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An Undergraduate Internship on JobCompass – A job-seeking website

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By

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Degree of Bachelor of Science in Computer Science

Department of Computer Science

Independent University, Bangladesh

Attestation

This attestation serves to confirm the report entitled “JobCompass” has been executed by Tayaba Sultana

Hossain (1830420), and submitted as a component of the requirements for the Degree of Computer Science from Independent University, Bangladesh (IUB). The report was completed under the guidance of Dr. Ashraful Islam (Supervisor). I further attest that all the work presented in this report is entirely original and was acquired during my tenure as an intern. All the sources of information utilized in the project and report have been duly acknowledged and cited in accordance with academic stress.

Signature: _____  _____

Date: _____5/10/2023_____

Name: _____Tayaba Sultana Hossain_____

Acknowledgement:

Firstly, I would like to appreciate the chance to finish my internship with Team Remotely Incorporation. I would also offer my gratitude to my supervisor, Dr. Ashraful Islam for his assistance and guidance throughout the internship period. His help and cooperation have helped me reach my goal more professionally.

I would also express my appreciation towards my supervisors and team leader of my office organization for guiding me through all the difficult pathways and continuing to prepare me for the industrial environment. I would also thank my faculties for arranging the course and sharing valuable knowledge with us, enhancing our observation.

Lastly, I am deeply honored to be part of this experience-gathering session. The knowledge and skills that I have gained while serving for my organization are beyond admiration. I look forward to serving more in the community and society using this comprehension and working for a better future.

Letter of Transmittal

Dr. Ashraful Islam

Lecturer

Department of Computer Science and Engineering School of Engineering and Computer Science

Independent University, Bangladesh

Subject: Submission of Final Internship Report in Compliance with Graduation Requirement

Dear Sir,

With due respect, I worked on this report to showcase my internship project and what I have done. It was an honor to work under your supervision as you have helped and guided us along with making us professional experts. I have learned so much from this course and deliverables.

All the work and deliverables given are authentic and done faithfully. I made sure that there were no missing values or information regarding the report and its agenda. I believe that this report will be as helpful as the project. I would be honored if you could assess the report in your valuable time and would really appreciate your feedback on this report. I hope the internship report is useful and informative enough and that I have gained a great professional experience.

Sincerely,

Tayaba Sultana Hossain

ID: 1830420

Department of Computer Science

Independent University, Bangladesh

Evaluation Committee

Supervision Panel

.....	.....
Academic Supervisor	Industry Supervisor

Panel Members

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Panel Member 1	Panel Member 2

Office Use

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Program Coordinator	Head of the Department

Abstract

Team Remotely Incorporation offered me this Web Development position to work on their websites in both the frontend and backend fields. Initially, I was designated to work on a website using WordPress for the frontend and JavaScript for backend.

The following project report presents the development and implementation of a job-seeking website built on the Laravel 10 framework. The e-commerce job-seeking website leverages the capabilities of Laravel 10, a popular and powerful PHP web framework, to achieve seamless integration of front-end and back-end components. Laravel's extensive features, including its Eloquent ORM, Blade template engine, and routing system, were utilized to enhance the website's performance and maintainability. The project's architecture was designed to ensure a responsive and intuitive user experience, allowing users to browse through a vast product catalog, view blogs, and securely complete their purchases through a streamlined process. Extensive testing methodologies were conducted to identify and resolve any potential bugs or issues, including unit testing and user acceptance testing. Here are also the challenges faced during the project, the solutions applied to overcome them, and the lessons learned throughout the development process. The result is a fully functional and reliable e-commerce website that aligns with modern market demands and provides a secure and efficient platform for job searching. Overall, the successful completion of this project demonstrates the capabilities of

Laravel 10 as a robust framework for building complex web applications and highlights the significance of employing best practices in website development to create a seamless and satisfying user experience.

Contents

Chapter-1

Introduction

1.1. Overview/Background of the Work

JobCompass is a job-seeking website where students and graduates can find their desired jobs and pursue their dream careers. This website distinguishes itself as a reliable source to find jobs. It has great features of uniqueness as a work finder dashboard. It is connected with other reliable companies to redirect users to their websites and apply for their preferred jobs. Not just one field of jobs is available on this website but many other fields of jobs can be found. JobCompass's website makes it easier for users to navigate through and get more information on the platform. With better browsing experience users can redirect to other pages and websites as well. That will help them to acknowledge more about the sector. It has other options of looking into more insights and help themselves. The website is very straightforward, yet so professional to give the users an impeccable experience.

1.2. Objectives

The objective of this project is to initiate a more professional platform for students and graduates to find their desired jobs online according to their preferences. While this website will give an overview of finding jobs, it also helps users to find other companies and websites from one place, instead of looking through different browsers.

Following objectives are listed:

- Admins can access their profile: Including registering for the account, logging in to the account, and modifying their profile. Reliable resources available
- Newest jobs are shown at the top.
- The website structure is less complex for the user to navigate easily.

1.3. Scopes

The job-seeking website is partially a portfolio website where users can learn and enlighten themselves with significant issues. Can also learn about new updates or blogs. The project is customizable and hence can be remodified for any other means of use.

Chapter-2
Literature Review

2.1. Relationship with Undergraduate Studies

Since this was a Website Development project all the knowledge and skills were gathered from this project. The project was done using the Laravel Web Application Framework, which is now a demanding framework in the market and is used by many live websites presently. The web

Development (CSC455) course is completely related to this project, as were able to connect the frontend with the backend. As Laravel is flexible and easy to code to build dynamic websites, undergraduate students can have a good start. Software Architecture and Component-based Design (CSC459) course helped me to understand how a website works and the basic MVCs. Software Engineering (CSC445) is related to understanding the functional requirements and business strategies. Object-oriented programming (CSC305) was related since we are dealing with class and methods. Database Management (CSC401) would be the most important course to contribute as there is database designing and management. Other core courses like Data Structure (CSC203) helped us understand how to link codes and the modules within, System Analysis and Design (CSC405) course also helped us to analyze the implementations and requirements.

2.2. Related Works

Job-seeking websites are almost available all the time in Bangladesh. Like JobCompass there are similar websites accessible for a long time. The following websites are: (https)

1. LinkedIn Corporation: LinkedIn Corporation is a job seeker platform made for business and employment. This website was initially made in the US but is now available in Bangladesh. LinkedIn used HTML and CSS for frontend and Django and Ruby on Rails for backend. Also used Bootstrap as CSS framework.

2. BD Jobs: Like most modern websites, the frontend of BDJobs is built with the combination of HTML, CSS, and JavaScript. While the backend was made with Node Js, Django, Ruby on Rails, and Java.

3. Chakri.com: Chakri.com is an online job site founded by Prothom Alo to help people to find jobs. HTML, CSS, and JavaScript for the frontend. The backend used Python (Django) and Ruby on Rails.

The research resulted in us knowing that almost all job-seeking websites use the same technologies and components to develop their website. These websites often share similar features and requirements. However, the framework, special technologies, or tools might vary according to user needs or preferences.

Chapter-3

Project Management & Financing

3.1. Work Breakdown Structure

The work breakdown helps us understand the project from the perspectives of different variables. This process breaks down the project's tasks, deliverables, and work components.

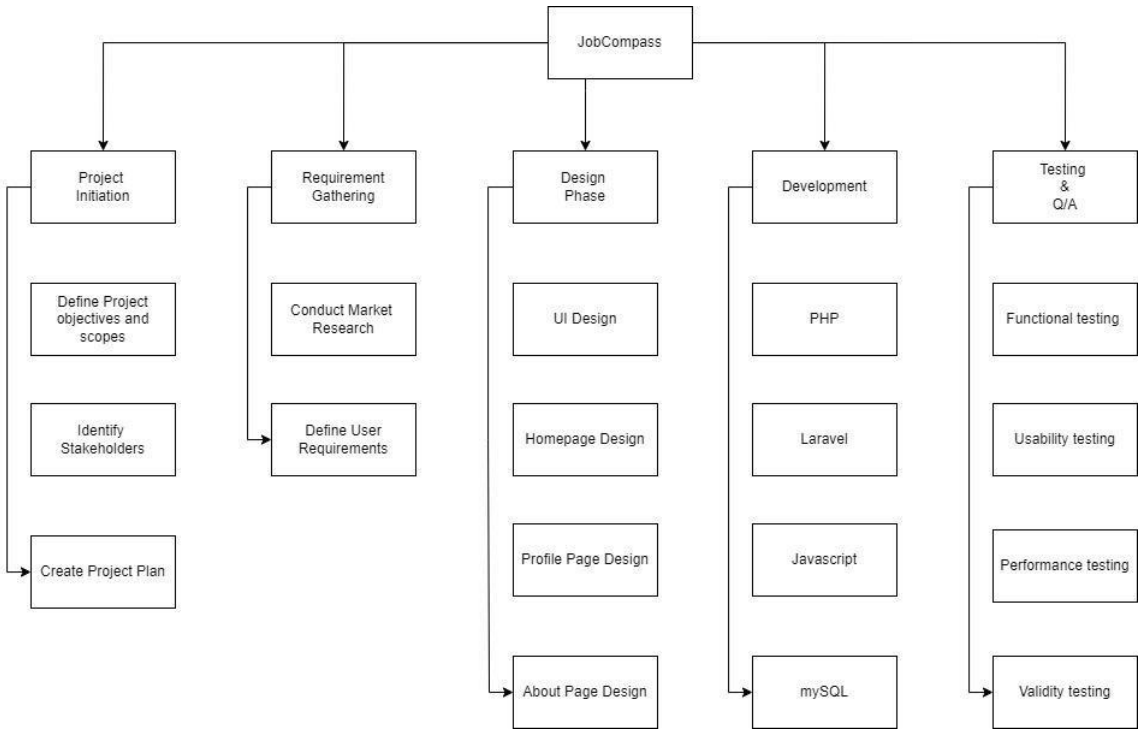

Fig: 3.1. WBS of JobCompass

3.2. Process/ Activity wise Time Distribution

The complexity of the project, the size of the team, the technological stack, and the particular features or needs can all have a considerable impact on the process/activity-wise time distribution for constructing a job-seeking website. However, based on the various stages and tasks usually involved in creating such a website, I can offer the following basic guidelines for time allocation:

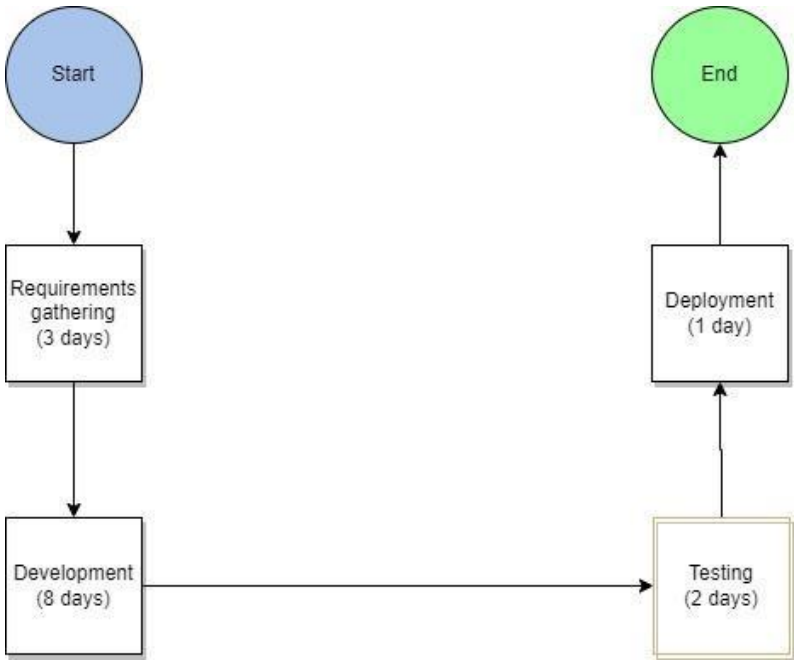

Fig: 3.2. Critical path method of the individual tasks

3.3. Gantt chart

A popular project management tool that offers a visual picture of a project's schedule across time is the Gantt chart. It was created by Henry L. Gantt in the 1910s and has since grown to be a useful resource for stakeholders, teams, and project managers. A Gantt chart lets you visualize the order and duration of each activity within a project by displaying tasks or activities on a horizontal timeline. Because of its adaptability, Gantt charts can be made with specialized project management software, spreadsheet programs like Microsoft Excel, or Internet project management applications. They are especially

useful for managing and visualizing complicated projects with many activities and dependencies.

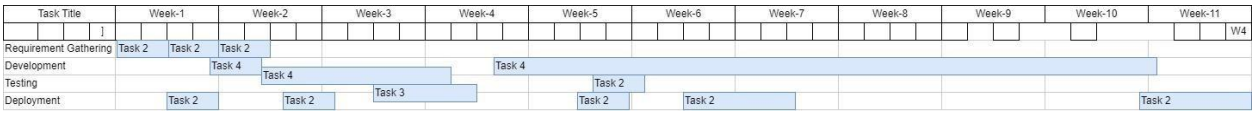

Fig: 3.3. Project Gantt Chart

3.4. Process/Activity-wise Resource Allocation

Resource allocation for our job-seeking website involved assigning the right people for the appropriate tasks and activities. The precise distribution of the works was determined by the team leader after deriving the scope and competence of the project. The business team of our project dealt with all the market research while the tech team was responsible for system analysis, understanding code structures, and deployment.

Activity	Duration	Work (%)
Requirement Gathering	3 days	12%
Code Development	8 days	78%
Testing	2 days	6%
Deployment	1 day	4%

Fig: 3.4. Resource allocation of individual tasks

3.5. Estimated Costing

The cost of the project was not disclosed by our development leader. Hence, the estimation or representation of the estimated cost is not accurate. Since the project is on a job-seeking website the factors were highly resourceful. Mainly the cost for frontend and backend was higher compared to other tasks.

Chapter-4

Methodology

A methodology is a methodical and organized framework or approach that is used to design, carry out, and manage a procedure, a project, or a collection of activities. A methodology is a system of concepts, rules, procedures, and best practices that aid people or teams in successfully completing a task. They are frequently employed in many different professions, such as software development, project management, and more.

Agile development is more adaptive for our web development project. The methodology is known for its flexibility and adaptability making it suitable for our project that changes the requirements over time. Our development team used the Agile method (SCRUM) and divided the work into iterations. Started the research of how to approach the project, then continued with the resources to be used, and then the coding was started. All our work was supervised by our team leader. Our codes were shown to the development team every week and monitored for any changes or inquiries. The final step was where the code was shown and tested ensuring if it was bug free and usable. (https)

Chapter-5

Body of the project

5.1. Work Description

JobCompass is a website where people can find jobs or look for desired jobs. I was responsible for designing their webpage which was both frontend and backend. The webpage consisted of all the necessary information about the website. I designed all the pages available on the website using PHP (Laravel), HTML, and CSS. I also did the backend coding for any updates, edits, and deletions of functions on the webpage. The webpage consists of a homepage: where users can get an overview of the job company and have other functionalities. I also designed the About page where the user gets to know more about the company's history and details or how to apply for jobs. The portfolio page portrays all the necessary skills or expertise needed to be capable of a job. Easier for the applicants to understand more about jobs. There is a blog page consisting of recent news updates, company talks, and articles for the user to read through. Lastly, the contact page is designed to find all the communication aspects between the user and the company/ company website.

The backend part where the user can look for jobs, apply to jobs, contact the in-charge etc. functionalities for the website to operate, was done by other team members responsible for the backend codes.

5.2. Requirement Analysis

Functional Requirements:

- Users can create an account by registering.
- Users can verify their email.
- Users can log in to their account.
- Website's assurance of secure login and logout functionality Users can scroll through the website with any device.
- Users can look for jobs using a separate button.
- Users should be able to upload CV/ resume on the website All the personal information of the user should be confidential.
- Users should be able to get any notifications about job approvals.
- No third-party allowance while the user is logged in.
- Users should be notified of any fraud job alerts.
- Admins should be able to verify the email of the users.
- Admins should be able to update, edit or delete any job listings.
- Admins should be able to update, edit, or delete any changes required in the webpage.
- Website must be responsive and mobile-friendly.

Non-Functional Requirements:

- Performance: The website should be able to perform its actions in significant response time and be able to provide the best experience for the users.
- Scalability: The website should handle a heavier workload and have the potential to maintain a certain number of users.
- Reliability: Website is required to set availability requirements that include backup and recovery strategies.
- Data protection: Ensures that the website is capable of securing all the data and measures to protect the data of the users.
- Mobile responsiveness: The website is optimized for various-sized screens and can be viewed on any device.
- User experience: The website's full page load speed of the website is in acceptable time with smooth scroll giving the user adequate experience.

5.3. System Analysis

5.3.1. Six Element Analysis

The six-element analysis wasn't provided by our office but here is a detailed analysis for the overview of our project.

Process	Human	Computer Hardware	Noncomputing Hardware	Software	Database	Network & Communication
Register	User, Admin	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL, Mailtrap	Internet
Login	User, Admin	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL	Internet
Forget Password	User, Admin	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL	Internet
Change Password	User, Admin	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL	Internet
View Jobs	User	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL	Internet
Apply for Jobs	User	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL	Internet
Upload CV/Resume	User	Computer/Laptop/ Mobile phone	N/A	Browser	MySQL	Internet

Fig:5.1. Six Element analysis of the project JobCompass

5.3.2. Feasibility Analysis

1. Technical feasibility: Technology used in the project should be measured and analyzed to know if it can be implemented. Check that the features assigned are working properly. The technology should also be able to handle multiple user requests and assure security measures for all the users at a time.
2. Economic feasibility: The final cost should not exceed the estimation of cost analyzed before developing the project.
3. Operational Feasibility: Market research should be done to understand and acknowledge the market demand of the type of project. So that project results in a good holding strategy of users.

5.3.3. Problem Solution Analysis

The problem identified during the requirement gathering was while finding jobs, users cannot see the availability of the job. Hence, apply for it without getting notified. Therefore, the solution is to constantly update the job lists check their available positions in the database, and let the users know of it as well.

5.3.4. Effects and Constraints Analysis

- Time Constraint: The time constraints of our project were the constant change of requirements in both the admin panel and user side. It took a longer time as it was a huge project with multiple requirements and client needs.

- Technical Constraint: To understand a project deployment fully we have to acknowledge all the technical and non-technical requirements needed for the project to be implemented. The development team must be aware of all the resources, skills, and knowledge to deploy the project.
- Cost Constraint: New features or requirements that are not affordable or unnecessary would affect the budget of the project.

5.4. System design

5.4.1. UML Design

Unified Modeling Language (UML) is one of the theoretical ways to understand the structure of a system. It was used by our team to understand, visualize, construct, and document the system. UML was chosen as a modeling tool as it has up-to-date modeling language and our project was built using Laravel.

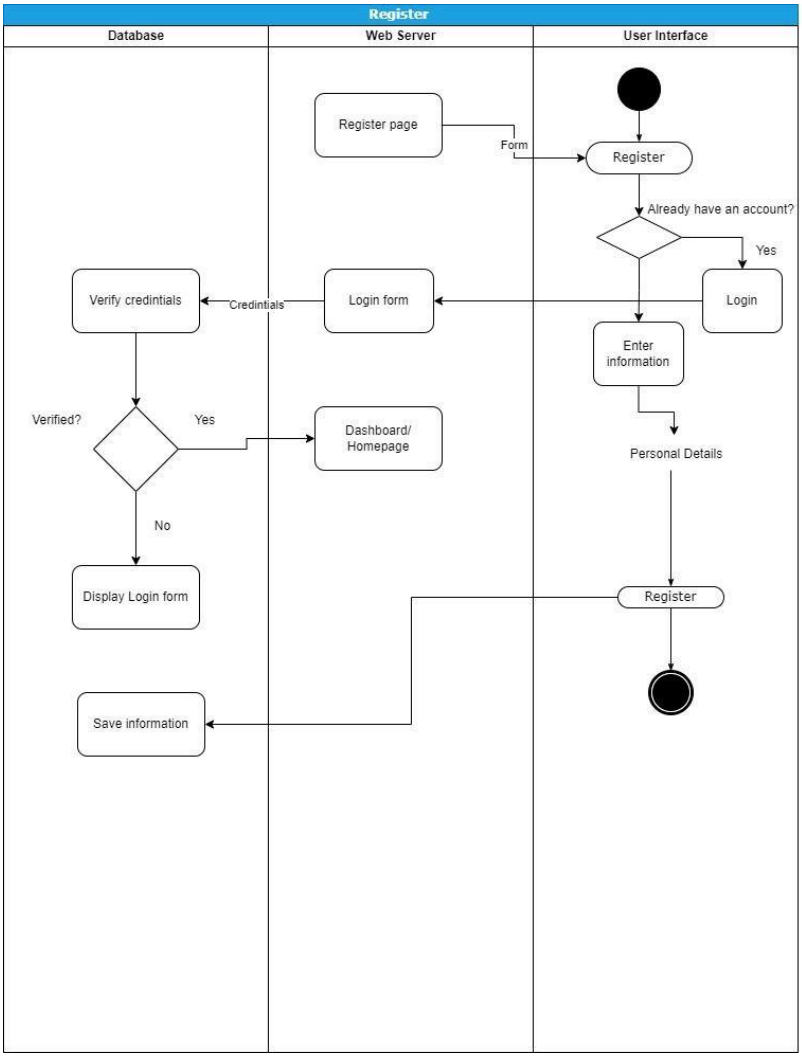

Fig: 5.2. Registration Process

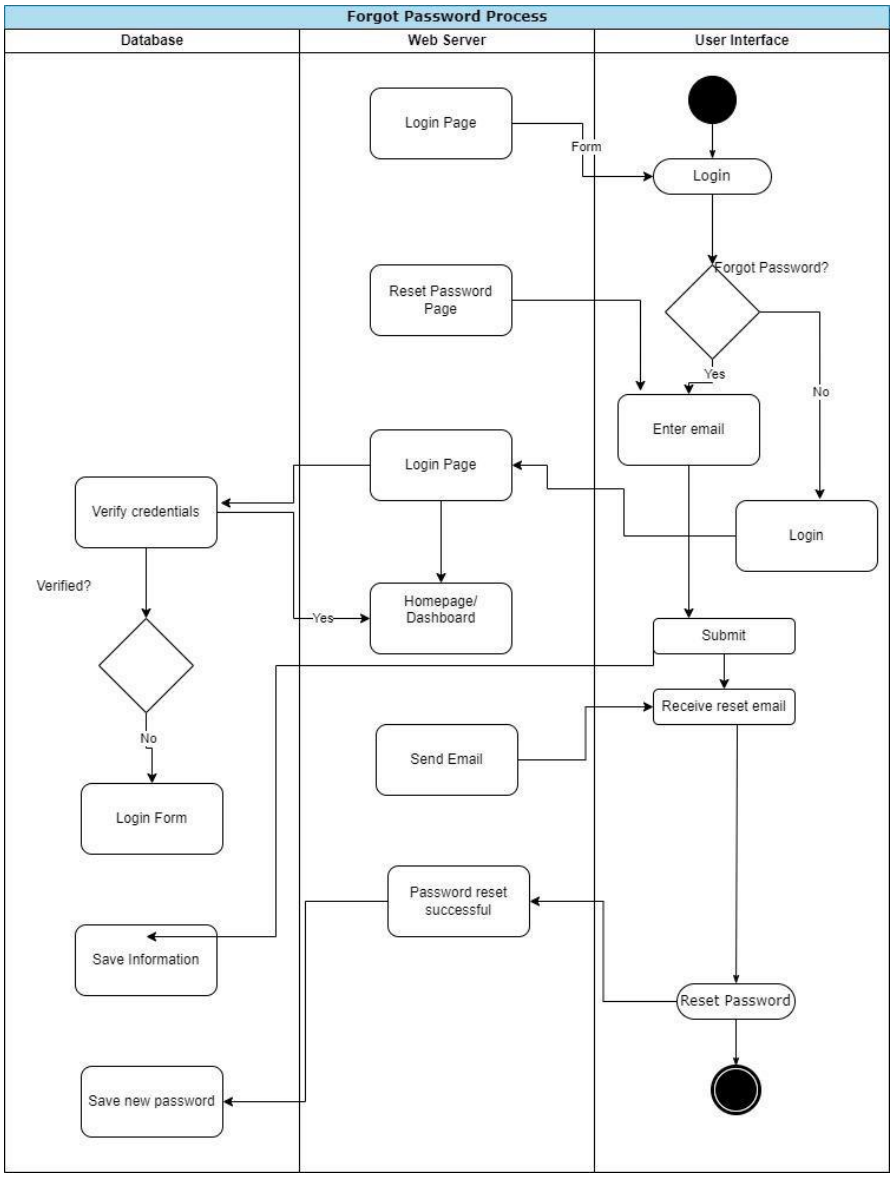

Fig: 5.3. Forgot password process

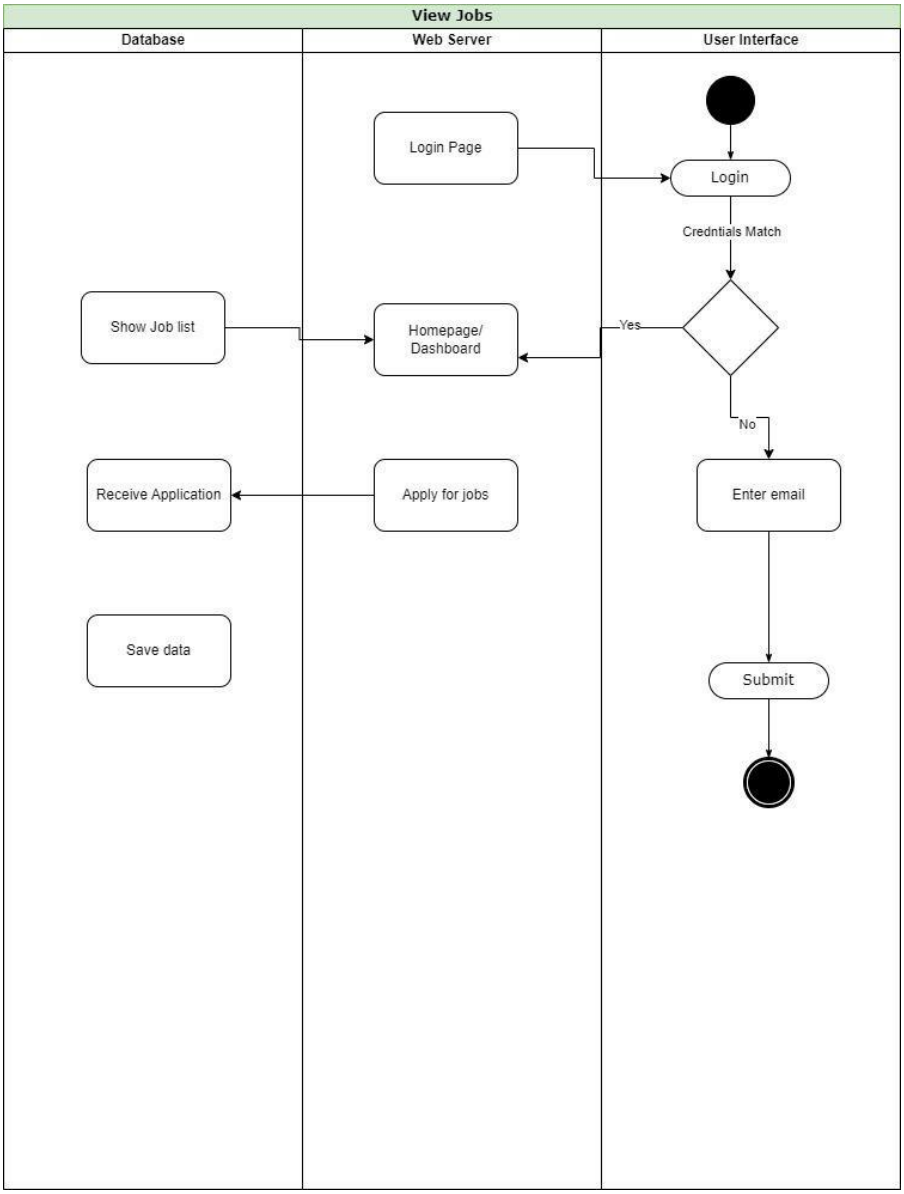

Fig: 5.4. View Jobs process

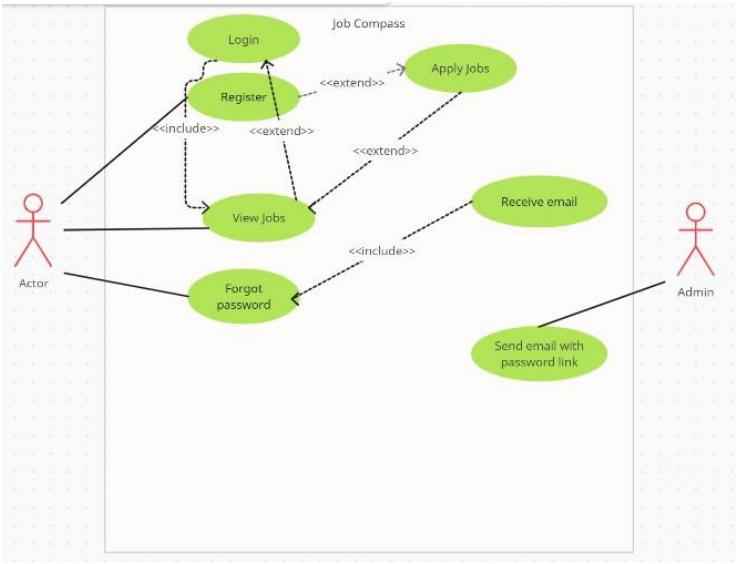

Fig: 5.5. Use case

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5.4.2. Architecture

The architecture for this website is Microservices architecture. Like many other websites, this architecture ensures the flexibility, reliability, and scalability of the project. HTML, CSS, and JavaScript have been used for the frontend development and PHP, Laravel and MySQL have been used for the backend.

5.5. Implementation

The project was implemented on the browser using PHP my admin as the localhost with IDE connection.

5.6. Testing

5.6.1. Inputs & Outputs

	Input	Output
Register	Name, username, email, password, confirm password	Registration Successful

Login	Username, password	If the password is correct -> Login Successful. If the password is incorrect -> Reset password
Forget Password	Email	If the email is correct it will notify the admin and a reset link email will be sent. Click on the link to reset the password.
View Jobs	Job details	Job categories, positions, name of the company, etc.
Apply jobs	Job details	If the user applies for the job it will be notified to the user and all the necessary information will be reviewed and saved.

5.6.2. Designing Test cases

5.6.3. Test Results

All the test results were successful.

Chapter-6

Result & Analysis

As Team Remotely Incorporation, is a remote company and is a US based company all the quality assurances and testing is done by the higher authorities of tech teams for a bugs and error-free system. As a developer, I tested my code myself by running it in the browser and following all the procedures. My team leader monitored whether every code was working or not. The website is dynamic so the runtime was also satisfied.

Project as Engineering Problem Analysis

7.1. Sustainability of the project work

Our project was sustainable and efficient regarding all these given factors:

1. Documentation: Documentation is important during project initiation as it provides knowledge for both technical and non-technical. It also enhances the quality and output of the website.
2. Security and Data Protection: Monitoring and enhancing project codes to protect data and secure users from cyberattacks and breaches.
3. Accessibility: Ensures that the website is diverse and is at constant updates according to user needs.
4. User Feedback: User engagement through comments and feedback creates a relationship between the user and the website. Also, developers know where and what to improve for a better and enhanced user experience.

7.2. Social and Environmental Effects & Analysis

1. Job Accessibility: Increase of job opportunities for a wide range of individuals.
2. Skill Development: Users can develop their skills by the resources, advice and materials provided by the website.
3. Feedback: Users may leave evaluations about several companies or jobs which promotes transparency in making decisions and applying for jobs.
4. Environmental friendly: Having these websites don't need a center to recruit people or give jobs. Thus saving energy, cost, and time.

7.3. Addressing Ethics & Ethical Issues

1. Authenticity: The information provided on the website is authentic and claims to be true.
2. Integrity: Any fake customers should be able to be identified by the website.
3. Interactive: The users should be able to interact with the website without any ambiguity or getting into misleading situations.
4. Discrimination: No risk of discriminatory practices such as biases in jobs or application processes.

Chapter 8

Lesson Learned

8.1. Problems faced during the internship period

As a web developer in a remote company, I got to learn many things related to Website Development and databases, and got a deep knowledge in the field of Laravel framework. The web development team I worked with was very obliging and supportive.

Working with Laravel framework was very new to me before working on the project. The team leader was very cooperative enough to let me learn about the documentation and themes first. After having a deep and thorough knowledge of this specific framework I started working on the project.

Initially, I was given a frontend and backend project with WordPress, HTML, and JavaScript. I lacked experience with WordPress which used plugins and elementors. So it helped me gain more knowledge on preparing websites.

8.2. Solutions to the problems faced during the internship period

The problems that I have faced were mainly a lack of advanced knowledge of theories in Computer Science. In my opinion, if the university courses were structured more professionally it would have been facile for the interns. Preparing students more for industrial environments will simplify their efforts during the internship period and rest corporate life.

Chapter 9

Future Work & Conclusion

9.1. Future Works

JobCompass is a dynamic job searching website with inclusive progress in the job market. Not only the features and requirements but also recommendations and updates are helpful. The codes used to create the project are reusable and can be used to make other projects like this as well. The website will be enhanced and improved for a better

experience for the users. CEOs and HRs of companies will be available to direct contact with potential employees. Filtered jobs, based on locations and expertise will also be available on the website.

9.2. Conclusion

In conclusion, I had a great professional experience in my internship journey. Not only did I enhance my technical skills but also improved my soft skills and communication. Though I was a part of a remote/work-from-home internship, my development team was really interactive throughout the journey. The weekly meetings held were very informative and I got to know many things regardless of the project

This internship provided me with great guidance and support that will help me grow my career. I am excited to apply the experience and knowledge to my future pursuits. I am confident that the insights and skills acquired will serve as a strong fundamental for my continued development in the Software sector.

I am very much grateful to my team leader, team members as well and my university supervisor for guiding me throughout the whole process, starting from initiation to implementation. Overall, the internship journey was momentous for me, and appreciate

the steps forward in my career pathway. I will contribute my gained valuable insights and skills for my future aspirations.

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Summer, 2023

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.

This internship report is checked with Turnitin and/or Ithenticate plagiarism checker, and the score is:

Turnitin Score (%) : 9%
Ithenticate Score (%) :

Ashraful Islam 15/10/23
(Signature of the Supervisor)

Dr. Ashraful Islam
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