

## CPRG352 - Web Application Programming

Fall 2021

### Topic: Use of Listeners and Filters in Java Web Applications

#### Problem 1: Logging application events with a Listener

Create an application called **LogListener**. This application prompts the user to enter a word, and adds that words to an **ArrayList<String>** held in the user's **session** object.

The application should use the *front servlet* pattern. It should have a servlet called **LogController** and a JSP in WEB-INF called **index.jsp**.

#### Example

## Logged Word List

[Invalidate](#)

New word:

Add

## Word List

When first run the application should show the form above. When the user enters a word and clicks on **Add** the word should be displayed in the list below, e.g. if the user enters “*apple*” and clicks on **Add**:

## Logged Word List

[Invalidate](#)

New word:

Add

## Word List

apple

Entering “*orange*” and clicking on **Add** results in:

# Logged Word List

[Invalidate](#)

New word:

Add

## Word List

apple  
orange

Clicking on the **Invalidate** hyperlink above the form invalidates the user's **session** and resets the list, e.g.:

# Logged Word List

[Invalidate](#)

New word:

Add

## Word List

### Logging application lifecycle events

Add an application listener to the application that displays information in the NetBeans output console about:

- Application startup and shutdown
- Session creation and destruction (including the session ID for the session being created or destroyed)
- Changes to session attributes (added, changed, destroyed)

**Example:** the application is deployed to Tomcat and starts up:

```
APPLICATION CREATED: /LogListener  
Session created: DC326F07C138251AD497A0B2B27A7E6C  
session attr added: wordList:[]
```

Then the user invalidates their session:

```
APPLICATION CREATED: /LogListener  
Session created: DC326F07C138251AD497A0B2B27A7E6C  
session attr added: wordList:[]  
Session stopped: DC326F07C138251AD497A0B2B27A7E6C  
session attr removed: wordList:[apple]  
Session created: EA78688681CD5298F80A137D39A9A210
```

Note that the session ID values you see will not match the ones above.

Try adding words to the `ArrayList<String>` attribute of the user's session and see what lifecycle events you can monitor. Try deploying and undeploying the application, shutting down and restarting Tomcat, etc., and make sure you understand when the events are occurring, and why.

### **Problem 2: Logging application request activity using a Filter**

Make a copy of your solution to the previous problem and rename it to **LogFilter**. Remove, or comment out, the Listener-related code (*Note:* check the **web.xml** file for your application also for required changes).

Add a Filter object to your project that outputs to the NetBeans output console the URL of any JSP and/or servlet that are being either directly requested by the user's browser, or forwarded to in the application code.

#### **Example:**

```
FILTER:https://localhost:8443/LogFilter/  
FILTER:https://localhost:8443/LogFilter/WEB-INF/index.jsp
```

When run the application should display information similar to that above, where it shows the URL being requested or forwarded to each time such an event occurs.

Add an additional JSP to the application that can be navigated to and from and ensure that your log shows all of the request and forward events correctly.