Group Project Log

Group Name:	Group – 4

Group Members:	Nikunj Goenka, Bala Sundeep Krishna Dasari, Prasant Sarvi, Harry Ben Alex Pavuluri

Deliverable:	StudE project proposal and front-end code (via GitLab)

Group Member Name	**Work Done (%)**
Nikunj Goenka	25 %
Bala Sundeep Krishna Dasari	25 %
Prasant Sarvi	25 %
Harry Ben Alex Pavuluri	25 %
Total:	**100 %**

PROJECT PROPOSAL

GROUP - 4
StudE
(A Student Companion)

Members and Contributors

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1. PROJECT BACKGROUND

From the last couple of years, the concept of traditional classroom learning has changed entirely. The rise of the internet and the advancement in modern technologies have gone hand in hand and paved a way for providing a new learning experience that is better, efficient, and timesaving as compared to conventional teaching practices [1]. People all over the world are entering a new era- the breakthrough in online learning. The importance of online education went unnoticed until the breakout of the pandemic which entirely shook the world with fear, disturbing the usual study routine of the students and responsible for the downfall of the economy globally. StudE, the online education platform for school students, strives hard to deliver quality education whenever and wherever necessary and continuously delivers knowledge to the students online without interrupting their study routine.

Keeping in mind the importance of online education, our team is working hard to build an online platform for the students. So, the students can resume learning by providing teaching materials online to the students and recovering the progress lost due to the pandemic. We are also planning to provide a feature to the teachers to conduct short quizzes for the students to apply their knowledge and assess their abilities. The purpose of the team members Bala Sundeep, Nikunj Goenka, Harry Ben, and Prashant Sarvi is to develop the basic features first like providing a separate profile to track their progress and events, allowing the students to access the course content and flexibility to store their information in notes. Lately, our team is tentatively planning to build advanced features like providing a dictionary tool so that a student can simultaneously view the meaning of the word while studying without getting distracted. Another one is a diary feature where the teacher can write a remark about a student or inform the parents through a diary for the things to get according to the timetable in the upcoming days. Thus, our goal is to provide quality education online and convenience to the students for their smooth learning experience, making them a better person each day.

1.1 Project Objectives

The purpose of the StudE is to provide students with an online learning platform personalized for them with a one-to-one learning experience which helps us understand every child's learning ability and needs to fulfill their dreams. The StudE strives hard to completely transform how knowledge can be imparted to students, benefiting students by learning in an easy, effective, and simpler way [2]. Unlike classroom teaching, the student can refer to the course content anytime and anywhere just with the availability of the internet. The StudE is extremely helpful during the revision of the chapters during the examination, especially if the student did not attend the classes during regular hours. The StudE platform can help the students to acquire knowledge with ease and according to their own pace. It also helps the student to improve the ability to prepare the topic on their own.

The StudE aims to deliver knowledge in a well-organized way and continue to keep the concentration of the students on the studies without getting affected by external parameters like the ongoing pandemic (COVID-19). StudE provides a separate portal for each student to keep track of all the major events in

the school and provide graphical reports on their performance in each subject. StudE also believes in socializing among peers which can help to improvise interactions between teachers and students. So, it provides students with a discussion forum where students can share their thoughts, ideas, and news regarding the subjects in the curriculum which helps the students to update their knowledge on the courses on a day-to-day basis. Providing all the essential modules and facilitate the help of tools under one roof provides convenience to the students and enables them to progress well and improve their learning skills. StudE is committed to stretch the boundaries of the student by challenging them each day and provides assessments to test their abilities. StudE also provides ease to the parents by updating their children's results, attendance, and behavioral remarks by automatically delivering all the information to parents regularly in a separate parent's portal.

1.2 Live Project URL:

The application can be accessed using the following link: https://studegroup4.herokuapp.com/

The link for GitLab repository is: https://github.com/bala-sundeep-d/StudE.git

2. APPLICATION DETAILS

2.1 Target User Base:

The target user base for StudE is the school children from class 1st to class 10th. Mostly our web application is used by schools and universities to provide distance education or for providing online learning along with classroom teachings. We target our audience of age 5-14 years, who live in modern society and having facilities to avail the latest technology. We promote our web application by running numerous ad campaigns on various social media platforms focusing on our target consumers to hit the target sales for the fiscal year. We believe in providing unique features which can help the students to improvise each day and that drives our customers to choose our service.

As our users are school students, the visual appeal of our web application has various color combinations that keep the interests of the student to stay on the website, deeply involve them in the learning and excite them by conducting quizzes for fun. The user need not even carry a physical rough copy to write the important points while referring to the course content as a feature is provided to allow the student to make store data online in ‘’Notes’’ and can refer/edit it anytime anywhere. We also plan to survey all our target users to take the feedback of the service provided and a few insights to enhance the user experience which can help us serve the customers better.

2.2 Brand Attributes:

The core values of our brand StudE give us distinctive competitive edges as compared to contemporaries in the market [3]. Our focus is to provide personalized and organized online education for students. There are a few crucial attributes that our brand possesses. Firstly, being consistent, as the trend in the market is shifting and people are preferring to study online, StudE is being consistent in providing quality education online with exception tools to support school children by dynamically understanding the changing business and getting adapted to the new trend. Sustainability [3] is also one of the attributes followed by our team to stay ahead in the industry. StudE uses creativity, providing a simple but effective solution, latest fonts, style, and colors are used on the website which is trending and is liked by children. Our team uses React which is a JavaScript library to build interactive user interfaces and maintains the industry standards accordingly.

2.3 Competitive Landscape

The Stud-E is an online educational platform for Primary school students. Due to the global pandemic of 2020, most schools and universities have shifted towards online classes. Unlike universities and colleges, schools do not have the budget or the resources to develop their learning applications.

Stud-E is a website that is entirely based on providing primary school a platform which will help them deliver study content to the students.

There are other applications like Brightspace that provide similar services, but all these applications are focused on high school and graduate-level students.

There are a few unique selling propositions of our web applications which gives us an upper hand in the market.

Layout and Design: Since our application is focused on primary school, we have tried to develop an application that is easy for kids to use. Most of our task flows are small and require minimum learning for students.

Parents View: Unlike High school students, primary school students still need parents' guidance. Our application provides features that are specifically made so that parents can monitor their kid's performance and activities in school.

Teacher Communication: Parent-Teacher communication is very important for primary school students. Parents need to be aware of upcoming events, activities of their kids. This feature will enable teachers to notify parents of any such event.

Dictionary: Kids are easily distracted and have a small attention span. They will get distracted every time they search for the meaning of a new word on the internet. To prevent this, we have provided an in-app dictionary, this icon will always be on the screen so that students can access it whenever they face a difficult word.

2.4 Project Scope

2.4.1 Project Goals

The goals of StudE are as follows:

1. To enhance the learning experience of students and providing them with the flexibility that they need.
2. To help students find study material to read based on their preferred subject.
3. To provide a platform for teachers to manage their students enrolled in their course by giving daily feedback on performance. This makes the user a Teacher for the website.
4. To provide a platform for students to make their learning easy. This makes the user a Student for the website.
5. To provide a platform for the parents to supervise their child based on the grades, feedbacks, and remarks. This makes the user a Parent for the website.
6. To provide the facility to the student users of 'StudE to study, assess, and improve their overall performance.
7. To provide a medium for teachers to share their feedback about particular students and have related information over their diary.
8. To save time for students in searching for any meaning through an in-app dictionary.
9. To encourage students to study well.

2.4.2 Intended Features

1. **Profile management:** This feature allows both students and teachers to log in via credentials provided by the institution and gain access to their specific dashboard. Also, there is an option of resetting the password via forgot password section.
2. **Course Content:** This feature allows the students to access the content of the specific enrolled course with advanced filters for quick navigation to the needed content. Also, this feature allows the teachers to add, modify, and delete the content of their assigned courses.
3. **Dictionary:** This feature allows the students to get the meaning of any word that they feel hard to understand at any particular instance while using our application. This feature uses an external API to retrieve the data of the selected words.
4. **Diary:** This feature allows the students to get the information about their daily tasks given by the teachers. Whereas, this feature allows the teachers to provide the required works to be completed by the students for a specific day and also allows to provide feedback about every student for each single. Also, this feature allows the parents to monitor the daily tasks that their child should complete and the feedback given by the teacher every day.
5. **Discussions:** This feature allows the students to discuss any doubts that they have regarding the courses where anyone who enrolled in that course can respond to the discussions in the comment sections along with the teacher. Also, this allows the teachers to share any information that they missed out in the lectures and assess students' active participation in the course.
6. **Notes:** This feature allows the students to save any textual information that they wish to revise later when they come back. It is specific to each course and can be used as paperless running notes. Also, it allows users to save the content with a title for a quick reference.
7. **Quizzes:** This feature allows the students to take a test provided by their course instructor within a deadline to finish, and grades will be allotted based on the number of correct answers. Also, this feature allows the teachers to add, modify, delete the question, answers, and options, and mention the deadline to create a quiz.
8. **Statistics:** This feature allows the students to check their performance to date which is specific and provided by the course instructors of the courses enrolled by students individually.

2.5 Information Architecture

The website is designed toward small task flows so that primary school children can navigate easily through the content on the website.

2.5.1 Proposed Sitemap

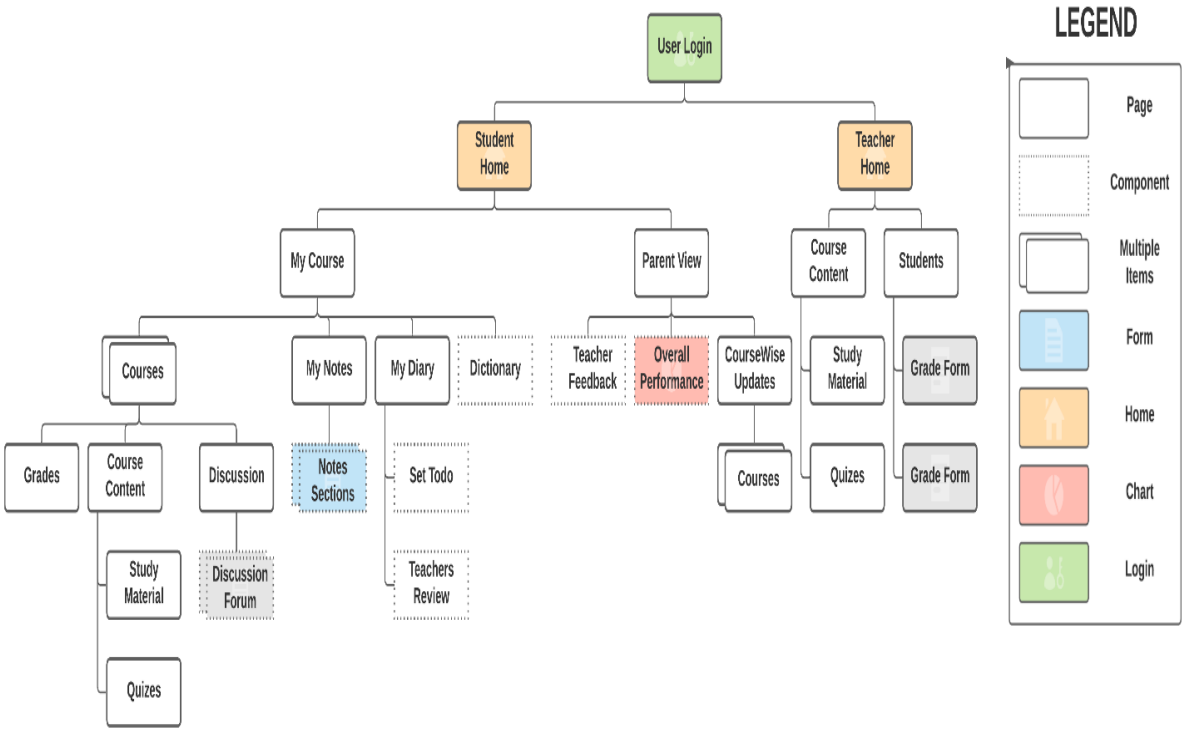

Figure 1: Sitemap for StudE. Created with LucidChart [4]

2.5.2 Website Design

All the website designs are focused on simplicity. We have to consider the fact that the website will be used by primary school students. The website design should be simple and motivate the students to interact with the application. We have achieved tried to achieve this by adding bright colored user interface.

2.5.2.1 Login Page

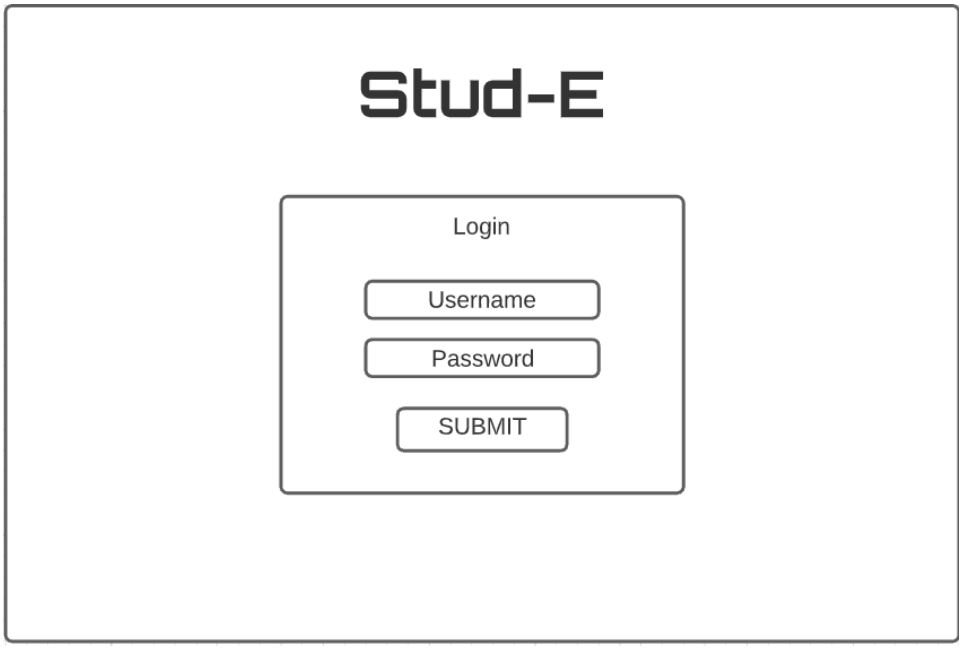

Figure 2: A wireframe for login Page. Created with LucidChart [4]

2.5.2.2 Homepage

Since the entire application is based around students, we have kept the course page as the default homepage. As soon as the students logs in the website, they will see the course cards with big image and attractive colors.

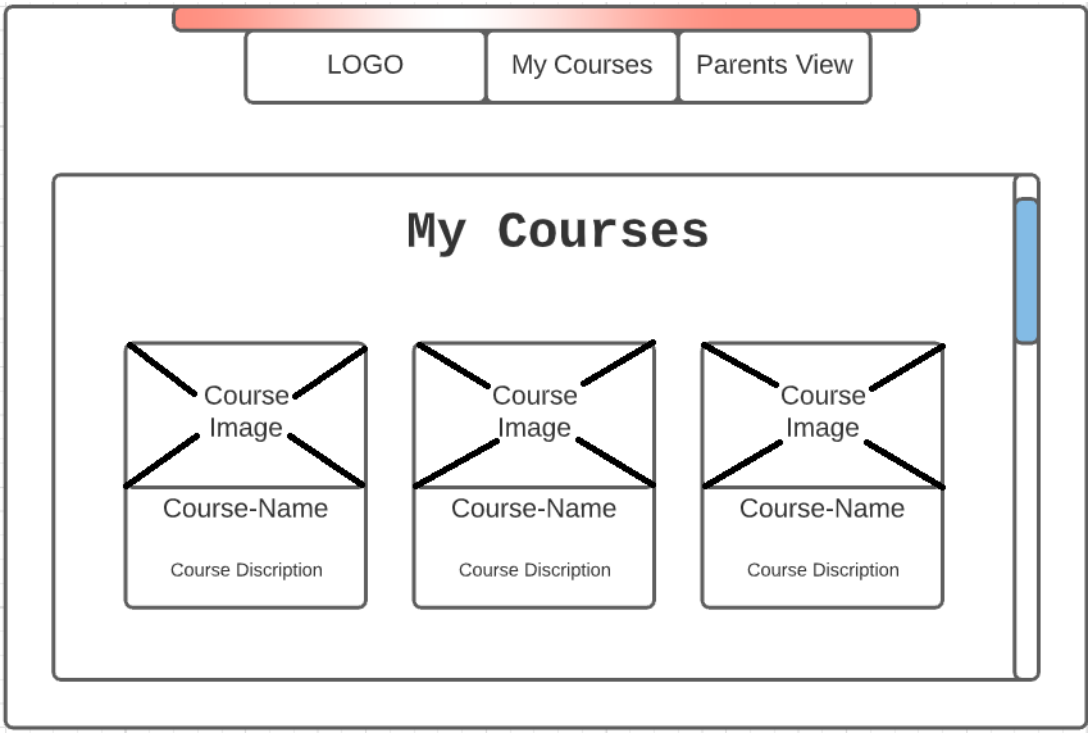

Figure 3: Wireframe for home page. Created with LucidChart [4]

2.5.2.3 Course Page

When we select any one course from the course list on the home page, we are redirected to the course page. This page consists of side navigation bar which have links related to course like study material, quizzes, discussion forum etc.

QnA

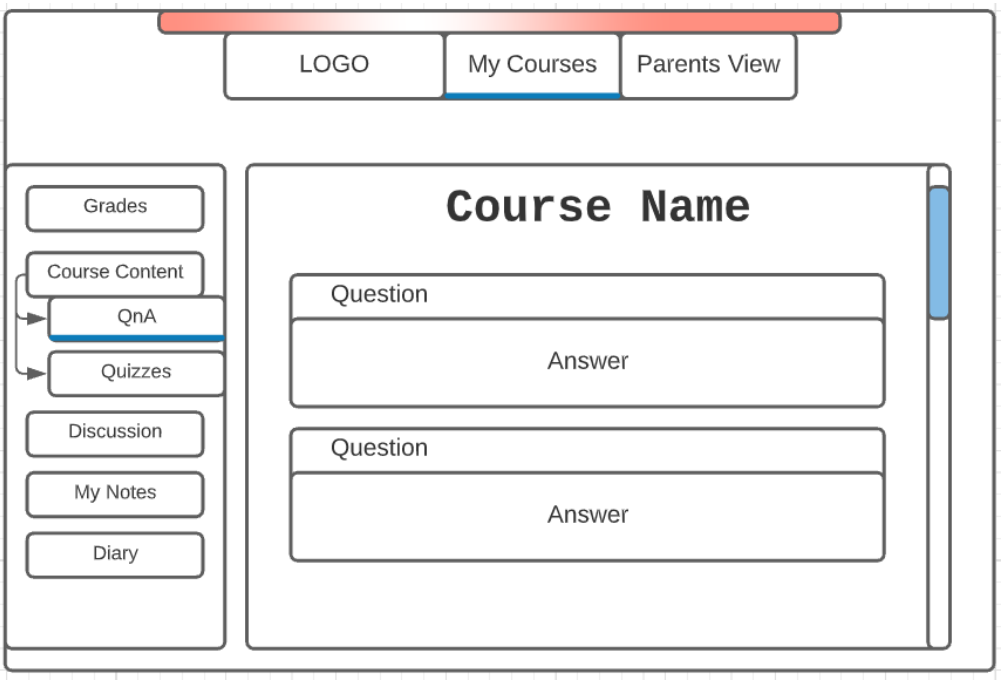

Figure 4: Wireframe for Course-QnA page. Created with LucidChart [4]

Quizzes

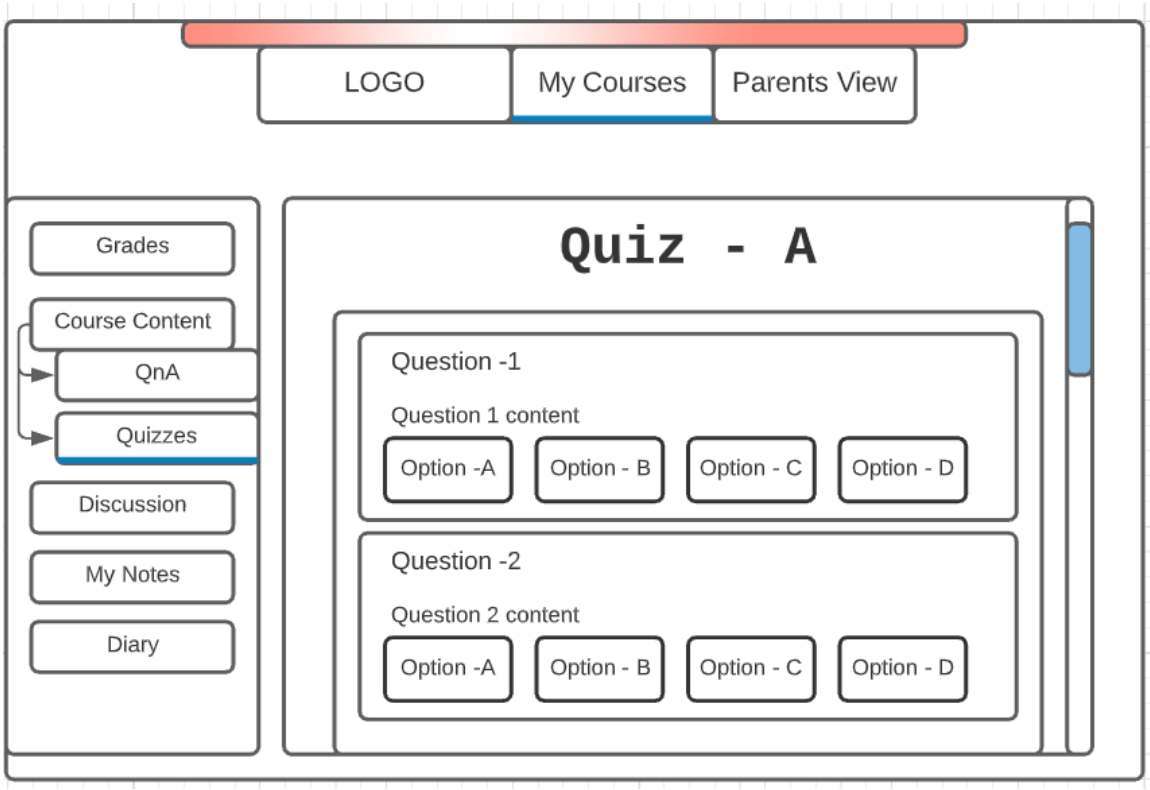

Figure 5: Wireframe for Course-Quiz page. Created with LucidChart [4]

2.5.2.4 Parent View

Parent view consists of teachers comments, overall grades, and course-wise grades. Since the website is made for primary school, parent-teacher interaction is an important feature. The teacher can update parents regarding their kids' progress/ activities within school and parents can review their kid's overall performance and course wise performance.

Teacher's Comments

The teacher's comment page will be updated more frequently when compared to the overall performance page. Due to this fact, we have kept the teacher's comment component as the default page. Also, most of the working parents need to go through the website quickly, and having comments shown as soon as they click the 'parent view' button will save time for them.

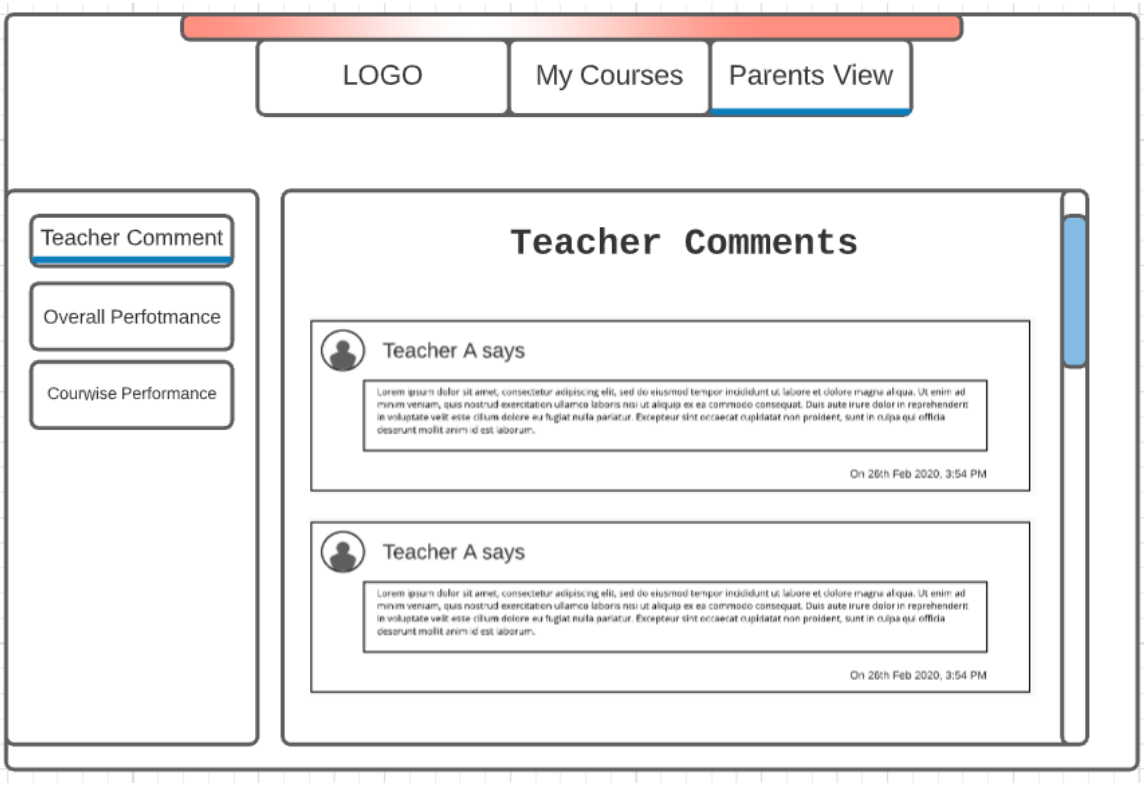

Figure 6: Wireframe for Teacher's Comment page. Created with LucidChart [4]

Overall Performance

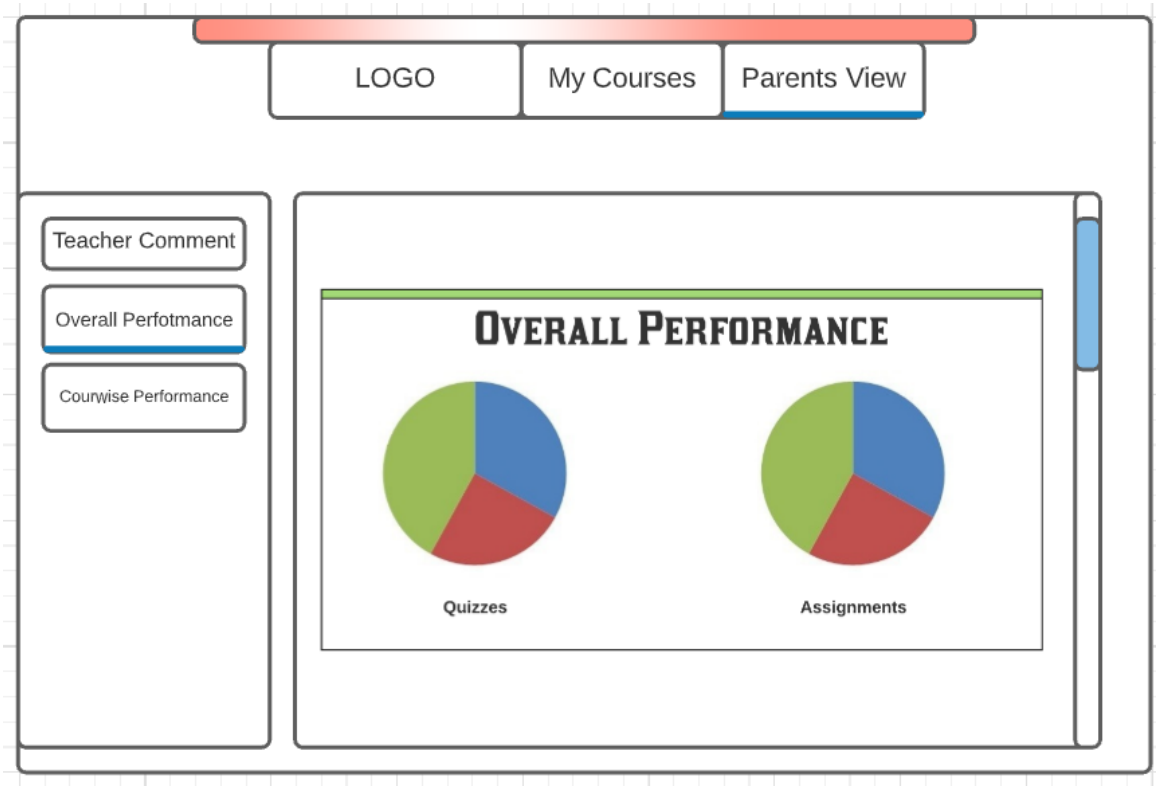

Figure 7: Wireframe for Overall Performance page. Created with LucidChart [4]

Course-Wise Performance

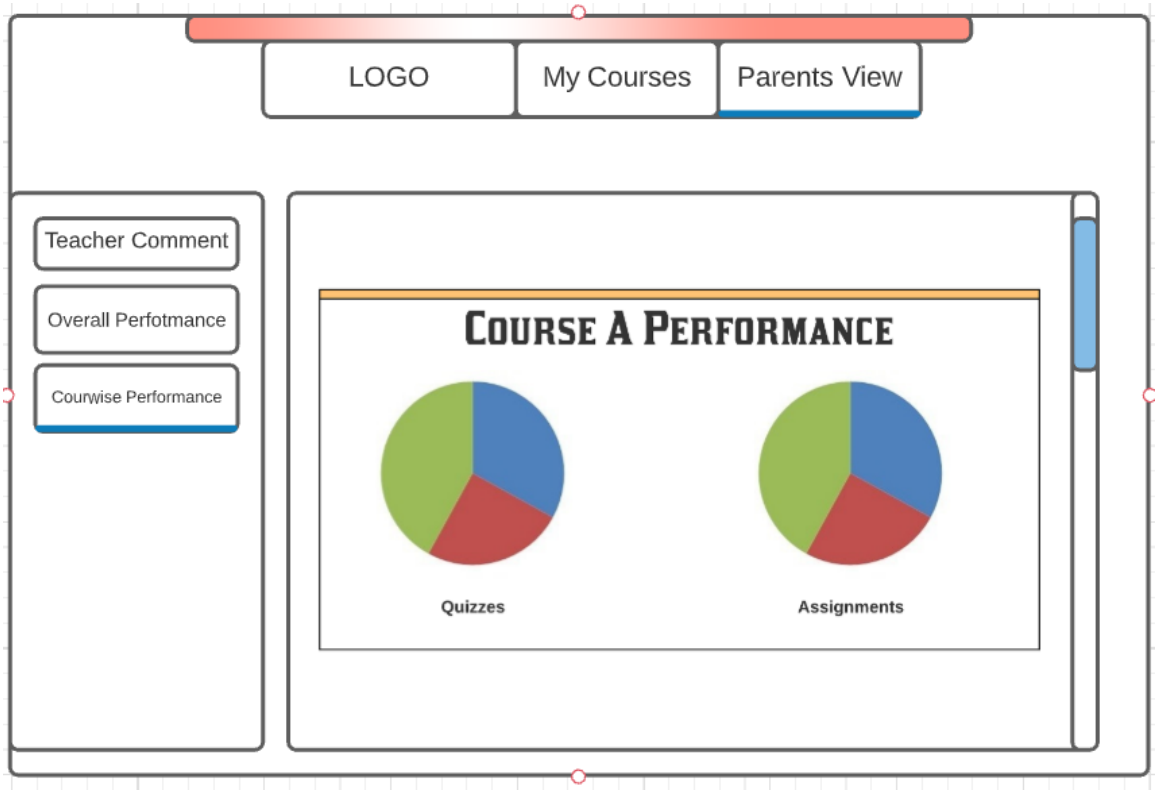

Figure 8: Wireframe for Course-wise Performance page. Created with LucidChart [4]

2.6 User Experience

Intended Scenario 1:

Physics teacher Sundeep wants to update the answers to Question2 and Question3 in the Questions and Answers page of Chapter 5 named "Time and Distance" as there was a mistake while creating the content. Figure 9 explains the task flow of this scenario.

Use case 1:

1. Sundeep Selects on the Questions and Answers tab of Chapter 5. **[User Action]**
2. System loads the questions and answers of chapter 5. **[System Action]**
3. Sundeep selects the 'edit' option that allows inline editing of all questions and answers available on the page. **[User Action]**
4. Systems renders the list of questions and answers in edit mode. **[System Action]**
5. Sundeep updates the answers to Question2 and Question3. **[User Action]**
6. Sundeep clicks the 'done' button. **[User Action]**
7. System updates the database with new inputs. **[System Action]**
   7.1. The system shows an error message saying that "Oops! Unable to update the database". **[System Action]**
   7.2. Sundeep tries to submit again. **[User Action]**
8. System shows the success message saying "content updated successfully". **[System Action]**

Task Flow 1:

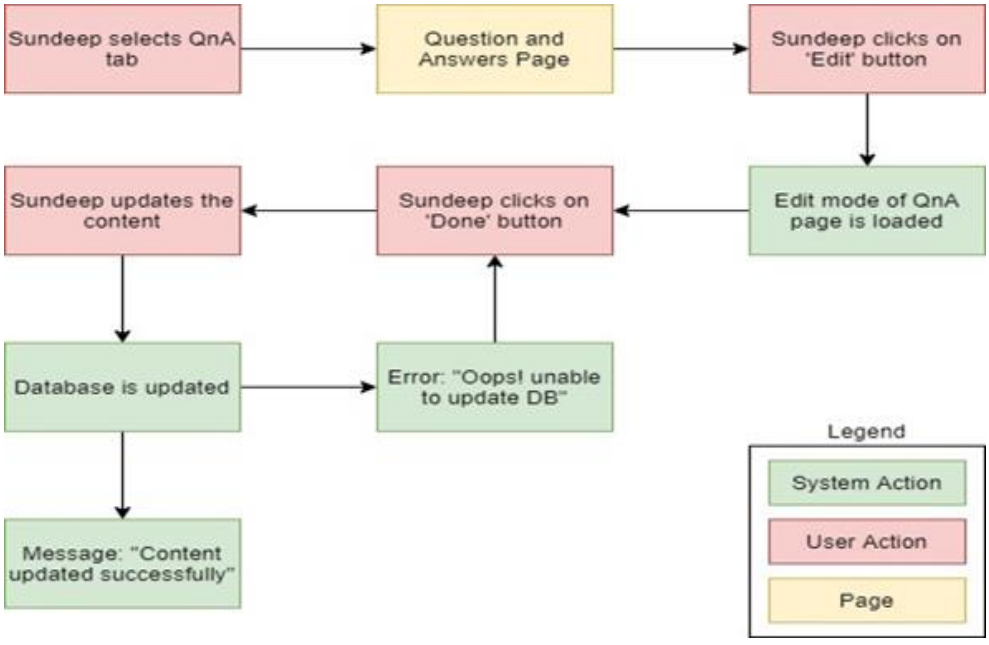

Figure 9: Task flow diagram for use case 1. Created with Draw.io [5]

Intended Scenario 2:

Harry is preparing for the upcoming mid-term examination of English subjects. He came across the word “Empathy” while reading the question and answers of the Chapter1. He is unaware of the word’s meaning and wants to look up the meaning in the dictionary. Figure 10 explains the task flow of this scenario.

Use case 2:

1. Harry clicks on the ‘Dictionary’ button floating on the right side of his screen. **[User Action]**
2. The system opens a modal window of the dictionary. **[System Action]**
3. Harry sees the dictionary modal window. **[User Action]**
4. Harry types the word “Empathy”. **[User Action]**
5. Harry clicks on the ‘search’ button. **[User Action]**
6. System searches for the word through online API. **[System Action]**
7. Systems shows an error saying that “Oops! Unable to fetch the meaning.” **[System Action]**
   7.1. Harry searches the word again. **[User Action]**
   7.2. System shows the meaning of the word. **[System Action]**
8. Harry clicks the close button of the dictionary modal. **[User Action]**
9. Systems hide the dictionary modal. **[System Action]**

Task Flow 2:

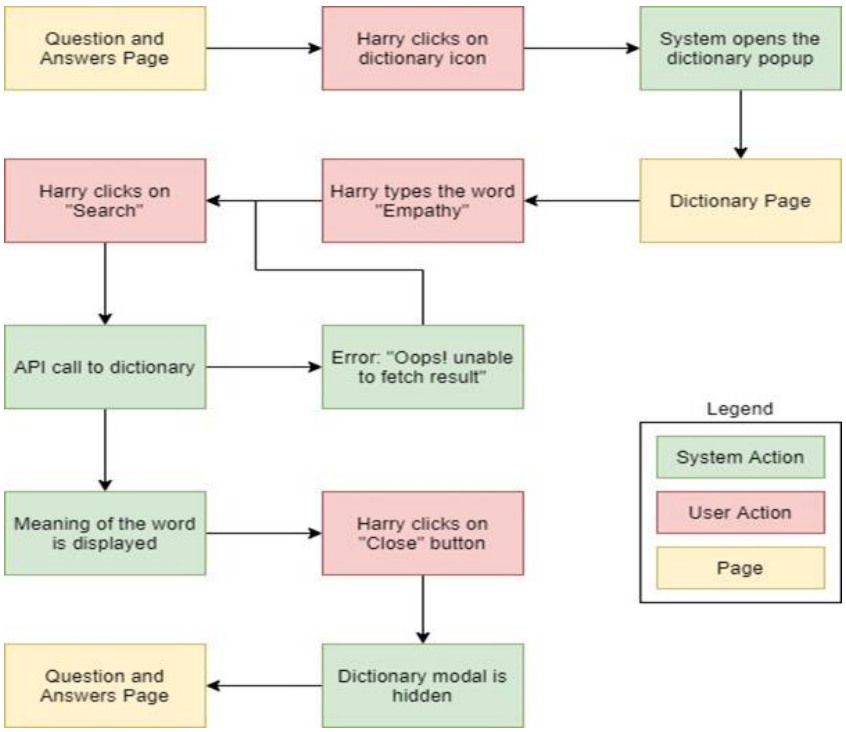

Figure 10: Task flow diagram for use case 2. Created with Draw.io [5]

Intended Scenario 3:

Your science teacher instructed every student to participate in the discussion forum about any topic from the subject. So, either you have to create a new discussion or you can comment on any one of the already existed discussions so you have decided to go ahead and create a new discussion. Figure 11 explains the task flow of this scenario.

Use Case 3: Creating a new discussion

1. Peter visits the application homepage **[user action]**
2. Peter clicks on the 'Discussion Forums' option **[user action]**
3. System displays forums page **[system action]**
4. Peter clicks on the 'Create new discussion' link **[user action]**
5. System displays new discussion form, and requests user to enter title and content of discussion **[system action]**
6. Peter enters title and content of discussion **[user action]**
   - 6.1. Peter enters only the title but not the content of the discussion **[user action]**
     - 6.1.1. System displays an error message and prompts the user to enter valid content **[system action]**
     - 6.1.2. Peter enters valid content **[user action]**
   - 6.2. Peter enters only content but not the title of discussion **[user action]**
     - 6.2.1. The system displays an error message and prompts the user to enter a valid title **[system action]**
     - 6.2.2. Peter enters valid title **[user action]**
   - 6.3. Peter did not enter both title and content of the discussion **[user action]**
     - 6.3.1. System displays an error message and prompts the user to enter valid title and valid content **[system action]**
     - 6.3.2. Peter enters valid title and valid content **[user action]**
7. Peter clicks on the 'Post' button **[user action]**
8. System displays a confirmation message of successful post **[system action]**

Task Flow 3:

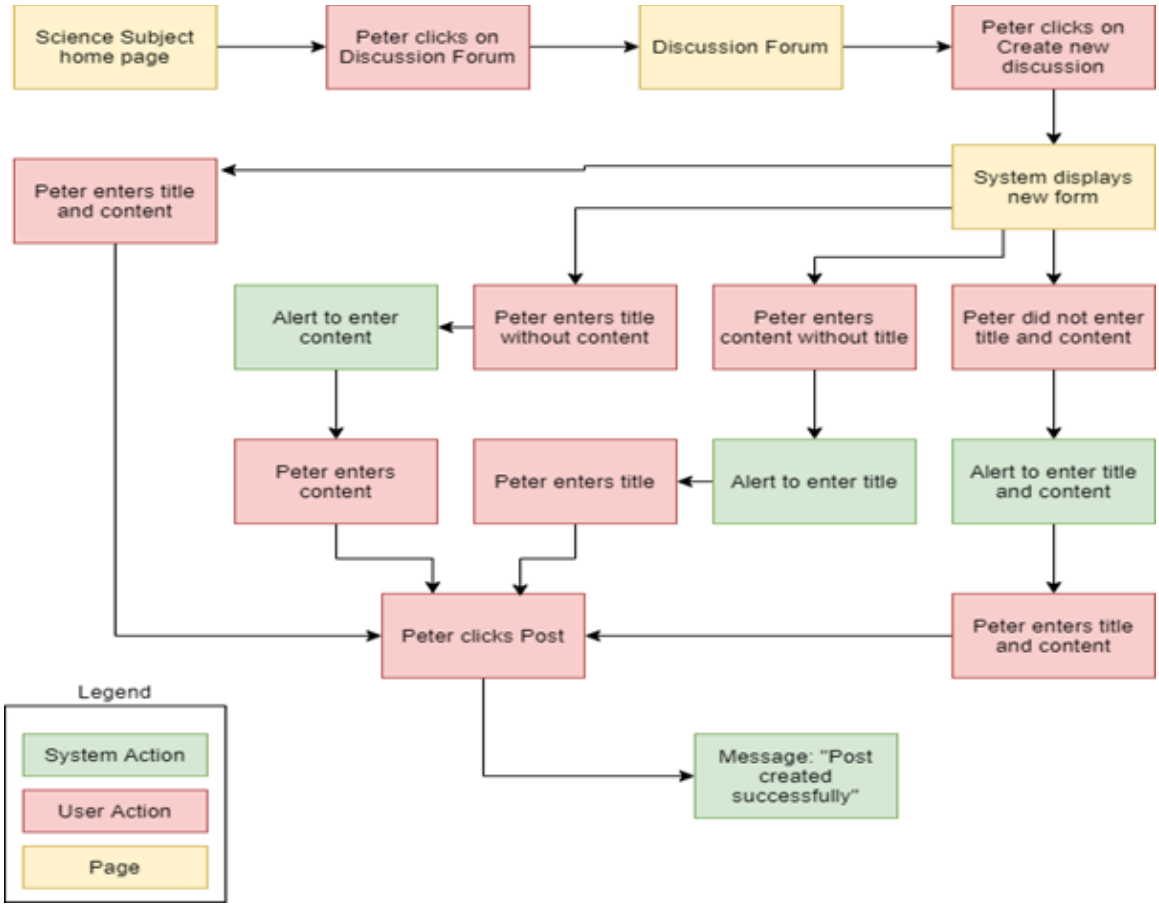

Figure 11: Task flow diagram for use case 3. Created with Draw.io [5]

Intended Scenario 4:

You have announced to your students that everyone must participate in the discussion forums and instructed them either to create a new discussion or to comment on any one of the already existed discussions. So, all your students have actively participated and now you have to view them and comment on what you feel about it. Figure 12 explains the task flow of this scenario.

Use Case 4: Commenting to a forum

1. Rob visits the application homepage **[user action]**
2. Rob clicks on the 'Discussion Forums' option **[user action]**
3. System displays forums page with all the existed forms **[system action]**

4. Rob views all forums **[user action]**
5. Rob selects one of the forums **[user action]**
6. Rob clicks on the ‘write a comment’ option of the selected forum **[user action]**
7. System waits for the user to enter comment **[system action]**
8. Rob enters comment **[user action]**
   8.1. Rob did not enter comment **[user action]**
      8.1.1. The system displays an error message and prompts the user to enter a valid comment **[system action]**
      8.1.2. Rob enters valid comment **[user action]**
9. Rob clicks on the ‘Comment’ icon **[user action]**
10. System displays a confirmation message of successful comment **[system action]**

Task Flow 4:

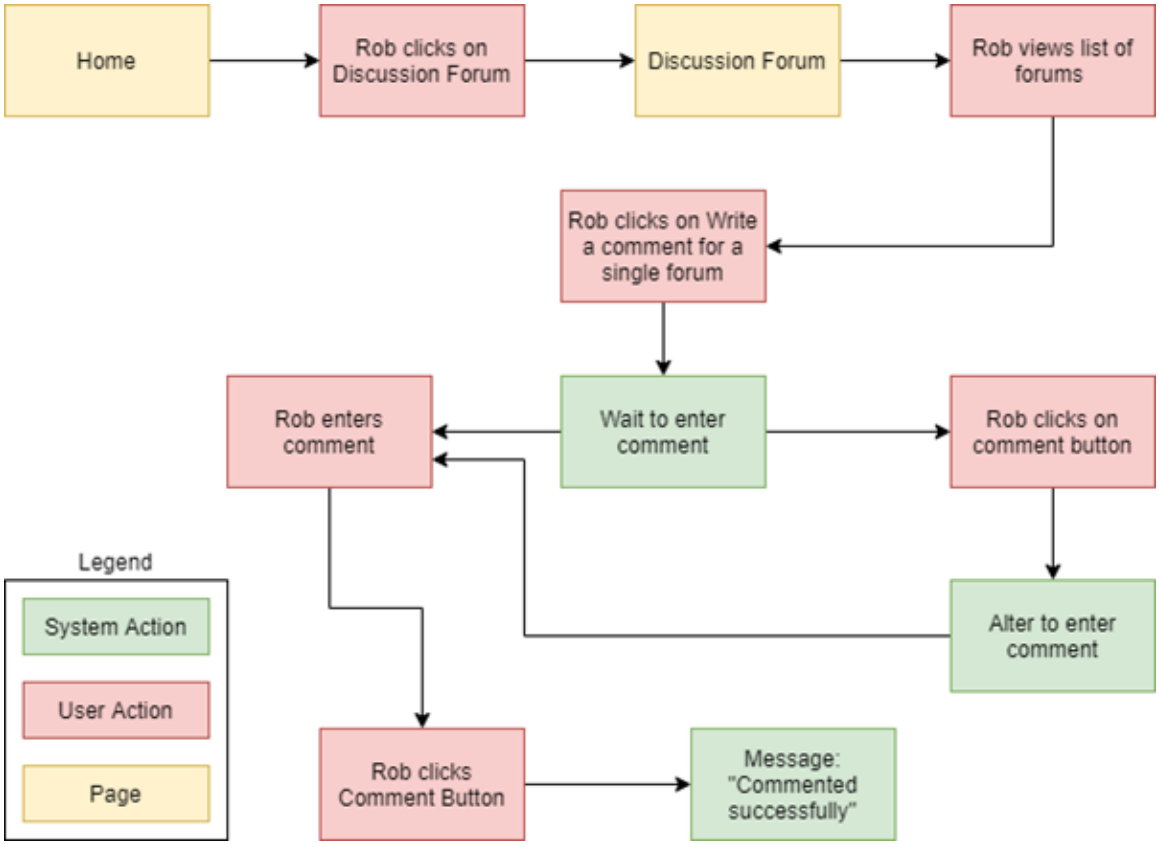

Figure 12: Task flow diagram for use case 4. Created with Draw.io [5]

Intended Scenario 5:

Anna has just attended the Science lecture and made notes regarding the same. Now, as the topic is fresh in the student's mind, Anna wants to refer to the course content which consists of questions & answers, and wants to get in-depth knowledge about the topic. Figure 13 explains the task flow of this scenario.

Use Case 5

1. Anna visits the landing page of the web application [user action]
2. Anna has two options to select:
   2.1. If Anna is an existing user, the student enters the username and password details for authentication [user action]
      2.1.1. Anna clicks on the 'Sign in' button [user action]
   2.2. If it's a new user, the Anna registers by entering the basic details [user action]
      2.2.1. Anna then clicks on the 'Sign up' button [user action]
3. System validates the user credentials [system action].
4. System displays an acknowledgment message to the user for successful Sign in/Sign up [system action]
5. System redirects to the student home page which consists of dashboard [system action]
6. Anna selects one of the courses from the list of enrolled subjects available on the dashboard [user action]
7. The system redirects to a page that contains the list of chapters of that Subject [system action]
8. Anna selects one of the chapters from the list available on the dashboard [user action]
9. The system redirects to the Content page which consists of all the questions and answers regarding the preferred course [system action]
10. Anna then refers to the course information on the web page [user action]

Task Flow 5:

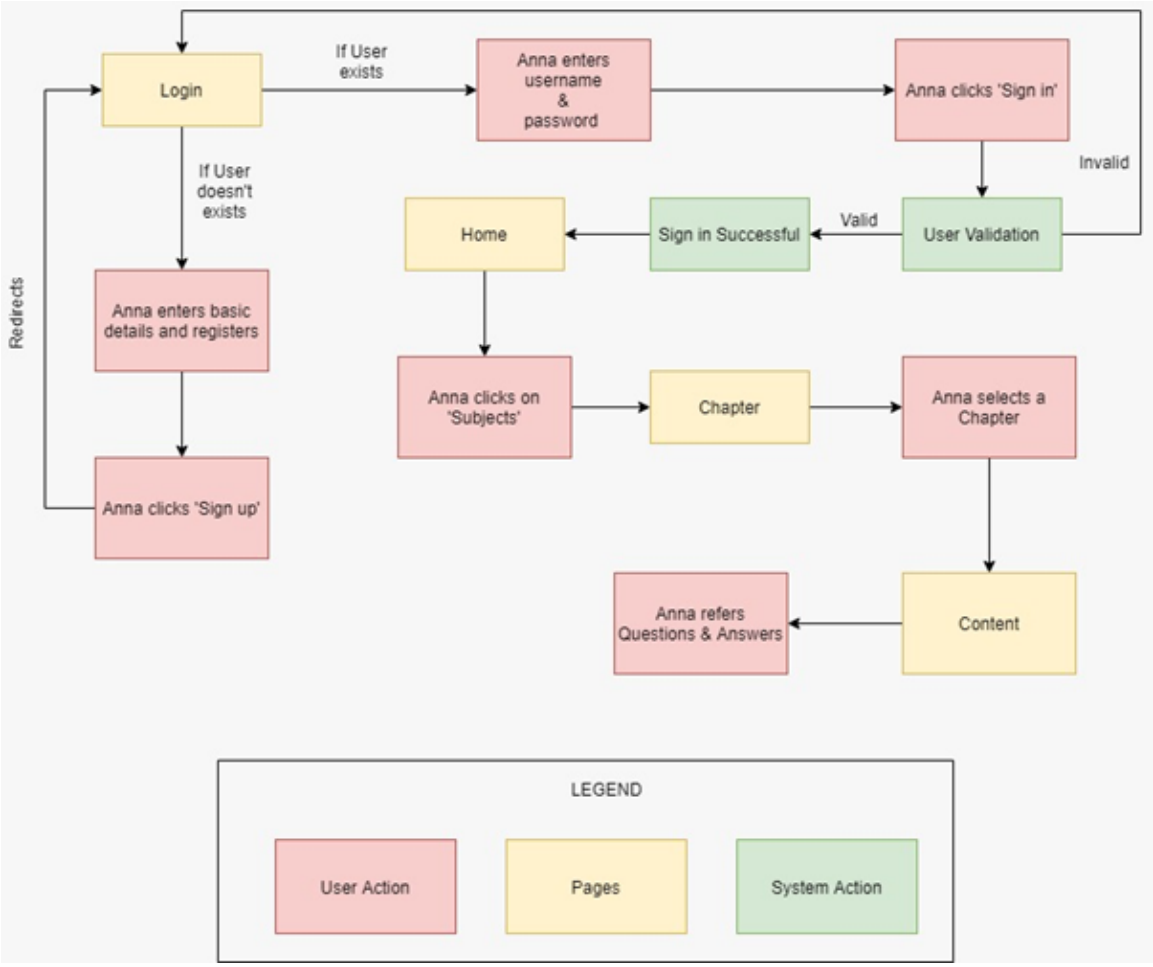

Figure 13: Task flow diagram for use case 5. Created with Draw.io [5]

Intended Scenario 6:

The lecturer Robin is worried about Alexis Roger and wants to notify her parents about the poor performance in the quizzes, recommend their parents to follow her up with her studies, and recommend her to take up the extra classes in the course scheduled at the end of the week. Figure 14 explains the task flow of this scenario.

User Case 6:

1. Robin visits the landing page of the web application

2. Robin has two options to select:
   2.1. If Robin is an existing user, the student enters the username and password details for authentication **[user action]**
      2.1.1. The Robin clicks on the ‘Sign in’ button **[user action]**
   2.2. If it’s a new user, the Robin registers by entering the basic details **[user action]**
      2.2.1. Robin then clicks on the ‘Sign up’ button **[user action]**
3. System validates the user credentials **[system action]**
4. System displays an acknowledgment message to the user for successful Sign in/Sign up **[system action]**
5. System redirects to the Lecturer home page which consists of dashboard **[system action]**
6. Then, Robin searches for the student Alexis Roger **[user action]**
   6.1. If the student is not available in the list, the system displays a message by saying “Student doesn’t exist” **[system action]**
7. If the student exists, the system redirects to Alexis’s profile page which consists of a dashboard having various options **[system action]**
8. Robin selects the Diary option from the dashboard **[user action]**
9. System redirects to Alexis’s Diary page **[system action]**
10. Robin enters the remarks which he wants to convey to Alexis’s parents **[user action]**

Task Flow 6:

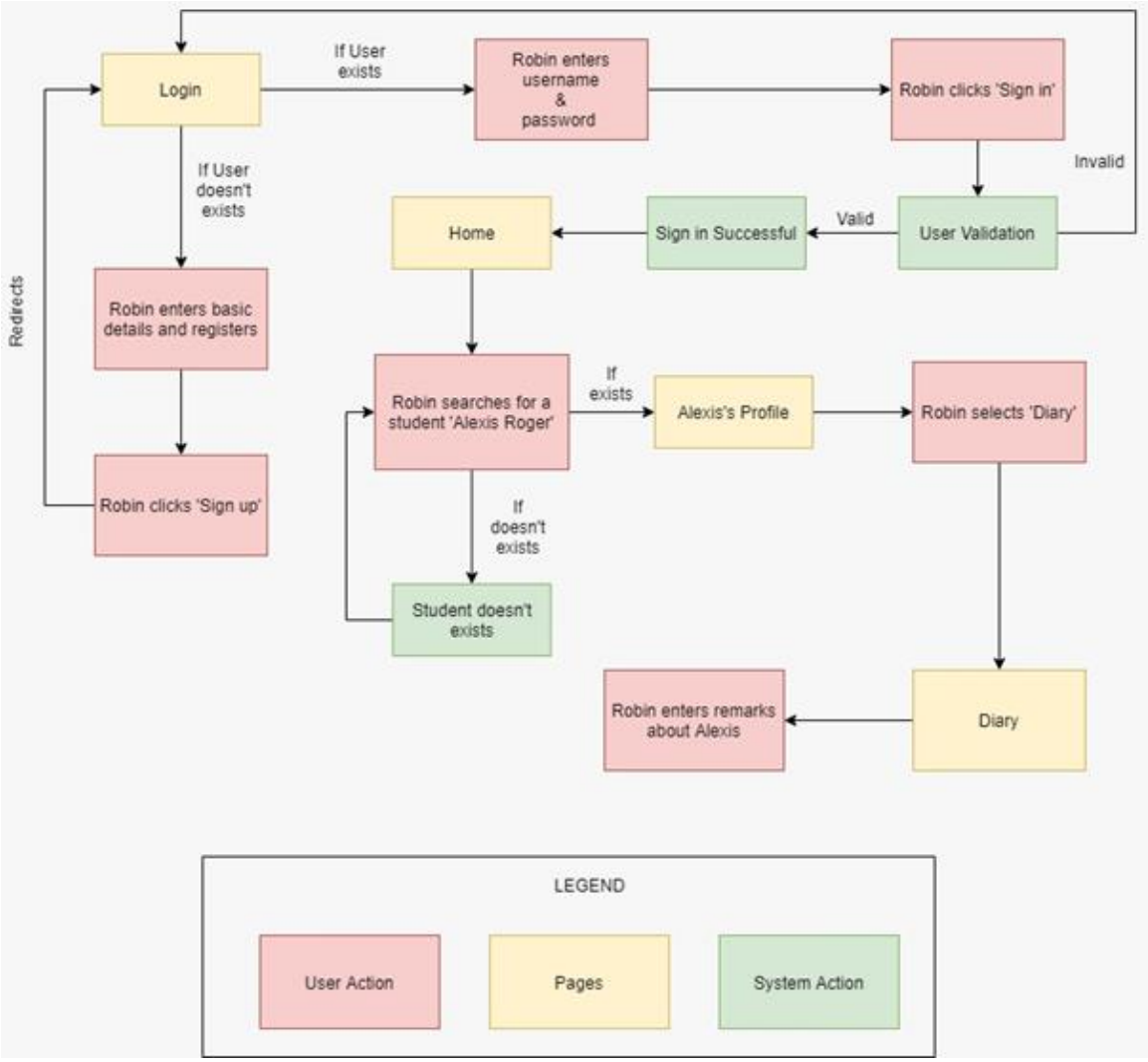

Figure 14:Task flow diagram for use case 6. Created with Draw.io [5]

Intended Scenario 7:

Robin is a student and wants to log in to the application to perform certain tasks. His main intention is to check whether his credentials are working or not. Figure 15 explains the task flow of this scenario.

User Case 7:

1. Robin visits the landing page of the web application
2. Robin enters user-id **[user action]**
3. Robin enters password **[user action]**
4. Robin clicks on submit **[user action]**
5. System validates the credentials
   5.1. Incorrect user id/ password
   5.2. Robin re-enters his credentials **[user action]**
   5.3. Robin clicks on submit **[user action]**
6. System redirects to dashboard page **[system action]**

Task Flow 7:

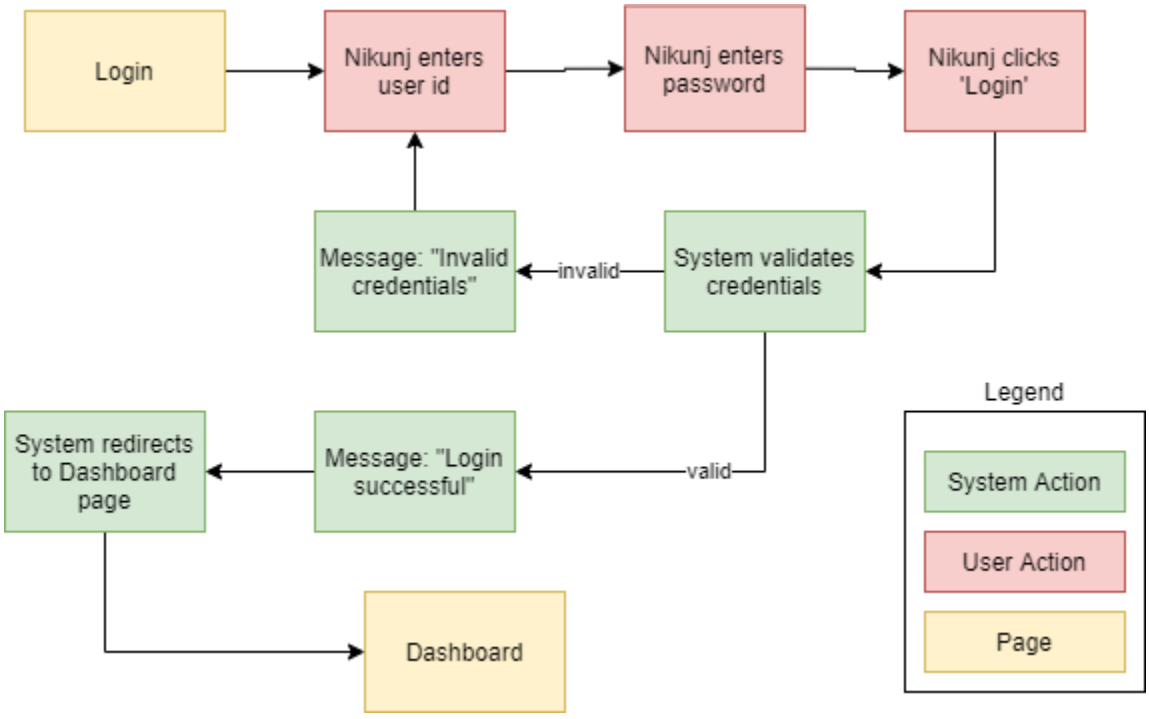

Figure 15: Task flow diagram for use case 7. Created with Draw.io [5]

Intended Scenario 8:

Oliver is a tutor and is needs to add a new course as the winter semester is going to start. He will log in to the application and create a new course from the My Courses page. Figure 16 explains the task flow of this scenario.

User Case 8:

1. Presently, Oliver is on the My Courses page. **[user action]**
2. Oliver clicks on the "new course button". **[user action]**
3. Then the system renders the modal window. **[system action]**
4. Oliver enters the new subject name "Physics". **[user action]**
5. Oliver clicks on the "Submit" button. **[user action]**
6. The system validates the input given by Oliver
   6.1. If successfully submitted then the system adds Physics subject in the database. **[system action]**
      6.1.1. A message to the user is displayed which is "Physics subject is added successfully". **[system action]**
   6.2. If an error occurs while submitting the subject name then the system displays a message to the user "Unable to add Physics subject". **[system action**
      6.2.1. The system redirects Oliver to the same page as before to enter the correct subject name and the same process is followed further. **[system action]**
7. System displays Physics subjects from the list of available subjects. **[system action]**

Task Flow 8:

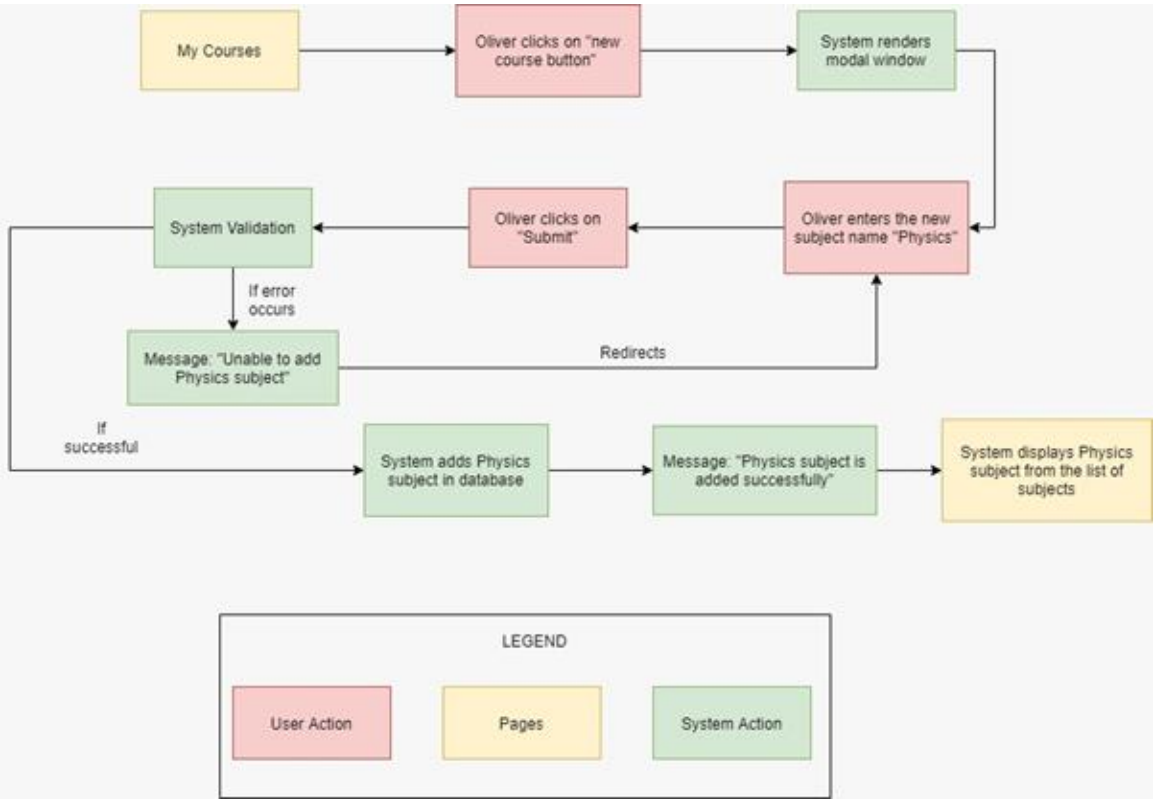

Figure 16:Task flow diagram for use case 8. Created with Draw.io [5]

Intended Scenario 9:

Sam is a tutor and wants to add a new chapter to the existing Science subject. He will log in to the application and navigate to the Science subject page, where a list of all the chapters is visible. He will then create a new chapter for the students to view. Figure 17 explains the task flow of this scenario.

User Case 9:

1. Presently, Sam is on my courses page. **[user action]**
2. Sam selects the “Science” subject. **[user action]**
3. Then the system renders the modal window. **[system action]**
4. Sam clicks on “Add new chapter”. **[user action]**
5. Sam enters Chapter Number and Chapter Name. **[user action]**
6. Sam clicks on the “Submit” button. **[user action]**
7. The system validates the input given by Sam
   7.1. If successfully submitted then the system adds Chapter 1 in the science subject and updates the database. **[system action]**

7.1.1. A message to the user is displayed which is “Chapter 1 is added successfully in Science subject”. **[system action]**

7.2. If an error occurs while submitting the subject name then the system displays a message to the user “Unable to add the chapter”. **[system action]**

7.2.1. The system redirects Sam to the same page as before to enter the correct Chapter Number and Chapter Name and the same process is followed further. **[system action].**

8. System displays Chapter 1 in the list of chapters from the Science subject. **[system action]**

Task Flow 9:

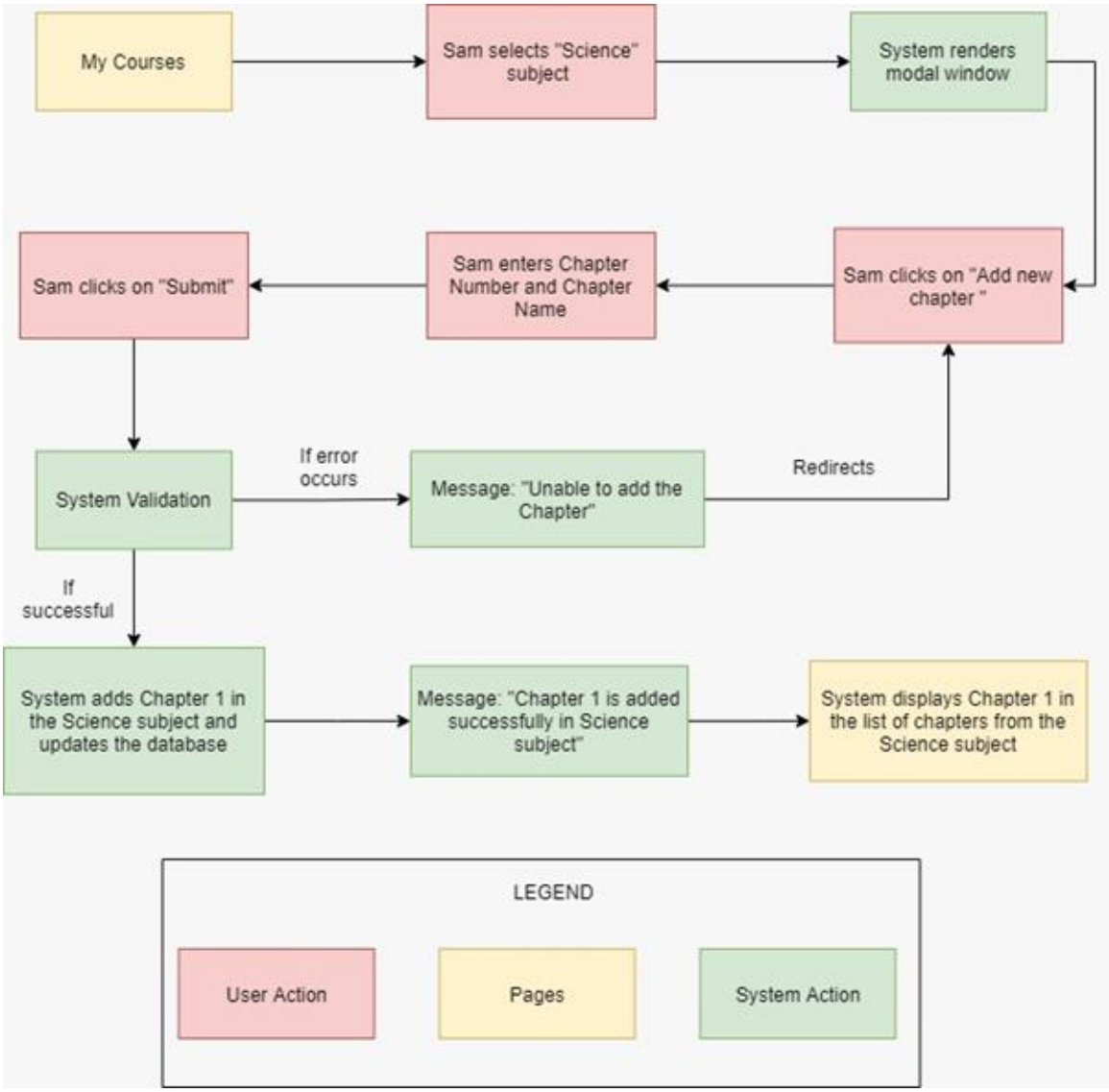

Figure 17: Task flow diagram for use case 9. Created with Draw.io [5]

3. ASSET INVENTORY

3.1 Front-end technologies

Following is the list of proposed frontend technologies used in developing our website:

1. **React Bootstrap:** React Bootstrap framework [6] is the basic foundation and provides responsiveness to our application. This supports Grid layout and all the components required for designing the building blocks of our website.
2. **React:** This JavaScript library [7] simplifies the development of our UI with its efficiency in updating and rendering any data changes to our application by maintaining the state of the components.
3. **Bootstrap:** This framework is internally used by React Bootstrap. Yet, this is used to support other features like Bootstrap Icons [8].
4. **React Router:** React alone does not support routing. We need to additionally use this library to be able to navigate between different routes across the website [9].
5. **CSS:** This style sheet language [10] is used for customizing the look and feel of our website where required.

3.2 Back-end technologies

Following is the list of backend technologies used for developing our website:

1. **Node.js:** As our business does not involve complex operations that require more processing power, Node.js [11] is used to take the advantage of non-blocking I/O, which is efficient for data handling and transmission.
2. **Express:** This framework [12] for Node.js is used to expose server-side APIs and interacting with the database.
3. **MongoDB:** This NoSQL, document database [13] helps in maintaining and transmitting data more simply.

3.3 Version control

1. **GitHub:** This hosting platform [14] makes our source code management and versioning more reliable.

3.4 Deployment

1. **Heroku:** This cloud platform [15] is used for hosting our production-ready website and make it available for usage.

4. GROUP ROLES

A list of our group members and their role in the project is described in the following table 1.

Table 1: Team members and their roles

Name	Role	Responsibilities
Bala Sundeep Krishna Dasari	Full-Stack Developer	Backend Manager and Integrator
Harry ben Alex Pavuluri	Full-Stack Developer	Testing and Scrum Master
Nikunj Goenka	Full-stack Developer	Designer and Document Manager
Prashant Sarvi	Full-stack Developer	Copywriter and Database Manager

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