Seed Recommendation System using Java OOP

Agriculture-Based Java Project with User Input and Environment Matching

# Introduction

* This Java project helps recommend suitable seeds for farming.
* It takes real-world input: temperature, humidity, and soil type.
* Using Java OOP, it compares inputs with seed requirements.
* It gives a list of seeds best suited for the area.

# Purpose and Importance

* Supports farmers in selecting the right crops.
* Teaches Java OOP concepts with practical use.
* Good for students, projects, and small-scale agricultural planning.
* Can be extended for real-time weather and soil data.

# User Input Required

* 1. Area name (any text)
* 2. Temperature (numeric, in Celsius)
* 3. Humidity (numeric, percentage)
* 4. Soil Type (e.g., LOAMY, CLAY, etc.)

# Output Example

* Area: Green Field
* Temperature: 25°C, Humidity: 60%, Soil: LOAMY
* Output: Recommended Seeds
* - Wheat
* - Maize
* - Rice

# Java Concepts Used

* Classes and Objects: Area, Seed, SeedRecommender
* Encapsulation: Private data with public methods
* Abstraction: isSuitable() hides logic inside the Seed class

# Java Concepts Used

* Enums: Used for SoilType like SANDY, LOAMY, etc.
* Lists and EnumSet: Store multiple seeds and valid soil types
* Scanner: Used to take user input from the console

# Class: Area

* Stores the input from user:
* - temperature (double)
* - humidity (double)
* - soilType (enum)
* Used by SeedRecommender to match conditions

# Class: Seed

* Stores details of a seed type:
* - name
* - temperature range
* - humidity range
* - suitable soils
* Method: isSuitable(Area) checks compatibility

# Class: SeedRecommender

* Holds a list of available seeds
* Has method: recommendSeeds(Area area)
* Checks which seeds match the area's conditions

# Code: isSuitable Method

* boolean isSuitable(Area area) {
* return area.temp in range AND
* area.humidity in range AND
* area.soilType in suitableSoils;
* }
* Returns true or false for each seed.

# Real-World Use Cases

* Smart farming and automated suggestions
* Agricultural education and training
* Mobile app integration for live farming help
* Weather or soil sensor-based input in future

# Future Improvements

* Add GUI (Graphical User Interface)
* Connect to live weather data (API)
* Use database for storing more seed types
* Support multiple languages for farmers

# Summary of the Project

* Java OOP used to create a practical farming tool
* Uses user input and logic to match environmental needs
* Teaches key Java concepts through a real application
* Easy to upgrade and expand

# Thank You!

* Project: Seed Recommendation System
* Made using Java with OOP concepts
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