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An Undergraduate Internship on Pine City Purbachol

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An Undergraduate Internship on Pine City Purbachol

By

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Autumn, 2022

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February 01, 2023

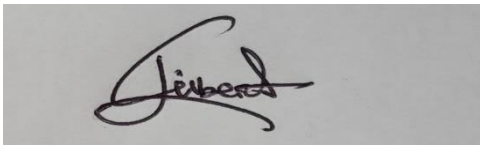
Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

I am Gilbert Akash Modhu id-1630382 declaring that this report is completely made by myself under the supervision of my respected faculty member Mr. Sanzar Adnan Alam. I have completed and submitted this document for the partial fulfilment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). All the works here are the result of my work experience in Dcastalia Limited and study from different online resources like blogs, research papers etc that are referenced in the report.



01-02-23

Signature

Date

Gilbert Akash Modhu

Name

Acknowledgement

First and foremost, I am grateful to the Lord as I am able to complete the report within due time.

I am extremely grateful to the CEO MD. Khairul Hasan, Dcastalia Limited as I was given an opportunity to work with their excellent development team as an intern. They have helped me to carry on with my work in a professional environment.

This report on my work could not have been possible without the help and guidance of my respected supervisor Mr. Sanzar Adnan Alam. He helped me understand why this report is so crucial and how I can make sure to express my work through this report to the best possible way.

I would also like to address my parents support and prayers for me that helped me to continue with my work patiently and without their help in every possible way I could not have come to the end of this Internship. Finally, I must express my cordial gratitude to all my faculty members to help me carry on with the whole bachelor's degree.

Letter of Transmittal

January 2, 2023

Mr. Sanzar Adnan Alam

Lecturer, Department of Computer Science and Engineering, Independent University,

Bangladesh

Subject: Submission of Internship report.

Dear Sir,

With due respect I would like to state that I am submitting my Internship Report to you. I have started working with Dcastalia Limited for a 4 month long period of time as a web development intern. I would like to inform you that I have worked on Pine City Purbachol project for Dcastalia Limited and made this report based on my work experience and under your supervision. I would be ever grateful to you if you would kindly evaluate my report.

I therefore pray and hope that your honor would be kind enough to grant my application and oblige thereby.

Yours Sincerely,

Gilbert Akash Modhu

ID: 1630382

Evaluation Committee

.....

Signature

Ajmiri Khan

Name

.....

Internal Examiner-1 / Panel Member-1

.....

Signature

Sarwar Shahidi

Name

.....

External Examiner-2 / Panel Member-2

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Signature

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Name SARZAR AONON ALAM

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Supervisor of the intern

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Signature

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Name

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Head, Department of Computer Science & Engineering

Abstract

Bhaiya Housing is a real estate company of the present of today. Pine City is a new housing venture of Bhaiya 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.

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

1.1 Overview/Background of the Work

Bangladesh has been evolving as a digital nation where we have a very high number of people using internet and the number keeps rising. Internet is easy to get now and has reached every corner of the country. This also demands business, different platforms, organization to evolve and get digitalized. This opens a huge opportunity for business organization to promote themselves online. Like every other business sector, Real Estate business have also taken this opportunity to grow their business and reach more people. Dcastalia has partnered with lot of prominent real estate companies to help them make their online platform to promote their business and increase the brand value. The following report is based on the development of such a company's website, Pine City. The website aims to help their customers and interested buyers with important information about land, easy solution to contact or book a meeting and also promote the brand to the local community to establish them as one of the prominent Real Estate agencies.

The report also describes my internship experience with Dcastalia Ltd, a well-known digital agency based in Dhaka, Bangladesh. Dcastalia was found back in 2009 and since then serving their customers with their expertise. I am glad to join them and work with them in the development team as a web developer intern.

1.2 Objectives

The main objective of the project is to reach more clients and investors through their online presence which will also provide the visitors an easy solution for communication through the web platform. Given the current pandemic situation of Bangladesh and also the traffic condition in Dhaka, moving from one place to another has become very challenging and time-consuming task. It has also become difficult for people who are interested in buying properties to travel from location to location and find their desired properties.

1.3 Scopes

i. **Landing Page** – The index page of the website where users will get a summary of the full website.

ii. **About Page** – A detailed page to highlight on who Pine City are.

iii. **Project Page** – Display of all the projects that are owned by Pine City with detailed information and pictures.

iv. **Service Page** – A page for the information that are required for the investors.

v. **Career Page** – Will show the job vacancies of Pine City and interested candidates can apply by filling up and submitting the form.

vi. **Contact Pages** – Dedicated contact page for general visitors, potential customers and potential investors.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

CSE 213, Object-oriented Programming: Through this course I learnt the concept of treating data as an object and also modular code structure which made codes shorter but more efficient. The concept of using functions and class was very helpful and was widely used in my project.

CSE 303, Database Management: This was a basic core course which focused on teaching us how to plan and design a project. In this course I learnt the basics of a database and how it works, database languages, Rich Picture, ER Model, Converting ERD-Relations, Introduction to Normalization and Structured Query Language. All these knowledges were useful while I designed and planned the project. Knowledges of MySQL, PHP and use of local server was also useful in my project to make it dynamic.

CSE 307, System Analysis and Design: This course gave a brief idea on Software Development Life Cycle which helped me to plan all the steps and phases of the project. It helped me to identify the goals and challenges. Through the 7 stages if SDLC analysis we formed a plan which made the work easier for me and the whole team at Dcastalia.

CSE 307, Web Application and Internet: This was the most important course for my project where the course covered the important parts of developing a web application. Here I learnt HTML, CSS, Js, Jq, PHP, MySQL etc. which was directly implemented in my project.

2.2 Related works

Real Estate and Properties business on the internet is not a brand-new idea, rather it's a very common thing to portray this business online worldwide. But for Bangladesh the idea is relatively new and business owners now a days are more inclined towards marking their online presence.

Dcastalia has worked previously with many Real Estate and Properties business companies to cater their need of a strong online presence on the internet and create a way of smooth communication with its customer. Some of the highlighted projects are:

i. **Concord**: Their website was designed to incorporate all the aspects of their services on one platform: Concord is one of the oldest and well-known real estate companies who have big projects like Sriti Shoudho under their belt. Their website consists of a great UI and UX to effortlessly reach their virtual client.

ii. **Shanta Holdings Limited:** Shanta Holdings is one of the most renowned names in the field of commerce and industry and is one of the prestigious and leading construction companies of Bangladesh today. Their site portrays the genuine personality of the organization.

iii. **Rangs Properties**: Rangs properties is a luxury real estate company. Their premium website allows users to properly engage with the brand and determine everything they need to know about the company and their services.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

Work Breakdown Structure is defined as a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. It organizes and defines the total scope of the project.

We have also created a WBS so that our project is managed smoothly and more efficiently in an organized way. We have used a top-down approach to produce our WBS and a phase based WBS.

The 5 elements in our Level 1 and how the phases are followed is described briefly below:

i. **Requirement Analysis:** Clients Requirement is taken and accordingly a sitemap is produced. Project timeline is produced, risk factors are analyzed and costing is estimated.

ii. **Design Layout:** Through various techniques of system analysis the design layout is produced like, UML diagram, Rich Picture and Activity diagrams. Then User interface is designed based on the analysis.

iii. **Development:** Starts with the front-end development and proceeds to backend development. Both the developments start with separate development meetings and then followed by different phases which includes number of audits to ensure quality, making the site mobile response, CMS setup and versioning, data entry etc.

iv. **User Acceptance Testing (UAT):** This phase starts when the site is functional and the site is taken through testing and fixing and showed to the client to obtain their feedback and further revisions are done.

v. **Development:** In this final stage upon client approval the site goes live.

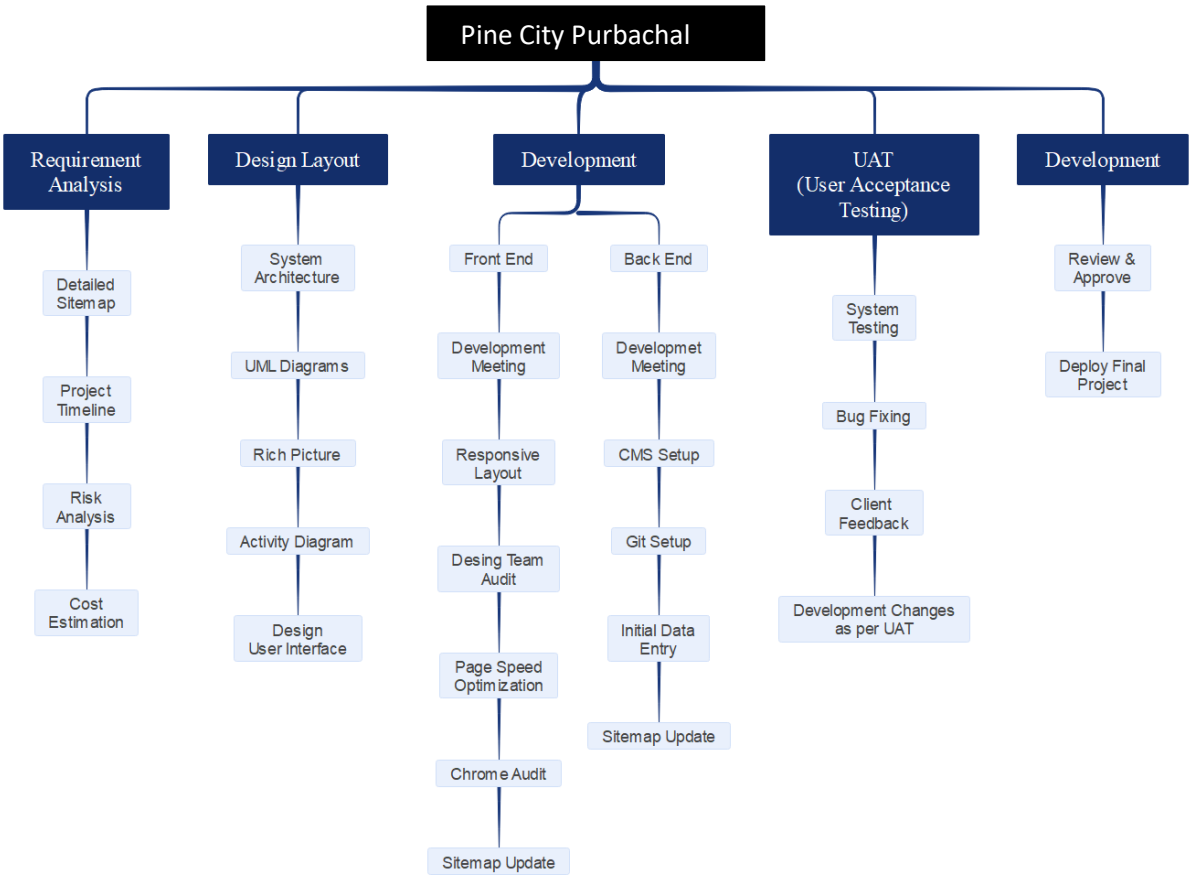


Figure 3.1: Work Breakdown Structure

3.2 Process/Activity wise Time Distribution

According to our WBS, we produced a table to demonstrate ideally what percentage of work should be completed in given time. The total time estimated for the project completion was 60 days. The total task is divided into 5 major tasks which sums up to 100% of the total work. The five major tasks are:

i. **Requirement Analysis**: In this we talked with the client and take a list of all the

requirements like functionalities, design and security were discussed. Further in-house

analysis of the requirements helped us to decide the costing and time needed for the

project. This takes around 10 days and considered 10% of the total work.

ii. **Design Layout:** UI/UX design is done using adobe XD according to the sitemap and a mockup us produced to show the client to portray how the site will look like. This takes around 10 days and considered 10% of the total work.

iv. **Development:** The most important part of the project where the whole project gets life. The frontend and backend coding are done in this phase. This is the largest phase of the project and takes around 25 days and considered 47% of the total work.

v. **User Acceptance Testing**: After the above 3 phases the project is shown to the client by arranging a meeting. All the functionalities and options are explained from our team. Then detailed feedback is asked from the clients and revisions are done to the project as per the feedback. Quality assurance

is also taken care in this phase. This takes around 10 days and considered 18% of the total work.

vi. **Deployment:** Finally, after the approval from the client, the project is hosted on the client's domain and hosting and the CMS is handed over to the clients and necessary training is provided to the client. This takes around 5 days and considered 5% of the total work.

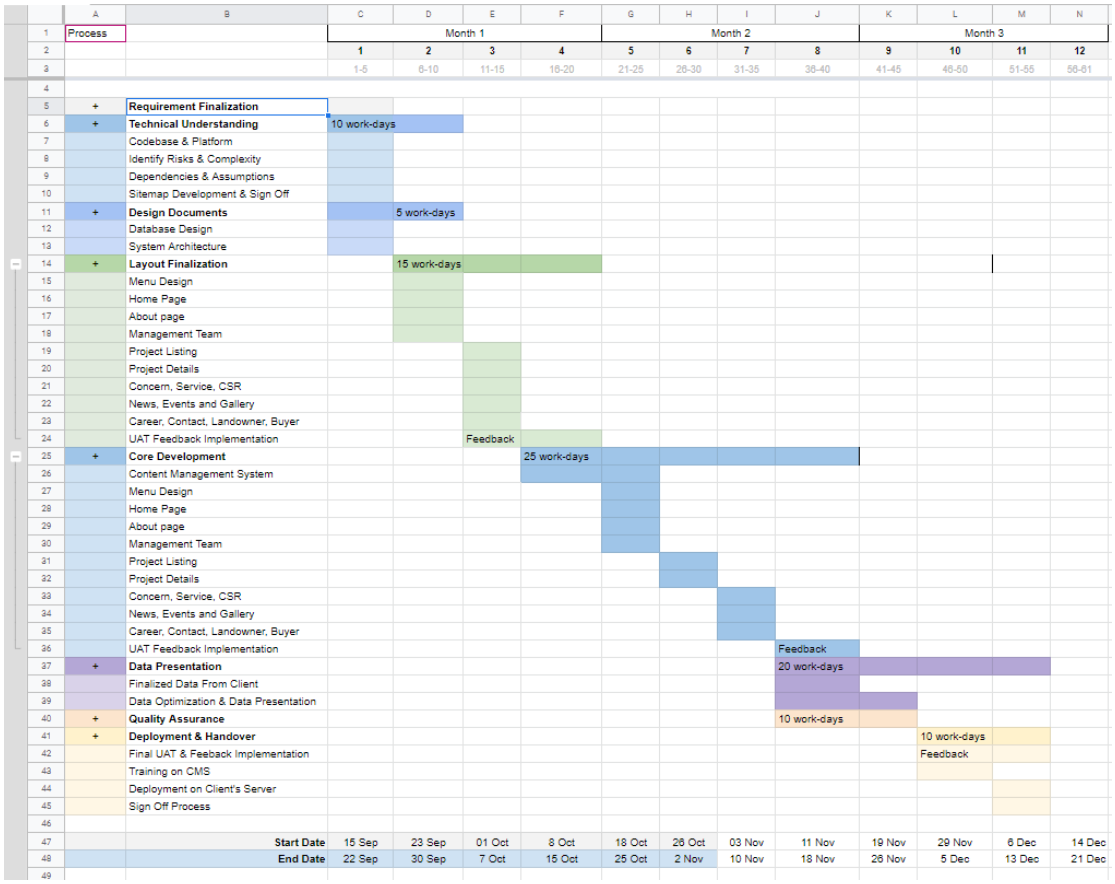
Task	Days	Work Percentage
Requirement Analysis	10	10%
Design Layout	10	20%
Development	20	47%
User Acceptance Testing (UAT)	10	18%
Deployment	10	5%
Total	60	100%

Figure 3.2: Activity wise resource & time allocation

3.3 Gantt Chart

A Gantt chart is a project management tool assisting in the planning and scheduling of projects. Project management timelines and tasks are converted into a horizontal bar chart, showing start and end dates, as well as dependencies, scheduling and deadlines, including how much of the task is completed per stage and who is the task owner.

We made a Gantt Chart which helped us to plan and schedule all the activities of the project in details.



Process		Month 1				Month 2				Month 3			
		1	2	3	4	5	6	7	8	9	10	11	12
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-61
+	**Requirement Finalization**												
+	**Technical Understanding**	10 work-days											
	Codebase & Platform												
	Identify Risks & Complexity												
	Dependencies & Assumptions												
	Sitemap Development & Sign Off												
+	**Design Documents**		5 work-days										
	Database Design												
	System Architecture												
+	**Layout Finalization**		15 work-days										
	Menu Design												
	Home Page												
	About page												
	Management Team												
	Project Listing												
	Project Details												
	Concern, Service, CSR												
	News, Events and Gallery												
	Career, Contact, Landowner, Buyer												
	UAT Feedback Implementation			Feedback									
+	**Core Development**				25 work-days								
	Content Management System												
	Menu Design												
	Home Page												
	About page												
	Management Team												
	Project Listing												
	Project Details												
	Concern, Service, CSR												
	News, Events and Gallery												
	Career, Contact, Landowner, Buyer												
	UAT Feedback Implementation								Feedback				
+	**Data Presentation**								20 work-days				
	Finalized Data From Client												
	Data Optimization & Data Presentation												
+	**Quality Assurance**								10 work-days				
+	**Deployment & Handover**										10 work-days		
	Final UAT & Feeback Implementation										Feedback		
	Training on CMS												
	Deployment on Client's Server												
	Sign Off Process												
	Start Date	15 Sep	23 Sep	01 Oct	8 Oct	18 Oct	26 Oct	03 Nov	11 Nov	19 Nov	29 Nov	6 Dec	14 Dec
	End Date	22 Sep	30 Sep	7 Oct	15 Oct	25 Oct	2 Nov	10 Nov	18 Nov	26 Nov	5 Dec	13 Dec	21 Dec

Figure 3.3: GANTT Chart

3.4 Estimated Costing

The costing of a web app project depends on several factors like size of the project, functionalities, design of the website and any additional feature demands by the client. Below is the estimated costing table we have where we have considered all the cost which includes design service like, theme, logo, icons, the cost for custom home page slider, live chat option, social media connection, SSL Certificate, SEO and other plugins and services provided. The cost of official resources used are also taken into consideration. The total costing was estimated at BDT 2,80,000 with domain and hosting and the possibility of additional charges if any

additional service is required within 1 year of the deployment of the website.

Work Distribution	Costing in BDT
UX Development	50,000
Front End Development	1,00,000
Content Management System (CMS)	1,00,000
Domain and Hosting	30,000
Total	2,80,000

Figure 3.4: Cost Estimation

Chapter 4

Methodology

There are a number of methodologies and models available for a system development life cycle. Each of these models are different in some way, but all of them serves the same purpose of organizing a project and helping the team working on the project to work more effectively and efficiently, for example:

- Waterfall
- Lean
- Agile
- Spiral

Agile: The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, team's cycle through a process of planning, executing, and evaluating. There are several software package development techniqueologies or models that are employed in development: among them we've got used the Agile method to develop my project. Agile software package development refers to a gaggle of software package development methodologies supported unvaried development, wherever needs and solutions evolve through collaboration between self-organizing

cross-functional groups. The Agile Methodology is predicated on varied and progressive development rather than a linear approach. It doesn't build a complete system right away, but rather develops incrementally.

The most widely used Agile methodologies are:

1. Agile scrum methodology
2. Lean Software Development
3. Extreme Programming (XP)
4. Dynamic Systems Development Method (DSDM)
5. Feature Driven Development (FDD)
6. Prototyping

Development Tools Used:

To build the website, we have used:

a) **Yii 2**: It is a high performance, component-based PHP framework for rapidly developing modern Web applications. Yii 2 inherits the main spirit behind Yii for being a simple, fast and highly extensible PHP

framework. Yii features include:

• Model–view–controller (MVC) design pattern.

• Generation of complex WSDL service specifications and management of web service request handling.

• Internationalization and localization (I18N and L10N), comprising message translation, date and time formatting, number formatting, and interface localization.

• Layered caching scheme, which supports data caching, page caching, fragment caching and dynamic content. The storage medium of caching can be changed.

• Error handling and logging. Log messages can be categorized, filtered and routed to different destinations.

• Security measures include prevention of cross-site scripting (XSS), cross-site request forgery (CSRF) and cookie tampering.

• Unit and functionality testing based on PHP unit and Selenium.

• Automatic code generation for the skeleton application, CRUD applications, through the Gii tool.

• Code generated by Yii components and command line tools complies to

the XHTML standard.

I have used Yii 2 for the backend development of my website.

Chapter 5

Body of The Project

5.1 Work Description

Pine City Purbachol is a concern of Bhaiya group. Pine City Purbachol is focused on expanding their business of land and properties. Their goal is to reach their clients easily in order to sell their properties, flat and apartments through their website. The clients will be able to choose from the number of properties as per their liking. This website will also help investors so that they can approach with their proposals.

Overall, the aim is to grow business in terms of sales and marketing and make a platform that will be an easy way of communication for clients and investors from anywhere.

My cv here was to build the web application focusing on the frontend developing, system designing and building some parts in the backend part.

The languages used for the front-end are:

- **HTML/CSS**
- **SASS**
- **Bootstrap**
- **JavaScript**
- **jQuery**

Languages and frameworks use in back-end are:

- **PHP**
- **YII2 (framework)**
- **MySQL (Database)**

5.2 System Analysis

A system analysis is carried out in order to help us to identify the goals of the system. System analysis is defined as a problem-solving technique which helps to identify our targeted goals and purposes to achieve the whole project efficiently and in time.

5.2.1 Six Element Analysis

	Human	Non Computing Hardware	Computing Hardware	Software	Database	Communication
Create Projects	Admin	Pen, Paper	Computer	Web Browser	RDMS	WAN/LAN
View Projects	User	Admin	Computer	Web Browser	RDMS	WAN/LAN
Update Projects	Admin	Pen, Paper	Computer	Web Browser	RDMS	WAN/LAN

Delete Projects	Admin	Pen	Computer	Web Browser	RDMS	WAN/LAN
Submit Form	User	N/A	Computer	Web Browser	RDMS	WAN/LAN
Manage Forms	Admin	Record Books	Computer	Web Browser	RDMS	WAN/LAN

Figure 5.1: Six element analysis

5.2.2 Feasibility Analysis

A feasibility study evaluates the project's potential for success; therefore, it is an important factor in the credibility of the study for potential investors and lending institutions. Generally, feasibility studies help us in the technical development and project implementation. Thus, we estimate the cost required and value to be attained.

Five feasibility studies are conducted for the project, which are discussed below:

i. **Technical Feasibility**:

Technical feasibility is the assessment of whether the existing resources and technologies owned are sufficient for the development of the project. This assessment helps to identify if the requirement in terms of the technical skill of the team, technology used, hardware and software used are good enough to complete the project and also provide support in the future.

ii. **Economic Feasibility:**

This analysis is conducted to find the cost and the benefit of the project. A detailed cost for the website development is estimated, which includes all the cost breakdowns. This cost is then generally compared to whether the company will be economically beneficial from the website. Since there is no charge for the visitors of the website, Pine City Purbachol only aims to benefit from their website visitors and turn them into potential customer. The goal is to generate profit from selling their properties to these potential customers.

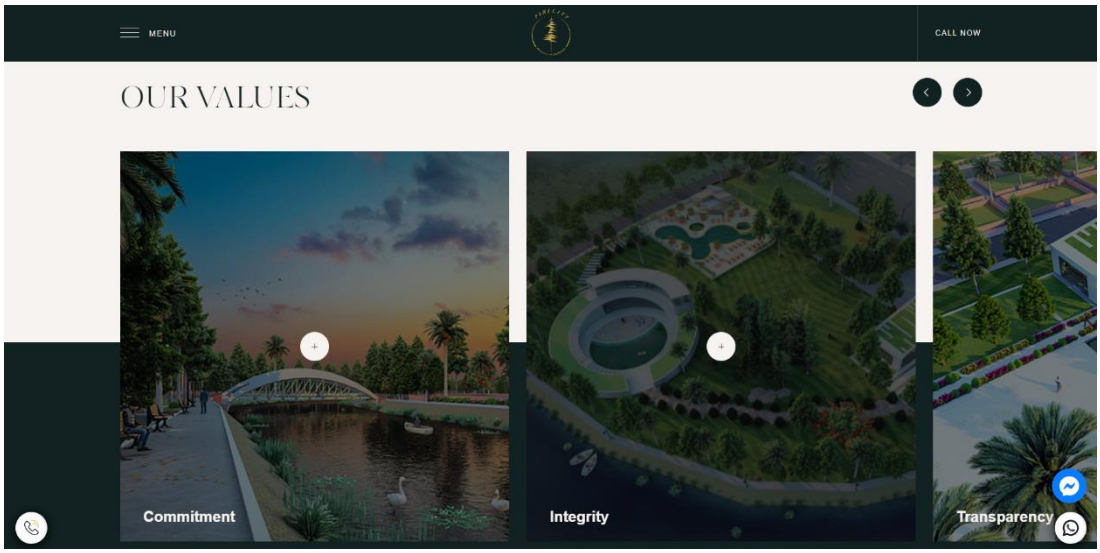
iii. **Scheduling Feasibility:**

The project was planned very well before starting which will help to complete the project in due time. Dcastalia is very strict on deadlines so the working process is designed accordingly without any obstructions.

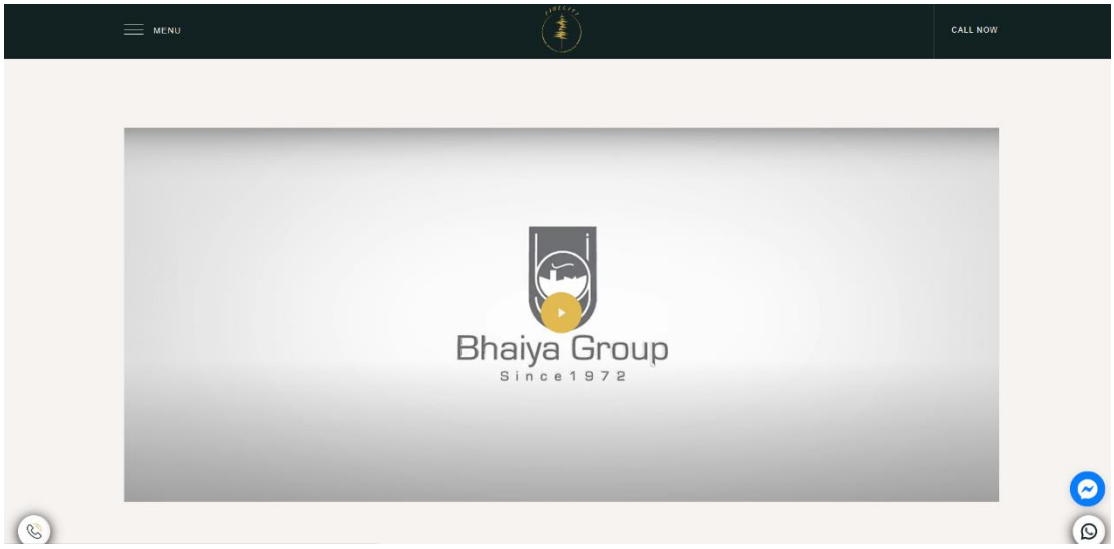
5.2.3 Problem Solution Analysis

At this stage I have faced number of problems during project management and financing part. There are several types of diagrams and charts has to be drawn which takes a lot of time and method. Also, there is some planning and meetings regarding which part of the work will be divided into several person, after that, whole work is transformed into work hour which then is converted to money per hour. So, there are many kinds of obstacles in many areas of the project that I have been facing.

i. Developing the properties slider with interactions:



ii. **Lightgallery framework**:



We have used a JavaScript plugin 'lightbox gallery' in the home page section. By using this plugin, we can add both videos and images. Here we have used it because when we click in this video, we don't have to go anywhere to else to see the video instead we can show direct link videos from YouTube, Vimeo etc. and can control video independently. After closing the video or the video is finish, we are remaining on the section.

5.3 System Design

5.3.1 Rich Picture

A Rich Picture is a way to explore, acknowledge and define a situation and express it through diagrams to create a preliminary mental model. We created a rich picture to create a model to map the significant journey of different kind of users.

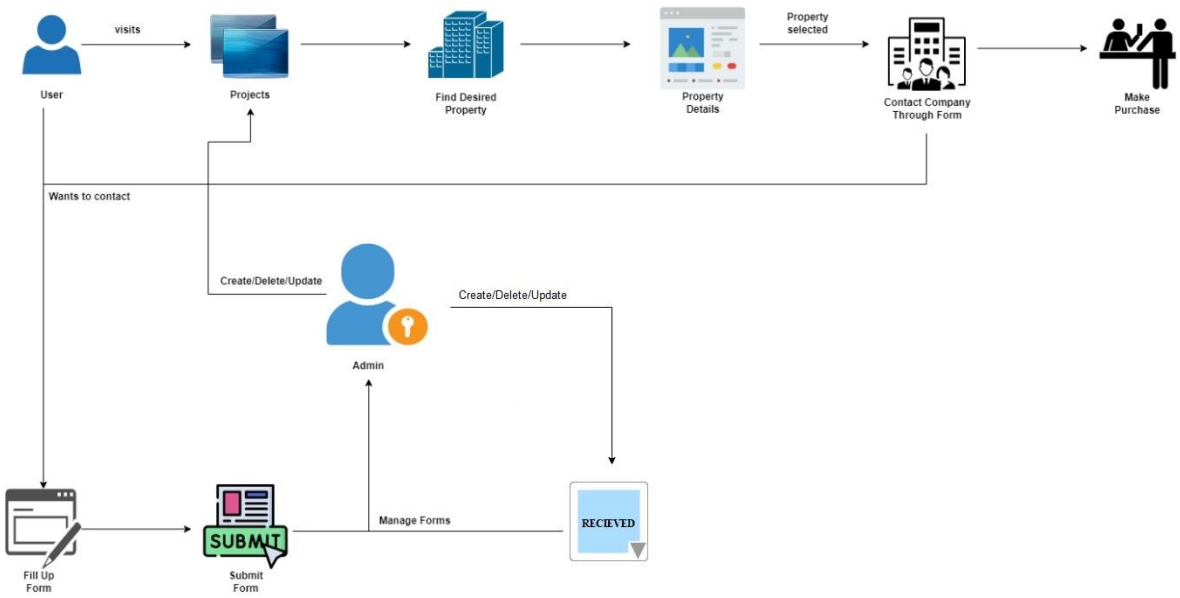


Figure 5.2: Rich Picture

5.3.2 UML Diagram

UML, or Unified Modeling Language, is a specification language that is used in the software engineering field. It can be defined as a general-purpose language that uses a graphical designation which can create an abstract model. This abstract model can then be used in a system. This system is called the UML model. There are different types of

UML Diagram that can be produced for a project. We did activity diagram and the most important of all UML.

Activity Diagram:

The workflow of a system can be illustrated by an activity diagram. The activity diagram for the user is drawn for user:

Prospective Buyer

This diagram illustrates the journey of the users. We have designed the follow activity diagrams:

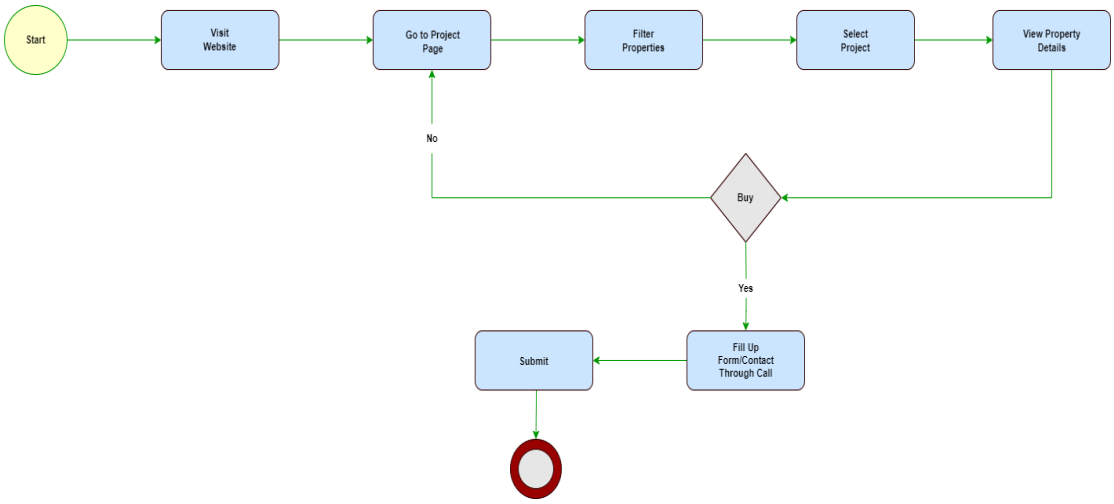


Figure 5.3: Activity diagram for buyers

Activity Diagram for Admin:

The activity diagram for the admin. This diagram illustrates the journey of the admin where he is in control of the admin panel (CMS).

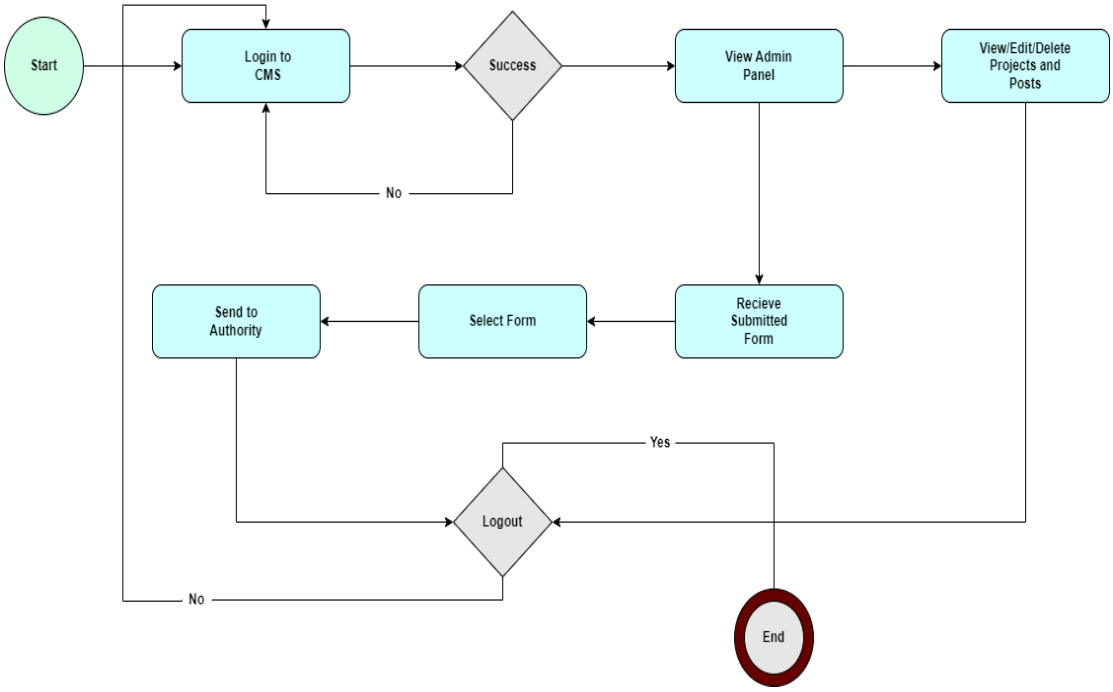


Figure 5.3: Activity diagram for Admin

Use-Case Diagram: As the most known diagram type of the behavioral UML types, use-case diagrams give a graphic overview of the actors involved in a system, different functions needed by those actors and how these different functions interact.

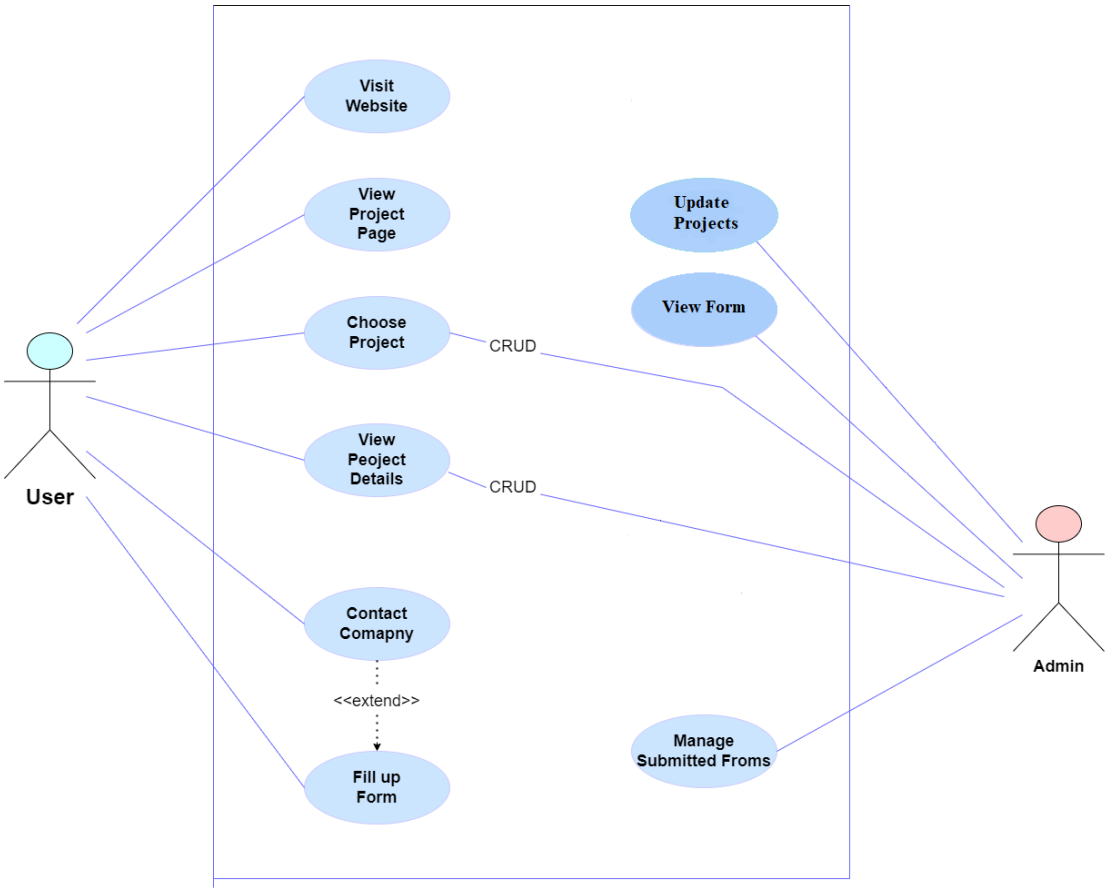


Figure 4: Use Case Diagram

5.3.3 Functional and Non-Functional Requirements

Functional Requirements:

Function:	**Finding Desired Property**	
Input:	**Process:**	**Output:**

Select Category, type and Location	Visits the website	Can view all project details
Pre-conditions:	User must have a device with internet connection	
Post-conditions:	User views the desired projects as per choice	

Table 1: Functional Requirement to find Property

Function:	**Contact with the company**	
Input:	**Process:**	**Output:**
Name, number, email, message	Visits Contact Page	Form is submitted
Pre-conditions:	User must have a valid email id & phone number	
Post-conditions:	Admin collects the form and forwards to authority	

Table 2: Functional Requirement to Contact

Non-Functional Requirements:

The non-functional requirements of the project are discussed below:

Performance:

Performance defines how fast or slow the system will respond. In our project, we gave our focus on the loading time and also handling the traffic of the website at a time. Through following best practices in using good code and content optimization. Also configuring the server so that we can make sure a smooth experience for the visitors ensuring better loading time and traffic handling of the system.

Portability and Compatibility:

We made a very user-friendly design for the system and made it responsive for maximum range of devices from mobile to desktop to large tv. Ensuring that the website will be responsive in those resolutions. We also ensured cross-platform compatibility to make sure that the website runs on commonly used browsers and minimum specifications needed to run the system without any issues.

Security: The system is secured at both client end and server end. SSL certification, form validation through CORS – cross origin resource sharing is ensured to protect from unauthorized access and malware attacks. Also, we use some security plugins inside the website to secure it more.

Availability Requirements:

It's very important to keep running the system 24/7 for our client. So, we need to ensure and support our system and server running properly without any issues.

Maintainability Requirements:

The maintenance of the website has been made very straightforward so that client can easily work and any changes can be easily done through the admin panel with our custom CMS. In case of any issues occurred, it can be easily fixed by updating from our part to resolve the issue.

Usability:

The whole system is designed in mind of accessing this website and browse through it and find necessary information and straightforward to everything that our client's targeted people need. User interface and user experience design has been done with time so that we can ensure a user-friendly and easy to access design. The admin panel is also designed so the admin can easily maintain the website.

5.4 Product Features

Product features defines the functionality of the product and how that will benefit the users. Here are the features of our website below:

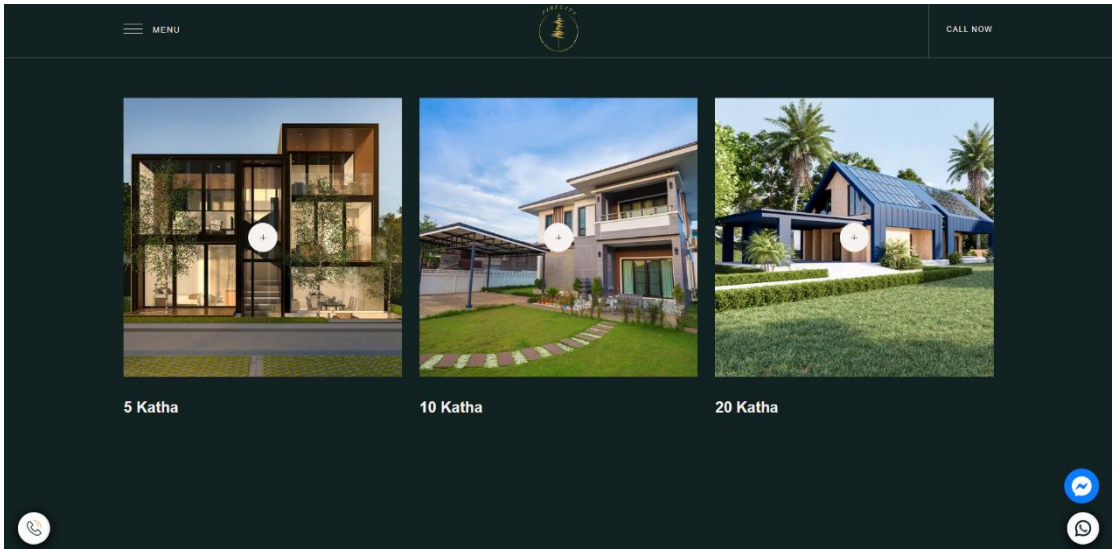
5.4.1 Input

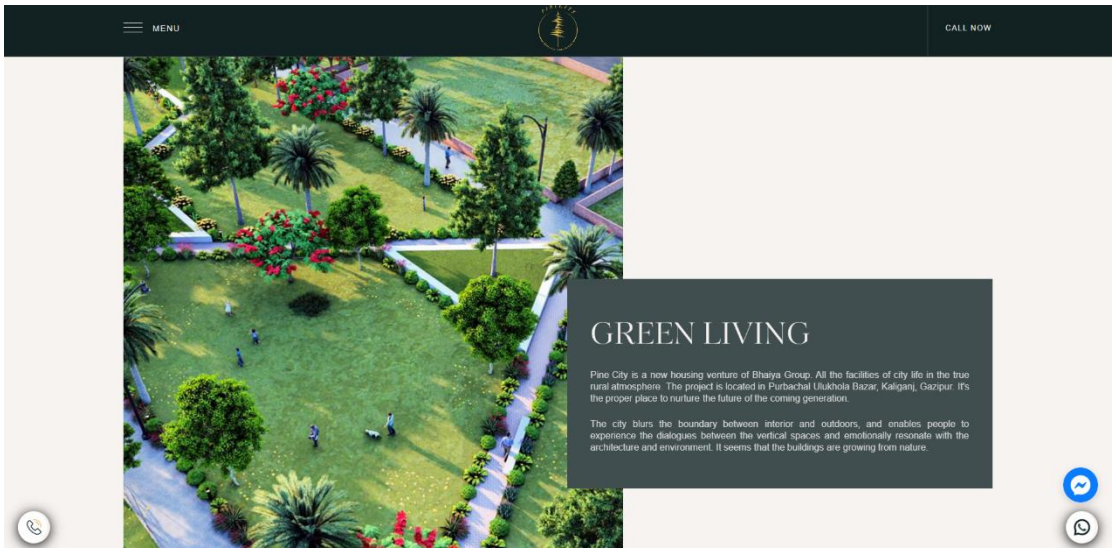
Whatever resource is needed is for the system is known as input. This includes resources used in the production stage like time, people, money, skills, efforts, documents, machines and hardware used. As we worked and develop everything using a computer, as an input, this resources also will be included like computer we have used, the processor, ram, hard drive space, internet, devices like phone and laptops are all included in the input.

5.4.2 Output

In context to our project all the services, features and products of the company that is gained from the website is considered as an output.

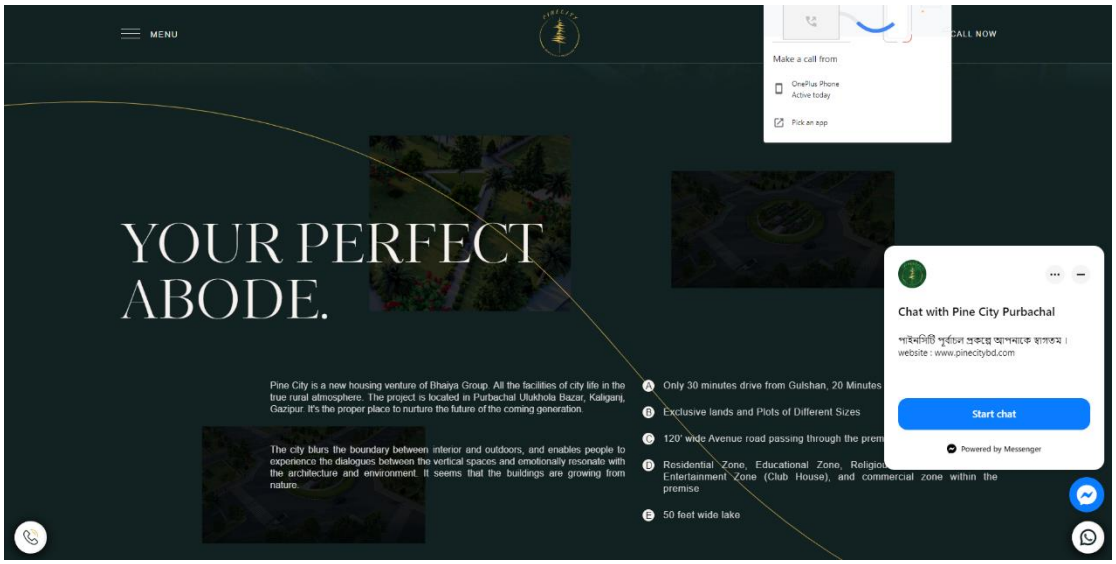
Here are the outputs given below:





Online Consultation:

The live chatbot can be used to consult with the company online also via direct phone calls. Consultation can be done instantly on the website.



5.4.3 Architecture

An architecture defines the structure of any project. It is designed to show how a structure will work for a website. A website architecture defines the structure of the website that is, how the website will work and how the data will be transferred and where they will be stored. If we see into the diagram below for details, we can see that the architecture we designed for the project where the diagram clearly demonstrate that user will see and interact with the front-end of the website. Request or commands received from the front-end part from the users and transfer it to the web server where all the data is stored on a server, which then retrieves data from the file system and database accordingly and sends it back to the front-end for the users as a view and response.

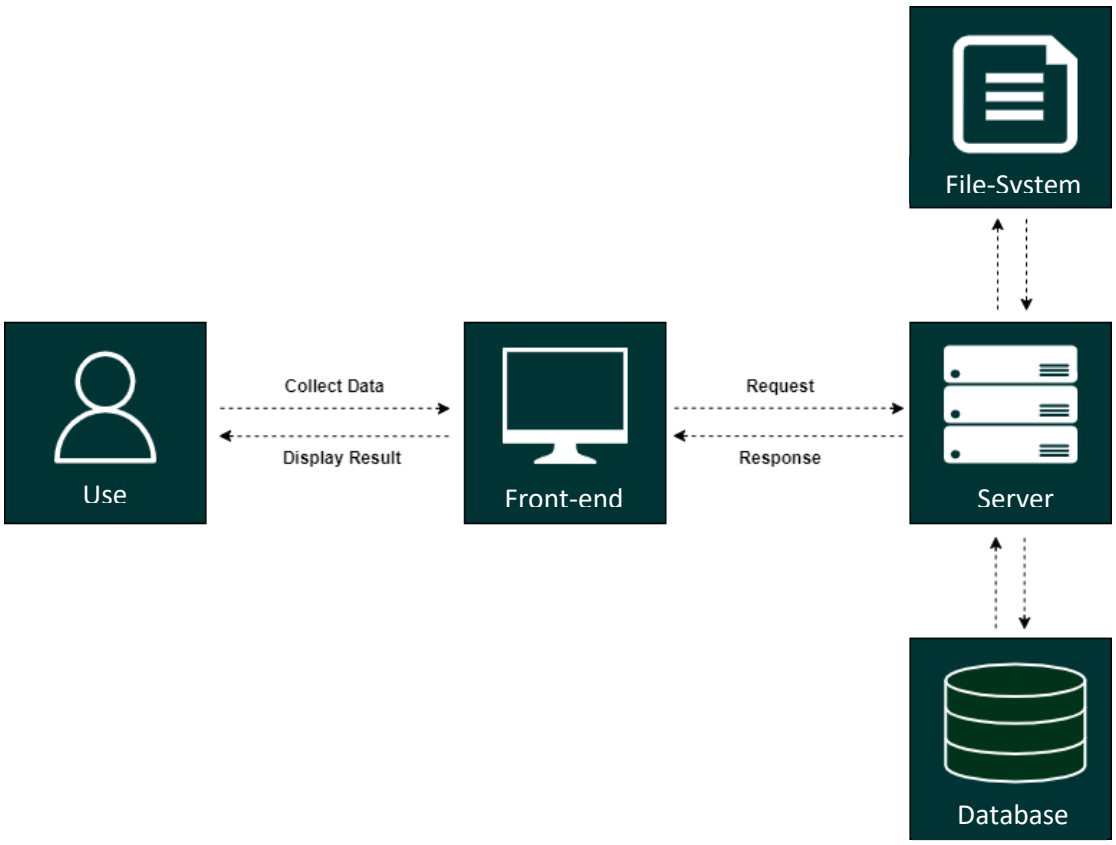


Figure 5: Website Architecture

5.5 Implementation

In our project to build a website for Pine City Purbachal, we used a number of web languages, frameworks and scripts.

HTML/CSS:

HTML is a hypertext markup language that is specifically used to design

the main skeleton of the website. It uses Cascading Style Sheets (CSS) properties and integrating with our HTML codes, we ensure a modern, user-friendly User Interface of the website.

SASS:

Sass stands for Syntactically Awesome Stylesheet. It is an extension to CSS. Sass is a CSS pre-processor and it is completely compatible with all versions of CSS. Sass reduces repetition of CSS and therefore saves time.

Bootstrap:

Bootstrap is a CSS framework used to develop responsive websites. We used Bootstrap to make the website responsive and mobile friendly. We also used media queries for specific devices to present our website best in all sizes of devices.

JavaScript:

JavaScript programming interpreter. We used JavaScript in our website along with React.js for the animations, effects and reducing loading time.

YII2:

YII2 is a component-based PHP framework, known for its high performance.

PHP is an open-source scripting language. We used YII2 framework for our backend

code.

MySQL: MySQL is a relational database management system. We managed our Database and backend through SQL queries.

Chapter 6

Results

The project of Pine City Purbachol was done to with aim to create a modern website and to promote the marketing and selling of property online. Pine City Purbachol wanted to increase the exposure on their company and attract more clients and grow their business. They believed a strong online presence will help them in their cause, as people will be easily able to find their desired property from their website. We catered to their need and built a website for them meeting most of the requirements given by the client. Below is an overview of what we have achieved in the project and how that will help the visitors of the website:

Menu: A global menu is used in the Navigation Bar. The menu is accessible through the hamburger icon, which gives a Fullscreen menu to access different pages of the website. The background of the menu changes with hove on each option of the menu. The menu can be access from all the pages at any time since the navigation bar is made sticky.

Footer: A global footer is there, accessible from all pages with contact details and social media links. Also Contact details so that a people can scroll down and see all the details without going back to search contact details again.

Landing Page: The landing page or the index page is first page that a visitor is able to see in the website. This page is designed to give an overview of the whole website.

A slider is used with project filters to improve user interaction with the website. Visitors can select prom the type of projects here and view specific projects.

A short description of the company and a video about the company is show in the About us section with the option to view details about the company, its goal and beliefs. A featured project section is shown by using a slider. Slick slide plugin is used here to. All the projects are accessible and further details can be seen by clicking on them.

A section for investors is there so the investors can see the details on how to collaborate with There is also a testimonial section which is also a slider, showing the reviews by their customers. In the next section there is an interactive map showing the location of the projects. The location markers are clickable which shows the available projects on the location and can be seen the details eventually. This section is then followed by a counter which shows the number of currently available projects and another section with a contact form to easily contact with the company for any queries.

About Us Page: The about us page is designed in such a way that it gives a detailed overview on the company. Starting from a summary on the mother company Edison Group and our client Edison Real Estate with the option read in details. There is also a

video section with it to show the visitors a video introduction of Edison Real Estate. The video section is developed with the help of plugin – Light Gallery.

There are sections for the companies Purpose, Vision and Mission followed by a message from their Chairman and his details. A visual of the company's board member are provided with the help of Slick Slider plugin and an option to get the visitors introduced to the whole team. There is not much interaction for the visitors on this is an informative page focusing on introducing the visitor with the company.

Project Page: The project page is designed and developed to showcase all the project of the company and help the visitors and prospective buyers to search for their desired property. Visitors of the site can easily view all the projects and can see the details of the project by clicking on each of the pictures. The user will be redirected to the *property details page*. The UI is made user friendly so visitors can easily access the projects. A filtering option is integrated here with 3 criteria to filter with. The visitors can filter with status of the property, type of the property and location of the property all show with drop down menu. Once selection is done filtered properties will be show to the visitors.

Property Details Page: These pages show the details of a specific property. Staring from the address, overview, specification like apartment size, land size, handover Date, number of apartments etc. It also shows the picture of the projects with a gallery to display multiple images. There is also a progress bar to show the progress of the project and current status Then there is a detailed section to show the features and amenities that will be available on the specific property and also a story on the interior and exterior of the project. All these details allow users to visualize the property with the help of the images as well and helps them to take a decision on whether to go forward with buying a property from this project.

Contact Page: The purpose of the page is to allow visitors of the website to contact the company with ease. Details on the companies contact information are given as well as a contact form is given to reach Edison Real Estate with any queries. Users will need to fill up the form with necessary information and their query as a message.

There is also Frequently Asked Question section developed as an Accordion to help visitors find the common questions asked.

Test Case Analysis

The following functionalities has been tested for this particular website:

• Admin login to CMS

• Add project

• Delete project

• Update project

• Change password

- Logout
- Mobile Responsiveness
- Contact forms

Test Table

#	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. Logins 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 Project**	Admin can add new projects of the company	Must be logged in to the admin panel	i. put relevant project information in the appropriate fields ii. Clicks on Save button to add new project	New project will be added	New project added successfully in the DB and visible in the website	Pass	N/A
3	**Delete Project**	Admin can delete a project from the DB	Must be logged in to the admin panel	i. Goes to the list of projects ii. Selects the project to be deleted iii. Press on the delete icon iv. Confirms to delete by pressing confirm button	Project deleted from the system and website	Project successfully deleted	Pass	N/A
4	**Update Project**	Admin can edit the project details	Must be logged in to the admin pane	i. Goes to the list of projects ii. Selects the project to be edited iii. Press on update icon iv. Edits required fields to update v. Saves the changes by pressing	Existing project will show updated information of the project	Data were updated successfully except the Project Description field	Failed	Check codebase

				Save button				
5	**Change Password**	Admin can update password	i. Access to the admin panel ii. Logged in as admin	i. Login to the admin panel ii. Click on the user's icon and selects change password iii. Input old existing password iv. Input new password v. Confirms new password vi. Clicks Save to change password	i. A message to confirm that password has been changed successfully is shown ii. 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	i. Needs to be logged in to the admin pane	Click logout from user menu in profile icon	Logs out from the admin pane	Successful logged out	Pass	N/A
7	**Mobile Responsive**	The design and layout is responsive to the commonly used screen size	i. Any user with internet connection can view the responsiveness	Visit the website URL	Design is responsive without breaking the layout	The website isn't perfectly responsive to all common screen size	Failed	Check Bootstrap implementation and Media query code.
8	**Forms**	Fill up the contact form and submit	Connected to internet	i. visits the website ii. 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

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

As days go by in this modern era, every system needs to give attention to sustainability. To survive in a long run ensuring that the purpose of the system is served to the consumers, sustainability is essential and plays a vital role keeping in mind it is really difficult to maintain. But if it can be established, the future of the project will be better in this competition technology era.

In software and web development, the systems are intended to be lengthy so how they can serve both the owners and the users indefinitely with no problems. To ensure the long-term viability of our project, the website has already been created to still be accessible regardless of the user's machine's environment.

The website we developed is unaffected by the user's computer configuration, operating system, resolution, or internet speed. All computers and smartphones will be able to access the internet using the most popular browsers.

The website's long-term sustainability will be ensured through regular maintenance of the website and its server. The website's HTML, CSS, JS, and backend code are all efficiently optimized. It is ensured that the website works as intended and is easily accessible by users regardless of the device's specification by minimizing repetitive codes, minifying different scripts that are utilized, and maintaining proper coding standards.

In terms of style and layout, the website is user-friendly, with such a strong emphasis on the User Experience. Visitors with only rudimentary computer skills will be able to quickly access and navigate the website. The media files, such as photographs, videos, symbols, and logos, have all been optimized to ensure that the pages load quickly, allowing visitors with low-end devices and poor connections to browse the site.

7.2 Social and Environmental Effects and Analysis

The Pine City Purbachol website lists all of its projects, and consumers may quickly access the site to learn more about a certain property. This allows users to save time by

gathering information. Instead of visiting various websites to make a decision, you can use the information available on the internet. This is something that anyone can do.

Rather than spending hours stuck in city traffic, they may do it from the comfort of their own homes. saves gasoline, and fewer cars on the road equals less pollution from automobiles.

We made every effort to make our programming and media material as efficient as possible. The website is ad-free, has fewer redirections, and only uses basic plugins, all of which contribute to overall optimization, resulting in less power consumption and energy savings.

Our office is totally digitally operated and equipped with energy-saving machinery and equipment. In our office, we are constantly conscious of the importance of avoiding wasting electrical energy. This allows us to be more energy efficient while also reducing our use of paper, which has a positive impact on the environment.

7.3 Addressing Ethics and Ethical Issues

The more technologically advanced our world becomes, the more necessary it is to address ethical challenges and follow accepted ethical principles and guidelines. Sensitive data is constantly sent over the internet via numerous systems, and it must be verified that the data is not compromised in any way.

We ensured that our project data was secure enough to prevent hacking or breaches. We ensured that no extremely sensitive data is gathered via the website, and that only data that is required is saved, such as name, phone number, email address. To secure sensitive data from any form of leak, proper security procedures are taken. Data is securely stored in the cloud, and critical information such as passwords is encrypted. These data can only be accessed by our team's Lead Developer with valid credentials, and no one else on our team has access, ensuring the data's security.

Dcastalia keeps all project-related papers, negotiations and agreements, and coding secret to protect the company's and our clients' privacy.

Chapter 8
Lesson Learned

8.1 Problems faced during this period

Since this was my first attempt to a big real time project, I did face a number of problems and issues. Most of them were some issues where I have lacking of understanding for example, customizing the jQuery plugins for animation, maintaining the grid and responsiveness, writing SQL queries for the forms. Understanding how JavaScript's will work in a specific part of the project. Also, we were having a problem regarding how to configure with the server as I am very much new to this new technology used to developing the website which I have not done before. As a team, with our supervisor, we were having several meetings to rectify all the problems we are facing or we will face in future.

It was also challenging to learn so many new technologies at such a short time. I didn't get to learn the technologies in depth as much as I would have liked given the fact that I was on a deadline. So, the learning had to be rushed. It was very stressful to learn and implement the knowledge at such a short time. It was difficult for me to come up with the pace of the experienced developers in the team.

8.2 Solution of those problems

The solution to the next problem is to keep learning and practicing the technologies more in depth. Spending more time with these technologies will surely make me an expert like the other developers in the team in near future.

Chapter 9

Future Work & Conclusion

9.1 Future Works

A proper real estate business website should not only be utilized to gather property information, but also to allow users to purchase properties through the system. Although this is a bold idea, and many people are still unaccustomed to and unwilling to accept a new manner of purchasing property rather than the traditional one, it is a viable option. We intend to improve the website's functionality by adding a walk-through apartment option, which will allow customers to see a 360-degree perspective of the residences. To summarize our future plans, we intend to do the following in the near future:

- Add e-commerce functionalities.
- Add “Walk Through the Apartment” option.
- Develop an android application
- Update animations using jquery

9.2 Conclusion

Pine City Purbachol project has been implemented effectively. My organization and our clients are pleased with the final result. We believe there are still areas where we can improve, which we will address over time.

Dcastalia provided me with a fantastic internship opportunity. Working at an IT firm with a skilled staff was a really rewarding experience for me. I learnt and implemented new skills and strategies, which enabled me not only to create a good website, but also to broaden my skill set. Thanks to Dcastalia, my professional skills, communication skills, and, last but not least, technical skills have all improved. They led me through each stage and assisted me whenever I needed it. I've also learned how to work under pressure and to meet tight deadlines. My team mates, on the other hand, played an important part in making my job easier by offering advice and suggestions, and I never felt like a newcomer in the firm. This internship has also provided me with an introduction to the website building industry, and I am confident that I will learn and grow as a result of it.

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An Undergraduate Internship on

Pine City Purbachol

By

Name: **Gilbert Akash Modhu**

Student ID: **1630382**

Autumn, 2022

Consent from Supervisor

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during and/or before final viva, and the department can use this version for archiving as well as the OBE course material for CSE499.

(Signature of the Supervisor)

SANZAR ADNAN AZAM
Name of the Supervisor

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Independent University, Bangladesh