"CvGen" - A WEB APPLICATION ABOUT ONLINE RESUME MANAGER AND GENERATOR

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project/internship titled **"CvGen - A WEB APPLICATION ABOUT ONLINE RESUME MANAGER AND GENERATOR"**, submitted by Subrata Halder, ID No: 133-15-3026 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12-12-2018.

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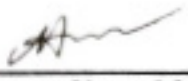

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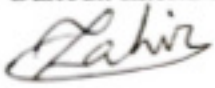

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DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Masud Rabbani, Lecturer, Department of Computer Science and Engineering,** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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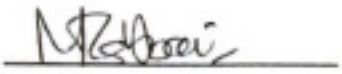

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Finally, I must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

The main goal of design and develop this project “A Web Application About Resume Manager and Generator” is to provide a simplified resume maker and management platform. This web application offers an instant flawless experience to user who wants to create a resume. In order to land a job interview, everyone needs a proper resume. The web application about resume manager and generator can help that, like instantly create an online resume, get some inspiration before making a resume from publicly available resume in the platform. Many people get confused by creating a resume for the very first time. People often misplaced what should put on a resume and what should not. This web application gives people the ability to get rid of those problems. People can also view public resume posted by other professionals and get inspired by them and post a comment on a topic and get replied by others. The web platform of the application is highly scalable and responsive so that people can browse and get their work done by any devices like smartphones.

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CHAPTER 1

Introduction

1.1 Introduction

The web application about online resume manager and generator is an excellent web platform to make a resume online quickly. This web application will help people to create their resumes quickly. Using this web application is very simple. All user interfaces are designed to provide the best user experience to users. There is a contact section in the application where people can ask any question and comments others posted a question about the resume. Anyone can access this application from any device and view all public resumes but to create a resume a signup process will be required. Users will be able to modify their resume and delete any section quickly. The main purpose of making this web application about resume manager and generator is to create a resume in the shortest time possible.

1.2 Motivation

My motivation behind making this web application is to solve a simple problem about the resume. A few years earlier, I found a frontend developer job vacancy in online I instantly contact with their contact email and they tell me to send a resume. I search google for a resume template and I got confused by a large collection of resume templates. Many of the resume template generator web site is offering resume generator services as a paid service. But like myself, many people are not interested to pay for such services. After all this, I managed to create my resume but I spend a huge amount of time making a simple resume with a free template. I thought how easy it would be if we had a web platform to make a simple resume without searching google for resume templates. So, I decided to make a web application to create a simple resume for free and the application will be web-based and also responsive so anyone can easily access it from any device.

1.3 Objectives

- The Primary Objective behind developing this web application is to provide a simplified platform to create a simple resume.
- To help people who want to create resume but doesn't have any experience to create resume.
- To provide a simple user experience and easy to use platform for resume management.
- Making a platform for asking a question related to resume.
- Saving time and avoiding the search for resume templates.

1.4 Expected Outcome

The main expectation from this web application is to create a resume profile and consume time for creating a resume. This application is highly responsive so that people can browse this web application from any device. Users can use this web application as a guest user or a registered user. People will be able to create their resume. people can ask a question about a resume. comments on others post and like them or dislike them. This web application will help people to create a resume, save and manage a resume online for future use.

1.5 Report Layout

In chapter 1 of the report, I overviewed the overall project by giving a brief introduction. I discussed the motivation for this web application, main objectives and also expected an outcome. In chapter 2 I discussed project background and related work like this project. I also discussed the problems and challenges that I have faced. In chapter 3 I describe software requirements, necessary ER diagrams, data flow diagrams. In chapter 4 I discuss about this application frontend and backend technology. And application design patterns. In chapter 5 I give a test result for all functionality of the application. In chapter 6 I discussed the consultation.

CHAPTER 2

Background

2.1 Introduction

In our country, internet usage is increasing day by day. web application is growing in every sector. A web application for creating a resume will save lots of time and reduce extra hatchel. It's important to implement a system that can be easily accessible from any device. "CvGen" is highly scalable and responsive. People can easily access it from any devices and overall user experience is also highly user-friendly. Creating a resume and a resume profile or posing a general question all are in one platform. "GvGen" is made with all the cutting edge technology so that every service of this web application is fast and scalable.

2.2 Related Work

There are some web applications available on the internet. Web applications that can generate a resume. I studied some of them. I found some of these web applications are well maintained. Some of these web applications are paid and need to create an account and some application is completely free to use with some limitations. I reference some of the web applications to compare with my web application. I found there are some field that needs to focus on. Specially on a simple user interface. Almost every web application are built with a complex user interface. I listed the two most simples found web application for the reference. One of this web site provides services for free and others provide services as paid services. User needs to subscribe by paying monthly subscription fees to get the services. Also, their user interface is a bit complex for the new users to understand. Both of the web sites provide a decent amount of resume, cover letter services. Some website also provides other services alongside with resume generator services like cover letter and project proposal, and software documentation generator. which seems bloated for a simple resume template generator website.

2.1 My perfect resume

My perfect resume is a web application that provide premium resume template. They provide resume builder, resume sample, resume example, resume templates. This website also an auto cover letter generator, cover letter example and cover letter templates. This website takes 3 steps to generate a resume [1].

Figure 2.1 is showing a homepage layout of "myperfectresume" website.

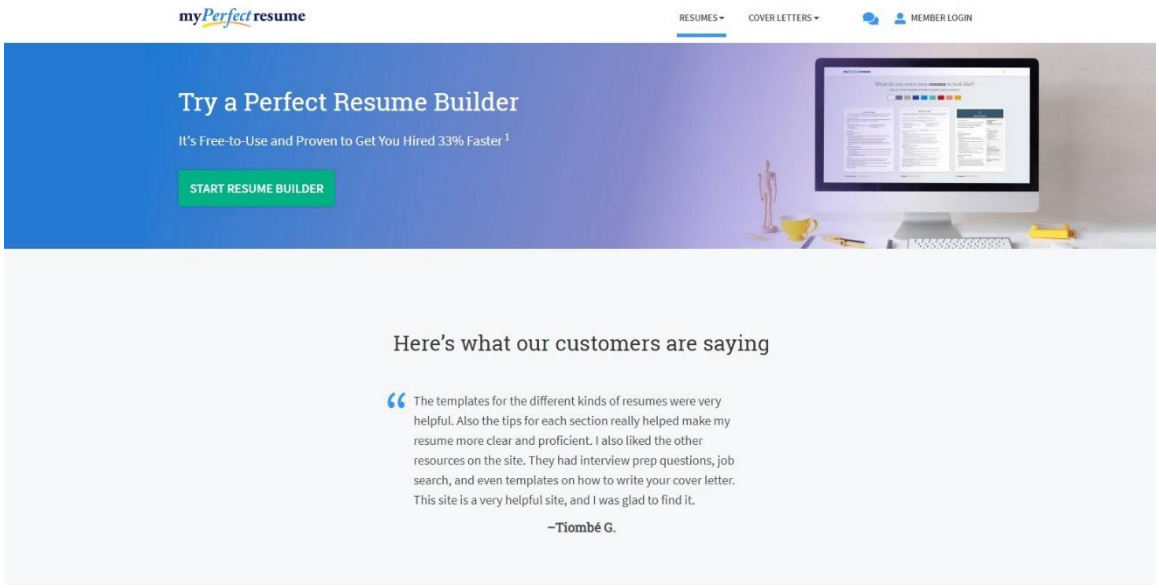

Figure 2.1 Screenshot of "myperfectresume.com" website

This is a homepage screenshot of "myperfectresume" website. In this website people can create resume, cover later by picking up a pre made template. Which can be helpful but the lake of customization in user end is still an issue. There are no security validation to make a resume. this web site just provides some simple template and users can select the category that they want to include to their resume. As a free service, this web site is a good choice but the lack of simplicity kind of ruins the purpose for a simple resume generator.

2.2 Novo Resume

Novo resume is multipurpose web application that provide various services including Resume Templates, CV, Templates, Cover Letters and a nifty Career Blog features. They provide both modern layout resume template and classic layout resume template. They have a premium pricing plan [2].

Figure 2.2 is showing a homepage layout of "novoresume" website.

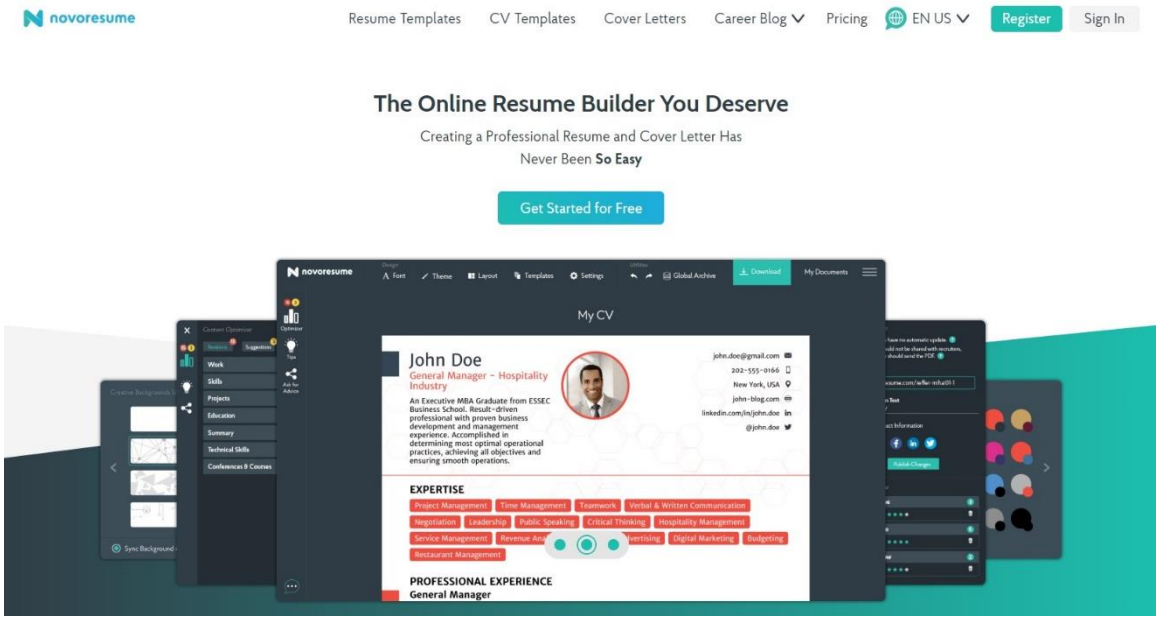

Figure 2.2 Screenshot of "novoresume.com" website

This is the frontpage screenshot of the "novoresume" website. By this web application people can make their resume by paying a subscription fee. This web site provides many quality resume template. but most of the users want to make their resume for free. Also, this web site user experience is not that much user-friendly for a simple resume generator. this web site is a good choice but the lack of simplicity and pricing kind of ruins the purpose for a simple resume generator.

2.3 Comparative studies

I design and develop “CvGen” as a complete web application. There are many web site in the internet that provide almost same functionality as this project. I research many of them. I found many web application provide free but they use watermark for the template and charge money to remove that mark. Some website also have some limitation of creating a certain amount of resume. some web site are to not that user friendly and not provide a great user experience. I try to solve those issue. I developed my web application mainly focus only create simple resume with maintain a simple user interface so that user don’t get overwhelmed.

2.4 Scope of problem

This web app is responsive so people can be able to use it from any devices. This application will support any types of smart phone and tablet. This application is well secured. Every form field is protected by proper validation so that one user can’t modify or access other information. From this web application people can create resume and save them as a profile in database. Public resume profile is viewable by all types of user without login into the application.

2.5 Challenges

Before I start developing this project. I ran some research work. I identify some possible challenges. After that when I first start developing this web application I face some issue. In this application user can create their resume but before that must be a registered in the system. So I developed a signup and login system. But now a days security is great concern. So what if the user provider information got hacked? So I implement a JWT (json web token) based login system. Beside that I implement Github user profile as an option and to that I had to integrated Github API.

CHAPTER 3

Requirements Specification

3.1 Business Process Modeling

Business process modeling is the graphical representation of a company's business processes or workflows, as a means of identifying potential improvements. This is usually done through different graphing methods, such as the flowchart, data-flow diagram, etc. Business Process Modeling for All Purposes. In business, process modeling is the act of graphically illustrating the processes that dictate the inner workings of an organization. This takes a lot of the guess work out of optimizing these processes in order to achieve business growth. Some steps of business process modeling are [3].

1. Define Your Goals.

2. Plan and Map Your Process.

3. Set Actions and Assign Stakeholders.

4. Test the Process.

5. Implement the Process.

6. Monitor the Results.

7. Repeat.

I visually represented a business process modeling diagram of my “CvGen” web application to easily understand the underling system process for this web application.

This is the visual representation of Business Process Modeling. This shows how this web applications internal system works. An overall system architecture is shown by this BPM diagram for CvGen web application.

Figure 3.1 is showing a Business Process Modeling for CvGen.

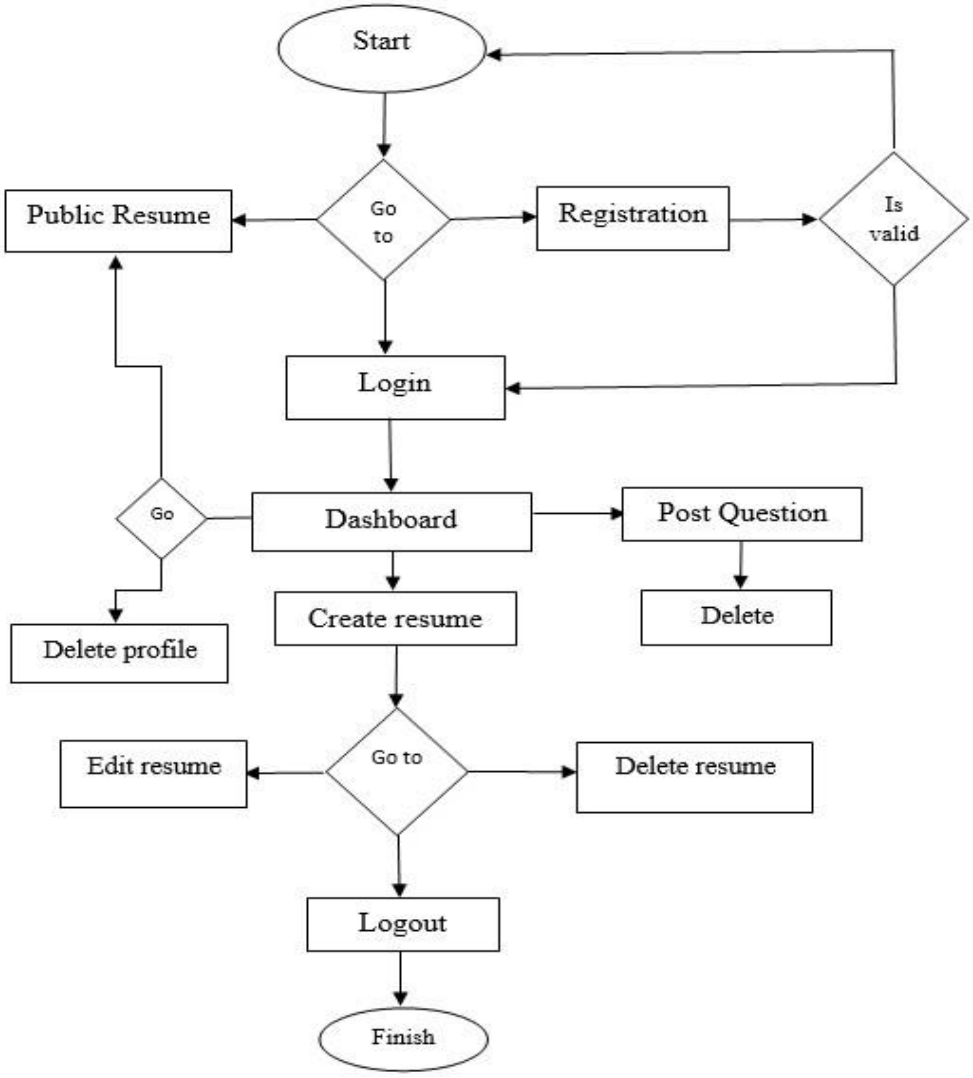

Figure 3.1 Screenshot of Business process modeling for “CvGen”

3.2 Requirement Collection and Analysis

Requirement collection and analysis play and important role in software development. It helps to maintain project for future scaling. Requirements analysis means to analyze, document, validate and manage software or system requirements. In Requirements modeling, the requirements are usually documented in different formats such as use cases, user stories, natural-language documents, or process specifications. The analysis step helps to determine the quality of the requirements. It involves identifying whether the requirements are unclear, incomplete, ambiguous, and contradictory. These issues resolved before moving to the next step [4].

3.2.1 Software Requirement

- **Development Tools**

  Code editor or IDE is main tools to build web project. Text editor like visual studio code, sublime text, atom is good enough but for more complex architecture where testing and debugging is frequent required IDE like php storm, web storm, will provide efficiency.

- **Database Client**

  Database GUI tools like MongoDB client, or MySql web client or desktop client is required for faster database implementation.

- **Commend line tool**

  Commend line tool like windows terminal, bash shell, is required for dependency installation. And overall system monitoring.

- **CDN**

  Browser and DSN server, container management system like docker is required for client rendering, hosting database, contend management.

3.2.2 Functional Requirement

Functional requirements are a part of requirements analysis (also known as requirements engineering), which is an interdisciplinary field of engineering that concerns the design and maintenance of complex systems. Functional requirements describe the desired end function of a system operating within normal parameters, so as to assure the design is adequate to make the desired product and the end product reaches its potential of the design in order to meet user expectations. In this application functional requirement are user registration, user login, create post, give like in individual post, access dashboard only validation success and log out from system [5].

3.2.3 Non-Functional Requirement

Basically, Non-functional requirements describe how the system works, while functional requirements describe what the system should do. Prioritize the important functions of the system based on usage patterns. Frequently used functions should be tested for usability, as should complex and critical functions. Some performance issue like What should system response times be, as measured from any point, under what circumstances? and are there specific peak times when the load on the system will be unusually high? Non-functional requirement checks additional memory leak or load management [6].

3.2 Use Case Modeling and Description

A use case is a list of actions or event steps typically defining the interactions between a role of an actor and a system to achieve a goal. A use case is a useful technique for identifying, clarifying, and organizing system requirements. A use case is made up of a set of possible sequences of interactions between systems and users that defines the features to be implemented and the resolution of any errors that may be encountered. While a use case itself might drill into a lot of detail about every possibility, a use-case diagram can help provide a higher-level view of the system, providing the simplified and graphical representation of what the system must actually do [7].

Two role applied for use case modeling in this project. 1. User without registration and 2. User with registration.

Table 3.2 is showing Use Case Modeling for user **without registration** for "CvGen" - A Web Application About Online Resume Manager and Generator.

Use Case Name:	**User**
Auth:	User without registration
Previous State:	None
Expected Path:	View Resume Enter Registration Details Login
Exceptional Scenario:	Incorrect Registration Details User Already Exist

Table 3.3 is showing Use Case Modeling for user **with registration** for "CvGen" - A Web Application About Online Resume Manager and Generator.

Use Case Name:	**User**
Auth:	User with registration
Previous State:	Enter Login Detains
Expected Path:	View Resume Login Create Resume
Exceptional Scenario:	Incorrect Login Details

This is the visual representation of Use Case Modeling for both User Without Registration and Users With a Registration. An overall users expected path and action are shown by this UCM diagram.

Figure 3.2 is showing a use case modeling for users of CvGen website.

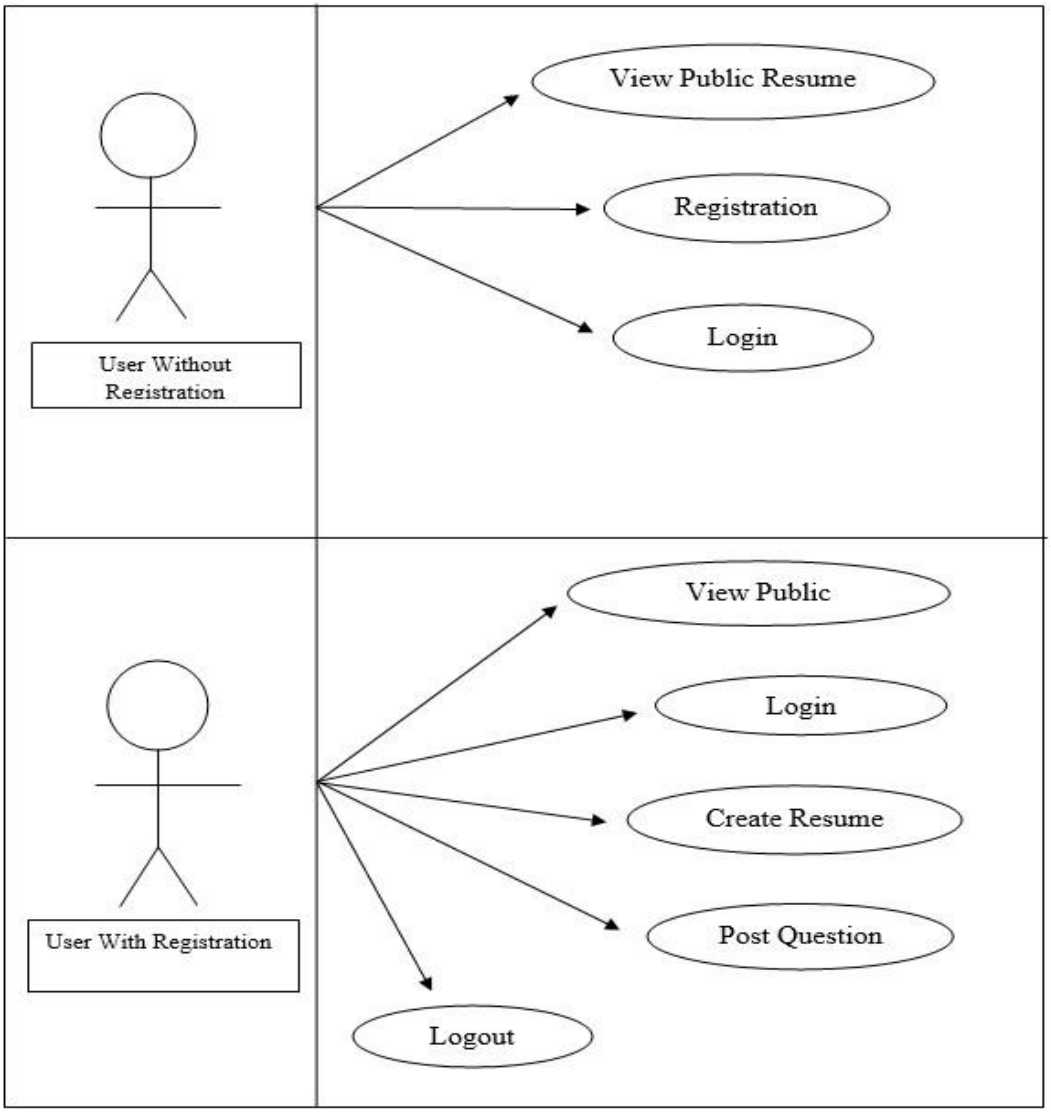

Figure 3.2 Screenshot of use case modeling for "CvGen"

3.3 Logical Data Model

A logical model contains representations of entities and attributes, relationships, unique identifiers, subtypes and supertypes, and constraints between relationships. A logical model can also contain domain model objects, or reference one or more domain or glossary models. After logical objects and relationships are defined in a logical data model [8].

3.4 Design Requirements

- In my project I design a navbar to navigate an identify all category in the top of the website header.
- This project required Registration and login to use full functionality. So I design a registration and login page.
- I design a question and answer type short contact section. Where user can post a question.
- This project has an option to comment on a user post. I design a like and dislike button to interact with post.
- I design resume page for public viewing. Anyone can access this resume page without login or registration into the application.
- I make three sections in Dishoard design. Where user can create their resume. I also added a edit profile option so that any mistake can be modified.
- I put Homepage design in simple form. Where unregistered user can see register/login button.
- This entire web application is clean and simple. No extra field is implemented to avoid cluttered in user interface as well as user experience.

CHAPTER 4

Design Specification

4.1 Front End Design

Today as the entity known as Web is exploring its vast horizons and is becoming increasingly convoluted, it is simply not possible for the designers to work on static environments to realistically articulate every possible screen sizes, form-factors, and predict variables that affects the web. Frontend design use some key component like HTML, CSS, JavaScript but for more efficiency today almost every web application build top of an frontend framework. Many component based frontend framework like React.js, and Vue.js is perfect to make any kind of frontend structure.

4.1.1 Home Page

This is the homepage for the "CvGen" web application people can view this page as a base of the application. Front-end ul design of the homepage using react framework.

Figure 4.1 is showing a home page layout of CvGen website.

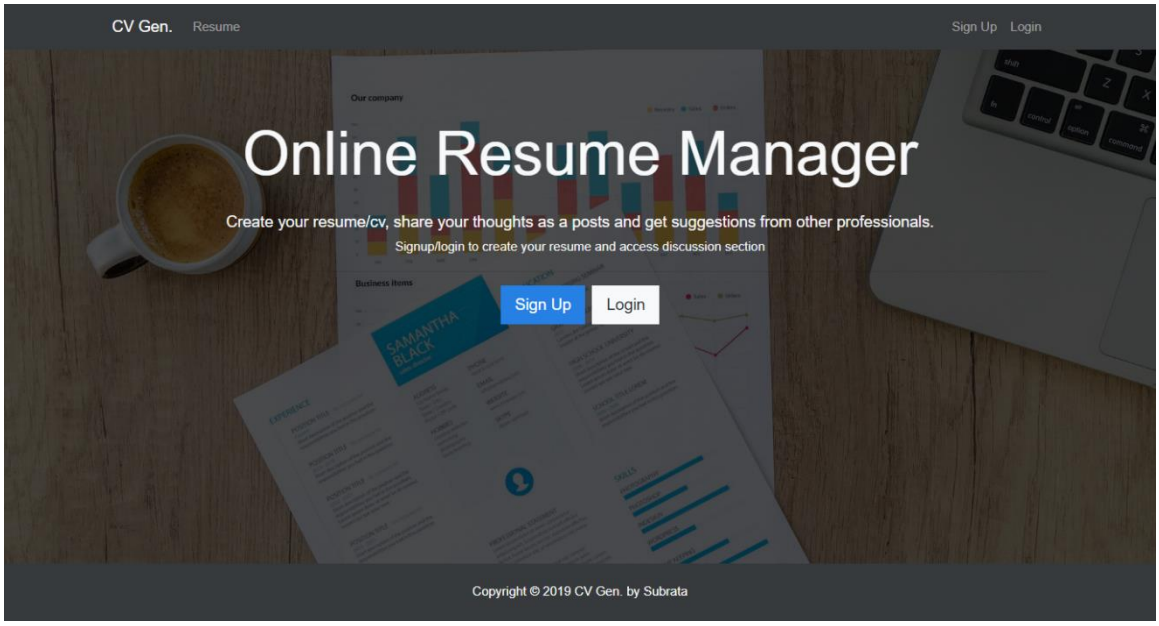

Figure 4.1 Screenshot of Frontend design of Home page for "CvGen"

4.1.2 Resume Page

This is the front-end UI design for the public resume page. People can view this page by entering the web application. All public resume are serialize by one after another.

Figure 4.2 is showing a resume page layout of CvGen website.

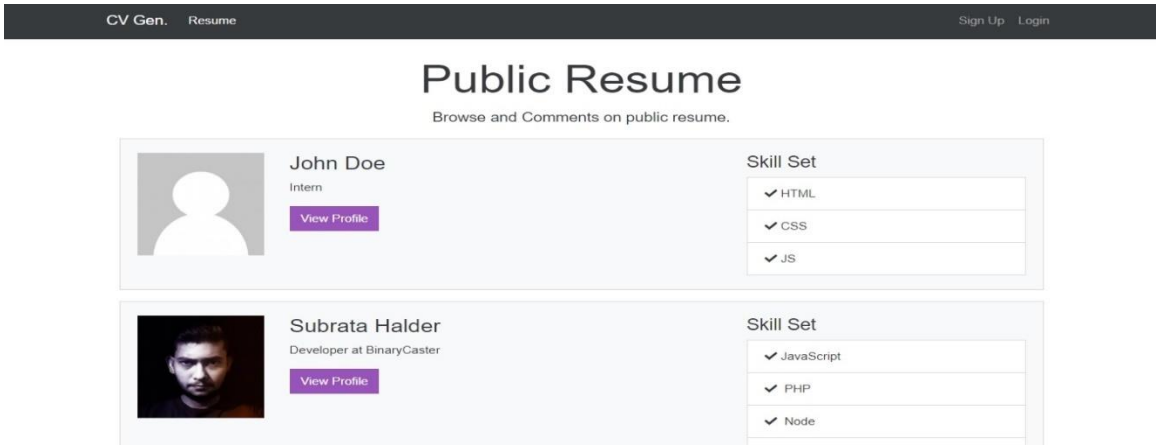

Figure 4.2 Screenshot of Frontend design of Resume page for "CvGen"

4.1.3 Login Page

This is the front-end design of login page. People can login with valid information from hear.

Figure 4.3 is showing a login page layout of CvGen website.

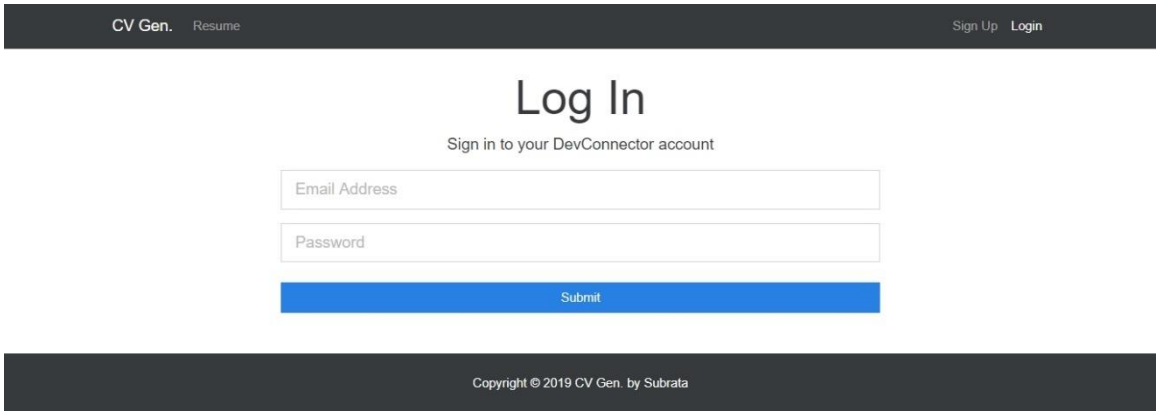

Figure 4.3 Screenshot of Frontend design of Login page for "CvGen"

4.1.4 Contact Page

This is the contact page frontend design. People can post a question and add a comment from hear. People can also put a like and dislike a post from the same section. User can delete post and comment too. To get a full access user must be login first. I use the react component and state manager to keep the user experience simple enough.

Figure 4.4 is showing a contact page layout of CvGen website.

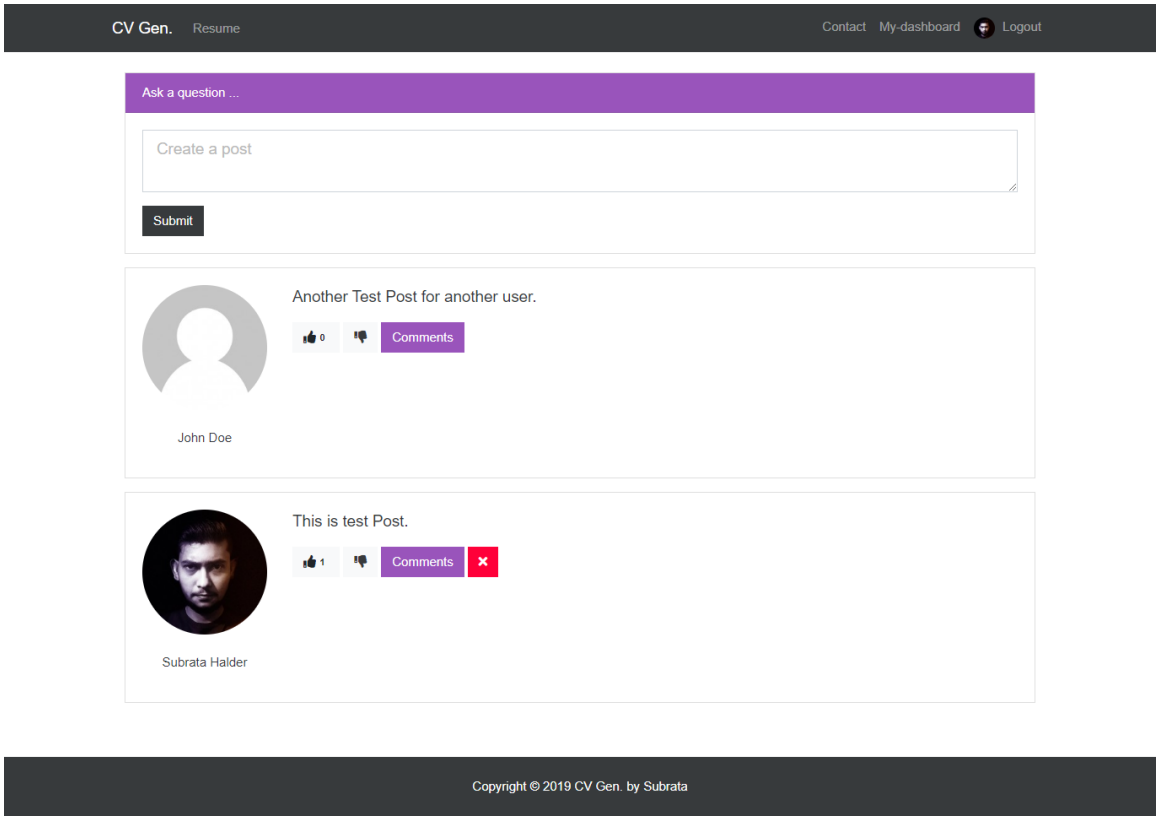

Figure 4.4 Screenshot of Frontend design of Contact page for “CvGen”

4.2 Back End Design

Back-end Design refers to the server-side development. It is the term used for the behind-the-scenes activities that happen when performing any action on a website. It can be registering an account or purchasing a watch from an online store. A backend developer works with the following:

- **Web Development Languages**

  Server-side programming languages used is designing backend. Some popular language are PHP, NODE, Python, Ruby, Golang etc.
- **Database and cache**

  Various DBMS technology is another important need for backend design. MySQL, MongoDB, Oracle, SQLServer, Redis are widely used for this purpose. Knowledge of caching mechanisms like varnish, Memcached, Redis is a plus.
- **Server**

  WEB server like Apache, Nginx, IIS servers, Microsoft IIS, play an important role in backend design.
- **API (REST & RESTful)**

  Different types of API are used in backend design. Importing an interacting with database and client are also use API Callbacks.
- **Design Patterns**

  Design patterns are also a key component for backend design. It's one of the crucial elements. One of the most popular design patterns is MVC which is Model View and Controller.

4.2.1 Registration field

This is the registration page with validation. Every field is protected by proper server-side validation. After validation this page redirect to dashboard.

Figure 4.5 is showing a registration form with validation layout of CvGen website.

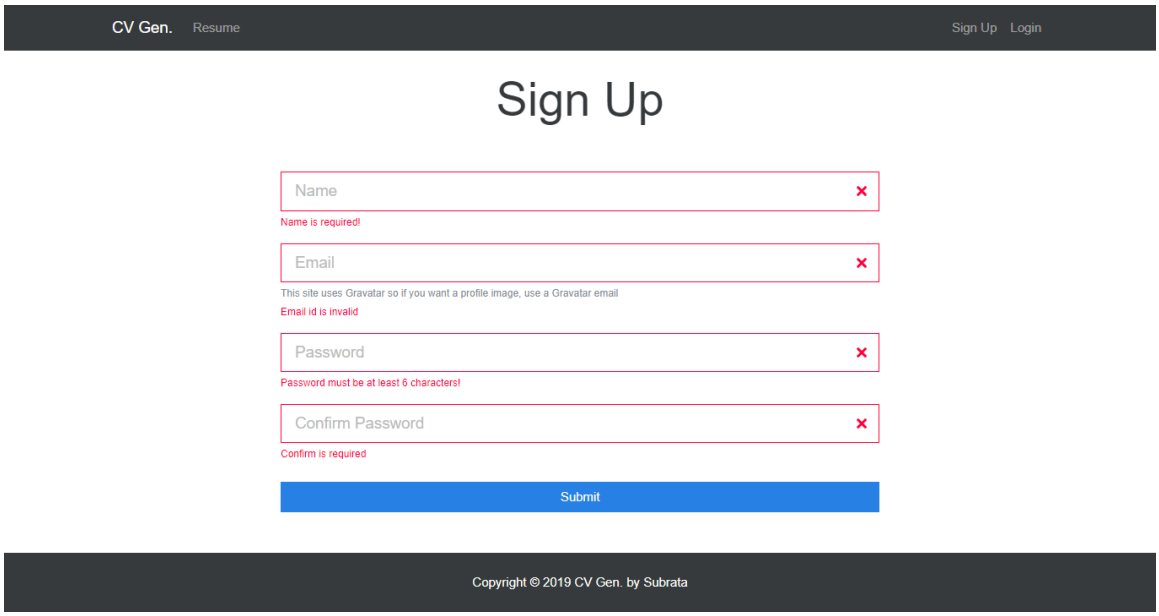

Figure 4.5 Screenshot of Registration form “CvGen”

Figure 4.6. is showing a registration page without validation layout of CvGen website.

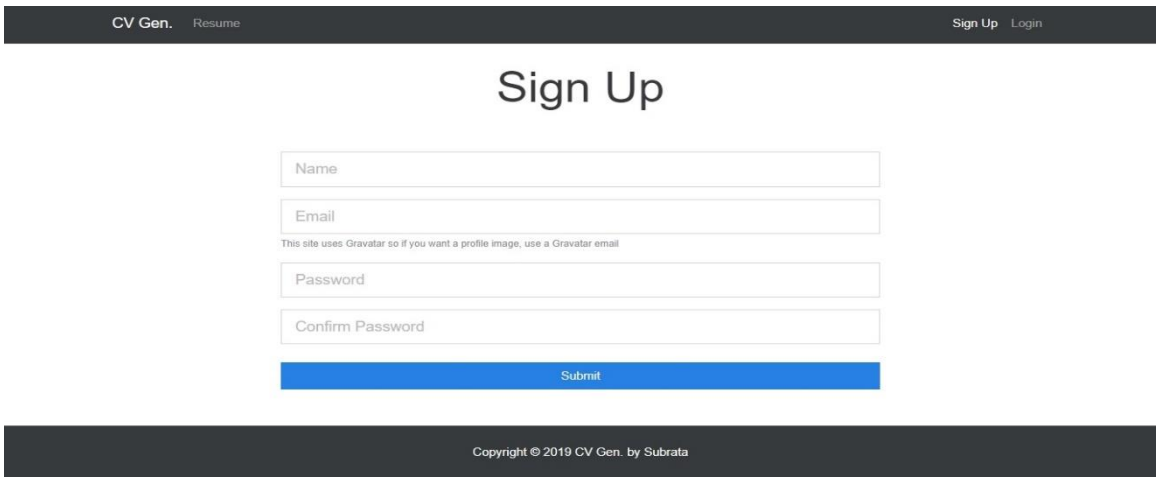

Figure 4.6 Screenshot of Registration page “CvGen”

4.2.2 Dashboard

This is the dashboard with user information which fetched from database. User can take full control of his account from hear. User can add a resume field, user can delete a field, user can modify existing data. User can completely delete his/her entire profile from here. All user schema is stored is a nonrelational database.

Figure 4.7 is showing a dashboard page layout of CvGen website.

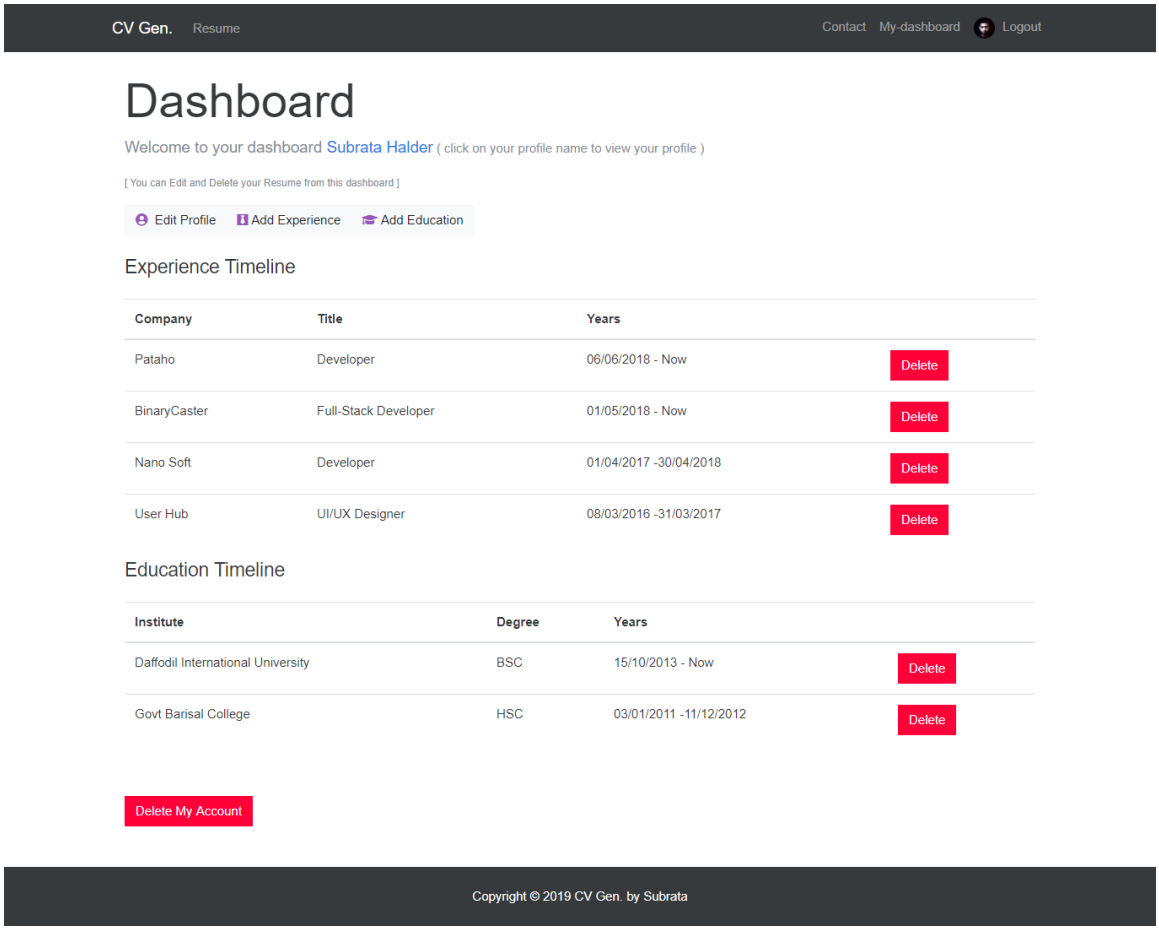

Figure 4.7 Screenshot of Dashboard page “CvGen”

4.3 Interaction Design and UX

Interaction design focuses on how a user interacts with specific elements of the software. Interaction Designers answer questions like what happens when a user clicks a button, or when a mobile app transitions between pages. They focus on things like animations, loading indicators and page transitions [9].

Experience design delves into if people WILL use a product and hence encompasses behavioral sciences and studies in motivational factors. Generally, experience design takes into account a much broader scope than traditional usability, looking at what attracts a person to the service, what helps them understand it and use it, how it integrates into the context of their lives, how they are encouraged to keep using it and how they communicate with others around the product/service. UX Design deliver customer insights, personas, customer journey maps and the like. This is before interaction design happens.

4.4 Implementation Requirements

To implementing this project I use different types of tool and technology. I use mainly Java script and different java script library and frameworks. I use React.js for the front-end implementation and Node.js for Back-end implementation. Express.js is a node frame work. I mainly use for it to different field validation. For the data base I use non-relational database MongoDB. Testing application URL routes I use Postma. Also for checking API call I use postman. I develop my web application on a local server for the build purpose. For the production build I use a live server. For the developer dependency I use Nodemon to run both frontend and backend server concurrently.

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database

Database systems underlie the large majority of business information systems. Most of those in use today are based on the relational data model, a way of representing data and data relationships using only two-dimensional tables. In my project I use MongoDB database. MongoDB is a document database, which means it stores data in JSON-like documents. I use mLab web client to implement database. MongoDB is a distributed database at its core, so high availability, horizontal scaling, and geographic distribution are built in and easy to use. MongoDB stores data in flexible, JSON-like documents, meaning fields can vary from document to document and data structure can be changed over time I chose MongoBD over MySql for this following reasons:

- The most natural and productive way to work with data.
- Supports arrays and nested objects as values.
- Allows for flexible and dynamic schemas.
- Rich and expressive query language that allows you to filter and sort by any field, no matter how nested it may be within a document.
- Support for aggregations and other modern use-cases such as geo-based search, graph search, and text search.
- Queries are themselves JSON, and thus easily composable. No more concatenating strings to dynamically generate SQL queries [10].

Figure 5.1 is showing a MongoDB cluster of CvGen website.

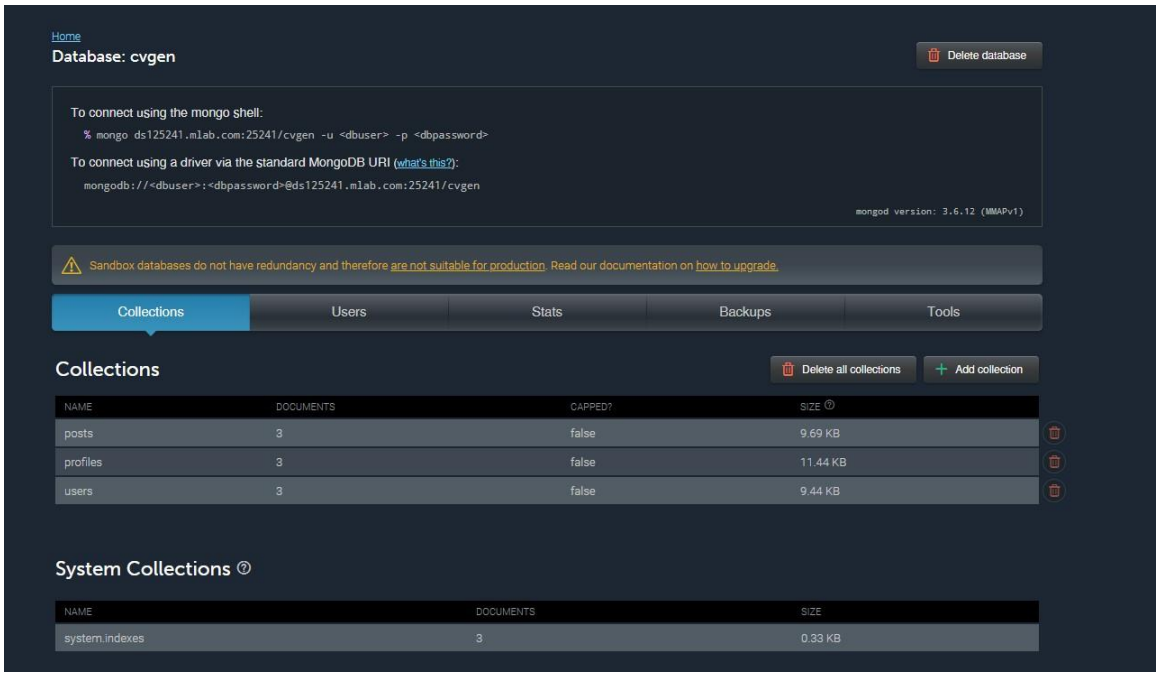

Figure 5.1 Screenshot of MongoDB database cluster for "CvGen"

5.2 Implementation of Front-end Design

Traditionally speaking the front-end could be defined as the UI of an application. Frameworks like Angular or libraries like React require developers to have a much deeper understanding of programming concepts; concepts that might have historically been associated only with the back-end. MVC, functional programming, high-order functions. Libraries like React requires a developer to learn concepts that traditionally were not associated with the front-end: setting up webpack, deployment processes, understanding high-order components. I used React in the front end for this web application. React makes it painless to create interactive UIs. Design simple views for each state in the application. I used react state and redux to manage all ul components.

I used JSX to render views. JSX is syntax extension to JavaScript. JSX produces React "elements". This the profile page front-end design of "CvGen" using React component and rendering by JSX.

Figure 5.2 is showing a Frontend profile page layout of CvGen website.

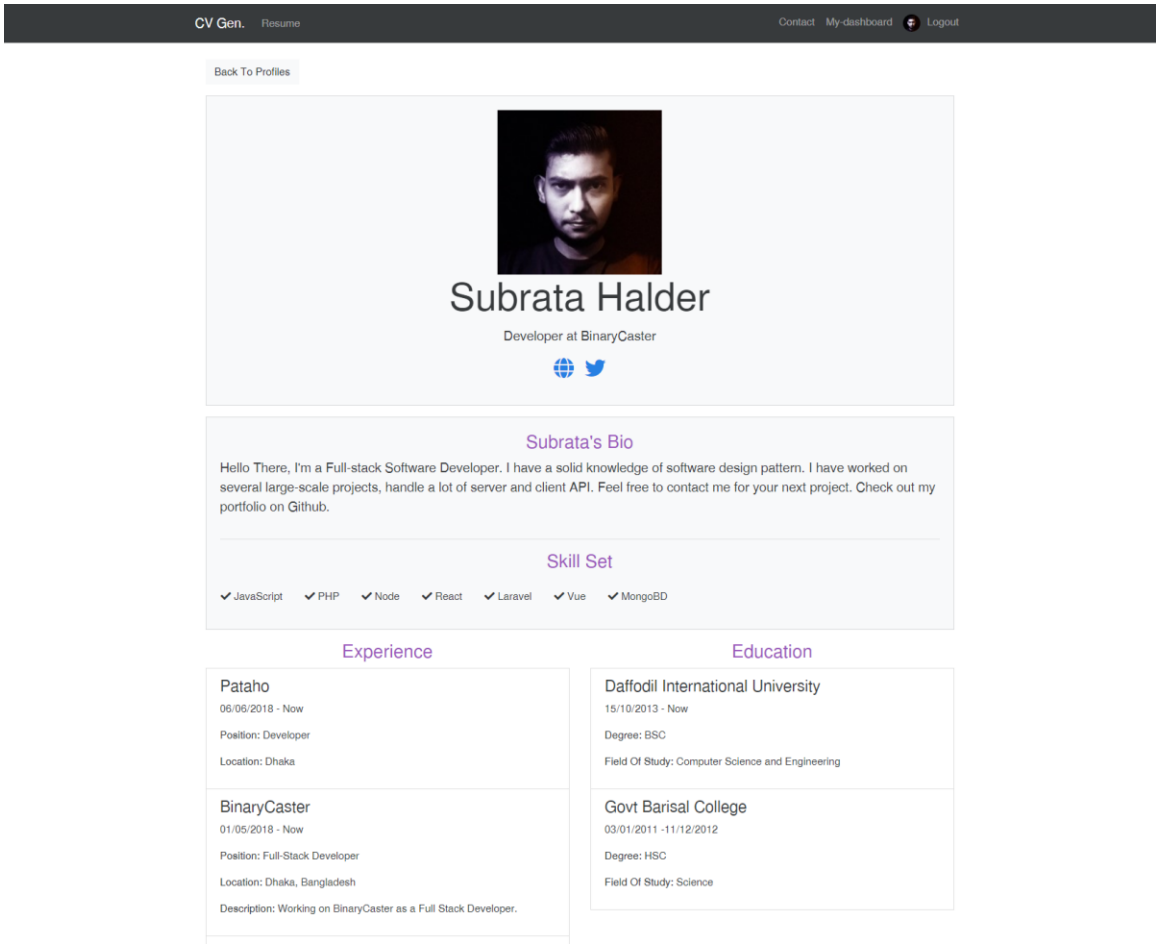

Figure 5.2 Screenshot of Profile page for "CvGen"

5.3 Implementation of Interactions

User interaction is important as it helps to identify user requirements. system-to-system interaction highlights the communication problems that may arise. component interaction helps us understand if a proposed system structure is likely to deliver the required system performance and dependability. Use cases were developed originally to support requirements elicitation. Each use case represents a discrete task that involves external interaction with a system.

5.4 Testing Implementation

Table 5.4 is showing test case for "CvGen" - A Web Application About Online Resume Manager and Generator.

Test case Name	Test Input	Expected Outcome	Test Output	Test Result
1. Registration	Fill up all field with valid information	Registration successful.	Redirect to login page	Passed.
	Fill up some field and blank some field.	Server side verified warning. All field must be filled.	Server side verified warning in each empty field.	Passed
2. Login	Login with valid data.	Successfully login.	Redirect to dashboard page.	Passed.
	Login with invalid data	Login failed.	Server side error message showing.	Passed

	Keep blank email and password field.	Login failed.	Server side error message showing.	Passed.
3. View Resume	Click for view resume.	Redirect to resume page and fetch all resume from database.	Show all resume	Passed.
4. Add Education	Fill up necessary field to create resume	Redirect to profile page.	Successfully created and Show all information	Passed.
5. Add Experience	Fill up necessary field to create resume	Redirect to profile page.	Successfully created and Show all information	Passed.
6. Edit Profile	Fill all field with modified data	Redirect to profile page.	Successfully show all modified information	Passed.
	Fill a single field with modified data	Redirect to profile page.	Successfully show modified information	Passed.
7. Contact	Write something in text field to ask question.	Successfully post	Successfully show the new post.	Passed.
	Write a comment.	Successfully post	Successfully show the comment.	Passed.

8. Delete Profile	Click to Delete	Delete Profile	Successfully delete the profile	Passed.

5.2 Test Results and Reports

I did two sets of test in my application. First I did a system testing of my application. It's checks that it works fine for the different operating systems. It is covered under the black box testing technique. In this, I just focus on the required input and output. After That I did a security testing, for all validation and verification and performance testing. All the test become successful. I can ensure that end user will not find and major system bug.

All tests are done by me personally and all tests are passed 100% successfully. It's very possible after all this testing something can be broken. This often occur when some application dependency got broken. Some dependency can be deprecated. Regular update check of this web application can easily solve this issue.

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and Conclusion

I this web application I try to make an easy to use interface to help people for creating resume. I finished this project successfully and tested in several times in different operating systems and multiple smartphone. I focus on easy to use user interface. And a user friendly user experience. This web application will deliver a smooth experience to all kind of user. People will be benefited from this web application by creating an Online resume. Manage a resume profile or making an online professional profile.

Developing this project, I used React.js in frontend. React is a frontend framework. I think choosing React as a frontend framework is ideal for this kind of web application. React state manager helps a lot to implementing of user interfaces. For the backend I chose Node.js. Using node over other backend language was not an easy diction. I made this web application as asynchronous way. So that every time user requests a route or complete a form action without blocking application I/O. For this reason, I chose node. Node provide great solution to async programming.

There are some small issue that can be improved. One of the issue is web application performance issue. Slow internet causing a major performance delay in web buffer and loading page. Implementing Lazy load that can be solved easily. Lazy load, load page quickly, cause it’s only render currently visible page rather than full page load.

6.2 Scope for Further Developments

As like many other web application, This website has also some limitations. I manage to overcome some of the limitations. But still there are some noticeable. I want to mention few of the main limitations of my application and with to develop in as a further development.

- **Notification**

  Though I implement a comment and like option in post, but I did not make any real time notification. In future wish to implement that. Notification system is a minor improvement for this web application.
- **Download option**

  This application does not have any automatic download button. In future I will implement that. Implement a download option will be major improvement for this project. Download functionality will helps a lot to people to easily download their created resume downloaded in the go.
- **Search**

  I wish to implement a full flagged search capability in future development. Because it will help to find a single profile easily.

Some more advanced development can be done in this project. Using a matching learning technology this project can give a suggestion for new user to how to create a resume. Giving a recommendation based on user rating can be done using scoring algorithm and methine learning library like Tenser Flow.

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Appendices

Appendix A: Project Reflection

Developing this project was a great experience. I enjoy the challenge to implement overall application system architecture. For the routing of the web application I did a test-driven development approach TDD. Every time people hit a route it will work as it expected to.

Appendix B: Related Diagrams

Figure A1 is showing a Homepage of CvGen website

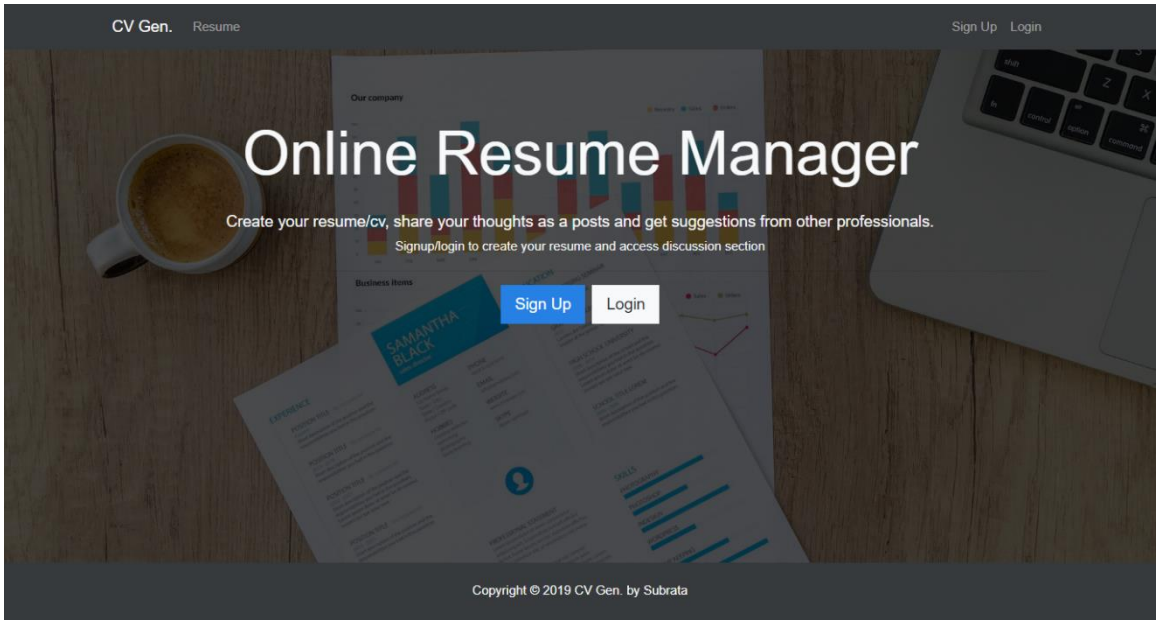
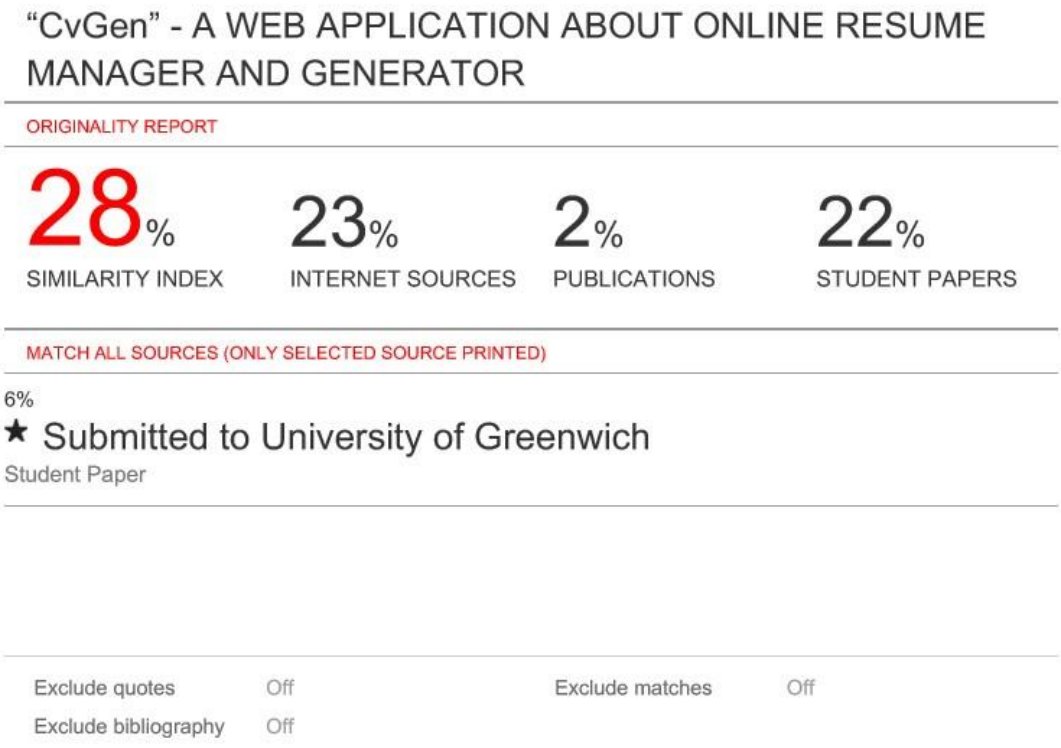


Figure A1 Home page of “CvGen”

Plagiarism Report



"CvGen" - A WEB APPLICATION ABOUT ONLINE RESUME MANAGER AND GENERATOR

ORIGINALITY REPORT

28%	23%	2%	22%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

6%

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Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		