

Web

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Web Application: It is a software application deployed on top of a web server enabling this server to publish dynamic content on a well-known HTTP endpoint so that such content can be presented to a user through a web-browser.

Java Servlet API: It specifies standard support (through javax.servlet package) for implementing a server side object known as a *servlet* (whose class inherits from javax.servlet.Servlet interface) to generate the response for a particular type of request received by its host web-server.

Each web-server provides its own implementation for this API and includes an environment called the *servlet container* which handles the request received by that server using following steps:

1. Get the servlet object mapped to the url-pattern (within WEB-INF/web.xml or through annotation) matching with the requested path initializing a new servlet object if required.
2. Invoke the *service* method of the above servlet object passing it the current *request* and *response* objects and when this method returns send the content of the response object to the server so that it can be transported back to the requesting client.

JSP (Java Server Pages): It provides servlet based support for delivering dynamic web-content by combining client-side markup (HTML) with server-side elements (expressions and tags) in a single web-page. The default URL pattern of a JSP page is *.jsp which is mapped to the built-in JSP servlet. The JSP servlet services each JSP page request by generating client-side markup from server-side elements included in that page.

The programming model of JSP includes support for

1. **Java Bean** - It is a serializable Java object whose class supports a parameter-less constructor and exposes properties of its instance using methods which follow standard get/set naming convention.
2. **Tag Extension** - It is a class (inheriting from javax.servlet.jsp.tagext.SimpleTag interface) whose instance is used by a JSP page to handle a user-defined (custom) server-side markup element (tag) mapped to this class within a standard XML type document known as *tag-library descriptor*. Commonly required tag extensions are implemented in *JSTL* (Java standard tag library) distributed along with JSP servlet.

JAX-RS (Java API for Restful Services): It provides servlet based support enabling a web-application to publish its own API which client-side code can consume to exchange data-objects with that application.

REST is an *architectural style* commonly applied when a mutually agreed upon REpresentational form of the State of some resource is

to be Transferred between HTTP endpoints. A RESTful service exposes methods of a stateless object (no instance fields) using REST architecture so that each such method

1. Performs a *create, read, update* or *delete* operation indicated by the requested verb (POST, GET, PUT or DELETE) on a data-object identified by the requested path.
2. Produces (in response) or consumes (from request) a data-object using a standard media-type (such as application/xml and application/json) and indicates the success or failure of its operation using a standard HTTP status code.

Classic Web Application	Modern Web Application
The data is acquired and output is rendered by the server-side code which is then transferred to the browser where it is presented to the user.	The data is acquired by the server-side code and transferred as objects to the browser based client-side code which renders these objects to present them to the user
The user's input is received by the browser and transferred to the server-side code which handles this input.	The user's input is handled by the client-side code running within the browser itself.
The application is more secure and is independent of the type and version of the browser	The application may have security issues and may depend upon the type and version of the browser
UI is implemented using a server-side framework which is well-known to the server-side programmer but can be difficult for a web-designer to learn.	UI is implemented using client-side framework which is well-known to the web-designer but can be difficult for a server-side programmer to learn.
UI is less responsive to the user because each interaction requires its re-rendering on the server.	UI is more responsive to the user since interaction does not require its re-rendering.
Suitable for an enterprise web application with multiple web-pages	Suitable for a single-page application (SPA)