Software Requirements Specification

for

Flore: Flower recognition system

Version *1.0*

Prepared by

GROUP 3

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Revision History

Name	Date	Reason For Changes	Version
Khairul Imam	25/05	Submission	1.0

1. Introduction

1.1 Purpose

Since there are thousands of different flower species throughout the world, flower recognition is an extremely difficult problem. It's a labor-intensive and time-consuming task that has primarily been completed by botanists. While individuals frequently use cameras and mobile phones in daily life to photograph flowers, they occasionally become perplexed by the type of flower they are photographing. As a result, it is essential for botany to design an automatic flower recognition system because it will make people's lives so much more enjoyable. The main goal is to educate the community about flowers. Flore's attempt to classify flowers typically relied on characteristics like color, texture, or shape. The model can be trained using these traits in order to make it capable of later identifying an unknown bloom.

1.2 Definitions, Acronyms and Abbreviations

HTTP Hypertext Transfer Protocol
TCP/IP Hypertext Transfer Protocol/Internet Protocol address
API Application Programming Interface

1.3 Intended Audience and Reading Suggestions

Other project developers, users, and watchers who will utilize this system make up the audience of this SRS. This SRS includes information about flowers, various external interfaces that are necessary, system features, functional limitations, and some other needs. Users have the ability to skip to any area they feel pertinent rather than having to read this paper from beginning to end.A short overview of each section of the document is provided below.

- Part 1 (Introduction)

  This segment provides an overview of the Flore, outlining its goals and scope, general system information, and some significant platform-related constraints.
- Part 2 (Overall Description)

  Classification by class is described in this segment, as well as the product perspective, class structures, operating environment, and restrictions on design and execution.
- Part 3 (External Interfaces Requirements)

The whole construction of the Graphical User Interface (GUI), including its hardware, software, and communication interfaces, is covered in this segment. This segment provides readers with a sneak preview of the finished article.

- Part 4 (Systems Features)

  The use case specifications and flow pattern used by the system are covered in this part, which users should reference if they are interested in the functional requirements of FLORE.

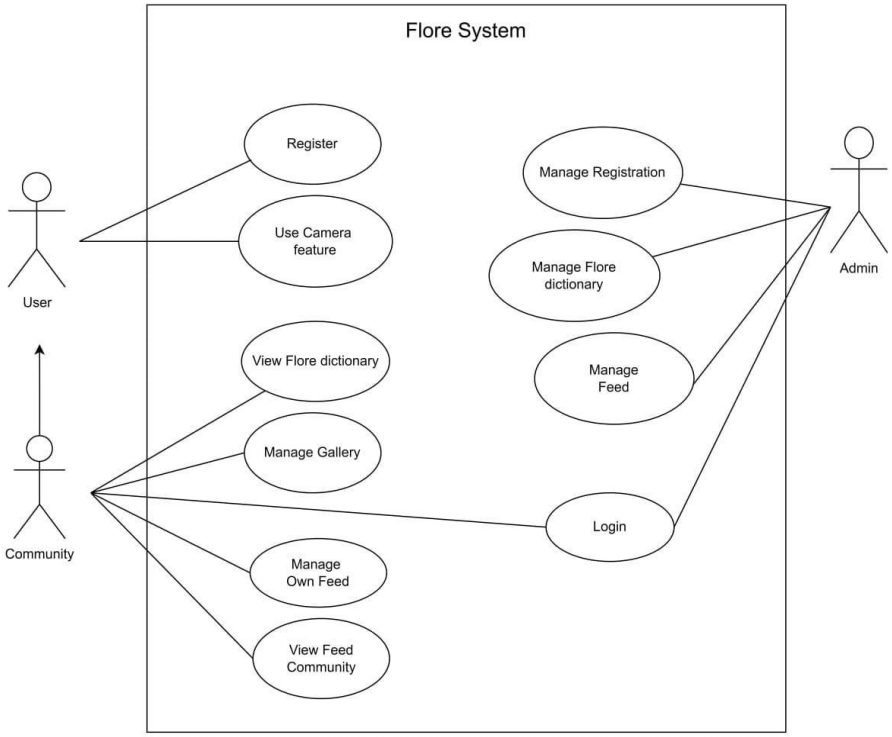
- Part 5 (Other Non-functional Requirements)

  The non-functional requirements of Flore application, a collection of specifications that outline the system's operational capabilities and limitations and seek to enhance its functionality, are covered in this segment..

- Part 6 (Appendices)

  Any additional information on Flore application that might be useful to readers is included in this segment of the document.

1.4 Product Scope



The primary purpose of Flore applications is to classify various kinds of flowers by looking at their photographs. Users mostly download and utilize the app for this function. Secondary but still crucial

components of the app include other features like presenting details about the flower's species, name, characteristics, habitat, and care recommendations.

Users can receive a continuous stream of fresh flowers and details about them due to the feature feed in Flore applications. Based on the user's choices and interests, the feed may be tailored. The software may analyze the user's search history and make suggestions for new flowers based on machine learning techniques. Updates from the app creator, such as new features, bug patches, and other announcements, may also be included in the feed. By like, commenting, and exchanging flowers with other users, users may engage with the stream. The feed feature encourages users to keep using the app and keeps them interested in it.

1.5 References

IEEE.*IEEE Std 830-1998 IEEE Recommended Practice For Software Requirements Specifications*.IEEE Computer Society, 1998.

2. Overall Description

2.1 Product Perspective

Flore is the acronym for Flower Recognition. Flore is a mobile-based flower recognition and identification application through object detection methods. The main challenge for humans is to recognize the name of the flower, even in normal ways like searching on the internet using search engines and search keywords are not efficient, time consuming, and without a definite result. Flore solves this challenge by providing an artificial intelligence system of flower recognition with object detection method emmbeded in application. The application enables users to track and take a picture of the flower by Android camera in real-time. The application provides a dictionary feature that contains information of various flowers to educate and acknowledge the user. As well as the community, the Flore community can share their experience through the application to express their experience using the application.

2.2 Product Functions

The system of Flore application must has these major features:

- Registration: New user able to register a new account
- Login: Registered user able to sign in as community of Flore
- Manage Account: Administrator able to control registered accounts
- Recognize Flore: All users able to get real-time flower recognition or a photo from gallery and display the information of the flower
- Dictionary: Application provides various type of flower information in detail
- Manage Dictionary: Application provides dashboard Administrator to manage dictionary items
- Manage Gallery: Flore Community able to save and remove the taken picture from camera
- Post Feed: Flore Community able to add a post and their experience from flower that was taken from their surroundings
- Manage Feed: Flore Community able to organize their post
- Feed Control: Administrator able to control community feed due to any restrictions and regulations.

2.3 User Classes and Characteristics

All ages can use this system to learn more about flowers in their daily life. We classify our users into 3 categories.

1) Kids age 10 or below. This category users use the application for fun learning to get more engaged with parental supervision. Their main focus is using the AI system to recognize the flower in their surroundings. It will assist them in expanding their vocabulary by introducing new terms of flowers.
2) Teenagers age 11-25. This category users use the application for their school as a learning support tool in biological subjects. They mostly use the AI system and the dictionary feature.
3) Adult age 25 or above. This category users use the application for their curiosity of flowers they found. Undeniably, they might be a community of flower lovers who will use the application sustainably.

2.4 Operating Environment

The Flore application uses these components below:

Operating system	: Android 5.0 or above
Database	: SQLite
Object Detection	: Convolutional Neural Network
Camera	: 2 Megapixel (1920 x 1080 pixels)
Internet	: Stable connection (1 Mbps Recommended)

2.5 Design and Implementation Constraints

The Flore application has these constraints below:

- Machine learning is implemented to recognize the flower by the characteristics of colors, sizes, and shapes.

- The application displays the detailed information of a recognized flower which are scientific name, species, plant taxonomy, and uses.
- The application only stores into local storage from the taken picture that was used in the application into Flore gallery with the data of the name of the flower and its details.
- GPS may need to be activated while posting a feed.
- Permission to save into local storage
- Need internet connection

2.6 User Documentation

The documentation covers the tutorials of the Flore application for the user to run activities and features. All tutorials will be made available in-application. The tutorial will display in picture and text format. The documentation cover these activities:

- Starting with Flore Application
- How to recognize the flower
- How to share a post in feed
- Things you are not allowed to post

2.7 Assumptions and Dependencies

Dataset and AI Model can impact on accuracy of flower recognition. Low accuracy and undetected flower can affect user usability. Due to this probability, it is needed to develop a more sophisticated AI model in further versions.

3. External Interface Requirements

3.1 User Interfaces

The FLORE lens's user interface for flower recognition is intended to be simple and intuitive. The interface indicates FLORE design guidelines, with a clean and minimalist look that is simple to understand and use.

The interface has elements of a single screen divided into two sections. The camera view at the top allows the user to see the flower they want to recognise. The bottom section is the information view, which displays the name of the flower as well as additional useful information.

The camera view occupies the biggest part of the screen, with a small button in the bottom left corner allowing the user to switch between front and back cameras. A small circle in the center of the screen indicates the area of the flower being analysed in the camera view.

The information view is at the bottom of the screen and displays the flower's name, as well as a picture of the flower and other relevant data, such as its scientific name, common name, and geographic range. The information view also includes buttons for sharing the information on social media and saving it to the user's camera roll.

The interface includes standard FLORE lens-specific buttons and functions, such as help and settings. The help button instructs the user on how to use the lens, whereas the settings button allows the user to change the lens's settings, such as the language and the type of information displayed.

The interface also includes error messages that are displayed when the lens is unable to recognize the flower. These messages are designed to be clear and concise, and provide the user with suggestions on how to improve the recognition process, such as adjusting the lighting or moving closer to the flower.

In summary, the FLORE lens's user interface for flower recognition is intended to be simple, intuitive, and consistent with FLORE's design guidelines. It has standard buttons and functions, error messages, and an easy-to-navigate camera view and information view.

3.2 Hardware Interfaces

The FLORE flower recognition lens is designed to work alongside the camera and other hardware components of mobile devices that support the FLORE application. The software product communicates with the device's hardware components via the operating system and camera API.

The camera API is used by the software product to capture images of the flower that the user wants to recognise. The software uses computer vision algorithms to identify the flower and extract relevant features such as the colour, shape, and texture of the petals and leaves from the image.

To identify the flower species, the software compares these features to a database of known flowers. The database is kept on a remote server, and the software communicates with it via standard protocols such as HTTP and TCP/IP.

The software also interacts with other hardware components of the device, such as the display and touch screen, to provide the user with a simple and intuitive interface for flower recognition. The software displays the camera view on the device's screen, and allows the user to switch between the front and back camera using a button on the screen.

In summary, the FLORE lens for flower recognition communicates with the device's hardware components via the operating system and camera API. The software uses the camera to capture images of the flower, analyses the images with computer vision algorithms, and communicates with a remote server to identify the flower species. The software also interacts with the device's display, touch screen, and speakers to provide a simple and intuitive interface for flower recognition to the user.

3.3 Software Interfaces

The FLORE flower recognition lens is a stand-alone application that does not rely on any other software components, databases, or commercially integrated components. The software is intended to run on mobile devices that support the FLORE application, and it interacts with the operating system and camera API of the device to capture images and analyse them using computer vision algorithms.

The software does not rely on any external libraries or tools and does not require any specific operating system version. The software communicates with no other software components or services, and no data is shared with any other applications.

Images captured by the device's camera are the data items entering the system. The goal of these images is to use computer vision algorithms to identify the flower species. The data items leaving the system are the outcomes of the flower recognition process, which include the name and other pertinent information about the identified flower species.

The software requires only the camera API of the device and the remote server that hosts the database of known flower species. Standard HTTP and TCP/IP protocols are used in communications to communicate with the remote server and retrieve information about the identified flower species.

Since the FLORE lens for flower recognition is designed to be a standalone application that does not rely on any external components or services, there are no detailed application programming interface protocols associated with it.

The software has no data sharing mechanism because it is designed to be a standalone application that does not share data with other applications. The software has no implementation constraints because it is designed to be a stand-alone application that does not rely on any external components or services.

3.4 Communications Interfaces

The FLORE lens for flower recognition requires no communication functions other than standard HTTP and TCP/IP protocols to communicate with the remote server that hosts the database of known flower species. Email, web browsers, network server communications protocols, electronic forms, or any other communication functions are not used by the software.

The software has no message formatting requirements because it is designed to be a stand-alone application that does not rely on any external components or services.

The software's communication standards are standard HTTP and TCP/IP protocols, which are used to communicate with the remote server that hosts the database of known flower species.

The software has no communication security or encryption issues because it does not transmit any sensitive or confidential information. The data transfer rates and synchronisation mechanisms are determined by the camera API on the device and the remote server that hosts the database of known flower species, and are not user configurable.

4. System Features (Functional Requirements)

4.1	**Use case name**	Registration
4.1.1	**Description**	If users want to get full access to other system features, they will need to register and become a community by key in their email, username, and password.
4.1.2	**Pre-Condition(s)**	Users must have no existing account with the same email and username.
4.1.3	**Post-Condition(s)**	Users registration information saved into the database.
4.1.4	**Actor**	User.
4.1.5	**Flow of Events**	
4.1.5.1	**Primary Flow**	1. User enters their email, username and password. 2. User presses the register button to submit the registration form to be able to login. 3. The database saves the user's data.
4.1.5.2	**Alternative Flow**	1. User enters their email, username and password. 2. User presses the register button to submit the registration form to be able to login. 3. The system shows an error message if the username or email entered is registered for another account. 4. Users re-enters the data.
4.1.5.3	**Exception Flow**	1. If the user clicks on the cancel button, the system will return to the homepage and data entered will not be saved.

4.2	**Use case name**	Camera feature
4.2.1	**Description**	All users can use the camera feature to scan flowers in real-life.Then, the AI will recognize the flower and display the name of the flower.
4.2.2	**Pre-Condition(s)**	Not applicable.
4.2.3	**Post-Condition(s)**	The system will display the name of the flower and more details button.
4.2.4	**Actor**	User.
4.2.5	**Flow of Events**	
4.2.5.1	**Primary Flow**	1. Users click on the camera feature button. 2. System will display the camera interface. 3. Users scan flowers they want to be recognized. 4. AI will detect and recognize the flower. 5. The name of the flower will be displayed.
4.2.5.2	**Alternative Flow**	Not Applicable.
4.2.5.3	**Exception Flow**	1. If the user clicks on the more details button after the system displays the flower's name, the system will display the register page. If the user has been registered, the system will display the details of the flower.

4.3	**Use case name**	Login
4.3.1	**Description**	Users who already have an account (community) need to login to the system using the username and password they have set up during registration.
4.3.2	**Pre-Condition(s)**	1. Users must have an account. 2. Users not already logged in to the system.
4.3.3	**Post-Condition(s)**	1. Users successfully logged in to the system. 2. Users gain access to the system or application, allowing them to utilize its functionalities.
4.3.4	**Actor**	Community and Admin.
4.3.5	**Flow of Events**	
4.3.5.1	**Primary Flow**	1. Users or Admins enter their username and password. 2. Users or Admins click on the login button. 3. System search users' or Admins' records in the database. 4. Database will check and validate users' or Admins' credentials. 5. Users and Admins can access the system once validated.
4.3.5.2	**Alternative Flow** Incorrect credentials.	1. Users enter incorrect credentials. 2. System will prompt users to re-enter the correct credentials. 3. System re-search users' records in the database. 4. Database will re-check and validate users' credentials. 5. Users can access the system once validated.
	Alternative Flow: User forgot password	1. User click on the forgot password button 2. System redirect to a password recovery process. 3. User input old password 4. User input new password twice 5. System update the database
4.3.5.3	**Exception Flow**	1. Use case ends if the system is unable to connect to the database.

4.4	**Use case name**	View Flore dictionary
4.4.1	**Description**	It is a flower dictionary that can be accessed by users who already have an account (community). It allows users to search and explore different flower species, learn about their characteristics, view images, and access related details.
4.4.2	**Pre-Condition(s)**	1. Users must have an account. 2. Users must have already logged into their account.
4.4.3	**Post-Condition(s)**	1. Users gain access to details and information about various flowers.
4.4.4	**Actor**	User (community).
4.4.5	**Flow of Events**	
4.4.5.1	**Primary Flow**	1. Users click on the dictionary button. 2. System will display a search interface and list of flower categories in alphabetical order. 3. Users click on the flower's name or enter the name of the flower in the search bar. 4. System displays the flower's information.
4.4.5.2	**Alternative Flow**	Not applicable.
4.4.5.3	**Exception Flow**	1. If the dictionary does not have information about a specific flower, the system will display a not found message.

4.5	**Use case name**	Manage gallery
4.5.1	**Description**	Users who already have an account (community) will have their own in-app gallery to keep data of their recognized flower. Users can access their past data and review their collection of flowers.
4.5.2	**Pre-Condition(s)**	1. Users must have an account. 2. Users must already be logged into their account. 3. Users must have recognized at least a flower.
4.5.3	**Post-Condition(s)**	1. Users can view the details of the flower they have taken such as details of the flower, date, and time taken.
4.5.4	**Actor**	User (community).
4.5.5	**Flow of Events**	
4.5.5.1	**Primary Flow**	1. Users click on the gallery button. 2. Users click on tha photos in the gallery to view the details.
4.5.5.2	**Alternative Flow**	Not applicable.
4.5.5.3	**Exception Flow**	Not applicable.

4.6	**Use case name**	Manage own feed
4.6.1	**Description**	Users who already have an account (community) can access the feed feature where they can create, update and delete their postings.
4.6.2	**Pre-Condition(s)**	1. Users must have an account. 2. Users must have already logged into their account.
4.6.3	**Post-Condition(s)**	1. Users gain access to create, update, and delete their posts.
4.6.4	**Actor**	User (community).
4.6.5	**Flow of Events**	
4.6.5.1	**Primary Flow**	1. Users click on the feed button. 2. If users want to create a new post, they click on the new post button. 3. If users want to update posts, users can click on the post they want to edit and choose the edit button. 4. If users want to delete posts, they can click on the post they want to delete and choose the delete button.
4.6.5.2	**Alternative Flow**	Not applicable.
4.6.5.3	**Exception Flow**	Not applicable

4.7	**Use case name**	View feed community
4.7.1	**Description**	Users who already have an account (community) can access the feed feature where they can view other communities' feeds or posts.
4.7.2	**Pre-Condition(s)**	1. Users must have an account. 2. Users must have already logged into their account.
4.7.3	**Post-Condition(s)**	1. Users gain access to view other communities' posts.
4.7.4	**Actor**	User (community).
4.7.5	**Flow of Events**	
4.7.5.1	**Primary Flow**	1. Users click on the feed button. 2. System will display the feeds containing posts of other communities.
4.7.5.2	**Alternative Flow**	Not applicable.
4.7.5.3	**Exception Flow**	Not applicable.

4.8	**Use case name**	Manage Registration
4.8.1	**Description**	Admin can manage users' accounts such as update users information if users have any issue with their account and delete accounts that have not been logged in for a long time.
4.8.2	**Pre-Condition(s)**	Admin must have logged into their account.
4.8.3	**Post-Condition(s)**	Admin gain access to update and delete registrar's data.
4.8.4	**Actor**	Admin
4.8.5	**Flow of Events**	
4.8.5.1	**Primary Flow**	1. Admin open manage Account page 2. The system displays all registered accounts 3. Admin able to do any actions (update or delete) for selected account 4. The system update or delete in database
4.8.5.2	**Alternative Flow**	Not applicable.
4.8.5.3	**Exception Flow**	Not applicable.

4.9	**Use case name**	Manage Flore dictionary
4.9.1	**Description**	Admin can update, delta and insert new data about flowers into the Flore dictionary.
4.9.2	**Pre-Condition(s)**	Admin must have logged into their account.
4.9.3	**Post-Condition(s)**	Admin gains access to manage the Flore dictionary.
4.9.4	**Actor**	Admin
4.9.5	**Flow of Events**	
4.9.5.1	**Primary Flow**	1. Admin click on manage Flore dictionary. 2. If Admin wants to delete data of the flower, Admin can click on the flower name, and choose delete. 3. If Admin wants to update data of the flower, Admin can click on the flower name, next change what needs to be changed and Admin can click on the update button. 4. If Admin wants to insert new data of a flower, Admin can click on the new button and enter the details of the new flower. 5. Any changes will be updated to the database.
4.9.5.2	**Alternative Flow**	Not Applicable
4.9.5.3	**Exception Flow**	Not Applicable

4.10	**Use case name**	Manage Feed
4.10.1	**Description**	Admin can make comment and
4.10.2	**Pre-Condition(s)**	Admin must have logged into their account
4.10.3	**Post-Condition(s)**	Admin gains access to comment or gives reaction on community feed.
4.10.4	**Actor**	Admin
4.10.5	**Flow of Events**	
4.10.5.1	**Primary Flow**	1. Admin click on the manage feed button. 2. If Admin wants to add a reaction on the particular post, Admin can click on the particular post and add a reaction. 3. If Admin wants to add a comment to a particular post, Admin can click on the particular post and post a comment on the posts. 4. Any changes will be updated in the database.
4.10.5.2	**Alternative Flow**	Not Applicable
4.10.5.3	**Exception Flow**	Not Applicable

5. Other Nonfunctional Requirements

5.1 Performance Requirements

A flower recognition application for non-functional performance requirements relates to how well the application works in terms of speed and efficiency. The goal behind these requirements is to guarantee that the application delivers to users fast, quick, accurate, and dependable results. Developers may make appropriate design decisions to optimize the application's performance and guarantee that it satisfies the expectations of users by expressing these requirements. Developers can also guarantee that the application fulfills the special demands of consumers who want real-time flower recognition by establishing timing relationships for real-time systems.

1) **Response Time:** The application must respond to user requests as soon as possible. This means that the application's time to recognise the flower should be quick enough to deliver a satisfactory user experience. The application should be able to recognise flowers and offer results in less than 2 seconds.
2) **Relationships between timing:** For real-time systems, the application is able to recognise flowers and offer results within the specified time range. The application will recognize the flowers and offer results in a few seconds without waiting too long to get the result.
3) **Accuracy:** It must be created by using powerful machine learning techniques, such as deep learning, that can learn from huge amounts of flower photos in order to achieve high accuracy. In addition to making sure that the recognition accuracy is not influenced by differences in lighting conditions, camera angles, and picture resolution, the application must also be able to manage changes in these aspects.
4) **Speed:** The application must be responsive and quick to respond. Users demand quick outcomes, and any wait might cause frustration and dissatisfaction Even while processing huge amounts of data, the application should be optimized to offer speedy results.
5) **Compatibility:** The application works with a variety of devices and systems. Users are able to use the programme from their preferred device, either by using a tablet or smartphone.

5.2 Safety Requirements

Flower recognition apps must prioritize data protection. These programmes gather and retain user photos and personal information, and they must be built to prevent unauthorized access, theft, or abuse of this data. This can include features like data encryption, anonymization, and secure storage, as well as frequent security audits to guarantee the application is safe from changing security threats. It relates to how effectively

the application maintains the safety of its users, their data, and the environment in which the application is utilized.

These applications are bound by all applicable laws and regulations, including those governing data privacy, intellectual property, and consumer protection. Noncompliance with these rules may result in legal responsibility, reputational harm, and other undesirable effects. The capacity of a flower recognition application to keep user data and avoid harm to users or the environment is a specific safety requirement :

1) The application must meet any required safety certifications for its intended use.
2) The programme should be designed to avoid privacy breaches and unauthorized access to user data.
3) The application should adhere to data security and privacy best practices, such as encryption and secure user data storage.

Above all, the safety requirement is an important non-functional requirement of a flower recognition application since it directly influences the user's personal safety of their data. The application should be created with user safety in mind that it satisfies user demands and conforms with any relevant laws or legislation. Users would like their data to be kept private, and the application must minimize the possibility of unauthorized access. Developers can create a safe and enjoyable experience for users by concentrating on safety requirements.

5.3 Security Requirements

To prevent unauthorized access, modification, or disclosure, this application sends and maintains user data via secure protocols. The privacy policies of this programme are straightforward, detailing how user data is collected, used, and shared. User data should not be shared with other parties unless the user directly permissions. Consider the following security and privacy concerns while developing a flower recognition application:

1) **The Secure of data storage:** To prevent data breaches and unauthorized access to user data, the application should ensure that user data is stored securely.
2) **Data security:** The application should employ encryption and other security measures to protect user data from unauthorized access or disclosure.
3) **User privacy:** Users should have control over what data is shared and with whom it is shared. Users should have the option to delete their data from the app if they so want.
4) **User authentication**: The application should use robust user authentication measures, such as two-factor authentication, to prevent unauthorized access to user accounts.

5) **User authorization :** Users may be permitted to post photographs of flowers in order to scan the flowers, but they are not permitted to edit or remove the photos of other users. In attribute-based access control, access is granted based on user characteristics such as user ID, location, or device.

Authentication, data security, user privacy, encryption, and safe data storage are all security requirements. Authentication guarantees that users are who they claim to be, whereas authorization ensures that users are permitted to access the application's capabilities. Secure data storage protects and secures the user's data. Building an application necessitates security or privacy certification. A flower recognition application can safeguard the security and privacy of its users and their data by achieving certain security criteria, adhering to relevant regulations and legislation, and acquiring appropriate security or privacy certifications.

1. Users may be asked to create an account or log in before they can use the application.
2. Users may be needed to provide personal information such as their name or email address in order to create an account.
3. The application may employ two-factor authentication or other security processes to authenticate the user's identity.

5.4 Software Quality Attributes

The software quality attribute for this application is adaptability. The application is able to adapt to many types of flowers, including uncommon or exotic species, as well as color, shape, and size variations. Because the application is adaptive, it can deliver a more solid and stable user experience, which is valuable to both consumers and developers.

1) **Availability :** The application is easy to use and accessible to users on a variety of devices and platforms. This can be accomplished by providing a web-based service or native applications for major mobile platforms such as iOS and Android. Moreover, the application is provided in several languages in order to accommodate users from various locations and cultures. Developers can extend the application's reach and influence by making it publicly available, as well as give users a more easy and smooth experience.
2) **Correctness :** It can be able to recognise flowers properly based on differentiating characteristics such as color, shape, and size. The application should be able to distinguish between different species of flowers, even if they seem identical. To achieve great accuracy, powerful image processing algorithms and machine learning approaches that can discover patterns and characteristics in pictures must be used.

3) **Reliability :** The application will offer users with consistent and accurate results. This is possible through the use of modern image processing algorithms and machine learning approaches that are resistant to distortion, and other causes of inaccuracy. Furthermore, the application is able to handle a diverse set of inputs, such as photographs shot from various perspectives or under varying lighting circumstances.
4) **Usability :** The application should be easy to use and navigate, with a user interface that does not need extensive instruction or technical experience. The application's instructions and feedback should be clear and simple, utilizing plain English and avoiding technical slang or complicated language. The application should give the user an instant and useful response, such as recognizing the flower species and providing more information about the flower, such as its habitat, uses, and cultural importance.

5.5 Product Requirements/Business Rules

This application's product requirement is important for ensuring that it satisfies the requirements of its users. One of the most important requirements involves operational concepts, such as individuals or roles played.

Firstly, different user roles with different levels of access and permissions are required in the application. This is important for ensuring that the application is safe and that users can only access the functions that they have been granted access to. For example, registered users have full access to all of the application's capabilities, while non-registered members can only access certain of them. To ensure that the application runs well, an administrator must be able to manage user accounts, add and delete data, and see logs.

Second, user support is essential to ensuring that users are able to fix issues and get the most out of the application. In order to ensure that users can obtain help when they need it, the application must provide enough user support, such as online help, user communities, and customer service. Other than that is user training: The application must provide enough user training to assist users in understanding the programme's capabilities and functions, as well as recommended practises for utilizing the application successfully and efficiently. The application must provide sufficient user training to make sure that users can use the application easily and successfully.

In general, this application's product requirement is important to its success. The application can deliver a high-quality experience to users while also being safe, dependable, and efficient by concentrating on operational concepts such as user roles, user support, and user training.

6. Other Requirements

- **Database requirements:** the flower recognition project will require a large database of images of different types of flowers to train the machine learning model. The database should be well-organized and contain a variety of images with different backgrounds, lighting, and angles. The images should be labeled with the correct type of flower so that the model can learn to recognize each type. The database should be easily accessible to developers and should be updated regularly to improve the accuracy of the model.
- **Internationalization requirements:** the flower recognition project should be able to recognize flowers from different parts of the world, so it should be able to handle images with different backgrounds, lighting, and angles. The model should be trained on images from different regions to ensure that it can recognize flowers from different parts of the world. The developers should also consider the language and cultural differences when designing the user interface.
- **Legal requirements:** if the flower recognition project is intended for commercial use, the developers should ensure that they have the appropriate permissions to use any images or data that they incorporate into the project. They should also ensure that the project complies with copyright and intellectual property laws. If the project is intended for use in a specific country, the developers should ensure that they comply with any relevant laws and regulations in that country.
- **Reuse objectives:** the code for the flower recognition project should be well-documented and modular to make it easy for other developers to integrate the model into their own projects. The developers should also consider how the project can be extended or modified for use in different applications. The code should be designed to be easily maintainable and scalable so that it can be used in a variety of settings.

Appendix A: Approval

The undersigned acknowledge they have reviewed the ***Flore : Flower recognition system*** Software Requirements Specification and agree with the approach it presents. Changes to this Software Requirements Specification will be coordinated with and approved by the undersigned or their designated representatives.

1. Signature :  Date: 26/05/2023

   Name : KHAIRUL IMAM BIN SUHERMAN

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   Role : Team Leader

2. Signature :  Date: 26/05/2023

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   Role : Software Tester

3. Signature :  Date: 26/05/2023

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4. Signature :  Date: 26/05/2023

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6. Signature :  Date: 26/05/2023

   Name : AINA FATIN BINTI REDIZO

   Student Id : 2021485488

   Role : Software Developer

7. Signature :  Date: 26/05/2023

   Name : NUR QHALIESHA BINTI ROSDI

   Student Id : 2021627622

   Role : Software Engineer

Appendix B: Glossary

- **SRS:** Software Requirements Specification
- **Flower recognition:** the ability of a machine learning model to identify different types of flowers based on images of the flowers
- **Machine learning:** a type of artificial intelligence that allows computer systems to learn and improve from experience without being explicitly programmed
- **Database:** a collection of data that is organized in a specific way to allow for efficient retrieval and manipulation of the data
- **Image:** a digital representation of a visual object or scene
- **Label:** a tag or piece of metadata that describes an image, such as the type of flower in the image
- **Model:** a mathematical representation of a system or process that can be used to make predictions or decisions based on input data
- **User interface:** the part of a software application that allows users to interact with the application, typically through a graphical interface
- **Copyright:** a legal right that grants the creator of an original work exclusive rights to its use and distribution
- **Intellectual property:** a legal concept that refers to creations of the mind, such as inventions, literary and artistic works, and symbols, names, images, and designs used in commerce
- **Maintainable:** the ability of software code to be easily modified and updated without causing errors or unintended consequences
- **Scalable:** the ability of software code to handle increased usage or data without significant performance issues or crashes
- **API:** Application Programming Interface
- **SDK:** Software Development Kit
- **ML:** Machine Learning

Appendix C: Analysis Models

(Activity Diagram)