



Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

Semester: (Spring Year: 2025), B.Sc. in CSE (Day)

PROJECT REPORT ON

Urban Green Haven: Transform Your Rooftop into Lush Paradise

Course Title: CSE 406

Course Code: Integrated Design Project -II

Section: 221-D10

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<u>Project Report Status</u>	
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URBAN GREEN HAVEN: TRANSFORM YOUR ROOFTOP INTO LUSH PARADISE

TEAM GREEN

May 20, 2025

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Chapter 1

Introduction

1.1 Overview

Urban Green Haven is an innovative web-based platform that encourages sustainable rooftop gardening in urban areas. The system integrates an online store, consultation booking, Q&A forum, blog resources, and admin dashboard — creating a central hub for green living. It simplifies garden management, fosters community interaction, and supports eco-conscious urban development.

1.2 Motivation

In urban landscapes like Dhaka, greenery is disappearing rapidly due to rapid urbanization. Rising temperatures, increased CO₂ emissions, and mental health decline are consequences. Rooftop gardening can counter these effects by transforming unused spaces into lush, vibrant ecosystems. This platform aims to promote eco-living by making rooftop gardening accessible, educational, and engaging.

1.3 Literature Review

Service	Key Features	Limitations
Green Savers	Rooftop garden setup, hydroponics	Focused more on selling, not knowledge sharing
BagaanBari	Plant packages and services	Lacks customization and engagement
Chitra Britto Haari	Home plant sales	No integration with consultations or user dashboard
Garden Center BD	Landscaping & gardening tools	No community features or Q&A system

1.4 Problem Domain

Most existing platforms focus on sales and lack education, interaction, and personalization. So the gap we identify:

- No centralized platform for rooftop gardening
- Lack of gardening knowledge among urban people
- No customized or expert assistance
- Fragmented online resources without community engagement

1.5 Objectives

- Build a one-stop solution for rooftop gardening
- Integrate shop, blog, consultation, and Q&A system
- Empower users through education, interaction, and tech
- Create a user-friendly interface for all devices
- Store and manage user and order data securely

1.6 Application

Urban households and rooftop owners are increasingly embracing green spaces, transforming rooftops into vibrant gardens that enhance aesthetics, promote biodiversity, and improve air quality. Gardening enthusiasts, both experienced and novice, actively cultivate plants, herbs, and vegetables, sharing their knowledge within their communities. Schools and community organizations are promoting environmental education through gardening programs, encouraging students to engage in hands-on activities that foster environmental responsibility. Environmental NGOs play a crucial role by providing resources and advocacy for urban green initiatives. Local nurseries and green product businesses are vital partners, supplying plants and materials while collaborating with schools and community groups to offer workshops. Together, these diverse stakeholders create a dynamic network that enriches urban living, promotes sustainability, and fosters community engagement through gardening.

Chapter 2

Implementation & Methodology

2.1 Tools & Technologies

- HTML, CSS, JavaScript
- PHP, MySQL
- XAMPP, VSCode
- Web Browser
- API for calendar

2.2 Model Selection

Criteria	Waterfall	V-Shaped	Iterative	Spiral	Agile	Prototype
Well-known Requirements (5)	YES	YES	NO	NO	YES	NO
Technological Knowledge (3)	YES	YES	YES	YES	YES	YES
Efficiency (6)	NO	YES	YES	YES	YES	YES
Risk Analysis (3)	NO	NO	NO	YES	YES	NO
User Testing Ability (5)	NO	NO	YES	YES	YES	YES
Dependability & Security (5)	YES	YES	NO	YES	YES	NO
Time Consuming (3)	YES	YES	NO	NO	YES	NO

Table 2.1: Selected SDLC Model: Agile

2.3 Diagrams

2.3.1 E-R Diagram

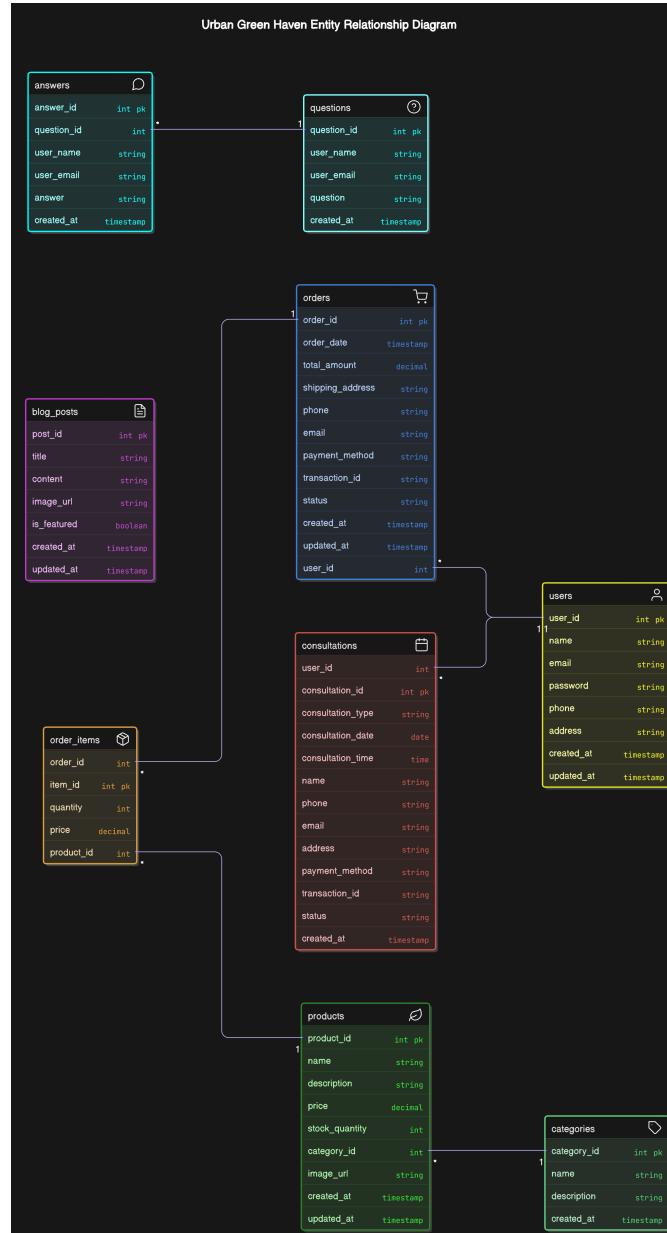


Figure 2.1: Entity Relation Diagram

2.3.2 High Level Architecture

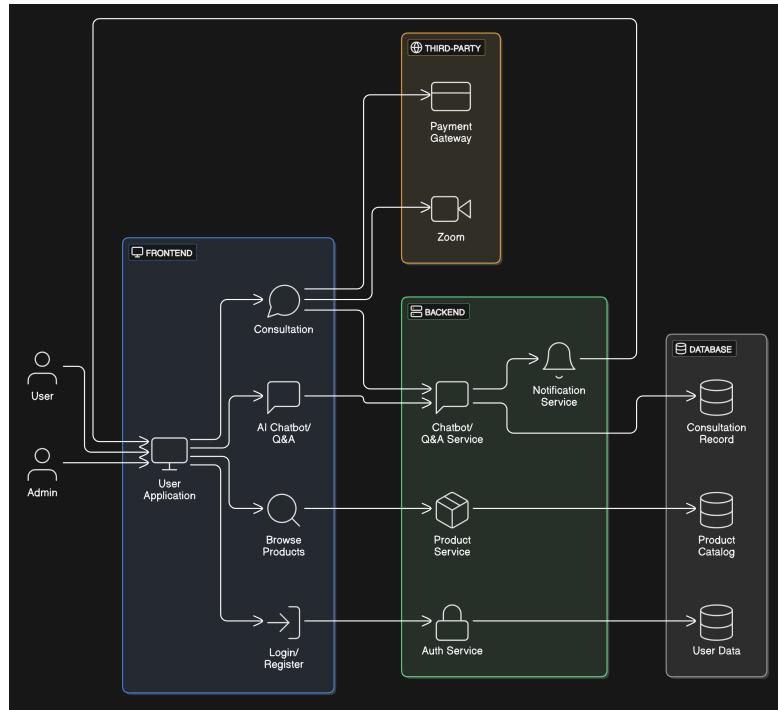


Figure 2.2: High-level Architecture

2.3.3 Low Level Architecture

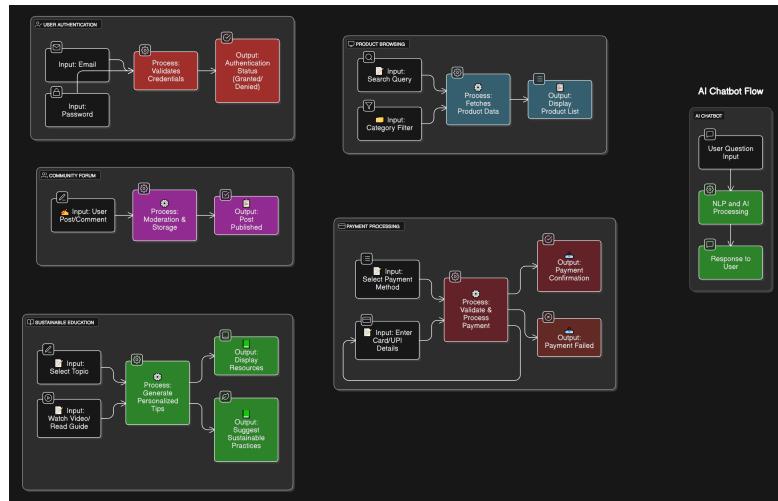


Figure 2.3: Low-level Architecture

2.4 Functionality

The **Urban Green Haven** project is a comprehensive web application focused on rooftop gardening products and services. Its major functionalities are categorized as follows:

User Interface and Navigation

- Responsive website with a modern design using **Tailwind CSS**.
- Navigation includes links to: **Home**, **Shop**, **Blog**, **Q&A**, **Consultation**, **Cart**, and **Login** pages.
- Integration of an **AI chatbot** for gardening advice and customer support.

E-commerce Platform

- Product catalog divided into categories: **flower plants**, **fruit plants**, **vegetable plants**, **fertilizers**, and **gardening tools**.
- Product filtering options by:
 - Category
 - Availability
 - Price range
 - Search keywords
- Sorting options:
 - Featured
 - Price: Low to High / High to Low
 - Newest
 - Best-selling
- Full cart functionality:
 - Add, update, remove, and clear items
 - Backend support using **PHP and MySQL**
- Checkout and order processing (part of order management in admin dashboard).

Consultation Services

- Users can book expert gardening consultations.
- Each consultation includes:
 - Type of consultation
 - Date and time
 - Payment info
 - Status tracking
- Admin panel to:
 - View requests

-
- Update consultation statuses
 - Delete bookings if necessary

Blog and Educational Content

- Blog section with articles on:
 - Gardening tips
 - Seasonal planting guides
 - Best practices
- Q&A section for community interaction.
- Admin control for:
 - Adding, editing, deleting blog posts
 - Managing user questions and expert answers

User Authentication and Administration

- User login and registration system.
- Admin dashboard for full CRUD operations on:
 - Users
 - Products
 - Orders
 - Consultations
 - Blog posts
 - Q&A entries
- Secure access control for admin pages to prevent unauthorized usage.

2.5 Database

```
1 -- Database schema for Urban Green Haven
2
3 CREATE DATABASE IF NOT EXISTS urban_green_haven;
4 USE urban_green_haven;
5
6 -- Users table (including admin flag)
7 CREATE TABLE users (
8     id INT AUTO_INCREMENT PRIMARY KEY,
9     name VARCHAR(100) NOT NULL,
10    email VARCHAR(255) NOT NULL UNIQUE,
11    phone VARCHAR(20),
12    password_hash VARCHAR(255) NOT NULL,
```

```

13     is_admin BOOLEAN DEFAULT FALSE,
14     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
15 );
16
17 -- Products table
18 CREATE TABLE products (
19     id INT AUTO_INCREMENT PRIMARY KEY,
20     name VARCHAR(255) NOT NULL,
21     description TEXT,
22     price DECIMAL(10,2) NOT NULL,
23     image_url VARCHAR(255),
24     category VARCHAR(100),
25     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
26 );
27
28 -- Cart table
29 CREATE TABLE cart (
30     id INT AUTO_INCREMENT PRIMARY KEY,
31     user_id INT NOT NULL,
32     product_id INT NOT NULL,
33     quantity INT NOT NULL DEFAULT 1,
34     added_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
35     FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,
36     FOREIGN KEY (product_id) REFERENCES products(id) ON DELETE CASCADE
37 );
38
39 -- Consultation requests table
40 CREATE TABLE consultation_requests (
41     id INT AUTO_INCREMENT PRIMARY KEY,
42     user_id INT,
43     name VARCHAR(100) NOT NULL,
44     email VARCHAR(255) NOT NULL,
45     phone VARCHAR(20) NOT NULL,
46     address VARCHAR(255) NOT NULL,
47     consultation_type VARCHAR(50) NOT NULL,
48     consultation_price DECIMAL(10,2) NOT NULL,
49     consultation_date DATE NOT NULL,
50     consultation_time TIME NOT NULL,
51     notes TEXT,
52     payment_method VARCHAR(50) NOT NULL,
53     transaction_number VARCHAR(100),
54     terms_agreed BOOLEAN NOT NULL DEFAULT FALSE,
55     status VARCHAR(50) DEFAULT 'pending',
56     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
57     FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE SET NULL
58 );
59
60 -- Q&A entries table
61 CREATE TABLE qa_entries (
62     id INT AUTO_INCREMENT PRIMARY KEY,
63     user_id INT NOT NULL,

```

```

64     question TEXT NOT NULL,
65     answer TEXT,
66     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
67     FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE
68 );
69
70 -- Create orders table
71 CREATE TABLE IF NOT EXISTS orders (
72     id INT PRIMARY KEY AUTO_INCREMENT,
73     user_id INT NOT NULL,
74     total_amount DECIMAL(10,2) NOT NULL,
75     shipping_address TEXT NOT NULL,
76     phone_number VARCHAR(20) NOT NULL,
77     customer_name VARCHAR(255) NOT NULL,
78     customer_email VARCHAR(255) NOT NULL,
79     payment_method VARCHAR(50) NOT NULL,
80     transaction_number VARCHAR(100) NOT NULL,
81     status ENUM('pending', 'accepted', 'processing', 'shipped', 'delivered', 'cancelled') DEFAULT 'pending',
82     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
83     FOREIGN KEY (user_id) REFERENCES users(id)
84 );
85
86 -- Create order_items table
87 CREATE TABLE IF NOT EXISTS order_items (
88     id INT PRIMARY KEY AUTO_INCREMENT,
89     order_id INT NOT NULL,
90     product_id INT NOT NULL,
91     quantity INT NOT NULL,
92     price DECIMAL(10,2) NOT NULL,
93     FOREIGN KEY (order_id) REFERENCES orders(id),
94     FOREIGN KEY (product_id) REFERENCES products(id)
95 );
96
97 -- Create questions table
98 CREATE TABLE IF NOT EXISTS questions (
99     id INT AUTO_INCREMENT PRIMARY KEY,
100    name VARCHAR(255) NOT NULL,
101    email VARCHAR(255) NOT NULL,
102    question TEXT NOT NULL,
103    created_at DATETIME NOT NULL,
104    INDEX (created_at)
105 );
106
107 -- Create answers table
108 CREATE TABLE IF NOT EXISTS answers (
109     id INT AUTO_INCREMENT PRIMARY KEY,
110     question_id INT NOT NULL,
111     name VARCHAR(255) NOT NULL,
112     answer TEXT NOT NULL,
113     created_at DATETIME NOT NULL,

```

```

114     FOREIGN KEY (question_id) REFERENCES questions(id) ON DELETE CASCADE,
115     INDEX (question_id),
116     INDEX (created_at)
117 );
118
119 -- Create blog_posts table
120 CREATE TABLE IF NOT EXISTS blog_posts (
121     id INT AUTO_INCREMENT PRIMARY KEY,
122     title VARCHAR(255) NOT NULL,
123     content TEXT NOT NULL,
124     image_url VARCHAR(255) NOT NULL,
125     author VARCHAR(100) NOT NULL,
126     category VARCHAR(50) NOT NULL,
127     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
128 );
129
130 -- SQL script to create a new MySQL user with privileges for
131 -- urban_green_haven database
132
133 CREATE USER 'urban_user'@'localhost' IDENTIFIED BY '123';
134 GRANT ALL PRIVILEGES ON urban_green_haven.* TO 'urban_user'@'localhost';
135
136 FLUSH PRIVILEGES;

```

Chapter 3

Testing & Output

For the testing, we have conducted manual testing. Here is some result of testing:

Test Case	Module	Test Scenario	Expected Result	Test Case
TC-001	User Registration	Test user sign-up with valid inputs	Account created, redirect to dashboard	Pass
TC-002	User Registration	Test sign-up with existing email	Error message: "Email already exists"	Pass
TC-003	Login	Test login with correct credentials	Redirected to user dashboard	Pass
TC-004	Login	Test login with wrong credentials	Display error message	Pass
TC-005	Product Browsing	View gardening products	List of products displayed	Pass
TC-006	Add to Cart	Add item to cart	Product added to cart with quantity updated	Pass
TC-007	Checkout	Complete check-out	Order processed successfully	Pass
TC-008	Blog Module	Read blog module and get blog article	Article content displayed properly	Pass
TC-009	Q&A Forum	Post a question	Question posted and visible	Pass
TC-010	Expert Booking	Book gardening consultation	Email notification sent	Pass

Test Cases Overview

Figure 3.1: Landing Page

Figure 3.2: footer

[Login](#) [Register](#)


Create Account
Join our community of gardeners

Full Name

Email Address

Phone Number

Password

Confirm Password

I agree to the [Terms of Service](#) and [Privacy Policy](#)

Create Account

Or sign up with

 Google

 Facebook

Figure 3.3: User Register

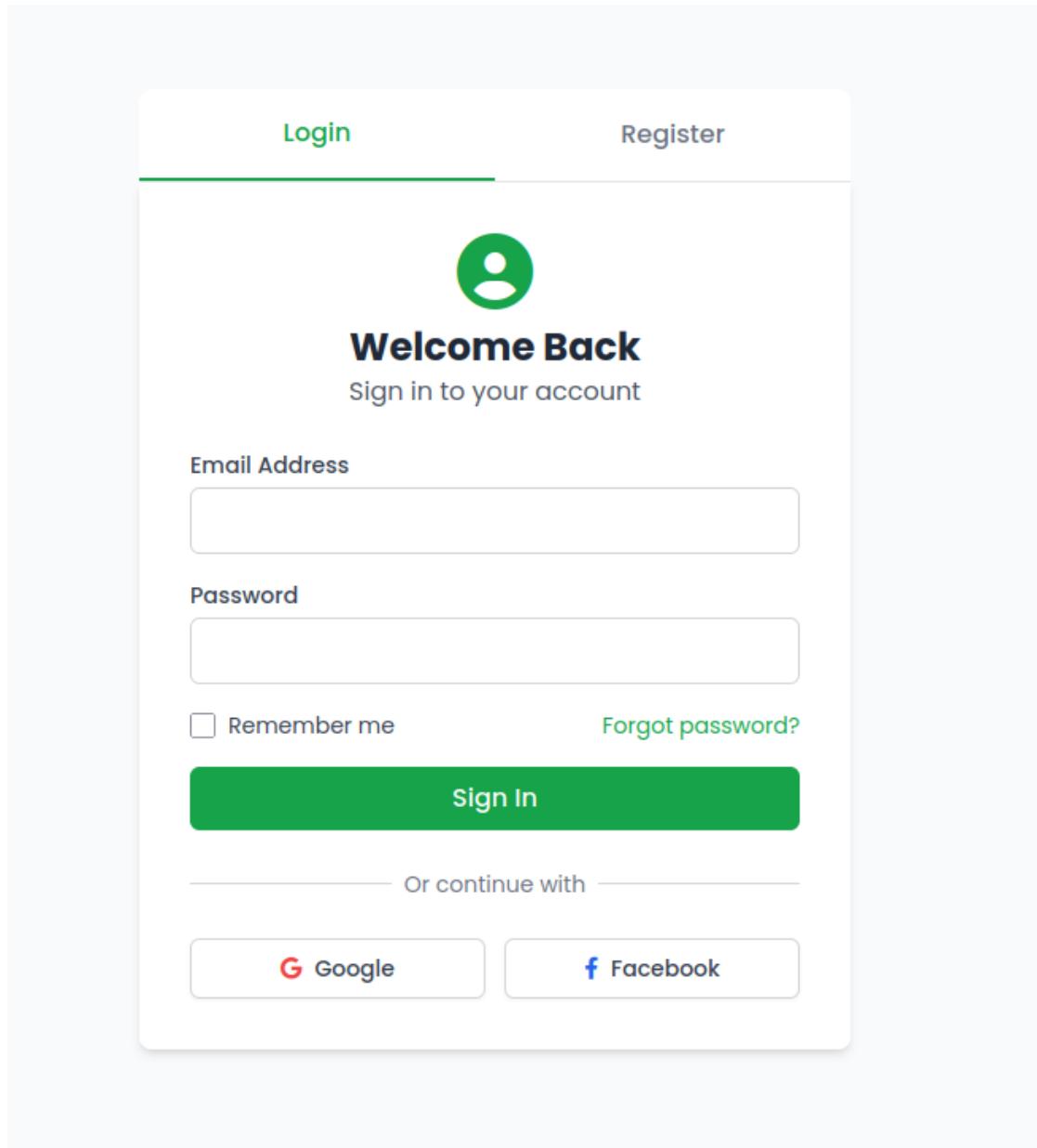


Figure 3.4: Login

Shop

Find everything you need for your rooftop garden

Filters

Search

Categories

- All Categories
- Flower Plants
- Fruit Plants
- Vegetable Plants
- Fascinated Plants
- Organic Fertilizers
- Gardening Tools

Price Range ₢0 ₢2500 ₢5000

Availability

- In Stock
- Out of Stock

Apply Filters

0 products found

Sort by: Featured   



Cherry Tomato Plant
Perfect for rooftop containers and produces sweet, bite-sized tomatoes.

৳350 BDT 



Herb Garden Kit
Grow your own basil, mint, and cilantro with this complete starter kit.

৳650 BDT 



Gardening Tool Set
Essential tools for rooftop gardening in a convenient carrying case.

৳1200 BDT 



Organic Fertilizer
Nutrient-rich organic fertilizer



Rose Bush
Beautiful flowering rose bush that



Dwarf Mango Tree
Compact mango tree variety

Figure 3.5: Shop page

Shopping Cart

Review your items and proceed to checkout

Cart Items

	Organic Fertilizer Nutrient-rich organic fertilizer specially...	-	+	৳450.00
Rose Bush	Rose Bush Beautiful flowering rose bush that thrives...	-	+	৳550.00

[Continue Shopping](#)

Shipping Information

Phone Number
01609165854

Shipping Address
Dhaka, Bangladesh

Payment Method
Bkash

Transaction Number
kjsbjsh456h

Payment Number: 01609168657
Please complete the payment and enter the transaction number above.

Place Order

Order Summary

Subtotal	৳1450.00
Shipping	৳100.00
Tax (5%)	৳72.50
Total	৳1622.50

Promo Code 

Proceed to Checkout

Urban Green Haven
Transforming urban rooftops into lush, productive gardens one step at a time.

Quick Links

- [Shop](#)

Categories

- [Flower Plants](#)

Contact Us

123 Green Street, Dhaka,
Bangladesh

Figure 3.6: Shipping Address

Urban Green Haven

Home Shop Blog Q&A Consultation  

Blog

Tips, tricks, and insights for your rooftop garden



Feb 10, 2025 • Gardening Expert • Urban Farming

Sky High Harvest: How Rooftop Gardening is Redefining Urban Life in Bangladesh

In the bustling chaos of Bangladesh's urban sprawl, a quiet revolution is taking root above our heads. Rooftop gardening, once an eccentric hobby, has become a full-blown urban movement. Especially in cities like Dhaka and Chattogram, where concrete suffocates natural greenery, more and more citizens are transforming their rooftops into vibrant ecosystems.

[Read Full Article](#)

Search

Search

Categories

Urban Farming	3
Gardening Tips	1
Environmental Benefits	1
DIY Projects	0
Seasonal Guides	0

Popular Posts

 Sky High Harvest: Rooftop Gardening Feb 10, 2025
 From Concrete to Green: A Beginner's Guide Feb 5, 2025

Figure 3.7: Blog page

Urban Green Haven

Home Shop Blog Q&A Consultation  



Feb 5, 2025 • Gardening Expert

From Concrete to Green: A Beginner's Guide to Rooftop Gardening in Dhaka

Starting a rooftop garden in Dhaka might sound complicated, but it's easier than you think. With just a few pots, soil...

[Read Full Article →](#)



April 28, 2025 • Community Writer

Balcony to Bounty: Women Leading the Rooftop Garden Revolution in Bangladesh

Behind the rise of rooftop gardening in Bangladesh, there's a powerful, green-fingered force: women. From stay-at...

[Read Full Article →](#)



Environment



Youth

women Leading

April 28, 2025

Subscribe to Newsletter

Get the latest gardening tips and updates delivered to your inbox.

[Subscribe](#)

Figure 3.8: Blog page

Urban Green Haven

Our Consultation Options

Online Consultation

Connect with our gardening experts via video call. Share photos and videos of your space and challenges, and receive personalized advice.

- ✓ 60-minute video consultation
- ✓ Written summary of recommendations
- ✓ 2 weeks of follow-up email support
- ✓ 10% discount on plant purchases

₹1,200 BDT

What Our Clients Say

Book Your Online

Personal Information

Full Name Email

Phone Number Address

Consultation Details

Preferred Date Preferred Time

Payment Information

Please send the payment to:

bKash Number: 01609198657
Please keep the transaction number for verification

Payment Method Transaction Number

Premium

Urban Green Haven offers premium consultation services. Our experts will assess the space, soil, light, and water requirements to provide hands-on guidance tailored to your specific needs.

Book Now

Figure 3.9: COnsultation Booking

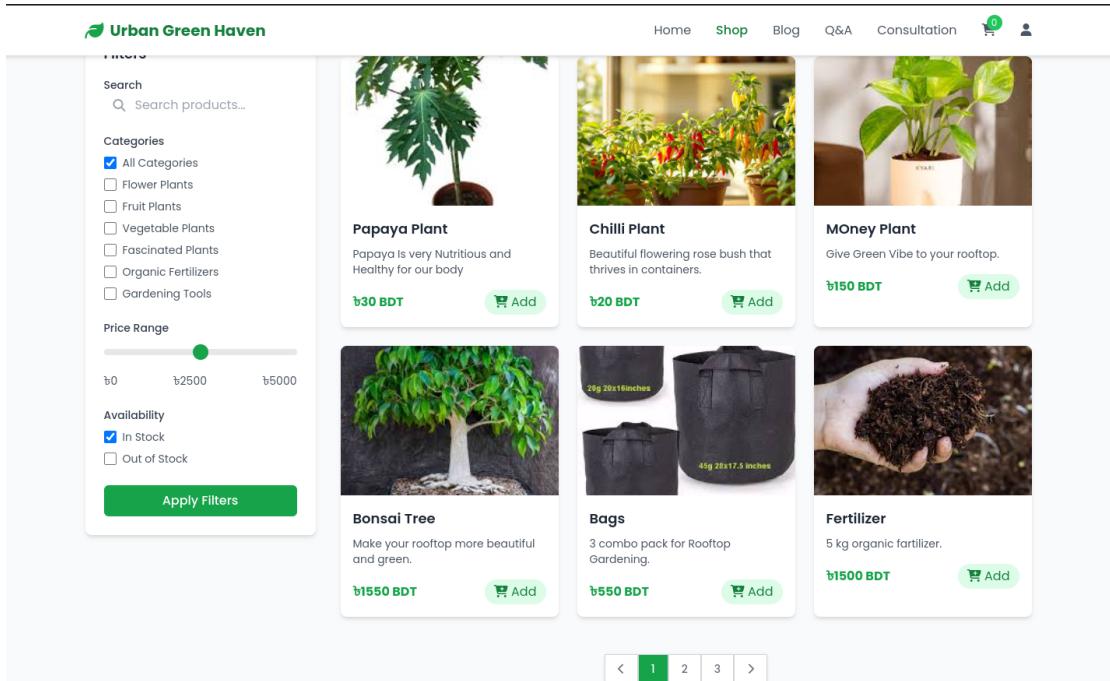


Figure 3.10: Shop page

Urban Green Haven

Home Shop Blog Q&A Consultation  

Question & Answer

Get expert answers to your rooftop gardening questions

Ask a Question

Your Name* Your Email*

Your Question*

I agree to the [privacy policy](#) and understand my question will be published publicly.

Submit Question

Need Personalized Help?

Our experts provide customized solutions for your specific gardening challenges.

Book a Consultation

Popular Topics

- Watering Techniques >
- Growing Vegetables >
- Container Gardening >
- Pest Control >
- Monsoon Care >

Products You Might Need



Organic Fertilizer
₹450 BDT
[View Product](#)

General Questions Plant Care Garden Setup Pest Control

What is rooftop gardening?

Recent Questions & Answers

in the rooftop papaya can plant ?
Asked by Saidul Islam on 5/12/2025

 [Answer](#)

Why not ? but be care in rainy season. because in the rainy season, the papaya plant may be broken.
Answered by Hanif Mia on 5/12/2025

View More Questions

Product Gardening Tool Set
₹1200 BDT
[View Product](#)

Product Herb Garden Kit
₹650 BDT
[View Product](#)

Figure 3.11: Q & A page

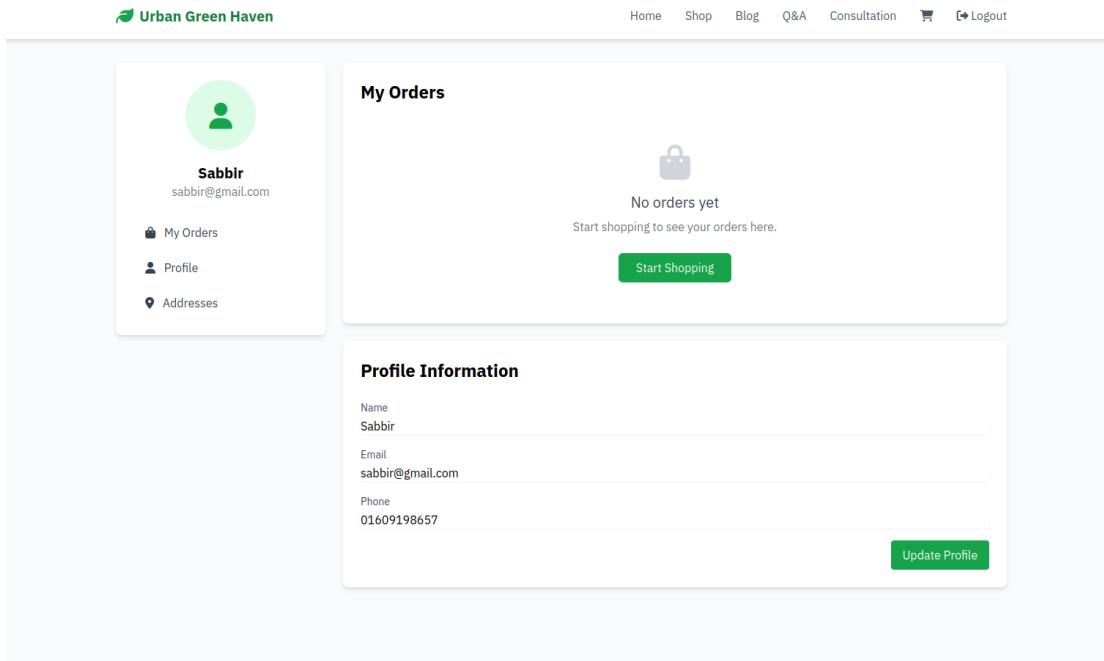


Figure 3.13: User Dashboard

ID	User	Consultation Type	Consultation Date	Consultation Time	Status	Created At	Actions		
#5	Naeem Hossen naeem@gmail.com	Phone: 01609165854	Organic Fertilizer (2 x \$450.00), Rose Bush (1 x \$550.00)		\$1,550.00 Including shipping	Dhaka, Bangladesh	Pending	May 11, 2025 10:06 PM	Delete
#4	Sabbir sabbir@gmail.com	Phone: 01606565656	Cherry Tomato Plant (1 x \$350.00), Herb Garden Kit (1 x \$650.00)		\$1,100.00 Including shipping	Badda, Lake view	Pending	May 11, 2025 09:45 PM	Delete
#3		Phone:	Cherry Tomato Plant (2 x \$350.00), Herb Garden Kit (1 x \$650.00)		\$1,450.00 Including shipping	Dhaka, Bangladesh	Pending	May 11, 2025 09:25 PM	Delete
#2		Phone:	Cherry Tomato Plant (1 x \$350.00), Herb Garden Kit (1 x \$650.00), Gardening Tool Set (2 x \$120.00)		\$3,500.00 Including shipping	Dhaka, Bangladesh	Pending	May 11, 2025 09:22 PM	Delete
#1		Phone:	Cherry Tomato Plant (1 x \$350.00), Herb Garden Kit (1 x \$650.00)		\$1,100.00 Including shipping	Dhaka, Bangladesh	Pending	May 11, 2025 09:18 PM	Delete

Figure 3.14: Admin Dashboard

Admin Panel

- Dashboard
- Users**
- Orders
- Products
- Consultations
- Q&A
- Blog
- Logout


Total Users
5


Total Orders
5


Consultations
0


Products
6

Users

ID	Name	Email	Phone	Admin	Created At	Actions
5	Naeem Hossen	naeem@gmail.com	01609198657	No	2025-05-11 22:05:29	 
4	Sabbir	sabbir@gmail.com	01609198657	No	2025-05-11 21:41:26	 
3	Test User	testuser@example.com	1234567890	No	2025-05-11 20:02:08	 
2	Hamid	h@gmail.com	01609198657	No	2025-05-11 19:31:40	 
1	Admin User	admin@urbangreenhaven.com	0000000000	Yes	2025-05-11 19:30:04	 

Products

ID	Name	Description	Price	Category	Created At	Actions
1	Cherry Tomato Plant	Perfect for rooftop containers and produces sweet, bite-sized tomatoes.	\$350.00	vegetable	2025-05-11 21:14:35	 
2	Herb Garden Kit	Grow your own basil, mint, and cilantro with this complete starter kit.	\$650.00	vegetable	2025-05-11 21:14:35	 
3	Gardening Tool Set	Essential tools for rooftop gardening in a convenient carrying case.	\$1,200.00	tools	2025-05-11 21:14:35	 
4	Organic Fertilizer	Nutrient-rich organic fertilizer specially formulated for container plants.	\$450.00	fertilizer	2025-05-11 21:14:35	 
5	Rose Bush	Beautiful flowering rose bush that thrives in containers.	\$550.00	flower	2025-05-11 21:14:35	 
6	Dwarf Mango Tree	Compact mango tree variety perfect for rooftop cultivation.	\$1,500.00	fruit	2025-05-11 21:14:35	 

Figure 3.15: Admin Dashboard

Admin Panel

- Dashboard
- Users**
- Orders
- Products
- Consultations
- Q&A
- Blog
- Logout

Publish Post

Consultation Requests

ID	User	Consultation Type	Consultation Date	Consultation Time	Status	Created At	Actions
----	------	-------------------	-------------------	-------------------	--------	------------	---------

Orders

Order ID	Customer Details	Contact Info	Order Items	Total Amount	Shipping Address	Status	Order Date	Actions
#5	Naeem Hossen naeem@gmail.com	Phone: 01609165854	Organic Fertilizer (1 x \$450.00), Rose Bush (1 x \$550.00)	\$1,550.00 Including shipping	Dhaka, Bangladesh	 Pending	May 11, 2025 10:05 PM	
#4	Sabbir sabbir@gmail.com	Phone: 01606565656	Cherry Tomato Plant (1 x \$350.00), Herb Garden Kit (1 x \$650.00)	\$1,100.00 Including shipping	Badda, Lake view	 Pending	May 11, 2025 09:45 PM	
#3		Phone:	Cherry Tomato Plant (2 x \$350.00), Herb Garden Kit (1 x \$650.00)	\$1,450.00 Including shipping	Dhaka, Bangladesh	 Pending	May 11, 2025 09:25 PM	
#2		Phone:	Cherry Tomato Plant (1 x \$350.00), Herb Garden Kit (1 x \$650.00), Gardening Tool Set (2 x \$1200.00)	\$3,500.00 Including shipping	Dhaka, Bangladesh	 Pending	May 11, 2025 09:22 PM	
#1		Phone:	Cherry Tomato Plant (1 x \$350.00), Herb Garden Kit (1 x \$650.00)	\$1,100.00 Including shipping	Dhaka, Bangladesh	 Pending	May 11, 2025 09:18 PM	

Q&A Entries

ID	User	Question	Answer	Created At	Actions
----	------	----------	--------	------------	---------

Figure 3.16: Admin Dashboard

Chapter 4

Feasibility Study

This section evaluates the feasibility of our project from technical, operational, and financial perspectives. Each feasibility criterion helps in understanding whether the project should proceed, be modified, or halted before further investment.

4.1 Technical Feasibility

Technical feasibility assesses whether the current technology and resources are sufficient to support the development and implementation of the proposed system. In this case, the project leverages modern, widely-supported web technologies which are well within the team's technical expertise. Additionally, the availability of development tools and hosting platforms ensures a smooth development process.

4.2 Operational Feasibility

Operational feasibility examines how effectively the proposed system solves problems and satisfies identified requirements within the existing operational framework. The system will enhance usability, reduce manual errors, and streamline tasks. Since the end-users are familiar with basic digital interfaces, training requirements are minimal, and the system will improve productivity significantly.

4.3 Financial Feasibility

Financial feasibility considers whether the benefits outweigh the costs. In this case, the project uses free and open-source tools and platforms, significantly lowering the cost of development and deployment. As a result, the overall financial risk is low, and the expected ROI (return on investment) is positive due to increased efficiency and reduced human labor.

4.4 Project Management

Effective project management is critical to the success of this system development. A phased SDLC approach—preferably Agile—will be adopted to allow for flexibility, iterative feedback, and progressive delivery. Responsibilities will be divided across team members, and milestones will be tracked using a task management tool like Trello or GitHub Projects. Time estimation will be handled using the PERT (Program Evaluation and Review Technique) method, ensuring realistic deadlines. Regular sprint reviews and retrospectives will be conducted to identify issues early and maintain momentum. Communication will be maintained through scheduled stand-ups, emails, and version-controlled documentation. Quality assurance will include both manual testing and automation to ensure deliverables meet expected standards.

Chapter 5

Social Impact and Benefit

The project **Urban Green Haven** offers a wide range of social benefits. Below are the key impacts presented in a structured list format:

- **Environmental Awareness and Action:** Encourages rooftop gardening to reduce CO₂, urban heat islands, and promote biodiversity. Helps transform unused spaces into green, functional zones.
- **Community Engagement and Empowerment:** Facilitates interaction through forums, blogs, and consultation services. Builds a collaborative, knowledge-sharing environment for gardeners and enthusiasts.
- **Mental Health and Wellbeing:** Gardening acts as a therapeutic activity. Users experience stress relief, mindfulness, and emotional satisfaction by cultivating plants in their urban spaces.
- **Urban Food Security:** Promotes growing of herbs, vegetables, and fruits at home. Encourages nutritional independence and a move toward organic, chemical-free produce.
- **Economic Opportunities:** Opens up green business potential for plant sellers, rooftop gardening consultants, eco-startups, and local nurseries.
- **Digital Inclusivity in Sustainability:** Designed to be mobile-friendly and easy to use for all age groups and tech skill levels. Democratizes access to sustainable living practices.
- **Support for Smart Urban Development:** Aligns with SDG goals, especially Goal 11 (Sustainable Cities and Communities) and Goal 13 (Climate Action). Complements government-led rooftop gardening initiatives.
- **Educational Value:** Offers valuable content and practical guidance that educates users on eco-friendly living, urban agriculture, and sustainability strategies.
- **Long-Term Social Transformation:** Encourages a cultural shift toward environmental stewardship, community resilience, and green innovation in urban living.

Chapter 6

Conclusion

6.1 Discussion

Urban Green Haven addresses key pain points in urban gardening through a seamless digital experience. It empowers users to learn, engage, shop, and consult — all from a single platform. Admins maintain the backend for data integrity and secure management. This system bridges the gap between nature and technology in a meaningful way.

6.2 Scope for Future Work

- Implement push notifications and newsletters
- Add payment gateway (e.g., bKash, Nagad) as we didn't do it perfectly in our project.
- Develop Android/iOS app version
- Add smart AI suggestions for plants based on user data
- Enable video consultations with gardening experts
- Integrate rooftop layout mapping feature

6.3 Summary

This platform has laid the groundwork for a digital urban rooftop gardening revolution. It combines technology, community, commerce, and sustainability — all into one web-based ecosystem that can scale up with urbanization demands.

Chapter 7

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