Project Report On

Restructuring Techechelons Website

Submitted By

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Under the Guidance of

Dr. Nilesh Sable

In Partial fulfilment of

Bachelor of Technology

[B. Tech. Information Technology]

[2021-2022]

At

Department of Information Technology

Vishwakarma Institute of Information Technology, Pune 411048

Affiliated To

Savitribai Phule Pune University, Pune Bansilal Ramnath Agarwal Charitable Trust’s

RESTRUCTURING TECHECHELONS WEBSITE

Vishwakarma Institute of Information Technology, Pune 411048

CERTIFICATE

This is to certify that the work entitled “RESTRUCTURING TECHECHELONS WEBSITE" is a bonafide work carried out by Mr. Ankush Patil, Ms. Manasi Purkar, Mr. Nishant Ulhare, Ms. Sejal Jagnade in the partial fulfillment of the award of Bachelor of Technology in Information Technology, Savitribai Phule Pune University, Pune, during the year 2022. The project report has been approved as it satisfies the academic requirements in respect of the project work prescribed for the Bachelor of Technology Degree.

Prof. Nilesh Sable

Project Guide

Prof. Pravin Futane

Head, IT Department

Prof. Vivek Deshpande

Director, VIIT, Pune

Date:

Examiners:

Place: Pune

TECHECHELONS®
DRIVING NEXT GENERATION INNOVATION

WeWork Futura,
Magarpatta Road, Kirtane Baugh,
Pune, MH 411028
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PROJECT SPONSORSHIP ALLOCATION LETTER

To,
The Head-IT
VIIT, Pune

We confirm that the project " TE Corp" is allocated to the following team :

1) Ankush Patil (21810232)
2) Manasi Purkar (21810414)
3) Nishant Ulhare (2181067)
4) Sejal Jagnade (21810020)

We hope that your team will sincerely complete it in the duration from February 2022 to April 2022 under the guidance of the Industrial Mentor who has been allocated to you from the company.

Thank you for your interest in working with us. Looking forward to an amazing association.

Yours Sincerely,
For **Techechelons Infosolutions Pvt. Ltd.**

Varun Sharma
Digitally signed by Varun Sharma
Date: 2022.02.17 18:43:10 +05'30'

Varun Sharma
Authorized Signatory

CERTIFICATE FROM COMPANY

ACKNOWLEDGEMENT

We take this opportunity to thank Head of the Department Prof. P.Futane and our project guide Prof. Nilesh Sabale for their valuable guidance and providing all the necessary facilities, which were indispensable in the completion of this project report. We are also thankful to all the staff members of the Department of Information Technology, VIIT, Pune for their valuable time, support, comments, suggestions and persuasion. We would also like to thank Mrs.Suruchi Dedgaonkar,Mrs.Jayashree Bagade,Mr.Rajendra Rode,TCS,TGF and the institute for providing the required infrastructure, internet and library facility.

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ABSTRACT

Techechelons is a software solutions providing company. The project consists of restructuring the website from scratch. The restructuring is required to organize the website by deleting, updating, and moving the content to increase its effectiveness. Also using open-source libraries provides technical supremacy by providing stability, adaptability and most importantly customization. The outcome of the project is desired to be a fully functional website. Restructuring will affect the company by driving traffic to the website and exposing the services to larger audiences efficiently. Clients will be benefited by having easy access to the required services. Applicants can easily apply and contribute to the company's growth and also learn through hands-on experience. Tools and technologies used will be Visual Studio Code, Strapi, Gatsby, Postgresql, Amazon web services, etc.

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Chapter 1
Introduction

1.1 MOTIVATION

Website building softwares offers a lot of functionality to various organizations and becomes a great asset to them. But these functionalities come with heavy pricing options and features lagging security thus making the websites vulnerable. Company websites are an important asset to the company and they require at most attention and security and in turn provide better user experience. The company itself being a technical company providing technology solutions needs its website to be up to date and up to the mark to attract the clients. Thus to fill up the loopholes in the previous website and provide better user interface as well as experience the project of restructure in the website is undertaken.

1.2 Need to Restructure Techechelons Website

Redesign the website to improve the look and feel of the website: The first thing the user observes about the company while interacting virtually is the website of the company which acts as an interactive end with the user. The impression the website leaves on the user is the same the user carries about the company. Thus the look and feel of the website should be nice.

Restructure the code to increase the efficiency in terms of speed: Building the website from scratch requires users to decide and organize the functionalities from the grassroot levels which requires more time to design and also does not guarantee the efficiency in terms of speed. On the other hand the website building tools that are available online provide different options to manage the frontend and the backend. This comes with the different requirements for different types of services and those require different amounts of time to gather and load the information when the user visits the website.

Use open source platforms and allow exploration to select the most suitable platform to the need and scope: Open source platforms come up with a large amount of functionalities and provide different ways to implement. These platforms also have limitations regarding the services they provide, the community the platform has and the pricing plans. Thus selecting the platform as per the requirements of the company or the project provides greater efficiency in all terms.

Select and implement selective CMS to ensure security: The content management systems are playing a major role in structuring websites these days which increases the efficiency. There are a plethora of content management systems with different combinations of options. But it is important for the company to ensure the security of its website and it is important to select the proper content management system.

Reasonable development cost: Budget for any project is assigned sensibly and as per the requirements. Using open source resources provides us with cheaper options yet great efficiency. Design efficient user experience: Increased speed, greater security and nicer looking feel of the website makes the website easily accessible which contributes to nicer user experience. Which in turn contributes to efficient growth of the company by providing accessibility to the users.

1.3 Reason behind Restructuring Techechelons Website

1. Redesign the website to improve the look and feel of the website.
2. Restructure the code to increase efficiency in terms of speed.
3. Use open source platforms and allow exploration to select most suitable to the need and scope.
4. Select and implement selective CMS to ensure security.
5. Reasonable development cost.
6. Design efficient User Experience for end users.
7. Help companies deliver maximum value and satisfaction to the customers.

Chapter 2

Literature Survey

2.1 Literature Review

There has been much research and many efforts made in recent years in the area of web development using a variety of different technologies. Many authors have written books and articles identifying good practices in the field of web design .There appears to be much research and analysis in recent literature that has investigated and sought best practices in web usability. This is an expected phenomenon because much of the success of a website is the ability for its users to make use of the site. The literature suggests that in re-engineering a website, it is important to approach the design from a user perspective, in order to see what the user will see. Each user will have different opinions, knowledge, and abilities which may make it impossible to account for all of the potential users of the website.

There are many elements that go into the a useable website, so each should be evaluated for the level of thought by a user that must go into learning what those elements are, what can be found on the website and what can be done at the website . One effective way to reduce the learning curve for users is by utilizing standards of conformance where possible. There are many web standards that are loosely followed by most professional sites on the net, and using such standards make it easier for a new user to the site to quickly evaluate and understand what the site is, how to navigate around the site, and what the site has to offer. Items such as the navigation placement, the use of simple search boxes, and inclusion of a company logo at the top left of the page help the user along in their understanding of the website, and make it more likely for them to revisit and use the website [2][3][4]. Use of abnormal placement or styles can increase the need for the user to think, and should be avoided, unless a truly innovative and easier-to-use structure is developed [1]. The likelihood of this, however, will be very rare. Clicking through a series of pages to find content or services of interest may be something users are somewhat willing to do, however, relying upon this would be unwise when creating the design. Designing more complex designs using nonstandard elements make the learning process more difficult. The moral is that if the user has to invest too much time into understanding and using the website, the usage is going to be limited at best [1][3][4]. Nearly all of the material addressed the issue of the navigation structure and its role in making the website user-friendly. The readings suggested that navigation should be evident and easily distinguished from other page content [6][4]. This is one major component where conformance to best practices has a lot of weight. Also, use of inline links in page content is a useful way to include non-obtrusive links. Buttons should stand out as buttons, perhaps changing color, shape, or some other visual indicator to convey the presence of navigation. Consistency of such navigation on all pages of the site also makes it much easier and more usable [1][4]. Another important factor addressed by much of the literature, was the importance of appropriate information architecture. The organization of information in a logical manner on the website makes navigation and understanding much easier. Users can more quickly identify grouped sets of information that is

related if logically arranged [2][3][5]. The navigation structure integrates with this grouping as it provides access to these areas, and provides visual clues [1][4]. The literature suggests that simple, short sentences should be used. Paragraphs should contain no more than about four to five sentences at most. Each line should have only about 10 to 14 words. Use of bulleted lists should be used whenever possible to more quickly summarize information [1][3][4]. The use of distinguishing marks, text sizes, fonts and colors is also a recommendation of usability material. Each page should have a title clearly identifying the page contents. This title should stand out through use of increased size, different colors and appropriate placement at the top of the document. Headings should also be used to separate sections of page content into more bite-sized pieces for faster scanning and reading by users. This can also be done using appropriate increased sizes, bolding of text and use of color [1][4]. Each of the usability components identified in the research all centered on clarity, conciseness and consistency in each of the elements of the website in order to ensure the best usability. However, most all material found was directed toward or directly addressing web usability. It is a goal of this project to investigate and determine aspects of web engineering related to maintainability and promote a framework for development and evaluation in this area.

2.2 Review of existing System

Current company website gives information about the company and the services they provide but does not elaborate about the kind of services they provide and decline to fill in the former contact the company for the information they desire. The important information about the number of projects completed, the number of clients companies associated with company experience and total number of hours that is invested by the company in various projects is stated quite below and which is important and deserves to be stated at the top.

The section for testimonials is not included on the home page, thus new clients cannot get updates about the previously built systems and would have to totally depend on the company for the ratings and reviews that clients are given which decreases a certain amount of transparency.

Current system also lacks the footer and requires the user completely to the top in order to access other pages.

It is important for a company to let the clients know about the companies they have worked before, which increases or adds to the impression of the serving company and puts both on their stronger side.

The blog page of the company lists out the random blogs and gives a long list of categories for the user to choose from which is difficult for the new user to decide the domain he is willing to explore. This hampers the user experience and imparts the wrong impression to the user of him not knowing what to search for.

The language used in the current website can be inclined to a little more friendly side for the user to feel included and worthy which will in turn help your interaction.

There is no clear mention of the vision and the mission of the company which is important for the applicant or the client to know before s/he is associated with the company. The company also does not highlight why it is different from the other service providers and what makes it unique. Again the categorization for the current opening speech can be improved to certain extent for the ease of the applicant.

Chapter 3

Project Statement

3.1 Purpose behind the Project

Techechelons is a software service providing company. Client approach company for the software solutions they provide. Virtual presence of the company and the way the work company does is presented virtually impacts the clients seeking for the services online. When the company market itself as the software service company it is necessary for the company to have its virtual presence up to the mark. Iteration is the beautiful process when it comes to designing the user experience. Identifying the loop holes in the previous system and then improving the features which leads to improved user experience presence the information in welling found manner. Does to make the process for the client companies more accessible and familiar the user experience needs to be improved.

3.2 Decision of Scope

The project AIIMS to present the information to the user in well informed manner and make the decision process for the clients easier by presenting the important information at the right point. Also learners can browse the blogs efficiently if filters are applied properly. The aspirings were willing to work in the company will be provided with the easier method to apply for the jobs available.

Working on the things mentioned about benefits the clients willing to collaborate with company, learners who are willing to learn from the information available on the company website and also help the people who are willing to be a part of the company.
At the end of the project it is expected that the website is more accessible and the user interface is more friendly for the user

.

3.3 Methodology for solving this proposed theme

3.3.1 Proposed system Architecture

Fig. 3.3.1.1 System Architecture

3.3.2 Methodology

The project consists of restructuring the website from scratch. The restructuring is required to organize the website by deleting, updating, and moving the content to increase its effectiveness.We took this project as restructuring make the website more efficient. By using open source technologies like strapi, gatsby, graphql and postgresql database we decided to restructure the website. Strapi, content management system is used to create content types and arrange the content to retrieve it when needed. It is the most used and efficient cms technology hence decided to use this one. Gatsby is the react based framework for efficiently creating frontend. Graphql is the query language used to get data from strapi. And postgresql is the database used to store data and media is stored in aws s3 bucket for decreasing load on database. In this way all technologies are decided then static pages firstly created using gatsby then all frontend and backend connection done. After that all dynamic pages developed and lastly integration of all components of project done. Finally restructured running website got developed.

Chapter 4

System requirement and specification

4.1 Software requirements specifications:

4.1.1 Introduction

Techechelons is a software solutions providing company. The project consists of restructuring the website from scratch. The restructuring is required to organize the website by deleting, updating, and moving the content to increase its effectiveness. Also using open-source libraries provides technical supremacy by providing stability, adaptability and most importantly customization. The outcome of the project is desired to be a fully functional website. Restructuring will affect the company by driving traffic to the website and exposing the services to larger audiences efficiently. Clients will be benefited by having easy access to the required services. Applicants can easily apply and contribute to the company's growth and also learn through hands-on experience. Tools and technologies used will be Visual Studio Code, Strapi, Gatsby, Postgresql, Amazon web services, etc.

4.1.2 User Classes and Characteristics

There are three users of the system:

User:

- Go to the required site
- Register/Login
- Browse the necessary features
- Visit Job Openings
- Visit Blog pages

Client:

- View case study
- View services provide by the company
- Contact the authority

Admin:

- Add case studies
- Add job openings
- Add blogs
- Post required updates

4.1.3 Integration

Integrated Gatsby and strapi by which we were able to gain interactivity with a high speed UI.

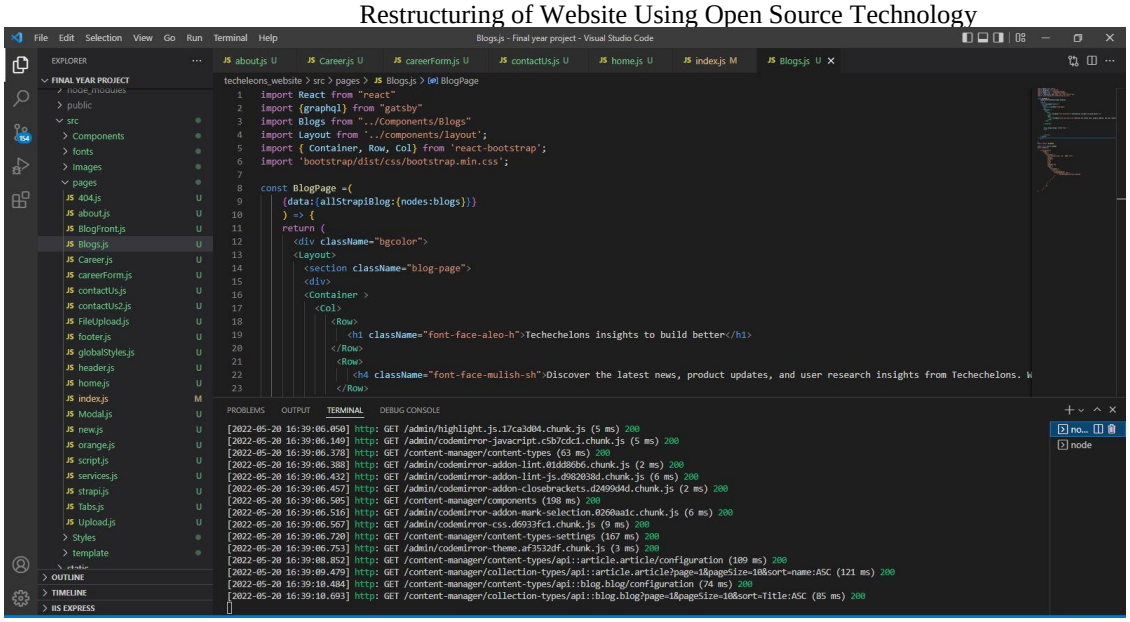

Fig 4.13.1 Integration

4.1.4 Operating Environment

The system is a web based application that can work on any Operating System with a well equipped web browser. It just requires internet connection to view the website and avail all other facilities.

4.1.5 External Interface Requirements

- Hardware requirement:

Personal computer with good internet connection and good amount of space two run the softwares simultaneously

- Software requirements

Node js and npm previously installed in the system.
Gatsby, strapi, graphql, postgresql, AWS.

4.1.6 Functional Requirement

1. Contact us page:
Name address phone number email address of the person in order to contact back with the necessary information

2. Job opening page
List the jobs that are available in the recent time also list the qualifications that are required for the applicants to apply for the job.

3. Blogs listing page
Blogs suitable to the domain or the domains which meets companies requirements for example machine learning web development and few related domains.

4. Case study listing page
Detailed case study of the projects that are completed by now by the company.

5. Home page

List all the necessary information like the number of hours invested by the company to complete the project the number of projects completed the number of companies and the names of repeated companies the firm associated with.

Also list few other important details that the company provides on the website such as blogs case study services jobs and links to other important pages.

4.1.7 Other Non-functional Requirements

1. Data input requirement: necessary details should be submitted to the website in order to use the admin portal. Admin portal allows the user with the additional functionalities to add the blogs at the case studies and descriptions and also at the job openings that are available.

2. Security requirements: this is stem should be completely secure it respective of the contain management system used and should be free from attacks and malfunctioning.

3. Speed requirements: the company being the software provider itself should have knowledge about which platform is to use for particular purpose and those maintain the speed in providing the information to the user. The user can be the client who wants to get associated with the company or a person who applies for the job.

4. Other software quality attributes:
   a. Reliability
   b. Efficiency
      - Security
      - User friendly
      - Flexibility

4.1.8 Product Perspective

The website is expected to be faster than it is now which good user interface and seamless user experience. Few basic features to be implemented in the website includes:
1. Easily accessible contact us button: the contact us button being easily accessible allows the clients to contact the company to know more about the services. It is also easier for a job applicant to contact the company directly and get in touch to know more about the job openings.

2. Seamless searching: the entire menu being present in the header for example home page link to services page block page contact us page case study page extra makes the searching experience for the user. Direct links present in the footer of each and every page also make it easier navigate within the pages.

3. Comprehensive home page: all the services being listed on the homepage links to case studies information about the cliently company previously has work with the blogs the company provides the types of services the company provides and how etc sums up the work that company does in seamless manner. This allows user to gain insights about the company in easier way.

4.1.9 Product Function

Some major functionalities of the product arr as follows:

1. Details of description in the job openings portal
2. Detail case study description for clients
3. Detain blogs and script pictures for references and community engagement
4. Details about the work done in the past

Chapter 5

Project Analysis and Design

5.1 Use Case Diagram

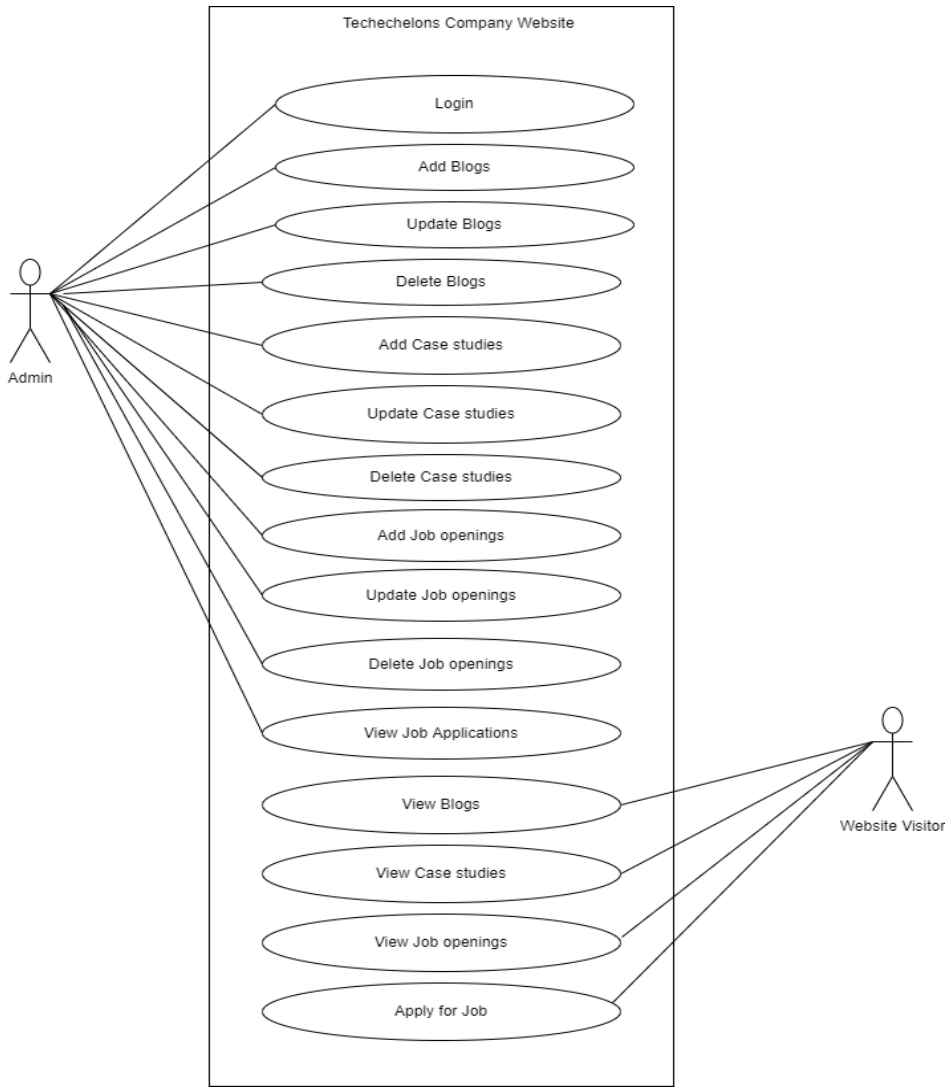

Fig. 5.1.1 Use Case Diagram

5.2 Class Diagram

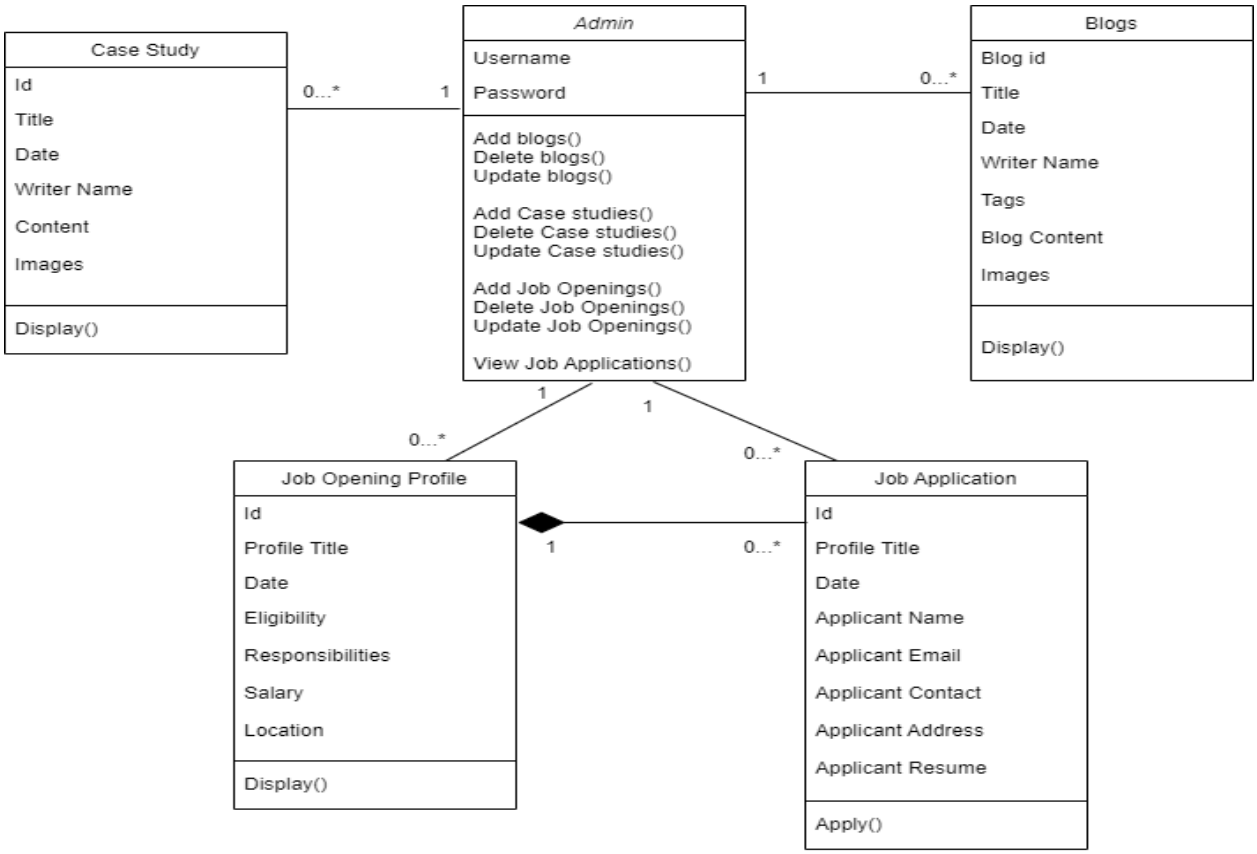

Fig. 5.1.2 Class Diagram

5.3 Sequence Diagram

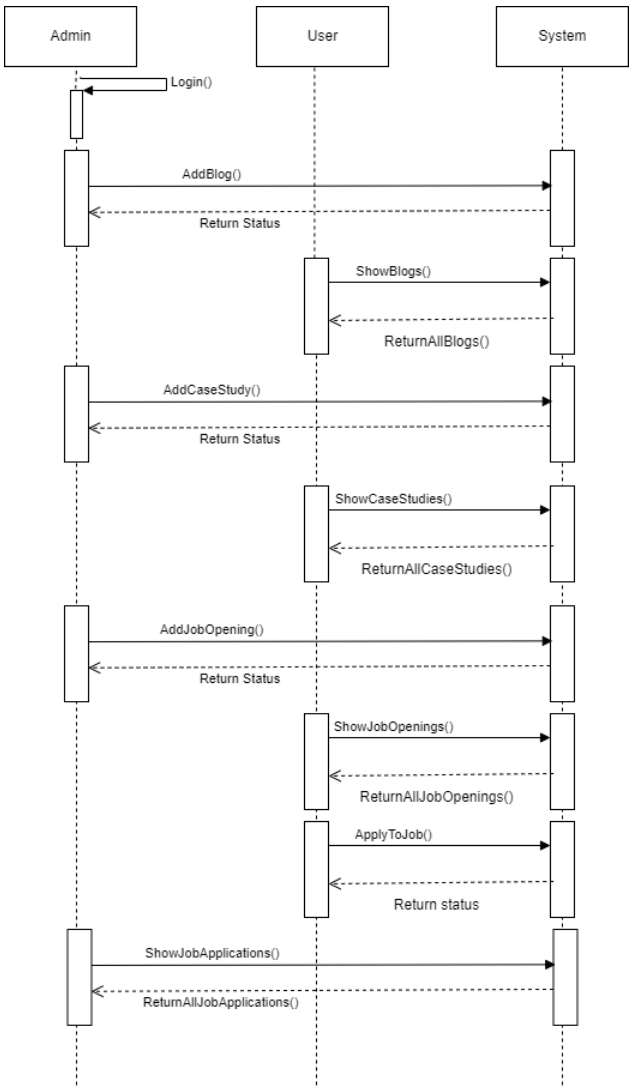

Fig. 5.1.3 Sequence Diagram

5.4 Workflow

1.Identify the type of frameworks to be used for development and storage

2.Identify the type of content management system to be used, the type of database storage method to be used, the frameworks to be used to develop frontend.

3.Developed static pages of the website.

4.Develop dynamic pages and working on the back end.

5.Configure the database to be used.

6.Configure the connection between the frontend and the backend.

7.Configured the cloud storage required to store and retrieve data.

8.Test the connection between front and back end and test if the data is sent and retrieved properly.

9.Design test cases for the actionable buttons on the pages.

10.Performance verify the test cases and document the results.

11.Work on the insights driven from the test cases and make changes in the code accordingly.

12.Integrate the pages on the website and check for the functionality.

5.5 Time Schedule

Sr. No.	Task	Start date	End date	Status
1.	Research and analysis	2/2/22	8/2/12	Done
2.	Installation of software and setups	9/2/22	16/2/22	Done
3.	Static pages designing	17/2/22	6/3/22	Done
4.	backend setup	7/3/22	10/3/22	Done
5.	connecting frontend with backend	7/3/22	10/3/22	Done
6.	connecting frontend with database	7/3/22	10/3/22	Done
7.	Contact us page : form frontend	11/3/22	18/3/22	Done
8.	Contact us page : form backend and connecting frontend with backend	11/3/22	18/3/22	Done
9.	career page : form frontend and show all jobs	19/3/22	29/3/22	Done
10.	career page: form backend and connecting frontend with backend	19/3/22	29/3/22	Done
11.	case study and blog backend : Case study backend	30/3/22	9/4/22	Done
12.	case study and blog backend: blog backend	30/3/22	9/4/22	Done
13.	case study frontend and connecting backend to frontend	10/4/22	20/4/22	Done
14.	blog frontend and connecting backend to frontend	10/4/22	20/4/22	Done
15.	work on remaining pages dynamic parts	21/4/22	27/4/22	Done
16.	Integrating and checking all things	28/4/22	5/5/22	Done

Fig 5.5.1 Time Schedule Table

5.5 Team Organization

5.5.1 Team Structure

Our team consisted of developers, product owner, internal guide, primary stakeholder from the company.

Developers:

- Ankush Patil
- Manasi Purkar
- Nishant Ulhare
- Sejal Jagnade

Product Owner:

- Mr. Imran Shaikh

Internal guide:

- Prof. Poonam Dhole
- Prof. Nilesh Sabale

Company stakeholder:

- Mr. Varun Sharma

5.5.2 Agile Methodology Practice

In our project, we followed agile methodology. AGILE methodology is a practice that promotes continuous iteration of development and testing throughout the software development life cycle of the project. In the Agile model, both development and testing activities are concurrent.

- Scrum meets
- Weekly meets
- Task completion meets

5.5.3 Tools : Project Management

- Slack
    - Communicate daily and weekly tasks
    - Meetings
    - Solve doubts
- Monday.com: We used monday dot com to
    - Allocate the tasks
    - Set timeline for individual tasks
    - Plan further tasks
    - Task distribution
- Gmail
    - Communicate
    - Grant the access to various frameworks and softwares
- Git
    - Push the implementation of the code

5.5.4 Interface Details and Screenshots

The home page id modified with the added functionalities

- Direct contact us button
- Number of projects done
- Number of companies worked with
- Repetition rate

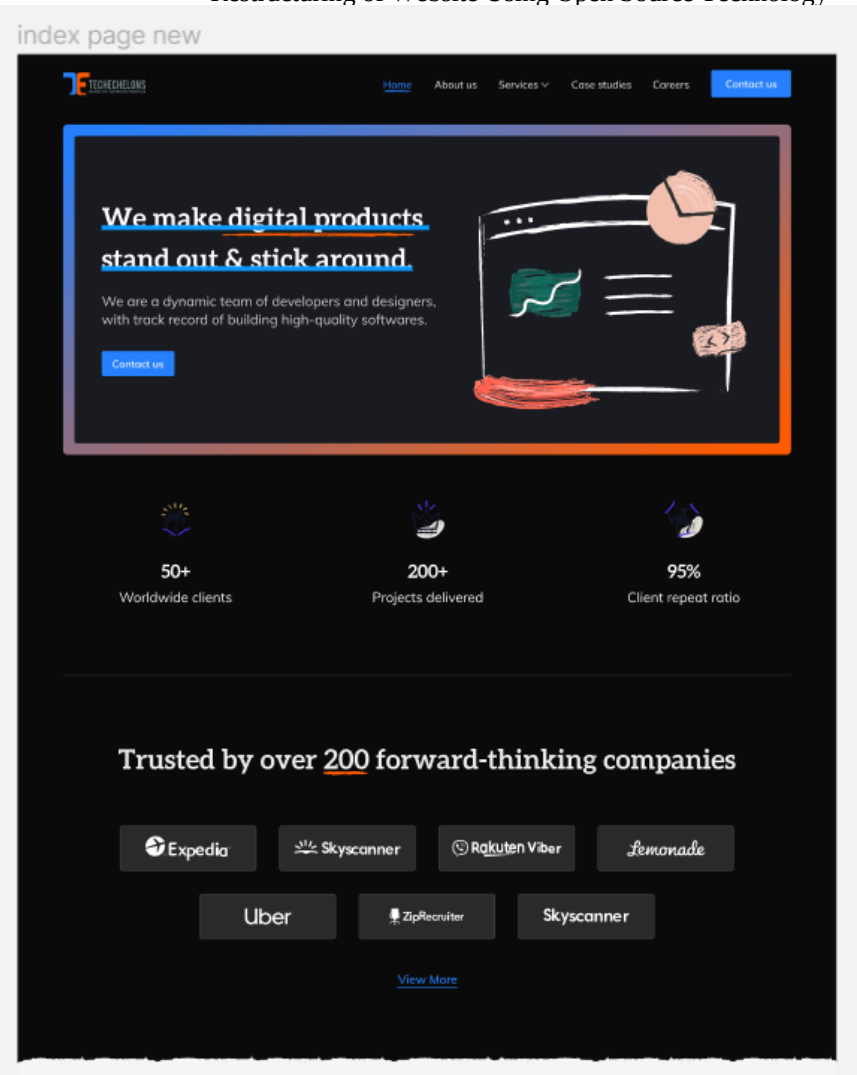

Fig. 5.5.4.1 Home Page

- Our capabilities section to highlight the tasks the company is good at
  - Development
  - Machine learning
  - Mobile application
  - Design

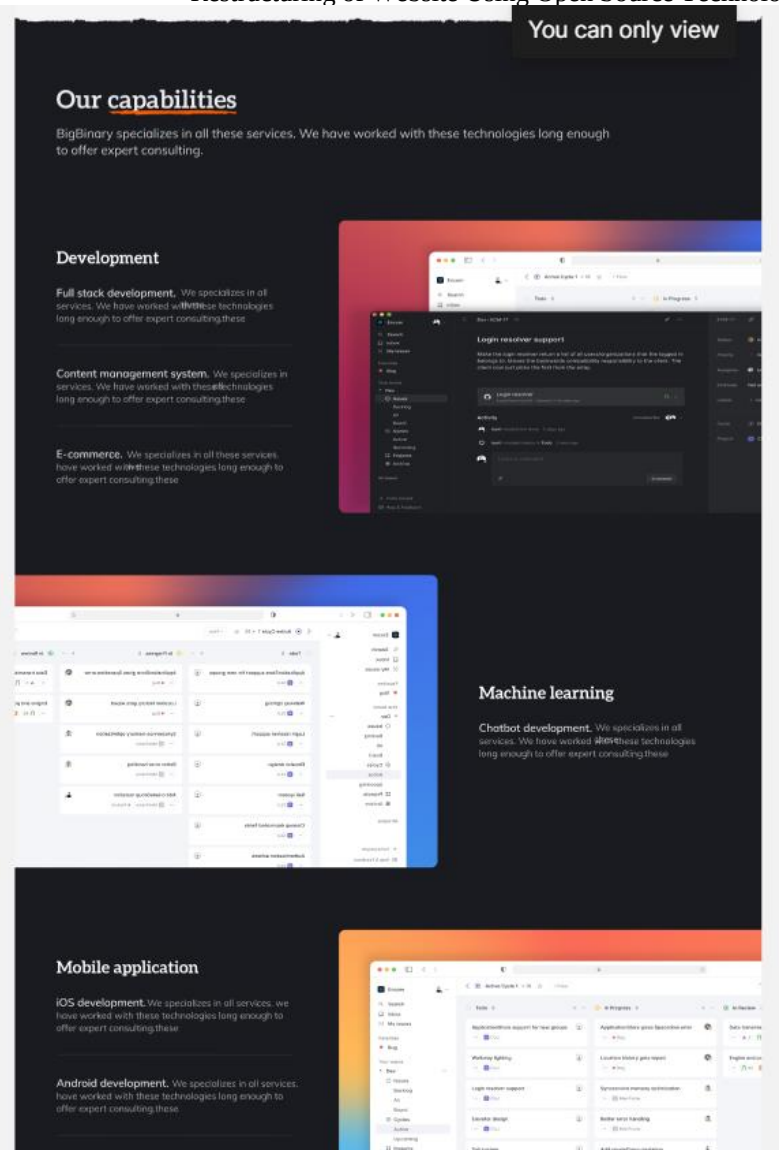

Fig. 5.5.4.2 Home Page

- Customers reviews and testimonials section
  - Customer reviews
  - Blogs for further insights
  - Contact us page for job openings
  - Footer

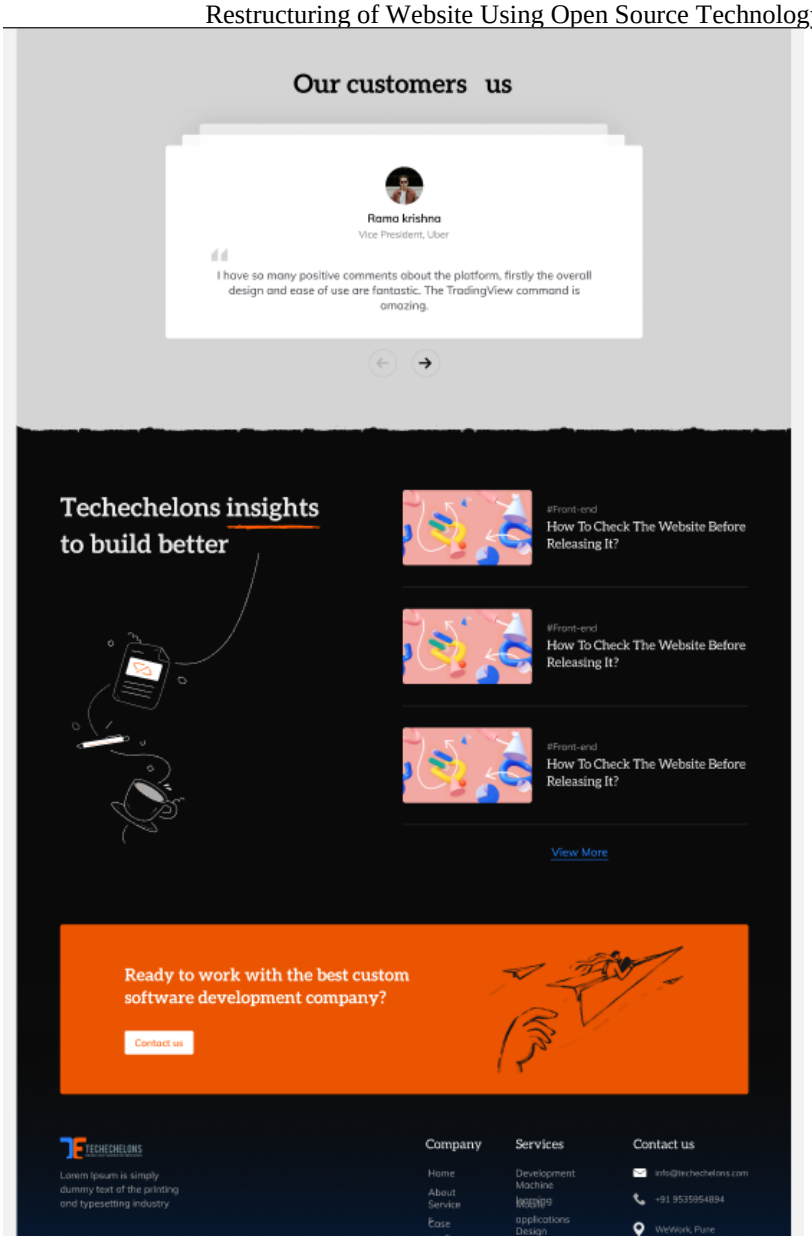

Fig. 5.5.4.3 Home Page with Blog

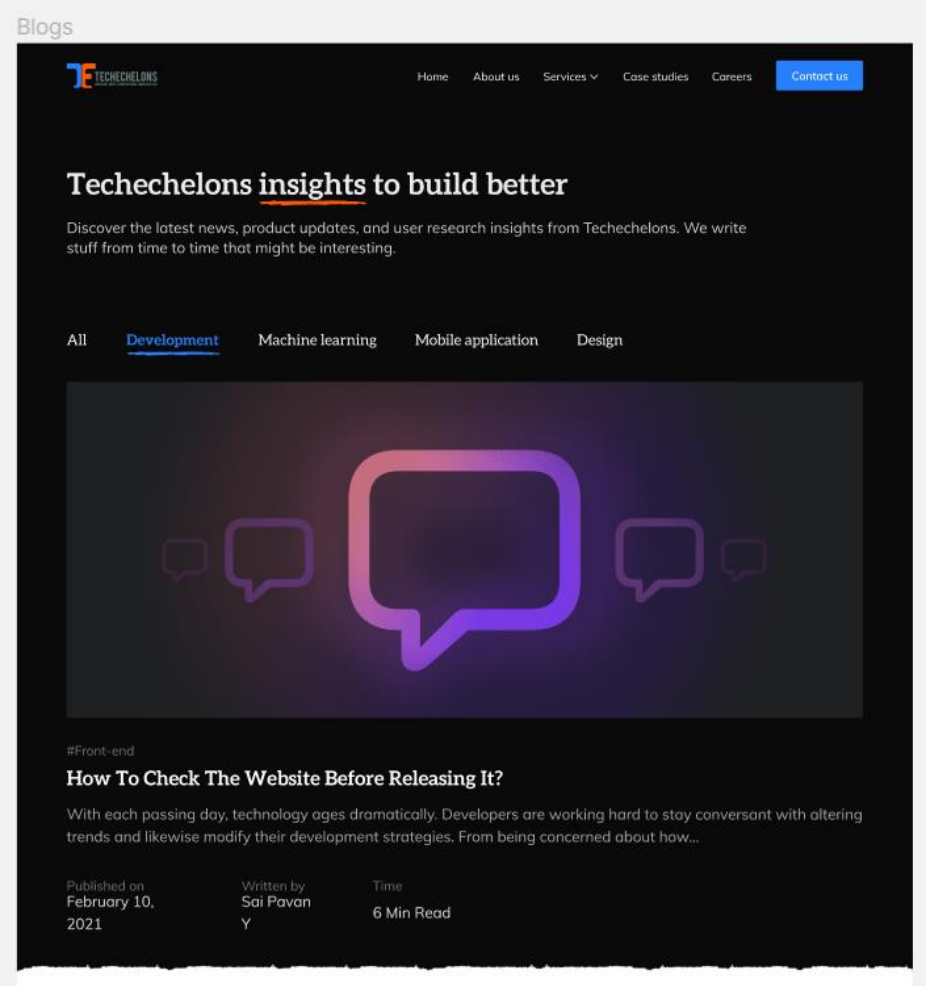

Fig. 5.5.4.4 Blogs

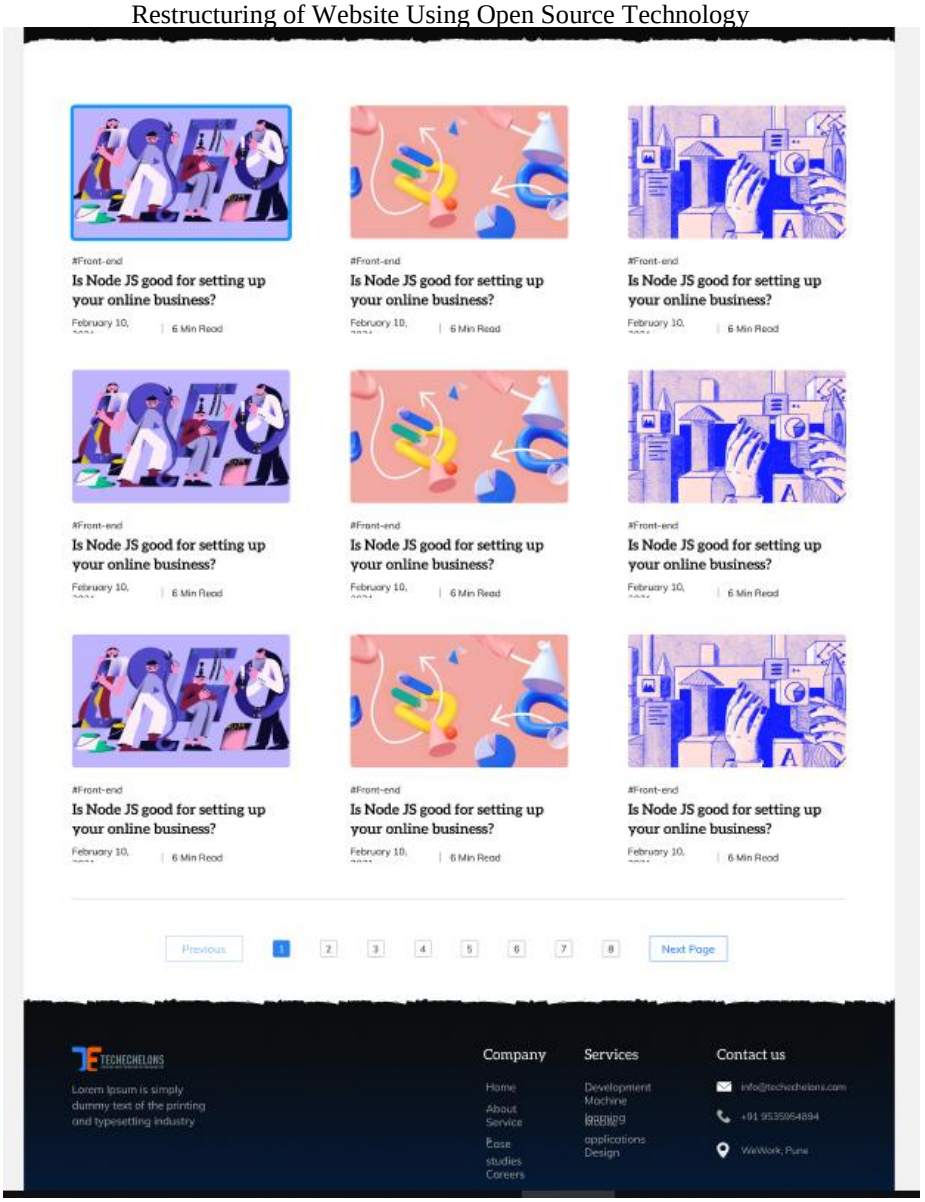

Fig. 5.5.4.5 Blog List

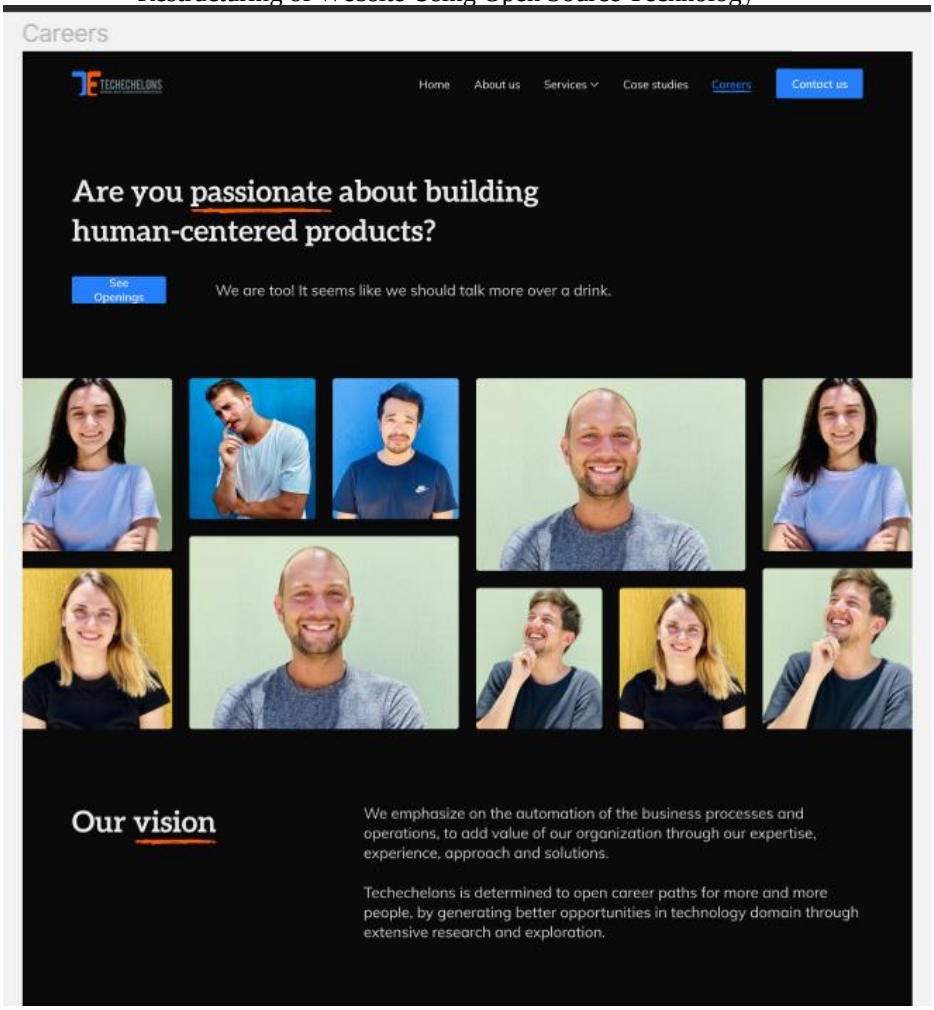

Fig. 5.5.4.6 Career Page

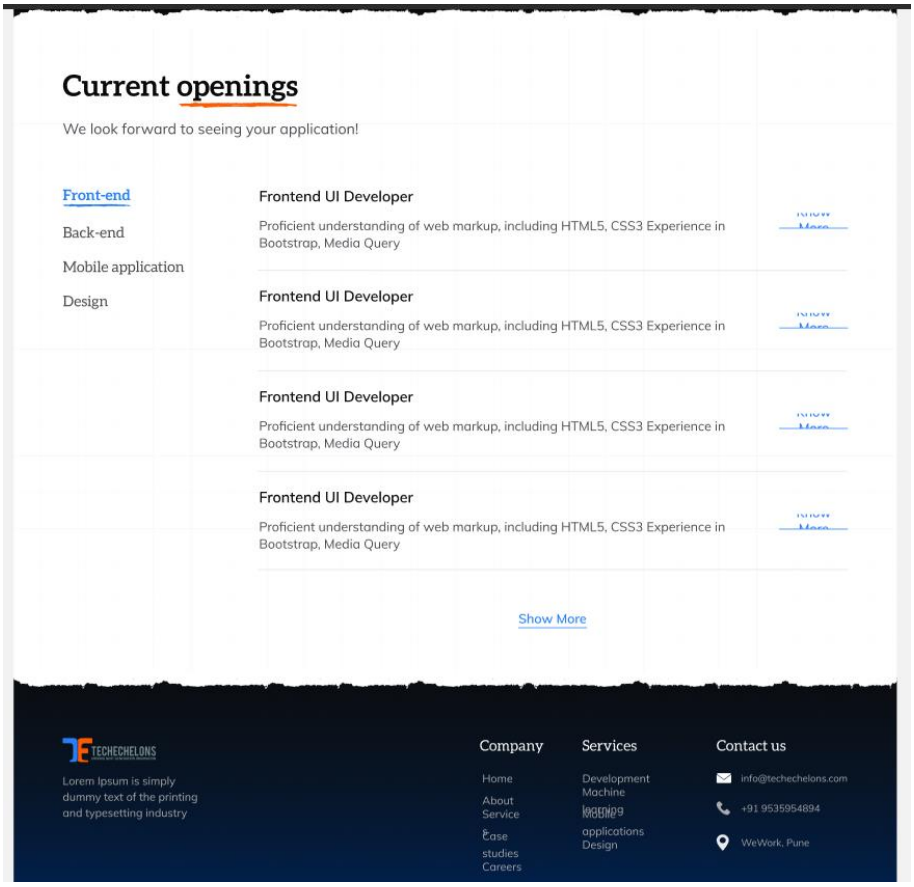

Fig. 5.5.4.6 Career Page with job openings

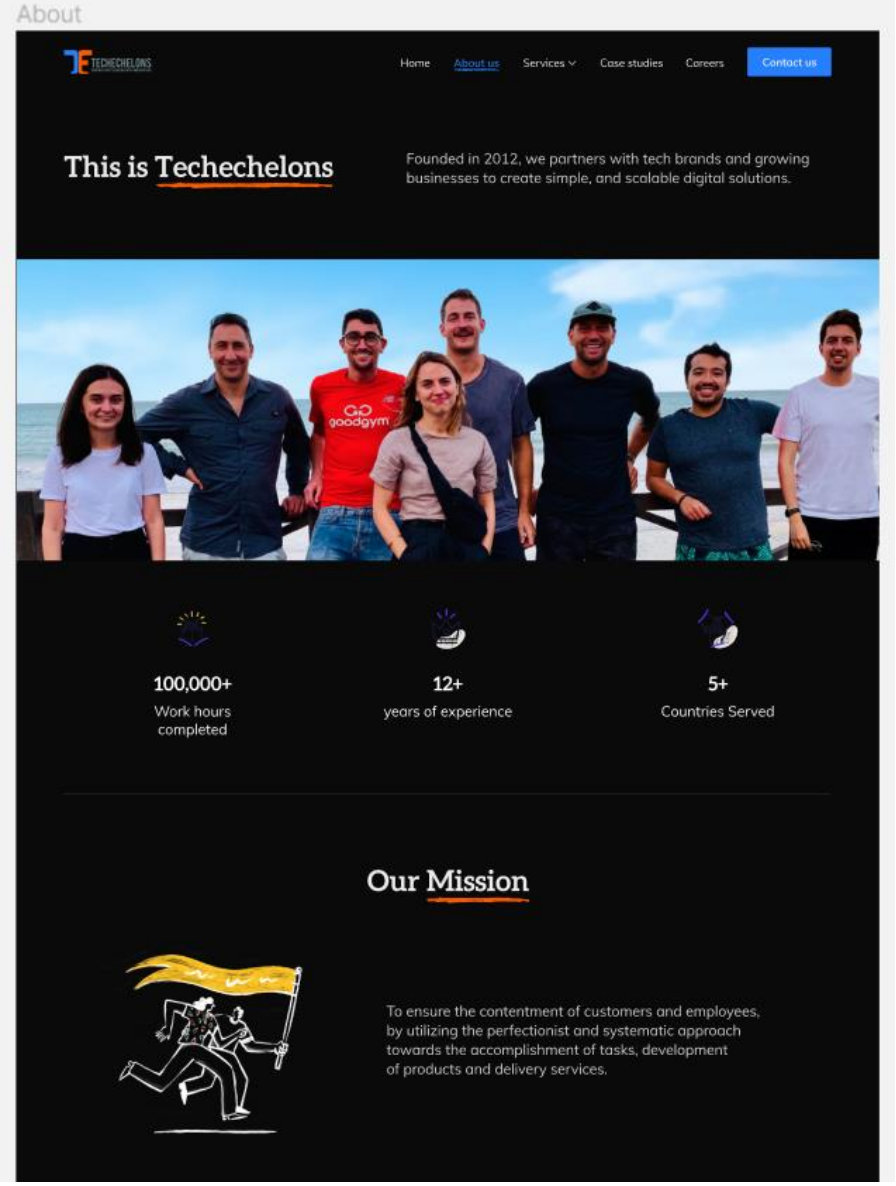

Fig. 5.5.4.6 AboutUs Page

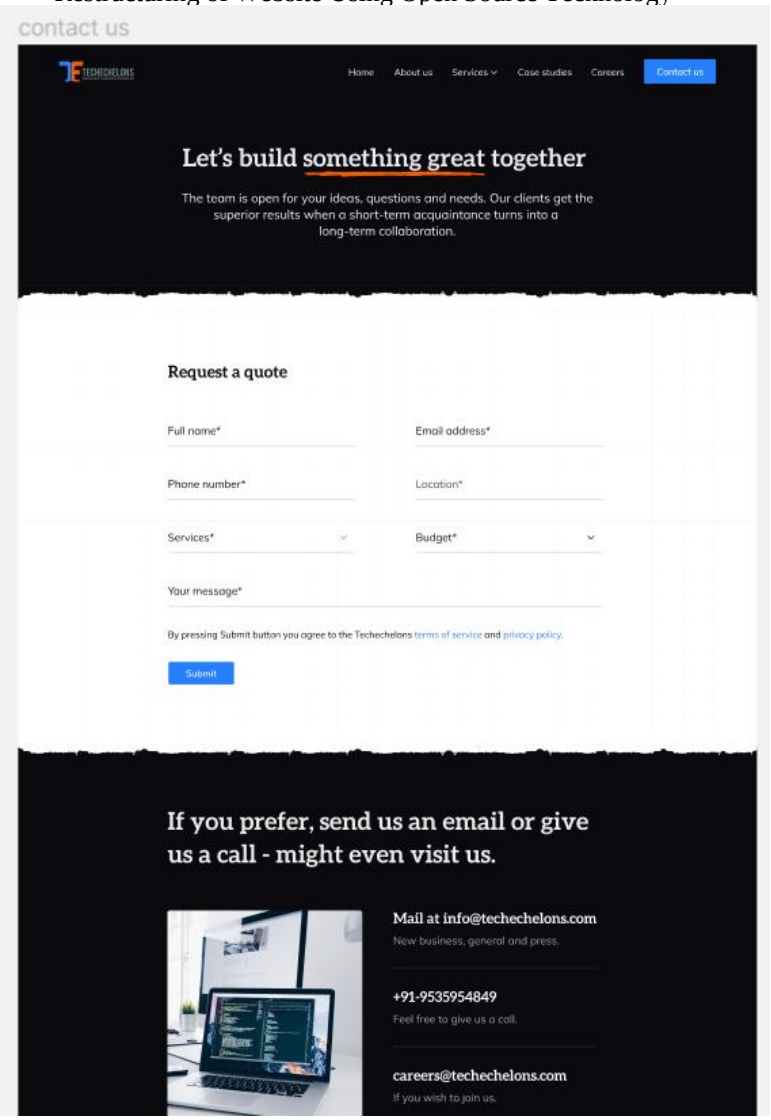

Fig. 5.5.4.7 ContactUs Page

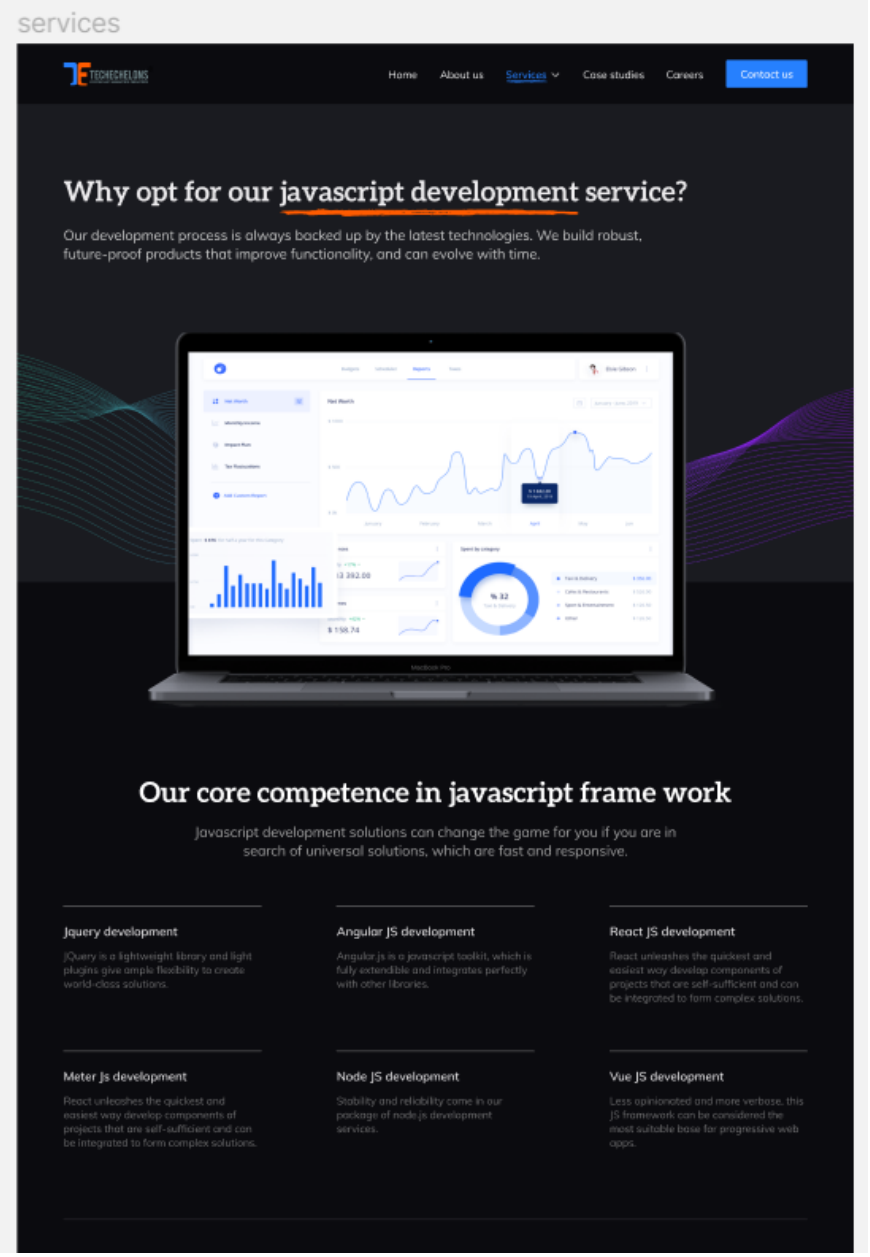

Fig. 5.5.4.8 Services Page

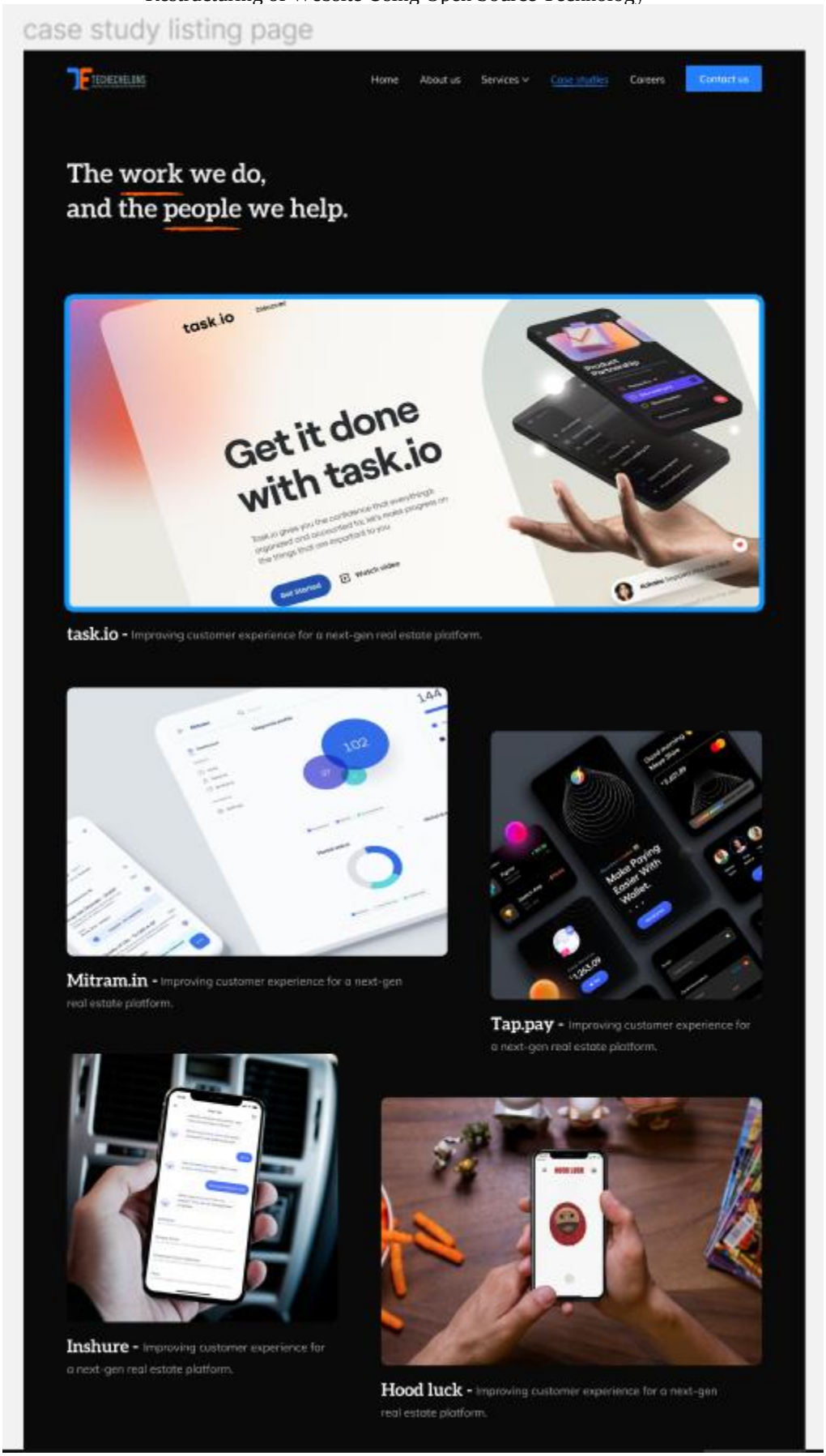

Fig. 5.5.4.9 Case Studies Page

Chapter 6
Implementation Software Testing

6.1 Database Creation

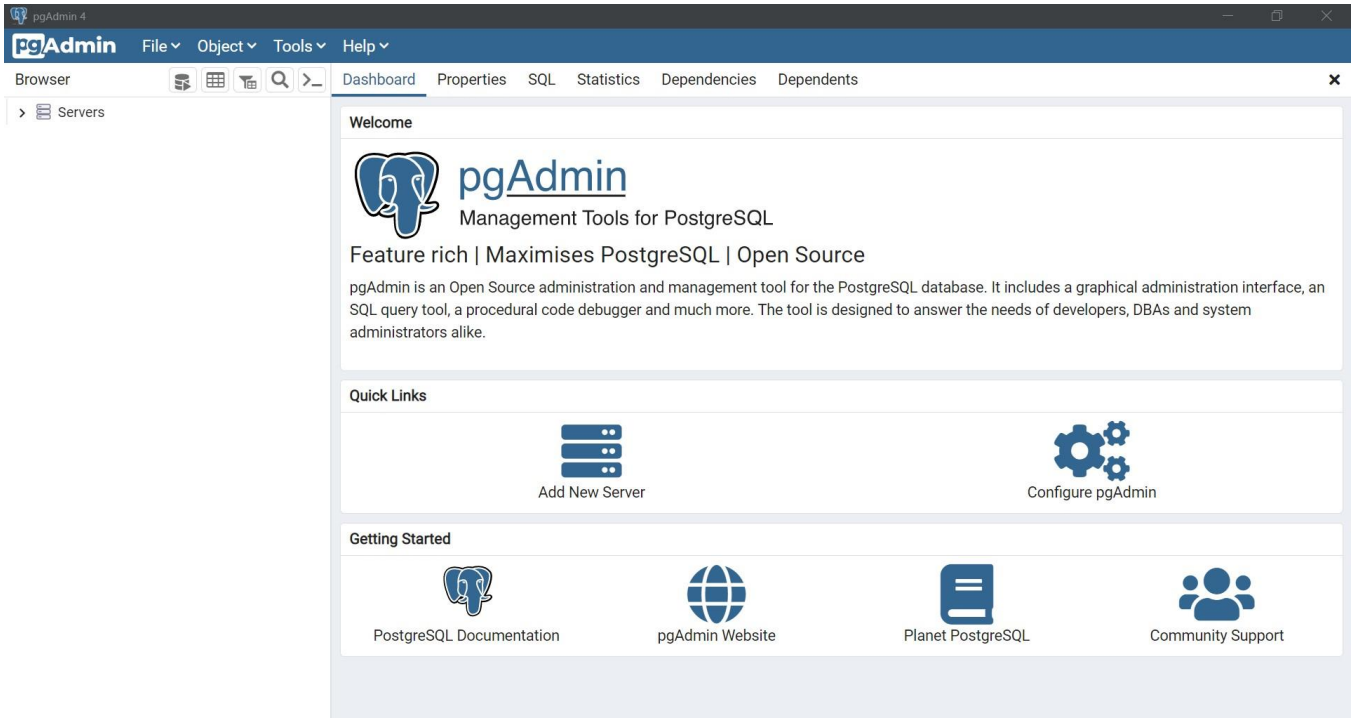

Fig 6.1.1 Postgresql Database Creation

6.2 Integration with AWS

Used AWS S3 bucket to store resume which user needs to upload at the time of job application form.

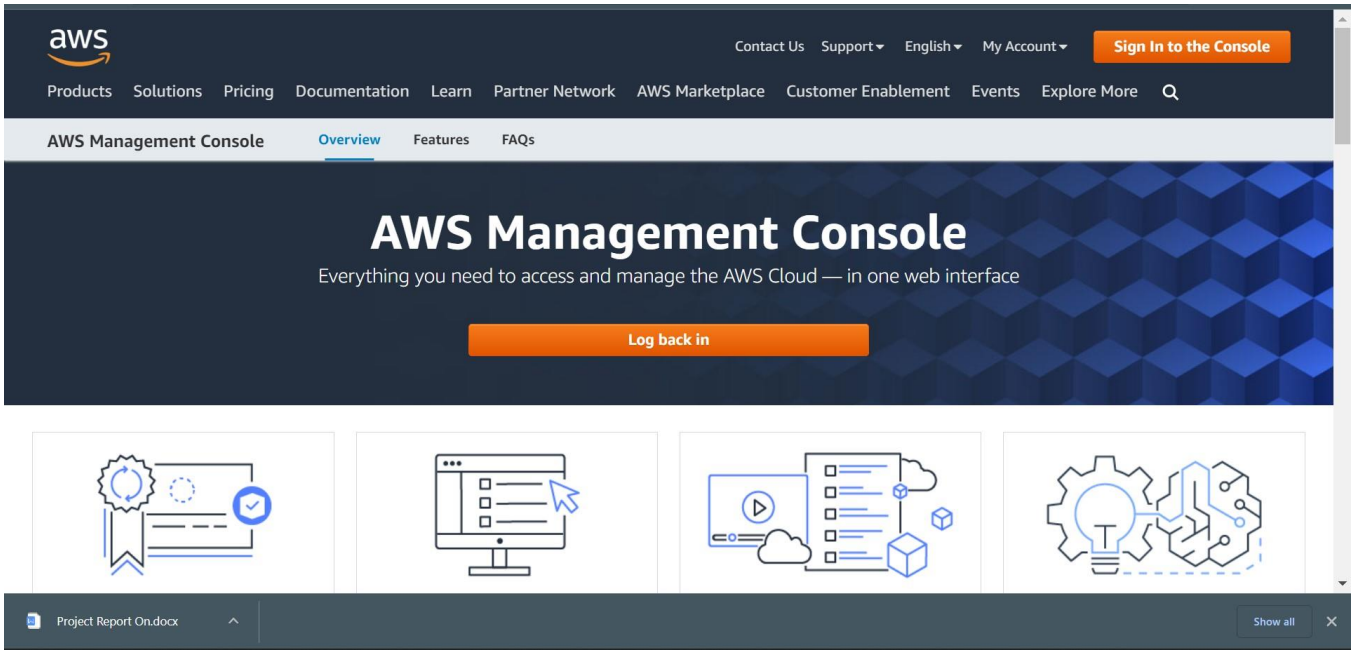

Fig 6.1.2 AWS S3 Bucket

6.3 Integration of backend and frontend

Connected Gatsby(frontend) and Strapi(Backend)

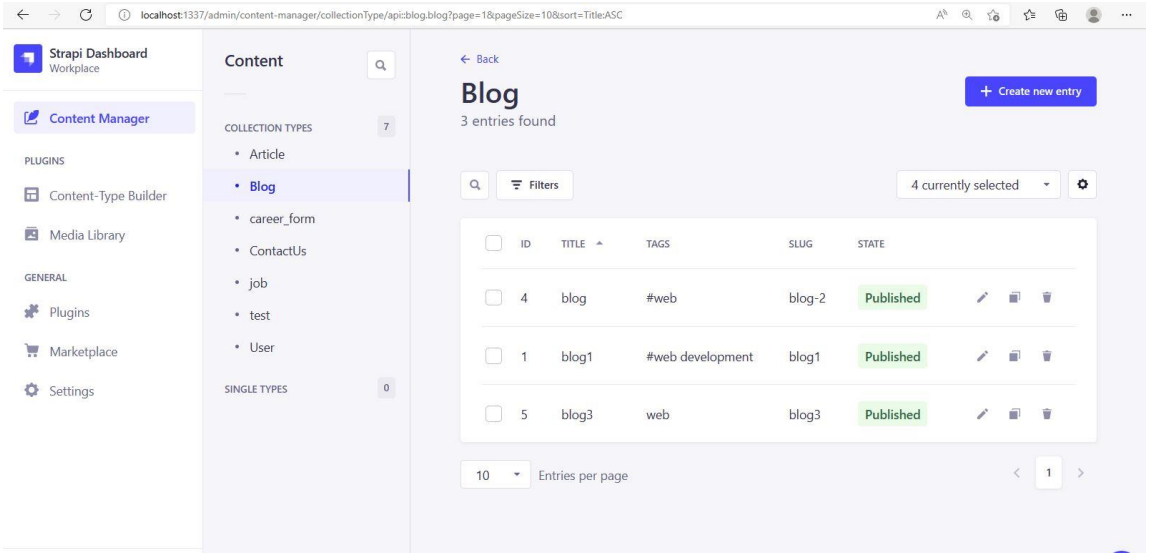

Fig 6.3.1 Strapi Backend

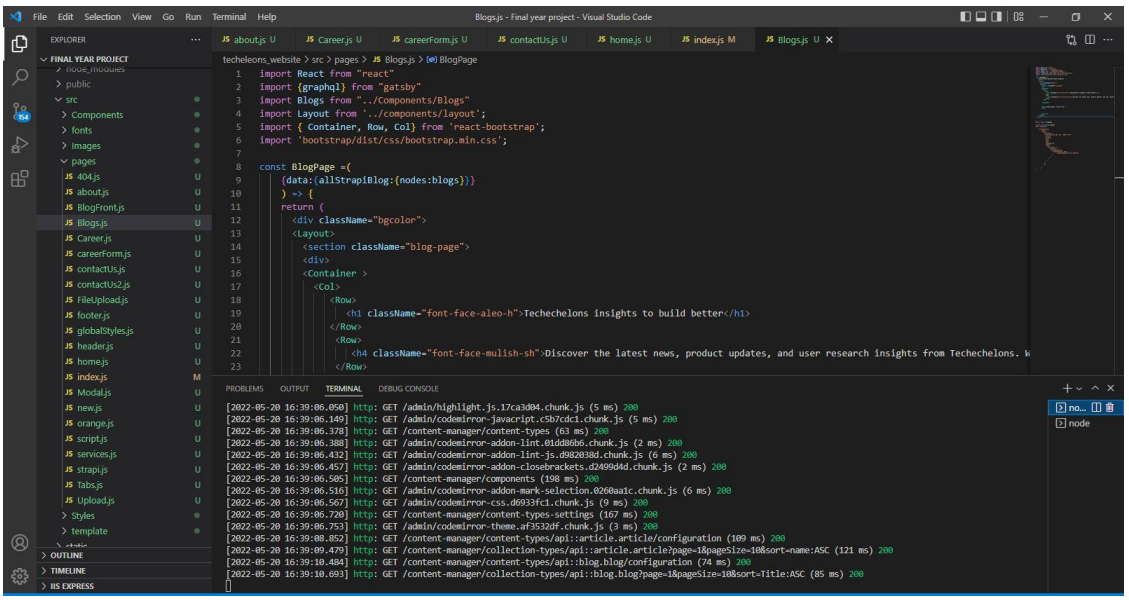

Fig 6.1.1 Strapi connected with Gatsby

6.4 Introduction

This document is a high-level overview defining our testing strategy for the website application. Its objective is to book events and accommodation for the respective event.It portrays a snapshot of the project as of the end of the planning phase. This document will address the different standards that will apply to the unit, integration and system testing of the specified application.

6.5 Purpose

The project aims at providing a user-friendly website for the Restructuring of company's website. In the Restructuring of company's website, we have created and implemented the high level design with frontent and backend.

6.6 Test Objective

The objective of our test plan is to find and report as many bugs as possible to improve

the integrity of our program. Although exhaustive testing is not possible, we will exercise a broad range of tests to achieve our goal. Our user interface to utilize these functions is designed to be user-friendly and provide easy manipulation of the data.

6.7 Process Overview

The following represents the overall flow of the testing process:

1. Identify the requirements to be tested. All test cases shall be derived using the current Program Specification.
2. Identify which particular test will be used to test each module.
3. Review the test data and test cases to ensure that the unit has been thoroughly verified and that the test data and test cases are adequate to verify proper operation of the unit.
4. Identify the expected results for each test.
5. Document the test case configuration, test data, and expected results.
6. Perform the test.
7. Document the test data, test cases, and test configuration used during the testing process.
8. Successful Unit testing is required before the unit is eligible for component integration/system testing.
9. Test documents and reports submitted. Any specifications to be reviewed, revised, or updated shall be handled immediately.

6.8 Test Cases And Results

Test Case no.	Test case name	Action	Expected result	Status
1	All required fields should be entered in contact us page	Click on submit	Successfully submit field values if required fields entered otherwise show alert	Pass
2	Email address and mobile number should be in correct form	Click on submit	Successfully submit field values if required fields entered otherwise show alert	Pass
3	Blog page should get created programmatically using slug value	Click on blog name	Path for that page should get created programmatically after clicking on blog name	Pass

4	Media content should go in AWS bucket	After uploading media in Strapi	Media content should go in AWS bucket	Pass
5	Dynamic URL of blog page	After clicking on blog name in blog list	Dynamically page should get generated with URL	Pass

Fig 6.8.1 Test Cases

Chapter 7
Conclusion and Future work

7.1 Conclusion

The emergence of responsive web design, showed us the vision for our future sites: a world where users can have great experiences no matter what devices or what screen sizes they have those experiences on. We have made a faster, interactive, highly scalable, fully secured website with new UI with Gatsby and Backend with strapi.

The screens defining the user interface were given to us and we were asked to develop better user experience in terms of accessibility and speed and feel of the website. Interaction with open source platforms and being a part of the community is important is what will be learnt from the project.

7.2 Future Scope

After restructuring the website other modules such as integration with the chat box and integration with the job search websites can be added. Providing immediate responses to the users can enhance the accessibility. Also, optimizing the keywords and improving the SEO can bring good results to the company website and inter lead to faster growth of the company.

Chapter 8
References

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