An Internship Report On

FRONTEND DEVELOPER
at
Branding Bee

By:

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PRIME COLLEGE

Khusibhu, Kathmandu, Nepal

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In Partial Fulfillment of the Requirements for the Degree of

BACHELOR OF INFORMATION MANAGEMENT (BIM)

Kathmandu

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DECLARATION

I hereby declare that the internship report entitled "**FRONTEND DEVELOPER at Branding Bee**" submitted to the Faculty of Management, Tribhuvan University, Kathmandu is an original piece of work under the supervision of Mr. Bipin Timalsina, faculty members, PRIME COLLEGE, KHUSIBUN, KATHMANDU, and is submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Information Management (BIM). This internship report has not been submitted to any other university or institution for the award of any degree or diploma.

ANJIL SHAKYA

Date: June, 2021

RECOMMENDATION LETTER

APPROVAL SHEET

This is to certify that the internship report

Submitted By:

ANJIL SHAKYA

Entitled

Frontend Developer at Branding Bee

I/We certify that I/We have read this document and, in my opinion, it is satisfactory in scope and quality area as an internship report in partial fulfillment for the undergraduate course, Bachelor of Information Management (BIM) held at Prime College, Tribhuvan University.

Date of Approval:_____

Signature:_____   Signature:_____

SUPERVISOR: Mr. Bipin Timalsina   RESEARCH CELL: Ms. Rupa Shrestha

Signature:_____   Signature:_____

COORDINATOR: Mr. Rupendra Gopali   PRINCIPAL: Mr. Narayan Pd. Sharma

ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people and I am extremely privileged to have got this all along the completion of my project. All that I have done is only due to such supervision and assistance and I would not forget to thank them.

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Lastly, I would like to express my special note of thanks to the Prime College for providing this platform and supporting me for all required procedures to complete this project.

ANJIL SHAKYA
BIM 8th SEMESTER
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ABBREVATIONS

BIM	Bachelor of Information Management
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing
CDN	Content Delivery Network
CMS	Content Management System
CSS	Cascading Style Sheet
DOM	Document Object Model
ECMA	European Computer Manufacturer's Association
FoM	Faculty of Management
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
HTML	Hypertext Markup Language
IT	Information Technology
JSX	JavaScript XML
PHP	PHP Preprocessor
PWA	Progressive Web Apps
SEO	Search Engine Optimization
TU	Tribhuvan University
UI	User Interface
UX	User Experience

CHAPTER 1 : INTRODUCTION

1.1 Background

TU is the largest and the oldest university of Nepal. It is the pioneer university in providing in management education and since its establishment it has been providing the excellent education to the students. It provides a wide range of streams in the education among which management education holds major position. The bachelor of Information Management (BIM) program is a four-year(8 semester) program of Tribhuvan University offering an integrated IT and Management courses. This course is envisaged to enable students to develop skill in information technology, and at the same time to make them able to understand the professional expertise while they occupy decision making positions. The Bachelor of Information Management (BIM) is a special purpose program in semester system designed to develop socially responsible, scientifically approached/ creative, and result oriented Information Technology (IT) professionals. The program intends to equip students with the skills and attributes required to be effective and efficient IT professionals.

As per the requirement of Faculty of Management (FoM) of Tribhuvan University, students of Bachelor in Information Management (BIM) should perform the internship in any organization for eight weeks. Simply this study is used for the partial fulfillment of BIM course affiliated to TU. The FoM, TU has its ultimate objective of educating students and to develop socially responsible, scientifically approached result-oriented Information Technology(IT) professionals.

The internship in the field of information technology helps to increase the exposure and in-depth knowledge in the respective technical platform. The technical industry is growing rapidly and new technology is emerging with the speed of time so, the skill and knowledge gain the college is not enough to compete in the market. we need some real-world experience in the industry and the internship program helps the students to gain the professional experience. In the BIM course, we learn various subjects such as Web Technology, Database Management System, Java Programming, Data Communication

and Networking, Accounting, Business Finance, Organizational Behavior, etc. and in the internship program we must try to implement those learning in order to produce the fruitful outcome.

1.2 Current Trend of the Subject Under Study

Web development is growing and expanding its periphery. From automating web interfaces to developing mission-critical applications, web development is turning dreams into realities. Technology continues to evolve as humans find new ways to innovate, doing things faster and with more flair than they did before. Not many areas feature as much of this innovation as the area of web development.

Developers are always looking ahead to discover new technologies that can catapult them to a brighter future. The industry is going to surprise us with more dynamic, voice-powered, AI-driven web interfaces. The websites are predicted to become even easier to navigate and faster to upload thanks to latest web technologies. Technologies like voice recognition, artificial intelligence, cloud computing, and new security protocols will enrich modern websites. (Fineart Studio, 2021) Some of the current trends in web development are:

- **Progressive Web Apps**
  PWAs are like website but operate similarly to mobile apps. The main objective of progressive apps is to provide a cross-platform experience for users. Famous brands like Amazon, Forbes, and Twitter have already developed their mobile-like experience. The trend of PWAs is expected to continue growing in 2021, as the number of mobile users is quickly increasing.
- **Dark UI Design**
  With the growth of video streaming and gaming services, dark UI design has been taking off. Users and designers alike are drawn to mesmerizing colors, sharp lines and clear separations. Accessing dark mode websites on mobile is easy on your eyes. Even in low light condition, dark themed websites need little brightness, thus lowering battery consumption. Dark UI design gives app or websites a stylish UX.
- **AI-Driven Chatbots**

AI-powered chatbots are usually incorporated into a website to help the user navigate it or provide useful tips or necessary information. Bots quickly learn and become smarter in their answers thanks to the ability to process millions of previous user interactions. With the advent of AI, website chatbots have turned into a huge web development trend.

- **Cloud Computing**

Cloud computing is the on-demand availability of computer system resources, particularly data storage, without the need for managing it directly. This concept is commonly referred to as a data storage or data center that is available for different users in the online mode.

- **Website Security**

Website security advances are not new trends in web development. However, they are so important for the over website health and functionality that we mention them here as a separate trend. According to recent studies, around 50,000 websites are breached by hackers daily.

1.3 Objectives

1.3.1 General Objective

The main objective of the internship program is to allow the students to implement theoretical knowledge and ideas to practical and real-life settings. Internship facilitates reflection on experiences obtained in the internship and to enhance understanding of academic materials be application in internship setting. It also helps the student to understand about the possible opportunities in the market, to analyze the strength and weakness of the business organization. The general objectives are:

- To gain real life experience working experience within the organization.
- To enhance the student's understanding of organization and professional processes.
- To analyze the real-world problem and find the solution using knowledge obtained.

1.3.2 Specific Objective

The specific objective are as follows:

- To develop a user interface that reflects the organization.
- Design and develop a website as per the client's need.

1.4 Methodology

The software methodology used to develop this system is agile methodology which is an approach for developing products using short iterations. The main idea is not making the whole project from start to finish, but making small features for the current projects in small periods of time.

1.4.1 Organization Selection

Selection of an organization is very crucial factor for internship program. As a BIM student, the intern was interested in web and software development. Various different organization was searched for. The intern expresses his deepest gratitude for Ms. Rolisha Sthapit, faculty member of Prime College for recommending me at Branding Bee. There were interviews during the process for applying for internship. The intern was accepted to join their internship program. Therefore, the intern joined Branding Bee as a frontend web developer intern. During Internship period, the intern got an opportunity to learn and work with widely used tools and technology with the guidance of the developers at Branding Bee.

1.4.2 Placement and Duration

The internship period was of 10 weeks which started form 21st February to 2nd April. The detail break-down of the time during the internship period plan is given below.

Table 1 Internship Period Plan

Internship Period Plan	Duration
Start Date	21 February, 2021
End Date	2 April, 2021
Working Hours	8 hours per day
Working Days	5 days a week
Average Working hours in a week	40 hours
Internship Period	10 Weeks
Holidays	Week holiday on Friday and Saturday along with public holidays

1.4.3 Activities Performed

The intern was assigned with various task and activities to be done for the organization and form my development. The intern performed the following activities:

- Handling the CMS of Parcel App Pvt. Ltd.
- Basic Wireframe, HTML, CSS and JavaScript
- Basic of React JS
- Designing the UI of Branding Bee
- Development of website
- Integration and Testing of the website
- Maintenance and updating the website

1.4.4 Tools Used

Various tools and technology were used to develop a working of the system. The various tools adopted during the process are listed below.

Table 2 Tools Used

Development Purpose	Tools and Technology
Frontend System Development	HTML, CSS and JavaScript
Design Tool	Figma
Web Browser	Google Chrome
Text Editor	Visual Studio Code
Documentation	MS Word 2019
Version Control	GitHub

1.4.5 Limitation

- The system is not fully completed yet.
- The content for the website is dummy text.
- This system lacks the content management tool for updating the contents.
- Since it is a static website, the dynamic feature of the website is missing.

CHAPTER 2: INTRODUCTION TO THE INDUSTRY

2.1 Introduction to Industry

Information Technology has taken the world by a storm. Everything things are now related to Information Technology in some other way. So, what exactly is information technology? Information technology is the skill being used for analyzing, understanding , developing, planning, creating, testing, allocating, supporting and operating computer hardware, software and other computer-related structures existing for the resolution of statistics, data and knowledge processing.

In order to study information technology, it is absolutely essential to define information technology, as well as to identify and investigate the nature of information technology as a new clue for researchers. Within the literature of information technology, there is not any generally accepted information technology definition, since lots of definitions of information technology have been used in different studies. However, the term information technology also includes any computer application and required packages of hardware's, Computer Aided Manufacturing (CAM), Computer Aided Design (CAD), Electronic Data Interchange and Enterprise Resource Planning that positively affects the productivity of cooperation.

Digital trend seems to have picked up its due trend in Nepal. The growing number of internet users and increasing mobile phone usage among Nepalese is adding to the digital media trend in Nepal, driven by existing social media platforms. As the latest reports say, many companies in Nepal are considering social media marketing as an effective means to promote products and services on low budgets. High rise in use of digital devices in the community is making many companies rely on digital marketing for a healthy business growth.

2.2 Brief Introduction of Industry in Nepal

The IT sector is an emerging area in Nepal. The Government of Nepal has identified IT and business process outsourcing (BPO) as one of the 5 priority export service sectors in

the Nepal Trade Integration Strategy. IT has the potential to generate high growth, investment, and significant profits in the coming years and is expected to be one of the most significant growth contributors to the Nepali economy.

An IT Park is being established in Banepa in Kavre District. The total investment in this venture is estimated to be around NPR 270 million (USD 2.70 million). The government is preparing to give a 50% tax subsidy to companies operating in the Park. The Park is expected to develop software, promote IT-based business and provide services, as well as promote investors in related fields. (Federation of Nepalese Chambers of Commerce and Industry [FNCCI], 2010)

The IT industry in Nepal is growing day by day and more people are being interested in joining and working in the field of IT. As many organizations are realizing the benefit of the IT in their industry that are slowly starting to implement IT in their operation and service which has benefited them. It has also created a huge demand in job at IT field and also made activity like planning, organizing, interaction, communication, operation and many more activities easier.

With the proliferation of smartphones, internet connectivity and social networking in Nepal, the digital marketing industry is gaining momentum. This growth trend has been impressive over the last few years with the number of agencies and sectors investing in digital marketing increasing at rapid pace. Even though traditional marketing methods are still predominant with a high focus of companies on TV advertisement, billboards, and newspaper ads, the market scenario is ready to be transformed.

In Nepal, digital marketing is an emerging trend. There is only handful of organization providing digital marketing services as many firms are now fully aware about the advantages digital marketing can provide to their business. Many firms still consider digital marketing a risk and hesitate while investing in it. Many existing firms still believe and practice traditional method of marketing. But the firms who are new to the market understand the benefits of marketing digitally. They treat digital marketing as an investment rather than risk. But slowly large number of people is getting access to the

internet which is an opportunity because it means increasing number of audiences i.e., the customers.

In Nepal, students are slowly being interested in Information Technology courses. There are many new courses that are appearing rapidly which help students to direct the path towards working in IT field. Bachelor in Information Management is also one of the courses students can pick which helps students to learn basics of IT and also contains management courses as which further helps students to learn the management aspect. Information Technology includes a wide aspect of science from management, possession and processing to evaluation and analysis of information and related technologies.

Some of the Software Development organizations in Nepal are as follows:

- Deerwalk Inc.
- Leapfrog Technology Inc.
- EB Pearls
- F1Soft International Pvt. Limited
- Cloud Factory
- Fusemachines Inc.
- LogPoint

Some of the leading fields (subjects) of Information Technology are:

- Web Development
- Mobile Application Development (Android, IOS)
- Data Engineering
- Software Project Management
- Software Engineering

2.2.1 Web Development in Nepal

In the context of web development in Nepal, the prospect is growing field as more and more people are being aware of the benefits of digitization and the advantages of a

website for a company. As a result, more and more companies and firms are hiring Web Development Company in Nepal to develop their own website. These web development companies are hired by business firms and other companies that are in need of a website. They state their requirements to the web development company, who then send their clients a price quotation and sample wireframe. After being approved, they continue on the website development.

There are different methods of how companies perform web development in Nepal. There are different tools and technique, and frameworks that take in web development process. For instance, multiple programming languages like PHP, Python, Java, .Net are used majorly by different developers. And based on those programming languages, there are multiple frameworks that can be used for web development in the back end. Among them, Laravel, Django, CakePHP, and Flask are widely used and are considered by many to be the best. These frameworks have their distinct function methods and are widely used for their vast functions and ease of access. (Shrestha, 2019)

Different companies use different programming languages and different frameworks in the process of web development in Nepal. All the frameworks perform the same task, but with a different approach. For example, websites like Instagram, Google use Python, whereas websites like Facebook, Wikipedia use PHP. However, all of this depends on what type of website you want. The web development company assesses your requirements and decides on a suitable framework to complete the task.

We live in the digital era, where the internet is everywhere, and websites can be accessed from anywhere at any point in time. This has led to companies wanting their own websites and thus, the establishment of multiple IT firms. In the context of Nepal as well, there are estimated to be over 500 web design companies in Nepal. These private companies hire competent individuals required to complete website development. (Shrestha, 2019)

Many human resources like web developers, system analysts, quality assurance (QA), etc. are required for the web development process. These competent individuals work in unison to meet the requirement of the client for their website.

The clients approach the web development company with their needs. They state what kind of website they want and how it should operate. All the requirements are taken into consideration, and a tentative price quotation is procured. After the price is approved, the web development company moves on to the development phase of the website.

After the development is completed, the clients are contacted for review and suggestions. Upon the client's suggestions, necessary tweaks are made, and the final website is handed over to the clients. This is generally how Web Development Company in Nepal functions. However, there are individuals who do freelancing web development as well. They function differently from that of a legitimate website development company.

CHAPTER 3: INTRODUCTION OF THE ORGANIZATION

3.1 Introduction of the Organization

Branding Bee is a marketing outsourcing company, established with aim to be the marketing partner for the associated brand. The organization believes in the use of creativity and technology for better and effective output at affordable cost.

The establishment of Branding Bee arose with the problem statement of non-satisfying 'digital marketing' campaign. The story of Branding Bee goes like this - Over 90% of the surveyed startup were not satisfied with so called 'digital marketing' campaign. On the other hand, almost same percentage of 'Digital Marketer' were trying their best to fish international clients and projects; claiming Nepali entrepreneurs are impossible to work with.

Branding Bee as a team, realized the gap in current delivery of the marketing service and expectation of the customers was too huge. The conventional digital marketing or traditional marketing approach could not fill the gap, neither implementing international strategies works wonder. Every country and society have its' own unique way of adopting new things and pitching the products without local flavor is bound to fail.

The decade long experience in business development, along with exposure in IT sector gave the organization an advantage and different perspective that very few can claim to have. Branding Bee as a team are guided to serve and realize the dream every ecommerce site and tech enabled solution provider dreams of. We want to introduce tech enabled and adopted services to each and every Nepali household.

Branding Bee assures that the technology is only way to increase effectiveness and efficiency of Nepali business. And, a carefully crafted marketing strategy infused with local flavor and technology will bear the result that every digital marketing campaign has ever envisioned. It recommends the client to be patient and always treat marketing as an investment rather than expense. No one has money to burn but without investment never expect return unless you have a magic wand (the real one).

Some of the major services of Branding Bee are:

- Ecommerce Management
- Social Media Management
- SEO Management
- YouTube Channel Management
- Comprehensive Marketing Outsourcing
- Market Research
- Marketing Collateral Development
- Business Development Consulting
- Brand Guidelines and Design
- Photography and Visuals
- Lead Generation & Management

Some of the major clients of Branding Bee are:

- Hello Beema
- Media Hub
- Parcel App
- Ek Bajey
- Shree Steels

3.2 Vision and Mission Statement

3.2.1 Vision

The vision statement of Branding Bee is to introduce tech enabled and adopted services to each and every Nepali household.

3.2.2 Mission

The mission statement of Branding Bee is to fill the gap between the current delivery of the marketing service and expectation of the customers digitally.

3.3 Objective of the organization

The objectives of the organization are:

- To be the marketing partner for the associated brand.
- Provide brand reorganization in every business and entertainment sector.

3.4 Organization Structure

An organizational structure is a system that outlines how certain activities are directed in order to achieve the goals of an organization. These activities can include rules, roles, and responsibilities. (Investopedia, n.d.) The organizational structure also determines how information flows between levels within the company.

3.4.1 Hierarchy of the Management

Managerial hierarchy means dividing the authority and responsibility among the various managerial position. Although all managers perform the same functions of planning, organizing, leading and controlling, there are hierarchies among them.
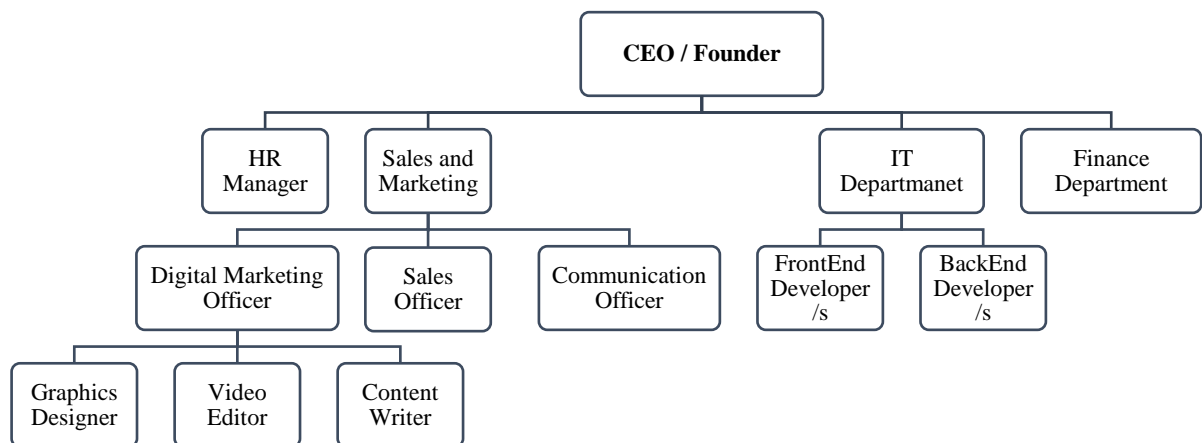

Figure 1 Hierarchy of the Management

3.4.2 Hierarchy of Decision-Making Process

Hierarchical decision making involves making decisions on the basis of formal positions of authority. For the proper implementation of strategy and decision-making process, managerial personnel have to think of the organization structure of the firm or business unit.
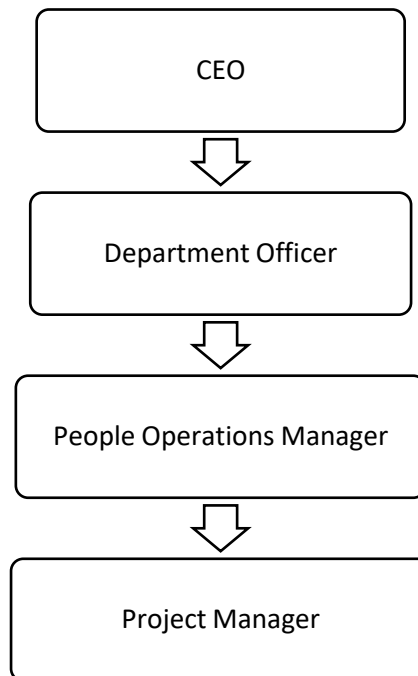
Figure 2 Hierarchy of Decision-Making Process

- **Chief Executive Officer**

  The CEO runs the entire show and makes the big decisions based on the business's direction and actions. The CEO runs everything in terms of operations and processes. The CEO is responsible for making decisions that will ultimately increase revenue and make the business profitable and viable.

- **Department Officer**

  The Department officer manages their own concerned department. They handle their department.

- **People Operations Manager**

    The role of people operations is to empower employees and facilitate the day-to-day work life. They act as a champion for the company culture and will support the company executives and team leaders, allowing the company to develop and grow quick.

- **Project Manager**

    The role of the project manager encompasses many activities including:

    ➢ Planning and Definition Scope
    ➢ Resource Planning
    ➢ Developing Schedules
    ➢ Time and Cost Estimates
    ➢ Monitoring and Reporting Progress
    ➢ Team Leadership

CHAPTER 4: ANALYSIS OF ACTIVITIES DONE AND PROBLEM SOLVED

4.1 Analysis of Activities Done

Web development refers in general to the task associated with developing websites for hosting via internet. The web development process includes web design, web content development, client-side/server-side scripting and networking security configuration, among other tasks.

As a web developer intern, the intern learned about the frontend development process. The frontend web development is the area of web development that focuses on what the user sees on their end. The intern found his interest in the visuals design and development therefore chose to be a frontend developer intern. The intern performed variety of tasks so that the interne would gain knowledge and experience in the concerned field. Branding Bee as an organization provided a lot of flexibility for the interne to learn and do more. Some of the activities performed by the interne are explained as follows.

Handling the CMS of Parcel App Pvt. Ltd.

Parcel App is one of the sister company of Branding Bee. It is an eCommerce website which sells variety of products including books, agriproducts, clothes and groceries. The Parcel App website runs on nopCommerce, which is an open-source eCommerce solution based on Microsoft's ASP.NET Core framework and MS SQL Server backend database. The intern was initially assigned to handle the CMS of the Parcel App.

A Content Management System (CMS) is a software application that enables users to create, edit, collaborate on, publish and store digital content. CMS are typically used for enterprise content management (ECM) and web content management (WCM). (Amsler, 2021) The intern was assigned to update and fix minor content bugs via the CMS of the Parcel App. Some of the activities that the intern did are:

- Updating the content of the Parcel App.

- Fixing some minor bugs which was encountered during the execution.

- Communicating with the developer about the issues in the website.

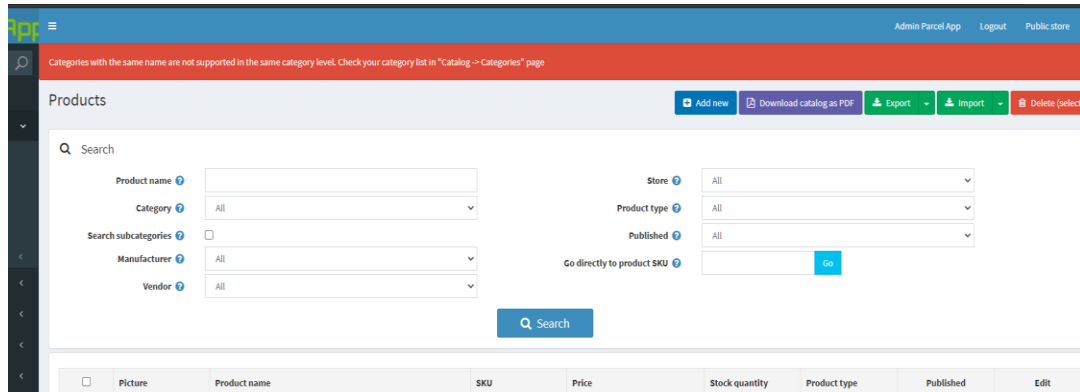- Designed product placeholder for the Parcel App Products.

Figure 3 CMS of ParcelApp

Basic of React JS

React JS is a JavaScript library used in web development to build interactive elements on websites. React JS is a declarative, efficient, and flexible JavaScript library for building reusable UI components. It is an open-source, component-based front-end library which is responsible only for the view layer of the application. It was initially developed and maintained by Facebook and later used in its products like WhatsApp & Instagram.

The main objective of ReactJS is to develop User Interfaces (UI) that improves the speed of the apps. It uses virtual DOM (JavaScript object), which improves the performance of the app. The JavaScript virtual DOM is faster than the regular DOM. We can use ReactJS on the client and server-side as well as with other frameworks. It uses component and data patterns that improve readability and helps to maintain larger apps.

As a frontend developer intern, the intern chose to learn the basics of React JS since its flexibility, popularity and usability. Some of the features of React JS includes:

JSX:

JSX stands for JavaScript XML. It is a JavaScript syntax extension. It's an XML or HTML like syntax used by ReactJS. This syntax is processed into JavaScript calls of React Framework.

Components:

ReactJS is all about components. ReactJS application is made up of multiple components, and each component has its own logic and controls. These components can be reusable which help you to maintain the code when working on larger scale projects.

Simplicity:

ReactJS uses JSX file which makes the application simple and to code as well as understand. We know that ReactJS is a component-based approach which makes the code reusable as your need. This makes it simple to use and learn.

Performance:

React uses virtual DOM, which makes the web applications run much faster than those developed with alternate front-end frameworks. React breaks a complex user interface into individual components, allowing multiple users to work on each component simultaneously, thereby speeding up the development time.

4.2. Problem of Existing System

Branding Bee is an established digital marketing company. But, the official website for the company is not developed yet. Therefore, the problem of the existing system include:

- The website is not developed yet.
- Proper planning for the website is not done.

4.3. Description of the System under Study

The website for Branding Bee is a static website that contains the information about the organization. It is a collection of webpages that contains the content regarding the specific

page. The website is built on HTML, CSS and JavaScript. The website is made up in flexbox and grid layout for the optimum utilization of the workflow.

4.4. Data Collection Method

The website for Branding Bee was built upon implementing various data collection methods. It is important to fully understand the current trends and requirements for the website development. Also, the requirements of the user should be understood. The data collection method used is described below.

4.4.1 Primary Source

For the primary source of data collection method, the client's user requirements were studied and listed. Various questions and queries were asked to the client about their needs.

4.4.1 Secondary Source

For the secondary source of data collection, various websites, articles and blogs were researched. Various competitors' websites were thoroughly analyzed. Web development trends and patterns were researched from various articles.

4.5 Functional Requirement of the Current System

The functional requirements of the website are:

- The website must contain the information about the company.
- Every link must map to the corresponding page.

4.5.1 Use Case Diagram

Figure 4 Use Case Diagram

The above figure is a use case diagram for the website. The website contains majorly 5 sections which are the main page, about us, services, case and contact section. The actors are the user of the website.

4.6 Feasibility Study

Feasibility study is the study to find out if the project can be successfully completed or not considering all the factors into account – including economic, technical, operational and many more. Feasibility study is done before pouring the time and resource into project.

4.6.1 Technical feasibility

Technical feasibility focuses on the technical resources available to the organization. The technical feasibility involves evaluation of the hardware, software and other technical requirements of the proposed system.

The system is developed through HTML, CSS, and JavaScript. The website is easy to develop since all the resources can be learned by anyone with the basic knowledge of programming. Open-Source libraries and functions makes the use of technology more feasible.

4.6.2 Economic feasibility

Economic feasibility involves a cost/benefits analysis of the project, helping organizations determine the viability, cost, and benefits associated with a project before financial resources are allocated.

The proposed system is economically feasible because there is no required of any additional hardware or software costs. All the tools and technology required are freely available.

4.6.3 Operational feasibility

This assessment involves undertaking a study to analyze and determine whether and how well the organization's needs can be met by completing the project. It also examines how a project plan satisfies the requirements identified in the requirement analysis phase of system development.

The project needs a browser and internet connection to operate and a space in the server for the data and the content. So, like any other websites in the market, this website can be considered operationally feasible.

4.7 Technical Requirement Analysis

The technical requirement analysis helps to understand the requirements that are needed to build and run the system. The software and hardware requirements include the following.

4.7.1 Software requirements

The software requirements of the system are:

- Web Browser: Any web browser running
- Operating System: Windows OS

4.7.2 Hardware requirements

The hardware requirements of the system are:

- Device: Laptop, Desktop or Mobile Phone
- Internet Connection: Good Internet Connection

4.8 Overall System Design

The overall system design of the website can be explained with the sitemap. A sitemap is a diagrammatic representation of hierarchical system. It demonstrates the navigational layout and organization of the content within. For the website design project, sitemap is used to plan the organization of pages to improve usability in early planning.

Figure 5 Sitemap of the website

The about us page contains the information regarding the company story, clients and the team. The service section contains the service list with the link to individual service section. Portfolio contains the blog and the case studies of the company and the last component is contact.

4.9 Flow of Information in the Website

In every system the information flow from different modules to modules to show the final output to the user or to perform user specified action. The flow of information can be shown through various diagrams which are mentioned in this section.

4.9.1 DFD Level-0 and DFD Level-1

The DFD (Data Flow Diagram) can be drawn to represent the system of different levels of abstraction. Higher level DFDs are portioned into lower levels according to their functional elements. Here, Level-0 and Level-1 DFD diagram are discussed.

4.9.1.1.1 DFD Level-0

It is also known as context diagram. It's design to be an abstraction view, showing the system as a single process with its relationship to external entities.

Figure 6 DFD Level-0 Diagram of website

The above figure is a DFD level-0 diagram showing interaction between the user and the website. The user accesses the website through browser and web contents are shown back to the user.

4.9.1.1.2 DFD Level-1

The DFD Level-1 is a context diagram decomposed into multiple bubbles/processes. We highlight the main function and system operation breakdown.
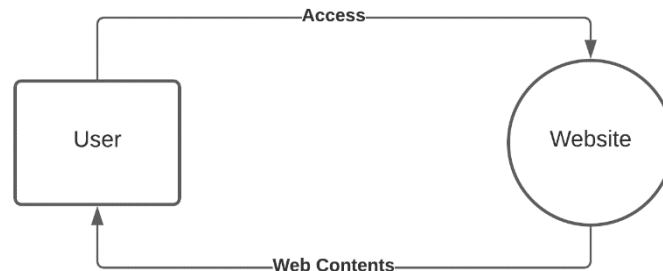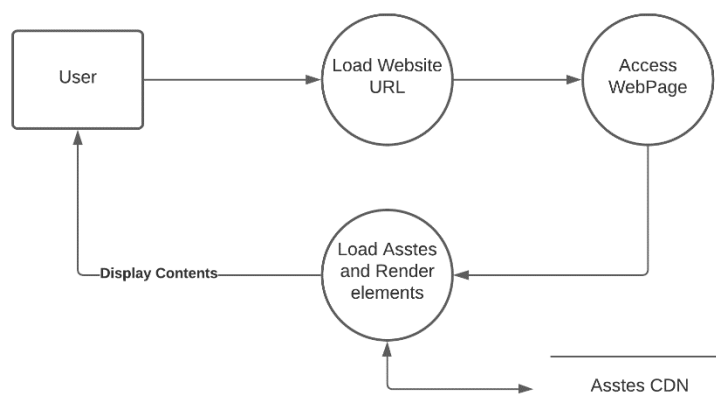

Figure 7 DFD Level-1 Diagram of website

The above figure is a DFD Level-1 diagram that shows the interaction between user and the website. The user accesses the website, the web contents are loaded, which includes the assets from the CDN and displays the content back to the user.

4.9.2 Sequence Diagram

Sequence Diagrams are the diagram that shows the interaction between different objects and how each operation is carried out between them in detail. The sequence diagram for the website is explained below.

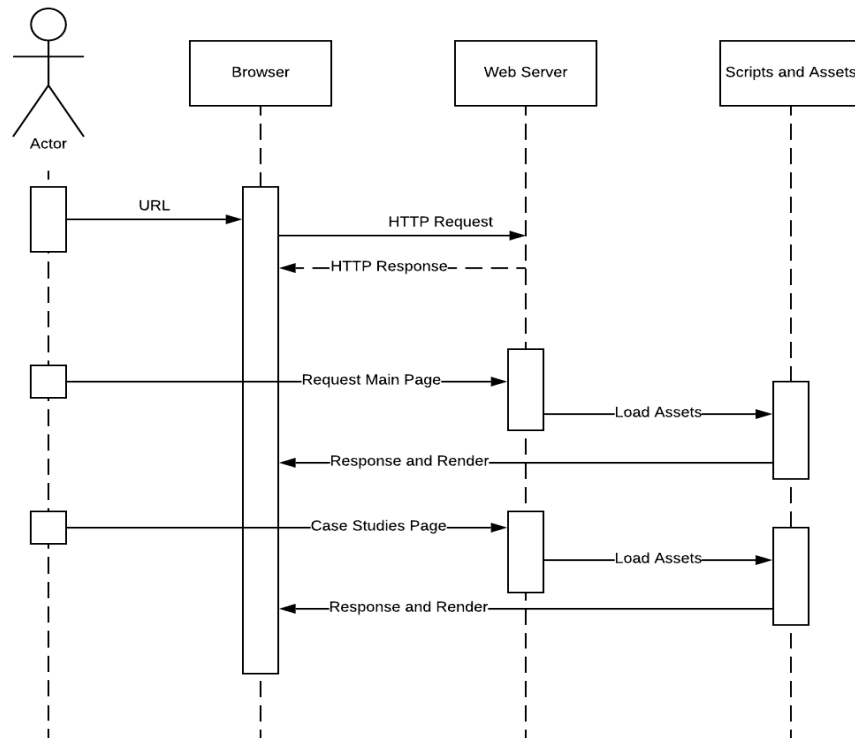Figure 8 Sequence Diagram

The above diagram is a sequence diagram for the website. The actor provides URL in the web browser and an HTTP request is sent to the web server. The webs server then gives back the HTTP response. The user navigates the web page, the request is sent to the web server and necessary assets such as CSS, JavaScript, libraries, etc. are loaded and rendered in the web browser.

4.10 System Implementation

System implementation is a set of procedures performed to complete the design contained in the approved system design document and to test, install and begin to use the new or revised information system. System implementation allows specifying how the system is executed during the development life cycle.

4.10.1 Web Development Life Cycle

Basic web development life cycle was used for the implementation and development of the website. Following is the web development life cycle implemented in the project.
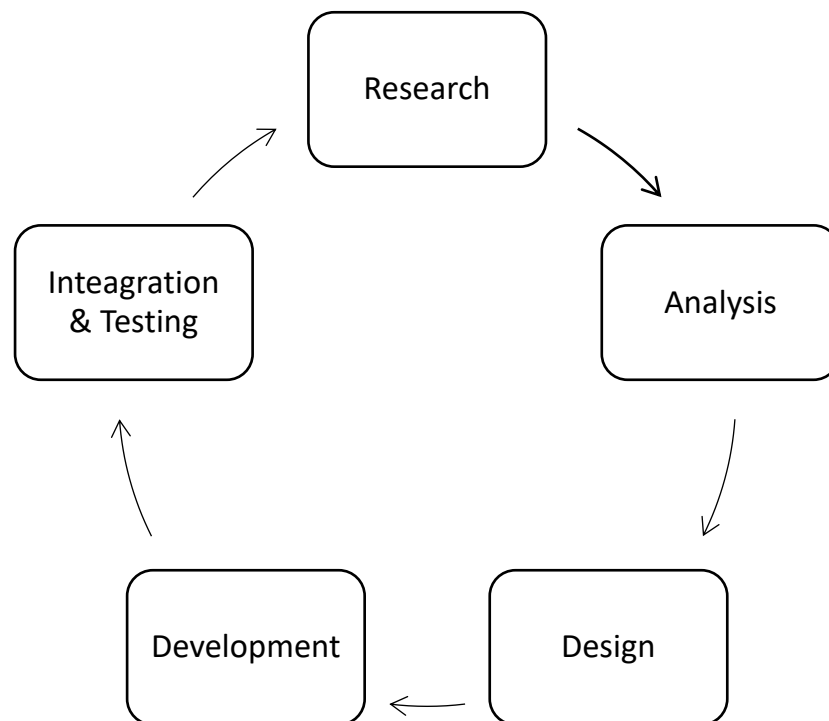

Figure 9 Web Development Life Cycle

I.   **Research**

The first step of design starts with research. Understanding who your audience is, what their needs are and what purpose they will be using your site. Some forms of

research include interviewing potential customers or user and finding competitors. It is important both for the designer and the stakeholder to brainstorm, make suggestions and come up with solutions to roadblocks and problem areas.

The intern did the research on the current trends and patterns in the web designing and development. Secondary method of data collection was done mainly. The intern went through various blog posts, articles and the internet to get the information regarding the current trends and patterns on the particular field. Not only reading the articles and posts, the intern also researched the existing website of the competitors to know the content and the trend of the website particularly for the digital marketing field.

II. Analysis

Analysis of the research done is the second step of designing the website or the project. By researching your audience and competitors, you can start to understand their needs, their lifestyle or hidden preferences. By this we can develop a product or website that suites your audience and caters to their needs. After the analysis, we can create storyboards and create tangible tasks for designing.

After the research, the intern analyzed the patterns and ideas. The outcome of the research and analysis was informed and told to the concerned supervisor (project manager). The requirements and functionality of the website were discussed among the team members.

III. Design

Generally, a design is the process of envisioning and planning the creation of objects, interactive systems, building, vehicles, etc. Web design is a Web development process for creating a website that focuses on aesthetic factors like layout, user interface and other visual imagery in order to make the website more visually appealing and easy to use. (Robbins, 2012) Designing of the website mainly include wireframing and prototyping.

a. Wireframe

Wireframes can be defined as outlines that show the design layout and function. Typically, they start very basic, low-fidelity sketches, and will progress into detailed mockups. Wireframing is the first that comes to mind when they think of UX design and design process.

For the designing of the website, the intern had sketched various versions of what the screen will look like and what steps/actions a user will take to accomplish a task. The intern used sketchpad and writing tool for sketching some rough designs of the website. The sketches were then made into digital wireframe using the Figma tool.

b. Prototyping

A prototype is essentially a scaled-down version of the final product – a simulation or sample version which allows you to test your ideas and designs before you get them developed. Creating a website prototype is useful in many ways. Most importantly, a prototype allows a user to interact with the website almost as it would behave when built. It is hugely beneficial in the design process as it allows us to save a lot of time early on a web project. Major prototyping tools includes Invision, Origami, Webflow, Sketch, Figma, Axure and many more.

The intern used Figma as a prototyping tool. Figma is one of the browser-based software that allows the user to create wireframes, prototypes and mockups either of web design or app design. The wireframe was then converted into a protype. The prototype of the web design led to the development of the website. The intern presented a protype for the website, how the visuals and the functioning of the website will be.

IV. Development

Website development refers to the work that goes into building a website. This could apply to anything from creating a single plain-text webpage to developing a complex web application or social network. The development is a stage where the website is built while maintaining the essence of the website's purpose. All the graphic elements are taken into consideration and are used to generate a functional website.

The process begins with first developing the home page followed by the interior pages. The main focus is given to the navigational structure of the site.

The intern in development phase of the project used Bootstrap CSS as the main styling framework. HTML, JavaScript and CSS is used mainly for the look and feel of the website. SCSS Preprocessor is also used. Various open-source CSS libraries was used. A CSS library is set of codes or functions that is built to perform specific task. CSS libraries contains set of class, id and functions to do specific specialized task. This helps a lot in reducing the line of codes. A CSS library can be installed in the computer or can be used as reference link from the web. Various JS library was also used for the development of the website.

A content delivery network (CDN) is used which allows for the quick transfer of assets needed for loading internet content including HTML pages, JavaScript files, stylesheets, images and videos. A properly configured CDN may also help protect websites against some common malicious attacks, such as DDOS attacks.

Some of the libraries, frameworks and CDN used in developing of the website are:

 i. Bootstrap CSS
 ii. Animate CSS
 iii. Hover CSS
 iv. AOS CSS
 v. Slick CSS
 vi. Font Awesome

The intern used Visual Studio Code as the text editor and git as version control system. Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extension for other languages and runtimes.

Git is a version control system which is primarily used for source-code management in software development. Using git, we can keep a track of changes in any set of files

among multiple people and with its help we can work offline. To work with git, we use version control hosting solution. This allows developers who collaborate on the source code to manage a master repository. (Adhakari, 2018) The intern used GitHub as a version control hosting software.

V.   Integration and Testing

After the website is developed, it should be integrated and tested. Web integration is the process of connecting all the outputs of all activities and components essential for carrying out the web project as a whole.

Integration of the web project is tested. Testing of website includes all the sitemap testing, links and UI of the website. One of the main features that a website must have is the responsiveness. The responsiveness of the web project is the approach that suggests that design and development should respond to the user's behavior and environment based on screen size, platform and orientation.

The intern tested for the responsiveness of the website. Various testing was done to find any defects or errors in the web project. The intern checked for the responsiveness of the web user interface and the contents for the web content.

4.10.2 Tools Used

4.10.2.1 HTML

HTML5 was used for the development of the website. A structured document was created with the help of the structural-semantic text like heading, paragraph, list, links and other items. The overall structure of the website was made with HTML.

4.10.2.2 CSS

CSS was used for styling the website. Bootstrap CSS was used which is a library of set of classes and functions performing specific task. CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. Bootstrap CSS

was not only used, rather custom CSS was included. Various CSS libraries and framework used in the project are:

- Bootstrap CSS for layout
- Animate.css for animation of elements
- Hover.css for hover effects
- AOS.css for animation on scroll behavior
- Slick.css for carousel
- Font Awesome for icons

4.10.2.3 JavaScript

JavaScript is a high-level, interpreted scripting language that conforms to the ECMA script specification. JavaScript provides the feature of interactivity to the website. Particular behavior and action to the elements are provided by JavaScript. In this project, JavaScript is used for the functionality and behavior of elements such as buttons, links and animation.

4.10.2.4 Git

Git is a version control system which is primarily used for source-code management in software development. Using git, we can keep a track of changes in any set of files among multiple people and with its help we can work offline. To work with git, we use version control hosting solution. This allows developers who collaborate on the source code to manage a master repository. (Adhakari, 2018) Git was used as a version control system for the project.

4.10.2.5 Figma

Figma is used as a wireframing tool. Figma is a browser-based UI and UX design application, with excellent design, prototyping, and code-generation tools. It's currently the industry's leading interface design tool, with robust features which support teams working on every phase of the design process. (Bracey, 2018) Wireframing and Prototyping was made with Figma.

4.10.2.6 Visual Studio Code

Visual Studio Code was used as a text editor. It is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. The functionality of the program with rich set of extension has helped a lot in building the website.

4.11 Test Strategy

A test strategy is an outline that describes the testing approach of the software development cycle. It is created to inform project managers, testers and developers about some key issues of the testing process.

4.11.1 System Testing

System testing is a level of software/web testing where complete and integrated software is tested. The purpose of this test is to evaluate the system's compliance with the specified requirements. For the testing of the webpage and website as whole Chrome Developer tool and Chrome extension of responsive web tester was used.

- **Chrome developer tool**

  Chrome Developer Tool is a browser-based developer tools that offer us the ability to develop and debug the clients' websites. Various elements were tested using this tool. The elements of the website, the spacing, debugging, etc. was done with the help of Chrome Developer Tool.

- **Responsive web design tester**

  Responsive Web Design Tester is a quick and easy way to test the websites' responsiveness. It is a Chrome extension. This provides quick preview of your websites design and the dimensions that they will be seen on devices.

  Responsiveness of the webpage was tested using this extension. The responsiveness was tested according to the dimension of the device. The desktop view, tablet view and the mobile view of the website is properly tested.

4.11.2 Test results and discussion

The entire test was performed through series of various test cases which help the website to identify the bugs and problems in the webpage. Testing was done with the help of chrome dev tools and the responsive design tester.

Table 3 Test Case for link

Test Execution	Results and Action
Scenario	Test if the sitemap of the link links with the corresponding pages
Expected Result	Link corresponds to the corresponding link
Actual Result	Every link doesn't correspond to the corresponding link
Status	Fail

Table 4 Test Case for responsiveness

Test Execution	Result And Action
Scenario	Test if the webpages are responsive with different dimension of the device
Expected Result	Website is responsive
Actual Result	The website is responsive.
Status	Pass

4.12 System Maintenance

System Maintenance is an ongoing activity, which covers a wide variety of activities, including removing elements and design errors, adding contents and updating it. Website maintenance is the act of regularly checking the website for issues and mistakes and keeping it updated and relevant.

The website is maintained according to the relevant news and contents. Various minor bugs and defects are being rectified.

CHAPTER 5: CONCLUSION AND LESSON LEARNT

5.1 Conclusion

To be a part as an intern has been one of the best professional experiences of the intern's life. The Interne will always be thankful to Branding Bee for giving me opportunity to learn from the company. During the 10 weeks of the internship period the intern learned and did so many things that he thought was not possible in that short amount of time.

The internship program was indeed a great opportunity for the students to get an industrial exposure at organizational setting. The internship program not only introduced the intern to the real working environment but it also provided the intern a platform to learn and perceive many new ideas, skills and values. Under the span of these 10 weeks, the intern learnt many things which will surely help much in the near future.

Front-end web development is the practices of converting data to graphical interface for user to view and interact with data through digital interaction. It makes the application user friendly and feel of sites. Front end web development mostly focused on then interaction and user interfaces. Frontend web development deals with the style, animation and graphics.

5.2 Lessons Learnt

With the internship program, the intern got a practical exposure to the actual environment resulting in gaining more and improved skills and knowledge. Also, through the internship program, the intern got a chance to get familiar with how IT is actually adopted and also idea about the real time working process. Learning new programming concepts, solving and debugging errors, getting familiar with new modules, staying in schedule, maintaining social relationship with other employees, etc. can be said the major learning from the valuable 10 weeks period of internship.

The lesson learnt during the internship project are:

- Build up relationship and communication skills,

- To be self-dependent,
- To work in as a group and a team,
- Understood the importance of coordination and cooperation in working environment,
- Keep out the frustration and pressure no matter how the situation is and
- To design and implement the system.

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APPENDIX: