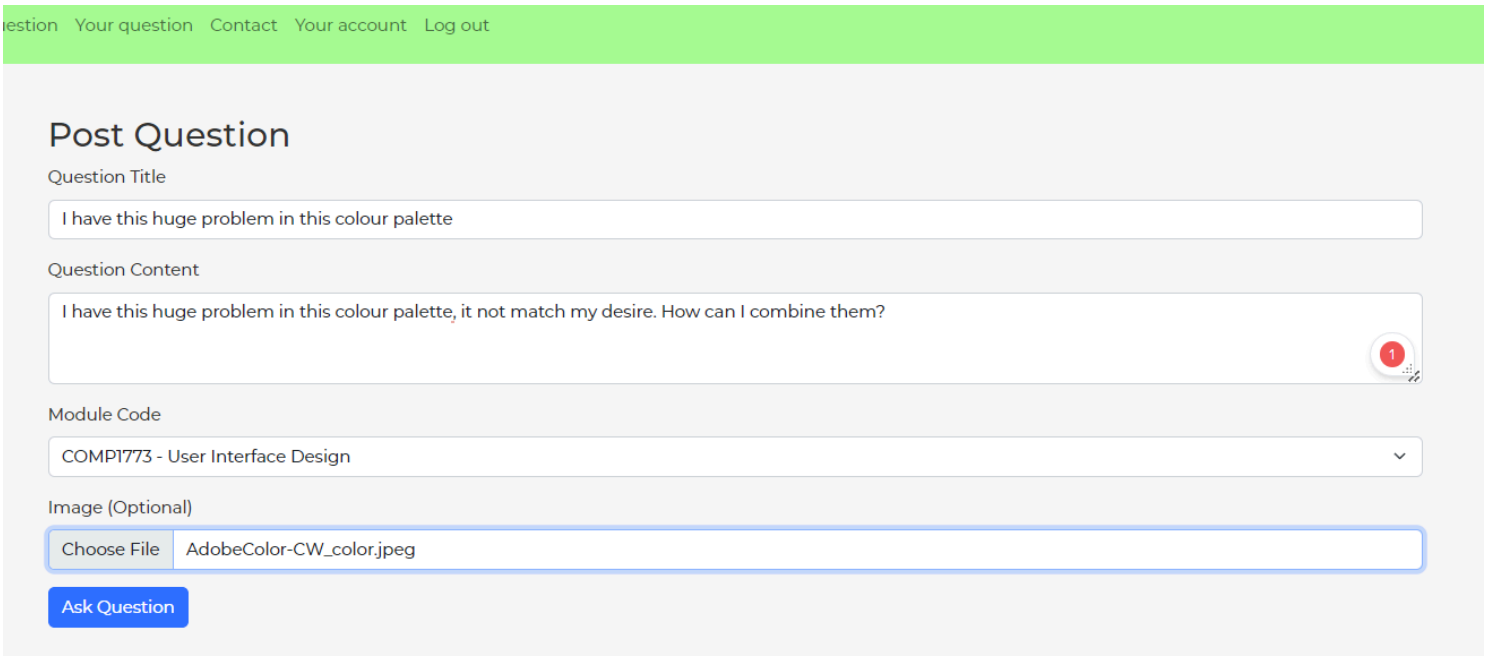
Function	Sample Input	Sample Action	Expected output	Actual output as expected
Post question	Empty input in all fields	"Ask question" button pressed	"Question title is required " below the question title field "Question content is required" below the question content field "Please select a module." below the module code field	yes
Post question	"I have this huge problem in this colour palette" the Question Title field	"Ask question" button pressed	Keep the record in the question title field "Question content is required" below the question content field "Please select a module." below the module code field	no
Post question	Fill in all fields	"Ask question" button pressed	"Post question successfully" below the navigation bar	yes

Figure 6-2: Test case for Post question


estion Your question Contact Your account Log out
Post Question
Question Title
Question title is required
Question Content
Question content is required
Module Code
Select Module
Please select a module.
Image (Optional)
Choose File
No file chosen
Ask Question


estion Your question Contact Your account Log out
Post Question
Question Title
I have this huge problem in this colour palette"
Question Content
Module Code
Select Module
Image (Optional)
Choose File
No file chosen
Ask Question


Post Question
Question Title
Question Content
Question content is required
Module Code
Select Module
Please select a module.
Image (Optional)
Choose File
No file chosen
Ask Question

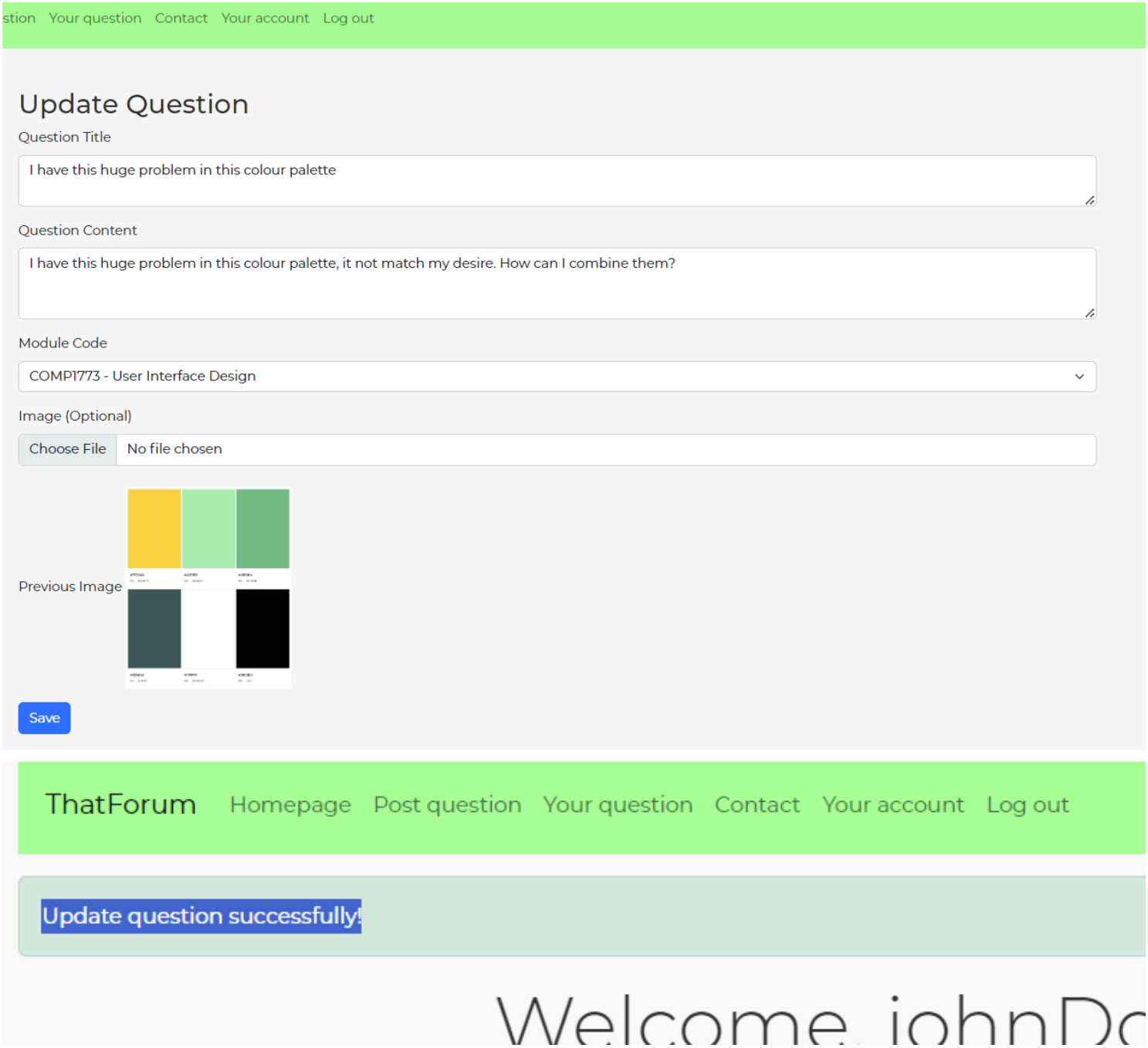

estion Your question Contact Your account Log out
Post Question
Question Title
I have this huge problem in this colour palette
Question Content
I have this huge problem in this colour palette, it not match my desire. How can I combine them?
Module Code
COMP1773 - User Interface Design
Image (Optional)
Choose File
AdobeColor-CW_color.jpeg
Ask Question

ThatForum
Homepage
Post question
Your question
Contact
Your account
Log out
Post question successfully

Table 6-3: Table test case for update question

Function	Sample Input	Sample Action	Expected output	Actual output as expected
Update question	Keep the all the existing fields	"Save" button pressed	"Update question successfully!" below the navigation bar	yes
Update question	Empty input in all fields	"Save" button pressed	"Question title is required " below the question title field "Question content is required" below the question content field "Please select a module." below the module code field	yes
Update question	Update all fields	"Save" button pressed	"Update question successfully!" below the navigation bar and display updated question	yes

Figure 6-3: Test case for update question



Update Question

Question Title

Question Content

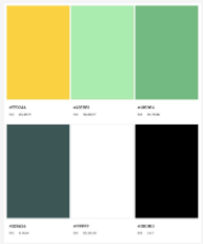
Module Code

Select Module

Image (Optional)

Choose File | No file chosen

Previous Image



Save

uestion Your question Contact Your account Log out

Update Question

Question Title

Please enter a question title.

Question Content

Please enter question content.

Module Code

Select Module

Please select a module.

Image (Optional)

Choose File | No file chosen

Save

stion Your question Contact Your account Log out

Update Question

Question Title

I have this huge problem in this colour palette HELPPPP

Question Content

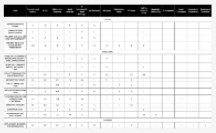
I have this huge problem in this colour palette, it not match my desire. How can I combine them? pleasee i need help this also

Module Code

COMP1770 - Professional Project Management

Image (Optional)

Choose File | No file chosen

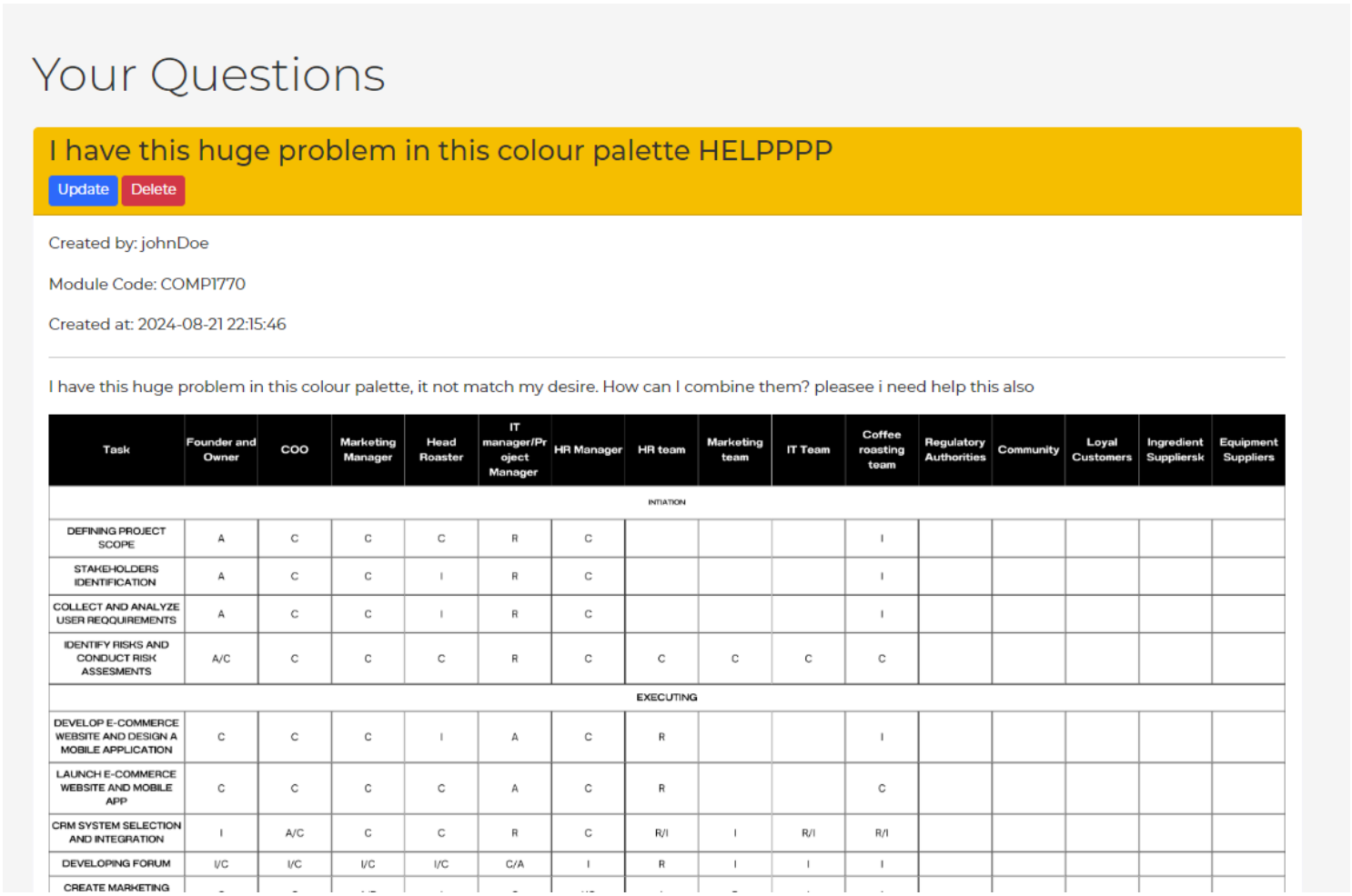
Previous Image 

Save

ThatForum Homepage Post question Your question Contact Your account Log ou

Update question successfully!

Welcome



Your Questions

I have this huge problem in this colour palette HELPPPP

Update Delete

Created by: johnDoe

Module Code: COMP1770

Created at: 2024-08-21 22:15:46

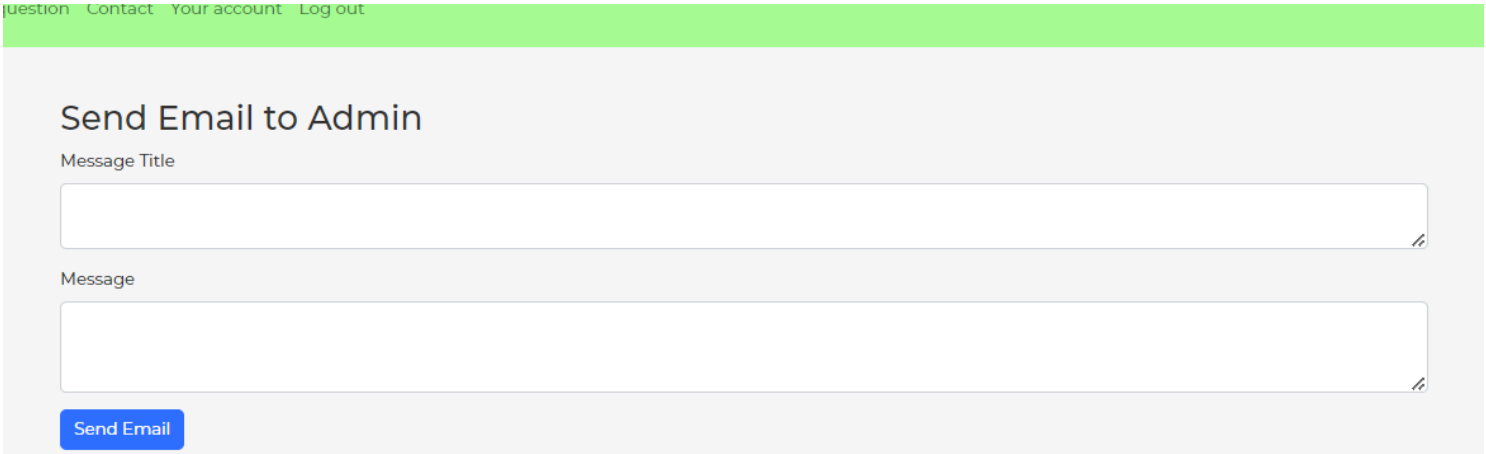
I have this huge problem in this colour palette, it not match my desire. How can I combine them? pleasee i need help this also

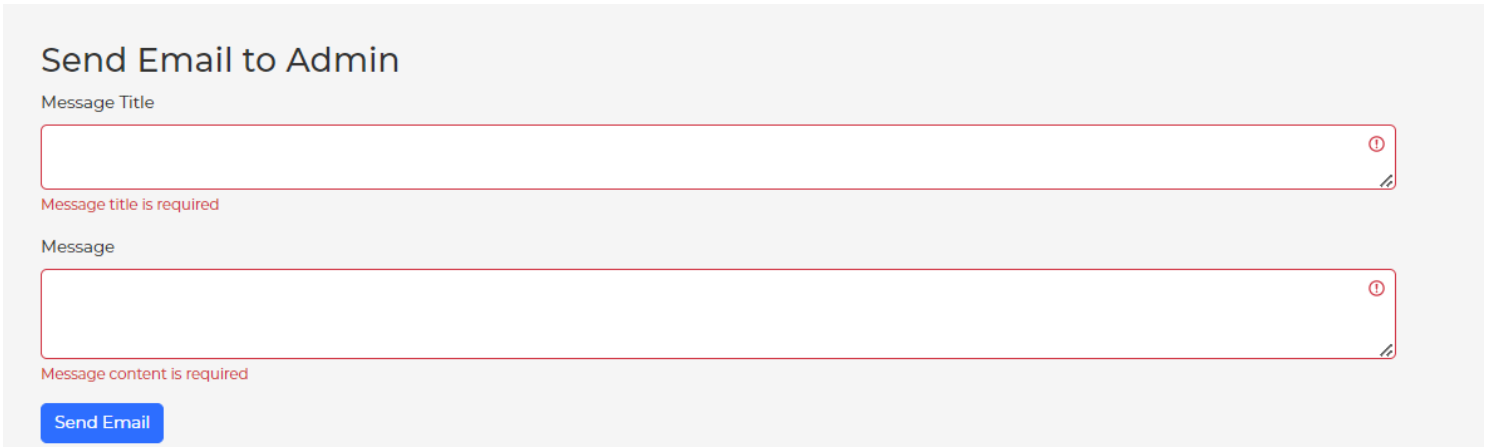
Task	Founder and Owner	COO	Marketing Manager	Head Roaster	IT manager/Project Manager	HR Manager	HR team	Marketing team	IT Team	Coffee roasting team	Regulatory Authorities	Community	Loyal Customers	Ingredient Suppliersk	Equipment Suppliers
INTIATION															
DEFINING PROJECT SCOPE	A	C	C	C	R	C				I					
STAKEHOLDERS IDENTIFICATION	A	C	C	I	R	C				I					
COLLECT AND ANALYZE USER REQQUIREMENTS	A	C	C	I	R	C				I					
IDENTIFY RISKS AND CONDUCT RISK ASSESMENTS	A/C	C	C	C	R	C	C	C	C	C					
EXECUTING															
DEVELOP E-COMMERCE WEBSITE AND DESIGN A MOBILE APPLICATION	C	C	C	I	A	C	R			I					
LAUNCH E-COMMERCE WEBSITE AND MOBILE APP	C	C	C	C	A	C	R			C					
CRM SYSTEM SELECTION AND INTEGRATION	I	A/C	C	C	R	C	R/I	I	R/I	R/I					
DEVELOPING FORUM	I/C	I/C	I/C	I/C	C/A	I	R	I	I	I					
CREATE MARKETING															

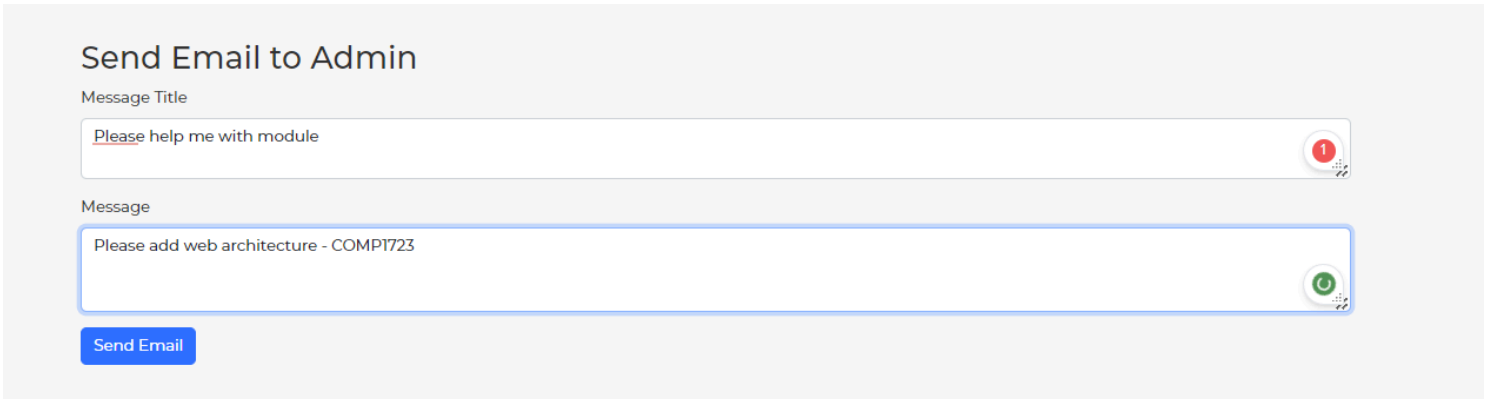
Table 6-4: Table test case for contact

Function	Sample Input	Sample Action	Expected output	Actual output as expected
Contact	Empty input in all fields	"Save" button pressed	"Please fill in all fields" below the navigation bar	yes
Contact	“12345” in Password field	"Save" button pressed	"Update account successfully!" below the navigation bar	yes

Figure 6-4: Test case for contact


uestion Contact Your account Log out
Send Email to Admin
Message Title
Message
Send Email


Send Email to Admin
Message Title
Message title is required
Message
Message content is required
Send Email


Send Email to Admin
Message Title
Please help me with module
Message
Please add web architecture - COMP1723
Send Email

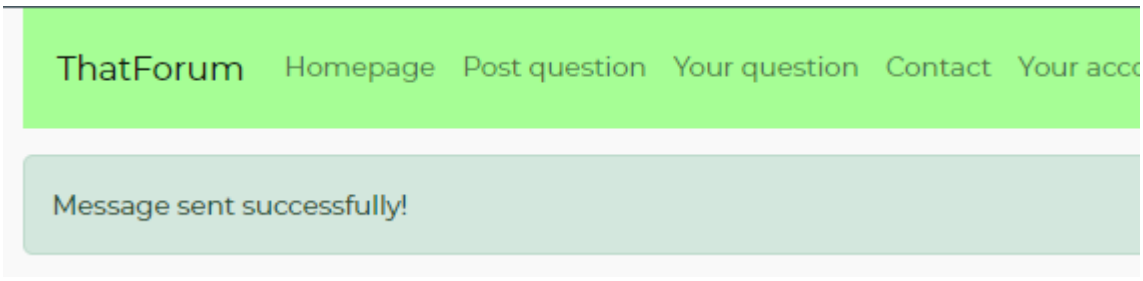
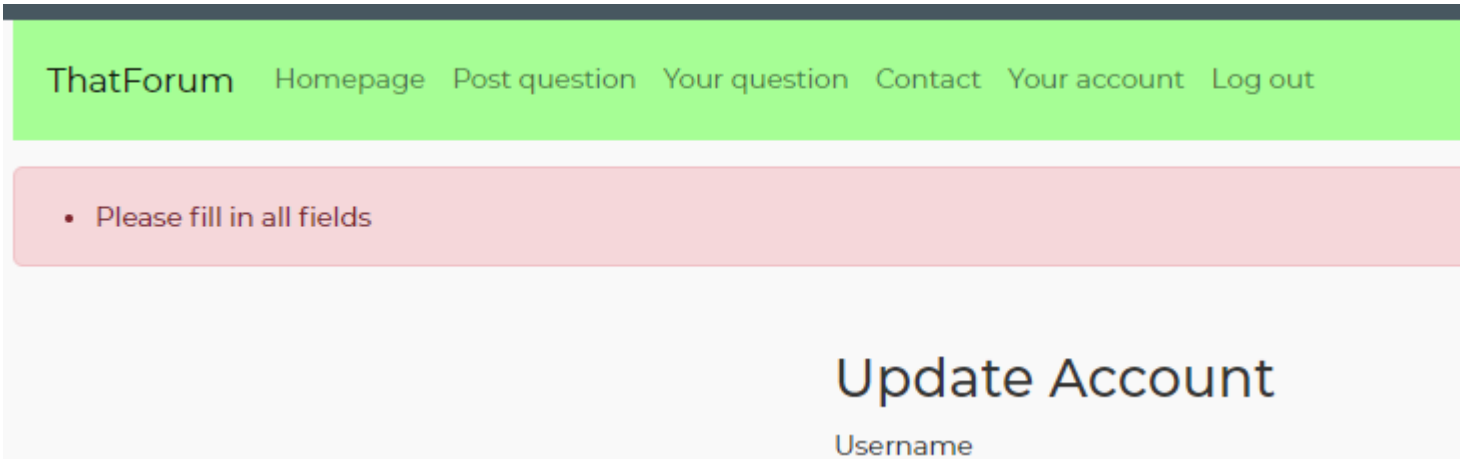
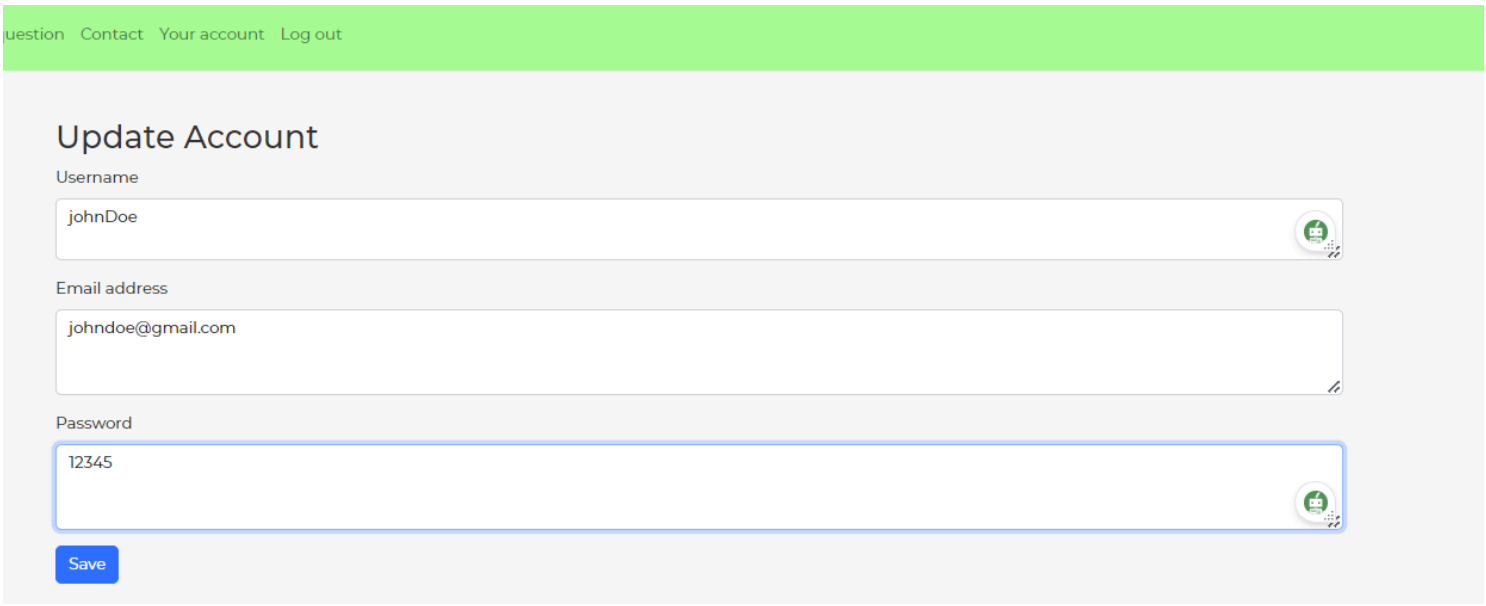

ThatForum
Homepage
Post question
Your question
Contact
Your acc
Message sent successfully!

Table 6-5: Table test case for update account

Function	Sample Input	Sample Action	Expected output	Actual output as expected
Update account	Empty input in all fields	"Save" button pressed	"Please fill in all fields" below the navigation bar	yes
Update account	“12345” in Password field	"Save" button pressed	"Update account successfully!" below the navigation bar	yes

Figure 6-5: Test case for update account





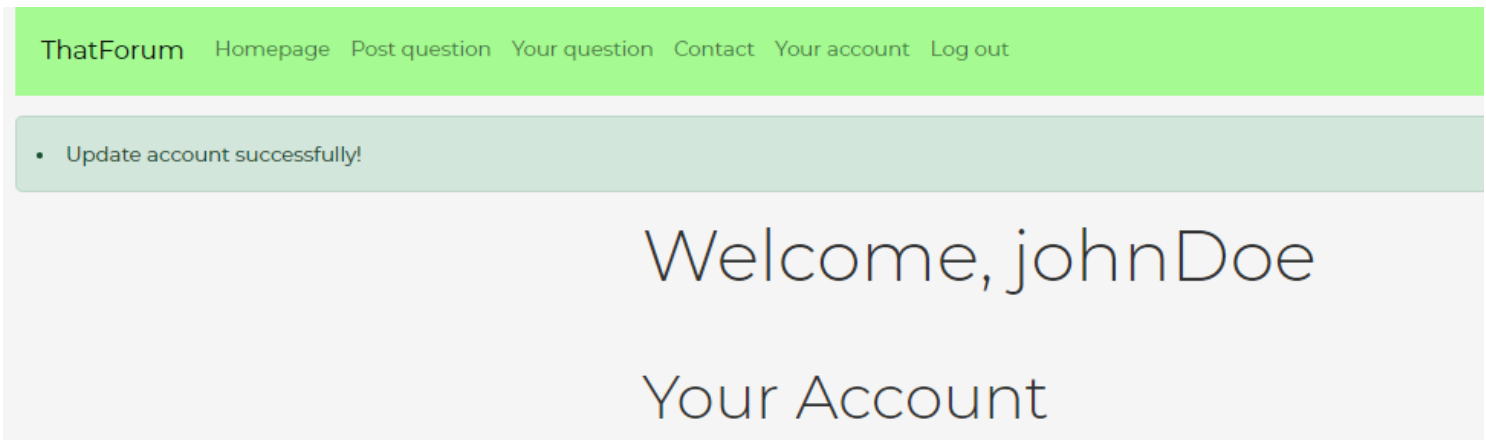


Table 6-6: Table test case for logout

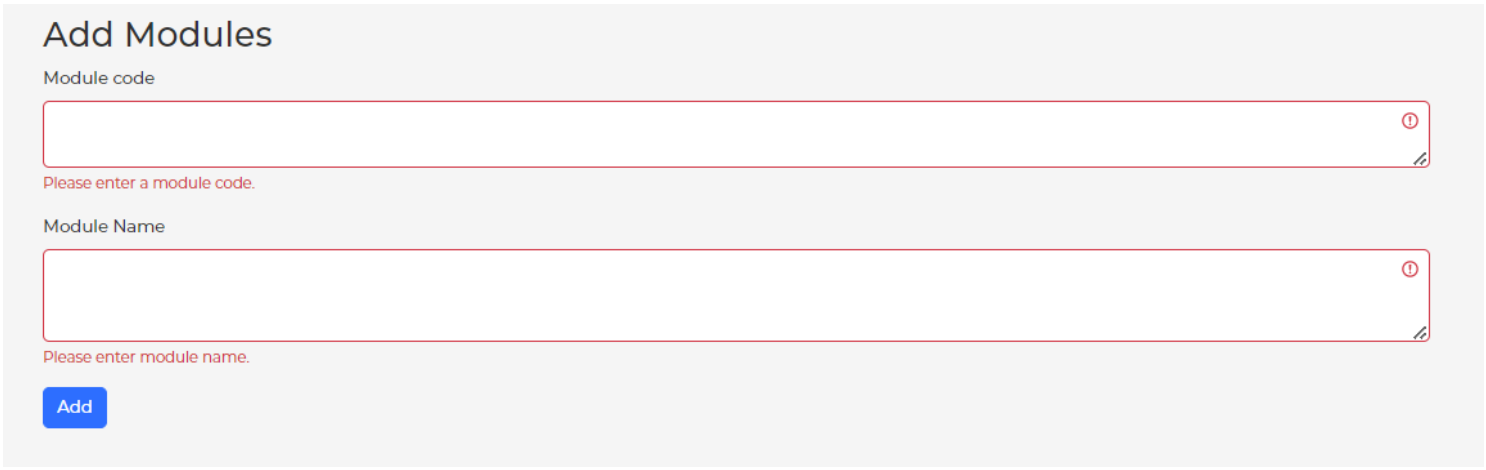
Function	Sample Input	Sample Action	Expected output	Actual output as expected
Log out		"Logout" button pressed	Moving to the welcome page	yes

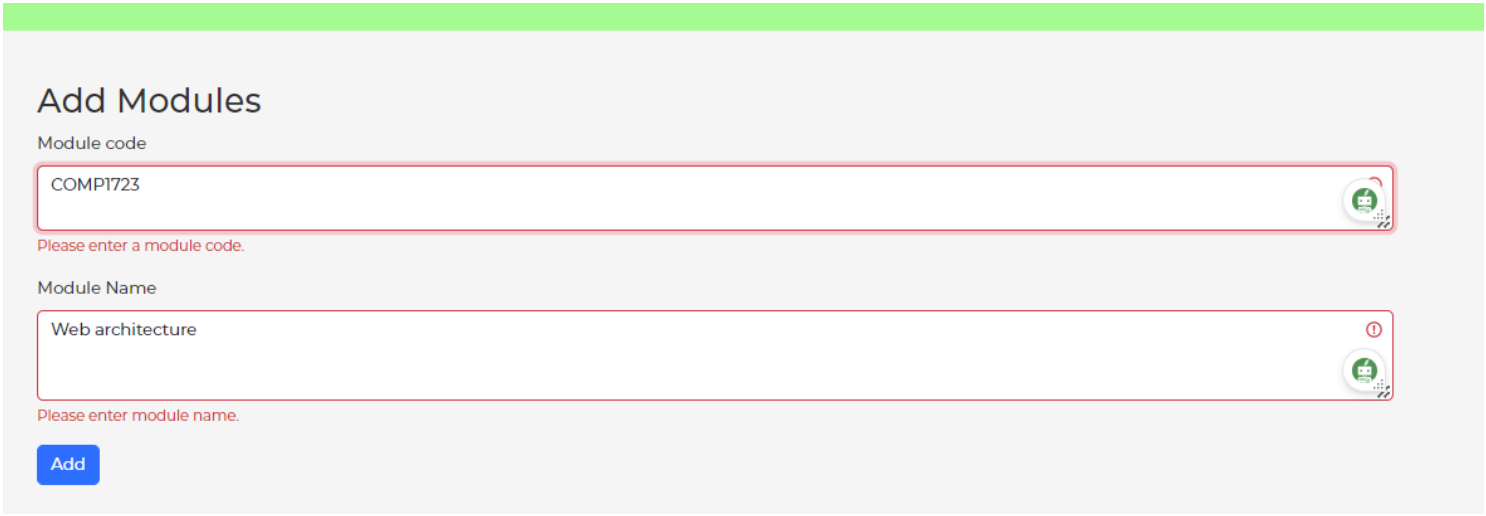
Figure 6-6: Test case for logout

Table 6-7: Table test case for add modules

Function	Sample Input	Sample Action	Expected output	Actual output as expected
Add modules	Empty input in all fields	"Add" button pressed	"Please enter a module code." below the Module code field "Please enter module name." below the Module Name field	yes
Add modules	"COMP1723" in Module code field "Web architecture" in Module Name field	"Add" button pressed	"Message sent successfully!" below the navigation bar	yes

Figure 6-7: Test case for add modules


Add Modules
Module code
Please enter a module code.
Module Name
Please enter module name.
Add


Add Modules
Module code
COMP1723
Please enter a module code.
Module Name
Web architecture
Please enter module name.
Add

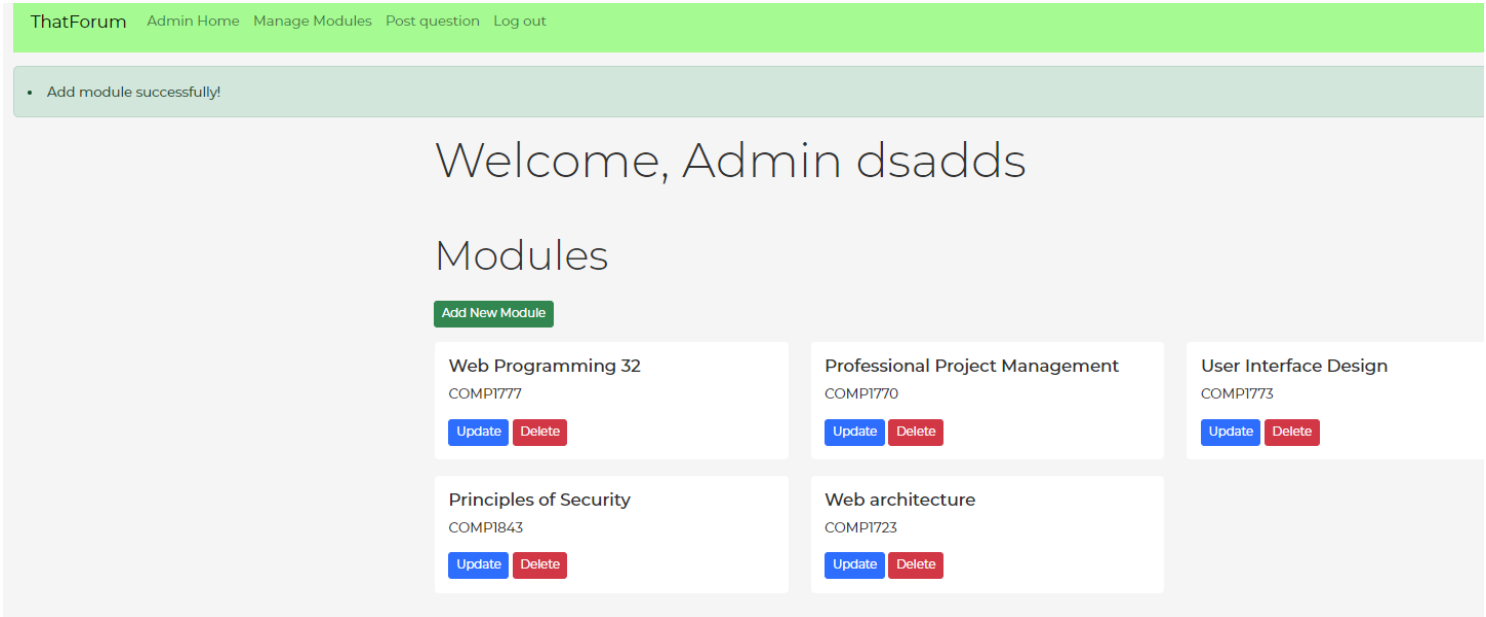
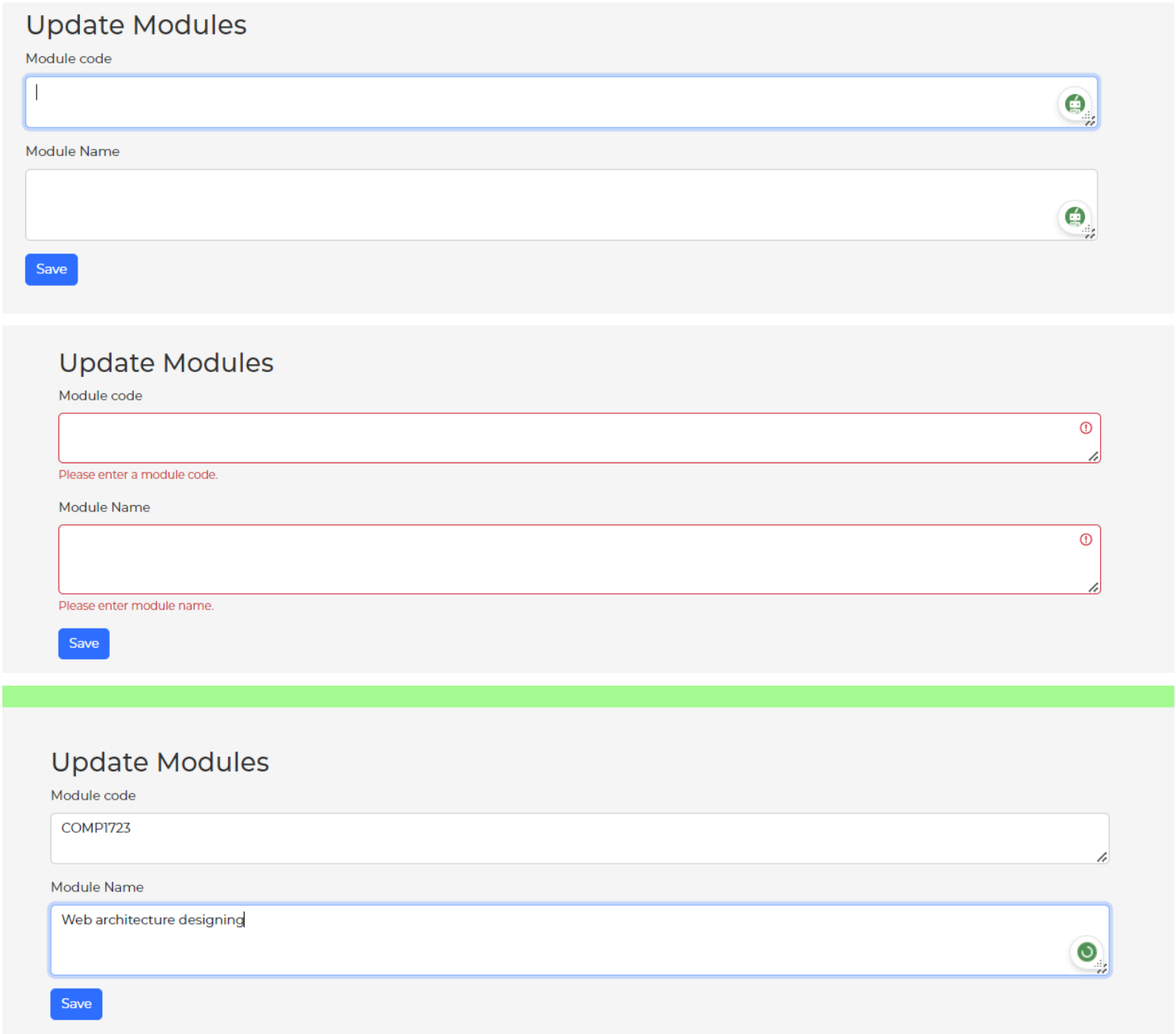
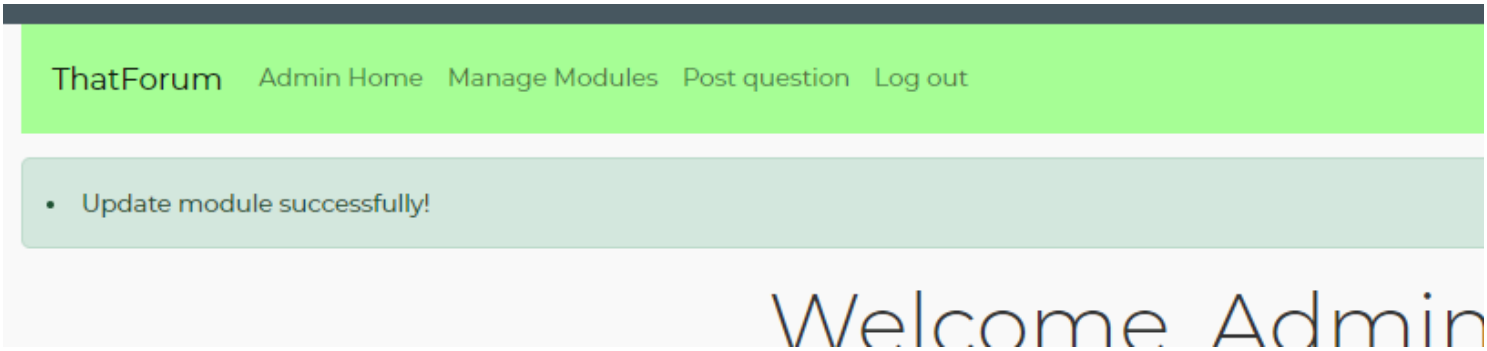

ThatForum
Admin Home
Manage Modules
Post question
Log out
Add module successfully!
Welcome, Admin dsadds
Modules
Add New Module
Web Programming 32
COMP1777
Update
Delete
Professional Project Management
COMP1770
Update
Delete
User Interface Design
COMP1773
Update
Delete
Principles of Security
COMP1843
Update
Delete
Web architecture
COMP1723
Update
Delete

Table 6-8: Table test case for update modules

Function	Sample Input	Sample Action	Expected output	Actual output as expected
Update modules	Empty input in all fields	"Save" button pressed	"Please enter a module code." below the Module code field "Please enter module name." below the Module Name field	yes
Update modules	"Web architecture desgining" in Module Name field	"Save" button pressed	"Update module successfully!" below the navigation bar	yes

Figure 6-8: Test case for update modules





7. Evaluation

In this coursework, I will use heuristic evaluation and specifically, will be the 10 Golder Rules of Nielsen Norman.

Ranking system for heuristic evaluation:

- Very good - completely match the criteria with some elaboration.
- Good - match the criteria but still need to improve.
- Average - match the criteria but need more improvement.
- Bad - not match the criteria.
- Very bad - not match and poorly demonstrate the criteria.

Nielsen's Ten Heuristics	thatForum	Recommendation
1. Visibility of System Status	Very good - All pages provides sufficient messages. users informed about their actions and what's happening.	
2. Match between System and the Real World	Good - Naming and texts are kept as simple as possible. Use words, phrases, and concepts that are familiar to target audience.	1 - Terms, concepts, icons, and images need to be changed to be clearer and more prominent"
3. User Control and Freedom	Average - the system don't allow users to undo and redo their actions according to their needs.	1. add a back button to get users back to the previous page and a drop up arrow to allow users to shorten the description 2. Terms, concepts, icons, and images need to be changed to be clearer and more prominent"
4. Consistency and Standards	Very good - All button is about keeping the same language throughout the system to avoid confusing the user.	
5. Error Prevention	Good -providing helpful constraints and good defaults.ow.	1 - need to add a confirmation, delete, or edit section for users to use when they make a mistake
6. Recognition Rather than Recall	Very good - menu items are visible and easy to access when needed.	1 - need to add measures to more clearly distinguish items so that users can remember and not get confused
7. Flexibility and Efficiency of Use	Average - don't have shortcuts , the process isn't f1lexible	Add shortcuts to speed up the interaction for the user
8. Aesthetic and Minimalist Design	Very - all pages keep clear and informative contents with adequate visual elements. Distracting users from the information they really need.	1 - need to add stronger design elements so that users will pay attention and remember the forum
9. Help Users Recognize, Diagnose, and Recover from Errors	Good - the signup page gives clear messages to help the users know the problem	1 - Need to add clear notifications for interactions, as well as add posting time, posting date and comments
10. Help and Documentation	Average - don't provide documentation to help users understand how to complete their tasks.	1- need to add livechat for direct support, as well as a frequently asked questions section for users to quickly answer questions

8. Conclusion

In this coursework, most of the requirements are fulfilled and finished, additionally, a comment section is created to make the forum fit well with its objective. Last but not least, the project has shown test cases and different recommendations for UI. Therefore to keep this forum intuitive and fit the purpose of achieving all of these requirements from creating ideas to creating the database and lastly evaluating it and testing.

9. Recommendations

For the, recommendation it the code will match the requirements, though there are a lot of UI/UX recommendations from the evaluation above. Moreover, the code may not showing the security need with bad variables naming and using a lack of encryption to manage users information. Therefore, having a fully using different types of security is need in this project.

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Link demo video and code:

https://drive.google.com/drive/folders/1MBZDA5nIJkSzPV6D-y-CEC5PUUMoyzhS?usp=sharing

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