

# Java Debugging



## Abstract

Debugging is one of the most painful and time consuming activities performed by programmers during the development cycle. In spite of the fact that debugging is a fundamental and repetitive activity, it is not trivial and in many cases programmers lack the knowledge needed to apply effective and efficient debugging techniques. Acquiring such knowledge and mastering the right tools may significantly increase productivity and greatly reduce the time and effort needed during the debugging process.

The Eclipse integrated development environment is a great tool for debugging Java programs. This course goes through the different tools available in eclipse, and teaches how to use them for effective debugging.

## Target Audience

Java developers and team leaders.

## Prerequisites

Familiarity with the Java language.

## Content:

### Introduction to Java Debugging (1 hour):

- Overview of the Java execution model.
- Java bytecode and debug information.
- Primitive debugging tools.
- Java Platform Debugging Architecture (JPDA).
- Debugging using static code analysis.

### Introduction to Eclipse (2 hours):

- Perspectives Views and Editors.
- The Debug perspective.
- Variables, Breakpoints and Expressions Views.

### Eclipse Debugging Tools (4 hours):

- Debug configuration.



Display, Register and Memory Views.  
Changing variable values.  
Hot code replacement.

**Debugging in a Multi Threaded environment (2.5 hours):**

Java threading model.  
Deadlocks.  
Race conditions.  
Starvation.  
Thread debuggers.

**Debugging Memory problems (2.5 hours):**

Java Memory model.  
Memory related Exceptions.  
Memory leaks in Java.

**Debugging in complex execution environments (3 hours):**

Debugging Java EE applications.  
Debugging third party modules.  
Remote debugging.

**Best Practices (1 hour):**

Server side best practices.  
Client side best practices.

**Duration:            2 days**