

# LECTURE 7: CREATE YOUR FIRST INFORMATION SYSTEM

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COMP2004J: Databases and Information Systems

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# HTML BASICS

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# HTML BASICS

- HTML is a language for describing web pages.
- **HTML** stands for **Hyper Text Markup Language**
- HTML is not a programming language, it is a markup language
- A markup language is a set of markup tags
- The purpose of the tags are to describe page content

w3schools.com

(Tutorials and Examples)

<https://www.w3schools.com/>

# HTML Tags

- HTML markup tags are usually called HTML tags
- HTML tags are keywords (tag names) surrounded by angle brackets like <html> <head><body>
- HTML tags normally come in pairs like<b> and </b>
- The first tag in a pair is the start tag, the second tag is the end tag
- The end tag is written like the start tag, with a forward slash before the tag name
- Start and end tags are also called opening tags and closing tags.

# HTML MAIN PART

- The text between <html> and </html> describes the web page
- The <head> elements is a container for metadata
- The following tags describe metadata:<title><style><script><meta><link><base>
- The text between <body> and </body> is the visible page content
- The text between <h1> and </h1> is displayed as a heading
- The text between <p> and </p> is displayed as a paragraph

# HTML MAIN PART

```
<html>
```

```
  <head>
    <title>Comp2004J Page Title </title>
  </head>
```

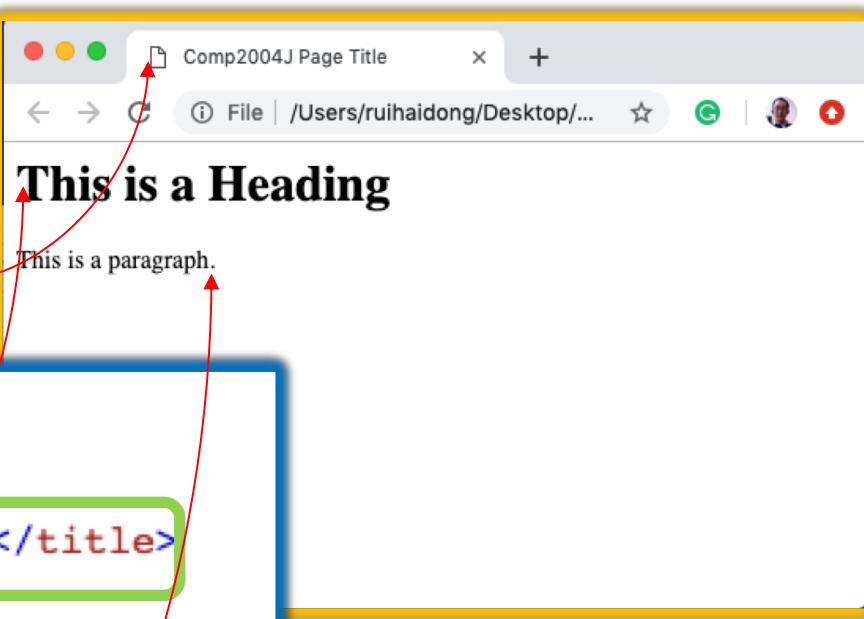
```
  <body>
```

```
    <h1>This is a Heading</h1>
```

```
    <p>This is a paragraph.</p>
```

```
  </body>
```

```
</html>
```



# TAGS AND ATTRIBUTES

Tags are sometimes enhanced by attributes, which are **name value** pairs that modify the tag. For example, the **img** tag (used to embed an image into a page) usually includes the following attributes:

```

```

The **src** attribute describes where the image file can be found.

The **alt** attribute describes text that is displayed if the image is unavailable.

# NESTED TAGS

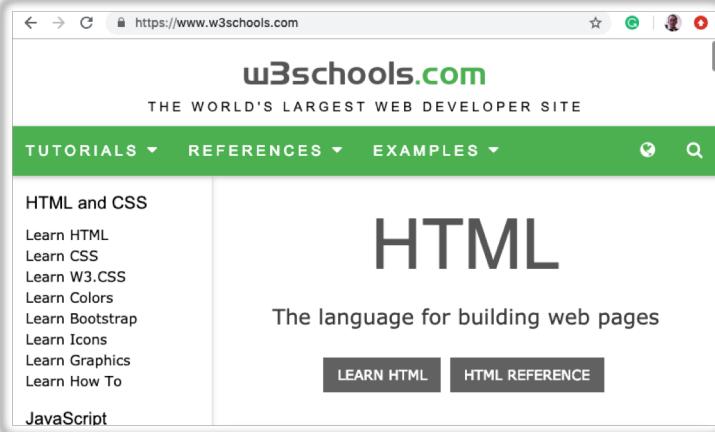
Tags can be (and frequently are) nested inside each other.  
Tags cannot overlap,  
so `<a><b></a></b>` is not legal,  
but `<a><b></b></a>` is fine.

# LINK, BUTTON, LIST

This is a link to w3c

Click me

- Coffee
- Tea
- Milk



```
<body>
  <a href="https://www.w3schools.com">This is a link to w3c </a>
  <hr/>
  <button>Click me</button>
  <ul>
    <li>Coffee</li>
    <li>Tea</li>
    <li>Milk</li>
  </ul>
</body>
```

# HTML FORM

The HTML <form> element defines a form that is used to collect user input

```
<form action="/action_page.php">
  First name:<br>
  <input type="text" name="firstname" value="Mickey">
  <br>
  Last name:<br>
  <input type="text" name="lastname" value="Mouse">
  <br><br>
  <input type="submit" value="Submit">
</form>
```

defines a button for **submitting** the form data to a **form-handler**.

The form-handler is typically a server page with a script for processing input data.

The form-handler is specified in the form's **action** attribute:

First name:  
Mickey

Last name:  
Mouse

Submit

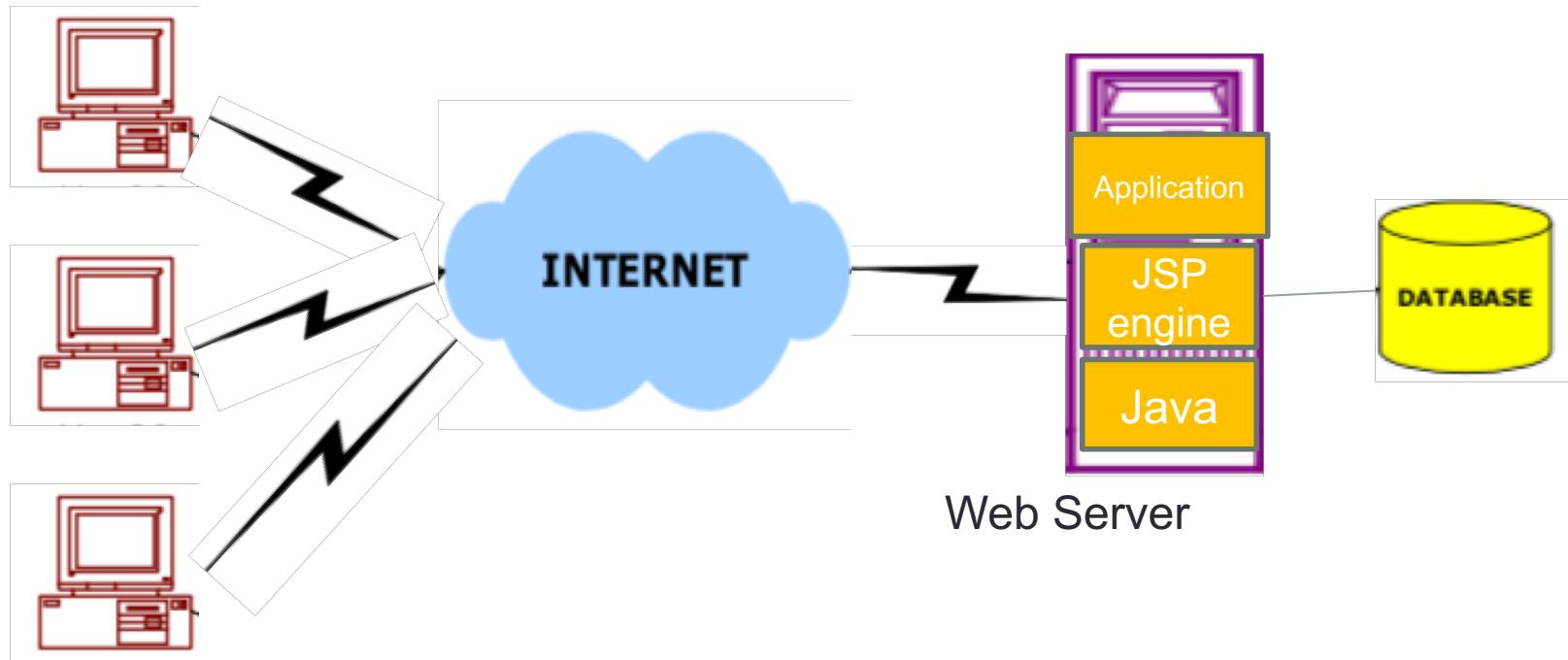
# JAVASERVER PAGES (JSP) BASICS

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# Introduction to JSP

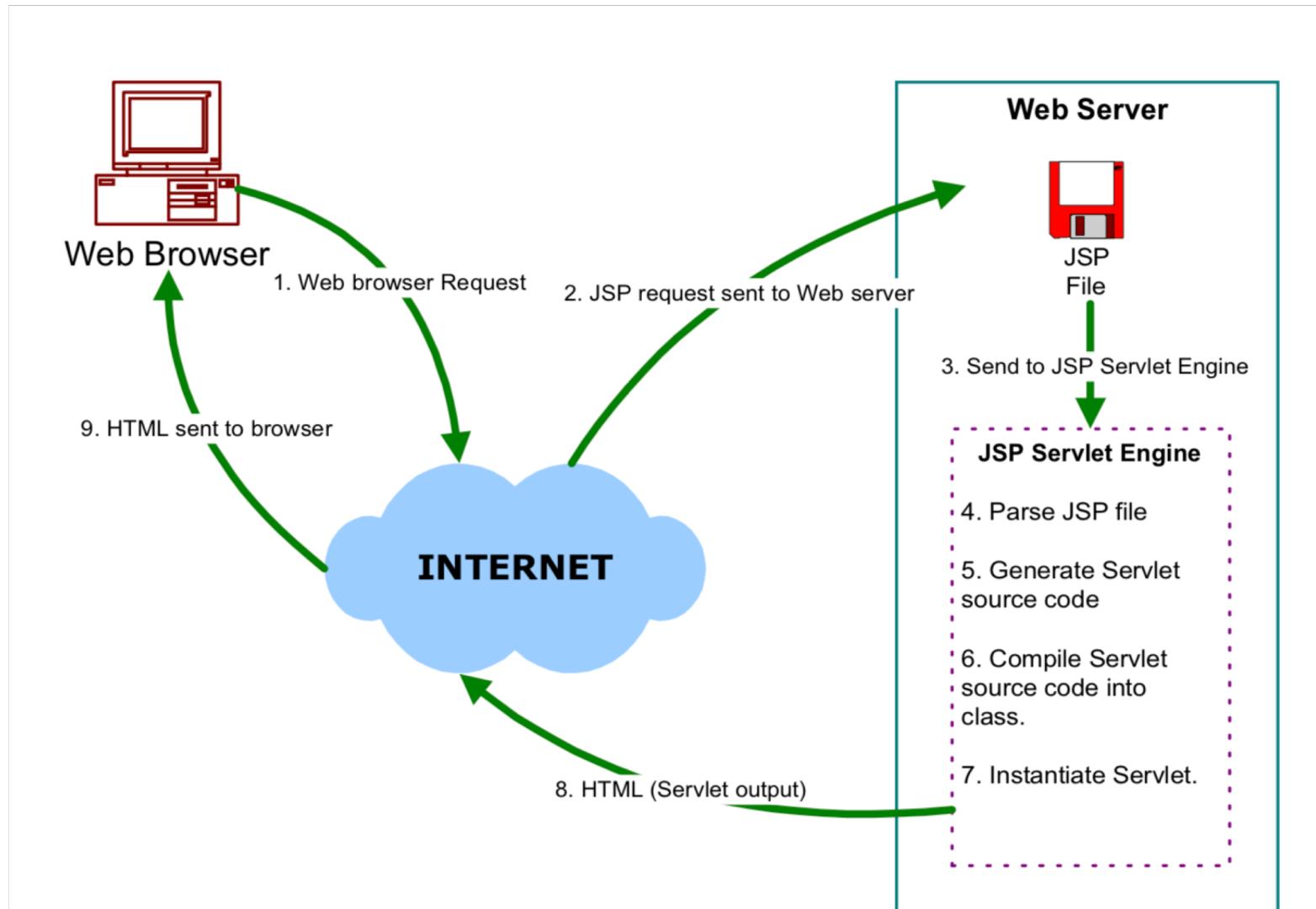
- JavaServer Pages (JSP) is a technology based on the Java language and enables the development of dynamic web sites. JSP was developed by Sun Microsystems to allow server side development. JSP files are HTML files with special Tags containing Java source code that provide the dynamic content.

# Typical Structure



Different clients connecting via the Internet to a Web server.

# JSP Architecture



# Create your first JSP page

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<html>
<head>
<title>My First JSP Page</title>
</head>
<body>
<%
    System.out.println("Hello World");
%>
</body>
</html>
```

# Scriptlet Tag <%...%>

Between <%...%> tags, any valid Java code is called a Scriptlet.

```
<%
    String username = "ruihai";
    System.out.println(username);
%>
```

# Expression Tag <%=...%>

This tag allows the developer to embed any Java expression and is short for `out.println()`.

A semicolon (;) does not appear at the end of the code inside the tag.

For example, to show the current date and time.

Date: <%=new Java.util.Date()%>



# Directive Tag <%@ directive ...%>

A JSP directive gives special information about the page to the JSP engine.

There are three main types of directives:

- 1) **Page - processing information for this page.**
- 2) **Include – files to be included.**
- 3) Tag library – tag library to be used in this page.

## Page Directive

language	Which language the file uses.	<%@ page language="java" %>
import	Import the classes used in the JSP	<%@ page import="java.util.*" %>

## Include directive

Allows a JSP developer to include contents of a file inside another. Typically include files are used for navigation, headers and footers that are common to multiple pages.

```
<%@ include file="footer.html"%>
```

# Implicit Objects

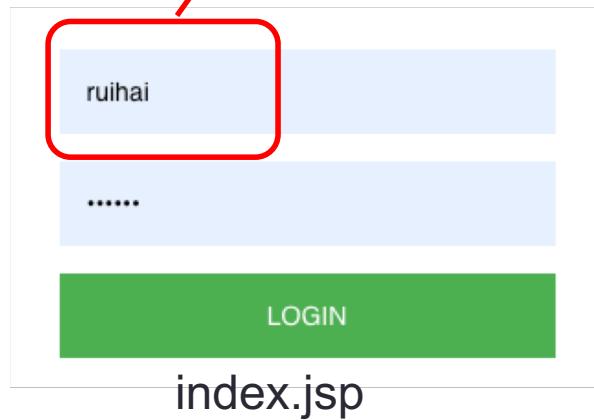
There are several objects that are automatically available in JSP called implicit objects.

Variable	Type
<b>request</b>	javax.servlet.http.HttpServletRequest
<b>response</b>	javax.servlet.http.HttpServletResponse
<b>out</b>	javax.servlet.http.JspWriter
<b>session</b>	javax.servlet.http.HttpSession
pageContent	javax.servlet.jsp.PageContext
application	javax.servlet.ServletContext
config	javax.servlet.ServletConfig
page	java.lang.Object
exception	java.lang.Throwable

# request

Access to information associated with a request. This object is normally used in looking up parameter values and cookies.

```
<%  
    String username = request.getParameter("username");  
%>
```



# session

A session object uses a key/value combination to store information.

## To set a session key with a value

```
<%
    session.setAttribute("user", u);
%>
```

## To retrieve information from a session

```
<%
    User u2 = (User)session.getAttribute("user");
%>
```

The return type of the method `getAttribute` is `Object`, so you will need to typecast to get the required value. If there is not a session key with that name, a null is returned.

# response

The response object can be used to add or manipulate response such as redirect response to another resource, send error etc.

For example, we can redirect the response to the employeeList.jsp

```
<%  
    response.sendRedirect("employeeList.jsp");  
%>
```

# out

The out object is used to write a message or a value to be displayed in the web page sent back to the client.

```
<%
    String xyz = "ruihai";
%>
```

```
<%
    out.println(xyz);
%>
```

```
<%=xyz%>
```

# HTML and JSP Comments

## **HTML comments**

```
<!-- This is HTML comment – visible in the page source-->
```

## **JSP comments**

```
<%-- This is JSP comment – not visible in the page source--%>
```

JSP comments are never send to the user's browser. HTML comments are visible in the page source.

# HANDS-ON YOUR FIRST INFORMATION SYSTEM

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# TOMCAT

<https://tomcat.apache.org/>

The screenshot shows the Apache Tomcat homepage at https://tomcat.apache.org/. The page features a yellow cat logo, the text "Apache Tomcat®", and the Apache Software Foundation logo. A search bar and navigation links are on the left. The main content area has a red box around the "Download" section, which includes links for "Which version?" and "Tomcat 9". Another red box surrounds the "Documentation" section, which lists "Tomcat 9.0" and "Tomcat 8.5". An arrow points from the "Documentation" box to the "Tomcat 8.5" link. The right side of the page contains an introduction to Tomcat 8.5, a list of changes, and a changelog link. The date "2019-03-19" is visible in the top right corner.

Apache Tomcat

Search... GO

Apache Tomcat®

SUPPORT APACHE THE APACHE SOFTWARE FOUNDATION

**Apache Tomcat**

The Apache Tomcat® software is an open source implementation of the Java Servlet, JavaServer Pages, Java Expression Language and Java WebSocket technologies. The Java Servlet, JavaServer Pages, Java Expression Language and Java WebSocket specifications are developed under the [Java Community Process](#).

The Apache Tomcat software is developed in an open and participatory environment and released under the [Apache License version 2](#). The Apache Tomcat project is intended to be a collaboration of the best-of-breed developers from around the world. We invite you to participate in this open development project. To learn more about getting involved, [click here](#).

Apache Tomcat software powers numerous large-scale, mission-critical web applications across a diverse range of industries and organizations. Some of these users and their stories are listed on the [PoweredBy](#) wiki page.

Apache Tomcat, Tomcat, Apache, the Apache feather, and the Apache Tomcat project logo are trademarks of the Apache Software Foundation.

**Tomcat**

Tomcat 8.5.x replaces 8.0.x and includes new features: comparison between 8.5.x and 8.0.x. The notable changes remain unchanged. The notable changes NIO2 already support this)

1. [Introduction](#) - A brief, high level, overview of /

2. [Setup](#) - How to install and run Apache Tomcat

3. [First web application](#) - An introduction to the

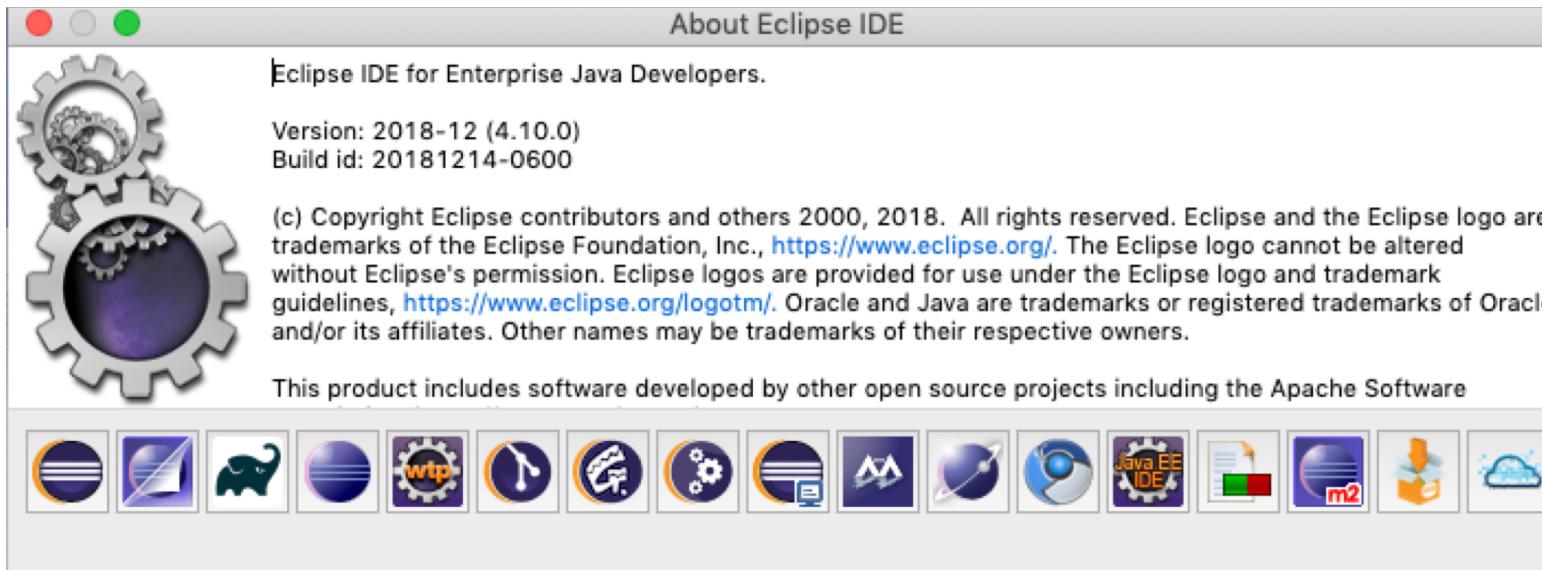
Full details of these changes, and all the other changes, are available in the [Tomcat 8.5 changelog](#).

[Download](#)

**Tomcat 9.0.17 Released**

2019-03-18

# Eclipse with Tomcat



<https://www.eclipse.org/downloads/packages/>

## To establish Tomcat integration in Eclipse:

<https://help.eclipse.org/luna/index.jsp?topic=%2Forg.eclipse.stardust.docs.wst%2Fhtml%2Fwst-integration%2Fdynamic-web-proj.html>

# Your First Information System

