**Logging using SLF4J**

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

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*.info("=== SLF4J Logging Demo Started ===");

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

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

*demonstrateLoggingLevels*();

*demonstrateParameterizedLogging*();

*demonstrateExceptionLogging*();

*logger*.info("=== SLF4J Logging Demo Completed ===");

}

private static void demonstrateLoggingLevels() {

*logger*.info("--- Testing Different Log Levels ---");

*logger*.error("ERROR: System encountered a critical failure");

*logger*.warn("WARN: Memory usage is above 80%");

*logger*.info("INFO: User logged in successfully");

*logger*.debug("DEBUG: Validating user credentials");

*logger*.trace("TRACE: Method entry point");

}

private static void demonstrateParameterizedLogging() {

*logger*.info("--- Testing Parameterized Logging ---");

String user = "john\_doe";

int attempts = 3;

double processingTime = 1.25;

*logger*.info("User '{}' logged in after {} attempts", user, attempts);

*logger*.warn("Processing took {} seconds for user '{}'", processingTime, user);

*logger*.error("Login failed for user '{}' after {} attempts", user, attempts);

}

private static void demonstrateExceptionLogging() {

*logger*.info("--- Testing Exception Logging ---");

try {

int result = 100 / 0;

} catch (ArithmeticException e) {

*logger*.error("Arithmetic exception occurred during calculation", e);

}

try {

String text = null;

int length = text.length();

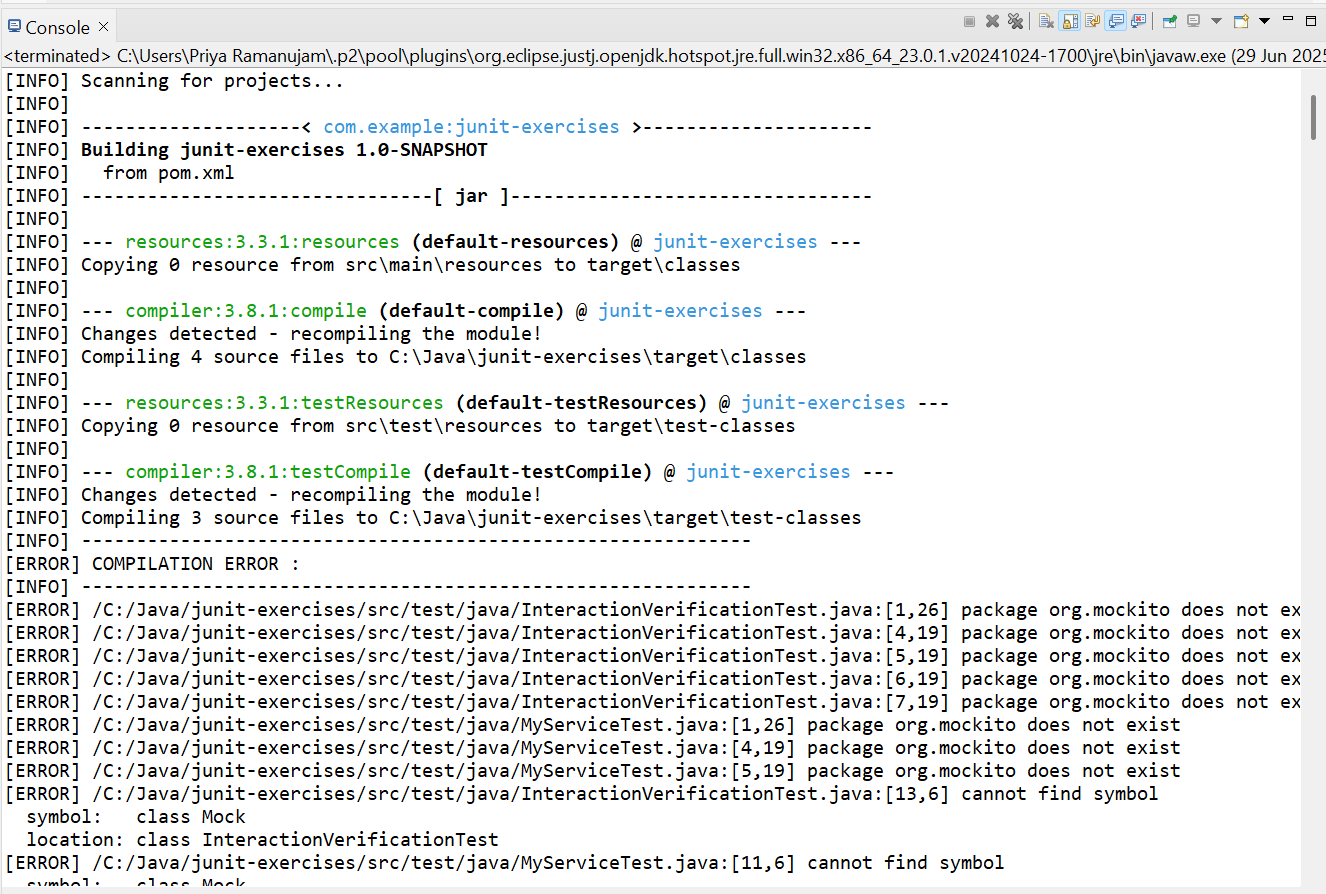
} catch (NullPointerException e) {

*logger*.error("Null pointer exception: {}", e.getMessage(), e);

}

}

}

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