Problem Statement:

You are tasked with implementing a logging system for a software application. The logging system should be flexible enough to support different types of loggers (e.g., console logger, file logger, database logger) and different log levels (e.g., INFO, DEBUG, ERROR). Additionally, the logging system should ensure that only one instance of the logging system exists throughout the application.

1. Design a logging system using appropriate design patterns that allow for different types of loggers to be easily added in the future.

2. Your solution should allow the client code to log messages at different log levels (INFO, DEBUG, ERROR) using the selected logger type.

3. Your solution should be extensible so that adding a new logger type or extending the functionality of existing loggers can be done without modifying existing code.

4. Perform unit testing ensuring only one instance of the logging system exists throughout the application.