**Exercise 1: Implementing the Singleton Pattern**

public class Logger {

private static Logger instance;

private Logger() {

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

}

public static Logger getInstance() {

if (instance == null) {

instance = new Logger();

}

return instance;

}

public void log(String message) {

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

}

}

public class SingletonTest {

public static void main(String[] args) {

Logger logger1 = Logger.getInstance();

logger1.log("Application started");

Logger logger2 = Logger.getInstance();

logger2.log("Performing some operations...");

if (logger1 == logger2) {

System.out.println("Only one instance exists. Singleton works!");

} else {

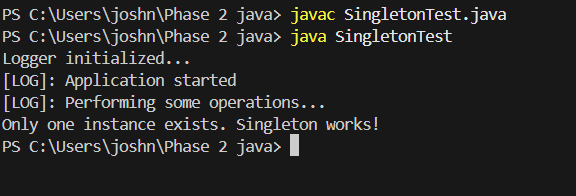
System.out.println("Different instances! Singleton failed.");

}

}

}

**Output:**

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