Comprehensive Report for Task 4: Fishery Management System

General Introduction: The Fishery Management System is a Java-based application designed to manage and track fish inventory in a fishery. This system implements the LegalEntity interface, allowing it to represent a legal business entity with associated address and VAT number information. The primary goals of this system are to:

1. Maintain a list of fish in the fishery
2. Add and remove fish from the inventory
3. Display the current fish inventory
4. Save and load the fish inventory to/from a file
5. Represent the fishery as a legal entity with appropriate identification

The system consists of two main classes, Fishery and Fish, along with the LegalEntity interface. Each component plays a specific role in achieving the overall functionality of the Fishery Management System.

Class Descriptions:

1. LegalEntity Interface: Functionality: Defines the contract for classes that represent legal business entities. Goal: To ensure that implementing classes provide methods for retrieving address and VAT number information.

Methods:

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

2. Fishery Class: Functionality: Represents a fishery as a legal entity and manages a list of fish. Goal: To provide methods for adding, removing, and displaying fish, as well as saving and loading the fish inventory to/from a file.

Key Methods:

- addFish(Fish f): Adds a fish to the inventory.
- removeFish(Fish f): Removes a fish from the inventory.
- displayFishes(): Displays all fish in the inventory.
- saveFishesToFile(String filename): Saves the fish inventory to a file.
- loadFishesFromFile(String filename): Loads the fish inventory from a file.
- getAddress() and getVatNumber(): Implement the LegalEntity interface.

3. Fish Class: Functionality: Represents an individual fish with species and weight information. Goal: To encapsulate fish data and provide a string representation of a fish.

Key Methods:

- getSpecies(): Returns the species of the fish.
- getWeight(): Returns the weight of the fish.
- toString(): Provides a string representation of the fish.

The Fishery Management System demonstrates object-oriented programming principles, including encapsulation, inheritance (interface implementation), and separation of concerns. It provides a practical solution for managing fish inventory in a fishery while also maintaining necessary legal entity information. The system's ability to persist data through file I/O operations adds an extra layer of functionality, allowing for data retention between program executions.

Without the FisheryTest class, the system retains its full functionality. However, it's worth noting that in a production environment, it would be beneficial to have a separate testing suite to ensure the continued correct operation of the system as it evolves or when changes are made. The core classes (Fishery and Fish) along with the LegalEntity interface provide all the necessary components for the Fishery Management System to operate as intended.