

Exercise 1: Implementing the Singleton Pattern

Logger.java :

```
package singletonPatternExample;

public class Logger {

    private static Logger logger;

    private Logger() {

    }

    public static Logger getLogger() {

        if(logger==null) {

            logger = new Logger();

        }

        return logger;

    }

    public void display(String message) {

        System.out.println(message);

    }

}
```

Test.java :

```
package singletonPatternExample;

public class Test {

    public static void main(String[] args) {

        Logger logger1 = Logger.getLogger();

        Logger logger2 = Logger.getLogger();

        logger1.display("First message");

        logger2.display("Second message");

        if (logger1 == logger2) {

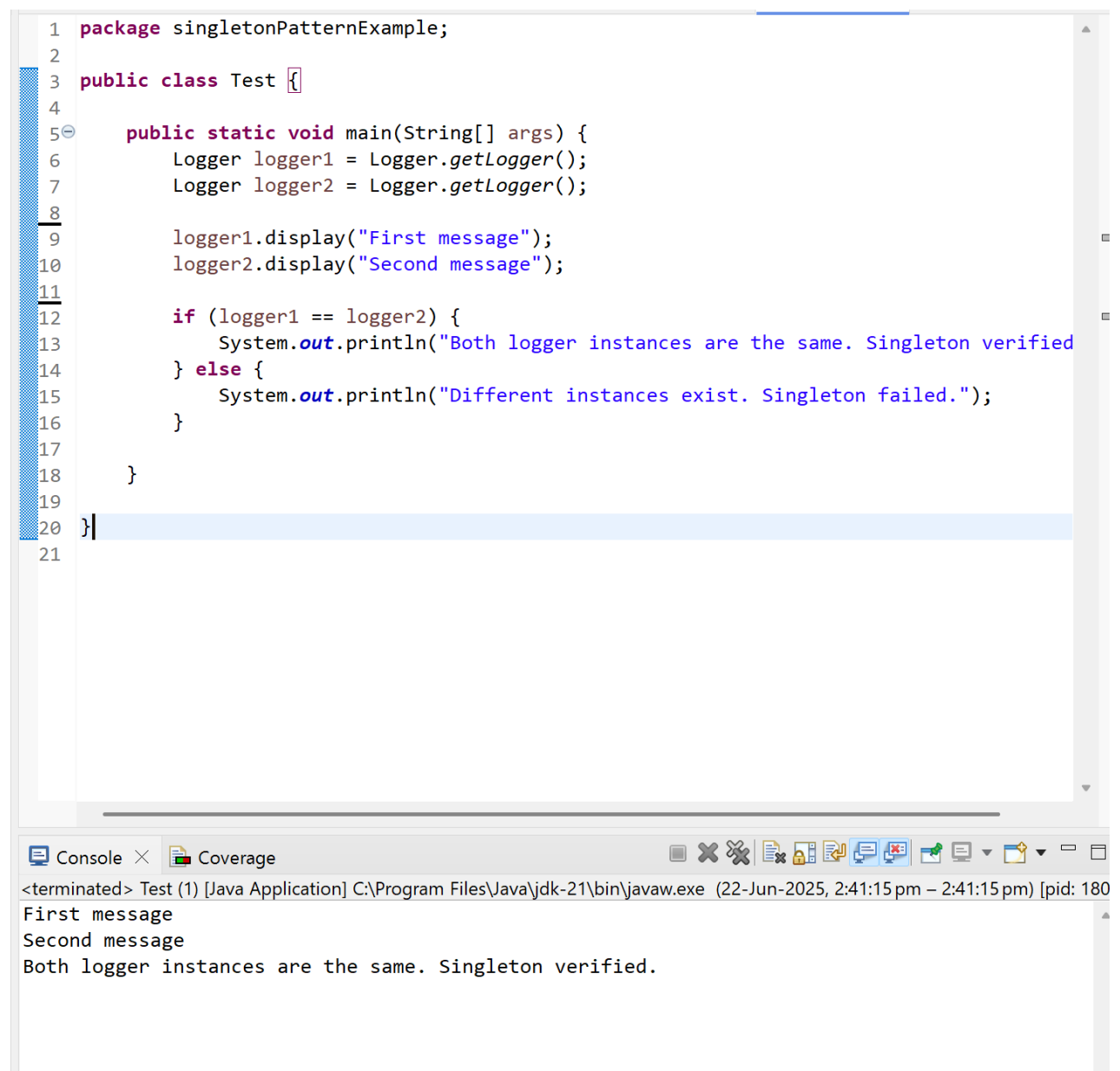
            System.out.println("Both logger instances are the same. Singleton
verified.");

        }

    }

}
```

```
        }else {  
            System.out.println("Different instances exist. Singleton  
failed.");  
        }  
    }  
}
```



The screenshot shows an IDE with a Java code editor and a console window. The code in the editor is a test for the Singleton pattern. It defines a package `singletonPatternExample` and a public class `Test`. Inside `Test`, there is a `main` method that takes a `String[] args` array. In the `main` method, two `Logger` objects are created using `Logger.getLogger()`. These objects are then used to display two messages: "First message" and "Second message". After displaying the messages, an `if` statement checks if the two `Logger` objects are the same (using `==`). If they are the same, it prints "Both logger instances are the same. Singleton verified". If they are not the same, it prints "Different instances exist. Singleton failed.". The console window at the bottom shows the output of the program, which matches the expected behavior of a Singleton: "First message", "Second message", and "Both logger instances are the same. Singleton verified."

```
1 package singletonPatternExample;  
2  
3 public class Test {  
4  
5     public static void main(String[] args) {  
6         Logger logger1 = Logger.getLogger();  
7         Logger logger2 = Logger.getLogger();  
8  
9         logger1.display("First message");  
10        logger2.display("Second message");  
11  
12        if (logger1 == logger2) {  
13            System.out.println("Both logger instances are the same. Singleton verified");  
14        } else {  
15            System.out.println("Different instances exist. Singleton failed.");  
16        }  
17    }  
18 }  
19  
20 }  
21
```

Console < Coverage

<terminated> Test (1) [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (22-Jun-2025, 2:41:15 pm – 2:41:15 pm) [pid: 180]
First message
Second message
Both logger instances are the same. Singleton verified.