Report of Internship done at Sansrujan Information Technology

An Internship Report for

Course code and Course Title: CSA-652 - Industry Internship

Credits: 16

Submitted in partial fulfillment of Master's Degree

in Computer Application for Semester VI.

By

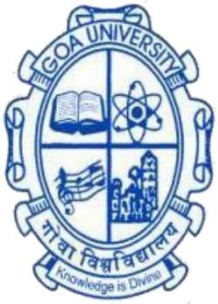
KIRAN KESHAV GAWADE

Roll Number: 2249

Under the Mentorship of

MR. SHOUNAK DESHPANDE

The Discipline of Computer Science and Technology,
Goa Business School,
Goa University.



Goa University

Date: June 2024

Examined by: Seal of the School

DECLARATION BY STUDENT

I hereby declare that the data presented in this Internship report entitled, "Report of Internship done at Sansrujan Information Technology" is based on the results of investigations carried out by me in the Computer Science and Technology at the Goa Business School, Goa University, under the mentorship of Prof.Ramdas Karmali and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will not be responsible for the correctness of observations / experimental or other findings given the internship report. I hereby authorize the University authorities to upload this dissertation on the dissertation repository or anywhere else as the UGC regulations demand and make it available to any one as needed.

Mr. Kiran Keshav Gawade

2249

Master of Computer Application

Goa Business School

Date:

Place: Goa University

COMPLETION CERTIFICATE

This is to certify that the Internship report is a bonafide work carried out by Mr Kiran Keshav Gawade under my mentorship in partial fulfilment of the requirements for the award of the degree of Master of Computer Application in the Discipline of Computer Science and Technology at the Goa Business School, Goa University.

Date:

Mr.Ramdas Karmal

Assoc. Professor, MCA

Goa Business School

Signature of Dean of School/HoD

School/Department Stamp

Date:

Place: Goa University

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OFFER LETTER

SANSRUJAN
UDYAM-GA-02-0002739

To,
Kiran Gawade,
Goa Business School
Goa University
Goa.

Date: 15-Jan-2024

Offer of Internship

Dear Kiran, I hope this letter finds you well.
We take pleasure in inviting you to join the Sansrujan Information Technology as a intern at Hs. No 311/11(new) 677(old) Devlay Khandola Marcela Goa on following conditions:

1. **Designation & Location**
   Software developer at our office address mentioned above.
2. **Date of joining:**
   You are expected to join the office not later then 15th January 2024.
3. **Stipend**
   We do not have a policy to pay a stipend to intern as of now.
4. **Period**
   Your internship will be of six months starting from 15 Jan 2024 to 15 June 2024
5. **Leaves**
   You are allowed to take 10 leaves in the given period which includes personal & sick leaves. Any leave required for the work at the education institution Eg. Viva, internship presentation may not be counted in the leaves. However, you are required to inform and take permission before taking a leave.
6. **Work Time & Ethics**
   - You will be governed by the timings and the hours of work applicable to the company wherein you are posted and you may be called upon work as required. Current work timings are 10:00 am to 06:00 PM from Monday to Friday.
   - If any time during your internship you are found guilty of misconduct or any willful breach or continuous negligence of terms of this appointment letter or rules or misconduct of duties and ethics then you will given notice and may end up in termination of your internship with this company.

We once again welcome you at Sansrujan Information Technology and look forward for your contribution in growing business and your industrial skills.

I have read and understood the offer letter and happy to join and be a part of the Sansrujan Information Technology .

Best wishes,

Sign of intern: Rawadi

Date: 15-Jan-2024

Place: Marcela - Goa

SANSRUJAN INFORMATION TECHNOLOGY

Shounak S Deshpande
PROPRIETOR
Founder
Sansrujan Information Technology

INTERNSHIP CERTIFICATE

SANSRUJAN

TO WHOMSOVER IT MAY CONCERN

This is to certify that Mr. Kiran K. Gawade student of Masters of Computer Applications (MCA) of Goa University, Goa is currently undergoing his final semester – Industry Internship (Semester IV) at our company, Sansrujan Information Technology from 15th January till 15th June 2024.

During his tenure he has met the expectations of his team lead and found to be regular and sincere.

This certificate has been issued on his request to be submitted with the Internship report at Goa University.

Yours Sincerely,

SANSRUJAN INFORMATION TECHNOLOGY

(Mr. Shounak Deshpande)

Founder PROPRIETOR

SANSRUJAN INFORMATION TECHNOLOGY

Registered Office:

Hs no. 677 Devlay, Khandola, Marcel – Goa

https://sansrujan.in/

ACKNOWLEDGEMENT

First and foremost, I am sincerely grateful to Sansrujan Information Technology for providing me with the opportunity to undertake this valuable internship. I extend my deepest gratitude to Mr. Shounak Deshpande for his exceptional leadership and unwavering support throughout the duration of my internship. Working under his mentorship has been an immensely enriching experience, offering me not only practical skills but also profound professional insights. His dedication to fostering a collaborative and innovative environment has greatly contributed to my professional growth, shaping my understanding of the industry and helping me gain confidence.

I would also like to acknowledge the support and collaboration of my peers at Sansrujan Information Technology, whose teamwork and cooperation made this internship both productive and enjoyable.

I am also profoundly thankful to Goa Business School, Goa University, for granting me the opportunity to gain practical industry experience.

Special thanks are due to Mrs. Jyoti Pawar (Dean), Mr. Ramrao Wagh (Program Director, MCA), Mr. Hanumant Redkar (Assistant Professor, MCA), and the entire MCA faculty for their continuous support and encouragement.

I would also like to express my heartfelt appreciation to my internship guide from the university**,** Mr. Ramdas Karmali (Professor, MCA), for his invaluable guidance and support throughout this journey.

Additionally, I am deeply grateful to my parents and friends for their constant encouragement and understanding. Their unwavering support has been a pillar of strength throughout my academic and professional journey.

Thank you all for your support and encourage.

EXECUTIVE SUMMARY

During my internship, I had the opportunity to work with a dynamic organization focused on web and mobile application development. Over the span of my,internship, I engaged in a wide array of tasks that encompassed both backend and frontend development, debugging, and enhancing user interaction features. My work revolved primarily around Laravel, PHP, HTML, and React Native, providing me with substantial exposure to modern web and mobile application frameworks.

Organisation:-

The organization is dedicated to providing innovative software solutions, with a strong emphasis on user experience and robust functionality. The team I worked with was collaborative and supportive, contributing to a productive and enriching internship experience. The company follows agile methodologies, ensuring continuous development and iterative improvement through regular sprint meetings and knowledge-sharing sessions.

Task Handled:-

During my internship at Sarsujans, I engaged in both backend and frontend development tasks, focusing on learning and implementing various technologies. I familiarized myself with GitHub/Gitbash, AJAX requests, jQuery, Laravel, Firebase authentication, and React Native. Initially, I started with PHP to understand the basics of PHP applications, working on enhancing existing features and adding new ones to improve user experience. My tasks included updating CSS, integrating interactive components with JavaScript and jQuery, and ensuring security enhancements. For the YuvaJagruti web application, I focused on adding new contests, implementing website features, and ensuring a seamless user experience. Additionally, I contributed to the Relish Asian Food Industries website by optimizing CSS, implementing meta tags, and improving email functionality.

As I progressed, I transitioned to the PHP framework Laravel, where I developed basic modules, worked on data displays, and ensured responsive design for UI enhancements. Although my exposure to Android development with React Native was limited, I managed to build simple features focusing on user authentication and real-time data fetching with Firebase and Axios. Additionally, I worked on integrating Firebase with PHP MySQL for backend support. I handled Git conflicts and merging changes, which helped me improve my

collaborative skills. Throughout these tasks, I concentrated on delivering quality results while adhering to design specifications and industry standards.

Key Learnings:

My internship experiences at Sansrujan Information Technology and Sarsujans were pivotal in enhancing my technical and professional abilities. At Sansrujan, I immersed myself in various programming languages and technologies, notably Laravel and React Native. I honed skills in AJAX, Axios, CSS, and website optimization techniques, learning to streamline website performance for optimal user experiences. Alongside, I gained proficiency in tools like FileZilla for web hosting. Hands-on experience with debugging techniques like console-log statements and familiarity with real-time communication using web sockets further enriched my problem-solving skills.

Moreover, the collaborative environment at both organizations played a crucial role in refining my teamwork and communication skills. At Sansrujan, regular knowledge-sharing sessions fostered an exchange of insights and industry best practices among team members. This exposure to real-world projects and adherence to industry standards has significantly prepared me for a future career in technology. With a robust foundation laid during my internships, I am well-equipped to address challenges and contribute effectively to the dynamic landscape of technology.

CHAPTER 1 : COMPANY OVERVIEW

SANSRUJAN

Name of the Company: Sansrujan Information Technology

Address: Marcel, Goa

Phone Number: +91 8262948825

Email: contact@sansrujan.in

Website: https://sansrujan.in/

1.1 Birds-eye-view

Introduction: Sansrujan Information Technology was founded in 2019 by Shounak Deshpande. The company focuses on making technology accessible to everyone. Located in Marcel, Goa, Sansrujan Information Technology serves clients worldwide, turning innovative ideas into excellent digital solutions.

Mission and Vision: Sansrujan Information Technology aims to turn "Imagination Into Reality" by offering a variety of services and solutions tailored to meet the unique needs of its clients. The company is committed to delivering high-quality, innovative technology solutions and has become a trusted partner for businesses in various industries.

1.2 Products/Services

Sansrujan Information Technology offers a comprehensive range of services, including;

- **Android Mobile App Development:** Creating user-friendly mobile applications for Android devices.
- **Web Application Development:** Building dynamic web applications that improve user engagement and business efficiency.
- **Website Building:** Designing and developing attractive and functional websites.
- **Graphic and Product Design:** Creating stunning graphics and innovative product designs.
- **UI/UX Design:** Ensuring seamless and engaging user interactions through user experience and interface design.
- **IT Support and Consultancy:** Offering expert IT support and consultancy services to enhance business operations.
- **Marketing Products and Services:** Developing effective marketing strategies to promote products and services.
- **Building Brands on LinkedIn:** Increasing brand presence and visibility on LinkedIn through targeted strategies.

1.3 Sections within the Organization

Team and Expertise: The team at Sansrujan Information Technology is made up of professionals who excel in their fields. Their expertise includes mobile app development, website creation, graphic design, and IT consultancy, ensuring every project is handled with precision and creativity.

Notable Achievements:

·**Client Success:** The company has worked with over 50 clients from various sectors, including retailers and multinational corporations. They have successfully completed projects such as inventory management systems, e-commerce platforms, logistics systems, portfolio websites, and content management systems (CMS).

·**Industry Recognition:** Founder Shounak Deshpande was appointed as a visiting faculty member at Goa University in 2023, highlighting his significant contributions to technology and

Under Shounak Deshpande's leadership, Sansrujan Information Technology has quickly grown to become a leader in innovative technology solutions. By turning imaginative ideas into reality, the company continues to make advanced technology accessible and beneficial to businesses and individuals worldwide.

Contact Information: For more information about Sansrujan Information Technology and its services, visit the company website at https://sansrujan.in/.

CHAPTER 2 : TASKS HANDLED

2.1 PROJECT: PORTFOLIO WEBSITE

*6*The Portfolio Website project is a personal website designed to showcase my professional skills, projects, and experiences. The website features a clean and responsive design, a contact form, and the ability to download my CV. It aims to provide potential employers and collaborators with an easy way to learn about my work and get in touch with me.

- Project Description

The key features of the portfolio website include:

- **Responsive Design:**Ensures the website looks good on all devices (desktops, tablets, and mobile phones).
- **About Me Section:**Details about my background, skills, and professional journey.
- **CV Download**:Provides an option to download my CV in PDF format.
- **Project Gallery**:Showcases my projects with descriptions and links to their repositories.
- **Contact Form:**Allows visitors to send messages directly to me. The form data is automatically stored in an Google sheet.

- Technologies Used

- **Programming Languages**:HTML, CSS, JavaScript
- **Frameworks**:Bootstrap (for responsive design)
- **Tools and IDEs**: VS Code (IDE), Netlify (hosting platform), Google Sheets API (for storing contact form data)

- System Architecture

The architecture of the website includes:

- **Frontend:** Built using HTML, CSS, and JavaScript, with Bootstrap for responsiveness.

- **Contact Form Processing:** Uses JavaScript to send form data to Google Sheets via Google Sheets API.
- **Hosting**:The site is hosted on Netlify, which handles continuous deployment from the GitHub repository.

My responsibilities:

Figure 2.1.1>Landing page

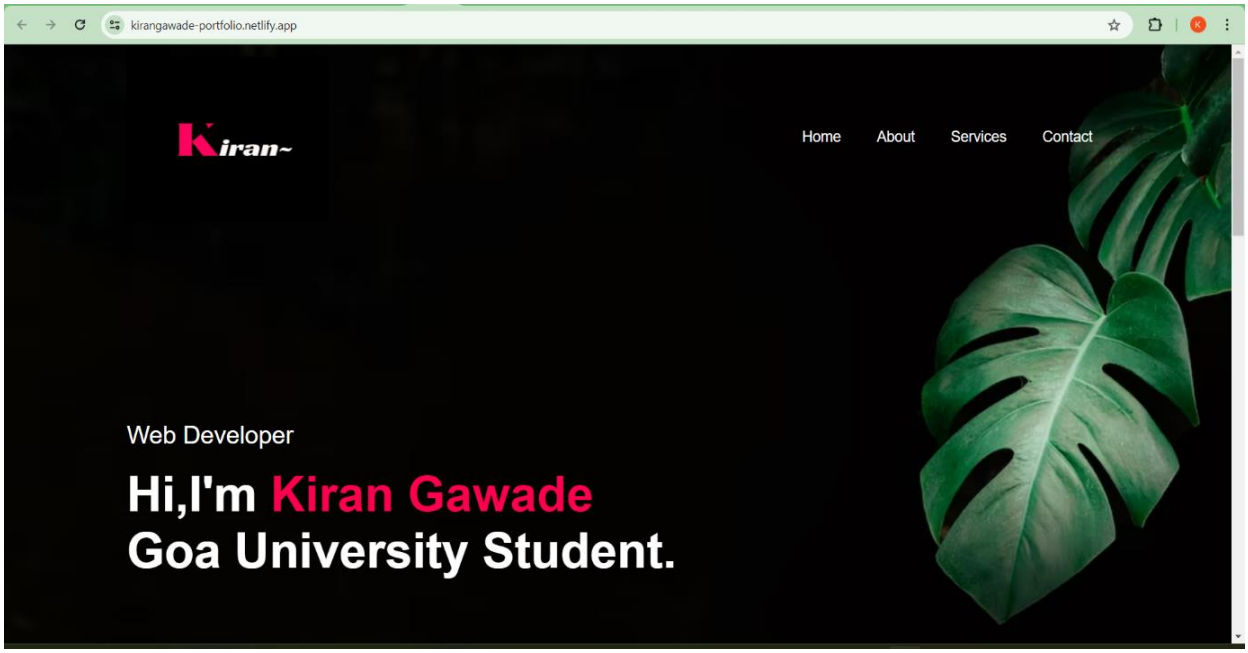
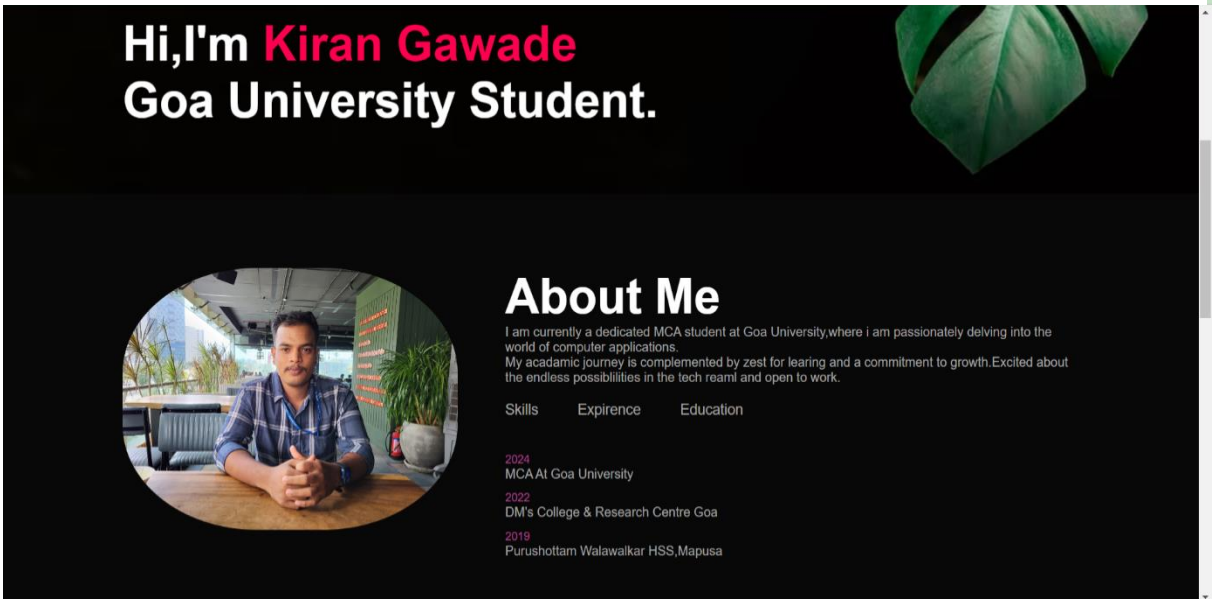


Figure 2.1.2>About me section.



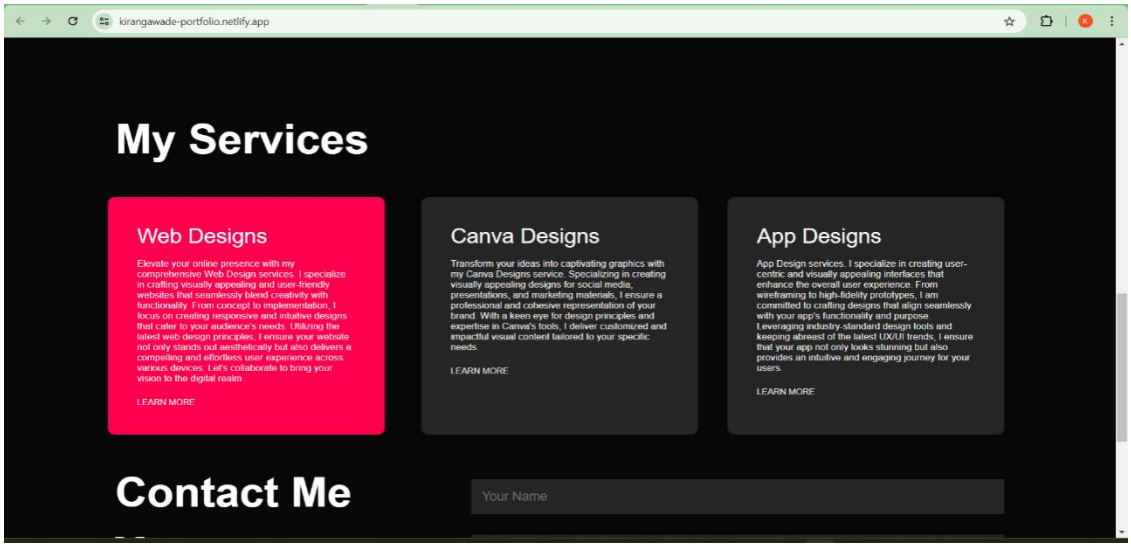
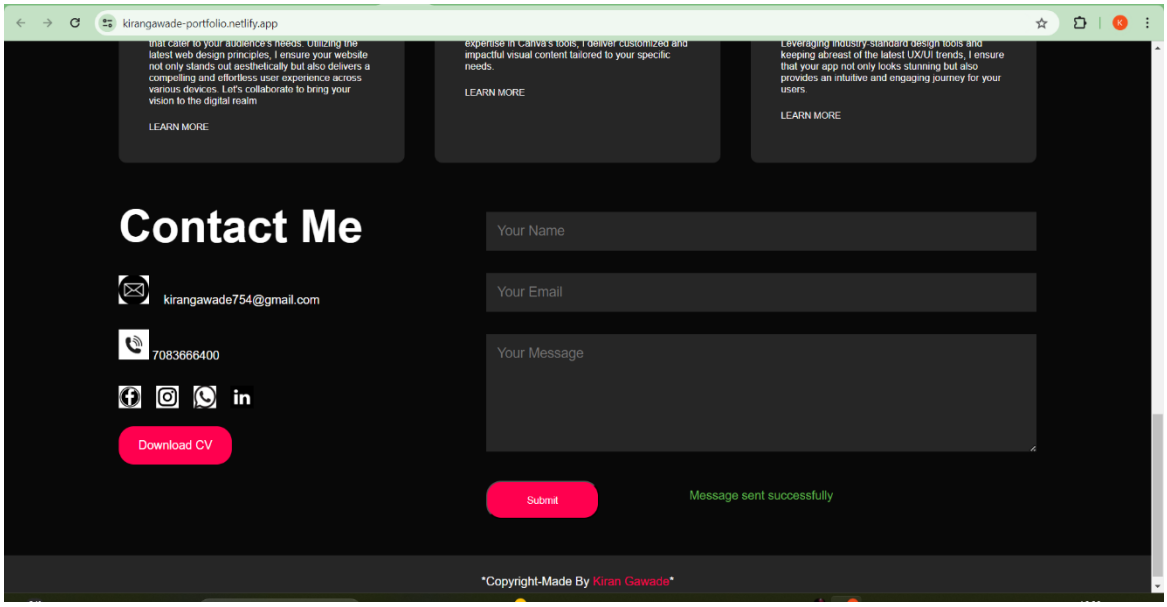


Figure 2.1.4>Contact form section



- **Contact Form and Data Storage:**
  Users can fill in their details through a contact form on my portfolio website. The information is collected and stored for easy access.

- **Download CV Option:**
  Implemented a feature that allows users to download my CV directly from the website.

Figure 2.1.5>Details in google sheet after submitting form.

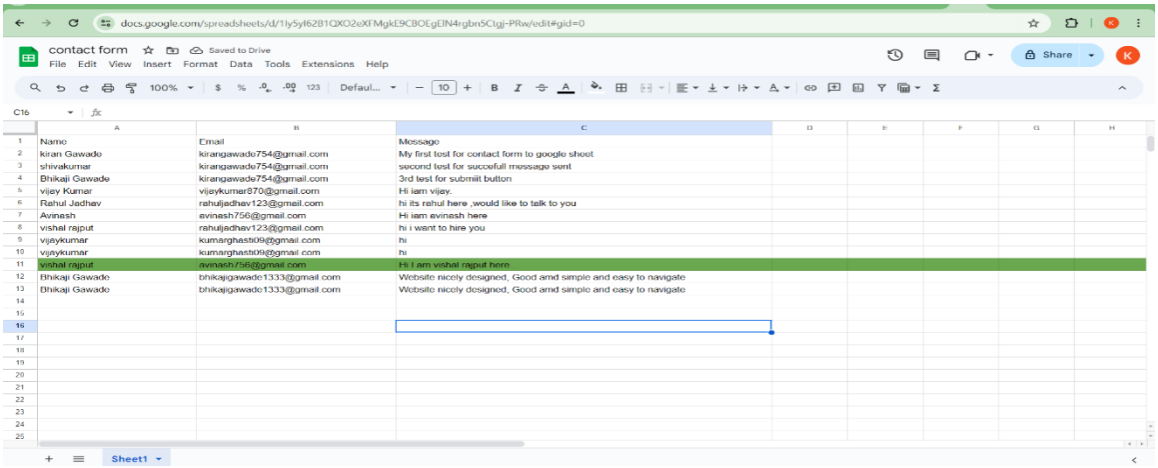


Figure 2.1.6>Script for getting details in Google sheet after submiting contact form.

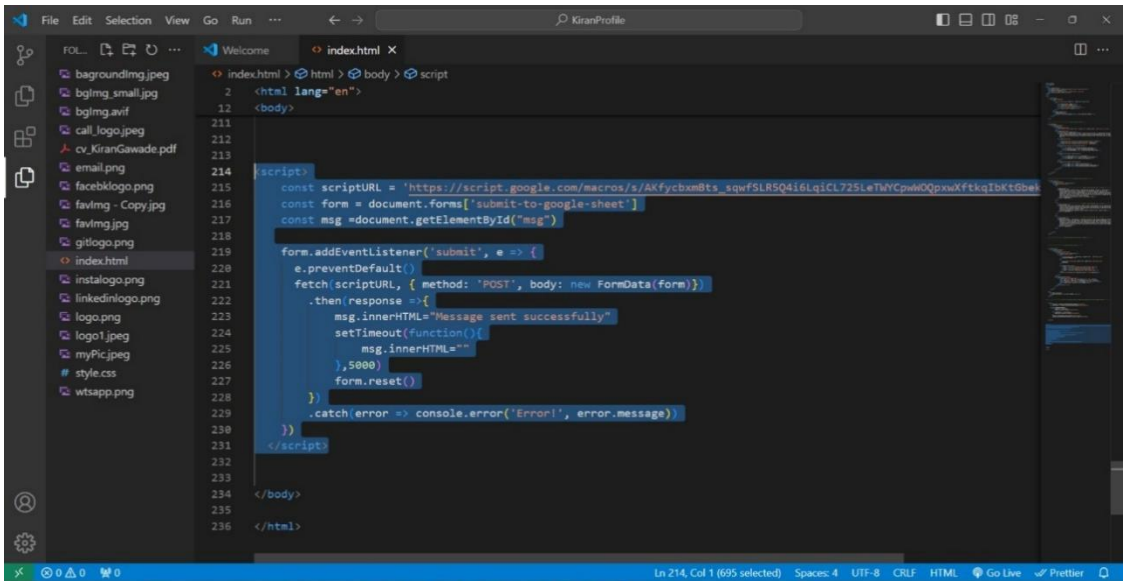


Figure 2.1.7>The site is hosted on Netlify which handles continuous deployment from GitHub repository.

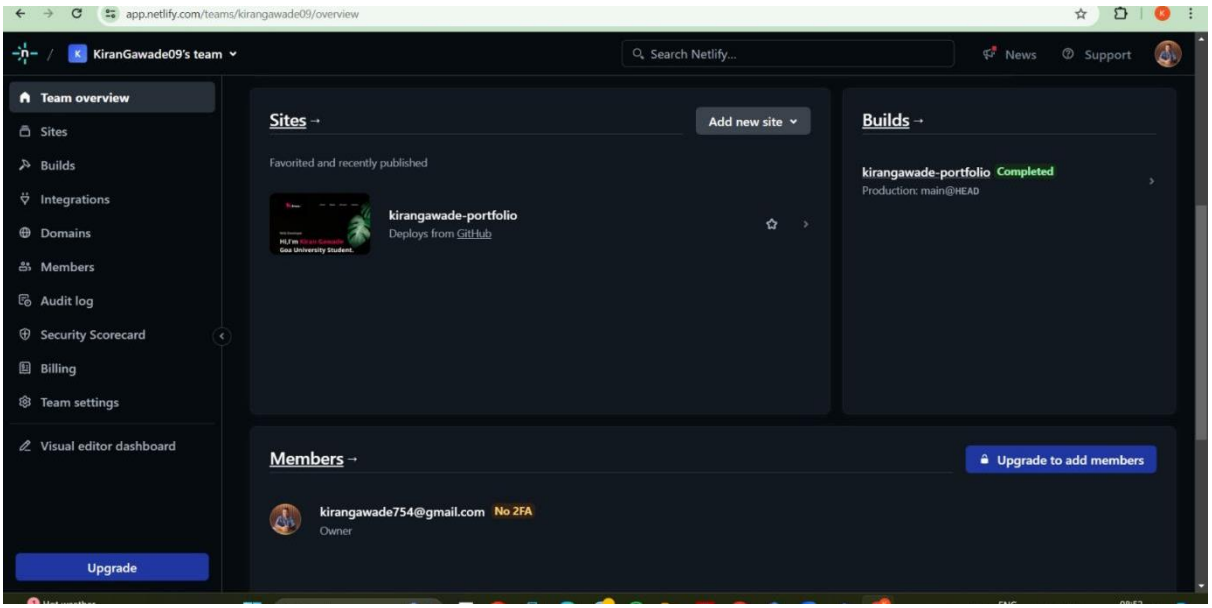
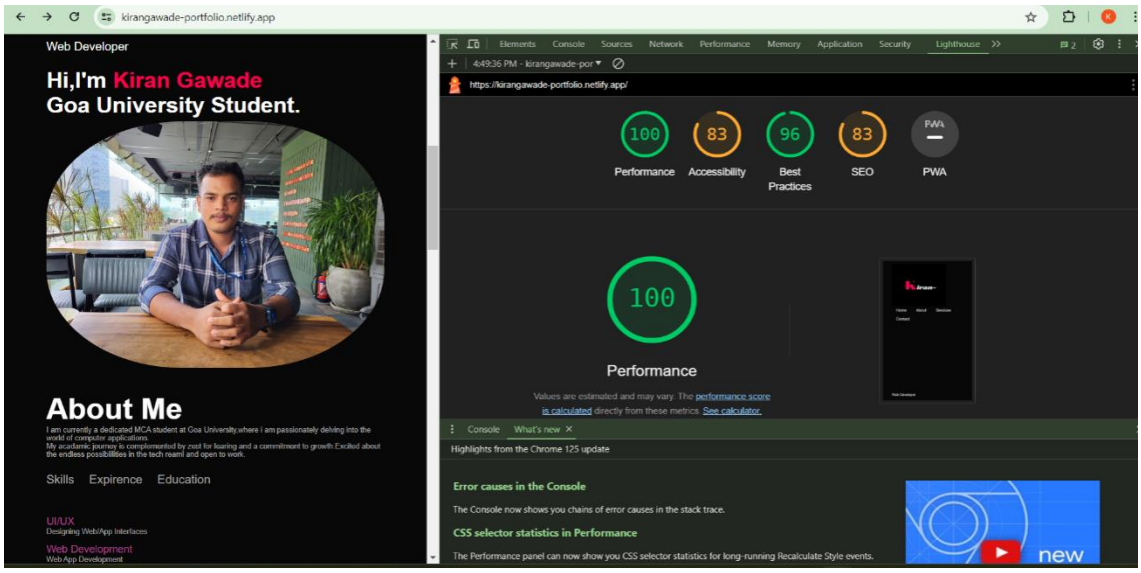


Figure 2.1.8>Optimised portfolio website to it's best possible way and made it responsive.



2.2 PROJECT: YUVA JAGRUTI WEB APPLICATION

The web application allows participants to register for different contests by filling out a form. The registration data is stored in a database, and the system checks for multiple registrations and provides appropriate feedback.

Project Description

- The website enables users to:
- Register for multiple contests.
- Prevent duplicate registrations.
- Receive confirmation emails upon successful registration.
- Manage registration data through an admin interface.

. Key Features

- **Registration Form:** Users can fill out a form to register for various contests.
- **Data Validation:** Ensures valid data entry and prevents invalid or duplicate registrations.
- **Email Confirmation**:Sends a confirmation email to users upon successful registration.
- **Admin Interface:** Allows administrators to manage and update registration details.
- **File Upload:** Supports uploading of proof documents in various formats.

Technologies Used

- **Backend:** PHP, MySQL
- **Frontend**:HTML, CSS, JavaScript, AJAX
- **Frameworks:Bootstrap** (for responsive design)
- **Tools:** VS Code (IDE), GitHub (version control), Xamp,Filezilla,cPanel.

System Architecture

- The system architecture comprises the following components:

Frontend:

- HTML/CSS for structure and styling.
- JavaScript for client-side validation and interactivity.
- AJAX for asynchronous communication with the server.

Backend:

- PHP scripts handle form submissions, data validation, database operations, and sending emails.
- MySQL database stores user registration data.

Data Flow:

- User fills out the registration form.
- Form data is validated and sanitized on the client side using JavaScript.
- AJAX sends the data to the server.
- PHP scripts validate the data and interact with the MySQL database.
- PHP sends a confirmation email to the user.
- Admin interface allows for managing registrations.

- **My responsibilities:**

Figure 2.2.1>Added offline contests for Yuvajagruti web application.

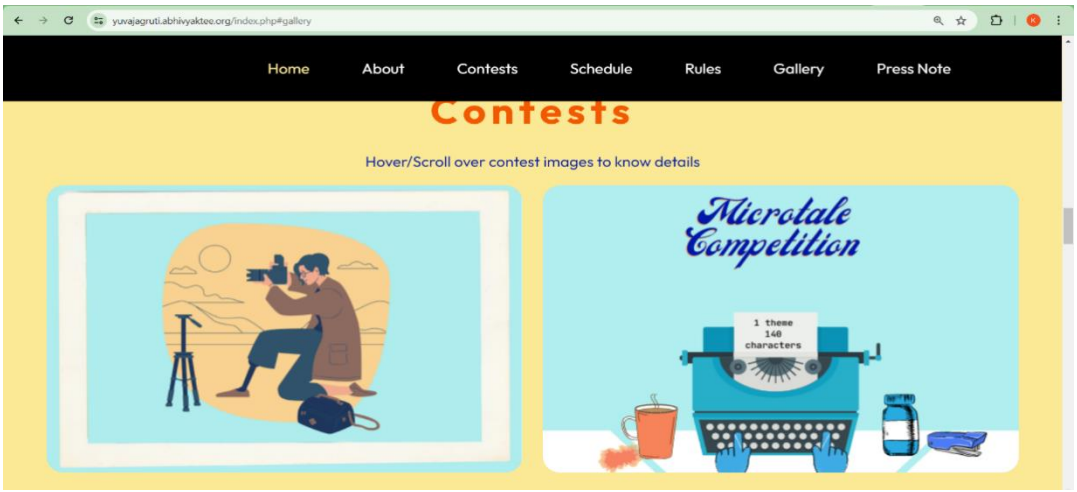


Figure 2 2.2>When hover on any contest info about contest appears.

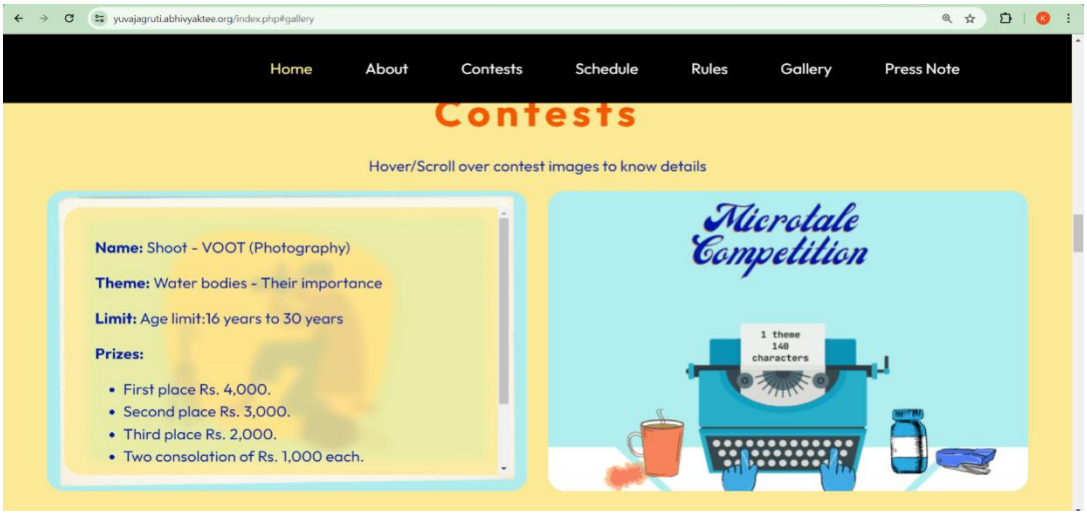


Figure 2.2.3>Offline contests.

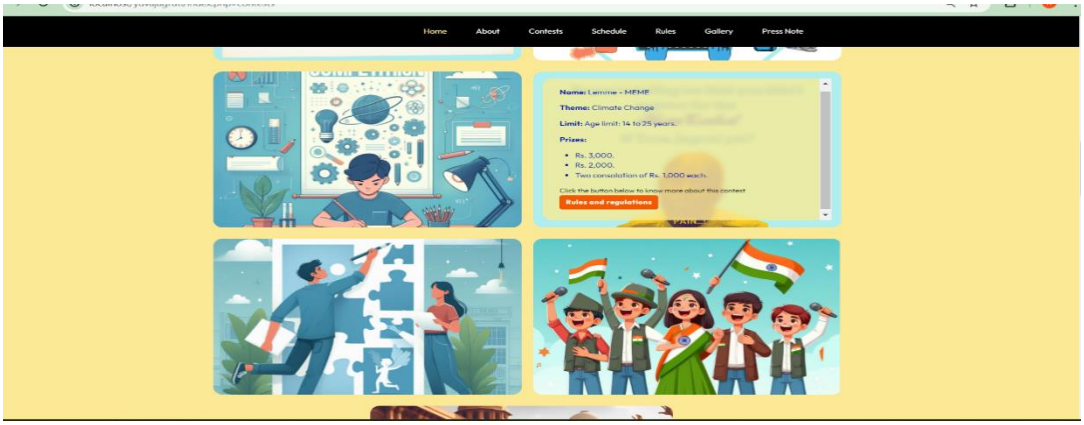


Figure 2.2.4>Rules and regulation section for the contests.

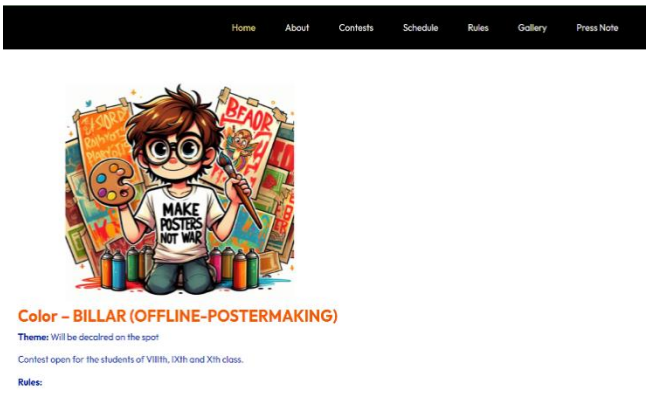


Figure 2.2.5>Rules and regulation section for the contests.

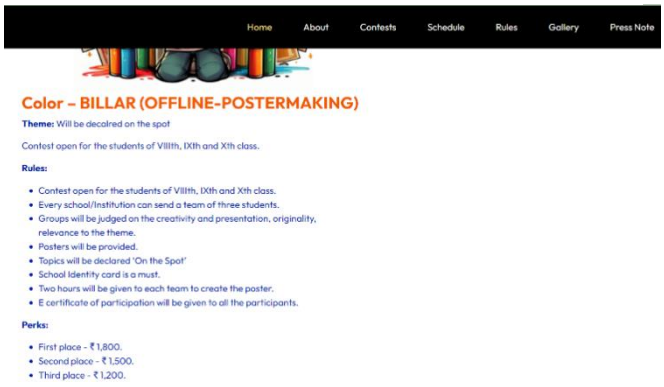


Figure 2.2.6>Build a gallery on the website to showcase images.

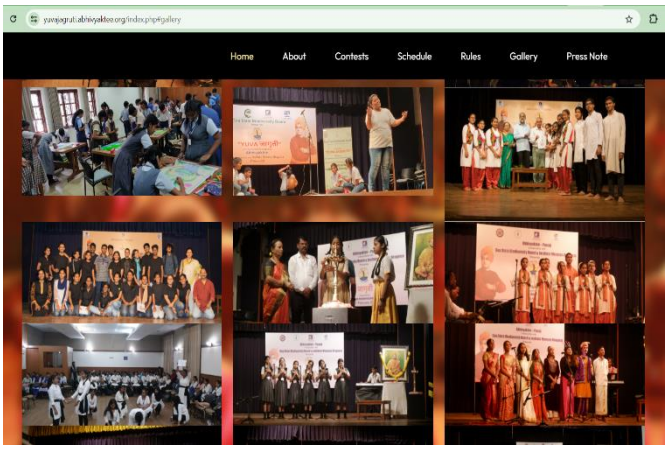


Figure 2.2.7>Added Press note section.

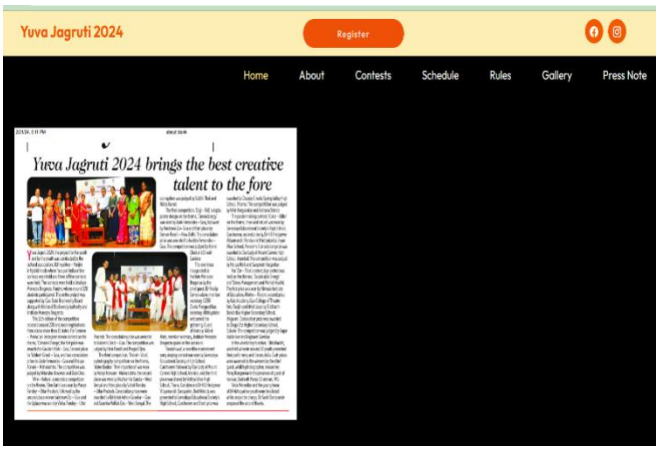


Figure 2.2.8>Developed a registration form for students to enroll in the contest.

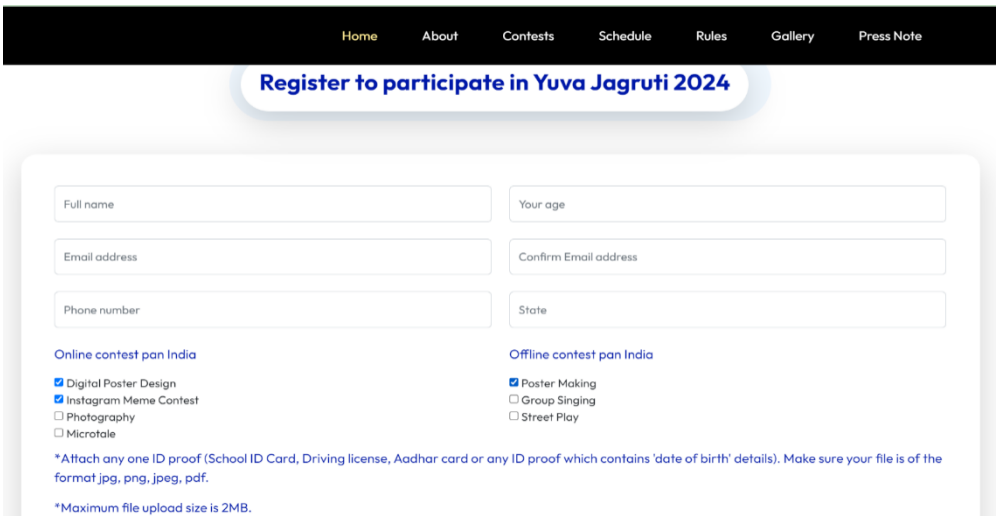
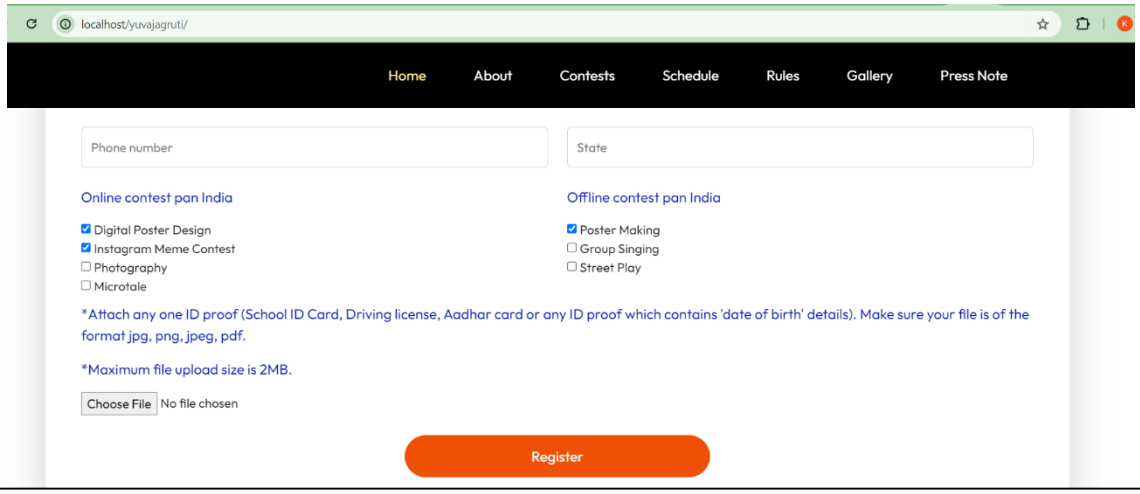


Figure 2.2.9>Implemented checkbox and file upload feature.



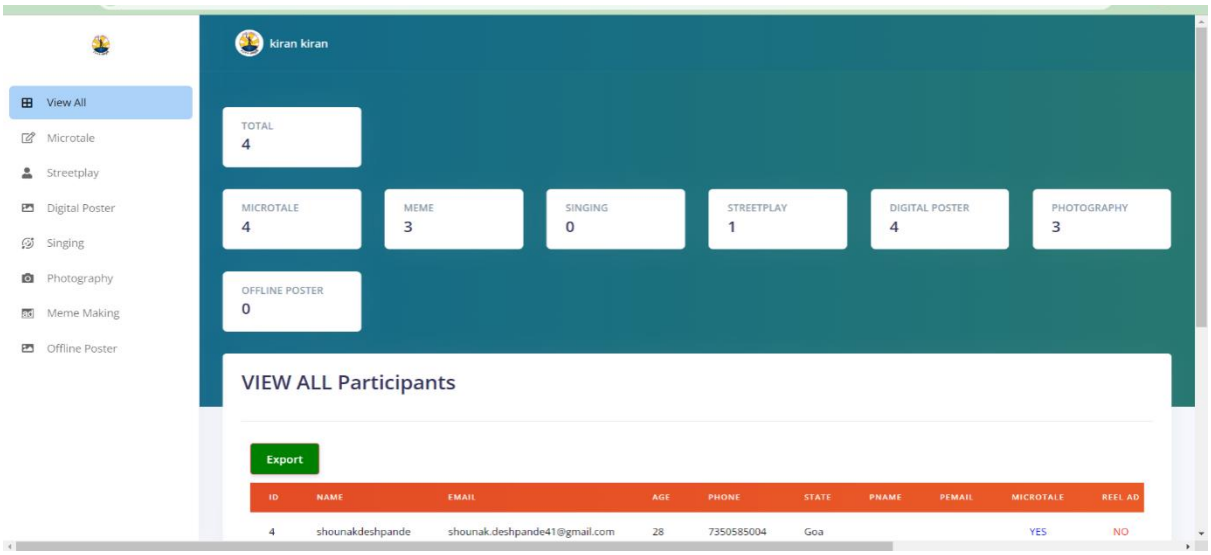
Security Measures:

1. Input sanitization using strip_tags, stripslashes, htmlspecialchars, and filter_var.
2. Input validation using regular expressions and FILTER_VALIDATE_EMAIL.
3. Prepared statements for database queries to prevent SQL injection.
4. Conditional checks to prevent duplicate or excessive submissions.
5. Proper email headers to ensure authenticity and prevent spoofing.

Additional Features:

1. Handles new user registrations.
2. Updates registration details for existing users.
3. Manages the number of events a user is registered for.
4. Updates specific event fields based on user inputs.
5. Increments the user's attempt count.
6. Sends confirmation emails to users upon successful registration or updates.

Figure 2.2.10>Added offline contest to previously built admin side dashboard of yuvajagruti site for managing registerd users.



2.3 PROJECT: RELISH ASIAN FOODS WEBSITE :

Designed and developed an e-commerce website to highlight food products, focusing on quality, hygiene, and user experience

- Key Responsibilities:

- **Quality Assurance:** Promotes high-quality ingredients and adherence to Good Manufacturing Practices (GMP). Highlights the exceptional quality of products, setting them apart.

- **Customer Interaction**: Includes a contact form to facilitate customer inquiries. Features a WhatsApp floating button for easy communication.

- **Location and Accessibility:** Embedded Google Map displaying the company's location. Fast delivery assurance mentioned prominently.

System Architecture:

Frontend:
- **HTML:** Structures the web pages.
- **CSS:** Provides styling and layout.
- **JavaScript:** Adds interactivity.

Libraries:
- **Bootstrap:** Ensures responsive design.
- **FontAwesome:** Adds icons.
- **Parallax.js:** Implements parallax scrolling.

Backend:
- **PHP:** Manages form submissions and email handling.
- **Apache:** Likely web server used to host the site.

Integration:
- **Google Maps:** Embedded for location display.
- **WhatsApp API:** For customer communication.

Technologies Used:

- **Frontend:** HTML5, CSS3, JavaScript, jQuery, Bootstrap, FontAwesome.
- **Backend**: PHP, Email Integration.
- **External Services:** Google Maps API, WhatsApp API.

Figure 3.1>Landing of of Relish Asian Foods website.

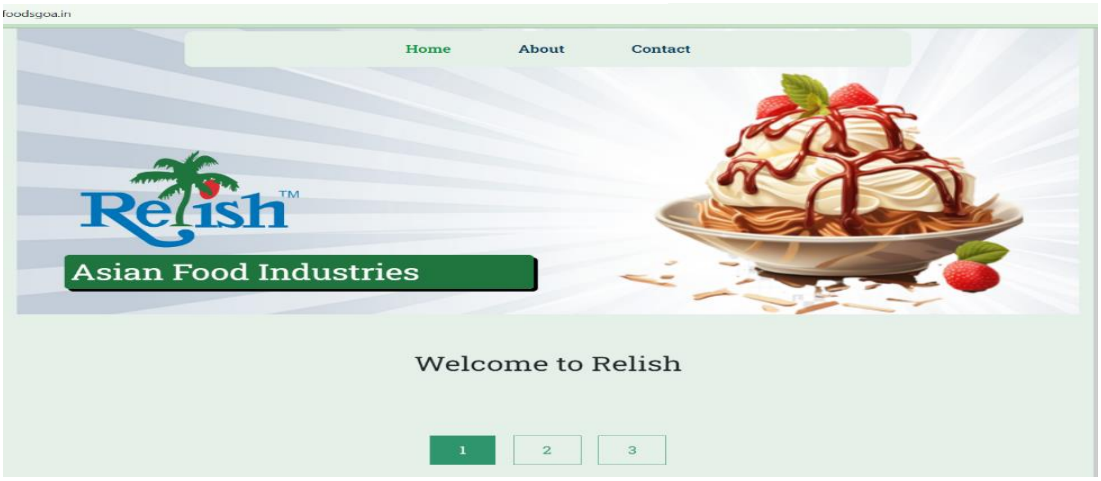


Figure 3.2>Products section.

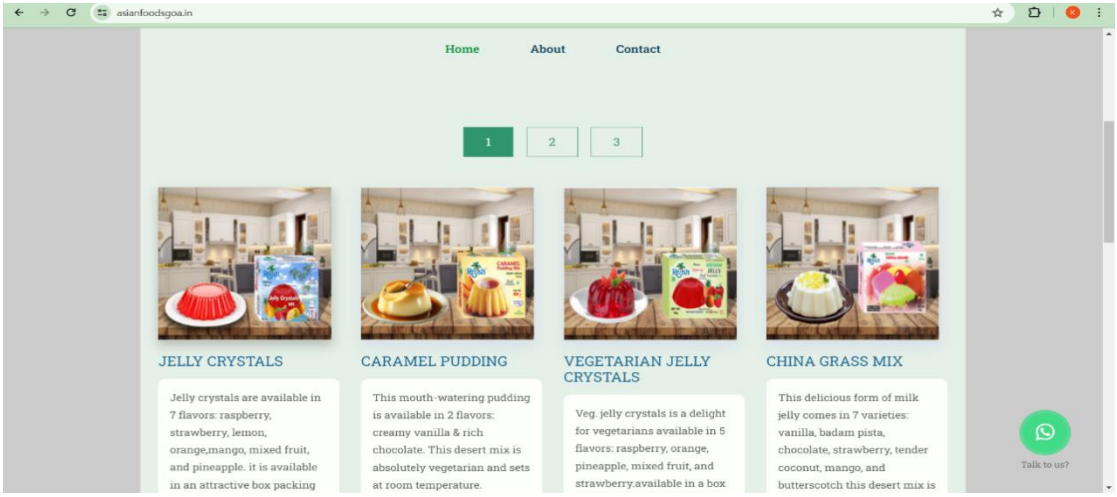


Figure 3.3>Products section.

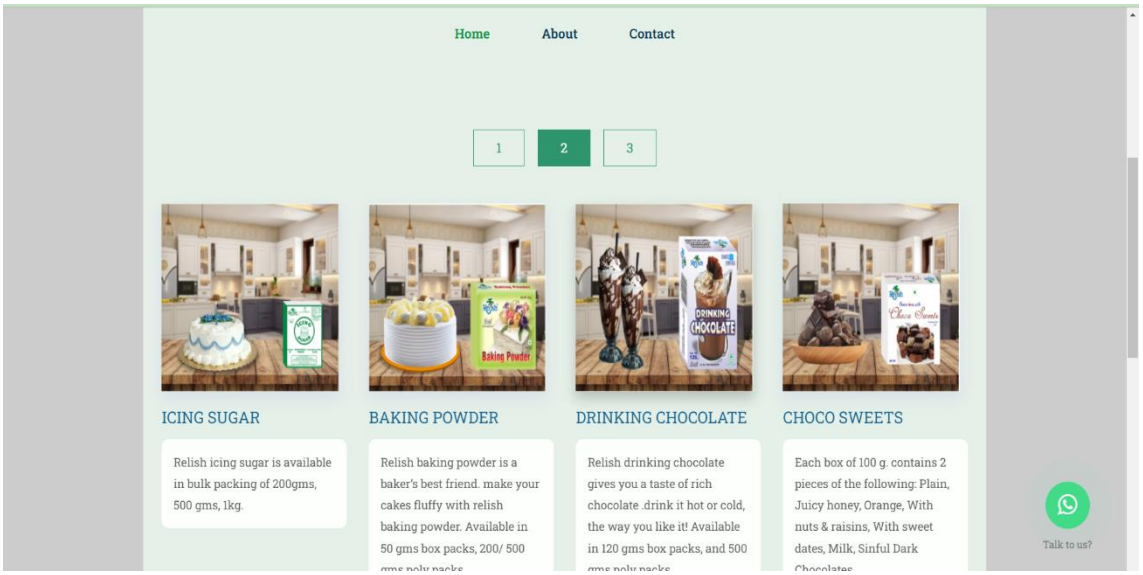


Figure 3.4>Contact form with validations.

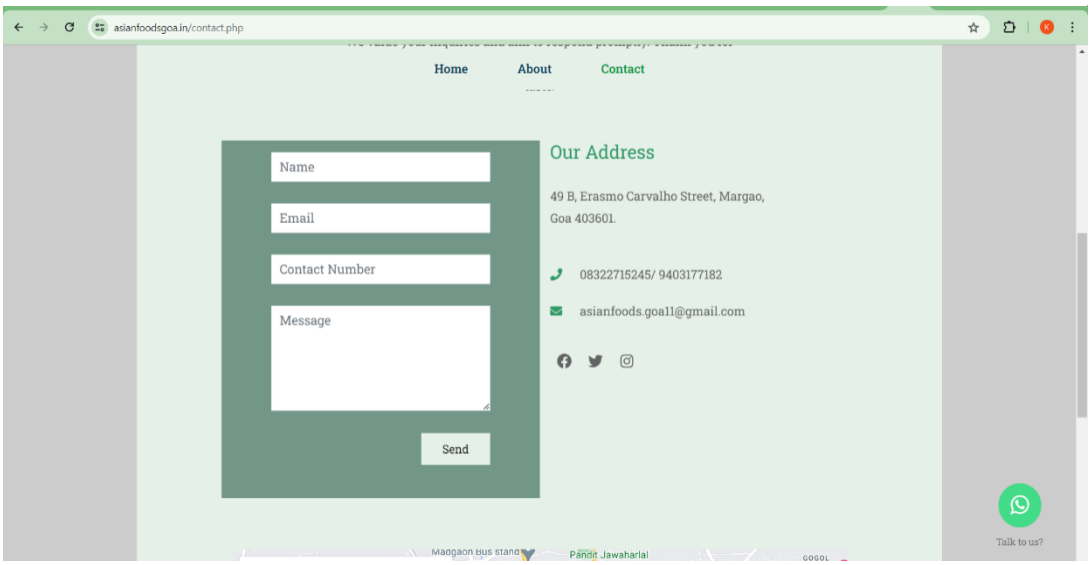


Figure 3.5>Google map integration.

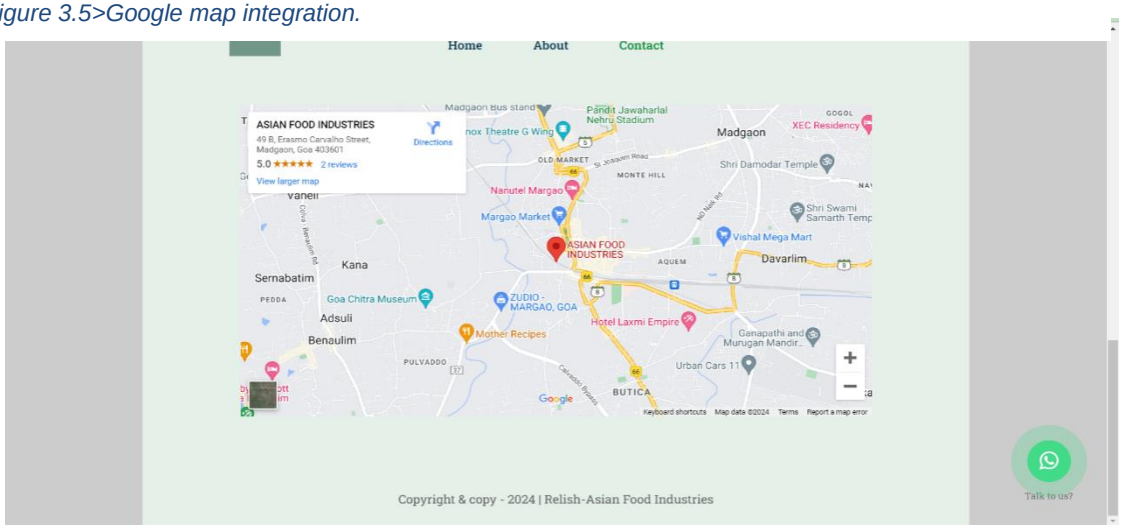
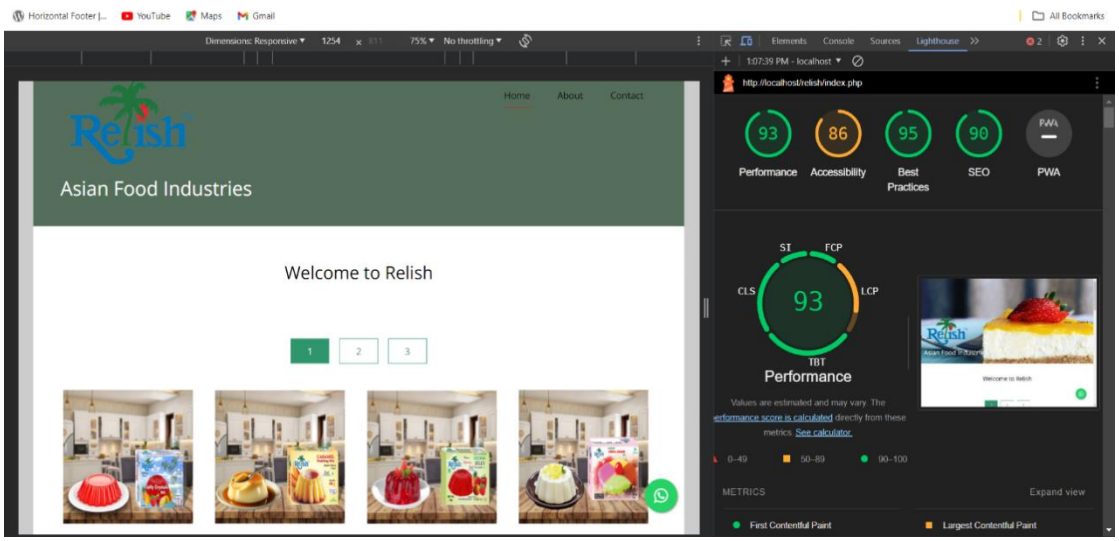


Figure 3.6>"Optimized website to the best possible standards, achieving high scores on Google Lighthouse.



2.4 PROJECT : EVENTIFY WEB APPLICATION

This website is designed for colleges and businesses to manage and coordinate various events. It aims to streamline the organization process and maintain records of contributions, transactions, and attendance of students, faculty, staff, and business participants. The platform likely offers tools for event planning, tracking participation, and documenting individual efforts to facilitate efficient event management for educational institutions and corporate settings.

Project Overview::

This project involves developing an event management system using Laravel. The system includes admin login functionality, vendor interfaces for event management, brochure upload modules, and detailed member reports.

- Key Responsibilities:

- Implemented secure admin login.
- Developed vendor interfaces for event status management.
- Created a brochure upload module.
- Enabled file upload options for events.
- Generated detailed member reports.

- System Architecture

- Model-View-Controller (MVC):
- Model: Manages data structures and database interactions.
- View: Handles the user interface using Blade templates.
- Controller: Processes user requests and contains business logic.

- Tools and Technologies Used:

- Laravel Framework for server-side scripting and backend development.
- MySQL for database management.

- AJAX (Asynchronous JavaScript and XML) for seamless form submission.
- HTML/CSS/JavaScript for rendering and client-side operations.
- XAMPP for local development environment.
- VS Code for code editing.
- npm (Node Package Manager) for managing project dependencies and packages.
- FileZilla: FTP client for transferring files between local and remote servers.
- cPanel: Web hosting control panel for managing hosting accounts.

My responsibilities:

Figure 4.1>Admin Login.

Admin login:

Overview of the Admin Login Module in Laravel

1. Controller (AdminController):

- Handles the logic for displaying the login form and processing login requests.
- Utilizes Laravel's authentication mechanisms to verify admin credentials.

2. View (login.blade.php):

- Presents a user-friendly login form to the admin.
- Includes fields for email, password, and a "remember me" checkbox.
- Displays session status messages and errors for invalid inputs.

3. Routing (web.php):

- Defines a route to access the admin login page.
- Maps the URL `/admin` to the `login` method in the `AdminController`.

Functionality and Techniques:

- Utilizes Laravel's built-in authentication features for secure login.
- Follows MVC architecture to separate concerns: the controller handles logic, the view manages presentation, and the route links URLs to controller actions.
- Ensures maintainability and scalability by adhering to Laravel’s structured framework.

Figure 2.2>Responsive Admin dashboard and sidebar UI.

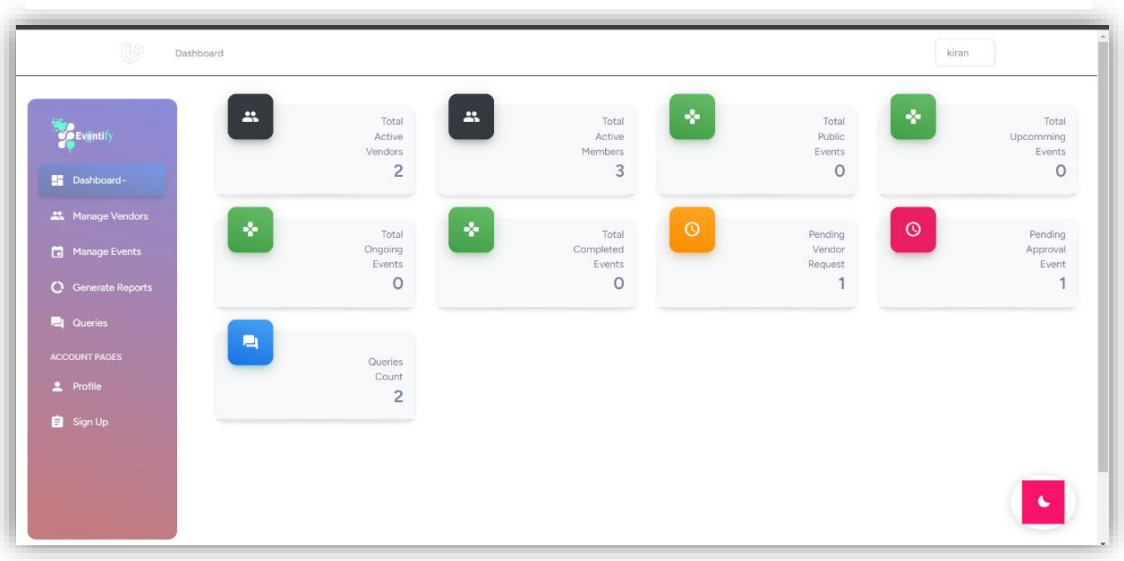
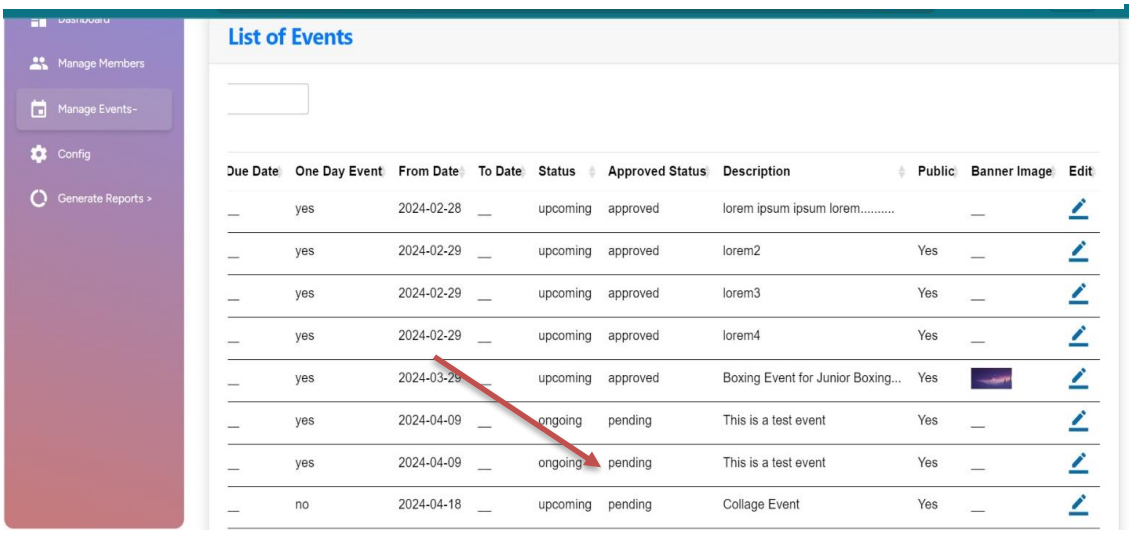


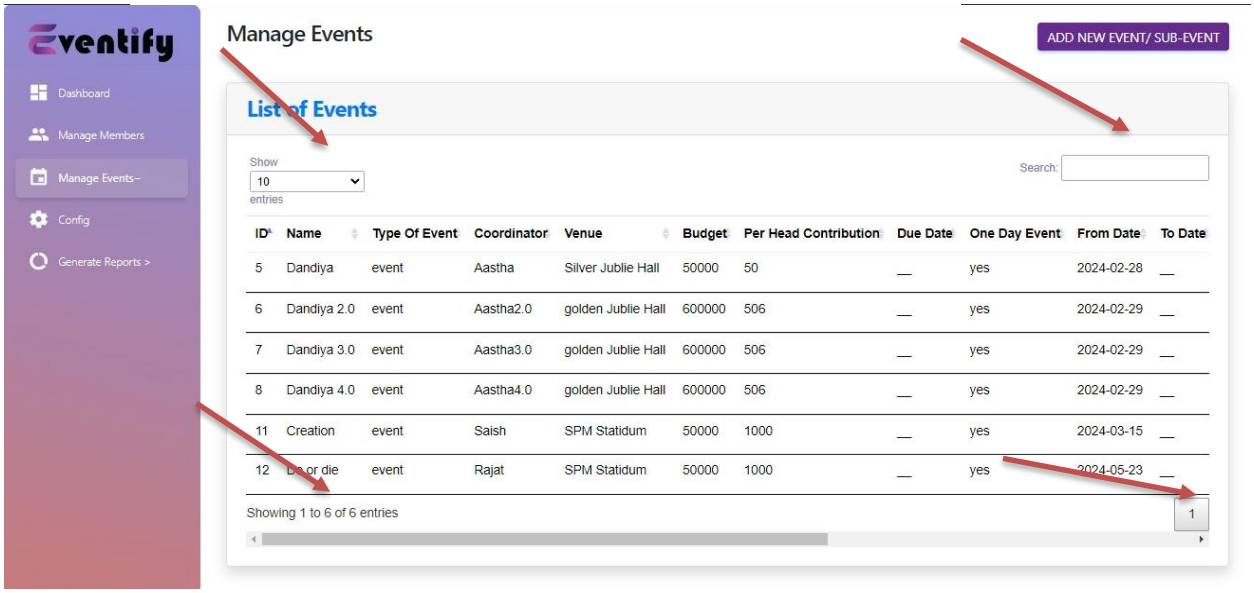
Figure 4.3>When vendor edits event the approval status changes to pending.



Vendor Interface

- Status Display: Vendors can see the updated status of their events, ensuring transparency in the approval process.

Figure 4.4>Implemented datatables for all entries and reports.



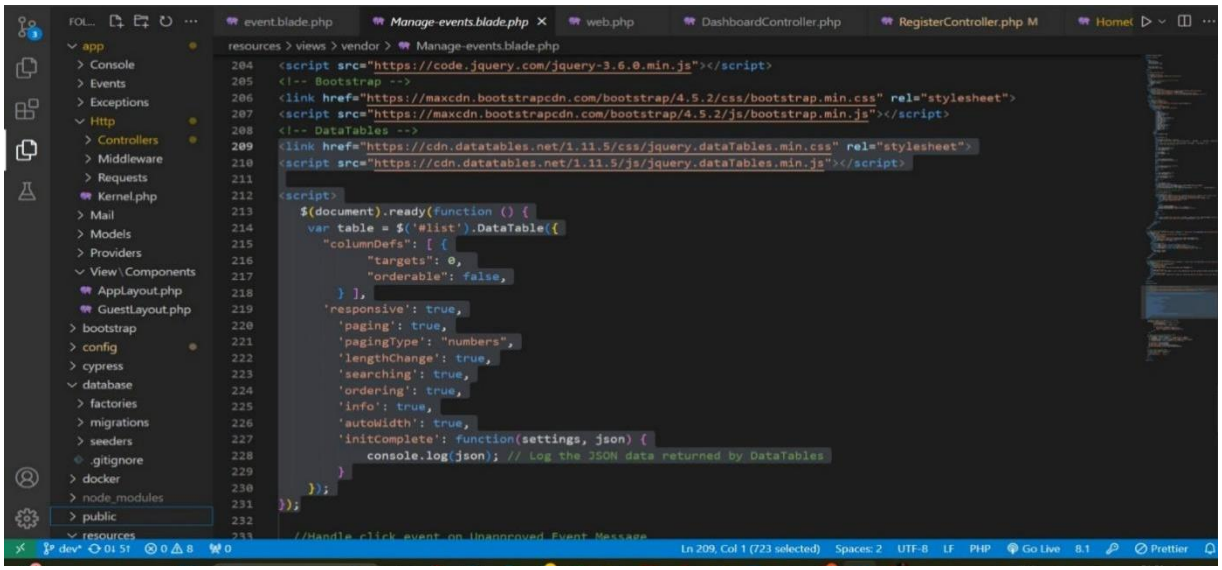
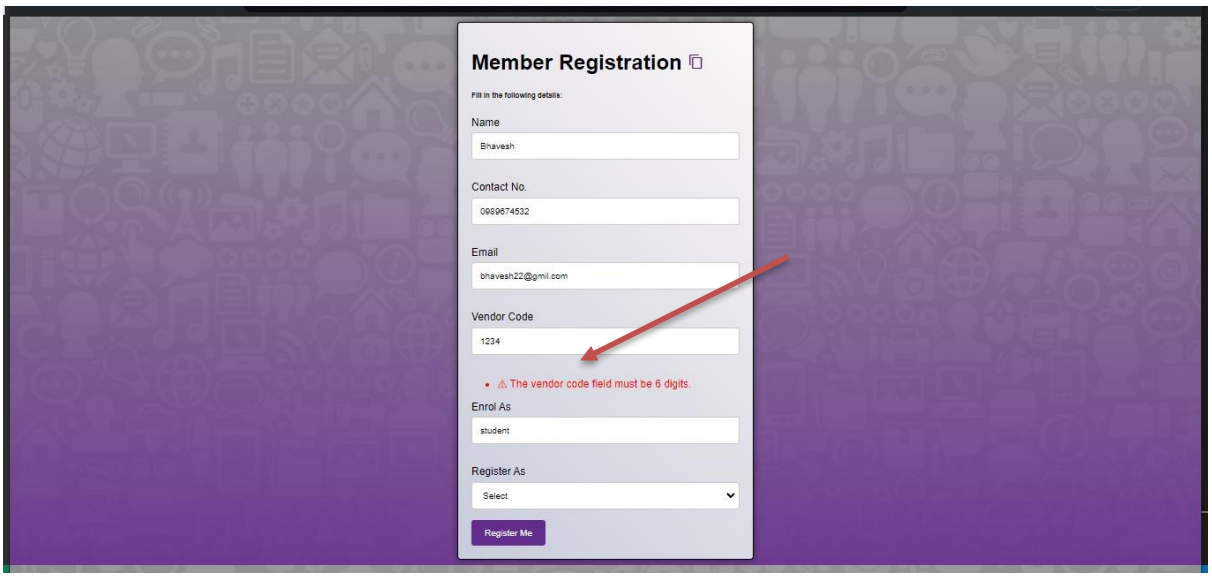


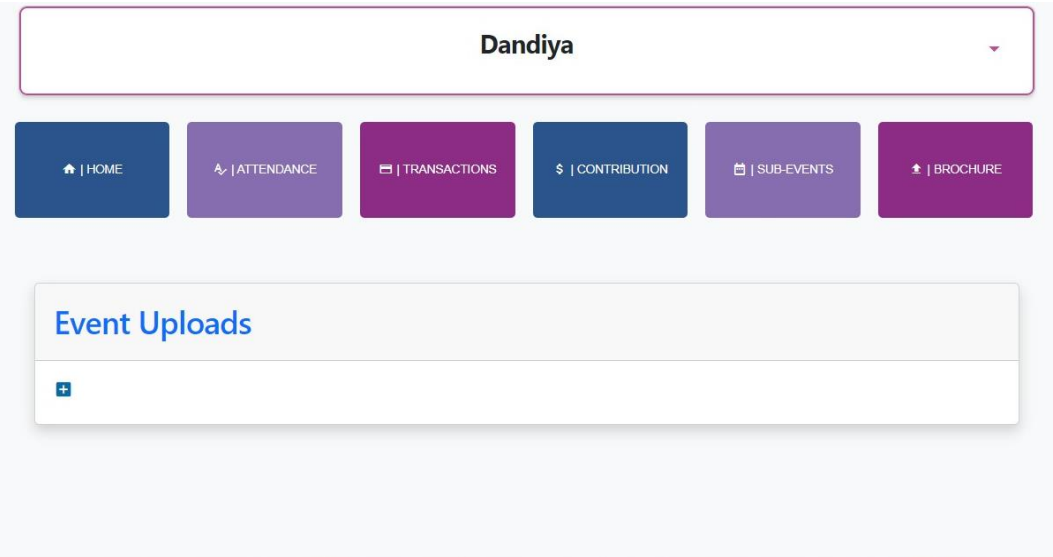
Figure 32.3.4>Added vendor code validation to member registration form.



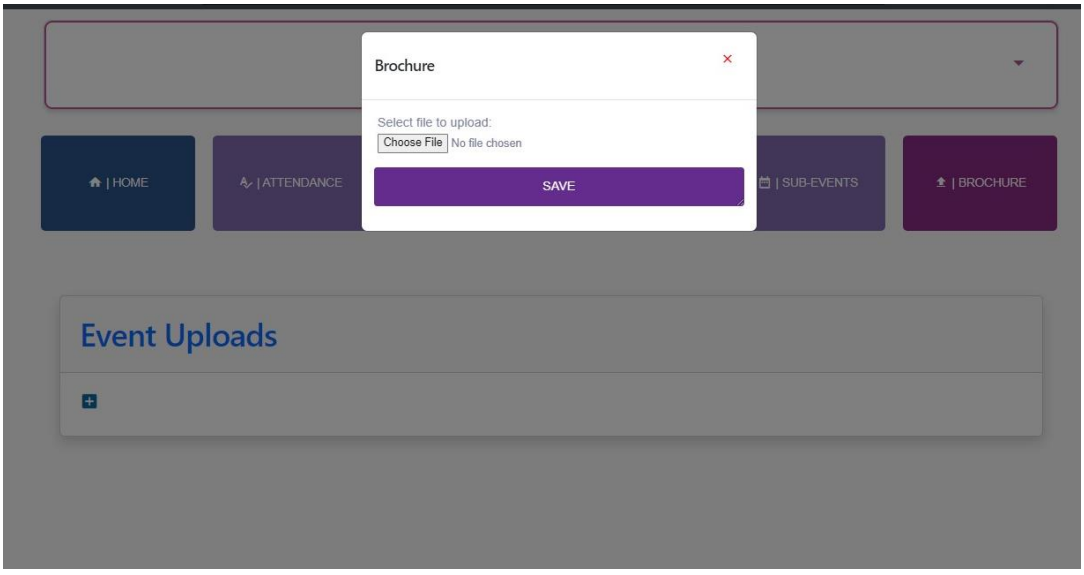
Brochure upload module:

- Extracts event ID from the request.
- Counts the total number of files already uploaded for the event.
- Redirects back with an error message if the count is 5 or more.
- Checks if a file is uploaded.
- Generates a unique file name.
- Moves the file to the designated directory.
- Saves the file URL and event ID in the `EventsUploadFile` model.
- Redirects back with a success message.

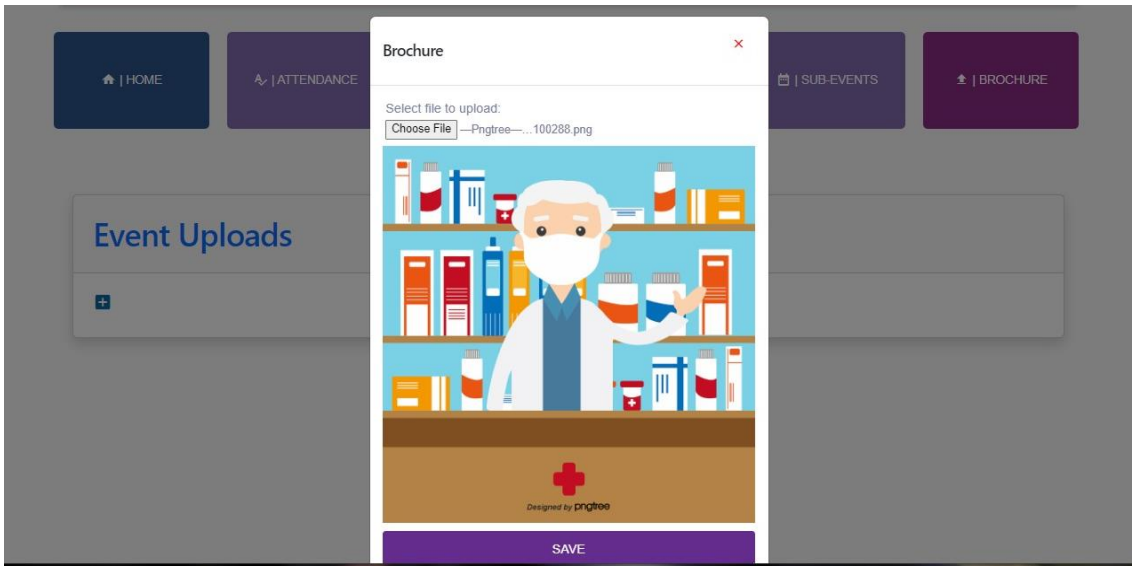
Figure 4>Dashboard for managaing events.



- I implemented the modal feature to allow vendors to easily upload brochure files for their events. This feature provides a user-friendly interface and ensures proper event association and security.



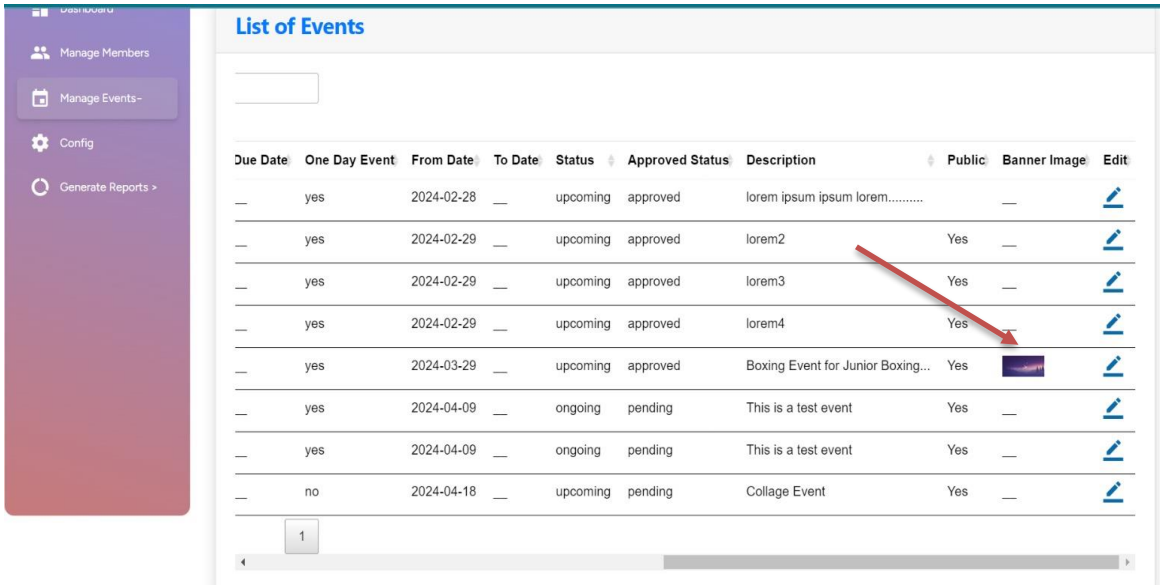
- **Before uploading file vendor gets to see the selcted file.**



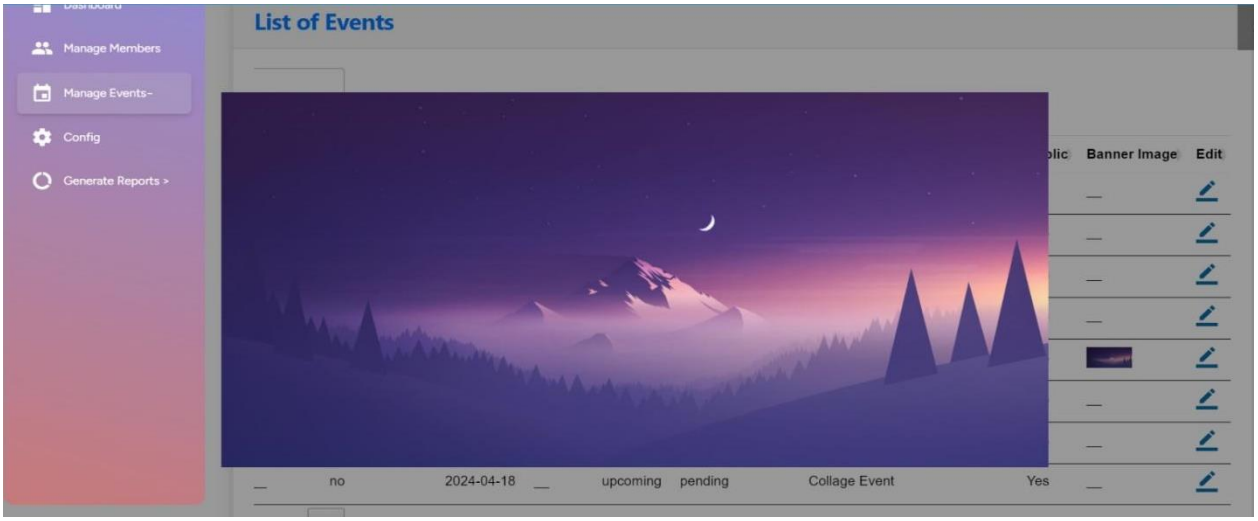
- Implemented file upload (banner image) option to vendor when filling add event form.
- If vendor selects event to make public. He gets option to upload banner image which will be displayed on landing page of the web application.

File upload option to public event.

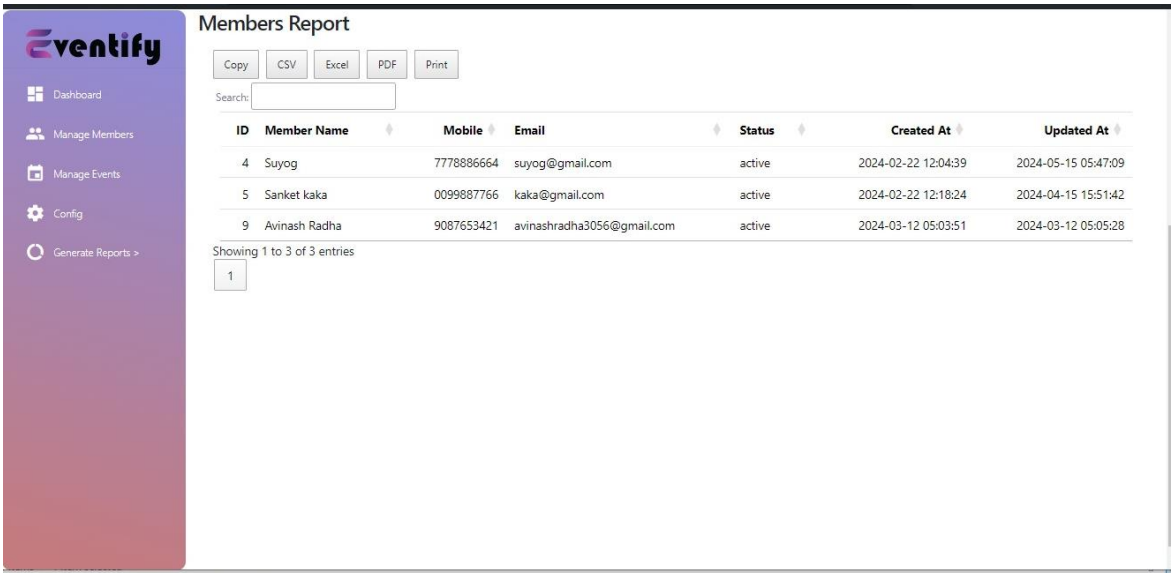
- Banner image is shown in event list datatables when event is successfully registered.



- Banner image gets pops out when clicked.



- **Member reports section to view members which registered under vendor.**



Members Report

The members report provides detailed information about each member and their involvement in various events. This report enables you to view specific details about individual members, including their registered events, contact information, and other pertinent details.

The members report shows:

- The list of events each member has registered for.
- The email address and contact information of each member.
- Other relevant details about the members such as their membership status, joining date, and any special roles or contributions.

2.5 PROJECT : EVENTIFY ANDROID APPLICATION

The mobile application is designed to provide members with an easy and efficient way to manage their participation in events. It includes features for event registration, viewing event details, tracking participation, and receiving notifications about event updates.

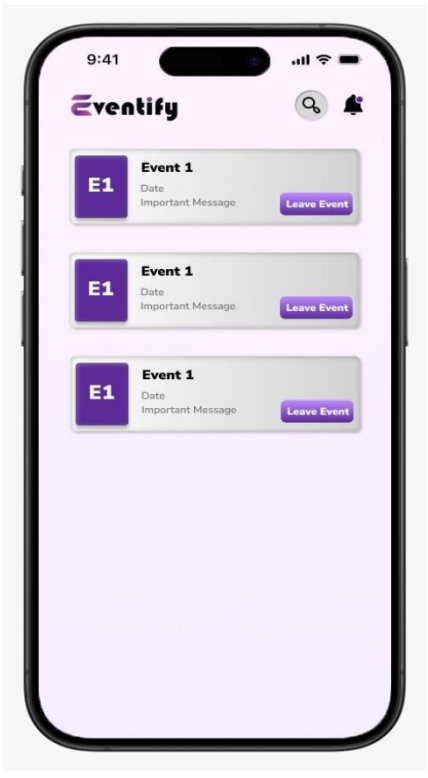
- **Tools and Technologies**

- React Native for mobile application development.
- Axios for making HTTP requests from the mobile app.
- Firebase for real-time database and push notifications.
- React Native CLI for building and running the mobile app.
- AsyncStorage for local storage management in the mobile app.
- Firebase Authentication for managing user authentication in the mobile app.

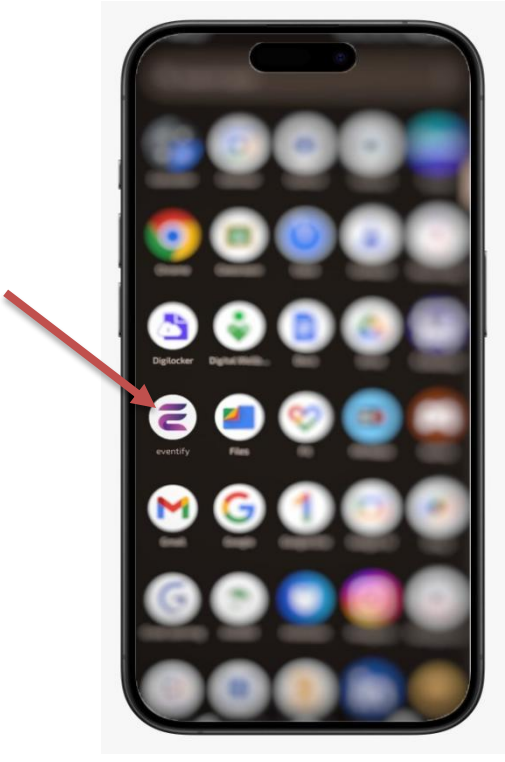
My responsibilities:

1. **Project Setup and framework**
   - Download and install Node.js.
   - Use npm to install React Native CLI.
   - Initialize a new Re2act Native project.
   - Download and install Android Studio.
   - Install necessary Android SDKs and set up an Android Virtual Device (AVD) for testing.
   - Open VS Code and install necessary libraries to start the project.

2. Design UI for Event List.



3. Added Eventify app icon.



CHAPTER 3 : LEARNINGS

3.1 Laravel Security Practices Implemented in the Project:

a. Disabling debug messages in production

When deploying an application to production, it's important to disable debug messages and enable production settings to ensure security, performance, and a smooth user experience. This is typically done by setting environment variables.
Example: -

```
APP_ENV=production
APP_DEBUG=false
```

Benefits:

- Security: Protects against exposing sensitive information.
- Performance: Reduces resource consumption by disabling debug features.
- User Experience: Shows user-friendly error pages instead of raw error details.

b. Protecting Forms from Cross-Site Request Forgery (CSRF)

To protect our forms from CSRF attacks, we used the @csrf Blade directive in our Laravel application. This directive added a CSRF token to our forms, which Laravel validated with each request to ensure it originated from our application.

Example: -

```
<form method="POST" action="{{ route('register') }}">
    @csrf

    <p>
        <label for="name">First Name</label>
        <input type="text" id="name" name="name" value="{{
old('name') }}" required />
    </p>

    <!-- Add other form fields here -->

</form>
```

@csrf: This Blade directive inserted a hidden CSRF token field into our form. Laravel used this token to verify that the request came from our application and not from a malicious third party.

Benefits: -

- **Security: Prevented attackers from making unauthorized requests on behalf of authenticated users.**
- **Ease of Use: Laravel automatically validated the CSRF token on form submissions.**

c. Validating User Input

Validation in Laravel was crucial to ensure our application's security and integrity. By validating user input, we sanitized the data users sent, which was essential since user input should never be trusted.

Example: -

```
use Illuminate\Support\Facades\Validator;

    public function store(Request $request)
    {
        $validated = $request->validate([
            'user_id' => 'required|exists:users,id',
            'title' => 'required|string|min:3|max:255',
            'content' => 'required|string|min:3',
            'published' => 'sometimes|boolean'
        ]);

if ($validator->fails()) {
return Redirect::back();
}
```

Benefits

- Security: Prevented malicious data from entering the system by validating inputs against specific rules.
- Data Integrity: Ensured that the data stored in the database met the required criteria, reducing the risk of errors and inconsistencies.

By using Laravel's built-in validation rules, we efficiently and effectively validated user input, enhancing the overall security and reliability of our application.

d. Handling Uploaded Files

As with any user input, files uploaded by users must never be trusted. Here are a few recommendations we followed to ensure secure handling of file uploads in our Laravel application:

Example :-

```
 $validated = $request->validate([ 'file' =>
'required|mimes:gif,jpeg,png,webp', ]);
```

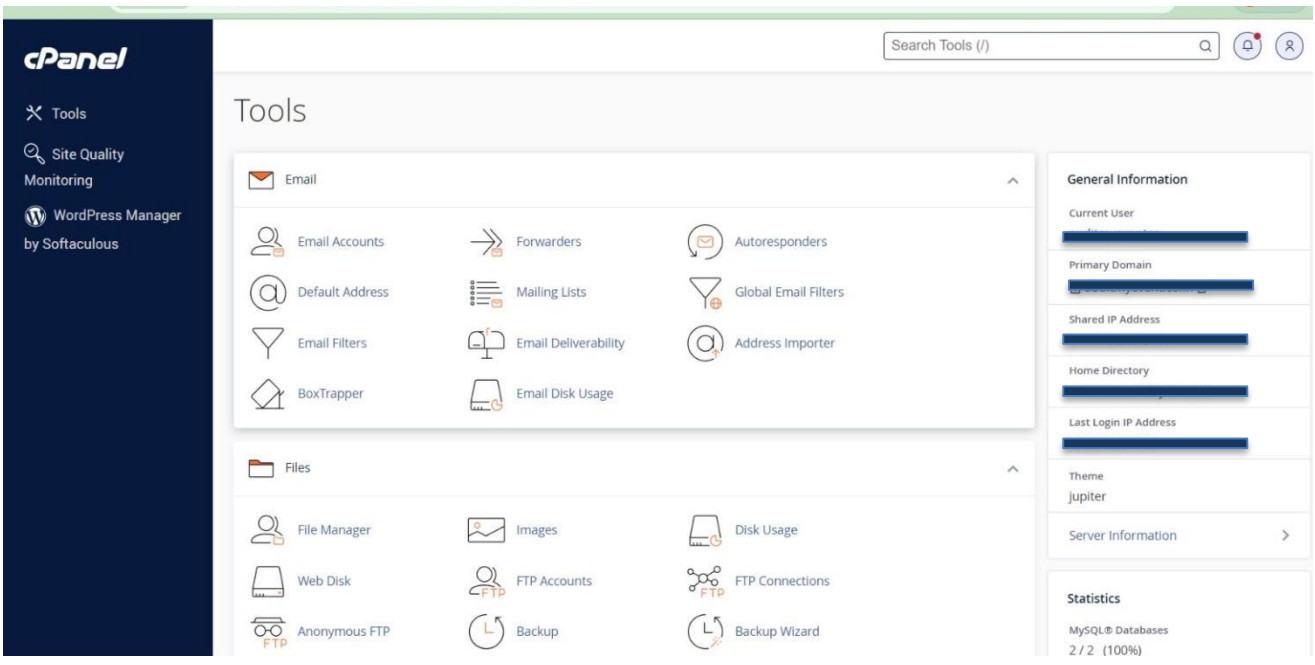
Benefits

- Security: Checked the MIME type to prevent users from uploading potentially harmful files.
- Data Integrity: Ensured that only files of the specified types were accepted, maintaining consistency and preventing errors in file handling.

3.2.Hosting and Deployment using FileZilla and cPanel.

FileZilla: It is an FTP (File Transfer Protocol) client that allows you to transfer files between your local machine and a remote server.

cPanel Dashboard:



cPanel: It is a web hosting control panel that provides a graphical interface and automation tools designed to simplify the process of hosting a website.

- Use FileZilla to upload the initial set of website files from a local development environment to the web server.
- Use cPanel to configure domains, set up databases, and manage other hosting settings.

Here are the steps I followed to successfully host a web application:

- Buy a server and a domain.
- Configure the DNS to connect the server to the domain. The domain typically takes 24-48 hours to become active once DNS is configured.
- Once the domain is live, open cPanel and install the necessary environment (like Laravel).
- Create a database and a user in cPanel, then assign the user to the database. Import the existing database if applicable.
- Use FileZilla to upload files from the local site to the remote site by entering the host, username, password, and then Quick Connect. Host the necessary files, including `.env`, `App` (http, models), routes, resources, public, and `config` (websockets, broadcasting) directories.
- Update the `.env` file with the correct username, database name, and database password for the production environment.

This experience provided me with valuable insights into the practical aspects of web hosting and server management using cPanel, enhancing my technical skills and understanding of the web deployment process.

3.3. Tools And Technologies:

Visual Studio Code: A free, open-source code editor by Microsoft that supports many programming languages and features like debugging, syntax highlighting, and Git integration through extensions.

Android Studio: The official integrated development environment (IDE) for Android app development, providing tools for code editing, debugging, testing, and a rich set of emulators for different Android devices.

GitHub: A web-based platform for version control and collaborative software development using Git. It provides a repository hosting service, enabling developers to manage their code, track changes, and collaborate with others through features like pull requests, issues, and project boards

HTML: The standard markup language for creating web pages, using elements and tags to define the structure and content, such as headings, paragraphs, links, and images.

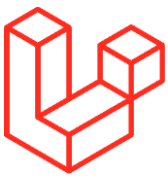
CSS: A stylesheet language used for describing the presentation of a document written in HTML or XML, enabling the design and layout of web pages with properties like colors, fonts, and spacing

JavaScript: A high-level, dynamic programming language primarily used to create interactive effects within web browsers, powering web functionalities like form validation, animations, and event handling.

jQuery: A fast, small, and feature-rich JavaScript library that simplifies HTML document traversal and manipulation, event handling, and animation, providing an easy-to-use API compatible with multiple browsers.

phpMyAdmin: It provides a user-friendly web interface for managing MySQL databases, allowing for easy database administration tasks without needing SQL knowledge.

PHP: A server-side scripting language designed for web development but also used as a general-purpose programming language, embedded in HTML to create dynamic web page content and interact with databases.



Laravel: A PHP web application framework with an expressive, elegant syntax, providing a robust set of tools and resources for building modern web applications, including routing, authentication, and database management.

Microsoft Teams: A collaboration platform within Microsoft 365, providing workspace chat, video conferencing, file storage, and application integration, designed to facilitate teamwork and communication within organizations.

React Native: An open-source framework created by Facebook for building mobile applications using JavaScript and React. It allows developers to write native mobile apps for iOS and Android with a single codebase, sharing logic and components across platforms.

npm: The Node Package Manager, a package manager for JavaScript, included with Node.js. It allows developers to install, share, and manage dependencies and packages needed for JavaScript development, simplifying project setup and management.

Node.js: An open-source, cross-platform JavaScript runtime environment that executes JavaScript code outside a web browser. It is used for building scalable network applications, offering event-driven, non-blocking I/O operations.

XAMPP: A free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting of Apache HTTP Server, MySQL database, and interpreters for scripts written in PHP and Perl. It simplifies the setup of a local development environment.

Firebase: A comprehensive platform developed by Google for creating mobile and web applications. It offers a suite of tools and services such as real-time databases, authentication, cloud storage, analytics, and hosting, enabling developers to build and scale apps quickly without managing the backend infrastructure.

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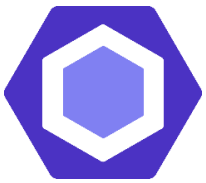
3.3. Knowledge sharing sessions:

FileZilla: An open-source FTP client for file transfer between a local computer and a server on the Internet, supporting FTP, SFTP, and FTPS protocols with features like drag-and-drop, site manager, and file editing.



ESLint: ESLint is a powerful static code analysis tool primarily used with JavaScript (ECMAScript) codebases. It helps developers maintain code quality and enforce coding standards by identifying patterns and potential issues in the code.

Cypress: An end-to-end testing framework for web applications, designed to provide a fast, reliable, and easy-to-use tool for writing, running, and debugging tests, with features like automatic waiting and real-time reloads.

Postman: A collaborative API development tool that simplifies the process of developing, testing, and debugging RESTful APIs through an intuitive graphical interface, allowing users to make HTTP requests and view responses.

cPanel: It is a web-based control panel and makes it easy to manage server resources, set up domains, and handle website files and databases.

Redis : Redis is a fast, in-memory database used for caching, real-time data, and messaging. It speeds up data access and improves performance in applications.

Katalon: A versatile test automation tool that supports web, API, mobile, and desktop applications, offering an integrated environment for creating and executing automated tests with a user-friendly interface.

Figma: Figma is a cloud-based design tool for creating user interfaces and prototypes. It supports real-time collaboration, vector graphics, and integrates well with other tools, making it ideal for web and app design.

Kafka: Kafka is a distributed streaming platform used to build real-time data pipelines and applications. It handles large volumes of data, providing high throughput, fault tolerance, and scalability

CHAPTER 4: CHALLENGES

4.1.Debugging Complex Code and Troubleshooting Software Issues

One of the most significant challenges encountered was debugging complex code and troubleshooting software issues. This task demanded meticulous attention to detail and persistence. Identifying and resolving bugs often required deep dives into the codebase to understand how different components interacted. Tracking down issues in complex, interconnected systems necessitated a methodical approach to isolate and fix problems without introducing new bugs.

4.2.Understanding the Laravel MVC Framework

Initially, understanding the Laravel MVC (Model-View-Controller) framework was quite challenging. As a comprehensive and feature-rich framework, Laravel has a steep learning curve for those unfamiliar with its structure and conventions. Learning how to properly utilize models, views, and controllers to build a cohesive application took considerable time and effort. Additionally, initially learning and creating routes was new and required substantial practice to get right. Understanding how to define and manage routes efficiently was critical for ensuring that the application's navigation was smooth and logical.

4.3.Handling Git Commits and Merge Conflicts

Another difficulty was handling Git commits and merge conflicts. With multiple developers working on the same project, merging code changes often led to conflicts. These conflicts arose when changes from different developers overlapped or contradicted each other. Resolving them required careful merging, adherence to good version control practices, and effective communication with team members. Ensuring that everyone was on the same page regarding the project's progress and changes was crucial to avoid misunderstandings and further conflicts.

4.4.Effective Communication and Coordination

In addition to the technical challenges, ensuring effective communication and coordination among team members was essential. With multiple developers contributing to the project, it was important to have regular check-ins and discussions to align on the project's direction and progress. This helped in preemptively addressing potential conflicts and ensuring that everyone was working towards the same goals.

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- https://www.atlassian.com/git
- https://www.google.com/
- https://www.youtube.com/
- https://stackoverflow.com/

APPENDIX I: PHOTOS WHILE I AM AT WORK