Internship as Full stack developer (MERN)

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Approval

This thesis/project titled on "**Internship as Full stack developer (MERN)**", submitted by **Rakib Ul Banna (ID: 191-35-2638)** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

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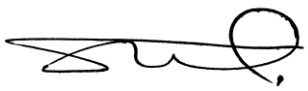

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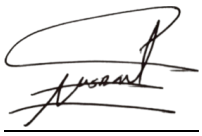
DECLARATION

I now attest that the internship report, "Internship on Full-stack Software Development in MERN stack," was prepared by me under the guidance of

"Nusrat Jahan," Assistant Professor, Department of Software Engineering, and was based on my four-month duration of internship activities.

The report is distinctive and hasn't been filed anywhere for any academic reason. I also gathered and organized the statistics and information that are given here. Any falsification or alteration of data or material in this report is exclusively my responsibility.

Certified by:



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Acknowledgement

I am incredibly grateful to Almighty God for helping me to make it through the most trying year.

I have the utmost respect for Nusrat Jahan, Assistant Professor, Department of Software Engineering, Faculty of Science and Information, Daffodil International University, for her advice and support throughout my stay in university.

I have no hesitation to say that, without her constant support and valuable advice

from time-to-time, I would probably fail to complete the work in an appropriate manner.

At the same time, I'd want to thank all of my coworkers at Bengal Software, especially the company's founder and CEO Mr Mahtab U Khan, who has extended help by offering career advice and motivating me to perform at my best using the skills I've learned while studying SWE at Bengal Software.

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CHAPTER 1: INTRODUCTION

1.1 Overview

The purpose of internships is to provide students experience working in the industry. By providing students with actual industrial training that they can use to start, internships help them develop good portfolios.

Although there is no specific period of time for how long an internship should stay, most internships run between two and twelve months. An intern has the chance to learn how to apply their educational experience and expertise to the actual world throughout this time, as well as to explore the profession and receive mentoring from senior employees.

Internship programs offer a unique setting for building a strong foundation for a new career, understanding corporate culture, obtaining practical experience, developing relevant skills, and offering the chance to obtain long-term employment inside the company and other businesses.

Undergraduate "BSc. in SWE" programs are available at Daffodil International University. As an undergraduate student, the program specifies that we do an internship with a respected organization. During this time, I will receive hands-on training in workplace procedures and industry knowledge. I worked in Bengal Software's software department as part of my internship program, and I will be there for four months.

During my internship, I would have to know how to successfully connect with teammates both verbally and in writing, produce software in keeping with the software development life cycle, create better software, and guarantee the best possible services.

In this report, I've covered my time as a full stack intern at "Bengal Software," a summary of the business and its operations, and my personal experiences. What I've learned and how it's benefited me in producing better services and software.

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1.2 Background

This section describes my four-month internship with Bengal Software. I worked most of the time in Edify e-commerce (front-end), The Korean mall e-commerce (backend), and Right time CMS both frontend and backend.

My contributions to the company and how they helped me hone my skill sets, and how I applied for the software developer position early in the development process.

1.3 Objectives

These internship reports' main purposes are to evaluate the job I did as an intern and work on a phase of the software development life cycle. In addition, the report is built to achieve certain objectives. Its main objective is to:

- Introduce the organization and the principles that will be used inside.
- Description of the team I was a part of.
- A thorough breakdown of the obligations.
- To be familiar with the actual software business.
- To possess problem-solving skills.
- To be familiar with industry evaluations and code standards.
- To complete the development process.
- Knowledge of software maintenance.
- Recognize how to operate in a group setting.

1.4 Methodology

Each and every piece of data included in this report was gathered from both internal and external resources. The following are the major and supplemental sources of information used in this report:

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1.4.1 Primary Data Source

- Observation and experience.
- By speaking with other software engineers.
- Information from the website of a software developer.

1.4.2 Secondary Data Source

- Company website
- Related office documents
- Internet

1.5 SCOPE

I've covered the firm, its services, products, working environment, culture, and regulations in this report.

The second section of the report discusses how I began my internship and the kind of work I did during this time.

Software Development and How to Use Different Tools and Practices in the Software Development Life Cycle are covered in the third section of the paper.

1.6 Limitation

First off, due to the terms of the contract I had to sign when I joined Bengal Software, the nature of the agreements between Bengal Software and its clients, and the nature of my confidentiality agreement, I am unable to disclose certain details about the business, its products, and services that are sensitive business information. Additionally, a number of limitations, including time and funding, have reduced my production.

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CHAPTER 2: COMPANY OVERVIEW

2.1 Overview of Bengal Software

Bangladesh is advancing quickly in the field of software and website development. Bengal Software is one of the many remarkable software development companies that have made a significant contribution to the expansion of the software industry. Bengal Software offers technological solutions to both small and large businesses. These services are provided both domestically and abroad with a strong commitment to enhancing client satisfaction. This organization is made up of a group of driven, imaginative, and talented individuals that enjoy working hard and whose major objective is to offer their clients innovative solutions for software development.

Bengal software is led by Mr Mahtab U Khan (Founder and CEO) with a strong management team and skilled software developers with experience in various areas such as web/mobile/server working both in-house and remotely around the clock.

Bengal software has different sets of products targeted at small startups and large enterprises. They offer both custom made applications for businesses and ready-made ERP solutions to companies who need them. With this experience, Bengal software is able to help its clients get to their desired goals quickly and successfully.

The company also has a sister concern called Remote Office located in Australia which offers offshore companies to hire employees directly in Bangladesh with unique and intelligent team creation and reliable management system.

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2.2 Organization Hierarchy for a Software Development Role

1. Managing director & CEO
2. Business Manager
3. Project manager
4. Team Leader
5. Senior software engineer
6. Software Engineer

Other roles:

1. UX designer
2. Software tester
3. Marketing Executive
4. Account executive
5. Digital Marketing executive
6. HR

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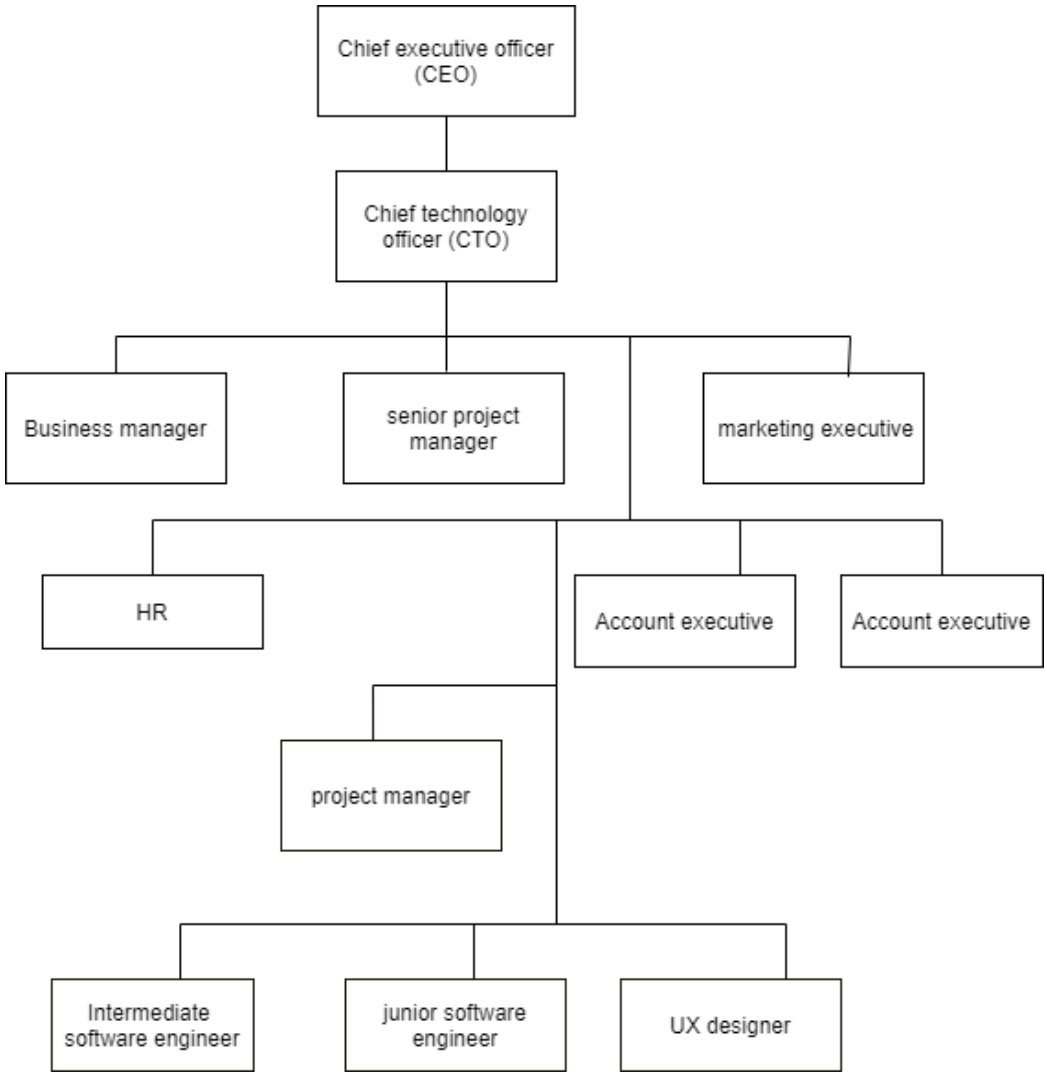
2.3 Organogram of Bengal Software



2.4 Products

- ✓ Mobile application
- ✓ Web application
- ✓ ERP
- ✓ Software as a service
- ✓ Consultancy
- ✓ E-commerce
- ✓ Motion Graphics

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2.5 Contact details

- Location:

Bangladesh Office: Adept K.R Complex (2nd floor), Bashundhara R/A link Road.

Australia office : 102-120 Railway Street Rockdale, NSW, Australia 2216.

England: 30 Cranes Park Road Birmingham B26 3SG UK

- Email: hr@bengalsoftware.com
- Website: bengalsoftware.com

2.6 Technology

The frameworks that Bengal Software uses:

- Node JS
- Express JS
- Laravel
- Django
- Django REST Framework
- Flutter

Languages used:

- Java Script
- Python
- PHP
- Java

Mobile application platform:

- Android
- iOS

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Web Frontend Frameworks:

- React JS
- Next JS
- Vue JS

Databases:

- MongoDB
- MySQL

Other Services:

- Vs code
- Firebase
- GitHub projects
- digital ocean(hosting)
- Heroku (hosting testing purpose)
- Slack
- postman
- Docker
- chrome developer tools
- mongo dB compass

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Version control:

- Git

2.7 Rules and regulations

Employees may occasionally disregard the rules established by the employer. Even if an employee defies the rules in good faith, it adversely affects others' workflow.

For both onsite and remote employees, Bengal Software has its own set of guidelines that must be observed at work.

2.8 Semi-formal attitude

Employees are urged to treat one another with respect and in a nice manner. Romance at work is not permitted.

Teams working internally that don't need to deal with clients should dress semi-formally, whereas teams dealing with external organizations should dress formally.

2.9 Office Schedule

The employees have ample flexibility with the office hours. Employees should arrive at the workplace between 10:00 and 10:30 AM and stay for at least eight hours after that. There are also breaks for lunch, prayer, and snacks. If the employee needs an urgent leave of absence and their employment is not dependent upon them, they may seek it. The working hours of remote employees are entirely governed by their individual contracts.

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CHAPTER 3: MY INTERNSHIP AT BENGAL SOFTWARE

3.1 Overview

The purpose of our academic program is to teach students how to graduate from high school as prepared as possible. The internship also serves a function. The most obvious advantage of an internship is getting hands-on, real-world training in the field something that a classroom cannot provide. Other noteworthy advantages include learning how to conduct oneself in a professional environment and how to collaborate with individuals of various backgrounds and cognitive capacities. Learning from the elders about the top techniques, widely used tools, and methods that fit into the first group. The latter group includes accountability, promptness, courtesy, respect, and teamwork.

This portion outlines my internship experiences, my involvement with Bengal software in the last 4 months, the things that I have learned from the company, and the contributions that I have done to the company as well during the internship experiences.

3.2 Internship experience

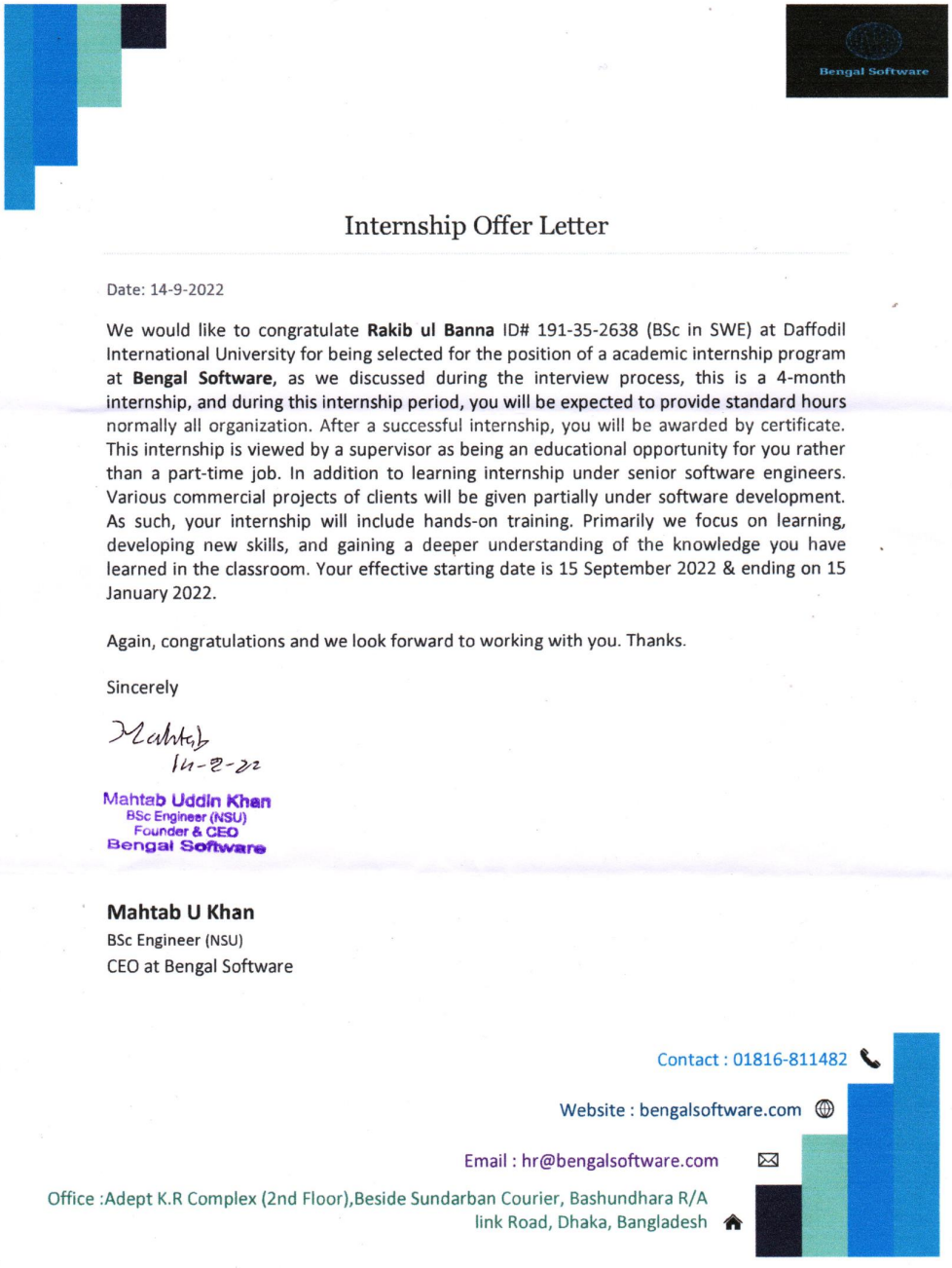
I was honored to be given the chance to complete my internship at Bengal Software because it provided me with a significant opportunity to learn from some of the most seasoned software engineers in the nation and experience firsthand how a business operates.

3.2.1 Recruitment

I was invited for an interview with Bengal Software, where the CEO, HR, and a senior project manager interviewed me informally about my academic pursuits and personal preferences. After the informal interview, a senior software engineer questioned me about the things I had studied in college, the technologies I was working with at the time, the things I wanted to learn, and some interview questions to assess my skill sets.

The interview was cordial, and I was warmly welcomed. A few days later, they phoned me to formally notify me that I had been accepted, and then they requested me to join and officially begin working.

3.3 Offer letter



Bengal Software

Internship Offer Letter

Date: 14-9-2022

We would like to congratulate **Rakib ul Banna** ID# 191-35-2638 (BSc in SWE) at Daffodil International University for being selected for the position of a academic internship program at **Bengal Software**, as we discussed during the interview process, this is a 4-month internship, and during this internship period, you will be expected to provide standard hours normally all organization. After a successful internship, you will be awarded by certificate. This internship is viewed by a supervisor as being an educational opportunity for you rather than a part-time job. In addition to learning internship under senior software engineers. Various commercial projects of clients will be given partially under software development. As such, your internship will include hands-on training. Primarily we focus on learning, developing new skills, and gaining a deeper understanding of the knowledge you have learned in the classroom. Your effective starting date is 15 September 2022 & ending on 15 January 2022.

Again, congratulations and we look forward to working with you. Thanks.

Sincerely

14-9-22

Mahtab Uddin Khan
BSc Engineer (NSU)
Founder & CEO
Bengal Software

Mahtab U Khan
BSc Engineer (NSU)
CEO at Bengal Software

Contact : 01816-811482
Website : bengalsoftware.com
Email : hr@bengalsoftware.com
Office :Adept K.R Complex (2nd Floor),Beside Sundarban Courier, Bashundhara R/A link Road, Dhaka, Bangladesh

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3.4 Evaluation process

In order to offer me assignments, monitor my progress, and assist me in overcoming some of the difficulties I had during the first part of the internship term, a senior software engineer was designated as my mentor. Each assignment I had to accomplish had a soft deadline. I received some feedback for improvement based on my progress. I was given instructions by software engineers and project managers to execute tiny changes of code that had stringent deadlines after becoming familiar with the system and how everyone works.

3.5 Personal expectations

I have the following expectations during the internship period:

I. Acquiring knowledge of the software development lifecycle
II. Being aware of project modifications in the middle
III. Acquiring knowledge about fascinating new technology
IV. Developing time management skills
V. Establishing positive connections within the sector

3.6 Conclusion

Most of my expectations were met, if not exceeded, throughout the internship term. And I'm happy with the software overall. Bengal software has pushed me to master new technologies and address more practical challenges while also assisting me in understanding how the industry functions. My employer has pushed me to continue learning new things and to stay up to date with industry standards. In addition, I was given the duty of managing a real-world application that taught me how to maintain a project and manage a product with the team.

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CHAPTER 4: SOFTWARE DEVELOPMENT LIFE CYCLE AND OVERVIEW

4.1 Software development lifecycle

Software development life cycle is referred to as SDLC. A software development life cycle is essentially a set of processes that serve as a framework for the creation and administration of an application's or software's lifetime.

The SDLC process approach differs from business to business. Engineers employ a software development life cycle, which is made up of a number of distinct work phases, to plan, create, test, and deploy information systems. An SDLC aims to produce high-quality systems that meet or exceed customers' expectations and fulfill their requirements by delivering systems that move through each clearly defined phase within the scheduled time frame and at the lowest possible cost. This is similar to anything that is produced on an assembly line.

Agile and waterfall SDLC are the two different types that may be employed. The primary distinction between the two is that while the agile SDLC starts with fewer strict rules and then makes modifications as needed, the water process is more conventional and is designed with a well-thought-out strategy and specified set of requirements. Agile development is renowned for its capacity to swiftly transition an application from a prototype to a finished product at almost any stage, making it more suitable for constantly updated or modified applications.

Bengal Software follows agile methodology most of the time to develop a software.

The principles of agile methodology are:

1. Satisfy customers by consistently delivering high-quality work on time.
2. Split up large activities into manageable parts that can be finished quickly.
3. Realize that self-organized teams provide the finest work.
4. Trust motivated folks to complete the task at hand by giving them the atmosphere and assistance they require.

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5. Establish procedures that support actions that are sustainable.
6. Keep up a steady pace for finished task.
7. Be open to requirements changing, especially late in a project.
8. Every day during the project, gather the project team and business owners.

9. Encourage regular team reflection on ways to improve performance, followed by behavior tuning and modification.
10. Track development based on the volume of work finished.
11. Constantly strive for greatness.

Generally there are six phases in the Software development life cycle model. They are the following.

- Collecting & analyzing requirements
- Design
- Implementation
- Testing
- Deployment
- Maintenance

Collecting & analyzing requirements:

Business needs are obtained at this stage. The project managers and stakeholders are primarily focused on this phase. In order to define the requirements, such as who the system's users are, what data should be entered into the system, and what the system should output, many meetings with managers, stakeholders, and users are held. In this step, all general inquiries are made. After collecting all the criteria, they are examined to determine their validity and whether it is feasible to include them into the system that will be created. Finally, a requirements specification document is produced as a set of recommendations for the model's subsequent phase.

Design:

The required requirements created in the first phase are used to prepare the system and software design in the second phase. System design aids in determining the overall system architecture as well as the hardware and system requirements. The model's subsequent phase receives input from the system design sepc. In this phase, UX designers provide guidelines, while testers develop test strategies that specify what should be tested and how it should be tested.

Implementation:

The task is separated into pieces during this phase, and real coding is started. The major priority for software engineers at this period is the production of the code. This is the stage of the software development life cycle that lasts the longest.

Testing:

To ensure that the program is truly solving the issue it was designed to, the code is tested against the requirements after it has been written. All functional and non-functional requirements are tested during this phase, along with unit tests, integration tests, system tests, and acceptance tests.

Deployment:

The program is tagged for shipment once the testing process is successfully completed, and then it is released to the production servers or app stores so that real consumers may use it. The client may also do the best consumer testing here, depending on the terms of the client contract.

Maintenance:

As soon as users begin utilizing the system, a real issue arises and periodically has to be resolved. Maintenance is the procedure where the developed product is looked after. The length of this phase will depend on the agreement with the customer.

4.2 My work as software developer intern

4.3 Project planning

My task at Bengal Software was to work and learn as a Full stack software developer intern. I have done there front-end developing such as react props drilling, state managements, component making, routing etc. and in backend part I created APIs for web/mobile applications.

After the planning phase of SDLC, the project manager supplied us with functionality and data requirement documentation, where they have mapped the actual interface of the application to their corresponding actions, what they do, the data input that the application should take, and the result that data will provide.

4.4 Tools and technology used during project's

Programming language: JavaScript

Front-end and back-end development Framework: React js, Redux, Node js, Express js.

UI framework: Tailwind, Material UI

API Documentation: postman

Database: Mongo

Operating System: Ubuntu

Editor: VS code

Authentication: Firebase

Task assigning: GitHub projects

Hosting: Digital Ocean

Hosting testing purpose: Heroku

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4.5 Project List

4.6 Project - 1

4.7 The Korean mall

- ✓ Project type: e-commerce web application
- ✓ Developed: Front-end and Back-end both
- ✓ Design: material UI, react-bootstrap
- ✓ Development: react js, node js,express js
- ✓ Database: MongoDB
- ✓ Database tool package: mongoose
- ✓ API Doc: postman
- ✓ MY work duration: 2.5 months

Project description

4.8 The Korean mall

This application helps people in to order goods not going to the shop.

Shopping mall owners will register on the application and upload his services via a web app.

Customer will select the product and select his order and submit the order. Customers will be able to pay online payment or cash.

Customer can get Bundle offer by ordering specific number of product with specific condition. Admin can manage all the functionality.

He can also see the whole business statistic from the admin panel.

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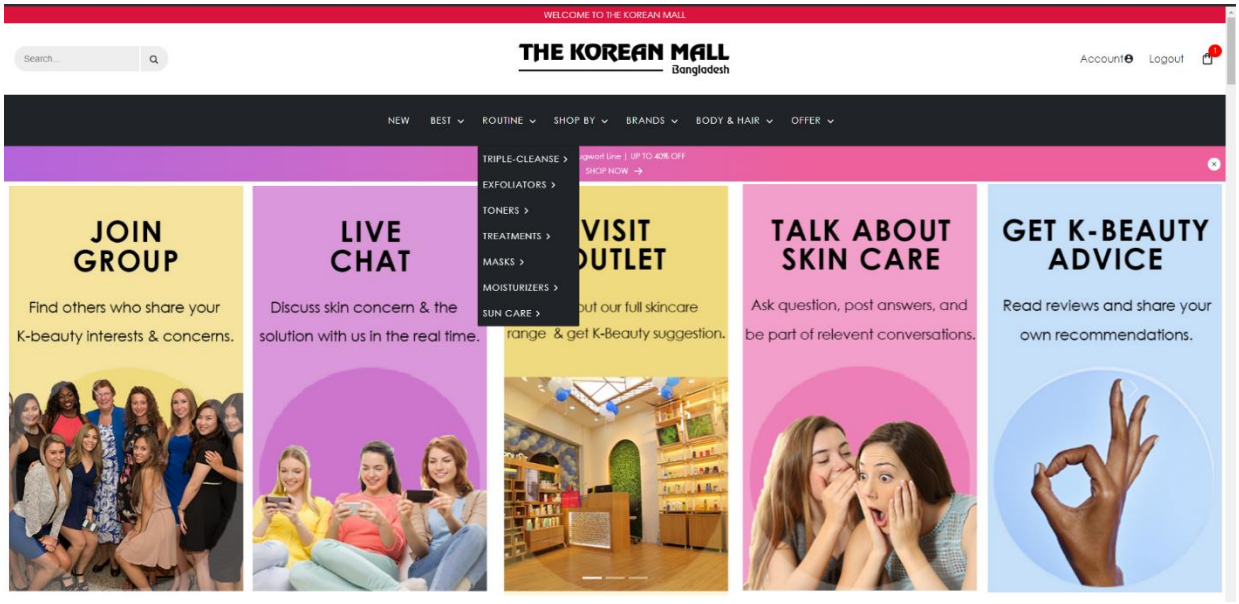
The customers will be able to access the mobile app through iOS or Android devices. The web apps will be accessed through public web from any device with a web browser connected to internet.

User Interface

Client side

❖ **Dashboard section**

Here the customer will get a complete idea about the store. They can see navigate route and can select product based on category.



❖ **Product section**:

Here customer can see all the product and the new arrival product and also see the best seller.

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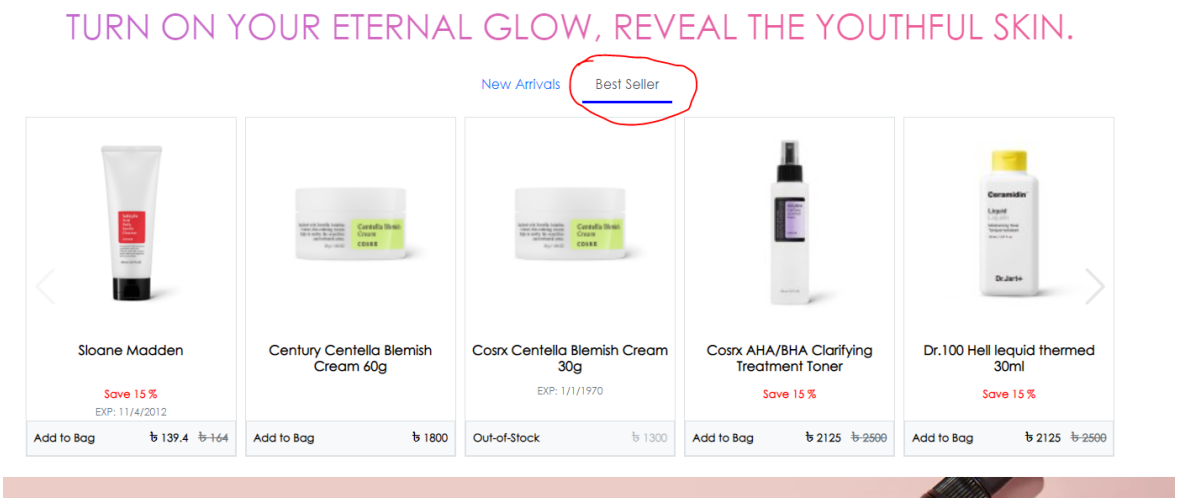
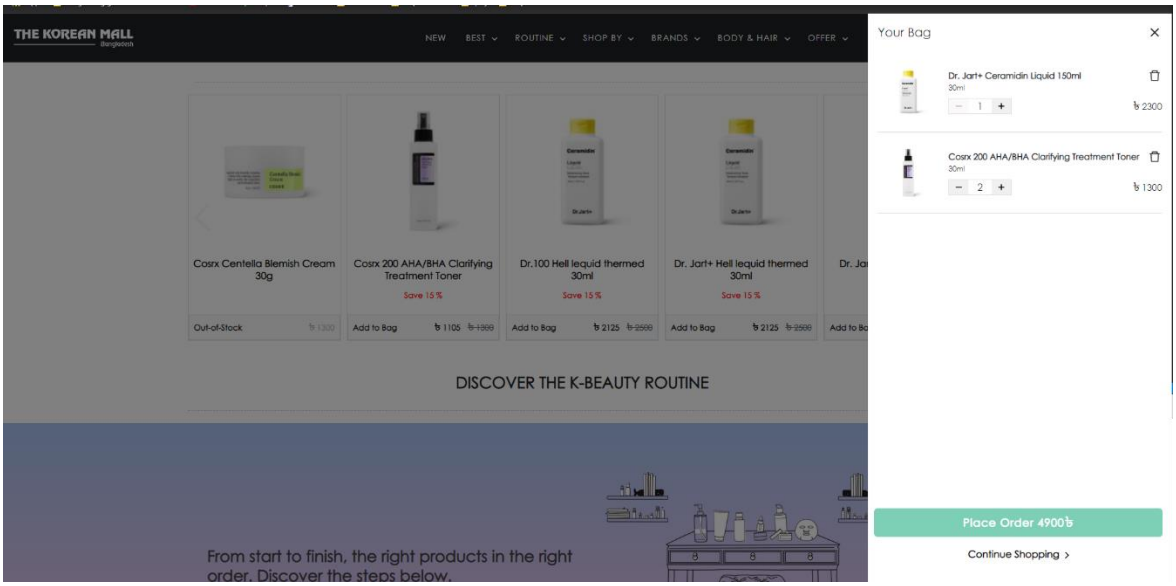


❖ Cart section

Here customer can add product in his cart and set the quantity and also can delete product from cart and can proceed to the order.



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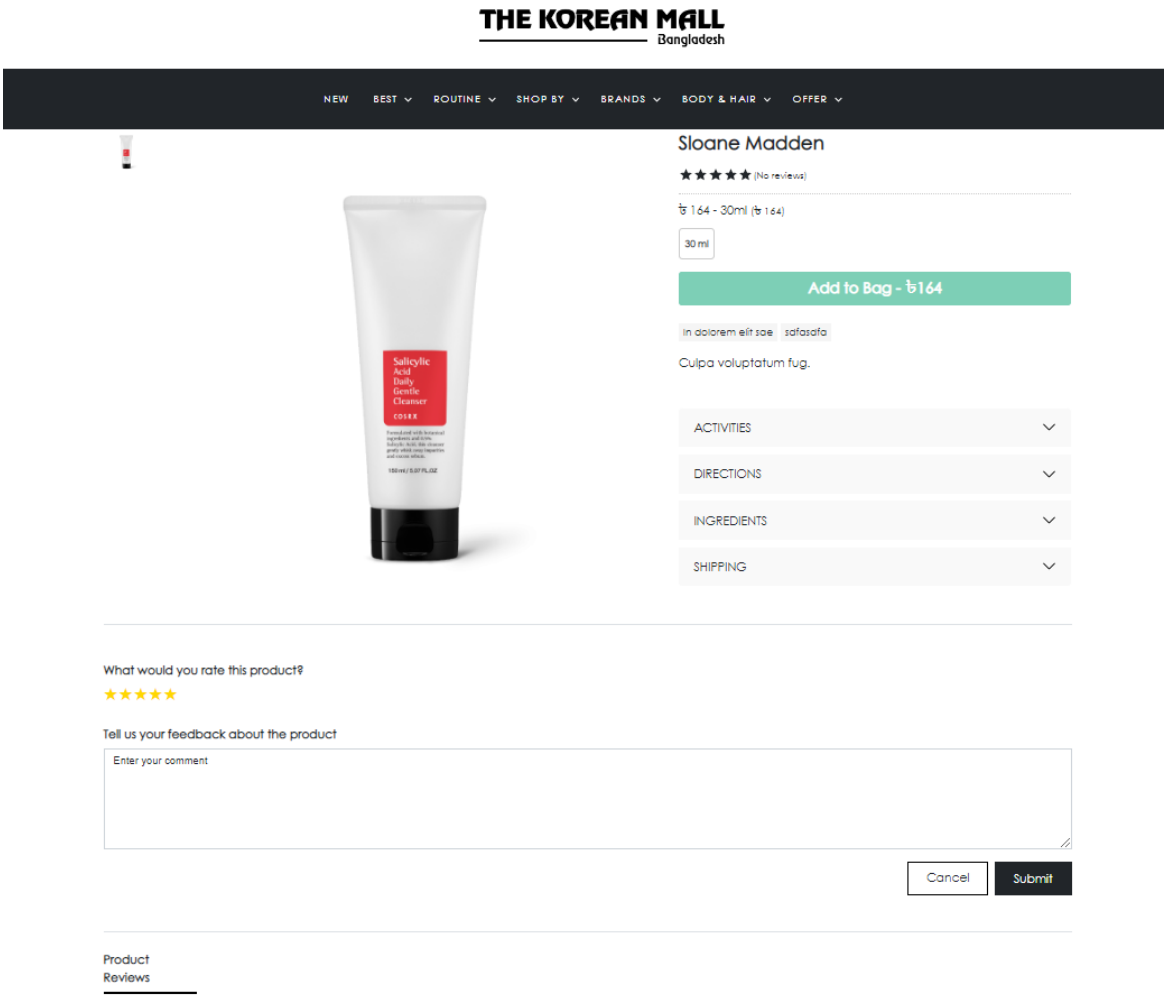
❖ **Single product section**: Here customer can see a single product and give review and select the variating of a single product.



❖ **Shopping bag section**

Here customer can his full cart and edit the cart.

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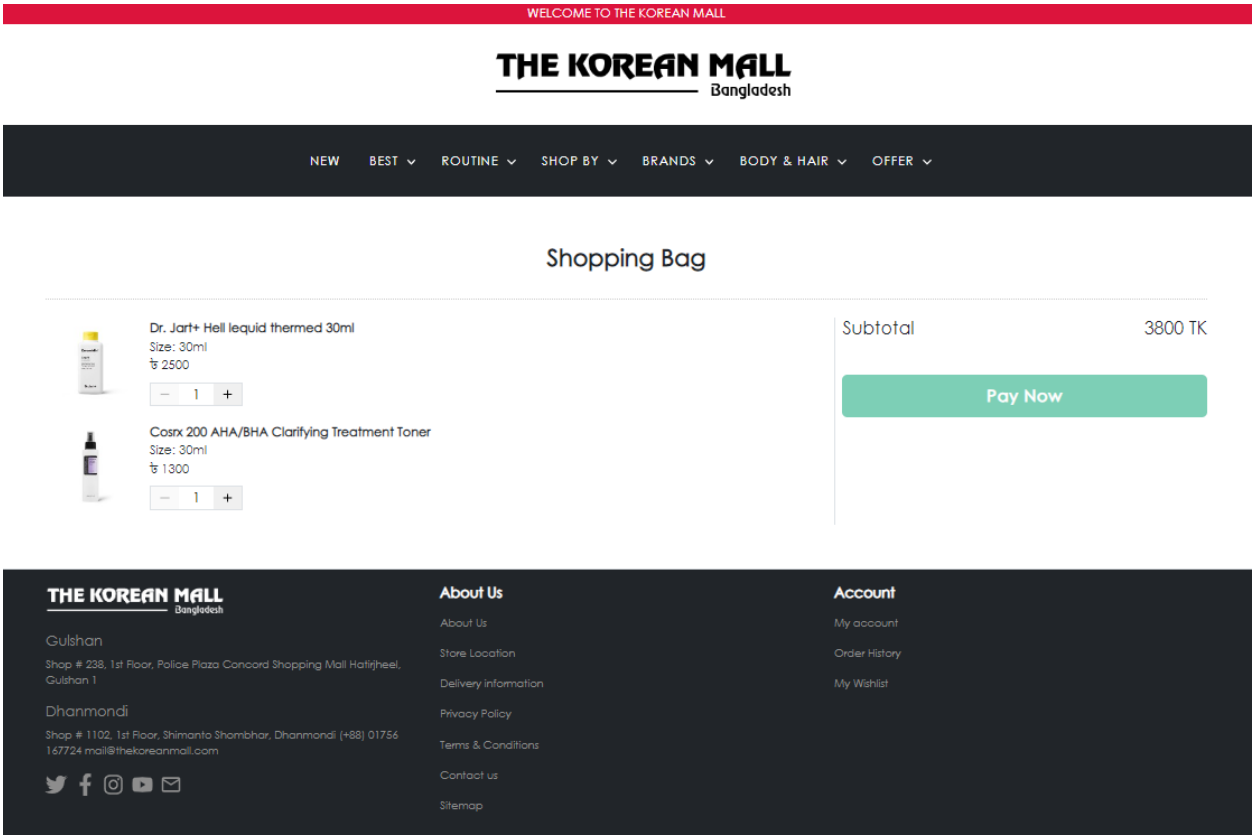
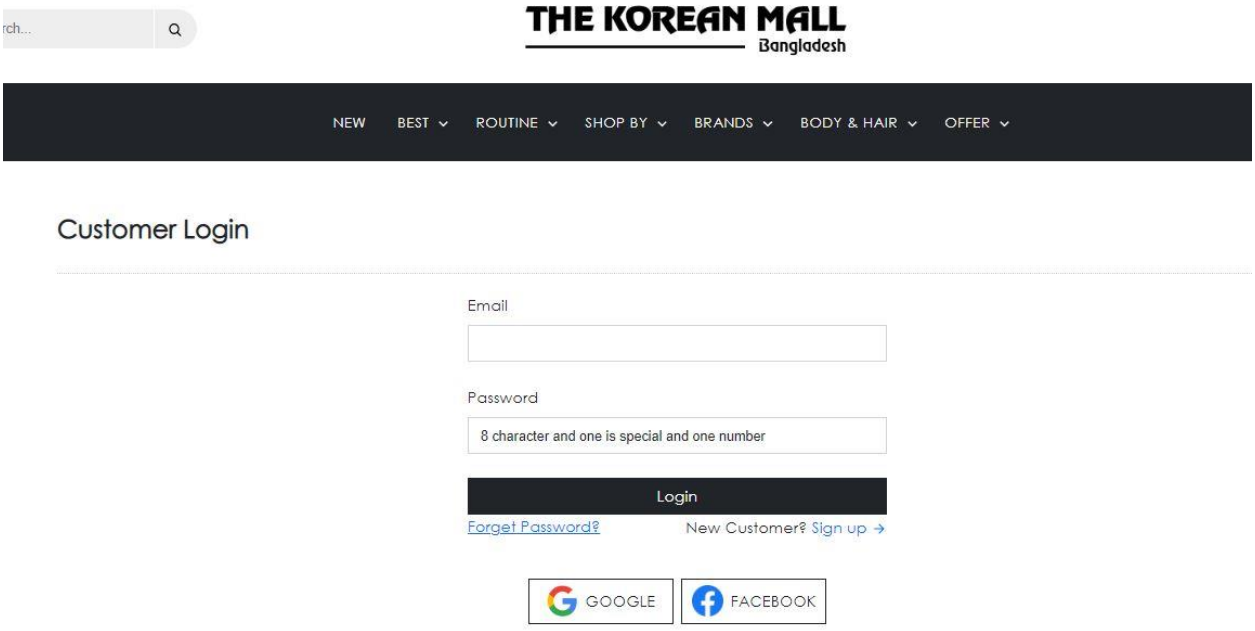


❖ **Login section:**

Here customer can log in via email, password or google account or Facebook account when he will want to order product.



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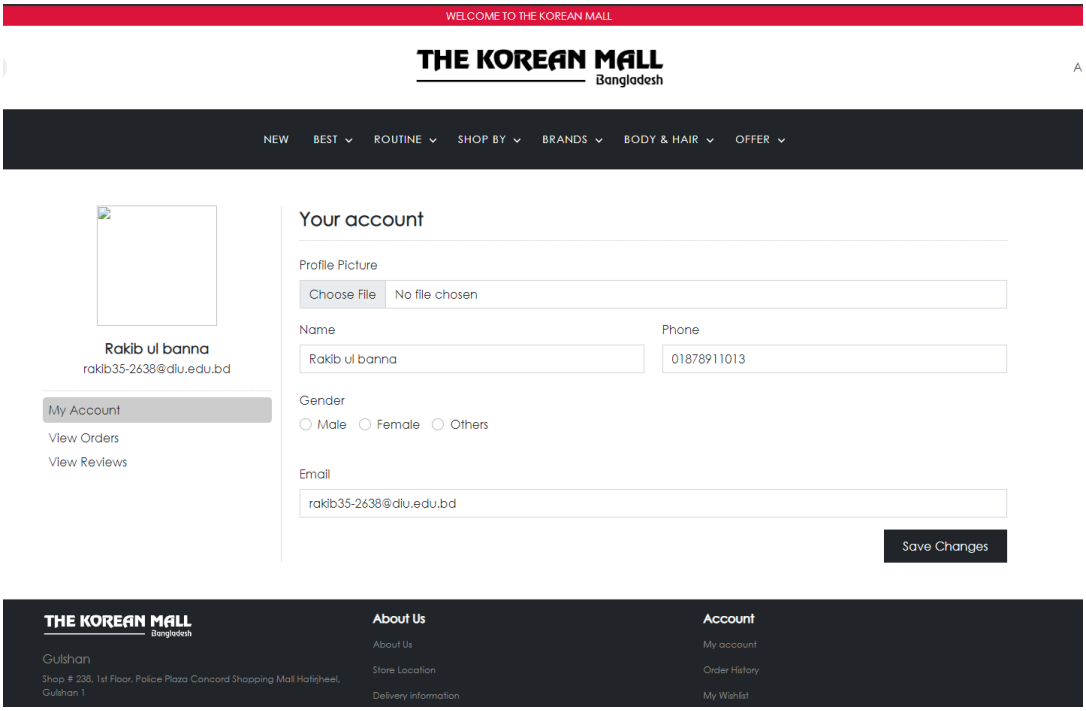
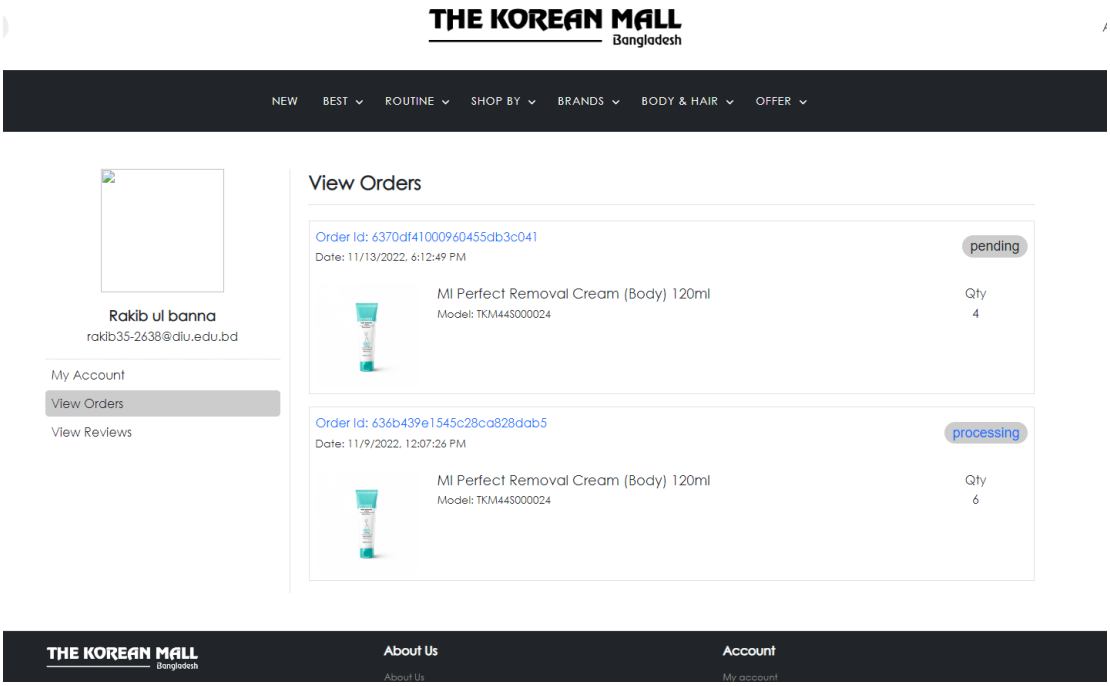
❖ Profile section

Here logged in customer can update his profile by giving information.



1. **View order route:** Here customer see his past and present order history with details and order ID.



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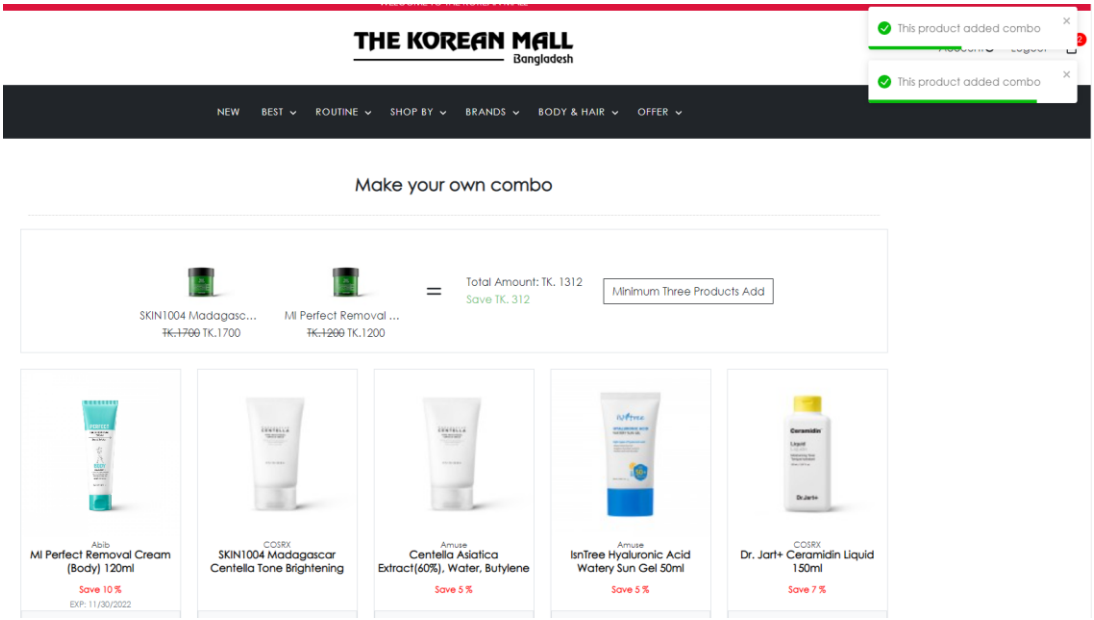
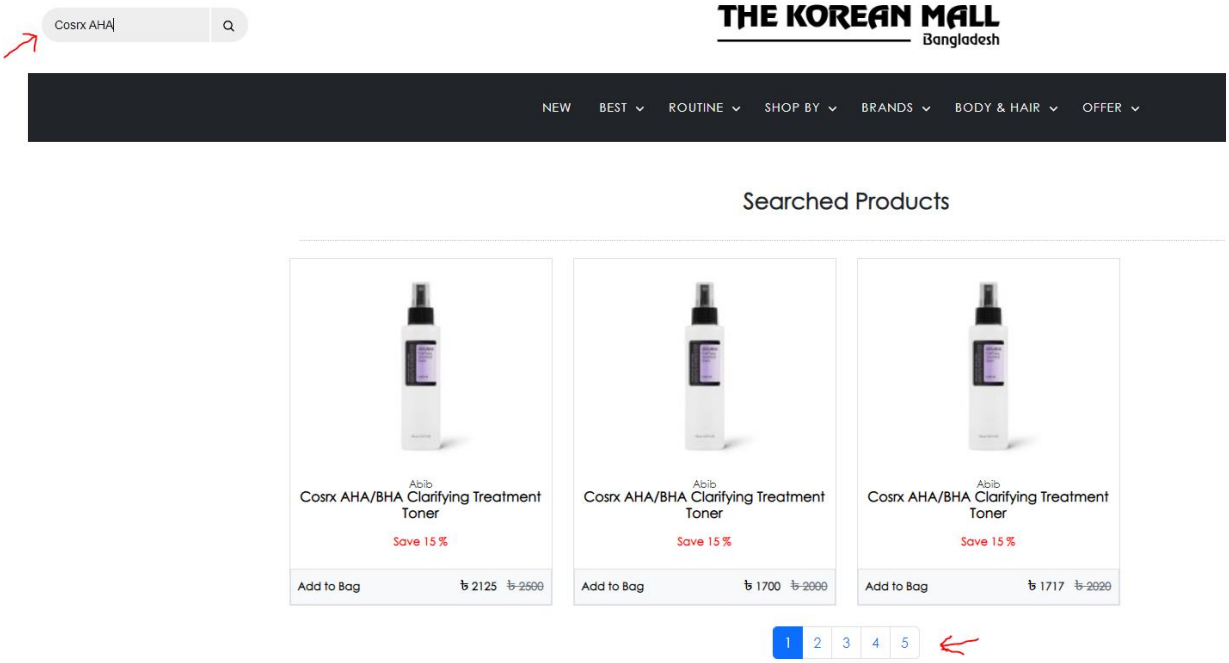
❖ **Combo ordering Section**:

Here customer order combo pack product and can get special discount which set from admin panel.



❖ **Product filtering and viewing with pagination**

Customer can filter product and see with pagination



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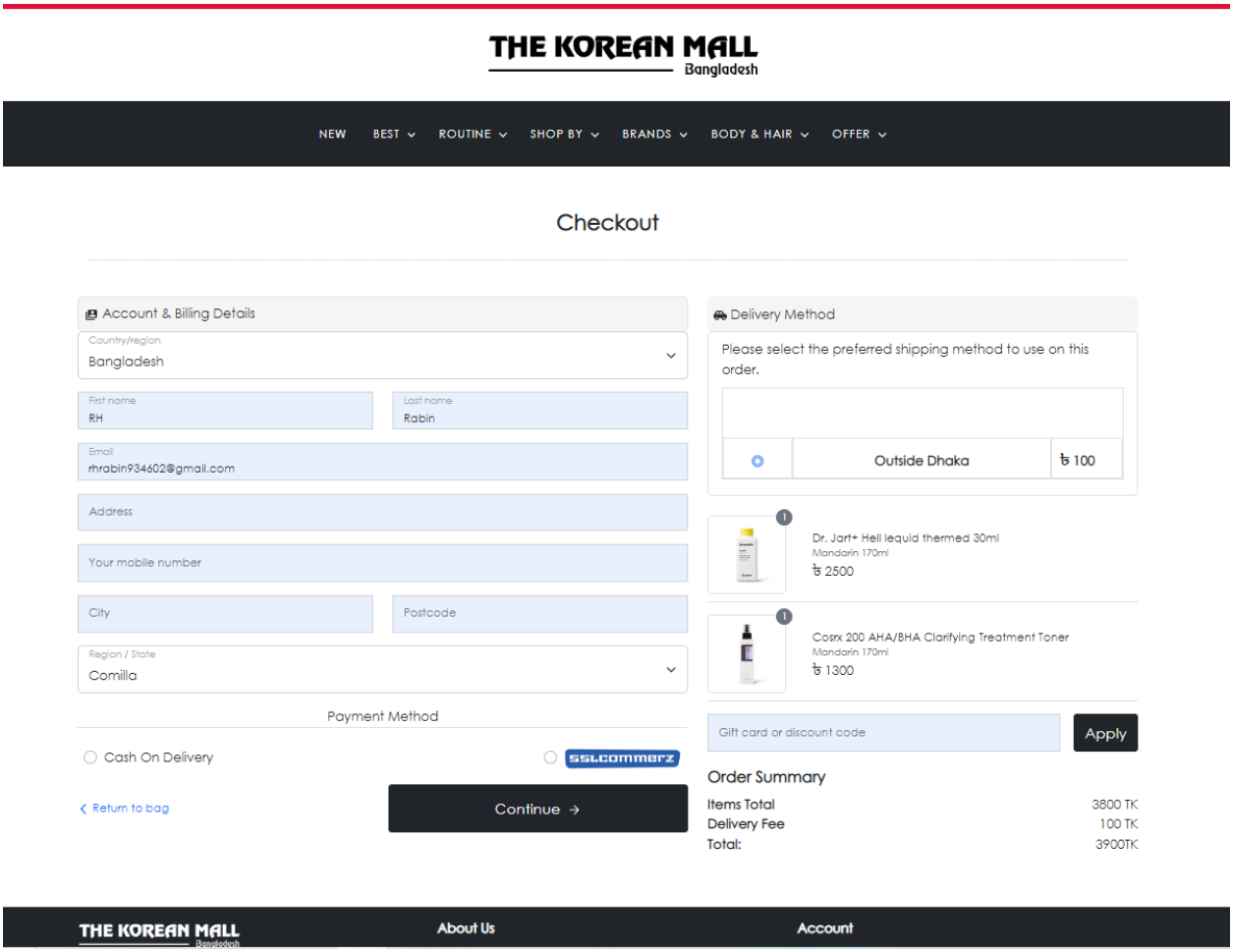
❖ **Checkout section**:

Here customer can give shipping address and make payment and confirm his order via online or select cash on delivery.



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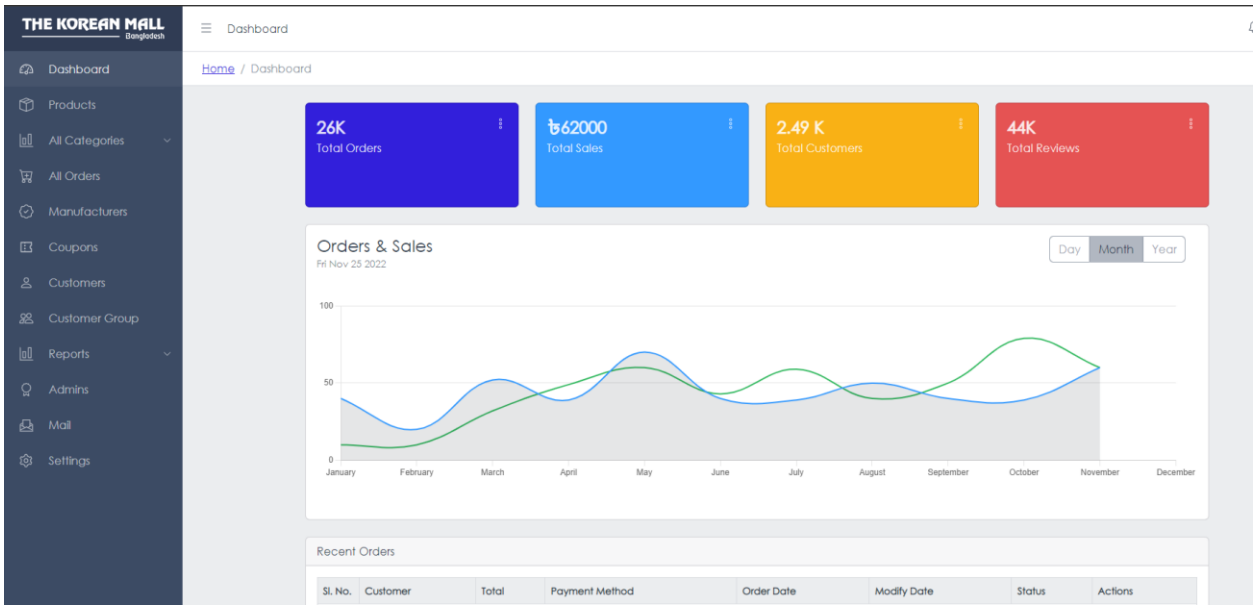
Admin panel

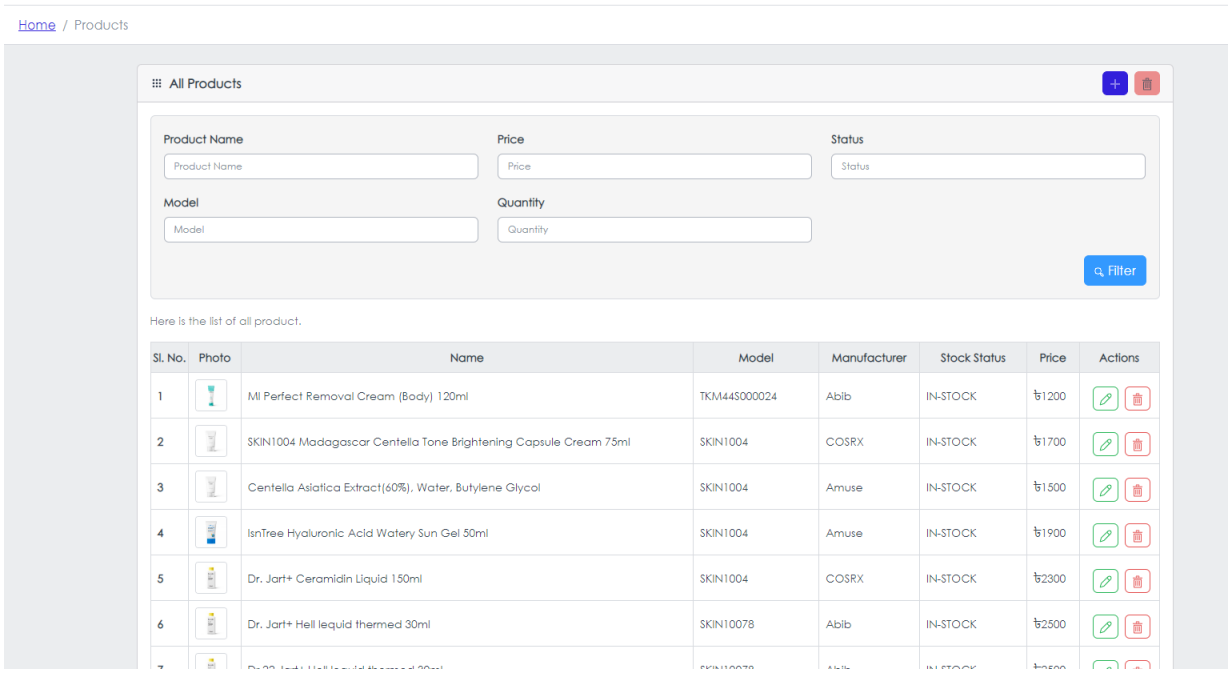
❖ Admin dashboard section:

Here admin can see total order, total sell, total customer, total product count, sales graph and get an overview of his business.



❖ Product section:

Here admin can filter product with variables.



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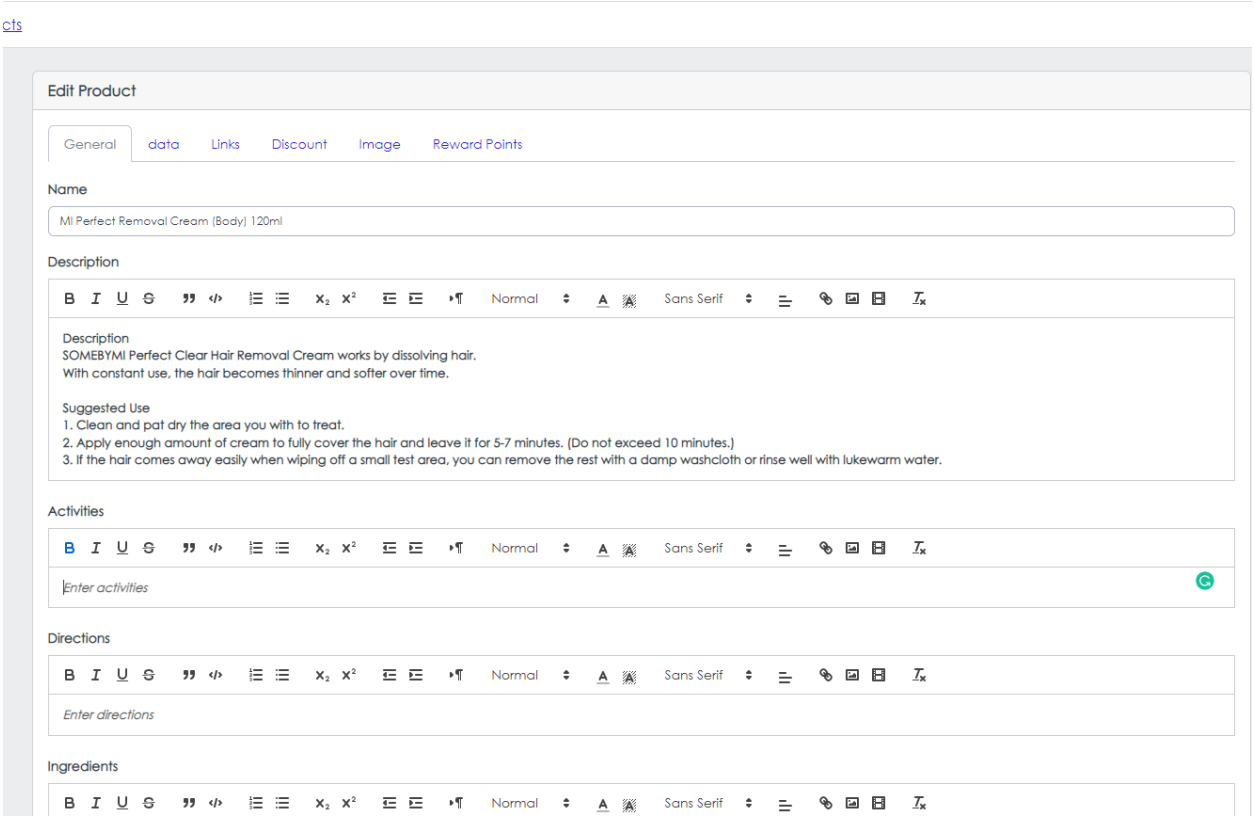
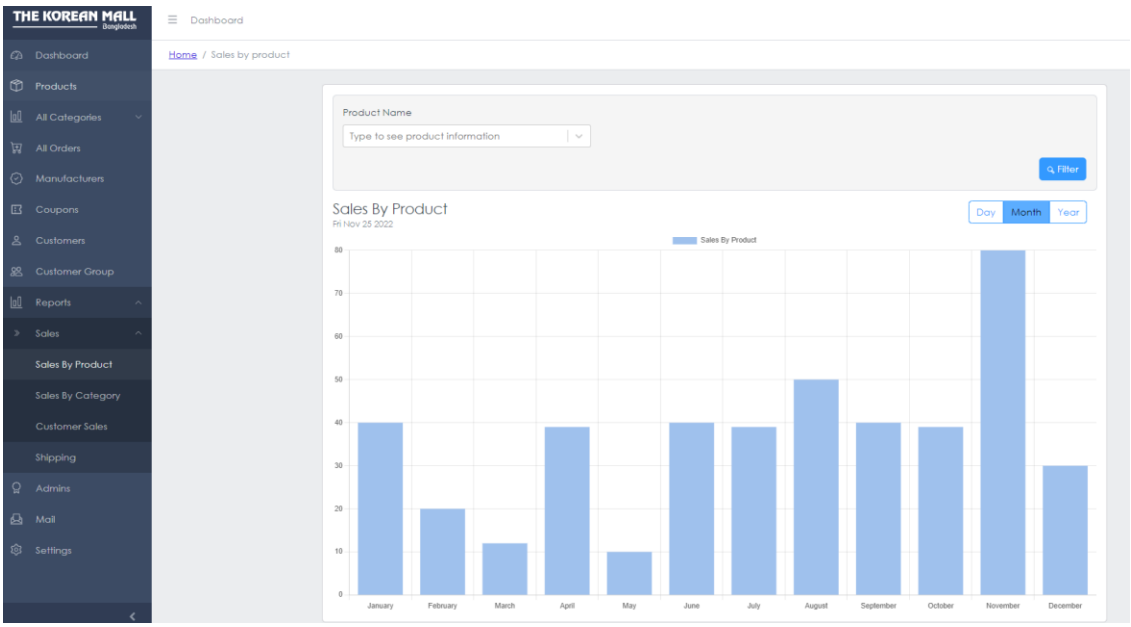
❖ **Product updating section:**

Here admin can update product with attribute and also can make options.



❖ **Sales graph:**

Here admin can see the sales graph based on daily sales, monthly sales and yearly sales.



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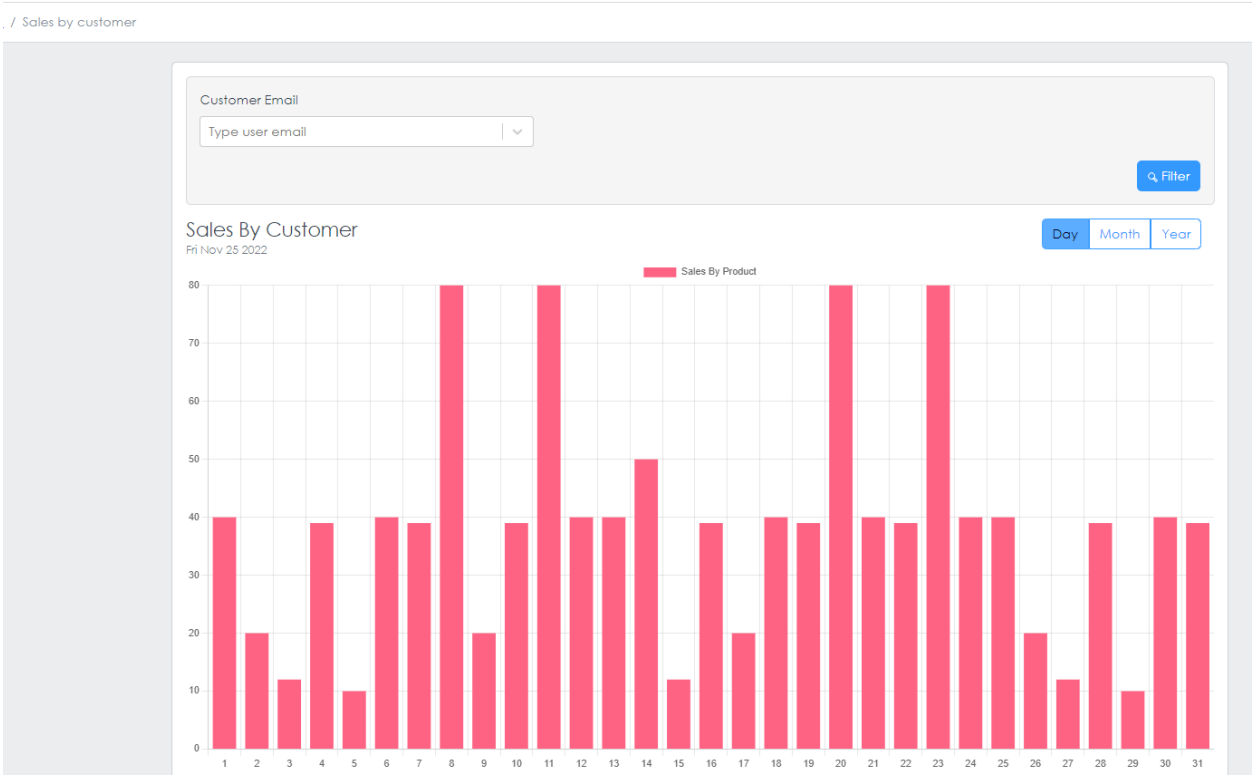
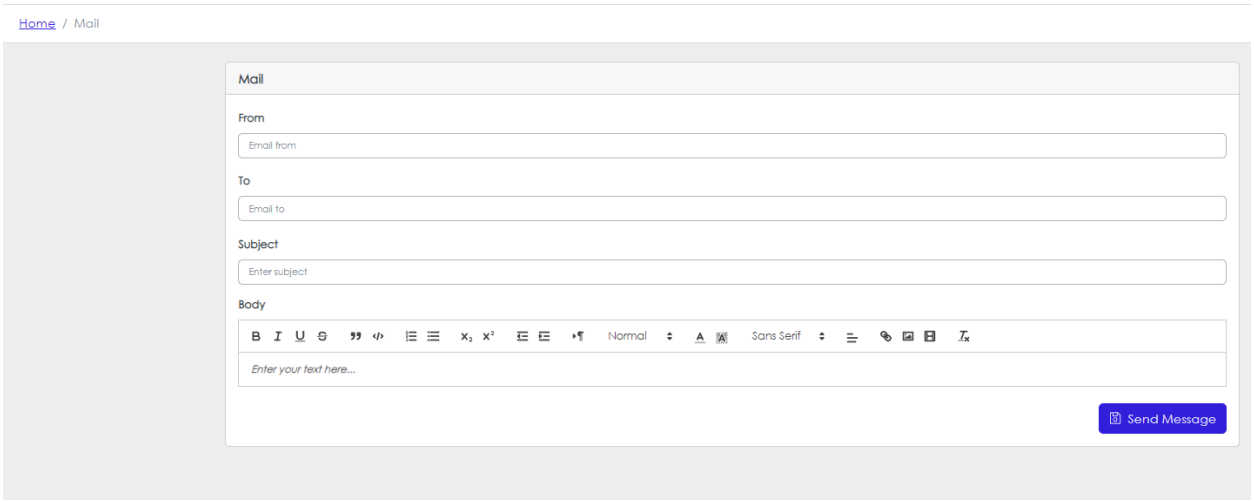


❖ Updating and deleting section:

Here admin can update and delete product and order. And also change order status.



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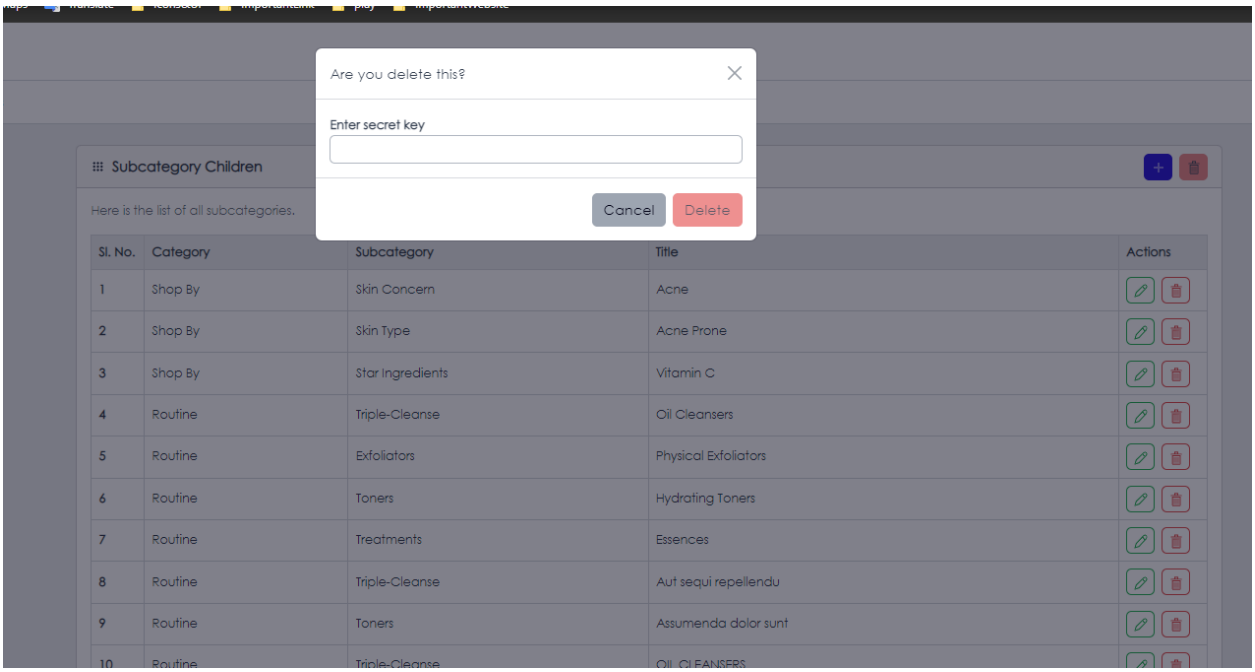

4.9 Project – 2

4.9.1 Bengal-software-Admin

- ✓ Project type: Template selling site
- ✓ Developed: Rest API in Back-end
- ✓ Development: node js,express js
- ✓ Database: MongoDB
- ✓ Database tool package: mongoose
- ✓ API Doc: postman
- ✓ MY work duration: 1 months

4.9.2 Project description

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This application is a website template selling site.

It’s a multi-vendor web application where temple owner can sell template and buyer can buy template.

It is also the official site of Bengal software where they provide different kind of service.

4.10 My responsibility

- Wrote API for the CRUD functionalities.
- Fixed many API bugs that caused the project to complete before the release date.
- Contributed to the Database Design so it makes query writing easier in Mongoose ODM.
- Also fixed the react components bugs in the Admin panel.
- Front-end so all functions work properly.
- Also, fixed the client-side front-end react state management bug so the UI functionality works smoothly.

4.11 Project – 3

4.12 Passionate programmer

- ✓ Project type: question answering, discursion application
- ✓ Developed: Rest API and UI
- ✓ Development framework: express js(node js)
- ✓ Database: Mongo
- ✓ Database tool package: mongoose
- ✓ Duration: 10 days

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4.13 Project description

This project is basically a programming questing answer and discussion application which

Will help the Bangladeshi student and developers for problem discussion.

Here any logged in user can make question and other can answer those questions.

Question answer will verify by the majority answer similarity checking and by the expert.

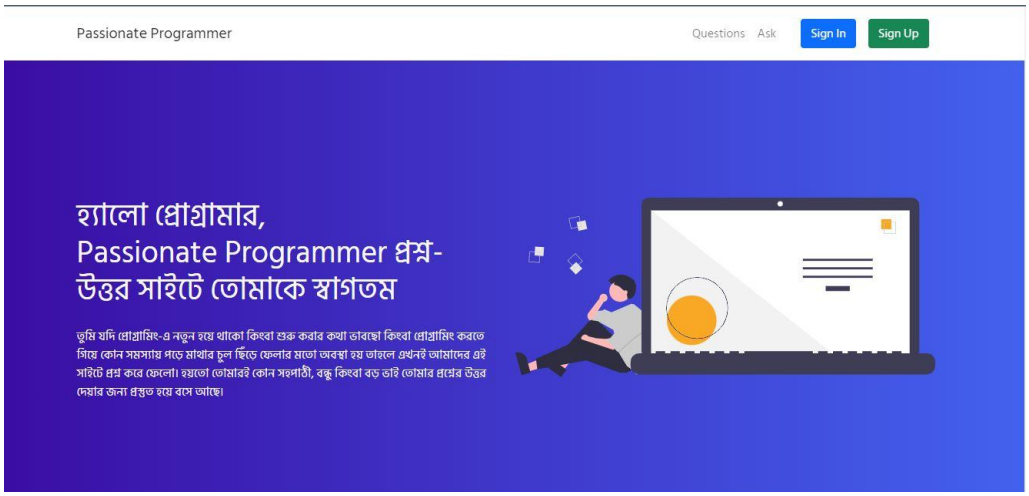
Expert can write blog and sell programming related course.

User Interface

Client side

❖ **Dashboard section:**

Here user can see the questions and the answer given by others.



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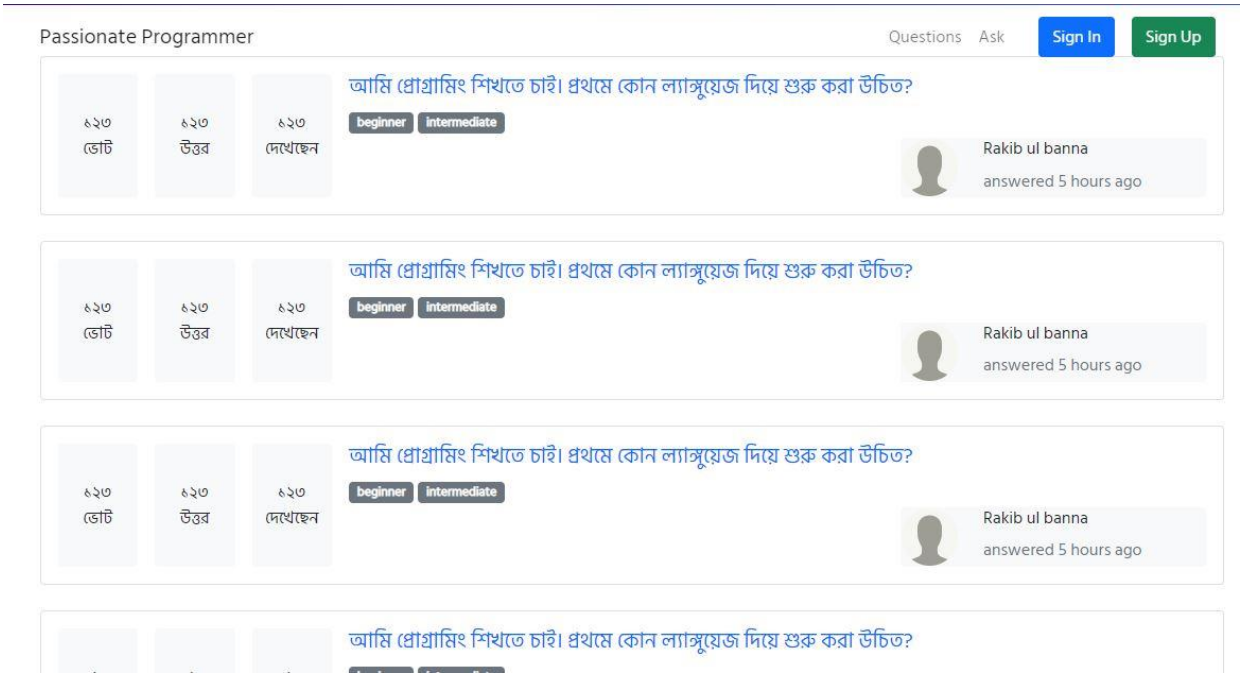
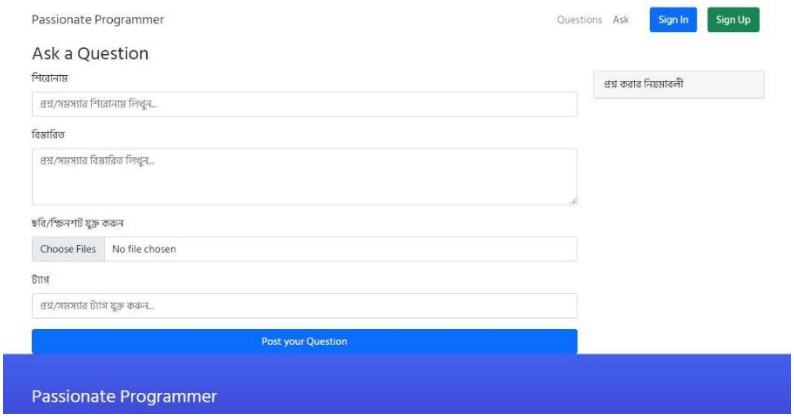


❖ **Question creating section:**

Here user can create question.



Still working in this project……

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CHAPTER 5: EXPERIENCE AND ACHIEVEMENT

5.1 Challenges and constraints

The organizational structure of Bengal Software is effective. This business strives to keep everything in good condition. As a result, I discovered a few small drawbacks throughout my internship.

5.2 Organizational constraints and challenges

5.2.1 Organizational rules constraints

The organization employs both local and remote workers, making it occasionally challenging to coordinate with other team members who work remotely and to coordinate with their time zones given that many of them operate in various time zones.

5.2.2 Desk arrangement

They use an open table divided by glasses as their workstation, which doesn't address the noise problem and makes working with others more difficult.

5.2.3 Limited resource

Due to a lack of resources, such as development servers, high-quality laptops, high-resolution monitors, and principals, the task is made more difficult than it has to be.

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CHAPTER 6: CONCLUSION

6.1 Concluding statements

One word would best describe my time at Bengal Software: "Humbling." Bengal Software has a robust business network that extends both domestically and internationally, which has given me a great deal of knowledge about both the domestic and international markets. Working there taught me how to be a team player, make the most of my time, and act professionally. This not only made it easier for me to recognize the professional route I want to follow, but it also gave me more self-confidence. I picked up additional soft skills and learned new technology thanks to the office's learning environment.

6.2 Recommendations

I didn't know what to anticipate when I first started at Bengal Software or how much I would learn or change, but I now fully understand the great changes it has brought about in my life. I will never forget the tremendous support I received from my coworkers at Bengal Software. I want to thank Mahatab U Khan (CEO) and Nusrat Jahan (Academic Supervisor) for providing me this chance, for their support, and most importantly for their time. I would definitely advise my young students to work as interns at Bengal Software.

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