

# Task 4 Report: Agricultural Company Management System

## 1. Introduction

In this report, we present an overview and functionality of the Agricultural Company Management System developed for Task 4. This system aims to facilitate the management of agricultural crops and company information using object-oriented programming principles in Java.

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## 2. Classes and Functionality

### 2.1. AgriculturalCompany Class

#### Goal:

The AgriculturalCompany class serves as the main entity representing an agricultural company. It manages a list of crops, allows addition, deletion, and persistence of crop data, and provides company information such as address and VAT number.

#### Functionality:

- **Attributes:**

- crops: List<Crop> to store instances of Crop objects.
- address: String representing the company's physical address.
- vatNumber: String holding the company's VAT number.

- **Methods:**

- addCrop(Crop crop): Adds a crop to the list.

- deleteCrop(Crop crop): Removes a specified crop from the list.
- saveCropsToFile(String filename): Serializes the list of crops to a file.
- loadCropsFromFile(String filename): Deserializes and loads the list of crops from a file.
- getAddress(): Retrieves the company's address.
- getVatNumber(): Retrieves the company's VAT number.
- main(String[] args): Example usage demonstrating CRUD operations on crops and file I/O operations.

## 2.2. CompanyInterface Interface

### Goal:

The CompanyInterface interface defines methods that must be implemented by classes managing crop data within a company.

### Functionality:

#### • Methods:

- addCrop(Crop crop): Adds a crop to the company's collection.
- deleteCrop(Crop crop): Deletes a crop from the company's collection.
- saveCropsToFile(String filename): Saves the company's crop data to a specified file.
- loadCropsFromFile(String filename): Loads the company's crop data from a specified file.

## 2.3. LegalEntity Interface

### Goal:

The LegalEntity interface specifies methods to retrieve address and VAT number for legal entities.

### Functionality:

- **Methods:**

- getAddress(): Retrieves the address of the legal entity.
- getVatNumber(): Retrieves the VAT number of the legal entity.

## 2.4. Crop Class

### Goal:

The Crop class represents individual crops with attributes like name, type, and yield.

### Functionality:

- **Attributes:**

- name: String representing the crop's name.
- type: String indicating the type of crop (e.g., Grain, Vegetable).
- yield: Double storing the yield of the crop.

- **Methods:**

- Getters and setters for name, type, and yield.
- toString(): Provides a string representation of the crop object for easy display.

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## **Conclusion**

The Agricultural Company Management System developed for Task 4 demonstrates effective use of object-oriented programming concepts to manage agricultural data. The system allows companies to add, delete, and persist crop data while providing essential company information retrieval functionalities. This approach ensures data integrity and facilitates efficient management of agricultural operations.

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