**Exercise 1: Implementing the Singleton Pattern**

**Scenario:**

You need to ensure that a logging utility class in your application has only one instance throughout the application lifecycle to ensure consistent logging.

**Java code:**

public class SingletonPatternExample {

static class Logger {

private static Logger instance;

private Logger() {

System.out.println("Logger Initialized");

}

public static synchronized Logger getInstance() {

if (instance == null) {

instance = new Logger();

}

return instance;

}

public void log(String message) {

System.out.println("[LOG] " + message);

}

}

public static void main(String[] args) {

Logger logger1 = Logger.getInstance();

Logger logger2 = Logger.getInstance();

logger1.log("First message");

logger2.log("Second message");

if (logger1 == logger2) {

System.out.println("Same instance: Singleton confirmed.");

} else {

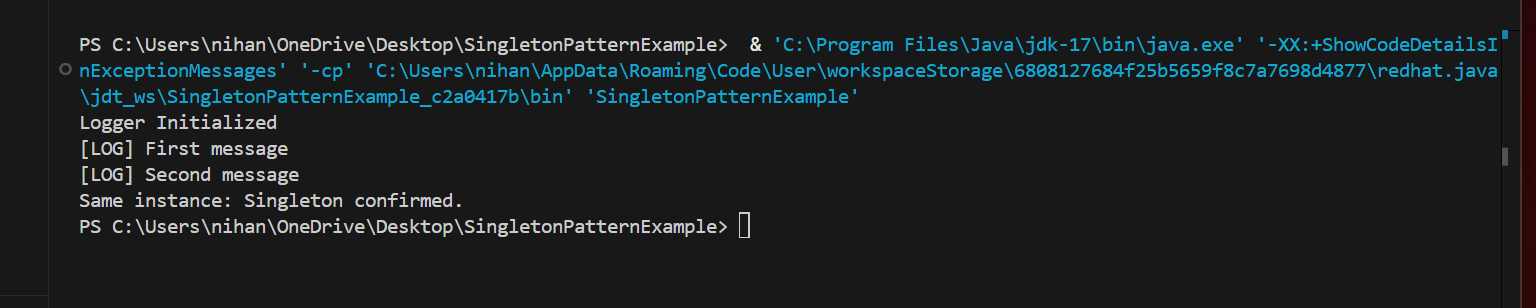
System.out.println("Different instances: Singleton failed.");

}

}

}

**Output :**

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