

**The Java™ EE 5 Tutorial, Third Edition:
For Sun Java System Application Server
Platform Edition 9**

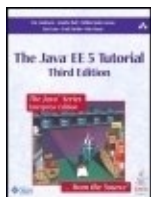
By Eric Jendrock, Jennifer Ball,
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Kim Haase

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Overview

The Java EE 5 Tutorial is an introduction to programming server-side Java applications. This book takes a task-oriented, example-driven approach to show you how to build applications for the Java EE 5 platform. This book also describes the features and functionalities available with NetBeans 5.5.

What's new in this edition? The author team have updated the existing chapters to reflect the changes to JSP, EJB, Servlets, and more. Also, the authors have added new chapters on the Sun Java System Application Server 9 as a deployment environment for server-side technologies. The web-tier technology chapters cover the components used in developing the presentation layer of a Java EE 5 or stand-alone web application. The web services technology chapters cover the APIs used in developing standard web services. The Enterprise JavaBeans (EJB) technology chapters cover the components used in developing the business logic of a Java EE 5 application. The Persistence technology chapters cover the Java Persistence API, which is used for accessing databases from Java EE applications. The platform services chapters cover the system services used by all the Java EE 5 component technologies



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About This Tutorial

This tutorial is a guide to developing enterprise applications for the Java Platform, Enterprise Edition 5 (Java EE 5). Here we cover all the things you need to know to make the best use of this tutorial.

Who Should Use This Tutorial

This tutorial is intended for programmers who are interested in developing and deploying Java EE 5 applications on the Sun Java System Application Server Platform Edition 9.

Prerequisites

Before proceeding with this tutorial, you should have a good knowledge of the Java programming language. A good way to get to that point is to work through *The Java™ Tutorial, Fourth Edition*, Sharon Zakhour et al. (Addison-Wesley, 2006). You should also be familiar with the relational database features described in *JDBC API Tutorial and Reference, Third Edition*, Maydene Fisher et al. (Addison-Wesley, 2003).

How to Read This Tutorial

The Java EE 5 platform is quite large, and this tutorial reflects this. However, you don't have to digest everything in it at once. The tutorial has been divided into parts to help you navigate the content more easily.

This tutorial opens with an introductory chapter, which you should read before proceeding to any specific technology area. [Chapter 1](#) covers the Java EE 5 platform architecture and APIs along with the Sun Java System Application Server Platform Edition 9.

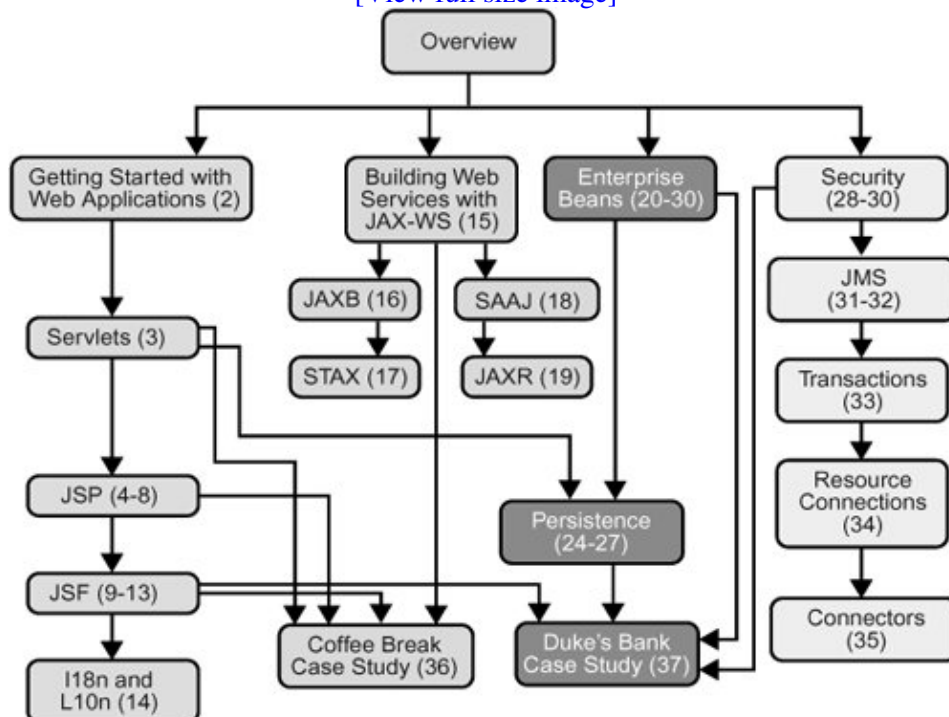
When you have digested the basics, you can delve into one or more of the five main technology areas listed next. Because there are dependencies between some of the chapters, [Figure 1](#) contains a roadmap for navigating through the tutorial.

- The web-tier technology chapters cover the components used in developing the presentation layer of a Java EE 5 or stand-alone web application:
 - ◆ Java Servlet
 - ◆ JavaServer Pages (JSP)
 - ◆ JavaServer Pages Standard Tag Library (JSTL)
 - ◆ JavaServer Faces
 - ◆ Web application internationalization and localization
- The web services technology chapters cover the APIs used in developing standard web services:
 - ◆ The Java API for XML-based Web Services (JAX-WS)
 - ◆ The Java API for XML Binding (JAXB)
 - ◆ The Streaming API for XML (StAX)
 - ◆ The SOAP with Attachments API for Java (SAAJ)
 - ◆ The Java API for XML Registries (JAXR)

- The Enterprise JavaBeans (EJB) technology chapters cover the components used in developing the business logic of a Java EE 5 application:
 - ♦ Session beans
 - ♦ Message-driven beans
- The Persistence technology chapters cover the Java Persistence API, which is used for accessing databases from Java EE 5 applications:
 - ♦ Introduction to the Java Persistence API
 - ♦ Persistence in the Web Tier
 - ♦ Persistence in the EJB Tier
 - ♦ The Java Persistence Query Language
- The platform services chapters cover the system services used by all the Java EE 5 component technologies:
 - ♦ Transactions
 - ♦ Resource connections
 - ♦ Security
 - ♦ Java Message Service
 - ♦ The Connector architecture

Figure 1. Roadmap to This Tutorial

[\[View full size image\]](#)



After you have become familiar with some of the technology areas, you are ready to tackle the case studies, which tie together several of the technologies discussed in the tutorial. The Coffee Break Application describes an application that uses the web application and web services APIs. The Duke's Bank Application describes an application that employs web application technologies, enterprise beans, and the Java Persistence API.

Finally, the appendix contains information about Java encoding schemes that may be helpful to the Java EE 5 application developer.

About the Examples

This section tells you everything you need to know to install, build, and run the examples.

Required Software

The following software is required to run the examples.

Tutorial Bundle

The tutorial example source is contained in the tutorial bundle. If you are viewing this online, you need to click on the Download link at the top of any page.

After you have installed the tutorial bundle, the example source code is in the `<INSTALL>/javaeetutorial5/examples/` directory, with subdirectories for each of the technologies discussed in the tutorial.

Application Server

The Sun Java System Application Server Platform Edition 9 is targeted as the build and runtime environment for the tutorial examples. To build, deploy, and run the examples, you need a copy of the Application Server and Java 2 Platform, Standard Edition 5.0 (J2SE 5.0). If you already have a copy of the J2SE SDK, you can download the Application Server from:

<http://java.sun.com/javaee/downloads/temp0283.html>

You can also download the Java EE 5 SDK which contains the Application Server and the J2SE SDK from the same site.

Application Server Installation Tips

In the Admin configuration pane of the Application Server installer:

- Select the Don't Prompt for Admin User Name radio button. This will save the user name and password so that you won't need to provide them when performing administrative operations with `asadmin`. You will still have to provide the user name and password to log in to the Admin Console.
- Note the HTTP port at which the server is installed. This tutorial assumes that you are accepting the default port of 8080. If 8080 is in use during installation and the installer chooses another port or if you decide to change it yourself, you will need to update the common build properties file (described in the next section) and the configuration files for some of the tutorial examples to reflect the correct port.

In the Installation Options pane, check the Add Bin Directory to PATH checkbox so that Application Server scripts (`asadmin`, `wsimport`, `wsgen`, `xjc`, and `schemagen`) override other installations.