Advanced Java

- **JSP**
  - JSP EL
  - JSTL

JSP EL

- To reduce the scriptlets and expressions.
- Syntax: `${...}`
- Used to
  - Access scoped objects
    - `${scopeName.objName}`
    - pageScope, requestScope, sessionScope, applicationScope
      - e.g. `${sessionScope.lb.email}`, `${pageScope.abb.books}`
    - Auto search from lowest to highest scope
      - e.g. `${lb.email}` --> lb will be searched first in pageScope, then requestScope, then sessionScope.
      - Using scopeName is useful if different beans with same name are present in multiple scopes.
  - Access fields (via getters)
    - `${objName.fieldName}` --> internally calls objName.getFieldName()
    - e.g. `${lb.email}`, `${lb.cust.role}`, `${bdb.book.author}`, ...
  - Access methods
    - `${objName.method()}`
    - e.g. `${lb.validate()}`, `${sb.fetchSubjects()}`, ...
  - Perform arbitrary calculations
    - `${2 + 3 * 4 mod 5}` --> mod 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");
```

JSP Tags

- Combines business logic with presentation logic.
- JSP standard actions:
  - Built-in tags with prefix "jsp:"
  - e.g. forward, include, plugin, fallback, useBean, setProperty, getProperty, etc.
- Third party tags:
  - Spring Tag Library, JSTL, etc.
  - Commonly used tags: if-else, loop, redirect, etc.
- Custom Tags:
  - Programmer can define new tags for application-specific requirements.

JSTL

- JSTL = JSP Standard Tag Library

- To use JSTL in the JSP web page:
    - step 1: Download from https://mvnrepository.com/artifact/jstl/jstl/1.2 and add into project's WEB-INF/lib directory.
    - step 2: Use "taglib" directive with appropriate uri into JSP page.
        - `<@taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>`
    - step 3: Use the tag into the JSP page.
        - `<c:redirect url="https://sunbeaminfo.in"/>`
- Five components
    - Core -- Programming constructs (forEach, choose, if), redirect, Variables (set), ...
    - Formatting -- Formatting date and currency.
    - SQL -- execute SQL queries directly from JSP pages (not recommended).
    - XML -- XML processing/generation.
    - Functions -- Utility functions like String manipulation e.g. length, concat, ...
- `<@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}" />`