

Enterprise Web Software Development COMP1640

Team 6 Group Report

Deadline Date: 01 April 2021

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Mohammed A Mohit	001020250	Back End Developer	20.00%
James Morrissey	000960284	Scrum Master	20.00%
Jan Jubilado	000937608	Code Tester	20.00%
Jiadong Wu		Ex Scrum Master/ Backend Programmer	0.00% (left group)

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1 Group Links

Screencast:

<https://web.microsoftstream.com/video/46b04d32-9484-4d61-bf08-b2c5bf9b4acc> (part 1)

<https://web.microsoftstream.com/video/51c5e87f-4ca0-4b56-b189-71e4e7474438> (part 2)

Website: <http://comp1640team6.com/pages/login.html.php>

Github: <https://github.com/manoelhcs/WebDevelopmentHub>

Because it is a web-based security-based website for the internal staff of the university, the account and password of each role will be released by the administrator.

Username: manoel@gmail.com

Password: password

Department: QAM

2 Introduction

The report will demonstrate the use of the SCRUM method to complete the research and development of a secure university system for collecting ideas from various departments in a group. The report will show the process of team cooperation from requesting requirements, creating prototypes to implementing web page functions and testing.

From the perspective of school construction and promotion, the creation of this system will improve the connection between coordinators and management of various departments. Coordinators will be able to express their ideas without having face-to-face communication. In the COVID-19 environment, the system will make communication more convenient while ensuring the safety of both parties. Everyone can get information just by logging on to the web without leaving home. At the same time, the system will have a comment function, and the coordinator can share their thoughts on the web. Managers can evaluate recommendations through real-time data surveys. This will greatly increase the efficiency and quality of management. The system will set up unique accounts for all departments of the university. At the same

time, a reminder function is set. When an idea is submitted and a like is received, the website will automatically remind the associate or administrator by sending an email.

As an associate, you need to log in to your special account first, and then you can post one or more ideas on the web page. The webpage will support associates uploading zip files to support ideas. Of course, you can also like or dislike other ideas. After the deadline, the system will not allow you to submit ideas. To protect privacy, the web page will provide an anonymous option.

As a manager, not only can you browse all your ideas, you can also post ideas. You can also add new departments and delete departments according to the needs of the university. You can set the deadline. The website will also set up a statistics page for you. Ideas will be evaluated on the website. You can understand the ideas of each department through the view.

3 Agile Documentation

3.1 Weekly Scrum Meeting

Date	Minutes	Attendance	Discussions and Tasks
28/01/2021	46	Manoel Henrique H Cortes Sousa, Jiadong Wu, Mohammed A Mohit, Jan Jubilado, Dong Wang, James Morrissey	Assigned Group Roles: Backend Developer: Manoel Scrum Master: Jiadong Backend Developer: Mohammed Code Tester: Jan Frontend Developer/Database Designer: Dong Backend Developer/Database Designer: James Outlined meeting schedule, SCRUM rituals and SCRUM artifacts. Began ERD design for database and frontend structure.
30/01/2021	27	Manoel Henrique H Cortes Sousa, Jiadong Wu, Mohammed A Mohit, Jan Jubilado, Dong	Product Owner decided upon the user stories from the given system requirements. Github Repository has been created and all team members given access. Zenhub has been implemented to give a deep visual

		Wang, James Morrissey	<p>understanding of the product and sprint backlogs. SCRUM master gave the start date for the sprint one, commencing next week.</p> <p>The group completed a planning poker session, we asessed our expected sprint velocity to be 28 (2 points for each day)</p> <p>Planning poker ended with an estimated 115 story points, slightly over the teams expected velocity for the project (112) but breathes confidence that the system is workable in the given timeframe.</p>
01/02/2021	33	Manoel Henrique H Cortes Sousa, Jiadong Wu, Mohammed A Mohit, Jan Jubilado, Dong Wang, James Morrissey	<p>Sprint One begins, Front end designers start to design basic homepage and login page, button creation etc.</p> <p>Backend team create a skeleton database and begin writing the java code for the backend.</p> <p>n.b. Jiadong has left the group at this stage, his duties as SCRUM master pass onto James, who will now solely focus on SCRUM master and product ownership.</p>
08/02/2021	46	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	<p>Halfway point of Sprint one, some issues raised by the backend team about using PHP to form a database connection to FastCompet (the hosting server) Mohammed will focus on this.</p> <p>Jan has begun to test the already implemented functionality, no issues found thus far.</p> <p>Burndown chart has been created by James to give team members an idea of how when each user story should be completed.</p> <p>Dong has created prototype front end pages to give the backend team an anchor point going forward.</p>
15/02/2021	35	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	<p>Sprint one ends.</p> <p>First half of the meeting is a sprint retrospective, we identify that communication was strong between team members, but improvements could be made going forward with regards to User stories which we aren't able to do as easily or quickly as we thought, the decision is made to deal with these user stories by placing them back into the product backlog, to be dealt with at a later date rather than dwelling on them and slowing down the sprint velocity.</p> <p>Sprint two discussion begins, team members are briefed on the user stories they are expected to deal with, work begins.</p>
22/02/2021	42	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	<p>Midway through sprint two.</p> <p>Through Jan's testing he has discovered that one of the functionalities implemented has not been completely finished, Manoel from the backend team has been assigned to fix it.</p> <p>Dong has created a responsive interface functionality, so that the system is appropriately presented across all</p>

			<p>devices.</p> <p>Mohammed has successfully created a database connection through PHP code.</p> <p>James has created the terms and conditions agreement which all users must agree to.</p>
01/03/2021	40	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	<p>The end of Sprint two.</p> <p>Retrospective brings up a couple of good points, we need to be more proactive in updating the sprint backlog and we also need to stick to the priority assignments as some low priority stories are being completed over higher priority ones.</p> <p>Good progress has been made in this sprint, important core functions like the ability to post ideas and comments and the thumbs up/ thumbs down system have been implemented effectively.</p> <p>Looking forward to sprint three, some issues which were intended for sprint four have been moved to the sprint three backlog, we feel that initially we overestimated the difficulty of sprint three's stories, namely the addition and deletion of categories, meaning the last week of sprint four can be used to instead focus on improving what we have already implemented and potentially including some stories which fell under 'Could' during the MoSCoW prioritisation</p>
08/03/2021	39	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	<p>Halfway through our third sprint, more focus is being put on polishing the product this time round, a lot of key functionality is working well including the role based login system and ideas posting. Heavy focus on the front end design ensuring the system is clean and doesn't break, Jan has been rigorously testing and reporting back to the front-end and back-end team any issues he has found.</p>
15/03/2021	28	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	<p>The end of sprint three.</p> <p>During the retrospective we highlighted that as a team we have come a long way since the first sprint, communication is effective and precise, team members abilities are highlighted to all, a good sense of optimism is present throughout the team as we begin our final sprint.</p> <p>Sprint four will focus mostly on small features that are not core to the system, small details such transforming data into CSV files and adding a block user feature will give the system a more finished and well thought out feel.</p>
22/03/2021	53	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James	<p>Halfway through sprint four, this meeting primarily zoned in on anything which we may have missed, James and Jan raised the point that although most of our user stories have been implemented, more 'could' features should be added if there is time for them, Manoel, Mohammed and Dong are currently finding any extra features that they can implement as we approach the final sprint retrospective.</p>

		Morrissey	Jan is heavily focused on testing, at this stage every new change must be tested to ensure it does not accidentally affect another part of the system, progress is slow but thorough.
29/03/2021	21	Manoel Henrique H Cortes Sousa, Mohammed A Mohit, Jan Jubilado Dong Wang, James Morrissey	The final sprint is complete, as well as Jan's testing, during the sprint retrospective we discussed how we feel the project has gone as a whole, picked up on what we would carry forward into a potential next sprint, Mohammed demonstrated the final finished system to the team members via screenshare, all members are happy with how it looks and functions.

3.2 User Stories

System Requirement	User Story
All staff (academic and support) have the opportunity to submit one or more ideas.	As a member of staff, I want to be able to submit any number of ideas
All staff must agree to Terms and Conditions before they can submit.	Users must be presented with the terms and conditions regarding usage of the system upon their initial visit
All staff can optionally upload documents to support their ideas.	As a member of staff, I want to be able to upload supporting documents related to my idea
All ideas can be categorised (tagged) from a list of categories at the point when they are submitted.	As a system user, I want to be able to assign a category to my idea depending on the nature of the idea.
The QA Manager can add additional categories at any time, and can delete categories, but only if they have not been used.	As A QA manager, I want to be able to edit the categories used in the system.
All staff can see all submitted ideas and can comment on any idea. They can also give the Thumbs Up or Thumbs Down for any idea, but only once for any idea	As a member of staff, I want to be able to use a comment function to discuss an idea, I also want to be able to rate the idea through a thumbs up/thumbs down rating system.
Ideas and comments can be posted anonymously, although the author's details will be stored in the database so any inappropriate ideas can be investigated.	As a user, I want to be able to post comments and rate ideas anonymously
	As a QA manager, I want to be able to see the credentials of comments made, so that any inappropriate communications can be investigated.

All new ideas are disabled after a closure date for new ideas, but comments can continue to be done until a final closure date.	The system must have a feature to close the ability to post new ideas depending on when the QA manager decides.
Once an idea is submitted the system emails a notification to the Department's QA Coordinator	As a QA manager, I want to be notified via email when a new idea is posted from within my department.
The author of an idea receives an automatic email notification whenever a comment is submitted to any of their ideas.	As an idea author, I want to receive a notification when someone comments on any of my submitted ideas.
Lists of Most Popular Ideas (+1 for Thumbs Up, -1 for Thumbs Down), Most Viewed Ideas, Latest Ideas and Latest Comments must be made available to all users.	As a user, I want to be able to filter and sort ideas via most popular, most viewed, latest and latest commented ideas.
The University QA Manager needs to be able to download all the data after the final closure date in a CSV file for transfer out of the system. Any uploaded documents need to be downloaded in a ZIP file	As a QA manager, I want to be able to download the submitted ideas after a closure date via a CSV or ZIP file.
Statistical analysis (e.g. number of ideas per Department) needs to be available.	As a QA manager, I want to be able to generate statistics relating to ideas per department, most popular ideas etc.
The interface must be suitable for all devices (eg mobile phones, tablets, desktops).	As a user, I want the system to utilize a responsive interface so that I can comfortably use it across all my devices.

User Story	Acceptance Criteria
(Assumed requirements)	<ul style="list-style-type: none"> The system needs a database hosted on a server which communicates with a front-end website. The database stores all ideas, user credentials, comments etc. The database will be built using MySQL. PHP will be used to facilitate communication to the database from the front-end site. System needs a 'login' button.

As a member of staff, I want to be able to submit any number of ideas	<ul style="list-style-type: none"> • User can write out their idea using an inline form. • There should be a 'idea title' and 'idea body' fields. • A feature to upload supporting documents is required. • Supporting documents can be downloaded via a ZIP file. • Alternatively, Ideas do not require any 'body' text, but require a title.
Users must be presented with the terms and conditions regarding usage of the system upon their initial visit	<ul style="list-style-type: none"> • The first time a user logs in, they must be presented with terms and conditions. • They can scroll inline down the document. • There is a radio button confirming the user agrees to obey these terms. • Users can only agree to the terms after they have viewed the entire document (scrolled to bottom)
As a system user, I want to be able to assign a category to my idea depending on the nature of the idea.	<ul style="list-style-type: none"> • A list of categories must be available populated by the QA manager. • Users must be able to assign a category to their idea. • Users must assign A category to every idea.
As A QA manager, I want to be able to edit the categories used in the system.	<ul style="list-style-type: none"> • QA manager can add a category. • QA manger can edit a category name. • QA manager can delete a category only if there are no ideas already associated with it.
As a member of staff, I want to be able to use a comment function to discuss an idea, I also want to be able to rate the idea through a thumbs up/thumbs down rating system.	<ul style="list-style-type: none"> • Comment function must be available to type a comment in line with the idea. • Thumbs up button must assign a +1 score to the chosen idea. • Thumbs down button must assign a -1 score to the chosen idea. • The overall rating of an idea must be accumulated and tallied. • The overall rating should be viewable next to an idea.

As a user, I want to be able to post comments and rate ideas anonymously	<ul style="list-style-type: none"> • The identity of any commentor should not be available to peer users. • The identity of any ratings given by a user should not be available to peer users.
As a QA manager, I want to be able to see the credentials of comments made, so that any inappropriate communications can be investigated.	<ul style="list-style-type: none"> • The identity of Ratings given, and comments made should be available to QA managers.
The system must have a feature to close the ability to post new ideas depending on when the QA manager decides.	<ul style="list-style-type: none"> • QA managers have to select a timeframe for the acceptance of ideas. • QA managers can select anywhere from 3 days, 1 month, 3 months, 6 months, or indefinitely.
As a QA manager, I want to be notified via email when a new idea is posted from within my department.	<ul style="list-style-type: none"> • System must send notification upon new idea being posted • Notification must be sent via email to the relevant department QA manager
As an idea author, I want to receive a notification when someone comments on any of my submitted ideas.	<ul style="list-style-type: none"> • Upon a user using the comment function on any idea, a notification must be sent to the original poster of the idea.
As a user, I want to be able to filter and sort ideas via most popular, most viewed, latest and latest commented ideas.	<ul style="list-style-type: none"> • Filter function must be available with the following criteria: by department, by topic, by poster, selected date range. • Sort function must be available with the following criteria: most popular, most commented, latest posts, latest commented.
As a QA manager, I want to be able to download the submitted ideas after a closure date via a CSV or ZIP file.	<ul style="list-style-type: none"> • After the closure date of new ideas, the system must make a CSV or ZIP file of the ideas available for download by QA managers only.
As a QA manager, I want to be able to generate statistics relating to ideas per department, most popular ideas etc.	<ul style="list-style-type: none"> • System must be able to generate visual statistic reports pertaining to ideas per department, most popular ideas, comments.

As a user, I want the system to utilize a responsive interface so that I can comfortably use it across all my devices.

- Front end design must be done in a responsive way to that the display is easily usable across computers and mobile devices.

4. Burndown Chart

The burndown charts were created in order to give the development team some idea of how long each user story should take depending on the weighting of the planning poker. 'x' indicates one day of development, some overlap as more than one story was being worked on that day.

Key	
Sprint One	
Sprint Two	
Sprint Three	
Time Estimation (Days)	x

Figure. Burndown Chart Keys. Created by James Morrissey

1	Issue	Sprint One															
2		11/02/2021	12/02/2021	13/02/2021	14/02/2021	15/02/2021	16/02/2021	17/02/2021	18/02/2021	19/02/2021	20/02/2021	21/02/2021	22/02/2021	23/02/2021	24/02/2021	25/02/2021	
3	Design database	X															
4	Create git repository		X														
5	Detail issues on backlog		X														
6	Create Terms and Conditions agreement			X													
7	Creation of Database				X	X	X	X									
8	Allow Categorization of Ideas							X	X	X							
9	Idea submission functionality									X		X	X				
10	Create List of categories																
11	Design UI interface												X	X	X	X	
12	Visualization of submitted ideas																
13	Post ideas and comments anonymously																
14	Responsive Interface																
15	Individualise thumbsup thumbsdown																
16	Ability to comment on ideas.																
17	Create Database connection																
18	Data Validation																
19	Closure dates for ideas																
20	Add categories																
21	Develop Log In page																
22	Update Documentation																
23	Upload Documents																
24	Paginate list of Ideas																
25	Comment submission email notification																
26	Test Administrator role																
27	Idea submission email notification																
28	Download uploaded documents as zip file																
29	QA manager can download data																
30	Thumbs up and down functionality on ideas																

Figure. Created by James Morrissey

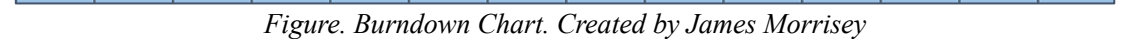


Figure. Planning Poker. Created by James Morrissey

Figure. Planning Poker. Created by James Morrissey

User Story Key	
As a member of staff, I want to be able to submit any number of ideas	A
Users must be presented with the terms and conditions regarding usage of the system upon their initial visit	B
As a member of staff, I want to be able to upload supporting documents related to my idea	C
As a system user, I want to be able to assign a category to my idea depending on the nature of the idea.	D
As A QA manager, I want to be able to edit the categories used in the system.	E
As a member of staff, I want to be able to use a comment function to discuss an idea, I also want to be able to rate the idea through a thumbs up/thumbs down rating system.	F
As a user, I want to be able to post comments and rate ideas anonymously	G
As a QA manager, I want to be able to see the credentials of comments made, so that any inappropriate communications can be investigated.	H
The system must have a feature to close the ability to post new ideas depending on when the QA manager decides.	I
As a QA manager, I want to be notified via email when a new idea is posted from within my department.	J
As an idea author, I want to receive a notification when someone comments on any of my submitted ideas.	K
As a user, I want to be able to filter and sort ideas via most popular, most viewed, latest and latest commented ideas.	L
As a QA manager, I want to be able to download the submitted ideas after a closure date via a CSV or ZIP file.	M
As a QA manager, I want to be able to generate statistics relating to ideas per department, most popular ideas etc.	N
As a user, I want the system to utilize a responsive interface so that I can comfortably use it across all my devices.	O

Figure. Planning Poker. Created by James Morrissey

The planning poker session was conducted using a Fibonacci sequence, a lower number such as 0 or 0.5 indicates little to effort for the user story, a higher number such as 20, 40, or 100 indicates a larger amount of effort to an almost impossible user story, 8 or 13 indicate a medium effort story.

The planning poker session ended with an estimation of 147 story points, this is 14 points over what we initially predicted was possible, this is not uncommon within planning poker and gives confidence because the discrepancy is not too large, meaning we have mostly successfully estimated our team velocity.

6. Workflow

A workflow was created during the initial development of the system using the specification document. The workflow helped the developers understand how the system process ideas and the stakeholders involved.

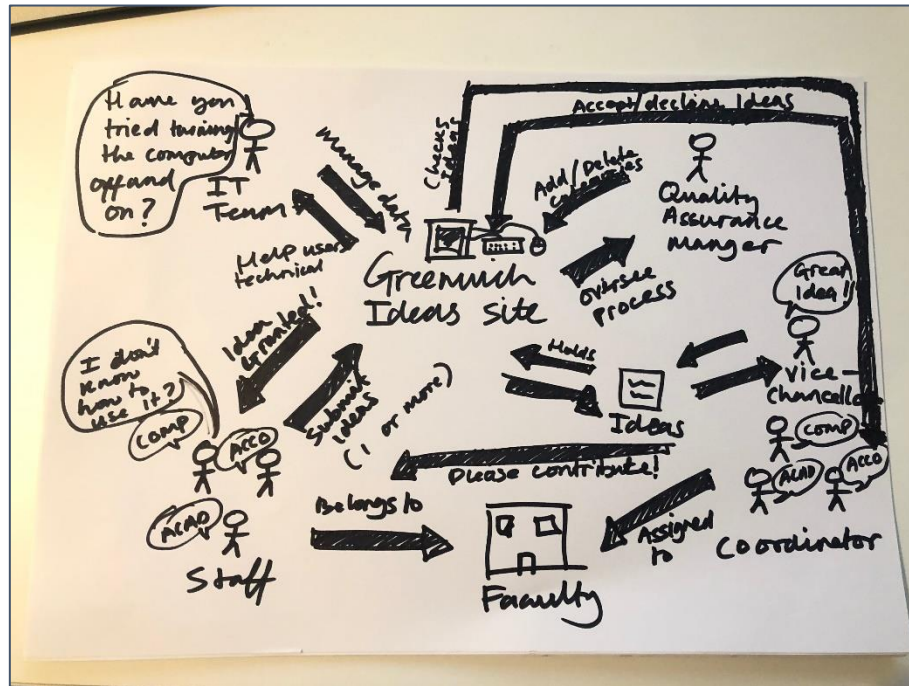
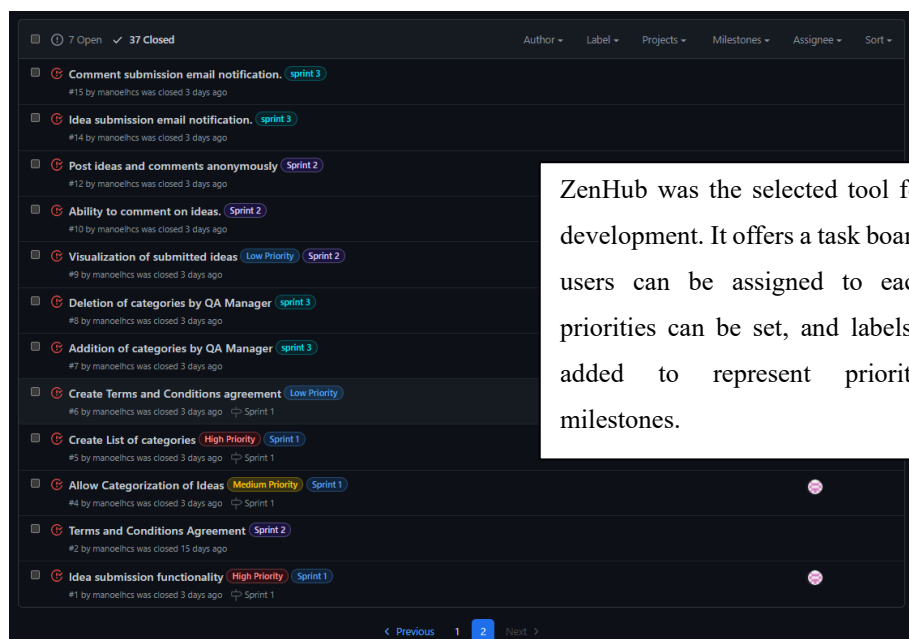


Figure 1. Workflow created by Jan Jubilado.

Product Backlog



ZenHub was the selected tool for Agile development. It offers a task board where users can be assigned to each task, priorities can be set, and labels can be added to represent priority and milestones.

Figure. Product Backlog. Created by Jan Jubliado

3.4 Sprints

Sprints were conducted through ZenHub. Tasks from the backlog were broken down into sprints and followed the process of going from Sprint Backlog -> In progress -> Review/Test -> Done. The images bellow are some examples of how the tasks were categorized and the labels that could be applied to them.

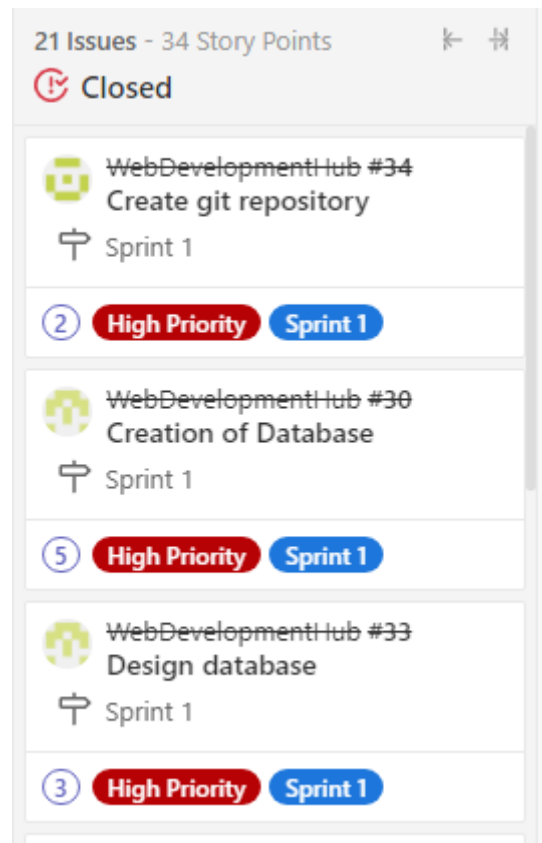


Figure. Sprint Board. Created by Manoel Sousa

Creation of Database #30

Database will be created to store all relevant information.

Creation of Database is closed

manoelhcs commented on Feb 4

Database will be made according to this diagram <https://drive.google.com/file/d/11OrDNJuk7v1D7Z0FcSLdg6i6EEhsbVpy/view?usp=sharing>.

manoelhcs set the estimate to 5 2 months ago

manoelhcs changed the pipeline from Sprint Backlog to Done in COMP-1640 a month ago

manoelhcs assigned DongWang0108 a month ago

DongWang0108 commented on Feb 26

Finished

Pipelines

COMP-1640
Closed

Labels

High Priority Sprint 1

Assignees

DongWang0108

Sprints

No Sprint Assigned

Milestone

Sprint 1
Past due by a month

Estimate

5

Epics

Figure. Task Details. Created by Manoel Sousa

3.4.1 Frontend Design

Sprint Name	Deadline	Developer	Achieved?
Make Axure prototype	02 February 2021	Dong Wang	Yes
Make login, Main page, register pages	09 February 2021	Dong Wang	Yes
Make 404, browse, data, details pages	09 February 2021	Dong Wang	Yes
Make ideas, info, report pages	16 February 2021	Dong Wang	Yes
Make reset-info, reset-password pages	16 February 2021	Dong Wang	Yes
Make add-topic, details-manager, ideas-manager, info-manager pages	23 February 2021	Dong Wang	Yes
Create Inappropriate Report page, add function buttons according to new requirements	09 March 2021	Dong Wang	Yes
Adjust the color of the webpage, use the Bootstrap framework	09 March 2021	Dong Wang	Yes

3.4.2 Database Design

Sprint Name	Deadline	Developer	Achieved?
Create database	02 February 2021	Dong Wang	Yes
Create Department, Employee, Idea, Comment and Topic table	09 February 2021	Dong Wang	Yes
Add test data	09 February 2021	Dong Wang	Yes
Set up the Host website	16 February 2021	Dong Wang	Yes
Upload database to Host	16 February 2021	Dong Wang	Yes

Create PWD Reset table	23 February 2021	Dong Wang	Yes
Create Inappropriate Ideas table	09 March 2021	Dong Wang	Yes
Add fields according to new requirements	09 March 2021	Dong Wang	Yes
Draw ERD	09 March 2021	Dong Wang	Yes

3.4.3 Backend Development

Sprint Name	Deadline	Developer	Achieved?
The QA Manager can add and delete categories at any time.	31/03/2021	Manoel & Mohammed	Yes
All staff can agree to the terms and condition before they submit.	03/02/2021	Manoel & Mohammed	Yes
Ideas and comments can be posted anonymously.	25/02/2021	Manoel & Mohammed	Yes
All staff can see the number of thumbs up and thumbs down for each idea.	16/02/2021	Manoel & Mohammed	Yes
One an idea is submitted the system emails the departments QA Coordinator.	24/03/2021	Manoel & Mohammed	Yes
Create role-based login system.	28/01/2021	Manoel & Mohammed	Yes
Allow users to add ideas.	27/03/2021	Manoel & Mohammed	Yes
Do not show the ideas of blocked users.	27/03/2021	Manoel & Mohammed	Yes
The author of an idea receives an automatic email notification when a comment is submitted to their ideas.	28/03/2021	Manoel & Mohammed	Yes
List of ideas are paginated to 5 ideas per page.	29/03/2021	Manoel & Mohammed	Yes
List of most popular ideas most viewed ideas latest ideas and latest comments.	08/03/2021	Manoel & Mohammed	Yes
The QAM can download the data as a csv file.	30/03/2021	Manoel & Mohammed	Yes
The interface is suitable for all devices.	28/01/2021	Manoel & Mohammed	Yes

3.4.4 Scrum Documentation

Sprint Name	Deadline	Developer	Achieved?
Work with system requirements to develop user stories	28/01/2021	James Morrissey	Yes
Expand user stories into acceptance criteria	28/01/2021	James Morrissey	Yes
Estimate sprint velocity for all team members	28/01/2021	James Morrissey	Yes
Conduct a planning poker session with all	30/01/2021	James	Yes

team members		Morrissey	
Set up Kanban board on ZenHub and enter product backlog	31/01/2021	James Morrissey	Yes
Assign user story points according to the planning poker session to each story.	03/02/2021	James Morrissey	Yes
Assign user stories to the relevant team member based on their role.	04/02/2021	James Morrissey	Yes
Create estimated burndown chart with anticipated finish date.	06/02/2021	James Morrissey	Yes
Take meeting notes from each weekly meeting	31/03/2021	James Morrissey	Yes
Prioritize user stories following the MoSCoW technique	10/02/2021	James Morrissey	Yes
Update the Kanban board when sprints have been completed	28/03/2021	James Morrissey	Yes

3.4.5 Testing

Sprint Name	Deadline	Developer	Achieved?
Create 'test plan' table on the shared document	28/01/2021	Jan Jubilado	Yes
Add test log for the 'login' page		Jan Jubilado	Yes
Add test log for the 'register' page		Jan Jubilado	Yes
Add test log for each of the department login		Jan Jubilado	Yes
Add test log for 'logout' page		Jan Jubilado	Yes
Add test log for 'reset password' page		Jan Jubilado	Yes
Add test log 'add topic' page		Jan Jubilado	Yes
Add test log 'add idea' page		Jan Jubilado	Yes
Re-evaluate the 'test plan'		Jan Jubilado	Yes
Final check on the 'test plan'	01/04/2021	Jan Jubilado	Yes

3.5 Analysis of Requirements

Before the project starts, we need to understand the university's needs for the website, otherwise the production of the project will most likely fail. The MoSCoW prioritization method will be applied to our project production, this method will analyze each function.

User Story	Priority
------------	----------

As a member of staff, I want to be able to submit any number of ideas	Must
Users must be presented with the terms and conditions regarding usage of the system upon their initial visit	Should
As a system user, I want to be able to assign a category to my idea depending on the nature of the idea.	Could
As A QA manager, I want to be able to edit the categories used in the system.	Could
As a member of staff, I want to be able to use a comment function to discuss an idea, I also want to be able to rate the idea through a thumbs up/thumbs down rating system.	Should
As a user, I want to be able to post comments and rate ideas anonymously	Must
As a QA manager, I want to be able to see the credentials of comments made, so that any inappropriate communications can be investigated.	Could
The system must have a feature to close the ability to post new ideas depending on when the QA manager decides.	Must
As a QA manager, I want to be notified via email when a new idea is posted from within my department.	Should
As an idea author, I want to receive a notification when someone comments on any of my submitted ideas.	Could
As a user, I want to be able to filter and sort ideas via most popular, most viewed, latest and latest commented ideas.	Could
As a QA manager, I want to be able to download the submitted ideas after a closure date via a CSV or ZIP file.	Should
As a QA manager, I want to be able to generate statistics relating to ideas per department, most popular ideas etc.	Must
As a user, I want the system to utilize a responsive interface so that I can comfortably use it across all my devices.	Must

3.5 Axure Prototype (See Appendices)

The production of the prototype will quickly show the specific details of the web page. Compared with the specific production of the webpage, the production of Axure prototype has simple and fast characteristics, which is conducive to the initial discussion of the team. When the team reaches a consensus, the project will start production, which is conducive to breaking the barriers between various positions and speeding up the project speed. The web pages will use blue and white as the main colors, which mainly takes into account the use of the website by color-blind users and increases the user experience. The production of the webpage will use the Bootstrap framework to make the website suitable for users' various devices.

3.6 Assumptions

It was assumed the admin is responsible for going into the database and setting a final date for ideas. It was also assumed the QA Manager is the only person that would be able to view the reports and download the .CSV file.

3.7 Database

MySQL was selected as the database for this project as the basis for storing data, because MySQL is relatively simple to use and can be compatible with a variety of auxiliary software, such as Navicat. The use of auxiliary software can greatly enhance database designers and back-end designers to have a clearer and quicker understanding of database frameworks, table connections, data types and fields. The designer will speed up the designer's completion of the project. MySQL can be compatible with a variety of computer languages, and the usage requirements are relatively low. MySQL language syntax is relatively simple, although compared to the flexible SQL language, it seems rigid. But because the language is simple and easy to understand, the framework is clear. This will speed up the development of small projects.

The project database will be divided into 7 tables, which are very important for realizing the functions required by the entire website. These 7 tables will contain all the data used by the website. The user table stores basic user information, distinguishing user identity and account password for login. Store the file path and the data related to the idea in the idea table. The following chapters will discuss in detail the role of the evaluation database, the structure of the security table and the realization of the relationship.

3.7.1 Security

The security of the database is very important. As a forum for the school to collect ideas, there are many personal information stored in it, including account, password, email and so on. For personal privacy and data security, appropriate measures must be taken to protect the database. When accessing the MySQL database, the username and password of the database must first be verified. This is the most basic first line of defense for MySQL. On the website, first connect the database and the front end through the back end, and then verify the user's identity through form verification. Secondly, for different user identities, user access permissions will also be different. When the user identity is not an administrator, the user will not be able to enter the data visualization webpage to view specific forms. When the user is registered, the user will be set with the default value, and the account with the value of the management authority will only be provided to the relevant personnel by the database administrator. Only this one method.

When a user creates a password, the PHP verification form will be passed, and the number of characters in the user's password will be limited. The password created by the user will be forcibly converted to MD5 for storage. The website does not advocate the use of strong passwords generated by machines, which will cause users to be unable to remember passwords and increase the burden on the website. Ordinary code will be transformed into a complex situation, which increases the level of security.

3.7.2 Appropriate Data Types

MySQL provides a wealth of data types to constrain the format of the field. A failed database will present messy data records and increase the burden on website administrators. Constraints by data types will greatly reduce failure cases. At the same time, data types are also used to meet various data requirements of the website. To support the realization of various interactions and functions of the website.

In the comment, topic and ideas tables, datetime data types are used to constrain time. First, datetime can accurately record the vouchers that users submit related content. Second, when time is constrained, it can standardize the display of this field in the database to provide standard templates for the backend to use time to complete related functions. For example, when the website wants to Time is calculated. When the data contains only the year, day and month, the function cannot be completed, because the specific time cannot be calculated, and the difference in format also hinders the acquisition of the data. Third, there is a time limit for topic submission in the website function. If the database cannot store the accurate time, the user's understanding of the deadline is very prone to deviation, resulting in missed submission time.

3.7.3 Role Implementation

The storage of roles in the database will be implemented in a table of employee. In addition to the auto-incrementing primary key of the ID, the user will also be given an int type value of *employee_identify*. When a user creates an account on the website, the ID will be automatically created when the user submits relevant data. The id will be used to associate all files and comments submitted by the user on the website.

employee_identify will be used by the website to judge the user's identity, thereby granting corresponding permissions. For ordinary users, they will not be able to post topics and access data analysis web pages. And modify the deadline, etc. Ordinary users will be defaulted to the values of ordinary users when registering. The employee table will store various personal information of the employee. The employee's account, password, and email information are

also stored in this table. *Employee_Identity* is designed to distinguish between coordinators and employees. When the stored value is 2, the employee's position is the coordinator, and when the stored value is 1, it is the employee. 3 is manager.

3.7.4 Referential Integrity

The structure of the database and the connection between the table and the table are the most important part of the database, it will link the various fields of the database. The primary key guarantees the uniqueness of the data, and the foreign key guarantees the integrity of the data. Among the five tables in the database, the data in each table has a unique primary key for distinguishing uniqueness. Otherwise, it will be impossible to search and sort on the website. When changing a certain data, the website also needs to find matching data.

There are 9 foreign keys in the database. *Topic_Employee* will be used to identify the topic published by the coordinator. The three foreign keys of *Idea_Topic* *Idea_Employee* *Idea_Department* will be used to determine the topic to which the idea belongs, and the department to which the idea belongs is published. *Employee_Department* will be used to distinguish the department to which the user belongs. *Comment_Idea* and *Comment_Employee* will be used to distinguish the idea to which the comment belongs, and which user posted the comment. *InappropriateIdeas_EmployeeId* is the foreign key linking the ID of the reported user, and *InappropriateIdeas_IdeaId* is linking to which opinion he posted.

3.7.5 Design Documentation

To ensure that the functions and data fields of the website are not left out, the ERD diagram as shown in the figure below is created. To facilitate the database test, the fields in the table will be empty except for the primary key.

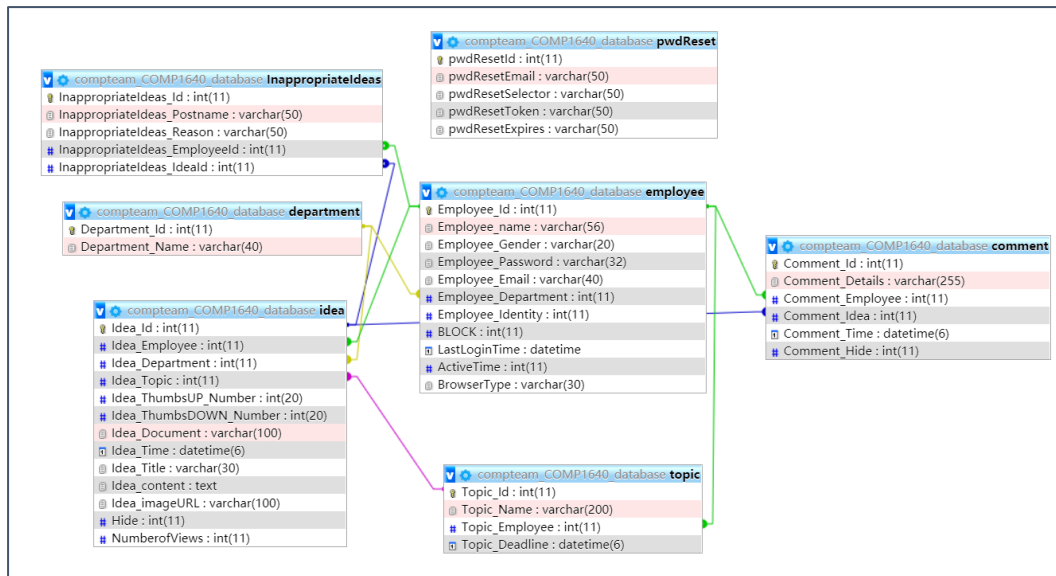


Figure 1. ERD Diagram. Created by Dong Wang

3.8 Site Design

Using the first meeting, I made a website prototype to discuss the details of the website, including website theme colors, network function buttons, navigation bar, etc. Prototype making is simpler and more timesaving compared to website implementation. This can avoid huge changes and wasting a lot of time when communicating with back-end designers later.

3.8.1 Usability

The website will be tested for usability, and the website will be reasonably designed through the Nielsen heuristic. In the case of being able to complete all necessary functions, the website is optimized to make it more suitable for users.

3.8.2 Accessibility

The design of the website will consider the color's experience for users. Complicated color matching and layout will reduce the user experience of using the website. The website will be designed with one or two theme colors and similar colors. Khuong et al. (2018) state that a special attraction is provided by color to create emotional attraction and enhance the user experience of the website.

3.8.3 Colour Factor

For a small number of color blindness, it is very difficult to distinguish between colors. Many colors are indistinguishable. In normal life, only black and white can be distinguished. This type of color blindness is called total color blindness. Of course, this phenomenon occurs in a few people. Most color blindness just cannot distinguish between red and green colors, so color blindness is also called red-green blindness. Obviously, the colors that are not easily distinguishable for color blindness are red and green. Therefore, considering the use of special groups of people, the website will adopt unexpected colors of red and green.

The following four pictures show the recognition of different colors in different color-blind eyes. The following four pictures show by TECNICÓPIAS (2017). In the picture, whether it is blind or blind, it will not have a greater impact on the recognition of purple. Therefore, the website uses purple and gray as the theme colors. At the same time, purple also makes people feel comfortable and relaxed. Let users not feel tired when browsing the website.

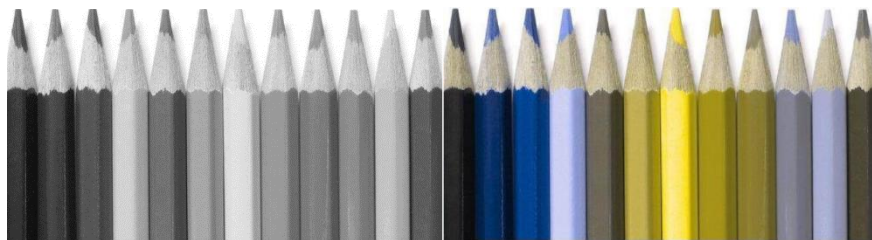


Figure 2.

Figure 3.



Figure 4.

Figure 5.

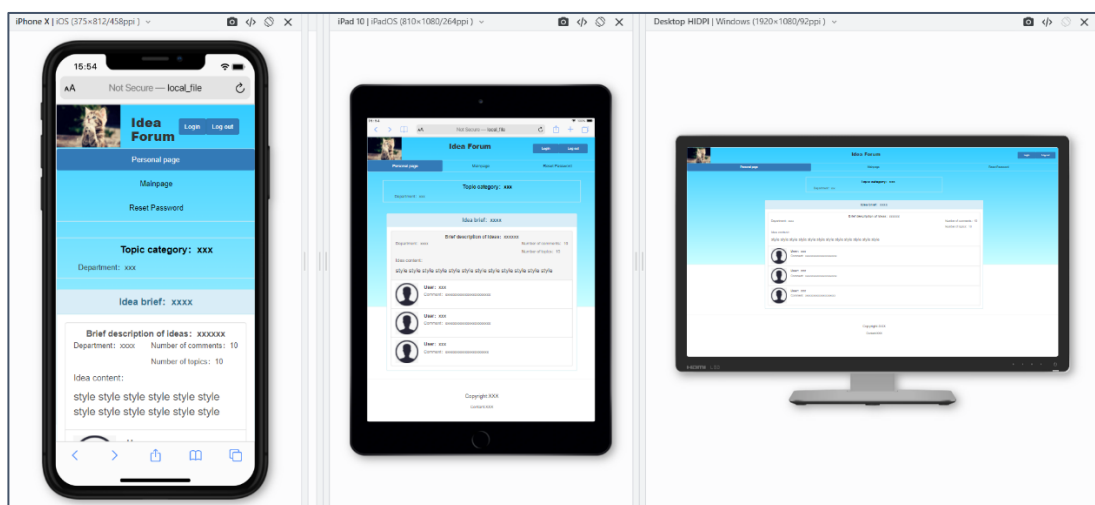
3.8.4 Responsive Design

The website will be designed with a responsive layout according to customer requirements, and the Bootstrap framework will be used in the design of the web page. With the widespread use of smart phones and mobile devices, people can browse the web anytime, anywhere. However, traditional web design cannot meet people's needs, and the size of a normal web page is not suitable for use on mobile phones or other screen sizes. So flexible, variable web pages are more popular.

3.8.5 Use of Bootstrap

Bootstrap is a framework for web page responsive layout that integrates CSS, JavaScript and jQuery. The framework not only provides codes suitable for various screen sizes, but also provides corresponding components and charts. Make the website highly integrated. Bootstrap provides a complete navigation bar, buttons, and table styles. It is used on various well-known websites.

As shown in the figure below, in the test component of the Blisk webpage, the webpage is adapted to all screens of different sizes to facilitate users to browse on any device. The webpage will automatically scale up and down according to the screen size. The change in the navigation bar in the picture is the most obvious. When the screen is small, the navigation bar will become three buttons arranged in a vertical row. In the computer, they are arranged in a row. This will increase the user experience.

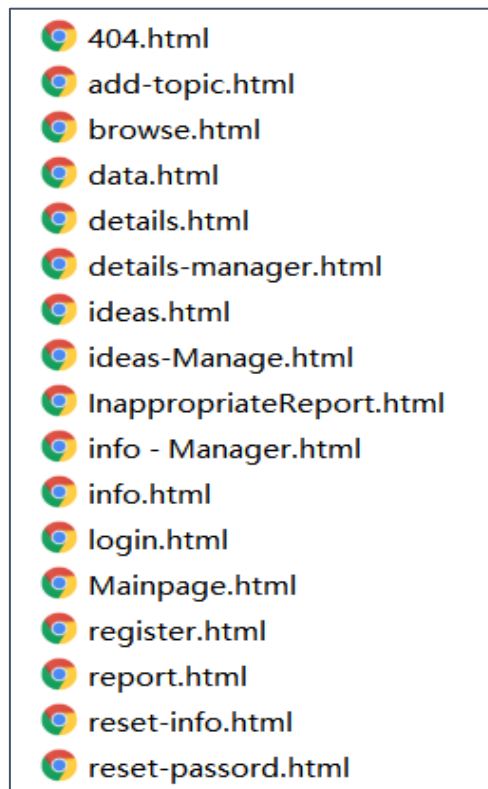


Mobile. Created by Dong Wang

3.8.6 Information Architecture

The forum is divided into 17 pages, which will meet the most basic needs of users, log in to the website, browse topics and ideas, submit ideas and comments. For managers, they will have higher authority to access web pages for data analysis and web pages created by topics. The webpage will form a closed circle. When the user enters the next webpage or the previous webpage, the webpage will not jump out of the forum. At the same time, when users submit ideas, the website is also designed to gradually guide users into the submission interface mode.

For new users, the website will not bring them a difficult-to-use experience.



List of Pages. Created by Dong Wang

4 Product Sketches

This is the login page of the website. When users log in, they are asked to enter their account password and select their department. When the user's input field is empty, the website will pop up the prompt content, and at the bottom of the website, there will also be words to remind the user of input errors or not input.

Login Validation. Created by Dong Wang

Register

Full Name

University Email

Password

Confirm Password

Gender
☐ Male ☐ Female


Department

Register

This is the registration page, the user is asked to fill in all the information as shown in the picture. After adding all the information, the user can click the register button.

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 Contact: 02053434534

Registration Page. Created by Dong Wang



Idea Forum

Login Log out register

Personal page Mainpage Reset Password

We need new computer devices
Department: COMP Deadline: 2021-02-10 21:19:04.000000

Post a topic

User: James Idea: New dell desktops please. 20 of them.
Number of comments: 10 file download 10 15 2

Pick up litter day!
Department: COMP Deadline: 2021-03-28 13:43:01.000000

Post a topic

User: John Smith Idea: Pick up litter day!
Number of comments: 10 file download 10 0 0

Go Green Greenwich!
Department: COMP Deadline: 2021-03-24 13:43:28.000000

Post a topic

User: John Smith Idea: Go Green Greenwich!
Number of comments: 10 file download 10 0 0

Study after school
Department: COMP Deadline: 2021-03-28 12:43:19.002000

Post a topic

User: John Smith Idea: Study after school
Number of comments: 10 file download 10 0 0

Buy new laptops
Department: COMP Deadline:

Post a topic

User: Manoel Idea: Buy 10 hp laptops.
Number of comments: 10 file download 10 0 0

Next page

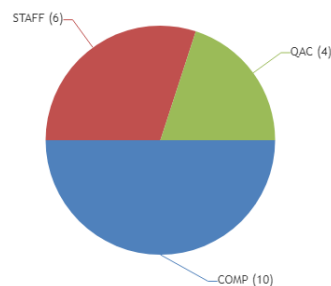
Ideas Page. Created by Dong Wang

Idea Forum	
Personal page	Manage
Most Viewed Ideas	
Idea: Office licenses required	Number of Views: 10
Idea: We need new computer devices	Number of Views: 5
Idea: Go Green Greenwich!	Number of Views: 4
Idea: Study after school	Number of Views: 3
Idea: Business Staff Meeting	Number of Views: 1
Latest Ideas	
Idea: Pick up litter day!	Number of Views: 1
Idea: Study after school	Number of Views: 3
Idea: Go Green Greenwich!	Number of Views: 4
Idea: Business Staff Meeting	Number of Views: 1
Idea: Office licenses required	Number of Views: 10
Popular Ideas	
Idea: We need new computer devices	Popularity: 15
Idea: Office licenses required	Popularity: 12
Idea: Business Staff Meeting	Popularity: 5
Idea: Pick up litter day!	Popularity: 0
Idea: Go Green Greenwich!	Popularity: 0
Latest Comments	
Idea: Office licenses required	User: quarky
Comment: This is great!	
Idea: Office licenses required	User: quarky
Comment: Excellent idea.	
Idea: We need new computer devices	User: Abdul
Comment: test!	
Idea: Buy pads for new staff	User: test
Comment: xxxxx	
Idea: We need new computer devices	User: test
Comment: new comment	

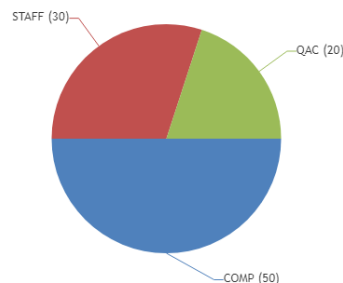
In this page, users can see the most popular and most viewed ideas according to the algorithm, and users can see how many times they have been viewed. Users can also see the latest ideas and comments.

Main page. Created by Dong Wang

Number of ideas made by each Department



Percentage of ideas by each Department



This is a real-time data visualization icon for managers. Managers can use these icons to understand various information on the web page, such as gender, ideas, and so on.

Report Page. Created by Manoel Sousa

UNIVERSITY of GREENWICH

Idea Forum

Log out

Personal page Mainpage Ideas

Title: xxxx

Deadline: xx/xx/xx

Copyright:XXX

Content:XXX

Title:

Concrete idea:

Topic:

Business Events Upload file

Submit anonymously:

☐ Yes ☐ No

Show terms

☐ Agree to all the above terms

Submit

When users want to post an idea, they go back to the web page by clicking a button. They are asked to fill in the content shown in the picture. At the same time they can choose whether to send anonymously.

Add Ideas Page. Created by Dong Wang

UNIVERSITY of GREENWICH

Personal Information

Log out

Personal page Mainpage Ideas

Name: John Smith

Email: johnsmith@gre.ac.uk

Department: 1

Reset Password


Topic	Modify
xxx	Modify
xxx	Modify

NO.	Comment
1	xxxxxxxxxxxx
2	xxxxxxxxxx

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Contact: 020573485783

Personal Page. Created by Dong Wang

 Idea Forum [Logout](#)

[Personal page](#) [Mainpage](#) [Ideas](#)

Category

Add Category

milik ▼


Delete Category

Copyright:XXX
Contant:XXX

Managers can publish or delete topics on this page.

Add Category Page. Created by Dong Wang.

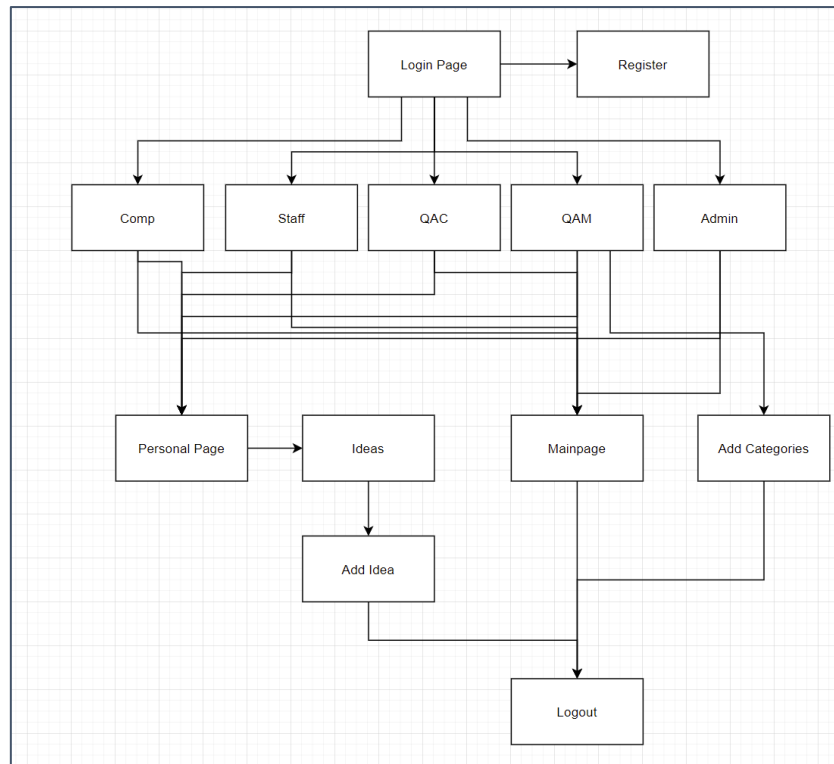
New Comment on your Idea [Inbox x](#)

 **compteam@uk8.fcomet.com**
to me ▼

There is a new comment on your idea

[↩ Reply](#) [➡ Forward](#)

Email Notification. Created by Manoel Sousa



UML Navigation Structure. Created by Mohammed



Figure Use case Function Structure. Created by Mohammed

5 Information Architecture

The role-based login system that leads you to different URL's depending on the department you are in.

```

if($result->num_rows==1 && $_SESSION['role']=="1"){
    header("location:/pages/comp.html.php");
}
else if($result->num_rows==1 && $_SESSION['role']=="2"){
    header("location:/pages/acad.html.php");
    //header("location:/pages/Mainpage.html.php");
}
else if($result->num_rows==1 && $_SESSION['role']=="3"){
    header("location:/pages/acco.html.php");
}
else if($result->num_rows==1 && $_SESSION['role']=="4"){
    header("location:/pages/envt.html.php");
}
else if($result->num_rows==1 && $_SESSION['role']=="5"){
    header("location:/pages/law.html.php");
}
else{
    $msg = "your Username, Password or Department is incorrect. Please try again!";
}

```

The page you are attempting to enter will first check if your role allows you to access this section.

```

<?php
session_start();

if( $_SESSION['role']!="4"){
    header("location:ideas.html.php");
}
?>

```

Manage Categories:

```

if(isset($_POST['addCategory'])) {
    $topic_name = $_POST['topiccat'];
    $userID = 0;

    $sql = "SELECT Employee_Id FROM employee WHERE employee_Email = '". $username . "'";
    $result = mysqli_query($conn, $sql);
    $resultcheck = mysqli_num_rows($result);

    if ($resultcheck > 0) {
        foreach($result as $row)
        {
            $userID = $row['Employee_Id'];
        }
    }

    $sql = "INSERT INTO topic (Topic_Name, Topic_Employee)
    VALUES ('". $topic_name . "', '". $userID . "')";

    echo "got here 5";

    if ($conn->query($sql) === TRUE) {
        $msg = "New category added successfully";
    } else {
        $msg = "Error: " . $sql . "<br>" . $conn->error;
    }

    echo $msg;
}

if(isset($_POST['deleteCategory'])) {
    $depOption = $_POST['depOption'];

    $sql = "DELETE FROM topic WHERE Topic_Name = '". $depOption . "'";

    if ($conn->query($sql) === TRUE) {
        $msg = "Record deleted successfully";
    } else {
        $msg = "Error deleting record: " . $conn->error;
    }
}

```

This updates the database to add or delete categories.

Add Idea:

```

$sql = "INSERT INTO idea SET
Idea_Employee = '". $employeeid . "',
Idea_Department = '". $usertype . "',
Idea_Title = '". $title . "',
Idea_ThumbsUP_Number = '0',
Idea_ThumbsDOWN_Number = '0',
Idea_content = '". $content . "',
Idea_Topic = '". $topic . "'";
$result = mysqli_query($conn, $sql);
$resultcheck = mysqli_num_rows($result);
echo '<script>alert("Thank you for submitting your idea")</script>';
}

```

Inserts the data the user has inputted and sets the thumbs up and thumbs down counter to 0. after submitting an idea an alert will pop up to inform the user that the idea has been submitted.

Pagination:

```
$sql = "SELECT employee.Employee_Name, idea.Idea_content, idea.Idea_Title , idea.Idea_ThumbsUP_Number, idea.Idea_ThumbsDOWN_Number, idea.Idea_Time, department.Department_Name,employee.BLOCK
FROM ((ideas
INNER JOIN employee ON Idea_Employee = employee.Employee_Id) INNER JOIN department ON Idea_Department = department.Department_Id)
WHERE Department_Name = 'QA' AND BLOCK = '1'
LIMIT 0,5";
$result = mysqli_query($conn,$sql);
$resultcheck = mysqli_num_rows($result);
```

Selects the idea details and fetches the ideas 5 at a time so they can be separated to 5 per page.

Data Validation:

```
<div class="form-group">
  <label class="font-weight">Title: </label>
  <input name="addtitle" class="form-control" required>
</div>
<div class="form-group">
  <label class="font-weight">Concrete idea: </label>
  <textarea name="addcontent" class="form-control" rows="3" required></textarea>
```

Setting the form attributes to required means the user must complete these sections of the form. Therefore, blank data is not added to the database.

Email:

```
<?php
$msg = "First line of text\nSecond line of text";

// use wordwrap() if lines are longer than 70 characters
$msg = wordwrap($msg,70);

// send email
mail("manoelhenriquees@gmail.com","My subject",$msg);
echo "Welcome to our ideas webpage";
?>
```

Sends an email to the user when registered using the PHPMailer functions.

6 Presentation and Product Evaluation

6.1 Presentation Overview

The team presented the final product using Microsoft PowerPoint as it is has an easy to use interface and easy accessibility for team collaboration. It has been used by many professionals for giving powerful presentation in the past and therefore it was chosen as the main software for showcasing the system. The presentation was presented to the client at a non-technical level

showcasing the user interface and usability of the system, as well as important features that the application has to offer. The presentation was presented approximately 20 minutes to the clients.

6.1.1 Presentation Link

https://uogcloud-my.sharepoint.com/:p/g/personal/dw7852v_gre_ac_uk/EVBYK9kQ9AFAtoU4FfvUAT8BydFkDJDxkGd7V05kDa6kkA?e=NyJ0VH (Created by Dong Wang).

6.2 Presentation Minutes

Developer	Topic	Time (approximate)
Dong Wang	User Interface Design (UI)	4 Minutes
Mohammed	Usability (UX)	4 Minutes
Manoel	Security	4 Minutes
James	Maintainability	4 Minutes
Jan	Real-Time Statistics	4 Minutes

6.3 Screencast

After a live presentation showcasing the system to the clients, a screencast was created showing the technical aspect of the project. The developers within the group from the frontend and backend developers, scrum master and code tester demonstrated their contribution to the project. It showcased the complex coding behind the system, the Scrum process and test plan of the project.

6.3.1 Screencast Link

<https://web.microsoftstream.com/video/46b04d32-9484-4d61-bf08-b2c5bf9b4acc> (part 1)

<https://web.microsoftstream.com/video/51c5e87f-4ca0-4b56-b189-71e4e7474438> (part 2)

7 Code Testing

7.1 Test plan

7.1.1 Overview

Testing was done during the entire development of system. This ensures the functionalities of the system were working correctly and helped notify the backend developers when a functionality does not work. When the actual result did not meet the expected results, it was revalidated until the actual result meets the expectation of the stakeholders. The testing was done manually by the assigned Test Lead/Code Tester using a simple, yet powerful test plan for great quality assurance of the system.

Project Name	University of Greenwich Ideas
Module Name	Register, Login, Department Page
Created by	Jan Jubilado
Creation Date	02/02/2021
Review By	Test Lead/Code Tester
Review Date	31/03/2021

Test ID	Test Scenario Description	Test Steps	Expected Results	Actual Result	Pass/Fail
01	Load the website via browser.	1. Open Google Chrome 2. Type the URL 'http://comp1640team6.com/pages/login.html.php' 3. Press enter to load page	The website should load successfully with the login page first.	The website loads the login page successfully without any issues.	Pass
02	Verify the registration functionality by entering correct values in every field.	1. Enter full name 2. Enter email address 3. Enter password 4. Enter password again 5. Enter gender 6. Enter department	The website should create the account and open the department page of the user.	After the user registered with his/her personal information and pressed the 'register' button, the page remains in the register page. However, the account has been successfully created.	Pass
03	Verify the registration functionality by entering no values in every field.	1. Leave name blank 2. Leave email blank 3. Leave password blank 4. Leave password blank	The website should ask the user to enter a value on each text field.	The name section pops-up a text 'please fill this form'. After entering a value in the name. The email section then pops-up a text again 'please fill this form'. This carries on until all the fields are filled.	Pass
04	Verify the login functionality of a valid user from the 'COMP' department	1. Enter 'COMP' department 2. Enter valid username 3. Enter valid password	Login takes you to the department homepage.	After successfully logging in with the correct account for the department, the page takes you to the user's ideas page.	Pass
05	Verify the login functionality of a valid user from the 'STAFF' department.	1. Enter 'STAFF' department 2. Enter valid username 3. Enter valid password	Login takes you to the department homepage.	After successfully logging in with the correct account for the department, the page takes you to the user's ideas page.	Pass
06	Verify the login functionality of a valid user from the 'QAC' department.	1. Enter 'QAC' department 2. Enter valid username 3. Enter valid password	Login takes you to the department homepage.	After successfully logging in with the correct account for the department, the page takes you to the user's ideas page.	Pass
	Verify the login functionality of a valid user from the 'QAM' department.	1. Enter 'QAM' department 2. Enter valid username 3. Enter valid password	Login takes you to the department homepage.	After successfully logging in with the correct account for the department, the page takes you to the user's ideas page.	Pass
	Verify the login functionality of valid	Enter 'ADMIN' department 2. Enter valid username	Login takes you to the department homepage.	After successfully logging in with the correct account for the department, the	Pass

	user from 'ADMIN' department.	3. Enter valid password		page takes you to the user's ideas page.	
07	Verify the login functionality of a user using an invalid department, valid username and password.	1. Enter invalid department 2. Enter valid username 3. Enter valid password	Remain in the login page and display 'incorrect login'.	After entering the correct username and password with the wrong department, the page remains in the login page with a 'your username, password or department is incorrect. Please try again!'.	Pass
08	Verify the password entry of the login page is hidden.	1. Load login page 2. Enter random characters in the password field	The password is hidden when characters are entered.	After entering a username and password field with random characters, the password section is not hidden.	Fail
09	Verify if all values need to be entered before clicking the submit button.	1. Leave the radio button for the department section blank. 2. Enter valid username 3. Enter valid password	Remain in the login page and display 'choose your department' underneath the radio button.	After entering a valid username and password, while leaving the department blank, the page remains in the login page with the message 'please select one of these options.'	Pass
10	Verify if the 'logout' button works.	1. Login with a valid account 2. Press the 'logout' button,	The 'logout' button should take the user to the login page.	After pressing the 'logout' button the user gets directed to the 'login' page where they will need to login again in order to use the system.	Pass
11	Verify if the 'reset password' works in the 'personal page'.	1. Login with a valid account. 2. Press the 'personal page' 3. Press 'Reset Password' 4. Enter new password. 5. Press 'logout' 6. Login with new password	The 'reset password' page should allow the user to enter a new password and login with the new password.	After entering a new password in the 'reset page' the user was able to login with the new password after logging out.	Pass
12	Verify if the 'add categories' button works in the manager page specifically for 'QAM' department	1. Login with a valid account. 2. Press the 'manager' tab 3. Press 'manage categories' 4. Add text within the text field 5. Press 'add category' button	The 'add category' button should allow the 'QAM' user to add a new category and display it in the 'add idea' page for users.	After pressing 'add category' the new category is available in the 'add ideas' page for when users would to create a new post for their department.	Pass
13	Verify if the 'delete categories' button works in the manager page specifically for 'QAM' department	1. Press 'manage categories' 2. Select drop box of categories 3. Press 'delete category'	The 'delete category' button should have deleted the selected data.	After pressing the 'delete category' button works and has deleted the selected data from the list.	Pass
14	Verify if users can create a new idea post as a COMP/STAFF user.	1. Press the 'ideas' page. 2. Press 'add idea' button 3. Add title, idea, topic, upload file and agree to terms. 4. Press 'submit' button.	The page should allow the user to submit a new idea filling all the sections and display it in the 'ideas page' for all users to view.	The page works and allows the user to submit a new idea by filling in all the sections. It then displays it in the 'ideas page' for all users to view the added idea for users to leave comment/report.	Pass
15	Verify if the 'add idea' page needs all section to be filled.	1. Press the 'ideas' page. 2. Press 'add idea' button. 3. Leave blank all sections. 4. Press 'submit' button.	Each section will prompt 'please fill this form' until all sections have valid text added.	The test works and each section have validation to ensure correct data is added before submission.	Pass
16	Verify if the 'like' button works within the 'ideas page'.	1. Login with a valid account. 2. Press the 'idea' page. 3. Press 'like' on a department's 'idea' page.	The 'like' button should turn green and add another count towards the 'like' button.	The like button is clicked but the number does not go up and all of the ideas are clicked simultaneously. The 'like' buttons works when pressed but does not turn green, instead it turns red. It also doesn't add +1 to the like counts.	Fail
17	Verify if the 'dislike' button works within the 'dislike page'.	1. Login with a valid account. 2. Press the 'idea' page. 3. Press 'dislike' on a department's 'idea' page.	The 'dislike' button should turn red and add another count towards the 'dislike' button.	The dislike button is clicked but the number does not go down and all of the ideas are clicked simultaneously. The 'dislike' button works when pressed but does not add +1 to the dislike button.	Fail
18	Verify if the 'Block' button works within the 'Manager Page'.	1. Login with a valid account. 2. Press the 'Manager' tab. 3. Select a user 3. Press 'block'	The user that was blocked should not be allowed to create a new Idea	Even though the user is blocked on the database it is still allowed to create ideas.	Fail
19	Verify if the 'UnBlock' button works within the 'Manager Page'.	1. Login with a valid account. 2. Press the 'Manager' tab. 3. Select a user 3. Press 'Unblock'	The user that was unblocked should be allowed to create a new Idea	The user is available to create a new Idea	Pass
20	Verify if the 'Download CSV' button works within the 'Manager Page'.	1. Login with a valid account. 2. Press the 'Manager' tab. 3. Press 'Download CSV'	The user should download a CSV file.	A CSV file is downloaded to the computer of the user	Pass

8 Conclusion

In conclusion, the team managed to work together using the Agile Scrum Framework to successfully meet the deadline for the *University of Greenwich Ideas* web-application. The team was able to form a team that consist of a database designer, frontend designer, backend designer and code tester, as well as a second role for Scrum master and Product Owner. The scrum master managed to organize weekly team meetings for the group discussing tasks that were accomplished and setting new tasks for the upcoming week. After weeks of discussion the team successfully presented the final product to the clients via live presentation.

The team contributed their part for the group report without any problems with designing the frontend of the user interface, which was created during the first week of the scrum meeting, giving enough time for the backend developers to work on. The database design was also created during the early phase of the project so the backend developers can use it to complete the functionalities of the website for storing user accounts and ideas. While the technical aspect of the project was done by the group, the Scrum master in charge was busy documenting the entire process from the daily scrum meetings, user stories and burndown chart. The most difficult part of the process was done by the backend developers in charge of making the functionalities to work. The backend developers followed the product backlog for meeting the requirements according to the priority list. This is so most of the high-level requirements are met before the deadline. They used sprints to document the requirements that needed work and requirements that were already done. Lastly, the code tester created a test log to test out each functionality of the website to ensure they are working correctly, if one of the functionalities fails, the tester reports back to the backend developer to re-evaluate the code.

The final product could have been more remarkable with better usability and user interface design if the developers had more time to collaborate via face-to-face communication and within a computer lab. It was difficult to share ideas via Microsoft Teams, especially the backend development as the team could not code together in one room and speak together comfortably.

9 References

1. Khuong, T. T., Nhi, P. Y., Nhan, D. T., & Thuan, N. H. (2018). Colour, trust, satisfaction, and E-loyalty: the Vietnamese experience of website design. In *Proceedings of the 2nd International Conference on Machine Learning and Soft Computing* (pp. 140-144).
2. TECNICÓPIAS (2017). É assim que as pessoas daltônicas veem o mundo das cores Available at: <https://www.tecnicopias.com.br/blog/interna/119-e-assim-que-as-pessoas-daltonicas-veem-o-mundo-das-cores> (Accessed: 10 March).

10Appendices

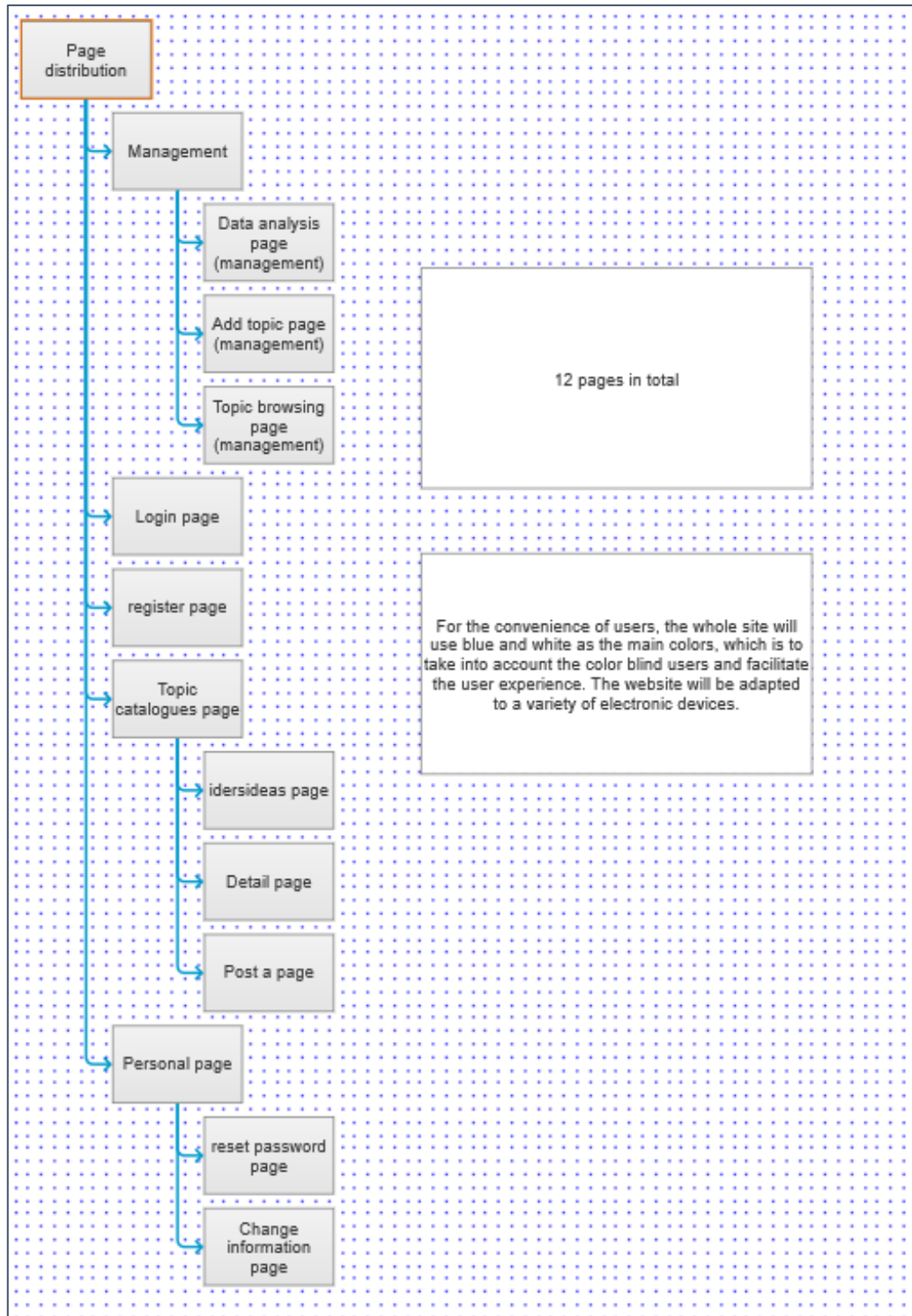


Figure 1. Wireframe created by Dong Wang.



Figure 2. Wireframe created by Dong Wang.

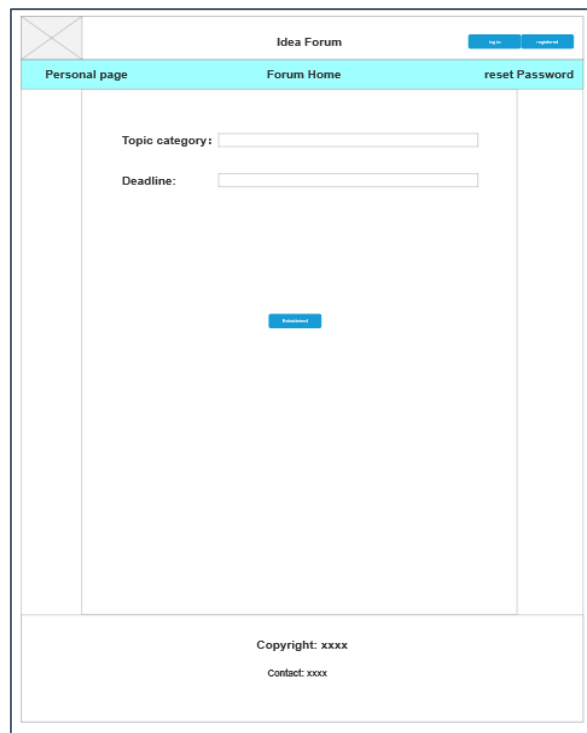


Figure 3. Wireframe created by Dong Wang.

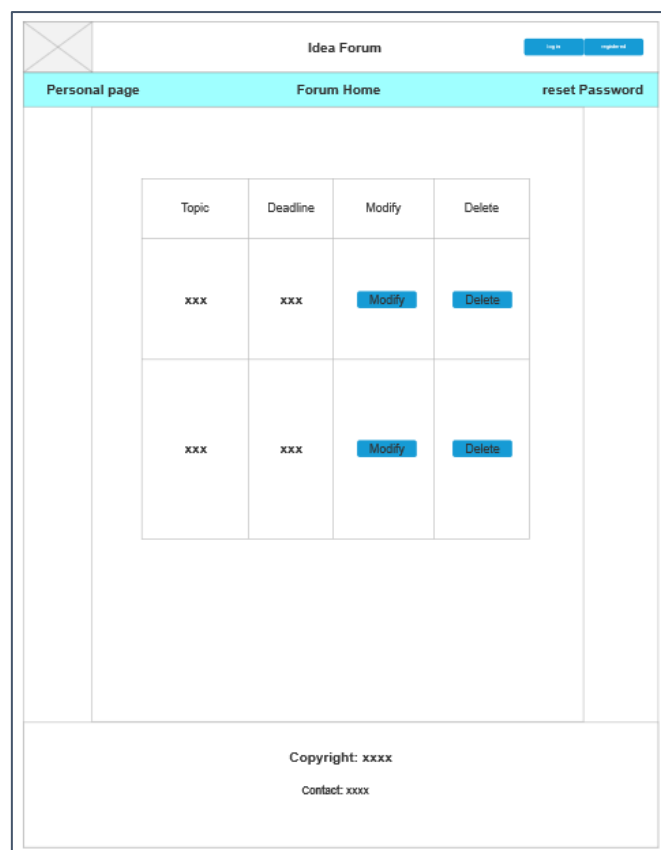


Figure 4. Wireframe created by Dong Wang.

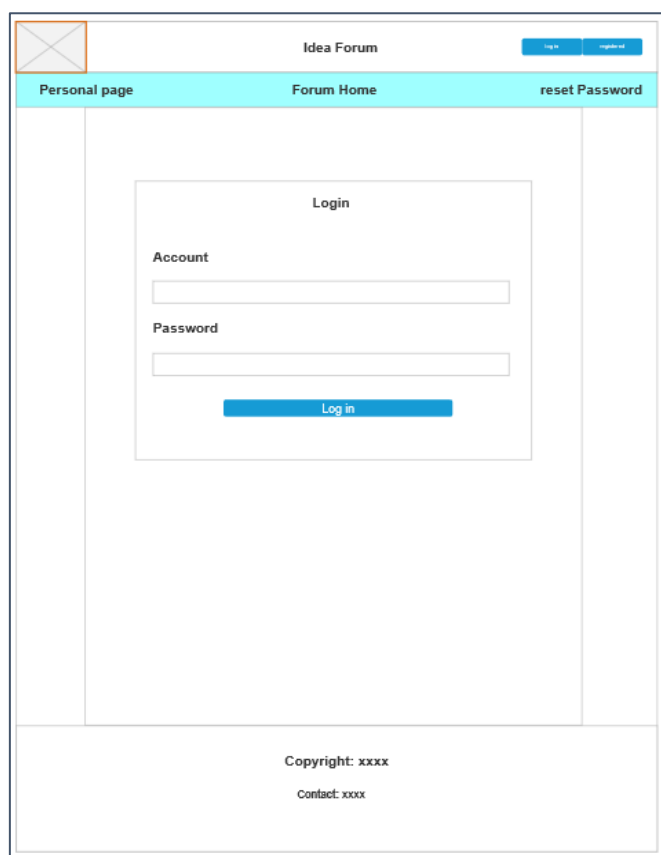


Figure 5. Wireframe created by Dong Wang.

The wireframe shows a web page titled 'Idea Forum' with a navigation bar containing 'Personal page', 'Forum Home', and 'reset Password'. The main content area is titled 'Register' and contains the following fields and elements:

- Account name:
- Password:
- re-Password:
- Email:
- Photo: (with an 'Upload Photo' button)
- Sex: ☐ Male ☐ Female
- Details:
- Department:
- Value: (with a placeholder text: 'The default is 1 and cannot be changed')
- A blue 'register' button at the bottom of the form.

The footer contains the text: Copyright: xxxx and Contact: xxxx.

Figure 6. Wireframe created by Dong Wang.

The wireframe shows a web page titled 'Idea Forum' with a navigation bar containing 'Personal page', 'Forum Home', and 'reset Password'. The main content area displays a list of forum topics, each with the following information:

- Topic category: xxxx
- Comment: 10
- Department: xxxx
- Deadline: xxx/xx/xx

There are seven such topic cards stacked vertically. The footer contains the text: Copyright: xxxx and Contact: xxxx.

Figure 7. Wireframe created by Dong Wang.

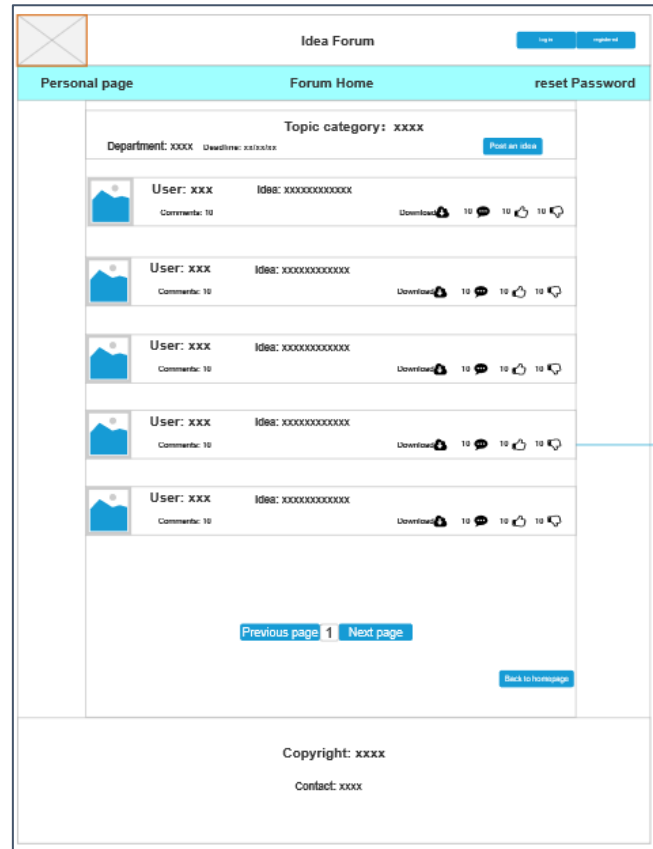


Figure 8. Page Wireframe created by Dong Wang.

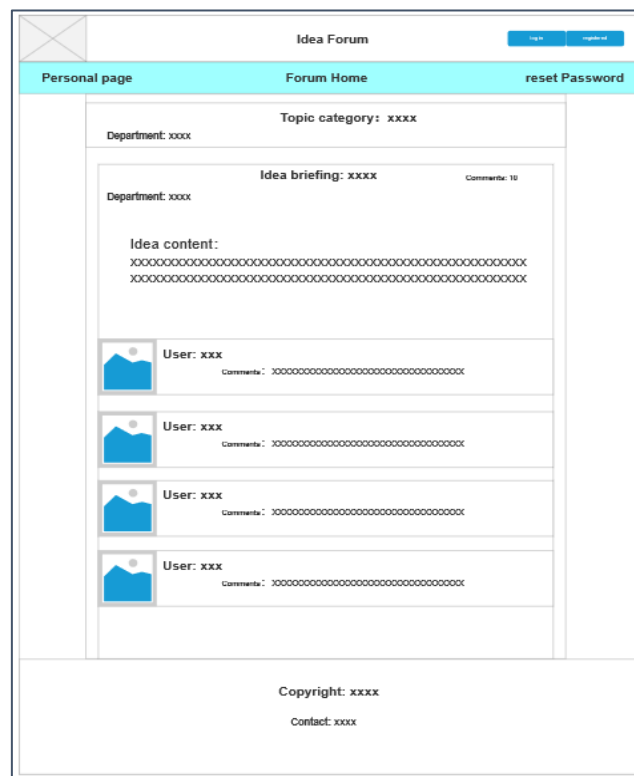


Figure 9. Page Wireframe created by Dong Wang.

Figure 9. Page Wireframe created by Dong

Idea Forum

login register

Personal page Forum Home reset Password

Topic: Deadline: xx/xx/xx

Title:

Specific ideas:

Submit documents:

Submit anonymously: ☐ Yes ☐ No

Show rules

- XXXXXX
- XXXXXX
- XXXXXX
- XXXXXX
- XXXXXX
- XXXXXX

☐ Agree to all the above terms

Submit

Figure 10. Page Wireframe created by Dong Wang.

Idea Forum

login register

Personal page Forum Home reset Password

Username: xxx
 Email: xxx
 Department: xxx

Change Password Change Information

Topic	Modify
XXX	Modify
XXX	Modify

NO.	Comment
1	XXXXXXXX
2	XXXXXXXXXX

Copyright: xxxx

Contact: xxxx

Figure 11. Wireframe created by Dong Wang.

The wireframe shows a web application titled "Idea Forum" with a navigation bar containing "Personal page", "Forum Home", and "reset Password". The main content area is titled "change the password" and contains two input fields labeled "Password" and "re-Password", followed by an "Ok" button. The footer includes "Copyright: xxxx" and "Contact: xxxx".

Figure 12. Wireframe created by Dong Wang.

The wireframe shows a web application titled "Idea Forum" with a navigation bar containing "Personal page", "Forum Home", and "reset Password". The main content area is titled "Change the information" and contains five input fields: "Account name", "Email", "Photo" (with a "Upload photo" button), "Details", and "Department" (a dropdown menu). Below these fields is an "Ok" button. The footer includes "Copyright: xxxx" and "Contact: xxxx".

Figure 13. Wireframe created by Dong Wang.