**Implicit Objects**

| **Implicit Object** | **Type** | **Key**[**12**](javascript:popUp('/content/images/chap2_0131001531/elementLinks/ch02fn12.html')) | **Value** |
| --- | --- | --- | --- |
| cookie | Map | Cookie name | Cookie |
| header | Map | Request header name | Request header value |
| headerValues | Map | Request header name | String[] of request header values |
| initParam | Map | Initialization parameter name | Initialization parameter value |
| param | Map | Request parameter name | Request parameter value |
| paramValues | Map | Request parameter name | String[] of request parameter values |
| pageContext | PageContext  The JSP page context. It provides access to other objects. For example:  pageContext.servletContext returns the application context;  pageContext.session returns the session;  pageContext.request returns the request,  pageContext.response returns the response. | N/A | N/A |
| pageScope | Map | Page-scoped attribute name | Page-scoped attribute value |
| requestScope | Map | Request-scoped attribute name | Request-scoped attribute value |
| sessionScope | Map | Session-scoped attribute name | Session-scoped attribute value |
| applicationScope | Map | Application-scoped attribute name | Application-scoped attribute value |

**Operators**

**Arithmetic Operators**: '+', '-', '\*', '/' (or div), and '%' (or mod).

Ex : <c:out value="${3.14\*param['radius']\*param['radius']}" />

**Comparison Operators**: == (or eq), != (or ne), > (or gt), < (or lt), >= (or ge), <= (or le).

**Logical Operators**: &&, ||, !

Ex: ${<exp 1> && <exp 2>}

**Validation Operators**: “empty” “not empty” is a boolean unary operator checking for null value or empty string,

Ex: ${empty param["username"]} returns true if the request parameter "username" is null or an empty string.

**Shorthand if-else (?:):** If the expression is true, then executes the trueExpression, else executes falseExpression.

Ex: ${condition ? "some text when true" : "some text when false"}

**Special Operators:** ‘.’ Operator and ‘[]’operator

Ex: <c:out value="Hello, ${user.firstname} ${user.lastname}!" />

**Operator precedence:**

* [] .
* ()
* - (unary) not ! empty
* \* / div % mod
* + - (binary)
* < > <= >= lt gt le ge
* == != eq ne
* && and
* || or =

**Reserved words**

The following words are reserved for the EL and should not be used as identifiers:

|  |  |  |  |
| --- | --- | --- | --- |
| and | or | not | eq |
| ne | lt | gt | le |
| ge | true | false | null |
| instanceof | empty | div | mod |