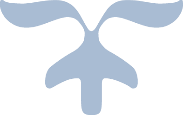


ENTERPRISE WEB SOFTWARE DEVELOPMENT

COMP1640



**TEAM SMARTSCHOOL**

GIT-HUB REPOSITORY:

<https://github.com/SmartSchool-Greenwich/SmartSchool.git>

GOOGLE DRIVE REPOSITORY:

[https://drive.google.com/drive/folder](https://drive.google.com/drive/folders/0B40vjbUs9BsoYTFpWF9MandLNkU) [s/0B40vjbUs9BsoYTFpWF9MandLNkU](https://drive.google.com/drive/folders/0B40vjbUs9BsoYTFpWF9MandLNkU)

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# **Table of Contents**

1. [Database 3](#_bookmark0)
   1. [Security 3](#_bookmark1)
   2. [Appropriate Data Types 3](#_bookmark2)
   3. [Role Implementation 4](#_bookmark3)
   4. [Referential Integrity 4](#_bookmark4)
      1. [Validation 4](#_bookmark5)
   5. [Design Documentation 5](#_bookmark6)
2. [Site Design 6](#_bookmark7)
   1. [Usability Heuristics 6](#_bookmark8)
      1. [Nielsen’s heuristics, (Jakob Nielsen 1995) 6](#_bookmark9)
   2. [Usability 8](#_bookmark10)
   3. [Accessibility 8](#_bookmark11)
      1. [Colour factor 8](#_bookmark12)
      2. [Colour scheme for colour blind people 9](#_bookmark13)
   4. [House Style Consistency 10](#_bookmark14)
      1. [Maintainability 10](#_bookmark15)
      2. [Reusability 10](#_bookmark16)
   5. [Responsive Design 10](#_bookmark17)
      1. [Use of Bootstrap 10](#_bookmark18)
   6. [Other technologies utilised 11](#_bookmark19)
   7. [Other aspect considered 13](#_bookmark20)
   8. [Minimal use of images 13](#_bookmark21)
   9. [Deferral of Script 13](#_bookmark22)
   10. [Use of CDN servers 13](#_bookmark23)
   11. [Keeping it basic 14](#_bookmark24)
   12. [Information Architecture 14](#_bookmark25)
       1. [Mobile Design 15](#_bookmark26)
       2. [Desktop Design 16](#_bookmark27)
3. [Functionality 19](#_bookmark28)
   1. [Role based security 19](#_bookmark29)
   2. [Submission of Contributions 19](#_bookmark30)
   3. [Email Notification 20](#_bookmark31)
   4. [Summary and Exception Reports 20](#_bookmark32)
   5. [UML diagrams 21](#_bookmark33)
      1. [Use case 21](#_bookmark34)
      2. [Class Diagram 22](#_bookmark35)

[3. 6 Website Analytics 23](#_bookmark36)

[3. 6 .1 Active Users in real time 23](#_bookmark37)

[3. 6 .2 Weekly Sessions Report 23](#_bookmark38)

[3. 6 .3 Yearly Report 24](#_bookmark39)

[3. 6 .4 Top Browsers Report 24](#_bookmark40)

[3. 6 .5 Traffic from Countries 24](#_bookmark41)

[3. 6 .6 Most Views Pages 25](#_bookmark42)

[3. 6 . 7 New and Old Users 25](#_bookmark43)

* 1. [Further Developments 26](#_bookmark44)
  2. [Code Snippets 26](#_bookmark45)

1. [Testing 0](#_bookmark46)
   1. [Test plan 0](#_bookmark47)
   2. [Scope 0](#_bookmark48)
      1. [Test Log 0](#_bookmark49)
   3. [Sufficient Data to Fully Test 2](#_bookmark50)
2. [Agile Methods Followed 3](#_bookmark51)
   1. [Zen hub 3](#_bookmark52)
   2. [Development tools and workflow 3](#_bookmark53)
   3. [Sprints 3](#_bookmark54)
   4. [Burndown Charts 5](#_bookmark55)
   5. [Minutes of Meetings 9](#_bookmark56)
   6. [User Stories 13](#_bookmark57)
3. [Screencast and Presentation 14](#_bookmark58)
   1. [Presentation 14](#_bookmark59)
   2. [Screencast 14](#_bookmark60)
4. [Conclusion 14](#_bookmark61)
5. [References 14](#_bookmark62)

# Database

SQLite was the database technology of choice in the development of the Journal Management System (MMS), It stands out for requiring no separate server, making it perfect for rapid development and small to medium-sized applications. Its file-based nature ensures smooth setup and low maintenance, offering enough functionality for a wide range of projects. While it's ideal for learning, development, and applications with moderate traffic, larger, high-demand projects might eventually need to upgrade to more robust database systems. A total of 7 tables are implemented in the database, necessary to ensure the desired functionality of fully supported application.

## Security

Data security is extremely important in implementing a project. For this project, the User table plays an important role in data security. The user table stores information of members and roles in the project, so data security measures have been applied. Used to avoid losing sensitive user data and information.

SQLite is a serverless database, embedded directly into the application that uses it. This means SQLite has no built-in user management system or complex authentication mechanisms. In SQLite, the responsibility for securing access to database files lies with the application developers. They need to implement their own security measures in the application code to manage who can access or modify the database. For user credential management, similar to MySQL but done at the application layer, developers can hash passwords using a secure hash algorithm before storing them in the database. This ensures that even if the database file is accessed without permission, the stored password is still protected from misuse.

## Appropriate Data Types

During the process of designing and implementing the database for the project, we used many different data types to be suitable for storing information and data in the project. We research and select the data columns and data types that best suit project-related requirements, ensuring the smoothest storage and display as well as achieving the minimum viable product. . A specific example in the project is Clouuredate and final closure. This is an attribute that needs to be stored using the datetime data type. Because here it will store the last ending date of that academic year.

## Role Implementation

Through understanding and researching the project's requirements, we know that there are a total of 5 different roles and different functions. The role will determine what functions that person can perform in the system. For Student Role, students can only post contributions. For administrators, accounts with higher roles than students can be created. Faculty is also a part to define the range of activities and functions of users and employees. For marketing coordinators, they can only view contributions belonging to the department they are managing.

## Referential Integrity

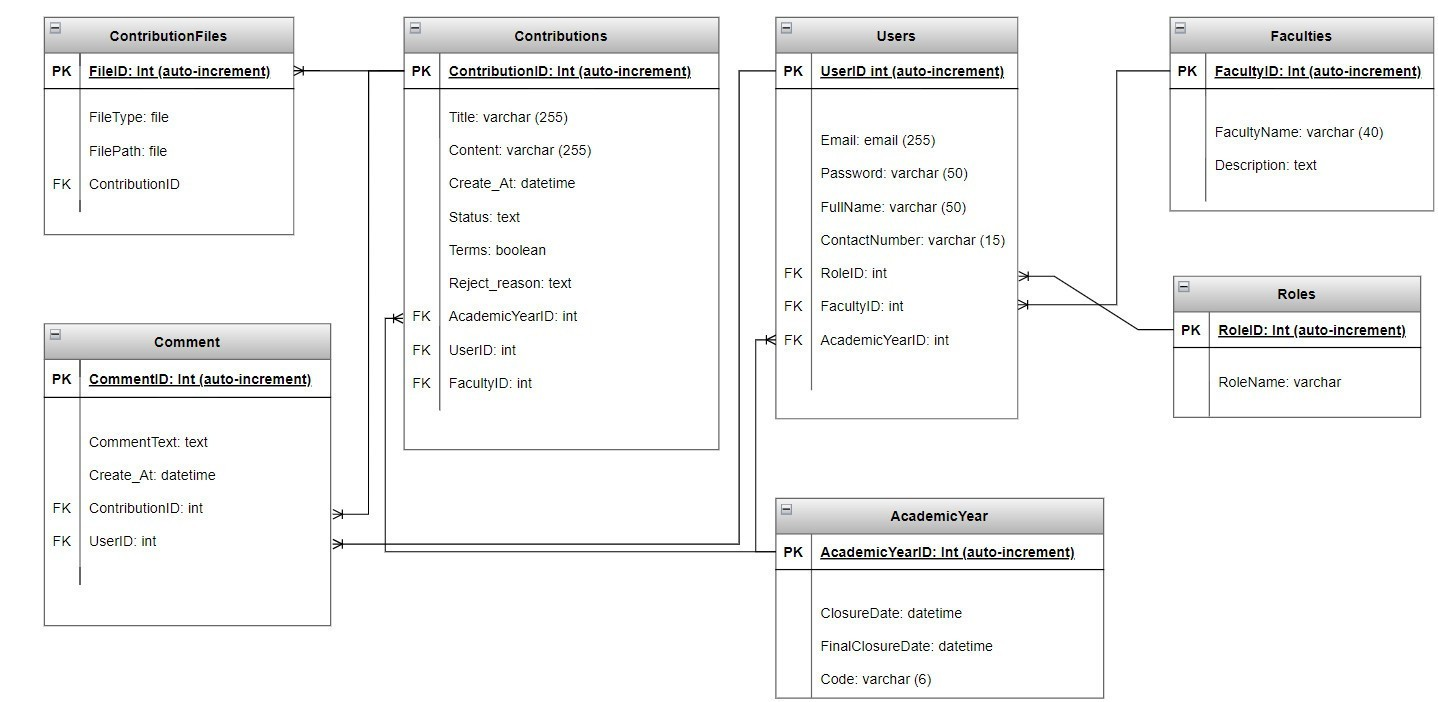
Throughout the entire process of designing and implementing a database, maintaining referential integrity is crucial. Foreign keys conceptually link tables, while primary keys uniquely identify each row, reducing the chance of entering incorrect data by ensuring only valid values are used. When inserting data, it's essential to adhere to constraints, and this can be efficiently achieved through the use of foreign keys. For instance, in the Faculty and Contributions database, a foreign key illustrates that a Faculty member can have multiple reports.

### Validation

Users can log in and access the application using their username and the username will be guaranteed to be unique to everyone for easy user identification. Upon request, administrators can create accounts for employees with positions higher than students. They may not know the email address used in advance. So, the user's email will be updated later.

## Design Documentation

An ERD was created for the magazine management system's database, which in the end supports the front-end application, in order to guarantee that all necessary features could be implemented. This is particularly true for role implementation and enabling multiple images for a contribution. There are now 7 tables in use, all of which have the proper constraints in place to enable the formation of linkages between them.



*Figure 3 – Entity Relationship Diagram for our MMS System*

# Site Design

Designing an easy-to-see, easy-to-operate interface suitable for a contribution management project such as MMS is a mandatory requirement for the project. To ensure that the Project has a suitable and user-friendly interface, our working group discussed and reviewed interfaces like the project's requirements to design and come up with an interface. suitable face. We explore the functional requirements and constraints for each user role and design how the functionality can be easily accessed and navigated for each user role. The colour and interface choices are all chosen and built by us so that the whole system has uniformity and system consistency. In designing and displaying the interface, we use HTML, CSS, JavaScript, and Bootstrap to give the website the most suitable and user-friendly interface.

## Usability Heuristics

To ensure the system meets the criteria for maximum device usability, user friendliness, ease of use and accessibility. During implementation, we always simplify the interface, layout and functional breakdown for each role. At the same time, simplicity, consistency in color and layout are always our top priorities.

### Nielsen’s heuristics, (Jakob Nielsen 1995)

Visibility of System Status

Edu Meet needs to have clear information about the user's location and status. Each page will have an appropriate title to guide the user, along with notifications to confirm actions have been successfully performed, such as pop-up notifications when user contributions are logged.

Match Between the System and the Real World

The language and terminology in Edu Meet will be simple and easy to understand, especially for users who are not native English speakers. Pages will also display elements in a logical and natural order, making it easy for users to fill in information without difficulty.

User control and automation

Users have control and automation in their work using Edu Meet. For example, they can return to the main page at any time by clicking on the Edu Meet logo, which reduces confusion and creates the best experience.

Consistency and standards

Edu Meet's interface will be consistent using a uniform design across all pages. Elements such as "upload" and "submit" buttons will always be in the same location and have the same function, making it easy for users to predict and use.

Error prevention

Edu Meet will use data testing and validation to resolve errors. For example, when you want to submit an assignment, required fields will be marked for users to know and cannot be left blank.

Recognition Rather than Recall

Users do not need to remember information between pages. The necessary information will be automatically obtained from the user without them having to re-enter it.

Functionality and efficiency in use

Navigation bars will be maintained on every page, but additional navigation bars can be displayed to give access to secondary options. This makes it easy for users to jump to the sections of Edu Meet they need.

Minimalist and aesthetic design

Edu Meet's interface will use a simple and clean design, displaying only the information necessary for users to complete tasks without causing clutter.

Helps users identify, predict, and resolve errors

Edu Meet will display clear messages and provide guidance tools to help users fix errors. For example: On submission, if the user has to agree to the terms and conditions and instead of a text popup explaining the cause, an exception error is thrown, which can cause confusion for users and thus may prevent them from using the system again.

Support and Documentation

Support and guidance will be provided in a clear and understandable manner, not as a user guide. Instructions will be displayed on the page where the user performs his task.

(Nielsen, 2024)

## Usability

The system is designed and developed in terms of Front-end, Back-end, and other modules within the website to be modern and focus on the quality and usability of the system. The design meets the essential requirements for an attractive and user-friendly interface. It is designed to be suitable for everyone, on every device, with appropriate layout and size distribution.

## Accessibility

Interaction, satisfaction, User Computer Experience (HCI) have been researched and designed by us to suit the website layout and website colours so that the website becomes modern. and easy to reach. Below we present an article about important factors that help the website reach all audiences on the website and help users complete tasks effectively.

### Colour factor

A recent research shows that purple, pink, red colours are more defusing colours. It helps users to remember the website by its different segments such as buttons, tabs, links etc. (Elliot AJ, Maier MA, 2014).

### Colour scheme for colour blind people

Colour blindness has its many kinds and some of them are Protanopia, Deuteranopes, Monochromacy. People with these nature of colour blindness have limited vision to distinguish between red, blue and yellow colour. With this, purple colour is best fit for all types of vision. Purple colour can still differentiate between different components of a web page such as the navigation bar colour, active tab colour, and different heading (Colourblindawareness, 2017). The below mentioned pictures shows the result of colours with above mentioned colour blindness (figures 5-8).

#### Normal vision result



**Normal vision** people can see the purple colour, this is MMS website navigation bar and font colour

*Figure 5 - People with normal vision*

#### DEUTERANOPIA color blind result



**DEUTERANOPIA**

**Color blind**: The colour still makes different with other colours.

*Figure 6 - DEUTERANOPIA colour blind people*

#### PROTANOPIA Color blind result



**PROTANOPIA Color**

**blind:** People with this colours blindness can see the purple colour as navy blue colour

*Figure 7 - PROTANOPIA colour blind people*

#### Monochromacy Color blind result



**Monochromacy Color blind:** People see the colour as dark grey

*Figure 8 - Monochromancy colour blind people*

## House Style Consistency

Bootstrap used in the EDU MEETING system can provide many benefits such as responsiveness, extensibility, and rapid development.

## Maintainability

Bootstrap is designed to aid in building responsive websites. For example, the website can adjust itself to fit the screen size of different devices, from desktop computers to tablets and mobile phones.

## Reusability

Bootstrap provides a default collection of CSS and JavaScript, but it also allows for customization and extension to fit a project's specific needs. Developers can edit or add other components to create a unique user interface

## Responsive Design

People using smart devices such as phones and tablets when accessing websites has become very popular. Everyone can access it anytime, anywhere. The EDU MEETING website is designed to meet everyone's needs. The use of Bootstrap to support smart devices smaller than a Desktop or Laptop.

## Use of Bootstrap

Bootstrap is a free and open-source front-end framework designed to help developers create responsive and mobile-first websites and web applications efficiently and effectively. It is one of the most popular HTML, CSS, and JS libraries in use today.

In the EDU MEETING project, Bootstrap is applied in designing the interface to be user-friendly and suitable for all devices. Below is an illustration of the use of Bootstrap in the project, image () is an example of a user using Desktop accessing the website, image () when the user accesses the website using phone.

A screenshot of a computer

Description automatically generated

*Figure 9: Desktop view of the MMS landing page*

A screenshot of a cellphone

Description automatically generated

*Figure 10: A Mobile view of the MMS landing page (right).*

## Other technologies utilised

Besides Bootstrap, the EDU MEETING Project also applies JavaScript:

JavaScript is a general-purpose programming language mainly used to create interactive websites. In EDU MEETING project, JavaScript designed to run in a web browser. Its main purpose is to add functionality to reject buttons) on a website. When the user presses the Reject button, a box will display and allow the user to enter the reason for rejection. Below is screenshot of the JavaScript in action as displayed in ()

A screenshot of a computer

Description automatically generated

*Figure 11: Terms & Condition Pop-up is triggered when user click on the link on the main window (darker window behind)*

## Other aspect considered

When developing the EDU MEETING project, security is an important issue of the project. Because the application will collect personal information of users, security needs to be enhanced to protect personal information of users. Below are some measures to improve website security.

1. Access Rights Management

Access management is an essential part of website management and security, especially for websites with many users and different functions. Access management helps ensure that each user can only access information and perform actions for which they are authorized. In the EDU MEETING project, roles are divided include (guest, student, marketing-coordinator, manager, and admin). Each role will be assigned different rights.

1. Security Sign in

Login security is an important aspect of protecting users' personal information and important data on a website. A well-secured login system helps prevent unauthorized access and protects the website from security risks. In EDU MEETING project applied encrypt passwords, and have a policy requiring passwords to be complex (a combination of upper- and lower-case letters, numbers, and special characters) and have a minimum length.

## Information Architecture

Information architecture in web development is the foundation that helps organize and structure content on a website systematically, with the aim of optimizing user experience. By classifying and arranging information logically, information architecture ensures that users can easily find, understand, and interact with content on the website.

This is no exception for the EDU MEETING platform, where one of the key success factors is a robust and thoroughly designed information architecture. This architecture performs many important functions for users, including helping them find needed information easily and guiding them in completing tasks on the website. CRUD operations - Create, Read, Update, Delete - are fundamental in using any website or application, and EDU MEETING is no exception. When performing these operations on the EDU MEETING system, the information architecture helps users perceive their current location on the website and provides guidance through options centered around them based on events. or expected response. It also assists users in navigating between different pages and finding necessary information, thereby creating an efficient workflow for the website. During the process of building the user interface design and interaction design for the EDU MEETING project, the information architecture played an important role by developing wireframes for the project prototype, illustrating how the process would be implemented website workflow.

A diagram of a company

Description automatically generated

## Mobile Design

Wireframes are utilized to draft the Information Architecture. Below is a responsive design tailored for mobile devices, focusing on the layout of the home page.

* **Mobile View – Login Page**



Users can go to the registration page when clicking here

Login page with Username and Password in filed

* **Mobile View – Home Page**

A screenshot of a web page

Description automatically generated

The navigation bar will display the menu to the user when the menu button is pressed

These contributions will be displayed when allowed by the marketing coordinator

* **iPad View - Home page**

A screenshot of a web page

Description automatically generated

The navigation bar will change and display navigation buttonsmenu button is pressed

## Desktop Design

The EDU MEETING project has many different types of users in the system, and each type of user has different functions and powers. Below is the design for each user.

* **Desktop View - Update Information Page**

A screenshot of a computer

Description automatically generated

Users can update personal information here

The user information update page will allow all types of users to update their information

**Student Dashboard View**

* **Desktop View - Enroll Code Page**

A screenshot of a computer screen

Description automatically generated

Students can enter the code here

The navigation bar will change when the user is logged in as a student

* **Desktop View – Upload Contribution Page**

A screenshot of a computer

Description automatically generated

Students can view the terms and policies, and they must check the consent box to be able to submit their contributions

These are two fields for students to upload file and upload image

Students can upload their contributions here

* **Desktop View – My Contribution Page**

A screenshot of a computer

Description automatically generated

Students can update, delete, and view contribution details

All student contributions will be displayed in the box

* **Desktop View – Contribution Details Page**

A screenshot of a computer

Description automatically generated

Students can update contribution

Students can interact with the marketing coordinator when

Students can view feedback here

**Marketing-Coordinator View**

* **Desktop View – Files in the Faculty Page**

A screenshot of a computer

Description automatically generated

Marketing-Coordinator can feedback in here

Marketing-Coordinator can view contributions in their faculty

The navigation bar will change when the user is logged in as a Marketing-Coordinator

* **Desktop View – List of Contribution Page**

A screenshot of a computer

Description automatically generated

Marketing-Coordinator can approve, reject, and view detail contribution. Beside they have the right to make that contribution public

**Manager View**

* **Desktop View – Download Contribution Page**

A screenshot of a computer

Description automatically generated

Managers can only see contributions that the marketing coordinator has approved

The manager will click on the contribution they want to download

**Admin View**

* **Desktop View – Statistical Analysis Page**

A screenshot of a computer

Description automatically generated

The charts will display the analytical data such as the number of contributions in the faculty, the number of approved contributions, etc.

# Functionality

Our project is built and developed on Django, a Python framework, along with SQLite3 as the database. The main goal of Django is to make it easier to develop complex data-driven websites. We follow the Model-Template-View (MTV) architecture, which emphasizes component reuse to ensure rapid development. This allows for flexible project implementation, with clearly defined role assignments: from database management (Model) to data flow processing (View) to user interface design (Template), our meticulous planning ensures a robust and sustainable development process that meets user expectations effectively.

## Role based security

During the development of our project, we pay special attention to ensuring the highest standards of security and data protection. Leveraging Django's strong authentication mechanism, we ensure that each user's password is treated securely. Django automatically uses industry-standard practices for password management, including hashing and salting, thus providing secure protection against unauthorized access. This approach ensures that, even in the unlikely event of a data breach, passwords remain encrypted and extremely difficult to decrypt.

Furthermore, our application incorporates a sophisticated role-based access control system, fine-tuned to effectively manage user permissions and secure sensitive information. Through our authorization functionality, we meticulously define roles and permissions for different user groups in our system, such as administrators, marketing coordinators, managers, and students. This granular access control ensures that users can only interact with the parts of the system that are relevant to their role, improving the overall security posture of our platform.

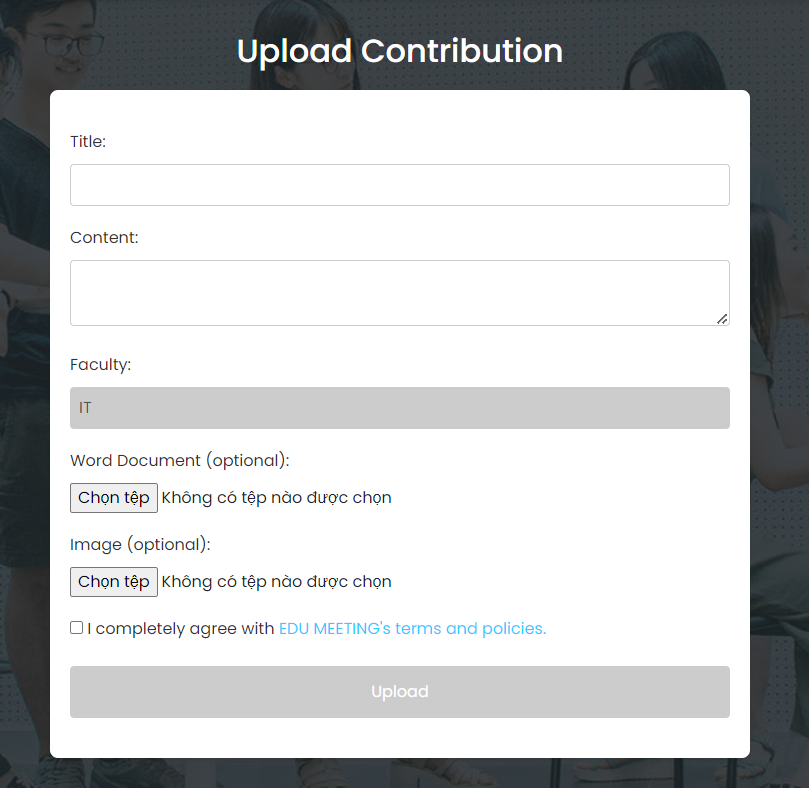
## Submission of Contributions

The Contribution function is responsible for creating, viewing, updating and manipulating user-generated content on the website. We used the POST method to ensure secure and authenticated submissions. Students have the ability to submit multiple contributions, including documents and images, to our journal management system. Each contribution is linked to their profile and academic details, such as department and year of study, providing efficiency in the review process and retrieval of essential information. Marketing coordinators have access to view student submissions in their assigned faculties. They can download submissions, review them, and send their feedback to students. Furthermore, marketing managers have the ability to monitor submissions from all departments and can download .ZIP files of their selected submissions to their devices, enhancing collaboration to improve quality of contributions.

Django's routing capabilities have allowed us to design clean and user-friendly URLs, making navigation easier for users. For example, a URL structured as /contribution/detail/3 provides direct access to the details of a particular contribution.

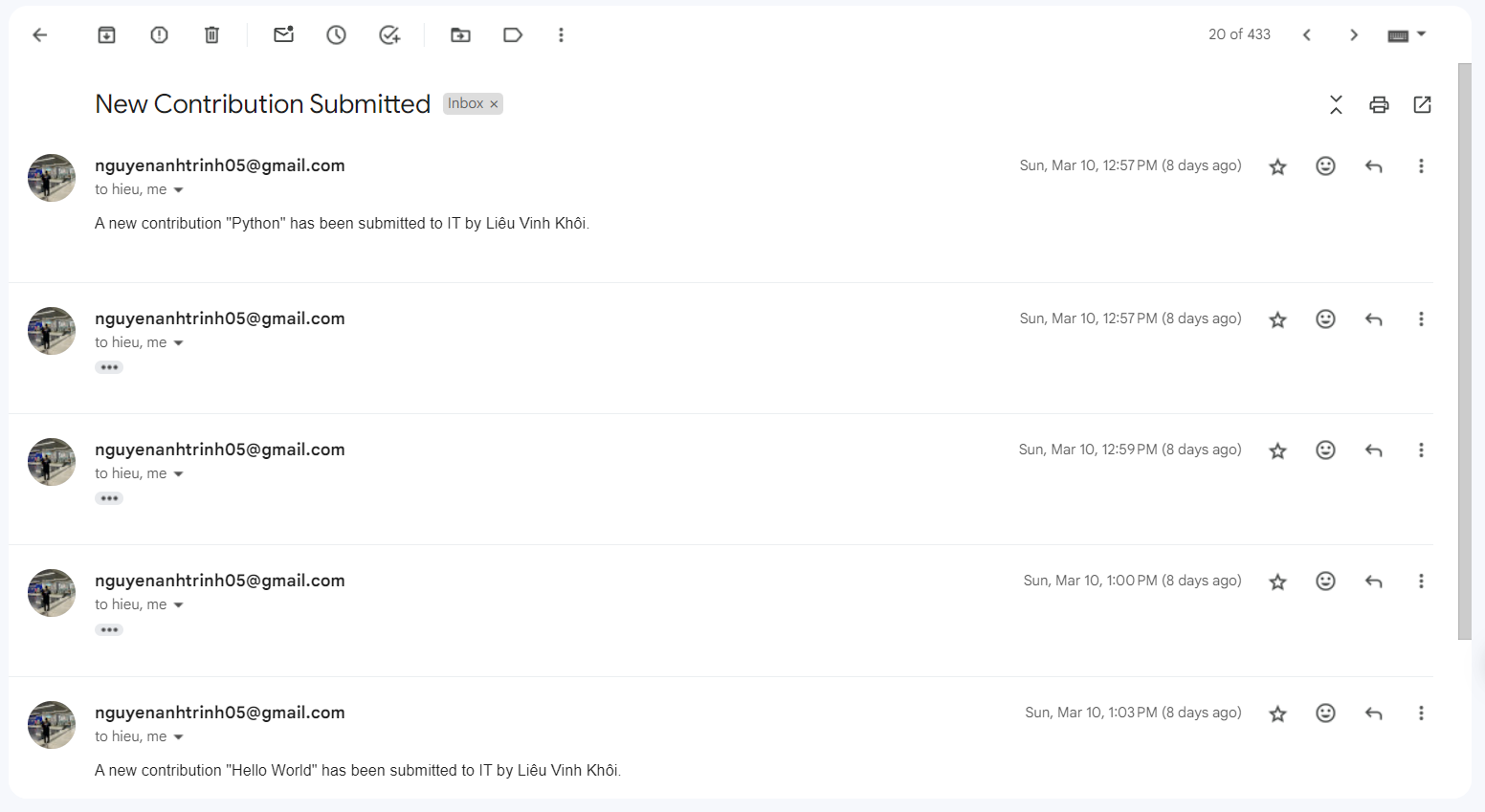
Our implementation employs Django's templating system to offer diverse views tailored to different user roles. This adaptability enables us to deliver personalized layouts and information to students, coordinators, and managers, ensuring a user experience aligned with their individual needs and responsibilities.

When a student attempts to upload a contribution, our system processes their academic year information. It first checks if the student's academic year is valid or expired. If the academic year is invalid or expired, the system prompts the student to input a code representing the desired academic year. This code, generated by administrators, manages academic years within the system. Upon inputting the code, the system verifies if the corresponding academic year is active. If it is, the system assigns this academic year to the student's information and contributions, allowing them to proceed to the contribution upload page.

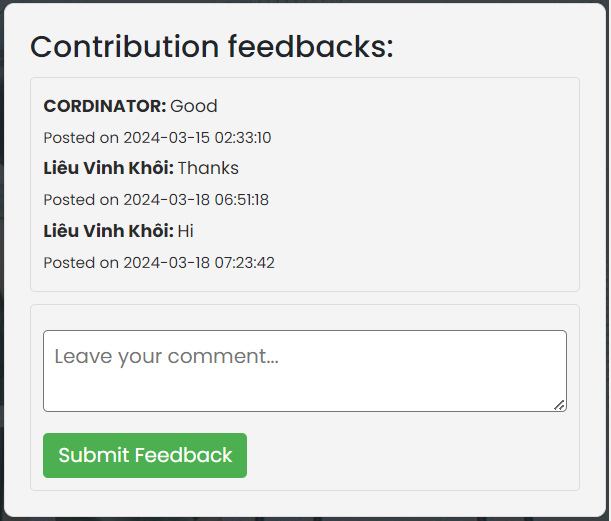


## Email Notification

Recognizing the importance of timely feedback on contributions, we have implemented an automated email notification system that is integrated into the contribution upload process. This function sends automatic emails to marketing coordinators at assigned departments. This reminder encourages them to review pending contributions and provide necessary feedback within the specified 14-day period. This proactive approach was conceived with the aim of promoting a more engaging and responsive environment within our journal management system, thereby encouraging higher feedback rates and improving quality. overall contribution amount.



To facilitate a more interactive and constructive feedback mechanism, we have also integrated a chat-like system in our platform. This feature allows marketing coordinators and students to engage in live conversations about contributions, allowing for a real-time exchange of comments and suggestions. This form of conversational feedback is instrumental in providing students with actionable insights and promoting a deeper understanding of the impact of their work and areas for improvement.

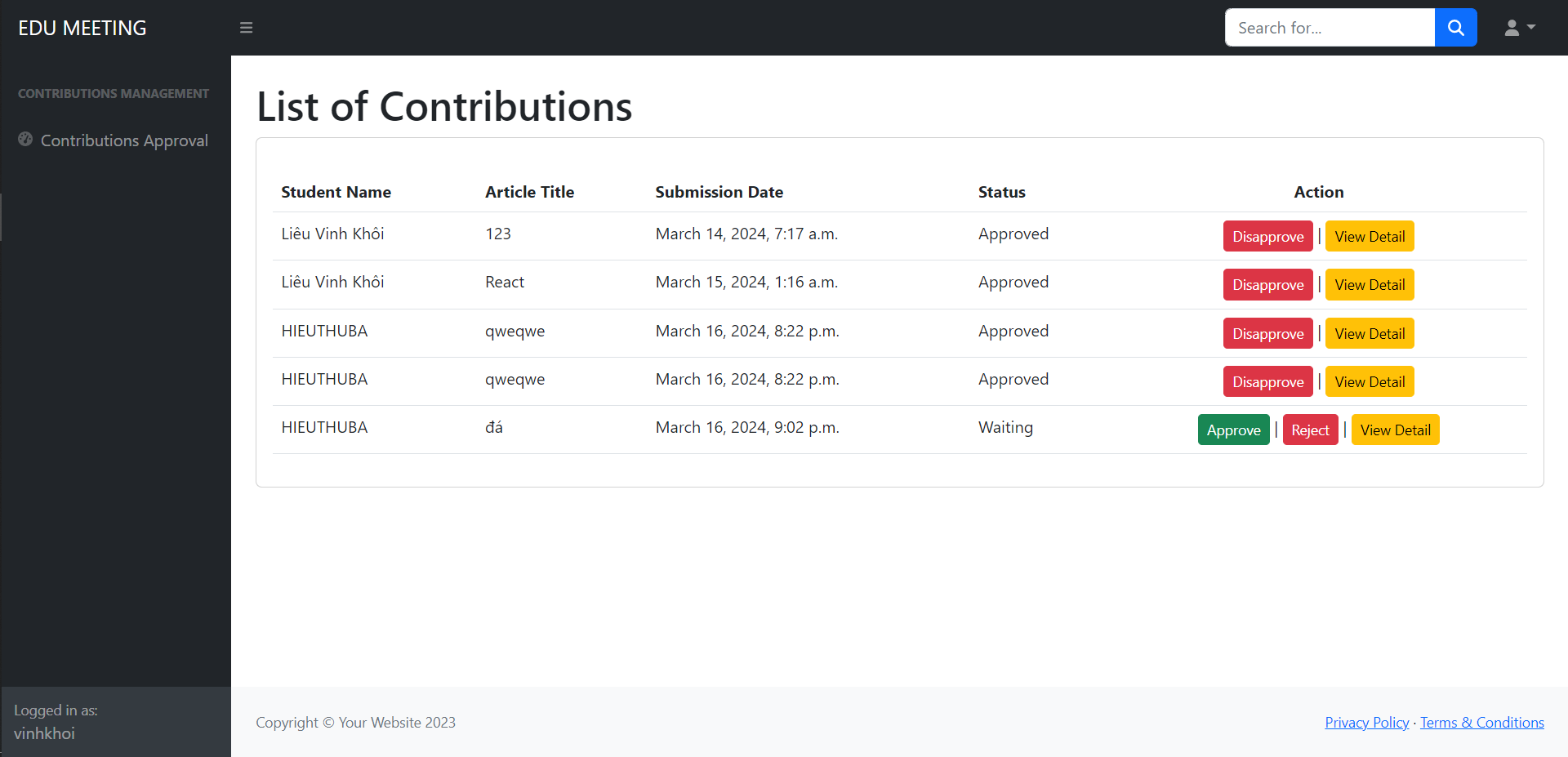


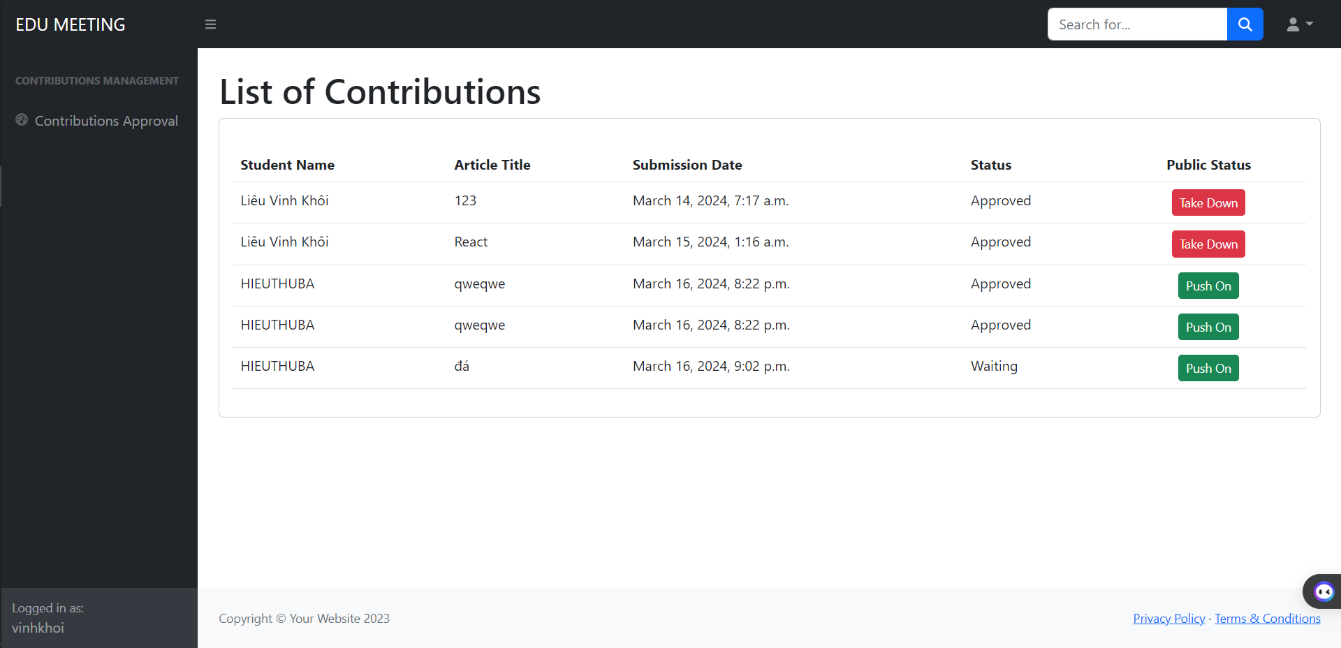
## Contribution Management

In our system, managing contributions is an important feature designed to facilitate the process of reviewing, approving, and publishing submissions. This function displays essential information such as title, content, relevant department, academic year, and current status of the contribution (e.g. pending, approved, rejected). This management interface, accessible to coordinators and marketing directors, is exposed through a Django view that presents all contributions in a structured format. This interface is not only intuitive but also displays action buttons (e.g. approve, deny, publish) according to user permissions. This design emphasizes our platform's commitment to role-based security, ensuring that users only interact with data and take actions appropriate to their role.

Marketing coordinators, responsible for the initial review and approval of contributions, are given options to approve or reject submissions directly from the management interface. In contrast, marketing directors have the additional ability to change the public visibility of contributions, reflecting their higher administrative authority.

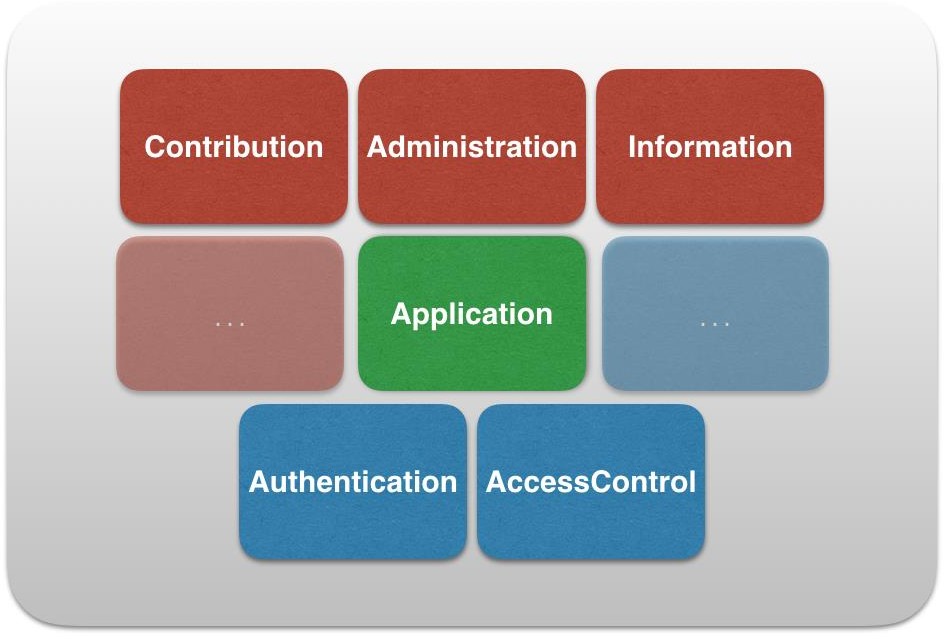
The rejection process is further improved by adding reasons when rejecting. This feature not only facilitates a more transparent and informative feedback loop, but also ensures that contributors are fully informed about the reasoning behind the decision, allowing them to refine and resubmit their work your product if needed.



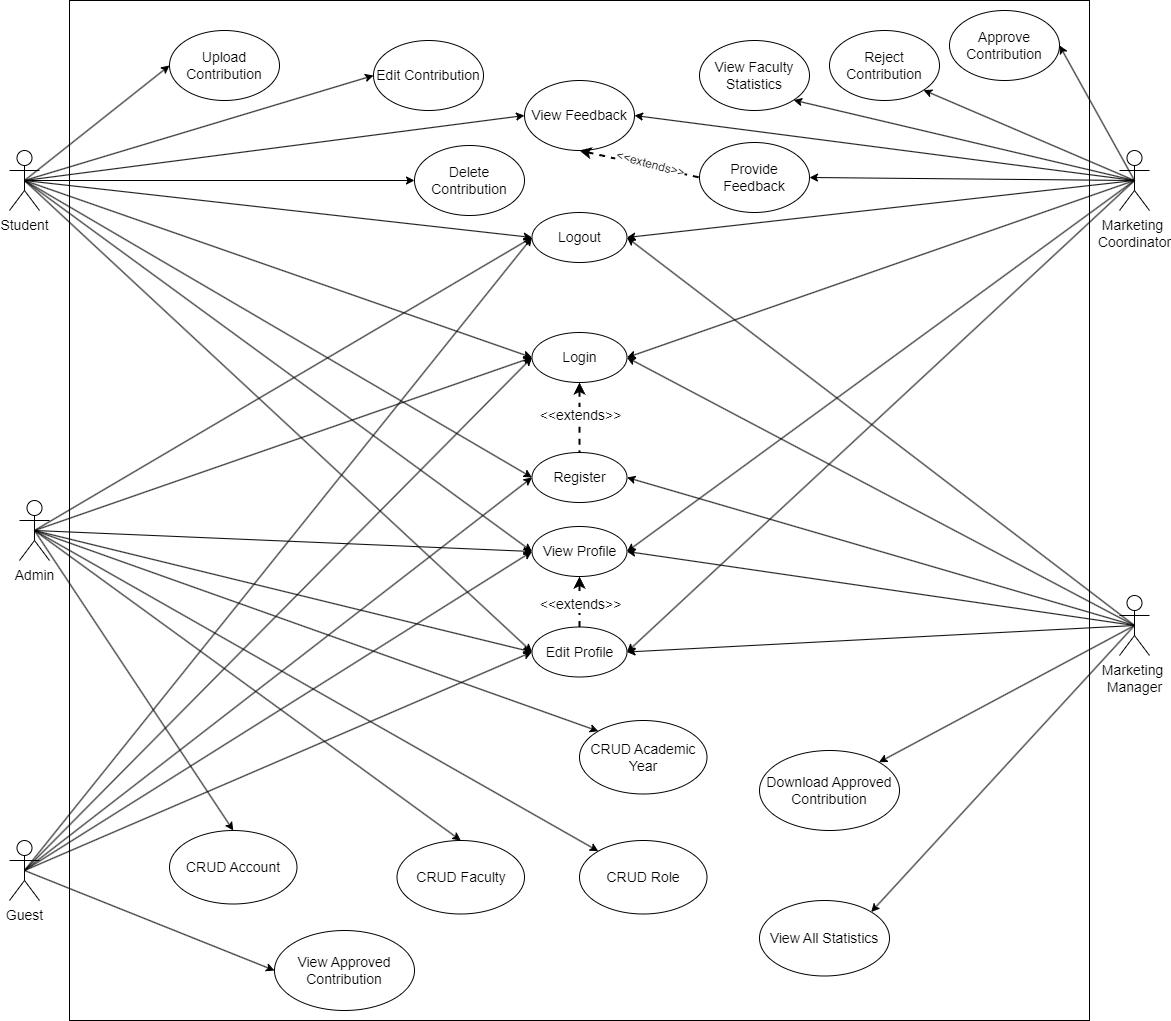


## UML diagrams

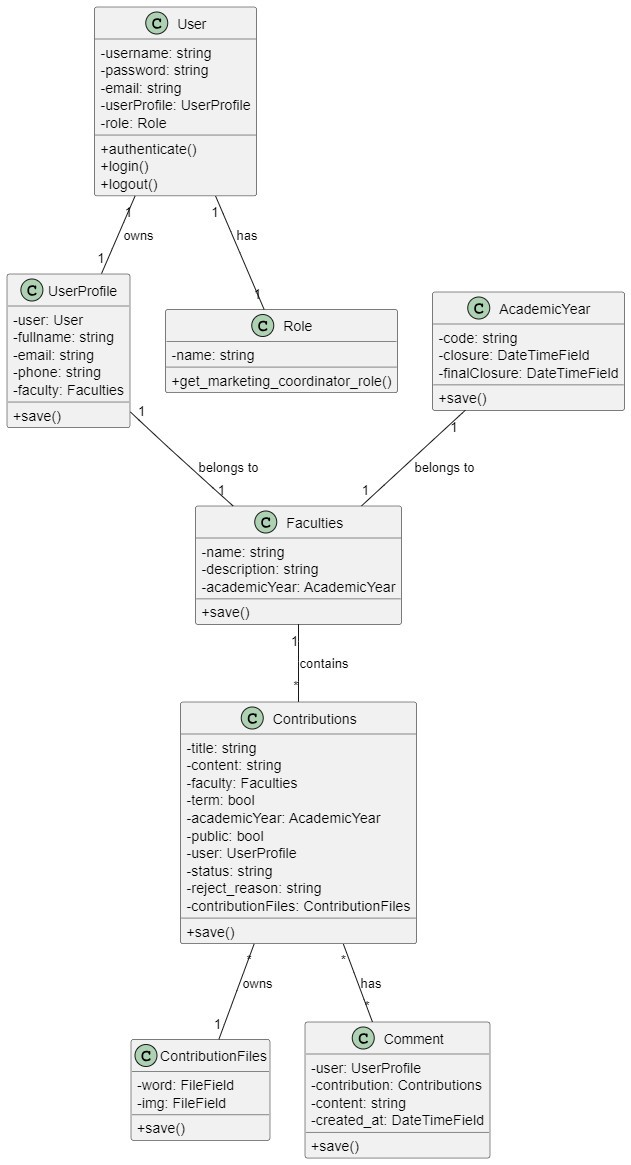
Using the modular Zend Framework there were no hard dependencies between the various functionality of the system. The users’ properties are accessed through an authentication service and the access control attaches itself to MVC events within the system. By architecturing this enterprise solution in this way we avoided a monolithic application, spaghetti code and avoided repeated conditional statements such as the following in all of our modules. Example: if($user->role = "STUDENT" || $user->role == "GUEST")



### Use case

**

### Class Diagram

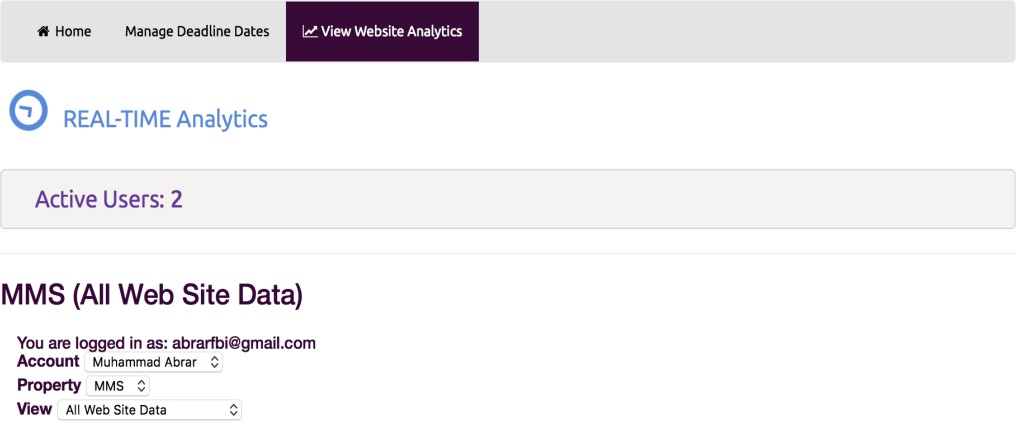


## Website Analytics

Google analytics (GA) are embedded on MMS website in order to get website analytics in real time and generate reports such as active users, most visited pages, traffic on website, origin of users, browser types are used to visit the website etc. These reports can be easily seen on google analytics dashboard. However, to show google analytics dashboard elements and required reports on MMS website directly, we created custom web elements using polymer (a java script framework) which helped us to create required elements to display the-afore mentioned reports on MMS website. Polymer uses google analytics API within the framework to get data from google in JSON format. The JSON data then represented in form of tables, charts and graphs by creating polymer elements. These elements are reusable and provide high maintainability. It is also possible to sort the data and get different metrics and dimensions for required analytics. For security purposes, it uses google sign-in API for authentication and only accessible by admin member of the system. Figures 28-34 demonstrate some screenshots of our analytics.

### 3. [6](mailto:ma1107w@gre.ac.uk) .1 Active Users in real time

The figure below shows the most active user on a website in real time and this dashboard is only accessible by admin user type of the system. As mentioned above, there is a second layer of security which verifies if the admin user is authorised to access the data by confirming users’ google identity.



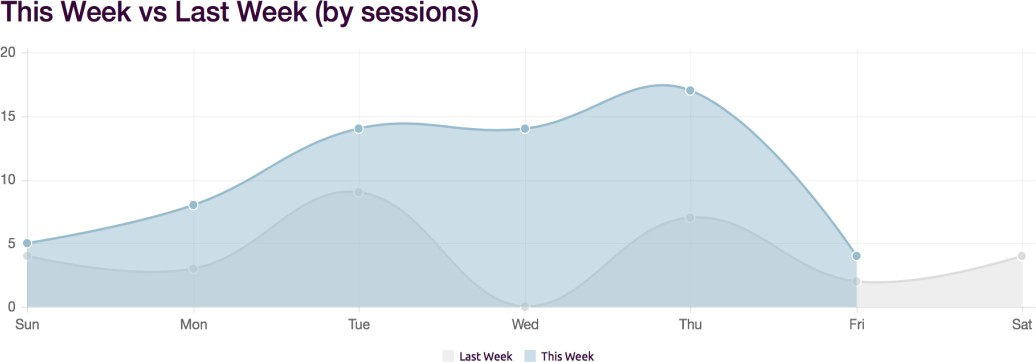
Logged in user and website details from google

Shows all active user on website in real time

*Figure 28 Active users*

### 3. [6](mailto:ma1107w@gre.ac.uk) .2 Weekly Sessions Report

The graph below shows the real-time traffic comparison on MMS website. It compares the current week active session with last week active sessions and depicts them in a line graph.

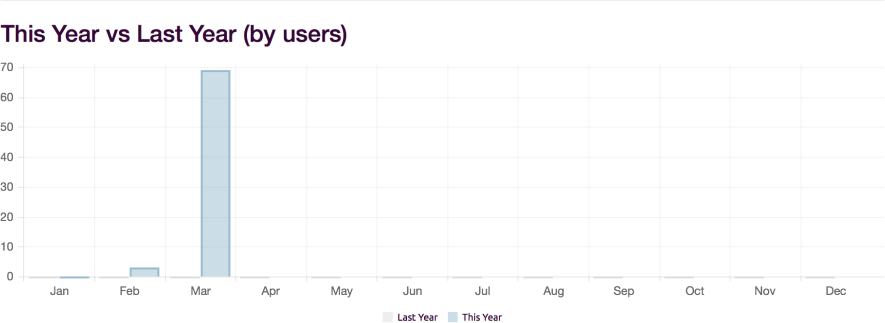


Shows traffic on website and compare it with last week

*Figure 29 Traffic*

### 3. [6](mailto:ma1107w@gre.ac.uk) .3 Yearly Report

Traffic on website on each year can be seen below. This report help companies to understand their website trend and to make decisions.



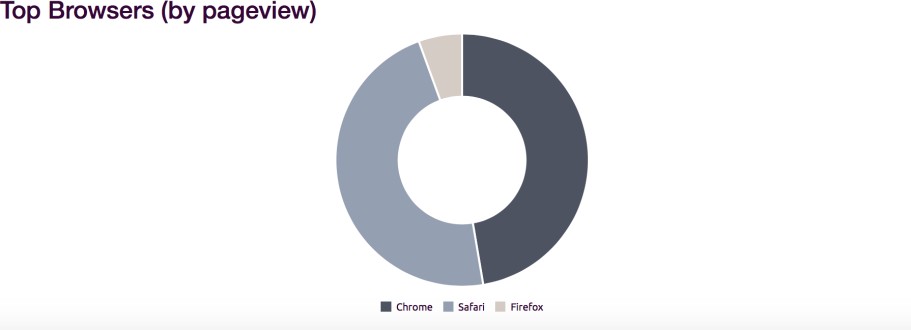
A report showing the yearly traffic on website and represent in a bar chart

*Figure 30 yearly report*

### 3. [6](mailto:ma1107w@gre.ac.uk) .4 Top Browsers Report

There are many browser types are available in present days. Every browser supports different functionalities and

compatibilities. Some of them are device oriented and support certain feature that other browsers don’t. The below mentioned report becomes very useful while developing and maintaining the website keeping in mind the browser trend.

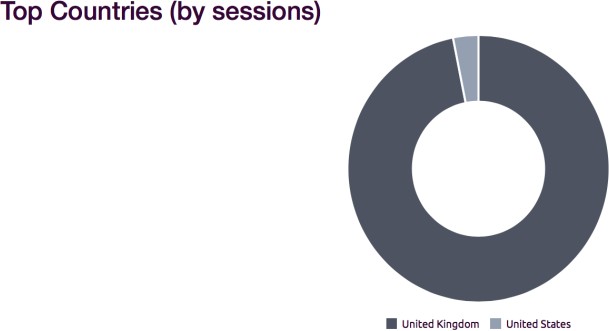


Browser names and colours that pie char represent

Pie chart to depict the top browser used to visit the website. It shows different colour for different browsers.

*Figure 31 Top Browsers*

### 3. [6](mailto:ma1107w@gre.ac.uk) .5 Traffic from Countries

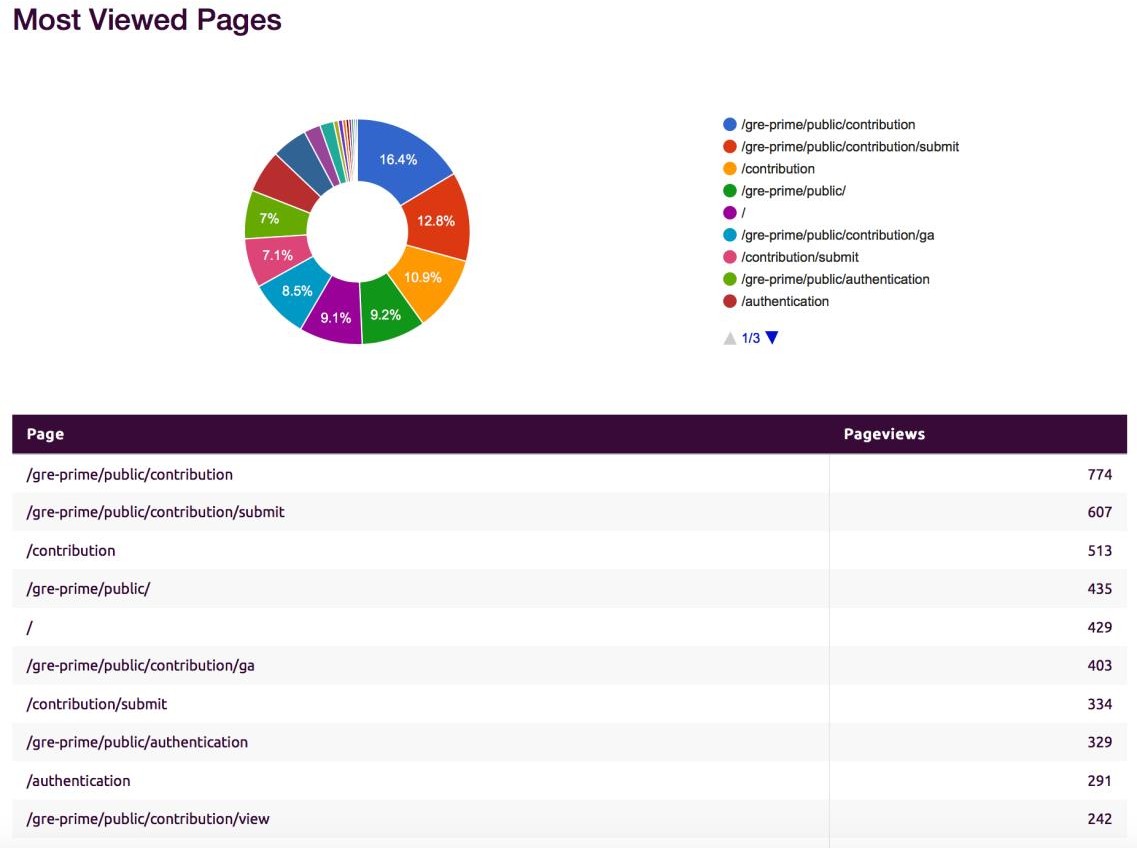


Pie chart shows the traffic on website by country

*Figure 32 Traffic from countries*

### 3. [6](mailto:ma1107w@gre.ac.uk) .6 Most Views Pages

The pie chart represents the most viewed pages of the website. Colours in pie chart represents the specific page of a website. The table below also shows the same result; it shows total number of viewing of each page instead of their percentage. The polymer element showing the results, uses ga:Pageviews as dimension and uses ga:pagepath as metrics.



A table view shows most visited pages, with page path and total numbers

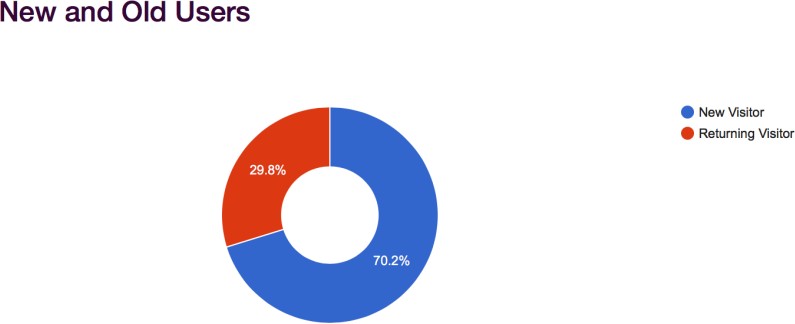
Page path with a colour which can be seen in pie chart to see the results

Pie chart to shows most visited pages and shows their percentage to easily analysis the results

*Figure 33 Most viewed pages*

### 3. [6](mailto:ma1107w@gre.ac.uk) . [7](mailto:ma1107w@gre.ac.uk) New and Old Users

User types on website can be seen below. The chart uses polymer element and the element uses google query to get data for user types. The metrics are ga: UserType.



The pie chart shows new user and old user % age report.

*Figure 34 New and old users*

## Further Developments

On reflecting on the project Team Prime discussed ways in which they could improve the system had there been more resources. One suggestion was the use of JQuery and AJAX to aid user experience - by using JQuery we could implement ‘Drag and Drop’ file transfer functionality in the system. This is an increasingly common method of submitting user generated content utilised by popular websites. Initially we attempted to implement the ‘View Feedback’ section into a Modal and populate this without the need to change or reload pages via AJAX. Unfortunately as time progressed we had to cut back on this functionality in order to ensure the stakeholder requirements were met.

## Code Snippets

Snippet #1 - Password Hashing

public function encrypt($salt) {

$password = $this->\_plain;

for ($i = 0; $i < 1000; $i ++) {

$password = sha1($salt . $password);

}

return $password;

}

public function create() {

$salt = substr(md5(uniqid(rand(), true)), 0, 8); return $salt . $this->encrypt($salt);

}

public function compare($encrypted) {

$salt = self::extractSalt($encrypted);

//encrypt user supplied plain password with known salt return $encrypted === ($salt . $this->encrypt($salt));

}

*Snippet #2 - OnBootstrap ACL Method*

public function onBootstrap(MvcEvent $e) {

$this->app = $e->getApplication();

$this->serviceManager = $this->app->getServiceManager();

// initialize ACL

$this->initAcl($e);

// Check ACL

$e->getApplication()->getEventManager()->attach('route', array($this, 'checkAcl'));

}

*Snippet #3 - Checking the MVC event against our defined ACL*

public function checkAcl(MvcEvent $e) {

$routeName = $e->getRouteMatch()->getMatchedRouteName();

$routeParams = $e->getRouteMatch()->getParams();

$routeResource = $routeName . '-' . $routeParams['action'];

$auth = $this->serviceManager->get('my\_auth\_service');

$userRole = $auth->hasIdentity() ? $auth->getIdentity()->role : 'DEFAULT';

if ($userRole != 'developer') {

if (!$e->getViewModel()->acl->hasResource($routeResource) || !$e->getViewModel()->acl-

>isAllowed($userRole, $routeResource)) {

if ($userRole != 'DEFAULT') {

$response = $e->getResponse();

$response->getHeaders()->addHeaderLine('Location', $e->getRequest()->getBaseUrl() .

'/404');

$response->setStatusCode(404);

}

}

}

*Snippet #4 - Contribution URL Routing Configuration*

'router' => array(

'routes' => array( 'contribution' => array(

'type' => 'segment', 'options' => array(

'route' => '/contribution[/:action][/:id]', 'constraints' => array(

'action' => '[a-zA-Z][a-zA-Z0-9\_-]\*', 'id' => '[0-9]+',

),

'defaults' => array(

'controller' => 'Contribution\Controller\Index', 'action' => 'index',

),

),

),

),

),

*Snippet #5 - Serving Different View Per User*

$user = $this->identity();

$view = new ViewModel(array('contributions' => $contributions, 'user' => $user));

$userRole = $this->identity()->role;

$view->setTemplate('contribution/index/dashboard/' . strtolower($userRole) . '.phtml'); return $view;

*Snippet #6 - CronTab Entry*



# Testing

Alongside the creation of the proposed application, testing was done to make sure the functionalities were implemented robustly and met client criteria. Details on the factors evaluated and the outcomes are provided in the sections below.

## Test plan

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Date** | **Purpose** | **Process** | **Expected Result** | **Actual result** | **Pass/Fail** | **Action Taken** |
| 1 | 5/3/2024 | Make sure users can register an account. | 1. Enter accurate and complete account information.  2. Select the faculty you are attending if you are a student or skip if you only want to see articles.  3. Press the subscribe button. | The website will display a successful registration message and navigate to the login page. | As Expected Result | Pass | No more action required |
| 2 | 5/3/2024 | Make sure guest can log in to the website. | 1. Fill in the guest account’s login information correctly.  2. Click the login button. | The website will navigate guest to the home page upon successful login. | As Expected Result | Pass | No more action required |
| 3 | 5/3/2024 | Make sure student can log in to the website. | 1. Fill in the student account’s login information correctly.  2. Click the login button. | The website will navigate student to the home page upon successful login. | As Expected Result | Pass | No more action required |
| 4 | 7/3/2024 | Check the administrator can log in to the site. | 1. Fill in the administrators account's login information.  2. Click the login button. | The website will navigate administrators to the home page upon successful login. | As Expected Result | Pass | No more action required |
| 5 | 7/3/2024 | Check the marketing coordinators can log in to the site. | 1. Fill in the marketing coordinators account's login information.  2. Click the login button. | The website will navigate marketing coordinators to the home page upon successful login. | As Expected Result | Pass | No more action required |
| 6 | 7/3/2024 | Check the marketing managers can log in to the site. | 1. Fill in the marketing manager account's login information.  2. Click the login button. | The website will navigate marketing managers to the home page upon successful login | As Expected Result | Pass | No more action required |
| 7 | 7/3/2024 | Verify that all users can log out of the website | 1. Log in to the website with any account.  2. Click on the logout button. | The website will navigate to the home page with the account profile section and the logout button replaced with a login button. | As Expected Result | Pass | No more action required |
| 8 | 7/3/2024 | Make sure all users can view their account profile. | 1. Log in with any account.  2. Click on the profile button. | The profile page will be displayed with information such as name, email, and phone number. | As Expected Result | Pass | No more action required |
| 9 | 7/3/2024 | Make sure all user can update the account information they are logging into. | 1. Log in with any account.  2. Click on the profile button.  3. Click on update information button  4. Enter new information  5. Click save button | The current account information will be displayed, and the newly changed information will be saved when the save button is pressed. | As Expected Result | Pass | No more action required |
| 10 | 9/3/2024 | Verify that students need to be enrolled in the latest academic year before they can upload their contributions. | 1. Sign in with the student's account.  2. Click the upload contributions button. | The website will display a form for students to enroll in the latest academic year. | As Expected Result | Pass | No more action required |
| 11 | 9/3/2024 | Ensure when students can post contributions to their department once enrolled in the latest academic year. | 1. Log in with student account  2. Enroll in the latest school year.  3. Click on the upload contributions button | The website will display a form that students can fill out and post their contributions. | As Expected Result | Pass | No more action required |
| 12 | 11/3/2024 | Verify that students cannot post contributions without agreeing to terms and policies | 1. Log in with student account.  2. Click the upload contributions button.  3. Fill in all contribution information.  4. Do not check the box to accept terms and policies.  5. Click the upload button. | The upload button will not be clickable when the user does not check the button agreeing to terms and policies. | As Expected Result | Pass | No more action required |
| 13 | 11/3/2024 | Ensure students can access and view website terms and policies | 1. Log in with student account.  2. Click the upload contributions button.  3. Click on terms and policies button. | The website will navigate to a page displaying terms and policies for students to refer to. | As Expected Result | Pass | No more action required |
| 14 | 13/3/2024 | Verify that students can see the contributions they have posted | 1. Log in with student account.  2. View my contributions button. | The website will display all contributions that students have posted with status, posting date, title as well as function buttons. | As Expected Result | Pass | No more action required |
| 15 | 13/3/2024 | Verify that students can change information and files while contributions are pending moderation | 1. Log in with student account.  2. View my contributions button.  3. Click the update button on the contribution want to change information.  4. Enter new information.  5. Click save button | The website will display a form containing information about the contribution that needs to be edited so students can edit it as they wish. Changed information will be saved after the save button is pressed. | As Expected Result | Pass | No more action required |
| 16 | 15/3/2024 | Make sure students cannot edit their contributions after they have been approved. | 1. Log in with student account.  2. View my contributions button.  3. Select the contribution want to change information. | The website will not show the edit button once the post has been approved. | As Expected Result | Pass | No more action required |
| 17 | 15/3/2024 | Verify that students can delete contributions they have posted | 1. Log in with student account.  2. View my contributions button.  3. Click the remove button on the contribution want to remove. | The website will display a confirmation message to delete the contribution and upon confirmation, the contribution will be removed from the list. | As Expected Result | Pass | No more action required |
| 18 | 15/3/2024 | Verify that students can see details of posted contributions. | 1. Log in with student account.  2. View my contributions button.  3. Click the view detail button on the contribution want to view more detail. | The website will navigate to a page displaying details of the contribution with the posted content and files, along with the comments and feedback section. | As Expected Result | Pass | No more action required |
| 19 | 17/3/2024 | Verify that the marketing coordinator can see all contributions posted in their faculty. | 1. Log in with marketing coordinator account.  2. Click on a specific faculty contributions. | All contributions posted by students in the selected faculty will be displayed. | As Expected Result | Pass | No more action required |
| 20 | 17/3/2024 | Verify that the marketing coordinator can see the list of all contributions available in the faculty and manage them. | 1. Log in with marketing coordinator account.  2. Click on the contributions management button. | A list of contributions with specific information such as the poster's name, title, posting time, status and function buttons for management will be displayed. | As Expected Result | Pass | No more action required |
| 21 | 19/3/2024 | Verify that the marketing coordinator can approve or reject student contributions. | 1. Log in with marketing coordinator account.  2. Click on the contributions management button.  3. Click on the approve/reject button. | The status of the contribution will be updated depending on the marketing coordinator's decision to approve or reject it. If rejected, a reason must be entered. | As Expected Result | Pass | No more action required |
| 22 | 19/3/2024 | Ensure users can view detailed contributions and download files that students have posted. | 1. Log in with marketing coordinator account.  2. Click on the contributions management button.  3. Click on the view detail button. | Details of the contribution will be displayed along with the files that the student has posted, next to a section displaying the feedbacks of the contribution. | As Expected Result | Pass | No more action required |
| 23 | 21/3/2024 | Verify that the marketing coordinator can contribute comments to the contributions students have posted. | 1. Log in with marketing coordinator account.  2. Click on the contributions management button.  3. Click on the view detail button.  4. Enter feedback.  5. Click submit feedback. | Feedbacks that the marketing coordinator enters will be displayed in the feedbacks section with the name of who made the feedback. | As Expected Result | Pass | No more action required |
| 24 | 21/3/2024 | Verify that the marketing coordinator can download attachment files posted by students in contributions. | 1. Log in with marketing coordinator account.  2. Click on the contributions management button.  3. Click on the view detail button.  4. Click on attachment files. | The files will be downloaded after clicking on them. | As Expected Result | Pass | No more action required |
| 25 | 21/3/2024 | Verify that approved contributions can be published for display on the website home page or taken back down. | 1. Log in with marketing coordinator account.  2. Click on the contributions management button.  3. Click on the push-on/take-down button on the public section of a contribution that is approved. | The post is published when the marketing coordinator presses the push-on button and is taken down when the take-down button is pressed. | As Expected Result | Pass | No more action required |
| 26 | 23/3/2024 | Verify that the marketing manager can see all contributions posted by each different faculty. | 1. Log in with marketing manager account.  2. Click on a specific faculty contributions. | All contributions posted by students in the selected faculty will be displayed. | As Expected Result | Pass | No more action required |
| 27 | 23/3/2024 | Verify that the marketing manager can download attachments of approved contributions in zip files. | 1. Log in with marketing manager account.  2. Click on the download zip files.  3. Select contribution want to download.  4. Click on the download selected files button. | All files of the selected contribution will be downloaded in a single zip file. | As Expected Result | Pass | No more action required |
| 28 | 25/3/2024 | Verify that the admin can add new roles to the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select roles management.  4. Click on create new role button.  5. Fill role information.  6. Click on the create button. | The role creation form will be displayed and once all information is filled in, a new role will be added to the system. | As Expected Result | Pass | No more action required |
| 29 | 25/3/2024 | Verify that the admin can remove roles from the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select roles management.  4. Select a role want to remove.  5. Click on the remove button. | After clicking the remove button, a confirmation form will be displayed. When confirming the deletion, the selected role will be deleted from the system. | As Expected Result | Pass | No more action required |
| 30 | 27/3/2024 | Verify that admin can create a new account into the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select accounts management.  4. Click on create new account button.  5. Fill account information.  6. Click on the create button. | The account creation form will be displayed and once all information is filled in, a new account will be added to the system. | As Expected Result | Pass | No more action required |
| 31 | 27/3/2024 | Verify that an admin can edit an account's information in the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select accounts management.  4. Select an account want to edit.  5. Click on edit button.  6. Fill edit information.  7. Click on the save button. | After clicking the edit button, the edit form with account information is displayed. When the save button is pressed, the account will be saved with updated information. | As Expected Result | Pass | No more action required |
| 32 | 29/3/2024 | Verify that an admin can change an account's role in the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select accounts management.  4. Select an account want to set role.  5. Click on edit button.  6. Select role want to set.  7. Click on the save button. | The account will be saved with the selected role and can perform the features of that role. | As Expected Result | Pass | No more action required |
| 33 | 29/3/2024 | Verify that the admin can remove the account from the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select accounts management.  4. Select an account want to remove.  5. Click on remove button. | After clicking the remove button, a confirmation form will be displayed. When confirming the deletion, the selected account will be deleted from the system. | As Expected Result | Pass | No more action required |
| 34 | 31/3/2024 | Verify that the admin can add a new academic year to the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select academic year management.  4. Click on create new academic year button.  5. Fill academic year information.  6. Click on the create button. | The role creation form will be displayed and once all information is filled in, a new academic year will be added to the system. | As Expected Result | Pass | No more action required |
| 35 | 31/3/2024 | Verify that the admin can edit the information of an academic year in the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select academic year management.  4. Select an academic year want to edit.  5. Click on edit button.  6. Fill edit information.  7. Click on the save button. | After clicking the edit button, the edit form with academic year information is displayed. When the save button is pressed, the academic year will be saved with updated information. | As Expected Result | Pass | No more action required |
| 36 | 2/4/2024 | Verify that the admin can delete an academic year from the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select academic year management.  4. Select an academic year want to remove.  5. Click on remove button | After clicking the remove button, a confirmation form will be displayed. When confirming the deletion, the selected academic year will be deleted from the system. | As Expected Result | Pass | No more action required |
| 37 | 2/4/2024 | Verify that the admin can add a new faculty to the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select faculty management.  4. Click on create new faculty button.  5. Fill faculty information.  6. Click on the create button. | The role creation form will be displayed and once all information is filled in, a new faculty will be added to the system. | As Expected Result | Pass | No more action required |
| 38 | 4/4/2024 | Verify that the admin can edit the information of a faculty in the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select faculty management.  4. Select a faculty want to edit.  5. Click on edit button.  6. Fill edit information.  7. Click on the save button. | After clicking the edit button, the edit form with faculty information is displayed. When the save button is pressed, the faculty will be saved with updated information. | As Expected Result | Pass | No more action required |
| 39 | 4/4/2024 | Verify that the admin can delete a faculty from the system. | 1. Log in with admin account.  2. Click on the administrator button.  3. Select faculty management.  4. Select a faculty want to remove.  5. Click on remove button | After clicking the remove button, a confirmation form will be displayed. When confirming the deletion, the selected faculty will be deleted from the system. | As Expected Result | Pass | No more action required |
| 40 | 6/4/2024 | Verify that the admin can see all contributions posted by each different faculty. | 1. Log in with admin account.  2. Click on a specific faculty contributions. | All contributions posted by students in the selected faculty will be displayed. | As Expected Result | Pass | No more action required |

## Scope

The application's functional requirements are what will be tested. These come from both the user stories and the requirements provided by the customer. A test log that lists every feature that will be tested throughout the development phase and is essential to achieving client requirements is included in the test log section.

* + 1. Test Log

|  |  |
| --- | --- |
| Guest Functions | |
| Features | **Descriptions** |
| Register | Can register for a guest account by do not select a faculty. |
| Log in | Can log in to the website using a registered guest account. |
| Log out | Can log out the account from the website. |
| View contributions | Can view all contributions from each different faculty. |
| Download contribution files | Can download contribution files while viewing them. |
| Student Functions | |
| Features | **Descriptions** |
| Register | Can register for a student account by select a faculty. |
| Log in | Can log in to the website using a registered student account. |
| Log out | Can log out the account from the website. |
| View their uploaded contributions | Can view all the contributions they have uploaded. |
| View contributions detail | Can view the contribution detail with attachment files. |
| View feedbacks | Can see others users feedbacks about a uploaded contribution. |
| Response to feedbacks | Can response to others users feedbacks about a uploaded contribution. |
| Update contribution | Can update information of uploaded contribution while waiting for approval. |
| Remove contribution | Can delete uploaded contributions. |
| Download contribution files | Can download contribution files while viewing their detail. |
| Enroll academic years | Can enroll in the latest academic year to upload contributions. |
| Upload contributions | Can upload contributions with content, title and attachments. |
| Upload document and image files | Can upload document files and attached images when posting contributions. |
| Agree with terms and policies | Students must agree to the website's terms and policies before they can post contributions. |
| Marketing Coordinator Functions | |
| Features | **Descriptions** |
| Log in | Can log in to the website using a marketing coordinator account. |
| Log out | Can log out the account from the website. |
| View faculty contributions | Can view all the uploaded contributions of their faculty. |
| Approve contributions | Approve contributions so they can be displayed for guests to view and marketing managers to download. |
| Disapprove contributions | Cancel the approved status of contributions so that other functions can be performed. |
| Reject contributions | Reject inappropriate contributions. |
| View contribution detail | Can view the contribution detail with attachment files. |
| Give feedbacks | Can give feedbacks to a contribution while viewing their detail. |
| Download contribution files | Can download contribution files while viewing their detail. |
| Marketing Manager Functions | |
| Features | **Descriptions** |
| Log in | Can log in to the website using a marketing manager account. |
| Log out | Can log out the account from the website. |
| View all faculty contributions | Can view all the uploaded contributions of all faculty. |
| Download contribution files | Can download contribution files while viewing the uploaded contributions. |
| Download zip files | Can download a zip file containing all the files attached to the selected contributions |
| Administrator Functions | |
| Features | **Descriptions** |
| Log in | Can log in to the website using a administrator account. |
| Log out | Can log out the account from the website. |
| View statistical analysis | Can view the website's statistical analysis |
| Roles management | Can view all roles in the system, add new roles and delete roles from the system |
| Accounts management | Can view all accounts in the system, add new accounts, edit an account information, set accounts roles and delete accounts from the system. |
| Academic years management | Can view all academic years in the system, add new academic years, edit academic year information, and delete academic years from the system. |
| Faculties management | Can view all faculties in the system, add new faculties, edit faculty information, and delete faculties from the system. |
| General website features | |
| Features | **Descriptions** |
| Website responsive | Website can adjust its layout to fit various screen sizes. |

## 

## Sufficient Data to Fully Test

A total of 200 contributions, each belonging to one of 100 individuals, were added to the database in order to fully test the finished product and the functions that were created. To show that they could see approved contributions, guest accounts were also created. To verify the provided credentials, roles were also assigned to each of the produced users. For example, an administrator account may examine statistics information on their dashboard, whilst a student can access their prior contributions from their dashboard and view mine. The use of created data not only ensured that different capabilities could be evaluated, but it also made it possible to analyze how well the system would work as the data sets increased.

Here are a few instances of how having several accounts for every kind of user has been taken into consideration while dealing with enormous volumes of data. The following accounts on our website (www.edumeeting.com), are active and completely functional. All passwords are designed to be simple to remember for demonstration reasons, but high-level security is still present when they are kept in a database. Furthermore, this table only provides a small number of instances of various roles to illustrate how user stories and customer requirements are met.

|  |  |  |
| --- | --- | --- |
| Roles | Username | Password |
| Administrator | admin | Amin@123 |
| Marketing Manager | manager | Manager@123 |
| Marketing Coordinator | coordinator | Coordinator@123 |
| Student | student | Student@123 |
| Guest | guest | Guest@123 |

# Agile Methods Followed

## Google Docs and GitHub

The team employed a combination of Google Docs and GitHub Issues for Agile development of the application. GitHub Issues were utilized for creating user stories, which were then organized under overarching Epics and assigned to Agile sprints represented by GitHub milestones. In parallel, Google Docs served as a collaborative platform for detailed documentation, sprint planning, and task tracking. Progress monitoring was facilitated through regular updates and discussions within Google Docs, while GitHub Issues provided a structured framework for tracking issues and progress. Regular updates and discussions in Google Docs have facilitated the monitoring of progress, while GitHub Issues has established a structured framework to monitor developments.

## Development tools and workflow

Our development workflow heavily relied on GitHub, Google Docs, and Discord. GitHub served as our primary platform for version control, issue tracking, and code collaboration, with all development work conducted within our single branch. Google Docs played a critical role in documentation and planning, providing a collaborative space for creating and updating project documentation, sprint backlogs, and task lists in real-time. Discord served as our primary communication channel, offering voice and text channels for discussions, quick updates, and impromptu brainstorming sessions. Through the seamless integration of these tools, our team achieved efficient collaboration and productivity in our development efforts.

The team leveraged GitHub extensively throughout our development process, adhering to a straightforward workflow without pull request approval. With only one branch in use, each team member directly contributed to the repository, committing their work directly to this branch. Work was described with issue numbers in commit messages. Upon completion, the work underwent integration into the master branch through a simple pull operation. This streamlined process, anchored by GitHub's collaboration features, facilitated effective teamwork and code management within our project.

## Sprints

Sprints are coordinated by the product owner (Na, Kiet) and managed by the scrum manager (Khoi), to maintain project deadlines within predefined timeframes. Sprints are structured over a two-week period, where the development team collaboratively identifies the necessary tasks to ensure a manageable workload. Weekly meetings are convened by the scrum master to review progress and come up with solutions to any emerging issues. After each two-week sprint cycle, a retrospective session is conducted to evaluate the team's performance and refine processes for future improvement. Furthermore, at the end of each sprint, a prototype demonstration was conducted to inform the team of milestones achieved and inform subsequent sprint planning decisions.

The development team used Google Docs to visualize and manage tasks assigned by the scrum master. Each task is allocated to a specific sprint and assigned to the respective team members. Tasks related to ongoing sprints have been listed in the product backlog and assigned completion times along with the importance level of each function (High, Medium, Low). Once the task is completed, the items are passed on to testers who evaluate functionality and pass any identified issues back to the developer. This agile, iterative approach facilitated comprehensive monitoring of all aspects of the site, ensuring the delivery of a fully functional product.

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

## Burndown Charts

A burndown chart visually charts remaining work against remaining time, enabling project managers and stakeholders to easily isolate potential issues that could impede project deadlines. Unlike more abstract ways of managing a timeline, a burndown chart maps the development team’s progress through user stories, including the total effort.

(Villanovau, 2024)

Throughout our development process, the utilization of burndown charts has proven to be crucial in our approach resembling agile methodologies. These charts offer a clear graphical representation of our team's progress throughout each sprint. Given that each sprint spans a week's duration, each chart portrays a timeline illustrating how swiftly the team tackles user stories. This timeline is mapped along the X-axis of the chart. Every burndown chart corresponds to sprints structured during our website deployment phase. As previously mentioned, each sprint is associated with a set of assigned issues. These issues are characterized by appropriate story points, which succinctly capture their complexity. Higher story point values indicate more challenging problems, providing valuable insights into areas requiring increased attention and effort. This comprehensive approach to the development cycle ensures that issues are addressed within the stipulated timeframe, empowering our team to achieve sprint objectives efficiently. The Y-axis of the chart signifies the number of days within the week. Through meticulous monitoring of burndown charts, our team maintains a clear understanding of progress, enabling effective sprint planning and timely issue resolution

A graph with a line

Description automatically generated

*Figure 36 – Our most up-to-date Sprint with a visual representation of its burndown chart*

A sprint backlog is a list of items for the product team to work on during a sprint. The highest-priority items from the product backlog are added to a sprint backlog if the team chooses to work on them during the sprint.

As the name suggests, the sprint backlog is created during sprint planning. [Sprint planning](https://blog.logrocket.com/product-management/what-is-sprint-planning-guide-meeting-agenda-cheat-sheet/) is one of the events in the [scrum framework](https://blog.logrocket.com/product-management/what-are-five-types-of-scrum-meetings/) during which the team plans its work for upcoming weeks.

(Thakkar, 2022)

We divided the items into six sprints that are reported each week, each sprint has a start and end sprint goal, division of work among members, and importance of functions. This ensures we can adjust risks quickly and ensure successful team performance in each sprint.

**Captions in the figure:**

**Sprint goal:** This part is the sprint goal of each sprint, representing the goal of completing each sprint within a certain time.

**Start date:** The date members start performing tasks in the sprint.

**End date:** The date members finish their tasks in the sprint.

**Backlog Item:** These items are taken from the Product Backlog requirements.

**Sprint tasks:** These are detailed tasks that need to be performed for Backlog items.

**Volunteer:** Contains the names of members performing their tasks during the sprint.

**Estimate effort hours:** This is the estimate of each member's working hours for each function.

**Priority:** This item shows the importance of functions in order of High, Medium, Low.

A screenshot of a computer

Description automatically generated

## Minutes of Meetings

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Meeting No** | **Date** | **Minutes of meeting** | **What was discussed** | **Tasks Achieved:** | **Member present:** |
| 1 | 19/02/2024 | 180 | 1. Discussed technologies to use 2. Github tutorial 3.Created User Stories | 1. Choose Django, MysqlSite3, Boostrap, JavaScript 2. Create github 3. Finish all user stories | Khoi, Trinh, Hieu, Na, Kiet |
| 2 | 22/02/2024 | 180 | 1. Broke down user stories to tasks 2. Prioritsed tasks in backlog 3. Assigned tasks to team members | 1. Finish product backlog with priority 2. Plan all 6 sprints 3. Assigned tasks to team members | Khoi, Trinh, Hieu, Na, Kiet |
| 3 | 26/02/2024 | 180 | 1. Design and implement login, registration, logout interfaces. 2. Implement article submission functionality, and login, registration, logout interfaces functionality. | 1. Designed and implemented login, registration, logout interfaces. 2 Implemented article submission functionality, and login, registration, logout interfaces functionality . | Khoi, Trinh, Hieu, Na, Kiet |
| 4 | 02/03/2024 | 180 | 1. Develop document viewing and reviewing features.  2. Enable downloading of documents as a ZIP file.  3. Implement view for approved student contributions. | 1. Developed document viewing and reviewing features.  2. Enabled downloading of documents as a ZIP file.  3. Implemented view for approved student contributions. | Khoi, Trinh, Hieu, Na, Kiet |
| 5 | 10/03/2024 | 180 | 1. Enable administrators to set closure dates for academic years.  2. Implement communication features for marketing coordinator.  3. Implement disabling of late submissions. | 1. Enabled administrators to set closure dates for academic years.  2. Implemented communication features for marketing coordinator.  3. Implemented disabling of late submissions. | Khoi, Trinh, Hieu, Na, Kiet |
| 6 | 18/03/2024 | 180 | 1. Allow updates to documents submitted on time.  2. Ensure document processing until final closing date. | 1. Allowed updates to documents submitted on time.  2. Ensured document processing until final closing date. | Khoi, Trinh, Hieu, Na, Kiet |
| 7 | 26/03/2024 | 180 | 1. Implement privacy and password conditions.  2. Develop features for managing personal information.  3. Set up email notification system.  4. Enable commenting for Marketing Coordinator. | 1. Implemented privacy and password conditions.  2. Developed features for managing personal information.  3. Set up email notification system.  4. Enabled commenting for Marketing Coordinator. | Khoi, Trinh, Hieu, Na, Kiet |
| 8 | 03/04/2024 | 180 | 1. Implement guest access.  2. Develop statistical analysis features.  3. Ensure responsiveness across all devices. | 1. Implemented guest access.  2. Developed statistical analysis features.  3. Ensured responsiveness across all devices. | Khoi, Trinh, Hieu, Na, Kiet |

## User Stories

As an unauthorized User I want to login

As an authorized User I want to logout

As an authorized User I want to register an account

Admin creates accounts for users with optional roles.

User want to view, add, and update their personal information.

As the Marketing Director, I want to see all student contributions once their contributions are approved and have access to them.

As a Marketing Coordinator, I would like to access, view, and review student documents and information in my Faculty.

All students have the opportunity to submit one or more articles as Word documents.

All students can also upload and update high quality images, e.g. photographs.

All documents that students submit late will be disabled after the closing date of new entries. Documents that students have submitted on time can be updated and continue to be processed until the final closing date.

All students must agree to Terms and Conditions before they can submit.

As a Marketing Coordinator, I want to be able to interact with the students in my Faculty to edit the contributions and to select those for publication.

As a Director of University Marketing, I want to see all the options. I will be able to download all selected contributions after the student submission deadline and download them as a ZIP file.

An administrator maintains any system data, e.g. closure dates for each academic year.

A guest account for each Faculty can be used to view the selected reports.

Statistical analysis (e.g. number of contributions per Faculty) needs to be available.

Once a contribution is submitted the system emails a notification to the Faculty’s Marketing Coordinator, who must make a comment within 14 days.

# Screencast and Presentation

## Presentation:

Our presentation was demonstrated at a professional standard. Prezi was used to demonstrate our presentation because it provides a more dynamic and captivating appeal towards our product. As slides swiftly move from one another with fluidity, it’s more impressive than the functions provided from PowerPoint (Sutton, 2014). Henceforth, with strong fluidity and displays of more visually compelling presentations that suit the current digital age, Prezi was chosen as the main software for our presentation.

The presentation gave a full insight into the depths of our product whereby each team member had thoroughly explained a unique aspect of our website.

The presentation was pitched at a non-technical level and was focused around several key areas. Areas included:

* Accessibility/Usability (Kishan)
* Maintainability (Stephen/ Ali)
* Product Overview (Stephen)
* Security (Kishan)
* Professional House style consistency (Noor)
* Website Design (Abrar)
* Real Time statistics (Abrar/ Ali)

Links to presentation:

<https://prezi.com/mlu9cdgeegn0/mms/?utm_campaign=share&utm_medium=copy>

<https://gre.cloud.panopto.eu/Panopto/Pages/Embed.aspx?id=42fcbe3c-8919-4a65-8ae2-14c40ff8a9de>

## Screencast

The screencast provided demonstrates a full in-depth audio narration of the functionality achieved by our team. The flow of the presentation was specifically organised based on the site map, to ensure best usability and accessibility practices.

This screencast was created by the scrum master who has been constantly following the development of the product from its initial stages. The scrum master was also accountable for previous screencasts that have occurred throughout the project development cycle.

Screencast Link:

<https://gre.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=7b53a59e-f410-433b-a11a-f753505ebb20>

# Conclusion

During the course of developing the product the team worked like an enterprise software development team, using agile techniques and tools to ensure the lean delivery of the product. In doing so the team delivers an enterprise- ready application that not only caters to the stakeholders’ initial specifications but exceeds in areas of security, robustness and scalability. To conclude, based on above mentioned factors, team prime has developed a secure, maintainable, efficient, portable, scalable magazine management system that satisfies all stakeholders’ requirements.

# References

AgileNutshell. (2017). *Burndown Charts.* Available: <http://www.agilenutshell.com/burndown> (Last Accessed: 4th April 2017).

Bootstrap. (2016). *About*. Available: <http://getbootstrap.com/about/>. (Last accessed 6th April 2017).

Colourblindawareness. (2017). *Types-of-colour-blindness.* Available: [http://www.colourblindawareness.org/colour-](http://www.colourblindawareness.org/colour-blindness/types-of-colour-blindness/) [blindness/types-of-colour-blindness/](http://www.colourblindawareness.org/colour-blindness/types-of-colour-blindness/)

(Last Accessed 6th April 2017)

Elliot AJ, Maier MA (2014) Color psychology: Effects of perceiving color on psychological functioning in humans. Annual review of psychology 65: 95–120. doi: 10.1146/annurev-psych-010213-115035. pmid:23808916

Google Inc. (2017). *PageSpeed Insights.* Available: <https://developers.google.com/speed/pagespeed/insights/>. (Last accessed 6th April 2017).

Jakob Nielsen. (1995). *10 Usability Heuristics for User Interface Design.* Available: <https://www.nngroup.com/articles/ten-usability-heuristics/>. (Last accessed 6th April 2017).

Oracle. (2011). *Top 10 Reasons to Choose MySQL for Web-based Applications.* Available: <http://www.oracle.com/us/products/mysql/mysql-wp-top10-webbased-apps-461054.pdf> (Last accessed 24th Mar 2017).

Sutton, C. (2014). *5 Reasons to Use Prezi Rather Than PowerPoint.*

Available: <http://www.business2community.com/tech-gadgets/5-reasons-use-prezi-rather-powerpoint-01050463> (Last accessed 6th April 2017)