

# Java Language

What is it about OOP that programmers find compelling? What fueled Java's meteoric rise? The sessions in the Java Language course of study are intended to help you answer these important questions for yourself. Wrap your head around the core concepts of OOP: objects, classes, inheritance, polymorphism, and encapsulation. Discover how to apply these OOP concepts, in concert with OO design strategies, to simplify the task of application analysis and design. See the concrete benefits of OOP for yourself, as you read and write useful Java code. Come and learn what the Java revolution is all about!

<b>Java Application Performance Analysis and Tuning on i5/OS</b>	
<b>21CA: Mon 8 - 9:15, Canal A, Opryland Hotel</b>	
<b>ID:520087</b>	
<b>Level:</b> Intermediate	Java Applications are becoming more and more the norm in today's IT world; they are available on i5/OS as part of a solution or as the complete solution. Although Java applications can be developed on another platform and easily deployed on i5/OS, sometimes Performance issues can arise if the environment and application are not properly tuned. This presentation will demonstrate performance analysis on a Java application. We will show various tools and their output that lead to a resolution of particular performance problems.
<b>Course:</b> Java Language	
<b>Speaker:</b> Gottfried Schimunek IBM Corporation	

<b>Accessing DB2 for i5/OS Using JDBC: Fundamentals</b>	
<b>26GC: Mon 3:30 - 4:45, Governor's Chamber D, Opryland Hotel</b>	
<b>ID:408135</b>	
<b>Level:</b> Intermediate	Where Java is "write once, run anywhere," JDBC is "data access anywhere." JDBC is the way Java accesses relational databases using SQL.
<b>Course:</b> Java Language	
<b>Speaker:</b> Peter DeGregorio PGM Systems, Inc.	

<b>LAB: Introduction to Java</b>	
<b>33LA: Tue 11 - 1:45, Bayou C, Opryland Hotel</b>	
<b>ID:403692</b>	
<b>Level:</b> Beginner	Ready to learn Java programming? This lab session provides a short introduction to Java and demonstrates how it fits with i5/OS.
<b>Course:</b> Java Language	
<b>Speakers:</b> Kim Button IBM Corporation John W. Eberhard IBM Corporation	

<b>V6R1: Introducing the IBM Toolbox for Java</b>	
<b>35CD: Tue 2 - 3:15, Canal D, Opryland Hotel</b>	
<b>ID:403552</b>	
<b>Level:</b> Beginner	The IBM Toolbox for Java is a set of Java classes and tools for accessing i5/OS data and resources from a Java program.
<b>Course:</b> Java Language	
<b>Speaker:</b> Kim Button IBM Corporation	

## Accessing DB2 for i5/OS Using JDBC: Deep Dive

**36GC: Tue 3:30 - 4:45, Governor's Chamber D, Opryland Hotel**

**ID:520163**

**Level:**  
Advanced

**Course:**  
Java Language

**Speaker:**  
Peter  
DeGregorio  
PGM Systems, Inc.

Deciding to jump into serious Java development? Taking this plunge almost always means you will need to access relational database data as an essential activity.

This session takes JDBC beyond the basics with coverage of metadata, calling RPG stored procedures, object-relational mapping, using JDBC in web applications, and performance tips.

## LAB: IBM Toolbox for Java

**41LA: Wed 8 - 9:15, Bayou C, Opryland Hotel**

**ID:403627**

**Level:**  
Intermediate

**Course:**  
Java Language

**Speakers:**  
Kim Button  
IBM Corporation  
John W.  
Eberhard  
IBM Corporation

This lab session explores classes and utilities that are part of the IBM Toolbox for Java.

In this lab session, attendees will learn:

1. How to create a program using basic Toolbox components.
2. How to identify the various types of Java applications that can use Toolbox components.
3. How to write a program using XML to call an i5/OS program.

## Java Beans - Using and Building

**43CC: Wed 11 - 12:15, Canal C, Opryland Hotel**

**ID:403374**

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
Jim Mason  
Cape Cod Bay  
Systems

See how objects can be used to build i5/OS and Web applications with Java and Groovy. This session discusses the basics of beans (properties, methods, events, serialization, reflection, introspection) and how they are used in frameworks and applications. See how Eclipse WTP (open-source) or IBM's WebSphere Development Studio client for System i (WDSC) can rapidly build Java beans and use those beans in applications on i5/OS.

In this session, attendees will learn:

1. Why beans are the key component for building applications rapidly.
2. What the future is for beans in Web and distributed object applications.
3. How you can quickly transition to Java and beans with visual programming tools in Eclipse or WDSC.

## IBM Toolbox for Java: Advanced

**43CD: Wed 11 - 12:15, Canal D, Opryland Hotel**

**ID:407180**

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
Kim Button  
IBM Corporation

The IBM Toolbox for Java is a set of Java classes and tools for accessing i5/OS data and resources from any Java environment.

In this session, attendees will learn about:

1. The popular components of the Toolbox in more detail.
2. The advanced functionality provided by the Toolbox (such as XML and database access).
3. Information about JTOpen (the open source version of the Toolbox).

## Multi-Threaded Programming Using Java

**44CD: Wed 12:30 - 1:45, Canal D, Opryland Hotel**

**ID:406147**

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
John W.  
Eberhard  
IBM Corporation

Multi-threaded programming provides a powerful mechanism for improving the performance of your application. In this session, you are introduced to the basic concepts of multi-threaded programming. The advantages and disadvantages of using threads are discussed. i5/OS provides industry leading Java threads support. Learn about the Java threading interfaces, including the Java Threading API and synchronization techniques. Several useful examples of Java thread programming will be provided. At the end of this session, you will be able to assess if multithreaded programming using Java is right for you and your applications.

## Java Database Access with Hibernate

44GC: Wed 12:30 - 1:45, Governor's Chamber D, Opryland Hotel

ID:520077

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
Peter DeGregorio  
PGM Systems, Inc.

Hibernate is a popular Java data access facility which, according to the project's web site ( <http://hibernate.org> ), is a "powerful, high performance object/relational persistence and query service." With Hibernate, the developer works with Java objects that have defined mappings to database tables. Hibernate can use the mappings to automatically update the database with changes in Java objects, without the developer having to use SQL or JDBC directly. This session introduces Hibernate concepts through fully coded examples.

Topics include:

- \* Why use Hibernate?
- \* Hibernate configuration and RDB mapping
- \* Basic Hibernate usage (creating, retrieving, editing, deleting records)
- \* HQL (Hibernate's SQL variant)
- \* User defined data types (for transforming data e.g. legacy dates)

By the end of this session, attendees will be able to:

1. Understand how Hibernate compares with other Java database access methodologies
2. Consider pro's and con's of using Hibernate
3. Take home working example Java source code

## OPEN LAB: WebSphere Application Server, Install, Configuration & Security

45LC: Wed 2 - 3:15, Bayou E, Opryland Hotel

46LC: Wed 3:30 - 4:45, Bayou E, Opryland Hotel

ID:420152

**Level:**  
Intermediate

**Course:**  
Web Applications: Administration

**Speakers:**  
George Weaver  
IBM Corporation  
Karen Stanley  
IBM Corporation  
Vanessa Grose  
IBM Corporation

This open lab contains exercises to help get you familiar with many aspects of WebSphere Application Server offerings. Included are install, admin, JMS, problem & performance determination and configuration of the various versions of the products. Includes the latest 6.1 release, admin consoles changes, WebSphere Application Server - Express, and the IBM Telephone Directory business application.

This open lab offers the following modules:

1. WebSphere Application Server version 6.1 application server creation, configuration and application installation. (520279)
2. WebSphere Application Server - Express application server creation, configuration and application installation. (520280)
3. Messaging: Configuring Service Integration Bus and WebSphere MQ Link. (540227)
4. Use WebSphere Application Server logging files and tracing for troubleshooting and problem troubleshooting (520282)
5. Web enabling DB2 for i5/OS with WebSphere Development Studio Client for System i (520283)
6. Use WebSphere application server tools for monitoring ebusiness application performance (520284)
7. Configure J2EE security on an ebusiness application and deploy it on WebSphere Application Server for i5/OS (520285)

## Understanding and Analyzing the Java Garbage Collection on i5/OS

45AE: Wed 2 - 3:15, Delta Ballroom D, Opryland Hotel

ID:520090

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
Gottfried Schimunek  
IBM Corporation

Understanding the Java garbage collection is crucial for tuning the garbage collector for best performance. We will show the differences between the "classic 64 bit" JVM and the new 32bit JVM engine and how to optimally set the parameters. We will also demonstrate how to collect information about GC activities and its overhead to the overall java application.

## Servlets and JSPs for Beginners

47MC: Wed 5 - 6:15, Cheekwood A/B, Opryland Hotel

ID:408139

**Level:**  
Beginner

**Course:**  
Web  
Applications:  
Architecture and  
Development

**Speaker:**  
David Money  
IBM Corporation

Client-side Java and Java applets are not where the world of Java is headed; it's server-side Java with Java servlets and JSP's. This presentation introduces i5/OS programmers with the architecture of server-side Java. It will show how easy it is for an i5/OS programmer to develop host applications and it will explain why Java servlets perform better than RPG servers.

By the end of this session, attendees will be able to:

1. Understand the architecture of Server-side Java with servlets and JSP's.
2. Know the required Java syntax of a Java servlet.
3. Understand the power inherent to Java servlets (Cookies, HTTP headers, parms, etc.).

## Java Stored Procedures and Java User-Defined Functions

47CD: Wed 5 - 6:15, Canal D, Opryland Hotel

ID:450104

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
John W.  
Eberhard  
IBM Corporation

Java stored procedures and Java user-defined functions can be used to access Java programs from SQL statements and programs. Using this ability, Java programs can be easily integrated with the database. This session describes how to create, use, and debug Java stored procedures, Java user-defined scalar functions, and Java user-defined table functions using DB2 for i5/OS.

By the end of this session, attendees will be able to:

1. Create, use, and debug a Java stored procedure.
2. Create, use, and debug a Java user-defined scalar function.
3. Create, use, and debug a Java user-defined table function.

## Detecting and Analyzing Java Object Leaks on i5/OS

47MB: Wed 5 - 6:15, Hermitage B, Opryland Hotel

ID:520088

**Level:**  
Intermediate

**Course:**  
Java Language

**Speaker:**  
Gottfried  
Schimunek  
IBM Corporation

Java Object leaks are the prime cause of performance problems in Java applications. Leaks are hard to detect and can be difficult to resolve. Sometimes leaks occur in one platform and not in others, depending on how stringently the Java environment handles JIT compiles and heap allocation. Java object leaks are sneaky; they can take hours, days, or even weeks to become visible. Have you ever had a situation where performance was just fine in the morning, slows down a little at noon, and becomes a major issue in the afternoon? You may have had a java object leak and did not know it.

This presentation defines an approach of how Java Object leaks can be detected and how to resolve them.

## OPEN LAB: V6R1 Application Development with RDi SOA

51LC: Thu 8 - 9:15, Bayou E, Opryland Hotel

52LC: Thu 9:30 - 10:45, Bayou E, Opryland Hotel

53LC: Thu 11 - 12:15, Bayou E, Opryland Hotel

54LC: Thu 12:30 - 1:45, Bayou E, Opryland Hotel

55LC: Thu 2 - 3:15, Bayou E, Opryland Hotel

56LC: Thu 3:30 - 4:45, Bayou E, Opryland Hotel

ID:430247

**Level:**  
All

**Course:**  
RPG IV

**Speakers:**  
Claus Weiss  
IBM Corporation  
George  
Voutsinas  
IBM Corporation  
Satish  
Gungabeesoon  
IBM Corporation  
Inge Weiss  
IBM Corporation

The following modules are offered during this work-at-your-own-pace open lab:

1. Using the Remote System Explorer and iSeries Projects (450153)
2. Working Off-line With iSeries Projects (480156)
3. Using EGL to Create a Web Application for i5/OS (520278)
4. Calling RPG/COBOL Programs from EGL (540211)
5. Creating and Consuming Web Services in EGL (540212)

## Introduction to XML Processing with Java

51CE: Thu 8 - 9:15, Canal E, Opryland Hotel

ID:540112

**Level:**  
Advanced

**Course:**  
Java Language

**Speaker:**  
John W.  
Eberhard  
IBM Corporation

Java 5.0 and Java 6.0 include several packages for processing XML data. This presentation presents an overview of these packages which support XML parsing and address. This presentation shows how XML documents can be parsed using the DOM, SAX, and StAX APIs. This presentation also shows how to utilize the XPath API to address parts of an XML document.

## Using the JVM Tools Interface (JVMTI)

55CE: Thu 2 - 3:15, Canal E, Opryland Hotel

ID:520322

**Level:**  
Advanced

**Course:**  
Java Language

**Speaker:**  
John W.  
Eberhard  
IBM Corporation

Using Java means using a virtual machine, and while this virtual machine becomes more robust with each release, we often have to look at the system beneath it. Java's designers face the ongoing challenge of how to provide a way to write native tools and agents in a platform-neutral way. The result of this combination the Java Virtual Machine Tools Interface (JVMTI) is the subject of this session.

By the end of this session attendees will understand:

1. How the JVMTI is structured like JNI in terms of calls and data structures.
2. How the JVMTI is a combination of the old JVMPi and JVMDI.
3. How to write JVMTI agents that inspect and interrogate the VM.
4. How IBM can and does extend JVMTI in its new IBM Technology VM for Java.

Some familiarity with the C programming language is helpful, but not required.

## V6R1: The Future of Java on i5/OS

56CE: Thu 3:30 - 4:45, Canal E, Opryland Hotel

ID:520161

**Level:**  
All

**Course:**  
Java Language

**Speaker:**  
John W.  
Eberhard  
IBM Corporation

Support for Java technology in i5/OS is in the midst of fundamental change, as IBM converges on a single virtual machine implementation across all its platforms. This session details the change embodied by the adoption of this new VM -- its content, timeline, rationale and impact -- and charts IBM's progress so far.

This new VM brings with it known impacts -- both good and bad -- to compatibility, performance, and long-term migration. These impacts are outlined, along with IBM's plans for their automatic detection and mitigation in most cases.

Impacts that defy automatic mitigation are expected to be rare; i5/OS facilities for their identification will be described and demonstrated.

By the end of this session, attendees will understand:

1. Java support in i5/OS, and how it is changing.
2. The timeline of the change and where we are in it.
3. The impacts of the change, both good and bad.
4. How to determine whether to try the new VM for yourself.