**Exercise 1: Implementing the Singleton Pattern**

Code:

Logger.java

**package** Singleton;

**public** **class** Logger {

**private** **static** Logger *instance*;

**private** Logger() {

System.***out***.println("Logger instance created");

}

**public** **static** Logger getInstance() {

**if** (*instance* == **null**) {

*instance* = **new** Logger();

}

**return** *instance*;

}

**public** **void** log(String message) {

System.***out***.println("Log: " + message);

}

}

LoggerTest.java

**package** Singleton;

**public** **class** LoggerTest {

**public** **static** **void** main(String[] args) {

Logger logger1 = Logger.*getInstance*();

logger1.log("This is the first log message.");

Logger logger2 = Logger.*getInstance*();

logger2.log("This is the second log message.");

**if** (logger1 == logger2) {

System.***out***.println("Only one instance of Logger exists.");

} **else** {

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

}

}

}

Output:

