



An Undergraduate Internship/Project on Web Development of Palmal Group

By

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Summer, 2021

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September 3, 2021

Dissertation submitted in partial fulfillment for the degree of Bachelor of
Science in Computer Science

Department of Computer Science & Engineering

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Attestation

I confirm that I finished the report named 'Palmal Group' and submitted it in partial completion of the requirements for the degree of Computer Science from Independent University, Bangladesh (IUB). Moumita Asad (Internal Supervisor) and Masud Kaisar (External Supervisor) guided the project to completion. I further confirm that all of my work is original and has not previously been submitted to this or any other institution. In this project report, all of the sources of information used have been properly recognized.

Signature

Date

Yeanur Rahman Chowdhury

Name

Acknowledgement

First and foremost, I would like to express my gratitude to Almighty Allah for allowing me to complete this report on the 'Palmal Group's Web Development.' I want to express my special thanks to my parents for their everlasting love and support, which has sustained, nourished, and prepared me for this task.

I want to express my gratitude to Mr. Khairul Hasan, CEO, for allowing me to finish my internship at Dcastalia Limited, and Mr. Masud Kaisar, Senior Developer, for his advice and assistance throughout this three-month internship program. The knowledge and experiences I've gained here have aided me as a developer and will undoubtedly help me in my future endeavors. I also want to convey my appreciation to all of my coworkers for assisting me and making the Internship experience pleasurable. This journey would not have been possible without them.

I want to express my gratitude to Moumita Asad, Lecturer, Department of Computer Science Engineering, Independent University, Bangladesh, for her essential assistance, patience, time, suggestions for improvement, and valuable guidance on different parts of my internship and report preparation.

My project's success and ultimate conclusion necessitated a great deal of advice and support from many individuals, and I consider myself incredibly fortunate to have received it throughout my project. All of what I've accomplished has been possible solely because of their guidance and help, and I'd want to express my gratitude to them.

Letter of Transmittal

September 3, 2021

Moumita Asad

Lecturer

Department of Computer Science & Engineering,
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Bashundhara R/A, Dhaka 1229, Bangladesh.

Subject: Report submission of the internship.

Dear Miss,

With due respect and honor, I would like to submit my internship report to complete my Bachelor of Computer Science and Engineering degree. This report is based on my internship experience at Dcastalia Limited, which began on June 10, 2021. As a Web Developer intern, I was assigned to the development team. Palmal Group's web development was assigned to me as a project. The primary goal of the internship is to study and gain information, as well as improve our abilities and get a taste of the corporate world, which I feel I have accomplished by working here.

I hope and pray that this report is insightful and meets your expectations. I've done my best to prevent any flaws, and I'm hoping that my report will meet my expectations. I would also like to express my gratitude for allowing me to submit this report.

Sincerely,

Yeanur Rahman Chowdhury

ID – 1610802

Evaluation Committee

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Abstract

Bangladesh has evolved as a digital nation, with many people utilizing the internet, and the number continues to rise. The internet is now widely available and has touched every part of the country. This necessitates the evolution and digitization of businesses, platforms, and organizations. This creates a great potential for businesses to market themselves on the internet. Like every other business sector, Garments companies have seized this chance to expand their operations and reach a wider audience. The following report is based on the development of a website for such a firm, Palmal Group. The website seeks to provide vital information to their clients, provide a simple way to contact or arrange a meeting, and promote the brand to the global community to build them as a renowned garments brand.

The report is organized into nine key sections that outline the project and the development process. It begins with the project's introduction in the first chapter, which focuses on the project's overview and aim and the scopes of work we had. The second chapter presents the literature study, discussing how the project relates to my bachelor's degree. In the third chapter, I addressed the planning that went into the project, project management, and finance, which included a breakdown of time, resources, and cost to continue the development. The project approach is then explained in the fourth chapter and how that methodology aided us in planning and development. The report's most essential section is the fifth chapter, labeled "body of the project." The system analysis is addressed in-depth here, with a focus on various analysis methodologies and graphics. The following chapter, Results, and Analysis discusses the outcomes of the development process and analyzes what we accomplished. Chapter seven discusses the project's long-term viability, social and environmental consequences, and ethical considerations. Chapter eight is devoted to reviewing the issues I encountered during this time and their solutions. Finally, as part of the report's conclusion, I outlined the scope of future work in the last chapter.

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Chapter 1

Introduction

A professional learning experience that provides meaningful, practical work linked to a student's study or career interest is known as an internship. An internship allows a student to explore and improve their profession while also learning new skills. [1] Independent University, Bangladesh has offered us the CSE 499 (Internship) course to enhance our professional skills, strengthen our character, and expand our opportunities. My main aim for the internship is to get experience in all of the company's technology-related sectors, such as research and development, documentation, content writing, and software development, and learn about software development processes and practices.

1.1 Overview/Background of the Work

I work in Dcastalia under the supervision of Mr. Masud Kaisar, Head of Development. I've been assigned to the Palmal Group website project, where I work as a web developer with the rest of the team.

We, the people of Bangladesh, live in a digital age, embracing new technology and systems. In the last ten years, we have become increasingly reliant on the internet in our daily lives. Every business seeks to develop a presence on the internet and make their services more available online to take advantage of this potential. The first and most important necessity for an organization to establish itself digitally is to have a working and user-friendly website.

Bangladesh's ready-made garments (RMG) industry has outperformed all others in growth and foreign exchange earnings. It contributes significantly to the national economy by offering abundant job opportunities and alleviating poverty through social development. People presently spend most of their time on the internet, which serves as the foundation for online engagement with clients to advertise and sell goods and services. Presenting product range on the internet aids investors in their decision-making process and allows them to determine whether or not they wish to invest. [2]

Team Deastalia collaborated with Palmal Group of Industries to create a website tailored to their garments industry. Their website wants to showcase their services in a beautiful, organized way for their visitors. The website will provide all the necessary information about the company to web browser users. The visitors can also use the website's contact form to contact the company. The company's brochure, audit reports and policies are available for download to anyone who views the website. To learn about a job opening, the visitors can go to the company's career page. Furthermore, while physical visits limit companies' ability to exhibit all of their products and services simultaneously, being digitally present allows companies to provide clients with a comprehensive view of their work.

1.2 Objectives

The project's main objective is to gain out to additional foreign clients via their online presence, providing visitors with a convenient medium to connect via the web platform. The garment sector has suffered a significant setback due to the global pandemic, as it can no longer inspect factories ahead of time. This website will allow clients to obtain all essential information without having to check the factory personally. With the use of forms, they will also be able to contact the company quickly and securely. The website's most advantageous feature is that individuals may access it from any computer or mobile device at any time because it is an online-based system.

1.3 Scopes

During the development of this web application, the following features will be offered to the user:

1. **Landing Page:** The users can obtain a brief review of the site.
2. **About Page:** A detailed page that explains who Palmal Group is.
3. **Division Page:** Display all Palmal Group concerns, including extensive information, photos, audit reports, policies, and a contact form.
4. **Service Page:** A page dedicated to the service information needed by clients.
5. **Sustainability Page:** A page dedicated to social responsibility in the business.
6. **Career Page:** This will display Palmal Group job openings and interested applicants can apply by filling out and completing the form.

7. **Media Page:** The user will see all of the company's newest news, events, and photo gallery on this website.
8. **Contact Us Page:** The user will be able to contact the company directly through this page.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

- **Database Management, CSE 303:** This course have taught me how to plan and create a project. It included topics like the System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model and Notation Diagram, and many others. In this course, I also learned about SQL. SQL is the most widely used database language. When I'm working with the database for my project, SQL will come in handy.
- **System Analysis and Design, CSE 307:** This course provides an overview of various SDLCs and how to apply them to a project. It benefited me in identifying my objectives and problems. We devised a strategy based on the SDLC's seven phases, which made work better for myself and the rest of the Dcastalia team.
- **Web Application and Internet, CSE 309:** This is the most significant course for my project, as it has covered the most critical aspects of web application development. I have learned HTML, CSS, JavaScript, Node js PHP, MySQL, and other skills to apply to my project.

2.2 Related works

Dcastalia has already worked with various organizations to meet their needs for a solid online presence and a method of easy contact with their customers. The following are some of the initiatives that have been highlighted:

- **Union Group:** Union Group is a diverse collection of companies encompassing a wide range of products and services. Retail, mobile phones, textiles, dyeing, real estate and engineering, power and energy, tours and travels, and the hospitality industry are among the sectors covered. Their website was created to bring all of

their services together on one platform. Their website has an excellent UI and UX that makes it simple to contact their virtual customer.

- **United Group:** United Group is one of the most well-known companies currently in the country. Their website allows users to connect with the brand and learn everything to know about the firm and its offerings.
- **Spectra Group:** Infrastructure development, construction, medical gas and pipeline services, real estate, hospitality, renewable energy, and agriculture are among the industries in which the Spectra Group is involved. Their website reflects the organization's true identity.
- **Anwar Group:** Anwar Group is presently one of the most well-known industries in the country. Users may engage with the brand on their website and learn everything there is to know about the company and its services.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

Breakdown of Work Structure is described as a deliverable-oriented hierarchical breakdown of the work to be carried out by the project team to meet the project's objectives and produce the needed deliverables. [3]

It organizes and specifies the project's overall scope. In addition, we have established a work breakdown structure (WBS) to ensure that our project runs smoothly and effectively. Our WBS was created using a top-down method and a phase-based WBS. The following is a short description of the five aspects in our Level 1 and how the stages are implemented:

1. **Requirement Analysis:** Client Requirements are taken into account, and a sitemap is created as a result. A project timetable is created, risk considerations are assessed, and cost estimates are calculated.
2. **Design Layout:** The design layout is created using various systems analysis approaches such as UML diagrams, Rich Picture diagrams, and Activity diagrams. Then, depending on the study, a user interface is created.
3. **Development:** Begin with frontend development and work your way back to the backend development. Both of these projects begin with separate development sessions. Then there are many phases, including several audits to assure quality. We are making the site responsive to mobile devices, CMS setup and versioning, data entering, etc.
4. **User Acceptance Testing (UAT):** Once the site is up and running, this step begins. The site is tested and improved before being shown to the customer for input, and more modifications are being made.
5. **Deployment:** After customer approval, the site becomes online at this stage.

3.1. WORK BREAKDOWN SPREADSHEET PROJECT MANAGEMENT & FINANCING

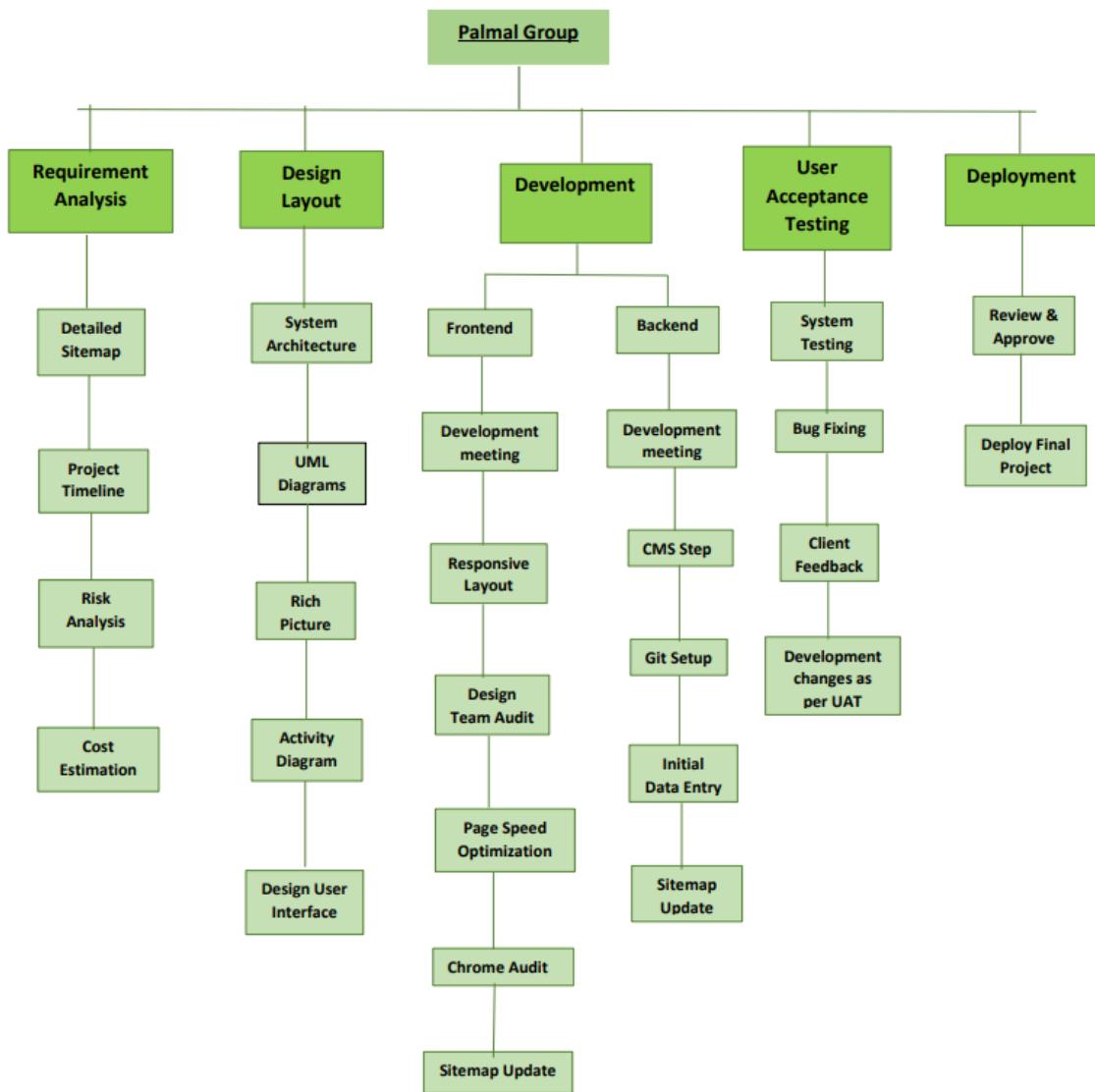


Figure 3.1: Work Breakdown Structure

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3.2 Process/Activity wise Time Distribution

The project is anticipated to take 60 working days to complete in three months. The whole task is divided into five primary functions, each accounting for 100 per cent of the total effort. The following are the five primary tasks:

1. **Requirement Analysis:** We spoke with the customer and compiled all the requirements, including functionality, design, and security. Forward in research of the requirements aided us in determining the project's price and timeline. This takes around ten working days.
2. **Design Layout:** According to the sitemap, UI/UX design is done in Adobe XD, and a mockup is created to demonstrate to the customer how the site would appear. This takes around ten working days.
3. **Development:** In this phase, the frontend and backend code are completed. This is the most time-consuming phase of the project, taking around 25 working days.
4. **User Acceptance Testing:** After completing the preceding three phases, the customer presents the project via a meeting. Our crew will go over all of the features and options with the client. The clients are then requested for a specific input, and the project is revised following the comments. In this phase, quality assurance is also addressed. This takes around ten working days.
5. **Deployment:** Finally, following the customer's approval, the project is hosted on the client's domain and hosting, and the CMS is given over to the client, along with the necessary training. This takes around five working days. [4]

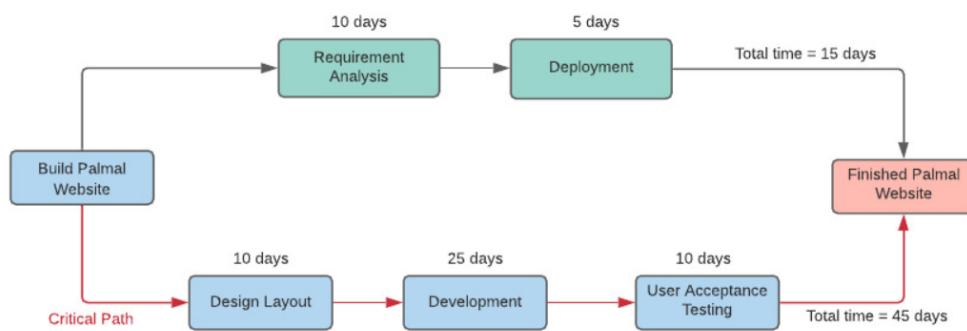


Figure 3.2: Critical Path Method

3.3 Gantt Chart

A Gantt chart is a project management tool that helps with project planning and scheduling. Timelines and tasks from project management are turned into a horizontal bar chart that displays the start and finishes dates and dependencies, scheduling, and deadlines and how much of the job is done at each stage and who the task owner is. [5] We created a Gantt Chart to assist us plan and schedule all of the project's activities in detail. The project is expected to take 60 working days to complete in three months.

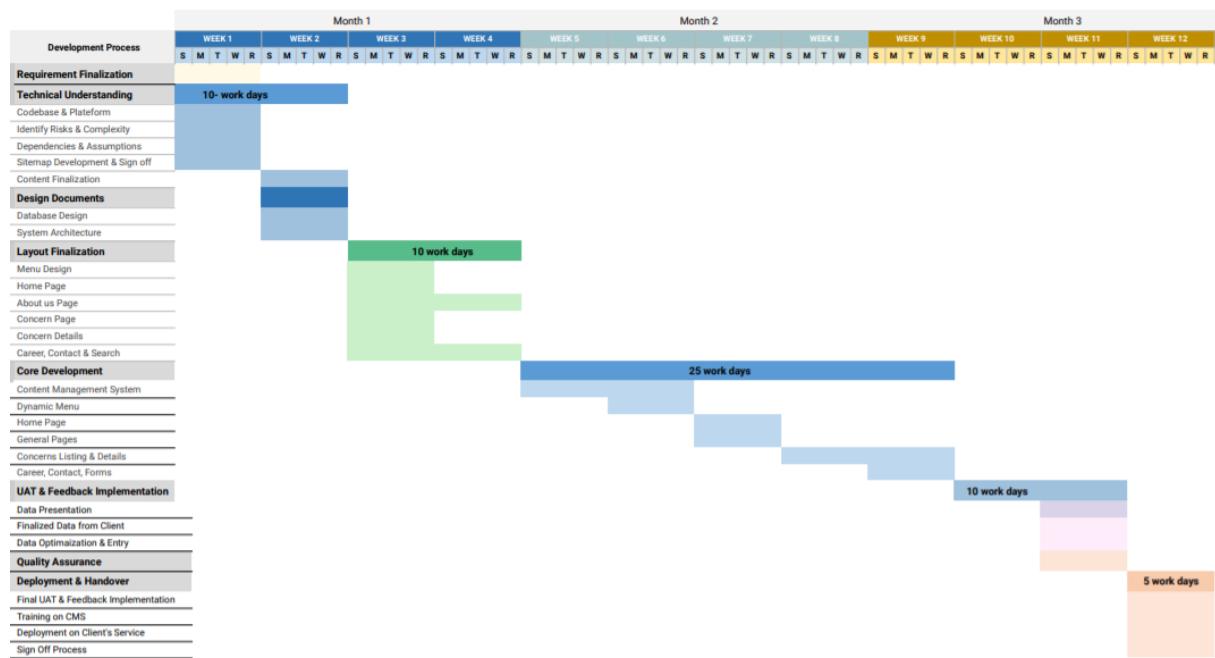


Figure 3.3: Gantt Chart

3.4 Process/Activity wise Resource Allocation

We have created a table to show how much work should be accomplished in a given amount of time. The whole task is divided into five primary functions, each accounting for 100 per cent of the total effort . In three months, the project is estimated to take 60 working days to complete. The project has a total of seven individuals working on it. They are,

1. **Project Management:** 1 Project Manager
2. **UX & UI Design:** 1 Designer
3. **Frontend & Backend Development:** 3 Developers
4. **Quality Assurance:** 1 QA Engineer
5. **Data Presentation:** 1 Person

Table 3.1: Activity wise work percentage allocation.

Task	Days	Work Percentage
Requirement Analysis	10	10%
Design Layout	10	20%
Development	25	47%
UAT	10	18%
Deployment	5	5%
Total	60	100%

3.5 Estimated Costing

The cost of a web app project is determined by numerous aspects, including the project's size, functionality, website design, and any other features requested by the customer. Below is our projected pricing table, which covers design services such as theme, logo, and icons and the cost of a custom home page slider, social network connection, SSL Certificate, SEO, and other plugins and services. The expense of using official resources is also taken into account. The entire cost, including domain and hosting, was anticipated to be BDT 3,40,000, with the possibility of extra expenses if any new services are necessary within one year of the website's launch.

Table 3.2: Estimated Costing

Work Distribution	Costing in BDT
User Experience & Interface Design	30,000
Web Modules & Functionality Development	270,000
Domain and Hosting	40,000
Total	340,000

Chapter 4

Methodology

A system development life cycle (SDLC) is a project management approach that defines the various stages from beginning to end. Clear roles and responsibilities are established and goals that are expected to be fulfilled after each step of the SDLC, such as planning, creating, developing, testing, and deployment. For SDLC, there are a variety of methodologies and models to choose from, such as:

1. Agile
2. Lean
3. Waterfall
4. Iterative
5. Spiral
6. DevOps

Each of these models is unique in some manner, but they all have the same goal of structuring a project and assisting the project team in functioning more successfully and efficiently.

We have chosen the Agile Model for our project. Agile methodology is a development and testing technique that encourages continuous iteration throughout the project's software development life cycle. Both development and testing are done concurrently under the Agile methodology. The principles of the Agile model are:

- 1. Individuals and Interactions:** Self-development via organization and self-learning is an essential element of the Agile approach, as is working with and learning from the team and coworkers.
- 2. Working Software:** Customers want a working software for accessible communication and comprehension. Aside from planning papers, a functional software model is essential.

3. **Customer Collaboration:** Interacting with consumers and soliciting feedback after each step is critical to obtain all of the tiniest details of customer requirements, which might be challenging to gather at the start of a project.

4. **Adapting to Changes:** In agile, changes are made as soon as input is received.

By carefully structuring and planning the project, we increased our productivity using the agile development methodology. This resulted in enhanced efficiency and improved team communication. It also provides a more substantial client relationship because we continuously contact them, showing them demos and soliciting comments. This also helps create client confidence, and we get all of the essential criteria completed, lowering risks. This approach saves time and ensures that each project has the most remarkable potential conclusion.[6]



Figure 4.1: Agile Methodology

Chapter 5

Body of the Project

5.1 Work Description

Palmal Group of Industries is one of Bangladesh's most prominent RMG manufacturing companies. Knitting, printing, embroidery, trimmings and accessories, composites, and garments are among their specialties, and they also provide backward linkage services. The website's primary goal is to focus solely on clients interested in doing business with them, making it easy to understand more about their services. The website also serves as a means of facilitating communication between potential clients and the administrative authority. A prospective client can obtain a copy of the company's brochure, audit reports,social compliance policies ,and procedures by visiting the website. These reports are available for download to anyone who views the website. Anyone who visits the website can also contact the company by using the website's contact form. A prospective employee can apply for a job through the website.

My role here is to develop the website, mainly concentrating on the frontend while also providing backend and data entry assistance. React.JS is utilized as the frontend framework for the entire project. We use the PHP language, Yii 2.0 framework in the backend and MySQL for the database.

5.2 System Analysis

System analysis is performed to investigate a system or its components to determine its objectives. It is a problem-solving approach that enhances the system and guarantees that its features function efficiently to achieve its goals. The system's behavior is specified through analysis.

5.2.1 Six Elements

Table 5.1: Six Elements

Process	Human	Non Computing Hardware	Computing Hardware	Software	Database	Network
Manage Report	Admin	Pen, Paper	Computer	PDF, Web Browser	RDMS	WAN/LAN
View Report	User	Paper	Computer	PDF, Web Browser	RDMS	Internet
Manage Career	Admin	Pen, Paper	Computer	Web Browser	RDMS	WAN/LAN
View Career	User	N/A	Computer	Web Browser	RDMS	Internet
Submit Forms	User	N/A	Computer	Web Browser	RDMS	Internet
Manage Forms	Admin	Record Books	Computer	Web Browser	RDMS	WAN/LAN

5.2.2 Feasibility Analysis

Since a feasibility analysis assesses a project's probability of success, considered neutrality is critical to the study's reliability among possible investors. It determines if the project is ethically, intellectually, and commercially feasible and whether or not it is worthwhile to invest in. This project is based on the results of five feasibility studies:

- 1. Technical Feasibility:** Dcastalia is a well-known and well-established firm that has collaborated with some of the industry's top names. They have the necessary skills to bring the project's vision to life. This project is technically feasible since all the required hardware, software, and other technical needs are on hand.
- 2. Operational Feasibility:** The continuing epidemic and economic condition make the website highly feasible, as physically inspecting industrial locations is now harmful. Visitors and foreign clients may now quickly and easily discover all of the information they want due to this website. Furthermore, the project plan meets all of the conditions stated for the project's completion.
- 3. Economic Feasibility:** This evaluation is carried out to determine the project's cost and benefit. A complete cost estimate for website creation is provided, including all cost breakdowns. This cost is then compared to whether the website would be financially advantageous to the firm. Because there is no fee for website visitors, The Palmal Group's sole goal is to profit from them and convert them into prospective clients.

4. **Legal Feasibility:** All legal limitations, such as data protection statutes, social media regulations, and government regulations, have been reviewed before starting with this project to ensure that it does not encounter any legal limits in the future.
5. **Scheduling Feasibility:** It is critical to executing a project on time for it to be successful. The project was completed on schedule, and all of the assigned tasks were performed on time. [7]

5.2.3 Problem Solution Analysis

I was assigned to a real-time project for the first time, which presented me with many obstacles and hurdles. Most of my issues stemmed from my lack of experience with Javascript and Reactjs. In my section of the website, I had some problems with responsiveness, padding, and grid. It was implementing response after knowing the fundamentals. It wasn't easy to learn Reactjs. My team was constructive and solved any difficulty I had by explaining past projects to me. My code did not appear professional because I was a new member of the team. I had a few issues: the functions and classes are mixed up and not capitalizing a component name. The Plugin speed and animation problem was handled by performing a full RD and having tailored javascript solutions for plugins.

5.2.4 Effect and Constraints Analysis

The website of Palmal group tries to bring about the actual value and essence that the company stands for. Visitors will have open access to their main divisions and services in-depth, starting from the production capacity to the year-wise turnover. Future clients will also be able to contact the division they choose to work with the help of numerous different forms. We realize that it is still not a traditional way for a potential client to contact an RMG manufacturing company, and most clients prefer a direct contact path. However, with the new world of digitalization, it will be very convenient for anyone to gather all the necessary information about the company with just a few clicks. This website will exceptionally be even more helpful during the current pandemic, as travelling is off-limits. Palmal aims to be transparent about their services, and it is of utmost importance that all clients are aligned about how they operate.

5.3 System Design

5.3.1 Rich Picture

A Rich Picture is a method of exploring, acknowledging, and defining a situation and then expressing it using diagrams to construct a rough mental model. A rich image aids in starting a conversation and reaching a broad, shared knowledge of a problem. The following Rich Picture represents how different users will interact with the website to view business units and ultimately contact the company, how a prospective employee will view job offerings and be able to apply for them by filling out a form, how users will learn about the company events, news, and gallery, and how the admin will handle his CRUD for business units, media, and job posting.

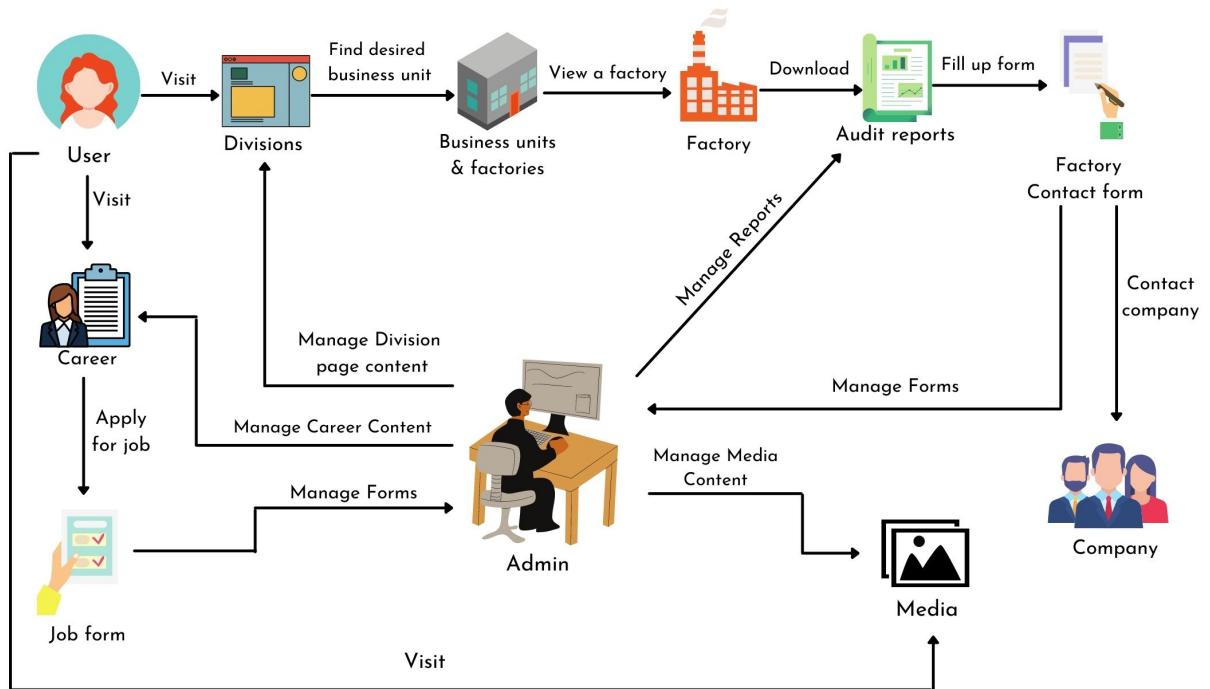


Figure 5.1: Rich Picture

5.3.2 UML Diagrams

UML (Unified Modeling Language) is a standardized modeling language that consists of an integrated collection of diagrams that was created to assist system and software engineers in describing, visualizing, creating, and documenting software system artifacts. [8]

- 1. Use Case Diagram:** Use-case diagrams depict a system's high-level functionality and scope. These diagrams also show the interactions between the system and its actors. In use-case diagrams, the use cases and actors explain what the system does and how the actors interact, but not how it works inside.

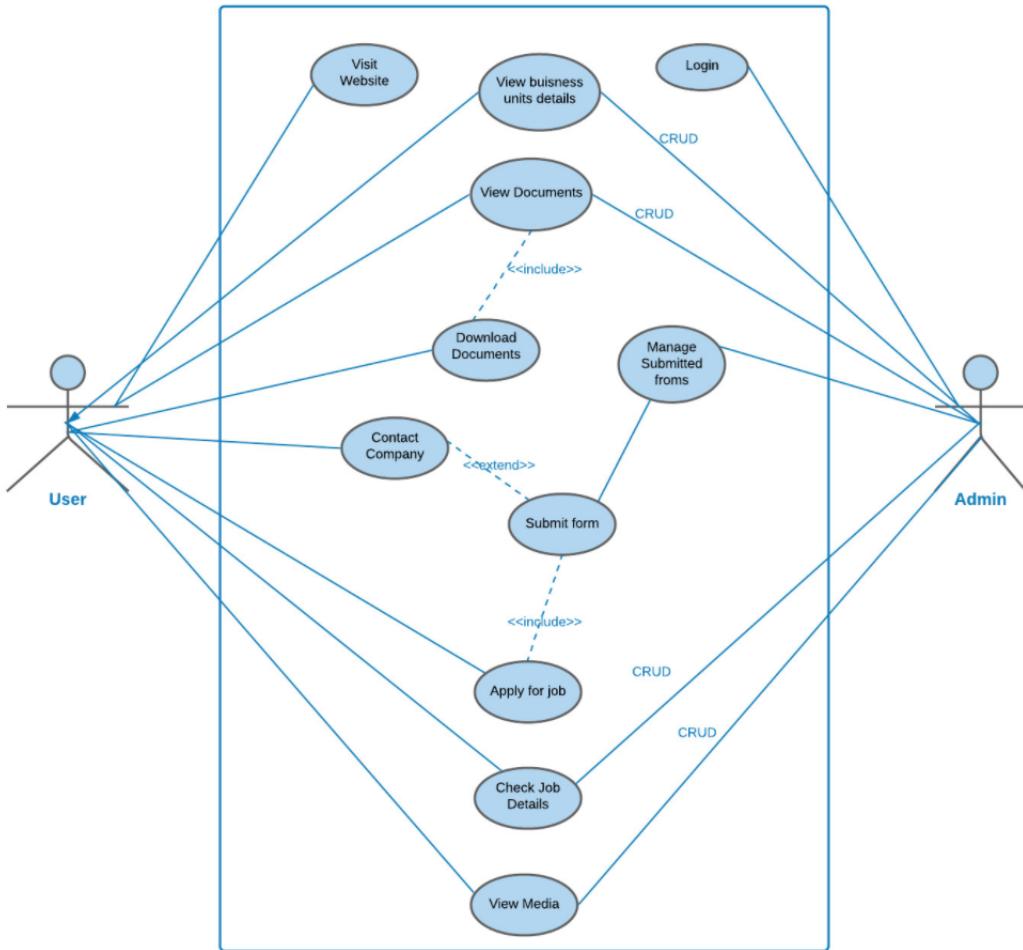


Figure 5.2: Use Case Diagram of Palmal Website

2. **Activity Diagram:** An activity diagram represents the control flow from a start point to a finish point and the numerous decision routes that exist while the activity is being done. We prepared the following activity diagrams:

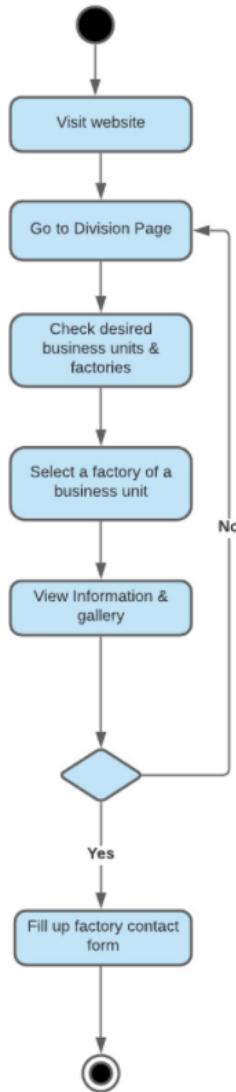


Figure 5.3: Activity diagram for contacting a factory of a specific business unit.

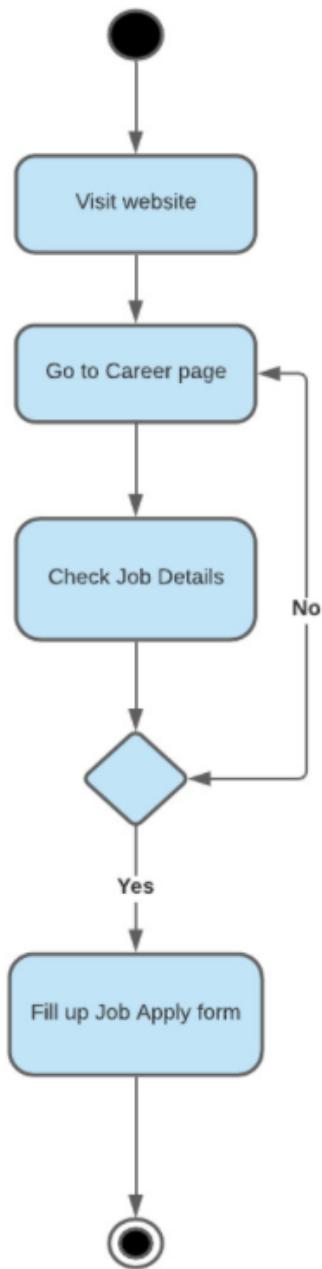


Figure 5.4: Activity Diagram for Applying for a job post.

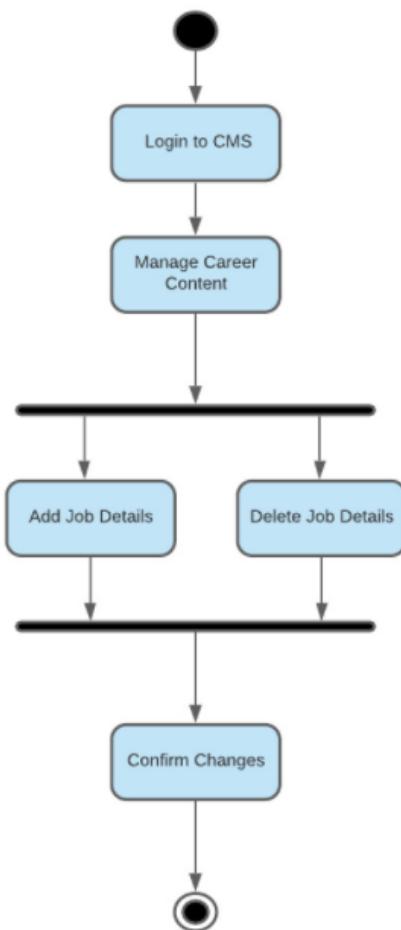


Figure 5.5: Activity Diagram for Managing Career content.

3. Entity Relationship Diagram : To show the system's structure and relationship to the database, an Entity Relationship Diagram is created. It displays the entities, which are the database tables, and the characteristics of the entities. It also depicts the entities' connections with one another.

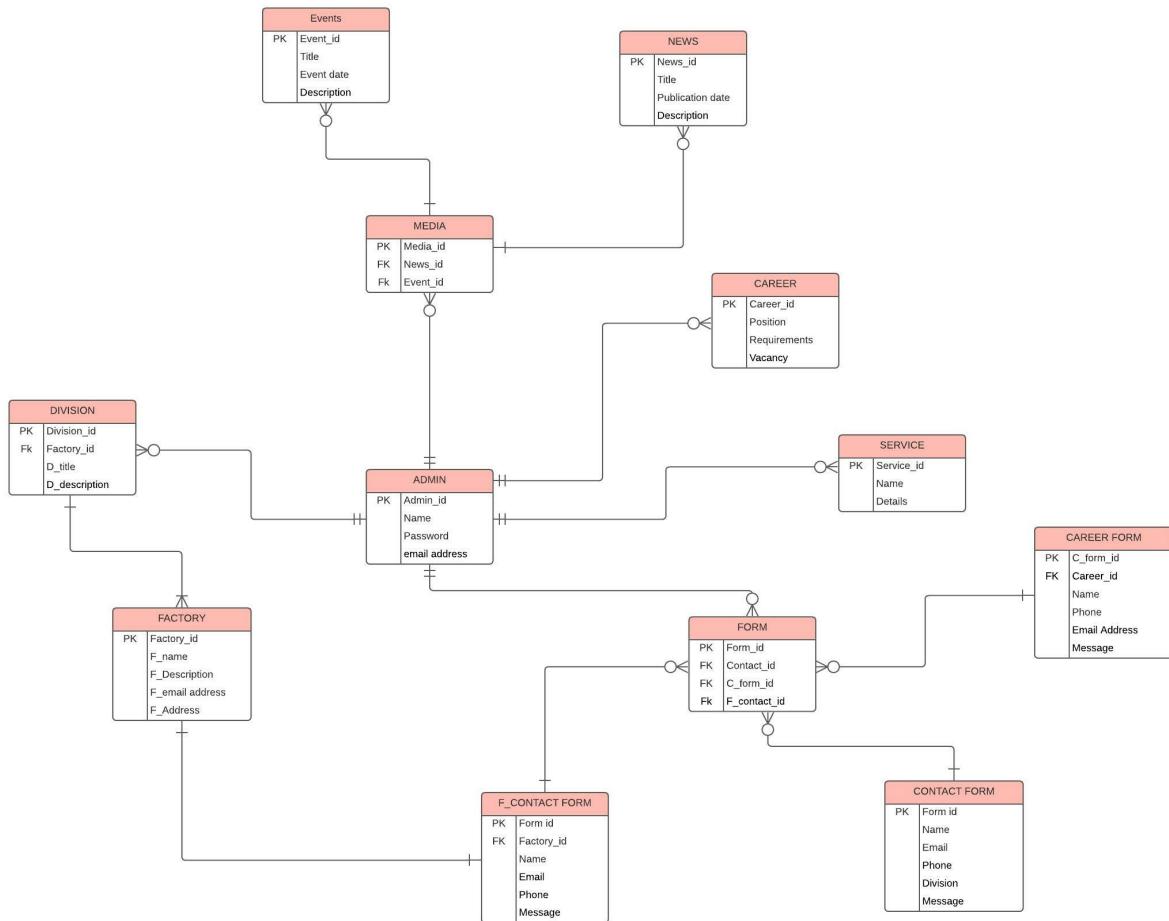


Figure 5.6: Entity Relationship Diagram

5.3.3 Functional and Non-Functional Requirements

Functional Requirements: Functional requirements define the basic system behavior. A functional need is a feature or function that must be incorporated in an information system to meet a business need while also being acceptable to users. The following are the system's functional requirements:

Table 5.2: Functional requirement to find desired business unit.

Function	Finding Desired Business Unit.	
Input	Process	Output
N/A	Visit Division Page/ Service page	Can view all business unit.
Precondition	User must have a device with internet connection.	
Postcondition	User views the desired business unit as per choice	

Table 5.3: Functional requirement to apply for a job.

Function	Applying for a job post.	
Input	Process	Output
Name, Contact Number, Email ID, Position Message, CV	Visit Career Page.	Form is submitted.
Precondition	The user must have a unique email id and submit the cv in pdf format.	
Postcondition	Successfully submitted the form for the job post	

Table 5.4: Functional requirement to contact the factory of a specific business unit.

Function	Contacting the factory of a specific business unit.	
Input	Process	Output
Name, Phone Number, Email ID, Message	Visit the factory page of a specific business unit that is on the Division page.	Form is submitted
Precondition	User must have a unique email id	
Postcondition	Successfully submitted the form to the company	

Table 5.5: Functional requirement to contact the company

Function	Contacting the company	
Input	Process	Output
Name, Phone Number, Select Company, Email ID, Message	Visit Contact page	Form is submitted
Precondition	The user must have a unique email id.	
Postcondition	Successfully submitted the form to the company	

Table 5.6: Functional requirement to download the company brochure.

Function	Downloading the company brochure	
Input	Process	Output
N/A	Visit Home page	The brochure is downloaded
Precondition	User must have a device with internet connection.	
Postcondition	Successfully downloaded the company brochure.	

Table 5.7: Functional requirement to download audit reports.

Function	Downloading the audit reports	
Input	Process	Output
N/A	Visit the factory page of the specific business unit that is on the Division page.	The reports are downloaded.
Precondition	User must have a device with internet connection.	
Postcondition	Successfully downloaded the audit reports.	

Non-Functional Requirements: This section lists the non-functional needs to define the system's primary operations. The project's non-functional requirements are briefly discussed below:

1. **Performance:** The response time of a system is defined by its performance. As a result, our project determines the loading time as well as how the website handles visitors. We attempted to provide a seamless experience for visitors by optimizing the code and content and setting the server to provide a decent loading time and system traffic management.
2. **Usability:** The website has a simple navigation mechanism and is highly user-friendly. This was done with the website's primary goal in mind: everyone with a basic understanding of computers should be able to use them. This website may be used without any additional instructions.
3. **Portability and Compatibility:** We created a user-friendly system design and made it mobile responsive, guaranteeing that the website would work in most common resolutions. We also checked for cross-platform compatibility to ensure that the website operates smoothly on the most popular browsers.
4. **Security:** Any system's security and administration are always a problem. On both the server and client sides, all information is secure. The administrator may only make any modifications to the website.
5. **Availability:** Since it is critical for an online-based system to be available at all times for visitors, we will make every effort to guarantee that the website is up and functioning at all times.
6. **Maintainability:** The website should be simple to maintain, and any modifications should be simple to make using the admin panel. If there are any problems with the system, they can be quickly rectified without requiring substantial changes in the present scenario. [9]

5.4 Product Features

Product features describe the product's functioning and how it will benefit the product's users. I've demonstrated the project's input and output functionalities in this section.

5.4.1 Input

I've included two forms from the webpage here. A career form is one, and a factory contact form is the other.

1. **Career form:** A potential employee must provide their name, email address, phone number, position, message, and upload their resume to the form.

The screenshot shows a career application form on a website with a teal header. The header includes the logo 'Palmal Group' and navigation links for 'Divisions', 'Services', 'Sustainability', 'Media', and 'Contact'. A three-line menu icon is also present. The main form area has fields for 'Name' (placeholder: 'Enter your name here'), 'Email ID' (placeholder: 'Enter your email ID here'), 'Contact number' (placeholder: 'Enter your contact number here'), 'Position' (placeholder: 'Sr. Executive - HR & Admin'), 'Message' (placeholder: 'Enter your message here'), and a 'CV' upload field ('Upload CV/Drag your CV'). A teal 'SUBMIT' button is at the bottom right.

Figure 5.7: Career Form

- 2. Factory form:** A potential client must provide their name, email address, phone number, and message to the form.

The contact form is located on the right side of the page. It consists of four input fields: 'Enter name', 'Enter mobile number', 'Enter email address', and 'Enter message'. Below these fields is a large text area for the message. At the bottom right is a button labeled 'Submit →'.

Figure 5.8: Factory Contact Form

5.4.2 Output

I've included two forms that are part of the website here. The first is a job application, while the second is a factory contact form. When a user completes the form, it is saved in the database, where the administrator can view it and then forward it to a higher authority.

The screenshot shows a web-based application interface for managing forms. At the top, there's a dark header bar with various navigation icons and a "Supper Admin" user profile. Below the header, the URL "Home / Submitted Form List / 20" is visible. The main content area is divided into two sections: "Form Details" on the left and "Form Data" on the right. The "Form Details" section contains the following data:

Form name	Career form
Form ID	career-form
Form Subject	Job application mail
Sent to	mohaimen@dcastalia.com, anjan@dcastalia.com
Cc	
Bcc	
From name	Career
From email	info@dcastalia.com

Below this table are two buttons: "Mark as Unseen" and "Delete". The "Form Data" section contains the following data:

name	Yeanur Rahman Chowdhury
contact_no	01715159435
email	yeanur.dcastalia@gmail.com
address	Dhaka, Bangladesh
cv	/var/www/vhosts/bestinbd.com/public_html/projects/web/2101PGW/dev/backend/web/form/Yeanur Rahman Chowdhury-CV.pdf

Figure 5.9: Career form Data

The screenshot shows the same application interface as Figure 5.9. The "Form Details" section contains the following data:

Form name	Contact Form
Form ID	contact-form
Form Subject	Contact mail
Sent to	mohaimen@dcastalia.com, anjan@dcastalia.com
Cc	
Bcc	
From name	Contact
From email	info@dcastalia.com

Below this table are two buttons: "Mark as Unseen" and "Delete". The "Form Data" section contains the following data:

name	Yeanur Rahman Chowdhury
email	yeanur.dcastalia@gmail.com
phone	01715159435
message	

Figure 5.10: Factory Contact form Data

5.4.3 Architecture

A website architecture specifies the framework of a website, including how it will function, how data will be moved, and where it will be kept. The MVC pattern was used to create this project. The model includes a method for inserting, retrieving, and updating data from the database. The figure clearly shows that users can only view and interact with the website's front end. The frontend takes the users' requests or instructions and delivers them to the webserver, collecting and storing data from the file system and database and giving it back to the frontend as a response. [10]

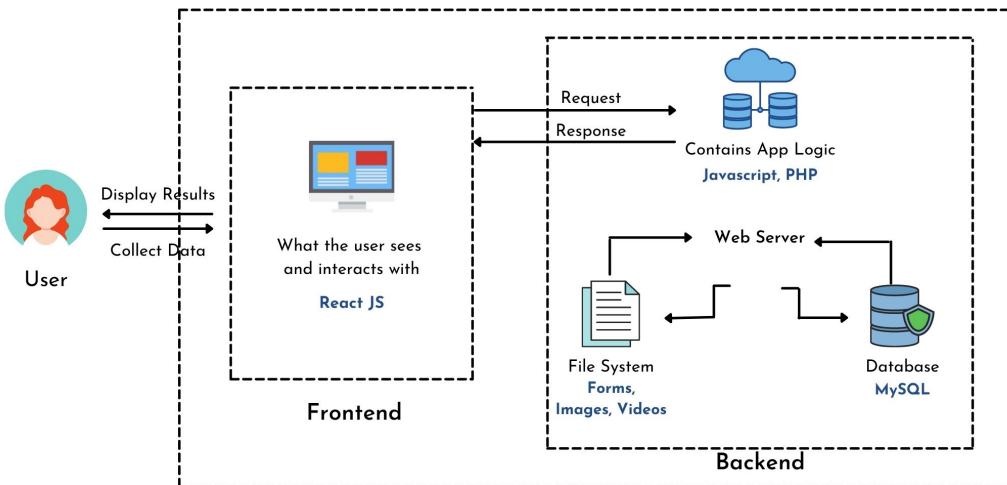


Figure 5.11: System Architecture.

Chapter 6

Results & Analysis

6.1 Results

Palmal Group's website seeks to deliver the actual value and spirit of the firm. Palmal Group wants to enhance its company's visibility to acquire more clients and expand its business. We adapted to their needs and created a website that met most of the client's expectations. Here's an overview of what we've accomplished so far in the project and how it will benefit website visitors:

1. **Home page:** A hamburger icon and the company's logo appear at the header of the webpage. Important website features, testimonials, featured clients, certification, corporate brochure, interactive map, and the footer are all located underneath them. Here's an overview of what we've accomplished so far in the project and how it will benefit website visitors:

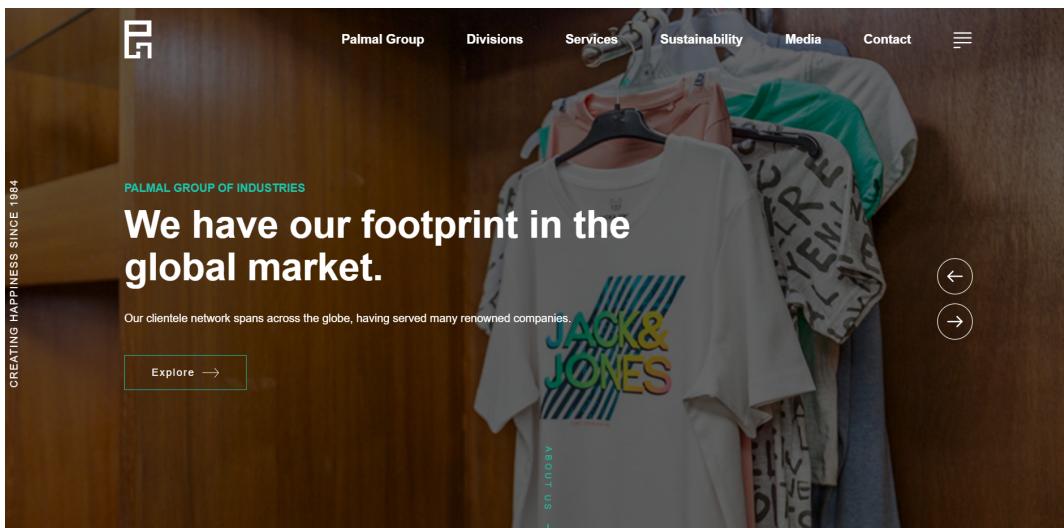


Figure 6.1: Home Page

2. **About us:** The page covers all of the company's essential communications. When the firm was founded, its purpose and vision and success stories and remarks from their employees.

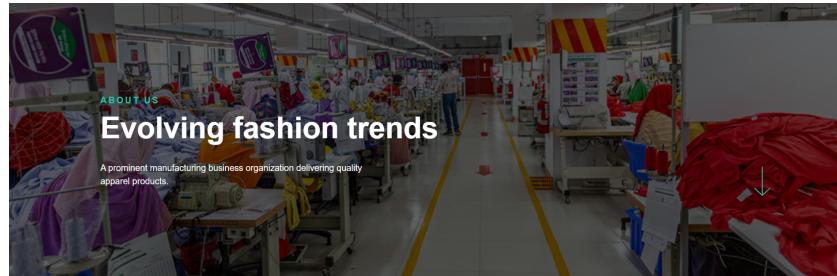


Figure 6.2: About us page

3. **Division Page:** The section is divided into eight divisions, each representing one of their business units. With their photos and descriptions, all of the business divisions and factory pages are appropriately defined.

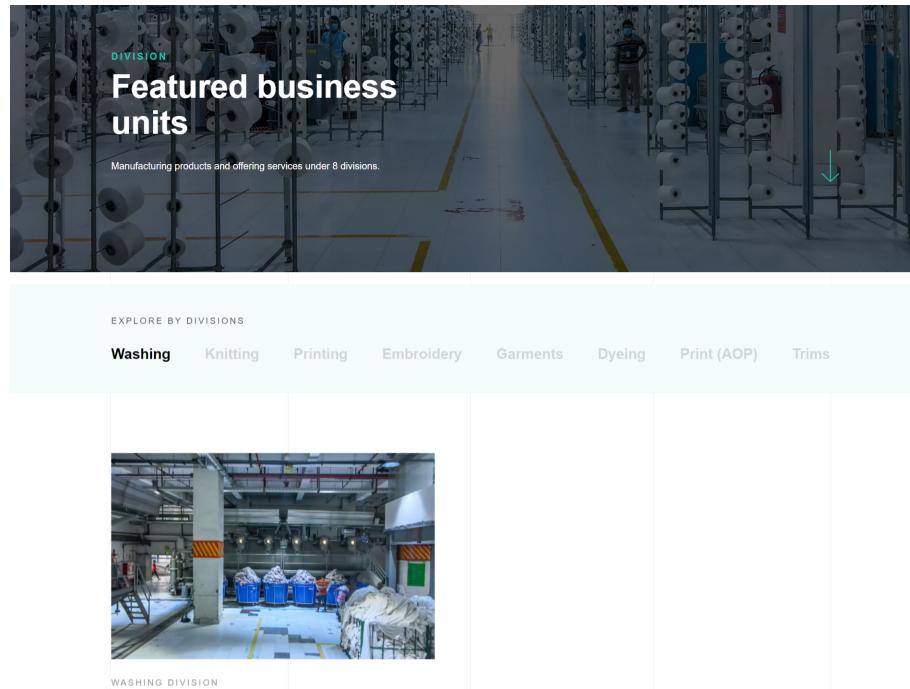


Figure 6.3: Division page

4. **Service page:** This page includes the company's service information that customers gain.

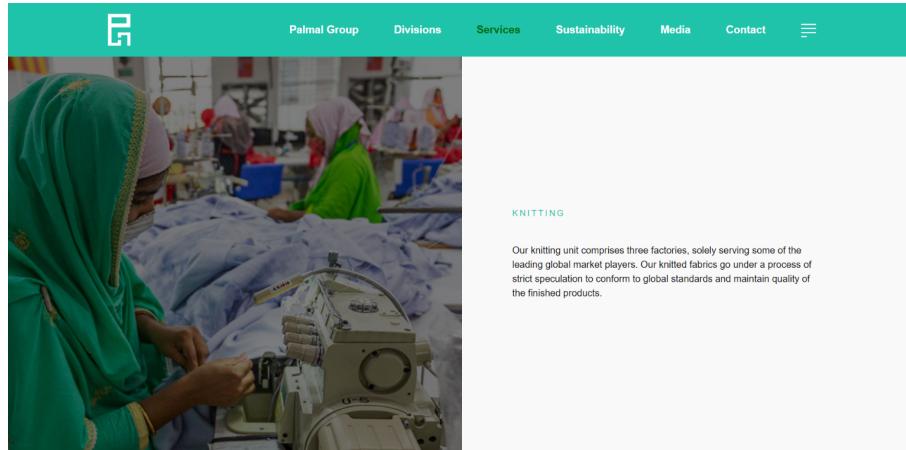


Figure 6.4: Service Page

5. **Sustainability:** This page is dedicated to social responsibility in the business.

Sustainability

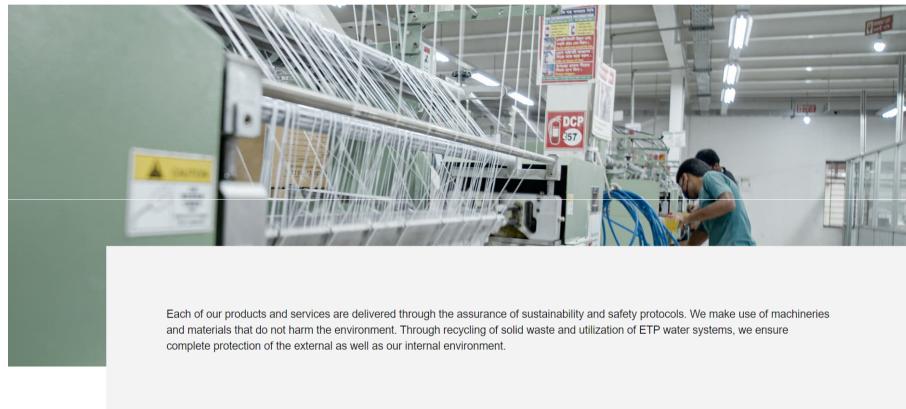


Figure 6.5: Sustainability Page

6. **Career page:** This page has been created for the company's future workers. Visitors will learn why they should join the firm based on the information provided. They will be able to examine all of the company's latest job postings and all of the position's information. Visitors will also be able to apply by filling out the form on the website with the required information and submitting a CV in pdf format.

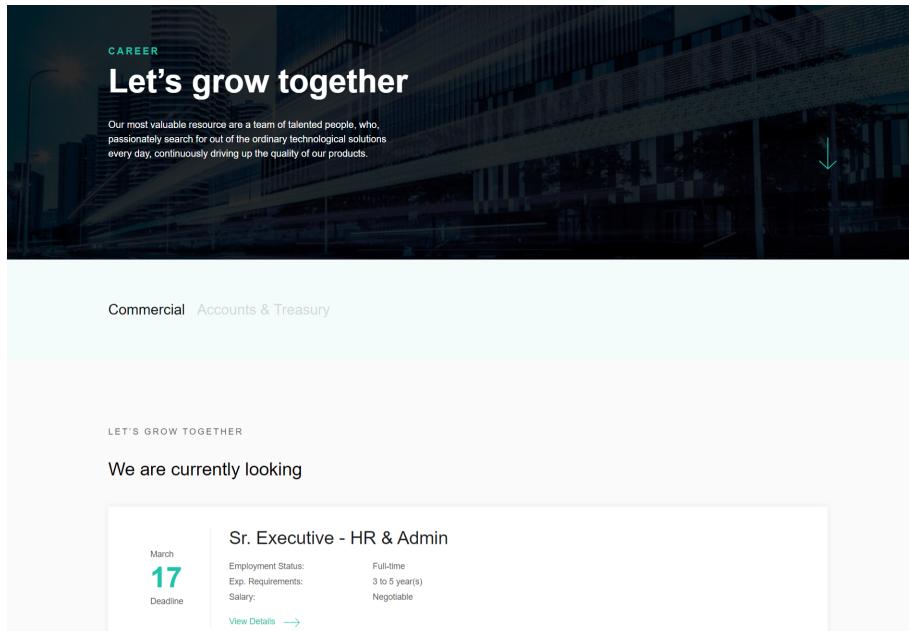


Figure 6.6: Career Page

The screenshot shows a career application form on a website with a teal header containing the logo 'P', 'Palma Group', 'Divisions', 'Services', 'Sustainability', 'Media', 'Contact', and a menu icon. The form itself has several input fields: 'Name' (placeholder 'Enter your name here'), 'Email ID' (placeholder 'Enter your email ID here'), 'Contact number' (placeholder 'Enter your contact number here'), 'Position' (placeholder 'Sr. Executive - HR & Admin'), 'Message' (placeholder 'Enter your message here'), and a 'CV' field with the placeholder 'Upload CV/Drag your CV'. A teal 'SUBMIT' button is located at the bottom right of the form.

Figure 6.7: Career form

7. Contact page: The page's goal is to make it simple for website visitors to contact the firm. Palmal Group's contact information and a contact form are provided to contact the company with any questions. Users must fill out the form with all required information as well as a message with their inquiry.

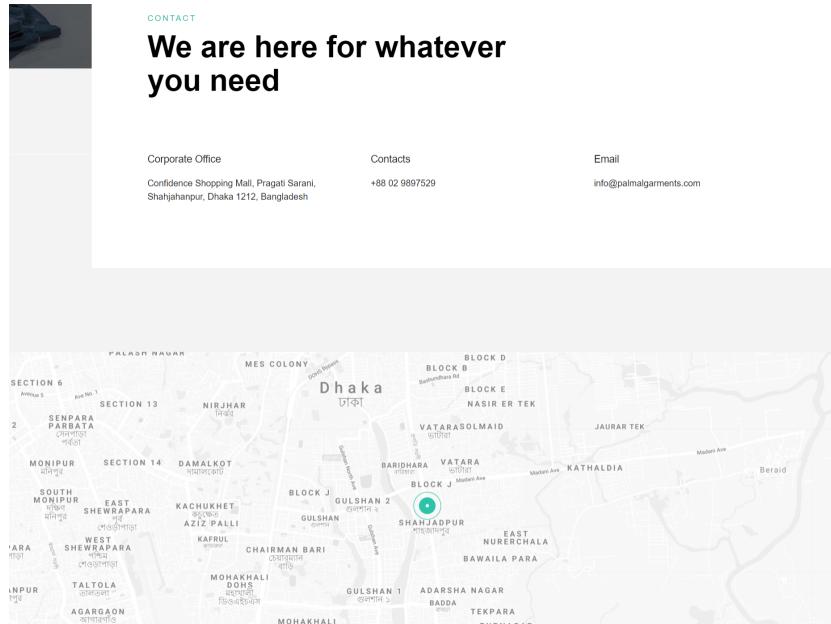


Figure 6.8: Contact Page

Figure 6.9: Contact Page

6.2 Test Case

A test case is a document that contains a set of test data, preconditions, expected outcomes, and postconditions that was created for a specific test scenario to check compliance with a given requirement. After applying a set of input values, the program has a conclusion and exits the system at some endpoint, also known as execution postcondition. For Palmal group, we ran a test case to ensure the website's quality and functionality.

6.2.1 Issue Tracking and Reporting System

The project will be submitted to Dcastalia's test server, and the URL will be distributed to the development team and a quality assurance tester. During the development phase, the QA tester will begin testing alongside the development team members. All modules and capabilities will be put through their paces. When a problem is discovered, it will be recorded on a shared Google sheet with a detailed description of the problem. The developer will resolve the issues and mark them as determined in the spreadsheet. The Dcastalia team and the QA tester verify the system for flaws after the first development is completed. Before sharing the project's test server URL with the customer for testing, issues are notified and addressed once more. Client feedback will be collected, and any issues will be resolved as needed before the project's final release.

6.2.2 Test Analysis

For this website, the following functions have been tested:

- Admin login to the CMS
- Add job post
- Delete the job post
- Update job post
- Change password
- Logout
- Contact forms

#	Case	Action	Precondition	Steps	Expected Result	Result Obtained	Status	Remarks
1	Login	Admin login	i. Connected to the admin panel through internet. ii. Valid login credentials	i. Add admin information to the users table in DB ii. Fill up the fields and press login button	i. Login in to the database and view the dashboard interface ii. Wrong credentials give an error message: "Login failed."	Login Successful	Pass	N/A
2	Add Job post	Admin can add new job post of the company.	Must be logged in to the admin panel.	i. Put relevant job information in the appropriate fields. ii. Click on Save button to add new job post.	New job post will be added	New job post added successfully in the DB and visible in the website.	Pass	N/A
3	Delete job post	Admin can delete a job post from the DB	Must be logged in to the admin panel.	i. Go to the list of the job posts. ii. Selects the project to be deleted. iii. Press on the delete icon. iv. Confirm to delete by pressing confirm button.	The job post deleted from the system and website.	Job post successfully deleted	Pass	N/A
4	Update Job post	Admin can edit the job post details	Must be logged in to the admin panel.	i. Go to the list of job post. ii. Select the post to be edited. iii. Press on update icon	Existing job post will show updated information of the job post.	Data are updated successfully except the post description field	Pass	N/A

5	Change password	Admin can update password	i. ii.	Access to the admin panel. Logged in as admin	i. ii. iii. iv. v. vi.	Login to the admin panel Click on the user's icon and selects change password Input old existing password Input new password Confirms new password Click Save to change password	i. ii.	A message to confirm that password has been changed successfully is shown Changes not saved message is shown if passwords don't match	Password change is successful and new password can be used to login	Pass	N/A
6	Logout	Admin can successfully log out	Need to be logged in to the admin pane	Click logout from user menu in profile icon	Log out from the admin panel.	Successful logged out	Pass	N/A			
7	Forms	Fill up the contact form and submit	Connected to internet	i. ii.	Visit the website Fill up the form and click submit button	A success message is show upon submission	Success message received and the message is received by admin	Pass	N/A		

Figure 6.10: Test Case

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

In today's competitive environment, every system must pay attention to long-term sustainability. It is challenging, but sustainability is critical to exist in the long term and ensure that the system's purpose is delivered to the customers. In the case of software and web development, the designs are built to be long-lasting so that they can serve their owners and users without difficulties eternally. The website has been created to be accessible independent of the user's machine's environment to ensure the long-term viability of our project.

The website we built is not affected by the user's computer configuration, operating system, resolution, or internet speed. All computers and smartphones will be able to access the website using the most prevalent browsers. The website's long-term viability will be ensured through routine maintenance of the website and its server. The website's frontend and backend code are all adequately optimized. It is guaranteed that the website runs effectively and is easily accessible by users regardless of the device's specification by eliminating repeated codes, different minifying scripts utilized, and keeping correct coding standards. In terms of design and layout, the website is user-friendly, emphasizing the User Experience. Visitors with just rudimentary computer skills will be able to quickly access and navigate the website. The media files, such as photos, videos, symbols, and logos, have been optimized to guarantee that the pages load quickly, allowing those with low-end devices and poor connections to view the site.

7.2 Social and Environmental Effects and Analysis

Palmal Group's website lists all its business units, allowing users to obtain information about a particular business unit quickly. This saves clients time by getting info online instead of visiting numerous factories to select and contact the firm. People may do this from the comfort of their own homes rather than spending hours stuck in city traffic, which saves fuel and reduces pollution generated by automobiles on the road. People may also use the website to apply for jobs and contact the firm without physically visiting their office. The website was created to maximize efficiency while creating sustainability. We made every effort to make our programming and media assets as efficiently as possible. The website is ad-free, has fewer redirections, and only uses essential plugins, contributing to overall optimization and less power consumption and energy savings. Our office is entirely digitally operated and equipped with energy-saving devices and equipment. In our workplace, we are always conscious of the need to avoid wasting electrical energy. This allows us to be more energy-efficient while also reducing our use of paper, which has a beneficial impact on the environment.

7.3 Addressing Ethics and Ethical Issues

Some unstated norms and ethics standards must be observed when working on building and publishing a website in the age of smartphones, with so much data collecting, hacking, cybercrime, and so on. The developers made sure that there were no violations of conduct and that all issues were seriously considered. The following are a few of them:

- The website only gathers essential user data, such as a user's name, email address, phone number, and CV. No further information is collected.
- The backend server and database are only accessible to the leading developer. The data saved may be considered safe and secure since they are stored in the cloud and can only be accessed using the lead developer's login credentials.
- There is no discrimination or favoritism on the website based on race, sexuality, gender, religious beliefs, color, language, political or other viewpoints, national or social origin, property, birth, or another status.
- Dcastalia Limited keeps all project-related papers, transactions and agreements, and codebase private to protect the company's and our client's privacy.

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

Working on a real-life project during my internship in Dcastalia Limited was beneficial for learning and developing expertise. I had the opportunity to learn from highly skilled developers with a wealth of knowledge. Despite the excellent experience, there were certain limits throughout my internship. For me, the main major challenge was the ongoing COVID-19 epidemic throughout the world. By coming to the workplace and working in a confined setting, I had to face the risk of exposing myself. Despite my precautions, I was still affected, prompting me to take a break from the project and continue working on it from home. This affected my ability to master certain critical aspects of the project properly.

Learning so many new technologies in such a short time was also difficult. Because I was on a tight schedule, I didn't get to understand the technologies as well as I would have liked. As a result, the learning had to be hurried. It was challenging to acquire and apply the information in such a short time. It was tough for me to keep up with the speed of the team's more experienced engineers.

8.2 Solution of those Problems

The COVID-19 currently impacts the entire world, and while we are doing everything we can to prevent the pandemic, everyone is at a loss due to this scenario in some manner. This dangerous infection requires the acquisition of a vaccination. Until then, we must adhere to safety procedures and exercise caution. The next issue can be solved by continuing to understand and practice the technology in greater depth. Spending more time with these technologies will undoubtedly make me an expert soon, just like the other developers on the team.

Chapter 9

Future Work & Conclusion

9.1 Future Works

The Palmal Group aims to add a lot more features to the website as the project progresses to make it even more helpful for users and to make it seem more presentable. More developers might be engaged for the project, in my view, to add more core elements to the website, such as live consultation sessions and more customized features.

9.2 Conclusion

Working as an intern with Dcastalia Limited was a fantastic experience. Throughout my internship, I learned and applied a great lot. New cutting-edge technology was brought to me, and I was driven to perform even better. I've also learned a lot about different types of development styles. I was under pressure to react fast to developments and offer reasonable solutions. To overcome challenges, I worked with my mentors and seniors throughout my assignment. Despite their busy schedules, my supervisor was always available to answer questions and assist me in settling in. This internship has allowed me to learn more about the development environment and market. I'd want to express my gratitude to everyone who has made my time as an intern so enjoyable.

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