

Chapter 1

An introduction to web programming with Java

Objectives

Knowledge

1. Name the software component that runs on the client of a typical web application.
2. Name the two software components that run on the server of a typical web application.
3. Distinguish between HTML and HTTP.
4. Distinguish between static web pages and dynamic web pages.
5. Name three approaches for developing Java web applications.
6. Describe the software components that are required for developing servlet and JSP applications.
7. List and describe the three layers of a typical Java web application.
8. In general terms, describe the use of these directories as defined by the J2EE specification: webapps, document root, WEB-INF, and WEB-INF\classes.

Objectives (continued)

9. Name two IDEs that can be used for developing Java web applications.
10. Name two web servers that can be used for developing Java web applications.
11. Name a popular database server that can be used for developing Java web applications.

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Murach's Java Programming

by Joel Murach
23 chapters, 802 pages, 340 illustrations
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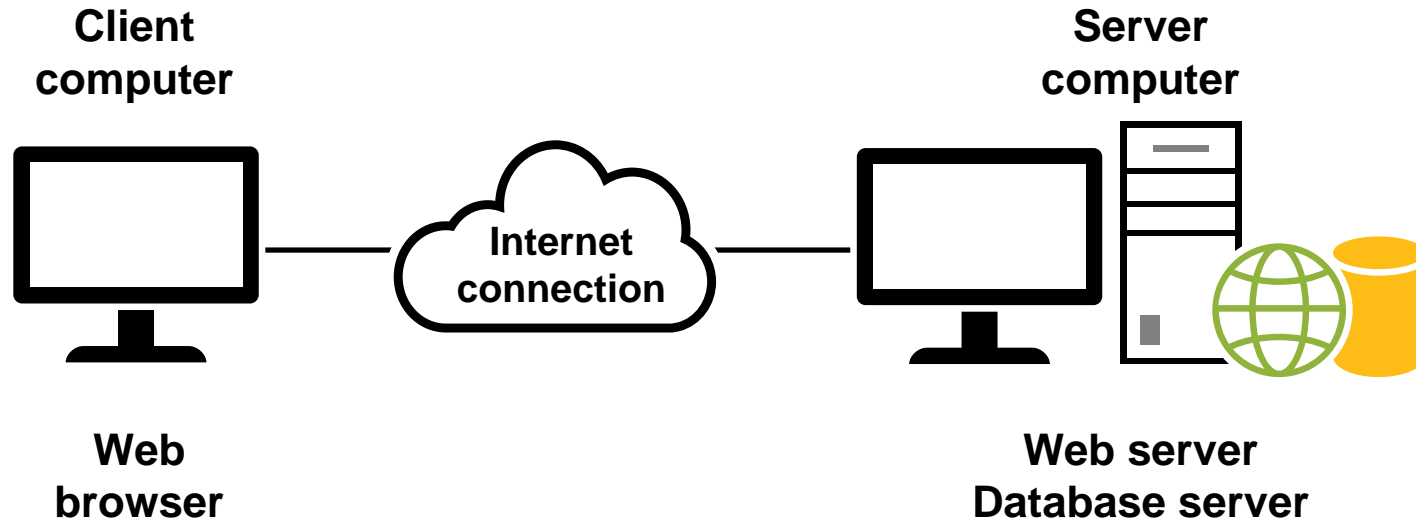
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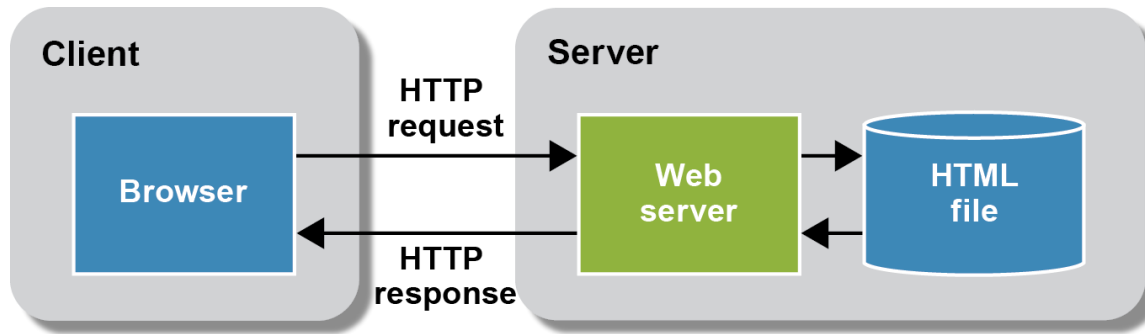
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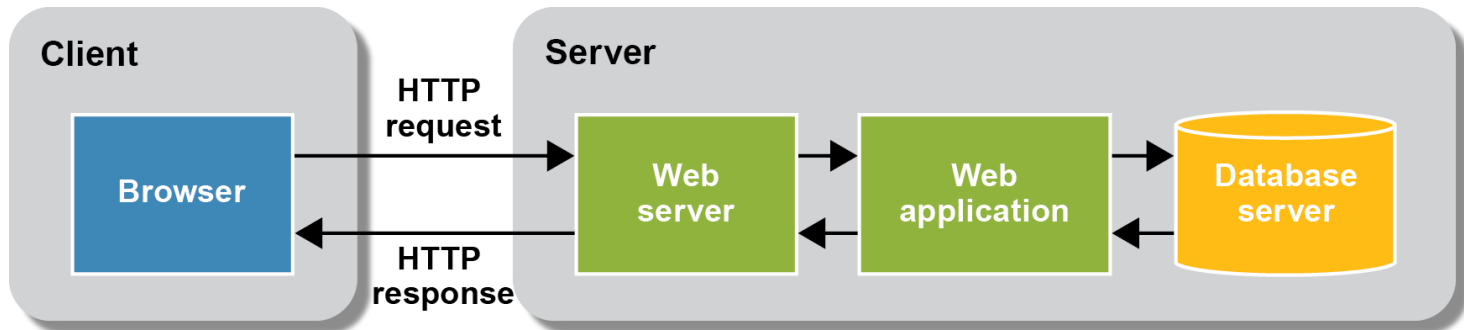
Components of a web application



How a web server processes static web pages



How a web server processes dynamic web pages



Three approaches for developing Java web apps

Servlet/JSP

- Is a lower-level API that does less work for the programmer.
- Provides a high degree of control over the HTML/CSS/JavaScript that's returned to the browser.

JSF

- Is a higher-level API that does more work for the programmer.
- Makes it more difficult to control the HTML/CSS/JavaScript that's returned to the browser.

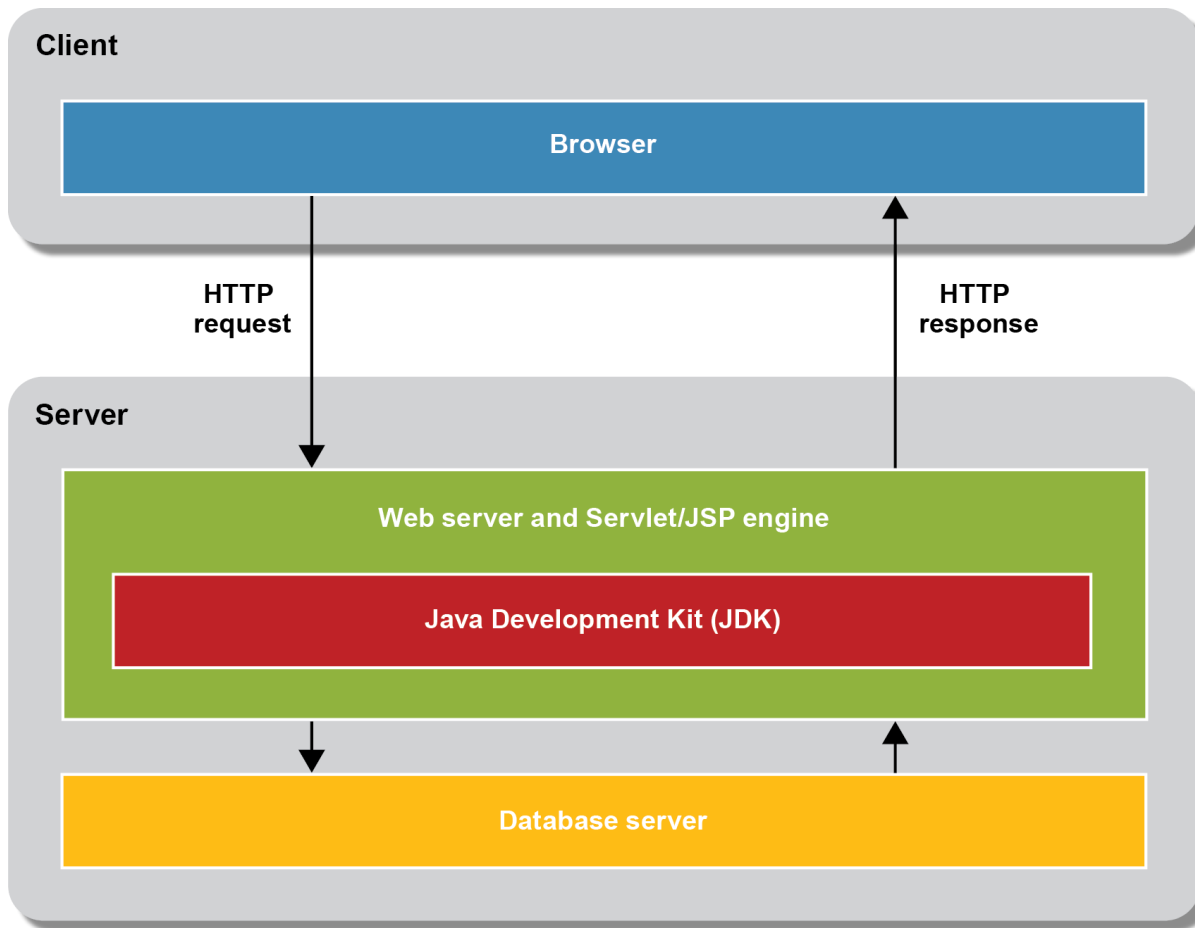
Spring Framework

- Is a higher-level API that does more work for the programmer.
- Provides a high degree of control over the HTML/CSS/JavaScript that's returned to the browser.

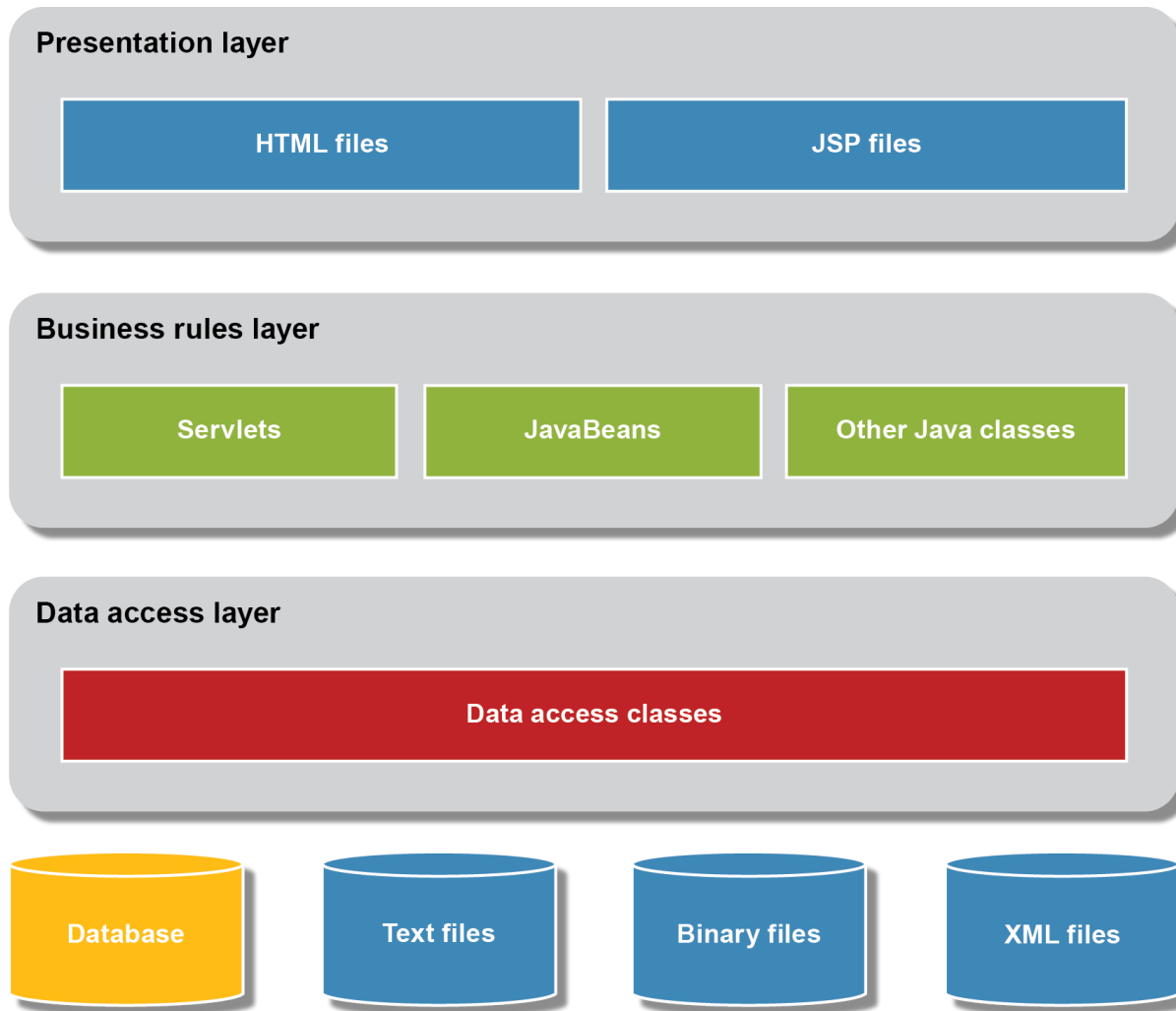
Terminology

- The *Java Standard Edition (Java SE)* includes the *Java Development Kit (JDK)* and the *Java Runtime Environment (JRE)*.
- The *Java Enterprise Edition (Java EE)* specification describes how web servers can interact with all Java web technologies.
- *Servlets* store the Java code that does the server-side processing.
- *JavaServer Pages (JSPs)* store the HTML that defines the user interface.
- *JavaServer Faces (JSF)* provides a higher-level API that replaces both servlets and JSPs.
- *Java Persistence API (JPA)* is an API for working with databases.

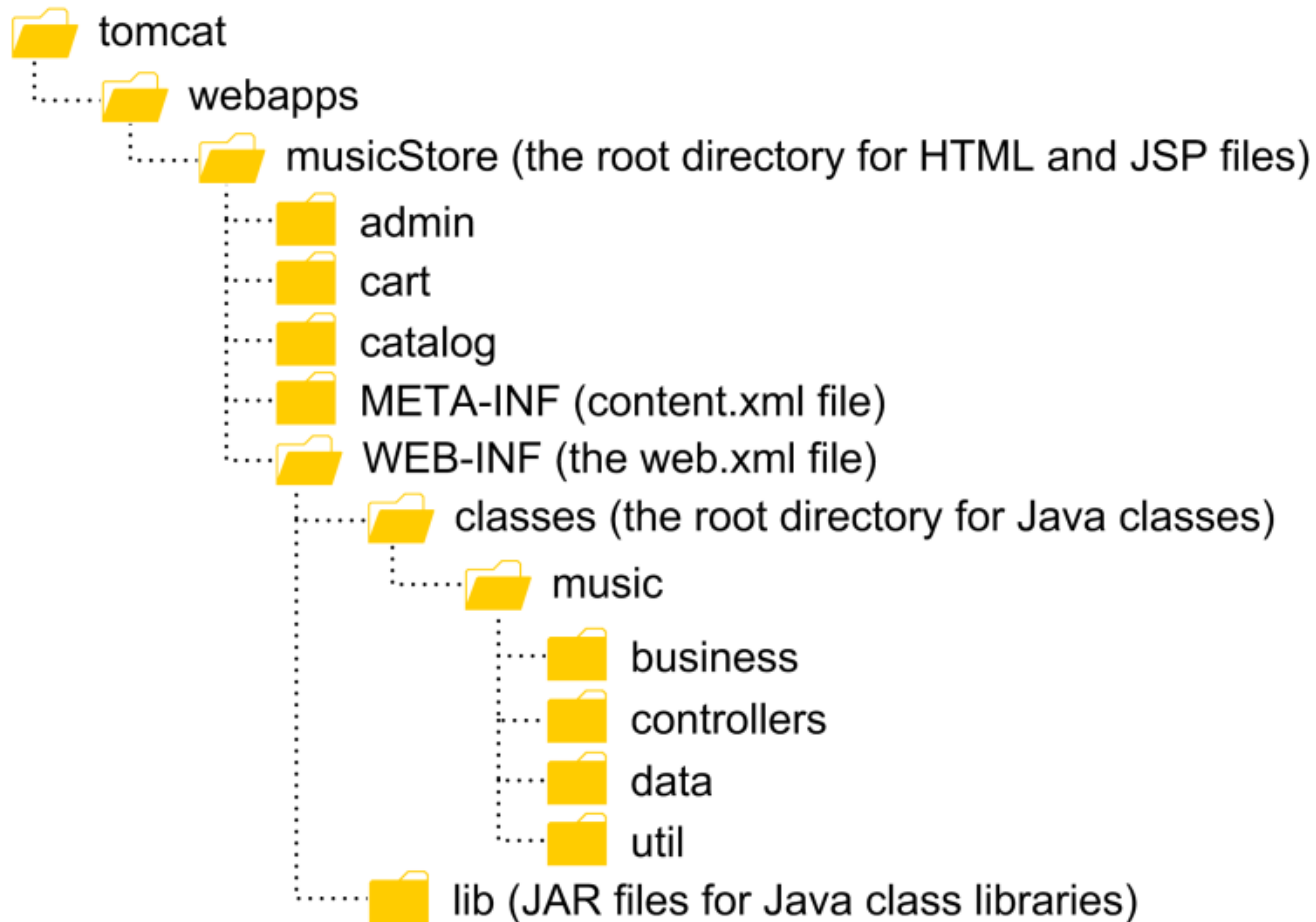
The components of a servlet/JSP application



The architecture for a servlet/JSP application



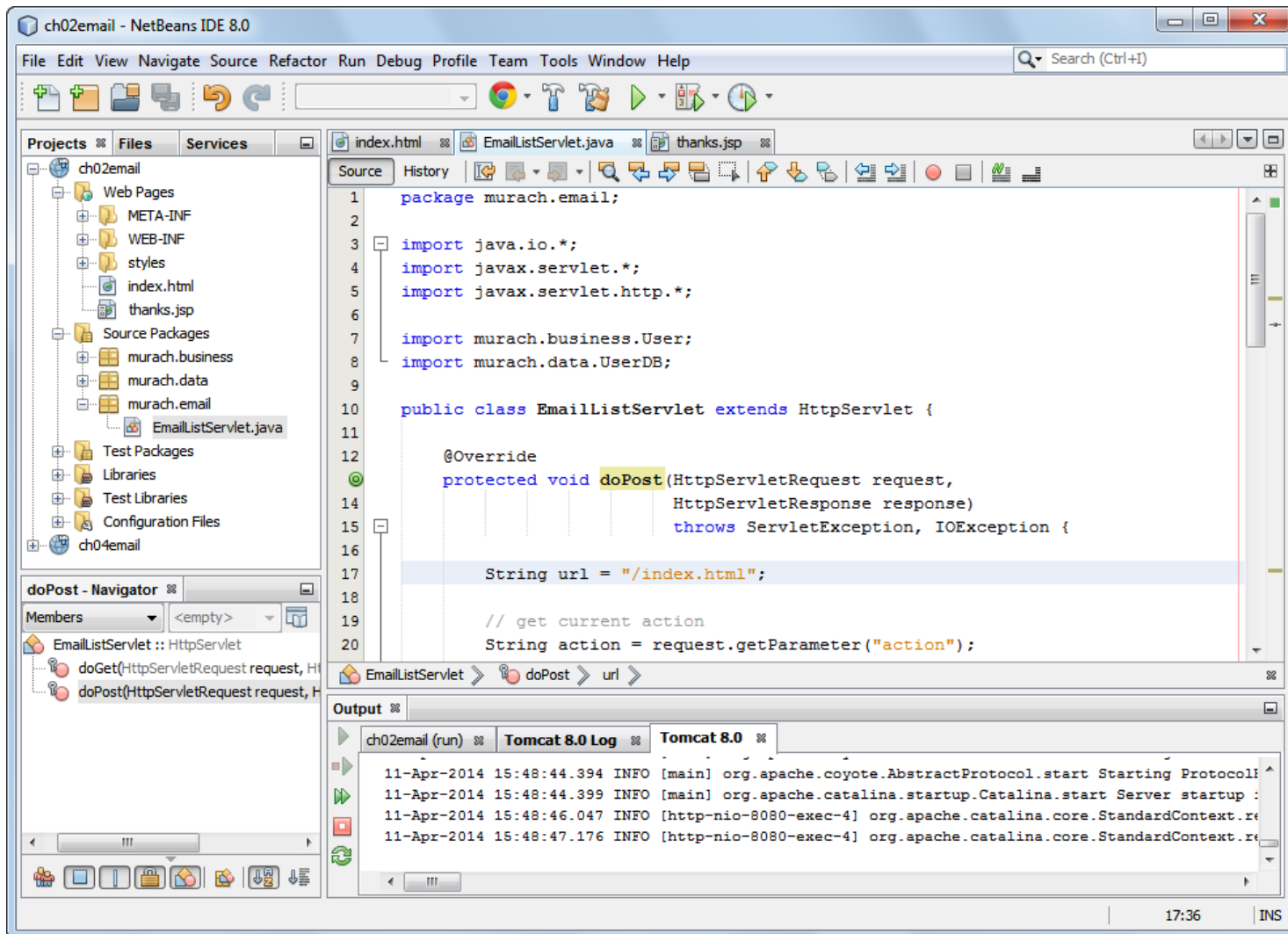
The directory structure for a web application



The directories and files for a web application

Directory	Description
(root)	Contains the HTML and JSP files.
\WEB-INF	Contains the web.xml file and is not directly accessible from the web.
\WEB-INF\classes	Contains the servlets and other Java classes for your application. Each subdirectory corresponds with the package for the Java class.
\WEB-INF\lib	Contains any JAR files that contain Java class libraries that are used by the web application.
\META-INF	Contains the context.xml file that configures the web application context.

The NetBeans IDE



Popular IDEs for Java web development

- NetBeans
- Eclipse
- IntelliJ IDEA

Two popular web servers

Tomcat

- Is a servlet/JSP engine that includes a web server.
- Is free, open-source, and runs on all modern operating systems.
- Is a popular web server for Java web applications.

GlassFish

- Is a complete Java EE application server.
- Is free, open-source, and runs on all modern operating systems.
- Provides more features than Tomcat.
- Requires more system resources than Tomcat.

Other popular web servers

- WildFly (formerly JBoss)
- Jetty
- Oracle WebLogic
- IBM WebSphere

A popular database server

MySQL

- Is a relational database server that implements most of the SQL standard.
- Is free, open-source, and runs on all modern operating systems.
- Is the most popular database server for Java web applications.

Other popular database servers

- PostgreSQL
- Oracle

An ISP that provides servlet/JSP web hosting

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The FileZilla program

