| **Exercise 1: Logging Error Messages and Warning Levels Task:** Write a Java application that demonstrates logging error messages and warning levels using SLF4J. Step-by-Step Solution:  1. Add SLF4J and Logback dependencies to your `pom.xml` file: org.slf4j slf4j-api 1.7.30 ch.qos.logback logback-classic 1.2.3  2. Create a Java class that uses SLF4J for logging: import org.slf4j.Logger; import org.slf4j.LoggerFactory; public class LoggingExample { private static final Logger logger = LoggerFactory.getLogger(LoggingExample.class); public static void main(String[] args) { logger.error("This is an error message"); logger.warn("This is a warning message"); } }  **Output:**    **Failed to instantiate SLF4J LoggerFactory**  **Reported exception:**  **java.lang.NoClassDefFoundError: ch/qos/logback/core/joran/action/AbstractEventEvaluatorAction**  **at java.base/java.lang.ClassLoader.defineClass1(Native Method)**  **at java.base/java.lang.ClassLoader.defineClass(ClassLoader.java:1027)**  **at java.base/java.security.SecureClassLoader.defineClass(SecureClassLoader.java:150)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.defineClass(BuiltinClassLoader.java:862)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.findClassOnClassPathOrNull(BuiltinClassLoader.java:760)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClassOrNull(BuiltinClassLoader.java:681)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClass(BuiltinClassLoader.java:639)**  **at java.base/jdk.internal.loader.ClassLoaders$AppClassLoader.loadClass(ClassLoaders.java:188)**  **at java.base/java.lang.ClassLoader.loadClass(ClassLoader.java:526)**  **at ch.qos.logback.classic.util.ContextInitializer.configureByResource(ContextInitializer.java:73)**  **at ch.qos.logback.classic.util.ContextInitializer.autoConfig(ContextInitializer.java:150)**  **at org.slf4j.impl.StaticLoggerBinder.init(StaticLoggerBinder.java:84)**  **at org.slf4j.impl.StaticLoggerBinder.<clinit>(StaticLoggerBinder.java:55)**  **at org.slf4j.LoggerFactory.bind(LoggerFactory.java:150)**  **at org.slf4j.LoggerFactory.performInitialization(LoggerFactory.java:124)**  **at org.slf4j.LoggerFactory.getILoggerFactory(LoggerFactory.java:417)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:362)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:388)**  **at com.cognizant.logging.LoggingExample.<clinit>(LoggingExample.java:7)**  **Caused by: java.lang.ClassNotFoundException: ch.qos.logback.core.joran.action.AbstractEventEvaluatorAction**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClass(BuiltinClassLoader.java:641)**  **at java.base/jdk.internal.loader.ClassLoaders$AppClassLoader.loadClass(ClassLoaders.java:188)**  **at java.base/java.lang.ClassLoader.loadClass(ClassLoader.java:526)**  **... 19 more**  **Exception in thread "main" java.lang.NoClassDefFoundError: ch/qos/logback/core/joran/action/AbstractEventEvaluatorAction**  **at java.base/java.lang.ClassLoader.defineClass1(Native Method)**  **at java.base/java.lang.ClassLoader.defineClass(ClassLoader.java:1027)**  **at java.base/java.security.SecureClassLoader.defineClass(SecureClassLoader.java:150)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.defineClass(BuiltinClassLoader.java:862)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.findClassOnClassPathOrNull(BuiltinClassLoader.java:760)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClassOrNull(BuiltinClassLoader.java:681)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClass(BuiltinClassLoader.java:639)**  **at java.base/jdk.internal.loader.ClassLoaders$AppClassLoader.loadClass(ClassLoaders.java:188)**  **at java.base/java.lang.ClassLoader.loadClass(ClassLoader.java:526)**  **at ch.qos.logback.classic.util.ContextInitializer.configureByResource(ContextInitializer.java:73)**  **at ch.qos.logback.classic.util.ContextInitializer.autoConfig(ContextInitializer.java:150)**  **at org.slf4j.impl.StaticLoggerBinder.init(StaticLoggerBinder.java:84)**  **at org.slf4j.impl.StaticLoggerBinder.<clinit>(StaticLoggerBinder.java:55)**  **at org.slf4j.LoggerFactory.bind(LoggerFactory.java:150)**  **at org.slf4j.LoggerFactory.performInitialization(LoggerFactory.java:124)**  **at org.slf4j.LoggerFactory.getILoggerFactory(LoggerFactory.java:417)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:362)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:388)**  **at com.cognizant.logging.LoggingExample.<clinit>(LoggingExample.java:7)**  **Caused by: java.lang.ClassNotFoundException: ch.qos.logback.core.joran.action.AbstractEventEvaluatorAction**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClass(BuiltinClassLoader.java:641)**  **at java.base/jdk.internal.loader.ClassLoaders$AppClassLoader.loadClass(ClassLoaders.java:188)**  **at java.base/java.lang.ClassLoader.loadClass(ClassLoader.java:526)**  **... 19 more**  **Exercise 2: Parameterized Logging**  Task: Write a Java application that demonstrates parameterized logging using SLF4J. Step-by-Step Solution:  1. Add SLF4J and Logback dependencies to your `pom.xml` file: org.slf4j slf4j-api 1.7.30 ch.qos.logback logback-classic 1.2.3  2. Create a Java class that uses SLF4J for parameterized logging:  **Output:**    **Exception in thread "main" java.lang.AbstractMethodError: Receiver class org.springframework.boot.logging.logback.RootLogLevelConfigurator does not define or inherit an implementation of the resolved method 'abstract void configure(ch.qos.logback.classic.LoggerContext)' of interface ch.qos.logback.classic.spi.Configurator.**  **at ch.qos.logback.classic.util.ContextInitializer.autoConfig(ContextInitializer.java:156)**  **at org.slf4j.impl.StaticLoggerBinder.init(StaticLoggerBinder.java:84)**  **at org.slf4j.impl.StaticLoggerBinder.<clinit>(StaticLoggerBinder.java:55)**  **at org.slf4j.LoggerFactory.bind(LoggerFactory.java:150)**  **at org.slf4j.LoggerFactory.performInitialization(LoggerFactory.java:124)**  **at org.slf4j.LoggerFactory.getILoggerFactory(LoggerFactory.java:417)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:362)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:388)**  **at com.cognizant.logging.ParameterizedLoggingExample.<clinit>(ParameterizedLoggingExample.java:7)**  **Exercise 3: Using Different Appenders**  Task:  Write a Java application that demonstrates using different appenders with SLF4J. Step-by-Step Solution:  1. Add SLF4J and Logback dependencies to your `pom.xml` file: org.slf4j slf4j-api 1.7.30 ch.qos.logback logback-classic 1.2.3  2. Create a `logback.xml` configuration file to define different appenders: %d{HH:mm:ss.SSS} [%thread] %-5level %logger{36} - %msg%n app.log %d{HH:mm:ss.SSS} [%thread] %-5level %logger{36} - %msg%n  3. Create a Java class that uses SLF4J for logging:    **Failed to instantiate SLF4J LoggerFactory**  **Reported exception:**  **java.lang.NoClassDefFoundError: ch/qos/logback/core/joran/action/AbstractEventEvaluatorAction**  **at java.base/java.lang.ClassLoader.defineClass1(Native Method)**  **at java.base/java.lang.ClassLoader.defineClass(ClassLoader.java:1027)**  **at java.base/java.security.SecureClassLoader.defineClass(SecureClassLoader.java:150)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.defineClass(BuiltinClassLoader.java:862)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.findClassOnClassPathOrNull(BuiltinClassLoader.java:760)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClassOrNull(BuiltinClassLoader.java:681)**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClass(BuiltinClassLoader.java:639)**  **at java.base/jdk.internal.loader.ClassLoaders$AppClassLoader.loadClass(ClassLoaders.java:188)**  **at java.base/java.lang.ClassLoader.loadClass(ClassLoader.java:526)**  **at ch.qos.logback.classic.util.ContextInitializer.configureByResource(ContextInitializer.java:73)**  **at ch.qos.logback.classic.util.ContextInitializer.autoConfig(ContextInitializer.java:150)**  **at org.slf4j.impl.StaticLoggerBinder.init(StaticLoggerBinder.java:84)**  **at org.slf4j.impl.StaticLoggerBinder.<clinit>(StaticLoggerBinder.java:55)**  **at org.slf4j.LoggerFactory.bind(LoggerFactory.java:150)**  **at org.slf4j.LoggerFactory.performInitialization(LoggerFactory.java:124)**  **at org.slf4j.LoggerFactory.getILoggerFactory(LoggerFactory.java:417)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:362)**  **at org.slf4j.LoggerFactory.getLogger(LoggerFactory.java:388)**  **at com.cognizant.logging.AppendersLoggingExample.<clinit>(AppendersLoggingExample.java:7)**  **Caused by: java.lang.ClassNotFoundException: ch.qos.logback.core.joran.action.AbstractEventEvaluatorAction**  **at java.base/jdk.internal.loader.BuiltinClassLoader.loadClass(BuiltinClassLoader.java:641)**  **at java.base/jdk.internal.loader.ClassLoaders$AppClassLoader.loadClass(ClassLoaders.java:188)**  **at java.base/java.lang.ClassLoader.loadClass(ClassLoader.java:526)**  **... 19 more** |
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