Singleton Pattern Implementation – Java

Exercise Title: Singleton Pattern
Module: Design Patterns and Principles
Track: DN 4.0 DotNet FSE Deep Skilling Program

Objective:
To ensure a logging utility class in a Java application maintains only one instance throughout the application lifecycle, thereby enabling consistent and centralized logging.

Concepts Applied:
Object-Oriented Programming (OOP)
Design Patterns: Singleton Pattern
Encapsulation and Access Control

Problem Summary
Create a utility class for logging where:
Only one object exists during runtime
Every component of the system uses this same instance
Helps avoid redundant memory usage and inconsistent logs

Deliverables
A Logger class implementing Singleton Pattern
A Main class to test that only one instance is created
A week-wise folder containing the solution for submission

Tools & Technologies
Java
IDE (IntelliJ, Eclipse, or VS Code)

Evaluation Criteria
Accurate implementation of Singleton Pattern
Proper folder structure
Self-evaluation completed
Solution committed to GitHub as per instructions

Self-Evaluation Checklist
Logger class uses Singleton principles
Same instance is returned each time
Folder structure is organized week-wise
Code compiled and tested successfully
Uploaded to public GitHub repository.