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# **CV builder and Management System**

**Bachelor of Science in Computer Science**

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# Abstract

Systems which are just completing their work or providing a solution are very popular and effective. To survive and progress at the same time is the vital part of any system, that's why CV Builder and Management system will be giving some good results. Information is key and power in the world right now, every want to know the new opportunities and wanted to get into right away. System is providing the coming students and users the opportunity to get start right way. Users will be able to register for new jobs; internships and the administration of companies and universities will also be happy to get more information on to get more right candidates for their jobs.



# Acknowledgments

In the name of Allah, the most beneficent the most forgiving the most generous all praises to Allah for giving us the strength to complete this project on time. I am very thankful and express my profound gratefulness to my supervisor Dr. Sabina Akhtar for her supervision, constructive suggestions and giving me a chance to work with her.

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# Chapter 1

## Introduction

### 1.1 Project Background/Overview

Curriculum vitae commonly used as CV [1]. It is basic utility for our individuals and organizations. Organizations use it to judge and categorize the people based on their requirements of the job. For efficiency web-based system are a far better choice to have in an organization. Web based systems are commonly very popular because of their ease of access and multiplatform support. Everyone can access it from their desktop computer, laptops or even mobiles. With the help of this system, the flow of information is very controlled and automated. Decision making in terms of hiring of employee, trainee or interns gets easier.

Collaboration improved between the teams. It is a very hard task to go through all the many CVs an organization receives on daily basis. That's why a web-based CV management [2] system is good solution for that in which users will enter their required information in fields. Administrator can view the CVs and can search the required person from the database.

Administrators or Human resource people of companies receive hundreds of CVs on daily basis and it is not an easy job for these people to go through that much of information. If all the CVs are being sent to different people on different email addresses, then much information get scattered and it is not easy to find any person. This project goes under the department of human resource, they not only take the information regarding the career, they also go for the information related to personal details for example address, data of birth and emergency contact numbers.

Whenever there is new job opened or vacancy available at any company, they make it public and post onto their platform about the job and its requirement specifications. That's where these systems came into play and businesses use these systems to simplify their complicated hiring processes into simple ones. Recruiting or employing are the most important part of any business or companies, department human resource's main task includes the recruitment. Businesses use the recruitment software to help their teams.

## 1.2 Problem Description

Web based CV management system is an automated system where student or user enters his/her details or specific requirements which are asked. User can edit or view his/her details. This system develops a generalized CV for administrator use in result. Administrator can search the CVs based on information provided by user himself.

With the increasing workload in our organizations, still lot of business are using the old methods of paper, people who needs to give the interview, they bring their hard copies of CV's and resume. That's a lot extra work just because of paper. That is why an efficient CV management system is necessary. Without a management system, there is no chance of keeping with the pace of the world. An efficient management system will not only keep our system fast and secure; it would help us in searching the best candidate for our requirements. This would increase the speed, accuracy and efficiency of the whole department.

## 1.3 Proposed Methodology:

To obtain these above-mentioned goals, we propose the development of Web based CV management system on ASP.NET [3]. This system will be like a content-based system where Administrator will be having a Login module. Administrator can access all the CVs, can search based on information given. Admin can add new announcement, whenever there is new announcement, it will be added into a panel where students will be able to see. User/Student can enter or edit his/her details, view his/her CV and apply for internship. All the information will be stored in Microsoft SQL Server database. Information gathering will be on text fields which will be directly stored into database.

## 1.4 Project Objective

The proposed system is aiming to develop generalized CV, based on input from users on text fields. All the information will be stored in database. After all the information collected, CV will be developed that user can download and the same goes for admin, as they can also view and download this CV. Announcements will be added by admin for internships. Students can apply on internships. Further details about the project will be discussed in the afterward sections.

## 1.5 Project Scope

The proposed system will be purely web-based and it will only cover some actions which are: Login for Admin, Admin adding announcements, Student giving his/her details for CV and CV generation, Student can apply on internship, Admin can see the CV and CV searching for Admin.

## Chapter 2

# Literature Review

When someone talks about professional life or career, we instantly go for CV or resume of that person. In Latin, CV is “Course of life.”. It is total and overall anyone’s life of work summed up on a paper. It not only includes your education it also contains your experience over the course of time. In order to understand, why it is necessary to have CV builders and management system, first, CV builder is necessary for ease and for the faster work environments. You just need to put up some of details and your CV is ready. Second, management systems are important now days, you get all the data, who is applying, for what post and you can easily see the potential of the people who are applying for the post.

Zety.com provides a CV maker which is very elegant. You get to work with a lot of templates, and they claim that CV will be created in 5 mins on their platform. Their platform is great, they provide help with your work if you need any. You can get to see many CV examples for your reference but only problem is that you also need to pay them for their services.

Dayjob.com also provides a CV maker, you can see in the figure 2.1, which can get the work done too but their templates are not very elegant, their templates are very simple. They put out 4 steps for CV creation. First user will be asked to select a design, then user will enter their details and preview the CV, and, in the end, user will be able to download the CV.

The screenshot shows the DayJob.com homepage. At the top, there is a navigation bar with links for Home, CV Templates, Cover Letter Examples, CV Builder, and Free CV review. A search bar is also present. Below the navigation bar, the main heading is "CV BUILDER". A sub-heading reads "It's the CV that's never started that takes the longest to finish." A red banner states "Use our CV Builder - it's totally FREE!". Below this, a paragraph describes the builder's capabilities. The section "THE SIMPLE STEPS TO USING OUR CV BUILDER" lists four steps: 1. Choose a Template (From our designs), 2. Enter your details (Use 1000's of our pre-written examples), 3. Preview (View your work and edit if necessary), and 4. Download (Download, Print or Email) with a note to activate Windows. A blue button at the bottom says "GET STARTED - Click here to start using our CV Builder".

Figure 2.1: DayJob.com Homepage

Now here is system for CV creation; cvmaker.uk, you can see in figure 2.2. In this system, you can create your CV without creating an account. You need to just click on “Create your CV” button and it will redirect you to another page, where first it will take your details and experience and then will let you select the template. You can download your CV in 15 mins.

The screenshot shows the cvmaker.com homepage. The header includes the logo "cvmaker" and navigation links for Create CV, CV templates, CV Building Service, Contact, and Log In. The main heading is "Create your professional CV online with CV maker". Below this, a sub-heading reads "Create your very own professional CV and download it within 15 minutes." A large blue button says "Create your CV". Below the button, a statistic states "You'll be 65% more likely to get a job". A white box contains a star icon and the text "Quick and easy cv builder" followed by a paragraph describing the service: "With our online CV maker, it is simple for anyone to quickly create a professional CV. Enter your personal details and begin filling out your CV content. Finally, choose one of our 36 available CV layouts, and download your CV."

Figure 2.2: Cvmaker.com Homepage

Reed.co.uk being shown in figure 2.3 provide CV development options which can be completed in four simple steps. It includes personal details, work experience, qualifications and additional information. You can also download the CV in word format. This system is used by the United

Kingdom audience as it is specifically designed for people applying for jobs in United Kingdom.

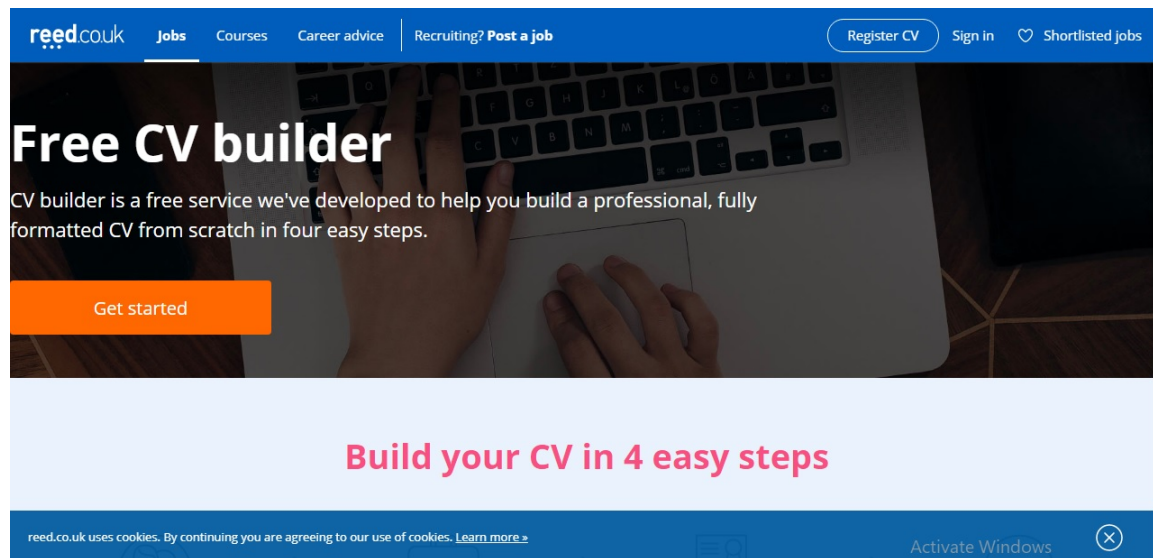


Figure 2.3: reed.co.uk Homepage

In cvonline.me being show in figure 2.4, first you have to create an account and login then you can access their system of CV maker. This CV development system got many eye-catching templates which we can use. But this system is paid, still you can use some of it's features during trial period.

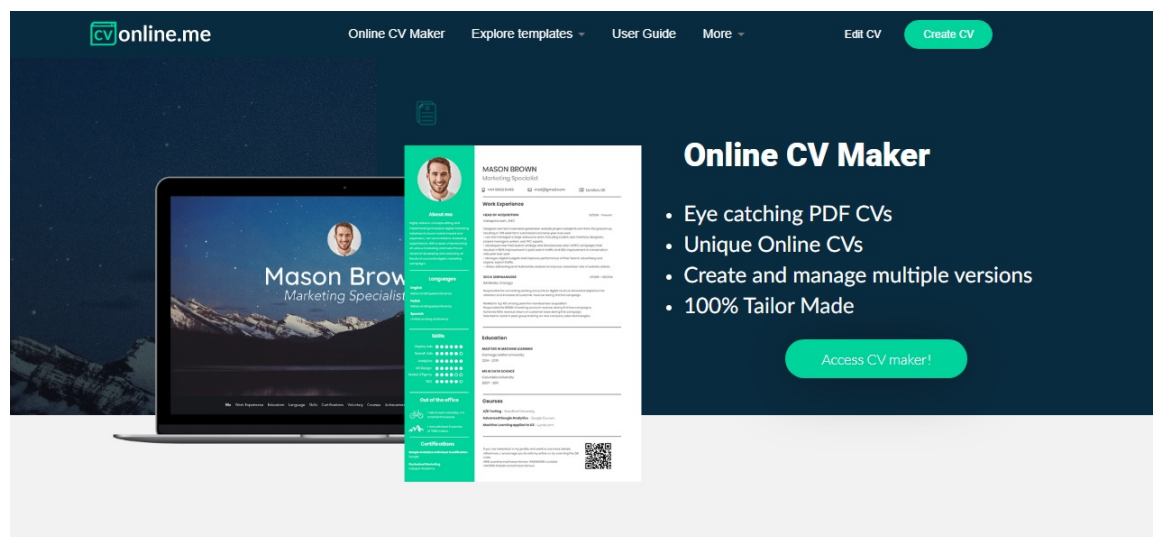


Figure 2.4: cvonline.me Homepage

The system which S&P Global is providing to its users is one of the best. They developed a very customized system for their own company, in which hiring of new employees gets very easy process. People can easily look into their website and can find job based on their location, division of work or by job function.

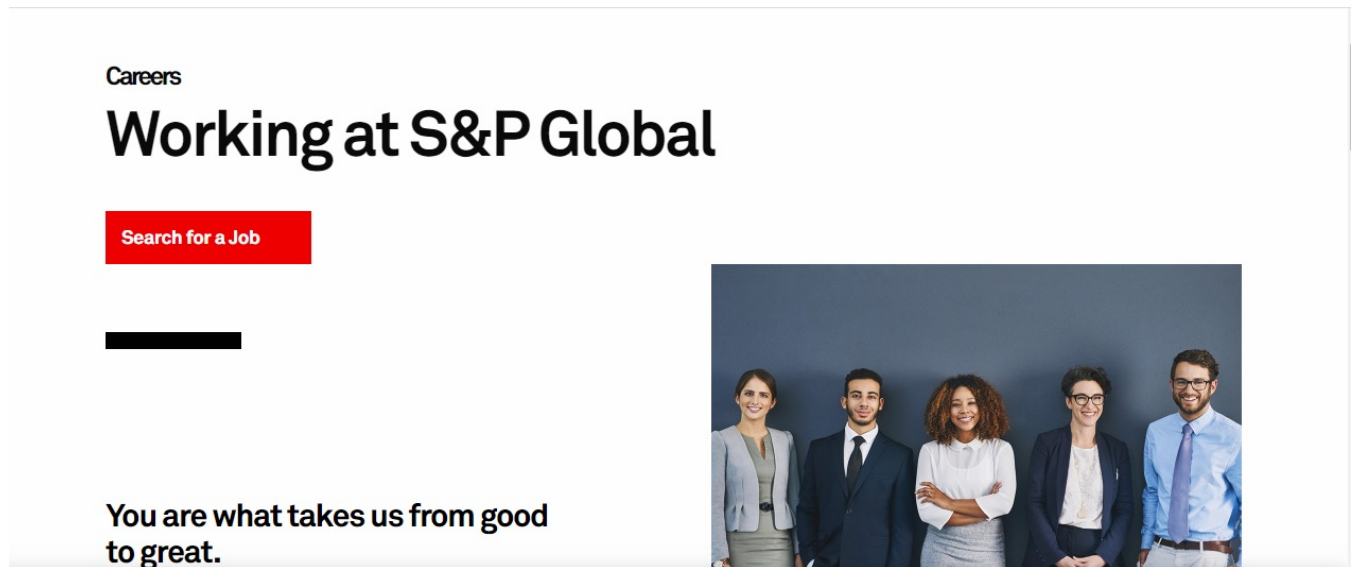


Figure 2.5: S&P Global careers Homepage

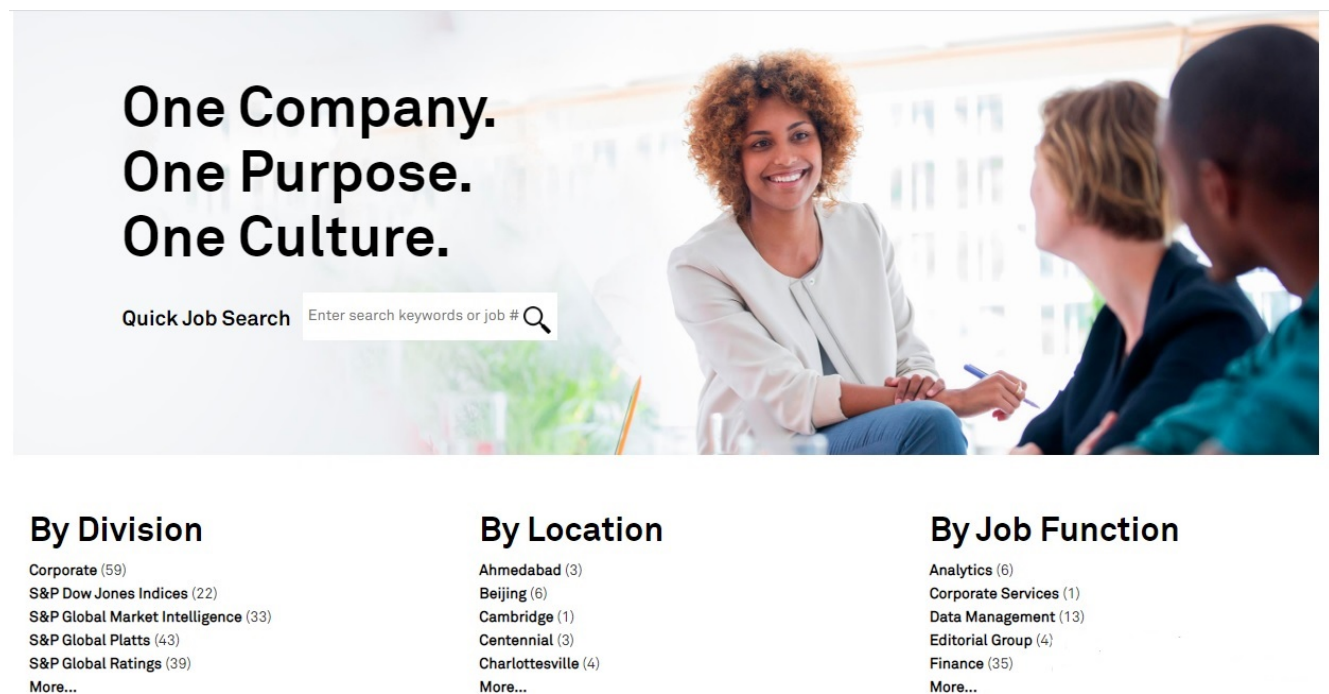


Figure 2.6: Job Search Module



## Chapter 3

# Requirement Specifications

The proposed system will be purely web-based system as there is no need to have any mobile application for this sort of work. This system will only be creating CV for user, a management system for internship and data manipulation based on GPA or age. A database which will be storing all the details or information being inserted by students or users and then admin can search or select different students based on GPA.

### 3.1 Existing System

All the existing systems which are available online are only creating CV but they are all paid systems. You cannot download the CV unless you paid them for the services they provided to you. Second, there is no internship management system in place where student can check if there is any new internship available.

### 3.2 Requirement Specifications

In the following sections, we will provide details regarding the specifications of the requirements, divided into functional and non-functional requirements.

#### 3.2.1 Functional Requirements

There are two main users of the system, a normal end user(student) that may use the system to create CV and can see the available internships. The other one will be termed as “Admin” from here onwards, who will be able to see all the details input by student and will be able to see the CV and add new announcements for internships.

##### 3.2.1.1 User Requirements: User:

Following will be the main functionality provided to the user by the working system:

- Create CV

- Can download or view CV once in a single session.
- Apply for Internship

### 3.2.1.2 User Requirements: Admin:

Following will be the main functionality provided to the admin by the working system.

- Login Module
- Create new admin.
- Search CVs based on name and gpa
- Add new announcements

### 3.2.2 Non Functional Requirements

Following are the main non-functional requirements of the system:

- **Performance:** The system should be able to accurately identify the persons in the database and the corresponding action.
- **Reliability:** The system should accurately create new CV for users.
- **Security:** The system should not be able to view the CV of other users.
- **Availability:** The availability of the system depends on internet connection as it is web-based system.
- **Maintenance:** Any maintenance will be carried out by system engineers when required.

### 3.2.3 User Categories:

There are two main types of users, as explained above and shown in the figure 3.1, which are “Admin” and a normal end user which will be student.

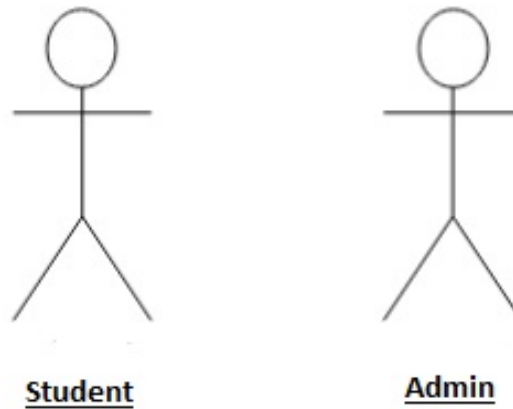


Figure 3.1: Types of Users in the system

### 3.2.4 Use Cases:

The top use cases of the system are:

- Login and add new admin account: Login is used for admin to view it's panel and admin can create new admin accounts.
- View and download CVs: To view and download CVs submitted by students/users.
- Search CVs: CVs can be search by names and grades
- Add new opportunities: To add new opportunities for the students, Existing opportunities can also be edited and deleted.
- Input data for CV: All the information being input by students themselves, information include personal, education, work experience, skills and certification information.
- Apply for opportunities: Students can apply on opportunities which are available after submitting information.

Use cases diagrams are an effective representation of how the users interact with the System:  
Here is its figure 3.2:



Figure 3.2: Overview Use case of system

# Chapter 4

## Design

### 4.1 System Architecture

The proposed system will have two types of users, the simple end user, who are going to use it to create CV and use an internship system. The “Admin” can do a lot more with the system, check the CVs in the database, view customized lists of the students on specific requirements. This system will be web-based system which will include scripting and graphics, HTML and CSS which are the fundamental of building Web Applications and Web pages. HTML supplies the structure of the page, CSS describes the Web pages presentation, involving layout, colors, and fonts. It enables the designer to adjust the presentation to various types of devices, like small or large screens, or printers.

### 4.2 Design Constraints

In the following sections, we will discuss some of the design constraints that are being considered during the development of this system. These constraints concern the software, hardware and development environment requirements that impact the outcome of the project.

- **Software Requirements** Computer with windows operating systems
- **Development Environment Requirements** Visual Studio Code
- **Programming Language** C#

### 4.3 Design Methodology

Design methodology which will be used in this project is waterfall method. Because this method is very structured and linear and to follow this approach you should have all the elements of your project listed with you.

## 4.4 High Level Design

### Conceptual

First, we will have a login module as we have two different type of users of the system. Student will have a different functionality, he can select templates and create CV. Admin will have different functionality, he can view the CVs and search CVs on the name and grades. Here in figure 4.1, a conceptual diagram of system explains, first browser will send the request to controller then information will be gathered from model and with the help of views, desired result will be shown onto the browser.

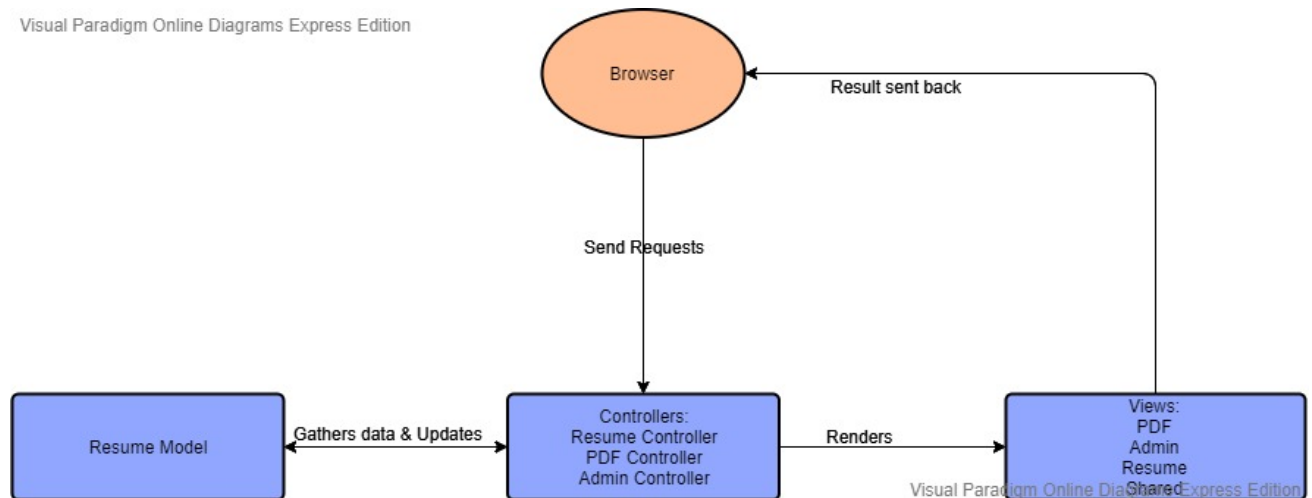


Figure 4.1: Inner system interaction

## Process

As we have two main users, it will be very different for both. User (Student) can enter information, select template, generate the CV and will apply on internship. On the other hand, Admin can login, see details and CVs of students, search CVs by name and grade.

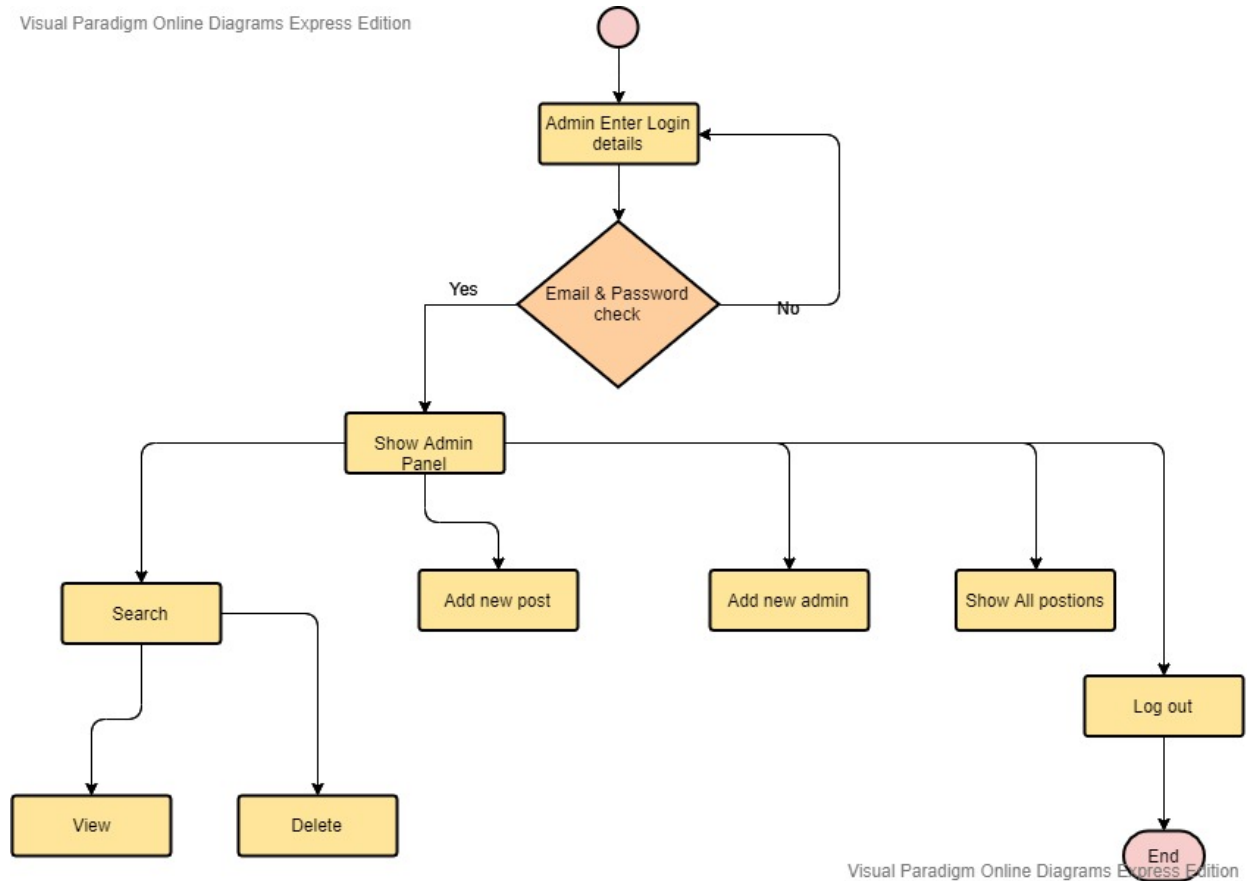
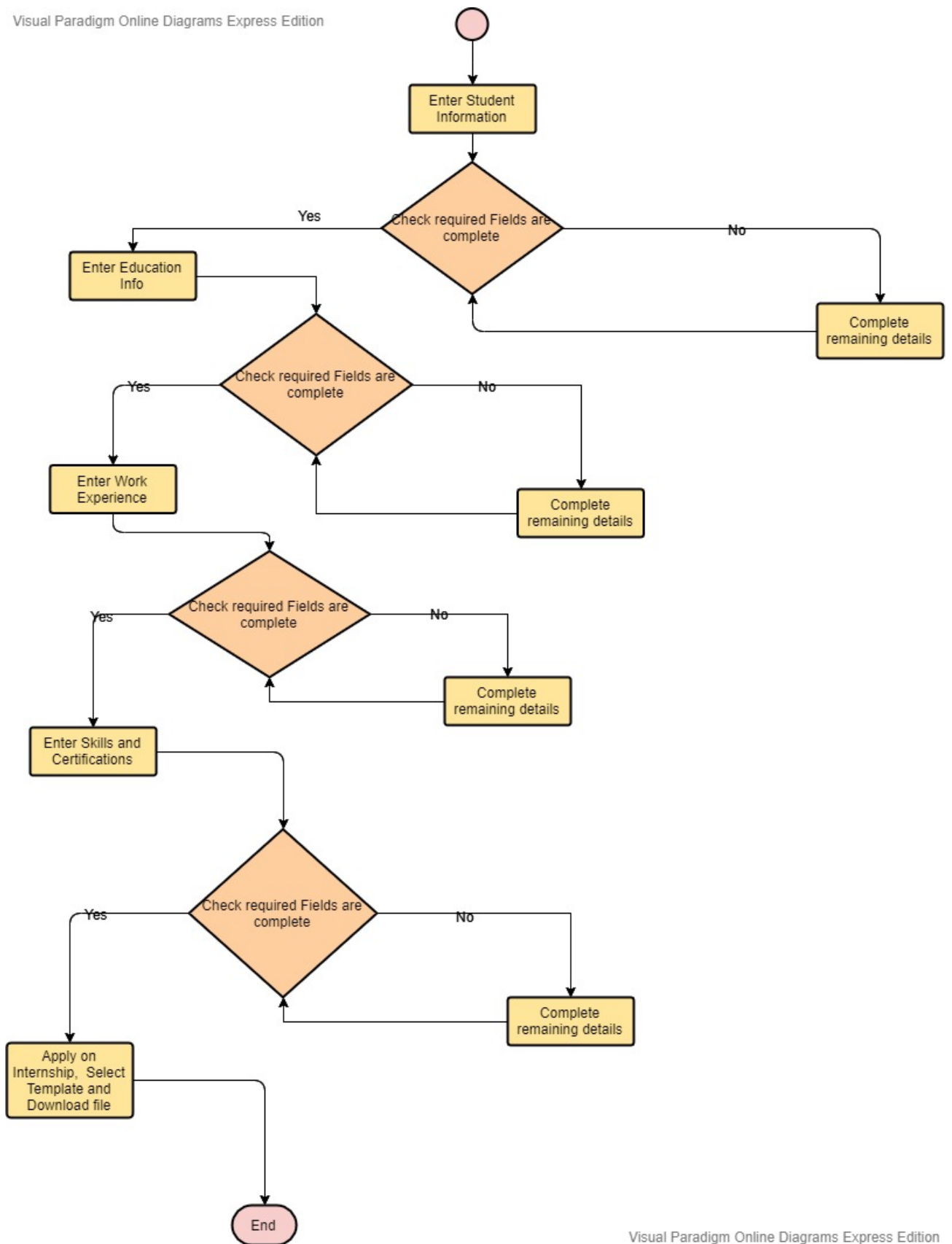


Figure 4.2: Admin interaction workflow

Visual Paradigm Online Diagrams Express Edition



Visual Paradigm Online Diagrams Express Edition

Figure 4.3: User (Student) interaction workflow



## Security

For the security purposes, a module of login is implemented. Student can access limited functionality without login, and he/she can create CV. For User (Student) access is very limited and can only access specific actions in the application and Admin access is higher than the student and admin can view the CVs created by students against specific opportunities.

## 4.5 Database Design

All the information will be stored in Microsoft SQL Server database. Information gathering will be on text fields which will be directly stored into database. Here is figure 4.4 which shows database:

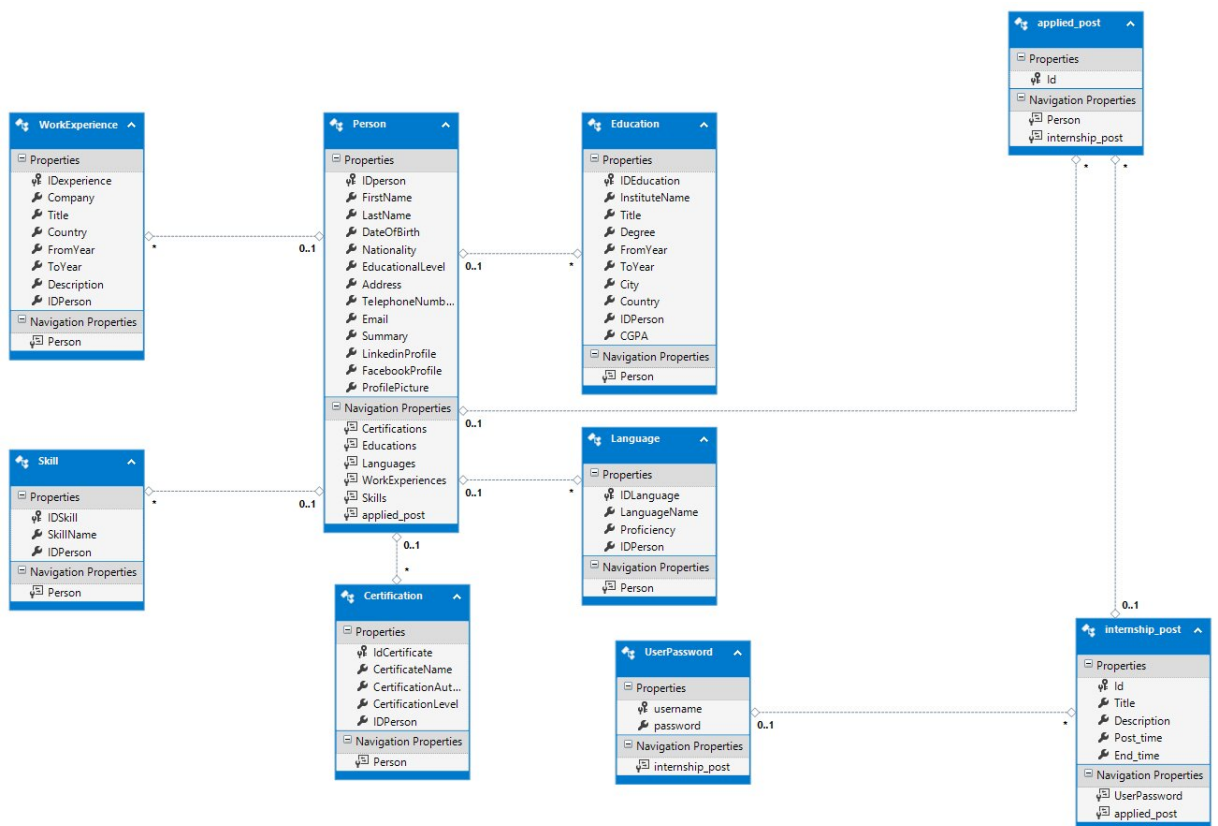


Figure 4.4: Entity Relationship

## 4.6 GUI Design

Graphical User Interface is being shown in figure 4.5

The screenshot shows the 'PERSONAL INFORMATION' section of a 'RESUME BUILDER WEBSITE'. The page is titled 'STEP 1 OF 6'. At the top, there is a dark navigation bar with 'RESUME BUILDER WEBSITE' on the left and a green 'Login as Admin' button on the right. The main content area is white and contains the following form elements:

- Upload Profile Picture:** A text input field with a 'Browse...' button next to it.
- First Name:** A text input field with the placeholder text 'First Name'.
- Last Name:** A text input field with the placeholder text 'Last Name'.
- Date Of Birth:** A text input field with the placeholder text 'mm/dd/yyyy'.
- Nationality:** A dropdown menu with 'Pakistan' selected and a downward arrow.
- Contact Information:** A text input field containing the number '923331234567'.

Figure 4.5: User (Student) interface

# Chapter 5

## System Implementation

In this chapter we will discuss the detail of implementation of the web application. We will thoroughly discuss the system internal components and its architecture

### 5.1 System Architecture

Under this section, we will methodically discuss the system architecture and how the internal components work with each other

#### 5.1.1 Tools and Technologies used:

- **Microsoft visual studio 2017:** We have used the integrated development environment of Microsoft for our web application. The web application has been developed in C#.
- **.NET Framework 4.6.1:** Project is being development in Microsoft .NET and framework version is 4.6.1.
- **ASP.NET MVC 5:** The architectural pattern we are using in our project is MVC 5 [4], it gives more control over the code and integration of other technologies gets very easy.
- **Bootstrap:** We are using bootstrap for our front end of project. It makes our site responsive and mobile friendly.
- **Entity framework:** We are using entity framework by Microsoft to connect the database and maintain communication.
- **jQuery:** jQuery is helping us in applying css and event handling for the web application.
- **LINQ:** This is another Microsoft component which we are using to add querying abilities and retrieve data from database or any other sources.

- **Automapper:** It is a simple library which we are using for classes to map them. With the help of this library we can map two classes with each other easily.
- **Razor:** In ASP.NET Razor [5] pages play an important role, common patterns are very easy to design. Razor [6] pages are also very lightweight, flexible and give a lot of control to the developers.
- **C#:** It is a general-purpose and versatile programming language which we are using in our project for server-side programming.

### 5.1.2 Methodology and Algorithmic Development:

This section represents the technical and backend details of the system, an overview of the whole system will be provided in this section. ASP.NET Model View Controller is the architecture on which system depends and it constitutes of three components: model, views and controller. Model is being developed by the database and database is saved in our project in App Data. First, the model is like an image of database and it only have to deal with database, it guides the system that what is stored in the database. Model is generated from database and in this project “Resume” is our model. An overview of model “Resume” is shown in figure 5.1

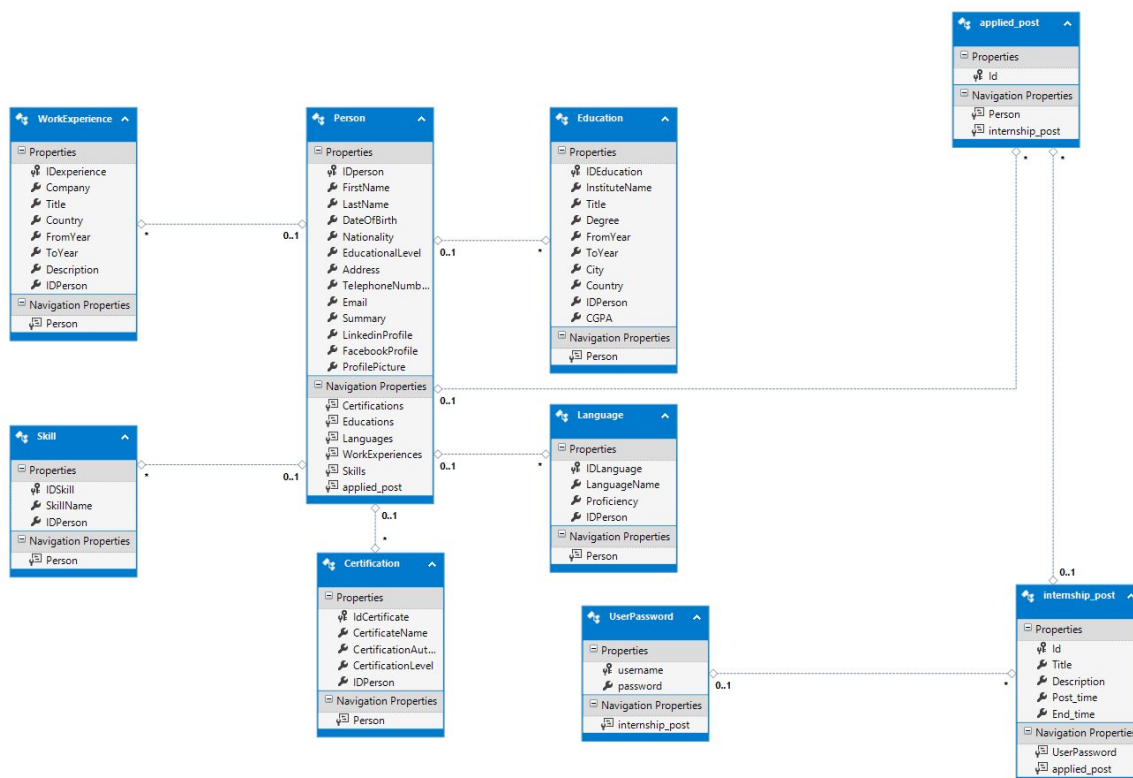


Figure 5.1: Entity Relationship

Now, after model let's move towards the views. In simple words, views are the component of the system, which are specifically designed for all the users of system. Views are actually what

users view on the screen and interacting with them. Views consists of total four folders named Admin, PDF, Resume and Shared. These all consists of their respective pages, for example let's talk about Admin views. Admin consists of total 5 pages. These all pages are developed by Razor, it has a different file name than HTML. Its name has a different suffix .cshtml. Project's pages are developed this way, because of their unique directive @page, it handles the requests directly. Admin folder contains AddAdmin, AdminPanel, AllPosts, CreatePost and Login views. In just the same way, other folder consists of their respective views. Here is login view of Admin being shown in figure 5.2

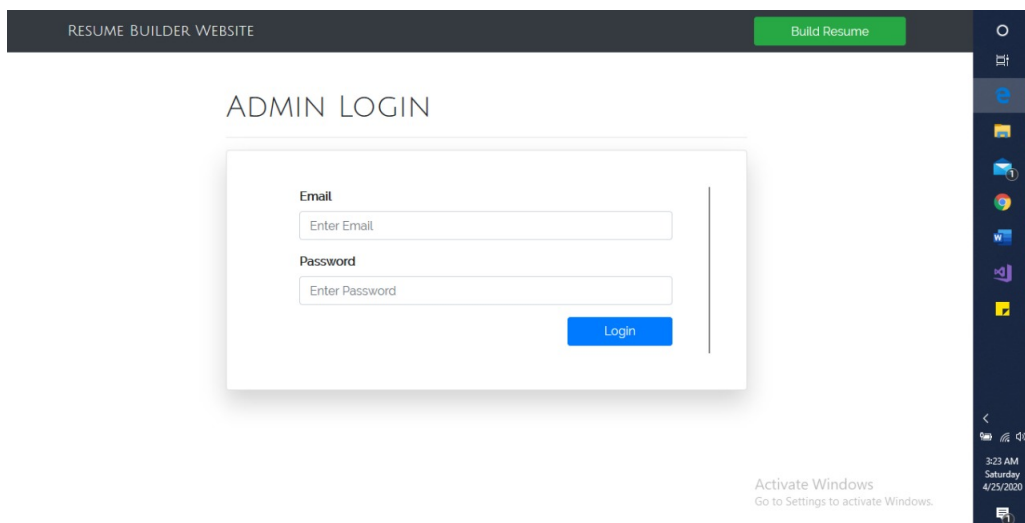


Figure 5.2: Login View of Admin

Web application consists of another folder named ViewModel, Model only connect you with the database and share the data while ViewModel is the detailing in the backend that how data should be viewed by user, how information will look like on the screen. Let's connect all of this by an example of a student who is entering his/her details for CV/Resume, he/she did not write anything into his/her first name field, There will be an error message shown onto the screen to write his/her first name. ViewModel is kind of error handler for the whole project and it helps the model to be more user friendly. For ViewModel and Model to map their fields, we used an AutoMapper library here, as there are same name fields in both Model and View model. All the user validations are being done in ViewModel. There are total three controllers in web application which are named as AdminController, PDFController and ResumeController. Controllers basically act as intermediary between Model and views. Controller's main work or task is to overview that the request data is valid or not and which view should be returned. Now complete overview of class diagram is shown in figure 5.3 and figure 5.4

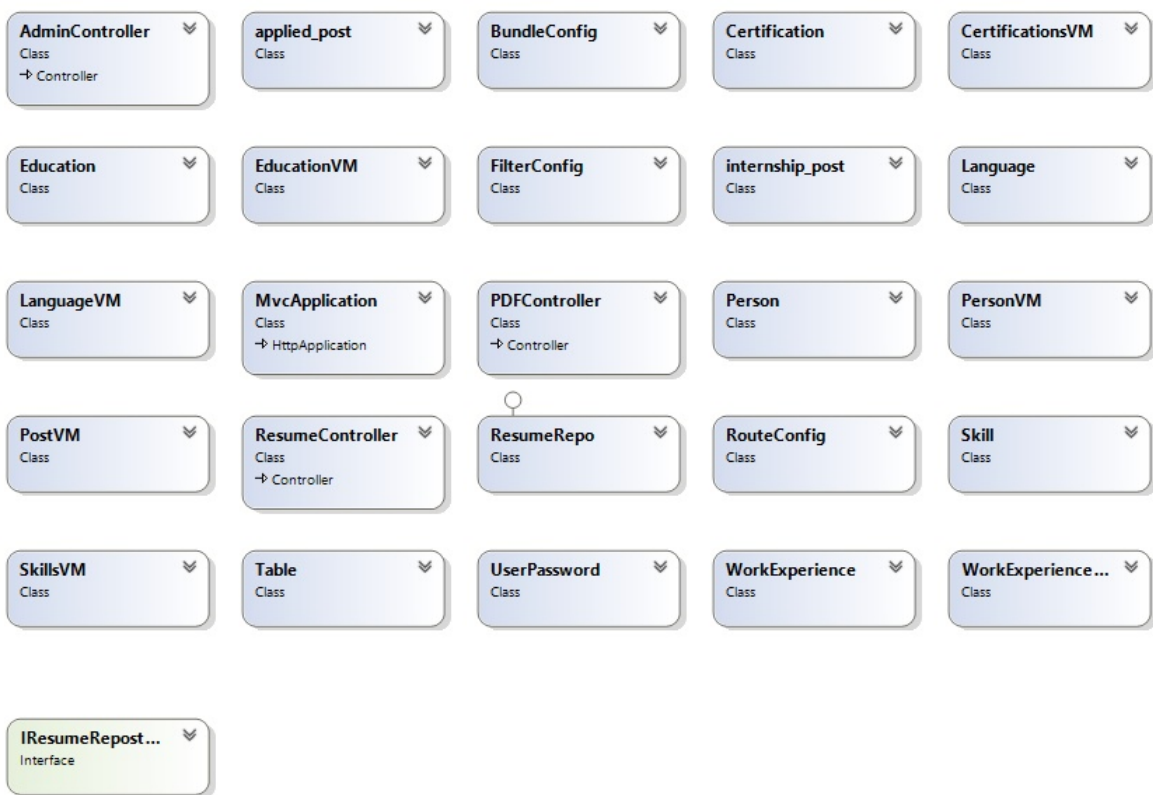


Figure 5.3: Low level Class diagram

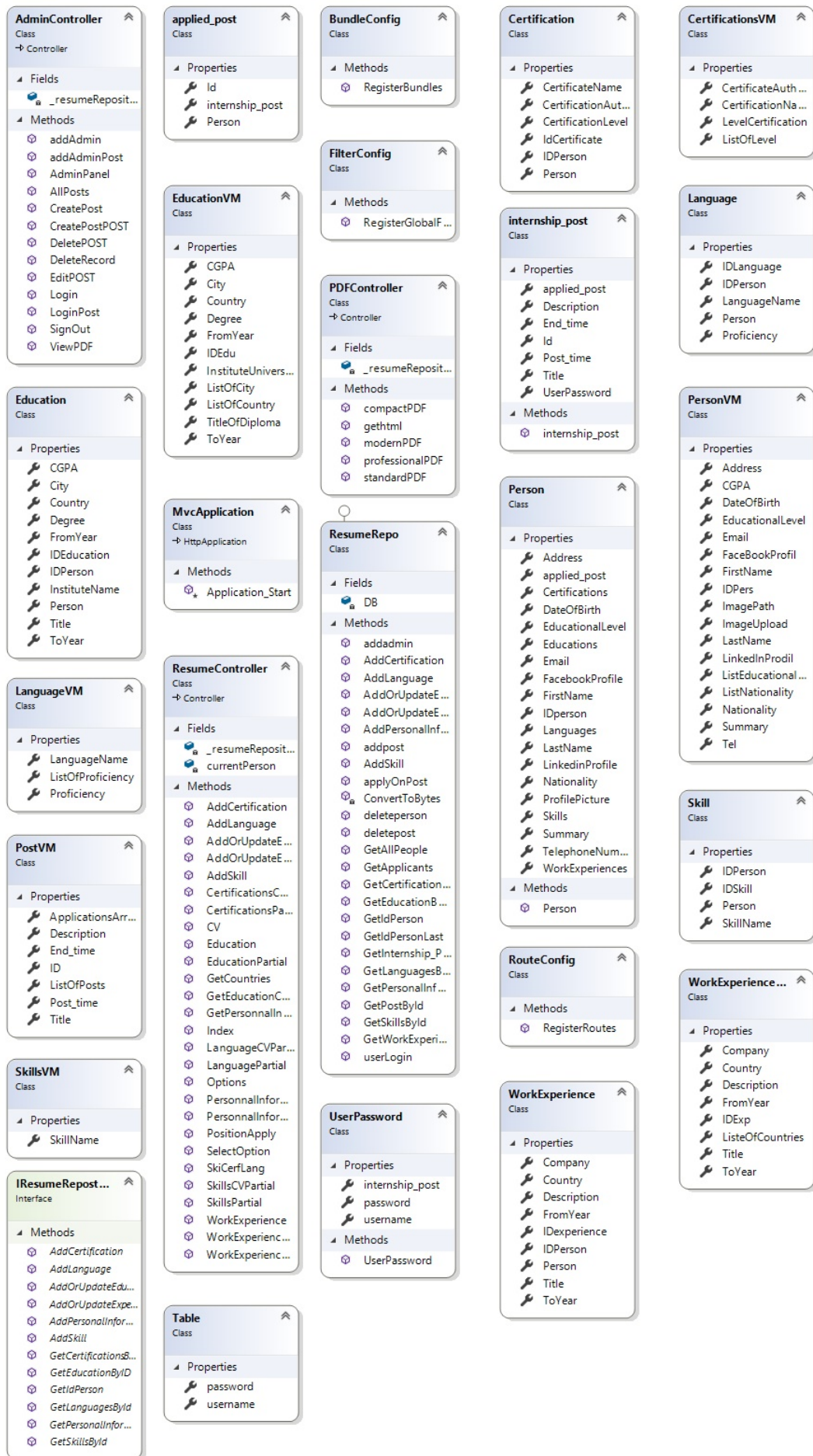


Figure 5.4: High level Class diagram

Project contains repository folder as well; Repository is the addition of folder which we did into architecture by analyzing our case. According to the architecture, Database class should have been accessed at upper levels that is Views, ViewModel and controllers. But for its security and for ease of use, we added a mediatory class. Now all the database functions are in Repository and this is the face of database. Because of Repo, there will be not many repetitions in the code. This is solving all our problems and issues related to functions of create, remove, update and delete.



## Chapter 6

# System Testing and Evaluation

In that competitive world and this fast-growing environment merely the creation of web application is not enough. Web application should be on the merits of fast growing economic and technological principles. To maintain and cope with this merit, you have to thoroughly process and test your web application. Any minor bug could be the end of your business process or functions. So altogether, system testing is very important for any project, it is not just for IT sector projects, it is major part of all the project nowadays. Whenever a company or department start a new project, there is always a testing teams and their sole purpose is to test the project and there are multiple techniques which are used for testing purposes.

Firstly, Graphical User Interface Testing is about the designing process of website. To test that user is able to see the graphics properly of website properly or not. Source code cannot be visible to the user on graphics user interface. The main focus in this type of testing is on the structure, fonts and images of the site. During the graphical user interface testing necessary components are being checked and marked by team lead. Error messages are being displayed for the right places. Cursor's tip is being checked again and again for all the buttons and fields. All the pages being tested and checked for any spell errors and scroll bar is being checked as errors can come onto the screen when scroll bar can be moved.

Software Performance Testing, it is for the system to check if system can perform well under maximum load and will it be responsive or not. In the project, Performance testing was live from the start, as more data and information was entered again and again into the database, many times it was debug for the simple code checking. System's reliability and resource usage was checked again and again during its development and implementation stage.

Compatibility testing, it is the part of the project, because resume/CV printing is a part of module. CV/resume. Compatibility testing mostly considered as browser compatibility, mobile browsing and printing options.

For user validation, we separately created another folder which have classes named as ViewModel. In ViewModel, all the necessary validations are being performed. For all the pages of web app,

validations and error checking is done. From security point of view, the data we stored in App Data, application cannot even itself access it, this is the part of MVC [7]. Application cannot see the database and it cannot query database through application. No one can use sql injection in the project, as we are not using SQL query. When user save his/her picture for CV/resume purposes, it always saved in the resources folder as we want the application to see the images otherwise application will not be able to create CV properly. Here is the figure 6.1 from system of user validation:

The screenshot shows a web application interface for a resume builder. At the top, there is a dark navigation bar with the text 'RESUME BUILDER WEBSITE' on the left and a green button labeled 'Login as Admin' on the right. Below the navigation bar, the main content area is titled 'PERSONAL INFORMATION' with a subtitle 'STEP 1 OF 6'. The form contains several input fields and a dropdown menu. The 'Upload Profile Picture' section has a 'Browse...' button. The 'First Name' and 'Last Name' fields are highlighted with red boxes, indicating they are required. The 'Nationality' dropdown menu is set to 'Pakistan'. The 'Contact Information' section has a phone number field containing '923331234567'. The 'Email' section has an 'Email Address' field. The 'Address' field is empty. A small error message 'This is a required field' is displayed next to the 'First Name' field. In the bottom right corner, there is a watermark for 'Activate Windows' with the text 'Go to Settings to activate Windows.'

Figure 6.1: Validation and error handling

## **Chapter 7**

### **Conclusions**

This thesis presents the overall lifecycle of CV Builder and Management system. It starts as we have seen that there are some related software or web apps available in the market, but our main concerns were to provide a system to university students and administration where both parties can make this system useful for themselves. In the CV Builder phase, firstly students present their information to the application and select the template which in return give them generalized CV and now this CV and information is both visible to the administration. Students can also see new opportunities which are being posted by administration. As mentioned earlier, Admins got high power here, they can view the data given by students, they can add new posts which are to be seen by students or other users.

# References

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