JavaServer Pages (JSP):

JavaServer Pages (JSP) is a technology used for building dynamic web applications in Java. It allows you to embed Java code and logic within HTML pages. Here's an explanation of key points about JSP, along with examples for each point:

1. **Embedding Java Code**:
   - JSP allows you to embed Java code directly within HTML using special tags.

   Example:
   ```jsp
   <%
     String message = "Hello, World!";
     out.println(message);
   %>
   ```

2. **Servlet Conversion**:
   - JSP files are automatically converted into Java Servlets by the JSP container. This makes it easier to work with dynamic web content.

   Example:
   The JSP code gets converted into a Java Servlet behind the scenes.

3. **JSP Directives**:
   - JSP directives provide instructions to the JSP container. Common directives include `page`, `include`, and `taglib`.

   Example:
   ```jsp
   <%@ page language="java" contentType="text/html; charset=UTF-8" %>
   ```

4. **Scriptlet Tags**:
   - You can use scriptlet tags to write Java code inside a JSP page. It's enclosed between `<%` and `%>`.

   Example:
   ```jsp
   <%
     String name = "John";
     out.println("Hello, " + name);
   %>
   ```

5. **Expression Tags**:
   - Expression tags allow you to evaluate and display expressions. They are enclosed between `<%=` and `%>`.

   Example:
   ```jsp
   <p>Welcome, <%= name %></p>
   ```

6. **Declaration Tags**:
   - Declaration tags are used for declaring variables and methods in a JSP page. They are enclosed between `<%!` and `%>`.

   Example:
   ```jsp
   <%!
      int age = 30;
      String getAgeCategory() {
         if (age < 18) {
            return "Child";
         } else {
            return "Adult";
         }
      }
   %>
   ```

7. **JSP Standard Actions**:
   - JSP provides standard actions like `<jsp:include>`, `<jsp:forward>`, and `<jsp:useBean>` to perform common tasks.

   Example:
   ```jsp
   <jsp:include page="header.jsp" />
   ```

8. **Custom Tag Libraries**:
   - JSP allows you to define and use custom tag libraries to encapsulate reusable logic and components.

   Example:
   ```jsp
   <mytags:customTag />
   ```

9. **Implicit Objects**:
   - JSP provides a set of implicit objects like `request`, `response`, `session`, and `out` for accessing web-related data.

   Example:
   ```jsp
   <p>Request URL: <%= request.getRequestURL() %></p>
   ```

10. **MVC Architecture**:
    - JSP is often used in combination with Servlets to implement the Model-View-Controller (MVC) architecture for web applications.

   Example:
   Separating business logic in a Servlet and presentation logic in a JSP.

11. **Tag Libraries (JSTL)**:
    - JSP Standard Tag Library (JSTL) provides a collection of custom tags for common tasks like looping, conditional statements, and formatting.

   Example:
   Using JSTL to iterate over a collection:
   ```jsp
   <c:forEach var="item" items="${items}">
       ${item}
   </c:forEach>
   ```

JSP is a versatile technology for creating dynamic web pages, and it's a key component of Java-based web development.