

IT 320 Course Project
Semester-1, 1447H



Software Product Release
<BloomLog>

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1. Chapter 1: Introduction

The intersection of technology and agriculture—commonly referred to as agritech—has significantly evolved in recent years, addressing challenges in food production, sustainability, and environmental awareness [1]. One notable branch of agritech is urban and indoor gardening, which encourages individuals to grow plants within their homes or small urban spaces [2]. This practice not only supports eco-friendly lifestyles but also offers measurable psychological benefits. Research indicates that the presence of indoor plants can lead to reduced stress levels, improved mood, enhanced concentration, and even decreased perception of pain. These findings highlight the growing importance of incorporating plant care into modern living, especially as people seek healthier and more mindful environments in increasingly urbanized settings [3]. As urbanization increases globally, especially in high-density environments, growing plants indoors has become a practical and desirable solution for people seeking connection with nature.

However, despite its benefits, home gardening presents several challenges. Many individuals lack the necessary knowledge to choose plants suitable for their environment, and struggle with maintaining regular care routines, such as watering schedules. Critical factors like humidity, temperature, and lighting vary greatly between regions, leading to frequent plant damage or death due to improper care.

A technological solution such as BloomLog addresses real and recurring challenges faced by plant owners both locally and globally. Many individuals grow indoor plants without understanding the environmental conditions necessary for each species to thrive—often selecting plants based on appearance rather than suitability to their local climate. Moreover, finding reliable and accessible information about different plants and their care requirements can be difficult, leading to frustration and plant loss. This is particularly problematic in regions like Saudi Arabia, where high temperatures and low humidity can make plant care more demanding. Through the use of localized environmental data based on the user's region, BloomLog accurately matches plant requirements with environmental conditions, providing users with detailed descriptions and care information for each plant. This ensures that users are guided toward plants compatible with their surroundings. Additionally, one of the most common issues in home gardening is forgetting when to water plants. BloomLog solves this through automated reminders tailored to each plant's watering schedule, helping users maintain consistent care routines.

This document includes a general overview of the **BloomLog** system and its purpose, followed by a description of the problem and the proposed solution. It also presents the product vision, development roadmap, and outlines the objectives from different perspectives. In addition, the scope of the system and the roles of the Scrum team members are clearly defined.

In the next section, we will present the problem in more detail, focusing on the challenges our project aims to address

1.1 The Problem

Caring for plants has become increasingly popular as people seek to enhance their living spaces, improve indoor air quality, and enjoy the psychological benefits of greenery. However, despite this growing interest, plant care remains a significant challenge for many individuals. One of the major issues is the mismatch between a plant's specific needs and its environment; selecting plants based solely on appearance or current trends often results in decline or death under unsuitable conditions. Moreover, many people struggle to access reliable and practical information on plant care, including species requirements, watering needs, and optimal environmental conditions. Maintaining consistent care routines—particularly watering—adds further complexity, as temperature, humidity, and lighting vary greatly across regions and even within households.

For example, a Peace Lily in a Riyadh apartment faces high temperatures, dry air, and limited light. Owners may try to compensate by overwatering or moving it frequently, but without proper guidance, these actions often stress the plant, leading to yellowing leaves, root rot, or premature death.

This project primarily focuses on addressing these critical pain points: helping users select plants suited to their environments, providing accessible and reliable care information, and supporting consistent watering routines. By targeting these areas, the project seeks to reduce plant loss while making gardening more manageable, enjoyable, and sustainable.

1.2 The Solution

BloomLog is a modern smart-gardening platform created to support the growing interest in gardening. It offers simple and innovative solutions that make caring for plants easier, more organized, and more enjoyable. Since many people often struggle with remembering when to water their plants, the platform introduces a personalized plant-care system that keeps all the necessary details in one place. Users can add new plants to their profiles and access a customized schedule that includes watering instructions, ensuring that every plant receives the care it needs at the right time.

For users who are unsure about which plants to grow, **BloomLog** evaluates their surrounding environment such as temperature, humidity, and provides tailored recommendations for the most suitable plants. This makes it possible for beginners as well as experienced gardeners to select plants that will thrive in their specific conditions without guesswork. In addition, the platform offers smart prompts that remind users when it is time to water their plants.

It also provides a smooth and user-friendly experience by enabling users to manage their plant collection adding new plants, searching for them by name, or removing them when needed. By addressing the challenges of plant maintenance and creating a more accessible way to enjoy gardening, **BloomLog** empowers users to care for their plants confidently and to cultivate healthier and more vibrant green spaces at home.

1.3 The Product

1.3.1 Product Vision

In this section, we will present the product vision of **BloomLog** that would be achieved by developing and deploying the website.

“BloomLog “is **for** people **who** are interested in plant care and want a unique experience in selecting and taking care of their plants, **the** “BloomLog “is a plant care and Gardening Management website **that** provides a convenient solution for choosing suitable plants and learning how to care for them. **Unlike** “leefwork”, **Our product** offers a way to select plants based on the city's weather conditions.

1.3.2 Product Roadmap

In this section, we will present the **BloomLog** roadmap, which demonstrates how the product will be built and delivered over time.

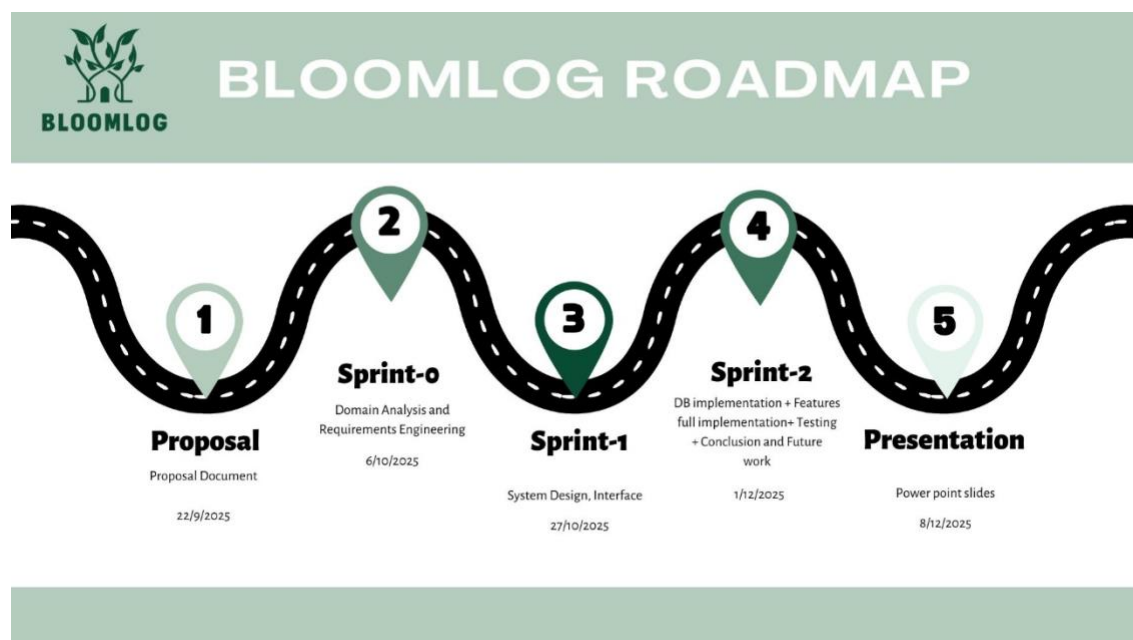


Figure 1: Product Roadmap

1.3.3 Objectives

The objectives of the BloomLog project are categorized into three main levels: product, project, and learning. Each level highlights a specific area of impact that the project aims to achieve.

Product Objectives (customer focus-value):

These objectives focus on the product itself, highlighting the problems we aim to solve and the value we plan to deliver to users through its core features. The main benefits include:

- Users can register to create a personal account.
- Users can log in to access their plant collection.
- Users can log out to safely exit their account.
- Users can add new plants to their personal collection, specifying details such as plant nickname, last watering date, and additional notes.
- Users can delete plants from their collection, ensuring an up-to-date and relevant plant list.
- Users can view each plant card, which displays the plant's image, notes, last watering date, and current watering status.
- Users can search for specific plants by name, facilitating quick access to plant information.
- Users can edit plant details including name, last watering date, and notes, allowing for flexible plant management.
- The system automatically sends watering reminders based on the specific watering needs of each plant, helping users maintain consistent care routines.
- Users can update the last watering date of a plant with a single click using the "Watered" button, simplifying the tracking process.
- The system offers a filter to display only the plants that require watering on the current day, helping users prioritize their care tasks effectively.
- When adding a new plant, users are presented with a personalized list of plant options that are suitable for their local environmental conditions, ensuring better compatibility and higher chances of plant survival.

Project Objectives (solution focus-plan):

- Understand user needs through interviews and questionnaires to identify the main challenges in plant care.
- Define system requirements based on the data collected from users, ensuring that the planned features directly address their needs and expectations.
- Collect and organize plant care data from reliable sources to support accurate recommendations and scheduling.
- Design an intuitive user interface that allows for easy plant management and interaction.
- Develop the system backend, including a database and core functionalities like plant tracking, reminders, and personalized suggestions.
- Test the platform thoroughly to verify that all functionalities work correctly and align with user expectations.

Learning Objectives (student focus):

These objectives focus on what the team will gain from completing this project:

- Develop back-end development skills to manage plant and climate data and integrate them into a website.
- Develop an Internal Plant Data System, gain experience in designing and managing a custom plant database.
- Enhance UX research and design abilities to make plant selection and care more intuitive.
- Strengthen project management knowledge and apply Agile practices by participating in sprints and using Scrum techniques.
- Improve problem-solving and decision-making skills in plant care through practical, real-world solutions.

Ultimately, achieving these objectives will enable the **BloomLog** platform to provide users with a reliable tool for selecting plants suitable for their local climate. At the same time, the team will sharpen its technical, analytical, and project management expertise through the application of Agile methodologies.

1.3.4 Scope

The target audience for BloomLog consists of individuals aged 15 years and above who have an interest in plants and gardening. The system provides full support in the English language only, with no support available in Arabic. Regarding platform accessibility, the system is designed to be accessible exclusively through desktop and laptop devices, with no support for tablets or mobile phones.

1.4 The Scrum Team

Scrum Team	
Product Owner: (list name of the student designated as a PO for the project)	Tala Alsheail
Developers: (list all student names)	Tala Alsheail Aseel Almubaddel Ruba alruzuq Norah Aldalal Alanoud Aloraydi
Scrum Master (SM): (list the name of your lab instructor)	I. Ghaida Alfayez
Stakeholders: (list the name of your lab instructor)	I. Ghaida Alfayez

Table 1: The Scrum Team

2. CHAPTER 2: DOMAIN ANALYSIS

2.1 Background

BloomLog leverages modern agritech solutions to address the challenges faced by home gardeners in managing indoor plants. Traditional home gardening presents several difficulties that prevent users from maintaining healthy plants efficiently. Key challenges include ensuring higher compatibility

between plants and their environment, maintaining consistent care routines based on the specific watering requirements of each plant, and accessing reliable information. These issues can lead to frustration, plant stress, and premature plant death, particularly in regions with extreme climates such as Saudi Arabia, where high temperatures and low humidity significantly affect plant survival rates.

To mitigate these challenges, BloomLog provides a structured and user-friendly digital platform that guides users through plant management and care. The system focuses on three main areas: it facilitates the selection of suitable plants by integrating and evaluating localized climate data to provide targeted recommendations. It also offers detailed and reliable care information. Finally, the platform supports consistent watering routines through a personalized reminder system that automates reminders systematically aligned with the needs of each plant

Plant Management in BloomLog

BloomLog enables users to create and manage a personal plant collection in a structured and intuitive way. Each plant entry can include details such as a nickname, last watering date, and additional notes. Users can add, edit, or delete plants, and separately update the watering date to keep their collection organized, accurate, and up to date. This functionality addresses a core challenge in home gardening: providing a structured overview of all plants and their specific care requirements.

Personalized Care and Smart Reminders

A common challenge in indoor gardening is remembering when to water plants. To address this, BloomLog integrates a Personalized Care and Smart Reminder System that automatically notifies users whenever a plant requires attention. By tailoring reminders to each plant's individual watering schedule, the system helps users maintain consistent care routines, reduce plant stress, and increase the likelihood of healthy growth and survival. This feature ensures that plant care remains simple, reliable, and responsive to each plant's needs.

Plant Recommendations Based on Environmental Conditions

Unlike generic gardening platforms that suggest plants based on popularity or aesthetics, BloomLog integrates localized environmental data, including temperature and humidity. Using these factors, the platform evaluates the suitability of plants for the user's specific conditions. This ensures that plant suggestions match the user's real conditions, reducing the risk of plant loss due to environmental mismatch.

Monitoring and Updating Plant Information

BloomLog provides tools for updating plant information efficiently. Users can update the last watering date of each plant with a single click using the "Watered" button, simplifying the tracking process. The system also provides a filter to display only the plants that require watering on the

current day, helping users prioritize their care tasks effectively. Together, these features support a well-organized and manageable plant care routine.

Key Theoretical Concepts

BloomLog's design relies on key concepts that guide its functionality:

Recommender System: A system that provides plant suggestions based on environmental conditions. While there are several types, such as collaborative filtering (which uses other users' preferences) and content-based filtering (which uses item attributes), BloomLog employs a context-aware, content-based approach. It matches the attributes of the plants (content) with the user's specific environmental data (context).

Reminder System: A digital tool that notifies users about tasks or events. In BloomLog, reminders ensure that plants receive timely watering according to their specific needs, helping users maintain consistent care routines.

These concepts form the theoretical foundation for BloomLog's core functionalities, ensuring that recommendations and reminders are systematically aligned with the needs of each plant.

System Architecture and Technologies

The BloomLog platform is a purely software-based solution and does not rely on any custom external hardware, such as physical sensors. The system's architecture comprises several integrated software components:

- **Backend Logic (PHP):** The server-side logic is implemented using PHP. It is responsible for processing user requests, managing data, executing the recommendation algorithm, and communicating with external services.
- **Database Management System (MySQL):** A MySQL database is used for persistent data storage. It securely stores all critical information, including user profiles, personal plant collections, watering schedules, and care history, enabling efficient data retrieval and management.
- **Frontend Interface (HTML, CSS, JavaScript):** The user interface is built using standard web technologies. HTML provides the structure, CSS handles the styling for a responsive and intuitive user experience, and JavaScript enables dynamic interactions within the browser.
- **External Service (OpenWeather API):** To provide accurate, context-aware recommendations, BloomLog integrates with the OpenWeather API. This external service

supplies real-time, localized environmental data, specifically temperature and humidity, which are key inputs for the recommendation engine.

2.2 Literature Review

In this section, we will analyze the competitive landscape of digital plant care platforms to gain a clearer understanding of the market. This comparison will help us identify the core features offered by existing systems and highlight key differences between **BloomLog** and its competitors.

The analysis includes three platforms — **Leefwork**, **Happy Plant**, and **Riyadh Plants** — alongside our proposed platform, **BloomLog**. The goal is to evaluate their strengths and weaknesses in order to better position BloomLog within the market.

Competitor : Leefwork[4]

description:

Leefwork is a web-based plant care application that helps users track and care for their plants with features such as watering reminders, detailed plant profiles, and a visual weekly timeline.

Strengths:

1. Allows adding plant profiles with species and care details.
2. Provides a watering journal for logging and notes.
3. Shows a weekly timeline of plant care tasks.
4. Sends watering reminders via notifications.

weaknesses:

1. Does not suggest suitable plants based on the user's environment (weather, humidity, light).
2. Does not consider the user's local weather conditions when managing plant care.

Competitor : Happy Plant[5]

description:

Happy Plant is a mobile application designed to help users remember to water their plants. It allows users to set custom watering schedules, receive notification reminders, and take plant selfies to create time-lapse videos showing plant growth over time.

Strengths:

1. Lets users create unique watering reminders for each plant.
2. Enables users to take plant selfies and build time-lapse growth videos.
3. Supports editing plant watering schedules and names.
4. Displays images of the plant in notification reminders.

Weaknesses:

1. Does not consider user's local weather or environmental conditions when managing plant care.
2. Does not provide plant information or include a built-in list of plants to choose from.

Competitor: Riyadh Plants[6]

description:

Riyadh Plants is a **mobile application** developed by the Royal Commission for Riyadh City, focused on providing detailed plant information suitable for the Riyadh climate.

Strengths:

1. Offers a large database of over 320 plants with species names in both Arabic and English.
2. Provides reliable, experience-based information developed under the supervision of experts in horticulture, landscaping, and afforestation in Riyadh.

Weaknesses:

1. Does not provide reminders or scheduling tools for plant care tasks.
2. Does not allow users to add or track their own plants.
3. Limited to plant species suitable for Riyadh only.

Feature	Leafwork	Happy Plant	Riyadh Plants	BloomLog
Weekly plant care timeline	✓	✗	✗	✗
Time-lapse plant growth (photos)	✗	✓	✗	✗

Plant Information large Database	×	×	✓	×
Watering reminders	✓	✓	×	✓
Plant recommendations based on user's weather	×	×	×	✓
Daily watering task filter	×	×	×	✓

Table 2: Comparison table of BloomLog and the competitors

This section outlines the unique features that differentiate BloomLog from other plant care platforms, including Leefwork, Happy Plant, and Riyadh Plants. In addition, It also highlights areas of overlap between BloomLog and existing platforms to provide a balanced view of its market position.

As shown in **Table 2**, BloomLog is the only platform among the compared systems that integrates weather-based plant recommendations, which ensures environmental compatibility—something competitors like Happy Plant and Leefwork do not offer. Additionally, while Leefwork provides timeline views and Happy Plant offers time-lapse photos, neither supports intelligent filtering for immediate care needs like BloomLog does. Compared to Riyadh Plants, which offers a large, Riyadh-specific plant database, BloomLog includes its own curated plant database that is not limited to one region. More importantly, BloomLog uses real-time weather data to suggest suitable plants based on the user's environment, offering personalized recommendations that go beyond just displaying plant information.

Moreover, BloomLog provides filtering options to show which plants need watering today, helping users focus on time-sensitive tasks. This functionality, combined with individual plant cards showing last watering date and care status, creates a seamless and proactive plant management experience.

In summary, BloomLog differentiates itself by combining weather-based plant recommendations, automated care scheduling, and a user-friendly interface that supports plant tracking and proactive care. While it shares some foundational features with its competitors—such as reminders and plant information—it uniquely delivers a smarter, climate-aware solution tailored to modern home gardeners.

3. CHAPTER 3: REQUIREMENTS ENGINEERING

3.1 Requirements Elicitation and Analysis

To gather the requirements for the proposed system, several elicitation methods were applied:

User Interviews

Semi-structured interviews were conducted with a range of participants who have different levels of experience with indoor plants. The interviews helped to understand user experiences, motivations, challenges, and expectations for digital support in plant care.

Questionnaires/Surveys

A survey was distributed to 12 participants to collect quantitative data on plant care habits, challenges, and desired features. This method allowed us to capture broader user perspectives in a structured format.

Observation and Focus on Similar Systems

We considered plant enthusiasts and asked what features would motivate them to use a website instead of traditional methods, and what aspects would make them prefer our platform over competitors. To address this, we reviewed and analyzed existing competing and similar digital platforms for plant care. This analysis helped us understand user expectations and identify opportunities to add competitive features and enhance our platform.

3.1.1 Interviews

We conducted interviews with five target users to gain deeper insight into their experiences with indoor plant care, the difficulties they encounter, and their expectations for a digital plant management platform. Each student in our team interviewed one participant, and together these interviews provided valuable input to understand user needs and common challenges. Below is a summary of the interview participants:

Interview Number	Name	Nationality	Age	Gender	Experience with Indoor Plants	Interviewer
1	Sarah	Saudi	40	Female	Advanced, over 10 years of consistent care	Aseel Almubaddel
2	Alreem	Saudi	23	Female	Intermediate, around 3 years of practice	Tala Alsheail

3	Omar	Saudi	32	Male	Basic to moderate, a few years of casual care	Norah Aldalal
4	Lina	Saudi	16	Female	Beginner to intermediate, about 1–2 years	Alanoud Aloraydi
5	Saad	Saudi	25	Male	Beginner, about 1 year of experience	Ruba alruzuq

Table 3: Summary Of Participants

Interview Findings:

1. Experience with Indoor Plants

The participants showed different levels of experience in plant care. Some have been taking care of plants for many years (Interview 1), while others only started recently (Interview 5). A few considered plant care part of their daily routine, while others described themselves as beginners. In general, everyone shared an interest in having indoor plants for decoration, enjoyment, or improving their spaces.

2. Plant Selection Criteria

Most participants mentioned that appearance is the first factor when choosing plants (Interviews 2, 3, and 4). At the same time, some also looked for plants that are easy to maintain and suitable for their environment (Interviews 1, 2, and 5). A few relied on recommendations from friends, shopkeepers, or online sources (Interviews 1 and 5).

3. Challenges in Plant Care

Watering was the most common problem. Several participants said they sometimes forget to water or water too much (Interviews 2, 3, and 5). Environmental issues like lack of sunlight, air conditioning, or dry weather were also reported (Interviews 1, 2, and 5). In addition, some participants mentioned that it is difficult to know what plant symptoms mean, or that online care information can be confusing (Interviews 2 and 3).

4. Desired Features in a Digital Platform

All participants saw value in having personalized watering reminders (Interviews 1, 2, 3, and 5). They also wanted recommendations for plants that fit their conditions (Interviews 1, 2, and 5). Other useful features included simple and trusted care instructions (Interviews 2 and 4), and tools to keep track of all their plants in one place (Interviews 1 and 4).

5. Information Needed Before Buying Plants

Before buying, most participants checked basic details such as watering, sunlight, and care level (Interviews 2, 3, and 5). Some also cared about how large the plant would grow (Interviews 1 and 4),

whether it is safe around children (Interview 1), and if it can handle local weather conditions like Riyadh's hot and dry climate (Interview 5).

3.1.2 Questionnaires

A survey was distributed to 12 participants to investigate the challenges they face in plant care, understand their current habits, and gauge their interest in a dedicated digital platform. The data analysis revealed several key insights, summarized below.

1. Motivations for Choosing Plants

As shown in **Figure[3]**, aesthetic appeal is the primary factor driving plant purchasing decisions, as it was a motivator for 50% of participants. Recommendations from others also play a significant role (25%), while ease of care (16.7%) and health/environmental benefits (8.3%) are less influential. These findings indicate that while visual appeal is the main driver, word-of-mouth recommendations are a key factor in the decision-making process.

2. Key Plant Care Challenges

According to the results shown in **Figure[4]**, the majority of participants (66.7%) identified remembering watering schedules as their biggest challenge, highlighting an urgent need for a solution. Choosing suitable plants for their environment was also a difficulty for 41.7% of participants. Additionally, finding reliable care information and maintaining proper lighting/humidity were challenges for 25% of participants each. These results show that both routine tasks and knowledge-based decisions are significant pain points for plant owners.

3. Current Watering Tracking Methods

Figure[5] illustrates that Participants rely equally on two traditional methods for tracking watering schedules: 50% depend on their memory alone, while the other 50% use notes or calendars. This demonstrates that none of the participants currently use a dedicated digital app, indicating a significant opportunity to introduce an efficient and organized digital alternative.

4. Most Desired Platform Features

As detailed in **Figure[6]**, when asked about the most valuable features for a plant care platform, watering reminders were a clear priority, with 83.3% of participants deeming them most important. Personalized plant recommendations and access to reliable care information followed, both considered essential by 66.7% of participants. In contrast, easy plant management (33.3%) and search and filter options (16.7%) were of lesser importance.

5. Willingness to Adopt a Digital Solution

According to the results shown in **Figure[7]** participants showed overwhelming enthusiasm for using a digital platform, with 100% confirming they would use a website to help them care for their plants. This result signifies a strong and untapped market demand, making the development of such a platform a promising and justified venture.

Conclusion of Findings

The requirements elicitation process identified the key challenges faced by users in plant care, namely the difficulty of remembering watering schedules and choosing suitable plants for their environment. The survey findings reinforced these points, highlighting a strong user demand for a digital solution. Furthermore, the results emphasize the need for a platform with features such as automated reminders and personalized recommendations to provide a valuable and trustworthy user experience. These insights will shape the proposed platform's requirements, ensuring it delivers a comprehensive and user-friendly experience that directly addresses the most pressing needs of plant owners.

3.2 System Users

This section describes general characteristics of our users, including their age, nationality, educational level, experience in plant care, and technical expertise.

- Users should be able to read and write and have basic familiarity with English words and letters.
- There is no specific educational level required for our users
- Users should have minimal technical knowledge to navigate and utilize the platform effectively.
- Users are expected to be 15 years or older
- Users may be male or female.
- Users may be from various nationalities

- Users may have prior experience in plant care; however, the platform is also designed to support individuals who are caring for plants for the first time.

3.3 Use Case Diagram

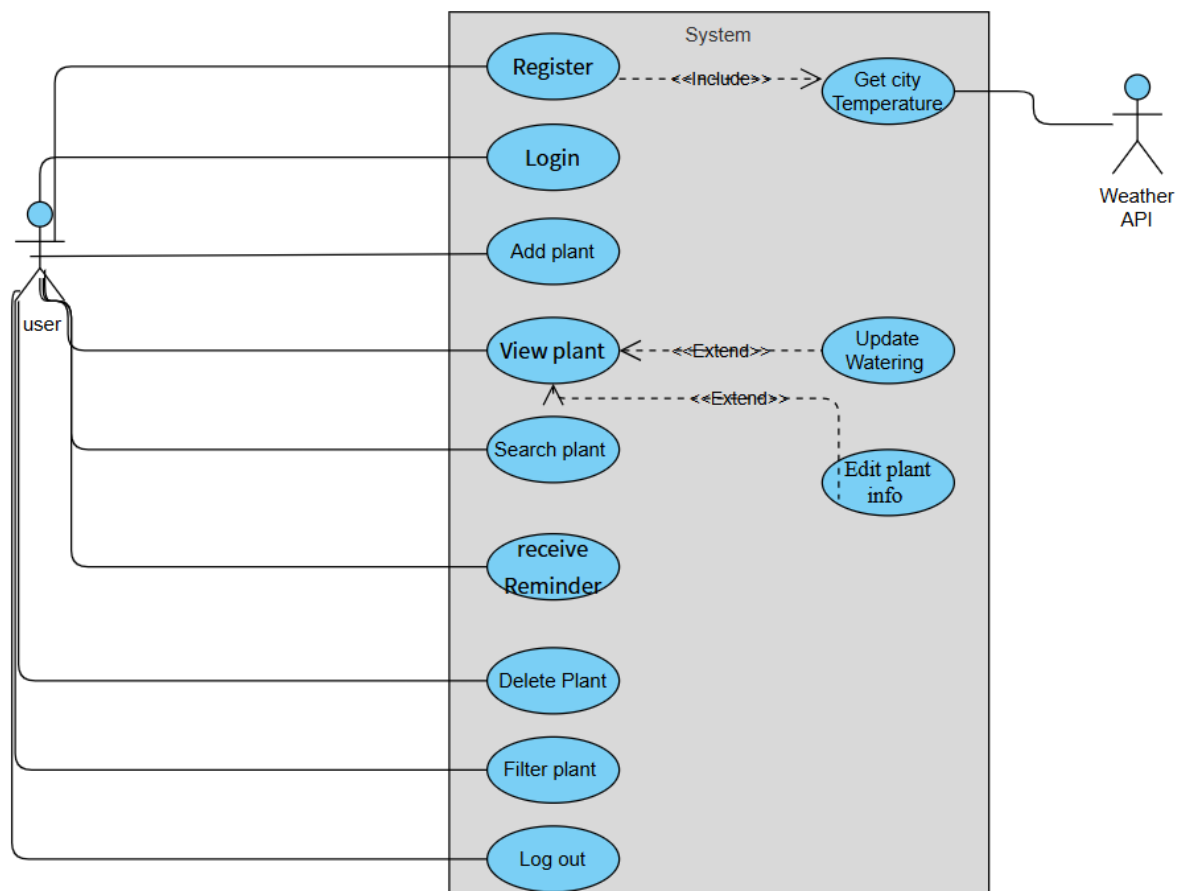


Figure 2: Use Case Diagram

3.4 Product Backlog

This section presents our product backlog, which consists of prioritized features formatted as user stories, along with their size and acceptance criteria. This product backlog will also be tracked in Jira.

PBI (user story)	Size (story points)	Type (Feature, defect, technical work, knowledge acquisition)	Acceptance Criteria The conditions of satisfaction that must be met for that item to be accepted.
As a new user, I want to register for an account so that I can access my personal plant care dashboard and manage my plants.	5	Feature	<ul style="list-style-type: none"> The user can easily access the registration page The registration page is easy to navigate from the System homepage. The registration form includes the required fields: username, email, password, and country. The system validates the email format (e.g., xxxx@xxx.xxx): If the email format is incorrect, the system displays a warning message. The password must include at least: <ul style="list-style-type: none"> One uppercase letter (e.g., "A"). One lowercase letter (e.g., "a"). One number (e.g., "1"). One special character (e.g., "@", "#", "\$"). The system ensures that all required fields are filled before submission. If the email is already registered, the system displays an appropriate error message. After successful registration, the user can log in using the newly created credentials Once the user submits the registration form, the system:

			<ul style="list-style-type: none"> ○ Uses the provided City to call the weather API. ○ Retrieves the current average temperature for that city. ○ Stores the temperature data along with the user profile for future plant recommendations.
As a registered user, I want to login with my email and password so that I can enter my account and use the services.	2	Feature	<ul style="list-style-type: none"> • If a registered user went to the login page and entered his/her email and password and clicked on login button, then the data associated to that user should be accessible. • If a registered user went to the login page and entered incorrect email or password and clicked on login button, then login fails with an error message without specifies which is wrong for security. • If a registered user went to the login page and entered his/her email and password and clicked on login button, then the user login session is loaded in less than eight seconds. • If a registered user went to the login page and entered his/her email and password and clicked on login button, then the user is redirected to his homepage.
As a user, I want to be able to logout from my account so that I ensure the security of my account and personal information.	2	Feature	<ul style="list-style-type: none"> • As a logged-in user, if I click on the Logout button within the application, then I should be successfully logged out from my account. • If I logged out and try to access any protected pages or features within the application, then I should be redirected to the login page, indicating that I no longer have access until I log back in.
As a user, I want to be able to add a plant suggested for my environment so that I only grow plants that are suitable for my home conditions.	3	Feature	<ul style="list-style-type: none"> • As a logged-in user, if API provide the environment details, then the system should generate a list of recommended plants. • If I select a plant from the suggested list, then it should be successfully added to my profile with its default care schedule. • If no plants match my environment, then the system should notify me there is “no suitable plant found for your environment”. • After adding the plant, it should immediately appear in my plant list with its basic care instructions (watering, fertilizing).

			<ul style="list-style-type: none"> If the user clicks the Add icon, then an add form with fields (Nickname – required, Notes – optional) should be displayed. The add form shall require a Nickname to be entered before submission. The add form shall accept submission with or without Notes, since this field is optional.
As a user, I want to view the details of each plant along with its watering data and current state, so that I can easily monitor and manage my plant's health.	3	Feature	<ul style="list-style-type: none"> When the user logs in, the user homepage displays all plants added to their profile. For each plant, when the user clicks on it the user is redirected to the view page and the following details are shown: <ul style="list-style-type: none"> Plant name and basic info (type, light needs, environment suitability). Last watering date. Next scheduled watering date. Current watering status (e.g., "Needs Watering," "Watered")
As a user, I want to search for plants by nicknames so that I can quickly find the plant I'm looking for.	3	Feature	<ul style="list-style-type: none"> If the user enters his homepage a search bar or an input field should be visible at the top of the page. If the user submits a plant nickname, then the system should display a list of plants that match the nickname If no plants match the nickname, then the system should display a message indicating that no results were found.
As a user, I want to edit my plant's name, last watering date, or notes so that I can keep my plant info updated.	3	Feature	<ul style="list-style-type: none"> If the user clicks the "Edit" icon in the view page, then the user is redirected to the edit page and an edit form with pre-filled fields (nickname, last watering date, and notes) should be displayed. If the user changes any field and clicks "Save", the system should update the plant data and reflect the changes immediately on the user homepage. If the user clicks "Cancel", the form should close without saving any changes.

			<ul style="list-style-type: none"> the updated data should be saved permanently and still be visible even after the user refreshes the page.
As a user, I want to delete a plant from my profile so that I can remove plants I no longer own or care for.	2	Feature	<ul style="list-style-type: none"> As a user, if I access my account, then I should be able to view a list of my existing plants. If I go to the plant list in my account, then the system should display all plants with a button to delete them. If I select the delete option for a plant, then the system should prompt for confirmation to ensure I intend to remove it. If I confirm the deletion, then the system should remove the plant from my account and update my plant list. If I click on the delete button, then the system should display a confirmation message indicating that the plant has been successfully deleted.
As a user, I want to receive timely watering reminders for each plant I added, so that I can avoid forgetting and keep my plants healthy.	5	Feature	<ul style="list-style-type: none"> When a plant's watering date arrives, the system should notify the user via email with the plant name and due date. If the user clicks "Watered," the system should automatically update the next reminder based on the plant's schedule. Notifications should be delivered consistently (e.g., once per due date, not duplicated).
As a user, I want to update the last watering date of a plant with a single click using a "Watered" button, so that I can easily keep my plant care records accurate without extra effort	2	Feature	<ul style="list-style-type: none"> Each plant entry in the list has a visible "Watered" button. When the user clicks the button: The system automatically updates the last watering date to the current date. The watering status changes to "Watered." The plant's care schedule is refreshed to reflect the new watering date
As a user, I want to filter my plant list to show only the plants that need watering today so that I can focus on plants that need care today.	3	Feature	<ul style="list-style-type: none"> a filter option labeled "Needs Watering Today" should be available on the homepage. If the filter is activated, the system should display only the plants whose watering schedule matches the current day. If no plants need watering today, the system should display a message indicating "No plants need watering today." If the user deactivates the filter, the full list of plants should be displayed again. The filter setting should reset when the user refreshes the page.

As a user, I want the platform to be simple and intuitive, so that I can add, edit, or view my plants without confusion or extra effort.	3	Feature	<ul style="list-style-type: none"> • Users should be able to add, edit, or view plants in no more than 3 steps from the main screen. • The interface must have clear contrast and support keyboard navigation. • Error messages should explain exactly what went wrong and how to fix it (e.g., "Please enter a valid plant name"). • User testing should confirm that the average user can perform key tasks smoothly.
As a user, I want the BloomLog system to stay accessible most of the time, so that I can rely on it whenever I need to check or update my plant data.	2	Feature	<ul style="list-style-type: none"> • The website should be online and usable whenever a user tries to access it. • Scheduled maintenance should be displayed on the homepage at least 24 hours in advance. • A simple daily backup of the plant database should be performed to prevent data loss. • In case the website is temporarily down, users should see a friendly message like: "The site is currently under maintenance. Please try again later."
As a user, I want the website to load within 3 seconds so that I can quickly access my data	3	Feature	<ul style="list-style-type: none"> • The homepage should load in under 3 seconds for 90% of users • Database queries should execute within 600 milliseconds

Table 4: Product Backlog of BloomLog

4 Chapter 4: System Design and Development

4.1 System Architecture

The BloomLog system utilizes a **Client–Server Architecture**, which establishes a clear separation of concerns between the user interface and the backend logic. This model promotes efficient communication, scalability, and maintainability by centralizing processing and data management.

Architecture Description

The architecture is composed of four main components: Client, Internet, Server, and MySQL Database.

Client (User-Side Application)

The client represents the end-user's web application interface. This interface allows users to perform essential actions, including: User Authentication (Registration, Log in, and Log out), Plant Management (Adding, Viewing, Editing, Deleting, and Searching for plants), and Watering Management (Filtering by "Watering Needed" and Marking as "Watered"). The client sends HTTP Requests to the server, which processes the necessary operations and returns responses accordingly.

Internet

The Internet serves as the communication backbone, reliably routing the Requests originating from the client to the server and delivering the corresponding Responses back to the client.

Server (Backend Logic and Processing)

The server acts as the system's core, handling the business logic, authentication, validation, and external service integration. It is implemented using web Server/PHP (server-side) technology. The server is responsible for processing client requests, performing CRUD operations, and executing complex logic such as:

API Integration: Calling an external API to fetch temperature and humidity data for a user's city during registration.

Environmental Filtering: Using the fetched environmental data to automatically filter and recommend suitable plants from the PlantCatalog when the user requests to add a new plant.

Watering Scheduling: Calculating the next watering date based on plant frequency.

By maintaining this logic on the server, the system guarantees data integrity and streamlined processing.

MySQL Database (Data Repository)

The MySQL database is the system's persistent data repository. It supports the server by storing crucial information across three main entities: User (including environmental labels fetched from the API), PlantCatalog (plant attributes and watering needs), and UserPlant (personalized plant records and watering history). The database ensures quick data retrieval and supports system scalability.

Data Flow Description

The data flow within the system follows a structured, request-response pattern. When a user makes a Request through the client interface (e.g., "Registration" or "Add Plant"), it is transmitted over the Internet to the Server. The Server then processes the request, performs necessary validation, executes the business logic (including API calls and environmental filtering), and interacts with the MySQL Database to retrieve or update the relevant data. The processed information is then sent back as a Response to the Client, where it is displayed to the user in an interactive format.

Reason for Choosing This Architecture

The **Client-Server architecture** was chosen because it ensures a clear separation of responsibilities between the user interface and backend logic. It enhances system scalability, allows for secure centralized data management, and supports future expansion such as adding new modules or connecting with additional APIs. Moreover, it aligns well with web-based systems that rely on dynamic interaction and real-time data exchange.

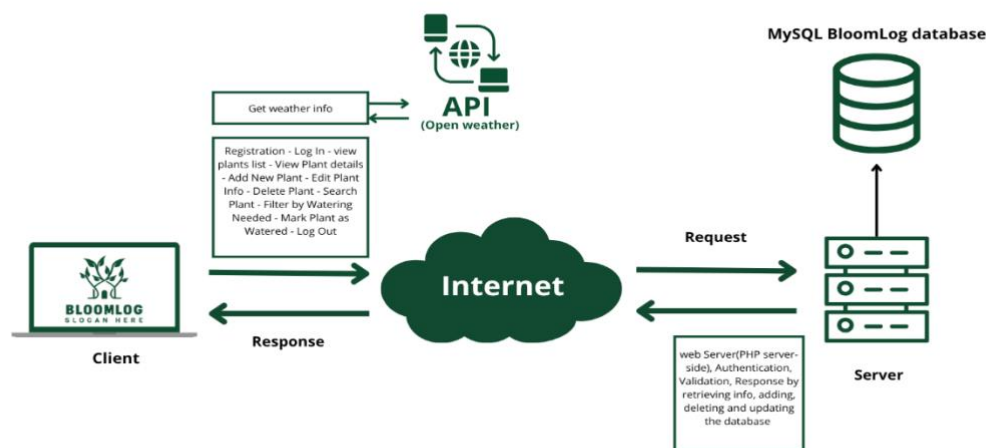


Figure 3: System Architecture of Bloomlog

4.2 Class Diagram

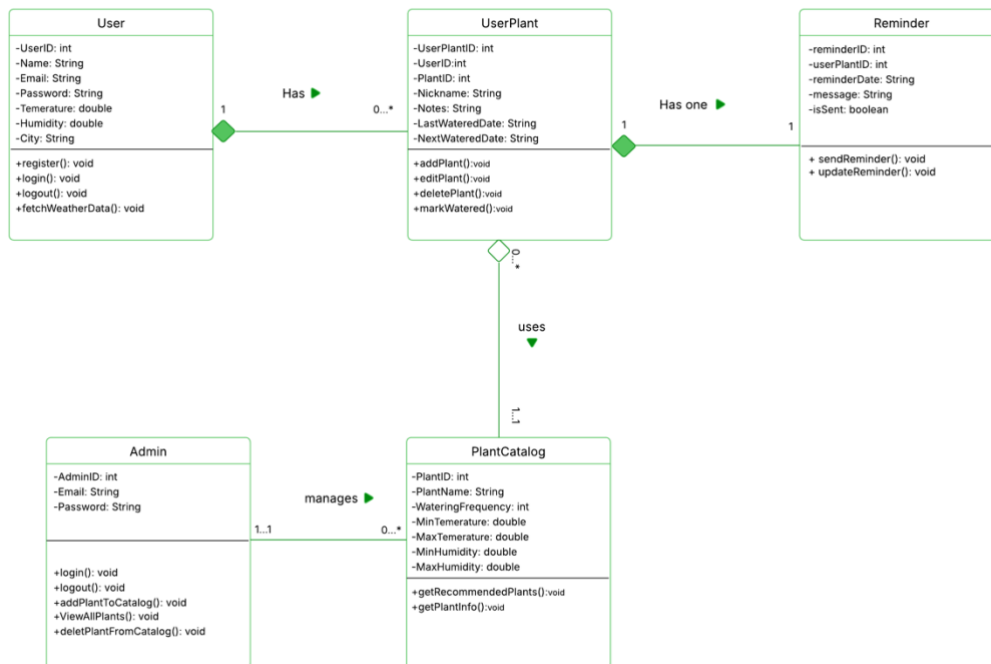


Figure 4: Class Diagram Of BloomLog

4.3 Data Design

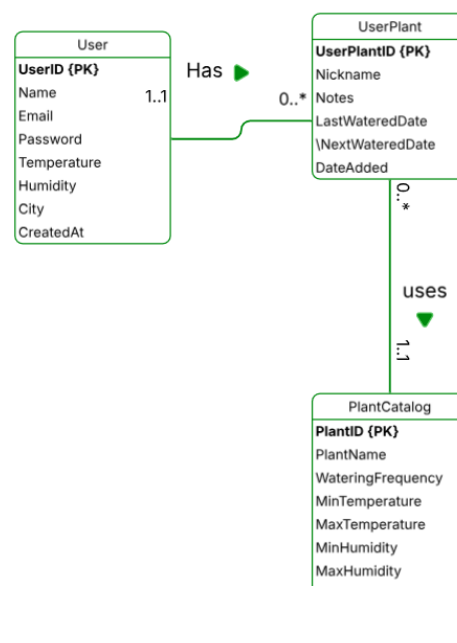


Figure 5:ER Diagram Of BloomLog

Relational Schema:

User (UserID, Name, Email, Password, Temperature , Humidity , City, CreatedAt)

Primary Key UserID

UserPlant (UserPlantID, UserID, PlantCatalogID, Nickname, Notes, LastWateredDate, NextWateredDate, DateAdded)

Primary Key UserPlantID

Foreign Key UserID references User (UserID)

Foreign Key PlantCatalogID references PlantCatalog (PlantID)

PlantCatalog (PlantID, PlantName, WateringFrequency, MinTemperature , MaxTemperature, MinHumidity, MaxHumidity, Image_Path, Plant_Info, SummaryInfo)

Primary Key PlantID

Data Dictionary:

- Data Dictionary showing description of all entities

Entity Name	Description	Aliases	Occurrence
User	Represents the individual person who uses the application to track their plants	-	Each user may own one or more plants, or none
UserPlant	Represents plants added by the user to his profile	-	-Each user plant belongs to exactly one user -Each user plant refers to exactly one plant catalog
PlantCatalog	Stores the list of all plant types that are available to be added to a user's Plant.	-	A plant in the catalog may be linked to one or more user plants, or to none.

Table 5: Data Dictionary of all bloomlog entities

- Data Dictionary showing description of all relationships

Entity Name	Multiplicity	Relationship	Entity Name	Multiplicity
User	1..1	Has	UserPlant	0..*
UserPlant	0..*	Uses	PlantCatalog	1..1

Table 6: Data Dictionary of all bloomlog relationships

- Data Dictionary showing description of all attributes

Entity Name	Attribute	Description	Data Type	Length	Nulls	Multi-Valued	Default Value	Range	PK
Users	UserID	Unique identifier for each user	INTEGER		N	N	N		Y
	Name	User's full name	VARCHAR	100	N	N	N		
	Email	User's email	VARCHAR	50	N	N	N		
	Password	User's Password	VARCHAR	255	N	N	N	Min 8 characters	
	Temperature	Temperature of the user city	Decimal	4.2	N	N	N		
	Humidity	humidity of the user city	Decimal	4.2	N	N	N		
	City	User's registered city	VARCHAR	100	N	N	N		
	CreatedAt	The date at which the user's account was created	DATE		N	N	N		

UserPlant	UserPlantID	Unique identifier for each user plant	INTEGER		N	N	N		Y
	Nickname	Nickname for each user plant	VARCHAR	100	N	N	N		
	Notes	Optional notes added by the user for his plant	VARCHAR	255	Y	N	N		
	LastWateredDate	The last date the plant was watered	DATE		N	N	N		
	NextWateredDate	The next water date for the user plant	DATE		N	N	N		
	DateAdded	The date the plant was added to the user profile	DATE		N	N	N		
PlantCatalog	PlantID	Unique identifier for each plant in the catalog	INTEGER		N	N	N		Y
	PlantName	Common name of the plant	VARCHAR	100	N	N	N		
	WateringFrequency	Number of days between watering	INTEGER		N	N	N	≥ 1	
	MinTemperature	Minimum Temperature for the plant	Decimal	4.2	N	N	N		
	MaxTemperature	Maximum Temperature for the plant	Decimal	4.2	N	N	N		
	MinHumidity	Minimum humidity for the plant	Decimal	4.2	N	N	N		
	MaxHumidity	Maximum humidity for the plant	Decimal	4.2	N	N	N		
	image_path	Path to the plant's image	VARCHAR	255	N	N	N		
	Plant_info	General information or care instructions for plant	VARCHAR	255	N	N	N		

	SummaryInfo	Summary information about the plant	VARCHAR	100	N	N	N		
--	-------------	---	---------	-----	---	---	---	--	--

Table 7: Data Dictionary of all bloomlog attributes

4.4 Component Design

In this section, presents the detailed component design of three main BloomLog system functions:

Filter Plants by Watering Need, Edit Plant Information, and Delete Plant.

Each component is described through its classification, definition, construction, and pseudocode, followed by a flowchart that illustrates its logical flow.

1) Delete Plant:

Classification: Function

Definition: The user should be able to delete their plant by clicking the “Delete” button on the “Home” page.

Pseudocode:

```

BEGIN
  DISPLAY "Home" page

  IF user clicks "Delete" button for a plant THEN
    DISPLAY "Are you sure you want to delete this plant?"
    DISPLAY "Yes" and "No" options
  ENDIF

  IF user selects "Yes" THEN
    DELETE plant record FROM database
    DISPLAY message to confirm the deletion
    REMOVE plant FROM "Home" page
  ELSE
    DISPLAY "Plant deletion canceled"
  ENDIF
END

```


FlowChart:

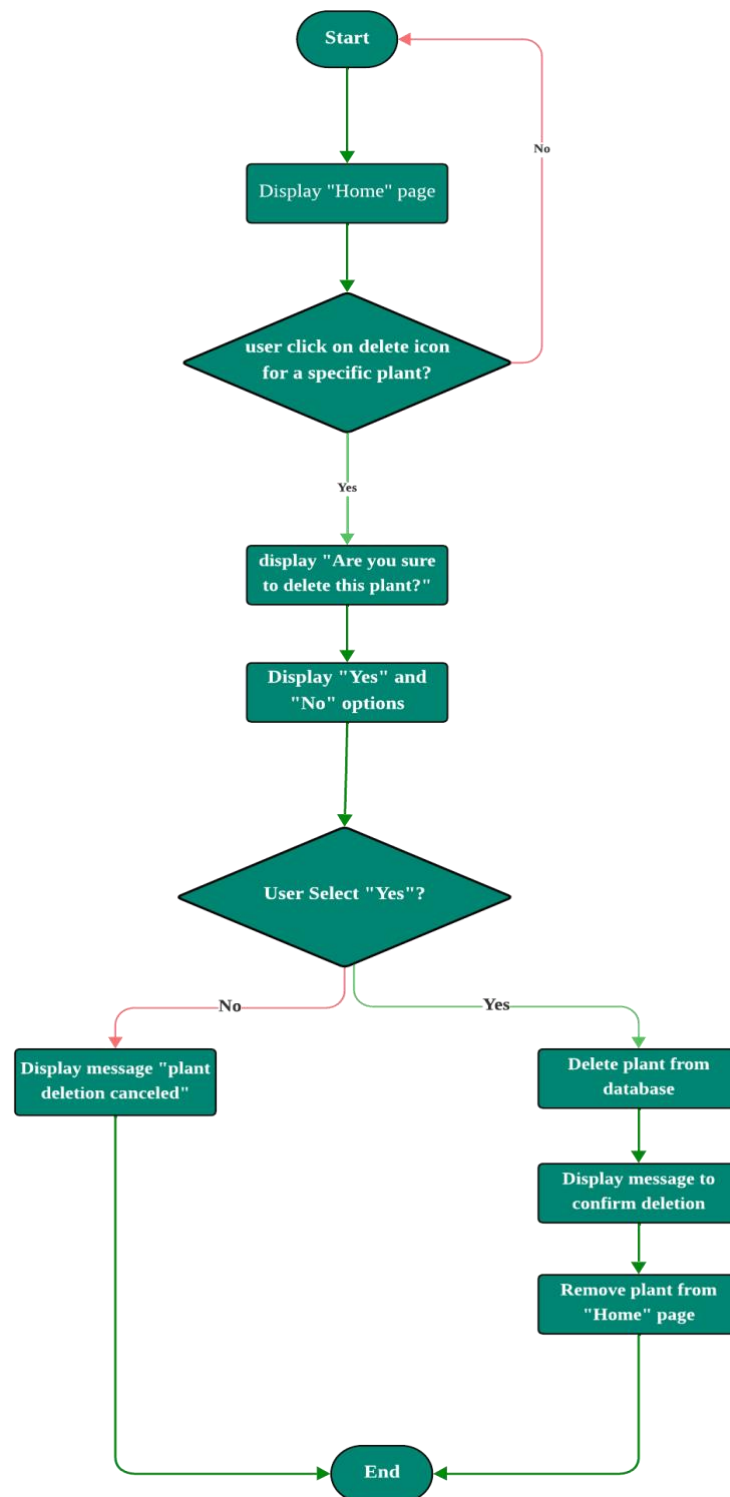


Figure 6: Delete Plant Flowchart

2) Search for Plant:

Classification: Function

Definition: The user should be able to search for plants by nickname to quickly find a specific plant.

Pseudocode:

BEGIN

 DISPLAY search bar on " Home " page

 USER enters search query (plant nickname)

 IF search query IS EMPTY THEN

 DISPLAY message "Please enter a plant nickname to search."

 ELSE

 SEARCH user's plants database for matches

 IF matches found THEN

 DISPLAY list of matching plants with their details (name, image, watering status)

 ELSE

 DISPLAY message "No plants found with that nickname."

 END IF

 END IF

END

FlowChart:

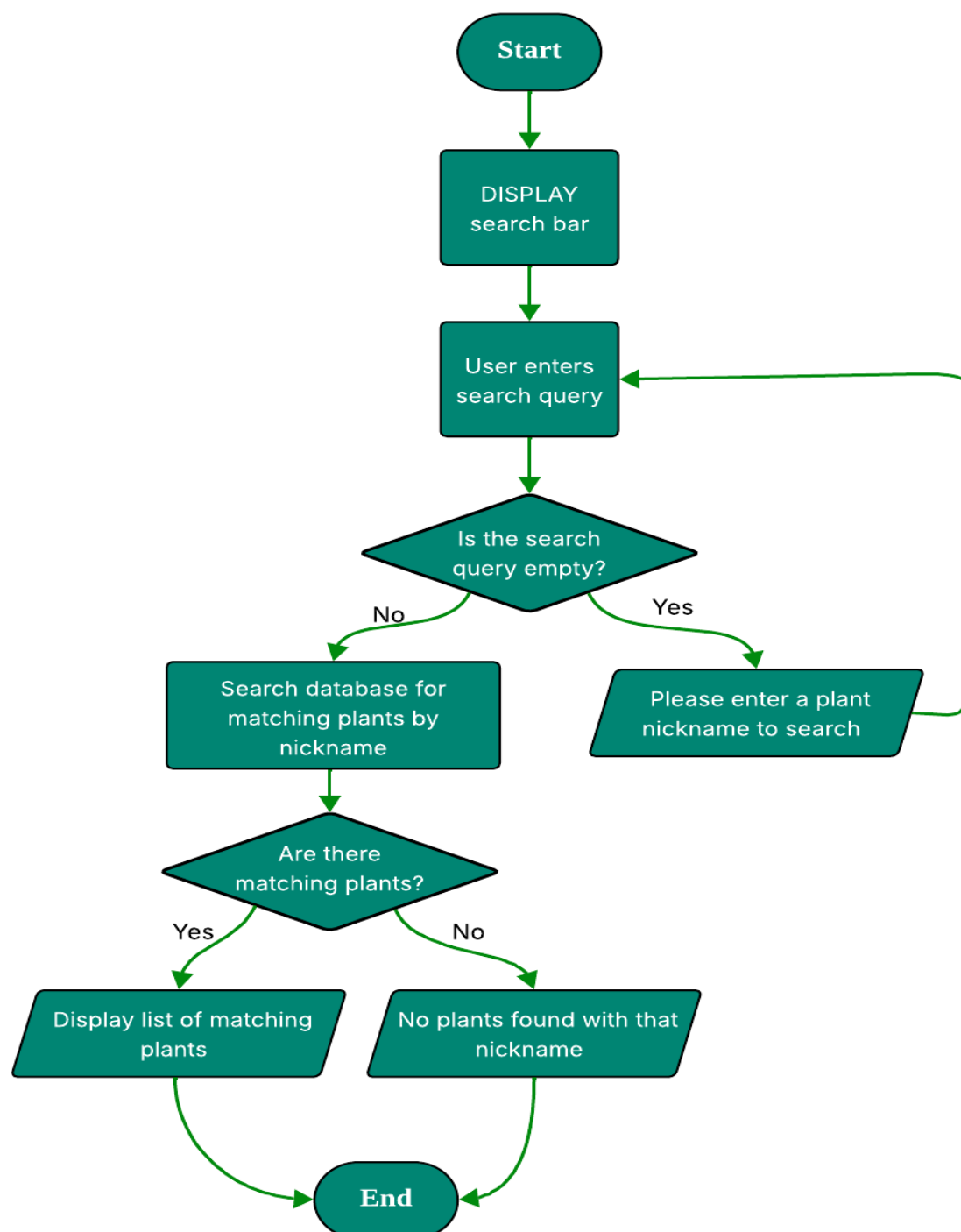


Figure 7: Plant Search Functionality Flowchart

3) Watering Status Filtering:

Classification: Function

Definition:

The user should be able to filter their plant list based on watering needs.

The filter provides two options:

1. Show All Plants – displays all plants owned by the user.
2. Plants That Need Watering Today – displays only the plants whose next watering date matches the current date.

Pseudocode:

BEGIN

DISPLAY "Home" page

DISPLAY filter options:

- "Show All Plants"
- "Plants That Need Watering Today"

USER selects a filter option

```
IF user selects "Show All Plants" THEN
    RETRIEVE all plants FROM UserPlant
    WHERE UserID = current_user_ID
    DISPLAY all plants
ENDIF
```

```
IF user selects "Plants That Need Watering Today" THEN
    GET current_date
    RETRIEVE plants FROM UserPlant
    WHERE UserID = current_user_ID
    AND NextWateredDate = current_date
```

```
    IF number_of_retrieved_plants > 0 THEN
        DISPLAY plants
    ELSE
        DISPLAY message "No plants need watering today."
    ENDIF
ENDIF
```

```
IF page is refreshed THEN
    RESET filter to default ("Show All Plants")
    RETRIEVE all plants FROM UserPlant
    WHERE UserID = current_user_ID
    DISPLAY all plants
ENDIF
```

END

Flowchart:

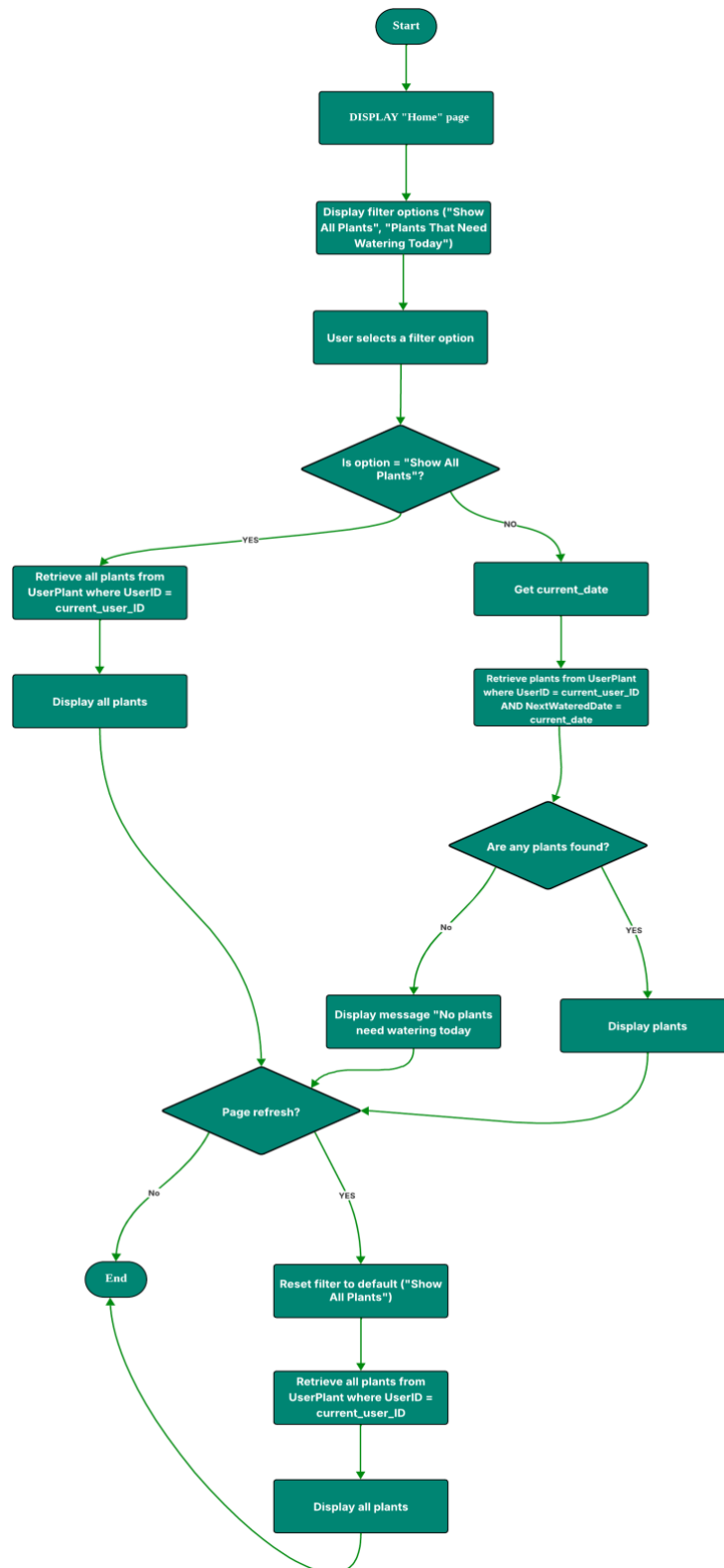


Figure 8: Watering Status Filtering Flowchart

4.5 Interface Design

4.5.1 SITE MAP:

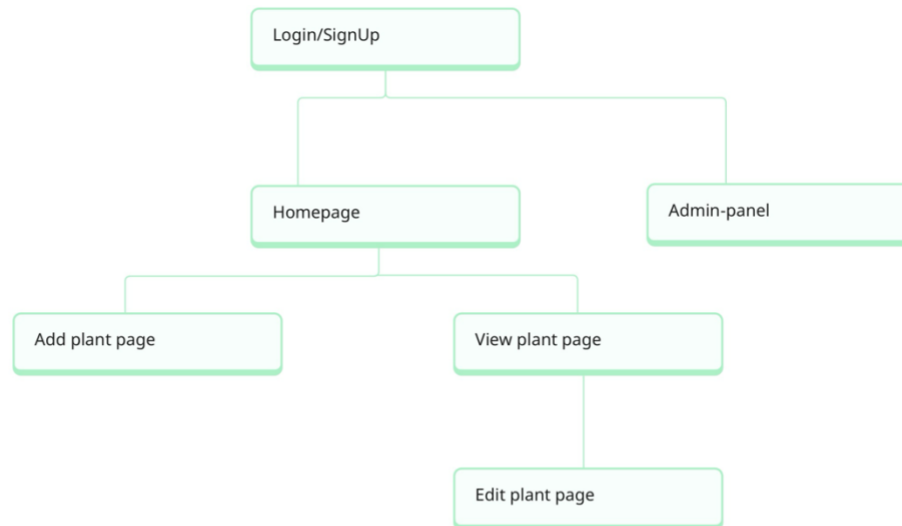


Figure 9: Site Map of BloomLog

4.5.2 UX Guidelines:

1. Recognition Rather Than Recall: the interface provides intuitive navigation and visual cues to reduce users' cognitive load.
2. User Control: the interface empowers users to freely navigate, undo, or cancel actions through clear exit options and confirmation prompts, ensuring they feel in control of their experience and confident in every interaction.
3. Error Handling: Prevent errors where possible by validating user inputs and providing clear instructions. When errors occur, informative error messages should be displayed, explaining the issue and suggesting possible solutions, such as when the user enters an invalid password in the registration process.
4. Provide Feedback: The system gives immediate responses to user actions, such as confirmation messages for completed actions.
5. Consistency: A uniform design language is maintained across all pages to improve usability.

4.5.3 GITHUB Link:

<https://github.com/talashail/BloomLogWebsite.git>

4.5.2 JIRA Link:

<https://2025-it320section56570-g2.atlassian.net/jira/software/projects/SCRUM/boards/1?atlOrigin=eyJpIjoiNjU2MTg4ZDEyODYwNDE1Y2E0NDI2N2FmMDRiYTZjZjkiLCJwIjoiaj9>

5.Chapter 5 : Testing

This chapter documents the comprehensive testing activities conducted on the final version of the BloomLog system. As a plant care management platform, delivering functional features and a satisfying experience for end users is essential. The testing strategy follows a structured approach encompassing User Story Acceptance Testing, Integration Testing, and User Acceptance Testing (UAT).

The primary objective of this testing phase is to validate that BloomLog meets all specified requirements and provides a seamless user experience for plant enthusiasts. Each testing method serves a distinct purpose: User Story Acceptance Testing verifies that individual features fulfill their intended purpose from the user's perspective; Integration Testing ensures that all system components work together harmoniously; and User Acceptance Testing confirms that the system meets the practical needs and expectations of the target audience.

Through rigorous testing, we aim to identify any discrepancies between expected and actual behavior, validate the system's robustness, and gather valuable feedback for continuous improvement. The results presented in this chapter demonstrate BloomLog's readiness for deployment and its capability to effectively support users in managing their plant care routines.

5.1 User Story Acceptance Testing

User Story Acceptance Testing is a critical phase in the development of Bloomlog, ensuring that the platform provides an intuitive and engaging experience for users who wish to manage their plants. By testing each feature from the perspective of actual users, we can identify and resolve any potential issues or inconsistencies that may hinder their interaction with the application. This approach improves the overall quality of Bloomlog and builds user trust and satisfaction by confirming that their needs and expectations are fully addressed.

We tested all the acceptance criteria outlined in our user stories, covering core functionalities such as user Sign up, plant addition , filtering, searching , and Updating plants watering states. Additionally, non-functional aspects like Availability , response time, and usability were evaluated to guarantee a smooth and efficient user experience.

To perform the tests effectively, we first created detailed use cases based on realistic scenarios and then engaged representative users in a controlled environment. Participants were asked to complete tasks while we observed their interactions with the platform, allowing us to gather feedback and ensure that every acceptance criterion was properly met.

This thorough testing process ensures that Bloomlog not only meets the defined requirements but also delivers a user-friendly and reliable platform that encourages environmental engagement and collaboration.

Sprint Number	User story	Acceptance criteria	Test cases	Pass ?	Comments
2	As a new user, I want to register for an account so that I can access my personal plant care dashboard and manage my plants.	<ul style="list-style-type: none"> The user can easily access the registration page The registration page is easy to navigate from the System homepage. The registration form includes the required fields: username, email, password, and country. The system validates the email format (e.g., xxxx@xxx.xxx): If the email format is incorrect, the system displays a warning message. The password must include at least: <ul style="list-style-type: none"> One uppercase letter (e.g., "A"). One lowercase letter (e.g., "a"). One number (e.g., "1"). One special character (e.g., "@", "#", "\$"). The system ensures that all required fields are filled before submission. If the email is already registered, the system displays an appropriate error message. After successful registration, the user 	<ol style="list-style-type: none"> Test Case 1: Successful Registration Open the website and navigate to the Login page. Click the "Sign Up" tab to open the registration form. Enter a unique Full Name, valid Email, unique Username, strong Password, and select a city from the dropdown list. Click the "Sign Up" button. Verify that a success message appears indicating successful registration and that the user is redirected to the Login page. Test Case 2: Invalid Registration Attempts Try signing up using an existing email or username and verify that an error message appears (e.g., "This email or username is already in use."). Leave one or more required fields empty and verify that the system prevents submission and displays an error message. 	Yes	-

		<p>can log in using the newly created credentials</p> <ul style="list-style-type: none"> Once the user submits the registration form, the system: Uses the provided City to call the weather API. Retrieves the current average temperature for that city. Stores the temperature data along with the user profile for future plant recommendations. 	<p>10. Enter an invalid email format (e.g., "abc@") and verify that the system displays a validation error.</p> <p>11. Enter a weak password that does not meet the required conditions and verify that an error message appears.</p> <p>12. Try submitting the form without selecting a city and verify that the system displays an error.</p>		
2	<p>As a registered user, I want to login with my email and password so that I can enter my account and use the services.</p>	<ul style="list-style-type: none"> As a logged-in user, if I click on the Logout button within the application, then I should be successfully logged out from my account. If I logged out and try to access any protected pages or features within the application, then I should be redirected to the login page, indicating that I no longer have access until I log back in. 	<p>1. Test Case 1: Successful Login</p> <p>2. Open the website and go to the Login page.</p> <p>3. Enter a valid Email and the correct Password of an existing registered user.</p> <p>4. Click the "Login" button.</p> <p>5. Verify that the system logs the user in successfully and redirects to the Homepage.</p>	Yes	-

			<p>6. Verify that all user data loads correctly and within the required time (less than 8 seconds).</p> <p>7. Test Case 2: Invalid Login Attempts</p> <p>8. Enter an incorrect Email or incorrect Password and click the "Login" button.</p> <p>9. Verify that the system displays a general error message (without specifying whether the email or password is wrong).</p> <p>10. Leave one or both fields empty and attempt to submit; verify that the system prevents login and displays a validation message.</p> <p>11. Try entering an email in an invalid format (e.g., "abc@") and verify that the system displays an error.</p>		
--	--	--	--	--	--

2	As a user, I want to view the details of each plant along with its watering data and current state, so that I can easily monitor and manage my plant's health.	<ul style="list-style-type: none"> When the user logs in, the user homepage displays all plants added to their profile. For each plant, when the user clicks on it the user is redirected to the view page and the following details are shown: Plant name and basic info (type, light needs, environment suitability). Last watering date. <ul style="list-style-type: none"> Next scheduled watering date. Current watering status (e.g., "Needs Watering," "Watered") 	<ol style="list-style-type: none"> The homepage displays all plants added to the user's profile. Clicking on a plant redirects to the plant details page. The plant details page shows: <ul style="list-style-type: none"> Plant name and type Light needs Environment suitability The last watering date is displayed correctly. The next scheduled watering date is displayed correctly. The current watering status (e.g., "Needs Watering," "Watered") is displayed correctly. 	Yes	
2	As a user, I want to update the last watering date of a plant with a single click using a "Watered" button, so that I can easily keep my plant care records accurate without extra effort	<ul style="list-style-type: none"> Each plant entry in the list has a visible "Watered" button. When the user clicks the button: <ul style="list-style-type: none"> The system automatically updates the last watering date to the current date. The watering status changes to "Watered." The plant's care schedule is refreshed to reflect the new watering date 	<ol style="list-style-type: none"> Each plant entry in the list displays a visible "Watered" button. Clicking the "Watered" button updates the plant's last watering date to the current date. The plant's watering status changes to "Watered." The plant's care schedule is refreshed to reflect the new watering date. 	Yes	
2	As a user, I want to delete a plant from my profile so that I can remove plants I	<ul style="list-style-type: none"> As a user, if I access my account, then I should be able to view a list 	<ol style="list-style-type: none"> Log in to the website using valid credentials. Navigate to the My Plants section of the account. 	Yes	-

	no longer own or care for.	<p>of my existing plants.</p> <ul style="list-style-type: none"> If I go to the plant list in my account, then the system should display all plants with a button to delete them. If I select the delete option for a plant, then the system should prompt for confirmation to ensure I intend to remove it. If I confirm the deletion, then the system should remove the plant from my account and update my plant list. If I click on the delete button, then the system should display a confirmation message indicating that the plant has been successfully deleted. 	<ol style="list-style-type: none"> Verify that all added plants are displayed, each with a Delete button beside it. Click the Delete button for any plant in the list. Verify that a confirmation prompt appears asking to confirm the deletion. Click Confirm on the prompt. Verify that the selected plant is removed from the list. Verify that a confirmation message appears stating that the plant has been successfully deleted. Refresh the page or revisit the My Plants list to confirm the plant no longer appears. 		
2	As a user, I want to be able to add a plant suggested for my environment so that I only grow plants that are suitable for my home conditions.	<ul style="list-style-type: none"> As a logged-in user, if API provide the environment details, then the system should generate a list of recommended plants. If I select a plant from the suggested list, then it should be successfully added to my profile with its default care schedule. 	<ol style="list-style-type: none"> Log in to the website and click the Add Plant button in the homepage. Verify that a list of suitable plants appears if environment data is available. If no plants are found, verify that a suitable message is displayed. If plants are found verify that the Add Plant form is displayed 	Yes	-

		<ul style="list-style-type: none"> If no plants match my environment, then the system should notify me there is “no suitable plant found for your environment”. After adding the plant, it should immediately appear in my plant list with its basic care instructions (watering, fertilizing). If the user clicks the Add icon, then an add form with fields (Nickname – required, Notes – optional) should be displayed. The add form shall require a Nickname to be entered before submission. The add form shall accept submission with or without Notes, since this field is optional. 	<p>with fields: Nickname , list of suitable plants (required) and Notes (optional).</p> <p>5. Try submitting the form without entering a Nickname, verify that the system notify the user and stop the submission</p> <p>6. Try submitting the form without selecting a plant, verify that the system notify the user and stop the submission</p> <p>7. Enter a Nickname, select a plant and (optionally) Notes, then click Add.</p> <p>8. Verify that the plant is successfully added and appears in the user’s plant list with basic care instructions.</p> <p>9. Verify that the user is redirected to the homepage after addition.</p>		
2	As a user, I want to search for plants by nicknames so that I can quickly find the plant i’m looking for.	<ul style="list-style-type: none"> If the user enters his homepage a search bar or an input field should be visible at the top of the page. If the user submits a plant nickname, then the system should display a list of plants that match the nickname If no plants match the nickname, then 	<p>1. Test Case 1: Successful Plant Search</p> <p>2. Log in to the website and navigate to the Homepage.</p> <p>3. Verify that the Search bar is visible at the top of the plant list.</p> <p>4. Enter a plant nickname that exists in the user’s plant list.</p>	Yes	-

		the system should display a message indicating that no results were found.	<p>5. Click the Search icon or press Enter.</p> <p>6. Verify that all plants matching the entered nickname are displayed correctly.</p> <p>7. Test Case 2: No Matching Results</p> <p>8. Enter a plant nickname that does not exist in the user's plant list.</p> <p>9. Click the Search button or press Enter.</p> <p>10. Verify that the system displays a clear message such as "No plants found."</p> <p>11. Ensure that no incorrect or unrelated plants appear in the results.</p> <p>12. Test Case 3: Empty Search Input</p> <p>13. Leave the search bar empty.</p> <p>14. Click the Search button.</p> <p>15. Verify that the system displays the full plant list.</p>		
2	As a user, I want to edit my plant's name, last watering date, or notes so that I can keep my plant info updated.	<ul style="list-style-type: none"> When the user clicks the Edit icon from the plant view page, the system must redirect the user to the edit page and display a form with 	<p>1- When I click the "Edit" icon on the plant view page, I should be redirected to the edit page and see a form with the plant's current information pre-filled.</p> <p>2- When I modify any field in</p>	Yes	

		<p>pre-filled plant information, including Added date, watering schedule, care instructions and next watering date (read-only), and the editable fields: nickname, last watering date, and care notes.</p> <ul style="list-style-type: none"> • The system must allow the user to edit only the fields: nickname, last watering date, and care notes. All other plant information should remain visible but non-editable. • When the user makes changes and clicks Save, the system must validate the inputs, update the plant record in the database, redirect the user back to the plant view page, and the updated values must appear immediately. • If the user clicks Cancel, the system must close the edit form, return the user to the plant view page, and no changes should be saved. • Updated data must be stored permanently in the database so that the changes remain visible even after refreshing the page or logging in again later. • Access to the edit page must be restricted to logged-in users only, and users should only be allowed to edit plants that belong to their account. • If the user enters invalid input (e.g., empty nickname or invalid date) and clicks Save, the system must display a clear 	<p>the edit form, the system should allow me to update the plant name, nickname, last watering date, or notes.</p> <p>3- When I click “Save”, the system should update the plant information and show the changes immediately on the homepage.</p> <p>4- When I refresh the homepage after saving, the updated plant data should still appear correctly.</p> <p>5- When I click “Cancel”, the system should close the edit form and keep all original plant information unchanged.</p> <p>6- When I try to save the form with invalid or empty required fields, the system should prevent saving and display an appropriate error message.</p>	
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		validation error and prevent saving until the			
2	As a user, I want to filter my plant list to show only the plants that need watering today so that I can focus on plants that need care today.	<ul style="list-style-type: none"> The homepage must include a filter option labeled "Needs Watering Today." When the user activates the filter, only the plants that have a next watering date equal to today's date should be displayed. If there are no plants that need watering today, the system should display the message "No plants need watering today." When the user deactivates the filter, the full list of the user's plants should be displayed again. The filter selection should reset automatically when the user refreshes the page. 	<ol style="list-style-type: none"> When I open the homepage, I should see a filter option labeled "Needs Watering Today." When I activate the "Needs Watering Today" filter, I should only see plants whose next watering date matches today's date. When the filter is active and there are no plants that need watering today, I should see the message "No plants need watering today." When I deactivate the filter, the homepage should return to displaying all my plants. When I refresh the homepage, the filter should reset automatically, and the full plant list should appear. 	Yes	
2	As a user, I want the BloomLog system to stay accessible most of the time, so that I can rely on it whenever I need to check or update my plant data.	<ul style="list-style-type: none"> The website should be online and usable whenever a user tries to access it. Scheduled maintenance should be displayed on the homepage at least 24 hours in advance. <ul style="list-style-type: none"> A daily backup of the plant database should be performed to prevent data loss. If the website is temporarily unavailable, a friendly message should appear (e.g., "The site is 	<ol style="list-style-type: none"> When I try to access the system at different times, I expect it to be consistently available. When the system is under maintenance, I expect to see a clear message explaining that the site is temporarily unavailable and when it 	Yes	-

		currently under maintenance. Please try again later.”).	is expected to be available again.		
			3. When I use the system, I expect my data to be safely stored and never lost unexpectedly.		
2	As a user, I want the platform to be simple and intuitive, so that I can add, edit, or view my plants without confusion or extra effort.	<ul style="list-style-type: none"> • Users should be able to add, edit, or view plants in no more than 3 steps from the main screen. • The interface must have clear contrast and support keyboard navigation. • Error messages should explain what went wrong and how to fix it. • User testing should confirm that average users can perform key tasks smoothly. 	1. When I add, edit, or view plants on the website, I want to complete each action in three steps or fewer. 2. When I navigate the website, I need the contrast to be clear and the keyboard navigation to feel natural, including proper Tab order, Enter actions, and accessible cues. 3. When I make common input mistakes on the website, I want the error messages to be clear and guide me on how to fix them. 4. When I use the website, I should be able to complete my tasks smoothly and without confusion.	Yes	-
2	As a user, I want to receive timely watering reminders for each plant I added, so that I can avoid forgetting and keep my plants healthy.	<ul style="list-style-type: none"> • When a plant’s watering date arrives, the system should notify the user via email including the plant name and due date. • If the user clicks "Watered", the system should automatically update the next reminder based on the plant’s schedule. • Notifications should be delivered consistently once per due date, not duplicated. 	1. When I add a plant with a watering schedule, I want the system to track its next watering date. 2. When the watering due date arrives, I want to receive an email reminder that includes the plant name and the due date.	Yes	-

			<p>3. When I click the “Watered” button, I want the system to automatically update the next reminder based on the schedule.</p> <p>4. When I check for notifications, I want to make sure no duplicate reminders are sent for the same due date.</p>		
2	As a user, I want to be able to logout from my account so that I ensure the security of my account and personal information.	<ul style="list-style-type: none"> As a logged-in user, if I click on the Logout button within the application, then I should be successfully logged out from my account. If I logged out and try to access any protected pages or features within the application, then I should be redirected to the login page, indicating that I no longer have access until I log back in. 	<p>1. Log in to the website with valid credentials.</p> <p>2. Locate and click the Logout button from the navigation menu.</p> <p>3. Verify that the system logs the user out successfully and redirects to the login/Signup page.</p> <p>4. Attempt to manually access a protected page.</p> <p>5. Verify that the system redirects to the login/Signup page.</p>	Yes	-

Table 8: user story acceptance testing of bloomlog

5.2 Integration Testing

Integration testing is carried out to verify that the various components of a system function correctly when combined. In the BloomLog project, integration tests are performed each time a new feature is introduced to ensure it interacts seamlessly with the existing functionalities.

We employ an incremental integration approach, starting with a single feature and progressively adding others, testing them collectively at each stage. This strategy helps identify issues early and guarantees a smooth, cohesive user experience throughout the platform.

The following sections present a visual integration hierarchy along with a test plan table, detailing the test cases, outcomes, and comments for each step of the integration process.

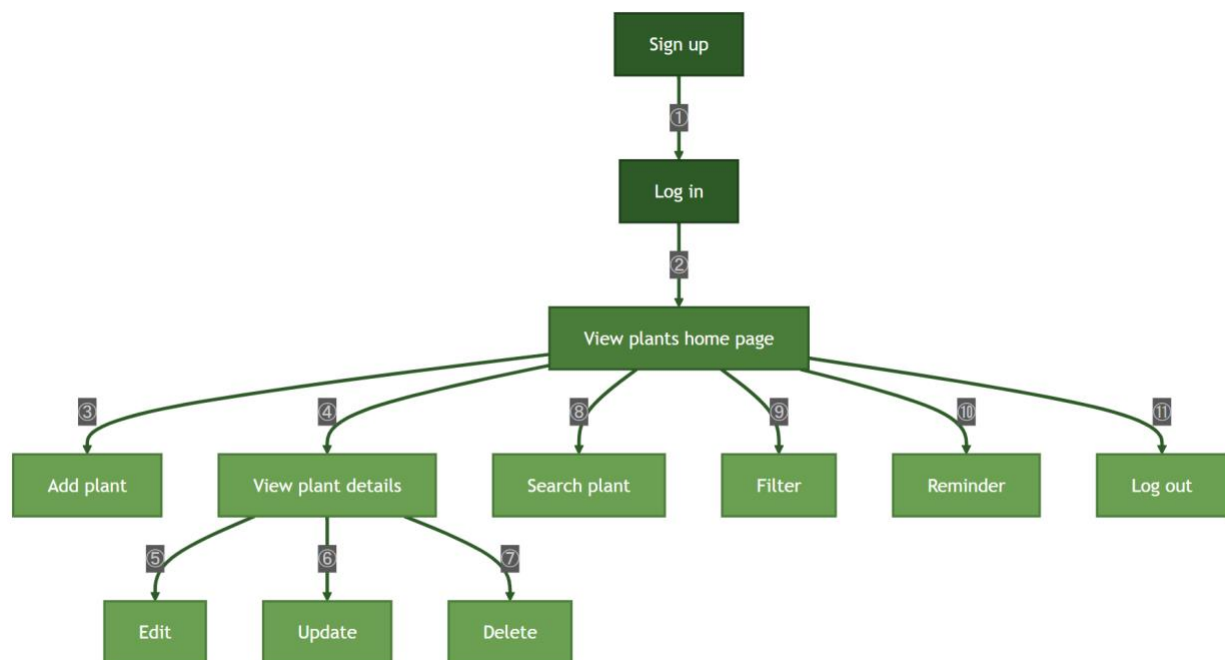


Figure 10: integration hierarchy for bloomlog

System components	New component	Test case	Pass?	Comments
<ul style="list-style-type: none"> Sign up in the system. 	Log in to the system	1. A user signed up into the system successfully 2. The signed up user logged into the system successfully	Yes	-

<ul style="list-style-type: none"> • Sign up in the system • Logging in the system 	View plants “home page”	<ol style="list-style-type: none"> 1. A user signed up into the system successfully 2. The signed up user logged into the system successfully 3. The system displays the list of user plants 	Yes	-
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants 	Add Plant	<ol style="list-style-type: none"> 1. A user signed up into the system successfully 2. The signed up user logged into the system successfully 3. The system displays the list of user plants 4. The user clicked on add plant button 5. The system directed the user to add plant page and displayed add plant form 6. The user filled the form and clicked on add plant button 7. The system confirmed the plant was added successfully and redirect the user to the homepage 	Yes	-
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant 	view plant detail	<ol style="list-style-type: none"> 1. A user signed up into the system successfully 2. The signed up user logged into the system successfully 3. The system displays the list of user plants 4. The user clicked on add plant button 5. The system directed the user to add plant 	Yes	-

		<p>page and displayed add plant form</p> <ol style="list-style-type: none"> The user filled the form and clicked on add plant button The system confirmed the plant was added successfully and redirect the user to the homepage User clicks on a specific plant card System redirects to plant details page All plant information displays correctly 		
<ul style="list-style-type: none"> Sign up in the system Logging in the system View Plants Add plant View plant details 	Edit	<ol style="list-style-type: none"> A user signed up into the system successfully The signed up user logged into the system successfully The system displays the list of user plants The user clicked on add plant button The system directed the user to add plant page and displayed add plant form The user filled the form and clicked on add plant button The system confirmed the plant was added successfully and redirect the user to the homepage User clicks on a specific plant card System redirects to plant details page All plant information displays correctly The user clicked Edit button from 	Yes	-

		view plant detail page. 12. The system displayed the edit form, the user saved the updated information and returned to the plant details page.		
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant • View plant details • Edit 	Update	<ol style="list-style-type: none"> 1. A user signed up into the system successfully 2. The signed up user logged into the system successfully 3. The system displays the list of user plants 4. The user clicked on add plant button 5. The system directed the user to add plant page and displayed add plant form 6. The user filled the form and clicked on add plant button 7. The system confirmed the plant was added successfully and redirect the user to the homepage 8. User clicks on a specific plant card 9. System redirects to plant details page 10. All plant information displays correctly 11. The user clicked Edit button from view plant detail page. 12. The system displayed the edit form, and the user saved the updated information and returned to the plant details page. 13. The user clicked Water Now button 	Yes	-

		from view plant detail page. 14. The system updated the watering status and last watering date instantly.		
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant • View plant details • Edit • Update 	Delete	1. A user signed up into the system successfully 2. The signed up user logged into the system successfully 3. The system displays the list of user plants 4. The user clicked on add plant button 5. The system directed the user to add plant page and displayed add plant form 6. The user filled the form and clicked on add plant button 7. The system confirmed the plant was added successfully and redirect the user to the homepage 8. User clicks on a specific plant card 9. System redirects to plant details page 10. All plant information displays correctly 11. The user clicked Edit button from view plant detail page. 12. The system displayed the edit form, and the user saved the updated information. 13. The user clicked Water Now button from view plant detail page. 14. The system updated the watering status and last watering date instantly. 15. The user clicked Remove button from view plant detail page. 16. The system showed a confirmation message,	Yes	-

		and the user confirmed deletion. 17. The system removed the plant and redirected to the homepage.		
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant • View plant details • Edit • Update • Delete 	Search	<ol style="list-style-type: none"> 1. A user signed up into the system successfully. 2. The signed up user logged into the system successfully. 3. The system displays the list of user plants. 4. The user clicked on add plant button. 5. The system directed the user to add plant page and displayed add plant form. 6. The user filled the form and clicked on add plant button. 7. The system confirmed the plant was added successfully and redirected the user to the homepage. 8. User clicks on a specific plant card. 9. System redirects to plant details page. 10. All plant information displays correctly. 11. The user clicked Edit button from view plant detail page. 12. The system displayed the edit form, and the user saved the updated information. 13. The user clicked Water Now button from view plant detail page. 	Yes	

		<p>14. The system updated the watering status and last watering date instantly.</p> <p>15. The user clicked Remove button from view plant detail page.</p> <p>16. The system showed a confirmation message, and the user confirmed deletion.</p> <p>17. The system removed the plant and redirected to the homepage.</p> <p>18. The user typed a nickname into the search bar and clicked Search; the system displayed only the matching plant card.</p> <p>19. The user cleared the search input and clicked Search again; the system displayed the full list of plants.</p>		
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant • View plant details • Edit • Update • Delete • Search 	Filter	<p>1. A user signed up into the system successfully.</p> <p>2. The signed up user logged into the system successfully.</p> <p>3. The system displays the list of user plants.</p> <p>4. The user clicked on add plant button.</p> <p>5. The system directed the user to add plant page and displayed add plant form.</p> <p>6. The user filled the form and clicked on add plant button.</p>	Yes	

		<ol style="list-style-type: none"> 7. The system confirmed the plant was added successfully and redirected the user to the homepage. 8. User clicks on a specific plant card. 9. System redirects to plant details page. 10. All plant information displays correctly. 11. The user clicked Edit button from view plant detail page. 12. The system displayed the edit form, and the user saved the updated information. 13. The user clicked Water Now button from view plant detail page. 14. The system updated the watering status and last watering date instantly. 15. The user clicked Remove button from view plant detail page. 16. The system showed a confirmation message, and the user confirmed deletion. 17. The system removed the plant and redirected to the homepage. 18. The user typed a nickname into the search bar and clicked Search; the system displayed only the matching plant card. 		
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		<p>19. The user cleared the search input and clicked Search again; the system displayed the full list of plants.</p> <p>20. The user activated the "Needs Watering Today" filter; the system displayed only the plant card(s) that need watering today.</p> <p>21. The user deactivated the "Needs Watering Today" filter; the system displayed the full list of plants.</p>		
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant • View plant details • Edit • Update • Delete • Search • Filter 	Reminder	<ol style="list-style-type: none"> 1. A user signed up into the system successfully. 2. The signed up user logged into the system successfully. 3. The system displays the list of user plants. 4. The user clicked on add plant button. 5. The system directed the user to add plant page and displayed add plant form. 6. The user filled the form and clicked on add plant button. 7. The system confirmed the plant was added successfully and redirected the user to the homepage. 8. User clicks on a specific plant card. 9. System redirects to plant details page. 10. All plant information displays correctly. 	Yes	

		<ol style="list-style-type: none"> 11. The user clicked Edit button from view plant detail page. 12. The system displayed the edit form, and the user saved the updated information. 13. The user clicked Water Now button from view plant detail page. 14. The system updated the watering status and last watering date instantly. 15. The user clicked Remove button from view plant detail page. 16. The system showed a confirmation message, and the user confirmed deletion. 17. The system removed the plant and redirected to the homepage. 18. The user typed a nickname into the search bar and clicked Search; the system displayed only the matching plant card. 19. The user cleared the search input and clicked Search again; the system displayed the full list of plants. 20. The user activated the "Needs Watering Today" filter; the system displayed only the plant card(s) that need watering today. 		
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		<p>21. The user deactivated the "Needs Watering Today" filter; the system displayed the full list of plants.</p> <p>22. The system sent a reminder email to the user for any plant that needs watering today.</p>		
<ul style="list-style-type: none"> • Sign up in the system • Logging in the system • View Plants • Add plant • View plant details • Edit • Update • Delete • Search • Filter • Reminder 	Log out	<p>1. A user signed up into the system successfully.</p> <p>2. The signed up user logged into the system successfully.</p> <p>3. The system displays the list of user plants.</p> <p>4. The user clicked on add plant button.</p> <p>5. The system directed the user to add plant page and displayed add plant form.</p> <p>6. The user filled the form and clicked on add plant button.</p> <p>7. The system confirmed the plant was added successfully and redirected the user to the homepage.</p> <p>8. User clicks on a specific plant card.</p> <p>9. System redirects to plant details page.</p> <p>10. All plant information displays correctly.</p> <p>11. The user clicked Edit button from view plant detail page.</p> <p>12. The system displayed the edit form, and the user</p>	Yes	

		<p>saved the updated information.</p> <p>13. The user clicked Water Now button from view plant detail page.</p> <p>14. The system updated the watering status and last watering date instantly.</p> <p>15. The user clicked Remove button from view plant detail page.</p> <p>16. The system showed a confirmation message, and the user confirmed deletion.</p> <p>17. The system removed the plant and redirected to the homepage.</p> <p>18. The user typed a nickname into the search bar and clicked Search; the system displayed only the matching plant card.</p> <p>19. The user cleared the search input and clicked Search again; the system displayed the full list of plants.</p> <p>20. The user activated the "Needs Watering Today" filter; the system displayed only the plant card(s) that need watering today.</p> <p>21. The user deactivated the "Needs Watering Today" filter; the system displayed the full list of plants.</p> <p>22. The system sent a reminder email to the user for any</p>		
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		<p>plant that needs watering today.</p> <p>23. The user clicks on the "Logout" button in the navigation bar.</p> <p>24. The system terminated the user session and cleared all authentication tokens.</p> <p>25. The system redirected the user to the login page.</p>		
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Table 9: integration testing plan of bloomlog

5.3 User Acceptance Testing

The final testing phase conducted was User Acceptance Testing (UAT), which enables real users from our target audience to evaluate the application in realistic scenarios. This test ensures that BloomLog meets user expectations and performs effectively for its intended purpose of plant care management.

To complete this test, we recruited 12 participants who matched our target user profile defined in Phase 2. The participants were selected based on their interest in plant care and gardening, with basic technical skills for navigating websites. The testing environment was controlled to minimize distractions and ensure focused interaction with the platform.

Participants were guided through a structured scenario covering BloomLog's core functionalities, including user registration, receiving weather-based plant recommendations, adding plants to their collection, using search and filter features, and edit plant information. Each user was given time to freely explore the website interface.

Feedback was collected through a carefully designed questionnaire consisting of ten unbiased questions. The questions aimed to assess user satisfaction and identify usability issues. The collected responses were systematically analyzed, with key findings visualized through graphs to highlight both strengths and areas for enhancement in the user experience.

5.3.1 Demographics of participants

This subsection presents the demographic information collected from the 12 participants who took part in the User Acceptance Testing. The data includes their age distribution, gender, and technical proficiency levels.

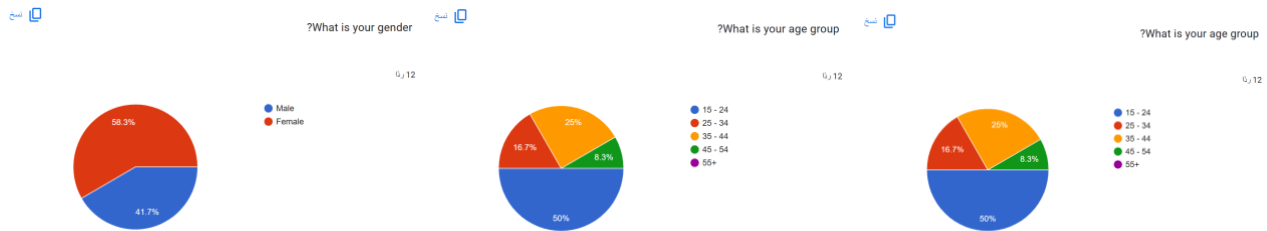


Figure 11: demographic information of user acceptance testing participants

The gender distribution showed a relatively balanced participation, with 58.3% male (7 participants) and 41.7% female (5 participants). Regarding age groups, half of the participants (50%) were young adults aged 15-24 years, followed by 25% aged 25-34 years, 16.7% aged 35-44 years, and 8.3% in both the 45-54 and 55+ age categories.

In terms of technical proficiency, the majority of participants (58.3%) reported intermediate comfort levels with websites, while 25% identified as basic users, and 16.7% as advanced users. This demographic profile indicates that our testing effectively represented our target audience of plant enthusiasts with varying technical backgrounds, providing diverse perspectives on BloomLog's usability.

5.3.2 Questionnaire

In this sub-section, we present the participants' responses to the questionnaire designed to gather feedback on BloomLog's usability and overall user experience. The questions aimed to evaluate various aspects of the system, from initial onboarding to core plant care management features.

Questionnaire Questions:

Q1: How satisfied are you with the sign-up process and account creation experience?

Q2: How easy was it to navigate through the BloomLog website?

Q3: How satisfied are you with the plant recommendation feature based on your local weather conditions?

Q4: How intuitive did you find the process of adding a new plant to your collection?

Q5: How helpful were the watering reminders and plant care notifications?

Q6: How accurate and useful did you find the plant information?

Q7: How efficient was the search and filter functionality in finding specific plants?

Q8: How would you rate the overall visual design and user interface of BloomLog?

Q9: How likely are you to recommend BloomLog to other plant enthusiasts?

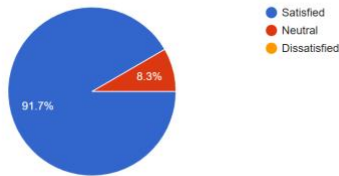
Q10: What is your overall satisfaction with BloomLog as a plant care management tool?





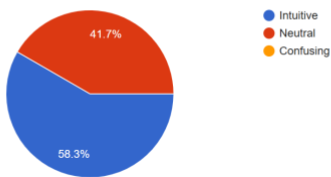
Q3: How satisfied are you with the plant recommendation feature
?based on your local weather conditions

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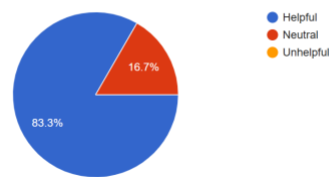
Q4: How intuitive did you find the process of adding a new plant to
?your collection

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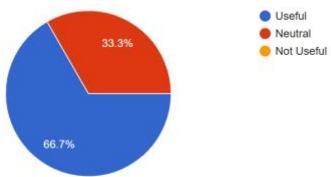
Q5: How helpful were the watering reminders and plant care
?notifications

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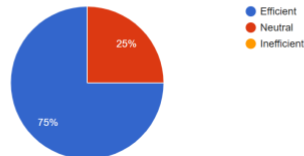
Q6: How accurate and useful did you find the plant information

رئنا 12



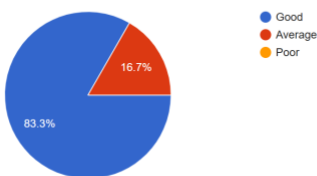
Q7: How efficient was the search and filter functionality in finding
?specific plants

رئنا 12



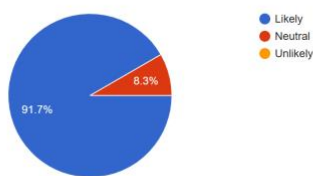
Q8: How would you rate the overall visual design and user interface of
?BloomLog

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Q9: How likely are you to recommend BloomLog to other plant
?enthusiasts

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Q10: What is your overall satisfaction with BloomLog as a plant care
?management tool

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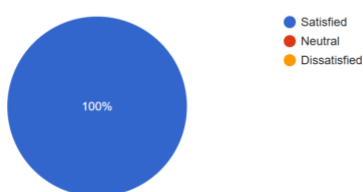


Figure 12: questionnaire results from user acceptance testing

5.4 Discussion

The testing process provided important insights into how effectively BloomLog supports users in managing their plants. The results from User Story Acceptance Testing and Integration Testing confirmed that all core functionalities operate as intended, including registration, login, plant management, weather-based recommendations, reminders, and filtering features. Each feature performed correctly within real usage scenarios, and no functional failures were reported during testing.

User Acceptance Testing further demonstrated that BloomLog successfully meets user expectations. Most participants reported a smooth and intuitive experience when navigating through the platform, with 66.7% expressing that the website was easy to use. Features such as plant recommendations and watering reminders received exceptionally positive feedback—91.7% and 83.3% satisfaction rates respectively—indicating strong alignment with user needs identified earlier in the requirements elicitation phase. Additionally, 100% of participants reported overall satisfaction with the system and expressed willingness to use it for managing their plants.

The non-functional requirements evaluated during testing also showed positive outcomes. The system demonstrated acceptable response time, with essential operations such as logging in, searching, and accessing the dashboard completing within the expected time frame. Usability feedback supports the clarity and simplicity of the interface, especially for first-time users. Availability was also confirmed through repeated access at different times with no interruption to the user experience.

Reflecting on the development process, adopting an incremental development approach allowed the team to resolve issues early and verify each component before integrating it with others. This approach contributed to system stability and ensured that BloomLog maintained a consistent experience across different features. The findings from testing show that BloomLog fulfills its intended purpose and provides a reliable tool for simplifying plant care while addressing user challenges identified during the project analysis phase.

6. Chapter 6: Conclusion and Future Work

BloomLog was developed in response to the growing interest in plant care and the challenges individuals face when selecting suitable plants and maintaining consistent care routines. Throughout the development lifecycle, the system evolved from a conceptual idea into a fully functional platform designed to support users in managing their plants with greater confidence and structure. By integrating localized weather-based plant recommendations, reminders, and a streamlined plant-management interface, BloomLog successfully addresses key difficulties identified during the requirements elicitation stage.

6.1 Global and Local Impact

BloomLog presents impact both locally and globally. Locally, it supports users living in regions such as Saudi Arabia, where high temperatures and low humidity can make plant maintenance challenging. Through environment-based plant recommendations, the system increases plant survival rates and helps users make informed decisions before purchasing or caring for plants. More broadly, BloomLog aligns with global trends in agritech and sustainable living by simplifying plant care and supporting consistent horticultural care practices, ultimately fostering stronger connections between individuals and their plant environments.

6.2 Challenges During Development

Throughout development, the team encountered several technical and design-related challenges. Integrating external weather data during the registration process and matching it with plant requirements required multiple revisions to ensure accuracy and usability. Designing a user interface that remained simple while supporting multiple functions—such as editing, filtering, searching, and reminders—required iterative refinement and multiple testing cycles. Additionally, ensuring that all features worked together seamlessly during integration required careful coordination across sprint activities.

6.3 Limitations

While BloomLog meets its intended purpose, some limitations remain. The system currently supports desktop and laptop access only, with no mobile or tablet optimization. The plant database, although functional, includes a limited number of plant species and can be expanded to include more varieties and regional-specific plants. Moreover, advanced personalization features—such as seasonal adjustments, adaptive care scheduling, or user-driven customization—are not yet implemented.

Based on User Acceptance Testing, 8.3% of users reported dissatisfaction with the sign-up and account creation process. This indicates that while the system is generally functional, improvements in the onboarding experience are needed to enhance user satisfaction.

6.4 Main Contribution

BloomLog's primary contribution lies in its integration of plant-care management with environment-aware recommendations. Unlike existing platforms that focus solely on reminders or static plant information, BloomLog provides a unified solution that helps users select plants that are naturally compatible with their surroundings and manage them through automated schedules and intuitive

interface interactions. This approach supports consistent horticultural care practices and encourages users to maintain plant health with greater accuracy and confidence.

6.5 Future Work

Several enhancements can be implemented to strengthen BloomLog in future versions. Planned improvements include the development of a mobile application to increase accessibility and portability, push notifications in addition to email reminders, and expansion of the plant database to support more species and regional growing conditions. Potential advanced features may also include AI-based plant disease detection, image-based plant identification, community content sharing, and seasonal care insights. These enhancements would further elevate BloomLog's value and relevance, supporting long-term scalability and wider adoption.

Future enhancements will focus on improving the onboarding process, addressing the 8.3% of users who reported dissatisfaction during the User Acceptance Testing with the sign-up and account creation experience. This may include streamlining forms, adding helpful guidance, and enhancing feedback during account creation.

7. References

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8. APPENDIX

8.1 APPENDIX A: Interview

Interview Questions:

Q1: can you tell me about your experience with growing or caring for indoor plants?

Q2: how do you decide which plants to buy or grow?

Q3: What challenges do you usually face in taking care of your plants?

Q4: what kind of features or support would you expect from a digital platform that helps with plant care?

Q5: what information about a plant do you usually look for before buying it?

Outline Interview 1	
Interviewee: Sarah	Interviewer: Aseel
Location/Medium: Sarah's house, Riyadh, Saudi Arabia	Appointment Date: 22 Sep 2025 Strat Time: 6:48 PM End Time: 7:30 PM
Objectives: <ul style="list-style-type: none"> • Understand user experience • Identify challenges they face • Validate feature needs 	Reminders: the interviewee is experienced in plant care
Agenda: Introduction & Purpose Background in project Overview of interview Permission to record Question 1 Question 2 Question 3 Question 4 Question 5 Summary of Key Points Questions from interviewee Closing	Approximate Time: 3min 4min 1min 30sec 6min 5min 8min 8min 5min 1min 3min 1min
General Observation: the interviewee communicated her thoughts clearly and assertively	
Topic Not Covered: we were able to cover all the topics	

Table 10: Interview's Transcription for First Interviewee 1

Outline Interview 1	
Interviewee: Sarah	Date: 22 Sep 2025
Questions:	Answers and Notes:
Q1: can you tell me about your experience with growing or caring for indoor plants?	<p>Of course. I've been taking care of indoor plants for more than 10 years now. I started with just a few small ones, and over the years I've added more like pothos, snake plants, and even some herbs in the kitchen. For me, it's part of my daily routine: watering, checking the leaves, and making sure they get the right amount of care. I really enjoy it, and I feel I've learned what each plant needs with time and practice.</p> <p>Observations: Sarah has long-term experience and deep knowledge about her plants. She seems passionate and consistent in her care routine.</p>
Q2: how do you decide which plants to buy or grow?	<p>Usually, I decide based on two things: how the plant will look in my house and how much time I have to take care of it. For example, I like having plants in the living room that add greenery and match the furniture, but I also look for ones that aren't too demanding since I'm busy with the kids. Sometimes I ask friends for recommendations or search online before buying. And honestly, if I see a plant that I like in a store, I just buy it without much planning.</p> <p>Observations: Sarah chooses plants based on a mix of aesthetic appeal, practicality, and convenience. She sometimes researches but also makes impulsive decisions.</p>
Q3: What challenges do you usually face in taking care of your plants?	<p>The biggest challenge for me is keeping a routine when life gets busy. Sometimes I forget to water certain plants on time, especially the ones that need more attention. Another challenge is when the weather suddenly changes some of my plants don't handle that well, and I don't always know what adjustments to make.</p> <p>Observations: Sarah's challenges are a mix of time management (forgetting tasks) and adapting to weather conditions</p>
Q4: what kind of features or support would you expect from a digital platform that helps with plant care?	<p>I would love a platform that gives me reminders for watering , but not just generic ones something that knows the type of plant I have. It would also help if it could suggest which plants are suitable for my home based on my city's weather, so I don't waste money on plants that won't survive. Maybe even a space to keep track of all my plants in one place.</p> <p>Observations: Sarah is looking for personalization. She clearly values: smart reminders, weather-based plant recommendations, plant logging/tracking</p>
Q5: what information about a plant do you usually look for before buying it?	<p>Before buying a plant, I usually check a few key things: how much sunlight it needs, how often it should be watered, how big it will grow, and if it's easy to take care of. I also like to know if it's safe for kids, since I have five children running around the house. but honestly, I don't always have time to research everything thoroughly.</p> <p>Observations: Sarah focuses on care requirements, safety, and growth characteristics. Her mention of limited time for research highlights the need to provide all essential info in a single, easy to access platform.</p>

Table 11: Interview's Transcription for First Interviewee 2

Outline Interview 2	
Interviewee: Alreem	Interviewer: Tala
Location/Medium: Online call (Zoom), Riyadh, Saudi Arabia	Appointment Date: 22 Sep 2025 Strat Time: 1:20 PM End Time: 2:30 PM
Objectives: <ul style="list-style-type: none"> Understand user experience Identify challenges they face Validate feature needs 	Reminders: The interviewee has moderate experience in growing and maintaining indoor plants.
Agenda: Introduction & Purpose Background in project Overview of interview Permission to record Question 1 Question 2 Question 3 Question 4 Question 5 Summary of Key Points Questions from interviewee Closing	Approximate Time: 3min 2min 3min 2min 8min 8min 8min 8min 8min 5min 5min 3min
General Observation: Alreem explained that she has been caring for plants for a few years and already knows the basics, such as when to re-pot and how to recognize common signs of overwatering. However, she still struggles with keeping up a consistent schedule when she is busy and sometimes buys plants that don't match her home environment. She showed strong interest in BloomLog's idea of personalized reminders and environment-based recommendations, which she said would save her time and reduce mistakes.	
Topic Not Covered: we were able to cover all the topics	

Table 12: Interview's Transcription for Second Interviewee 1

Outline Interview 2	
Interviewee: Alreem	Date: 22 Sep 2025
Questions:	Answers and Notes:
Q1: can you tell me about your experience with growing or caring for indoor plants?	<p>I've been taking care of plants for around three years now. I started with simple plants like cactus and aloe vera because they were easy. Over time, I added more, like a peace lily and mint. I know the basics, like when a plant looks dehydrated or when the soil is too wet, and I've learned to repot a few of them. But I still feel I'm not advanced because sometimes I lose plants when I get too busy or travel.</p> <p>Observations: Alreem has <i>moderate experience</i>; she understands basic plant care but still struggles with consistency. This indicates BloomLog should target both beginners and moderately experienced users who need structured support.</p>
Q2: how do you decide which plants to buy or grow?	<p>Usually, I choose based on appearance first if the plant looks nice and matches my living room. But I also check how much care it needs, because I don't want something too demanding. I also think about my apartment environment, like how much sunlight I get in the morning, and whether the plant can handle air conditioning. Sometimes I also take advice from friends who already own that plant.</p> <p>Observations: Her decisions are influenced by <i>aesthetics, ease of care, and environmental factors</i>. This highlights the need for BloomLog's personalized plant recommendations based on conditions like light and temperature.</p>
Q3: What challenges do you usually face in taking care of your plants?	<p>Her decisions are influenced by <i>aesthetics, ease of care, and environmental factors</i>. This highlights the need for BloomLog's personalized plant recommendations based on conditions like light and temperature.</p> <p>Observations: Main issues are <i>watering schedules, unsuitable plant choices, and unreliable information</i>. This validates BloomLog's core features: reminder system, environment analysis, and reliable plant database.</p>
Q4: what kind of features or support would you expect from a digital platform that helps with plant care?	<p>I'd love reminders that are personalized, not just "water every 3 days" but based on the type of plant and maybe even my city's weather. I'd also like recommendations for plants that would actually survive in my environment, like if I tell the app about my lighting and room conditions. Another</p>

	<p>thing is having trusted care instructions in one place, so I don't waste time searching. And if I could log each plant and see a small dashboard of all of them, that would be really useful.</p> <p>Observations: She expects personalized, adaptive support (not generic). She also values centralized, trustworthy resources. This shows BloomLog should focus on user-friendly dashboards, reliable info, and contextual reminders.</p>
Q5: what information about a plant do you usually look for before buying it?	<p>First, I check the level of care — is it easy, medium, or difficult? Then I check the light requirements, because my apartment has only one bright window. I also look at watering needs, soil type, and whether it can survive with air conditioning. Finally, I look at pictures of the plant when it's healthy, so I know what to expect.</p> <p>Observations: Key information users need before purchase is difficulty level, environment requirements, and visual reference. BloomLog should integrate this into its plant database and recommendation system.</p>

Table 13: Interview's Transcription for Second Interviewee 2

Outline Interview 3	
Interviewee: Omar	Interviewer: Norah
Location/Medium: Online call (Zoom), Jeddah, Saudi Arabia	Appointment Date: 22 Sep 2025 Strat Time: 5:00 PM End Time: 5:40PM
Objectives: <ul style="list-style-type: none"> • Understand user experience • Identify challenges they face • Validate feature needs 	Reminders: The interviewee has basic to moderate experience in caring for indoor plants, mostly for office decoration.
Agenda: Introduction & Purpose Background in project Overview of interview Permission to record Question 1 Question 2 Question 3 Question 4 Question 5 Summary of Key Points Questions from interviewee Closing	Approximate Time: 3min 2min 3min 2min 5min 5min 5min 5min 5min 3min 2min 2min
General Observation: The interviewee was cooperative and comfortable during the discussion. He spoke casually about his experience with indoor plants and provided clear examples from his office. His answers showed that he has only basic to moderate knowledge of plant care, which sometimes caused him to be uncertain about specific details. Overall, the interview provided useful insights into the challenges of remembering watering schedules and selecting suitable plants for indoor environments.	
Topic Not Covered: Financial cost of purchasing and maintaining indoor plants. Psychological or health benefits of having plants in personal or office spaces.	

Table 14: Interview's Transcription for Third Interviewee 1

Outline Interview 3	
Interviewee: Omar	Date: 22 Sep 2025
Questions:	Answers and Notes:
Q1: can you tell me about your experience with growing or caring for indoor plants?	<p>Well, I wouldn't say I'm an expert, but I do enjoy having plants around, especially in my office. I started buying them a few years ago because the place felt a bit empty and dull. At first, I just got a small cactus and a money plant, and later I added a peace lily because I heard it's good for indoor air. I try to take care of them, but honestly, sometimes I just water when I remember. Some plants did well, others... not so much. I had one that died pretty quickly because I think it needed more sunlight than my office could provide.</p> <p>Observation: Shows he has basic interest and some experience, but plant care is inconsistent and based on trial and error.</p>
Q2: how do you decide which plants to buy or grow?	<p>To be honest, it's usually based on how they look. If I like the way it looks on a desk or in a corner, I'll buy it. Sometimes the shopkeeper tells me it's "easy to care for," and that's usually enough to convince me. I don't spend much time researching, which might be why a couple of plants didn't survive.</p> <p>Observation: Selection is based on appearance rather than suitability, indicating limited knowledge about plant requirements.</p>
Q3: What challenges do you usually face in taking care of your plants?	<p>The biggest challenge for me is remembering the watering. Some weeks I completely forget, and other times I overdo it because I think the plant looks dry. Another challenge is the environment in my office—there's air conditioning all the time and not much natural light. I'm never sure if the plant is getting what it needs. Also, sometimes I just don't know if the yellow leaves mean I'm doing something wrong or if that's normal.</p>

	Observation: Main struggles are irregular watering and unsuitable office conditions. Uncertainty about plant health reflects lack of knowledge.
Q4: what kind of features or support would you expect from a digital platform that helps with plant care?	<p>If I had something like that, I guess I'd want it to remind me when to water, because that's where I mess up the most. Maybe also something simple that tells me whether the plant I'm thinking of buying would even survive in an office with AC and limited sunlight. I wouldn't want anything too complicated—just straightforward advice that's easy to follow.</p> <p>Observation: Values reminders and simplicity. Wants practical, tailored support rather than advanced or technical features.</p>
Q5: what information about a plant do you usually look for before buying it?	<p>Mostly I ask about watering—like, “how often do I need to water this one?” I also want to know if it needs direct sunlight, because my office doesn't get much. And if they tell me it's low-maintenance, that's a big plus. I don't usually go into much detail beyond that.</p> <p>Observation: Focuses only on basic and practical information (watering, light, maintenance level). Matches typical beginner behavior.</p>

Table 15: Interview's Transcription for Third Interviewee 2

Outline Interview 4	
Interviewee: Lina	Interviewer: Alanoud
Location/Medium: Community library, Riyadh, Saudi Arabia	Appointment Date: 23 Sep 2025 Strat Time: 4:15 PM End Time: 5:02PM
Objectives: <ul style="list-style-type: none"> Understand user experience Identify challenges they face Validate feature needs 	Reminders: The interviewee has limited experience with indoor plants.
Agenda: Introduction & Purpose Background in project Overview of interview Permission to record Question 1 Question 2 Question 3 Question 4 Question 5 Summary of Key Points Questions from interviewee Closing	Approximate Time: 4min 5min 2min 30sec 7min 6min 5min 6min 6min 3min 2min 1min
General Observation: Lina indicated that she enjoys collecting large and colorful plants to create a vibrant, nature-inspired atmosphere in her room. She is interested in experimenting with different plant varieties and considers the aesthetic impact of each plant in her space. Although she occasionally struggles with maintaining consistent care routines and selecting plants that perfectly suit her environment, she recognizes the value of structured guidance and reminders to support effective plant management.	
Topic Not Covered: we were able to cover all the topics	

Table 16: Interview's Transcription for Fourth Interviewee 1

Outline Interview 4	
Interviewee: Lina	Date: 23 Sep 2025
Questions:	Answers and Notes:
Q1: can you tell me about your experience with growing or caring for indoor plants?	<p>Recently, I've been collecting more plants to decorate my room. At first, I only had a small Spider Plant, but over the last year I added bigger plants like a monstera and a fiddle-leaf fig. I really enjoy how they change the atmosphere, almost like I'm in a mini jungle. Sometimes I even move my desk near them when studying because it feels calming. I've had both successes and failures — for example, one time I overwatered a succulent and it actually started to rot, which I didn't expect at all. But other plants have been thriving, especially the larger ones.</p> <p>Observations: The interviewee enjoys collecting plants that create a lush, forest-like atmosphere in her room, has limited practical experience, and learns from both successes and mistakes while caring for her indoor plants.</p>
Q2: how do you decide which plants to buy or grow?	<p>I usually decide based on how they make me feel in my space. I love large leafy plants because they make me feel like I'm in a forest, which is the kind of atmosphere I want in my room. Sometimes I choose based on aesthetics, like if a plant will look good next to my bookshelves or by the window. But I also like experimenting — for example, once I bought a colorful coleus just because I'd never had something with purple and red leaves before.</p> <p>Observations: The interviewee selects plants primarily based on aesthetics and emotional appeal, prefers large leafy varieties, and enjoys experimenting with colorful or unusual plants to enhance her room's ambiance.</p>
Q3: What challenges do you usually face in taking care of your plants?	<p>Sometimes I forget to water regularly, especially when I'm busy with school. Other times, I'm not sure if the sunlight in my room is enough, because I only have one window and the light changes during the day. I also find it confusing to know which plant needs more care and which one is "low-maintenance." These small things make me worry if I'm doing it right or not.</p> <p>Observations: The interviewee struggles with maintaining consistent watering routines, adapting to sunlight limitations, and distinguishing between high-maintenance and low-maintenance plants, reflecting her developing knowledge in plant care.</p>

<p>Q4: what kind of features or support would you expect from a digital platform that helps with plant care?</p>	<p>I'd like reminders about watering and sunlight, because I forget sometimes. Also, it would be helpful if the platform gives me simple care tips for each plant, like how often to repot or what signs mean it's healthy. And maybe a way to keep track of all my plants in one place, so I don't have to search for each one separately.</p> <p>Observations: The interviewee values practical, easy-to-follow guidance, personalized reminders for watering and sunlight, and a centralized system to manage all her plants efficiently.</p>
<p>Q5: what information about a plant do you usually look for before buying it?</p>	<p>I check how large it can grow, because I prefer plants that create a forest-like vibe. I also look for whether it's safe to keep indoors, since I sometimes sit close to them while studying. I care about the watering needs, but I also want to know if it attracts insects or needs repotting often. And I like seeing real photos of mature plants, because sometimes the small version in the store looks very different when it grows up.</p> <p>Observations: The interviewee prioritizes plant size, safety for indoor use, watering needs, and realistic visual references, aiming to create a visually pleasing and safe environment in her room</p>

Table 17: Interview's Transcription for Fourth Interviewee 2

Outline Interview 5	
Interviewee: Saad	Interviewer: ruba
Location/Medium: Zoom call, Riyadh, Saudi Arabia	Appointment Date: 25 Sep 2025 Strat Time: 1:15 PM End Time: 1:35PM
Objectives: <ul style="list-style-type: none"> Understand user experience Identify challenges they face Validate feature needs 	Reminders: The interviewee has intermediate experience (one year) with indoor plants.
Agenda: Introduction & Purpose Background in project Overview of interview Permission to record Question 1 Question 2 Question 3 Question 4 Question 5 Summary of Key Points Questions from interviewee Closing	Approximate Time: 2min 2min 2min 30sec 1.5min 1min 2min 1min 1min 2min 2min 1min
General Observation: The interviewee is a beginner in indoor plant care and has learned through experience and research. They choose plants that can survive the local climate, face challenges with watering and sunlight, and would benefit from	
Topic Not Covered: we were able to cover all the topics	

Table 18: Interview's Transcription for Fifth Interviewee 1

Outline Interview 5	
Interviewee: Saad	Date: 23 Sep 2025
Questions:	Answers and Notes:
Q1: can you tell me about your experience with growing or caring for indoor plants?	<p>I bought my first indoor plant about a year ago because I wanted to add some color to my house. Unfortunately, it only survived for a month since I overwatered it. That experience made me realize I needed to learn more about plant care. I then did some research on proper watering techniques and how to choose the right plants. After that, I bought another plant, which has been growing well until now. This success encouraged me to try more plants</p> <p>Observations: The interviewee's plant died due to overwatering, which affected the plant's ability to absorb water properly. This highlights the importance of understanding each plant's specific watering needs</p>
Q2: how do you decide which plants to buy or grow?	<p>When I decide to buy a plant, I usually start by researching which types can survive in hot and dry weather, since that matches the environment I live in. I also check care tips to make sure the plant won't be too difficult to manage. Sometimes I get recommendations from friends who have more experience with plants, and I also follow people on social media who share content about plants, which gives me ideas.</p> <p>Observations: The interviewee selects plants based on their ability to survive hot, dry weather, recommendations from friends, and social media content about plant care.</p>
Q3: What challenges do you usually face in taking care of your plants?	<p>The biggest challenge for me is remembering the watering schedule. Because I have different types of plants, each one needs water at different times, and sometimes I forget. Overwatering and underwatering are both problems I've faced. Another challenge is ensuring the right amount of sunlight: some indoor plants, need sunlight, while others can survive in no light</p> <p>Observations: The main challenges are remembering watering schedules and providing the correct amount of sunlight. Some plants</p>
Q4: what kind of features or support would you expect from a digital platform that helps with plant care?	<p>I would like the platform to remind me of watering times for each specific plant, because every plant has a different schedule. It would also be helpful if it could provide tips about sunlight, , and temperature requirements.</p> <p>Observations: The interviewee expects reminders for watering each plant, tips for sunlight, temperature</p>
Q5: what information about a plant do you usually look for before buying it?	<p>Before buying a plant, I usually check if it can handle the tough weather in Riyadh, since it is often very hot and dry. I also look</p>

	<p>for information about how much water and sunlight it needs, and whether it is suitable for keeping indoors. If possible, I like to know how big it will grow</p> <p>Observations: Before buying a plant, the interviewee looks for its ability to survive Riyadh's harsh climate, water and sunlight needs, and maintenance level. This shows that people mainly choose plants that are easy to care for and can survive in their environment.</p>
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Table 19: Interview's Transcription for Fifth Interviewee 2

8.2 APPENDIX B: Questionnaires

1.How do you decide which plants to buy or grow?

[Copy chart](#)

12 responses

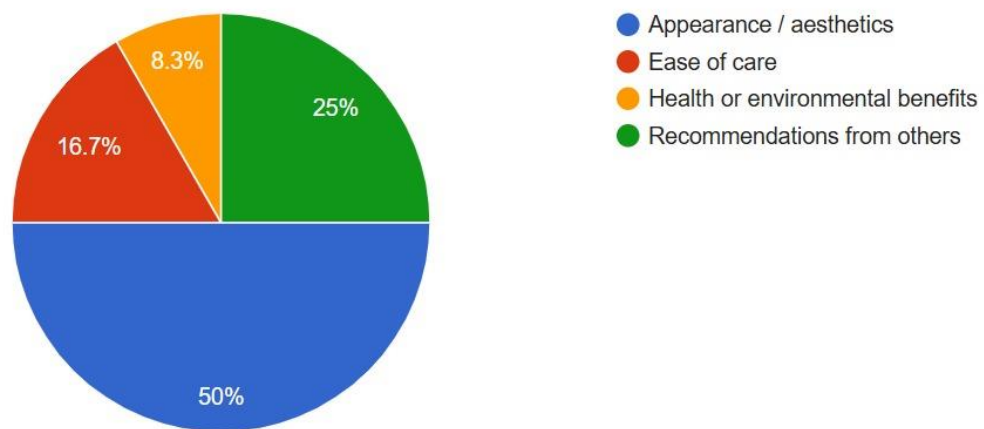


Figure 13: Question 1 Graph

2.What is the most common difficulty you face in caring for your plants ? (You can choose more than one)

[Copy chart](#)

12 responses

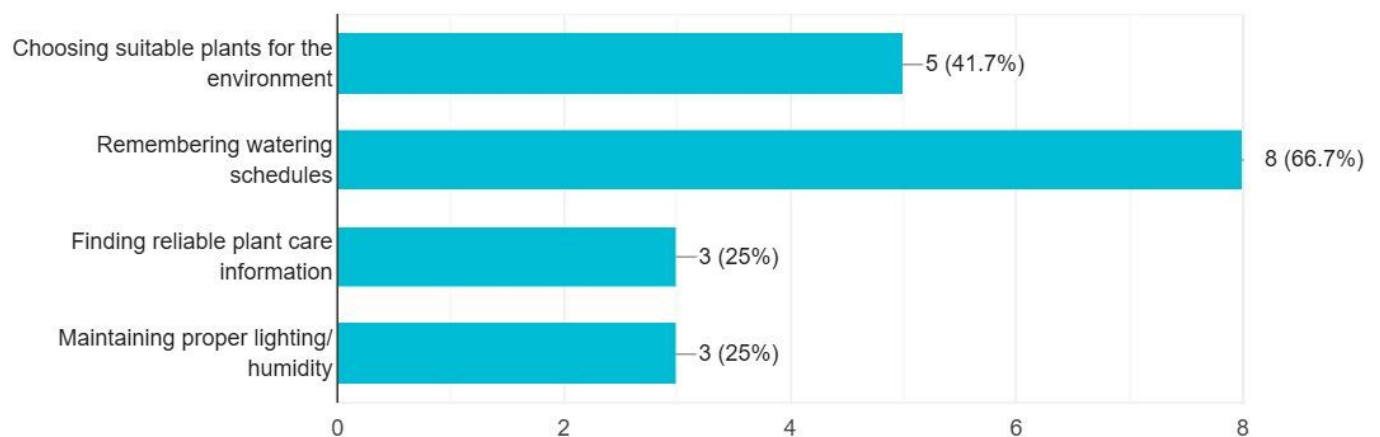


Figure 14: Question 2 Graph

3.How do you usually keep track of watering your plants?

12 responses

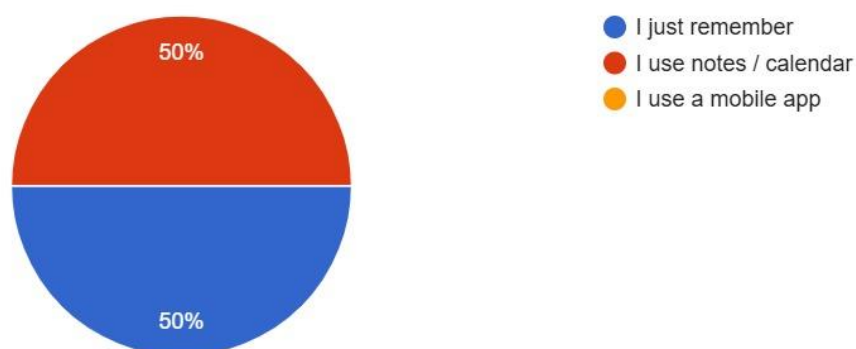


Figure 15: Question 3 Graph

4.Which feature would be most valuable to you in a plant care platform? (You can choose more than one)

Copy chart

12 responses



Figure 16: Question 4 Graph

5.If there was a website that helps you take care of your plants, would you use it?

12 responses

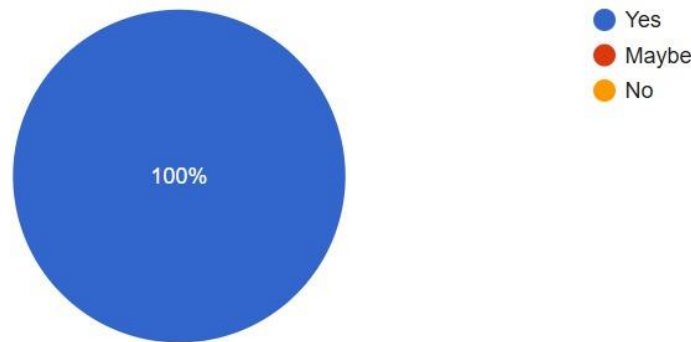


Figure 17: Question 5 Graph

8.3 APPENDIX C: JIR

Ujira

Search

+ Create

Premium trial

Projects

2025-IT320-56570-G2

Summary Timeline Backlog Board Calendar List Forms Goals All work Code Archived work items Pages Shortcuts Reports

Search backlog

Filter

Create a whiteboard to plan your work

SCRUM-1	As a new user, I want to register for an account so that I can access my personal plant care dashboard and manage my plants.	TO DO	5	R
SCRUM-2	As a registered user, I want to login with my email and password so that I can enter my account and use the services.	TO DO	2	AA
SCRUM-3	As a user, I want to be able to logout from my account so that I ensure the security of my account and personal information.	TO DO	2	T
SCRUM-4	As a user, I want to be able to add a plant suggested for my environment so that I only grow plants that are suitable for my home conditions.	TO DO	3	T
SCRUM-15	As a user, I want to view the details of each plant along with its watering data and current state, so that I can easily monitor and manage my plant's health.	TO DO	3	R
SCRUM-16	As a user, I want to search for plants by name so that I can quickly find the plant I'm looking for.	TO DO	3	AA
SCRUM-17	As a user, I want to edit my plant's name, last watering date, or notes so that I can keep my plant info updated.	TO DO	3	AA
SCRUM-18	As a user, I want to delete a plant from my profile so that I can remove plants I no longer own or care for.	TO DO	2	T
SCRUM-19	As a user, I want to receive timely watering reminders for each plant I added, so that I can avoid forgetting and keep my plants healthy.	TO DO	5	A
SCRUM-20	As a user, I want to update the last watering date of a plant with a single click using a "Watered" button, so that I can easily keep my plant care records accurate without extra effort	TO DO	2	R
SCRUM-21	As a user, I want to filter my plant list to show only the plants that need watering today so that I can focus on plants that need care today.	TO DO	3	AA
SCRUM-22	As a user, I want the platform to be simple and intuitive, so that I can add, edit, or view my plants without confusion or extra effort.	TO DO	3	A
SCRUM-23	As a user, I want the BloomLog system to stay accessible most of the time, so that I can rely on it whenever I need to check or update my plant data.	TO DO	2	A
SCRUM-24	As a user, I want the website to load within 3 seconds so that I can quickly access my data	TO DO	3	AA

Figure 18: Jira product backlog