

INTERNSHIP ON PATIENT MANAGEMENT SYSTEM

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An intern report submitted

In partial fulfillment of the requirements

For the degree of

Bachelor of Science in Computer Science and Engineering

UNIVERSITY OF LIBERAL ARTS BANGLADESH

Dhaka, Bangladesh

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DECLARATION

This internship report is submitted to the Computer Science and Engineering, University of Liberal Arts Bangladesh in partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Science & Engineering. I, the undersigned hereby declare that this internship report on report is based on the work done by me under the supervision of Dr. Farhana Sarker during the internship period. Materials of work found by other researchers are mentioned by reference. This internship report, neither in whole, nor in part, has been previously submitted for any degree.

Signature:

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Date : 10th October 2021.

CERTIFICATE OF APPROVAL

The internship report entitled “*Patient Management System*” is submitted to the Department of Computer Science and Engineering at University of Liberal Arts Bangladesh (ULAB) in partial fulfillment of the requirements for the degree of Bachelor of Science.

Dated: 10th October 2021

Prof. Syed Akhter Hossain, PhD

Professor & Head of Department

Computer Science and Engineering

University of Liberal Arts Bangladesh

Signature & Date

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Assistant Professor & Course Coordinator

Computer Science and Engineering

University of Liberal Arts Bangladesh

Signature & Date

DEDICATION

To my lovely parents, who gave me endless love, trust, constant encouragement over the years and for their prayers.

To my mentors and peers for their patience, support, love, and for enduring the ups and downs during the completion of this report.

This report is dedicated to them.

ACKNOWLEDGEMENT

I would like to thank Almighty god to give me the strength to finish the internship in due time. I am thankful to my family for their whole family for their wholehearted support.

I would also like to give special thanks to my supervisor Dr . Farhana Sarker for her encouragement, supervision, support, and time throughout these three months. The internship I had with Macadam IT was a great opportunity for me to develop my skills in professional level. I would also like to thank my team members who helped to make this possible. It has been a great journey with Macadam IT and I have nothing but respect for everyone.

ABSTRACT

This internship report titled “Patient Management System” was done at Macadam IT during 1st July 2021 to 30th September 2021. Macadam IT is a software company which provides industry and research services for national and international clients. I was involved as a web designer in my hosting company Macadam IT. I have tried to make this internship report informative and analytical as much as possible according to the information and knowledge I have acquired.

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Chapter 1

INTRODUCTION

1.1 Introduction

Students take the internship program when he or she is in the last semester of the bachelor's degree. It is important to acquire a working experience in a specific field. I think field experience is very important to judge the knowledge. Internship program helps students get a job with some experiences.

I am a student at University of Liberal Arts Bangladesh, and I got good flexibility to choose one from internship, project, or research to complete my bachelor's degree. My choice is internship because I want to work in engineering field in future. First, I chose web developing sector for my industry work. I applied for front-end web developing in Macadam IT and I got an opportunity to work with Macadam IT.

At Macadam IT, mainly I was working on website developing in Macadam IT's customized project. After joining I learned many different things about website developing tool and framework. In my internship period I have learned many things. My company team members and my supervisor are very friendly and so much helpful. The internship was one of the best learning periods of my life. In my internship first I learned all basic things of website developing.

My supervisor helped me learn many new things and she assigned to develop a patient management system. I discussed about this project with my company supervisor, because yet there is no perfect website has been made for it, so she suggested me to gather knowledge about patient management system in order to make a perfect website including prescription and appointment management system as well. Thus, a patient can get their prescription also can book sample collector appointment based on preferable time via online and doctor can revise the prescription & can see own appointments.

1.2 Motivation

Main objective of this project is to create a web application with prescription and appointment system, which will be helpful for doctor and patient. Patient can see their prescription and can take doctor and sample collector appointment. Also, patient will get their prescription in their email which will be very helpful for them. To understand the

practical demands and requirements of prescription I decided to create a web application which will be professional, well organized, efficient, secure, and maintainable.

Main motivation of this project is to create Patient Web Application to help doctor and patient to maintain information because everyone faces problems with doctor's handwriting even in pharmacy sometimes the staff does not understand what doctor wrote in the prescription. Also, a patient can lose their prescription and sometimes it is very hard to maintain all the prescriptions and reports; along with that patient suffers a lot for taking appointments of doctor and they must wait in long serial for giving their sample. My job as a Web Application Developer is to create a web application of Patient Management System to solve those problems.

1.3 Internship Objectives

I started my internship with several goals which I wanted to achieve:

1. To understand what it is like to work in a professional environment.
2. To have a practical understanding of professional website developing process.
3. To use the skills and knowledge I have learned from the university.
4. To learn about working in a project.
5. To learn about communication with the client for understanding.
6. To take a step forward in becoming a professional website developer.

This report contains all the major performances that I have performed in these three months for completing my internship period. I believe my experience at Macadam IT has increased my ability to work in an organization and helped me to build up my career as a website developer.

1.4 Introduction to the Company

After completing my 11th semester, I immediately joined Macadam IT as a front-end developer also as a full time Intern in order to complete my four yearlong B.Sc. degree. Although have learned a lot from my university about software development, coping up with the professional life was still a challenge for me.

Macadam IT is an information technology-based company in Bangladesh. It offers web design and web development, application development, graphic design solutions, digital marketing, branding solution, domain registration, software development and much more.

Macadam IT offers guaranteed reliable service and promises high-quality customer service. It develops innovative and creative products and services that offer comprehensive communication and information solutions. Among a multitude of services, web design and development, custom applications, ERP, CRM, e-commerce solutions, managed hosting and Internet portal management are just some of those they offer.

1.5 Report Layout

This report explains my three-month experience as an Intern at Macadam IT. On chapter one, I have described the project motivation and explained why I worked on this project and what is my goal with this web application. Main objectives of the web application and my internship objectives are described here. On chapter two, I have given a brief introduction to my host company Macadam IT. I have also described my roles and responsibilities in the company. Chapter three includes the hardware and software that were used for the Web development project. Software can be developed in many ways, but some approaches are more effective than others. I have explained the approaches and methodologies, which I have followed for developing the application. Chapter four describes the project that I have worked on while completing my internship at Macadam IT. I have explained the project with diagrams and visualized the implementation with screenshots of Patient Management System. Finally, on chapter five, I have concluded my three-month practical experience as a web application developer and pointed out further scope of development.

Chapter 2

ORGANIZATION

2.1 Introduction

Macadam IT was an owner-run company in 2018 and only started with a medical department. With two visionary directors and a handful of employees, he was successful in no time. In 2020, Macadam became a limited liability company and began to expand its business areas and expertise. Gradually, the company achieved significant market growth in the medical, analytical, pharmaceutical and IT sectors.

<i>General Information:</i>	
Legal Name	Macadam IT
Company Information	• Launched in 2020 • Over 10' trained and certified resources • Successfully completed over 5 IT, local & international Private projects
Company Address	Siraj Bhaban (3rd Floor), 38 North Kamalapur, Dhaka 1217.

Table 2.1: General Information of Macadam IT.

2.2 Product and market situation

In today's complex business environment where flexibility, speed, and efficiency are paramount, a solid IT strategy is essential. We help you achieve these qualities in your IT strategy by offering you systems integration, testing, application development, as well as management solutions and services. In more than 1years of work, we have completed various types of projects; and we specialize in automating our clients' business processes. We have developed a series of solutions and acquired extensive experience with the services we offer:

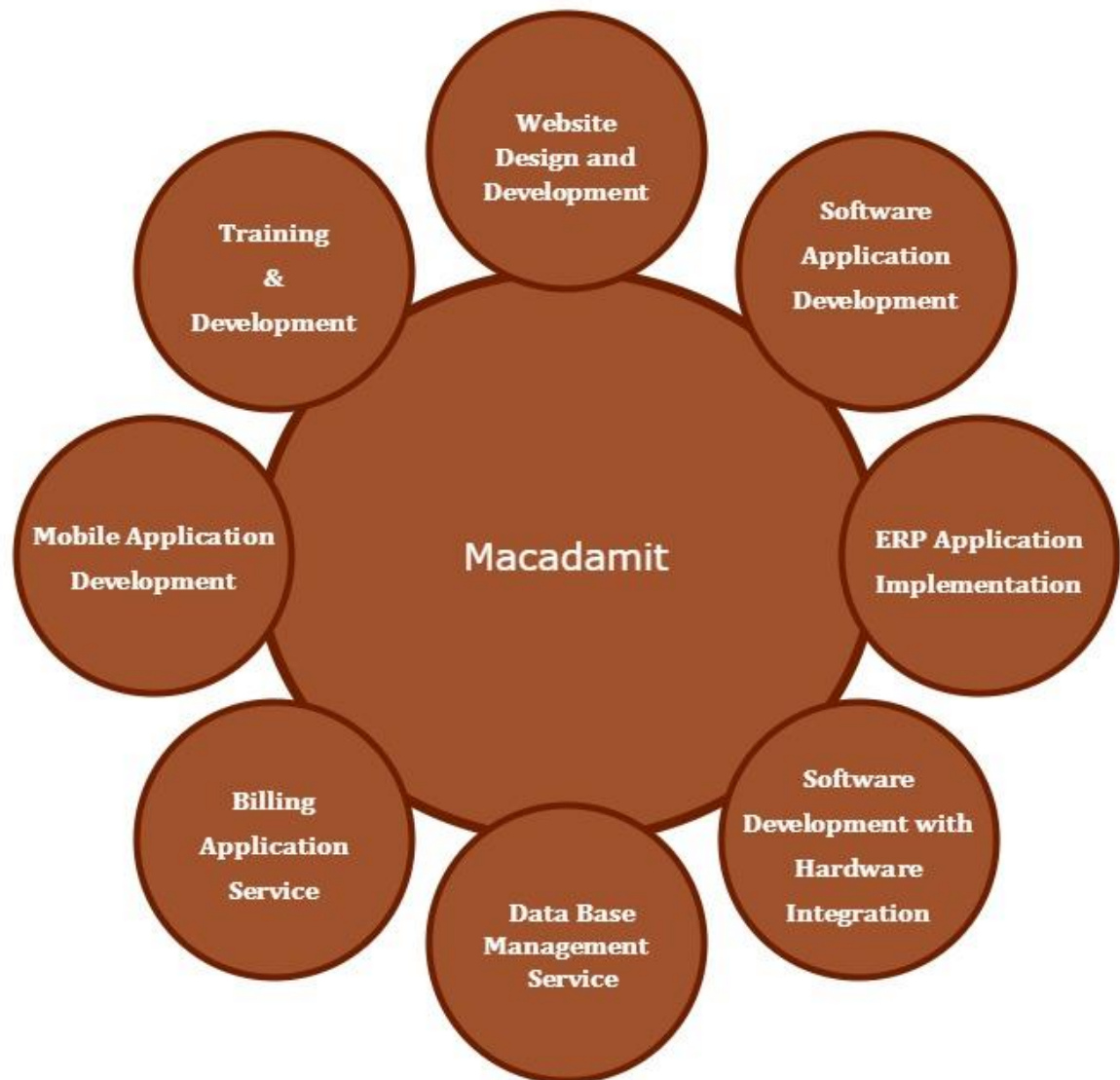


Figure 2.1: Macadam IT's Product and Service.

2.3 Target Group

Core Focus Area	Description
E-Commerce	Macadam IT has successfully carried out a numeric number of most impactful e-commerce projects that have a direct and indirect impact on company development.
Web Portal, Website	Macadam IT is a very well-known company in Bangladesh that has a very good number of success stories of development and implementation for their national & international client.
Customize Database & Mobile (Android & IOS) Application	Macadam IT is a company in Bangladesh that has the qualities to deliver customized applications that have a direct impact on the overall business process automation of public and private sector organizations of Bangladesh

Table 2.2: Target Group of Macadam IT.

2.4 SWOT Analysis

Strengths, Weaknesses, Opportunities and Threats Analysis (SWOT) is a framework used to assess the competitive position of a company and develop strategic planning. The organization must be thorough in its analysis, avoiding preconceived notions or gray areas, and focusing on contexts of daily life. Companies should use it as a guide rather than a recipe.

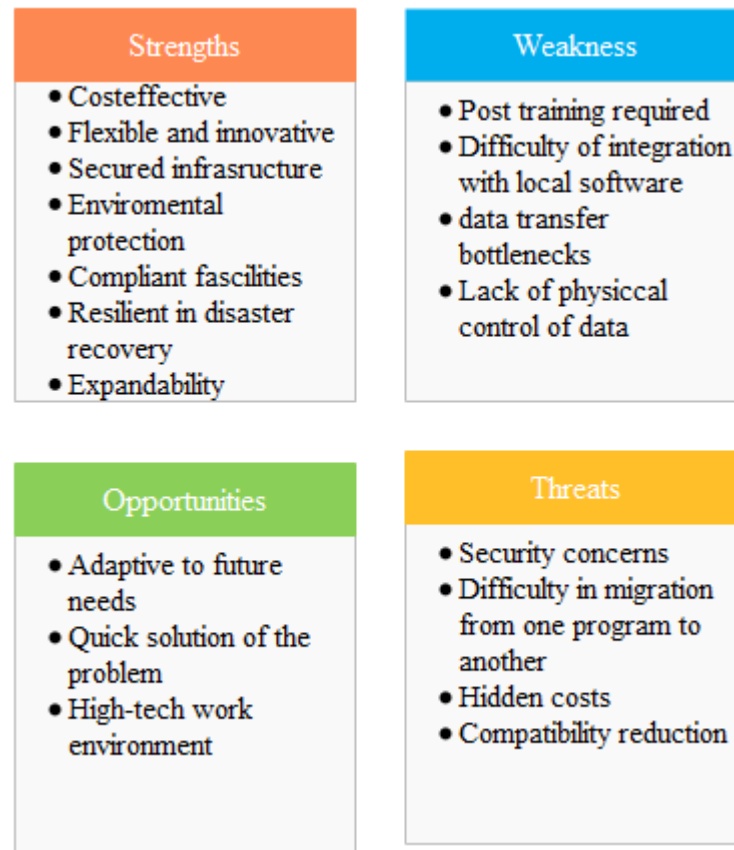


Figure 2.2: SWOT Analysis of Macadam IT.

2.5 Organization Structure

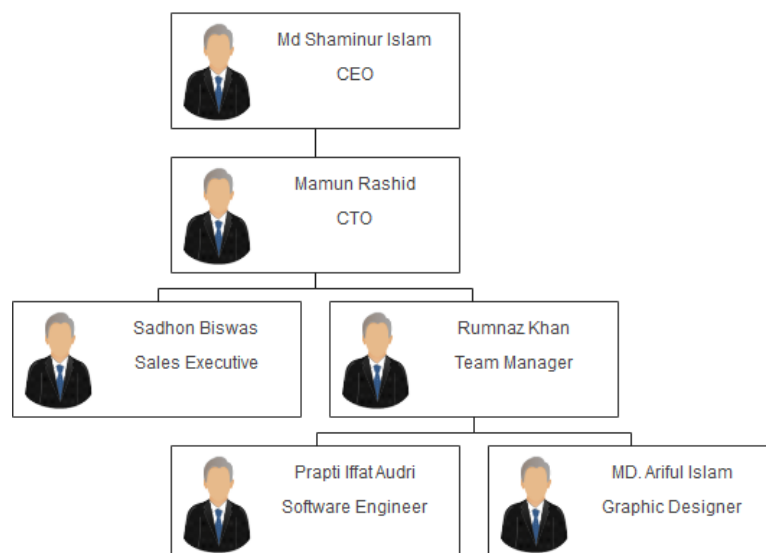


Figure 2.3: Organization Structure of Macadam IT.

Chapter 3

Task, Projects, and Activities

3.1 Daily task and activities:

No.	Start Date	End Date	Task
1	7/1/2021	7/7/2021	Learn Basic Laravel Tutorial
2	7/8/2021	7/14/2021	Learn to Create Dynamic Website Using Laravel
3	7/15/2021	7/21/2021	Learn CRUD (Create, Read, Update, Delete)
4	7/22/2021	7/28/2021	Learn Searching, Sorting, Pagination and Database Connection
5	7/29/2021	8/4/2021	Learn to Store Data in Database
6	8/5/2021	8/11/2021	Requirement Analysis and Planning About the Project
7	8/12/2021	8/18/2021	UI/UX Design
8	8/19/2021	9/1/2021	Login and Registration Page design & backend
9	9/2/2021	9/8/2021	Design Database
10	9/11/2021	9/16/2021	Backend layout design for Doctor, Patient & Sample Collector.
11	9/18/2021	9/23/2021	Integration the Web Application with Database
12	9/25/2021	9/30/2021	Testing and debugging.

Table 3.1: Daily Task and Activities.

3.2 Events and activities:

At Macadam IT my main responsibility was to develop web application according to the requirements. As a team we followed Agile Scrum methodology to develop application. The entire project was broken down into different events and milestones. I was assigned with tasks in every sprint which I needed to achieve to keep the development going. My

responsibilities involved different tasks such as design UI/UX, completing tasks set in sprints, communicating with the colleagues and many more.

3.2.1 Requirements

Entire work in our project was broken into different tasks. The tasks were selected according to the Software Requirement Specification (SRS). Each sprint had some specific targets which developers had to achieve. So, I did a meeting with my teammates and discussed about client requirements. We did some research & found out that the project needs – user friendly dynamic website, authentication, user login & registration system, appointment & prescription management system to make the project more appealing for users (Patients).

3.2.2 Planning

I prepared my planning and gathered knowledge about my all- Key features in about patient management system. While I did our research about our requirements I went through, many websites of Bangladesh's renowned hospitals. Then I made a comparison table to compare the features that made this project stand out from the other websites. The comparison table is given below:

Comparison Table

Web App Feature	BIHS	Samorita Hospital LTD.	Square Hospital	LABAID Specialized Hospital	Patient Management System
Login / Register	x	x	x	x	yes
Authentication	x	x	x	x	yes
User Friendly	yes	x	yes	x	yes
Quick Reload	yes	yes	x	yes	yes
Mail Confirmation	x	x	x	x	yes
Text Confirmation	x	x	x	x	yes
Doctor's Appointment System	x	x	Not Working	x	yes
Online Prescription	x	x	x	x	yes
Sample Collector Appointment	x	x	x	x	yes
Reset Password	x	x	x	x	yes
Download Prescription / Report	x	x	x	x	yes

Table 3.2: Comparison Table.

3.2.3 Design

Patient management system targets users (patients, doctors, sample collectors) who are looking for appointment, prescription, and other services by using patient management system. The entire project is designed with the view of making the system user- friendly. In the web application, user can find any of their desired information very easily and quickly. Anyone can find doctor and services related every information by using the website. Patient management system is a very important part of hospital, the compounder can oversee maintaining the web site. The web site is containing the main communicator of information coming from the hospital. Prescription management system is also an important part of a hospital because this is a platform where doctors can add their patient's prescription and patients can get their prescription; it is a safe, secure, and disciplined way for them.

3.2.4 Development

In the development part, I first did the database model designing. First, I figured out what tables I needed for my database, those are – user table, prescription table, appointment table, sample collector table, role table, password reset table. Then I started the backend development. In the begging of backed development I created the doctor layout according to my requirements and features. Then I created the patient layout following all my requirements. After that, I completed the registration page of the patients. Finally, I completed the sample collector's layout where sample collector can view their appointments.

3.3 Project Task and Activities

To develop a web application, I have used several kinds of technologies. I was involved with software development, so naturally I had to use different kinds of software to build, test and deploy the application.

3.3.1 Hardware

I used my own laptop to work on at my company (OS: Windows 10, Processor: Intel Core i5-8th Gen).

3.3.2 Software

To complete this project at first, I needed some software. That was Xampp, which stands for Cross-Platform (X), Apache (A), MySQL, and PHP (P). Then an editor, I prefer

Visual Studio Code. For languages I chose PHP and Laravel framework. Laravel is an open, robust, and easy to understand PHP framework. Conforms to the model-view-controller design pattern. Laravel reuses existing components from various frameworks to help you build a web application. The web application created in this way is more structured and pragmatic.

3.3.3 Project Background

Receiving Patient-related information and service is still one of the major issues in Bangladesh. To make this information and service easily accessible and available to people, I have decided to work on the project named “Patient Management System” where users (doctors, patients, sample collectors) can find any information about their doctor, and the patient can also get their prescription where doctors can upload and view prescription at any time by using the prescription management system. One of the main objectives of the patient management system is to create a community where doctor and patient can easily get their desired information, also if any people want to see the website and want to find any specific information they can. This is a Patient Management System with a prescription and appointment management system. Users need to log in to search for any updates on prescriptions and appointments. I want to create a website where anyone can find out all information like Services, Departments, Location Map, Contact, Doctor’s Information, etc. and with a prescription management system where doctors can log in and add new prescriptions or view the previous prescriptions by using a patient management system, by clicking one of the menus named View Prescription patients can get their prescription. By clicking one of the menus named Add Appointment, an appointment form will be shown, and patients need to fill up all the elements and need to click Submit to store it into the database. Also, patients can see the appointments by clicking one of the menus named view appointments and their appointments will be shown directly from the database. To make this all kinds of patient/doctor related purposes I made this Patient Management System. I was assigned with the target of developing a web application for doctors where users (doctors as admin) can log in and add new doctors. Anyone can get whole information about this patient management system by visiting the website. Patients will be able to log in and do registration using the web application.

3.3.4 Project Design

The entire project was designed with the goal of making the system easy to use. In the web application, users can access all the information they want quickly and easily. Anyone can find all the information on medical services through the website. The website contains the main communicator of hospital information. The prescription management system is also an important part of a hospital, as it is a platform where doctors can add their patients' prescriptions and patients can receive their prescriptions. Patients can make their sample collection appointments without wasting valuable time. Additionally, patients can attend medical appointments through an appointment management system and the appointment is confirmed through an email confirmation system. Those Use case diagrams of the patient management system show the patient's prescription, which can be added by a doctor. A Patient can have his/her prescription by logging into this web application. Also, Patients can add appointments which can be viewed by the doctor, patient, and sample collector.

3.3.5 Dataflow Diagram

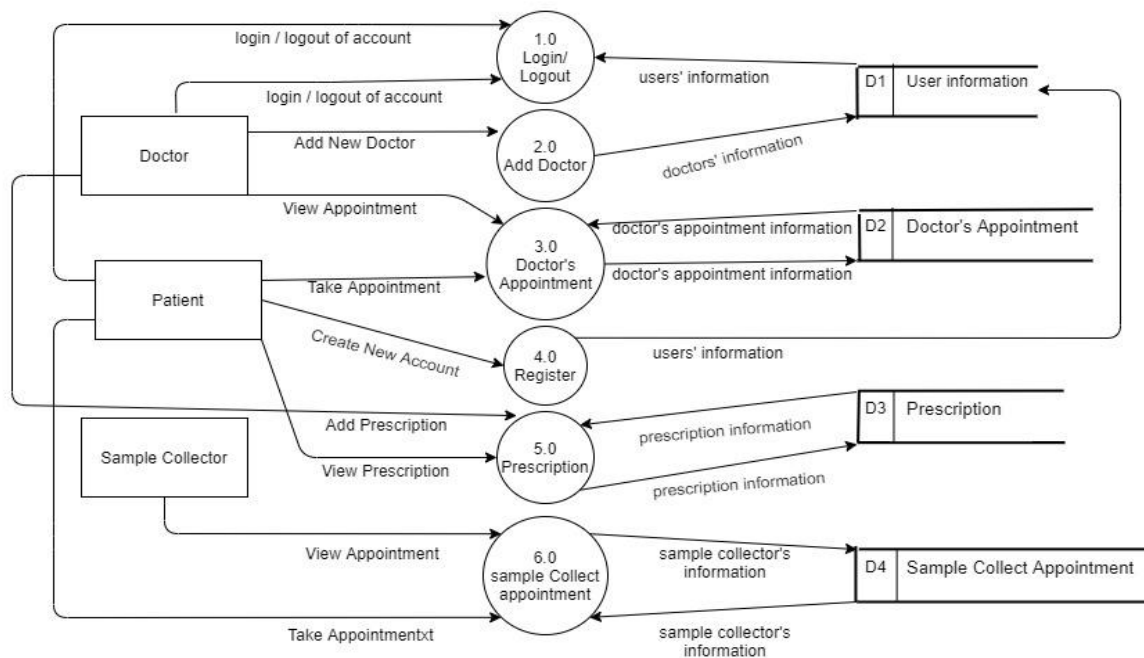


Figure 3.1: Dataflow Diagram of PMS.

3.3.6 Use Case Diagram

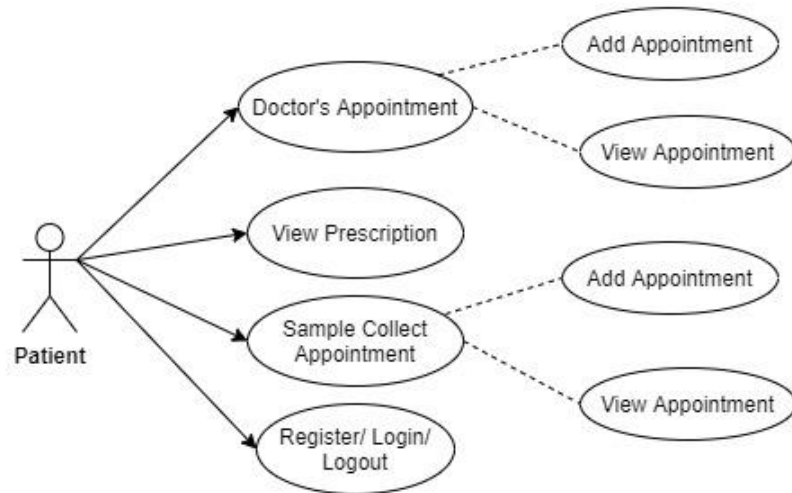


Figure 3.2: Use Case Diagram for Patient of PMS.

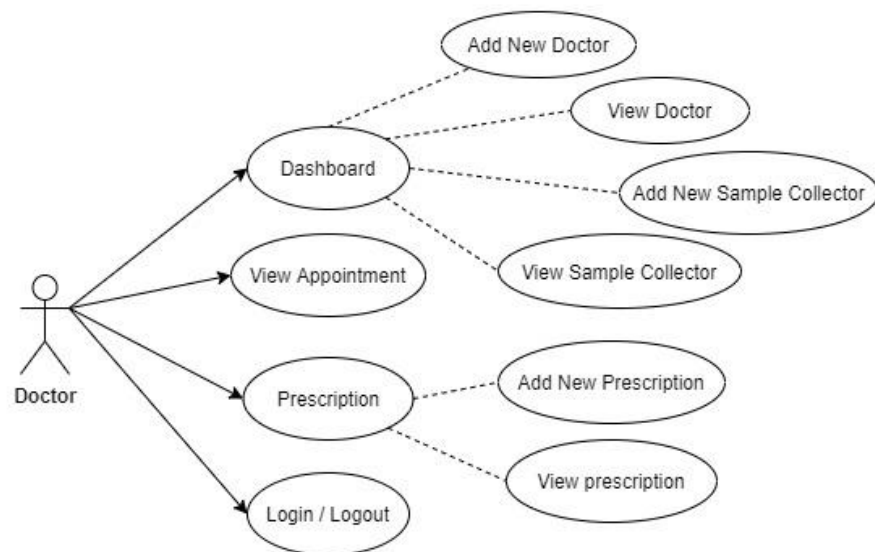


Figure 3.3: Use Case Diagram for Doctor of PMS.

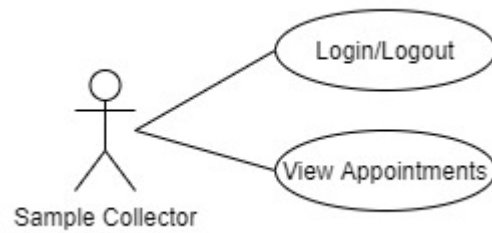


Figure 3.4: Use Case diagram for Sample Collector of PMS.

Those Use case diagrams of the patient management system shows the patient's prescription, which can be added by doctor. A Patient can have his/her prescription by logging into this web application. Also, Patient can add appointment which can be viewed by doctor, patient, and sample collector.

3.3.7 Activity Diagram

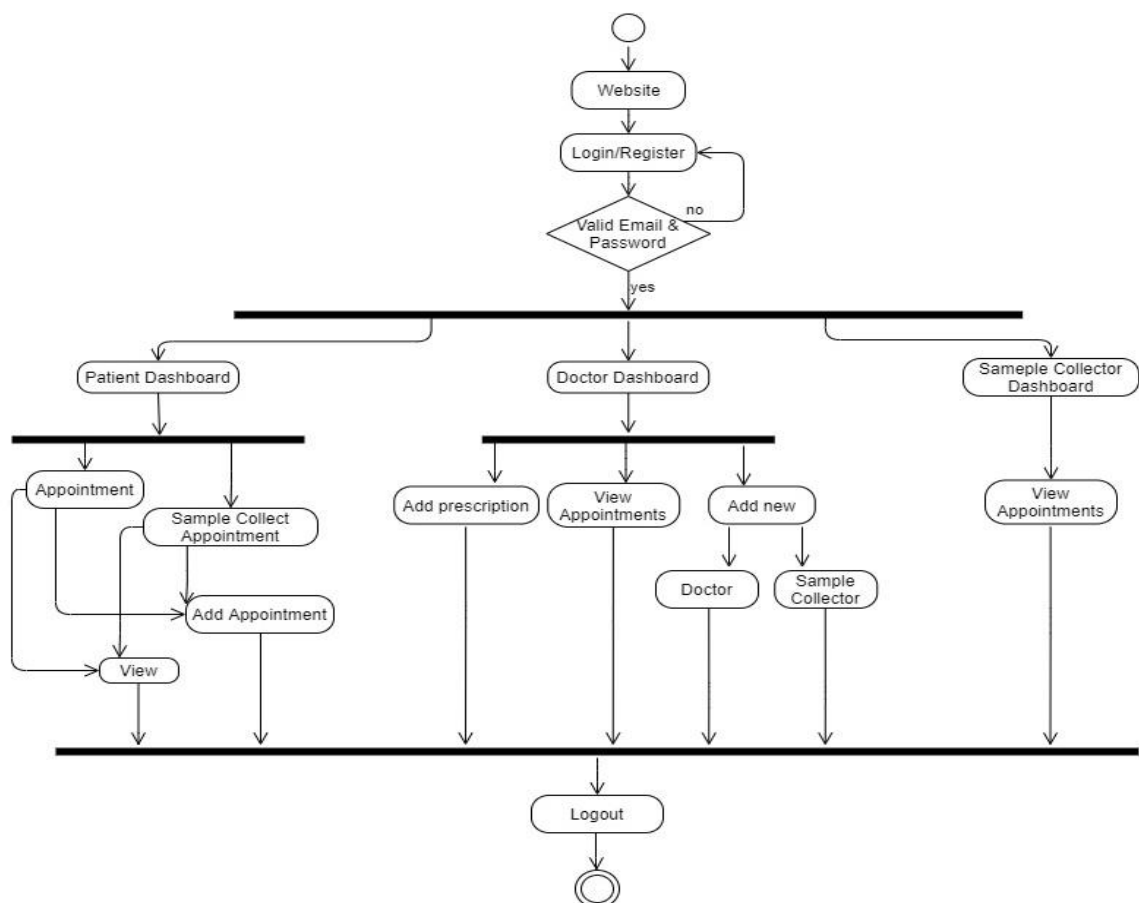


Figure 3.5: Activity Diagram of PMS.

The activity diagram shows user has two choices - one is visiting the website others is login. So if user would like to visit the website he/she can directly do it but if he/she wants to

login to the website then he/she has to put their email and password; if any of this is invalid then he/she do not get permit to login so he/she will be back to the login page again and if his/her email and password is valid then he/she can be able to successfully login and will be able to use the given features.

3.3.8 Class Diagram

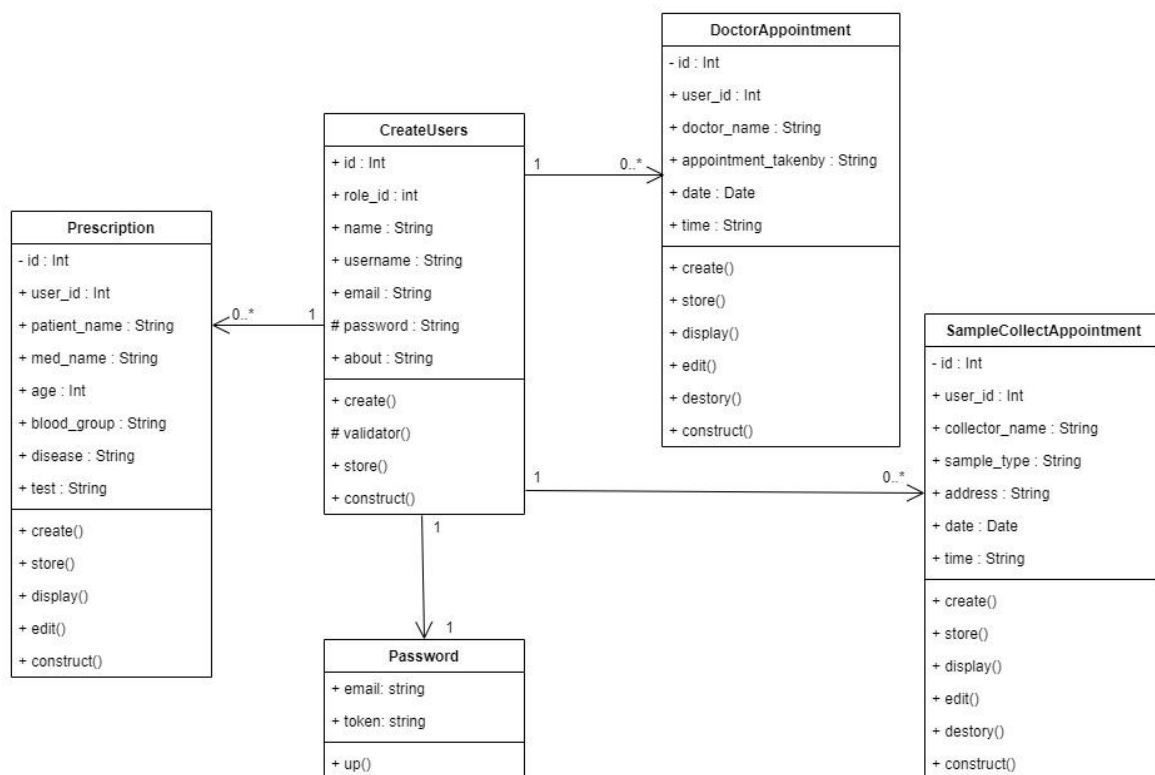


Figure 3.6: Class Diagram of PMS.

The diagram above shows a simplified version of Patient Management System Project's Class Diagram. A user can be patient. Admin (doctor) can upload any information about prescription and patients can get their prescription by logging into the website and prescription will be shown from the database. Patient can take appointment. Doctor and patient both can view appointments.

3.3.9 Entity Relationship

ER diagram shows how different entities connect to each other in patient management system. One admin (doctor) can create another admin (doctor), where doctor can see the list of doctors if there any. Doctor can also have an appointment. One patient can

book appointment. Also, a new patient can do registration. A patient can take sample collector's appointment. Sample collector can do login and will be able to see own appointments.

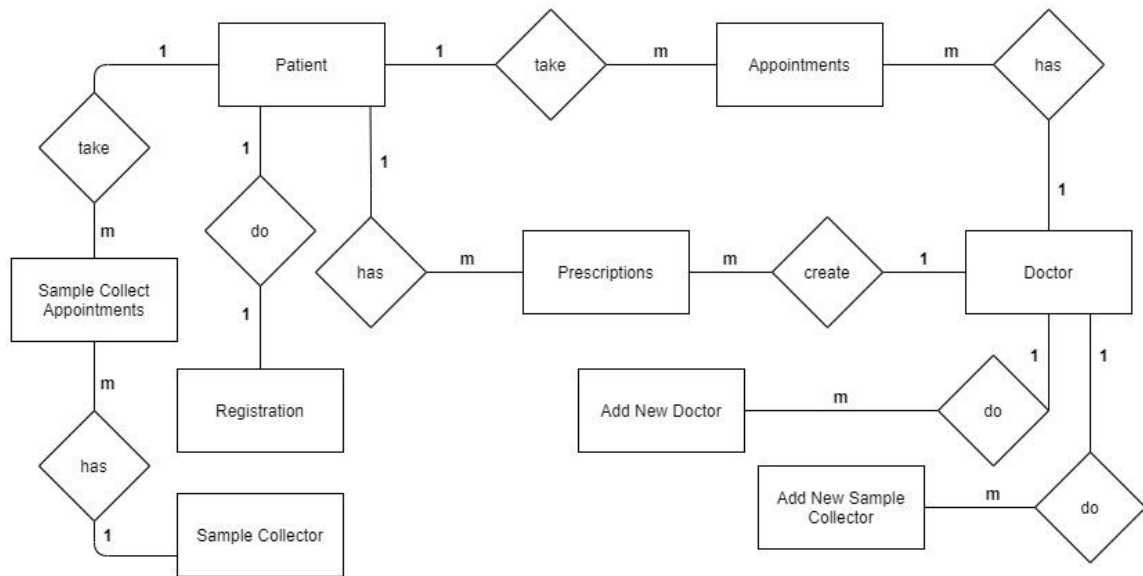


Figure 3.7: Entity relation diagram of PMS.

3.3.10 Implementation

Firstly, I started UI/UX Design of Patient Management System. Then I create the model, authentication system, storage link & migration for the database.

php artisan make: model User – m

php artisan make: model Role – m

php artisan make: model Appointment – m

php artisan make: model Prescription – m

php artisan make: model Department –m

php artisan make: model About –m

php artisan make: model Contact –m

```
php artisan make: model Doctor --m
```

```
php artisan make: model Features --m
```

```
php artisan make:auth
```

```
php artisan db: seed
```

```
php artisan make:seed RolesTableSeeder
```

```
php artisan migrate
```

```
php artisan storage:link composer requireint  
intervention/image
```

Then connect the database with the project

```
DB_CONNECTION=mysql
```

```
DB_HOST=127.0.0.1
```

```
DB_PORT=3306
```

```
DB_DATABASE=PMS
```

```
DB_USERNAME=root
```

```
DB_PASSWORD=' '
```

Patient Management System is divided into three main features: Website, Prescription Management System and Appointment System. The application starts with a welcome page containing an emergency contact number with email address and a logo of Patient Management System.

Currently, I am working with the Laravel Framework for best security reasons. Once all the features have been completed and tested thoroughly, the application will be integrated to the main database of the web application.

Home page is the place, which connects user interface to some of the main features of the application such as:

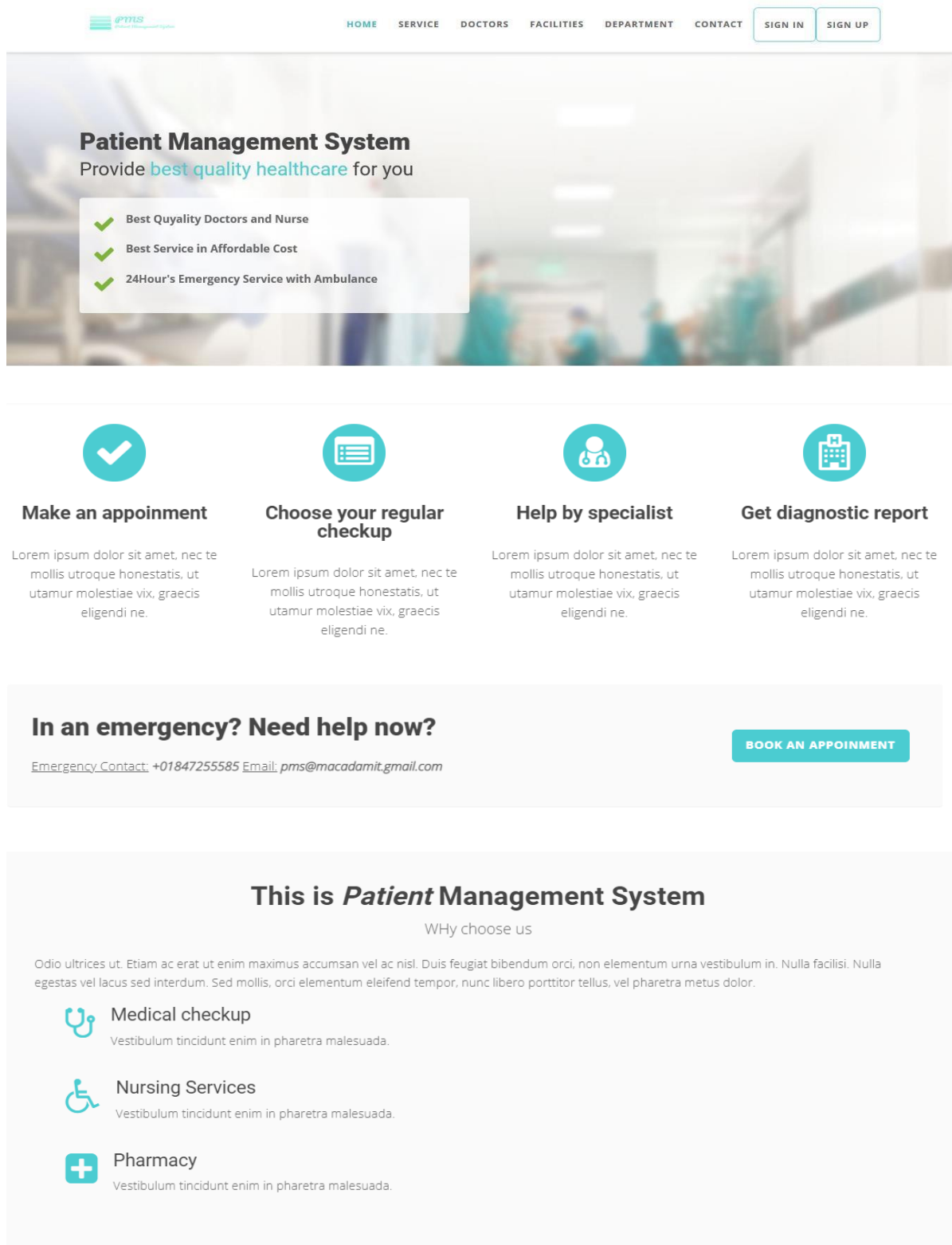


Figure 3.8: Home Page Section of Patient Management System.

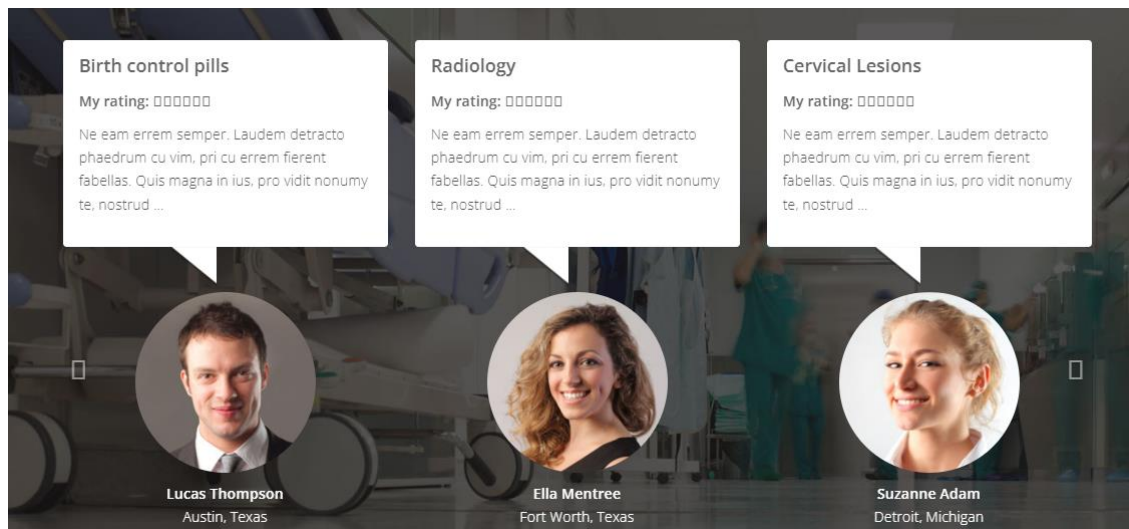


Figure 3.9: Client's Feedback Section of Patient Management System.

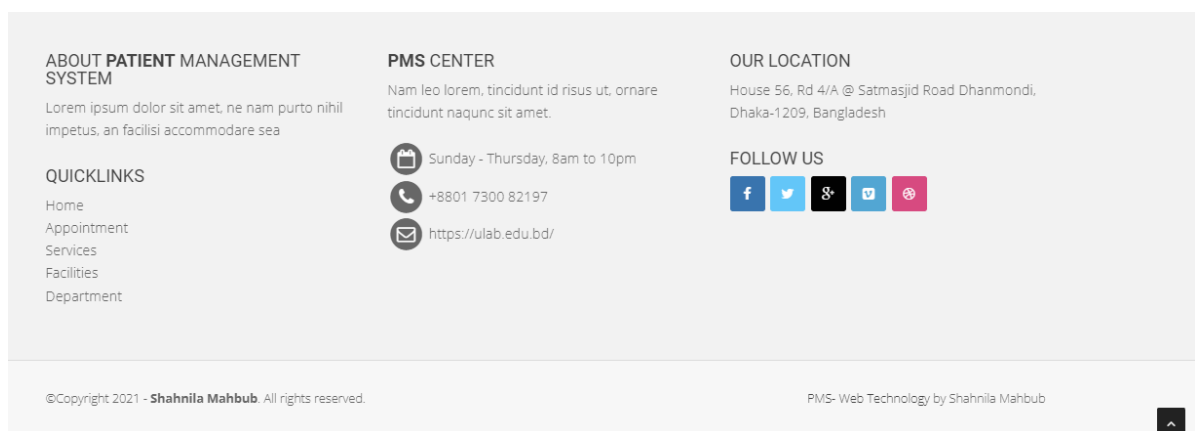


Figure 3.10: Footer of Patient Management System.

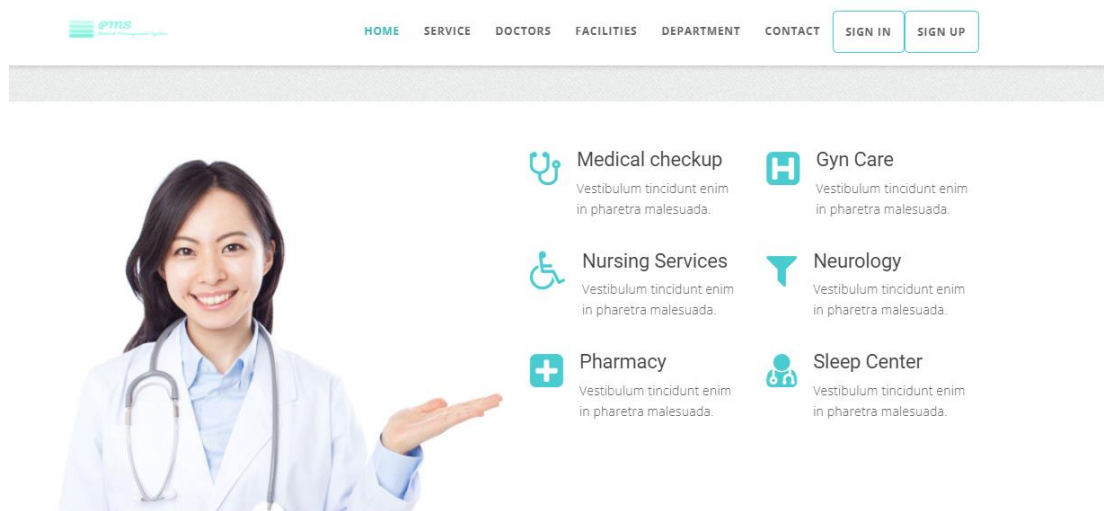


Figure 3.11: Services Page of Patient Management System.

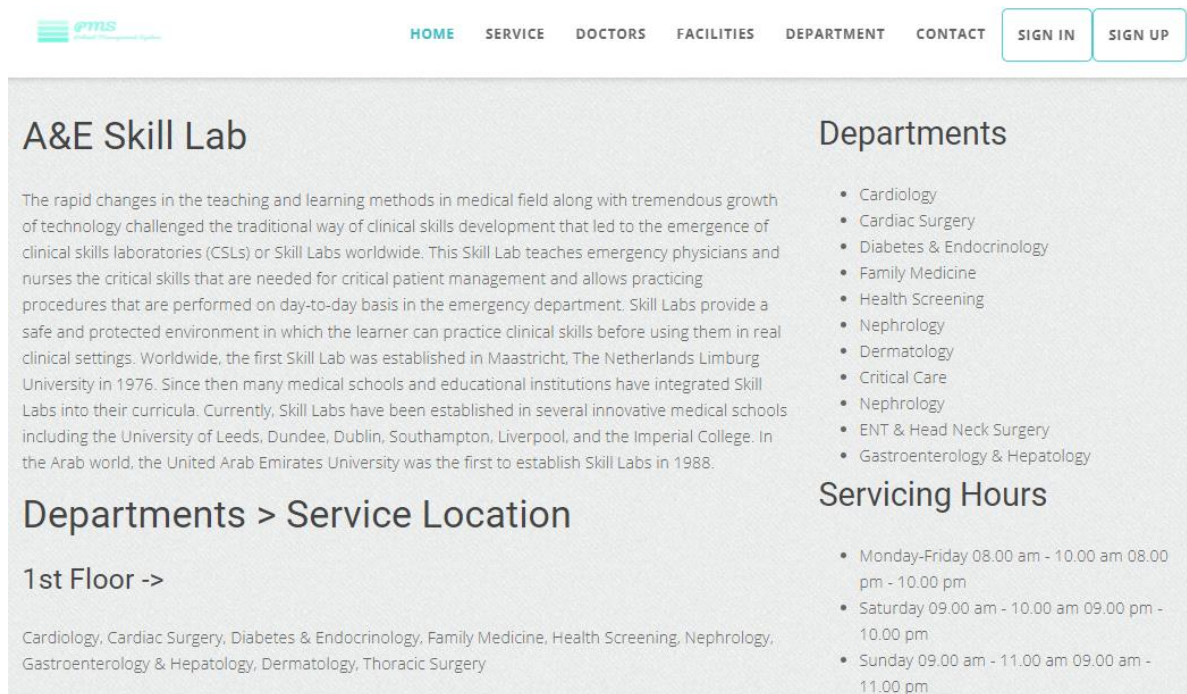


Figure 3.12: Department Page of Patient Management System.

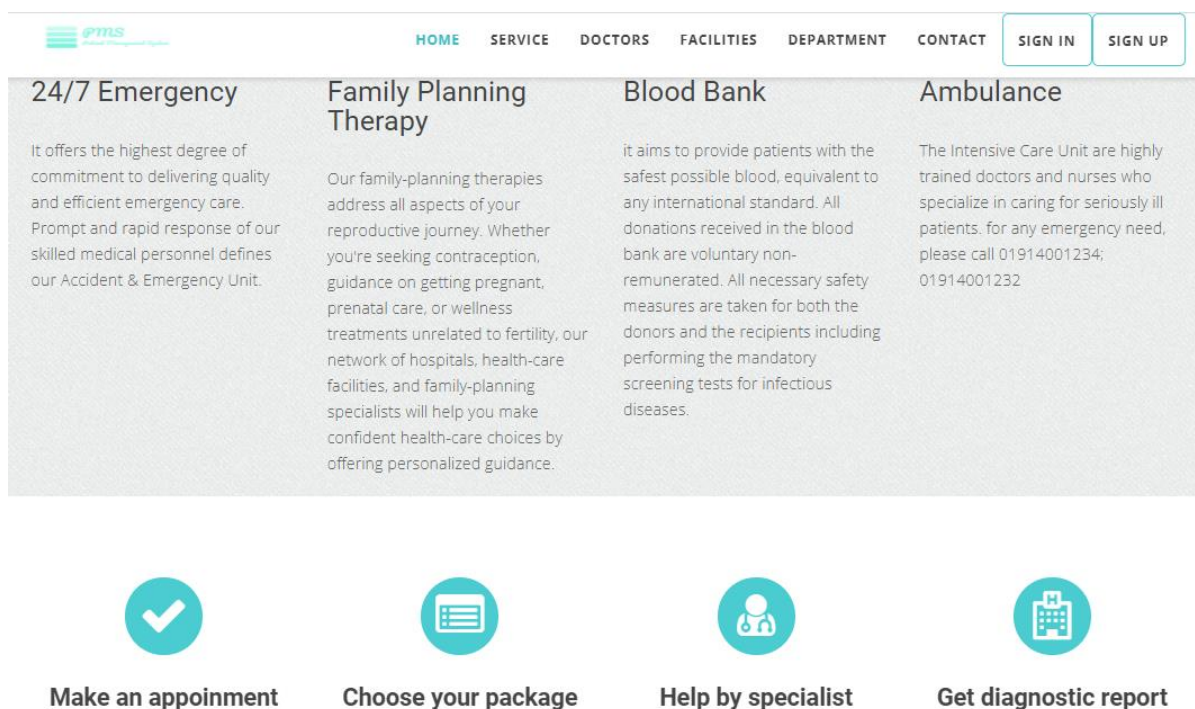
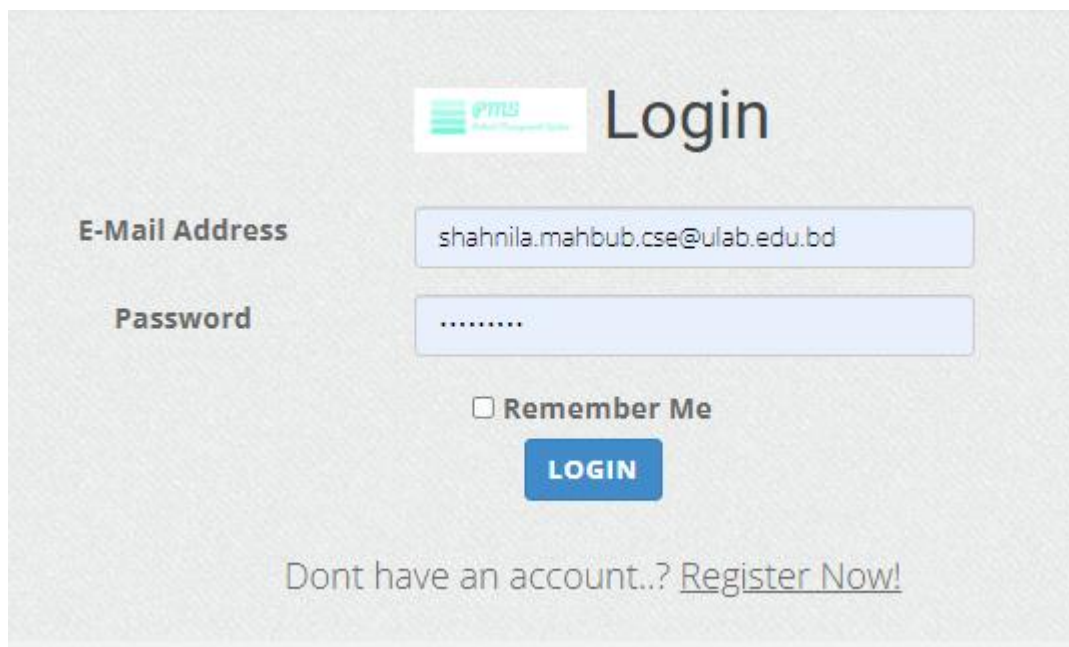
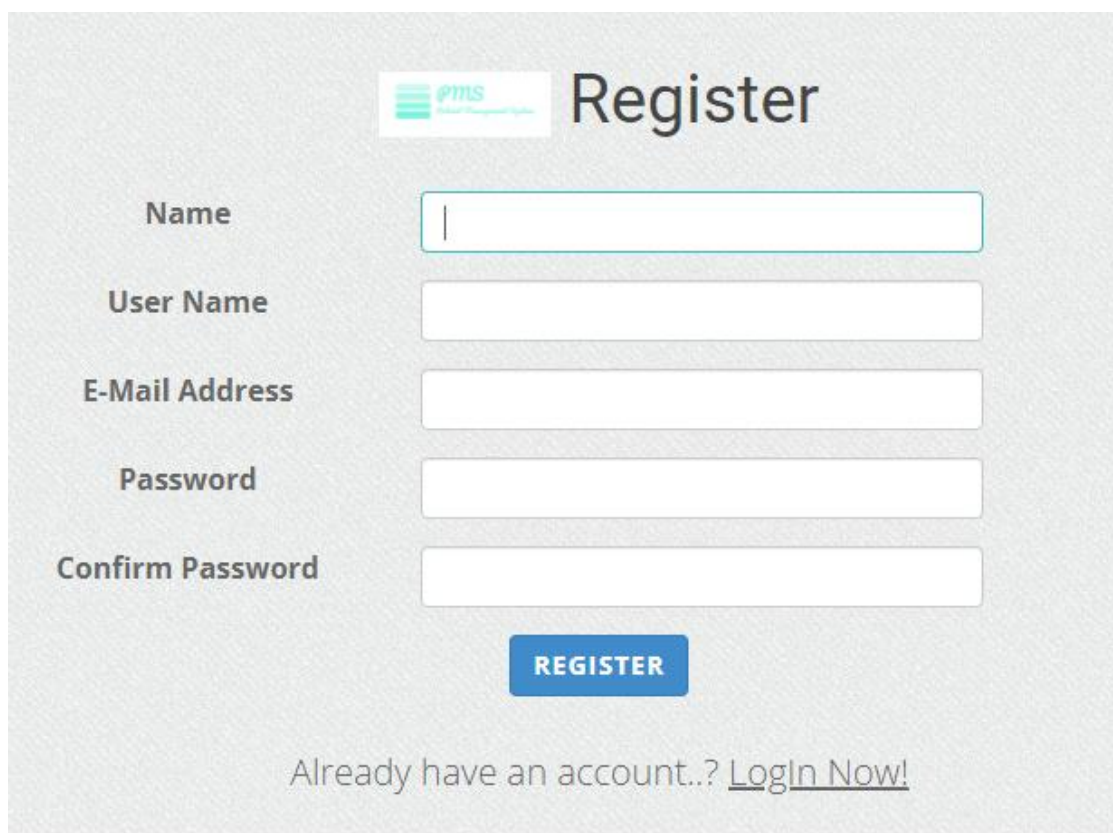


Figure 3.13: Facilities Page of Patient Management System.



The login page features a light gray background. At the top center is the PMS logo, which consists of three horizontal green bars and the text 'PMS Patient Management System'. To the right of the logo is the word 'Login' in a large, dark gray font. Below the logo and title, there are two input fields: 'E-Mail Address' with the value 'shahnila.mahbub.cse@ulab.edu.bd' and 'Password' with masked characters '.....'. Below these fields is a checkbox labeled 'Remember Me'. A blue button with the text 'LOGIN' in white is positioned below the checkbox. At the bottom of the page, there is a link that says 'Dont have an account..? [Register Now!](#)'.

Figure 3.14: Login Page of Patient Management System.



The register page has a light gray background. At the top center is the PMS logo, which consists of three horizontal green bars and the text 'PMS Patient Management System'. To the right of the logo is the word 'Register' in a large, dark gray font. Below the logo and title, there are five input fields: 'Name', 'User Name', 'E-Mail Address', 'Password', and 'Confirm Password'. A blue button with the text 'REGISTER' in white is positioned below the input fields. At the bottom of the page, there is a link that says 'Already have an account..? [LogIn Now!](#)'.

Figure 3.15: Patient Registration Page of PMS.

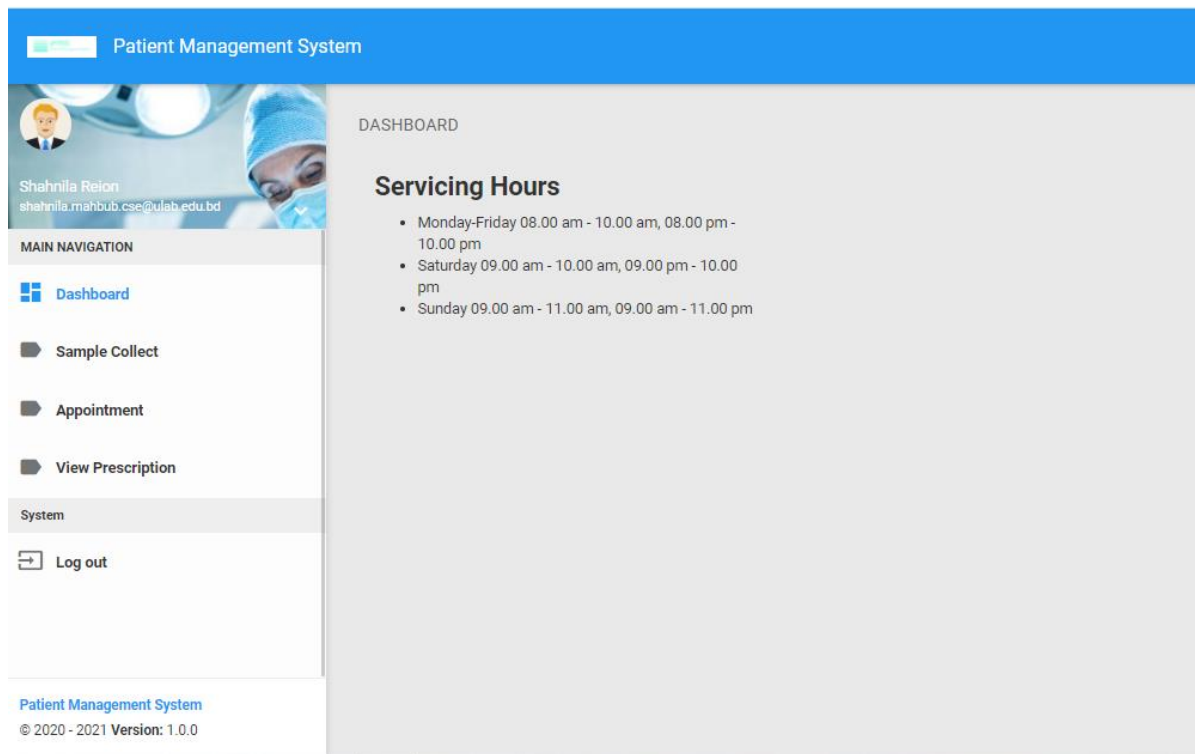


Figure 3.16: Patient Dashboard of PMS.

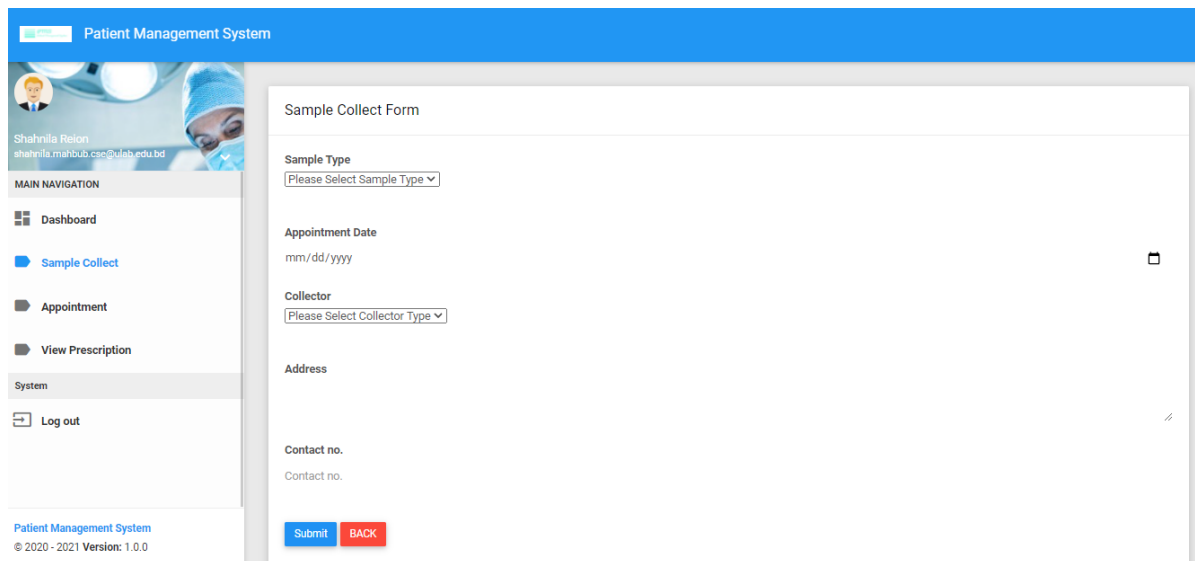


Figure 3.17: Sample Collector Appointment Layout for Patient.

Shahnila Reion
shahnila.mahbub.cse@ulab.edu.bd

MAIN NAVIGATION

- Dashboard
- Sample Collect
- Appointment
- View Prescription

System

Log out

Patient Management System
© 2020 - 2021 Version: 1.0.0

Appointments Booking Form

Select Doctor Name

Appointments Booked BY
 Enter Your Name

Enter Date
 mm/dd/yyyy

Booking Time
 morning/evening

Figure 3.18: Doctor Appointment Layout for Patient.

Shahnila Reion
shahnila.mahbub.cse@ulab.edu.bd

MAIN NAVIGATION

- Dashboard
- Sample Collect
- Appointment
- View Prescription

System

Log out

Patient Management System
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All Prescription 1

Patient name	Medicine Name	Age	Disease	Test	Action
Shahnila Reion	napa	29	fever	none	Edit

Figure 3.19: View Prescription Layout for Patient.

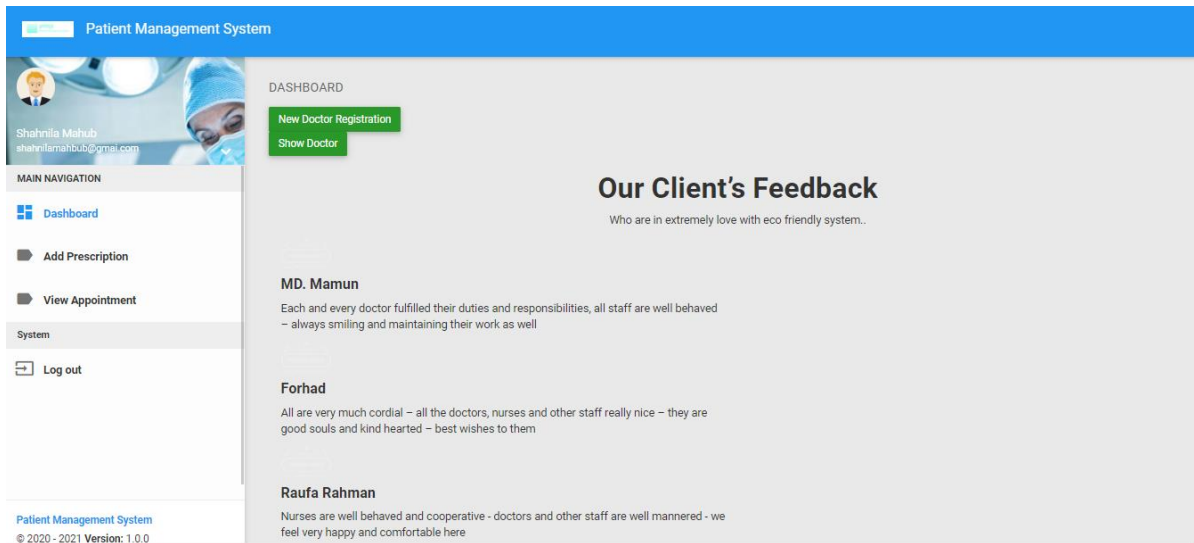


Figure 3.20: Doctor Dashboard of PMS.

Add New Doctor

Name	User Name
E-Mail Address	Password
Confirm Password	
	Back Submit

Figure 3.21: Add New Doctor Layout.

Patient Management System

Shahnila Mahub
shahnilamahub@gmail.com

MAIN NAVIGATION

- Dashboard
- Add Prescription
- View Appointment
- System
- Log out

Role Id	Name	User Name	Email
2	Shahnila Mahub	nitu	shahnilamahub@gmail.com
2	asifa	asifa	asifa@gmail.com
2	tasfia	tasfia fairuz	tasfia@gmail.com

Figure 3.22: View All Doctor Layout.

MAIN NAVIGATION

- Dashboard
- Add Prescription
- View Appointment

System

- Log out

Patient Management System
© 2020 - 2021 Version: 1.0.0

ADD NEW Prescription

Select Patient Name

Enter Medicine

Enter age

Enter blood group

Enter the name of disease

Test

Choose File No file chosen

Submit Back

Figure 3.23: Add New Prescription Layout.

MAIN NAVIGATION

- Dashboard
- Add Prescription
- View Appointment

System

- Log out

Patient Management System
© 2020 - 2021 Version: 1.0.0

All Appointment 1

Doctor name	Appointment taken by	date	time	Action
Shahnila Mahub	S Mahub	2021-10-05	evening	

Figure 3.24: View Doctor's Appointments.

3.4 Challenges

A complex process such as software development has its own set of problems that can be faced on a daily basis. Challenges must be addressed almost immediately to reduce their impact on final product.

Challenge 1: Project infrastructure

A non-established project environment is always a common challenge in terms of its effects on project execution. If the environment is not available, I will not be able to continue my project in time. I wanted to do my best on this project. To ensure the efficient development of the project, I carried out the User Acceptance Testing (UAT) phases, invested up front in a strong IT infrastructure to create a better software development environment.

Challenge 2: Development Expectations and Results

One of the main reasons for the complexity of software project is constantly changing requirements. Collecting requirements is much more than just a handful of business consultants designing your perfect product, it's a complete understanding of what the project will bring. To ensure product results match expectations and requirements, it is necessary to establish a robust process and line of communication that I did in my requirements analysis with communication with my teammates. I also did a comparison with other websites available in our country to find more important characteristics and requirements.

Challenge 3: Quality Assurance

On my project, I faced challenges in quality assurance because I had to complete the project within three months. So, checking code or suppressing errors was just one means by which I could save time and meet deadlines. Compliance with a formal quality assurance process is essential for a successful implementation. To maintain the quality of my project, I have clearly defined my requirements, which helped me save time. This allowed me to spend more time reviewing the code, finding and fixing bugs.

Challenge 4: Systems and Applications Integration

Nowadays Thousands of different technologies, systems, and applications are available to businesses. And the biggest challenge with integration is that they asked me to try different technologies in the development process and that often showed up at the end, delays, quality degradation, and sometimes even project failure.

Challenge 5: Security infrastructure

Increase in security incidents; A recent study estimates that 96% of all web applications have at least one serious security vulnerability. That is why the security infrastructure was a great challenge for my project. I have looked beyond technology to improve the security of my software. I developed the software using high-level programming languages with built-in security features. I also used Laravel's hash facade, which offers Bcrypt for storing user passwords.

Chapter 4

COMPETENCIES AND SMART PLAN

4.1 Competencies Earned

During my internship, I earned several competencies which are very helpful for my career. These skill improvements inspire me to try harder and to do better. They are listed below:

4.1.1 Planning Skills

I had to breakdown the project plan and made own day-to-day tasks. I created a Gannt Chart of the whole project that showed its timeline. This helped me gain planning skills.

4.1.2 Problem Solving Skills

In the first drafted design plan of my project, I had a problem in the patient's dashboard which is that a patient can take appointment of any preferred doctor but can't see their detailed information. I then proposed the solution to my supervisor that doctors' detailed information can be added on the website for a more informed decision-making process.

4.1.3 Creativity

While doing the project I had a problem regarding online prescription system for which I did not have any knowledge of directly fixing it. By the end of the development part, I sorted out the issue, it triggered my creativity.

4.1.4 Pressure Management

It was very difficult for me to learn new tasks and methods then directly applying them in my internship tasks, but I managed to do it under pressure. Being an introverted person, I had a lot of difficulty in clear communication which felt like a huge pressure to me. Also, all the tasks assigned to me had fixed timeline and even a slight change could affect my whole performance scale which pressurized me a lot. I handled the challenging situations well.

4.1.5 Data Modelling

For the project I added data into the database for testing. It avoids future expensive expenditure on ineffectiveness.

4.1.6 Structural Analysis

I designed the structure of the project how the dashboards of doctor, patient, and sample collector are going to function properly. Later I performed quality assessments on the structures to make sure they work perfectly.

4.1.7 Attention to Detail

I checked again and again for bugs in the project. Also, I found and corrected many design flaws which are hidden in the details.

4.1.8 Teamworking Ability

I worked with my team on this project by communicating without hesitation. I asked for help whenever I needed and completed assigned tasks on time. I maintained a professional and appropriate behavior with them.

4.1.9 Communication Skills

I had to communicate in English in the office which I found hard at first. But day by day I improved my communication skills by pushing myself forward. By the end of my internship, I could communicate my concerns fluently. I also communicated with the client we were working for.

4.1.10 Ability to Build Relationship

I built a good healthy professional relationship not only with my teammates and superiors but also with the client we have been working for.

4.1.11 Motivation and Enthusiasm

Some days the tasks were too hard for me to complete on time, but I always managed to stay motivated. My enthusiasm helped me push myself forward and complete assigned tasks timely.

4.1.12 Educational Commitment

I learned a lot in my university on projects and paper works. In the internship I had the opportunity to apply that knowledge into practice. During the internship, I learned so much more about planning and practical applications which only added to my learning. My educational commitment just increased, and I became more inspired to pursue a career in engineering field.

4.1.13 Adaptability and Flexibility

In the beginning I wasn't sure of what project I'm going to be a part of and what team I'm going to be a part of. It increased my concerns but gradually everything fell into right order and finally I became more adaptable and flexible to this type of situation where uncertainty is inevitable.

4.1.14 Leadership Potential

Though I was not in any lead position or had any task related to leadership, I motivated my teammates during difficult times. I pushed them when they were lacking behind on assigned tasks by setting example of completing own tasks timely. I participated in the planning and researching process and gave several insights. This reflects potential leadership within me.

4.2 Smart Plan

There are many methodologies for developing software (such as Incremental, Prototyping, Agile etc.). To develop this system, we have followed **Scrum** which is an Agile Methodology for developing software. An agile team is a nimble team able to respond to changes appropriately. Agile increases team structures and attributes that make communication simple which helps a lot in implementation. Agile is dynamic, content specific, and growth oriented. Agile process reduces cost of change because software is related in increments and changes can be controlled. Scrum is an agile software development method. Most popular agile methodology. Within each framework activity, task is completed through a process pattern known as sprints. The entire work is broken down into smaller tasks that can be completed within sprints. Everyone in the team needs to implement a feature. It is the job of Scrum Master to allocate tasks to each member of the team in every sprint.

A Scrum master is the facilitator for a nimble improvement group. The scrum master is not the undertaking head also is not considered responsible for results. The group in general oversees results. That does not mean that the activity is simple. In this project of developing a Patient Management System, our Scrum master was Prapti Iffat Audri. Her guidance and support helped me in many ways to grow as a software developer.

A Scrum Team can consist of three to nine developers. The development team works to achieve the targets of the sprint set by the Scrum Master. They are responsible for the product and the quality. Entire work in our project was broken into different tasks. The tasks were selected according to the Software Requirement Specification (SRS). Each sprint had some specific targets which developers had to achieve. The project was broken down to seven sprints where each sprint consists of one or two weeks. On Sprint one, I prepared my planning and gathered knowledge about my all-key features. Then in sprint two, I created frontend UI/UX of the application according to the SRS. Later in sprint three, I started to design database. After that on the fourth sprint, I started to create backend UI/UX with the help of web development team. Next, in sprint five, I started integrating web application with the Database. Finally, the next two sprints consisted of producing prototype, testing the prototype, and finding issues/bugs, debugging issues, and producing web application.

4.3 Reflections

The competences I've earned from My internship will reflect on my future. I have learnt teamwork, planning smartly, brainstorming with the team, making strategies, distributing work evenly among the whole team, and most importantly helping each other. All these qualities and skills that I have learned from my internship Are making me better at doing any project or even planning on doing any project. These skills that I have acquired Make me a better engineer. I have developed more communication skills and how to behave properly and professionally with my teammates. working on a project in an official environment is much different than working on a project in a university environment. My internship taught me to be more responsible because if I didn't complete my tasks daily then I Would have to bear the loss myself. It also taught me the value of time because once time is lost, I can't ever get it back. So, I had to do everything timely otherwise it would pressurize my own work. I didn't know how to do everything if and every task given to me by my supervisor, but I had

help from my teammates which made me better. They told me how to use resources and how to find them and helped me with my Underdeveloped skills. I also learned to communicate my issues and whenever I needed help with them in a proper way. Communication is a very important part in any profession. My internship has helped me with communication a lot. I also gained experience which is better than examples. Experiences help in the future in unexpected ways. Even the bad experiences also help to avoid problematic situations. I also lost my fears of starting a project because now I know how to plan before starting a project. Planning, analyzing the requirements, making a smart plan Can help make the project the best version of itself. I gained confidence by my internship, and I also learned to stay calm in a crisis.

Chapter 5

CONCLUSION AND FUTURE CAREER

It has been an amazing experience to work as an intern at Macadam IT. In these three months I didn't just learn about web development, but also earned valuable practical experience of working in an organization. I have never worked in a professional environment before, so it was a completely new experience for me, and I learned something new every day about the manners and approaches inside an organization. I also learn how to work as a team I am very happy to be able to produce a working prototype of the web application in this period.

5.1 Discussion and Conclusion

While working in a professional field, it is very important to complete the tasks assigned to you at your own responsibility within the given time. I believe I have managed to do so by achieving the targets set by my Supervisor and my Scrum Master and producing a working on the Patient Management System. The application can currently retrieve data from the database and add new users by registering them. on skills, testing patient management system and most importantly, learning about the approaches of an organization while working on a project. An organization like Macadam IT always thinks about profit, also how to produce more efficient user-friendly system and reusability while working on a project.

At the beginning of my internship, I set some goals for my personal improvement, and I am happy to say that my goals have been achieved exactly that way I wanted them to be. I have learned how to adapt to a professional environment and work in a team of developers. My confidence has increased dramatically with my skills as a Web developer. I am prepared to work in an organization and contribute to the growth and profit with all the skills that I have acquired.

5.2 Scope for Further Career

Patient Management System aims to provide health related fast and smart solution to the Doctors and Patients. Our system goes above and beyond to help the hospital get an efficient service in a timely manner. Although our future plan to make this website more

attractive and add more feature and add serial number system, payment management system. Some of the main scopes of development are given below:

- Develop the application management system and add serial number system.
- Develop the application management system and add the online Payment system.
- Develop the application management system and add mobile message confirmation service.
- Develop the application management system more for doctors, patient, and staff.
- Develop a Mobile application of doctor management system.

REFERENCES

- [1] “MacadamIt.” Macadamit.com, macadamit.com/index.php. Accessed 10 Sept. 2021.
- [2] Wikipedia Contributors. “Visual Studio Code.” Wikipedia, Wikimedia Foundation, 21 Mar. 2019, en.wikipedia.org/wiki/Visual_Studio_Code. Accessed 15 Sept. 2021.
- [3] Bhagat, Varun. “8 Features That Make PHP Laravel Framework Best.” PixelCrayons, 22 May 2017, www.pixelcrayons.com/blog/8-top-features-stats-facts-about-php-laravel-framework. Accessed 18 Sept. 2021.
- [4] What is a scrum master. “What Is a Scrum Master?” WhatIs.com, 2019, whatis.techtarget.com/definition/scrum-master. Accessed 21 Sept. 2021.
- [5] “What Is the Agile SDLC and How Does It Work? | Synopsys.” Wwww.synopsys.com, www.synopsys.com/glossary/what-is-agile-sdlc.html. Accessed 26 Sept. 2021.
- [6] “About MacadamIt.” Macadamit.com, macadamit.com/about.php. Accessed 1 Oct. 2021.

Appendices

Appendix A

Internship Reflection

In this chapter, I reflect on the internship. Regarding my learning objectives, I briefly talk about my experiences; if I achieved my goal, if I had difficulties, and what I think I need to improve.

Working method and working conditions in an office:

At first, I had no experience of working in an office. Although I have seen one, I have a better understanding of how the organizational structure works and how projects are set up. When I tried to work as a team, I realized the importance of team support and how to use and improve my personal skills. Dependence on external institutions and people forces us to adopt a flexible attitude. During my internship I also experienced compulsion. There was often uncertainty about whether and when projects could start. At first, dependency and insecurity were annoying, but they forced me to be flexible and see what else I could do.

Improvement in communication skills:

I had more difficulties with language than I expected. I thought I was good at communicating in English, most of the people I have worked with spoke in English in office. So, at first, I was reluctant to communicate, but got better day by day. My internship added to my communication skills, but I want to pay more attention to communication in the future. I can seem reserved and insecure. To contribute more to projects and make progress faster, I want to learn to appear more confident and express my ideas and opinions more certainly.

The use of skills and knowledge acquired at university:

It is difficult to say what skills and knowledge from my studies I could directly apply in practice in my internship. I learned database creation, project requirement analysis, project

feasibility analysis, various types of system development life cycles, general research; They taught me some basics of data collection, data processing, and creating research projects. That is practical and I have seen that research projects acquire the necessary skills and knowledge. Skills and knowledge that can be improved to work in a professional environment. Although I will learn and develop the necessary skills and knowledge while working in an organization, there are some things that I could already improve. It was not entirely clear what activities I could have done to achieve my learning goals. So, during my stay, I had some difficulty figuring out what to do. Before my internship, I spoke with the organization about the project that I could be part of, but no clear agreements were made about my activities. A more assertive attitude on my part might have helped. To avoid uncertainty in future projects, I will pay more attention to clear agreements and backup plans. Other aspects that I would like to consider in general are defining a clear research question and determining what data collection and analysis is appropriate. I often tend to focus more on data collection activities. During the internship I also saw that it is important to have your investigation cleared, because it guides you in the process. They arranged a general workshop; I was excited to participate in the workshop. Before that, I had some doubts as to whether such workshops could lead to useful results, as there are many stakeholders, each with their own interests. In this workshop, however, everyone involved was really engaged. It was interesting to listen to the ideas and discussions between the different stakeholders. This type of meeting is important because it helps to create a better understanding between the different parties. It allows to transmit information and dig into topics. It is also a way to excite each other and stimulate to put things into action.

Project organization:

During my internship I learned how to properly organize a project. That is why I saw

what aspects to consider when organizing a project (smart plan, data analysis, hardware requirements and software requirements). It is important to identify what knowledge you have and adapt the program to each group. It is important to convey an objective and sustained message that considers the views of many people. I also realized that the locals are very knowledgeable that could aid research and conservation. I have expanded my knowledge of methods. It is also difficult to create a standardized method. Through this internship I saw what elements of my career I liked and was excited again by.

Appendix B

Company Detail

Macadam IT was an owner-managed company in 2018 and it only started with a medical department. With two visionary CEOs and a handful of employees, they were successful in no time. In 2020, Macadam IT became a limited liability company and began expanding its business areas and expertise. Gradually, the company achieved significant market growth in the fields of medicine, analytics, pharmaceuticals, and information technology.

Macadam IT is owned and managed by a team of entrepreneurs and technocrats with global experience in using people and technology for business processes. Macadam IT's depth and competence lies in the unique technical skills of our employees that guarantee you outstanding performance through consistency, precision, reliability, on-time delivery, and the latest technology. The company strives to create high-quality products, solutions, and services backed by the latest technology and extensive global research. Macadam IT strives to provide you with the best solutions that meet a clear business need. We want to help our clients compete more effectively with solutions ranging from general business process automation, management information systems, e-commerce development, financial information management, geographic information systems, and mobile game development.

Company Philosophy:

Our vision is to build long-term strategic partnerships with clients in Bangladesh and abroad by providing an exceptional customer experience.

Our mission is to exceed customer expectations by maintaining transparency, providing easy-to-use software and solutions, and becoming the customer's first choice.

How we do it:

- We understand the business needs of our customers and we know how technology can be a tool to make modern businesses more profitable.
- Macadam IT combines technical excellence with excellent customer service and value for money.
- We value creativity and collaboration; Ideas are shared, and everyone contributes individually to the common goal.
- We assemble new teams for each project to ensure the best possible combination of skills and experience to meet customer needs and provide high-quality solutions.

Area of Expertise:

- **Web Based Application / Web Portal / Website:**

Macadam IT is a renowned company in Bangladesh with several development and implementation success stories for its national and international clients.

- **Managed Services:**

Macadam IT is an experienced provider of managed services for all vertical industries. We offer a full range of managed services from desktop to enterprise infrastructures for small, medium, and large organizations, including corporate and public environments.

- **Infrastructure Solution:**

Macadam IT Infrastructure Consultants are understandably familiar with supporting complex, multidisciplinary, and often cross-platform technology environments. We influence

our relationships with leading desktop and enterprise technology providers to assist you in selecting new systems and providing comprehensive implementation support.

- **Business Process:**

Automation Macadam IT supports the enterprise with Business Process Automation and Business Process Reengineering to provide features that increase productivity by reducing manual processes. By creating flexible automated business processes, organizations of all sizes can achieve the following benefits:

- Increased consistency and compliance in the application of business rules.
- More sales and lower costs.
- Optimize the process cycle time.
- Transparent, reliable, effective, efficient and compliance system.
- Automation optimization eliminating tedious manual processes.
- Support compliance initiatives with greater control and easily accessible audit trails.
- Increased responsibility through administrator access to previous activities and status.
- Higher productivity leads to higher throughput / shorter cycle times.

- **Network and Security Solution:**

Macadam IT provided thought leadership and differentiated values through secure and scalable on-demand application systems and solutions for data access.

- **Resources:**

- Strong IT experience with professionals with an average experience of 2 to 10+ years.
- Our technical team is equally diverse, with programmers, business analysts, quality control experts.