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Mental Healthcare Management System

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Mental Healthcare Management System

By

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Autumn, 2022

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January 19, 2023

Dissertation submitted in partial fulfillment for the degree of

Bachelor of Science in Computer Engineering

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

This is to certify that the report titled “Mental Healthcare Management System” is completed by me, Mim Islam (ID: 1820804), submitted in partial fulfillment of the requirement for the Degree of Computer Engineering from Independent University, Bangladesh (IUB). It has been completed under the guidance of Mr. Sanzar Adnan Alam (Supervisor). I also verify that all my work is authentic which I have presented and learning during my internship in Kodeeo Limited. All the sources and information used in this project and report has been duly acknowledged in it. All module and procedures of this project are being made after proper inspection and internet information.

It has not been prepared for any other purposes, rewards and presentations.

Mim Islam

Signature

19 January 2023

Date

Mim Islam

Name

Acknowledgement

First and foremost, I am grateful to Almighty Allah for His blessing. Without His concern, nothing can be possible. In my internship period, I confronted many physical and mental infirmities, which was sufficient for me to detach from this program, but with the blessings of Almighty Allah, I overcome those issues and successfully completed my internship program.

I would like to express my heartiest gratitude to my honorable supervisor Mr. Sanzar Adnan Alam (Lecturer), Department of Computer Science and Engineering, Independent University, Bangladesh, who supervised me for the purpose of this report under his proper guidance.

I express my sincere gratefulness to Mohammad Tohidul Islam, Technical Lead, Kodeeo Limited, for giving me the opportunity and a plate to learn, work and gain experience.

I am also thankful to the entire employee of Kodeeo Limited, who gave me long persistence hearing and answering my numerous question and queries uncomplainingly.

Additionally, I must emphasize the amazing workplace and teamwork of this company, both of which have helped me to deal with many issues.

Finally, I would like to express my gratitude to my parents, family, friends and faculty members for their continuous encouragement gave me the courage and determination to complete the internship project properly.

Letter of Transmittal

Sanzar Adnan Alam

Lecturer

Department of Computer Science & Engineering

School of Engineering and Computer Science

Independent University, Bangladesh

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

Dear Sir,

I am hereby submitting my Internship report, which is a part of the Bachelor Program curriculum. It is a great achievement to work under your supervision.

The report is based on “Mental Healthcare Management System” which I was assigned. It was a great opportunity to work at Kodeeo Limited, under the supervision of Mohammad Tohidul Islam, Technical Lead, Kodeeo Limited.

While doing my internship, I have the opportunity to meet all employees in the Kodeeo Limited. Almost each of the people I came across had been very helpful. My experience throughout this internship has been both intellectual and practical. This internship has provided me the chance to build a network with the corporate environment. I tried to make this report as informative as possible. However, I genuinely hope that this report will fulfill the objectives of my internship program.

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

Sincerely Yours,

Mim Islam

ID- 1820804

Department of Computer Science & Engineering

Independent University, Bangladesh

Evaluation Committee



……

Signature

Name: Mr. Sanzar Adnan Alam

Supervisor



……

Signature

Name: Ms. Ajmiri Sabrina Khan

Internal Examiner – 1 / Panel Member



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Name: Mr. Sarwar Shahidi

Internal Examiner – 2 / Panel Member



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Signature

Name: Dr. Mahady Hasan

Convener

Abstract

The internship is defined as obtaining practical experience from various organizations, which helps form a connection between theoretical and practical knowledge. It is essential because it is the first time for a student to acquire a keen practical understanding of different organizations. "A WebBased System for Mental Healthcare" project focuses on web development and design for the Mental Healthcare Management system. I create a website for the people who are facing mental health issues. In this project, I am attempting to provide a concept for the management system of Mental Healthcare. To build the project, I created a plan, gathered data, designed the website, and coded it. This project has provided me with some invaluable learning opportunities. This initiative has inspired me to pursue further development-related endeavors. This experience will be beneficial to my future work.

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Chapter 1

Introduction

Web applications are becoming increasingly popular and regarded a significant tool for business with their uses of communication between clients, collaboration with staff, safe data storage and generating insightful information from data. I was offered with this Internship opportunity by Kodeeo Limited to complete my CEN499 Internship Program course in Independent University, Bangladesh. I was assigned to develop a Mental Healthcare Management System in Kodeeo Limited. I was solely responsible for the Planning, Requirement Gathering, Analyzing, Designing, and Developing and Deploying the System. In this report, I have discussed my internship period at Kodeeo Limited, an overview of the work I have done, my experiences working for a software company, what I have learned and how it has helped me to develop and grow in a proficient way.

1.1 Overview /Background of the Work

Being an intern, the main challenge was to translate the theoretical concepts into Real Life experience. I started my Internship as a trainee at Kodeeo Limited where they gave me the opportunity to work on a web application named “Mental Healthcare Management System”.

Typically, Patients need to call at a hospital or a chamber to schedule an appointment with a doctor. When they call, assistants receive the call and record the details on sheets or on notebooks. Doctors do not have any access to these when they stay out of the chamber; therefore, they are not informed about that instantly. If a patient has new information about their mental health condition, then patient has to inform this to the assistants first, then the assistant will let that know to the doctor or doctor need to call their assistant every time for his/her patients’ update. As a result, doctors are unable to set up any appointments properly. Additionally, this existing technique poses a serious risk to the security of their information, as it may be lost or accessed easily by unauthorized parties; its confidentiality and integrity are not upheld. For this reason, the system is terrible and there are no reliable backups of it.

This web-based real-time ‘Mental Healthcare Management System’ will resolve all of these issues.

Doctors may access patient’s appointment lists, screening test information, and can fix their appointment consultation schedule in concurrent. This will significantly contribute to the ease of the life for both patients and doctors by having flexible scheduling and availability. By using this system, patients also can be assured of privacy and confidentiality. For future reference or auditing, all the data will be kept in the database.

1.2 Objectives

The project objectives are the things which we want to accomplish by the end of the project. The certain things that maybe achieved with the web-based application are as follows:

1. To provide everyone with access to professional treatment, whether they are at home, work, or even outside of Dhaka in a remote place
2. Automate the present manual patient data recording method, maintain a date-based patient database, and preserve user rights and data security
3. To easily collect the information of the Doctors and the Patients
4. To provide information about appointment date and time and overall patients details
5. To provide the free screening test for simple self-assessment and its result to patients
6. To access patient’s list in the system from any place, so that doctors can schedule their plan accordingly
7. To create a strong and secret database for easy access or retrieval of patients details and the users who registered to the system
8. To store patient’s data in the database for further reference or audit
9. To make the website dynamic so that the admin can update information easily
10. To build a time-saving system
11. To make a cost-effective system

1.3 Scopes

Features available to the user after the development of this web-based application **MHMS**:

Doctors and Patients can register with this web-based real-time Mental Healthcare Management System. Following the registration procedure, a login page will also provide. Both doctors and patients can utilize different user interfaces with a variety of functionalities. A patient can take a short free screening test for simple self-assessment purpose and after attempting in that screening test, patient will get an imprecise result instantly that might be beneficial in first step toward getting better treatment. Depending on that result, the system will suggest some doctors name, form those patients can choose doctor of their choice and can book an appointment of that particular doctor by checking their available consultation days and times. The patient will have access to the screening test result's records and a list of their previous test results' along with the date and time. The patient can also search for a doctor by the name of the doctor with available consultation days and time and might book an appointment of the doctor after looking for his/her choice. Doctor will set their consultation schedule by following those; patient can book an appointment of doctors' availability. Each Doctor will have access to check the appointment list, which will show how many patients took date wise appointment on his/her supervision. The doctor may also view the screening results of the patients' self-screening tests.

Chapter 2

Literature Review

A literature review is a thorough examination of previous research on a certain issue. A literature review looks at scholarly articles, books, and other materials on a given study topic. In other words, it assists the reader in understanding how the current study fits into the greater body of relevant literature. In such circumstances, the approach is usually the first thing to go, followed by components of the work.

2.1 Relationship with Undergraduate Studies

Knowledge and skills gained from undergraduate courses have helped develop the "Mental Healthcare Management System" project. It would have proven more difficult if these courses were not covered before working on this project. Some of the courses are:

- **CSC101 - Introduction to Computer Programming**

This was the first and a foundation course in our Computer Engineering degree. This course has helped us develop a strong pillar of computer programming and coding using C++. After completing this course, we had a complete breakdown and the foundation of complex and sophisticated programming problems into smaller segments.

- **CEN 203 - Data Structure**

This course taught how to manage and manipulate complex arrays, objects, classes, an array of objects, objects of an array, nested arrays, nested objects, etc. As "Mental Healthcare Management System" involves many complex data structures, the skills gained from this course made handling them much easier.

- **CEN 305 - Object-Oriented Programming**

This course is a deep dive into classes and their objects of programming. It also taught me how to write modular programs, making codes less repetitive and reusable. It helped design the "Mental Healthcare Management System" code in a modular format. In addition, as the application grew bigger, this practice helped avoid writing new modules from scratch by using parts of old modules and adding new functions to them.

- **CEN 401 - Database Management**

This course taught the fundamentals of database design and their uses of database management systems, the development process, architectural principles, relation algebra and SQL for a database. It also taught how to plan and design a project. It covered popular planning and strategy practices such as System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model, understanding database query language and components of DBMS etc. It helped us comprehend the fundamentals of database security and data formats, query processing and optimization strategies, and data access architectures.

These techniques helped in the development planning and the strategy of the "Mental Healthcare Management System."

2.2 Related Works

The internet is filled with various websites or web applications that are identical to Mental Healthcare Management System (MHMS). Every website or web application has its unique set of needs. Therefore, they are all unique from one another. In essence, a project might come from the integration of many subprojects. Several of them include the following:

wEvolve: wEvolve is an online mental healthcare service site, targeting the buoyant online-mental health consultation. Its landing page is informative as our developed project. It has the web version that was built by using a framework.

Vorosha: Vorosha is an automated web-based platform, built with a mission to create a "one-stop" mental healthcare platform for Doctors and Patients.

LifeSpring: LifeSpring is a similar health support site. Its landing page is also informative as our developed project. In it web versions; the website was built by using a framework.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

The Work Breakdown Structure is a schematic diagram that shows how a project is broken down into smaller segments that are more manageable. To make sure that our efforts were coordinated, we created a work breakdown structure (WBS) for the project. In order to prevent important deliverables from being overlooked, the work breakdown structure visualizes all scopes, communication points, risks, responsibilities and costs. It is the best toll for team communication and brainstorming. We used a top-down methodology to create our work breakdown structure.

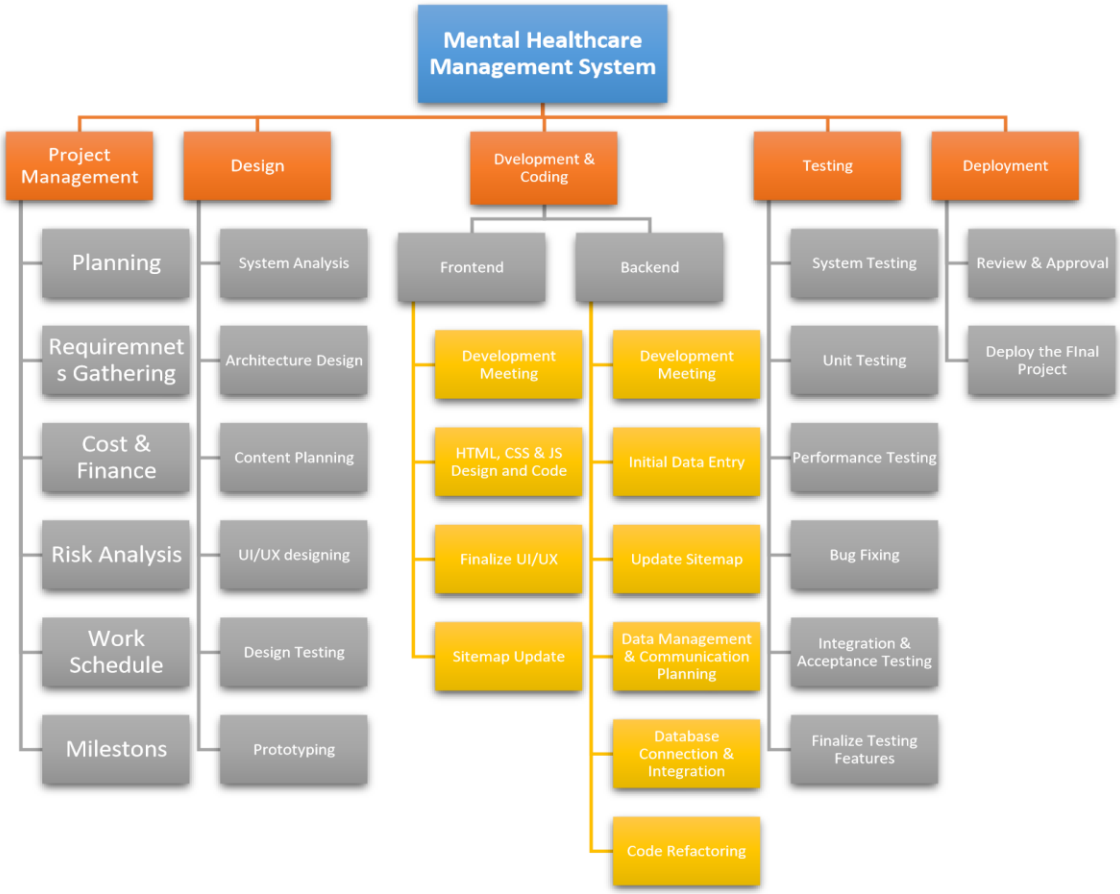


Figure 3. 1: Work Breakdown Structure of 'Mental Healthcare Management System'

3.2 Process/ Activity Wise Time Distribution

The process wise time distribution is a method of estimating how much time will be needed to design and complete a project within a specific time. This generates a conceptual map of how effectively team members must collaborates to finish a project and satisfy all of the deadlines. It is significant to a project management.

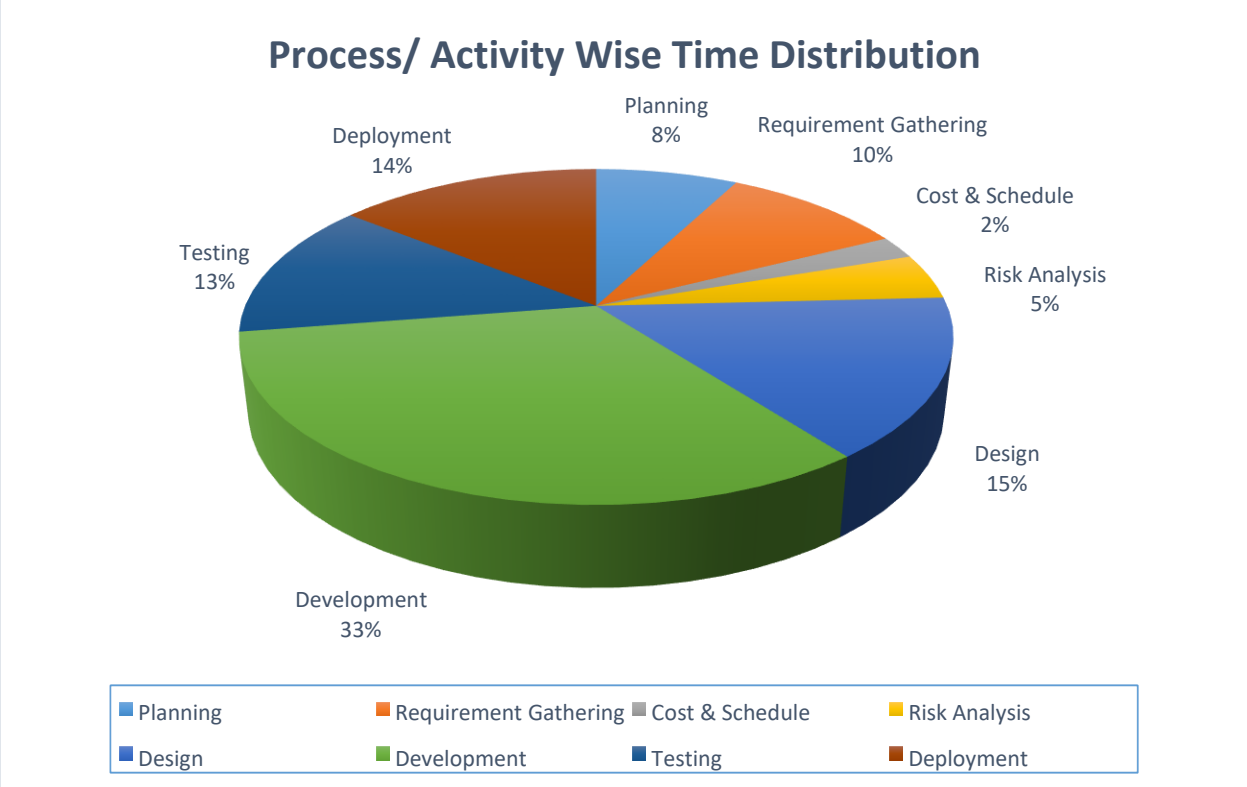


Figure 3. 2: Process/ Activity wise time distribution chart

The software development phases that we will go through to finish successfully the project are shown in this pie chart. In the relation of time, it also displays a list of the phases we will go through. The project's phases are each identified by a certain hue and percentage. Using the entire time allocated for the project, the percentage (%) shows how much time is required to finish each section.

3.3 Gantt Chart

A Gantt chart has been created to assist in scheduling and planning project work. It assisted in determining the resources required, the estimated duration of the project and the planned sequencing of the activities. Additionally, it was useful for controlling task dependencies. Once the project has begun, the Gantt chart has also been helpful for tracking its development. It helped in having a better picture of what should have been accomplished by a given time period, and when the project fell behind schedule; the proper measures were taken to get it back on track. The 'Mental Healthcare Management System' (MHMS) Gantt chart is shown below:

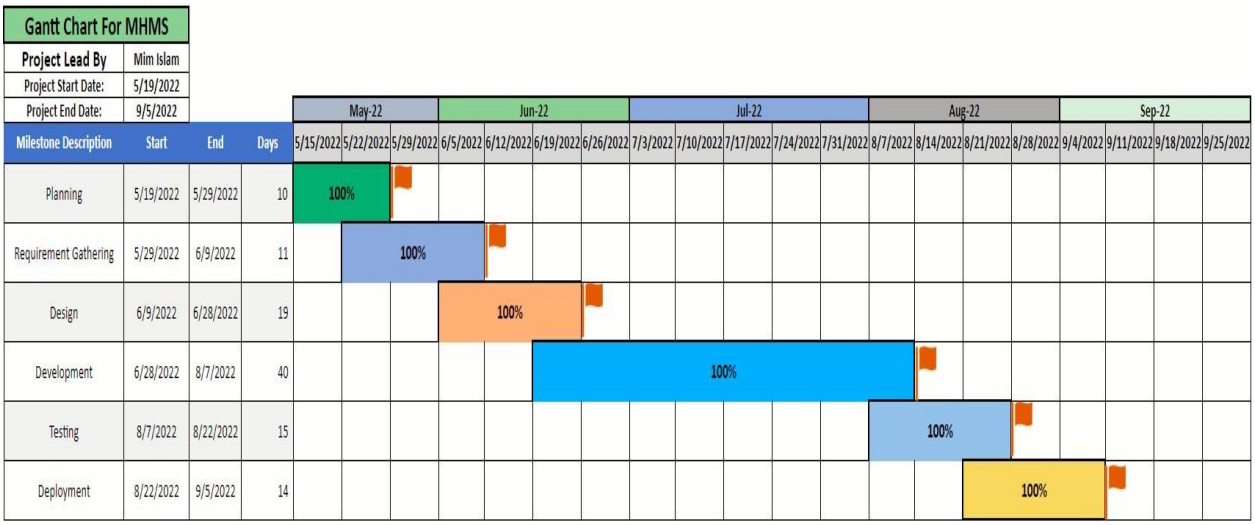


Figure 3. 3: Gantt Chart for Mental Healthcare Management System

The software development phases that we will go through to finish the project successfully are shown in this Gantt chart. Additionally, it displays the timeline's breakdown of the phases we will go through. In this Gantt chart, we focused on 6 steps of our development process. They are: Project Planning which was going for 10 days, Requirement gathering was going for 11 days, Design and Development part was going for 19 and 40 days, respectively. After development, we need to test our project, which was for 15 days and finally we need 14 days for deployment of the project.

3.4 Process/ Activity Wise Resource Allocation

In order to support the objectives of a team, resources must be allocated. In this project, developers are considered as the primary source, followed by the computers used in the office and servers needed to deploy the project. The details of each step in the project are as follows:

- **Project management:**

This is the first phase of the project, where the Managing director of the company presented the idea of the project. In the first twenty-one days the planning and requirement gathering process of this project, developers and the technical lead spends time defining how to build this project, what approach to take, smaller goals and deadlines and the overall requirements for completing the project. For example, computer specifications, software/ technologies used to build the web application, features and required developers. This part occupies total 22.1 percent of overall works.

- **Design:**

The UI is designed during this stage. We designed the application's web page for almost four weeks (19 days), and the management set out to create high-level and low-level diagrams of the project. This part accounted for 19.45% of the total works.

- **Development:**

At this stage, the designs for the web pages were complete and started working on writing the code for the frontend and backend of the application, while the management team kept regulating whether all the deadlines were maintained. The whole process is going for almost 5 weeks that considered 39.67% of the total works.

- **Testing:**

Testing will started as soon as features will be added to the site. Although the testing will be carried out by the developers simultaneously. At the end of the implementation phase unit testing for the application had started. This process is going for 15 days and considered 14.56% of the total works.

- **Deployment:**

After finishing the testing, the deployment unit will take 15 days that is accounting for 13.21% of the total workload.

Activity Wise Resource Allocation		
Activity	Days	Work Percentage
Planning	10	10.6%
Requirement Gathering	11	11.5%
Design	19	19.45%
Development	40	39.67%
Testing	15	14.56%
Deployment	14	13.21%

Table 3. 1: Process/Activity Wise Resource Allocation

3.5 Estimated Costing

The cost was determined using the website features that the client had requested. It depends on the size, specifications, functionality and style of the website. Nearly 72,500 BDT was the first evaluated costing for this project. This is a rough estimation of the project's cost. It can be expanded upon in the context of software updates and keeps up fetched. We made every effort to execute the project entirely within the budget. Additionally, we will be able to complete the project while staying under our allocated spending. The project's estimation is shown in the table below:

Features	Costs
Internet Bills	3000
Domain Bills	3500
Hosting Bills	1000
Project Manager	15000
Frontend Developer	20000
Backend Developer	30000
Total Costs	72,500

Table 3. 2: Estimation cost of the project Mental Healthcare Management System

Chapter 4

Methodology

A set of procedures that we employ in a particular field of inquiry or activity is known as a methodology. To create a strategy that is in line with our goals, it is necessary to research the techniques employed in our field as well as the theories or guiding principles utilized in the selection process. The methodology describes the specific steps taken to locate, choose, process, and conduct in-depth analysis on data related to a topic. One of the most comprehensive and functional websites is the one I have working on, and it was created with the help of contemporary web technologies.

There are several approaches and procedures used in software development, such as:

1. Agile
2. Waterfall
3. Spiral
4. Prototype
5. Iterative
6. Incremental
7. Scrum
8. Rapid Application Development
9. Extreme Programming

4.1 Software Development Methodology

The term “Software Development Methodology” refers to a process or a group of processes in an organized manner or an arrangement of procedures used in the field of software development to create software by breaking it down into smaller, parallel or sequential steps to speed up the development process and maintain discipline. It is a vast and massive topic that involves several stages, including planning, defining requirements, designing, developing, testing, deployment and

maintenance. It outlines the discipline that should be followed to build software and how to achieve success within a set amount of time.

A software development process in software engineering or computer programming is the procedure for segmenting software development activity into several phases to enhance design, product management and project management.

Software Development Life Cycle (SDLC) is a conceptual structure for project management that outlines the phases of developing an information system, from the early phase of a feasibility study through the ongoing support of the completed system. The software development phase is regulated by many software development life cycle models that must be specified and designed. The term "Software Development Process Models" is also used to describe these models.

To ensure success in the software development stage, each process model adheres to a set of steps that are specific to its type.

The following are some crucial stages of the SDLC life cycle:

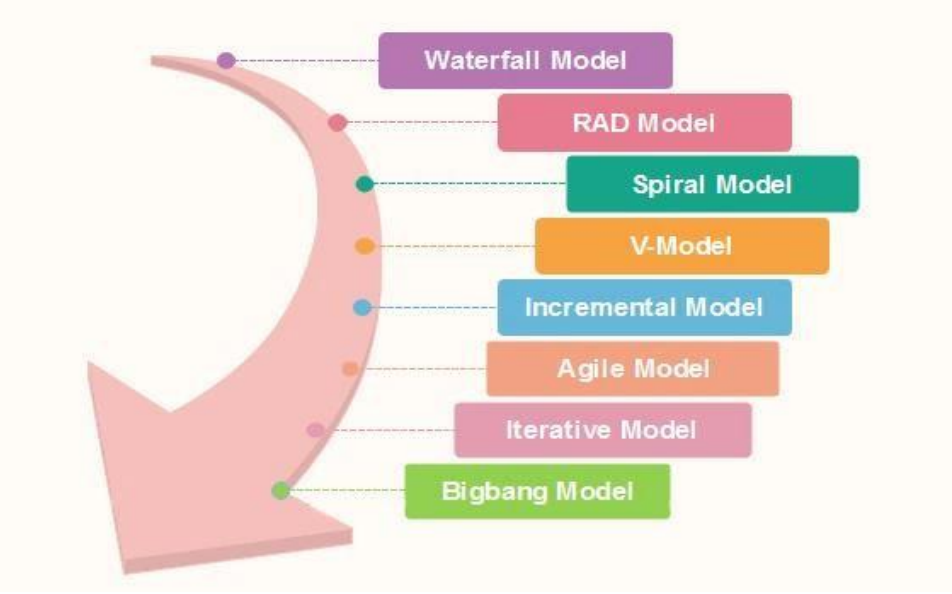


Figure 4. 1: Software Development Life Cycle (SDLC)

For this project, we have chosen the **Agile Methodology**. Agile is one of the most prevalent and widely used approaches for software development. It mostly concentrates on how to quickly meet the customer's needs. It can also be effective in iterative development. Agile is a method through which a team may manage a project by segmenting it into several phases, incorporating ongoing stakeholder participation, continuous improvement, and iteration at each phase. Customers are asked to describe how the finished product will be used and what problem it will answer as the first step in this method. It expands progressively rather than building a whole structure all at once.

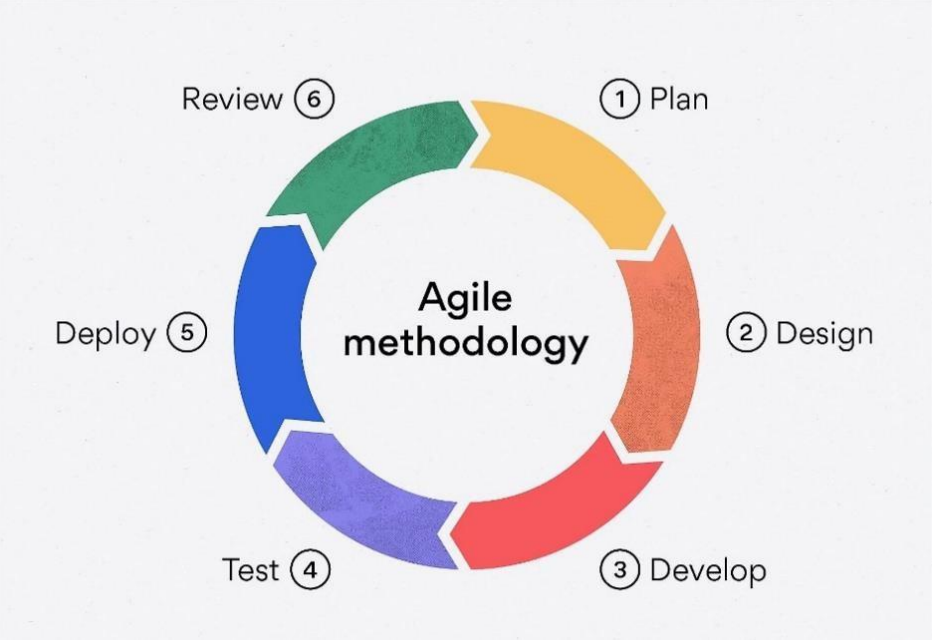


Figure 4. 2: Agile Methodology

The agile software development life cycle approach is used to produce the project. One of the easiest and most effective methods to translate a notion for a company's requirement into software solutions is through the agile software development process. Agile software development approaches include elements such as continuous planning, learning, and improvement, team engagement, evolutionary development, and quick delivery. It improves a person's capacity for change adaptation. Agile development is incremental, so features are delivered over time, providing benefits as the product is created.

Reasons for choosing agile methodology:

- **Faster development time:** Due to the iterative nature of the agile methodology, products are available for market sooner, helping businesses stay one-step ahead of the competition and reap the advantages of their efforts more rapidly. The cost of development and time to release are reduced by agile methodologies.

- **Flexible control:** Agile technique uses incremental development, so tasks and stages may be divided into smaller components and carried out in brief iterative bursts. This fosters visibility throughout the whole process by enabling project team members to discuss challenges and find solutions at scheduled scrum.

- **Productivity:** The progressive nature of the Agile technique results in projects being completed in manageable, short periods. The project can be deployed more quickly and development modifications may be made whenever needed.

- **Better quality:** Agile reduces time, cost, and quality while allowing us the capabilities to identify issues and create solutions swiftly and effectively, enabling team members to assess client reaction, seek input, and constantly enhance the system.

- **Customer satisfaction:** We will be able to give timely feedback through regular meetings and team engagement with consumer reactions, which will enable us to make significant adjustments that will help us satisfy customers' expectations and requests throughout the development lifecycle it produced satisfied and pleased consumers. Agile enables us to establish strong connections with our clients, enabling us to tackle difficulties as a team.

Chapter 5

Body of the Project

The project's body comprises a thorough examination and research of the project and the application that we are developing. The project's core is what enable us to comprehend the system's design, construction, operation, function and aesthetics with clarity. It also includes a comprehensive explanation of the project, its architecture and workflow, the needs and procedure of the application, as well as the project's design and view.

5.1 Work Description

Mental Healthcare Management System is a system that can handle doctor-patient relationships efficiently. Here, a simple, quick and flawless online supportive system between the doctor and the patient will be developed using this approach. With the help of this system, patients can easily find out about doctor consultation days and time by using this system, and from there they can book an appointment of a specific doctor whenever they would like. This web based application system solves the problem of maintaining and scheduling appointments in accordance with user preferences and needs. Users can also participate in free self-assessment test from where they will get to know about their current mental health state.

There are four modules in this system. They are given below:

Registration and Login: Where both the patient and the doctor can register for an account and log in using their email and password.

Update Profile: Where both the patient and the doctor can update their profiles.

Appointment Booking: Where the patient can book an appointment by checking the doctor's consultation days and time.

Free Screening Test (Self-Assessment): Patient can take a free self-assessment purposescreening test from where they will get an approximate result about their mental health condition.

Description of all modules:

Registration and Login:

- Patient Account Creation: Patient can create an account by giving the information of their required field First Name, Last Name, Password, Date of Birth, Image, Email Address, Mobile No, Gender, Marital Status.
- Doctor Account Creation: Doctor can create an account by giving the information of their required field First Name, Last Name, BM&DC Registration Number, Email Address, Mobile No, Image, Experience, Degree, Address, Gender, and Password.
- Login Process: Both the doctor and the patient can access their accounts using the registered email address and password.

Update Profile: Both the patient and the doctor can edit their profile from the "Update Profile" section.

Appointment Booking: A patient can make a doctor appointment through the "Book an Appointment" section from their registered account.

Free Screening Test (Self-Assessment): A patient can take a free screening test for self-assessment purpose to get to know about their imprecise mental health condition.

5.2 System Analysis

System analysis is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. System Analysis is conducted for studying a system or its parts in order to identify its objectives. A problem-solving technique improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. Analysis specifies what the system should do. This chapter contains parts of System Analysis that will help understand the project better.

5.2.1 Six Element Analysis

The six-element analysis of the project is as follows:

Process	System Roles					
	Human	**Non Computing Hardware**	**Computing Hardware**	**Software**	**Database**	**Network & Communication**
Browsing Website	All user	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Sign up/ Login	All user	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Admin Dashboard	Admin	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Doctor Dashboard	Doctor	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Patient Dashboard	Patient	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Manage Schedule	Doctor	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Manage Doctor	Admin/Doctor	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Manage Appointment	Doctor	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN

Book Appointment	Patient	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
View Appointment History	Admin/ Patient/ Doctor	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Manage Patient	Doctor	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Take Screening Test	Patient	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN
Generate Report	Admin	N/A	Laptop/ Smart Phone	Google Chrome/ Microsoft Edge/ Opera/ Firefox etc.	MySQL	WAN

Table 5. 1: Six Element Analysis of Mental Healthcare Management System

5.2.2 Feasibility Analysis

A feasibility study determines if a proposed project or system is practicable. The primary focus of this analysis is the confirmation of the design, plan, and strategy. It is an investigation of the software product's viability or a measurement of how beneficial product development will be from the perspective of the organization. This analysis is conducted for a variety of reasons to determine whether software products are appropriate in terms of development, implementation, and project contribution to the organization, etc.

The feasibility analysis consists of a few key components. They are –

- **Technical Feasibility:**

  In Technical Feasibility, current resources; both hardware and software along with required technology are assessed to develop the project. This technical feasibility analysis gives a report whether there exists correct required resources and technologies that which will use for project development. Along with this, feasibility study also analyzes technical skills and capabilities of

technical team and the existing technology can be used or not. Moreover, maintenance and upgradation is easy or not for chosen technology, etc.

Mental Healthcare Management System (MHMS) has developed using the Laravel framework. The use of latest version of Laravel framework and the regular HTML, CSS, Bootstrap and JS helped to build a much efficient and faster website. Moreover, as it is online based so no need of any installation or updates and both PC and mobile users can use this software via only an internet connection.

- **Operational Feasibility:**

The successful proposed system solves problems and meets system requirements set during the scope definition and problem analysis phases, determining its operational feasibility. In Operational Feasibility, degree of providing service to requirements is analyzed along with how easy the product will be to operate and maintain after deployment. Along with these, other operational scopes are determining usability of the product and determining whether a suggested solution by the software development team is acceptable or not etc.

The Mental Healthcare Management System has developed so that it can be conducted very quickly. People will accept it without any doubt. We hope that it will be thought-out solution that will be able to fulfill the users' requirements. People of all ages will be able of access it. It reduces physical and technical difficulties. To use this system, users do not need to be very highly technical.

- **Economic Feasibility:**

In an economic feasibility study, the costs and benefits of the project are thoroughly examined. This analysis covers all project development costs, including those for hardware and software requirements, design and development costs, operations costs, etc. After that, it is determined whether the project will be profitable for the organization financially or not. Additionally, it will cut down on the expenditures associated with squandering time, pen, and paper. Nevertheless, depending on the uses, advantages will appear.

The economic feasibility test was successful as well in this system. This Mental Healthcare Management System is a product that will reduce a huge amount of expenses since it was developed using open source software and a no-cost environments.

5.2.3 Problem Solution Analysis

The fact that the requirements change frequently is the major issue a web developer needs to cope with during the web development process. Before starting to develop any product, it is essential to gather objectives. All systems experience some issues both during and after development. There were many issues that arose during the project's execution. We made an effort to address and implement them. We followed some fundamental procedures for all issues. Here are some of them:

- Once the software is in operation, this system will need a reliable internet connection. Therefore, to get an uninterrupted internet connection can find a solution by purchasing mobile data, separate connections, or backup purposes.
- The project’s plan should be described.
- Power loss can be a big issue while users are utilizing the system because we need laptops and Wi-Fi routers in order to use this software. Users to overcome this issue can use the highcapacity batteries.
- Team must communicate with one another to find out the errors and solve those easily.
- Creating a list of specifications from the beginning of the project.
- The previous stages are repeated if the issues not fixed.
- Finding and implementing the particular solution to minimize the time effectively.

5.2.4 Effect and Constraints Analysis

The analysis of effects and constraints identifies potential modifications to organizational norms, as well as system limitations and drawbacks. Some significant consequences and limitations are experienced while utilizing the Mental Healthcare Management system as we begin to adapt to the new system.

Effects:

Keeping track of the past was challenging for the hospital when the software was not there. All information was kept in a file under the previous system. Therefore, it was difficult and required a large number of employers to find previous records concerning each hospital. The old system was good, but people nowadays are very used to the online system. After developing the software, it is hoping that patients can get more facilities than before as they can take services and book appointments and consult with the doctors whenever and wherever they want as they don't need to go to the hospital physically. Hence, Software is created to address this problem. From using this web application all information can be accessed from anywhere. There will not be a labor shortage to go through all the paperwork and monitor the entire process in software.

Constraint:

We made an effort to convert every manual tasks to online. However, some limitations still exists. The total procedure had a greater cost, and the price was not set. However, a specific amount of money must be paid on hosting, a domain, etc., for the existing software. The software's budget was initially an issue, but subsequent improvements were made and several functionalities and workloads were reduced to help the product stay within its budget.

5.3 System Design

System design is deriving a solution which satisfies software or system's requirements. We can define software design as translating requirements into software components and interactions among them. Any design may be modelled as a directed graph made up of entities with attributes which participate in relationships. Design represents the system, how it will work and how it can be assessed for quality. Design is the way to translate client's requirements into a system or software product accurately. Software architecture provides an abstract representation of the overall structure of software. This chapter contains numerous design level diagrams to have a clearer understanding of the system and flow of data.

5.3.1 Rich Picture

Rich pictures are visually represented and modelled using diagrams that show the primary components and their relationships to one another in accordance with the operational system. Its components pictures, text, symbols and icons are all combined to visually depict the scenario. Rich picture focuses on a situation's structure as well as its processes.

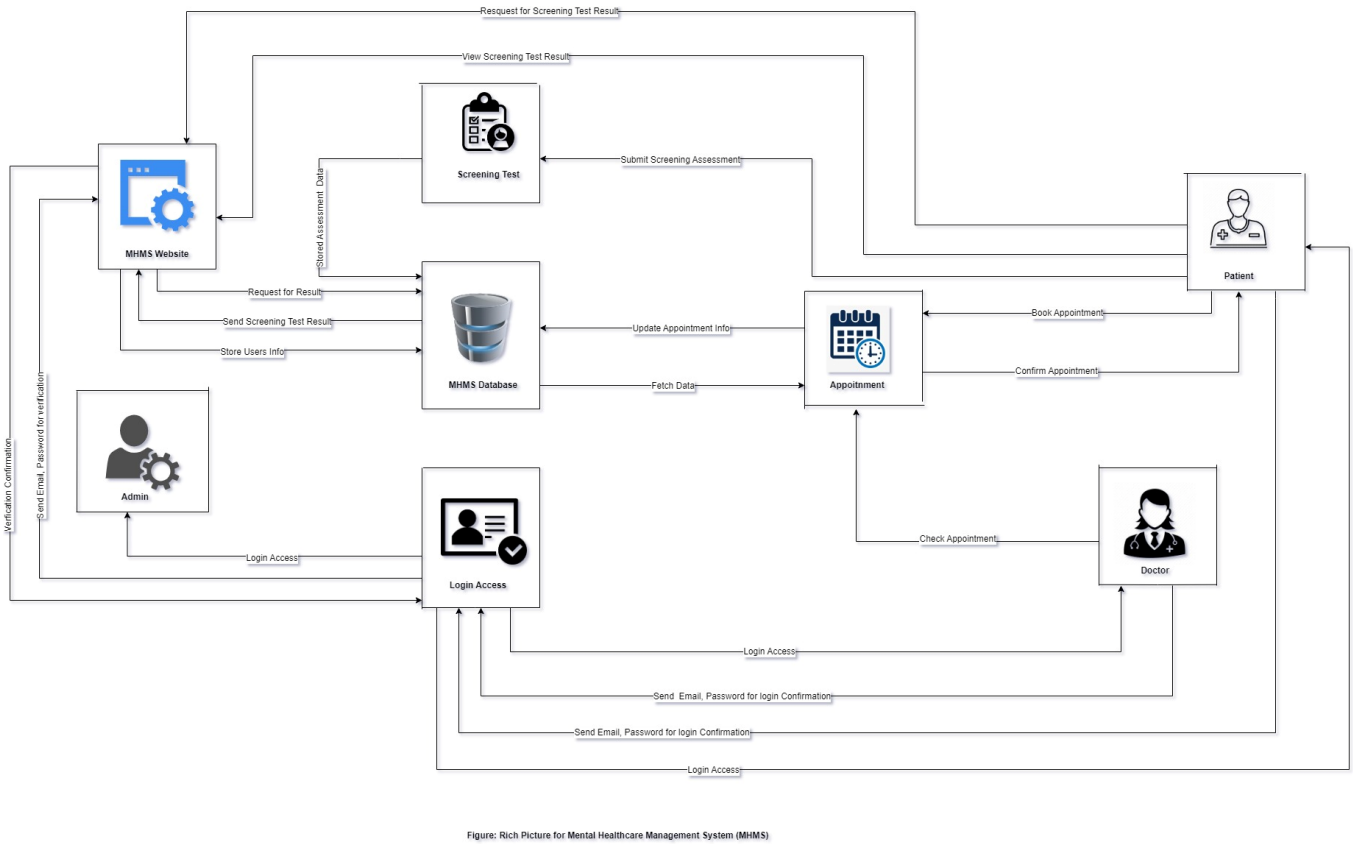


Figure: Rich Picture for Mental Healthcare Management System (MHMS)

Figure 5. 1: Rich Picture of Mental Healthcare Management System

5.3.2 UML Diagrams

A graphical depiction of a system is a UML diagram and its major participants, roles, actions, objects, or classes based on the UML (Unified Modeling Language) to understand better, update, manage, or keep system documentation. UML diagrams can show a project before it begins or documents it after it has been completed. UML diagrams can depict a project before it starts or write it once completed. However, UML diagrams' overall objective is to assist teams in envisaging how a project is or will work, and they may be applied in any sector.

Use Case Diagram:

An effective technique to condense information about a system and the users within it is to create a use case diagram. It is typically displayed as a graphic representation of how various system components interact with one another. The followings' includes use case diagrams for the Mental Healthcare Management system:

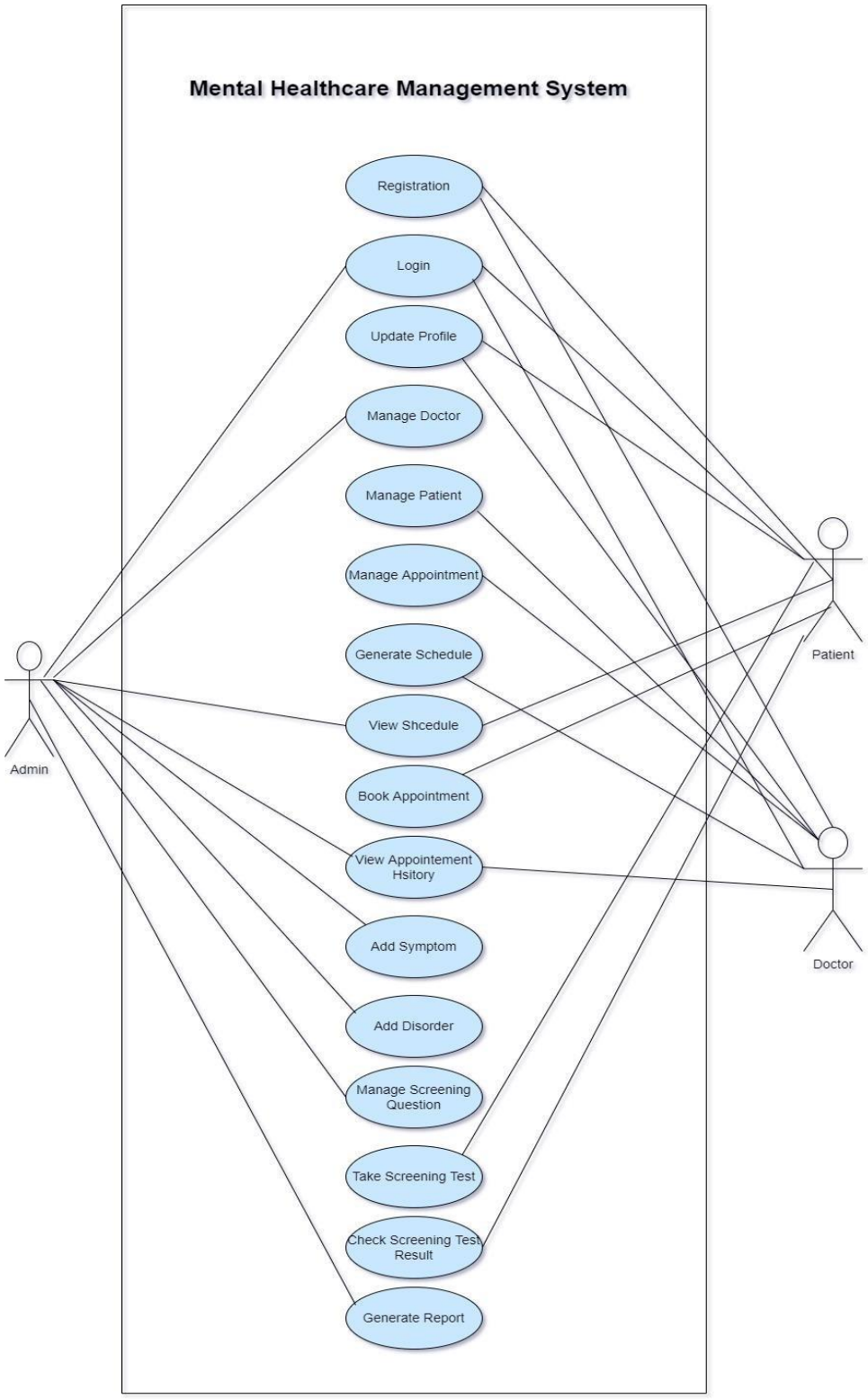


Figure 5. 2: Use Case Diagram of Mental Healthcare Management System

Activity Diagram:

A software's flow of activities is depicted in an activity diagram. This activity diagram is essentially a flowchart that shows how one activity leads to another.

The Mental Healthcare Management System activity diagram is shown below:

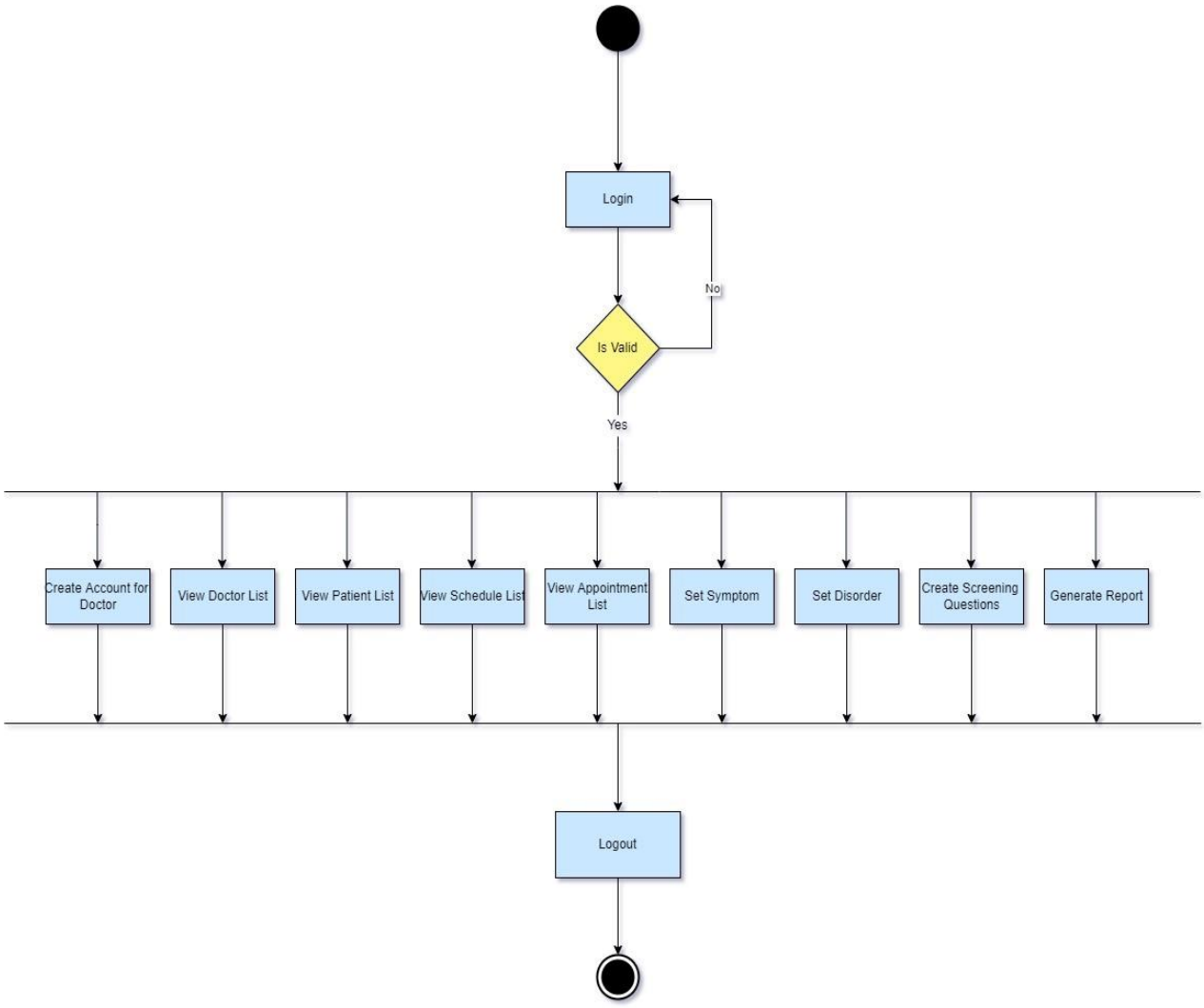


Figure 5. 3: Activity diagram for Admin

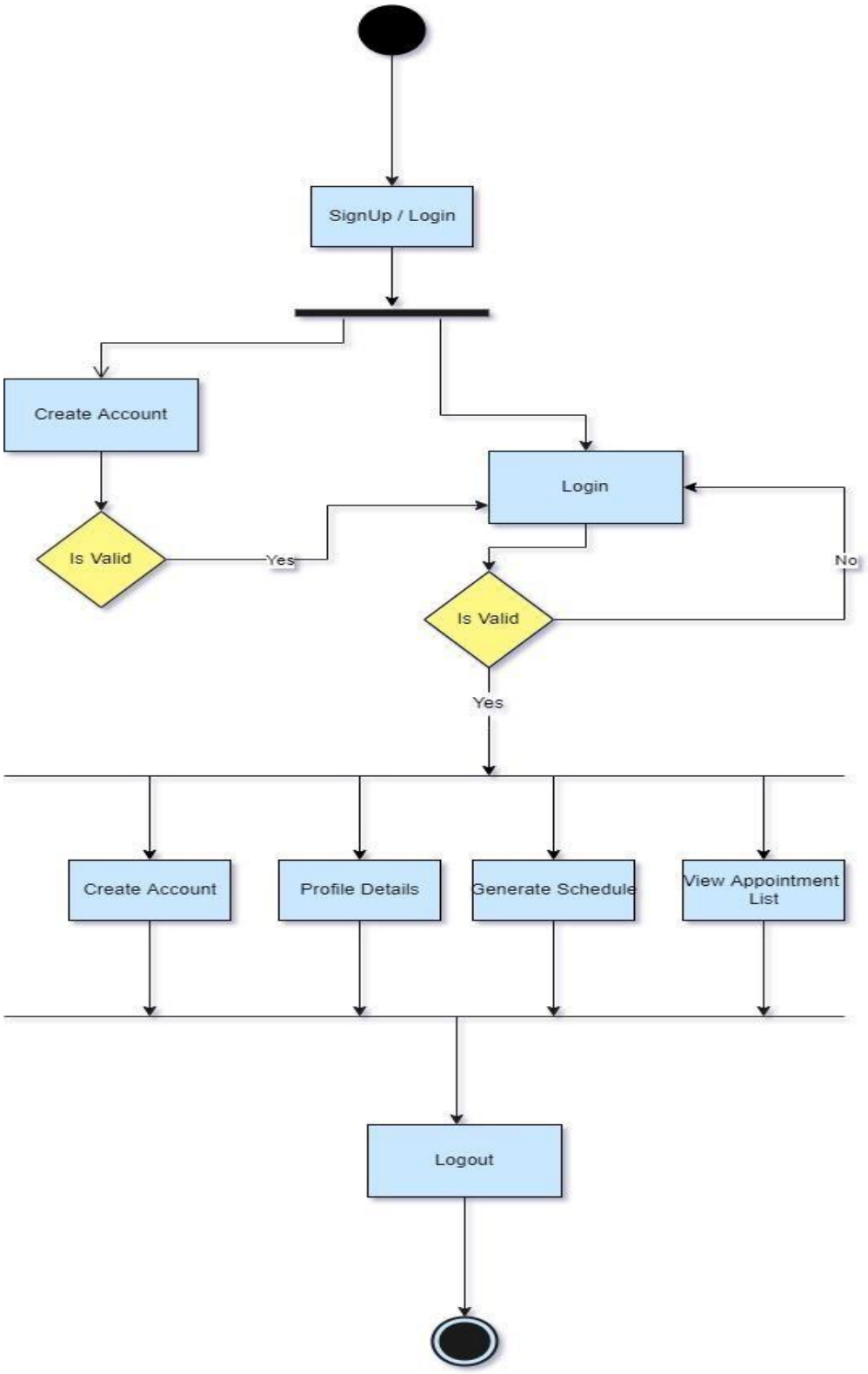


Figure 5. 4: Activity diagram for Doctor

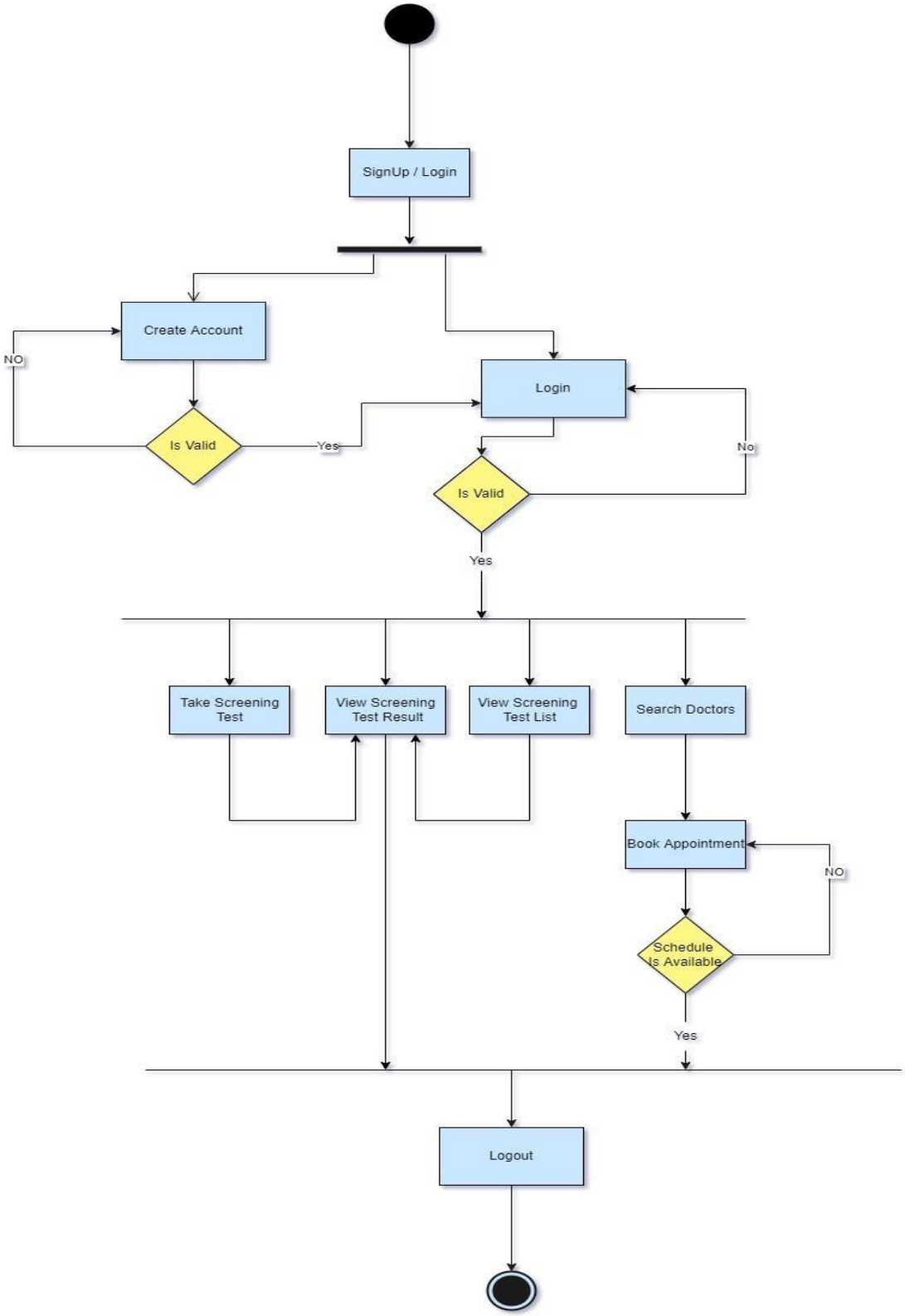


Figure 5. 5: Activity diagram for Patient

Entity Relationship Diagram:

The relationship between 'entities' such as people, things, or concepts, within a system is shown in a form of flowchart in an entity relationship diagram (ERD). The figure given below is the entity relationship diagram of Mental Healthcare Management System.

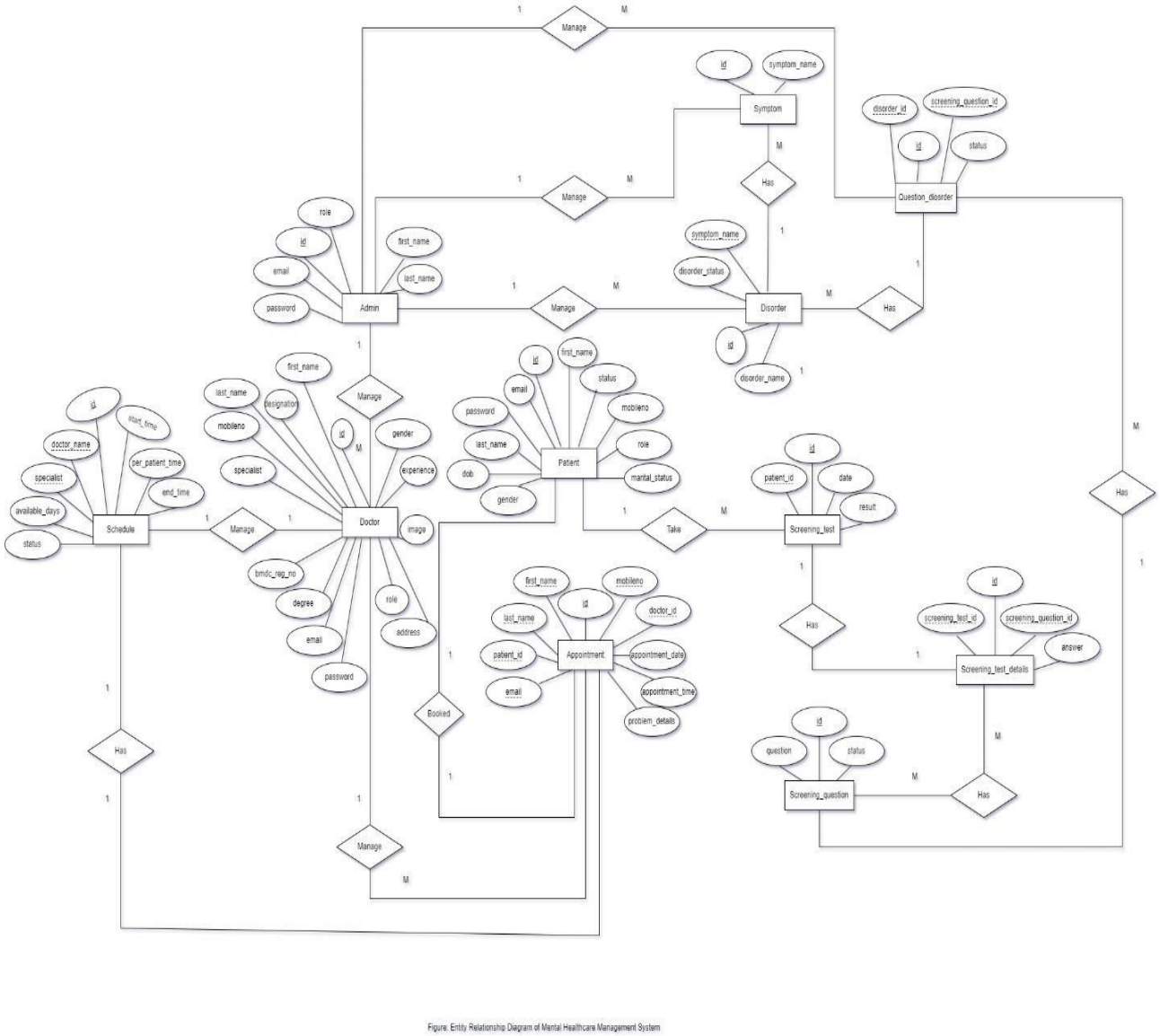


Figure: Entity Relationship Diagram of Mental Healthcare Management System

Figure 5. 6: Entity Relationship Diagram for Mental Healthcare Management System

5.3.3 Functional and Non-Functional Requirements

Functional Requirements:

These are the few functional requirements this system must have in order to achieve and accomplish its goals:

- Users (Doctors, Patients) will be able to sign up and login into the MHMS.
- Admin will be able to login into the MHMS.
- Admin will be able to add and see all Doctor's list in MHMS. Admin will be able to see the entire Patients list.
- Admin will be able to add, edit and remove the Schedule for all Doctors.
- Admin will be able to see all the appointments booked by the patient.
- Admin will be able to add, edit and remove Screening Question for Screening Test.
- Admin will be able to add and remove the Symptoms of Disorders.
- Admin will be able to add, edit and remove Disorders.
- Admin will be able to search the appointments by entering the date and can generate report of it.
- Patients will be able to view dashboard and edit their profile.
- Patients will be able to book appointment by doctors' availability.
- Patients will be able to see all the appointments, which was already booked by them individually.
- Patients will be able to participate in the Screening Test.
- Patients will be able to view their Screening Test Result.
- Doctors will be able to view and edit their profile.
- Doctors will be able to view the appointment list that will be booked by the patients.

Non-Functional Requirements:

A nonfunctional requirement is a description of the system's features, characteristics, and attributes as well as any limitations that might set the limits of the suggested solution. It explains the functionality of the system, features and focus on user expectations and the overall effectiveness of the system. Following is a basic explanation of non-functional requirements:

- **Database Security:** Reading, writing, and accessing the panel or database without authorization is not permitted. The security of the client's information must be guaranteed.
- **Usability Criteria:** The system is made to be simple to use and developed for a userfriendly environment.
- **Efficiency Requirement:** Patients should be able to book appointment quickly once all the functionalities have been deployed.
- **Availability:** The system ought to be accessible every 24/7.
- **Reliability Requirement:** The Mental Healthcare Management System should provide a reliable environment for both patients and doctors.
- **Economy:** Our system should be reasonably priced to produce and generate a steady, profitable income through sales. For system development, we will be using open-source software for developing the system, which will not cost anything to add on or buy packages.

5.4 Product Features

The functioning and advantages of a product are determined by its features. The following is a description of the attributes of the website:

5.4.1 Input

The user input we receive for this web application comes in many different forms. Here are a few of the most significant and important input data the system will be gathering in order to make the software work.

The following are the inputs for Mental Healthcare Management System:

Input	
Process	**Field Types**
Login	Email – string Password – string
Registration	Name – string Email – string Password – string Mobile No – integer Date of Birth – string Address – string
Book Appointment	Appointment Date – string Time – string

Table 5. 2: Input for Mental Healthcare Management System

5.4.2 Output

The output that users will see in our application comes in a wide variety of formats. Here are some of the most significant outputs that the system will show to the user in order to make the software work and accomplish its goals.

The following are the inputs for Mental Healthcare Management System:

Output	
Process	**Field Types**
Login	On success – Redirect to user dashboard On failure – Show error message "Invalid Credentials"
Registration	On success – Show success message "Registration done successfully" On failure – Show error message "Registration not done"
Book Appointment	On success – Show success message "Appointment Booked Successfully" On failure – Show error message "Appointment Booking failed"

Table 5. 3: Output for Mental Healthcare Management System

5.4.3 Architecture

A solution that satisfies technical and operational requirements is defined and organized by its software architecture. Software architecture improves characteristics including a number of choices, such as security, performance, and management. It describes the organization and interaction of software components. There are many types of architectures that are used among them. During the development of this project, an MVC architecture was used. That means a CRUD system is playing a key role in this project. All the inputs are saved in the database. And with given authority only intended users can access those data accordingly and update edit or delete them. As a result, the software transforms the data supplied as input into useful information. Consequently, it functions as an information system.

Chapter 6

Result and Analysis

Primarily Result and analysis are carried out at the application's interface, with little emphasis on core logic or structure. Generally, this is accomplish by trial and error. Usually test cases documented when the problems fixed. All test cases have been supported by testing methodology. A number of flaws and issues found early on, but some of them fixed after numerous iterations of applying different test cases and running tests. Few integrations are feasible but it will be included later. The tastings have not entirely been completed. However, all of the testing has been completed and the functionality is functioning flawlessly up to this point.

6.1 Software Testing

The primary objective of software testing is to identify program defects. The process of confirming that the developed computer software complies with the clients' needs is referred to as approbation.

The results of the tasks I have worked on are display in the tables below.

Results from Patient Panel:

Test ID	Test Case	Description	Steps Performed	Expected Result	Actual Result	Pass/ Fail
1	Patient Sign Up	User needs to register in order to book appointment and take screening test	1. Go to "Sign Up" page 2. Give all information 3. Click on "Register" button	Information will be stored in the database and open an account for that user	Information stored in database and opened an account for that user	Pass
2	Patient Login	Patient needs to "Login" with registered email and password	1. Go to "Login" page 2. Enter email and password 3. Click on "Login" button	Information will be checked in the database if found redirect to home page	Information will be checked in the database if found redirect to home page	Pass
3	Take Screening test	Patient can take screening test by giving questions answers	1. Go to "Screening" page 2. Click on "Take New Screening Test" button 3. Give questions answer 4. Click on "Submit" button	Information will be stored in the database	Information will be stored in the database	Pass
3	View Screening Test Result	Patient can view screening test result	1. Go to "Screening Test" section 2. View Screening result	Screening Test Result will be displayed from the database	Screening Test Result will be displayed from the database	Pass
4	View Screening Test List	Patient can view screening test list	1. Go to "Screening" section 2. There will be shown screening	Screening test data will be displayed from the database	Screening test data will be displayed from the database	Pass

			test list with date			
5	Book Appointment	Patient can book appointment	1. Go to Appointment section 2. Click on “Doctors” button 1. Then click on “Make an Appointment” button 2. Enter information for booking appointment 3. Click on “Submit” button	Information will be stored in database	Information will be stored in database	Pass
6	View Appointment list	Patient can view all appointment history from a list	1. Go to Patient Dashboard section 2. View Appointment list	Appointment list will be displayed from the database	Appointment list will be displayed from the database	Pass
7	Update Profile	Patient can update profile of their own	1. Go to Patient Dashboard section 2. Click on “My Profile” 3. Enter information to edit 4. Click on “Update” button	Information will be stored in the database	Information will be stored in the database	Pass

Table 6. 1**:** Testing Result for Patient

Results from Doctor Panel:

Test ID	Test Case	Description	Steps Performed	Expected Result	Actual Result	Pass/ Fail
1	Doctor Sign Up	User needs to register in order to check appointment and manage patient	1. Go to "Sign Up" page 2. Give all information 3. Click on "Register" button	Information will be stored in the database and open an account for that user	Information stored in database and opened an account for that user	Pass
2	Doctor Login	Doctor needs to "Login" with registered email and password	1. Go to "Login" page 2. Enter email and password 3. Click on "Login" button	Information will be checked in the database if found redirect to home page	Information will be checked in the database if found redirect to home page	Pass
3	Add Schedule	Doctor can add schedule for checkup patients in a specific time	1. Go to "Schedule" page 2. Click on "Add Schedule" button 3. Enter all information 4. Click on "Submit" button	Information will be stored in the database	Information will be stored in the database	Pass
3	Edit Schedule	Doctor can edit schedule	1. Go to "Schedule" page 2. Click on "Edit" button on a specific schedule 3. Input information to edit 4. Click on "Submit" button	Information will be stored in the database and redirect to schedule table	Information will be stored in the database and redirect to schedule table	Pass
4	Delete Schedule	Doctor can delete schedule	1. Go to "Schedule" page 2. Click on "Delete" button	Specific schedule will no longer will be displayed	Specific schedule will no longer will be displayed	Pass

5	View Appointment list	Doctor can view all appointment history from a list	1. Go to Doctor Dashboard section 2. View Appointment list	Appointment list will be displayed from the database	Appointment list will be displayed from the database	Pass

Table 6. 2: Testing Result for Doctor

Results from Admin Panel

Test ID	Test Case	Description	Steps Performed	Expected Result	Actual Result	Pass/ Fail
1	Admin Login	Admin needs to "Login" with registered email and password	1. Go to "Login" page 2. Enter email and password 3. Click on "Login" button	Information will be checked in the database if found redirect to dashboard	Information will be checked in the database if found redirect to dashboard	Pass
2	Add Doctor	Admin can add doctors	1. Go to doctor section 2. Click on "Add Doctor" button 3. Add doctor	It will redirect to the doctor list and show that doctor	It will redirect to the doctor list and show that doctor	Pass
3	View Doctor List	Admin can view all doctors list	1. Go to doctor section 2. View Doctor List	Doctors will be displayed from the database	Doctors will be displayed from the database	Pass
4	View Patient List	Admin can view all patients list	4. Go to Patient section 5. View Patient List	Patients will be displayed from the database	Patients will be displayed from the database	Pass

5	View Schedule List	Admin can view all doctors schedule list	1. Go to Schedule section 2. View Schedule List	Schedules will be displayed from the database	Schedules will be displayed from the database	Pass
6	View Appointment History	Admin can view all appointment history	1. Go to Appointment section 2. View Appointment History	Appointment History will be displayed from the database	Appointment History will be displayed from the database	Pass
7	Add, Edit, Delete Screening Question	Admin can add, edit and delete screening questions	1. Go to Screening Question section 2. Add screening questions 3. If needed click on edit button of a specific screening question 4. Enter new information 5. Click on "Save" button 6. If needed to delete then click on "Delete" button on a specific screening question	Information will be stored in the database and after deleting the specific screening question will no longer be displayed	Information will be stored in the database and after deleting the specific screening question will no longer be displayed	Pass

8	View Screening Question List	Admin can view screening question list	1. Go to Screening Question section 2. View Screening Question List	Screening questions will be displayed from the database	Screening questions will be displayed from the database	Pass
9	Add & Delete Symptom	Admin can add and delete symptoms	1. Go to symptom section 2. Add symptoms 3. If needed click on edit button of a specific symptom 4. Enter new symptom 5. Click on "Save" button If needed to delete then click on "Delete" button on a specific symptom	Information will be stored in the database and after deleting the specific symptom will no longer be displayed	Information will be stored in the database and after deleting the specific symptom will no longer be displayed	Pass
10	View Symptom List	Admin can view symptoms list	1. Go to Symptom section 2. View Symptom List	Symptoms will be displayed from the database	Symptoms will be displayed from the database	Pass
11	Add, Edit & Delete Disorder	Admin can add, edit and delete disorders	1. Go to Disorder section 2. Click on "Add Disorder" button to add disorder 3. For edit purpose, click on "Edit" button, edit the information, and click on "Save" button for saving it.	Information will be stored in the database and after deleting the specific disorder will no longer be displayed	Information will be stored in the database and after deleting the specific disorder will no longer be displayed	Pass

			4. For delete purpose, click on “Delete” button of a specific disorder.			
12	View Disorder List	Admin can view disorder list	1. Go to Disorder section 2. View Disorder List	Screening questions will be displayed from the database	Screening questions will be displayed from the database	Pass
13	Generate Report	Admin can generate report	1. Go to Report section 2. Select the dates from “Form date” to “To date”. 3. Click on “Filter” button for searching reports. 4. It will show the reports of those selected dates. 5. Then click on “Export” button to generate the report of it.	Information will be store in the database and if found redirect to report interface	Information will be store in the database and if found redirect to report interface	Pass

Table 6. 3: Testing Result for Admin

6.2 Graphical User Interface Result

In this section, I would like to show the screenshot of the web application so it can be seen about how the actual application looks like:

- Homepage:

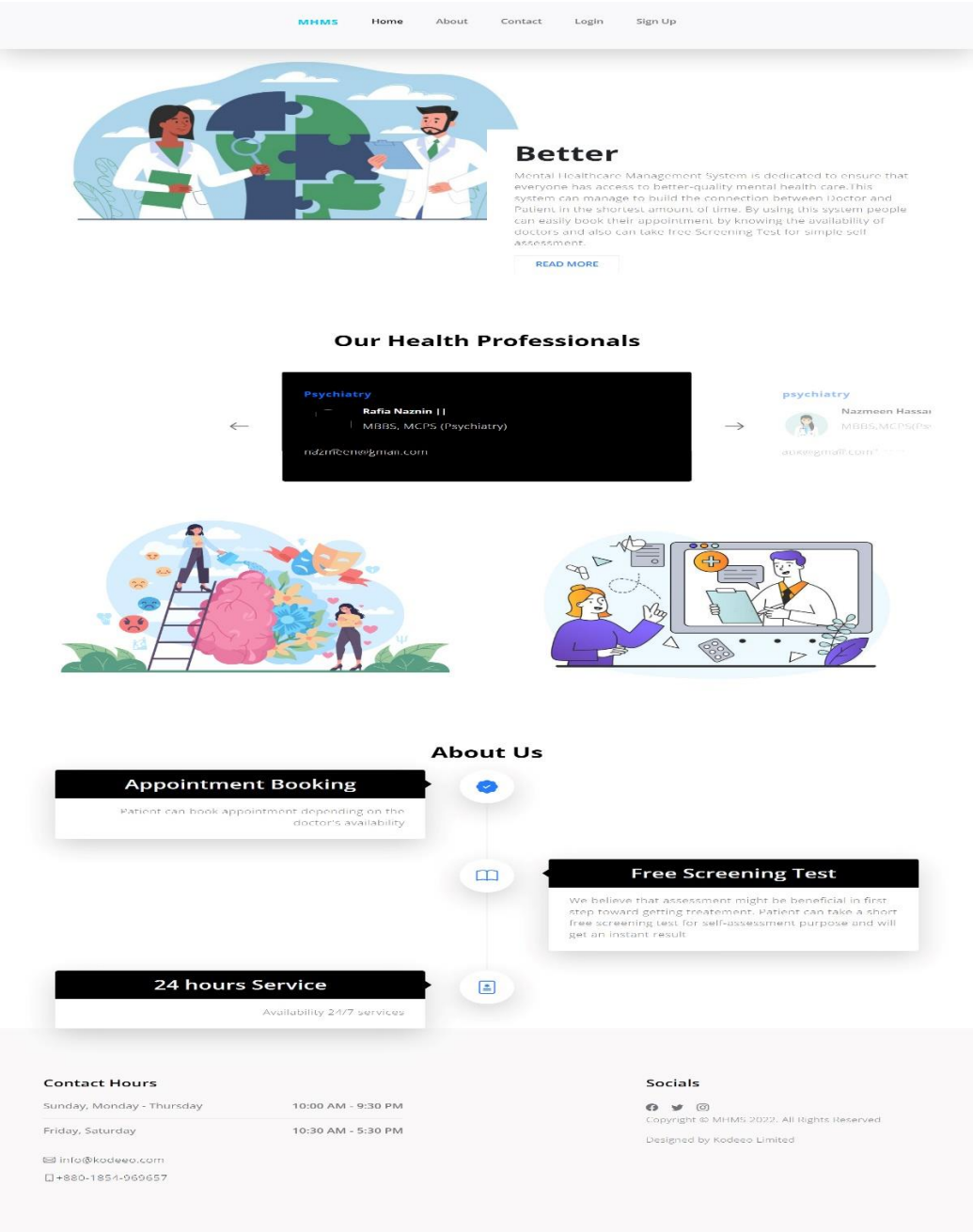


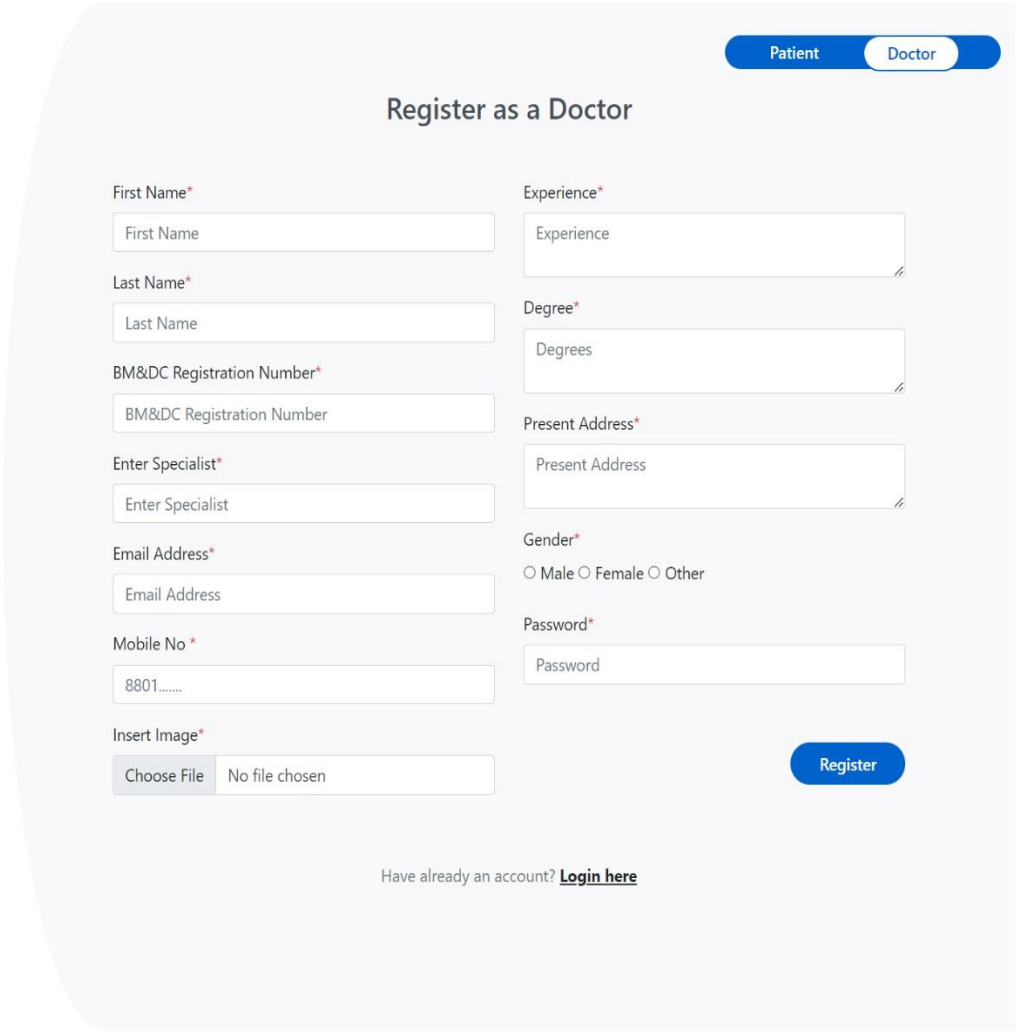
Figure 6. 1: Homepage Interface (Mental Healthcare Management)

These are the screenshots of the homepage. Anyone who goes to the website first sees this homepage. On this page, from the navigation bar, anyone can go to any specific page.

The last part is the footer. In the footer, there is some information about the system and the contact hours.

The header and footer are the same on every page for the users.

- Sign up page for doctor:



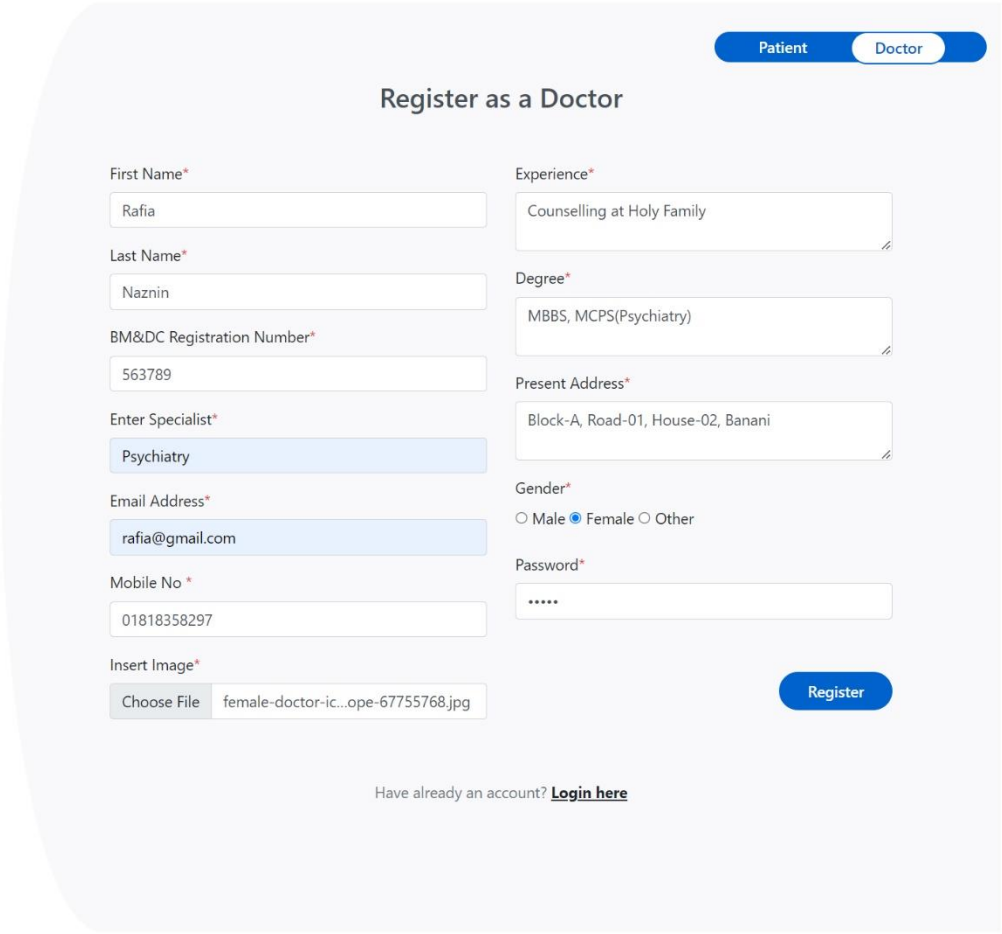


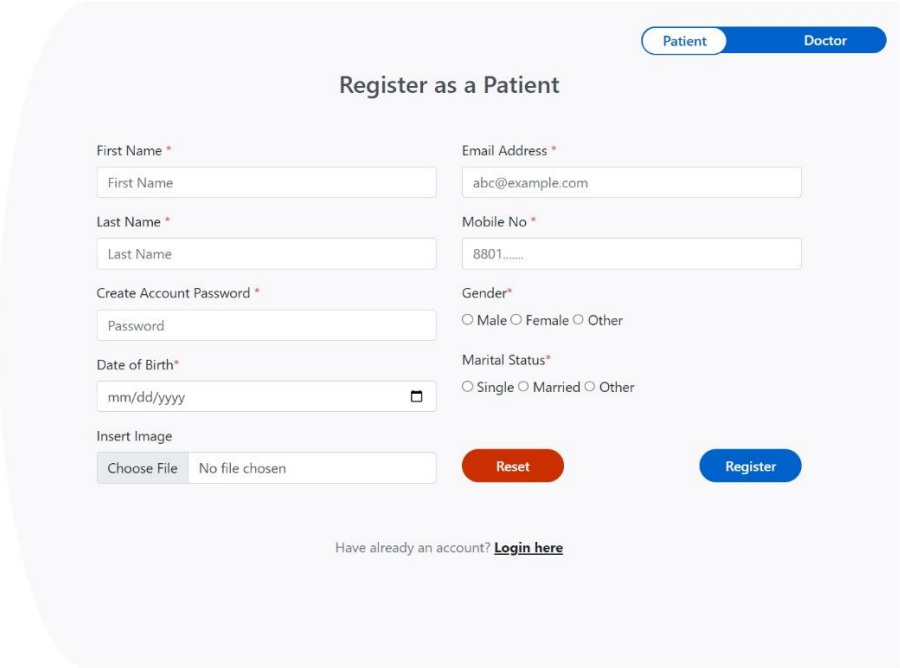
Figure 6. 2: Doctor Signup Interface for Doctor

These are sign up pages for doctor.

If the doctor gives an email address that is already in use then an error message will be shown. Also, if the user gives invalid phone number or didn't give the image and so on then also error message will be shown.

If the sign up is successful then the website will show a dialog message with a success message and will go to the login page.

- Sign up page for Patient:



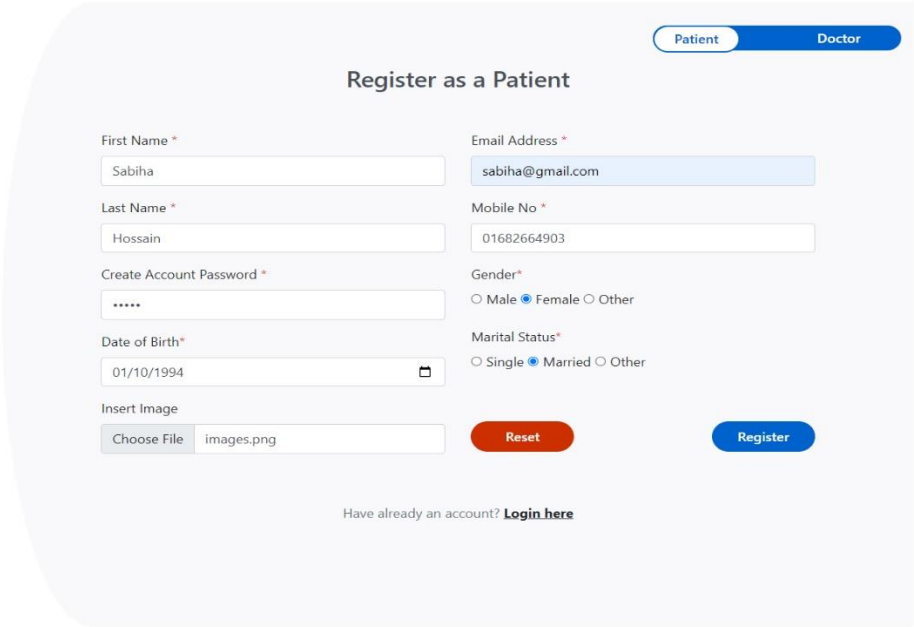


Figure 6. 3: Patient Signup Interface for Patient

These are sign up pages for patient.

If the patient gives an email address that is already in use then an error message will be shown. Also, if the user gives invalid phone number and so on then also error message will be shown.

If the sign up is successful then the website will show a dialog message with a success message and will go to the login page.

- Login page for users:

  These are login pages.

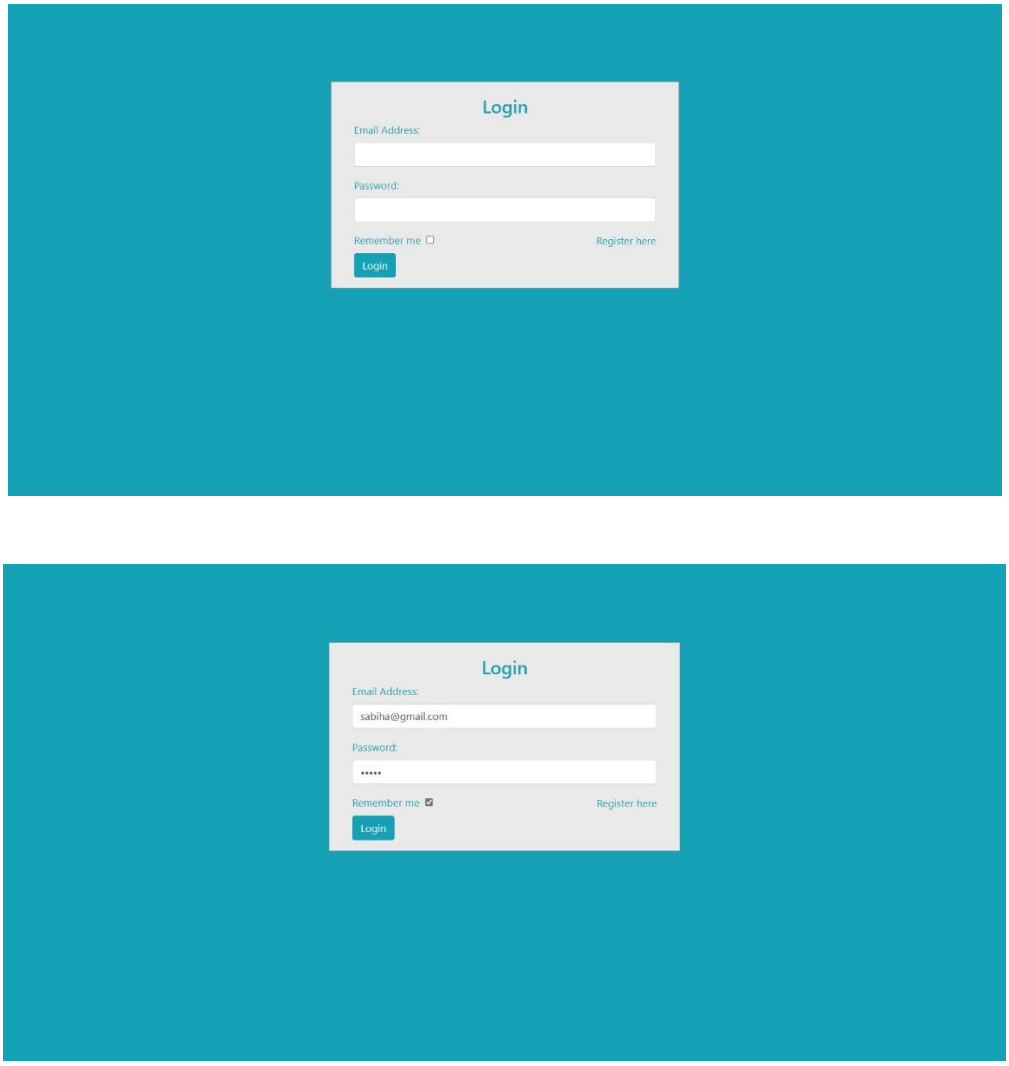
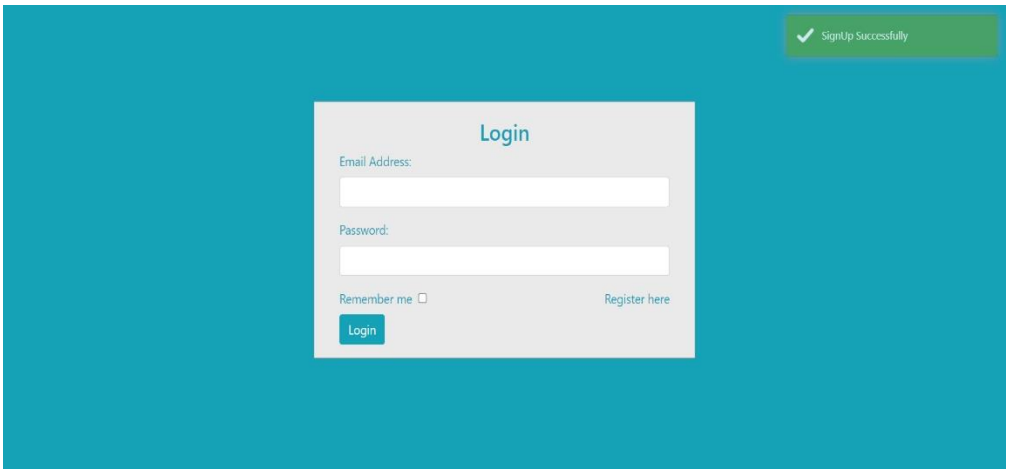
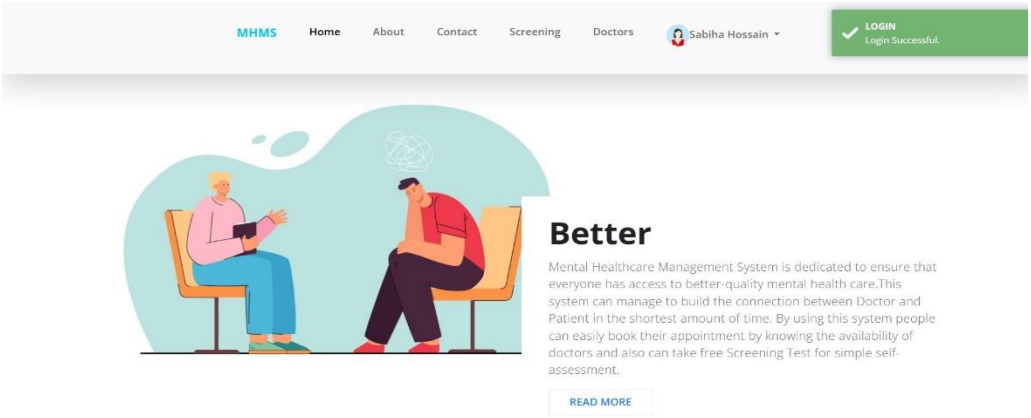
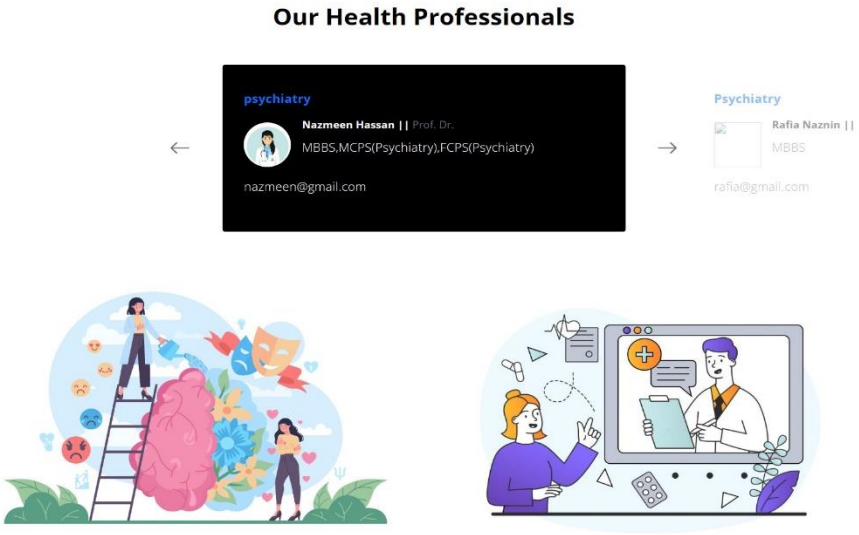


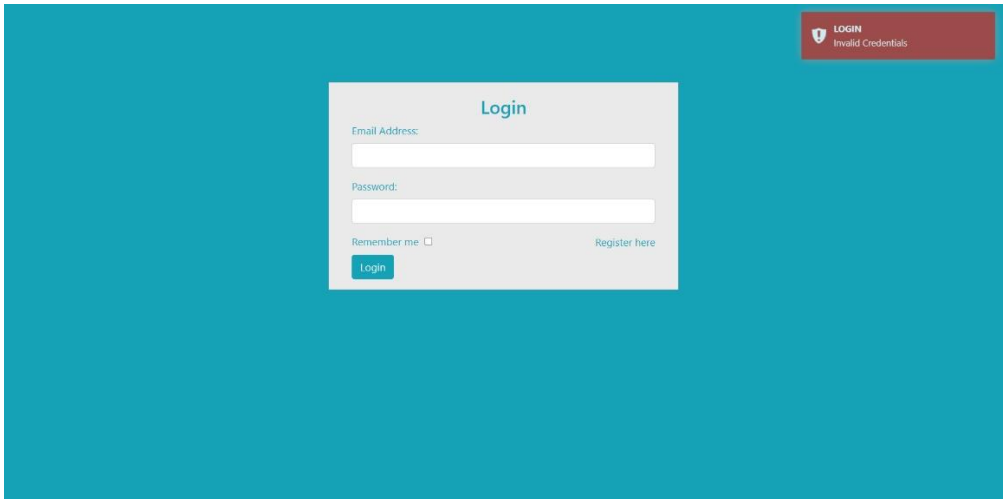
Figure 6. 4: Login Interface for users





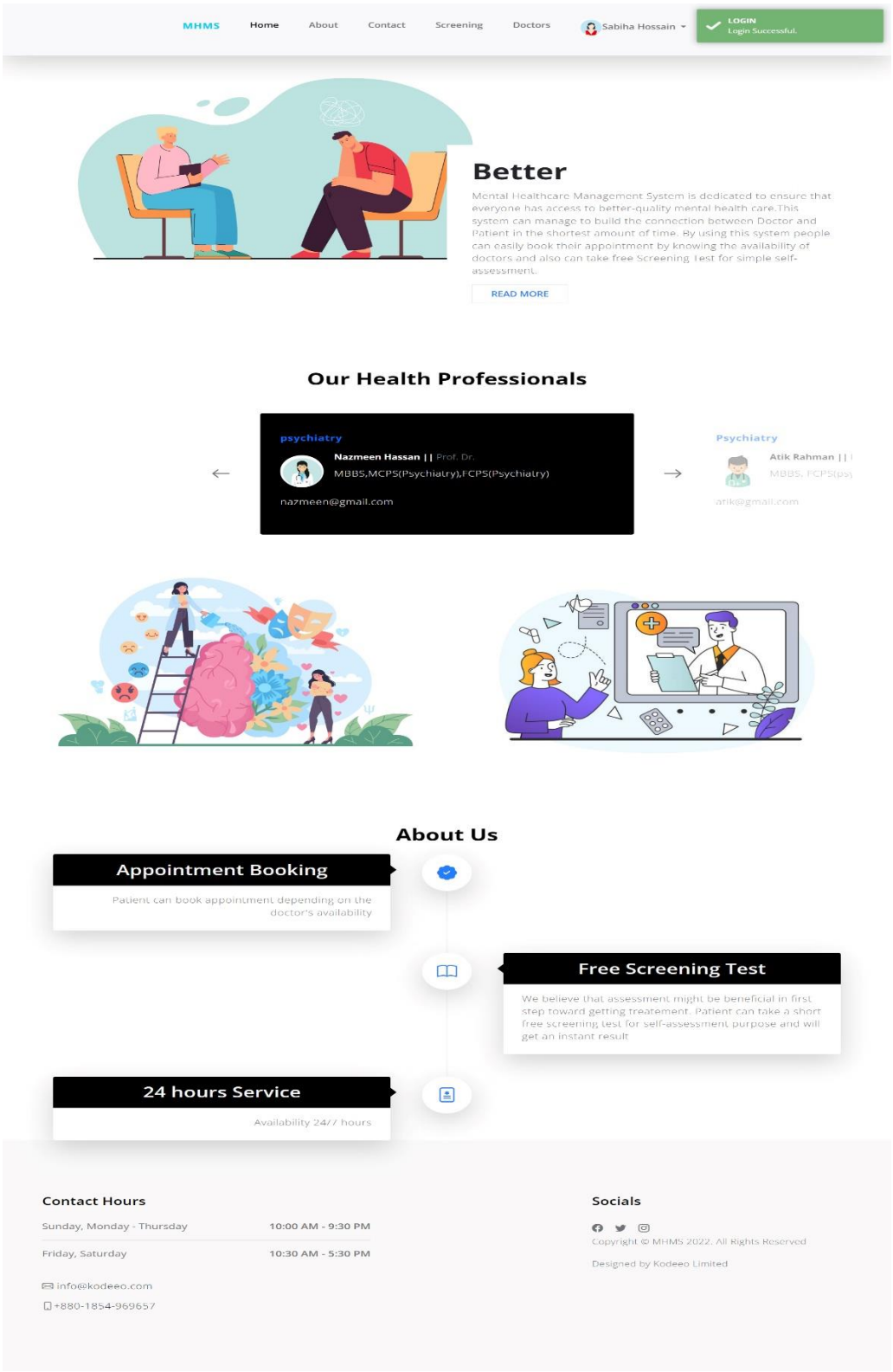


After successful login, this page will be shown for patient login. Here, some portions are changed in the navigation bar. Two new navigation item are shown which are Screening and Doctors and also on the right side, the user's image and name will be shown.



And if the login is unsuccessful, then an error message will be shown.

- Patient Interface after Login:



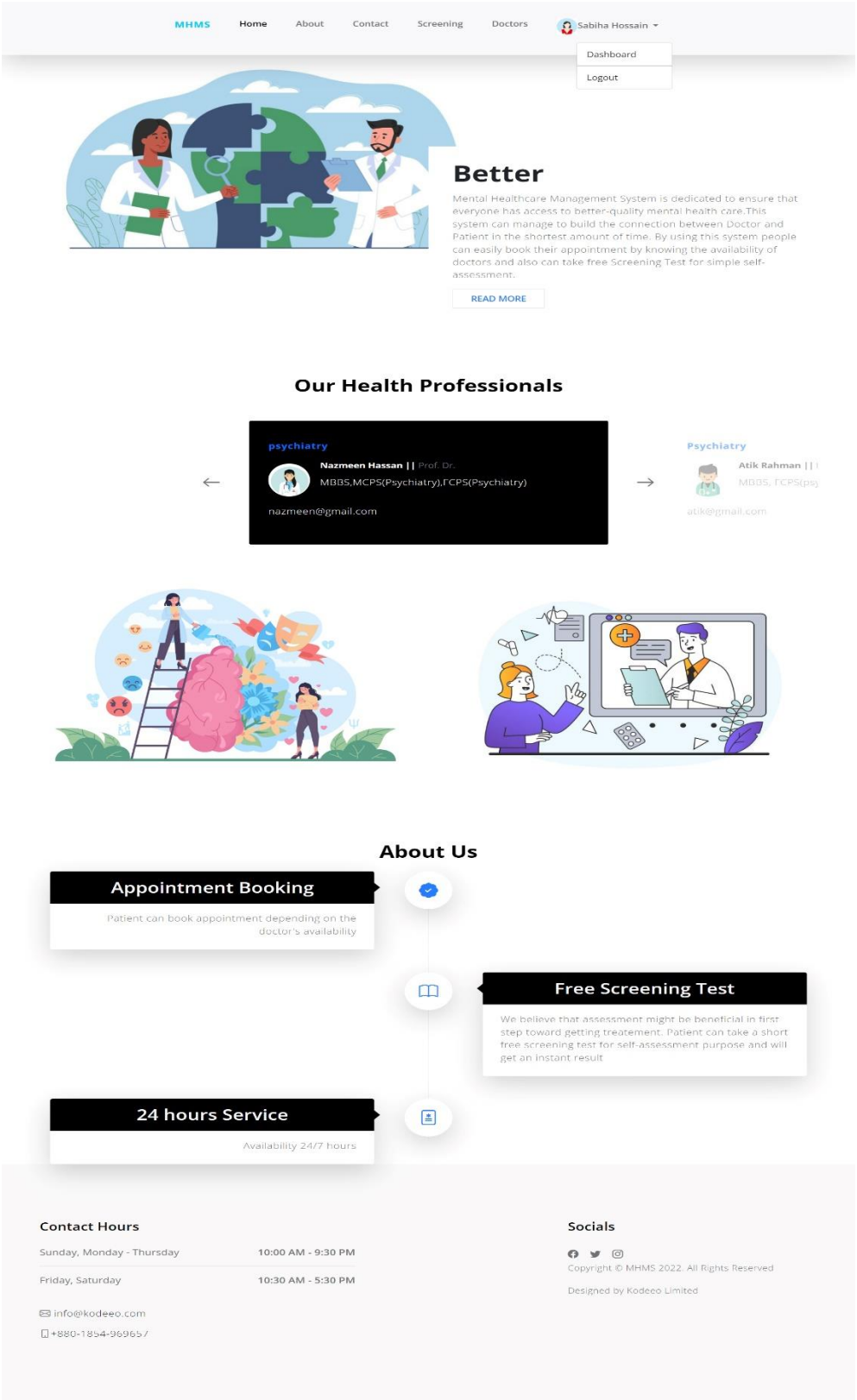


Figure 6. 5: Patient's Interface for Patient

- Patient's Dashboard Interface:

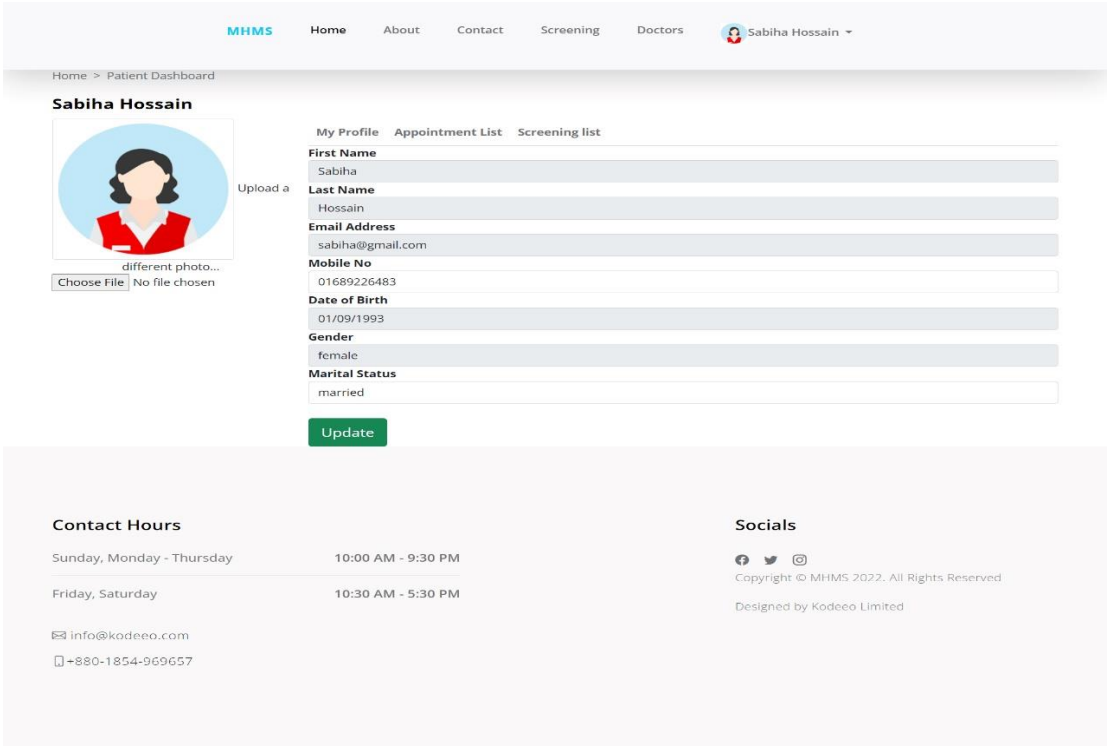


Figure 6. 6: Patients Profile Interface for Patient

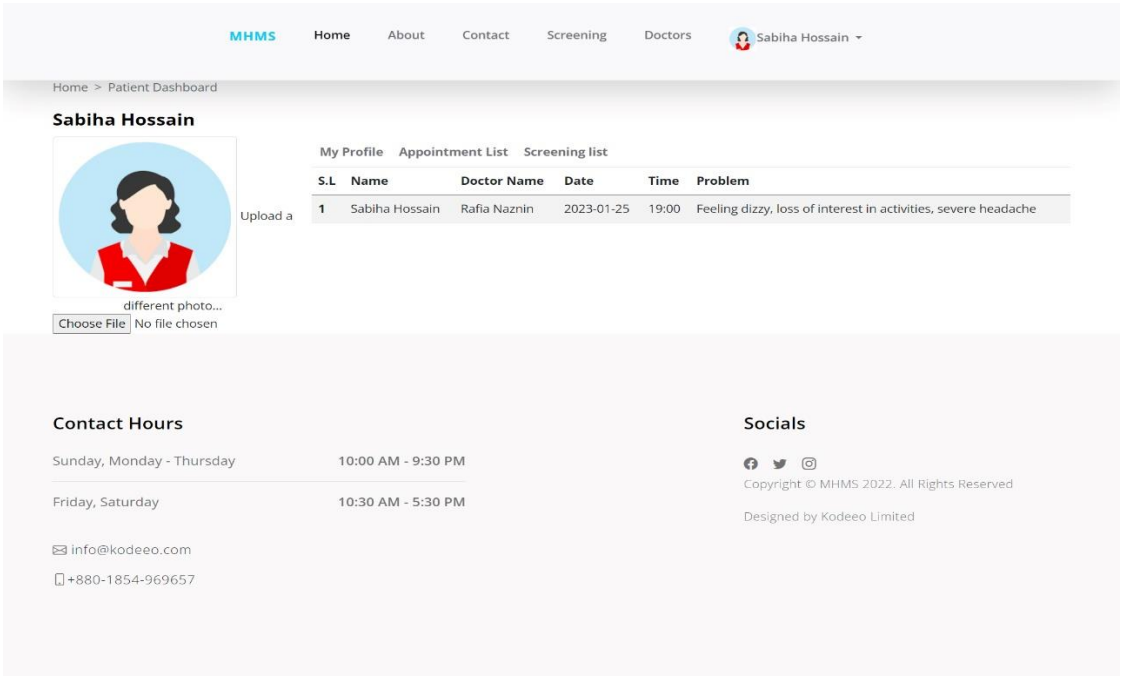


Figure 6. 7: Patient's Appointment List Interface for Patient

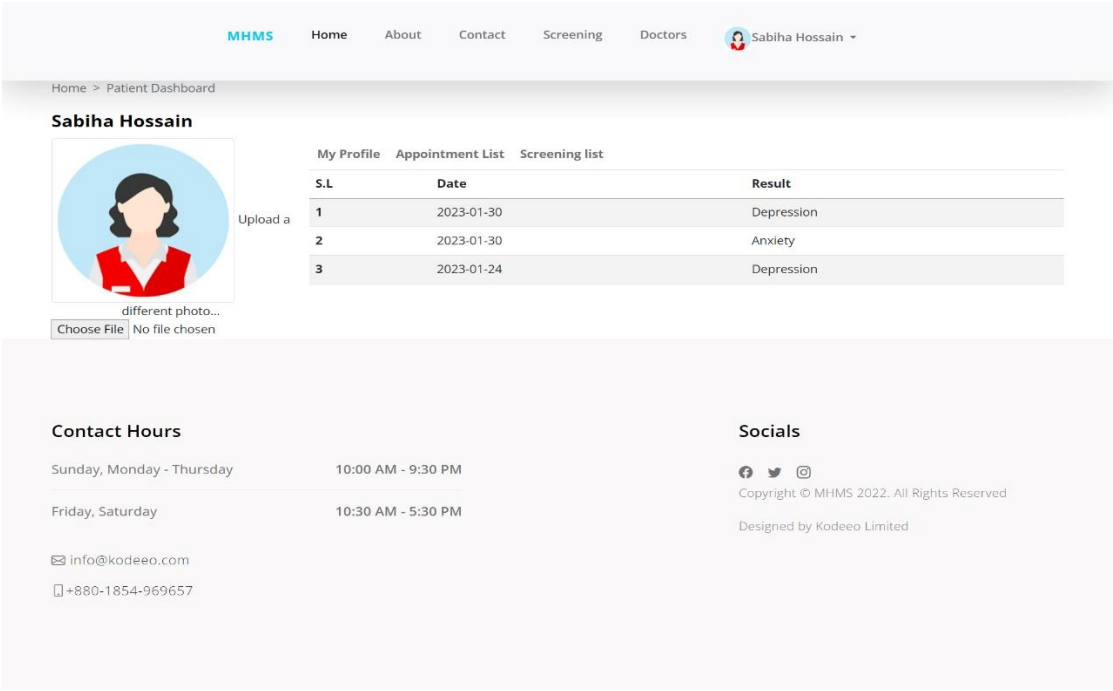


Figure 6. 8: Patient's Screening Test List Interface for Patient

- Doctors Interface after Login:

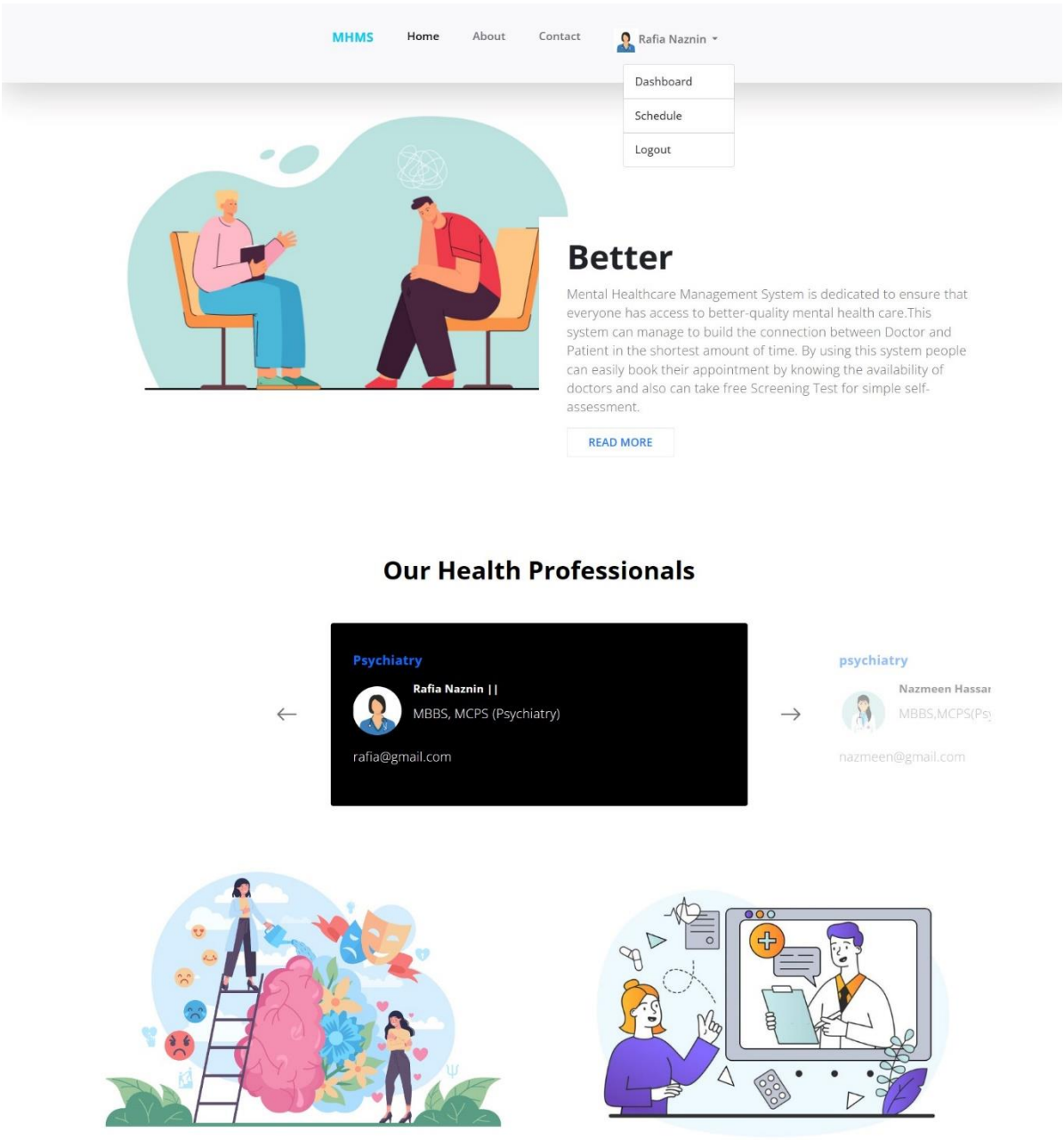


Figure 6. 9: Doctors Interface after login for Doctor

- Doctors Dashboard:

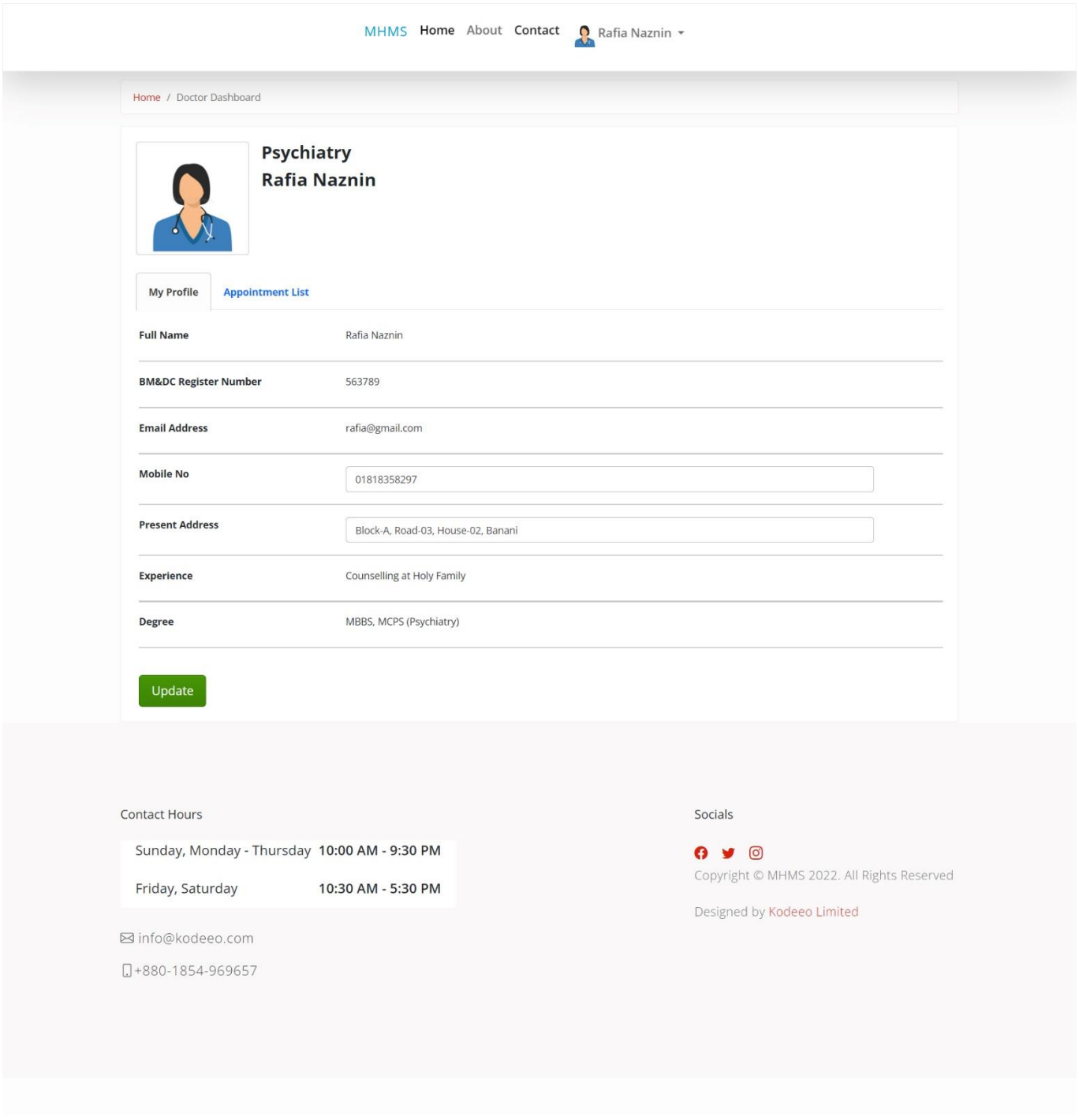


Figure 6.10: Doctor's Profile Interface for Doctor

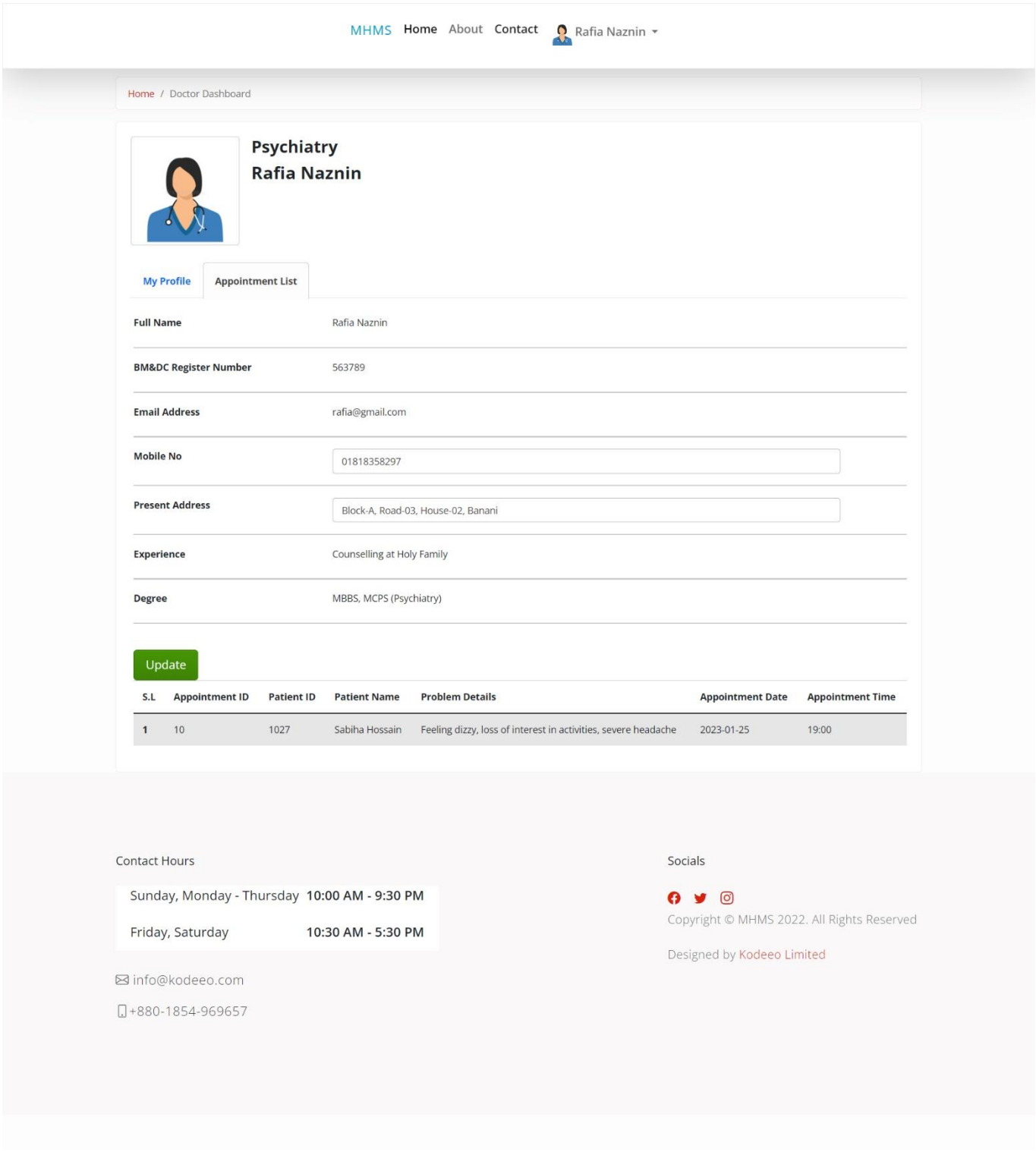


Figure 6.11: Doctor's Appointment List Interface for Doctor

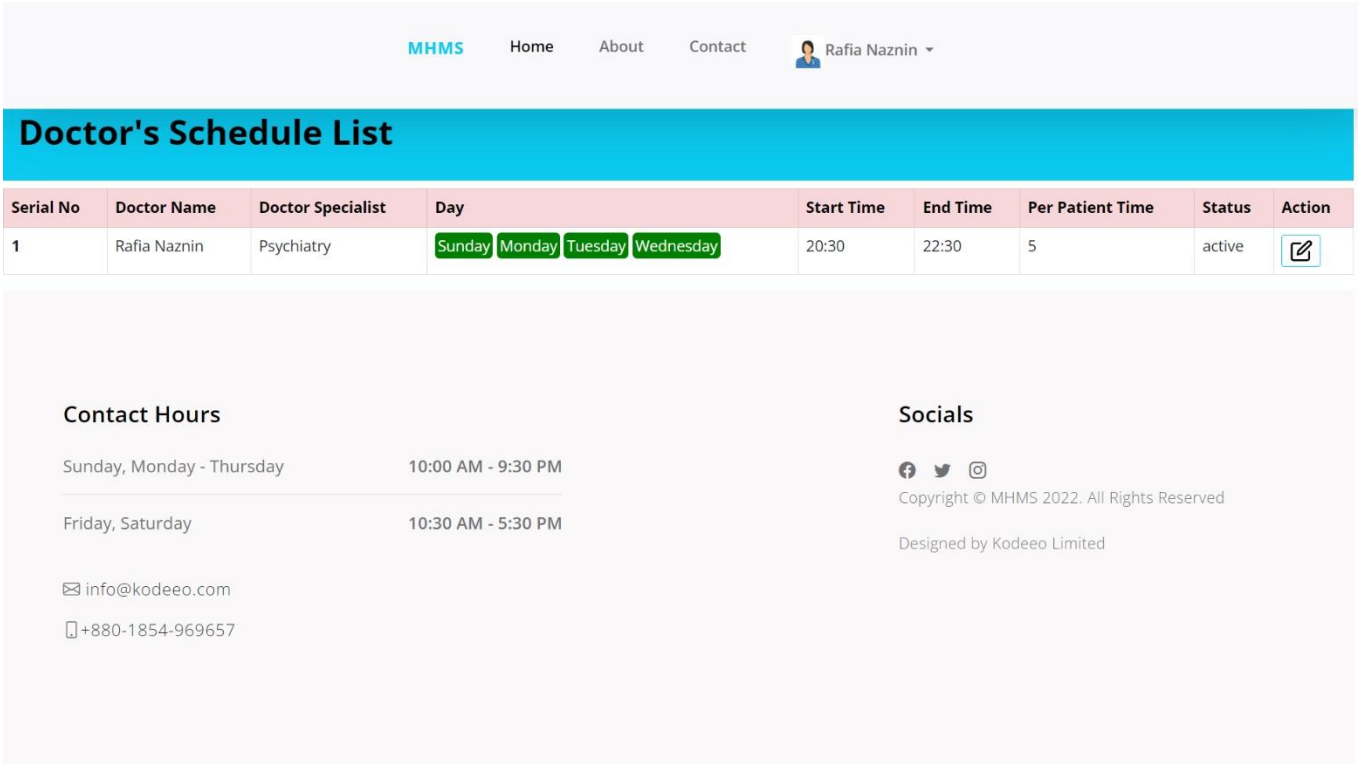


Figure 6.12: Doctor's Schedule List Interface for Doctor



Figure 6.13: Doctor's Schedule Edit Interface for Doctor

- Screening Test:

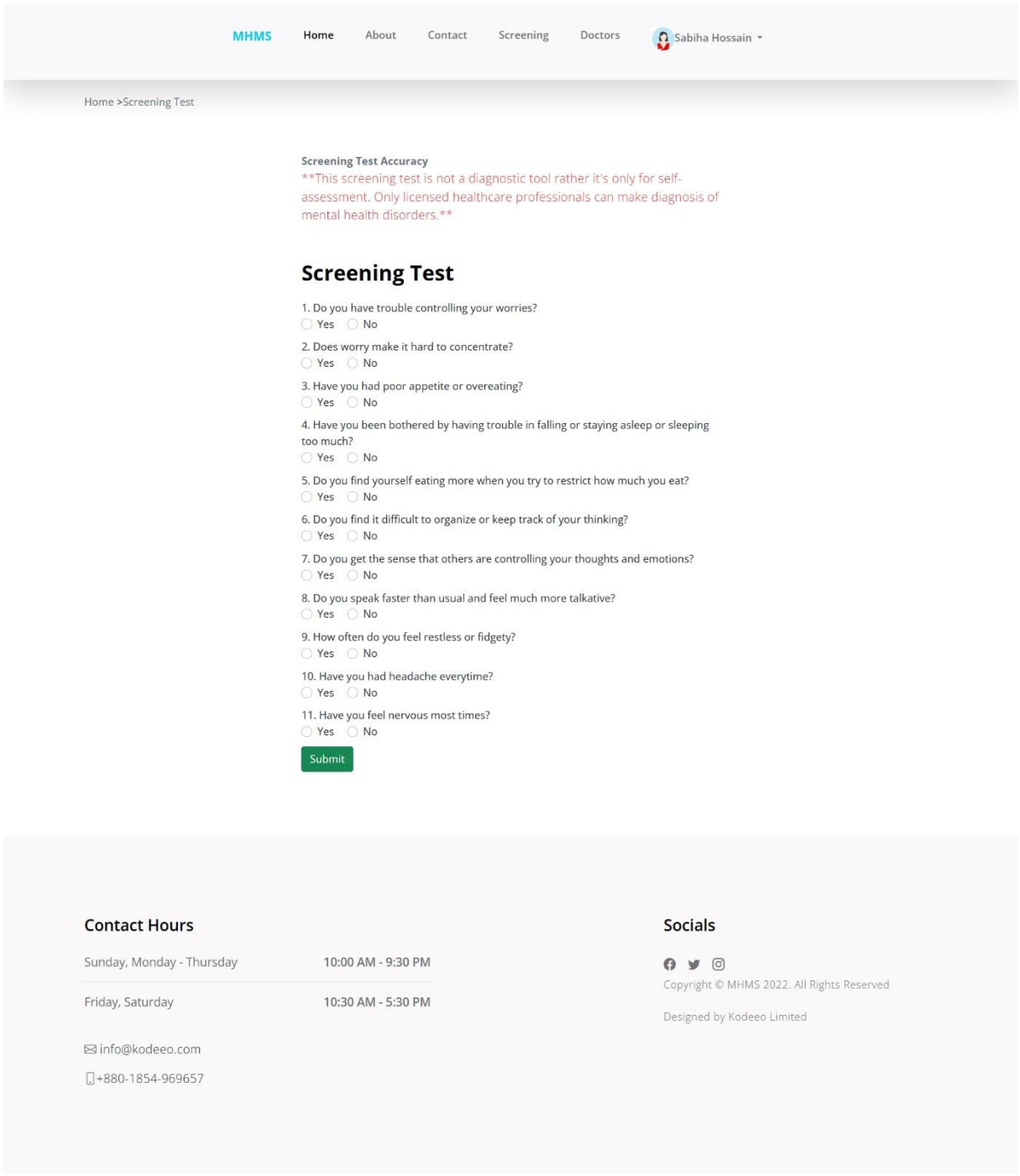


Figure 6. 14: Self-Screening Test Interface before taking test for Patient

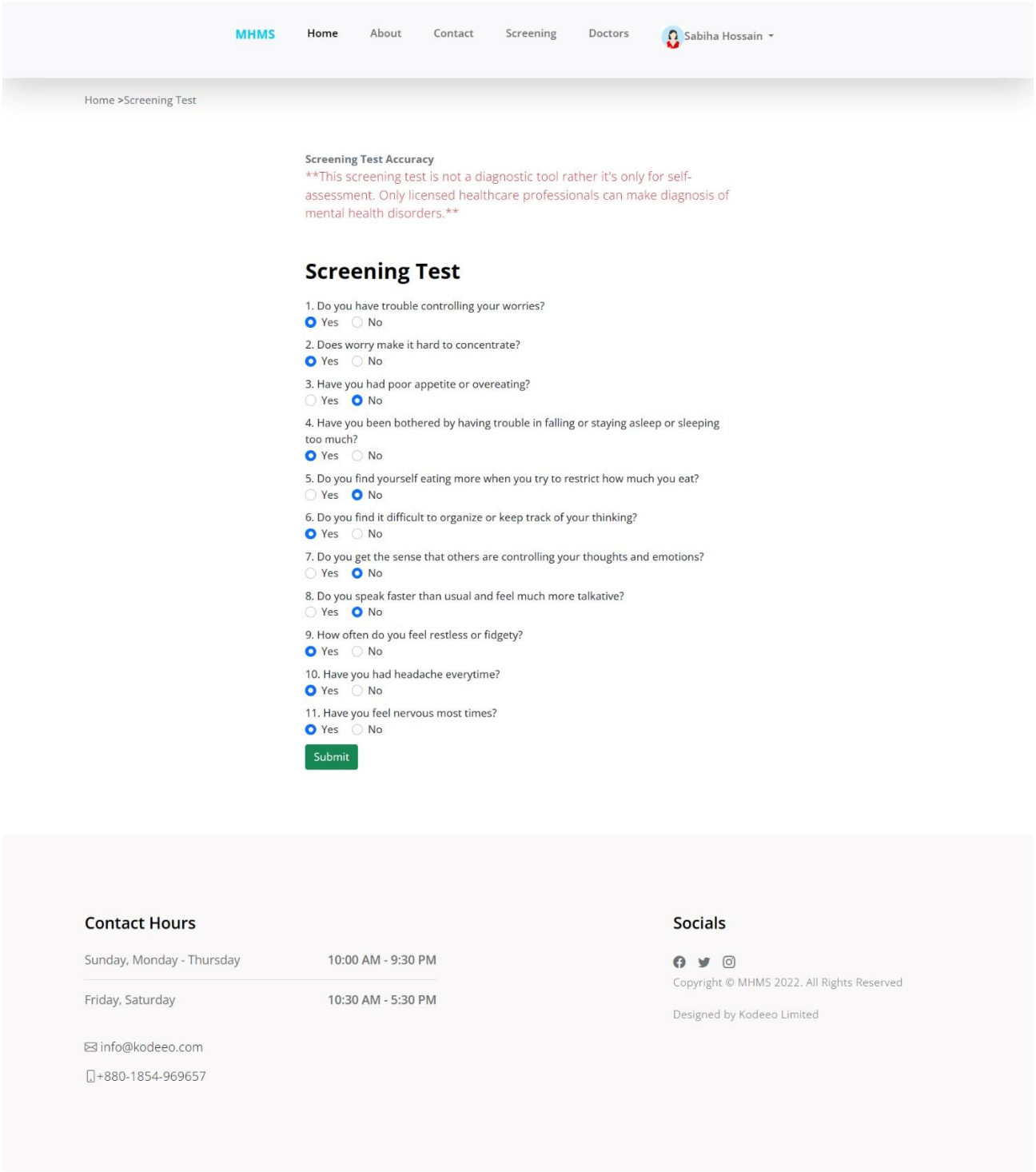


Figure 6. 15: Self-Screening Test Interface during test for Patient

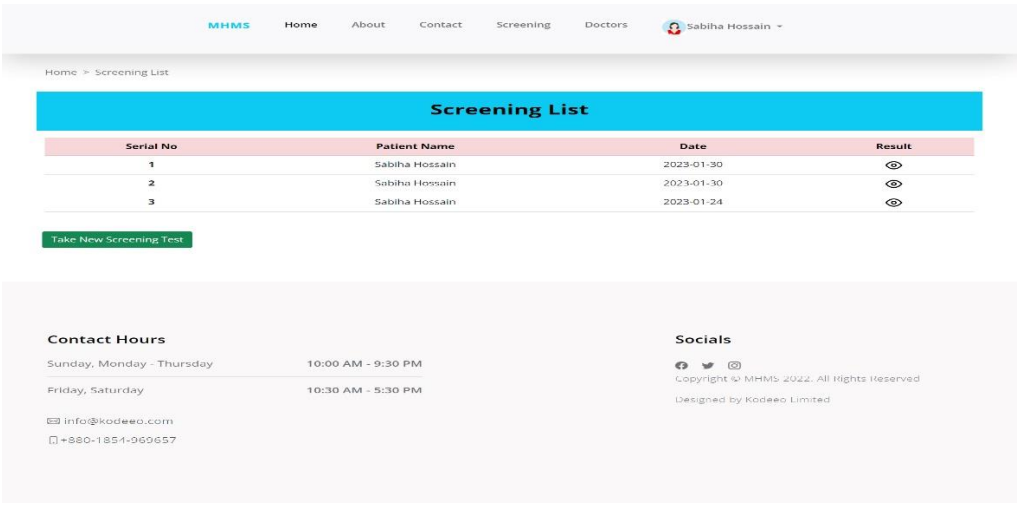


Figure 6. 16: Self-Screening test list Interface for Patient

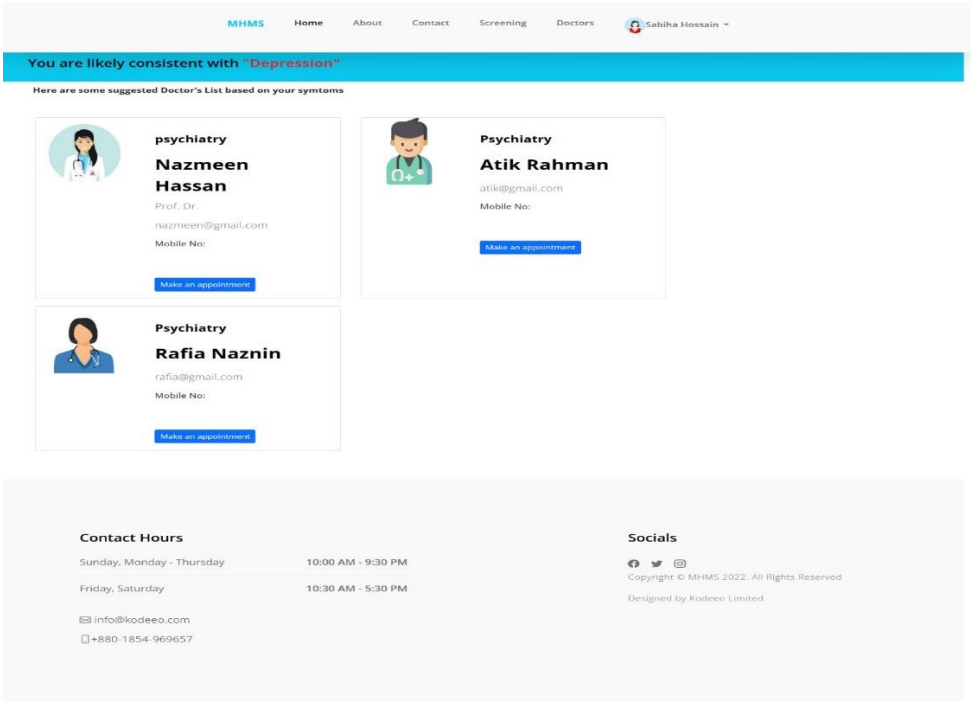


Figure 6. 17: Self-Screening test result and suggested doctors for Patient

Here, patient see their screening test result by clicking on eye icon button then it will take them to another page where they can see the result alone with some suggested doctors depending on the disorder.

- Book Appointment:

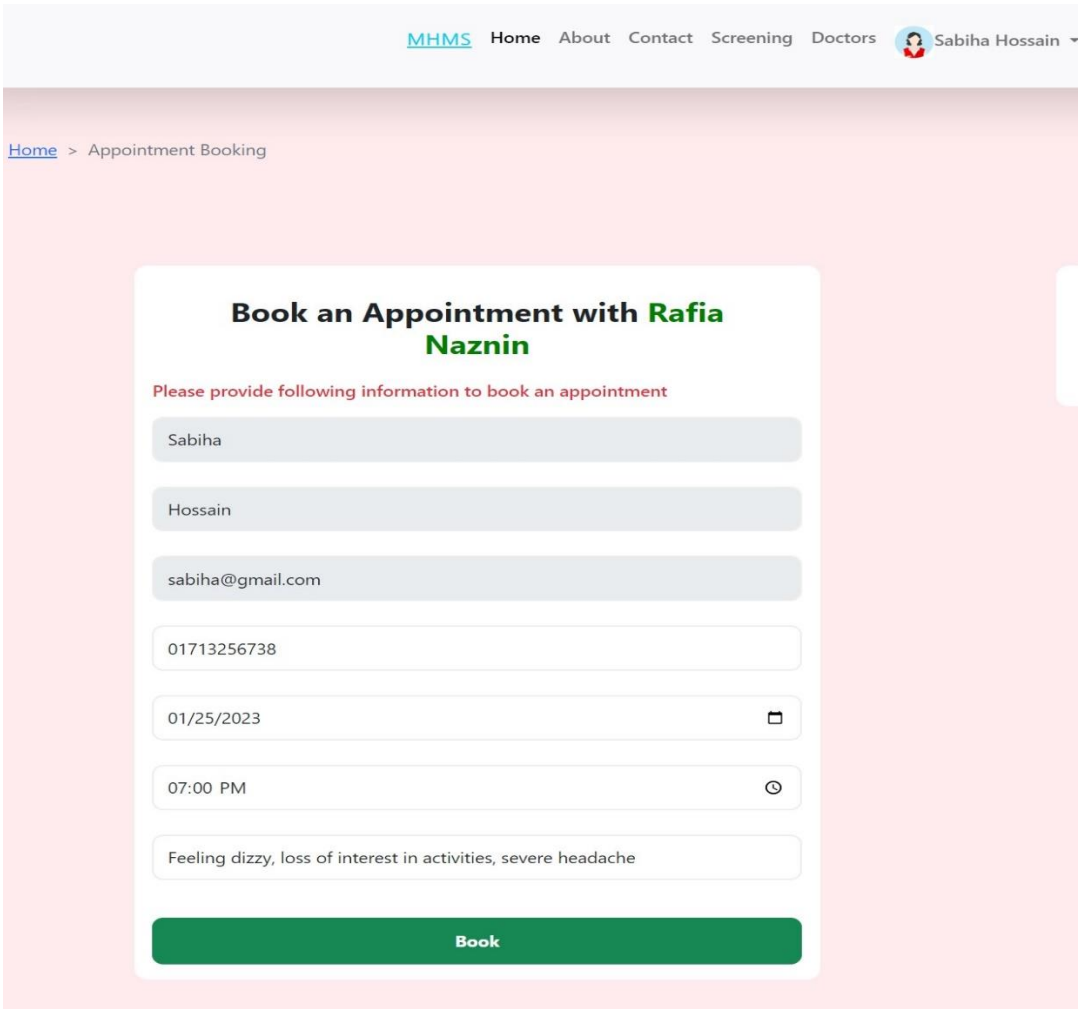


Figure 6. 18: Make an Appointment Interface for Patient

- Admin Login:

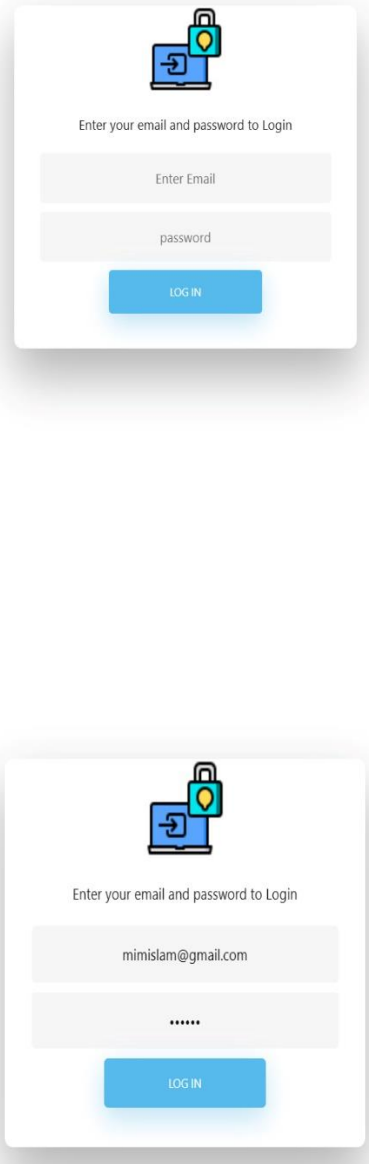


Figure 6. 19: Admin Login Interface for Admin

- MHMS Admin Dashboard:

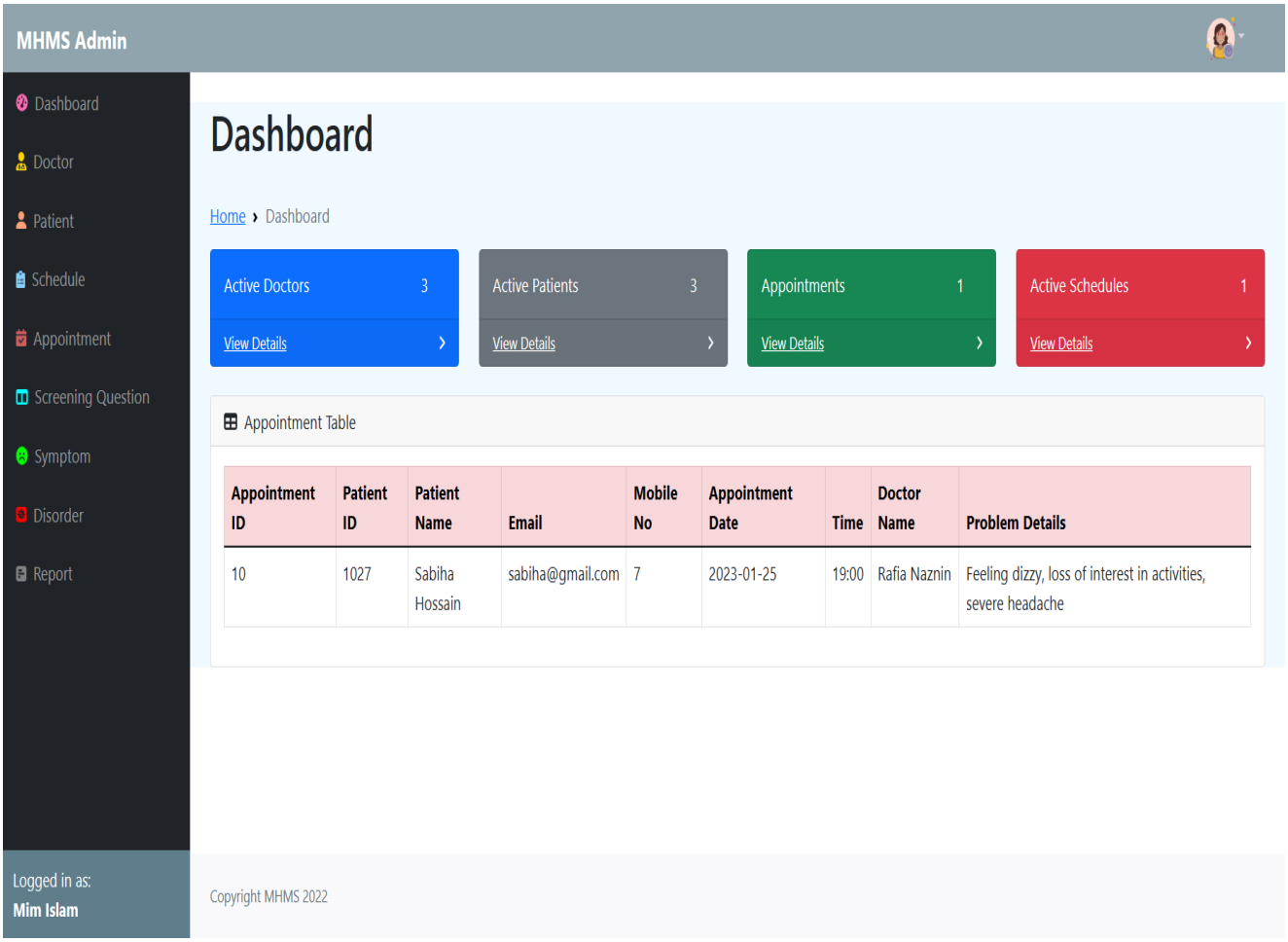
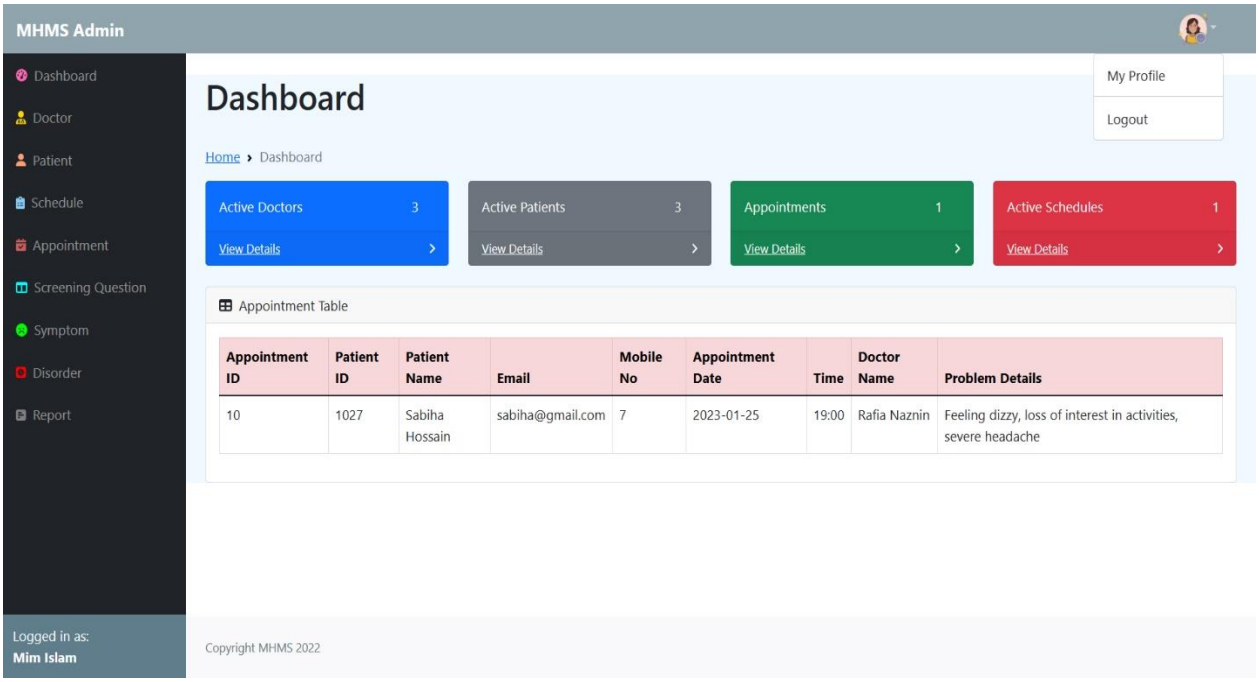


Figure 6. 20: MHMS Dashboard Interface



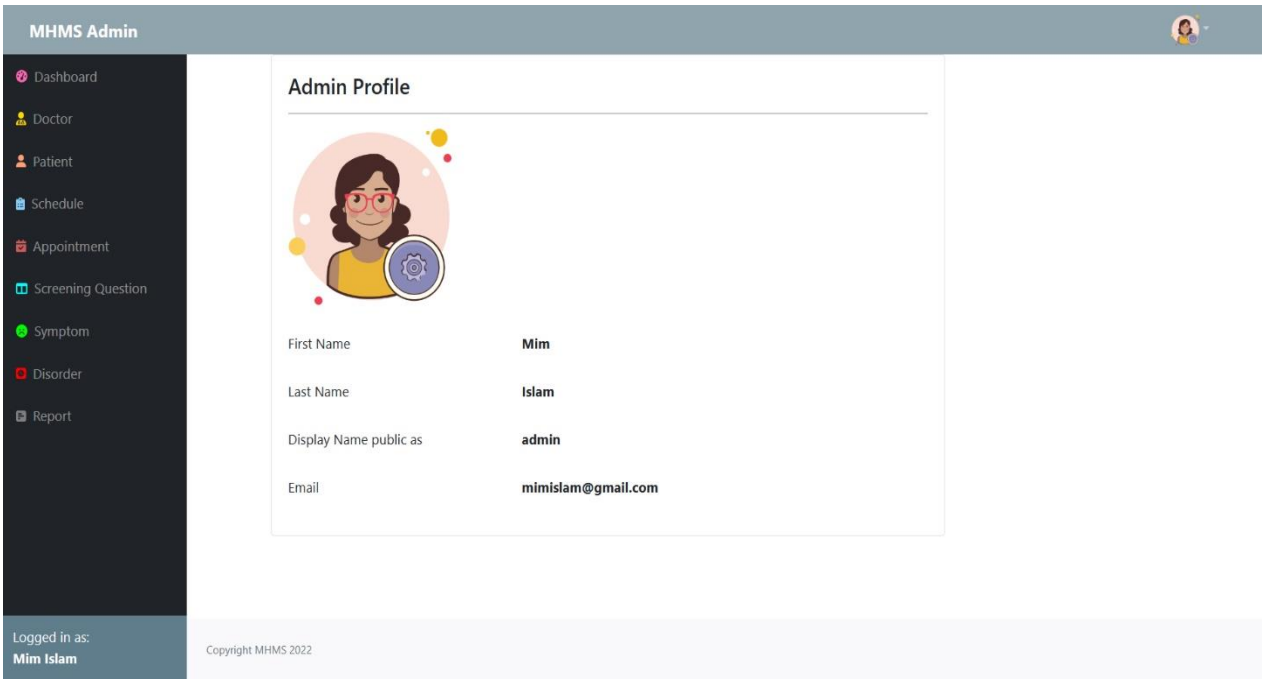


Figure 6. 21: Admin's Profile Interface

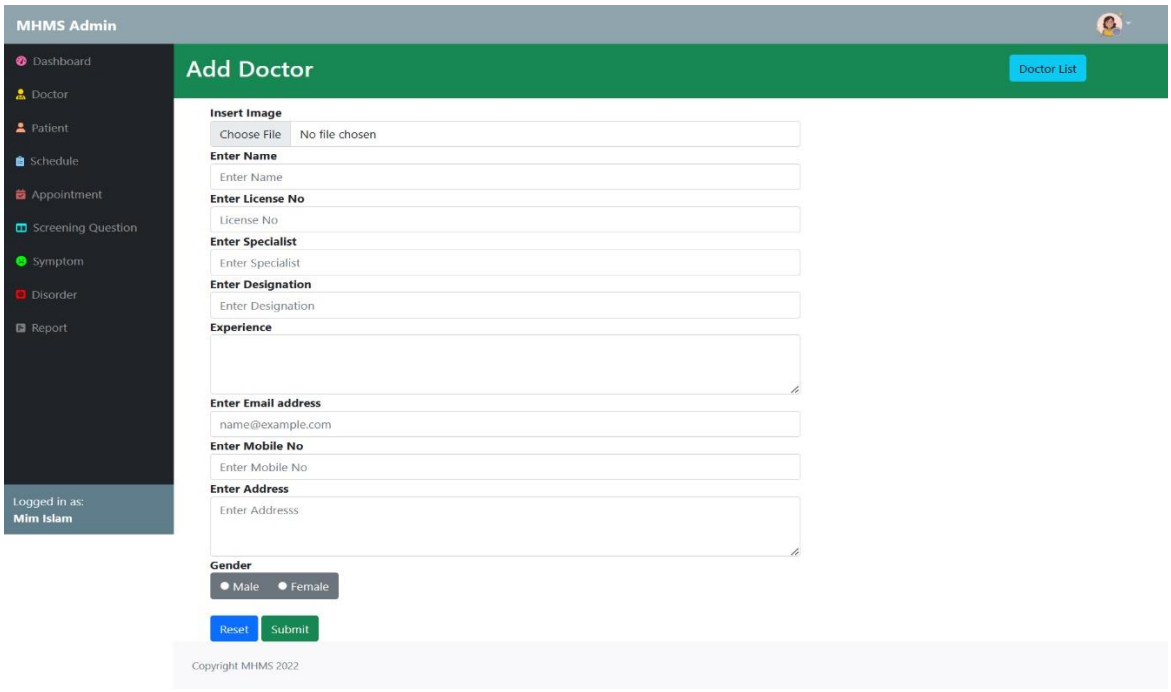


Figure 6. 22: Add Doctor Interface for Admin

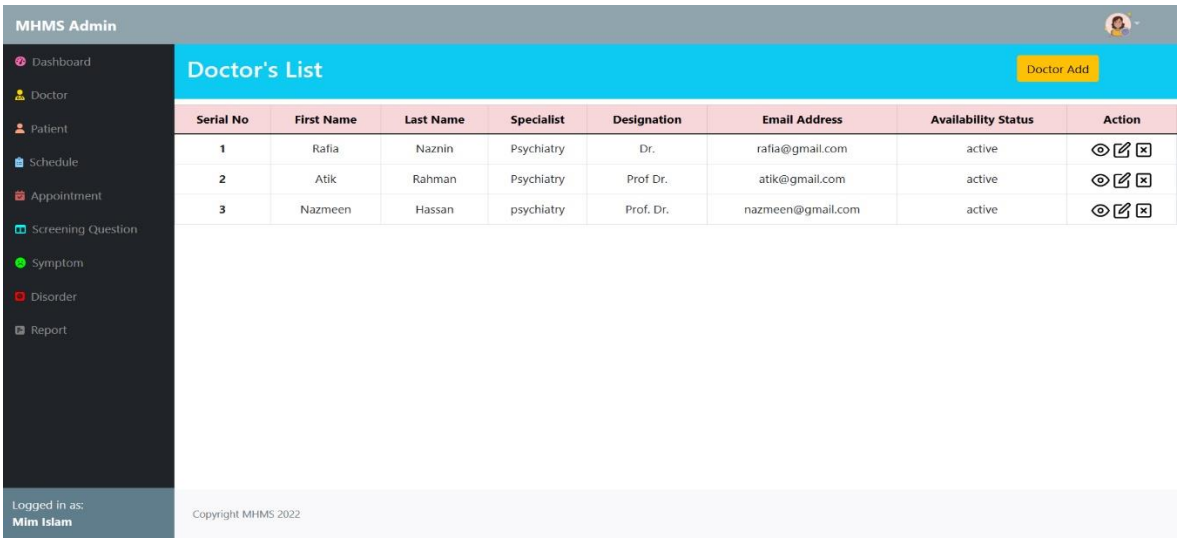


Figure 6. 23: Doctor's List Interface for Admin

In this page, admin will be able to see the doctor's basic information.

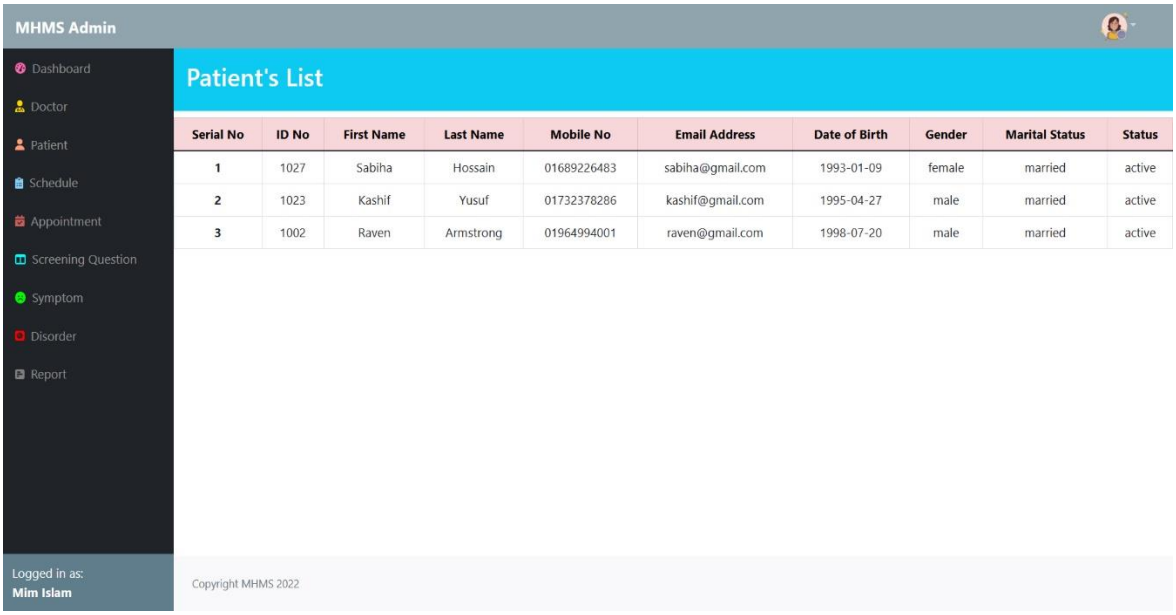


Figure 6. 24: Patient's List Interface for Admin

In this page, admin will be able to see the basic information of a patient

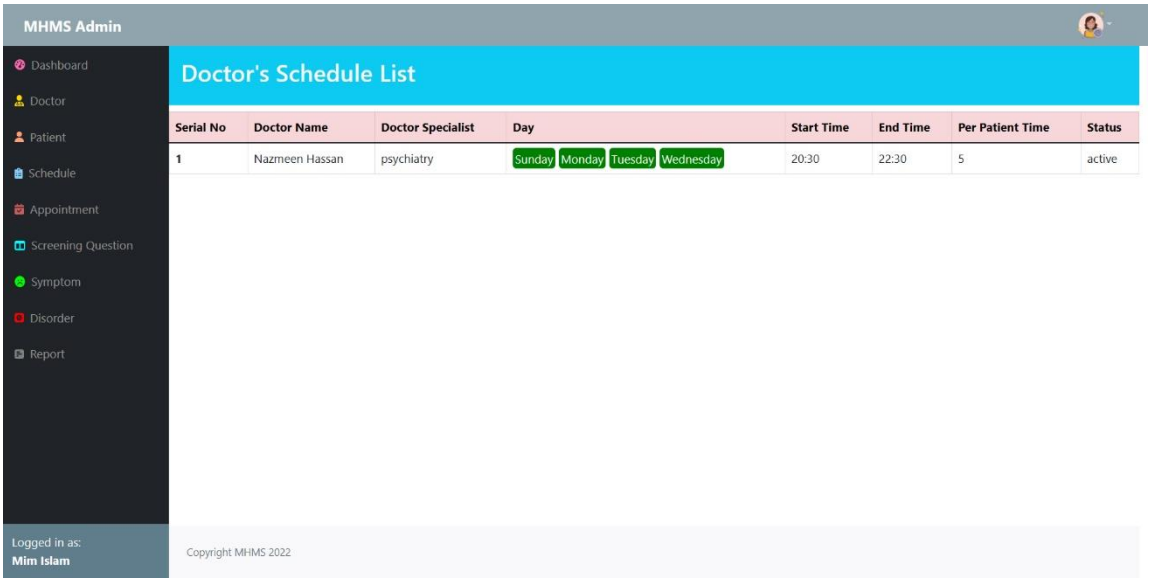


Figure 6. 25: Doctor's Schedule List Interface for Admin

In this page, admin will be able to see the doctors schedule list.

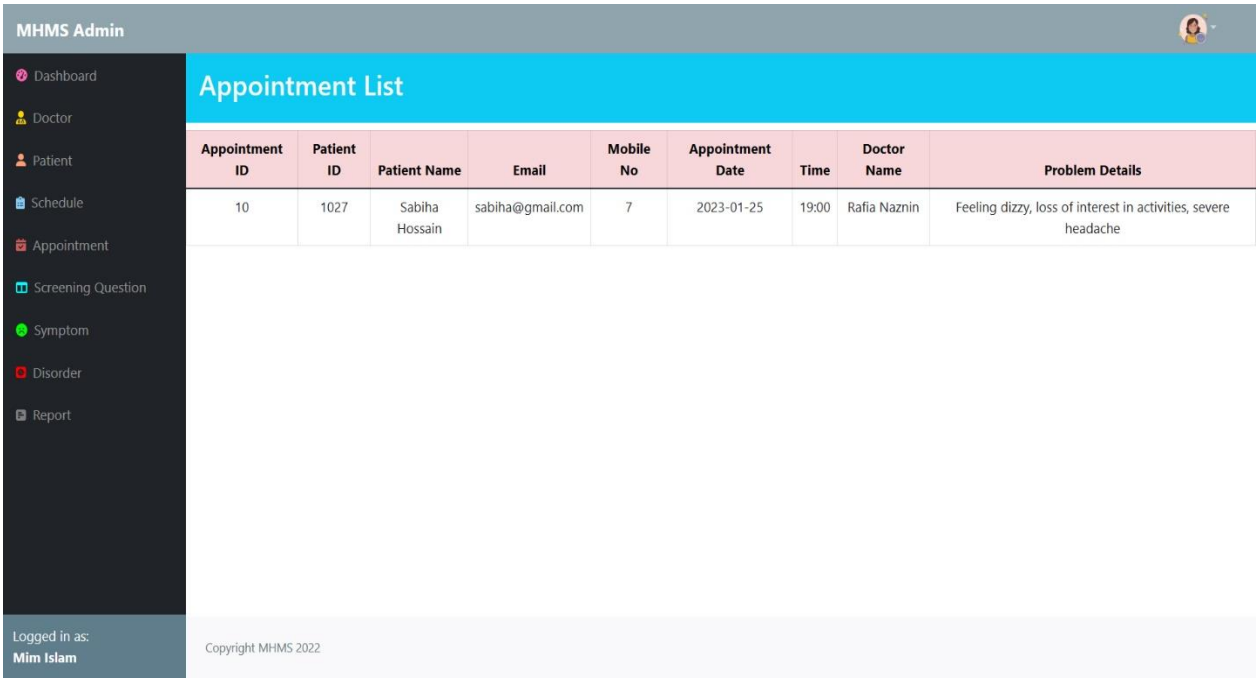
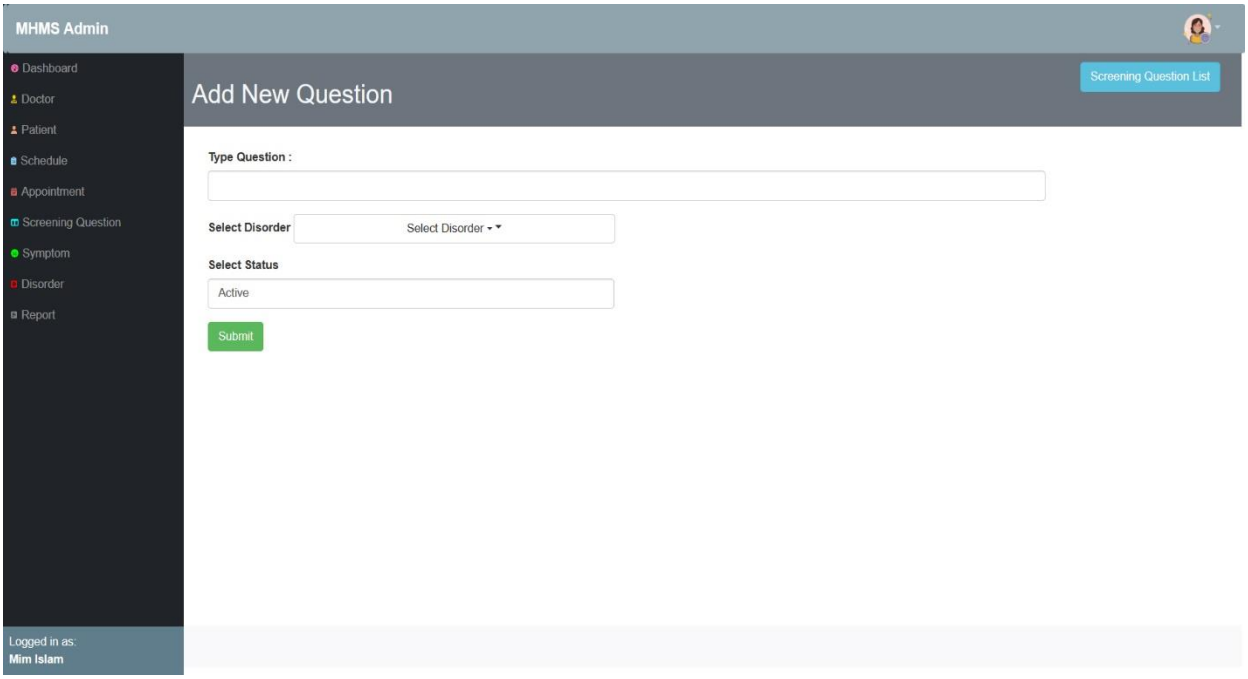


Figure 6. 26: Appointment List Interface for Admin

In this page, the appointment's list will be shown to the admin including the basic information of the patient of a specific doctor whose appointment is booked by the patients.



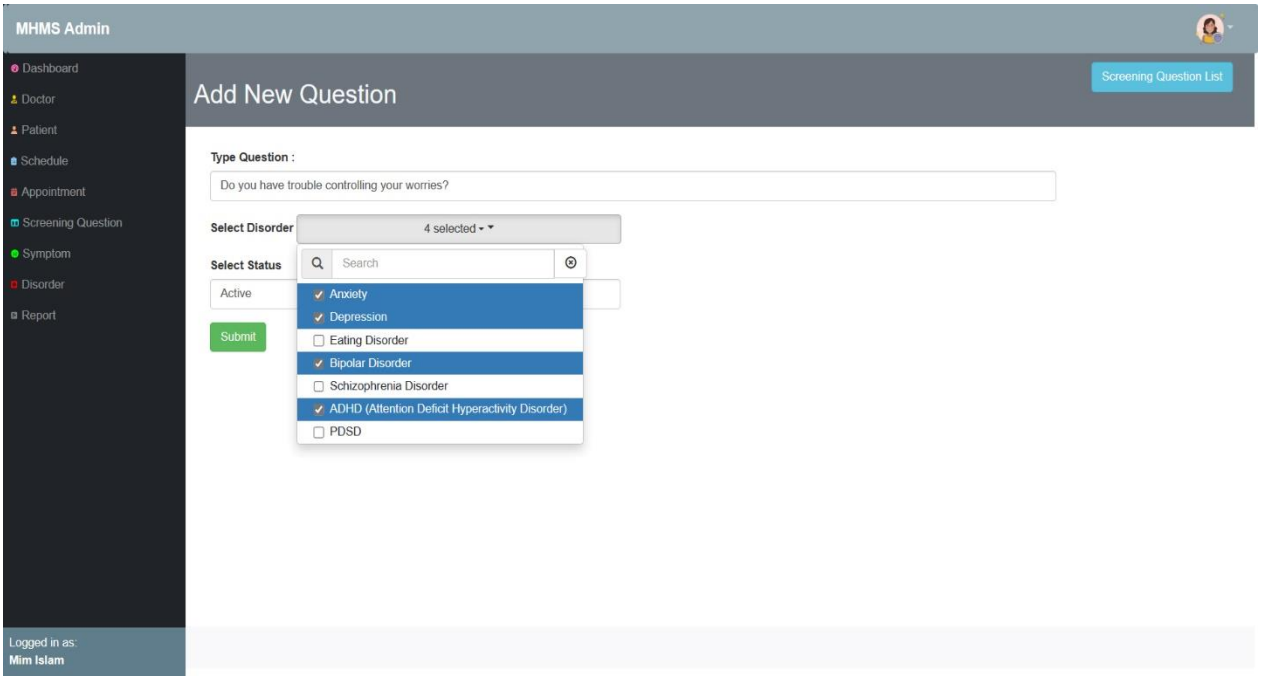
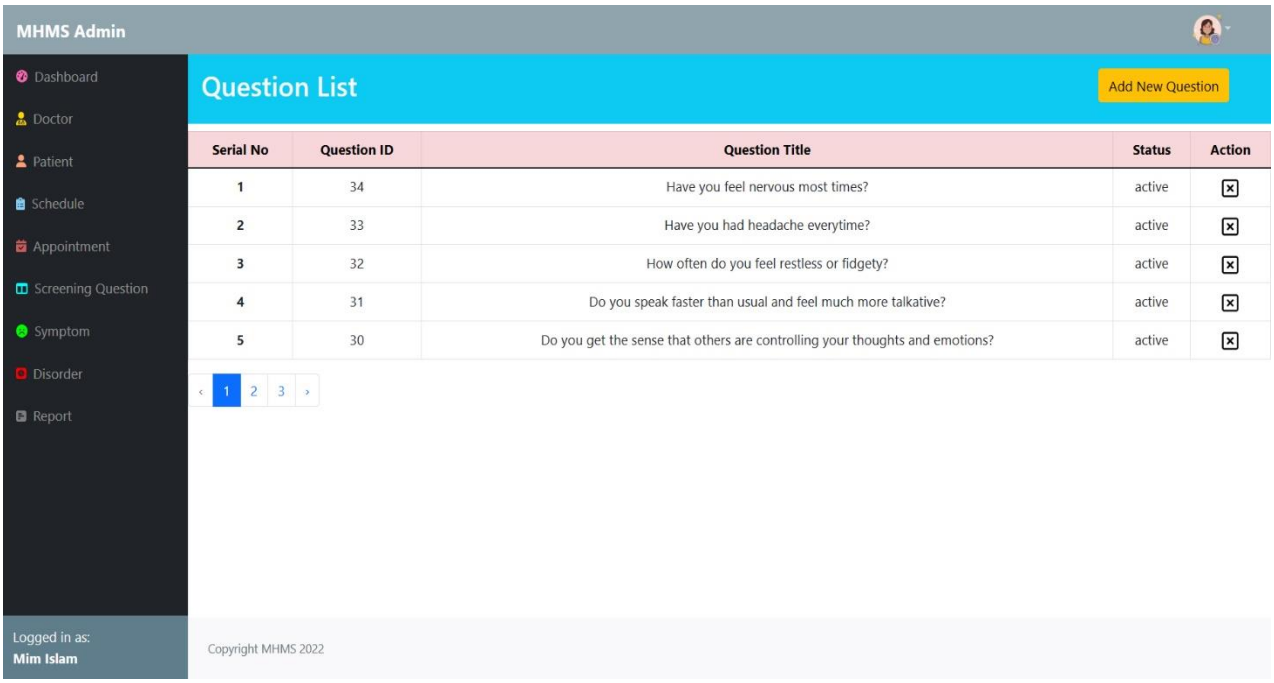
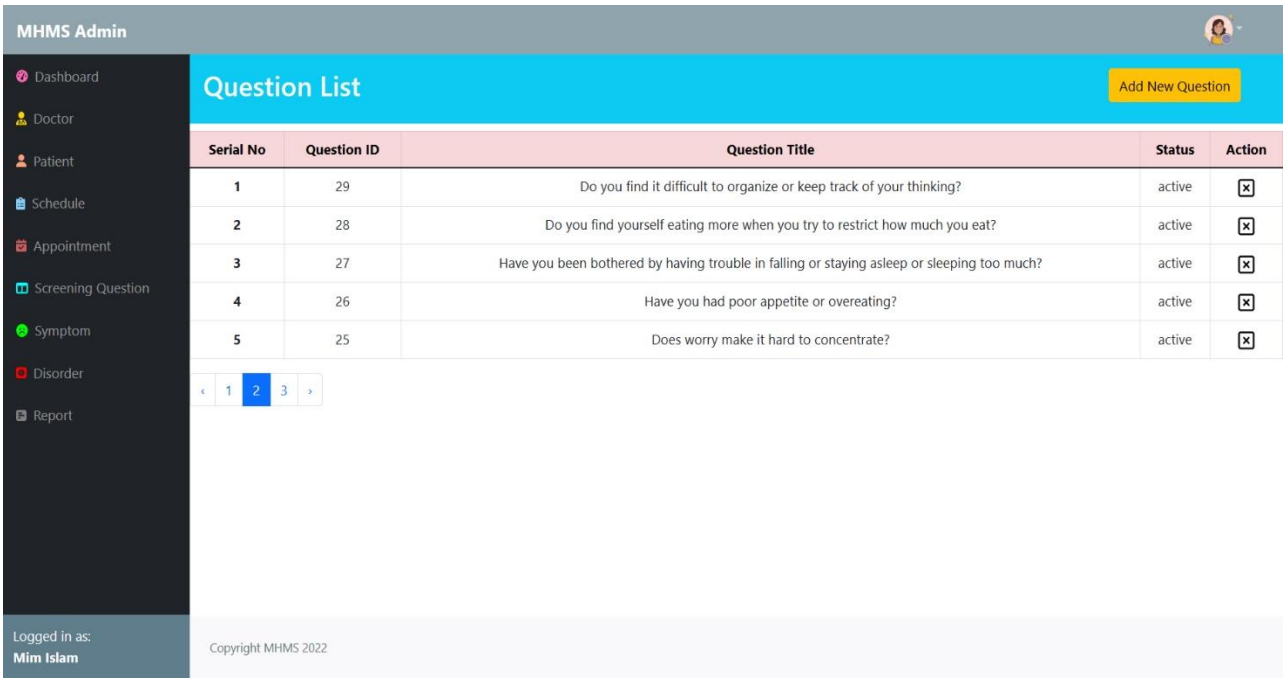


Figure 6. 27: Add New Screening Test Question Interface for Admin





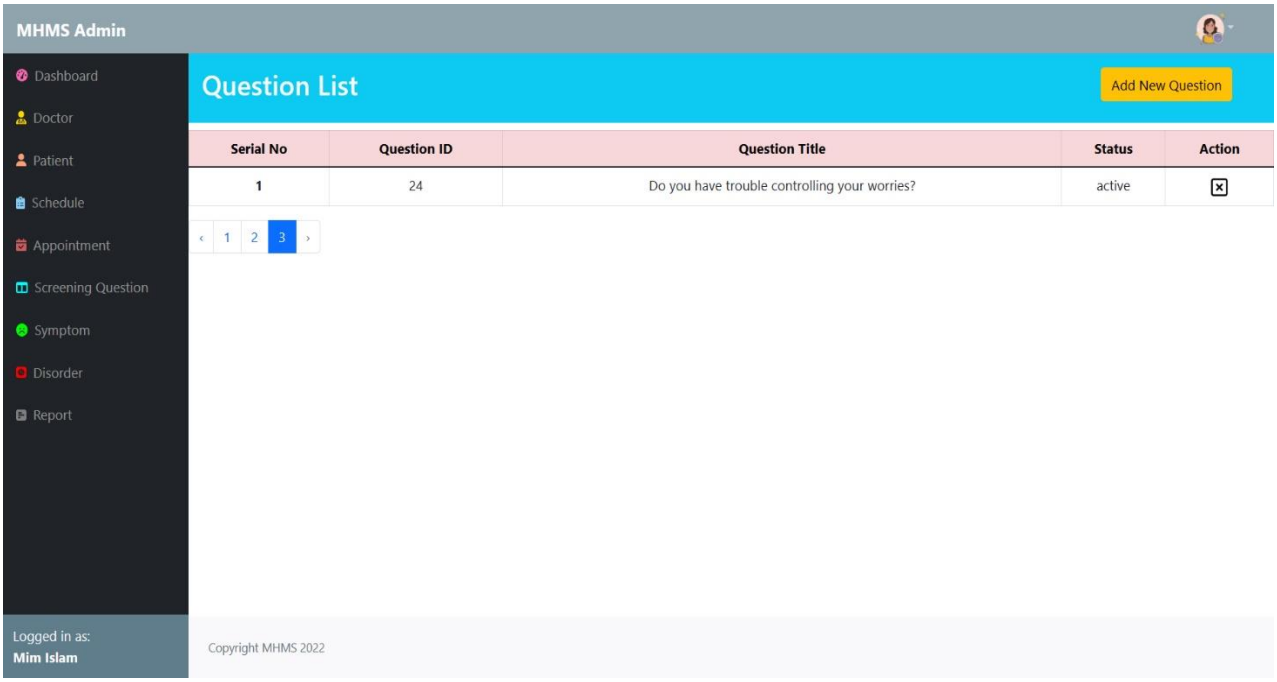


Figure 6. 28: Screening Test Question List Interface for Admin

Here, screening question can be added by clicking on the ‘Add New Question’ button. Then the added question will be shown in those pages given above.

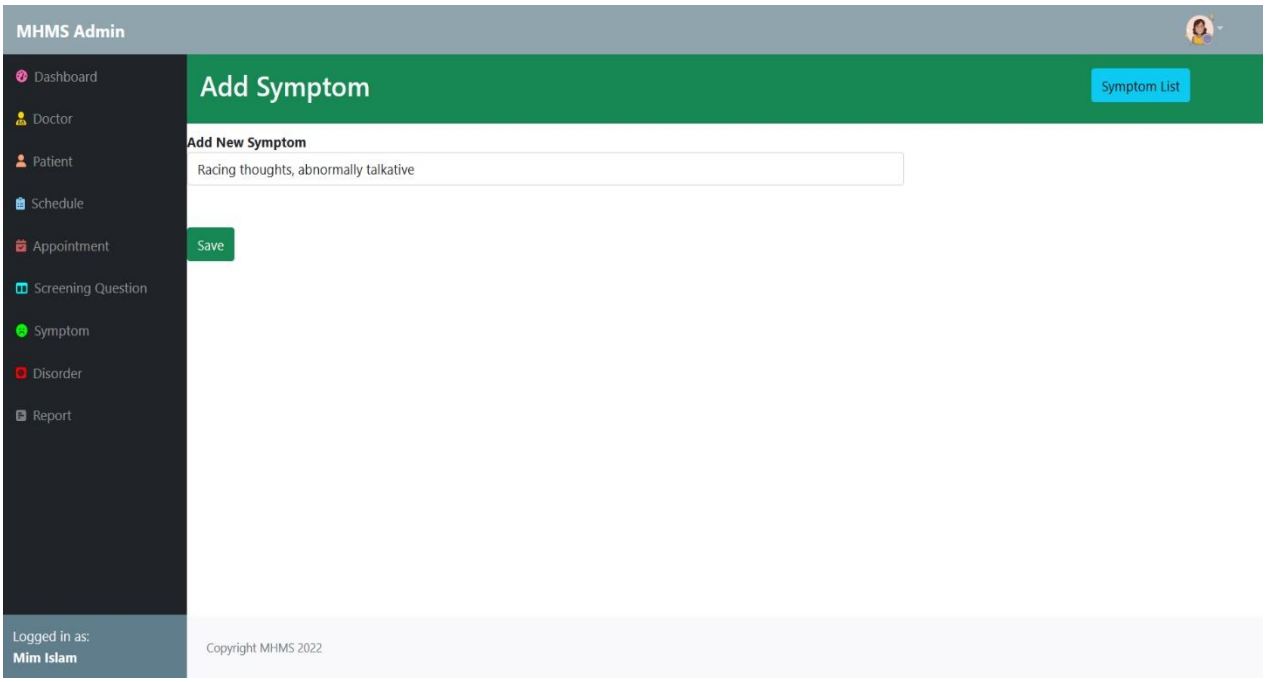
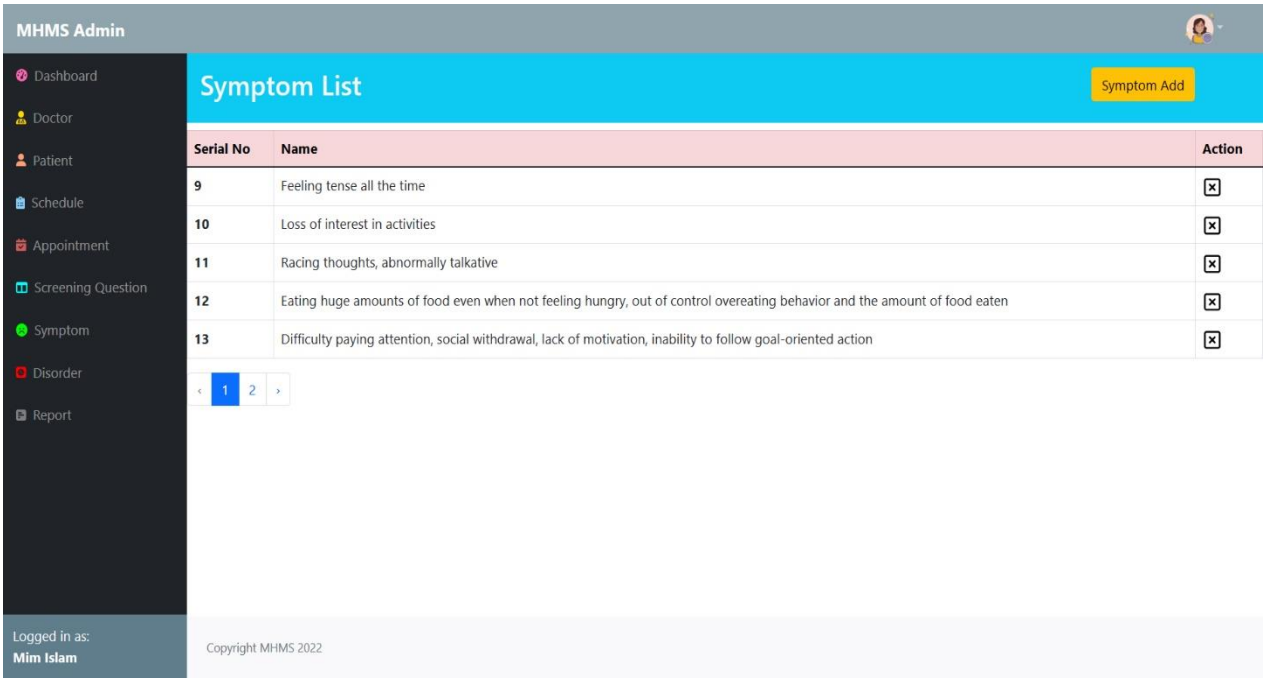


Figure 6. 29: Add Symptoms Interface for Admin



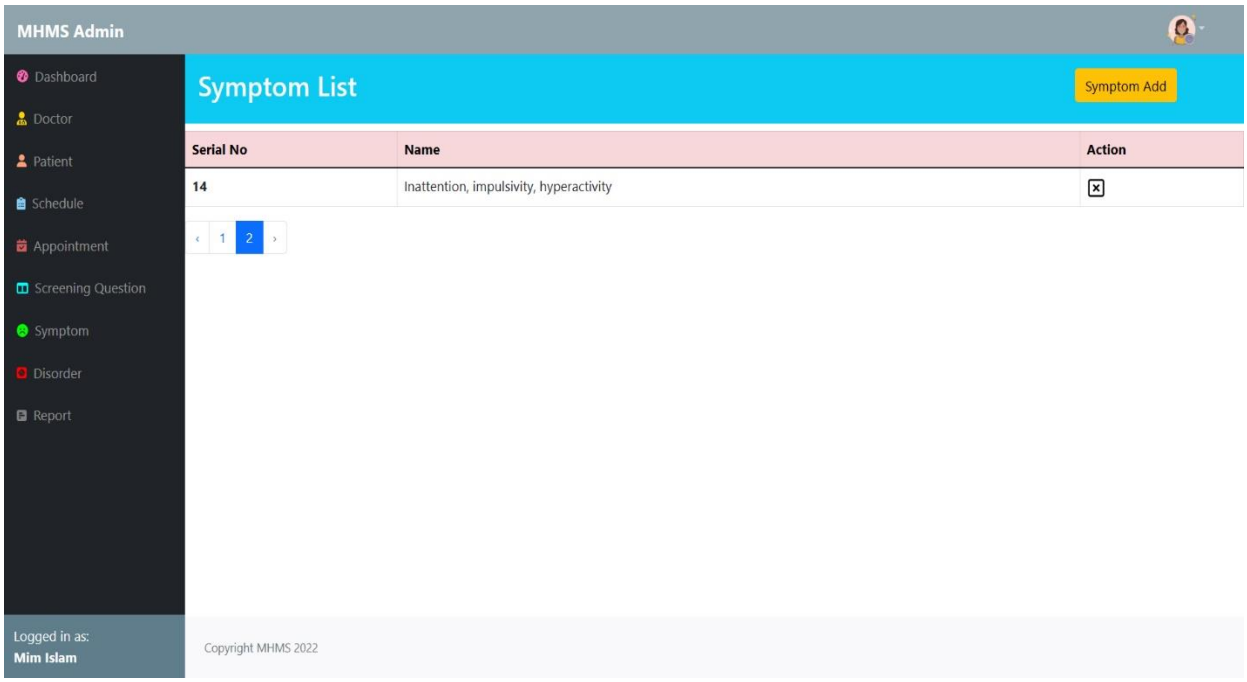


Figure 6. 30: Symptom List Interface for Admin

Here, symptoms can be added through this specific page and also can be delete the specific symptom by clicking on ‘Delete’ button.

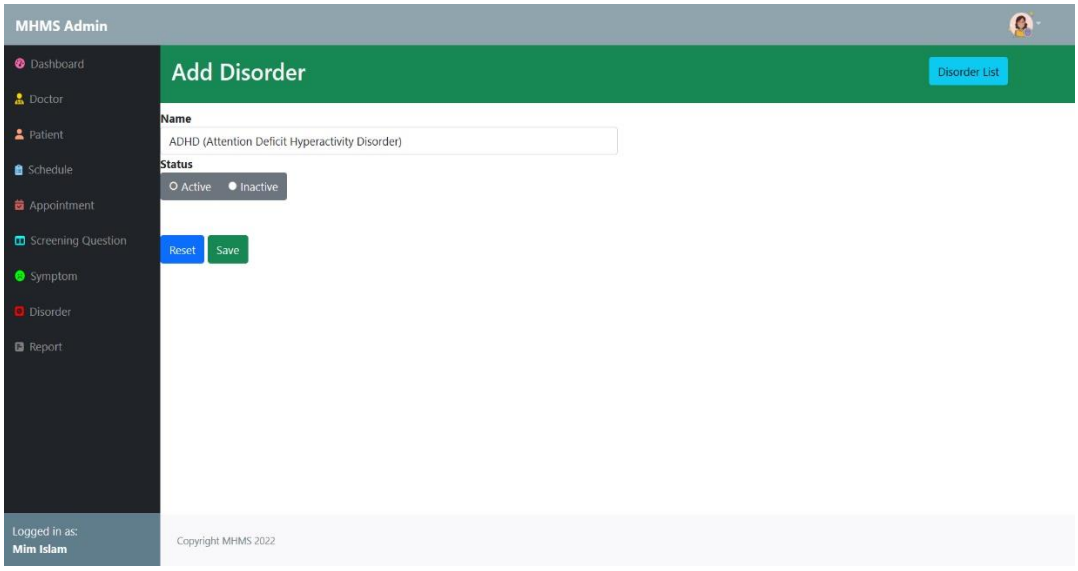


Figure 6. 31: Add Disorder Interface for Admin

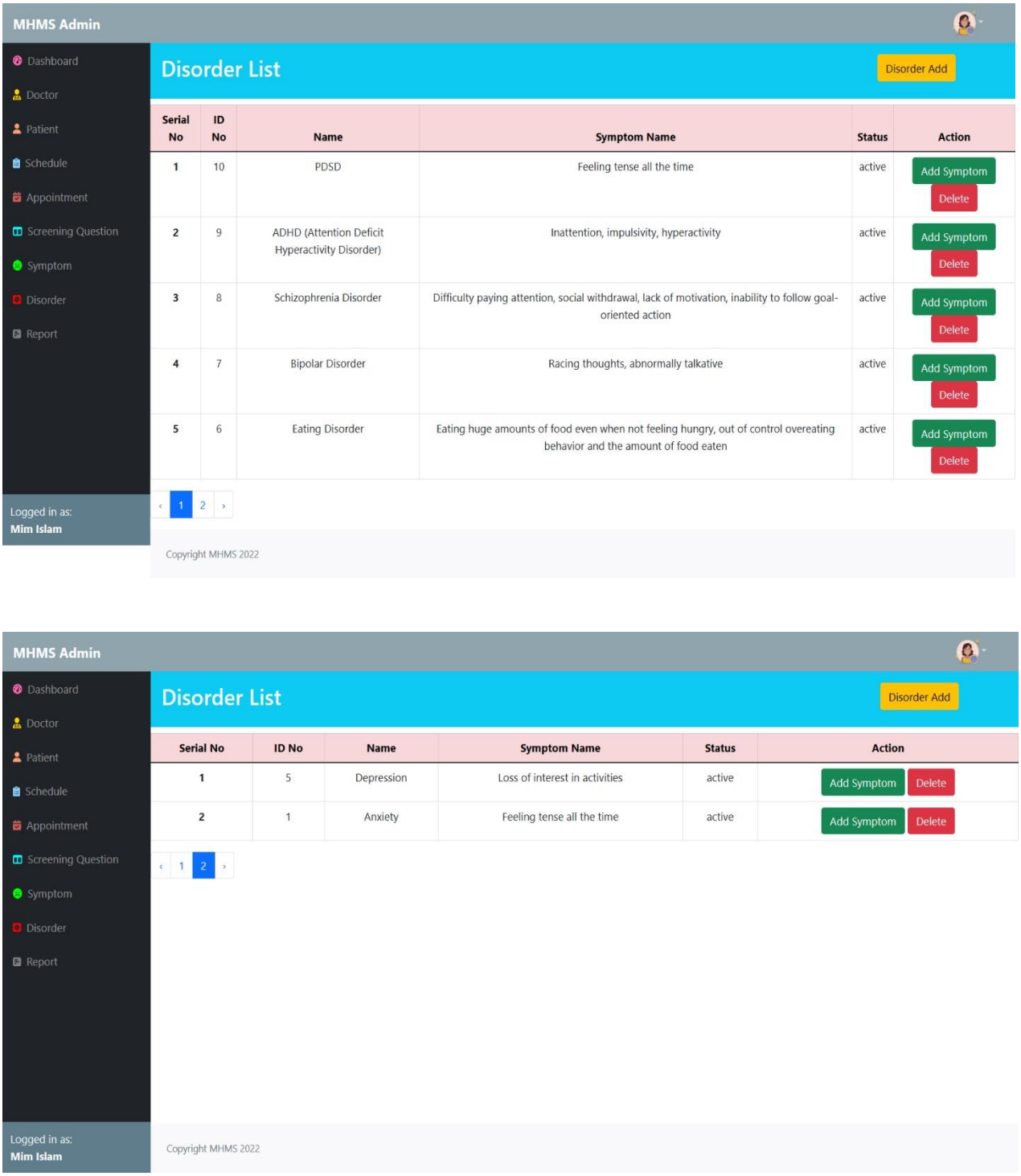
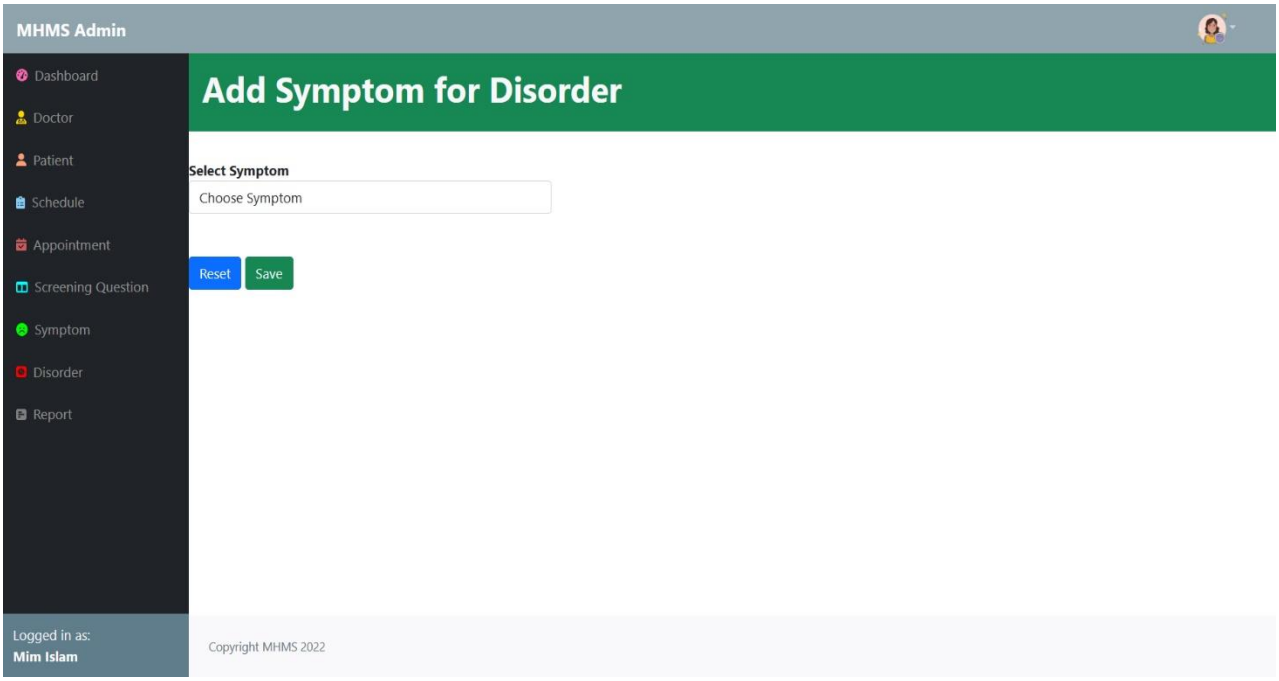


Figure 6. 32: Disorder List Interface for Admin

If Admin wants to add more disorder then admin needs to click on ‘Disorder Add’ button and also to add symptoms to that specific disorder it needed to click on ‘Add Symptom’ button and for delete purpose use ‘Delete’ button.



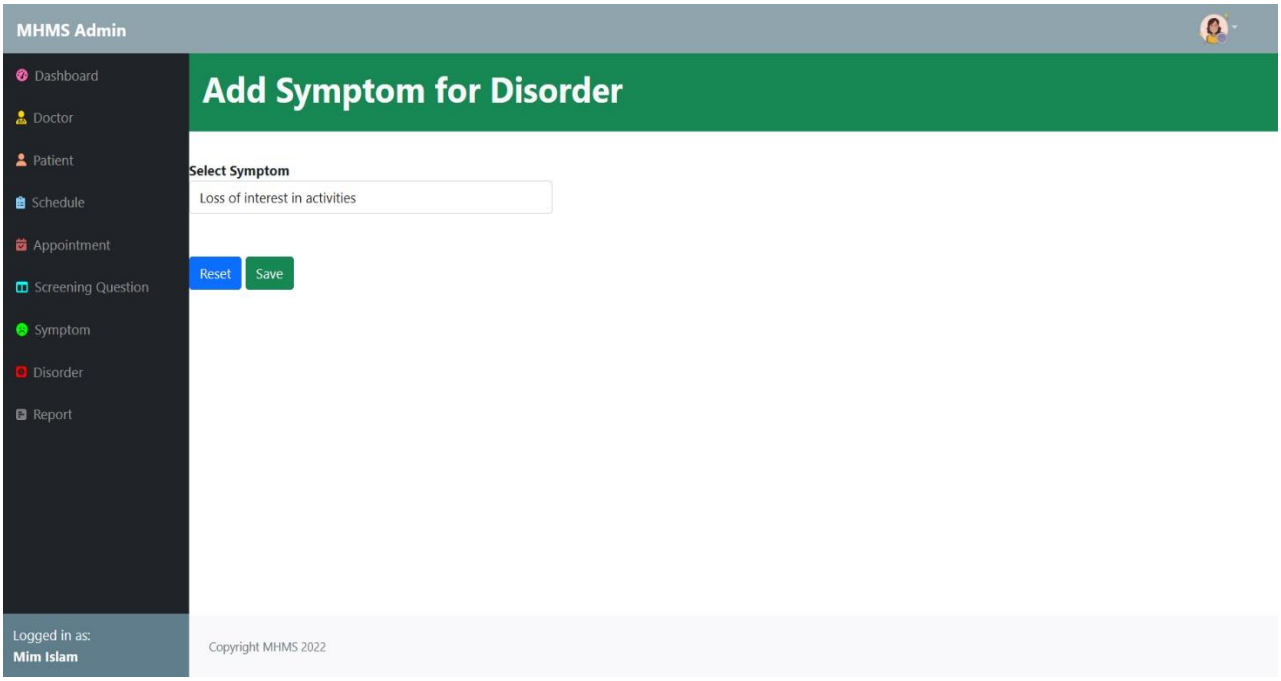


Figure 6. 33: Add Symptom for Disorder Interface for Admin

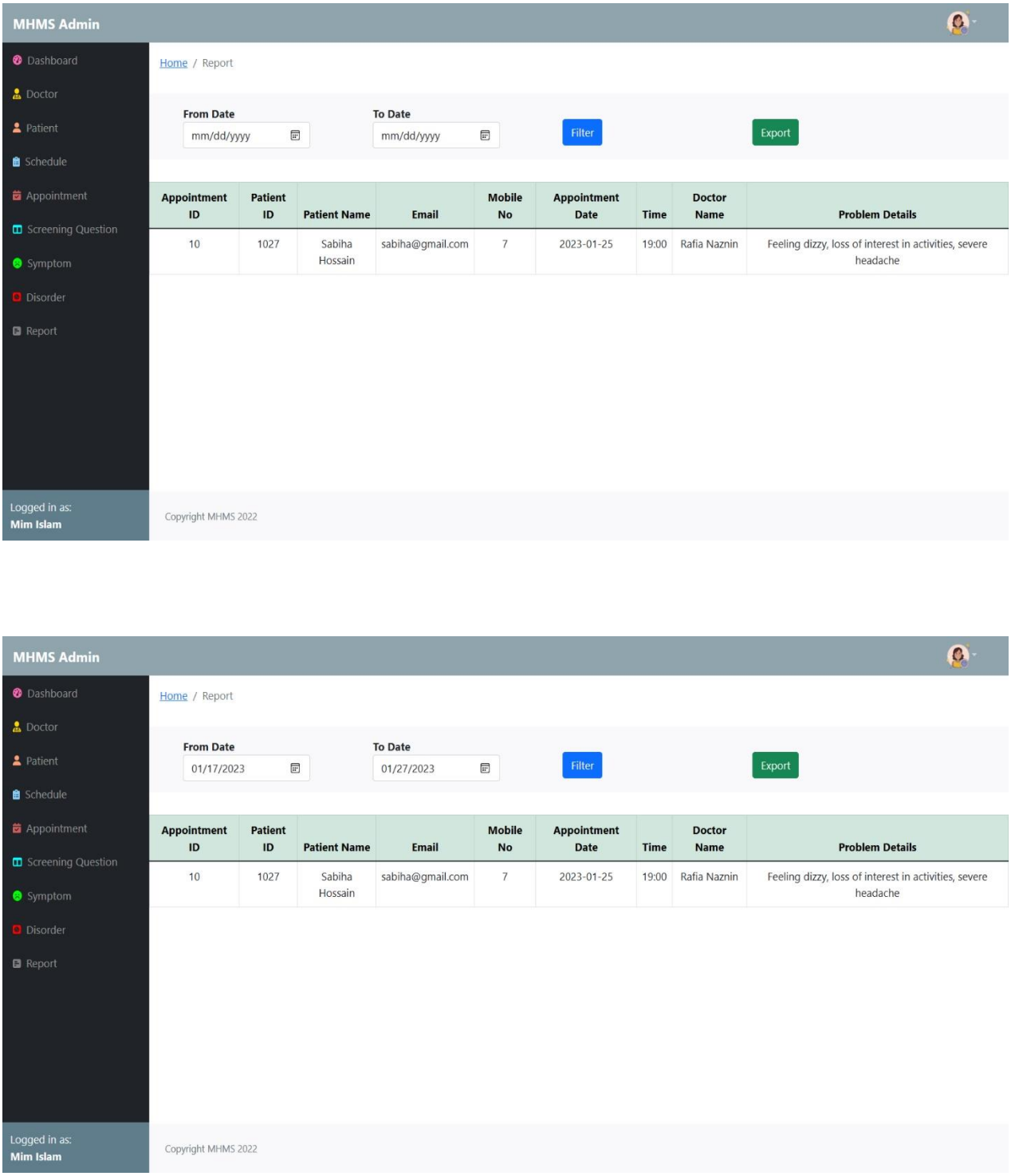


Figure 6. 34: Generate Report Interface for Admin

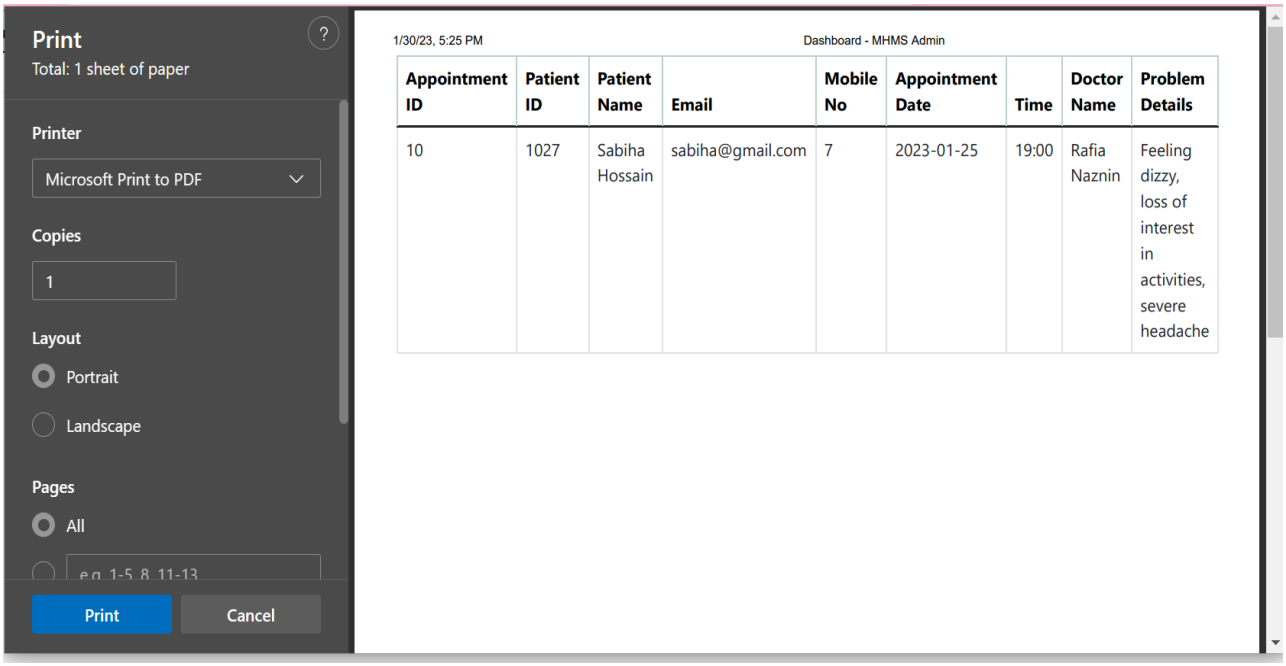


Figure 6. 35: Generate Report Export Interface for Admin

Chapter 7

Project as Engineering Problem Analysis

Engineering problem analysis can classified as the breakdown of sustainability, social and environmental effects and analysis, ethics, and ethical issues into their fundamental components to get at their key qualities and their links to one another and to external factors.

7.1 Sustainability of the Project/Work

The development of long-term software has been one of the most significant challenges in web application development. System maintenance is performed on a regular basis to ensure the program's longevity. The ability of a product updated and maintained referred as sustainability. The goals of sustainable development meet current demands while protecting the viability of shared systems and the environment, so that future generations' ability to meet their own needs is not nullified. Every program released in the current world must be maintained and regularly updated for its user base. Furthermore, plans for Mental Healthcare Management System include the development and delivery of numerous additional features. The project will be maintained and upgraded after released, and premium services will be added as the application has future goals.
As a result, it may be concluded that the project is organizationally sustainable.

7.2 Social and Environmental Effects and Analysis

Social Effect:

A platform is needed to meet the demand as mental health care issues become more prevalent day by day. The environment of the healthcare system is becoming more hostile due to telehealth services. Telemedicine is used to enhance local hospitals' treatments. The number of new firms providing healthcare services through social media and online portals is expanding as more individuals take use of and get used to this service. With this Mental Healthcare Management System, some activity of users kept on record. Admin can easily view doctor, and patient lists.

Patients can easily book appointment of a doctor. All the information is stored safely in the database. The password is stored with a proper encryption method so that any hacker cannot be able to see the password. Users do not have to worry about data loss because the database will have a backup. Concisely, this Mental Healthcare Management System's ability to save time and be hassle-free is by far its most significant social impact.

Environmental Effect:

The virtual mental healthcare system helped so many patients throughout this pandemic that they are thinking about seeking post-pandemic mental healthcare service on online. This evolved into the norm for visiting a doctor through online. For instance, people no longer need to travel to the hospital or clinic to see a doctor because they may now get consultations from doctors while at home. We do not need to use as much paper as we did in the past while using this approach, which is good for the environment. It also lessens waste generated by medical offices.

Moreover, when a patient leaves a doctor's office, the space needs to be cleaned in preparation for the subsequent appointment, which produces trash.

7.3 Addressing Ethics and Ethical Issues

The system will be fully secured for all users. No personal information will be leaked from the database. We will try to give the maximum level of security. Every user’s password will be encrypted so that the admin cannot know the password. Only users can change and access their dashboard.

Chapter 8

Lesson Learned

My experience as an intern is entirely new. In addition, as a beginner, I find it challenging to do all the work. For the project, I had to learn the Laravel framework. It is my first time to do work in any company because I have never worked for a company before. Throughout my internship, I encountered a few difficulties, examined social consequences, environmental effects, ethical issues, and the sustainability of a software to understand the various problems that organizations may encounter while implementing new software, what effects it might have and how to fix it, for which I had to come up with the solutions for those issues. This internship taught me many valuable lessons. I have learned a lot from this internship experience, which is completely new to me. I acquired knowledge of contemporary technologies utilized Web app development. Moreover, I am hoping that the knowledge I am gaining will be very beneficial to me in the future.

8.1 Problem Faced During This Period

Problem analysis is the process of understanding and defining the issue to be solved. The process of addressing an issue include finding solutions that satisfy the requirements and constraints of the situation. Even if the system seeks to enhance current practices or capitalize on market opportunities, a large portion of what is done in the design and development of information systems is to address problems. Managing time effectively, planning my workload, and meeting deadlines have been some of the challenges I have encountered during my internship program. Learning and adjusting to the new technology while simultaneously building the software was not easy. In addition to system planning, project management, system analysis, and system design, a great deal of careful consideration, analysis, and best judgment call were required to meet deadlines, balance tasks, and create an all-around good and strong system plan.

I had many difficulties working on this Project during my internship program. Here is a list of some of these:

- I had to learn and adjust to the new technologies used by the company since this was the first time I had ever worked on a web application in an office environment. It was possible to acquire the skill set, but it was challenging to put those skills to use in practical scenarios.
- I first struggled to keep up with the workload, as I was a new member in the corporate environment besides Laravel was new to me.
- It was challenging to achieve weekly deadlines, which delayed the application's overall development rate, as it was the first time I had ever used them in an office setting.
- The development team had good skills in the development phase, but the testing team lacked tenacity. The development team was therefore required to perform the testing. Due to this lack of knowledge, an appropriate testing procedure was indistinct.
- It used to be common for flaws to be extremely difficult to locate, and even when they have been found, fixing them was difficult. Some faults were so challenging to resolve that it might take a week to do so.

8.2 Solution to those Problems

Here are some solutions of how to fix those issues:

- The transition to new technology was first challenging for me. Nevertheless, with the support of my supervisor and the web developers' team, I became accustomed to the entire procedure after a few days.
- To solve the issues, I have to put in a lot of effort. I need to learn Laravel because I do not know as much about it as I should. Therefore, I need to learn this framework during work hours and in my off time. In addition, system planning, project management, system analysis, and system design certainly need a significant amount of time.
- Since it was my first time using it in an office setting, the process started slowly for me. It became simpler to sustain workload and speed after a few weeks.
- By constantly updating a list of the problems and features, while working on project that makes it simpler for me to grasp the state of the code base and to resolve bugs.
- Regularity of testing the work on project and revised prior drafts reduces the endure suffering in future. By using this method, it's easy to identify the errors in the ER diagram and quickly fix them. Therefore, no need to have to start from scratch.

Chapter 9

Future Work and Conclusion

9.1 Future Work

The "Mental Healthcare Management System" project is currently in the development stage, and many other additional features will be added soon. Some of the future updates to this web application will include more features such as:

- Log in using other service, such as Google, Facebook.
- Adding e-prescribing
- Adding live chat system
- Including audio and video consultancy option
- Display users' self-screening test result statistics in charts.
- Adding appointment remainders for patients
- Adding new features for the user such as Diagnosis labs, Meditation, Therapy and many more.
- Receive alerts and connections from other social networks, including Twitter, Facebook etc.
- Will implement the finest password protection solution on the project later Information archiving.
- Push notifications and daily remainders with positive message for patients.
- Include rating system for each service.
- Adding a payment gateway

9.2 Conclusion

Everything I have learned or done up until this point has been for learning purposes only or as a requirement for a certain course. However, I finally had the chance to put my academic skills to use in practical situations and the chance to put my academic learning in real life.

I had never worked with qualified experts at a professional level before this internship opportunity. This internship has been a very worthwhile and rewarding experience. I was able to gain firsthand experience in a field that I knew nothing about. Since I was the least experienced internee there, I received a lot of advice from the employee members of that company. I made an effort to improve my web application development skills and cover my weaknesses during this internship. Despite the time restrictions, I truly enjoyed working on new technical hitches. I picked up new computer skills, business ethics, communication techniques, etc.

Furthermore, I discovered how to use various tools and project development methodologies. I have realized how to combine my extensive theoretical knowledge with actual corporate environment. Lastly, I would want to express my gratitude to my internal and external supervisors, whose direction and inspiration have inspired me to work hard on this project and the countless others that will come my way in the forthcoming.

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An Undergraduate Internship/Project on
Mental Healthcare Management System

By
Mim Islam
Student ID: **1820804**
Autumn, 2022

Consent Form

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during and/or before final viva, and the department can use this version for archiving as well as the OBE course material for CSE499.



Mr. Sanzar Adnan Alam
Department of Computer Science & Engineering
Independent University, Bangladesh