JAVA SERVLET PROGRAMMING

Learning Goals

- Understand Servlet
- Can use Servlet to develop web application

Structure

- Introduction
- Servlet Overview and Architecture
- Servlet Life Cycle
- Handling HTTP get Requests
- Handling HTTP post Requests
- Servlet Context

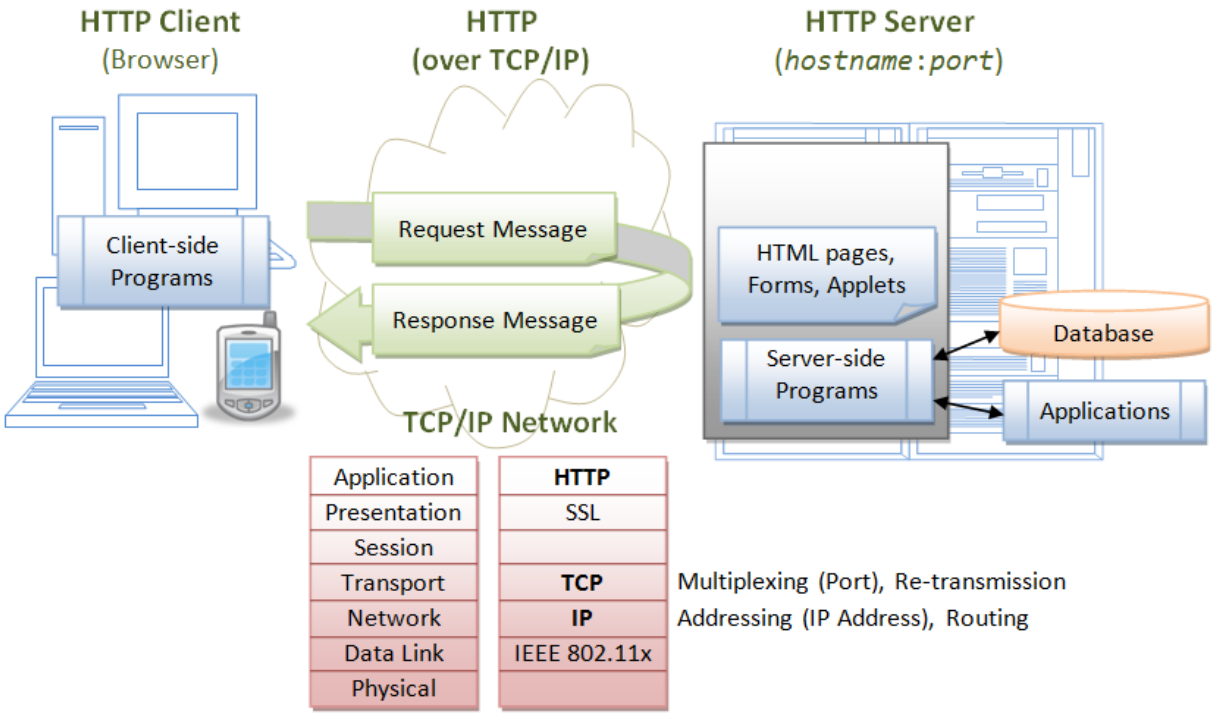
Trainee's missions

To complete this course and achieve goals, trainees must:

- **Read Lecture, Reference**
- **Do Exercises**
- **Take quiz**
- **Complete Assignment**

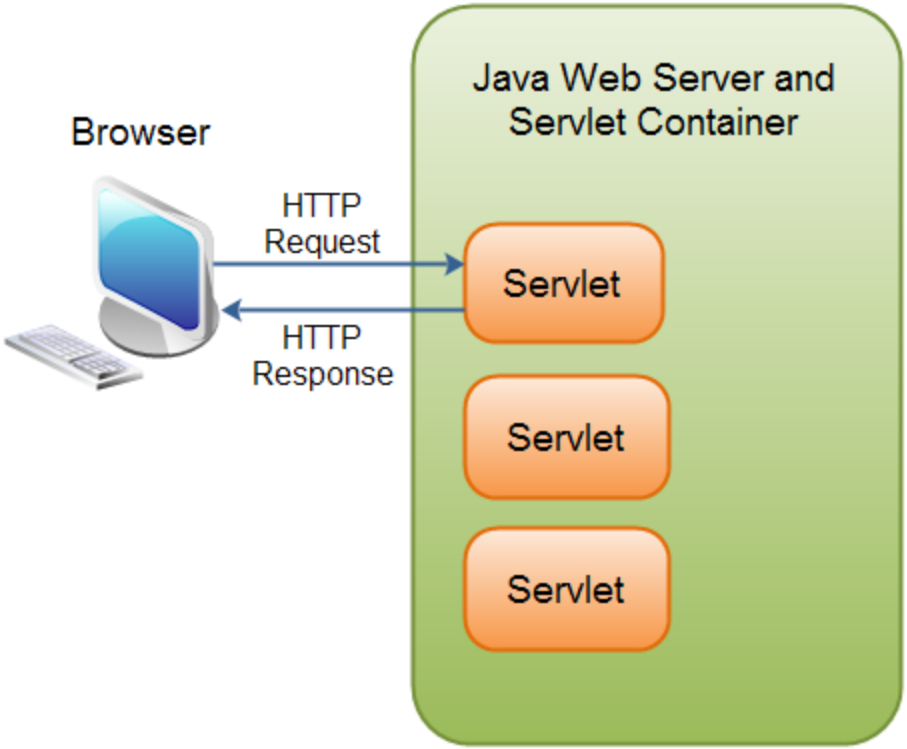
Introduction

- Servlets to build Web-based applications
- Without the performance limitations of CGI programs.
- Servlets have access to JDBC API to access enterprise databases.



Servlet Overview

- Java Servlets are programs that run on a Web or Application server and act as a middle layer between a request coming from a Web browser or other HTTP client and databases or applications on the HTTP server.
- Performance is significantly better.
- Servlets are platform-independent because they are written in Java.



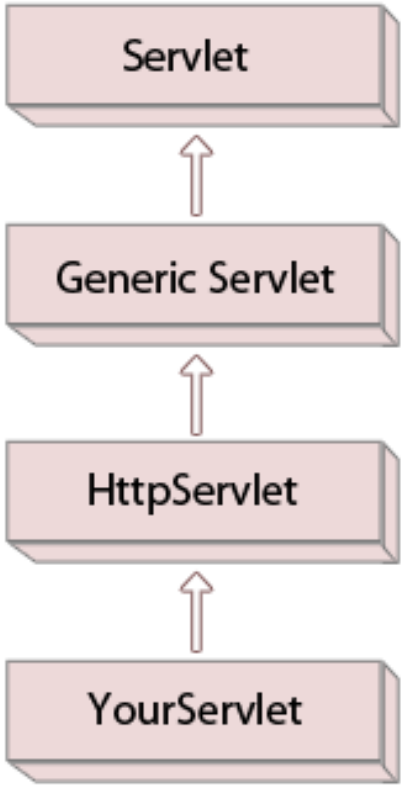
Servlet Architecture

There are two packages javax.servlet and javax.servlet.http that provides the interfaces and classes:

- **Servlet**: is a interface
- **Generic** implements **Servlet**
- **HttpServlet** extends **Generic**

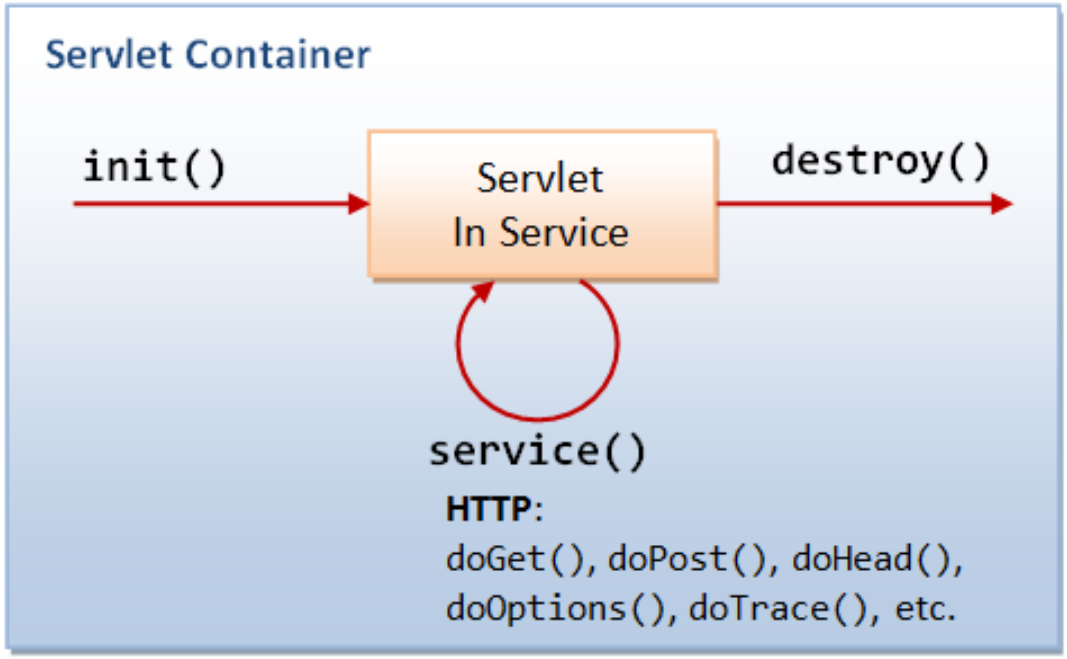
To write a servlet we need to implement Servlet interface. Servlet interface can be implemented directly or indirectly by extending **GenericServlet** or**HttpServlet** class.

Purpose of extending the HttpServlet class is to provide the HTTP specific services to your servlet.

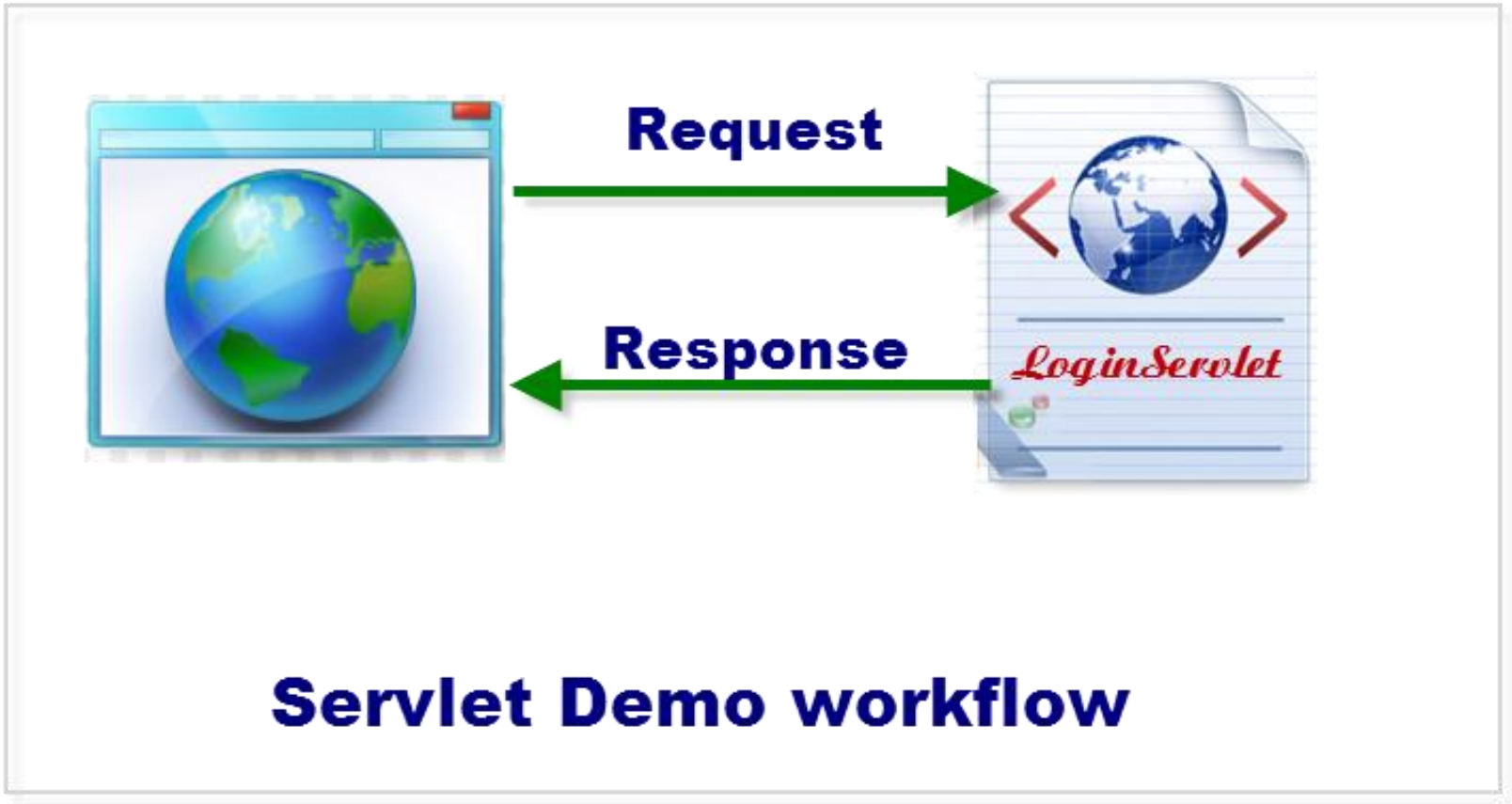


Servlet Life Cycle

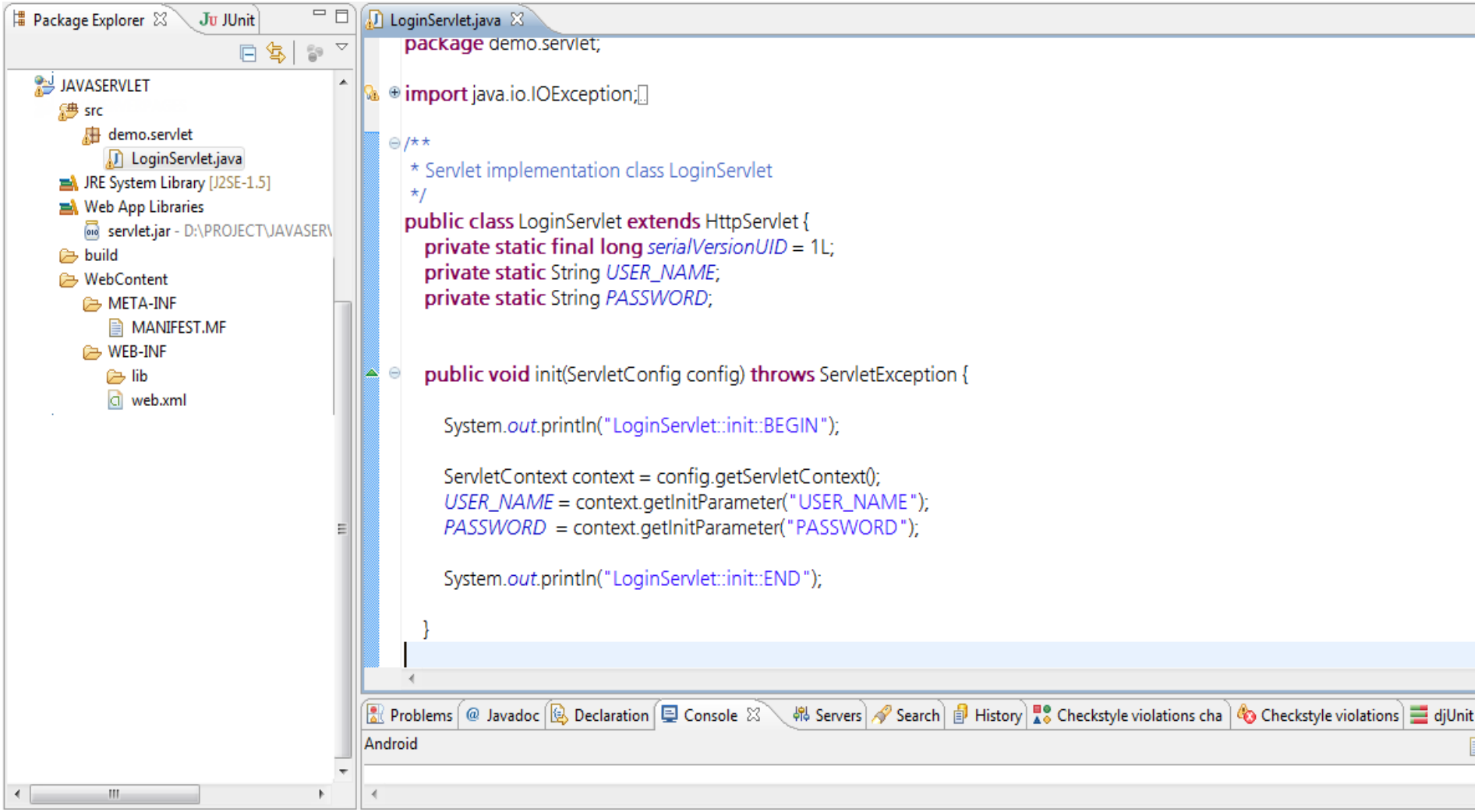
- A servlet life cycle can be defined as the entire process from its creation till the destruction. The following are the paths followed by a servlet:
- The servlet is initialized by calling the init () method.
- The servlet calls service() method to process a client's request.
- The servlet is terminated by calling the destroy() method.
- Finally, servlet is garbage collected by the garbage collector of the JVM.



Servlet Demo workflow

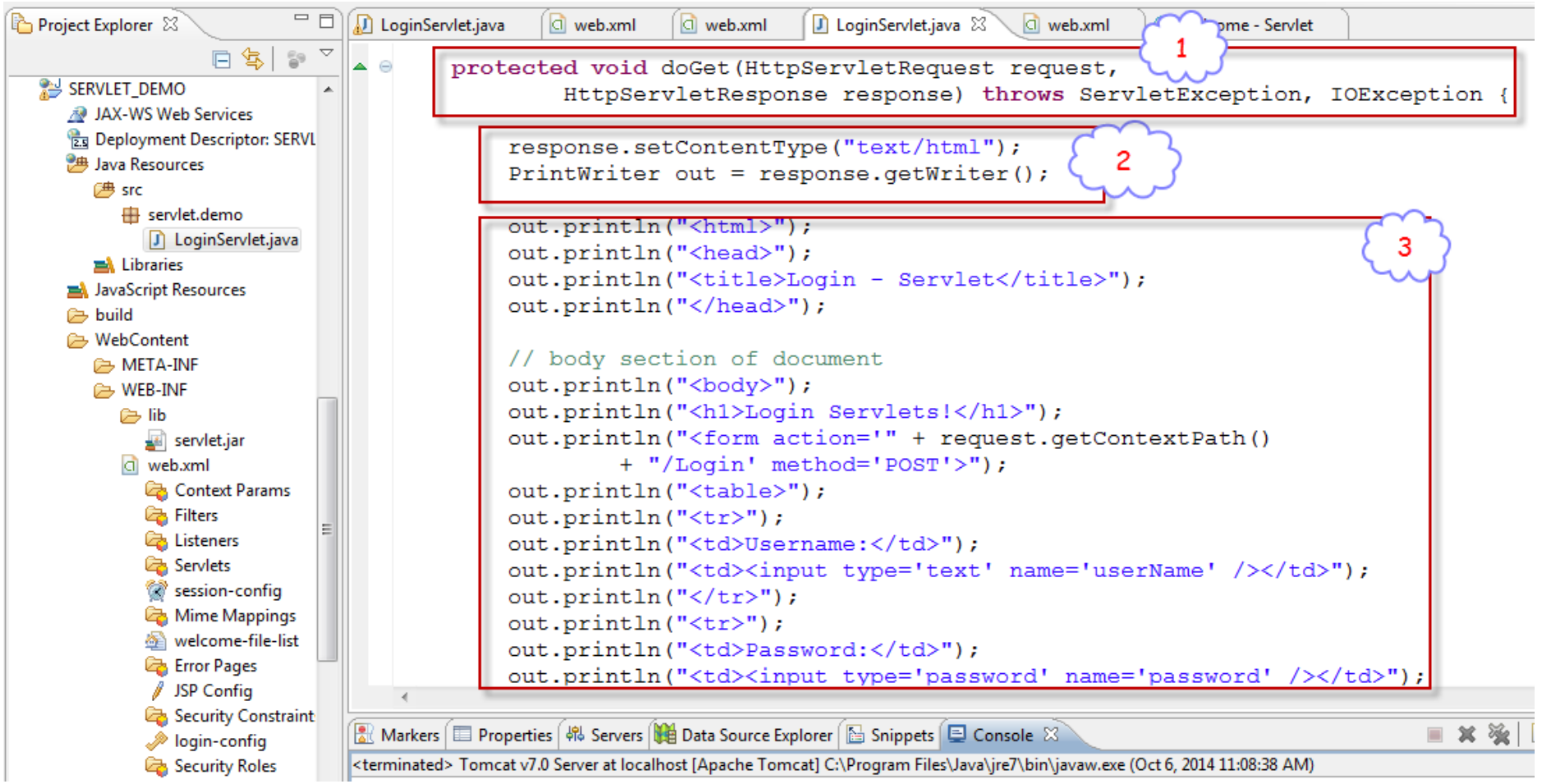


Create Dynamic Web Project



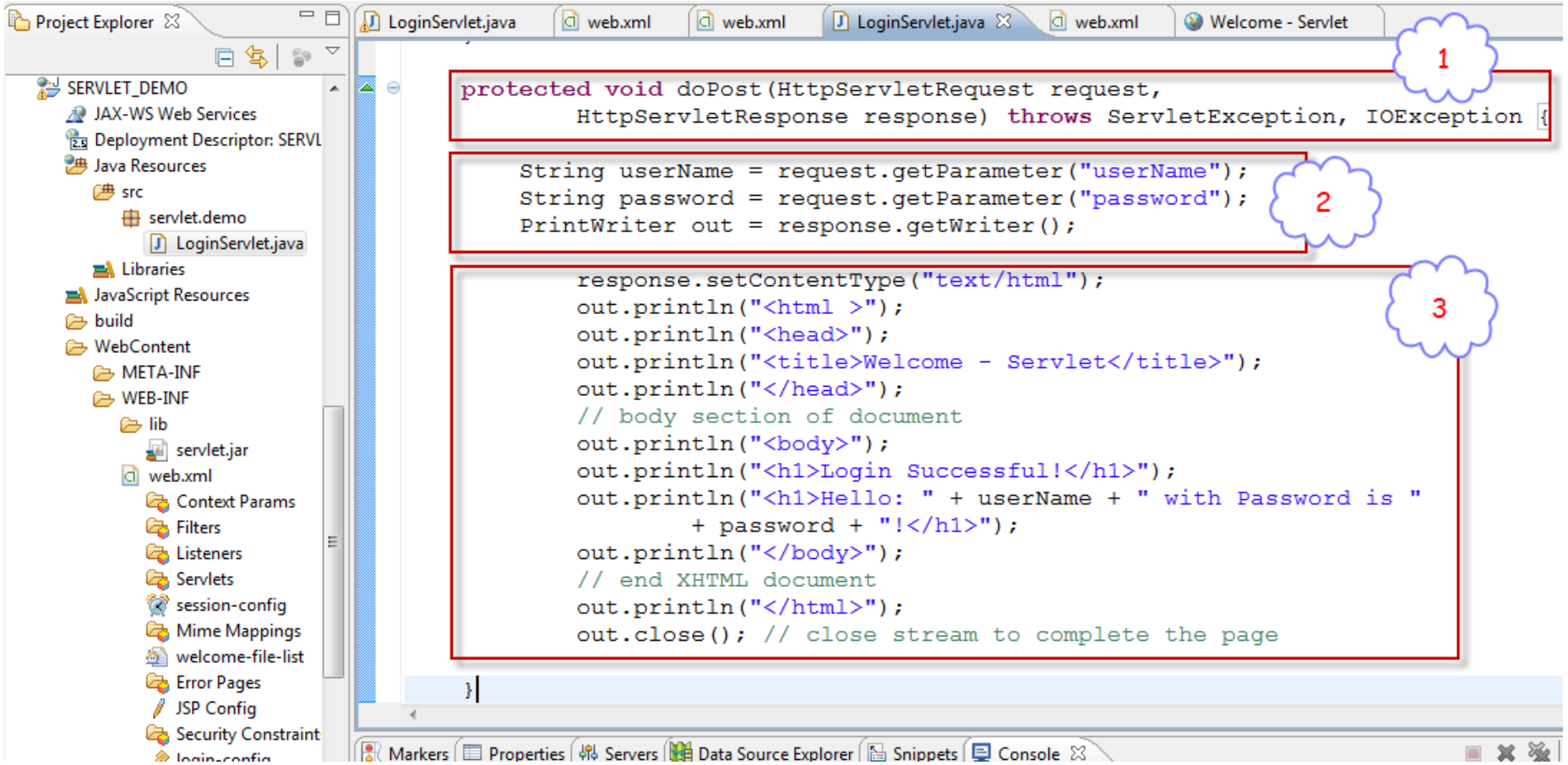
Handling HTTP GET Requests

doGet() to process requests with method is “GET” from client



Handling HTTP POST Requests

doPost() to process requests with method is “POST” from client

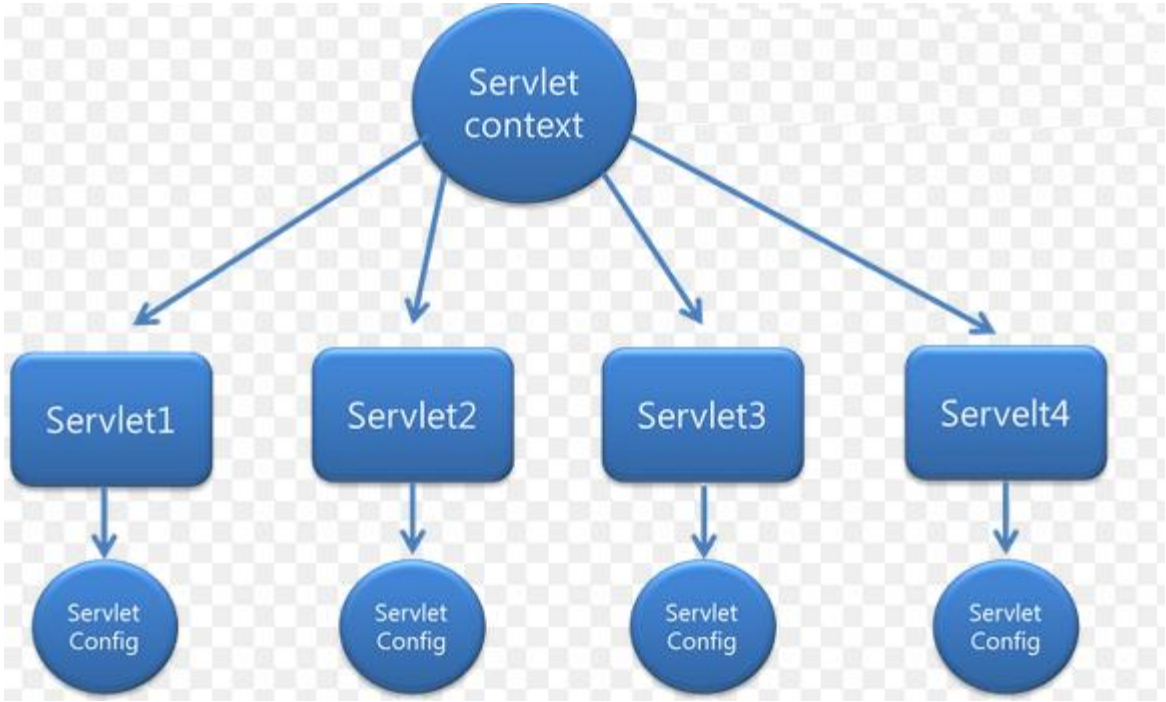


ServletContext

ServletContext is used to maintain state for web applications.
Servlet Context has 3 main methods:

- GetAttribute ()
- SetAttribute ()
- RemoveAttribute ()

Servlet Context help provides communication between the servlet
Servlet Context can also be used to obtain configuration information web.xml



ServletContext Example

web.xml

```
<display-name>JAVASERVLET</display-name>

<welcome-file-list>
    <welcome-file>Login</welcome-file>
</welcome-file-list>

<context-param>
    <param-name>USER_NAME</param-name>
    <param-value>admin</param-value>
</context-param>

<context-param>
    <param-name>PASSWORD</param-name>
    <param-value>admin123</param-value>
</context-param>
```

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web.xml | LoginServlet.java

```
 */
public class LoginServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;
    private static String USER_NAME;
    private static String PASSWORD;


    public void init(ServletConfig config) throws ServletException {

        System.out.println("LoginServlet::init::BEGIN");

        ServletContext context = config.getServletContext();
        USER_NAME = context.getInitParameter("USER_NAME");
        PASSWORD  = context.getInitParameter("PASSWORD");

        System.out.println("LoginServlet::init::END");

    }
```

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Summary

-Servlets to build Web-based applications

- There are two packages javax.servlet and javax.servlet.http that provides the interfaces and classes:

- **Servlet**: is a interface
- **Generic** implements **Servlet**
- **HttpServlet** extends **Generic**

- Servlet life cycle
  - •The servlet is initialized by calling the init () method.
  - •The servlet calls service() method to process a client's request.
  - •The servlet is terminated by calling the destroy() method.

- doGet(): process request with “GET” method
- doPost(): process request with “POST” method
- ServeltContext: is used to maintain state for web applications.