Independent University, Bangladesh

Mobile Application Development of "Your Lawyer" at

Aveneur Solutions

An undergraduate internship report submitted by

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Under the guidance of

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In consideration of the partial fulfillment of the requirement for the degree of

BACHELOR OF SCIENCE in Computer Science

Department of Computer Science and Engineering

June 9, 2021

Attestation

I understand the nature of plagiarism, and I am aware of the University's policy on this. I certify that this is an original work by me during. However, following internationally accepted academic guideline of using others written work and / or software (in the form of code) in my University project is properly cited if used in any part of this work.

Signature: Signature:

Name: ---------   Name: -----------

Acknowledgement

First of all, I would like to thank almighty Allah, for his grace in accomplishing my internship report timely.

I would like to express my gratitude to the Faculty of Computer Science and Engineering department to keep internship credit in the curriculum of the graduation program and give me a scope of tasting the flavor of industry-oriented tasks and the field of work with my interest. I would like to thank specially and heartily to my supervisor, Mrs. Sabrina Alam, Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh, who encouraged and directed me with her continuous guidance, invaluable instructions, stimulating suggestions and thoughtful advice during pursuing this internship and preparation of this report.

I am also thankful my supervisor Ashiqur Rahman, stack Developer, Aveneur Solution. I feel proud and gratified that I was always held the under supervision of the Mobile App Development team and got advices directly from Ashiqur Rahman.

I am also indebted to the employees of Software development team and also specially Wasif M.Chowdhury sir, CEO, Aveneur Solutions who gave me immense support while working. Moreover, to prepare this report and other documentation regarding Internship Report and else I would show appreciation to all the members of TehTrioz team, who always advised me and helped me through hands and pens. Moreover, I must mention the wonderful working environment and group commitment of this organization that has enabled me to deal with a lot of things.

Abstract

This report shown about the activity of mobile app developed by Aveneur Solution and my contributions to their project. The project stated with different categories, firstly Login and Register part, this part done my me. If person don't register then he should register, for register he needs to input his/her number and password then otp send to the number then he input otp if otp match then he easily signup the lawyer apps. Then he shows the interface of the mobile app. First page customer can easily find a district wise lawyer. If he has any question, he can easily ask. And also, everyday customer gets law tips. And also, our top-class lawyer is available for 24/7. This report mainly has been documented based on my overall work in the company as an intern.

Letter of Transmittal

5th January, 2021

Mrs. Sabrina Alam

Lecturer,

Department of Computer Science & Engineering,

School of Engineering & Computer Science,

Independent University, Bangladesh

Subject: Submission of Internship Report for the completion of Graduation.

Dear Madam,

I am hereby submitting my Internship Report, which is a part of the BSc. Program in Computer

Science and Engineering curriculum. It is a great achievement to work under your active

supervision. This report is based on, "Internship at Avenuer Solutions". I have got the

opportunity to work at Avenuer Solutions for three months, under the supervision of Ashiqur Rahman, Software Developer, Avenuer Solutions.

This internship has given me both academic and practical exposures. The internship has given me the opportunity to develop a network with the corporate environment. I tried to make this report as much informative as possible with the experience I have gained during my internship period. In order to prepare a well-organized internship report, I have followed the guidelines and described the required fields with sufficient details. I, however sincerely believe that this report will serve the purpose of my internship program.

I shall be highly obliged if you are kind enough to receive this report and provide your valuable judgment. It would be my immense pleasure if you find this report useful and informative to have an apparent perspective on the issue.

Sincerely Yours,
Mohammad Azizul Haq Rabbi
ID#1610049
Department of Computer Science
School of Computer Science and Engineering,
Independent University, Bangladesh

Table of Contents

Chapter 7

Chapter 8

Chapter 9

Chapter 1

Introduction

Bangladesh is a country of population over 150 million with literacy rate of more than 50 percent. In the last two decades, the country has fetched remarkable economic progress with GDP growth rate of more than 5 per cent. It is argued that there is a tremendous prospect for the country to leapfrog into industrialized economy through the development of the IT sector. Because Bangladesh has high potential to become a huge source of skilled human resources with its cultural adoption capability, English language skills, analytical capability and a large number of educated and energetic youths with bright aptitude, good quality and natural ability in software development. A recent study shows that the wage rate of IT professionals in Bangladesh is almost half of the Indian IT professionals. However, the IT sector has not yet been growing as much as expected. The country obtained US$ 33 million by exporting software in 2009. Although the export earnings from the software sector increased by eight million dollars in 2009, compared to 2008, the share of software export is only 0.2 per cent of the country's total export (BASIS 2010). The IT sector mainly concentrates in Dhaka, the capital city of Bangladesh. There is only one IT clusters namely the IT incubator center, which was established in November 2002, where around 50 IT firms are now doing business.

Software and IT service industry in Bangladesh has crossed a long road over the last few decades. It has matured. The industry no more remains at the sideline. It joined the mainstream. Not only the industry is contributing significantly in the national income, but also it has been playing very crucial role in creating high quality employment for a sizable portion of young graduates of the country.

1.1 Company profile:

Aveneur Solutions is an aesthetic-first web design, digital content and software development company - serving businesses both large and small. We are a creative IT company that provides a diverse set of services tailored to your specific needs. We also promote innovation, develop ideas into reality and provide opportunities for businesses to grow. Their main services are to set up and maintain business dashboards, data mining, and reporting. They also provide the full range of consultancy and implementation of Cloud Computing Architecture by designing highly fault-tolerant, scalable, secured, compliant, and cost-effective solution according to need.

1.1.1 Vision, mission &objective:

Mission

Aveneur Solutions mission is to provide the highest-grade, bespoke web, application, software, and technological solutions to its valued client base in an affordable and time-efficient manner. They provide services to all types of companies from solo bloggers to large enterprises.

Vision

We are on a journey to expand and grow into a ubiquitously trusted name in the fields of digital design and technology. In time, Aveneur Solutions shall span the globe to provide its digital development and technology transfer services in major markets of the world over, such as the United Kingdom, Singapore and the United States. The core values of the company shall always be integrity and social responsibility.

Objective

Top products, top performance, and top service.

Aveneur Solutions customers' success is our declared goal and utmost concern. Therefore, they make great demands on every detail of our work in all sections of our services.

They offer our customers

- high-performance, user-friendly software solutions
- first-class, proven hardware products and
- comprehensive individual services

Treat each other with responsibility and respect.

Our everyday work both within and outside the company is characterized by mutual respect. The resulting positive attitude is the basis for all issues related to personnel management – at all hierarchical levels.

We expect and encourage

- a high level of self-motivation,
- constructive criticism,
- individual responsibility,
- a pleasant working environment as well as
- continuing education.

We continue to develop ourselves and our performances.

The services provided by us have a significant influence on the central business processes of our customers. Therefore, we conduct strict internal control to ensure a high level of transparency and gapless traceability of all work processes.

We continuously control and optimize the effectiveness and efficiency of our actions to be more productive at work and to further improve the quality of our job performance at the same time.

We secure our leading position every day – thereby maintaining our independence.

The quality and efficiency of our products and solutions and also our daily personal commitment has made us the market leader concerning ERP solutions for the packaging industry.

To maintain this status and ensure the future success of our company, we pursue clear strategic objectives.

Together we want to

- create new jobs
- maintain existing jobs,
- foster innovations and
- plan and shape the future.

Updates at regular intervals and ongoing maintenance ensure the functioning of our IT solutions while safeguarding the customers' investments at the same time. Only satisfied and successful customers help

us to reach our most important strategic goal: to maintain and expand our corporate success and our financial and economic independence.

1.1.2 Corporate Division

A corporate division, also known as a business division, is a discrete part of a company that may operate under the same name and legal responsibility or as a separate corporate and legal entity under another business name.

1.1.3 Details of the product lines or services

Design: Visual service

Their designing team of creative minds explore new ideologies through the challenges our clients provide us. We use various visualization tools like the ones provided by Adobe Creative Suite to meet the need of our clients.

Develop:

At Aveneur, they provide high quality Software's and Solutions through Test Automation, Quality Assurance and Agile Processes. Their success in Software/Application development is achieved through effective collaboration between the Stakeholders. They tackle any changes made through our effective set of Procedures to overcome the challenges in an organized way. They encourage external participants to review our projects to bring out a diverse perspective of the software to ensure quality.

They Use HTML, CSS, JavaScript, React, Typescript, Dotnet core and Flutter.

Innovation:
- Business consultancy
- Security System
- Cloud Migration

- Data Mining
- Al Chatbot Integration
- IOT Services
- Company Training & Certifications

Chapter 2

2.0 Internship Experience & Observation Details

I have started working at Aveneur Solutions on 3rd March 2021 as an intern in Software developer Team. For the internship period of 12 weeks, Mr.Ashiqure Rahman sir developer of Aveneur Solutions was my supervisor. I found very friendly environment therefrom the first day of my working. Each of the person of the company was so nice and cooperative to me. My supervisor was also very cooperative and friendly whenever I faced any kind of problems in doing the works assigned to me, he always helped me to get out of the problem. I have learned a lot of things there. The most important thing I have observed there is that working is mandatory but beside this we have to be very friendly with others and have to communicate with the people beside our time of working. I have learned also how to cope up with the culture and working environment. Another thing is I have learned that in working life we need to do a lot of work and have to work with lot of data but one thing we need to remember that in every kind of pressure situation, we have to be handled this situation efficiently with patience. Punctuality is very important in working life. Though I have maintained punctuality very efficiently. I used to go there in between 9.30 AM and leaved at 5.0 PM.

Another thing due to covid-19 I only gone office once a week, and all the task done my online. My supervisor gave online lecture and I watched these video and learned. It's a good experience of 12weeks.

2.1 Job Responsibilities

At the time of my internship period at Aveneur Solutions, I have acquired a new kind of experience. In the very first day I was introduced and I got the basic knowledge about what's projects are going on in the company. Then the next day my supervisor teach me the basic of Flutter. First two week I leaned introduction to Flutter and understand Flutter app anatomy. Then the next week I learned Object Oriented Programming & Data Structure and Collections in dart. The 3rd week I learned Flutter fundamental. The 4th week I tried to build a flutter app. And the next week I learned Flutter Stateful Widgets. And then my supervisor gave me some tasks to solve. I have stuck with many errors and problems, but the team was always there to help me with necessary information. Working with firebase was completely a new experience for me. The team was always helpful to me learn new things. Overall, these 12 weeks was a fruitful learning journey of my life.

Chapter 3

Internship outcome & issue analysis

3.1 Problems & challenges faced in the workplace

During the 3 months Internship in Aveneur Solution, I have faced some challenges. As our office remain closed on (from april21-still now) due to covid-19. But we done our work in online. There I faced many problems; my supervisor helps me to overcome these problems.

- As our work done by online, while something I don't understand I failed to learn it on this time, I called my supervisor then when my supervisor free he discovers it to me.
- Online based intern is giving another experience, maximum time our meeting happened on discord, google classroom. Though it not physical but it's another experience.
- While I completed learning then my supervisor gave me task and I completed and send them to my supervisor but it happens many times I failed to understand the task and that's why I asked my supervisor he was very friendly. I always tired to complete my done within time.
- While I worked in group then I faced more problem cause other member in my inter they are senior and expert so they easily catch many more and solve them quickly rather I needs more time. My work skill has improved then before. I could not able to overcome this situation
- without the support and cooperation of my office members. Their hard work and experience inspired and motivated me a lot to work harder.

3.2 Analyzing of the issue(s) based on relevant theory

These courses bellow was relevant to my work. These courses output helped me a lot to complete my many tasks.

Database Management:

A database management system is a course that makes which is about to organize data in a database. The functions of a DBMS include concurrency, security, backup and recovery, integrity and data descriptions. The knowledge of database helps me to store, filter, manage and organize data efficiently.

Web Application and internet:

Web application and internet deals with basic background, terminology, fundamental concepts and hands-on experience with the various technologies that are needed to build modern full-stack web applications. Although the World-Wide Web was initially conceived as a vehicle for delivering documents, it is now being used as a platform for sophisticated interactive applications. Applications that provide instant access, automatic upgrades, and opportunities for collaboration on a massive scale. Creating full stack web applications requires different approaches than traditional applications and involves the integration of numerous technologies.

System Analysis and Design:

System analysis and design deal with planning the development of information systems through understanding and specifying in detail what a system should do and how the components of the system should be implemented and work together. During my internship, system analysis and design course helped me to prepare business plan requirement, various diagram.

Software Engineering:

Software engineering is defined as a process of analyzing user requirements and then designing, building, and testing software application which will satisfy those requirements. This course helped me to understand my work methodology, project as a product, designing and testing. Database Management: A database management system is a course that makes which is about to organize data in a database. The functions of a DBMS include concurrency, security, backup and recovery, integrity and data descriptions. The knowledge of database helps me to store, filter, manage and organize data efficiently.

Data Structure:

In computer science, a data structure is a data organization, management, and storage format that enables efficient access and modification. The knowledge of this course helped me a lot to understand the effective way of storage format to access easily for the user.

3.3 Recommendation

Here is some recommendation for company:

- For fresh ideas and new perspective, they need to recruit more youth and fresher because youth are the source of new ideas and new innovation.
- Since Aveneur work for many systems for their operation and clients, so they need watchful maintenance of the systems by the responsible management.
- They should maintain standard quality of products and services.
- Though they work with so many projects and which are more than enough for this company. Still my recommendation will be more focused on promotional activities.

Chapter 4

4.0 Methodology:

The term methodology means "the analysis of the principles of methods, rules, and postulates employed by a discipline"; "the systematic study of methods that are, can be, or have been applied within a discipline"; "the study or description of methods".

4.1 SYSTEM DEVELOPMENT METHODOLOGY (SDLC)

The system development life cycle, known as the SDLC, is the industry-standard approach to managing phases of an engineering project. Think of it as the equivalent to the scientific method for software development and other IT initiatives. The common breakdown of the SDLC includes seven phases that trace a product or project from a planned idea to its final release into operation and maintenance. the proposed system input and output, users and system development tools.

4.1.1 Waterfall Model

Waterfall Model is a sequential model that divides software development into pre-defined phases. Each phase must be completed before the next phase can begin with no overlap between the phases. Each phase is designed for performing specific activity during the SDLC phase. It was introduced in 1970 by Winston Royce.

4.1.1.1 Feasibility study

Here, we carried out a study to gain an understanding of the customers' current system and problems experienced in this system through interviews, observations, participations etc. We used the obtained data to determine the viability of the system being proposed in terms of technical, economic and social feasibilities.

4.1.1.2 Requirements analysis

Requirement Gathering and analysis − All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document. System Design − The requirement specifications from first phase are studied in this phase and the system design is prepared

4.1.1.3 Design

At this stage we made an overall design of the system architecture and physical design which includes User interface and Database design. It's at this stage that we identified any faults before moving onto the next stage. The output of this stage is the design specification which is used in the next stage of implementation.

4.1.1.4 Coding/Implementation

The Implementation phase is when all of the actual code is written ("SDLC Phases", n.d.). This phase belongs to the programmers in the Waterfall method, as they take the project requirements and specifications, and code the applications

4.1.1.5 Testing

In this stage, we will ensure both individual and integrated whole are methodically verified to ensure they are error free and satisfy customer requirements. We will involve both unit testing of individual code modules, system testing of the integrated product and acceptance testing conducted by or on behalf of customer. We will ensure bugs found are corrected before moving to the next stage.

4.1.1.6 Installation

It is done once the product has been tested and certified as fit for use. The system is prepared for use at customer site.

4.1.1.7 Maintenance

This stage occurs after installation. It involves making modifications on the system to improve performance. Such changes are user initiated or as a result of bugs being discovered which were

initially not known. These modifications are recorded for documentation and system update.

4.1.1.8 Benefits of waterfall model

Waterfall Model - Advantages

- Simple and easy to understand and use.
- Easy to manage due to the rigidity of the model.
- Phases are processed and completed one at a time.
- Works well for smaller projects where requirements are very well understood.
- Clearly defined stages.
- Well understood milestones.
- Easy to arrange tasks.

4.2 SYSTEM ANALYSIS

4.2.1 Existing System

The existing system was found to be completely manual, i.e. patients' information is captured

in note books, there also required to call assistant to know the patients update.

4.2.2 Problems of Existing System

Considering the above section, there are many problems associated with the existing manual

system, they include the following:

- Doctor don't see any update as patient's appointment notebook is maintained by
- assistant.
- There is a problem of storage of the records i.e., can easily get lost.
- Information retrieval from these sources is not easy.

4.2.3 Requirements Analysis

4.2.3.1 User Requirements

It is very important to get users of the system fully involved such that the problem of change management does not arise. The system is expected to be:

- Easy to learn and use
- Improve on the efficiency of information storage and retrieval
- Produce results faster i.e., measurements date wise patient's status, date wise fee
- calculation.
- Provides attractive interfaces with easy navigation throughout the system
- Faster, flexible and convenient.
- A system that stores data timely and accurately

4.2.3.2 Functional Requirements

This section describes different functional requirements of the system in terms of the functions/features the system should provide.

1. Login for Admin (by Admin)
2. Registration of Lawyer (by Admin)
3. Update details of Lawyers (by Admin)
4. Delete Lawyer (by Admin)
5. Login for Lawyer (by Lawyer)
6. Registration of Clients (by Lawyer)
7. Update details of Clients (by Lawyer)
8. Delete Client (by Lawyer)
9. Add case details of Clients (by Lawyer)
10. Update case details of Clients (by Lawyer)
11. Delete Cases of Clients (by Lawyer)
12. Login for Client (by Client)
13. View/ Download Case Details (by Client)
14. Registration as Visitor of Website (by Any New User)
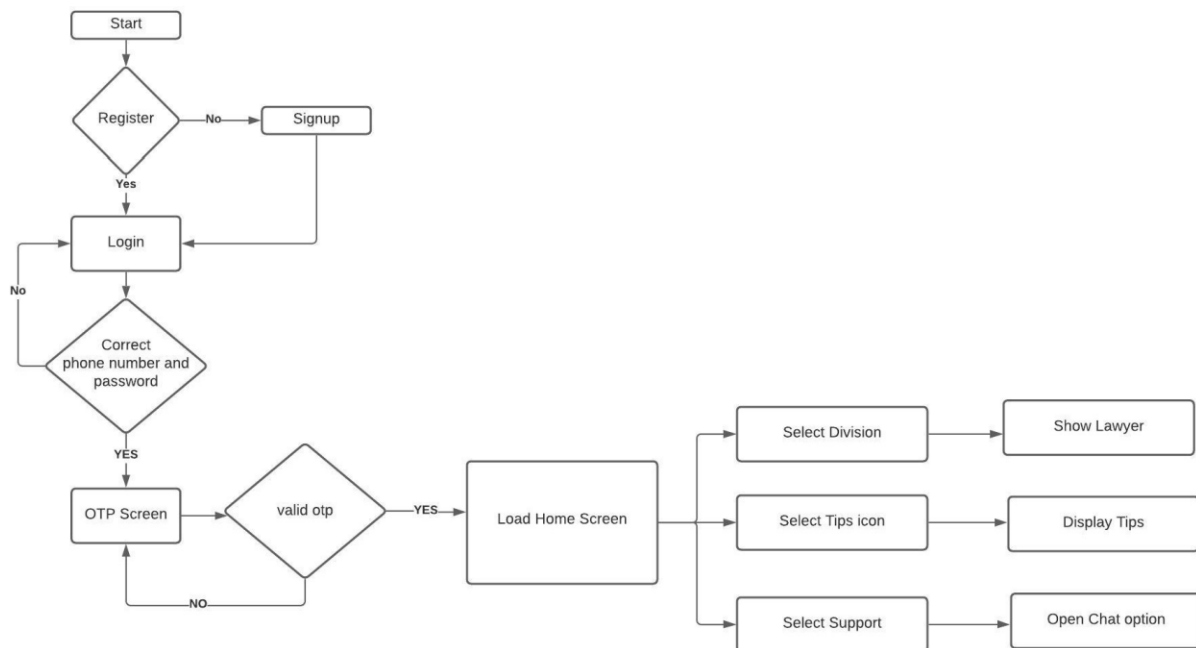15. Finding Lawyers (by a registered Visitor)

After being logged in, an admin in this project can make the entries of the lawyers who register with the apps, can update details of lawyers or delete a lawyer. Only after a lawyer is registered by the admin, he can further carry out his tasks with his clients. For the first time a lawyer registers himself, he gets an id and password from the admin which he uses throughout the time.

After being logged in, a lawyer can register his clients, update client's details, delete a client and can store all the case details of his clients in the database. He has the previous details of the case which can help him plan for the further evaluation of the case. Also, the cases that have been completed accidentally (due to withdrawal, death, etc.), or those have been solved by him are stored in the database which he can use as a reference for the future cases. A lawyer can also update the case details of his clients and can also delete some cases if desired. After being logged in, a client can see his case details and all the transactions carried out during the case. He can also find out new lawyers through this apps. New visitors can't visit this apps.

4.2.3.3 Non-functional Requirements (NFR):

1. The system should not disclose any private information or message to anyone else.
2. The system will have backup server.
3. User must have easy password accessible to the system.
4. The system will have bug report system for user.
5. The system should have two step authentications for login.
6. The system will have small development working on solving bugs reported by the user.

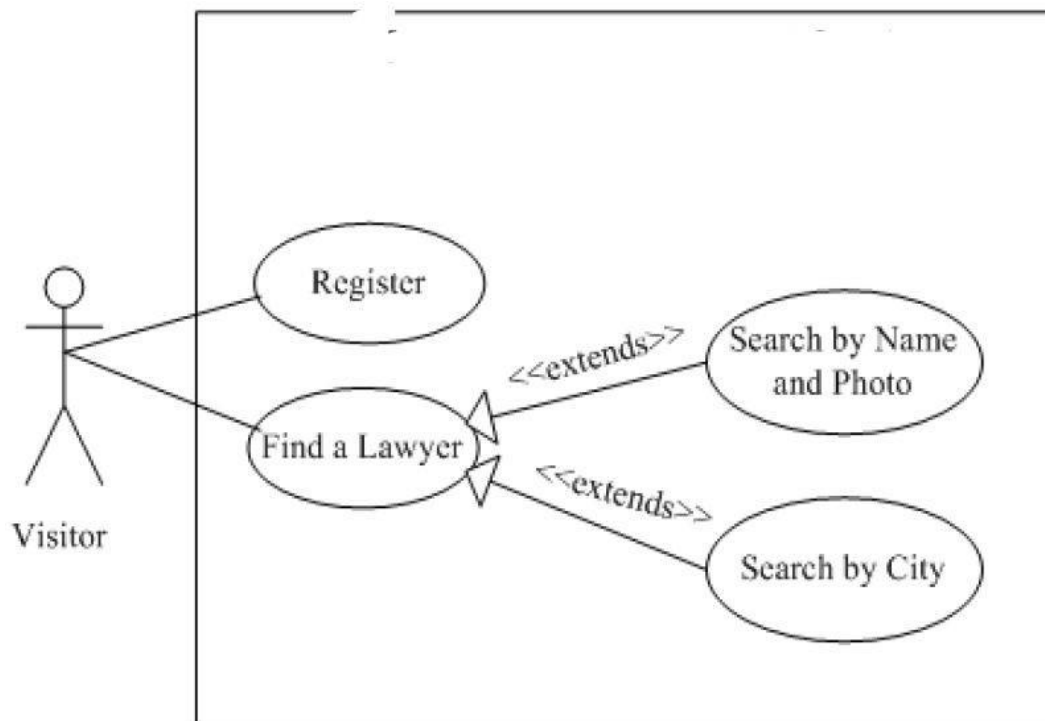# 4.2.4 Data Flow Diagram:

4.2.5 Use Case Diagram:

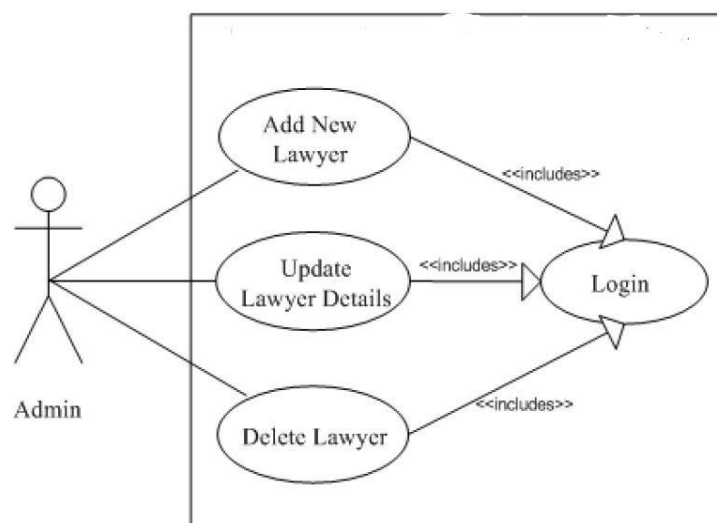**Figure: Use Case Diagram for Visitor**

Figure: Use Case Diagram for Admin

4.3 Design:

At this stage we will make an overall design of the system architecture and physical design which includes User interface and Database design. It's at this stage that I will identify any faults before moving onto the next stage. The output of this stage is the design specification which is used in the next stage of implementation.

Chapter 5
Project Management
5.0 Activity Wise Time Distribution

Activity wise days of learning		Expected Days	Considered Days
Learning Process	25%	10	13
Installment	10%	7	7
Requirement	15%	10	12
Design	20%	7	10
Implementation/coding	15%	30	30
Testing and deployment	15%	10	12
	100%		

Table5.1: Activity Table

5.2 Gantt Chart

Chapter 6

Result and Test Analysis

6.1 Testing

Testing is the process of verifying and validating the system for the conformance with specification and meeting the customer's requirements. The objectives of testing are to ensure that the system programs are error free, guarantee the system end users can interact with the system well and ensure that the components of the system interface are working well

6.1.1 Functional Testing

The purpose of functional testing is to ensure that the program performs all the functions that were originally specified, that all the input is correctly accepted. It relates to the whole system and does not require a technical understanding of the system. All the functions of the system as originally specified are systematically tested to ensure that nothing has been accidentally omitted or misinterpreted. A positive attempt is made to anticipate errors than an inexperienced user might make, and tests made to check the effect of such errors and ensure that they do not result in incorrect actions or bad data being stored in the database.

6.1.2 System Testing

This is where the system is checked whether it has met the user requirements and performs as per expectations. The following are the tests to be used. On completion of the whole system, each of it is tested to ensure no errors have been introduced. The system is tested with a realistic amount of test data, the system tested with about 50 records in each of the main tables.

6.1.2.1 Recovery Testing

Recovery testing can be carried out to determine what happens, for example if there is a power failure in the middle of data entry. Is the whole database corrupted or not?

6.1.2.2 Acceptance Testing

The user is invited to test the system to ensure that it fulfills the stated objectives. The tester observed this testing and not stop the user from mistakes. The system should cope with unexpected user behavior.

6.1.2.3 User Acceptance testing

This is testing of the system by the user department after the system has passed the systems test

6.1.3 Unit testing

After the parts of the system are completed, they are first tested. All the new hardware, procedural manuals and all system interfaces tested to ensure that they meet the required standards.

6.1.4 Test Data

The purpose of test data is to verify and make sure that the system is operating well and according to the standards set. It involves checking the new system if it is working correctly. It is tested in modules to establish if there is any problem in any module. This is whereby each module is tested on its own. While testing entries inputted as they are so as to be acceptable in the database else errors will occur. As an example, patient's phone no should be in numbers, otherwise the field won't accept it.

6.2 Test Results

After completing test process, we found some defects while running the software. Some issues came up while retrieving the data from the firestone database. But we passed in most of the test. There was also some issue with responsiveness but after a few tests the issue got resolved. The main task of this project is to record appointments and approve those appointment from assistant's side and viewed that updated data table from doctor's side. Fortunately, these functionalities run without any flaw. After getting the errors and defects, we tried to go over through all the problems and fix that.

Chapter 7

Conclusion & implication

In my internship I worked on a futter mobile application. In lawyer system maintaining all the manually is very difficult. While working on lawyer mobile application our boss gives separate task of our members. My task is to complete the signup form and that connect with mobile and send on time password on the mobile phone I completed my task on time.

This application helps general people to find a lawyer easily and also in location-based lawyer can easily found. At the same time a lawyer can easily signup and write his/her details so that any kind of people can easily found them. If any customer has any complain they can easily complain in the complaint section.

Chapter 8

References

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- https://api.aveneur.com/
- https://en.wikipedia.org/wiki/Flutter_(software)
- https://flutter.dev
- https://dart.dev/
- Rap Payne, Beginning App Development with Flutter

Chapter 9

Appendix

Appendix 9A

Date and Time	Task
28-02-21 16:56	Get internship Offer letter
03-03-21 9:00	Joining day for Aveneur Solutions and familiar with the working environment
1st week	Starting to learn what is flutter and why flutter Download flutter Code Development tools Setup
2nd week	Introduction to the Dart Programming Language Control flow and Functions in dart
3rd week	Object oriented Programming Introduction Object oriented Programming Intermediate Object oriented Programming Advanced
4th week	Data Structures and Collections in Dart
5th week	Building Flutter Apps Flutter Fundamentals
6th week	Flutter Intermediate Concepts - Navigation, List views
7th week	Understanding Themes in Flutter
8th week	Connecting to the World - Networking in flutter
9th week	Starting Project: Read project requirements of "Lawyer App"
10th week	Starting programming part
11th week	Complete first task (Login and Auth in Flutter)
12th week	

Appendix 9B (UI Screenshots)