System analysis is the process of observing systems for troubleshooting or development purposes. The analysis focuses on capturing the business requirements for the system. The analysis identifies the "what" of the system, and it leads directly into the design phase, during which the "how" of the system is determined. Many deliverables are created during the system analysis phase, including the use cases, use case description, and context diagram.

Identification of Use Cases

A use case is a description of how a person who uses that process or system will accomplish a goal. It includes all application operations that are important to users, as well as models of system/actor(user) interaction objectives. In this project, the main users are the end users (the community).

Actor	Description	Use Case
End User	This is the actor inputs data into the system and views the results of the system	1:Register 2: Login 3:Set up required Information for recommendation 4: Get Recommendation
Google Maps	This actor provides latitude and longitude for a given location	Set up location
ISDA	This actor provides soil nutrients data and soil composition	Get Soil Data
Open Meteo	This actor provides environmental data	Get Environmental Data
Recommendation Model	This actor provides recommendations based on the soil data and environmental data provided	Get Recommendation

Figure 1: System Actors of the Crop Recommendation System

Use Case Diagram

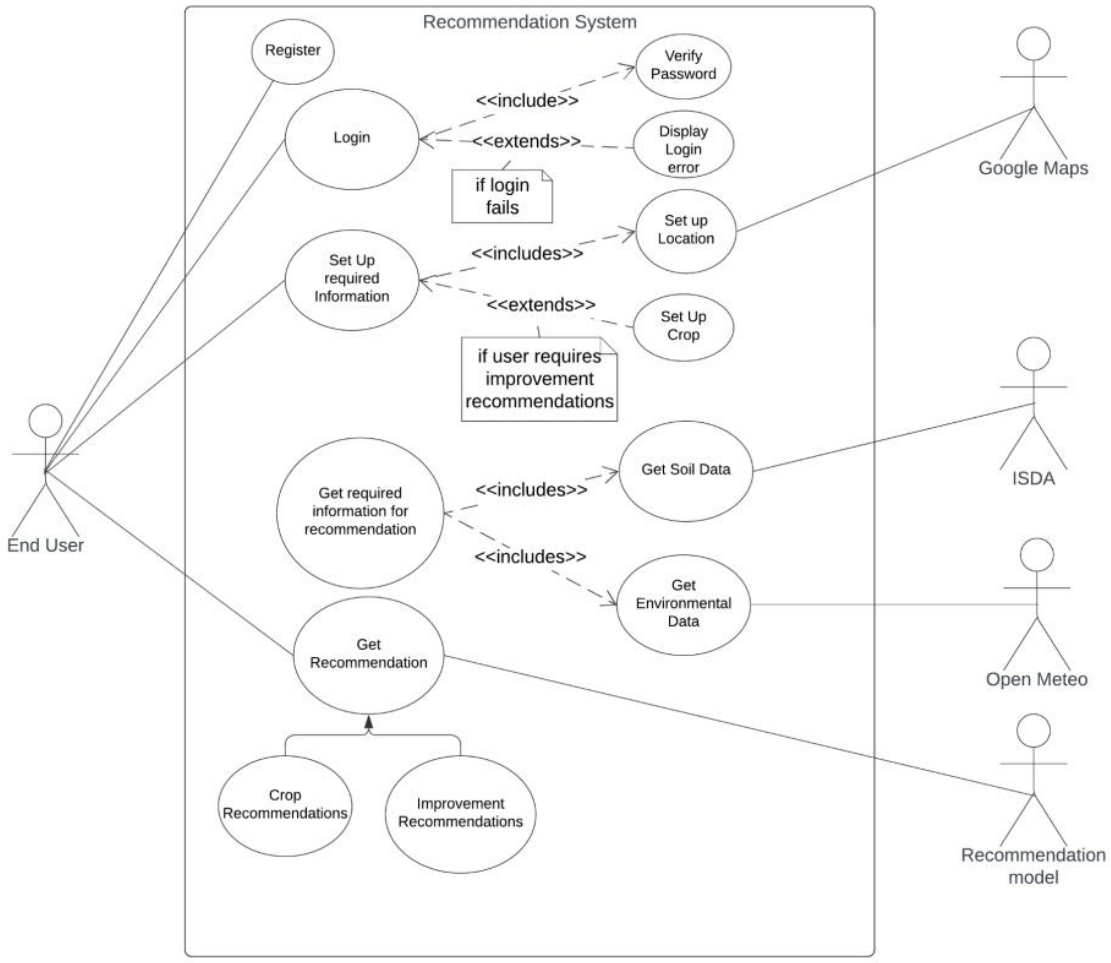

Figure 2: Use Case Diagram

Use Case Description

Table 1: Use Case Register

Field	Description
Use Case:	Register
Actor	End User
Short Description	User creates a new account in the system.
Pre Condition	User is not registered.
Post Condition	User is registered and can log in.
Main Flow	1. The user selects the Register option 2. The user provides the necessary information and submits the form. 3. The system registers the user.

Table 2: Use Case Login

Field	Description
Use Case:	Login
Actor	End User
Short Description	User logs into the system with a username and password.
Pre Condition	User must be registered
Post Condition	User gains access to the system
Main Flow	1. User enters username and password. 2. System verifies credentials. 3. User is logged in.

Table 3: Set up required information for Recommendation

Field	Description
Use Case:	Set up required information for Recommendation
Actor	End User
Short Description	User provides additional required information for recommendations
Pre Condition	User is logged in and requires recommendations
Post Condition	Required information for recommendation is set up
Main Flow	1. The user selects to set up the required information. 2. The user inputs all necessary data. 3. The system saves the data for future recommendation processes.

Table 4: Use Case Get Soil Data

Field	**Description**
Use Case:	Get Soil Data
Actor	ISDA
Short Description	System retrieves soil data for recommendation purposes
Pre-Condition	User has requested a recommendation that requires soil data
Post Condition	Soil data is retrieved and available for recommendation processing.
Main Flow	1. System requests soil data from ISDA. 2. ISDA provides soil data. 3. System receives and processes the soil data

Table 5: Use Case Get Environmental Data

Field	**Description**
Use Case:	Get Environmental Data
Actor	Open Meteo
Short Description	System retrieves environmental data for recommendation purposes.
Pre Condition	User has requested a recommendation that requires environmental data.
Post Condition	Environmental data is retrieved and available for recommendation processing.
Main Flow	1. System requests environmental data from Open Meteo. 2. Open Meteo provides environmental data. 3. System receives and processes the environmental data. 1. System requests environmental data from Open Meteo. 2. Open Meteo provides environmental data. 3. The system receives and processes the environmental data.

Table 6: Use Case Recommendation

Field	**Description**
Use Case:	Get Recommendation
Actor	End User Recommendation Model
Short Description	User receives crop and improvement recommendations
Pre Condition	Required information for recommendation is set up.
Post Condition	User receives crop and improvement recommendations.
Main Flow	1. The user requests a recommendation. 2. System gathers required data. 3. System provides crop and improvement recommendations.