Title of the Project

Serene (Mental Health Solution System)

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APPROVAL

This project titled "**Mental Health Solution System**", Submitted by **Muhibur Rahman Joy**, ID No: 193-16-463, to the Department of Computing & Information Systems, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computing & Information Systems and approved as to its style and contents. The presentation was held on 23/01/2024.

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DECLARATION

This project focuses on the "**Mental Health Solution System**" has been carried out by Md. Muhibur Rahman Joy in the Department of Computing and Information Technology, Daffodil International University, Bangladesh. I declare that the thesis work or any part of this work has not been submitted anywhere for the award of any degree or diploma. The information presented in this document is accurate and valid to the best of my cognition.

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Acknowledgement

It was my pleasure to research and complete the project on "**Mental Health Solution System**" I am grateful to Allah for his grace in my education.

I express my sincere gratitude to my supervisor, **Md Sarwar Hossain Mollah**, Associate Professor, and Head of the CIS Department at Daffodil International University, for dedicating his valuable time, offering guidance, and providing inspiration throughout the development of this project and my academic journey. I extend my thanks to him, conveying my best wishes for his unwavering support, sound judgment, appropriate insights, and comprehensive understanding of various elements that played a crucial role in bringing this project to fruition. His efforts have been instrumental in ensuring my comprehension of the essentials needed to successfully complete this project.

I extend my sincere appreciation to **Ms. Bilkish Khanam**, Psychologist at Daffodil, for her invaluable assistance at the commencement of the study and for ensuring my clear understanding of the subject matter. Her gracious demeanor and supportive nature consistently motivate me to strive for excellence in my work.

I must respectfully thank **Mr. Mehedi Hassan**, Lecturer in the CIS Department at Daffodil International University, and all of my lecturers for their unfailing help and patience in getting this thesis work done.

Abstraction

In the vast online world, "Serene" is a website designed to make mental health easy to understand and access. It's a friendly digital place offering lots of help for anyone dealing with mental health issues. The goal is to help you feel better and less alone, no matter where you are in the world. This website is like a comforting friend, sharing useful stuff to read and watch about mental health. It's not about big words or complicated ideas; it's here to make things simple and clear. The idea is to help you feel good about yourself and get through tough times. You can join a friendly community where people share their stories and support each other. It's like a global team cheering you on, no matter what you're going through. We've asked smart and kind experts to share their thoughts about mental health, so you get helpful advice. And just in case things get really tough, there's a quick way to find someone to talk to. "Serene" is more than just a website; it's a digital friend here to help you with the global challenge of mental health. Let's make this journey together, creating a kinder and happier world for everyone.

DEDICATION

I dedicate this work to my father, Muzibur Rahman, and mother, Anwara Begum. Without the blessings and unwavering support of my parents, I would not have had the opportunity to engage in research or studies with the goal of making a positive impact on society.

Contents

List of Figures

List of Tables

Chapter 1- Introduction

1.1 Description of the project:

People nowadays prefer online systems because they manage tasks effectively and quickly. These systems store and provide access to lots of information easily, unlike the slow and less efficient paper-based methods. Businesses using paper struggle to get needed information fast, affecting how they manage things. This makes digital systems more helpful for managing everything.

In today's tech world, taking care of our feelings and thoughts is super important. Imagine a website all about helping with mental health. It's like a smart helper connecting people and mental health experts. You can check how you're feeling, get free therapy tips for home, book a talk with a doctor, chat with others, and buy things that can help your mental health. Some people run it, admins make sure everything's working, doctors handle appointments, and sellers sell mental health stuff. It's a website that's easy to use and helps you understand how you're feeling. It uses clever tech to guide you to the right help. You can update your info, buy things, set up appointments, and talk to others who get it. It's here to make mental health care easier and friendlier for everyone. [1].

1.2 Document Context of the project:

- **Chapter 1: Introduction:**

This section provides an overview of online applications.

- **Chapter 2: Initial Study**

This section delineates my application objectives, offers various information, identifies the problem area, and delves into potential solutions.

- **Chapter 3: Literature review**

This section elucidates the challenges within the domain and presents the proposed solution. Moreover, a comparative analysis of the project is undertaken in this segment.

- **Chapter 4: Methodology**

This chapter outlines the selected methodology for the project, explaining both the chosen approach and the underlying reasons behind its adoption.

- **Chapter 5: Planning**

This chapter explores the feasibility of the project across economic, operational, social, and technical dimensions.

- **Chapter 6: Feasibility**

Here examines all types of feasibility of the project.

- **Chapter 7: Foundation**

Here offers an overview of the project's structure, supplemented by a comprehensive pictures.

- **Chapter 8: Exploration**

Here elucidates the preceding system, delineating and illustrated through various types of diagrams.

- **Chapter 9: Engineering**

This section provides a detailed account of the activities undertaken and the engineering aspects addressed.

- **Chapter 10: Deployment**

This section delineates the prioritization of tasks, the techniques utilized, and the sequential steps involved in the project.

- **Chapter 11: Testing**

This chapter presents the test cases employed for the project.

- **Chapter 12: Implementation**

Here delineates the implementation process & methodology.

- **Chapter 13: Critical Appraisal and Evaluation.**

This section explores evaluation of the project.

- **Chapter 14: Conclusion**

In this chapter provides a concise overview of the project and outlines the entire project process."

Chapter 2- Initial Study

2.1 Project Proposal:

Initial Conception

A. Brief description of the project:

In present era, plays a crucial role worldwide, influencing work dynamics. Hence, I opted for an innovative approach for this venture by developing it with web-based systems. Contemporary society demonstrates a heightened interest in mental health, with an increasing curiosity about understanding psychological problems and their solutions, all seamlessly integrated into the project. Previously, the mental health solution process was unfamiliar to many, but the project now facilitates awareness.

The mental health solution system operates in harmony with people's interests, efficiently managing the entire process through a web-based platform. This system oversees organizational tasks, including patient management, AI testing procedures, appointment scheduling, as well as product details manipulation (uploading, deleting, editing, and selling). Users can engage with the platform by interacting with blogs, leaving comments and likes, while administrators can respond to user feedback. Additionally, the system allows for the management of monthly reports detailing the organization's financial performance, and doctors can efficiently coordinate their appointment schedules. Patients benefit by logging into the system, taking AI tests, scheduling appointments, viewing and purchasing products, leaving comments, liking content, writing blogs, and updating their profiles. [2].

B. Proof of a concept:

i. Prototype:

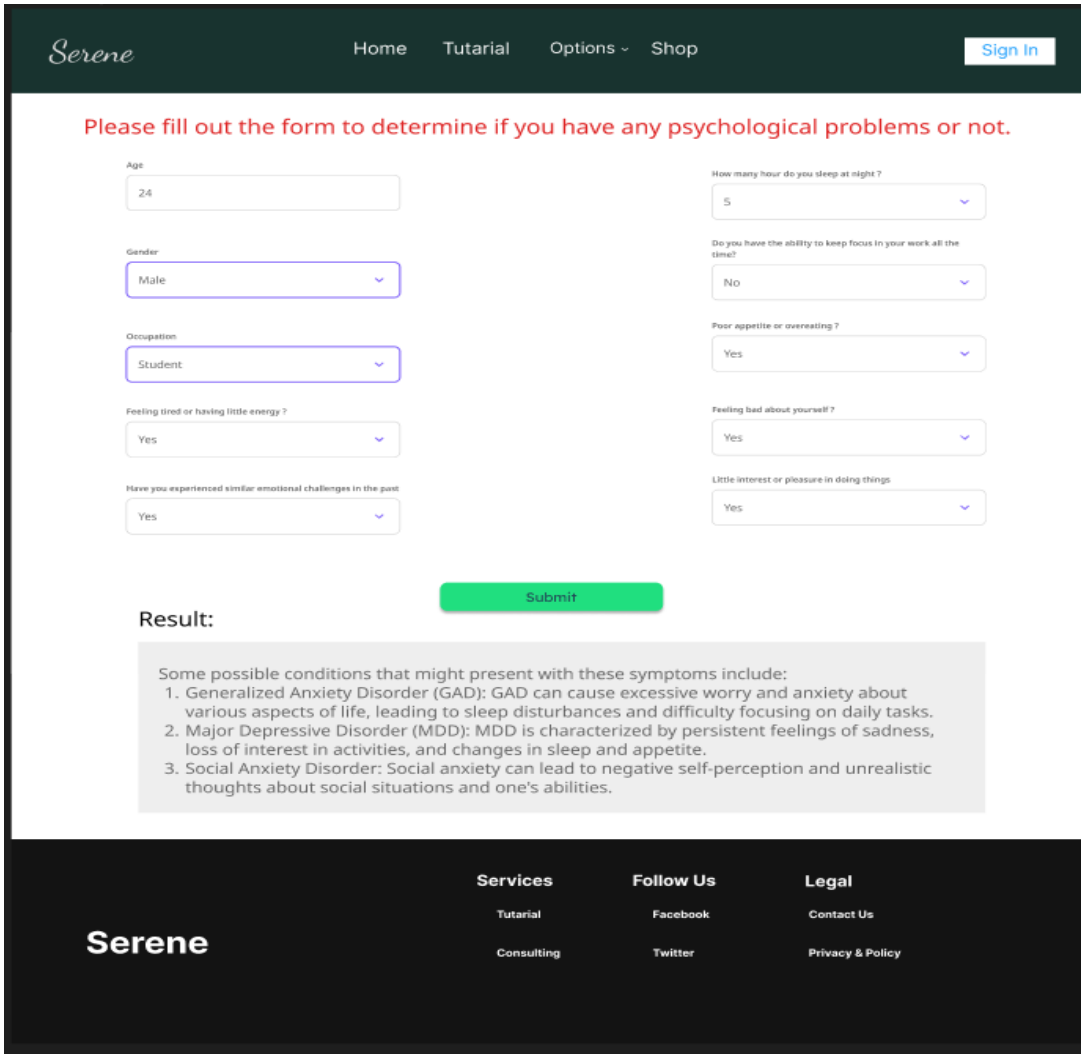

Fig 1: Mental Health Solution prototype.

ii. Initial research:

Market Viability:

Bangladesh is starting to pay more attention to mental health issues [3]. This means there's a chance to create an online platform that helps with mental health problems. Right now, more people in Bangladesh are realizing how important mental health is. But it's still hard for many to get the help they need. Things like people not talking about it, not enough places to go for help, and not enough resources make it tough. But in all these challenges, there's a chance to make things better. We can create a website that's easy for everyone to use and helps with mental health problems in Bangladesh.

The website offers different things to help with mental health, like tests to check how you're feeling, booking appointments, and getting products that can help with mental health. It's made to help lots of different people who need support with their mental health.

I decided to focus on mental health solutions because there's a lack of good options in Bangladesh. Getting help for mental health here can be hard and time-consuming. I want to change that by making it easier for people. I want them to feel comfortable reaching out for help and to get interested in the services available. That's why I'm creating this system.

2.1 Feasibility Study

A. Operation Feasibility:

Empowers various users to actively oversee its functions. Those selling items can include products for sale, while medical professionals can access their appointment schedules. The administrator holds authority over patients, doctors, and sellers, with capabilities to upload, delete, edit, and manage product information. They can establish blog spaces, allowing patients to engage through comments. The system displays product orders and facilitates their management. Furthermore, the

administrator holds decision-making authority over the entire system. I will enhance the operational capacity of the system to ensure optimal functionality:

- Give AI test
- Get appointment.
- Easily have video call.
- Easily get home therapy.
- Easily purchase product.
- Easily add product.

B. Technical Feasibility:

Hardware	Computer/Laptop (1TB HDD, 4GB RAM), RUTER(WiFi)
Software	➢ Window 11 ➢ Microsoft office 2019 ➢ Visual Studio Code ➢ Node JS. ➢ MongoDB Compass ➢ Browser

Table 1: Technical component table

A. Economic feasibility:

Costs:

i. Cost of Software
ii. Cost of Hosting
iii. Cost of Storage
iv. Cost of Development

Serial number	components	price
1	software	38,200/=
2	hardware	65,200/=
3	hosting	5,100/=
4	others	10,500/=
total		77,500/=

Table 2: Technical feasibility table

Hardware:

Serial number	components	price
1	laptop	40,300/=
2	router	5,200/=
3	others	2000/=
Total		47,000/=

Table 3: Hardware feasibility table

Hosting:

Serial number	components	price
1		5,500/=

Table 4: Hosting feasibility table

Software:

Serial number	components	price
1	Window 11	10,500/=
2	Microsoft office	10,200/=
3	MongoDB compass	5,000/=
4	Visual Studio Code	5,000/=
5	Browser	0/=
Total		30,000/=

Table 5: Software feasibility table

b. Comparative analysis:

In Bangladesh, there is a need for a streamlined mental health solution system. Individuals currently rely on traditional methods to access the treatment they need, but my system eliminates the need for manual processes. Our platform enables the easy management of test appointments and report generation with just a single click.

B. Foundation

a. Defined goals/objective of the project:

Goal: My first aim of deploying this application is to upgrade mental health assistance. infrastructure in Bangladesh. This innovative approach serves as a valuable instrument to promote efficient solutions for mental well-being.

Objectives:

- **AI Test:** Patients share their thoughts and feelings in a form. A smart system reads what they write and checks if it hints at any mental health concerns. If it finds signs that match, it suggests seeking help from a mental health expert.

- **Appointment:** Patients can schedule appointments with doctors for their specific health concerns at their preferred date and time.
- **Self-Therapy:** Patients can get some home activity. They can complete those activity and the system monitoring this.
- **Community post:** There are a community where patient can post about their thought and problems and other members can give feedback without revealing reveal their identity
- **Shop**: Users can discover their preferred items, access detailed descriptions, and make purchases effortlessly.
- **Sell item**: Seller can add new product, give description, image give price and shipping cost.

Functional requirements

- AI Test
- Home activity.
- Get appointment.
- Post.
- Add product.
- Add Blogs
- Blogs
- Order products
- Comments

Nonfunctional requirements:

- Authentication/confirmation
- Safety
- Adaptive
- System effectiveness
- Dependability
- Adaptability

- Testability

C. Exploration and Engineering

a. **Iterative development:**

i. Manage report
ii. Manage product

Deployment:

I am crafting of its designated roles is denoted as the manager. Unlike its counterparts, I believe the site optimizes online compatibility for our gadgets. It encompasses numerous functionalities and advantages, including broad internet accessibility, economical operation, dispensing with the necessity for equipment installation, and facilitating swift and uncomplicated modifications. I manage the technical aspects using a foundation in programming, employing dynamic scripting for functionality, a distinctive and adaptive user interface developed with a popular library, and employing markup and styling languages along with their respective iterations. The data management component involves the utilization of a widely used database and additional tools, as deemed necessary.

2.3 **Background of the Project:**

Getting help for mental health has been hard because the old ways are complicated. Sometimes, it's tough for people to explain what they need, and professionals may not get it right. The way things are done with papers and sketches takes a lot of time and can cause problems. My project aims to make mental health solutions simpler and more accessible for everyone.

The rationale behind selecting a web-based system for the project is its digital functionality, allowing for comprehensive management of the mental health solution system. The dynamic approach facilitates efficient company management. The anticipated outcome is a system that dynamically oversees mental health solutions. Upon completion, the system should seamlessly handle

appointments, production, order processing, testing, blog creation, reporting checks, and more. It encompasses production and fundamental functions within the sales model, enabling users to easily purchase and sell products once the development phase concludes.

2.4 Goals of the project:

iii. Easily buy and sell product.
iv. Easily give test.
v. Easily get appointment.
vi. Easily manage product.

2.5 Objectives of the project:

vii. Manage the system.
viii. User can easily use and get help.
ix. Seller can easily do business.

2.6 Problem areas**:**

Helping with mental health is kind of new for people in Bangladesh. People now know more about mental health and want to fix their issues. This system can do what people need. It looks at solving problems step by step. People in Bangladesh can easily get the help they want. That's why the company went for a more flexible way to help with mental health. But there are some tricky parts we need to talk about.

x. All information must be input correctly.
xi. User must be knowledgeable about their websites
xii. The Doctor should know about the system.
xiii. Security problem.

2.7 **Possible solution:**

Once I studied everything, I spotted the tough parts. For mental health solutions, I went for a way that could handle these issues. As I built the system, I arranged all the details really well. That made it easy for the company to manage their system smoothly. I learned a bunch from websites to make it simpler. Keeping things safe was a big deal to avoid troubles for users. So, while making the systems, I really put my focus on finding solutions.

Chapter 3 – Literature Review

Researching existing information is important when creating a new system. This helps find out what others have done in the same area. While building the system, looking at past work helps to see what's similar. It's like finding important ideas to include in the new application.

3.1 Discussion on problem domain based on published articles:

Mental health system field is always changing. More and more people are using mental health systems now. Ten years ago, only rich people had them, and they were costly, not accessible for all people. But things have changed. Mental health systems are now more about being useful than just looking fancy. Even though the field has grown a lot, there are still some problems it faces. Here are a few of them below:

- **Managing costs:**

Keeping track of money is a big deal for any company, even for mental health services. This involves managing costs related to tasks, resources, advertising, and things like monthly bills. For many mental health services, handling expenses linked to their facilities can be tough. In the field of mental health, not working efficiently in the workspace can be not just costly but also take up a lot of time and money.

- **Schedule and manage to time:**

People involved in mental health solution systems have commitments, so ensuring effective time management for you and your colleagues is a crucial aspect of your responsibilities. Design has consistently posed challenges for many in the mental health solution systems field, often leading to prolonged processes.

- **Limited Resource:**

Creating a mental health website with limited resources requires a strategic and focused approach. Prioritize essential features such as a user-friendly interface, clear navigation, and reliable information on mental health. Opt for a clean and calming color scheme, incorporating the existing orange, blue, and green colors harmoniously to promote a soothing atmosphere. Utilize free or low-cost resources for content creation, such as open-access images and royalty-free graphics. Prioritize user engagement by integrating simple interactive elements like forums or chat support to foster a sense of community. Leverage cost-effective website hosting options to ensure reliability. Emphasize the quality of information and support available, even if the scope is modest, to create a valuable resource for those seeking mental health assistance.

3.3 Comparison of ¾ leading solution:

Some leading application are listed here:

- Free Mental Health Test - LifeSpring Consultancy Limited (lifespringint.com) (Bangladesh)
- Verywell Mind - Know More. Live Brighter. (International)
- Psychology Today: Health, Help, Happiness + Find a Therapist (International)

3.3.1 Best features:

Life Spring:

- Here has our courses, corporate services, help.
- Sell premium courses.
- They have mental health test.
- They have child development section.
- They give services for corporate people [4].

Fig 2: Life spring website

Very Well Mind:

- Online-based websites for learn about mental health.
- Here has a home, conditions description, therapy, living well, relationship, trending and about us.
- They have test for check personality type.
- They have detail description about all psychological problem.
- They collect trending news about mental health.
- They give relationship advice [5].

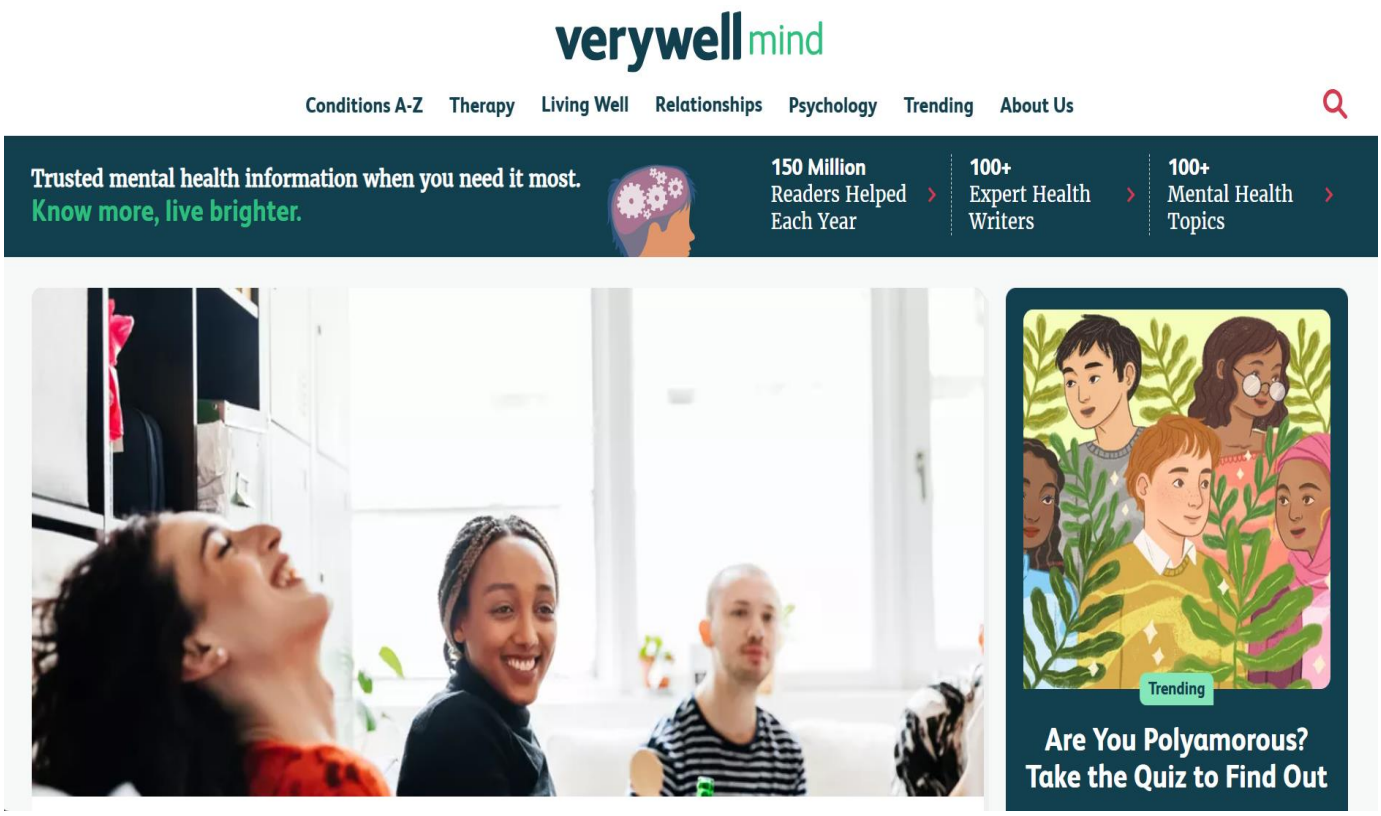

Fig 3: Verywell mind website

Psychology Today:

- Here has a home, conditions description, therapy, living well, relationship, trending and about us options.
- They give access for country based mental health doctors.
- They have test on different section like “Depression”, “Anxiety” , “Personality type”
- They offer consultancy for parenting.
- They help to overcome addiction like “smoking”.
- They offer paid magazine [6].

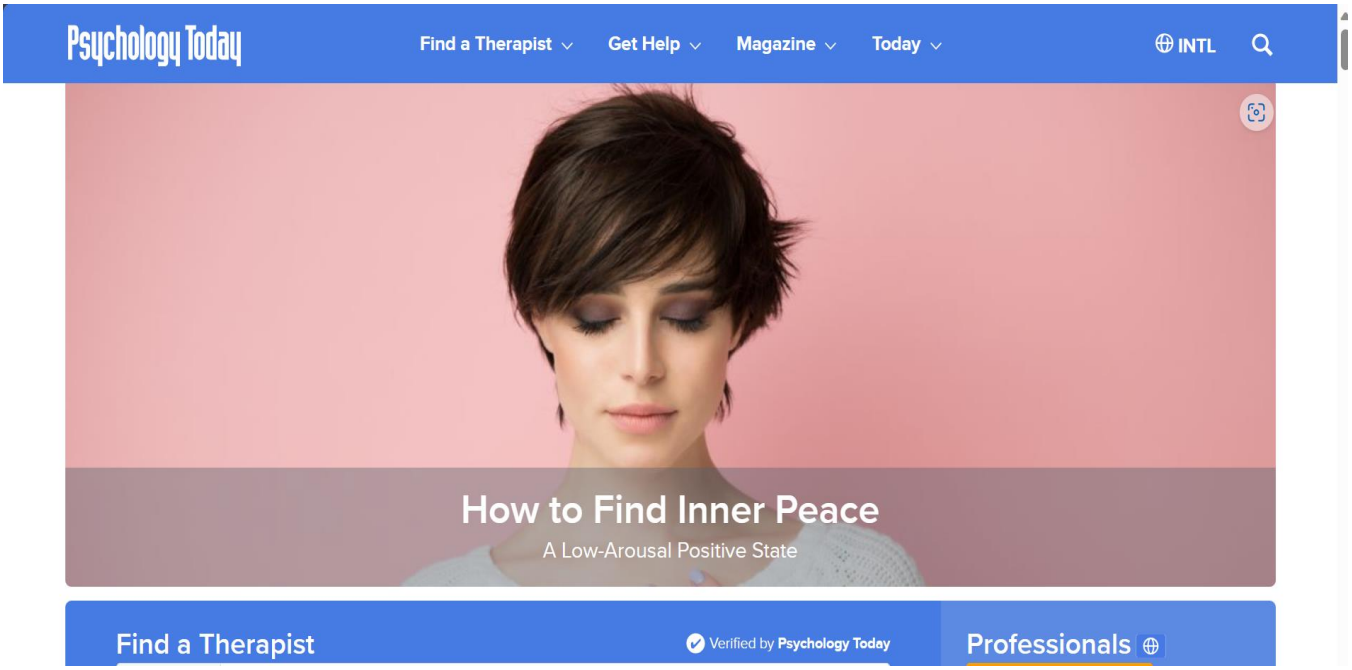

Fig 3: Psychology Today website.

3.3.1 Limitations:

Life spring:

- Can’t get automatic appointment.
- Low amount of service.

Very Well Mind:

- Too many details in a single page (not enough organized).
- Don’t find links for many services.

Psychological Help:

- Don’t have doctor for Many Asian countries.
- Some services are paid.

3.4 Recommended approach:

Adopting an agile philosophy for system development prioritizes requirements, ensuring seamless progression in work tasks. Before initiating the project, a comprehensive risk management plan needs to be formulated and put into action. Once established, integration of acceptance criteria becomes pivotal. The ultimate aim is to execute this project punctually, incorporating outstanding features.

Chapter 4 – Methodology

A project methodology helps us analyze projects. To make application better, pay attention to how long it will take, and possible problems. Also, make sure the company and user understand each other. When we create systems, we should use software.

4.1 What to use:

Diverse options exist globally for application development. The crucial aspect lies in understanding the most effective approach for a project. Initially, I will explore three methodologies, highlighting both their strengths and weaknesses, to determine the most suitable ones for project.

Waterfall model:

Waterfall model an established approach in software development. It follows a systematic sequence of steps, making it a robust and straightforward method. This model is renowned for its clarity and ease of use, as each phase must be completed before advancing to the next. The waterfall model provides a comprehensive view of the software development process, ensuring that every step is diligently executed. It emphasizes a structured and disciplined approach, where each stage is like a cascading waterfall, building upon the completion of the previous one. This method has been widely adopted for its simplicity and effectiveness in managing software projects [7].

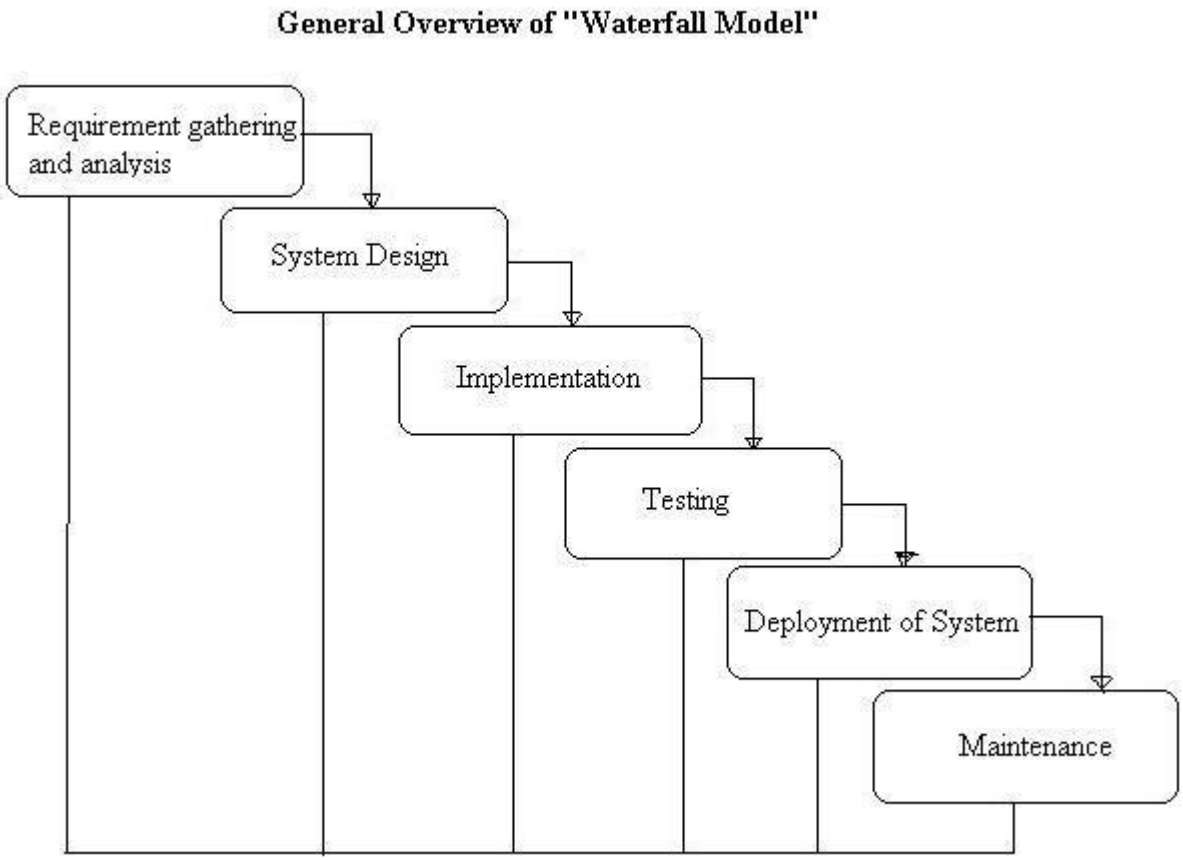

Fig 4. This is the waterfal development process[8].

Advantage:

- It facilitates time-saving during development compared to alternative methods.
- The testing method and inspection processes are straightforward.
- Managing the waterfall model is notably convenient.
- Its user-friendliness stands out in both understanding and application.
- The sequential progression from one level to another is a distinctive characteristic.

Disadvantages:

- The completion of the waterfall model does not allow for backward progression.
- Once a stage is completed, there is no opportunity to transition to the subsequent level.
- It is unsuitable for launching projects.
- The magnitude of differences may not consistently align in certain cases.
- Addition or deletion of requests during the project is not feasible.
- Resolving issues after completing a level becomes an insurmountable challenge.

Agile Methodology:

Agile methodology is like a team game in software development, where requests and actions are smoothly handled by collaborating teams. It was created as a response to improve traditional methods, such as the Waterfall strategy, aligning with the principles of the Agile Manifesto. The software industry is highly competitive, requiring constant updates. Engineers need to continuously enhance components to stay competitive, and the simple, step-by-step approach of the waterfall model doesn't quite fit the fast-paced nature of the field [9].

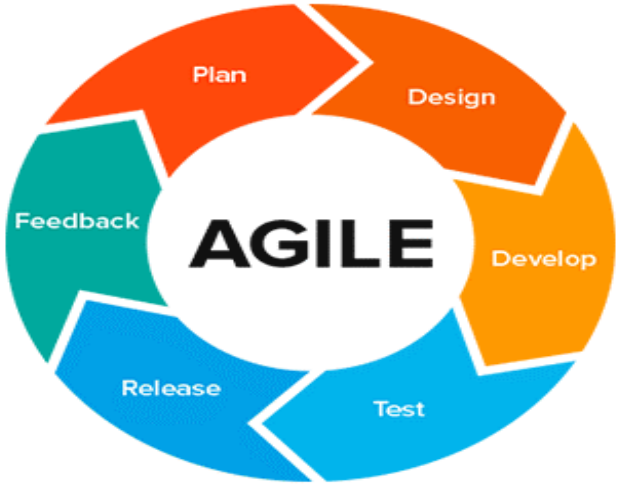

Fig 5. This is the agile development methodology [10].

Advantages:

Disadvantages:

- It excels in promptly and comprehensively delivering educational materials, ensuring patient satisfaction.
- Its emphasis on face-to-face communication facilitates excellent interaction.
- Daily engagement between entrepreneurs and developers is fostered.
- The agile methodology aligns well with effective design principles.
- Prioritizing people and interactions over tools and actions is a core strength.
- Interaction among patients, developers, and testers is encouraged.
- Regular and consistent delivery of business software is a notable advantage.

Dynamic system development methodology (DSDM):

Unlike traditional methodologies, DSDM places a strong emphasis on flexibility, enabling the accommodation of changing requirements throughout the project life cycle. The framework incorporates the principle of timeboxing, setting fixed time constraints for each development iteration to ensure a structured yet efficient approach.

DSDM actively involves users throughout the development process, promoting collaboration between cross-functional teams. Feasibility and business studies at the project's initiation ensure that the undertaken initiatives align seamlessly with organizational goals. The framework also encourages prototyping and iterative testing, fostering continuous feedback and improvement. structure and adaptability in project management and software development. [11].

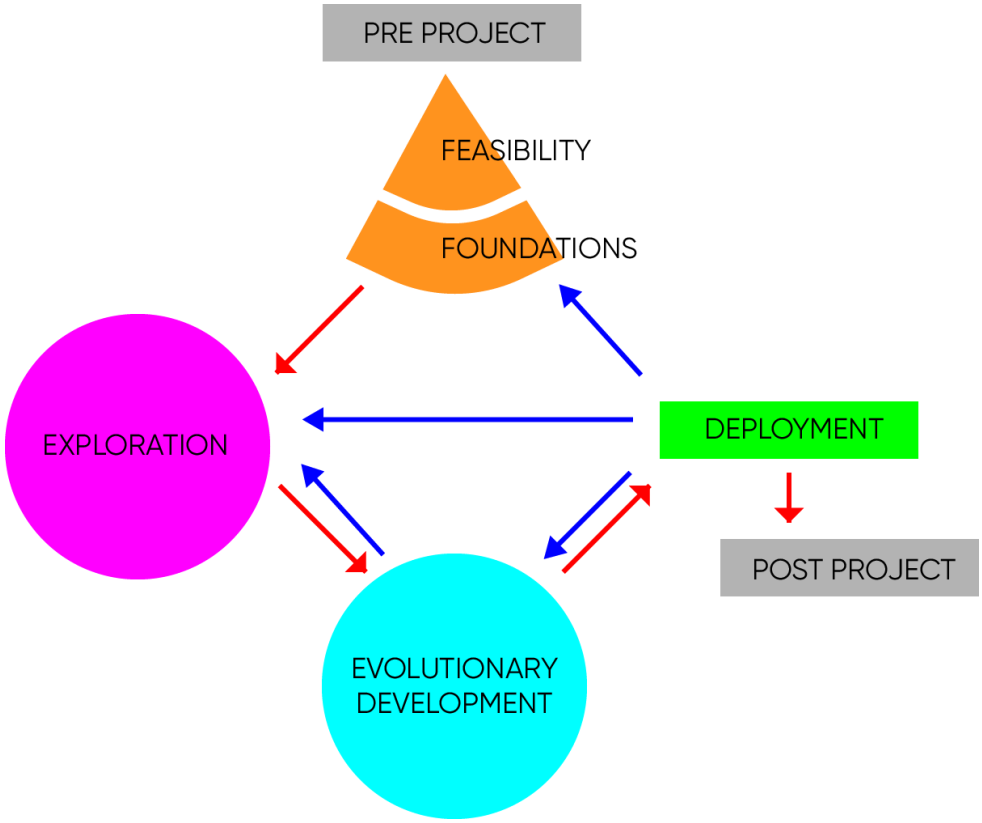

Fig 6. This is DSDM methodology process [12].

Advantages:

- Emphasizes time efficiency as a focal point.
- Demonstrates adaptability as a key attribute.
- Encourages user collaboration throughout the development process.
- Proves time-saving benefits as a distinctive feature.

Disadvantages:

- Implementation costs for the methodology can be high.
- DSDM methodology lacks widespread adoption.
- Understanding the methodology can often be challenging.
- Smaller organizations may find it impractical to utilize the methodology.

The Mental health Solution System is something I'm creating for my research project, and it's not following a strict plan. Since the studies aren't all set from the beginning, I'm collecting and analyzing data first, and then prioritizing system development. I'm working on this project solo, without a team, so there's no fixed method that fits perfectly. A hybrid methodology, combining waterfalls and DSDM modes, seems like a good choice. Waterfalls work well for gathering requirements, while DSDM is great for the ongoing process.

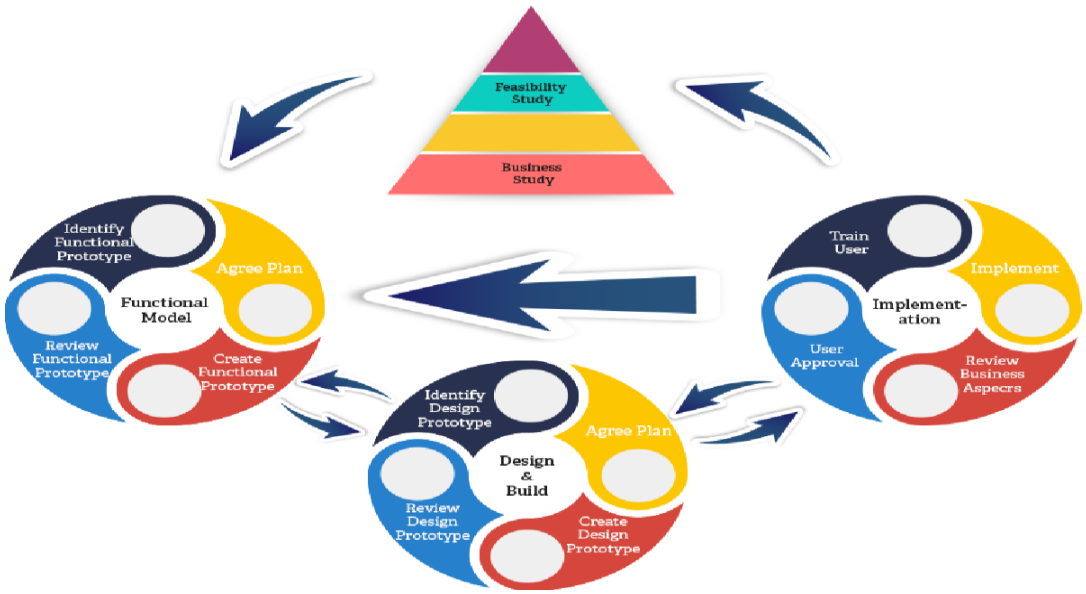

Fig 7. This is DSDM process[13].

4.2 Why to use:

I am confident that by aligning with system requirements. Among various advertising alternatives, the chosen method stands out as the most suitable for the task, given its alignment with system requirements. The specific methodology for this approach is readily accessible within this context.

Some reason are given below:

- It ensures prompt responses when assistance is sought.
- Successful completion of the project within the designated timeframe.
- Leverages interactive capabilities effectively.
- The envisioned system can configure proposed frameworks.

4.3- Sections of methodology:

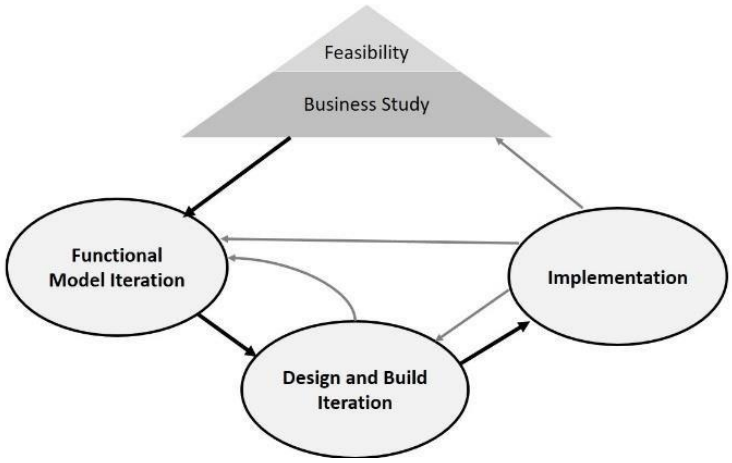

Fig 8. This is the DSDM methodology stage [14]

Feasibility study:

Deciding if an investment is a good idea involves checking if it makes sense for our company. We do this by looking at market research to see if the investment is a good choice. Feasibility is like a tool that helps us decide if an idea is valid. we want to make sure it's a great choice. Feasibility tells us if the investment is smart. We create different kinds of projects, like ones involving technology or business. We also look at how many projects we can do and how good they are. It helps us figure out which projects are the best for our company.

Requirements analysis and prioritization:

This part gives a quick overview of what you should or shouldn't do. We use various methods to collect opinions, like having discussions, getting feedback, asking questions, and more. Many suggested tools can help gather these opinions effectively.

Exploration and engineering:

These first two stages are commonly known as the fundamentals. Checking and examining are essential to understand how things are going. To make improvements, it was handed over tech organization.

4.4 Implementation plan:

Upon reaching the final phase of the project, users will gain access to the system, which is on the brink of operational readiness. Should any issues surface during this stage, it may necessitate a return to the expansion phase for further refinement. Once all challenges are addressed, the system configuration is solidified for optimal performance. The ultimate deployment signifies its readiness and availability for use by stakeholders

Chapter 5 – Planning

5.1 Project plan:

Organization critical task for any project. It entails identifying tasks, creating a comprehensive plan, anticipating potential challenges, estimating time and budget constraints, and outlining the necessary steps. This systematic approach aids developers in understanding their requirements and executing tasks efficiently. The design is tailored to accommodate these specifics. The project is divided into distinct components, and all requisite materials are meticulously planned out. This phase establishes the project's starting point and lays the groundwork for all subsequent decisions.

5.1.1 Work Breakdown Structure (WBS)

I am committed to timely project completion. I formulate a guide within the project design termed the "multi-level enhancement zone." This roadmap serves as a tool to identify opportunities and delineate steps for enhancements, ensuring a streamlined workflow for the team. Each work stage is distinct, spanning from primary tasks to more granular ones. Employing the work breakdown structure block is pivotal in achieving optimal results. The foundation of this structure lays the groundwork for a meticulously planned breakdown.

5.1.2 Time Duration / Time Boxing

Time box:

Task Name	Start Time	Duration	End-Time
1. Initial Study	1 August 2023	20 days	20 August 2023
1.1 Identify the Project All requirement		3	4 August 2023

1.2 Justify the Project		5	9 August 2023
1.3 Find out the solution		10	19 August 2023
1.4 The Aims and Objectives		1	20 August 2023
2 .Requirement Gathering and Analysis	21 August 2023	10 days	31 August 2023
2.1 Feasibility Study		2	23 August 2023
2.2 Use Cases		2	25 August 2023
2.3 Functional Requirement		1	26 August 2023
2.4 Non Functional Requirement		1	27 August 2023
2.4 System Architecture		1	28 August 2023
2.5 ERD For (Database Management0		1	29 August 2023
2.6 Initial Class Diagram		2	31 August 2023
3. Design	1 September 2023	**15**	**15 September 2023**
3.1 UI Design		5	5 September 2023
3.2 Database design		2	7 September 2023
3.3 Class Diagram		2	9 September 2023
3.4 Behavioral Model		2	11 September 2023
3.5 Collaboration Diagram		4	15 September 2023
4. Implementation	16 September 2023	**20**	**6 October 2023**
4.1 Programming Language MERN		2	18 September 2023
4.2 Project Implementation		18	6 October 2023
5 Testing	7 October 2023	**10**	**17 October**
6 Documentation	18 October 2023	**15**	**1 November 2023**

Table 6: Time boxing.

5.1.1 Gantt chart:

Task Name	Starting Date	Ending Date	Duration
Initial Study	1-Aug-23	20-Aug-23	20
Identify the Project All requirement	1-Aug-23	4-Aug-23	3
Justify the Project	5-Aug-23	9-Aug-23	5
Find out the solution	10-Aug-23	19-Aug-23	10
Feasibility Study	20-Aug-23	21-Aug	1
Use Cases	22-Aug	7-Sep	10
Functional Requirement	8-Sep	10-Sep	2
Non Functional Requirement	11-Sep	13-Sep	2
System Architecture	14-Sep	15-Sep	1
ERD For (Database Management0	16-Sep	17-Sep	1
Initial Class Diagram	18-Sep	20-Sep	1
UI Design	1-Sep	15-Sep	15
Database design	16-Sep	18-Sep	2
Class Diagram	19-Sep	21-Sep	2
Behavioral Model	22-Sep	24-Sep	2
Collaboration Diagram	25-Sep	29-Sep	4
Implementation	29-Oct-23		20
Programming Language MERN SetUp	16-Sep-23	18-Sep-23	2
Project Implementation	19-Sep-23	6-Oct-23	20
Testing	7-Oct-23	17-Oct-23	10

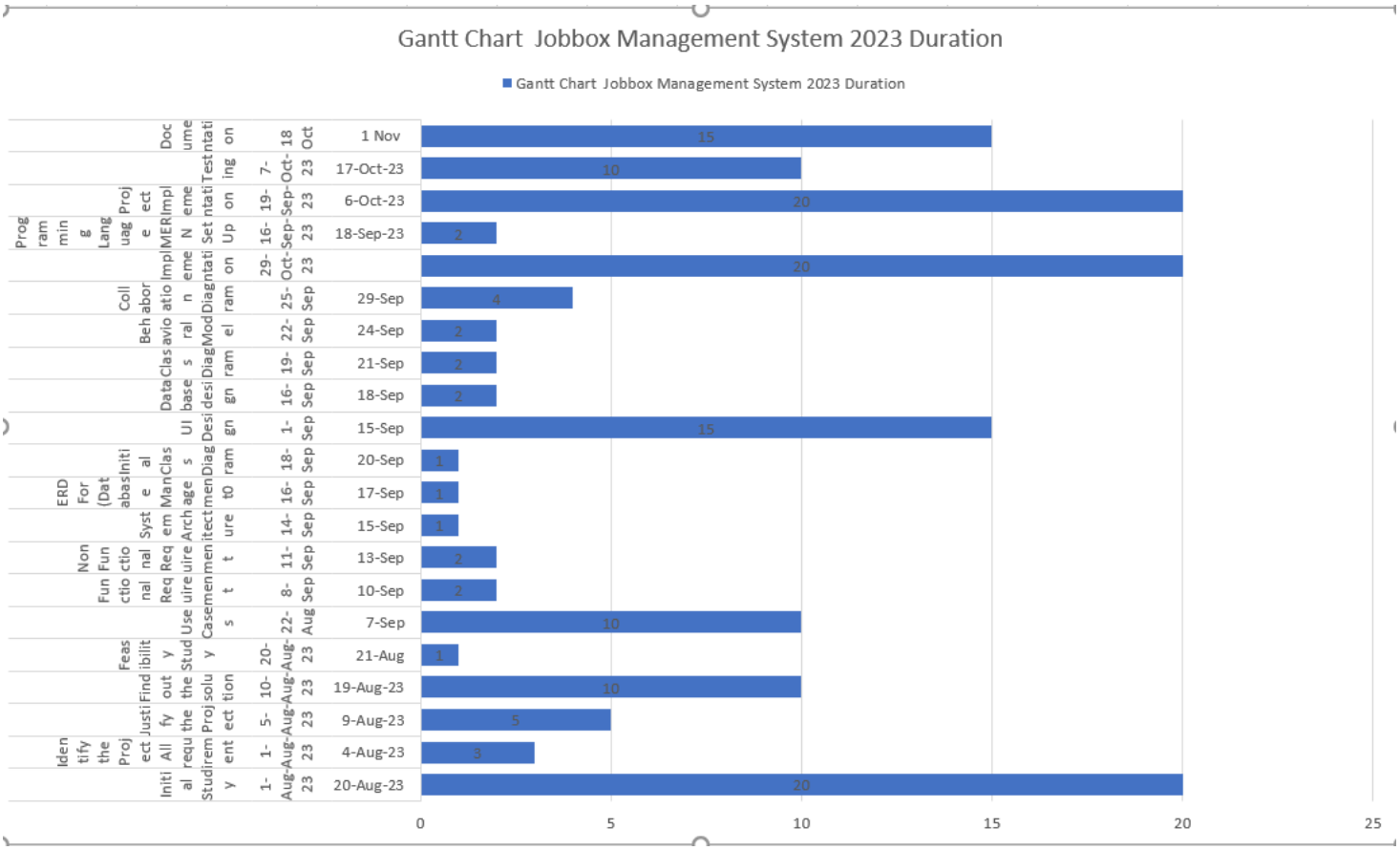

Fig 9. Gantt chart

5.1.2 Required tests:

Various tests play a crucial role in addressing system issues, aiding in the distinction between points of strength and areas that need improvement in a proposed system. Below are some essential tests that contribute to this evaluation:

Functional Testing

- **Unit testing:**

This test are conducted according to the established protocols, ensuring seamless integration and effectiveness in supporting operational functionalities, thus contributing to the efficiency of law enforcement operations and coding initiatives.

- **Integration testing:**

Primarily used for testing software, this process certifies the organization as a software unit. It involves multitasking with the integration of test units, encompassing inspiring features or groups. The focus is on ensuring all software modules operate seamlessly, leading to successful test validations.

- **System testing:**

Typically, it's involved in integration testing. It collaborates with the system's capabilities, features, and requirements. It ensures proper control over the workload, emphasizing the importance of the right approach.

- **Acceptance testing:**

Concluding the acceptance testing phase, functional testing engages users in a participatory evaluation. The primary objective of this assessment is to gauge patient contentment and meet the criteria outlined by the business.

Non-functional

- **Security testing:**

This part deals with the security of web applications and internal/external software. We use measures like SQL injection to enhance security. Both external and internal aspects are examined to ensure robust security against potential threats.

- **Usability testing:**

In this phase, we evaluate user-friendly software. Users should find it easy and quick to operate the system. We prioritize what consumers find interesting. This testing focuses on enhancing the overall user experience in a software setting [15].

Chapter 6-Feasibility

Feasibility study

When self-defense is timely, easily accessible, and aligns with legal guidelines, it can be considered a feasibility study. This assists in gauging the practicality of the approach.

6.1 All possible type of feasibility:

6.1.1 Economic feasibility:

Serial number	components	price
1	software	38,200/=
2	hardware	65,200/=
3	hosting	5,100/=
4	others	10,500/=
total		77,500/=

Table 7: Technical feasibility table

Hardware:

Serial Number	components	price
1	laptop	40,300/=
2	router	5,200/=
3	others	2000/=
Total		47,000/=

Table 8: Hardware feasibility table

Software:

Serial Number	components	price
1	Window 11	20,500/=
2	MongoDB compass	5,000/=
3	Visual Studio Code	5,000/=
4	Browser	0/=
Total		

Table 9: Software feasibility table

Hosting: Here hosting price:

Serial number	components	price
1		5,500/=

Table 10: Hosting feasibility table

6.1.1 Technical feasibility:

The utilization of JavaScript powers the automated system, mitigating the risks associated with data and file loss prevalent in manual processes. With the recent implementation, tasks have become significantly more accessible and manageable through automated procedures. I've developed a program compatible with both web browsers and control panels. These projects address the technical challenges enumerated below, serving as foundational elements for the project.

Software:

- MS office
- Web browser
- OS
- MongoDB Compass
- VS Code

Hardware:

- DCL laptop (intel core i3)
- Router.

6.1.2 Operation feasibility:

Within diverse actively oversee mental health solution systems. An admin user holds managerial control, allowing them to handle patient management, product description uploads, deletions, edits, and overall product description management. The admin can establish blog spaces for patient interaction, showcase intern CVs, manage product orders, and wield decision-making authority for the mental health solution system company. I aim to augment the operational capabilities of the system to enhance its overall functionality.

- Easily give test.
- Easily get appointment.
- Easily added all product.
- Easily give post / feedback.
- Easily accessible system.

6.2 Cost Benefit Analysis

Serial No	Cost	Year 1	Year 2	Year 3	Year 4	Total
1	Software	50,200/=	-	-	-	50,500/=
2	Hardware cost	78,300/=	-	-	-	78,500/=

3	Hosting	14,100/=	14,500/=	20,500/=	20,500/=	5,500/=
4	Office cost	18,500/=	19,200/=	15,200/=	15,300/=	70,500/=
5	Staff cost	25,800/=	30,200/=	25,200/=	25,200/=	130,500/=
6	Development	4,300/=	4,200/=	4,300/=	8,500/=	15,500/=
7	Other Cost	18,400/=	18,200/=	18,300/=	18,200/=	90,300/=
	Total	209,600/=	83,300/=	83,500/=	87,700/=	441,300/=

Table 11: Total earning Table

Total revenue:

Serial	**Cost**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Total**
1	Total	130,500/=	160,500/=	240,500/=	250,500/=	880,500/=
2	Total expenditure	202,500/=	74,500/=	74,500/=	74,500/=	444,000/=
	Total revenue	**333,000/=**	**234,500/=**	**355,000/=**	**325,000/=**	**1,320,000/=**

Table 12: Total revenue Table

By conducting a comprehensive cost analysis, a team can generate significant revenue annually, with a consistent upward trend in income each year. Project assessments reveal that the projected revenue for the upcoming four to five years will reach 1,334,000/=. This analysis indicates the profitability of the program..

6.3 DSDM is good or not for the project:

Throughout this process, we adhere to the DSDM language procedures. This approach, established by the original developers, facilitates seamless integration with end users. Given the educational nature of my project, DSDM proves to be an invaluable ally. The functions within DSDM align closely with the systems I am hosting, making it well-suited.

Chapter 7-Foundation

7.1 Overall Requirement List

In realm of software engineering, requirements can generally be categorized into two main types: functional and non-functional. Presented below are detailed specifications encompassing these diverse requirements.

7.1.1 List of functional requirement:

- **Give AI test.**

Patient can give multiple types of test. That helps them to find out if they have mental problem.

- **Appointment:**

User can easily choose their scheduled appointment time. And talk with doctor online.

- **Add Product:**

Seller can easily add new product and sell it.

- **Shop:**

Users have the convenience of selecting products, adding them to their cart, and effortlessly confirming orders. The administrative role oversees the order processing, allowing the admin to track and display order statuses, distinguishing between pending and completed orders.

- **Blog setup:**

The administrator possesses the ability to oversee and contribute to blogs by creating, updating, and managing company details through this platform. Additionally, the admin can engage in discussions by commenting on blogs. Patients, on the other hand, have the convenience of leaving comments, liking blogs, and viewing responses. Furthermore, users can upload various file

formats, including PDFs and images.

7.1.2 List of nonfunctional requirement:

- **Validation/ verification:**

The website operates a validation and verification system in place. Patients are prompted to enter their information, adding an additional layer of validation to ensure precision and security.

- **Security:**

The website prioritizes security, fostering trust among patients. Because security is paramount for any website, we ensure a safe and reliable environment for users.

- **Responsive:**

Responsiveness is crucial for a website. If a website lacks responsiveness, patients may encounter issues. A responsive website adapts seamlessly to various devices, including mobiles, laptops, and others, ensuring a smooth experience for users.

- **Reliability:**

The system might yield unexpected results when keys are unintentionally pressed. In contrast, reliability entails the system delivering services consistently. Therefore, evaluating our system, I aim for the highest possible reliability to ensure continuous functionality.

- **Testability:**

The proposed system should be easily testable, allowing for straightforward verification of all its features. Admins, designers, and patients should find it easy to work with the system, ensuring a seamless user experience for all involved parties.

7.2 What Technology to be implemented:

Client/server application:

These applications are instrumental in facilitating organized and standardized information exchange within an organization or group. The integration of client or server applications offers significant advantages to any organization and has been specifically selected for implementation. Additionally, individuals can conveniently access them across multiple platforms simultaneously, thereby enhancing their versatility and accessibility. This software operates with high speed while maintaining minimal security risks. The client/server applications provided are as follows:

- Initially installed this.
- Limited scalability, not suitable for a large number of users.
- High cost involved.
- Sturdy and resilient.

Web application:

- Functions independently without the need for additional software.
- Operates seamlessly with no user constraints, ensuring swift performance.
- Requires no installation process.
- Easily accessible.
- Efficient and speedy performance.

7.3 Recommendations and Justifications:

In the pursuit of identifying the best-suited solution for our proposed system, we've delved into different application types, their roles, and the significant advantages they offer. In this context, opting for a web server emerges as a harmonious fit for our system. It also proves to be cost-effective, eliminates the need for device installations, facilitates seamless and rapid updates, and presents numerous other benefits. Therefore, the conclusion is clear: a web server application stands as the optimal choice for ours.

Chapter 8-Exploration

8.1 Old system use case:

This use case serves as a comprehensive and illustrative representation of the entire system, offering in-depth insights into the functionalities of the website and facilitating a thorough understanding of user interactions. It provides valuable insights into user tasks and functionalities, aiding in the enhancement of user experience and system performance. Below, we meticulously outline the various use cases of the previous system, providing a detailed analysis of its operational dynamics and functional requirements.

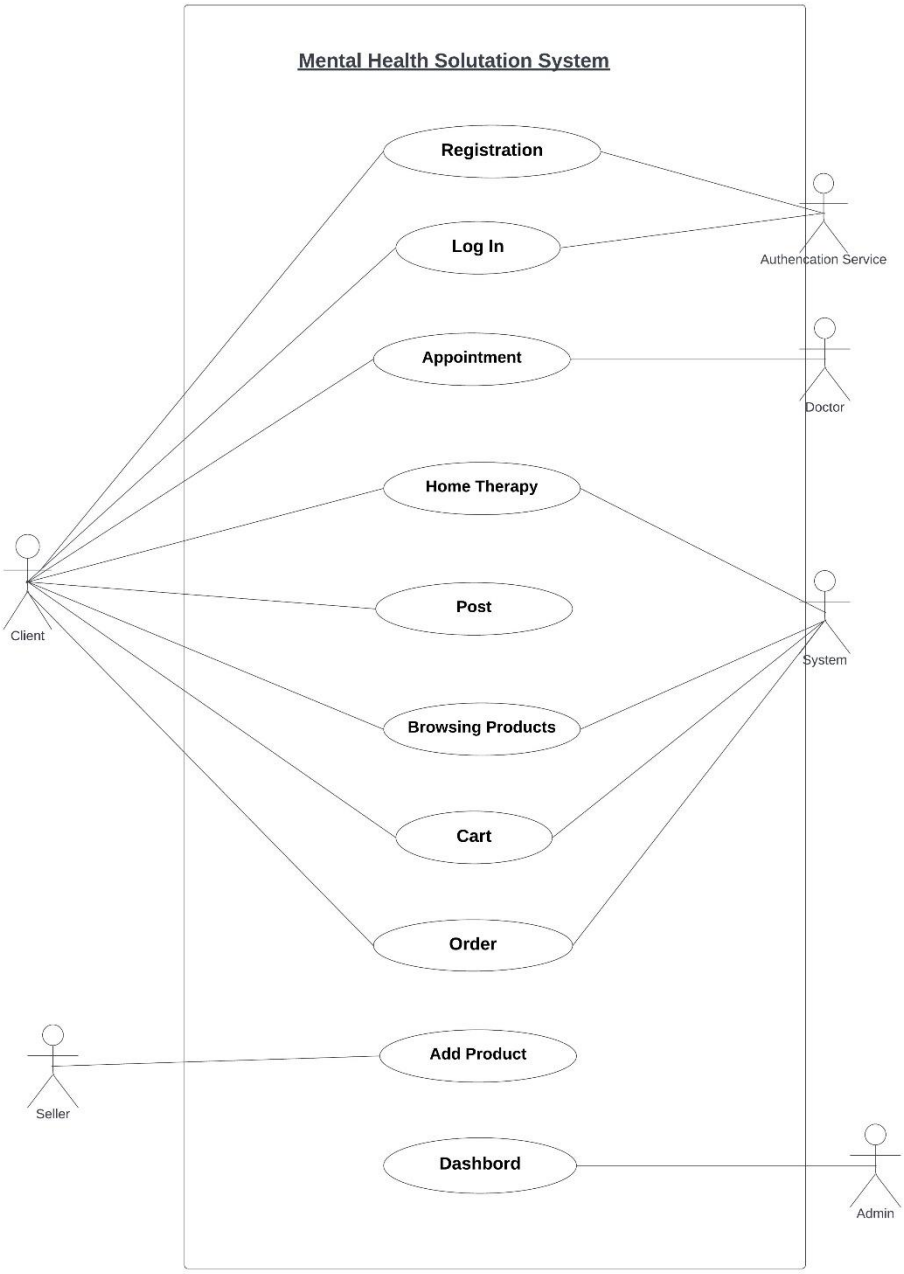

Fig 10. Project old system diagram.

8.2 Old system full activity diagram:

This diagram play a crucial role in defining system workflows, capturing performance details, and illustrating the transition from one system to another. This specific application distinguishes itself from other system. The diagram of activities serves as a representation of workflow. Below, we present the activity diagram from the previous system:

Admin activity diagram:

Fig 11. Project old system admin activity diagram.

Patient activity diagram:

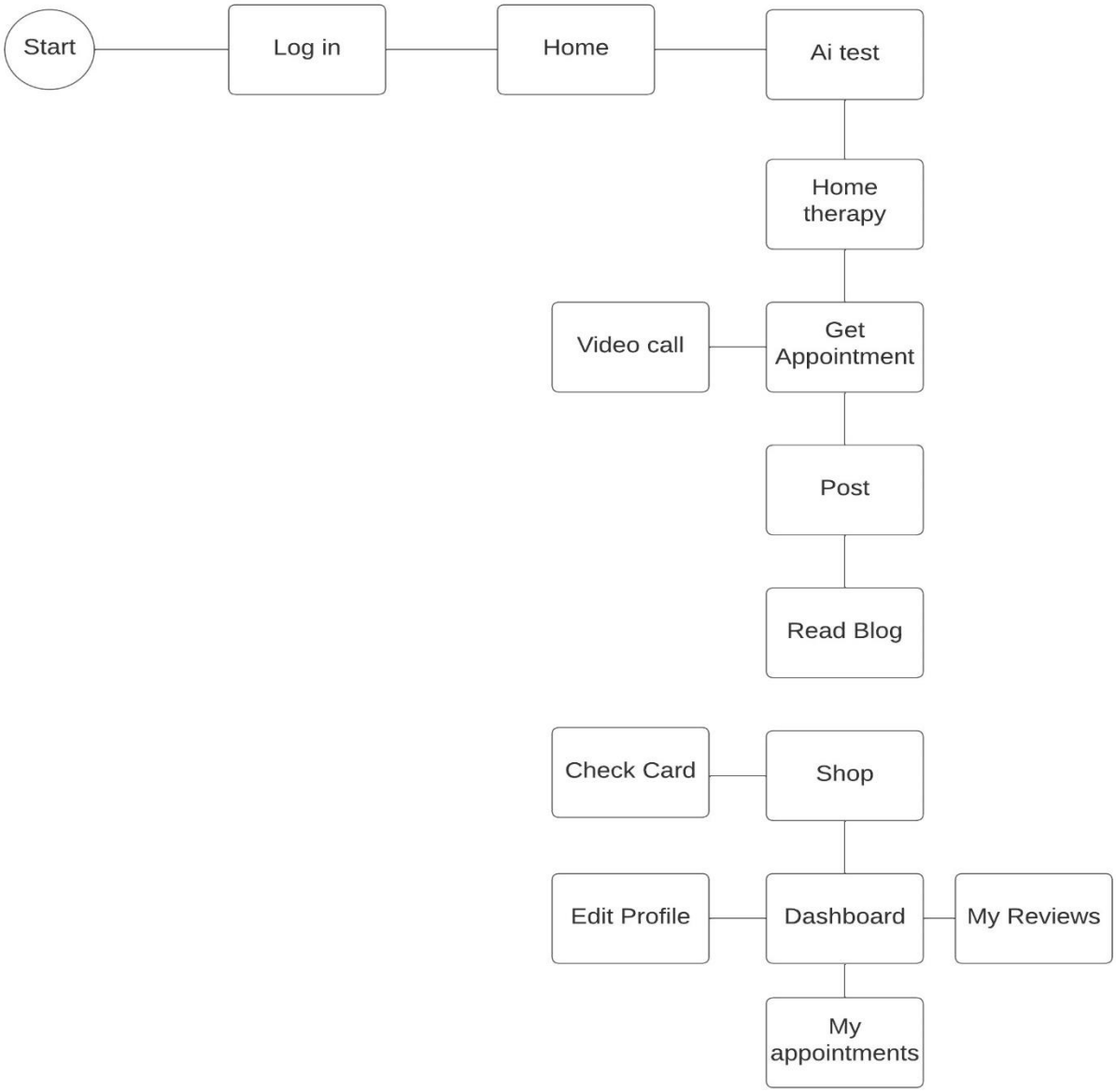

Fig 12. Project old system patient activity diagram.

8.3 Prioritized Requirement List (PRL):

MoSCow:

This method is providing utility across software development, project management, and business analysis domains. MOSCOW method proves valuable in prioritizing services and comprehending essential needs. MoSCoW categorizes features into Must-have, Should-have, Could-have, and Would-have. The following outlines the features classified under the MoSCoW framework.

SL Nu.	MOSCOW	requirement
1	Must have	➢ AI / Manual Test ➢ Appointment ➢ Add Product ➢ Product buy
2	Should have	➢ Registration ➢ Login ➢ Post ➢ Manage Post ➢ Manage product ➢ Add Doctor ➢ Manage Doctor ➢ Manage Seller
3	Could have	➢ Like
4	Would Have	➢ Rating

Table 14: Prioritization Table

8.4 Prototype of new system:

Before delving into advantages, essential to articulate the concept of prototype. The prototype stands as a resilient that precedes development final design. It serves the purpose of showcasing not only the visual aesthetics of the forthcoming website but also its layout, and its integration within the broader website structure. Prototyping is an approach geared towards expediting website development by concentrating on pivotal design elements. Presented below is the prototype for the new system:

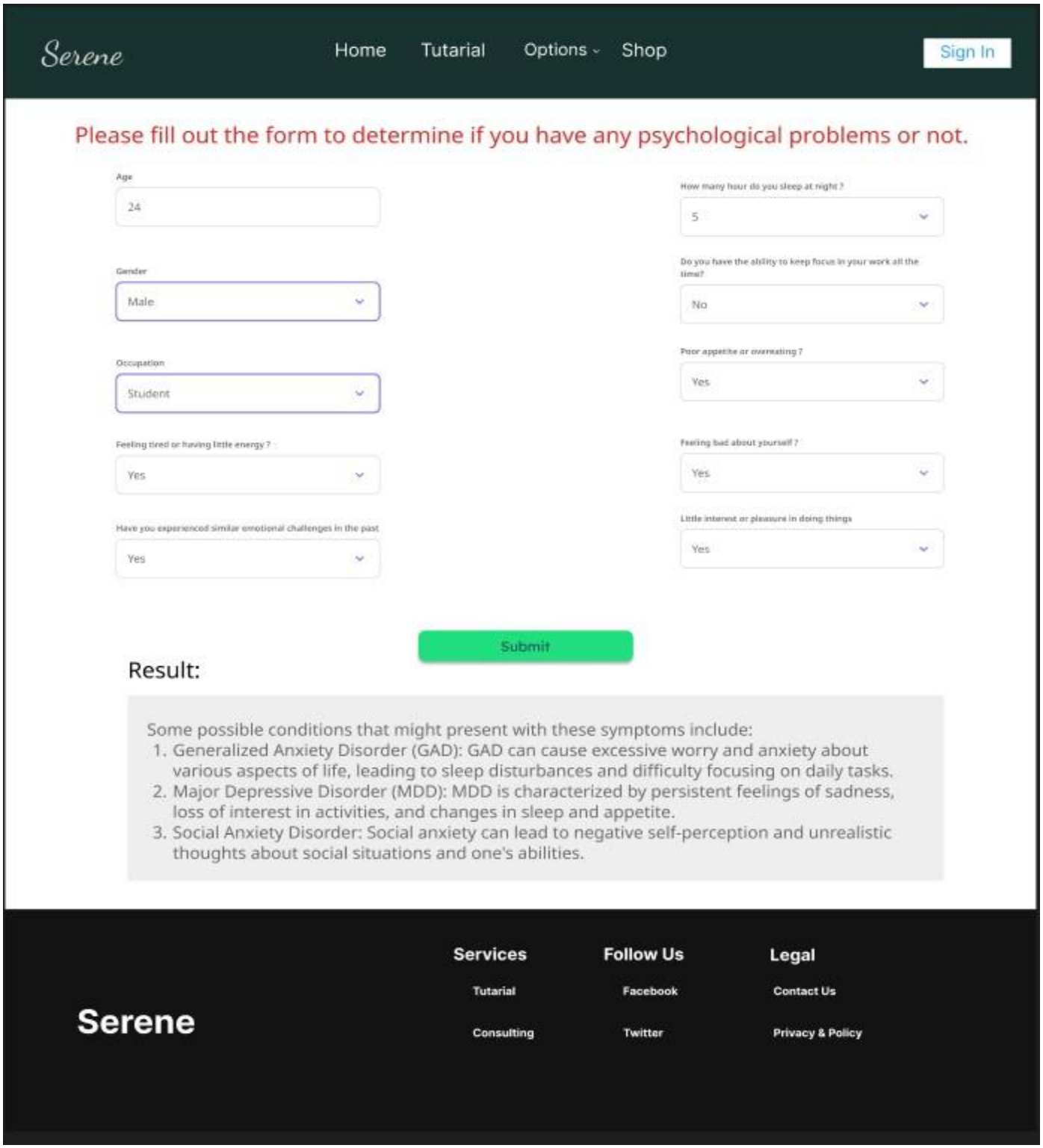

Fig 13. This is the test page prototype design.

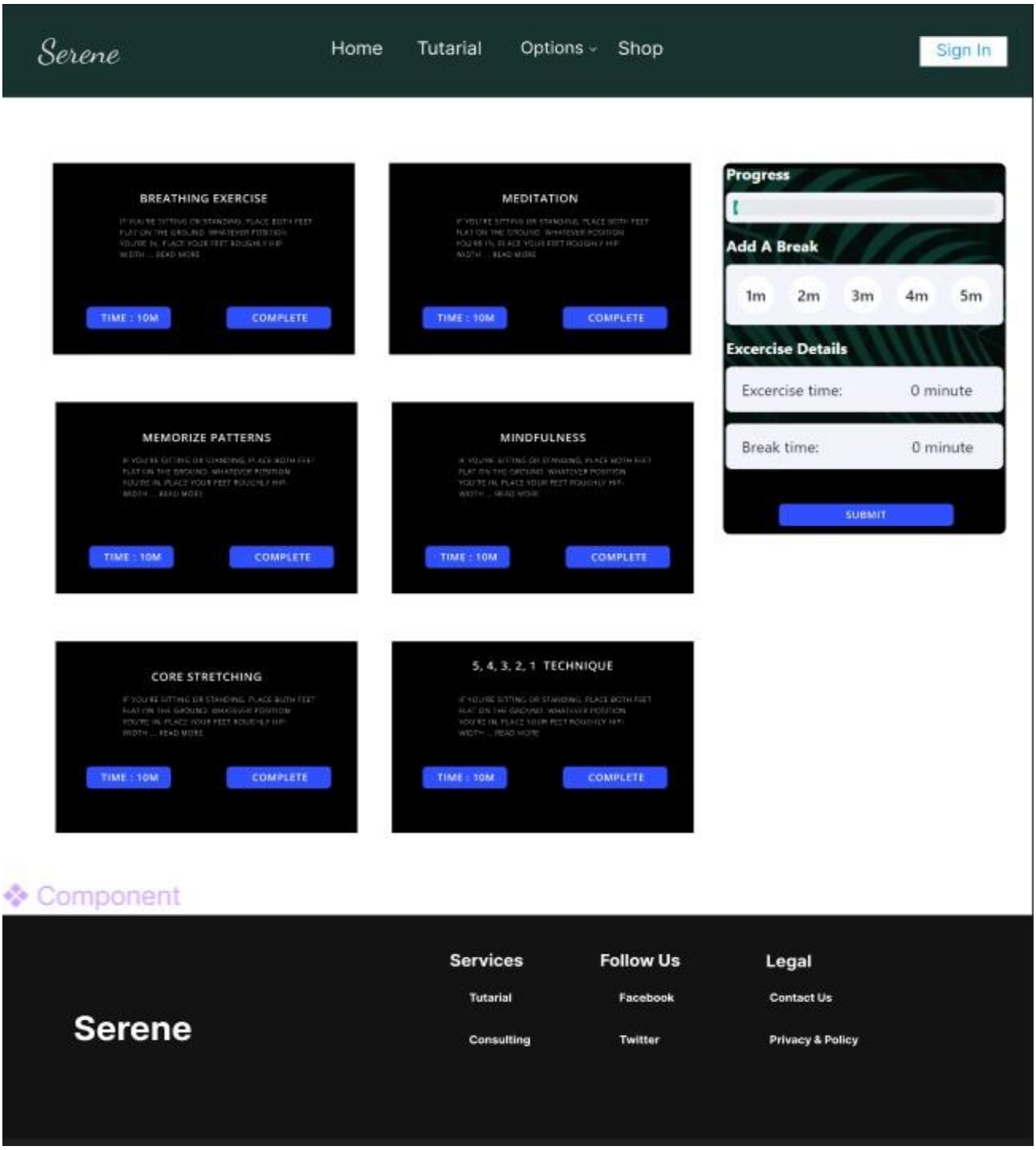

Fig 14. This is therapy page prototype design.

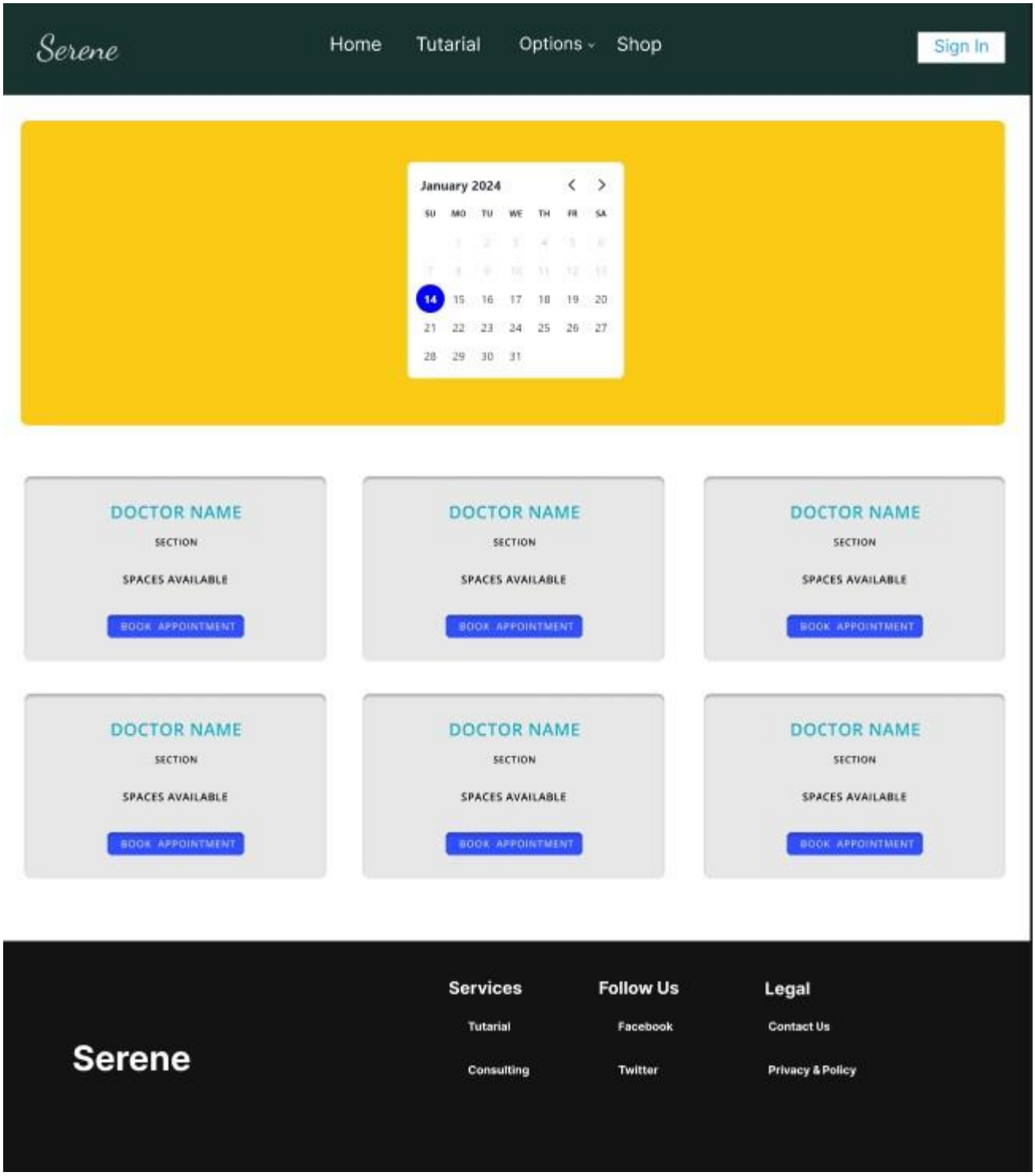

Fig 15. This is appointment page prototype design.

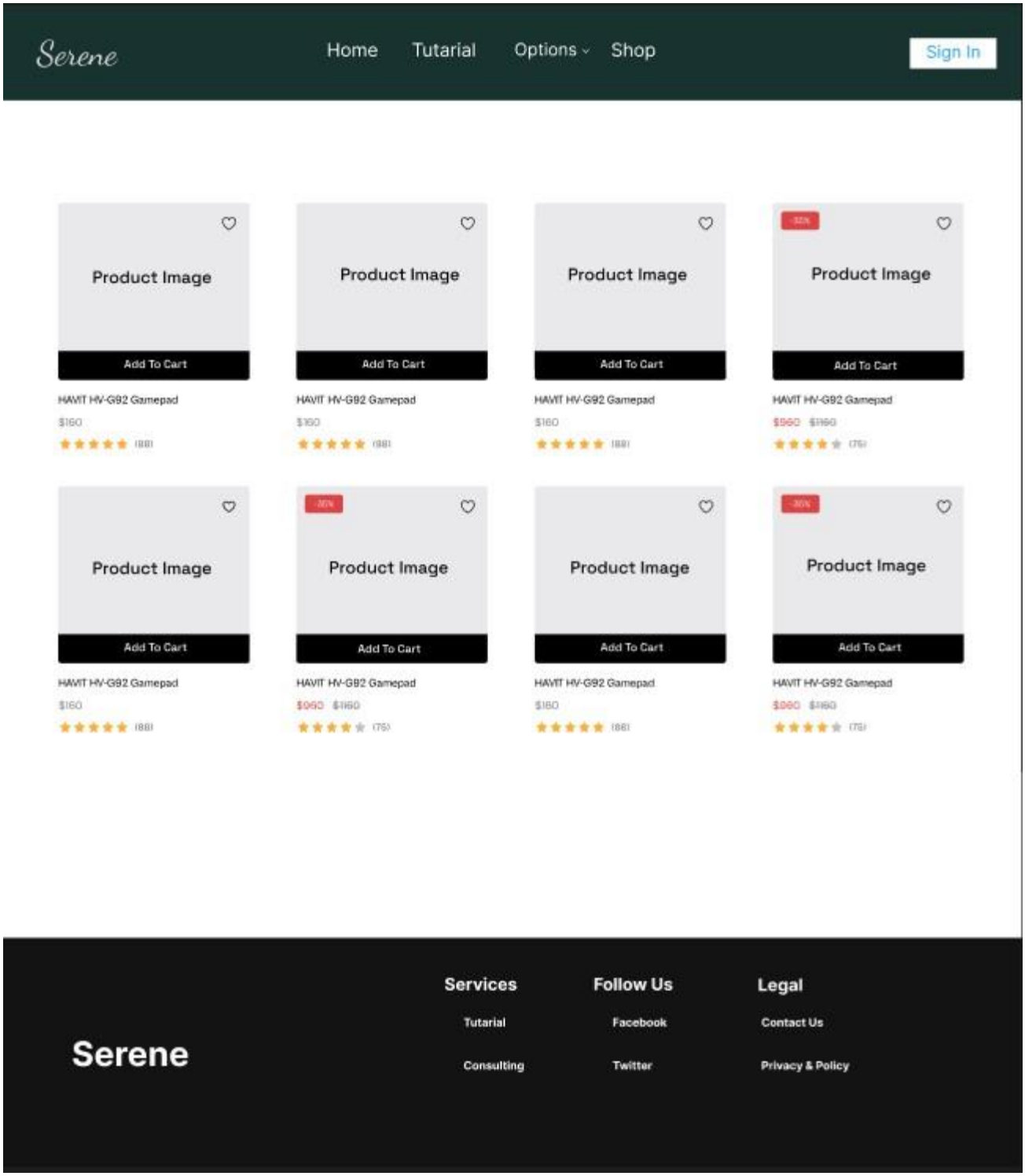

Fig 16. This is the shop page prototype design.

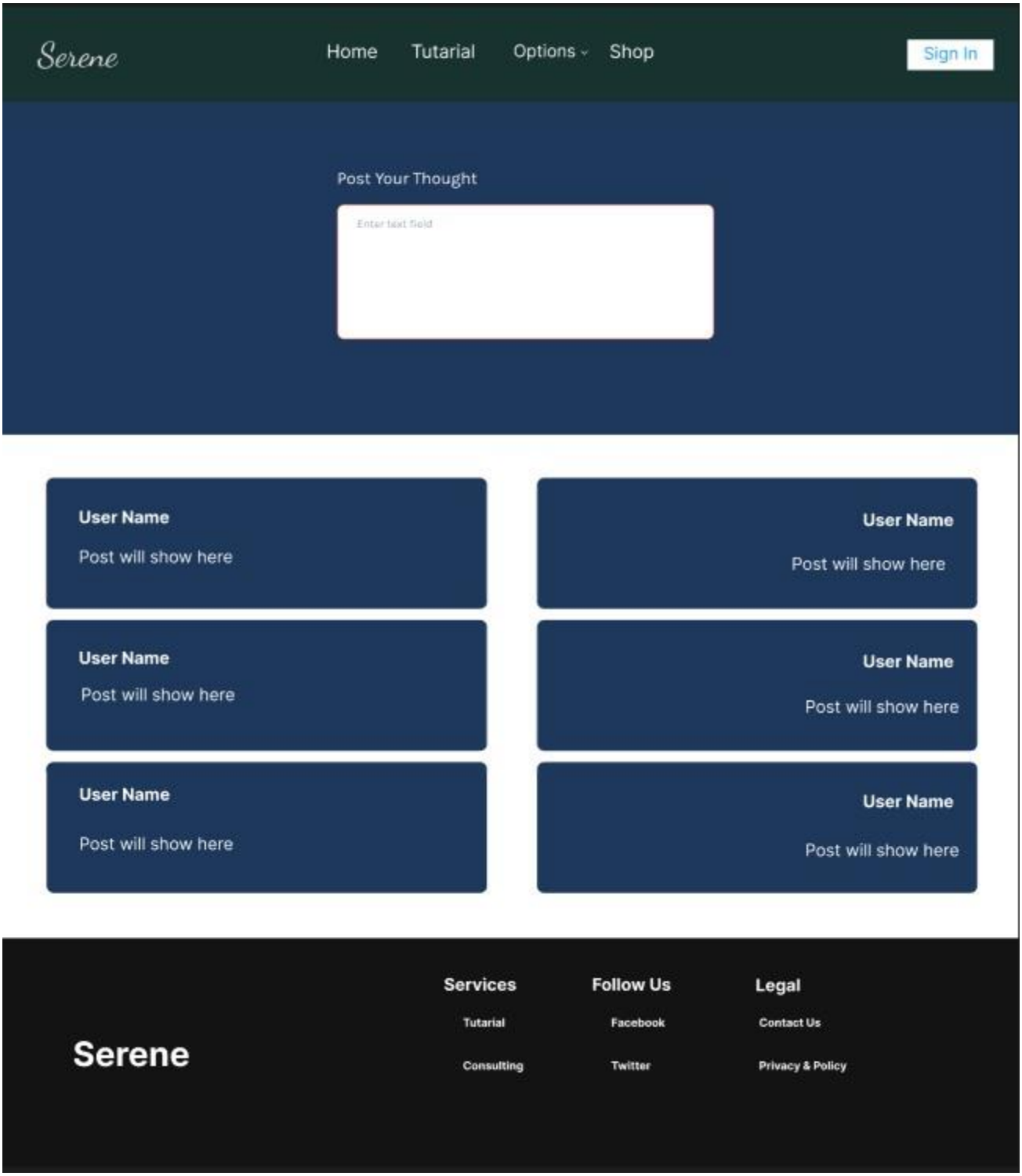

Fig 17. This is the post comment page prototype design.

Chapter 9-Engineering

9.1 New System Modules:

I design a multifaceted application tailored to meet diverse requirements. Allow me to dissect its primary functionalities. These integral components distinguish the system, enabling it to perform tasks unparalleled by any other.

9.2 New system Use case:

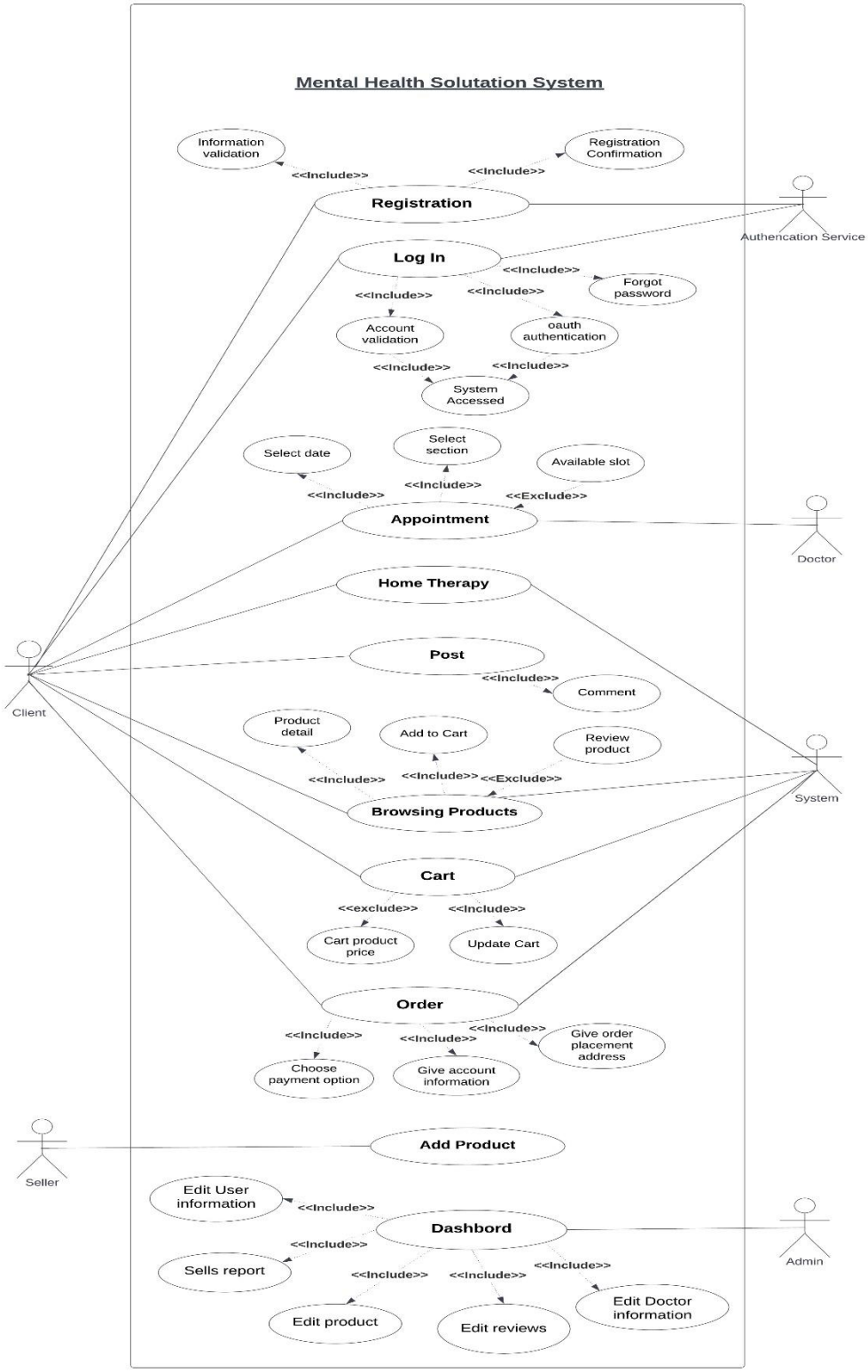

Fig 18. This is the new system use case diagram.

9.3 ERD Diagram:

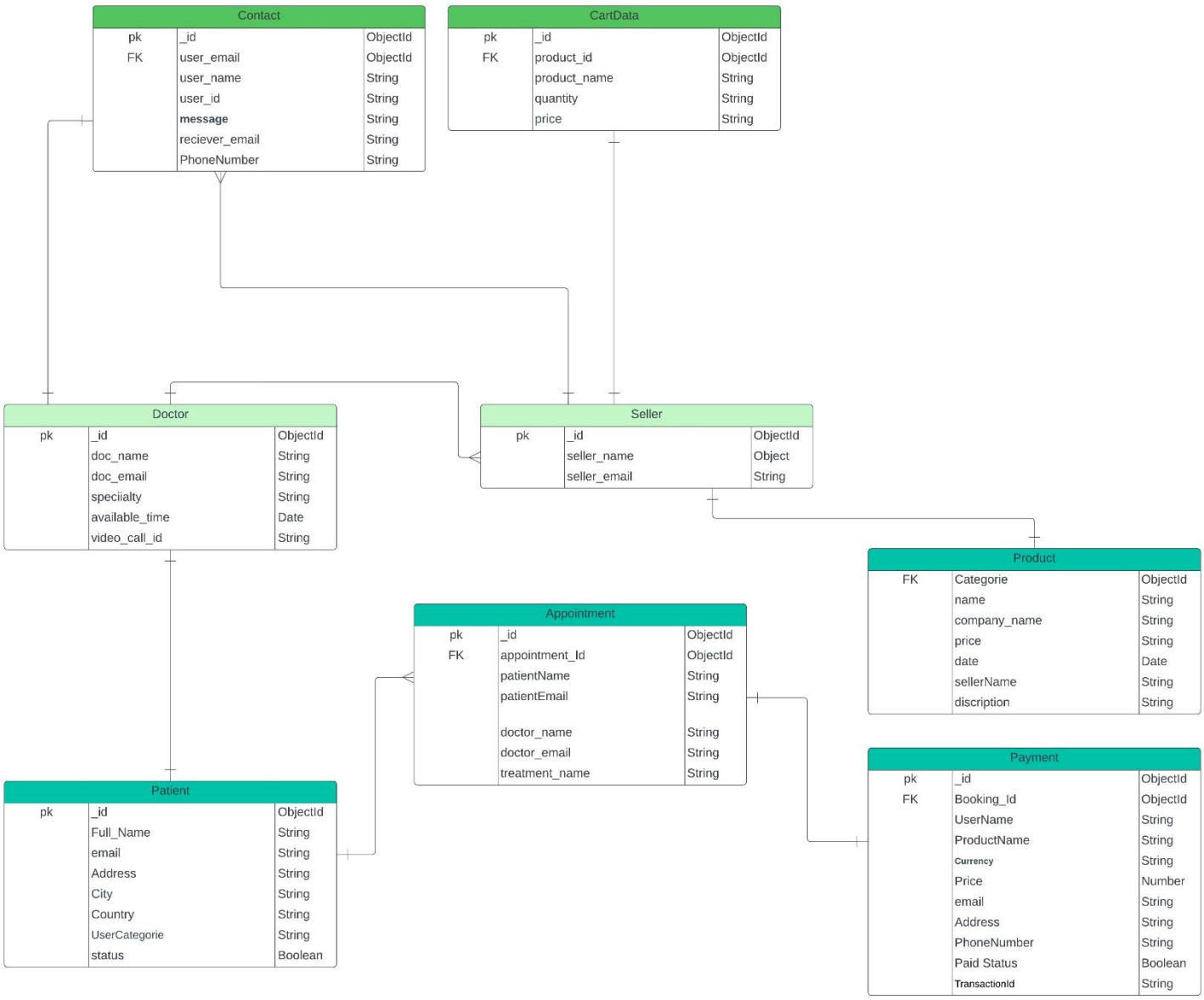

Fig 19. This is the project ERD diagram.

9.4 System Interface Design/Prototype:

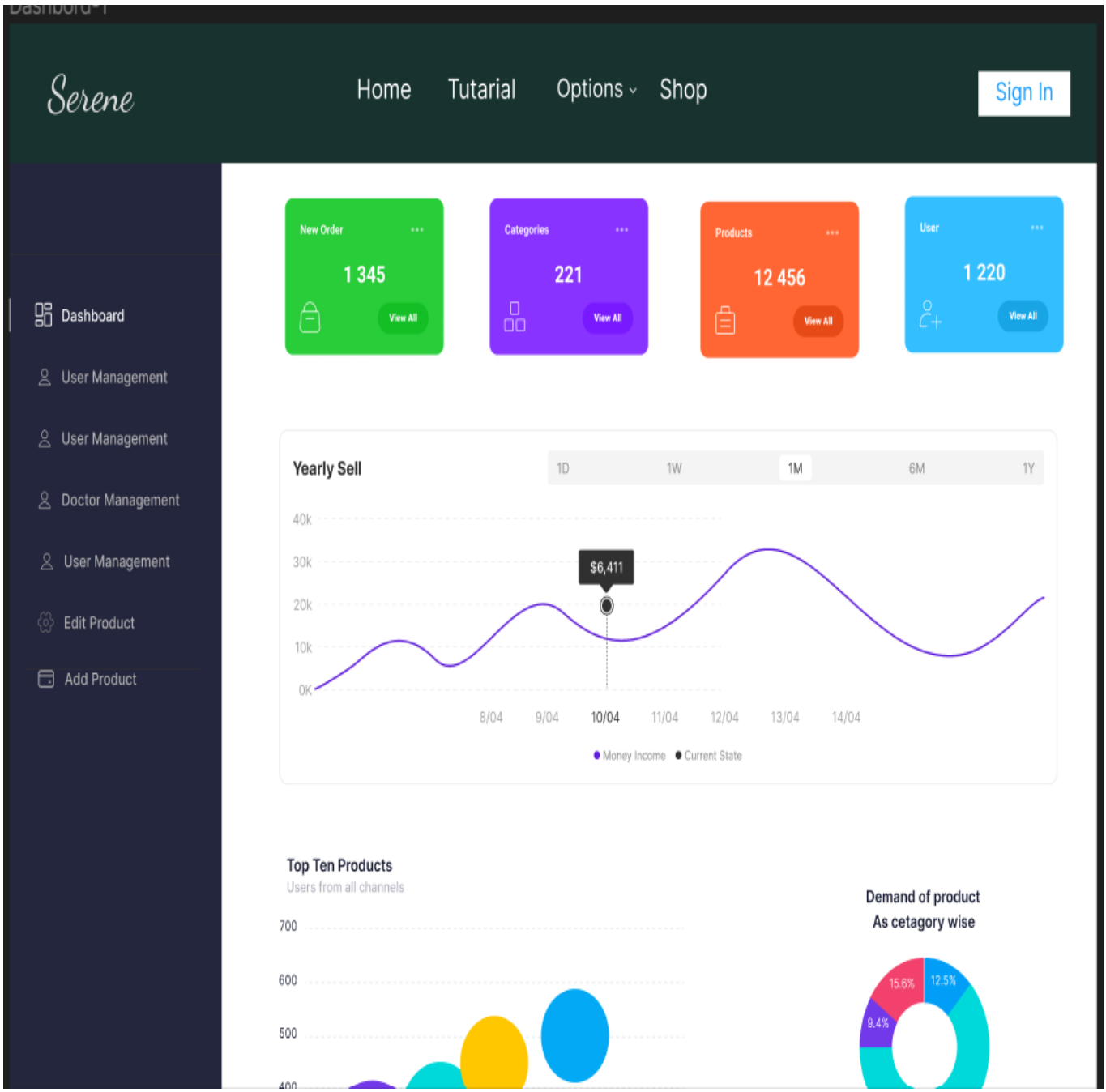

Fig 20. This is the admin page prototype design.

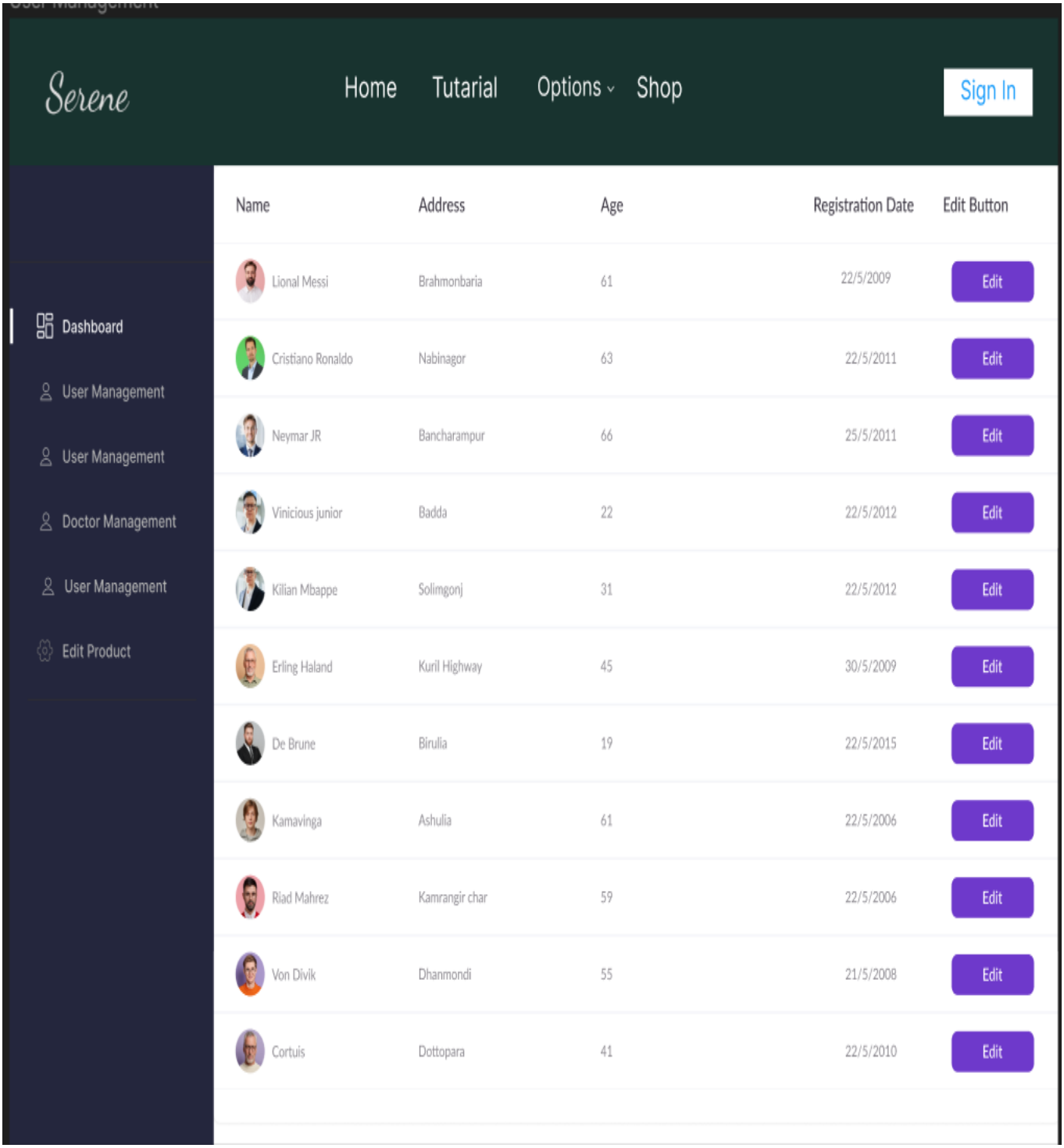

Fig 21. This is the edit user design.

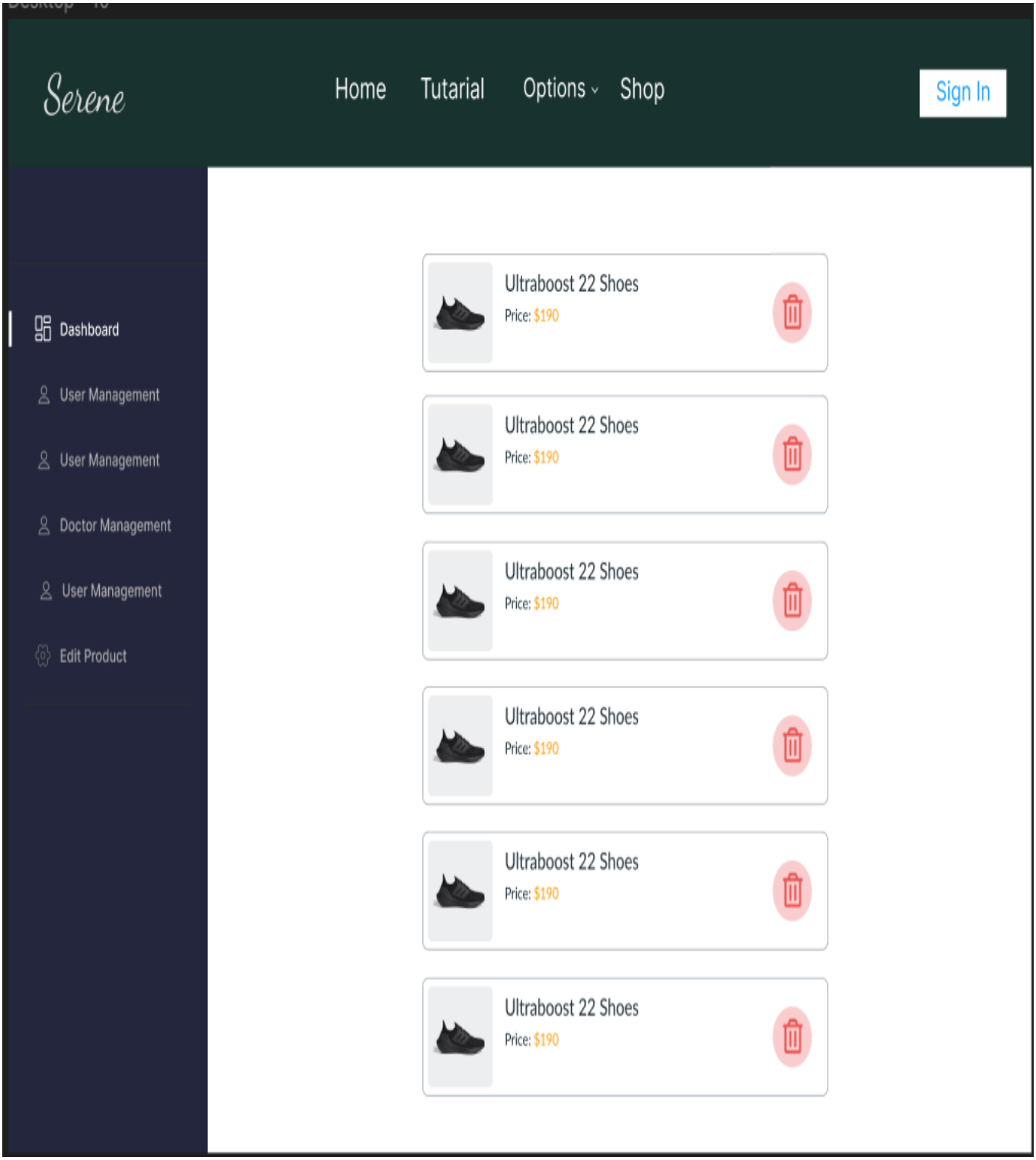

Fig 22. This is edit new product design.

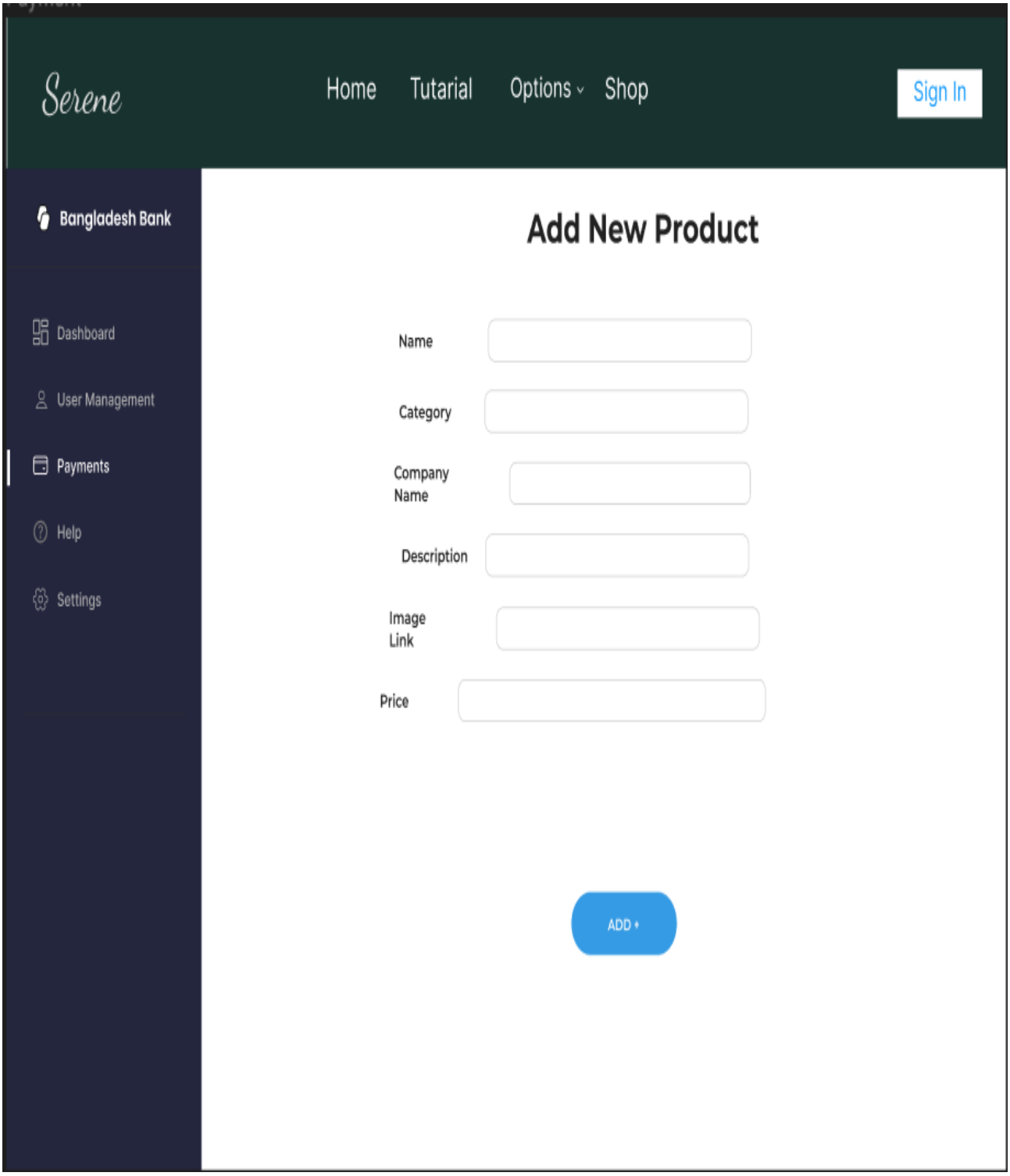

Fig 23. This is the add new product design.

Chapter 10-Deployment / Development

10.1 Core Module Coding Samples:

I segmented the workload into concise, specific tasks, making the development process remarkably straightforward. To construct the proposed framework, I employed programming languages such as HTML, CSS, and JavaScript. Presented below are excerpts exemplifying some of the code implementation.

Appointment Page:

```
const AvailableAppointments = ({ selectedDate }) => {
    const [modal, setModal] = useState(false);
    const [modalData, setModalData] = useState(null);

    const date = format(selectedDate, 'PP');

    // Tanstack + data load main API.
    const { data: appointmentData = [], refetch,
isLoading } = useQuery({
// get give =[] as default value;
        queryKey: ['appointmentData', date],
// this help for caching.
        queryFn: () => fetch(
`http://localhost:4000/appointmentOptions?date=${date}`)
            .then(response => response.json())
    })

    if (isLoading) {
        return <Loading></Loading>
    }

    const handleModal = (data = null) => {
        setModal(!modal);
        setModalData(data);
    }

```

```
return (
        <div className='mt-10 ml-5'>
            {
/* <h1 style={{ color: '#1eedb9' }} className='font-bold
text-xl'>Available Appointsment on {format(selectedDate,
'PP')}</h1> */
}

            <div className='grid grid-cols-3 gap-5 mt-5'>
                {
                    appointmentData.map(data =>

                        <div class=
"max-w-sm p-6 bg-white border border-gray-200 rounded-lg
shadow dark:bg-gray-800 dark:border-gray-700"
>
                            <a href="#">
                                <h5 style={{ color:
'#1eedb9' }} class=
"mb-2 text-2xl font-bold tracking-tight ">{data.name}</h5
>
                            </a>
                            <a href="#">
                                <h5 class=
"mb-2 text-1xl font-bold tracking-tight ">{data?.
speciality}</h5>
                            </a>
                            <p class=
"mb-3 font-semibold text-gray-700 dark:text-gray-400">{
data.slots.length > 0 ? data.slots[0] : "Try another day"
}.</p>
                            <p class=
"mb-3 font-normal text-gray-700 dark:text-gray-400">{data
.slots.length} {data.slots.length > 0 ? 'spaces' :
"space"} available</p>
                            <button onClick={() =>
handleModal(data)} style={{ backgroundColor: '#0FCDE9'
 }} disabled={data.slots.length === 0} class=
"inline-flex items-center px-3 py-2 text-sm font-medium t
ext-center text-white rounded-lg  focus:ring-4 focus:outl
ine-none focus:ring-blue-300 dark:bg-blue-600 dark:hover:
bg-blue-700 dark:focus:ring-blue-800"
>
                                Book Appointment
                            </button>
                        </div>
                    )
                }
            </div>
            {
                modalData &&
                <AppointmentModal
                    modal={modal}
                    modalData={modalData}
                    handleModal={handleModal}
                    selectedDate={selectedDate}
                    refetch={refetch}
                >
                </AppointmentModal>
            }

        </div>
    );
};

export default AvailableAppointments;
```

Fig 24. This is the manage product code.

10.2 Possible problem break down:

To facilitate the execution of the development process, I've dissected all challenges into smaller, more manageable issues. This approach proves highly effective in establishing timelines and systematically accomplishing tasks. The system I advocate for encompasses numerous remarkable features, but to enhance efficiency, the system must undergo a meticulous breakdown. Attempting to develop the entire system in one go would pose significant challenges.

Create Database:

- Examination system data.
- Formulation system database.
- Development of Entity-Relationship Diagram (ERD).
- Generation of queries.

Front-End designing:

- Initial sketching of the prototype on paper.
- Crafting the design using HTML, CSS, JavaScript, and Tailwind.
- Establishing interconnections between all pages.
- Ensuring responsiveness across the system.

CRUD for the system:

- Inclusion of products, modification of product details, and removal of products.
- Incorporation of new doctors, modification of doctor information, and removal of doctors.
- Creation of appointments, updates to appointment details, and cancellation of appointments.
- Posting comments, revising comment content, and removal of comments.

Admin management:

- Admin panel.
- Manage products.

- Add Doctors.
- Manage Seller.
- Manage Users.
- My profile

Patient management:

- Edit Profile.
- Get Appointments.
- Get home therapy.
- Give AI test.
- Post data/ give feedback.
- Comment on products.
- Show Blog.

Seller Management:

- Add product.
- Manage Product.

Doctors Management:

- Profile Update.
- Video call.
- Doctor’s appointment.

Chapter11-Testing

Examining the product type becomes an imperative step, and additional testing may be deemed necessary in subsequent assessments. This article furnishes comprehensive insights into information and alternative methodologies. These sensors play a vital role in identifying system errors, contributing to enhance improved.

11.1 Test Case:

It talks about different tests, why we do them in software making. Testing is like checking if the software works as we want it to. There are many types of tests like small tests, big tests, making sure everything works together, and even checking if it's safe to use. We also give examples of what rules to follow for each kind of test.

11.2 Unit Testing:

Unit testing stands as a fundamental component of any project, aiming to confirm the proper functionality of the project code. The examination of the project involves restructuring and enhancements geared towards elevating overall quality. Presented below are instances exemplifying unit testing in practice:

Integration testing	Test class	Designer Muhibur Rahman		
Data source:	Object: Test case functionality	Tester Muhibur Rahman		
Test cases	Testing Description	Tasks	Expected Result	Actual Result
1.1	In Here users fill up login form.	After submit the form , there will be successful pop us message.	Shows successful massage.	Shows a userprofile.
1.2	Seller can add new product.	Fill up all info mandatory	Popup successfully added a new product.	Shows newlyadded product.

Table 15: Unit testing Table

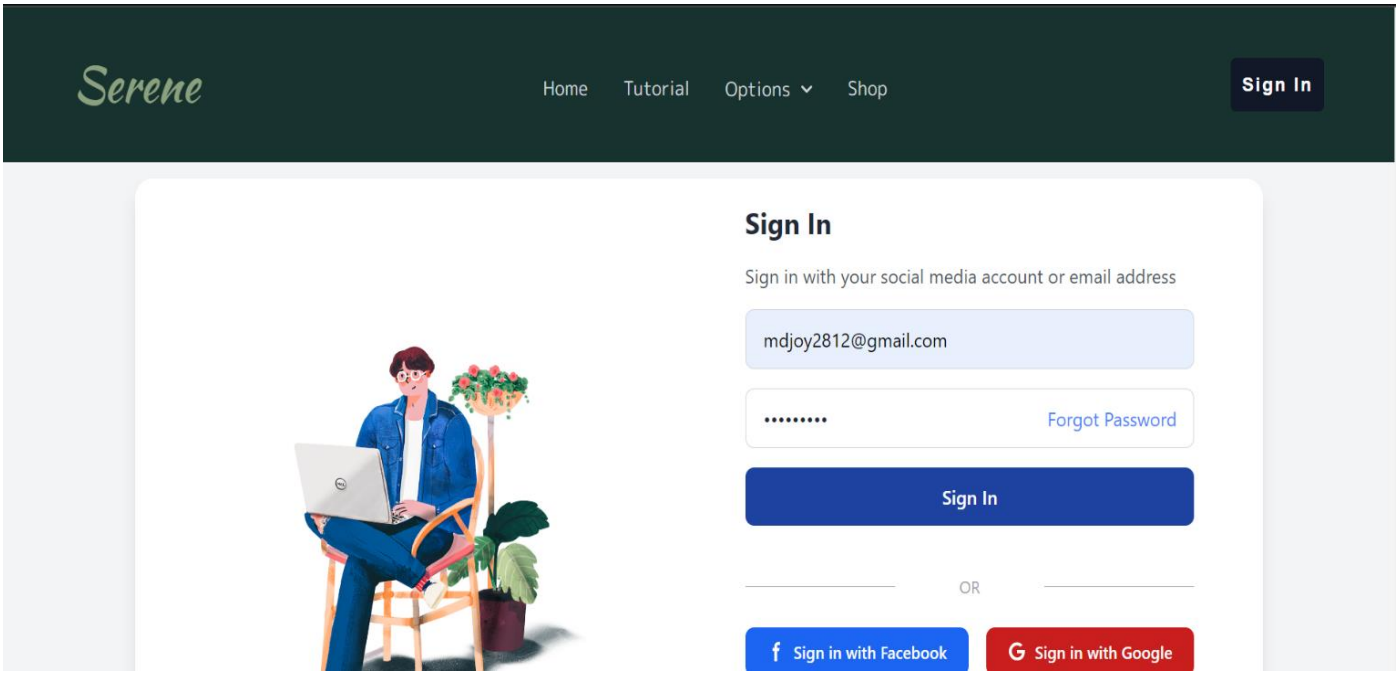

Fig 25. New user registration form.

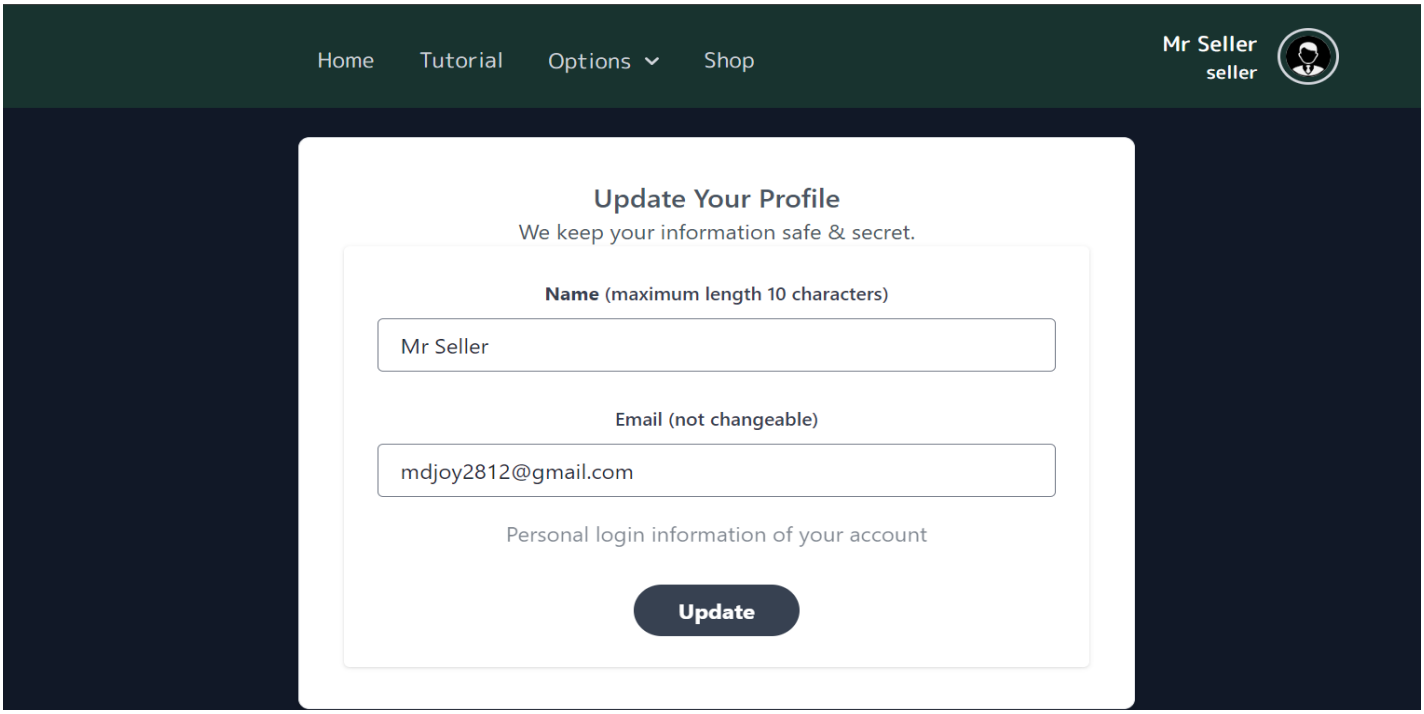

Fig 26. User profile.

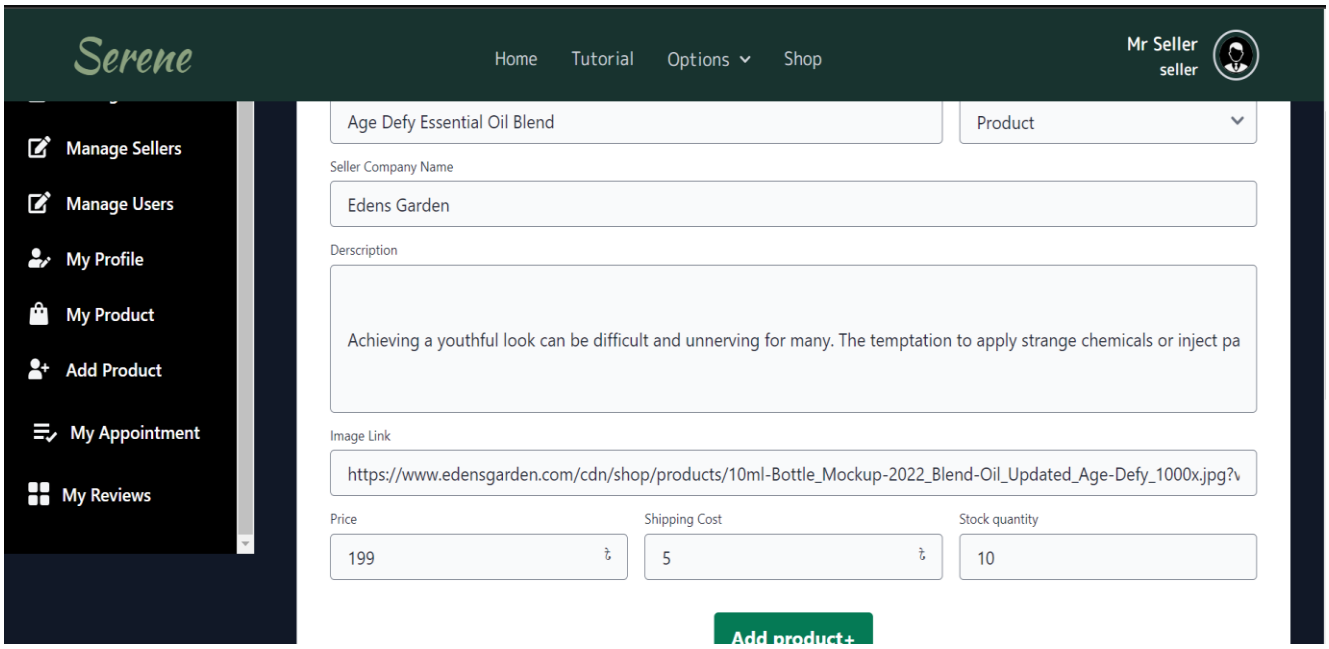

Fig 27. Here Add product in cart.

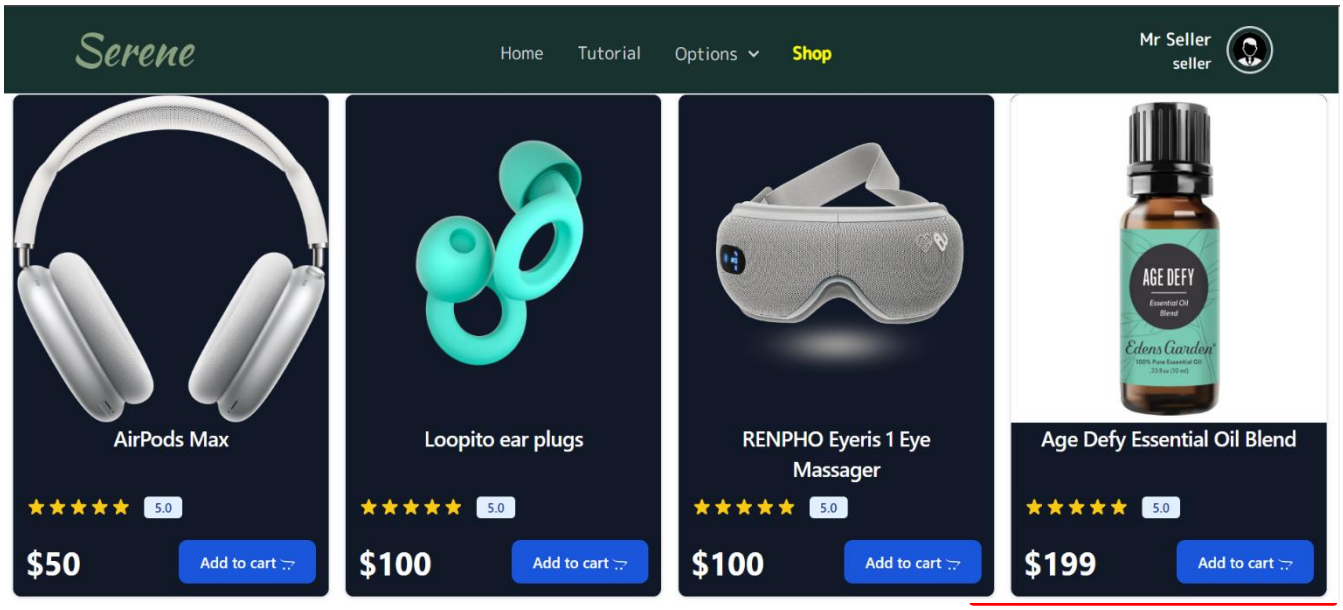

Fig 28. Add to cart for buy the product.

11.3 Module testing:

Module testing	Test classes	Designer Muhibur Rahman Joy		
Data source:	Object: Test functionality case	Tested by: Muhibur Rahman Joy		
Test cases	Testing Description	Tasks	Expected Result	Actual Result
2.1	Enter product price.	Enter product price is mentatory.	Shows error massage.	Shows expected massage.
2.2	Enter company name.	Must be enter company name.	Shows a wrong massage.	Showsactual massage.
2.3	enter image.	Enter Image.	Shows a wrong popup.	Shows Actual popup.

Table 16: Module testing Table

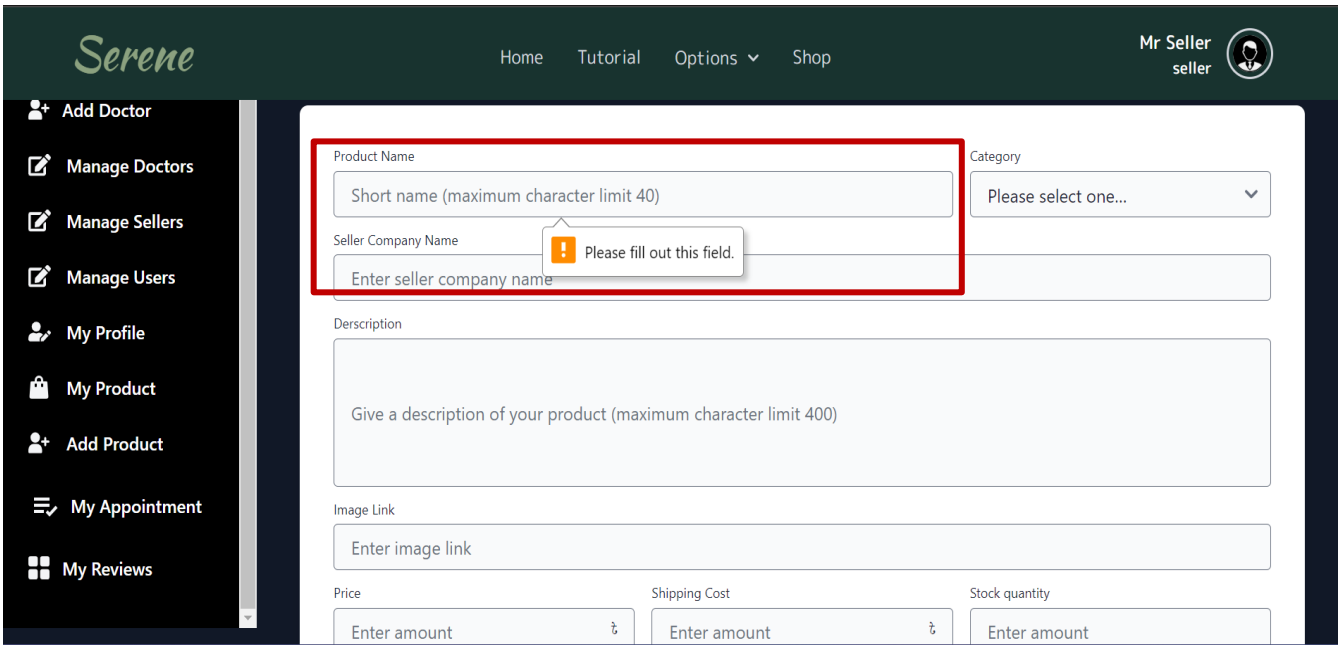

Fig 29 Here shows popup for enter the product price.

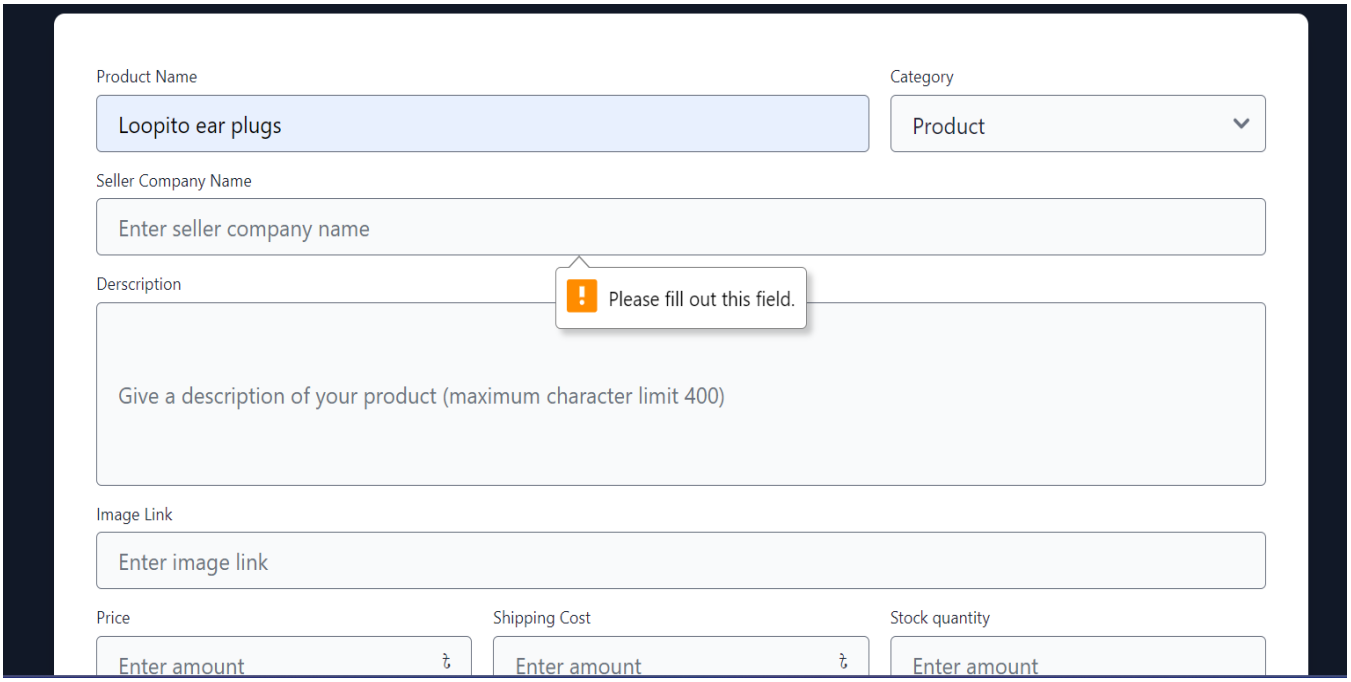

Fig 30. Here shows popup for enter the company name.

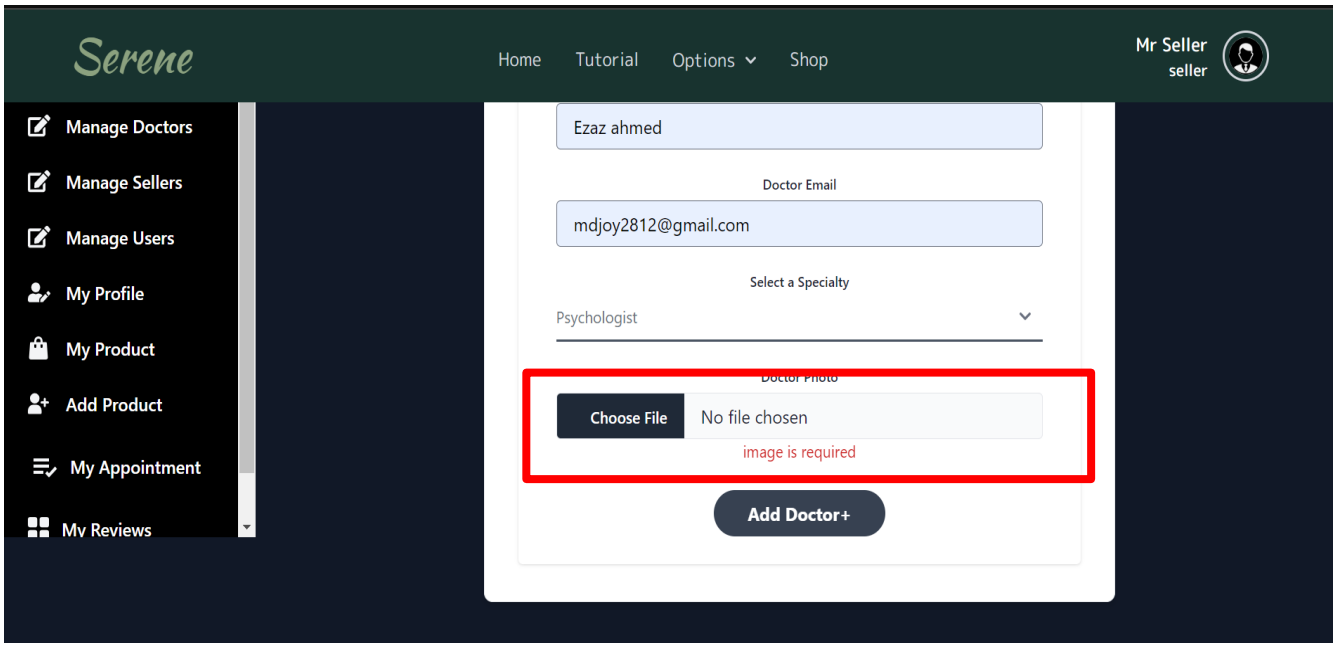

Fig 31. Here shows error popup for enter image.

11.4 Integration Testing

Integrtion testing	Test class	Designer Muhibur Rahman Joy		
Data source:	Object: Test case functionality	Tested by: Muhibur Rahman Joy		
Test cases	Testing Scenario	tasks	Expected Result	Actual Result
3.1	Enter the rightinformation.	Enter email and right password is mendatory.	Present the wrong massage.	Present the actual massage.
3.2	Purchases the product.	Must be login then they can purchase the product.	Shows login massage.	Shows the actual massage.
3.3	Here shows the product add successfully.	Must add the product for the purchases and use add cart.	Shows the cart massage successfully.	Shows successful massage.

Table 17: Integration testing Table

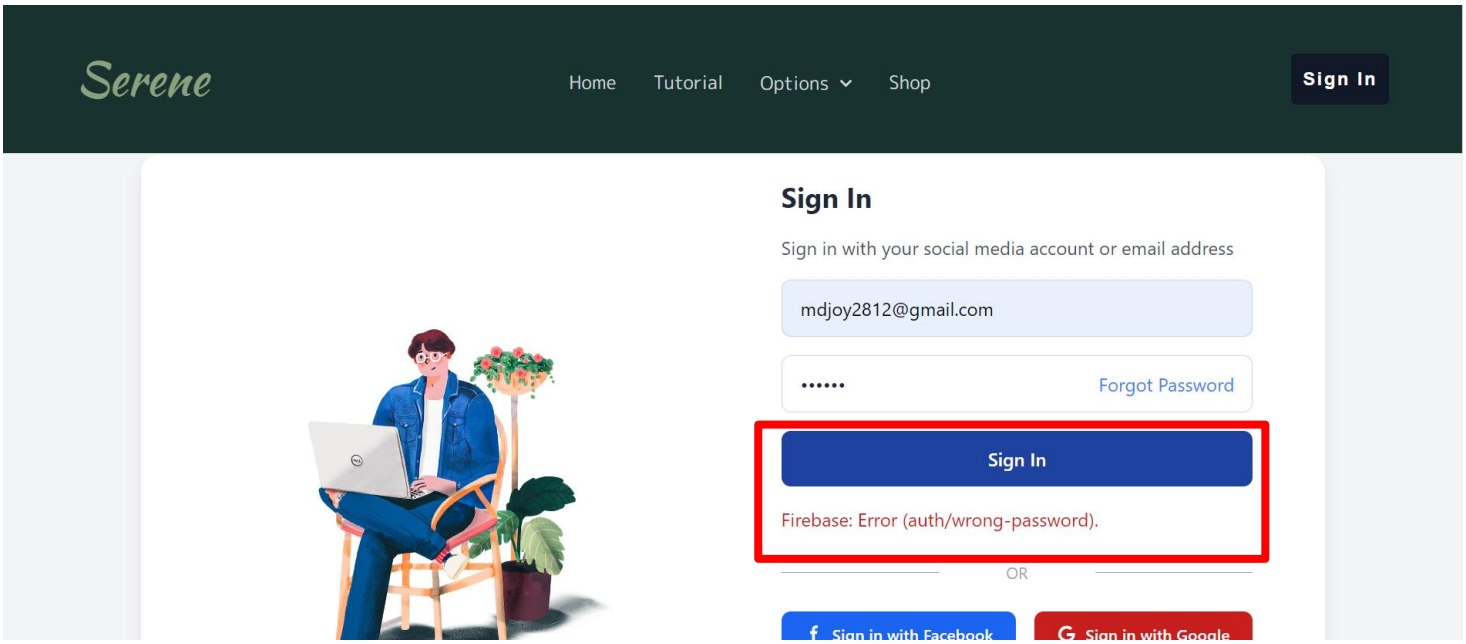

Fig 31. Here shows massage for enter the wrong details.

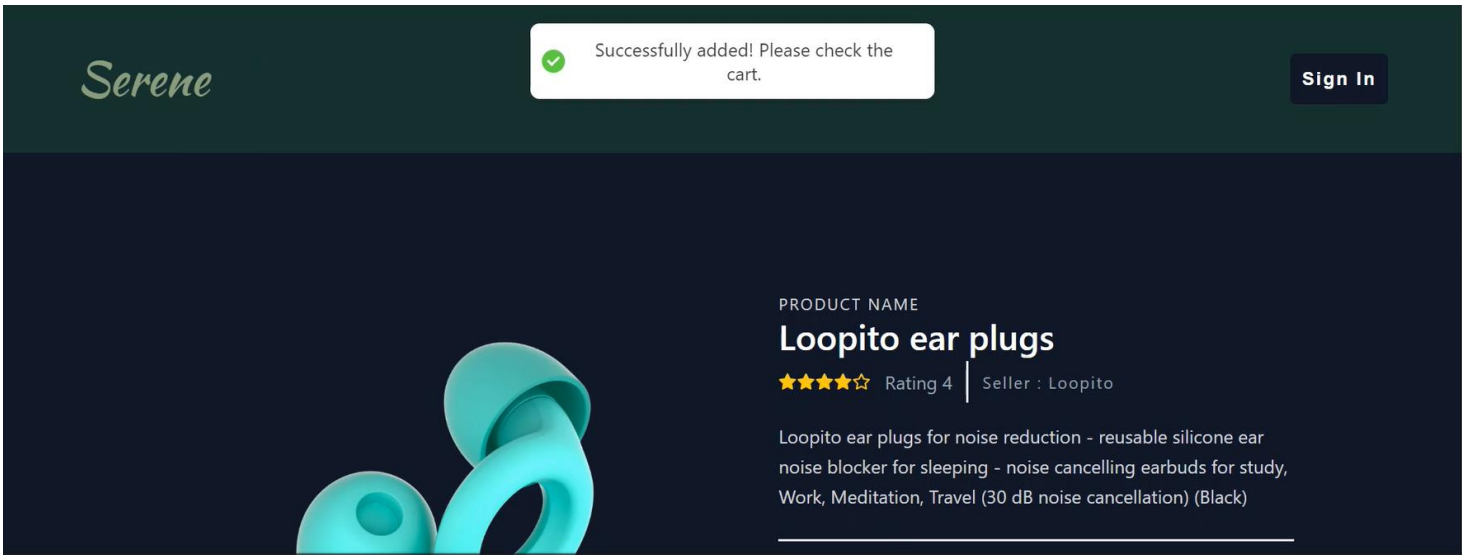

Fig 32. Message for login

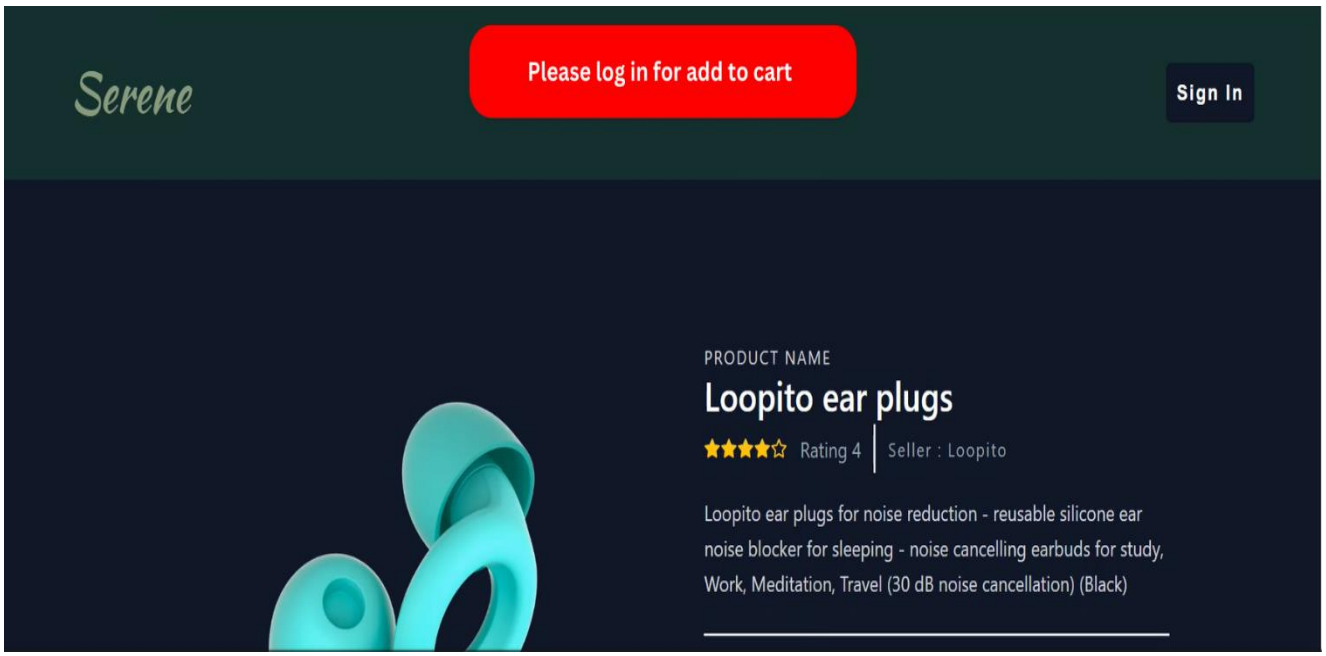

Fig 33. Used add to cart option.

Chapter 12-Implementation

12.1 Training:

Learning is a big part of making things better. We need to teach people about the system and how to use it. Training helps users understand and use the system easily. Here are some different ways we can teach people about it.

SL No	Users	Training section	Duration	Comments
1	Admin	Manage(create/ delete / (User/Seller/Doctor/ Product)	1 hour	Here Admin can easily understand maintaining the User, Doctor, Seller and Products.
2		Admin panel	30 min	Admin caneasily understand how monitor admin panel.
3		Add New Doctor	20 min	Here admin can easilyunderstand how to add a new doctor.
4		Manage Seller (Create/ edit/delete)	10 min	Admin can easily understand how to manage sellers.
5		Manage Users (Create/ edit/delete)	20 min	Here admin can easilyunderstand how to Manage Users.

6		Edit Profile	30 min	Here admin can easilyunderstand how to edit his profile.

Table 18: Training Table

12.2 Big bang:

Basically, it's like stop a system and start a new one. The first choice. Once the test is done, we put in the new system. Moving information from the old to the new system takes a while, and there's a risk of losing or damaging information with the new created system. It's all about handling pages [16].

- **Pilot:**

This is like trying out system to see if it works correctly. Some organizations try it for a while, and if everything is good, they officially install the system for final use.

12.3 Implementation process

I believe we can start trying out the system in different parts of the organization to see how it works. This is called a pilot project. If everything goes well and all the functions are working, we can officially start using the system.

Chapter 13-Critical Appraisal and Evaluation

I talked for looking closely at things. I shared about projects that went well and those that didn't. It's important to be happy with what's done. I also mentioned if some parts didn't meet the needs and talked about it. For the next steps in the project, I need advice on meeting the needs I examine that section.

13.1 – Objective that could be met

13.1.1 Success rate against the objective.

The success rate corresponding to each objective comprises three components, detailed as follows:

- Objective in academic section.
- Objective in business section.
- Objective in personal section.

Academic objectives:

- Ensure the website is easy for users to understand and navigate.
- Evaluate if the right method is used for creating this system.
- Conduct a study on whether the system is feasible.
- Assess the potential risks involved.
- Design and build the database effectively.
- Thoroughly examine and properly document every aspect to create a comprehensive system.
- Implement standardized documentation accessible to all.
- Ensure documentation is clear and understandable for everyone involved.

Business objectives:

- Enhance Accessibility.
- Promote Awareness.
- Provide Personalized Support.
- Improve Mental Health Literacy.
- Collaborate with Professionals Increase User Engagement.
- Expand Reach.

Personal objectives:

- Validate.
- Must be system verified.
- Must be bug-free.
- Proper documented.
- Must be secured system.
- Robust system.

13.1.2 How much better could have been done:

- Multiple user video call at the same time.
- Audio calling system.
- Live chat option.
- Doctor rating.
- Pdf options.

13.1.3 How much better are the feature of the solution?

- Faster than other framework.
- The system is completely secured.
- Will be smooth and reliable.
- Have performance scale.

3.1.4 Which features could be untouchable.

- Doctor appointment.
- Post / feedback
- Testimonials.

Chapter 14-Conclusion

14.1 Summary of the project.

“Mental Health Solution” to streamline mental health services, addressing challenges in the existing system. Using React JS for development, alongside HTML and CSS for web design, I have chosen JavaScript due to its openness and user-friendly nature. As a React JS programmer, I appreciate its safety, speed, and reliability, making it widely accessible. JavaScript's versatility and numerous advantages make it the go-to language for enhancing my system. In response to the complexities in the current mental health system, I have created a 'Mental Health Solution System' using React JS, HTML, and CSS to ensure an intuitive and efficient web experience. Embracing JavaScript for its openness and ease of use, I have used its full capabilities to create a secure, fast, and reliable system. I find its accessibility and features essential for upgrading and enhancing the overall effectiveness of the mental health solution. JavaScript's widespread usage in business websites underscores its versatility, making it a cornerstone in revolutionizing mental health management.

14.2 Goal of the project

Our goal for the Mental Health Solution is to move from using papers to a helpful website. At first, the organizations used paper, and the doctors faced many problems. The Doctors couldn't focus enough on their patient and it also a lengthy process for patients. That's why it’s helpful for the organizations to switch to online work. They want everything to happen automatically, which saves time for both side. Now, all the assessment can be easily managed. The Doctors can also see their patients online. Patients can give test, buy products and find what they need. Seller can sell product. The admin can take care of everything in the organization. Having an online system makes life easier, so I think the Mental Health Solution should be dynamic and easy to use.

14.3 My overall experience:

I have gained invaluable insights into information gathering, meeting deadlines, and problem-solving. Though challenging to initiate everything from scratch, it has provided an opportunity for continuous learning and growth in future endeavors. Managing financial aspects and dedicating ample time have been significant endeavors. I trust that the lessons learned from this project will prove invaluable in the future. I extend my gratitude to the Divine for guidance, strength, and clarity of mind, as well as to my friends and family for their unwavering support throughout this journey.

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Appendices:

Requirement Catalouge:

Admin:

- ✓ Product management.
- ✓ Product order management.

- ✓ Doctor management.
- ✓ Seller management.
- ✓ Blog management.
- ✓ User profile management.

User:

- ✓ registration/login
- ✓ Appointments.
- ✓ Test.
- ✓ update profile
- ✓ product order
- ✓ Add blog.

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