

Bfarming: A WEB BASED APPLICATION

BY

SHUVA DHAN BAIDYA

ID: 201-15-14186

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

Supervised By

Md. Aynul Hasan Nahid

Lecturer

Department of Computer Science and Engineering
Faculty of Science and Information Technology
Daffodil International University



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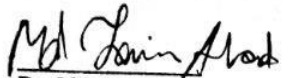
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APPROVAL

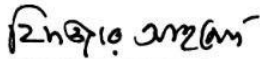
This Project titled "Bfarming: A WEB BASED APPLICATION", submitted by Shuva Dhan Baidya to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 13.07.2024.

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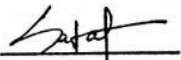
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Lecturer
Department of CSE, DIU

Internal Examiner 2



Sadat Hasan
Data Scientist (Senior Principal Officer)
Risk Management Division
BRAC Bank

External Examiner

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We hereby declare that, this project has been done by us under the supervision of **Md. Aynul Hasan Nahid**, Lecturer, Department of Computer Science and Engineering Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

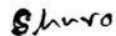


Md. Aynul Hasan Nahid

Lecturer

Department of Computer Science and Engineering
Faculty of Science and Information Technology
Daffodil International University

Submitted by:



Shuva Dhan Baidya

ID:201-15-14186

Department of CSE

Daffodil International University

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ABSTRACT

Every day new technology is arriving and billions of people were connected to the Internet. Purchasing goods, groceries, clothes everything is online. Innovation is expected. From agricultural to ultramodern times, society has experienced technology. Agriculture is the source of the economy, health, and environment. As technology advanced, agricultural practices were adopted. Most developed nations employ smart farming technology to decrease labor costs and understand crop management in real-time. The bfarming System is a web-based Application that makes very easy to farmer sells their crops and buyer can easily bought fresh crops. Its intuitive design promotes user engagement while maintaining a visually appealing layout that adapts seamlessly across various devices. The application consists of two main components: farmer interface and buyer interface. The farmer interface allows users to browse available upload their all crops and can fix the fair price of crops. The buyer interface can easily bought fresh crops and easily will get good crops at a flexiable price. A standout feature of the Bfarming System is its diverse easily bought fresh crops, offering flexibility price, easily gave payments. Additionally, the system provides real-time availability tracking, enabling users to promptly as certain fresh crops availability, facilitating efficient planning and avoiding chemical. The system boasts advanced security measures, leveraging smart technology to monitor bfarming facilities, ensuring a safe and secure environment for users. It as a comprehensive solution, catering to the diverse needs of fresh crops. With its user-centric design, convenient features, and robust security, it stands as an indispensable tool for individuals seeking hassle-free farming facilities booking and management.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The project named for Bfarming : A Web Based Application. The entire work of the project has done on farming System.Bfarming is the farmer system where they can plan, monitor and analyze the activity of the farmers production system. It manages farmer operation with one system and organizes data in one place. It helps smart farmers become even smarter. This creates in partnership with growers and buyers. It inspire farmer to produce and buyers to consume fresh goods. Bfarming System will make better connection among Farmers and Buyers ensure quality food. Standardize and increase efficiency of bfarming process.

1.2 Motivation

Project aims to make it easier to find and book fresh crops. Right now, it's quite difficult and takes a lot of time to do this manually. Creating a simple website, to make it easy for everyone to find fresh crops and book them quickly. Also want to help farmer by letting them list their crops on the website. This will not only makeit easier for them to get customers. Overall, our goal is to that farmers get fair price, make it simpler to take fresh crops, and support local businesses in the farming sector. The Bfarming Systemisn't just about technology; it's about making good things happen in society. By encouraging farming,it aims to make everyone healthier and happier.

1.3 Objectives

The objective of the Bfarming project is to create an accessible and user friendly online platform for finding and booking fresh crops. The primary aim is to simplify the process for both crops seekers and owners by providing a convenient and efficient booking system. Users will be able to easily search for nearby crops, check availability, and book crops with minimal hassle. Furthermore, the project seeks to empower crops owners by offering them a platform to

showcase their facilities and manage bookings effectively. The project also aims to encourage more people to engage in farming and grown more crops, thereby promoting a healthier lifestyle.

1.4 Expected Outcomes

Those are the expected outcome that will get the end of the project

- ❖ **Accessibility:** The system will make crops more accessible to a wider audience and farmer found the fair price,encouraging more people to engage in farming activities.
- ❖ **Booking Simplification:** Users can book different kinds of crops easy by login to the website. User will get smoother and faster booking experience.
- ❖ **Increased farming Participation:** Making easier to book crops, the project aims to inspire more individuals to get involved in farming and lead active lifestyles.
- ❖ **Support for crop Owners:** crop Owner's will benefit from increased visibility and improved management tools, leading to enhanced business opportunities and growth.
- ❖ **Community Connection:** The system will connect all farmers, helping them to make crops.

1.5 Report Layout

In “Chapter 1” Introduction

Chapter one represents the Introduction of the project, the motivation for the project, what are the objectives, expected outcome and project management and finance. All the followed topic has discussed in this chapter.

In “Chapter 2” Background

Chapter two mentioned the Preliminaries/Terminologies of the project. related works comparative analysis that helps to find-out project gap, scope of the problem and challenges for the project.

In “Chapter 3” Requirement Specification

Chapter three mentioned the Requirement Specification of the project. This chapter has been discussed about business process modeling, requirement collection and analysis, use case modeling and description, logical data model, and design requirement.

CHAPTER 2

BACKGROUND

2.1 Preliminaries and Terminologies

B-farming serve as artificial shop for various crops such as potato, Ladyfinger, rice and etc. It provides fresh crops and fair price for everyone. The process of booking crops can sometimes bit challenging due to timing constraints or prior reservations. To simplify this issue, the project proposed the development of a comprehensive crops booking website. The platform will consist of three main modules: Admin, Crops Owner, and User. Admin will have the authority to add new crops, assign managers to oversee specific areas, set pricing details, and manage bookings across all locations. crop Owner, designated by Admin, will receive login credentials and be responsible for handling booking requests, confirming booking, generating bills, and maintaining booking records for their respective locations. For users, the website will offer a user-friendly interface where they can easily check the availability of fresh crops, select preferred different crops, provide personal information, make payments securely, and access their booking history. By streamlining the booking process and enhancing accessibility, this website aims to make crops more readily available to fair price while ensuring efficient management for administrators and crop owner alike.

Admin

- **Add Crops:** Admin can add update and delete crops. Crop owner can add crops but admin approval need.
- **Manage Crop:**Admin can manage all registered crop.
- **View Booking:** Admin can view the booking of the crops. Can view the history of bookings.

Crop Owner

Add Crop: Crop owner can add crop.

- Manage Crop: Crop owner can manage his/her crop.
- View Booking: Crop owner can view the bookings of the crop. Can view the history of bookings.
- Price: Crop owner can set the prices for booking crop.

User

- Login: Registered user can login the system.
- Register: A user can register via the website.
- Find Crop: A user can easily find the fresh crops.
- Book crop: User can easily booking fresh crops in advance.
- Online payment: User can pay their bill directly through the website without any hassle.

Studies required for the implementation of the project:

Web Development:

Web development is the process of creating and maintaining websites. It involves designing how a website looks and works, writing code to make it function properly, and keeping it updated over time. Web developers use various programming languages, such as HTML, CSS, and JavaScript, to build websites that are user-friendly and responsive on different devices. In simpler terms, web development is about bringing ideas to life on the internet, making them accessible to users and enabling interaction with digital content.

Website:

A website is a collection of web pages hosted on the internet. It serves as an online destination where users can access information, interact with content, or conduct transactions. Websites are typically accessed through web browsers and can contain various elements such as text, images, videos, and interactive features. They are often used by businesses, organizations, and individuals to share information, promote products or services, or connect with audiences. In simpler terms, a website is like a digital storefront or platform where users can visit to find and engage with content or services online.

Web Page:

A web page is a single document or file displayed on a web browser. It contains content such as text, images, videos, and interactive elements arranged in a specific layout. Web pages are accessed by users through the internet and are often interconnected through hyperlinks, allowing users to navigate between different pages. They can serve various purposes, including providing information, displaying products or services, or facilitating online interactions. In simpler terms, a web page is like a digital document that you view on your computer or mobile device when you visit a website.

HTML (Hypertext Markup Language):

By utilizing a system of markup tags, HTML enables web developers to define various elements within a webpage, including headings, paragraphs, images, links, forms, and more. Each HTML tag represents a specific element or component of the webpage, with attributes that further specify its behavior or appearance. These tags are interpreted by web browsers, allowing them to render the content in a visually coherent manner for users to view and interact with.

CSS(Cascading Style Sheets):

CSS is a style sheet language used to control the presentation and layout of web pages. It works alongside HTML to define the appearance of elements on a webpage, such as colors, fonts, spacing, and positioning. By separating the content from its visual presentation, CSS allows web developers to create consistent and visually appealing designs across multiple pages or even

entire websites.CSS uses selectors to target specific HTML elements and apply styling rules to them. These rules can include properties such as color, font size, background image, and more. Additionally, CSS supports various techniques such as inheritance, cascading, and specificity to manage the styling hierarchy and ensure that styles are applied correctly.

PHP:

PHP, which stands for Hypertext Preprocessor, is a server-side scripting language used for web development. It is primarily used to create dynamic web pages and web applications by processing data on the server before sending it to the client's web browser. PHP is embedded within HTML code and can interact with databases, manipulate files, and perform various other tasks to generate dynamic content. [2] PHP is commonly used in conjunction with databases like MySQL to create dynamic websites with features such as user authentication, content management systems, e-commerce platforms, and more. It is an open-source language, widely supported by web servers and platforms, making it a popular choice for web development projects of all sizes.

JavaScript:

JavaScript is a versatile programming language commonly used for web development. It allows developers to add interactivity, functionality, and dynamic behavior to websites. Unlike HTML and CSS, which primarily deal with the structure and presentation of web pages, JavaScript enables developers to manipulate the content of web pages in real-time and respond to user interactions. JavaScript can be used to create interactive features such as dropdown menus, form validation, image sliders, and animations. It also allows for client-side scripting, meaning that code is executed on the user's device rather than on the server, resulting in faster and more responsive web applications. In addition to client-side scripting, JavaScript can also be used for server-side scripting using platforms like Node.js.This allows developers to write JavaScript code that runs on the server, enabling them to build full-stack web applications using a single programming language.

Bootstrap:

Bootstrap is a popular front-end framework for building responsive and mobile-first websites and web applications. It provides a collection of pre-designed HTML, CSS, and JavaScript components, as well as customizable templates and themes, to help developers create sleek and modern user interfaces with minimal effort. With Bootstrap, developers can quickly create responsive layouts that automatically adapt to different screen sizes and devices, ensuring a consistent and user-friendly experience across desktops, tablets, and smartphones.

2.2. Related Works

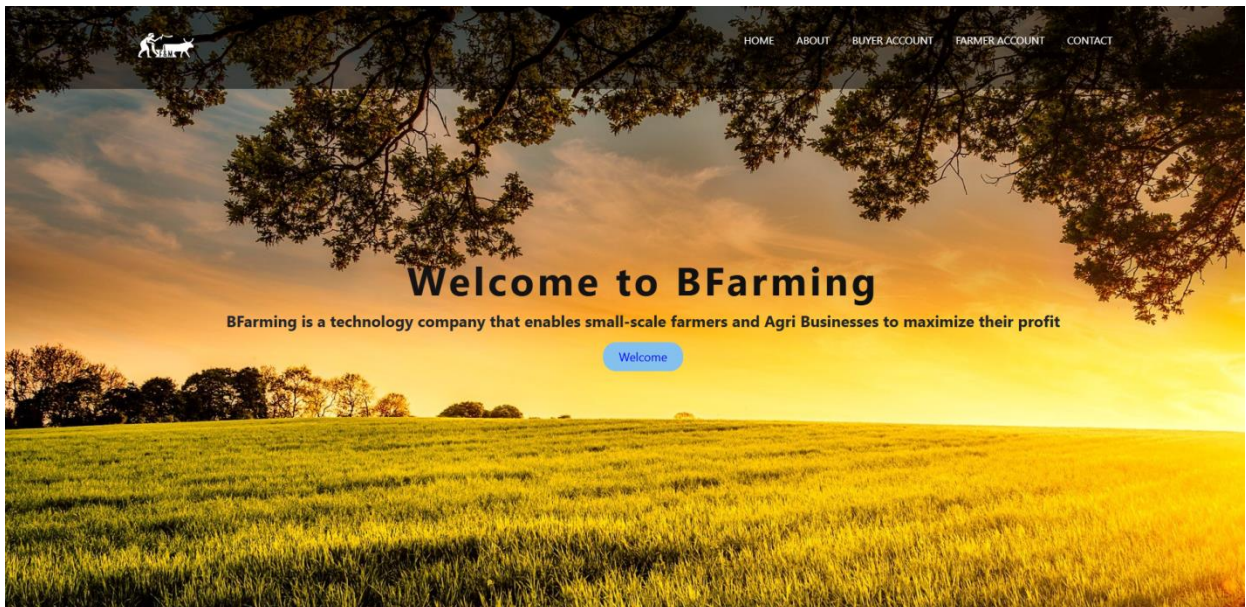


Figure2.2.1: Bfarming Website's Homepage

B-farming the website for online crops booking system. The website has the feature of finding fresh crops locating in Chittagong, Dhaka and whole Bangladesh. User has the access to view the all available crop list. A section for crop owner where a crop owner can list their crop and enlarge their business. But the limitation of this website makes user aversion. The system doesn't have any extra payment system and no option to book a crop. The Design of the system is not eye catching. The management system of the website does fulfill the user demand.

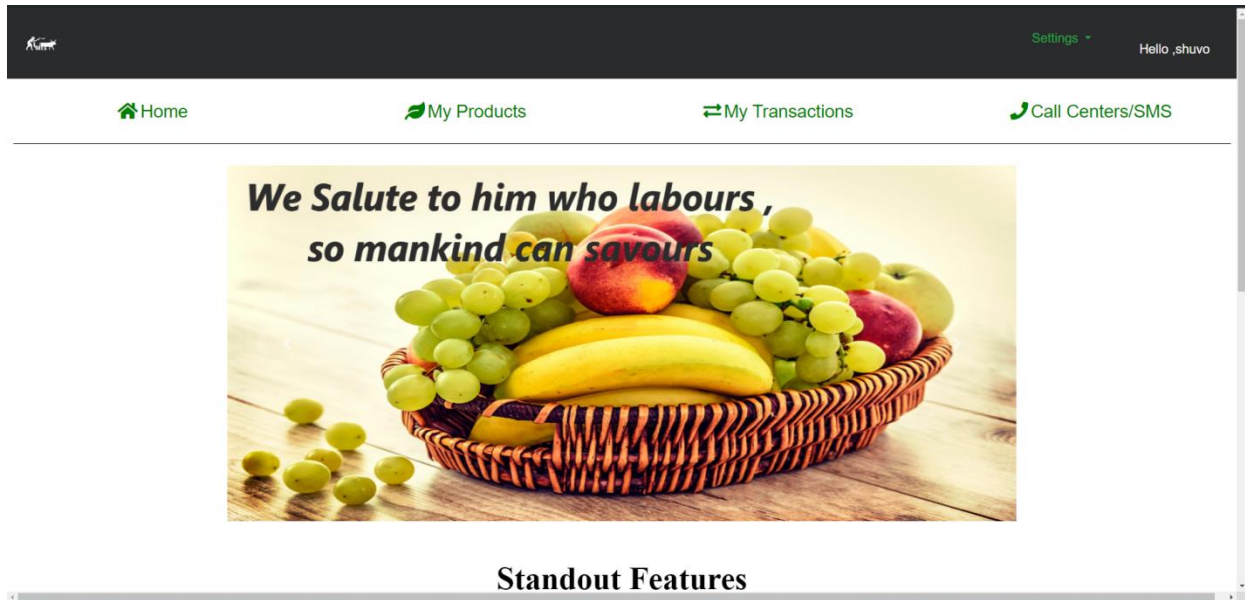


Figure2.2.2:Bfarming Website's Farmer Homepage

For the farmer crops the website for Bfarming system. Homepage of the website has about menu and gallery menu where about page contains with information of the website. The website has links like Crops Promotion, Easy Crop Booking but the program doesn't able to fulfill user demand. From the UI design of the website is unorganized and user experience is quite difficult. Limitation of the website make user aversion. The system doesn't have any extra payment and no option to book crop. No schedule management is available in the website.

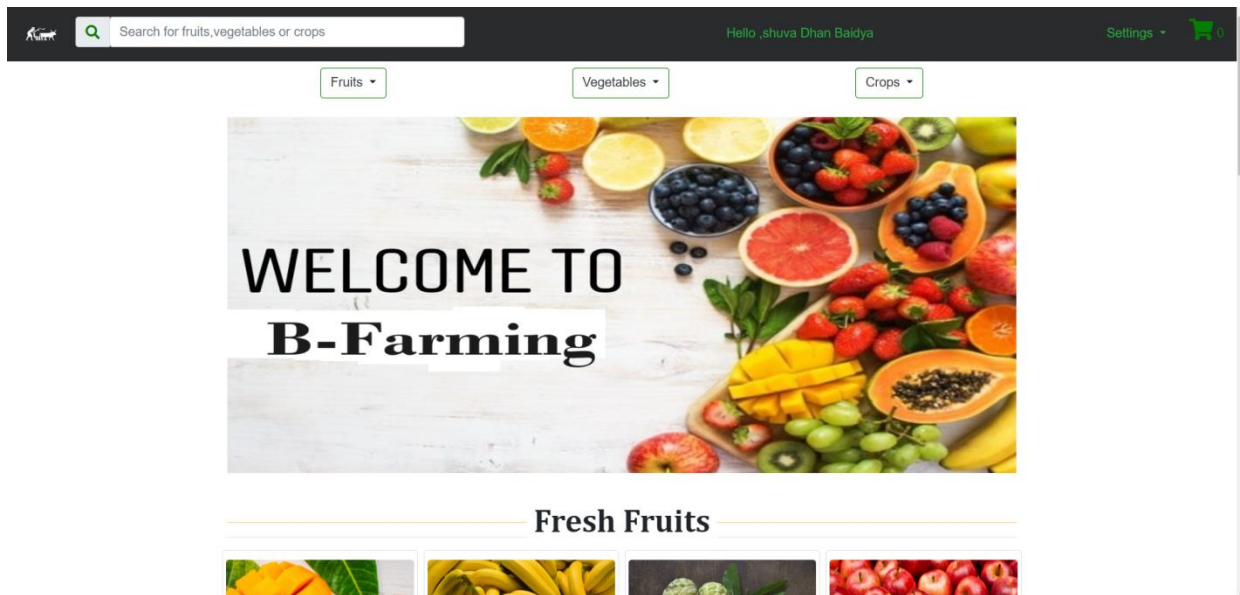


Figure2.2.3:Bfarming Website's Buyer Homepage

2.3 Comparative Analysis

Upon reviewing existing bfarming systems and evaluating their strengths and weaknesses, our proposed system emerges as a comprehensive solution designed to overcome common limitations while prioritizing user experience and efficiency.

❖ Existing Systems:

- **Limited Features:** Previous systems have been criticized for lacking essential functionalities such as online payment options and crop booking capabilities, hindering user convenience and satisfaction.
- **Design Issues:** The user interfaces of existing systems often fall short in terms of visual appeal and ease of navigation, resulting in suboptimal user engagement and adoption rates.
- **Management Challenges:** Management systems in place have been deemed inadequate, failing to meet the evolving demands and expectations of users for efficient crop reservation processes and experiences.

❖ Our Proposed System:

- **Direct Booking:** Users can easily book different crop directly through our website,streamlining the reservation process.
- **Area-Based Search:** Our system enables users to find crop facilities based on city and area, ensuring accessibility and convenience.
- **Real-Time Availability:** Live updates on crop availability reduce uncertainties and enhance planning for agriculture enthusiasts.
- **User-Friendly Interface:** With an intuitive design, our website offers easy navigation and a seamless booking experience.
- **Online Payment System:** Secure online payment options are integrated for convenient and efficient transactions.
- **Events/Discount Features:** Additional features such as events and discounts enhance user engagement and satisfaction, providing added value to our system.

2.4 Scope of the Problem

The problem is that current farming systems have issues that make it hard for users to reserve spots easily. Here are the main problems:

- ❖ **Missing Important Features:** Many systems don't have key features like paying online,booking crops, or showing real-time availability. This makes it inconvenient for users and can be frustrating.
- ❖ **Complex to Use:** The way current systems look and work isn't great. They're not attractive, they're complicated, and they're difficult to use, which means people don't like using them.
- ❖ **Management:** The systems in place for managing bookings aren't good enough. They don't keep up with what users need, which leads to delays and problems with booking crop.
- ❖ **Limited Access:** Some systems only let you book crops in certain areas, or they don't let you search for crops nearby. This makes it harder for people to find and book cropspots.

❖ To fix these problems, we need to make a new farming system. It should have all the important features, be easy to use, and have better management. This will make it easier and more enjoyable for people to book crops.

2.5 Challenges

Challenges is a part of new journey, innovation, and in everything. When anyone try to invent, create, or do something, they face many challenges. Our project is no different. We have to overcome various hurdles, whether they're about what's right or wrong or about how things work. Challenges that we can faced is listed.

- **Technological Integration:** Integrating essential features such as online payment options and real-time availability updates into the farming system may pose technical challenges, requiring robust software development and testing procedures.
- **User Adoption:** Adopting the new farming system may be challenging, especially if they are accustomed to existing platforms. Effective communication and marketing strategies may be required to promote awareness users to switch to the new system.
- **User Experience Design:** Designing a user-friendly interface that easy to use diverse needs and preferences of users ensuring of navigation and accessibility presents a significant challenge. Iterative testing and feedback collection may be necessary to refine the user experience design.
- **Data Management and Security:** Managing sensitive user data, including payment information and personal details, requires robust data management practices and stringent security measures to safeguard against potential breaches or unauthorized access.
- **Scalability:** Ensuring that the farming system can handle a growing user base and increased demand for turf reservations without sacrificing performance or reliability poses a scalability challenge. Scalability testing and infrastructure optimization may be necessary to adapt future growth.

- **Stakeholder Collaboration:** Collaborating with crop owners, managers, and other stakeholders to onboard them onto the new system and address their specific needs and requirements presents a logistical challenge.
- **Regulatory Compliance:** Ensuring compliance with relevant regulations and legal requirements, such as data protection laws and industry standards, poses a challenge. Thorough legal analysis and compliance measures may be required to mitigate legal risks and ensure adherence to applicable regulations.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

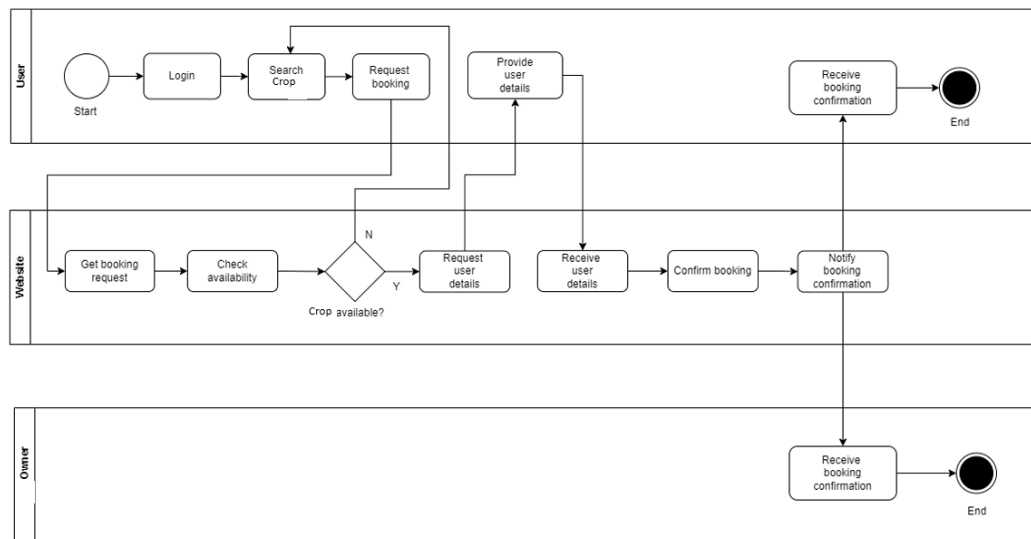


Figure: 3.1 Business Process Modeling

Business process modeling gives organizations a simple way to understand and optimize workflows by creating data-driven visual representations of key business processes. In this business process model it simplify understanding for bfarming management system. A user must need login to book crops. User login the system after user can search a crop near him/her. After that user request for a reservation and the system take the response and find the crop is available. If the crops are available then it response user information for reservation . In this stage user provides the credential information to the system. The system got the user information and proceed the next stage named “received user details”. After getting the use

details the system confirm the booking and notify the User and crop manager to Booking is Confirmed. Admin also get notified.

3.2 Requirement Collection and Analysis

TABLE 3.2: REQUIREMENT COLLECTION AND ANALYSIS

SL No.	Requirement Name	Analysis of required
1	User Login	In this system User must be login
2	User Registration	This system allows a User to create account. User can register account providing user details.
3	User Profile	In this system allows a User to edit his/her name and other details.
4	User Booking	In this system contains User booking process.
5	History	In this system it records all kinds of booking history, payment history, booking date.
6	Crop Manager	In this system allows Crop Manager to view booking, user profile, payment history.
7	Admin	This system allows Admin to view User and Turf Manager and manipulate data, System Analysis.

3.3 Use Case Modeling and Description

Use Case Modeling and Description



Figure:3.3 Use Case Modeling

Above figure represents Use Case Diagram of the project and is a useful technique for identifying, clarifying, and organizing system requirements. It describes how a user uses a system to accomplish a particular goal. Use cases help ensure that the correct system is developed by capturing the requirements from the user's point of view.

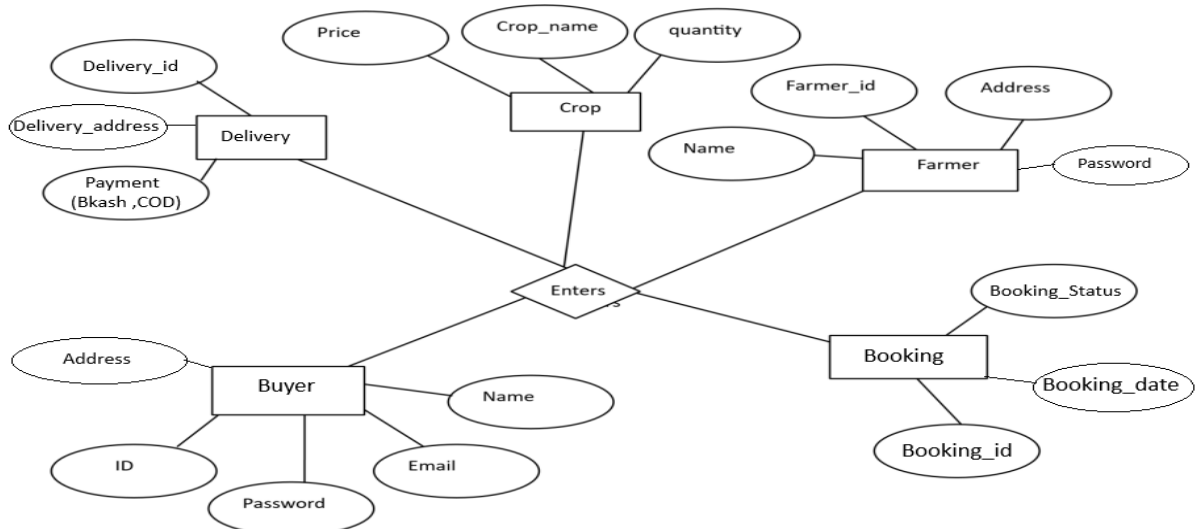


Figure:3.4 ER Diagram

3.4 Logical Data Model

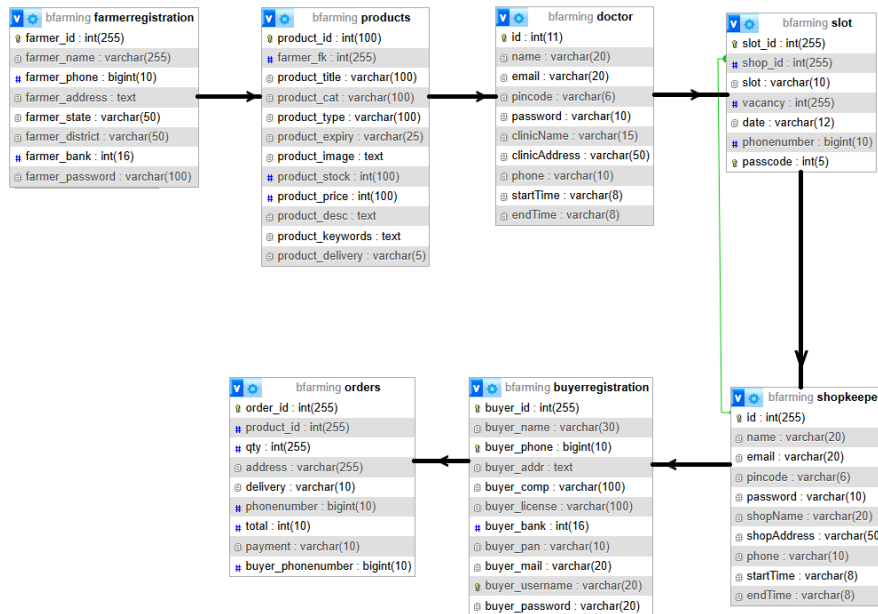


Figure: 3.5 Logical Data Model

Logical Data Model diagram show all the relationships between entity sets stored in the database. It illustrates the logical structure of the database. It helps to visualize how data is connected in general ways. A logical data model establishes the structure of data elements and the relationships among them. The farming system has a logical data representation model. It consists of 5 table named user, admin, crop_manager, crops and booking.

User has a user_id that is unique and auto incremented. It is the primary key of the user table and the type is “integer”. It also contains user_name type is “varchar”, email of the user, the type is “varchar”. Email type is “varchar”, password for “varchar” and created at for “timestamp”. Admin table has admin_id type for “integer” and auto incremented. admin_name type for “varchar”, email for “varchar”, phone for “varchar”, admin_password for “varchar”. Turf owner table has column manager_id, manager_name, email, phone, m_password, created_at.

There are different data types in database system.

- Varchar: Way to store text or words in a database.
- Timestamp: Way to save the date and time.
- Integer: It's a whole number, like 1, 2, 3, etc. It's used to store numbers without any decimal points.
- Boolean: It's a type of data that can have only two values: Yes or No.

3.5 Design Requirement

PHP:

PHP is a coding language used to build websites, while a farming management system is an online tool for booking crops. PHP helps create dynamic and interactive web pages, making it easier for developers to build features like online booking systems. A farming management system is needed to simplify the process of reserving crops. It made easier to phone calls, allowing users to easily check crops availability, book crops, and receive automated reminders. For crops owner, it helps optimize crop usage, ensuring maximum revenue. Overall, PHP enables the creation of user-friendly online platforms, while a farming system improves convenience for both users and admin, making it easier to manage crop management efficiently.

JavaScript:

JavaScript is a programming language used to add interactivity and functionality to websites. It's like brain behind web pages, making them dynamic and responsive. With JavaScript, developers can create features like pop-up windows, interactive forms, and real-time updates without needing to reload the entire page. For a farming management system, JavaScript plays a big role in creating a smooth and user-friendly experience. It allows developers to build attractive calendars where users can select dates and times for booking crops. It enables real-time validation of booking forms, ensuring that users enter correct information before submitting their requests.

HTML:

HTML stands for Hyper Text Markup Language. It is the standard language used to create web pages. HTML like the skeleton of a webpage, providing the structure and content . It uses elements, such as headings, paragraphs, images, and links, to organize and display information. For a turf booking management system, HTML is used to create the layout and structure of the booking page. It defines elements like forms for entering booking details, buttons for submitting requests, and tables for displaying available different crops. HTML also incorporates other elements like images or logos to enhance the visual appeal of the page.

CSS:

CSS, short for Cascading Style Sheets, is a language used to control the visual presentation of web pages written in HTML. It's like the stylist for a webpage, determining how elements on the page look and are displayed. In the context of a farming management system, CSS makes the booking page visually appealing and user-friendly. It allows developers to customize the appearance of elements like buttons, forms, and tables, making them easy to understand and interact with. CSS has properties such as colors, fonts, spacing, and layout, ensuring consistency and across the entire booking system.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

"Bfarming: A Web-Based Application" features a front-end design that prioritizes a modern, user-friendly interface. The application employs responsive design principles to ensure a smooth experience across various devices and screen sizes. The user interface (UI) is structured intuitively to facilitate easy navigation and quick access to key functions, such as crop booking, schedule management, and personalized user profiles. Visual elements like call-to-action buttons and interactive calendars enhance user engagement. The design emphasizes accessibility, usability, and aesthetics to ensure a positive and efficient user experience. By focusing on these aspects, the front-end design aims to provide users with a seamless and enjoyable interaction with the application.

4.2 Back-end Design

"Bfarming: A Web-Based Application" utilizes a robust back-end architecture built on the PHP, which is facilitated by Composer for package management and PHP Artisan as a command-line tool for efficient development. PHP, a powerful framework, simplifies the creation of secure and scalable applications. Its Model View-Controller (MVC) architecture and modular design enable seamless integration of various functionalities, ensuring a cohesive and efficient system. Composer, a PHP dependency manager, streamlines the installation and maintenance of project-specific packages, fostering an effective development workflow. These tools collectively enhance the development process, ensuring that the Bfarming application is both reliable and maintainable.

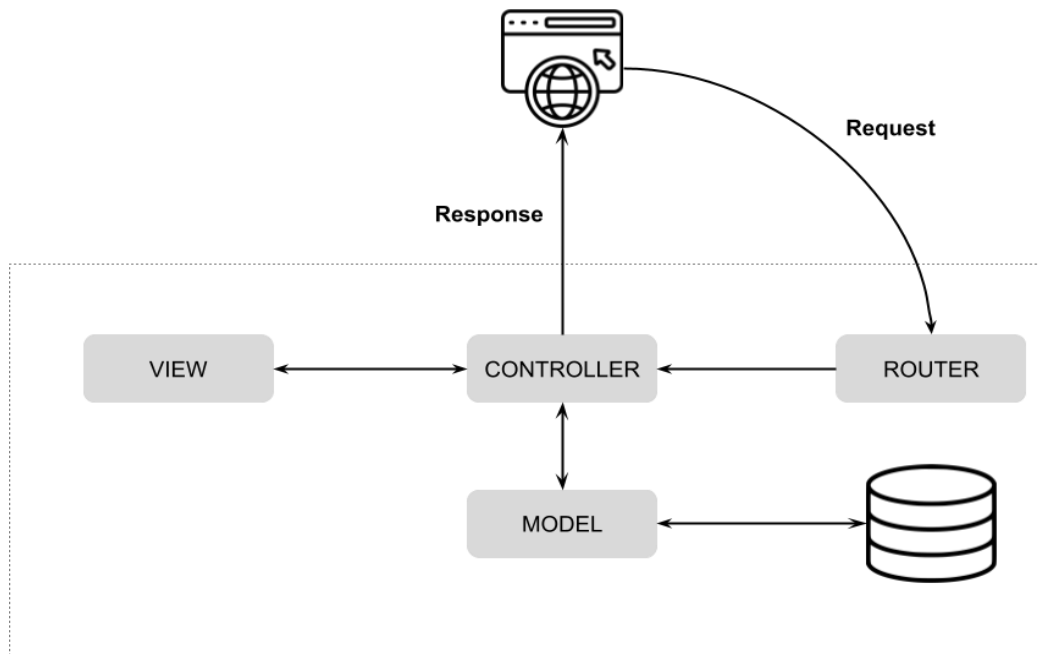


Figure:4.1 MVC Architecture

The MVC pattern in php promotes a clean separation between the application's components, making the code more manageable and scalable. It also enhances reusability, as components like models, views, and controllers can be reused across different parts of the application. This separation simplifies testing, allowing individual components to be tested independently, resulting in a more robust and reliable application.

Moreover, php integration with Composer and PHP Artisan streamlines the development process. Composer handles dependencies and package management, ensuring the application uses up-to-date and stable libraries. PHP Artisan offers a suite of commandline tools that automate common development tasks, such as database migrations and scaffolding, further enhancing productivity.

By leveraging php MVC architecture, the Bfarming application ensures a clear separation of concerns, promotes code reusability, and facilitates efficient development workflows. This robust back-end design is crucial for delivering a secure, scalable, and maintainable application.

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4.3 Interaction Design and User Experience (UX)

The interaction design and user experience (UX) for "Bfarming: A Web-Based Application" focus on optimizing user interactions and ensuring a smooth, intuitive experience across the platform.

Interaction Design:

- ❖ Intuitive Navigation allows users to effortlessly move between different features and sections of the application.
- ❖ Streamlined Booking Process a straightforward and streamlined booking process, guiding users through each step with clear instructions and prompts.
- ❖ Visual Feedback and Responsiveness: Provide visual cues and feedback to acknowledge user actions, such as form submissions, booking confirmations, or loading indicators. This will help users understand the system's response and maintain a sense of control over the application.
- ❖ Search and filtering capabilities to help users quickly find and book their desired crops based on various criteria such as location, fresh type, availability, price range, and amenities.

- ❖ User Accounts and Profiles Allow users to create personal accounts and profiles, enabling them to manage their bookings, preferences, and payment methods in a centralized location.
- ❖ Multi-Device Compatibility Ensure that the application is designed with a responsive and adaptive approach, providing a consistent and optimized experience across various devices, including desktops, tablets, and mobile phones.

User Experience (UX):

- ❖ Personalization: Offer personalized features, settings, and recommendations to enhance user engagement and cater to individual preferences.
- ❖ Accessibility Design: Ensure that the application adheres to accessibility guidelines and standards, enabling users with disabilities to navigate and interact with the platform seamlessly.
- ❖ Usability Testing and Iterative Improvements: Regular usability testing sessions to identify potential pain points, usability issues, or areas for improvement within the application.
- ❖ Visual Appeal and Aesthetics: Implement a visually appealing and modern design that prioritizes readability, clarity, and an aesthetically pleasing interface. Incorporate high quality imagery, appropriate use of color, and thoughtful typography to enhance the overall user experience.
- ❖ Performance Optimization: Optimized the application's performance and loading times to ensure a smooth and responsive experience across various devices and network conditions.
- ❖ User Feedback and Support: Provide multiple channels for users to submit feedback, report issues, or seek assistance, such as in-app messaging, email support, or a dedicated help center.
- ❖ Secure Payment Gateways and Data measures are in place to safeguard users' personal and financial information, fostering trust and confidence in the application.

4.4 Implementation Requirements

❖ Front End Technologies

- HTML
- CSS
- Tailwind CSS
- Bootstrap
- JQuery

❖ Back End Technologies

- PHP
- JavaScript
- MySQL
- Maria DB

❖ Tools

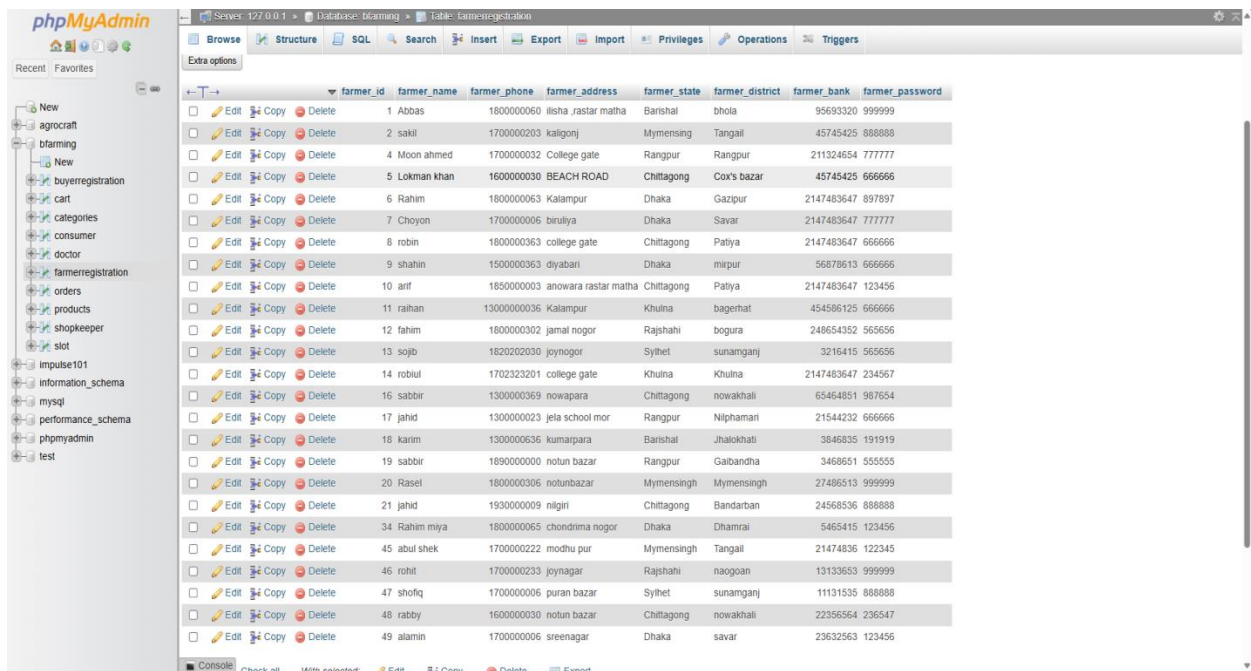
- Table Plus
- Composer
- Web Browser
- Visual Studio Code Studio (IDE)
- Node JS

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

In the Bfarming system, the data is organized and stored across multipletables, each serving a specific purpose to facilitate the functionalities of the application. These tables primarily include the User Data table, Booking Data table, and Payments table.



The screenshot displays the phpMyAdmin interface for a database named 'bfarming'. The 'farmerregistration' table is selected, showing its structure and a list of 49 records. The table has the following columns: farmer_id, farmer_name, farmer_phone, farmer_address, farmer_state, farmer_district, farmer_bank, and farmer_password. The records are numbered 1 through 49, each with corresponding data for these fields.

farmer_id	farmer_name	farmer_phone	farmer_address	farmer_state	farmer_district	farmer_bank	farmer_password
1	Abbas	1800000060	ilisha_rastar matha	Barishal	bhola	95693320	999999
2	sakil	1700000203	kaligonj	Mymensing	Tangail	45745425	888888
4	Moon ahmed	1700000032	College gate	Rangpur	Rangpur	211324654	777777
5	Lokman khan	1600000030	BEACH ROAD	Chittagong	Cox's bazar	45745425	666666
6	Rahim	1800000063	Katampur	Dhaka	Gazipur	2147483647	897897
7	Choyon	1700000006	biruliya	Dhaka	Savar	2147483647	777777
8	robin	1800000363	college gate	Chittagong	Patiya	2147483647	666666
9	shahin	1500000363	diyabari	Dhaka	mirpur	56878613	666666
10	arif	1850000003	anowara rastar matha	Chittagong	Patiya	2147483647	123456
11	raihan	13000000036	Katampur	Khulna	bagerhat	454586125	666666
12	fahim	1800000302	jamal nogor	Rajshahi	bogura	248654352	565656
13	sojb	1820202030	joynogor	Syhet	sunamganj	3216415	565656
14	robiul	1702323201	college gate	Khulna	Khulna	2147483647	234567
16	sabbir	1300000369	nowapara	Chittagong	nowakhali	65464851	987654
17	jahid	1300000023	jela school mor	Rangpur	Nilphamari	21544232	666666
18	karim	1300000636	kumarpara	Barishal	Jhalokhati	3846835	191919
19	sabbir	1890000000	notun bazar	Rangpur	Gaibandha	3468651	555555
20	Rasel	1800000306	notunbazar	Mymensingh	Mymensingh	27486513	999999
21	jahid	1930000009	nigiri	Chittagong	Bandarban	24568536	888888
34	Rahim miya	1800000065	chondima nogor	Dhaka	Dhamrai	5465415	123456
45	abul shek	1700000222	modhu pur	Mymensingh	Tangail	21474836	122345
46	rohit	1700000233	joynagar	Rajshahi	naogaon	13133653	999999
47	shofiq	1700000006	puran bazar	Syhet	sunamganj	11131535	888888
48	rabby	1600000030	notun bazar	Chittagong	nowakhali	22356564	236547
49	alamin	1700000006	sreenagar	Dhaka	savar	23632563	123456

Figure:5.1 Database Architecture

5.2 Implementation of Front-end Design

Landing Page:

The front-end design of "Bfarming: A Web-Based Application" focuses on creating an intuitive and responsive interface. This ensures easy navigation, personalized farming experiences, and efficient management of reservations for users.

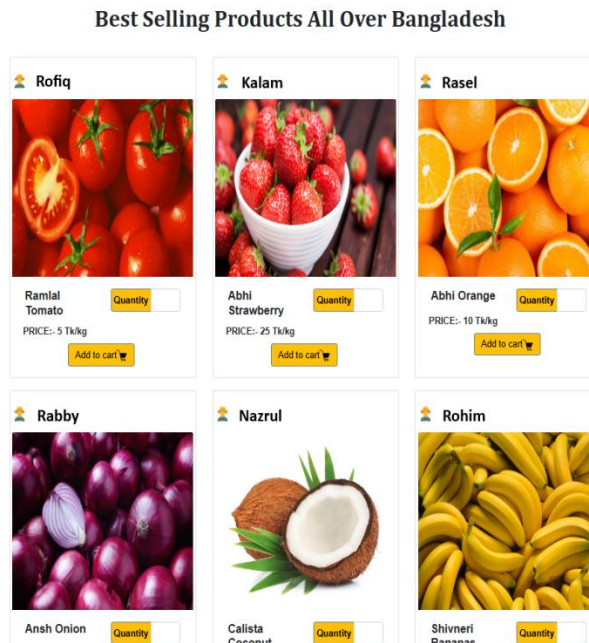


Figure:5.2.1 Selling Page Design

Booking Page: The Booking Page in the "Bfarming: A Web-Based Application" is designed to provide users with a seamless and intuitive experience when reserving turf facilities. This page integrates various functionalities to ensure that users can easily find, book, and manage their reservations.

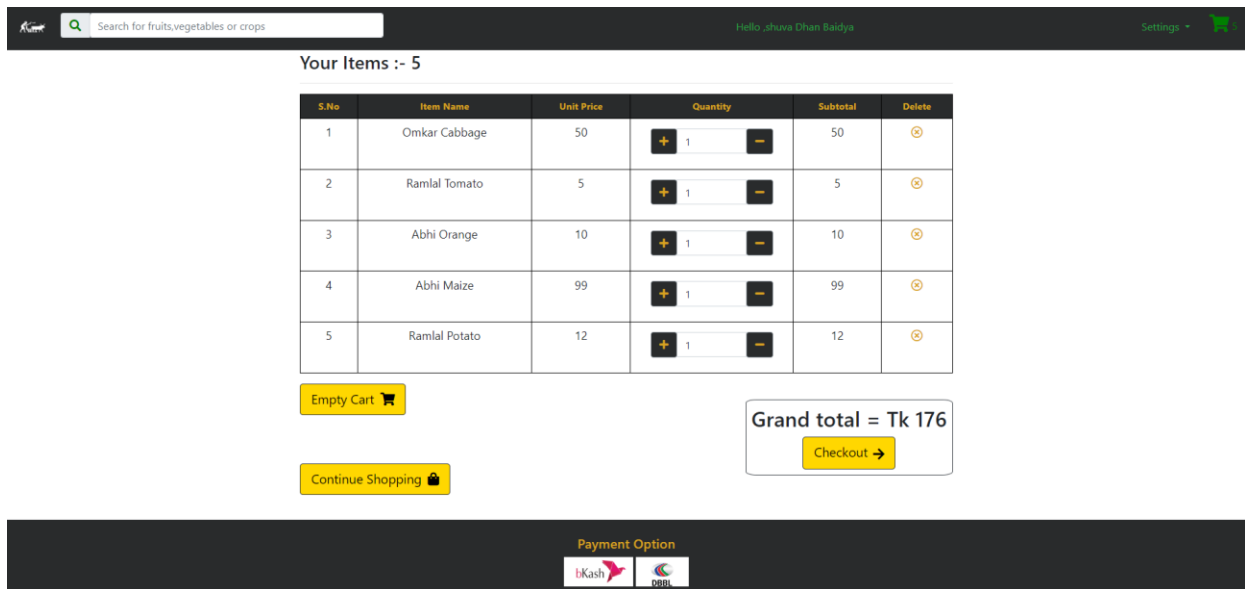


Figure:5.2.2Booking Page Design

Bfarming Dashboard:

The Bfarming Dashboard in the "Bfarming: A Web-Based Application" provides administrators with comprehensive control over crop operations. This intuitive and responsive interface allows for easy navigation and efficient management of bookings, users, payments, and maintenance schedules. Administrators can view and modify bookings through a consolidated calendar view, with options to edit, approve, or cancel reservations while notifying users of any changes. The dashboard also offers detailed user profiles, allowing managers to update information and communicate directly with users via integrated messaging systems.

Bfarming management is streamlined with features to add, update, or remove crops, and schedule maintenance activities. Payment management is facilitated by viewing all transactions and generating financial reports to monitor income and outstanding payments. The dashboard includes robust analytics and reporting tools, providing usage statistics and user engagement insights. Real-time alerts and scheduled reports keep administrators informed of critical events and key metrics. Analytics provide insights into booking patterns and user engagement, aiding in data-driven decisions. The responsive design ensures usability across devices, while real-time alerts keep administrators informed of critical events.

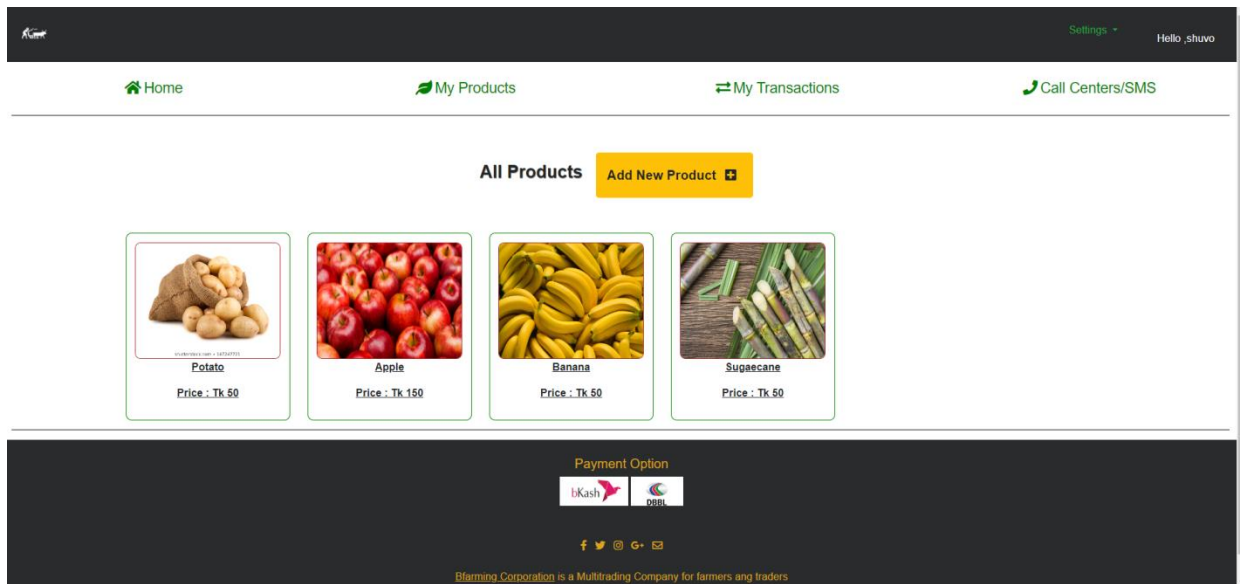


Figure:5.2.3Add New Product Page Design

5.3 Testing Implementation

To ensure the reliability, functionality, and quality of the "Bfarming System," we have implemented a comprehensive testing strategy encompassing various testing types and techniques throughout the development process.

Unit Testing:

- ❖ Written and executed unit tests for individual components and modules of the system, such as the booking logic, payment gateway integration, and user authentication.
- ❖ These tests validate the correctness of each unit's functionality and behavior in isolation.
- ❖ Followed test-driven development (TDD) practices, where tests are written before the actual code implementation.

Integration Testing:

- ❖ Integration tests have been conducted to ensure the proper integration and communication between different components and subsystems of the "Bfaarming."

- ❖ These tests verify that the various components work seamlessly together, such as the booking system interacting with the turf management module and the notification system.

Functional Testing:

- ❖ We have performed functional tests to validate the system's compliance with specified requirements and expected behaviors.

- ❖ Test cases were designed to cover various user scenarios, including crop booking, payment processing, user account management, and administrative functions.

- ❖ Cross-browser and cross-device compatibility testing has been conducted to ensure consistent functionality across different platforms and devices.

Usability Testing:

- ❖ Usability tests have been carried out with a representative sample of end-users to evaluate the system's user experience (UX) and user interface (UI) design.

- ❖ Feedback from these tests has been used to identify and address usability issues, improving the overall user experience and satisfaction.

Performance Testing:

- ❖ We have conducted performance tests to assess the system's responsiveness, scalability, and robustness under various load conditions.

- ❖ These tests simulated real-world scenarios with different levels of user traffic and concurrent bookings to identify and resolve any performance bottlenecks.

Security Testing:

❖ Security tests have been performed to identify and mitigate potential vulnerabilities and security risks within the system.

These tests included penetration testing, vulnerability scanning, and compliance checks against industry-standard security best practices and regulations.

5.4 Test Results and Reports

The testing phase for "Bfarming: A Web-Based Application" yielded comprehensive results, ensuring the application's reliability and user satisfaction. The unit tests demonstrated a high pass rate, identifying and resolving minor issues related to isolated functions. Integration tests revealed some data flow inconsistencies, which were promptly corrected, resulting in successful component integration. System testing uncovered a few workflow issues, particularly in booking modifications and payment processing, all of which were fixed to ensure smooth operation.

User acceptance testing (UAT) received positive feedback, although some usability improvements were suggested. These were incorporated into the design to enhance user experience. Performance testing showed the application could handle up to 500 concurrent users with an average response time of 1.2 seconds, and optimizations were made to support up to 1,000 users. Security testing found no major vulnerabilities, with minor issues addressed to strengthen security measures.

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Society

The "Bfarming: A Web-Based Application" has the potential to make a significant positive impact on society by revolutionizing the way crop facilities are managed and accessed. Here's how:

- ❖ **Increased Accessibility:** By providing a centralized platform for booking crops facilities, the application makes it easier for individuals and groups to access and utilize these spaces. This increased accessibility encourages more people to engage in fresh crops, promoting a healthier lifestyle and overall well-being.
- ❖ **Optimized Resource Utilization:** Efficient management of crop facilities through the application ensures optimal use of resources such as time, space, and manpower. This leads to reduced wastage and better allocation of resources, benefiting both facility managers and users.
- ❖ **Community Engagement:** The application fosters community engagement by bringing together individuals and groups with shared interests in field and recreational activities. It provides a platform for networking, collaboration, and social interaction, strengthening community bonds and cohesion.
- ❖ **Support for Local Businesses:** Crop facilities managed through the application often belong to local businesses or organizations. By increasing their visibility and accessibility, the application can help boost their revenue and support their growth, contributing to the local economy.
- ❖ **Environmental Sustainability:** By streamlining crop bookings and reducing the need for paper-based processes, the application contributes to environmental sustainability. It helps minimize paper waste and carbon emissions associated with manual booking systems, aligning with broader efforts to protect the environment.

- ❖ **Empowerment of Sports Enthusiasts:** The application empowers sports enthusiasts by providing them with a convenient platform to book crop facilities and organize their activities. It puts control in the hands of users, allowing them to plan and manage their working events more efficiently.
- ❖ **Educational Opportunities:** Crop facilities booked through the application can also serve as venues for educational and training activities. Schools, colleges, and community organizations can utilize these spaces for Bangladesh farming programs, workshops, and other educational initiatives, enhancing learning opportunities for individuals of all ages.

6.2 Impact on Environment

The implementation of the "Bfarming: A Web-Based Application" can have a significant positive impact on the environment through various means:

- ❖ **Reduced Paper Consumption:** By digitizing the booking process, the application eliminates the need for paper-based booking forms and receipts. This reduction in paper consumption helps conserve trees and reduces the environmental footprint associated with paper production and waste disposal.
- ❖ **Minimized Transportation Emissions:** The application allows users to efficiently book crop facilities, reducing the need for unnecessary travel to inquire about availability or make bookings in person. This leads to a decrease in transportation emissions, contributing to improved air quality and reduced carbon footprint.
- ❖ **Optimized Resource Utilization:** Through efficient management of crop facilities, the application helps optimize the use of resources such as water, electricity, and maintenance materials. By scheduling bookings effectively and avoiding overuse, the application minimizes resource wastage and promotes sustainable resource management practices.

- ❖ **Promotion of Green Spaces:** By facilitating access to crop facilities for works and recreational activities, the application encourages outdoor shops crops and promotes the use of green spaces. This contributes to the preservation and maintenance of natural environments, enhancing biodiversity and ecosystem health.
- ❖ **Support for Sustainable Practices:** Crop facilities managed through the application can adopt sustainable practices such as using eco-friendly crop materials, implementing water-saving irrigation systems, and incorporating renewable energy sources. The application can promote and incentivize these sustainable initiatives, further reducing environmental impact.
- ❖ **Education and Awareness:** The application can serve as a platform for raising awareness about environmental issues and promoting eco-friendly behaviors among users. By integrating educational resources and promoting sustainable practices, the application can inspire users to adopt more environmentally conscious lifestyles.
- ❖ **Data-Driven Insights:** The application can collect data on crops usage patterns, resource consumption, and environmental impact metrics. Analyzing this data can provide valuable insights into opportunities for further environmental improvement and guide decision-making to minimize environmental footprint.

6.3 Ethical Aspects

The implementation of the "Bfarming: A Web-Based Application" raises several ethical considerations that need to be addressed to ensure fair, transparent, and responsible use of the platform:

- ❖ **User Privacy:** The application must prioritize the protection of user privacy by implementing robust data protection measures. This includes obtaining informed consent for data collection, usage, and sharing, as well as ensuring secure storage and handling of user information to prevent unauthorized access or misuse.
- ❖ **Data Security:** It is essential to safeguard sensitive data such as personal information, payment details, and booking history from security breaches or cyberattacks. This requires

implementing encryption, access controls, and regular security audits to maintain the integrity and confidentiality of user data.

❖ **Fair Access:** The application should ensure fair and equal access to crop facilities for all users, regardless of their background, socioeconomic status, or affiliations. This includes implementing transparent booking procedures, preventing discrimination or preferential treatment, and providing accessible options for users with disabilities.

❖ **Accuracy of Information:** The application must provide accurate and up-to-date information about crop facilities, including availability, pricing, and amenities. Misleading or inaccurate information can lead to user dissatisfaction and undermine trust in the platform.

❖ **Transparency in Algorithms:** If the application uses algorithms or automated decision making processes to allocate crop bookings or personalize recommendations, it must ensure transparency and accountability in how these algorithms operate. Users should have visibility into the factors influencing their bookings and be able to appeal decisions if necessary.

❖ **Responsible Use of User Data:** The application should only collect and use user data for legitimate purposes and with the user's consent. Data should not be shared with third parties without explicit consent, except in cases where required by law or for essential service provision.

❖ **Ethical Marketing Practices:** Marketing efforts should be conducted ethically, avoiding deceptive or manipulative tactics to attract users. Transparency about pricing, terms of service, and promotional offers is essential to maintain trust and integrity.

❖ **Community Engagement and Feedback:** The application should actively engage with users and stakeholders to gather feedback, address concerns, and incorporate suggestions for improvement. This fosters a culture of transparency, accountability, and responsiveness to user needs.

❖ **Environmental Responsibility:** The application should consider the environmental impact of its operations and take steps to minimize its carbon footprint. This includes adopting sustainable practices such as energy-efficient hosting, paperless operations, and eco-friendly initiatives.

❖ **Social Responsibility:** The application should demonstrate social responsibility by supporting community initiatives, promoting diversity and inclusion, and giving back to society through charitable contributions or partnerships with nonprofit organizations.

6.4 Sustainability Plan

To ensure the long-term sustainability and success of the "Bfarming: A Web-Based Application," a comprehensive sustainability plan is essential. This plan outlines strategies and initiatives to support the ongoing development, operation, and growth of the application while minimizing environmental impact and maximizing social and economic benefits. Here's a summary of key components of the sustainability plan:

❖ **Environmental Sustainability:**

- **Green Hosting:** Utilize hosting providers that prioritize renewable energy sources and energy-efficient infrastructure to minimize the carbon footprint of the application's servers.
- **Paperless Operations:** Implement paperless processes wherever possible, including digital booking forms, invoices, and receipts, to reduce paper consumption and waste.
- **Resource Optimization:** Continuously monitor and optimize resource usage, including server resources, database queries, and network bandwidth, to minimize energy consumption and maximize efficiency.
- **Sustainable Practices:** Encourage and incentivize turf facilities managed through the application to adopt sustainable practices such as water conservation, energy efficiency, and waste reduction.

❖ **Social Responsibility:**

- **Community Engagement:** Foster a sense of community among users by organizing events, tournaments, and educational programs that promote sportsmanship, teamwork, and physical activity.
- **Accessibility:** Ensure the application is accessible to users of all abilities by complying with accessibility standards and providing alternative formats for content where necessary.

- **Diversity and Inclusion:** Promote diversity and inclusion within the application's user base and staff, ensuring representation from diverse backgrounds and perspectives.
- **Partnerships with Nonprofits:** Collaborate with nonprofit organizations and community groups to support initiatives related to farming, health, education, and environmental conservation.

❖ Economic Viability:

- **Revenue Diversification:** Explore multiple revenue streams, such as subscription plans, premium features, and advertising partnerships, to ensure financial sustainability and reduce reliance on any single source of income.
- **Cost Optimization:** Continuously assess and optimize operational costs, including hosting fees, development expenses, and marketing budgets, to maintain profitability and maximize return on investment.
- **Long-Term Planning:** Develop a long-term financial plan that includes projections for revenue growth, expense management, and investment strategies to ensure the application's financial health and sustainability over time.

❖ Continuous Improvement:

- **Feedback Loop:** Establish a feedback mechanism to gather input from users, stakeholders, and staff on ways to improve the application's features, usability, and performance.
- **Agile Development:** Adopt agile development practices to iterate quickly, respond to changing market demands, and deliver new features and updates to users on a regular basis.
- **User-Centric Design:** Prioritize user needs and preferences in the application's design and development process, incorporating user feedback and usability testing to ensure a positive user experience.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 Discussion and Conclusion

The "Bfarming: A Web-Based Application" offers a comprehensive solution for booking and managing crop facilities, catering to the needs of works enthusiasts, facility managers, and community organizers alike. By providing a user-friendly interface, transparent booking procedures, and robust features such as real-time availability and payment integration, the application enhances accessibility, efficiency, and convenience for all users.

Furthermore, the application's adherence to ethical principles, environmental sustainability practices, and social responsibility initiatives underscores its commitment to creating a positive impact on society and the environment. Through continuous improvement, user feedback, and collaboration with stakeholders, the application is poised to evolve and adapt to changing needs and emerging challenges, ensuring its relevance and effectiveness in the long term.

In essence, the "Bfarming: A Web-Based Application" represents not only a technological innovation but also a catalyst for promoting fresh crops, community engagement, and environmental stewardship. With its multifaceted benefits and holistic approach to addressing societal needs, the application stands as a testament to the transformative power of technology in advancing the well-being of individuals and communities.

7.2 Scope for Further Developments

While the "Bfarming: A Web-Based Application" has achieved significant milestones in enhancing accessibility to crop facilities, there are several opportunities for further development and improvement to enhance its functionality, user experience, and impact. Here are some areas with potential for future enhancements:

❖ **Expand Payment Options:** Enhance the application's payment ecosystem by integrating diverse methods, including digital wallets and even cryptocurrency. Offering such versatility

ensures users can transact in ways most convenient for them, thereby enhancing user satisfaction and engagement.

- ❖ **Mobile Application Development:** Extend the application's accessibility by developing a mobile application counterpart. This move not only caters to users who prefer mobile devices but also opens avenues for push notifications, location-based services, and a more seamless user experience on-the-go.

- ❖ **Real-Time Communication Features:** Introduce chat or messaging functionalities within the platform to facilitate direct communication between users and facility managers. This fosters quicker query resolution, enhances customer support, and strengthens the overall user experience.

- ❖ **Referral Program Incentives:** Launch a referral program where users earn rewards or discounts for successfully referring new users to the platform. By leveraging users' networks, this initiative drives organic growth while rewarding existing users for their advocacy.

- ❖ **Premium Membership Tiers:** Introduce tiered membership plans with varying benefits, such as priority booking slots, exclusive discounts, or access to premium facilities. These tiers incentivize users to upgrade their memberships, driving revenue and loyalty.

- ❖ **Loyalty Rewards System:** Implement a loyalty program where users earn points or rewards based on their booking frequency and engagement with the platform. This not only encourages repeat bookings but also fosters a sense of loyalty and community.

- ❖ **Partnerships with farming company:** Forge partnerships with local farming companies and organizations to provide integrated registration and scheduling services. This collaboration streamlines processes for teams and organizers, driving user adoption and retention.

- ❖ **Enhanced User Interface:** Revamp the user interface with interactive elements like maps, calendars, and visualizations. This not only improves usability but also enhances the overall aesthetic appeal, contributing to a more engaging user experience.

- ❖ **Advanced Search and Filtering Options:** Upgrade the search functionality with advanced filters for users to narrow down their options based on location, amenities, availability, and price. This empowers users with more precise and relevant search results.
- ❖ **Comprehensive Reporting Dashboard:** Develop a robust reporting and analytics dashboard for facility managers to gain insights into usage patterns, revenue streams, and customer feedback. This data-driven approach facilitates informed decision making and operational optimization.
- ❖ **Automated Reminders and Notifications:** Implement automated reminders and notifications for upcoming bookings, payment deadlines, and promotional offers. This proactive communication keeps users informed and engaged, reducing no-shows and enhancing user satisfaction.
- ❖ **Integration with Retailers:** Partner with farming equipment manufacturers and retailers to offer integrated product sales and recommendations within the application. This additional service not only generates supplementary revenue but also adds value to users' experience.
- ❖ **Partnerships with Educational Institutions:** Collaborate with schools and educational institutions to provide special programs or discounted rates for student groups and youth organizations. This fosters community engagement and promotes youth involvement in sports.
- ❖ **Integration with Tracking Devices:** Integrate with tracking devices and apps, allowing users to sync their workout data and track their progress alongside their crop facility bookings. This holistic approach promotes fresh crops and wellness among users.
- ❖ **User Feedback Mechanism:** Establish a user feedback and suggestion system within the application to gather insights on new features, improvements, and development priorities. This user-centric approach ensures continuous refinement and enhancement of the platform based on user needs and preferences.

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Bfarming: A WEB BASED APPLICATION

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