

Advanced Java

Agenda

- JSP
 - Expression language
 - JSTL
 - Custom tags
- Web application architecture
 - Model-View architecture
 - Model-View-Controller architecture

JSP

JSP EL

- To reduce the scriptlets and expressions.
- Syntax: `${...}`
- Used to
 - Access scoped objects
 - `${scopeName.objName}`
 - `pageScope`, `requestScope`, `sessionScope`, `applicationScope`
 - e.g. `${sessionScope.lb.role}`, `${pageScope.sb.bookList}`
 - Auto search from lowest to highest scope
 - e.g. `${lb.role}` --> `lb` will be searched first in `pageScope`, then `requestScope`, then `sessionScope`.
 - Using `scopeName` is useful if different beans with same name are present in multiple scopes.
 - Access fields (via getters)
 - `${objName.fieldName}` --> internally calls `objName.getFieldName()`
 - Access methods
 - `${objName.method()}`

- Perform arbitrary calculations
 - `${2 + 3 * 4 mod 5}`
 - mod is "%" operator.
 - div is "/" operator.
- Work with EL implicit objects

EL implicit objects

- `${param.name}` --> `request.getParameter("name")`
- `${paramValues.name}` --> `request.getParameterValues("name")`
- `${header.name}` --> `request.getHeader("name")`
- `${headerValues.name}` --> `request.getHeaderValues("name")`
- `${initParam.name}` --> `ctx.getInitParameter("name")` -- `<context-param>` in web.xml.
- `${cookie.name}` --> returns value of the cookie with given "name".
- `${pageContext....}` --> to access objects in the pageContext like request, ...

JSP Page Context

- PageContext object is created to process the JSP. It holds all required objects (for JSP processing) like request, response, out, session, application, config, etc.
- It is also useful for state management -- Page level.

```
pageContext.setAttribute("key", value);  
value = pageContext.getAttribute("key");
```

JSTL

- JSTL = JSP Standard Tag Library
- Additional JSP tags by Sun Microsystems.
- Download from <https://mvnrepository.com/artifact/jstl/jstl/1.2>
- Five components

- Core -- Programming constructs (forEach, choose, if), redirect, Variables (set), ...
- Formatting -- Formatting date and currency.
- Functions -- Utility functions like String manipulation e.g. length, concat, ...
- SQL -- execute SQL queries directly from JSP pages (not recommended).
- XML -- XML processing/generation.
- `<@taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>`
 - `<c:if .../>`
 - `<c:choose .../>`
 - `<c:forEach .../>`
 - `<c:set .../>`
 - `<c:url .../>`
 - `<c:redirect .../>`
- `<%@ taglib prefix = "fmt" uri = "http://java.sun.com/jsp/jstl/fmt" %>`
 - `<fmt:formatDate pattern="dd-MM-yyyy" value="${cust.birth}" />`

Assignment

1. Movie Review System using JSP and Java Beans
2. Election System using MVC -- Add announcement feature.