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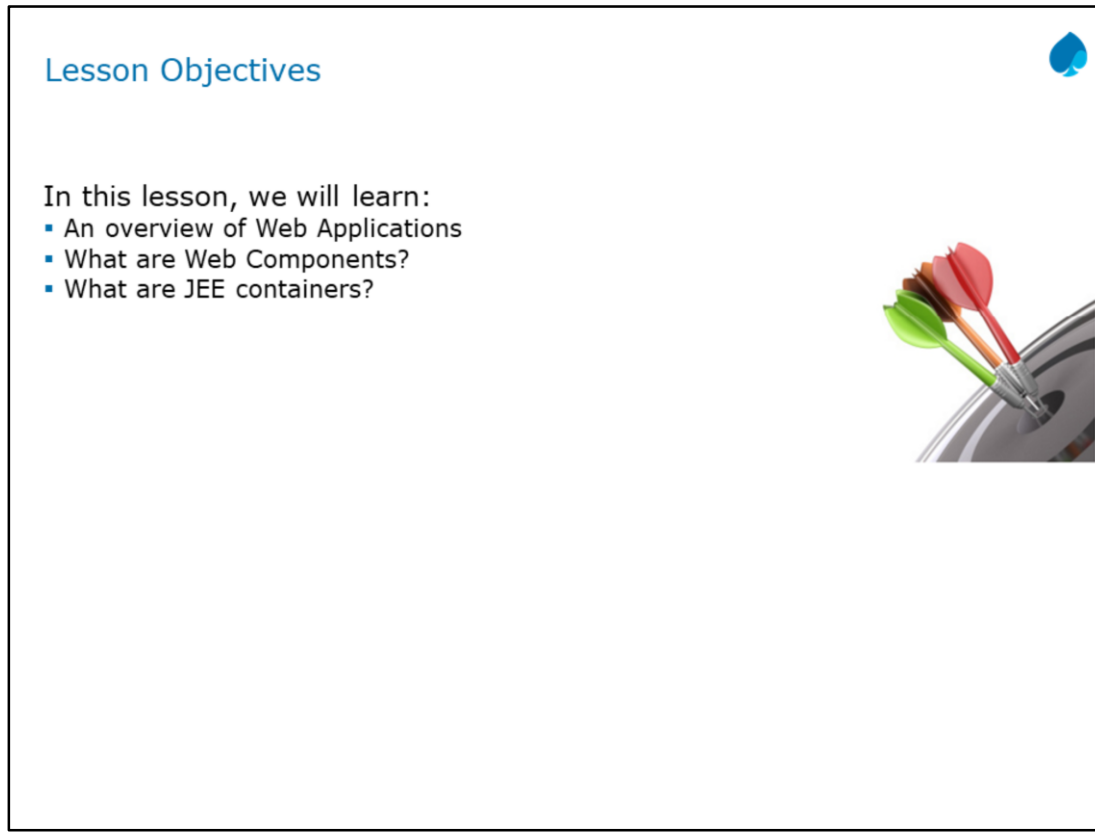

Lesson Objectives:
This lesson introduces Web application concepts. The lesson contents are:
Lesson 01: Java Web Applications
- 1.1: An overview of Web Applications
- 1.2: What are Web components?
- 1.3: What are JEE containers?

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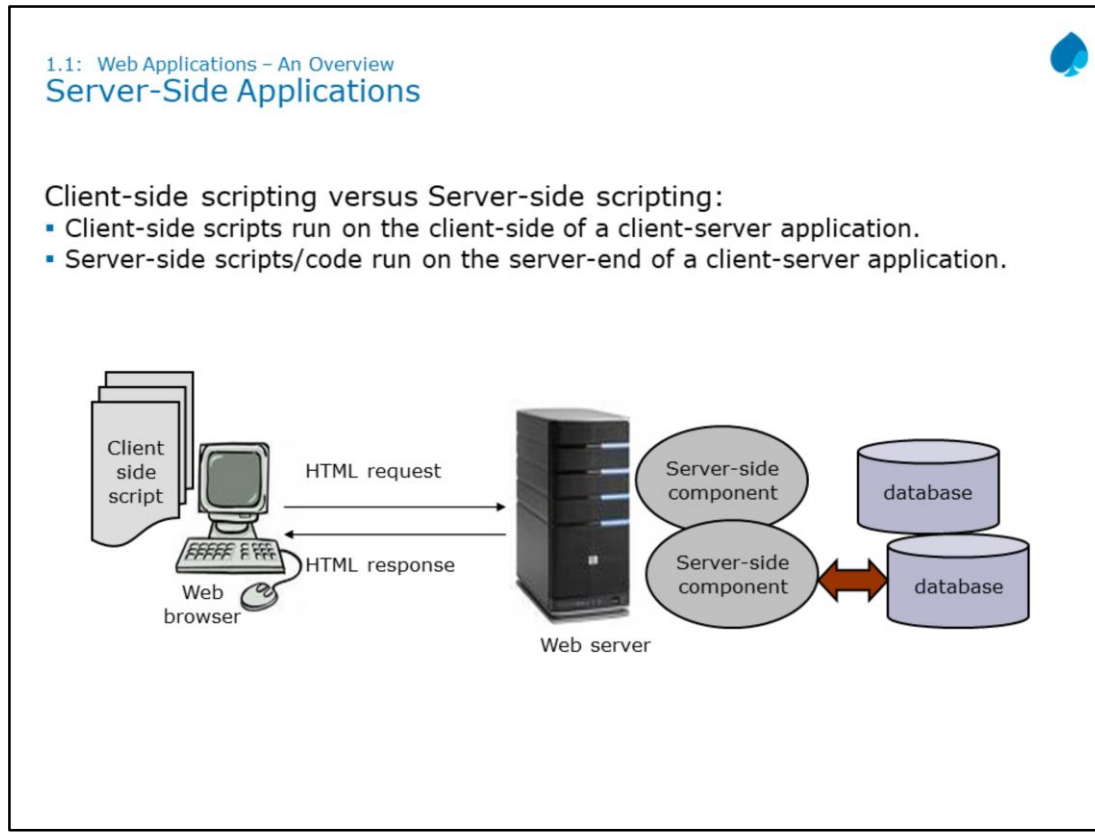

Web Applications – An Overview:

- **Desktop applications** are those that have stand-alone applications running on them. They are maintenance heavy.
- **Server-side applications** on the other hand run on the server side of a client-server system. The server is then able to access server side resources like databases, server components, and provide these services to multiple clients concurrently.

Client-side scripting versus Server-side scripting:

- **Client-side scripts** run on the client-side of a client-server application. For example, in a web application, we have written Javascript that runs on the browser to perform presentation validation!
- **Server-side scripts** run on the server-end of a client-server application. For example, when a HTML form is submitted, the data may be persisted on a database at the server side!
  From a web application perspective, there are many advantages to this:
  - The response is in HTML form, so complex code that is executed to generate the response stays at the server-side.
  - Server is able to access server side resources like databases, server components, which ensures centralized control.

Instructor Notes:

1.1: Web Applications – An Overview

Server-Side Applications

A web application is …

- an application that is accessed via web browser over a network such as the Internet or an intranet

A Web Client typically uses HTTP protocol to communicate with a Web Server to request for services.

A Web component is a software entity that provides a response to a web request. For example: Servlets and JSP

Web Applications – An Overview:

- A web application relieves the developer of the responsibility of building a client for a specific type of computer or a specific operating system. Since the client runs in a web browser, the user could be using an IBM-compatible or a Mac. They can be running Windows XP or Windows Vista using popular browsers like Internet Explorer, Netscape Navigator, or Firefox.
- **Web applications** commonly use a combination of **server-side script** (such as ASP, JSP, PHP) and **client-side script** (such as HTML, JavaScript) to develop the application.
  - The client-side script deals with the presentation of the information.
  - The server-side script/code deals with business logic, storing and retrieving the information.
- **Web clients (browser)** typically requests for services to a web server, and the web server either sends a static HTML page or dynamically generates a response to the request.
- **Web server** is a computer program that delivers (serves) content, such as a web page, using the Hypertext Transfer Protocol. The term web server can also refer to the computer or virtual machine running the program.
- Web components present in the Web Server are responsible for generating appropriate dynamic response. The JEE platform specifies two types of Web components:
  - Servlets
  - JavaServer Pages (JSP) pages

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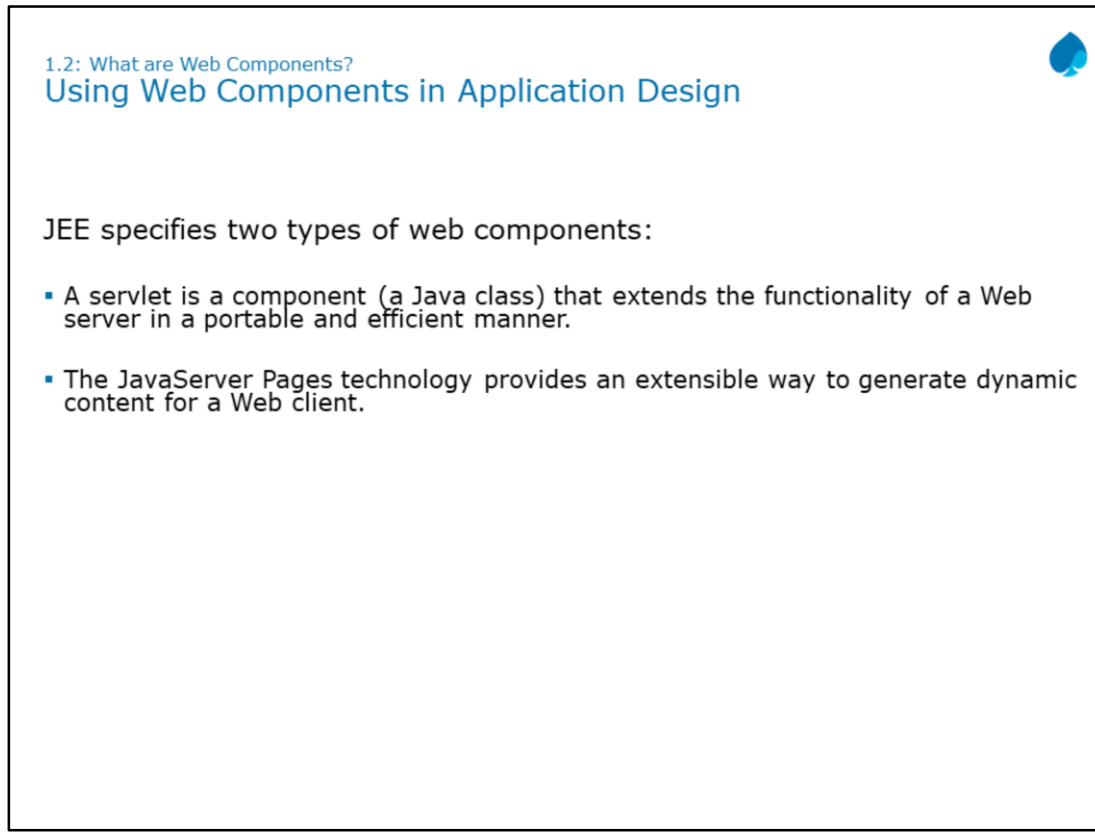
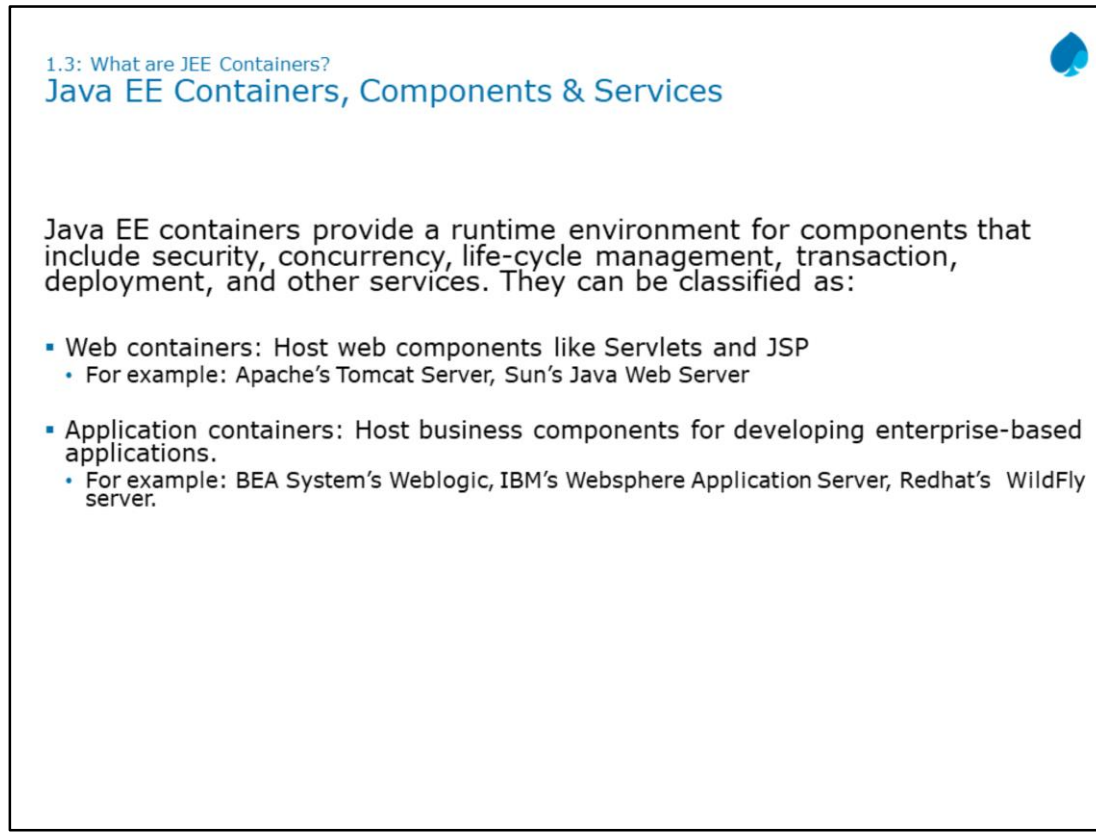


What are Web Components?

- A Web component typically generates the user interface for a Web-based application.
- **Servlets:** A Web server hosts Java servlet classes that execute within a server (web) container. When a servlet receives a request from a client, it generates a response, possibly by invoking business logic in Enterprise Beans or by querying a database directly. It then sends the response – as an HTML or XML document – to the requestor.
- **Java Server Pages technology (JSP):** It uses XML-like tags and scriptlets written in the Java programming language to encapsulate the logic that generates the content for the page.
  - By separating the page logic from its design and display, and supporting a reusable component-based design, JSP technology makes it faster and easier than ever to build web-based applications.
  - We shall be covering servlets in greater detail in this course and shall be covering JSP as a subsequent course.

Instructor Notes:

Explain container services in brief. Explain that there is no real difference between a web container and a web server.



What are JEE Containers?

- Once an application is built, it is packaged into one or more standard units for deployment to any Java EE platform. This **JEE unit** is now ready to be deployed. Deployment typically involves using a platform's deployment tool to specify location-specific information, such as a list of local users, who can access it, and the name of the local database. Once deployed on a local platform, the application is ready to run.
- Containers provide a runtime environment for components that includes security, concurrency, life-cycle management, transaction, deployment, and other services. Since the container handles these services, the developers need not be concerned about taking care of these aspects in the code. They can then focus on the business logic!
- JEE Containers are classified as:
  - **Web component containers (servers):** Allow us to test and deploy web components. They come in three flavors: Standalone, Add-on, Embeddable. We shall be seeing more on this topic in lesson-2.
  - **Application servers:** They offer server-side support for developing enterprise-based applications. Most Java-based application servers support servlets,JSP, and the rest of JEE specification. For example: BEA System's Weblogic, IBM's Websphere Application Server, Redhat's WildFly server

Instructor Notes:

Summary

In this lesson, we have learnt:

- An overview of Web Applications
- What are Web Components?
- What are JEE containers?

Instructor Notes:

Answers for the Review Questions:

Answer 1: Web Component

Answer 2: Application server

Review Questions

Question 1: A ___ is a software entity that provides a response to a web request.

- Option 1: Web Component
- Option 2: HTML page
- Option 3: Javascript
- Option 4: Web Server

Question 2: WildFly is actually an example of a:

- Option 1: Web Server
- Option 2: Application server