**Exercise 1: Logging Error Messages and Warning Levels**

**Task:** Write a Java application that demonstrates logging error messages and warning levels using SLF4J

**SourceCode:**

**LoggingExample.java**

**package** com.example;

**import** org.slf4j.Logger;

**import** org.slf4j.LoggerFactory;

**public** **class** LoggingExample {

**private** **static** **final** Logger ***log*** = LoggerFactory.*getLogger*(LoggingExample.**class**);

**public** **void** run() {

***log***.error("This is an error message");

***log***.warn("This is a warning message");

}

}

**Logback.xml**

<configuration>

<appender name=*"STDOUT"* class=*"ch.qos.logback.core.ConsoleAppender"*>

<encoder>

<pattern>%d{HH:mm:ss} %-5level %logger{36} - %msg%n</pattern>

</encoder>

</appender>

<root level=*"WARN"*>

<appender-ref ref=*"STDOUT"*/>

</root>

</configuration>

**LoggingExampleTest.java**

**package** com.example;

**import** ch.qos.logback.classic.Logger;

**import** ch.qos.logback.classic.spi.ILoggingEvent;

**import** ch.qos.logback.core.read.ListAppender;

**import** org.junit.jupiter.api.Test;

**import** **static** org.junit.jupiter.api.Assertions.\*;

**import** org.slf4j.LoggerFactory;

**class** LoggingExampleTest {

@Test

**void** shouldLogErrorAndWarning() {

Logger root = (Logger) LoggerFactory.*getLogger*(Logger.***ROOT\_LOGGER\_NAME***);

ListAppender<ILoggingEvent> collector = **new** ListAppender<>();

collector.start();

root.addAppender(collector);

**new** LoggingExample().run();

**long** errors = collector.list.stream()

.filter(e -> e.getLevel().toString().equals("ERROR"))

.count();

**long** warnings = collector.list.stream()

.filter(e -> e.getLevel().toString().equals("WARN"))

.count();

collector.list.forEach(ev -> System.***out***.println(ev.getFormattedMessage()));

*assertEquals*(1, errors, "Expected one ERROR log");

*assertEquals*(1, warnings, "Expected one WARN log");

}

}

**Pom.xml**

<project xmlns="http://maven.apache.org/POM/4.0.0"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<groupId>com.example</groupId>

<artifactId>slf4j-log-demo</artifactId>

<version>1.0-SNAPSHOT</version>

<properties>

<maven.compiler.release>21</maven.compiler.release>

</properties>

<dependencies>

<!-- SLF4J API -->

<dependency>

<groupId>org.slf4j</groupId>

<artifactId>slf4j-api</artifactId>

<version>1.7.30</version>

</dependency>

<!-- Logback implementation -->

<dependency>

<groupId>ch.qos.logback</groupId>

<artifactId>logback-classic</artifactId>

<version>1.2.3</version>

</dependency>

<!-- JUnit 5 -->

<dependency>

<groupId>org.junit.jupiter</groupId>

<artifactId>junit-jupiter</artifactId>

<version>5.10.0</version>

<scope>test</scope>

</dependency>

</dependencies>

<build>

<plugins>

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-surefire-plugin</artifactId>

<version>3.1.2</version>

<configuration>

<printSummary>true</printSummary>

</configuration>

</plugin>

</plugins>

</build>

</project>

A screenshot of a computer

AI-generated content may be incorrect.

**Output:**

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer error message

AI-generated content may be incorrect.