**Assisted Practice: 1.5 Servlet Filters**

This section will guide you to:

* Create an HTML page to send different requests via hyperlinks
* Create servlets to handle each request
* Show the output of the servlet showing whether the request came through a filter or not

**Development Environment**

* Eclipse IDE for Enterprise Java Developers v2019-03 (4.11.0)
* Apache Tomcat Server v9.0
* JRE: OpenJDK Runtime Environment 11.0.2

This lab has twelve subsections, namely:

* + 1. Creating a dynamic web project
    2. Creating an HTML page
    3. Creating an AccountProfile servlet
    4. Creating an AccountDashboard servlet
    5. Creating an InfoPage servlet
    6. Creating a LoginFilter filter
    7. Configuring web.xml
    8. Checking for servlet-api.jar
    9. Building the project
    10. Publishing and starting the project
    11. Running the project
    12. Pushing the code to your GitHub repositories

**Step 1.5.1:** Creating a dynamic web project

* Open Eclipse
* Go the **File** menu. Choose **New->Dynamic Web Project**
* Enter the project name as **FilterDemo**. Click on **Next**
* Enter nothing in the next screen and click on **Next**
* Check the checkbox **Generate web.xml deployment descriptor** and click on **Finish**
* This will create the project files in the Project Explorer

**Step 1.5.2:** Creating an HTML page

* In the Project Explorer, expand the project **FilterDemo**
* Expand **WebContent**. Right click on **WebContent**. Choose **New->HTML File**
* Enter the filename as index.html and click on **Finish**
* Enter the following code:

<!DOCTYPE html>

<**html**>

<**head**>

<**meta** charset="UTF-8">

<**title**>Filter Demo</**title**>

</**head**>

<**body**>

<**a** href="dashboard?userid=johndoe">Account Dashboard (allow filter)</**a**><**br**>

<**a** href="profile?userid=johndoe">Account Profile (allow filter)</**a**><**br**>

<**a** href="dashboard">Account Dashboard (block filter)</**a**><**br**>

<**a** href="info">Info Page </**a**><**br**>

</**body**>

</**html**>

* Click on the **Save** icon

**Step 1.5.3:** Creating an AccountProfile servlet

* In the Project Explorer, expand **FilterDemo->Java Resources**
* Right click on **src** and choose **New->Servlet**
* In **Class Name,** enter **AccountProfile** and click on **Finish**
* Enter the following code:

**import java.io.IOException;**

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

/\*\*

**\*** Servlet implementation class AccountProfile

\*/

**@WebServlet("/AccountProfile")**

**public** **class** AccountProfile **extends** HttpServlet {

**private** **static** **final** long serialVersionUID = 1L;

/\*\*

**\*** **@see** HttpServlet**#**HttpServlet()

\*/

**public** AccountProfile() {

**super**();

// TODO Auto-generated constructor stub

}

/\*\*

**\*** **@see** HttpServlet**#**doGet(HttpServletRequest request**,** HttpServletResponse response)

\*/

**protected** void doGet(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, **IOException** {

// TODO Auto-generated method stub

response.getWriter().write("I am in Account Profile after passing through LoginFilter");

}

/\*\*

**\*** **@see** HttpServlet**#**doPost(HttpServletRequest request**,** HttpServletResponse response)

\*/

**protected** void doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, **IOException** {

// TODO Auto-generated method stub

doGet(request, response);

}

}

**Step 1.5.4:** Creating an AccountDashboard servlet

* In the Project Explorer, expand **FilterDemo->Java Resources**
* Right click on **src** and choose **New->Servlet**
* In **Class Name,** enter **AccountDashboard** and click on **Finish**
* Enter the following code:

**import java.io.IOException;**

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

/\*\*

**\*** Servlet implementation class AccountDashboard

\*/

**@WebServlet("/AccountDashboard")**

**public** **class** AccountDashboard **extends** HttpServlet {

**private** **static** **final** long serialVersionUID = 1L;

/\*\*

**\*** **@see** HttpServlet**#**HttpServlet()

\*/

**public** AccountDashboard() {

**super**();

// TODO Auto-generated constructor stub

}

/\*\*

**\*** **@see** HttpServlet**#**doGet(HttpServletRequest request**,** HttpServletResponse response)

\*/

**protected** void doGet(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, **IOException** {

// TODO Auto-generated method stub

response.getWriter().write("I am in Account Dashboard after passing through LoginFilter");

}

/\*\*

**\*** **@see** HttpServlet**#**doPost(HttpServletRequest request**,** HttpServletResponse response)

\*/

**protected** void doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, **IOException** {

// TODO Auto-generated method stub

doGet(request, response);

}

}

**Step 1.5.5:** Creating an InfoPage servlet

* In the Project Explorer, expand **FilterDemo->Java Resources**
* Right click on **src** and choose **New->Servlet**
* In **Class Name,** enter **InfoPage** and click on **Finish**
* Enter the following code:

**import java.io.IOException;**

**import** javax.servlet.ServletException;

**import** javax.servlet.annotation.WebServlet;

**import** javax.servlet.http.HttpServlet;

**import** javax.servlet.http.HttpServletRequest;

**import** javax.servlet.http.HttpServletResponse;

/\*\*

**\*** Servlet implementation class InfoPage

\*/

**@WebServlet("/InfoPage")**

**public** **class** InfoPage **extends** HttpServlet {

**private** **static** **final** long serialVersionUID = 1L;

/\*\*

**\*** **@see** HttpServlet**#**HttpServlet()

\*/

**public** InfoPage() {

**super**();

// TODO Auto-generated constructor stub

}

/\*\*

**\*** **@see** HttpServlet**#**doGet(HttpServletRequest request**,** HttpServletResponse response)

\*/

**protected** void doGet(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, **IOException** {

// TODO Auto-generated method stub

response.getWriter().write("I am in InfoPage");

}

/\*\*

**\*** **@see** HttpServlet**#**doPost(HttpServletRequest request**,** HttpServletResponse response)

\*/

**protected** void doPost(HttpServletRequest request, HttpServletResponse response) **throws** ServletException, **IOException** {

// TODO Auto-generated method stub

doGet(request, response);

}

}

**Step 1.5.6:** Creating a LoginFilter filter

* In the Project Explorer, expand **FilterDemo->Java Resources**
* Right click on **src** and choose **New->Filter**
* In **Class Name,** enter **LoginFilter** and click on **Finish**
* Enter the following code:

**import java.io.IOException;**

**import** javax.servlet.Filter;

**import** javax.servlet.FilterChain;

**import** javax.servlet.FilterConfig;

**import** javax.servlet.ServletException;

**import** javax.servlet.ServletRequest;

**import** javax.servlet.ServletResponse;

**import** javax.servlet.annotation.WebFilter;

/\*\*

**\*** Servlet Filter implementation class LoginFilter

\*/

**@WebFilter("/LoginFilter")**

**public** **class** LoginFilter **implements** Filter {

/\*\*

**\*** Default constructor.

\*/

**public** LoginFilter() {

// TODO Auto-generated constructor stub

}

/\*\*

**\*** **@see** Filter**#**destroy()

\*/

**public** void destroy() {

// TODO Auto-generated method stub

}

/\*\*

**\*** **@see** Filter**#**doFilter(ServletRequest**,** ServletResponse**,** FilterChain)

\*/

**public** void doFilter(ServletRequest request, ServletResponse response, FilterChain chain) **throws** **IOException**, ServletException {

// TODO Auto-generated method stub

// place your code here

**String** userId = request.getParameter("userid");

**if**( userId != **null**){

chain.doFilter(request, response);

}

}

/\*\*

**\*** **@see** Filter**#**init(FilterConfig)

\*/

**public** void init(FilterConfig fConfig) **throws** ServletException {

// TODO Auto-generated method stub

}

}

**Step 1.5.7:** Configuring web.xml

* In the Project Explorer, expand **FilterDemo->WebContent->WEB-INF**
* Double click on **web.xml** to open it in the editor
* Enter the following script:

<?xml version="1.0" encoding="UTF-8"?>

<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://xmlns.jcp.org/xml/ns/javaee" xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee http://xmlns.jcp.org/xml/ns/javaee/web-app\_4\_0.xsd" id="WebApp\_ID" version="4.0">

<display-name>FilterDemo</display-name>

<welcome-file-list>

<welcome-file>index.html</welcome-file>

<welcome-file>index.htm</welcome-file>

<welcome-file>index.jsp</welcome-file>

<welcome-file>default.html</welcome-file>

<welcome-file>default.htm</welcome-file>

<welcome-file>default.jsp</welcome-file>

</welcome-file-list>

<filter>

<filter-name>loginFilter</filter-name>

<filter-class>LoginFilter</filter-class>

</filter>

<filter-mapping>

<filter-name>loginFilter</filter-name>

<url-pattern>/dashboard</url-pattern>

<url-pattern>/profile</url-pattern>

</filter-mapping>

<servlet>

<servlet-name>AccountDashboard</servlet-name>

<servlet-class>AccountDashboard</servlet-class>

</servlet>

<servlet>

<servlet-name>AccountProfile</servlet-name>

<servlet-class>AccountProfile</servlet-class>

</servlet>

<servlet>

<servlet-name>InfoPage</servlet-name>

<servlet-class>InfoPage</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>AccountDashboard</servlet-name>

<url-pattern>/dashboard</url-pattern>

</servlet-mapping>

<servlet-mapping>

<servlet-name>AccountProfile</servlet-name>

<url-pattern>/profile</url-pattern>

</servlet-mapping>

<servlet-mapping>

<servlet-name>InfoPage</servlet-name>

<url-pattern>/info</url-pattern>

</servlet-mapping>

</web-app>

**Step 1.5.8:** Checking for servlet-api.jar

* Before building the project, we need toadd **servlet-api.jar** to the project
* Servlet-api.jar file is already present in your practice lab. (Refer FSD: Lab Guide - Phase 2)
* To add it to the project, follow the below mentioned steps:
  + In the Project Explorer, right click on **FilterDemo** and choose **Properties**
  + Select **Java Build Path** from the options on the left
  + Click on **Libraries** tab on the right
  + Under **ClassPath,** expand the node that says **Apache Tomcat**
  + If there is an existing entry for the **servlet-api.jar,** then click on **Cancel** and exit the window
  + If it is not there, then click on **Classpath** entry and click on **Add External JARs** button on the right
  + From the file list, select the **servlet-api.jar** file and click on **Ok**
  + Click on **Apply and Close**

**Step 1.5.9:** Building the project

* From the **Project** menu at the top, click on **Build**
* If any compile errors are shown, fix them as required

**Step 1.5.10:** Publishing and starting the project

* If you do not see the **Servers** tab near the bottom of the IDE, go to **Window** menu and click on **Show View->Servers**
* Right click on the **Server** entry and choose **Add and Remove**
* Click the **Add** button to move **FilterDemo** from the **Available** list to the **Configured** list
* Click on **Finish**
* Right click on the **Server** entry and click on **Publish**
* Right click on the **Server** entry and click on **Start**
* This will start the server

**Step 1.5.11:** Running the project

* To run the project, open a web browser and type: [**http://localhost:8080/**](http://localhost:8080/ServletConcept)**FilterDemo**

**Step 1.5.12:** Pushing the code to your GitHub repositories

* Open your command prompt and navigate to the folder where you have created your files.

**cd <folder path>**

* Initialize your repository using the following command:

**git init**

* Add all the files to your git repository using the following command:

**git add .**

* Commit the changes using the following command:

**git commit . -m “Changes have been committed.”**

* Push the files to the folder you initially created using the following command:

**git push -u origin master**