

Comprehensive Report for the Task4

The `finalexam.task4` package includes classes designed for managing a Recycling Company. This report outlines the functionality and goals of each class within this package.

LegalEntity Interface

```
package finalexam.task4;

public interface LegalEntity {
    String getAddress();
    String getVatNumber();
}
```

Define methods to retrieve address (`getAddress()`) and VAT number (`getVatNumber()`) of a legal entity.

Recycling Company Class

```
package finalexam.task4;

import java.io.*;
import java.util.ArrayList;
import java.util.List;

public class RecyclingCompany implements LegalEntity {
    private String address;
    private String vatNumber;
    private List<Material> materials = new ArrayList<>();

    public RecyclingCompany(String address, String vatNumber) {
        this.address = address;
        this.vatNumber = vatNumber;
    }

    public String getAddress() {
        return address;
    }

    public String getVatNumber() {
        return vatNumber;
    }

    public void addMaterial(Material material) {
        materials.add(material);
    }

    public boolean removeMaterial(Material material) {
        return materials.remove(material);
    }
}
```

```

public Material findMaterialByName(String name) {
    for (Material m : materials) {
        if (m.getName().equalsIgnoreCase(name)) {
            return m;
        }
    }
    return null;
}

public void printMaterials() {
    for (Material m : materials) {
        System.out.println(m);
    }
}

// Method to save materials list to a file
public void saveMaterialsToFile(String filename) {
    try (ObjectOutputStream oos = new ObjectOutputStream(new FileOutputStream(filename))) {
        oos.writeObject(materials);
        System.out.println("Materials list saved to " + filename);
    } catch (IOException e) {
        System.err.println("Error saving materials list: " + e.getMessage());
    }
}

// Method to load materials list from a file
@SuppressWarnings("unchecked")
public void loadMaterialsFromFile(String filename) {
    try (ObjectInputStream ois = new ObjectInputStream(new FileInputStream(filename))) {
        materials = (List<Material>) ois.readObject();
        System.out.println("Materials list loaded from " + filename);
    } catch (IOException | ClassNotFoundException e) {
        System.err.println("Error loading materials list: " + e.getMessage());
    }
}
}

```

Goal: Represents a Recycling Company that implements the `LegalEntity` interface.

Functionality: `address`: Stores the address of the recycling company.

`vatNumber`: Stores the VAT number of the recycling company.

`materials`: List of materials managed by the company.

Methods: `addMaterial(Material material)`: Adds a material to the company's list.

`removeMaterial(Material material)`: Removes a material from the company's list.

`findMaterialByName(String name)`: Searches for a material by name.

`printMaterials()`: Prints all materials managed by the company.

`saveMaterialsToFile(String filename)`: Saves the list of materials to a file using serialization.

`loadMaterialsFromFile(String filename)`: Loads the list of materials from a file using deserialization.

Material class

```
package finalexam.task4;

import java.io.Serializable;

public class Material implements Serializable {
    private static final long serialVersionUID = 1L;

    private String name;

    public Material(String name) {
        this.name = name;
    }

    public String getName() {
        return name;
    }

    @Override
    public String toString() {
        return "Material: " + name;
    }
}
```

Goal:Represents a material that can be recycled.

Functionality:

name: Name of the material.

getName(): Retrieves the name of the material.

toString(): Returns a string representation of the material.