512.What are the implicit objects in JSP?

a set of Java objects that the JSP Container makes available to developers on each page. being formed within the service method so that JSP developers can use them directly in Scriptlet without declaration and initialization.

513.How will you extend JSP code?

We can extend JSP code **with custom tags** to avoid scripting elements and java code in JSP pages.

514.How will you handle runtime exceptions in JSP?

Runtime errors can be handled in Java using try-catch blocks with the following steps:
1. Surround the statements that can throw a runtime error in try-catch blocks.
2. Catch the error.
3. Depending on the requirements of the application, take necessary action. For example, log the exception with an appropriate message.

515.How will you prevent multiple submits of a page that come by clicking refresh button multiple times?

Using a Post/Redirect/Get or a PRG pattern, this problem can be solved.

516.How will you implement a thread safe JSP page?

A thread-safe JSP/servlet is one that works correctly when more than one thread is running at the same time. To make your JSPs thread-safe, you can **implement the SingleThreadModel interface that prevents two threads from accessing the service method at the same time**.

517.How will you include a static file in a JSP page?

We can include static files in JSP by using include directive (static include)<%@ include file=header.jsp %>
The content of the header.jsp will be included in the current jsp at translation time.
Hence this inclusion is also known as static include.

518.What are the lifecycle methods of a JSP?

jspInit() method before servicing any requests. initialize database connections, open files, and create lookup tables in the jspInit method. Call once

jspService() ----handle multiple request and send response.
jspDestroy() method ---destroy method for servlets. Call once

519.What are the advantages of using JSP in web architecture?

JSP can use the multithreading feature of Java. JSP can be easily connected to the MYSQL databases. JSP can use the exceptional handling feature of Java. JSP has better performance and scalability, as developers can embed dynamic elements into the HTML code.

520.What is the advantage of JSP over Javascript?

JSP is the server-side scripting language i.e. it runs on the server while JavaScript runs on the client. As a result, **JSP is more used to change the content of a webpage, and JavaScript for the presentation**. It is quite common to use both on the same page.

521.What is the Lifecycle of JSP?

The life cycle of a JSP page can be divided into the following phase: **Translation Phase**. **Compilation Phase**. **Initialization Phase**.

522.What is a JSP expression?

A JSP expression is **used to insert the value of a scripting language expression, converted into a string, into the data stream returned to the client**.

523.What are the different types of directive tags in JSP?

page directive--- page dependent properties such as language, session, errorPage etc.
include directive --- defines file to be included.
taglib directive--- declares tag library used in the page

524.What is session attribute in JSP?

A session attribute is **a pre-defined variable that is persistent throughout the life of a Tealeaf session**. Session attributes can be used to store various data that may be referenced by events at any point during the session

525.What are the different scopes of a JSP object?

Every object created in a JSP page will have a scope. Object scope in JSP is segregated into four parts and they are **page, request, session and application**. 'page' scope means, the JSP object can be accessed only from within the same page where it was created.