Servlet Filters

## What is a Servlet Filter?

A servlet filter is a Java class that implements the jakarta.servlet.Filter interface. It sits in a "pipeline" or "chain" of execution between the client's request and the target resource (servlet, JSP, or static content), and similarly, between the target resource's response and the client.

## Why Use Servlet Filters? (Common Use Cases)

1. **Authentication and Authorization:**
   1. Checking if a user is logged in before allowing access to certain pages.
   2. Verifying user roles and permissions.
2. **Logging and Auditing:**
   1. Logging request details (IP address, URL, timestamp, user agent).
   2. Auditing user actions for security or analytics.
3. **Data Compression/Decompression:**
   1. Compressing response data to reduce bandwidth.
   2. Decompressing request data.
4. **Encryption/Decryption:**
   1. Encrypting sensitive data in the response before sending it to the client.
   2. Decrypting encrypted data in the request.
5. **Input Validation:**
   1. Validating incoming request parameters to ensure they meet certain criteria (e.g., preventing SQL injection, checking data types).
6. **Character** **Encoding**:
   1. Setting the correct character encoding for requests and responses.
7. Image Conversion:
   1. Transforming image formats on the fly
8. Transforming Content (e.g., XSL/T):
   1. Applying XSL/T transformations to XML content.
9. URL Rewriting:
   1. Modifying URLs before they reach the servlet.
10. Performance Monitoring:
    1. Measuring the time taken to process requests.
11. Caching:
    1. Implementing caching mechanisms for frequently accessed content.