Java Server Pages (JSP)

Road Map

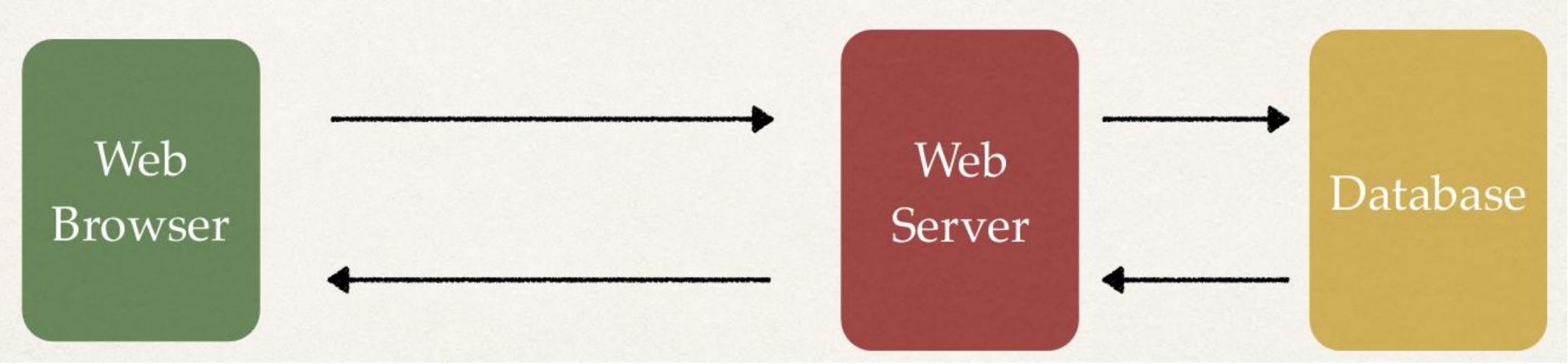
- Getting Started with JSP: Dev Environment
- Explore JSP scripting elements
- Reading HTML form data with JSP
- Manage application state with Cookies and Sessions
- and much more …

Overview

- What are Web Applications?
- What are JSP and Servlets?
- What types of apps can you create?

Web Applications

- A web site where the HTML pages are generated dynamically
- Based on the user's actions



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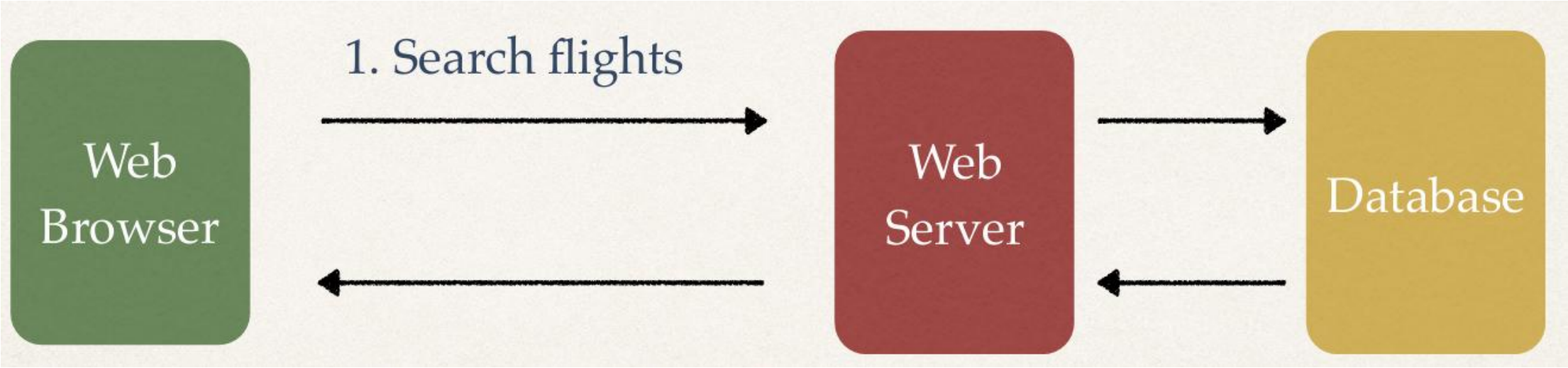

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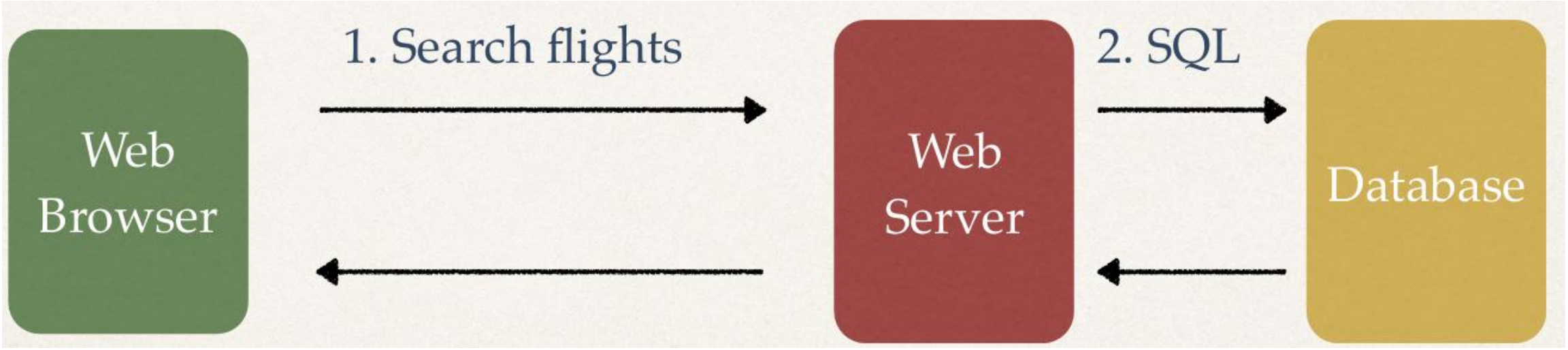

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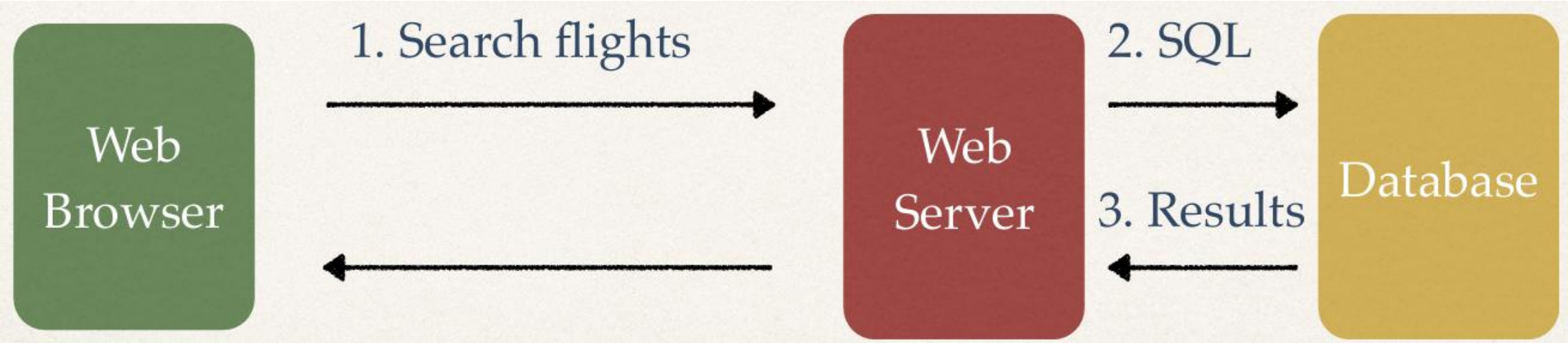

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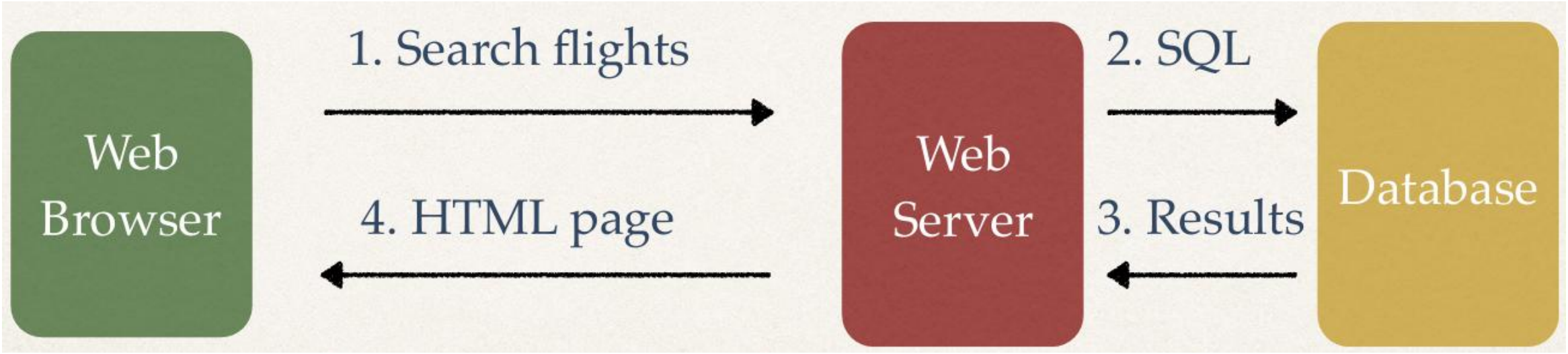
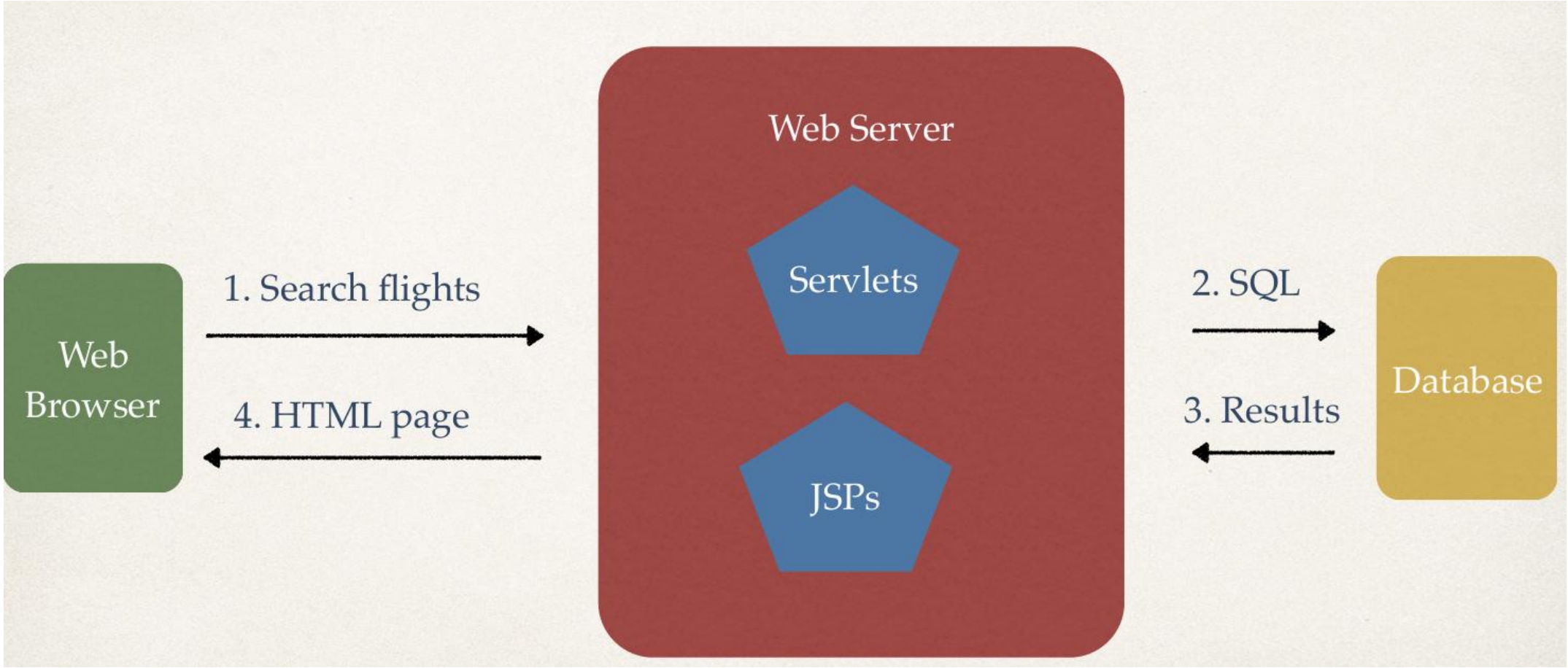


What are JSPs and Servlets?

- Java code that runs on the web server
- Reads user's actions … normally from HTML Form
- Performs the work
- Returns an HTML page that is generated dynamically

What are JSPs and Servlets?



What Types of Web Apps can you create?

- Any industry …
- E-commerce
- Student / Employee Tracking
- Restaurant / Hotel Reservations
- Social Media
- Any type of app … no limits … be creative ☺

Key Building Blocks

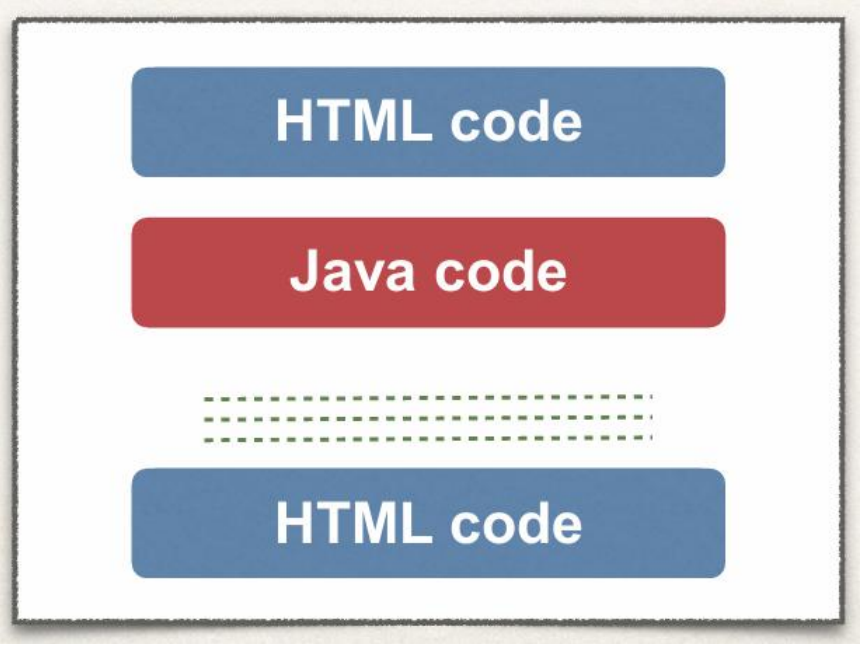
- JSPs and Servlets are key components of the Java Enterprise Edition (Java EE)
- Popular MVC frameworks are actually built on top of JSP and Servlets
  - Spring
  - JSF
  - Struts

Required Software

- JDK
- Apache Tomcat
- IDE (Eclipse)

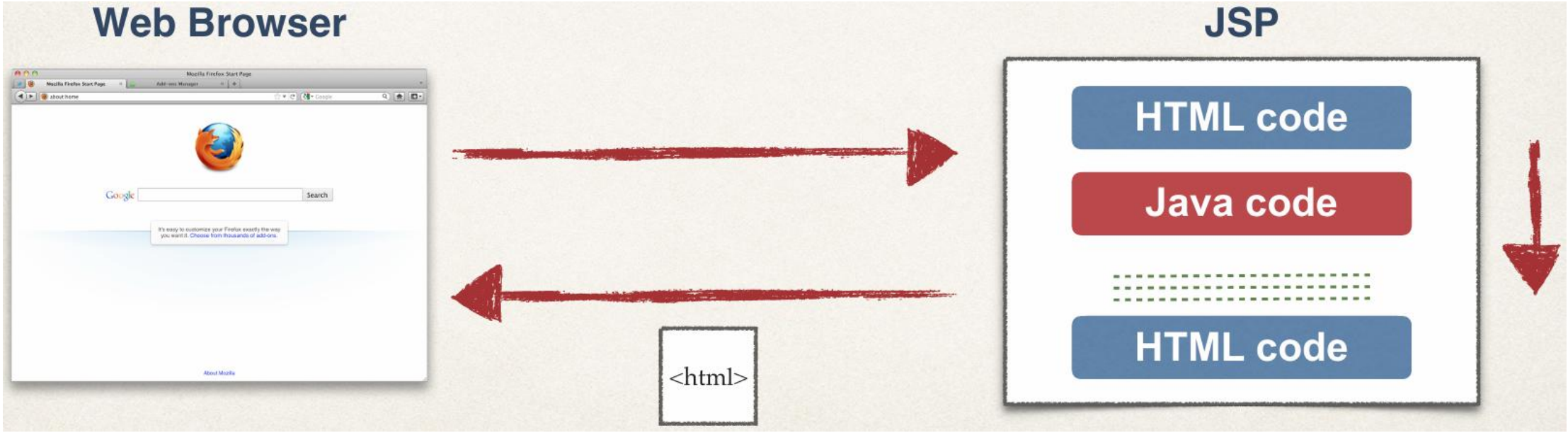
JSP

- An HTML page with some Java code sprinkled in…
- Include dynamic content from Java code



Where is the JSP processed?

- JSP is processed on the server
- Results of Java code included in HTML returned to browser



Where to place JSP file?

- The JSP file goes in your WebContent folder
- Must have .jsp extension

Code

- File: helloworld.jsp

```
<html>
<body>

<h3>Hello World of Java!</h3>

The time on the server is <%= new java.util.Date() %>

</body>
</html>
```

JSP Scripting Elements

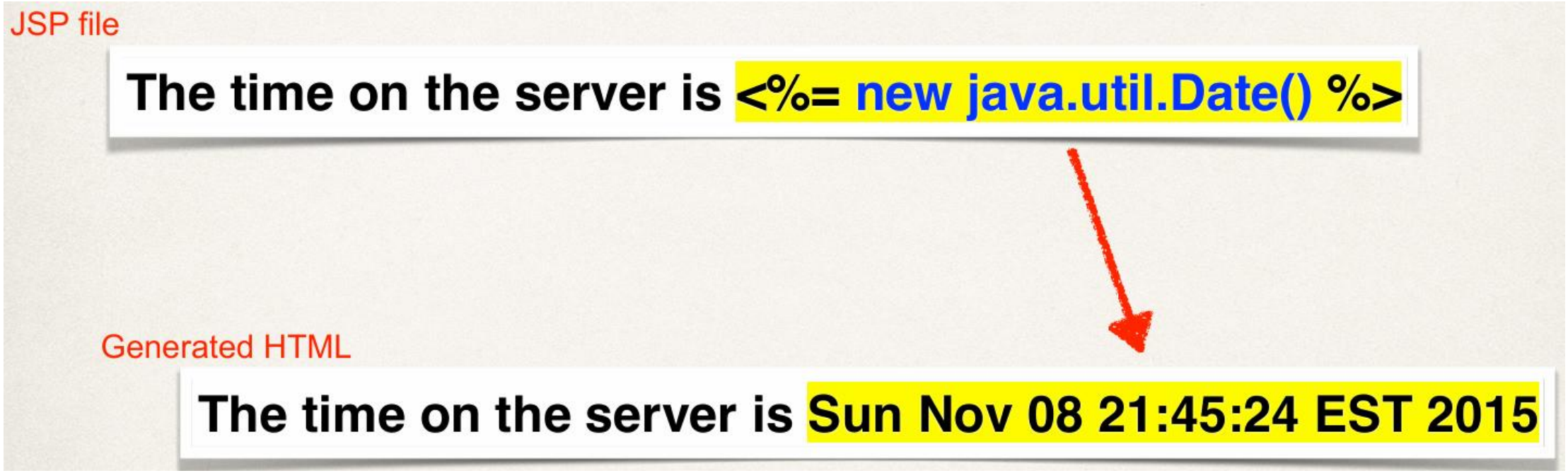
Element	Syntax
JSP Expression	<%= some Java expression %>
JSP Scriptlet	<% some Java code: 1 to many lines %>
JSP Declaration	<%! variable or method declaration %>

JSP Expression

- Compute an expression
- Result is included in HTML returned to browser

```
<%= some Java expression %>
```

JSP Expression - Example



JSP Expression - More Examples

```
Converting a string to uppercase: <%= new String("Hello World").toUpperCase() %>

<br/><br/>

25 multiplied by 4 equals: <%= 25*4 %>

<br/><br/>

Is 75 less than 69? <%= 75 < 69 %>
```

JSP Scriptlets

- Insert 1 to many lines of Java code
- To include content in the page use: out.println(…)

```
<%
  // some lines of Java code
%>
```

JSP Scriptlet - Example

- **Hello World of Java**

- <%
- for (int i=1; I < 5; i++) {
- out.println(“Writing good code: “ + i);
- }
- %>

JSP Scriptlet - Best Practice

- Minimize the amount of scriptlet code in a JSP
- Avoid dumping thousands of lines of code in a JSP
- Refactor this into a separate Java class … make use of MVC

JSP Declarations

- Declare a method in the JSP page
- Call the method in the same JSP page

```
<%!
  // declare a method
%>
```

JSP Declaration - Example

```
<%!
  String makeItLower(String data) {
    return data.toLowerCase();
  }
%>

Lower case "Hello World": <%= makeItLower("Hello World") %>
```

Lower case "Hello World": hello world

JSP Declarations - Best Practice

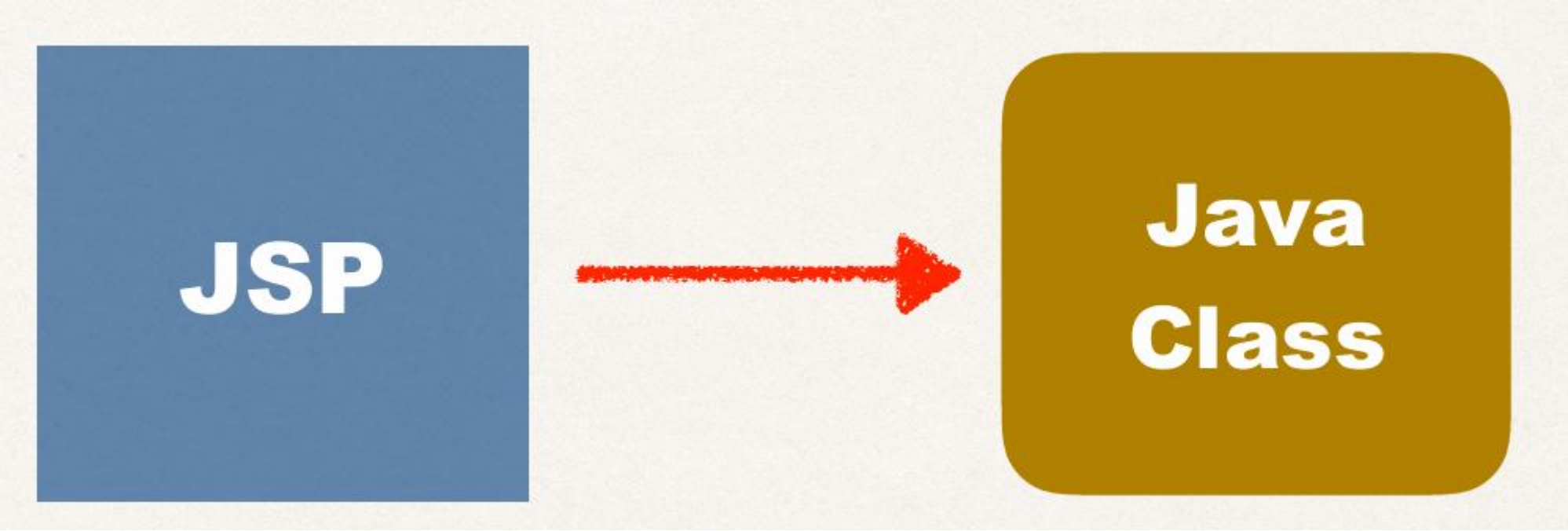
- Minimize the number of declarations in a JSP
- Avoid dumping thousands of lines of code in a JSP
- Refactor this into a separate Java class … make use of MVC

Call Java Class from JSP

JSP - Best Practice

- Minimize the scriptlets and declarations in a JSP
- Avoid dumping thousands of lines of code in a JSP
- Refactor this into a separate Java class … make use of MVC

JSP - Best Practice



To Do List

1. Create Java class

2. Call Java class from JSP

JSP Built-In Server Objects

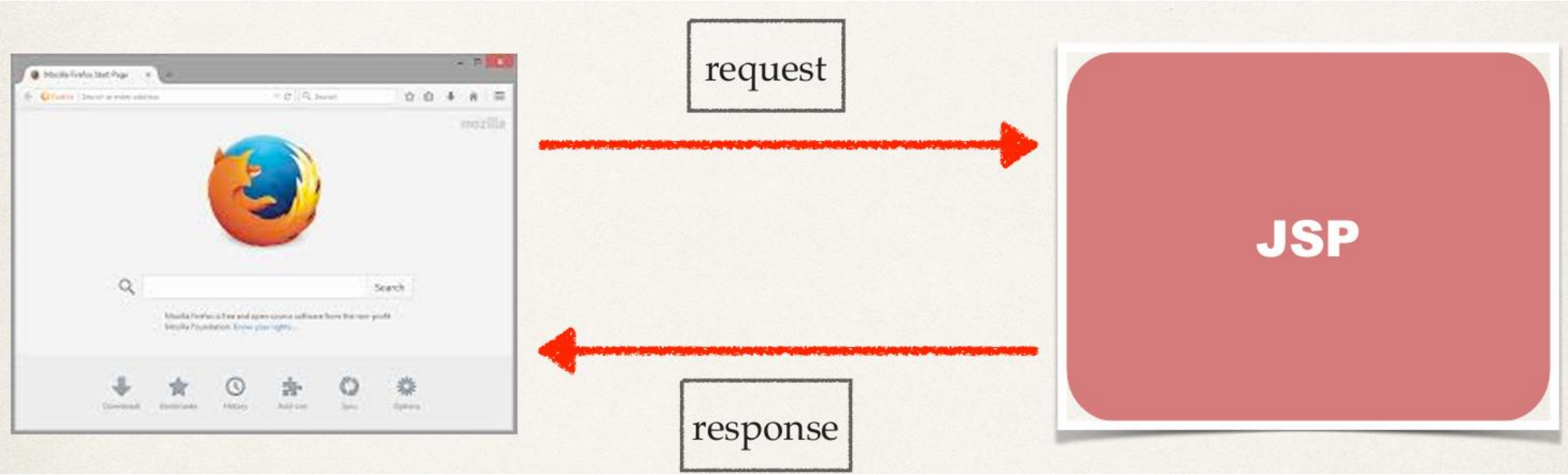
- Given to you for free
- Use them directly in your JSP page

Built-In Server Objects

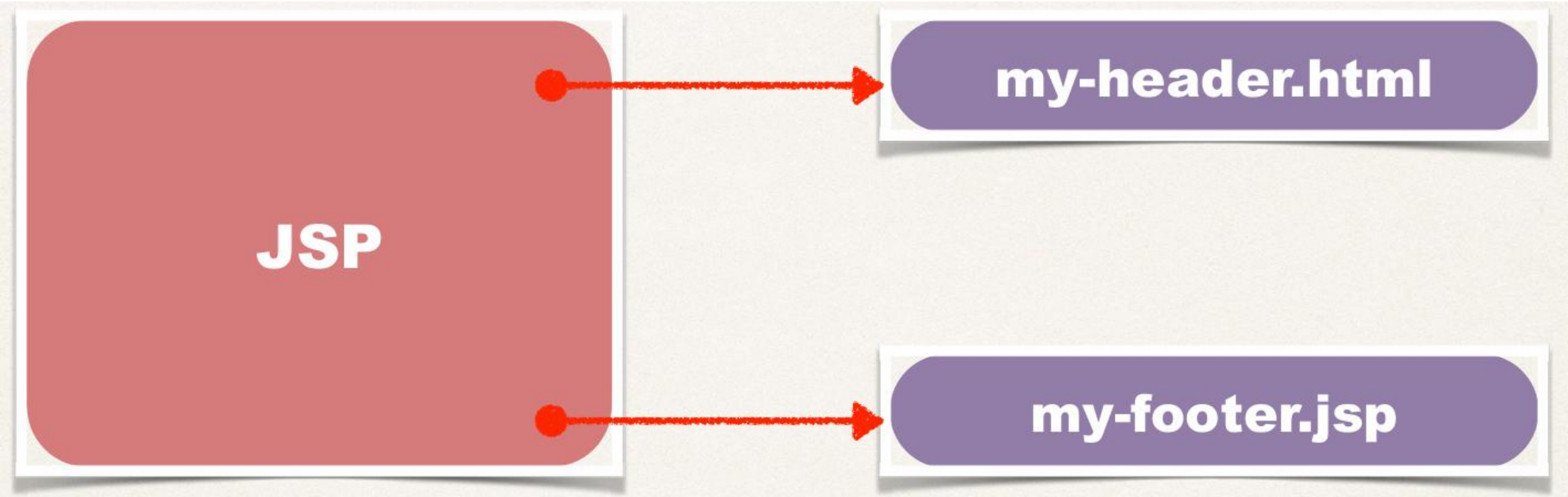
- List of commonly used JSP objects

Object	Description
request	Contains HTTP request headers and form data
response	Provides HTTP support for sending response
out	JspWriter for including content in HTML page
session	Unique session for each user of the web application
application	Shared data for all users of the web application

HTTP Request / Response



Including Files



Including Files

```
<jsp:include page="my-header.html" />
```

```
<jsp:include page="my-footer.jsp" />
```