**Exercise 1**: Implementing the Singleton Pattern

**Code:**

**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);

}

}

**public** **class** ex1 {

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

Logger logger1 = Logger.*getInstance*();

logger1.log("First message");

Logger logger2 = Logger.*getInstance*();

logger2.log("Second message");

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

System.***out***.println("Both logger instances are the same.");

} **else** {

System.***out***.println("Different logger instances exist.");

}

}

}

**Outputs:**  
