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Introduction to Servlet & JSP

Krerik Piromsopa.

Department of Computer Engineering.

Chulalongkorn University

Krerik Piromsopa.

Servlet & JSP

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Servlet Technology

- JAVA APPLETs run on client side (in web browsers) or writing Internet applications.
- JAVA SERVLETs run on server side for web-based application. (No GUI is required)
- JAVA have built-in support for multithread.
- Servlet API is Standard Java Extension API, (NOT part of core Java) and available as add-on package.

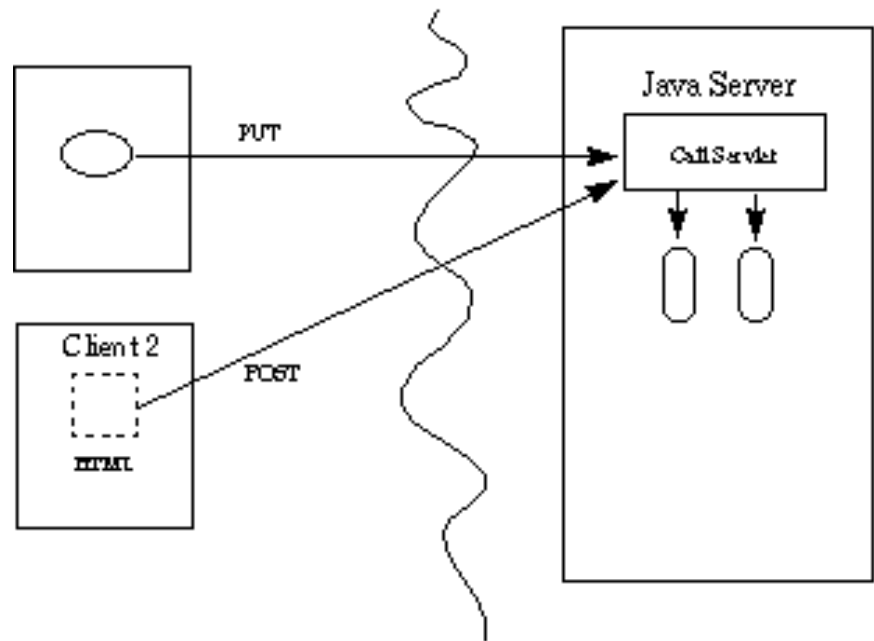


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Servlets Overview

- Protocol and Platform-independent server side Java components
- Clients may range from simple HTML forms to Java applets.
- Used as middle tiers for distributed application systems.



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Applications & Usage Modes.

- Database Connection.
- Synchronization (On-line conferencing)
- Virtual Server management
- etc.
- Filter chains of Servers.
- HTTP
- CGI replacement
- Server side include



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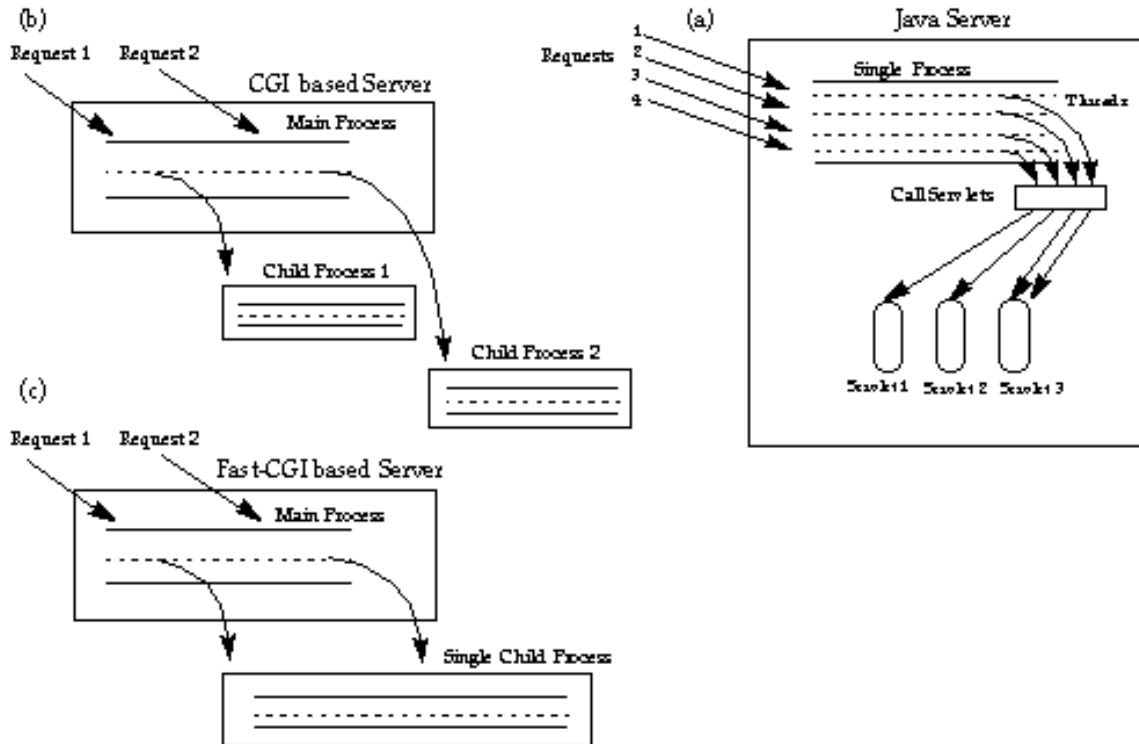
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Security.

- Rely on HTTP-specific authentication
- Secure Socket Layer (SSL)
- Java advantage: no memory access violations, strong typing violations. (Servlet will not crash servers.)
- Security Manager. Only trusted servlets will be allow to access network services or local files.
- Support fine grained access control (more secure than MS. ActiveX.)



Performance



Servlet run as light weight thread in process.

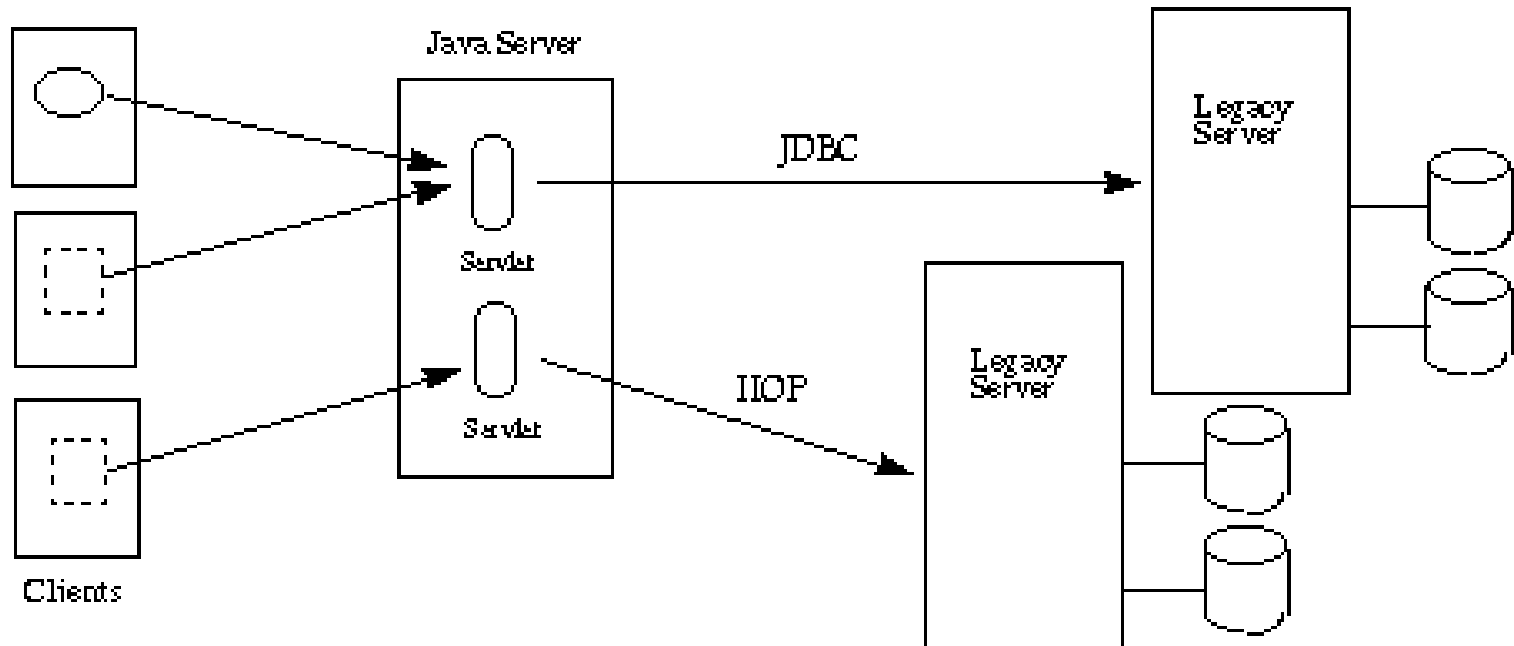
CGI run as heavy weight process.



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Three Tier Applications.



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Sample Servlet

Hello World!

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class HelloWorld extends
    HttpServlet {

    public void doGet(HttpServletRequest
        request, HttpServletResponse
        response)
        throws IOException, ServletException
    {
        response.setContentType("text/html");
```

```
        PrintWriter out = response.getWriter();
        out.println("<html>");
        out.println("<body>");
        out.println("<head>");
        out.println("<title>Hello
            World!</title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>Hello World!</h1>");
        out.println("</body>");
        out.println("</html>");
    }
```

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JavaServer Pages VS. Servlets.

- Dynamic Page require for.
 - Working on any web or application server
 - Separating the application logic from the appearance of the page
 - Allowing fast development and testing
 - Simplifying the process of developing interactive web-based applications
- JSP is a new approach to fit this need.
- Servlet ,to turn page, have to edit and recompile.



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JavaServer Pages Approach.

- Separating content generation from presentation
- Emphasizing reusable components
- Simplifying page development with tags

- Java Technology benefits (memory management and security).
- Scalability (integrated with J2EE)



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JSP Example.

```
<HTML>
<%@ page language=="java" imports=="com.wombat.JSP.*" %>
<H1>Welcome</H1>
<P>Today is </P>
<jsp:useBean id=="clock" class=="calendar.jspCalendar" />
<UL>
<LI>Day: <%=clock.getDayOfMonth() %>
<LI>Year: <%=clock.getYear() %>
</UL>
<% if (Calendar.getInstance().get(Calendar.AM_PM) == Calendar.AM) { %>
Good Morning
<% } else { %>
Good Afternoon
<% } %>
<%@ include file=="copyright.html" %>
</HTML>
```

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JSP components.

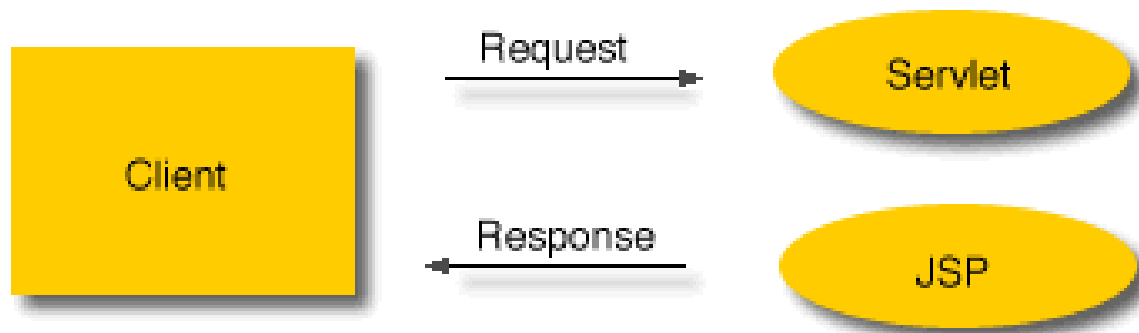
- JSP Directives
 - `<%@ %>`
- JSP Tags
 - `<jsp:useBean ... />`
 - `<jsp:setProperty ... />`
 - `<jsp:getProperty ... />`
 - `<jsp:include ... />`
 - `<jsp:forward ... />`
- JSP expression
 - `<%= ... %>`
- Scripting Elements (scriptlet)
 - `<% ... %>`

Application Model

- Simple Application



- Flexible Application with Java Servlets



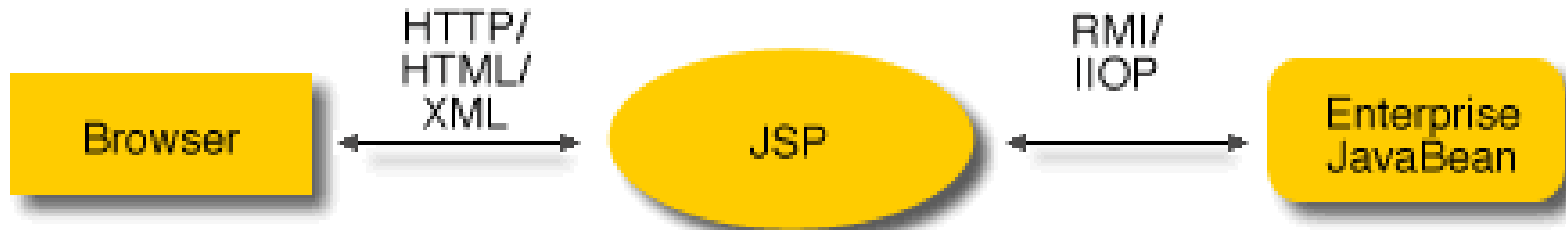


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Application Model (Continue)

- Scalable Processing with Enterprise JavaBeans Technology.





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References

- “JAVASERVER PAGES WHITE PAPER,”
<http://java.sun.com/products/jsp/whitepaper.html>
- “JAVA SERVLET TECHNOLOGY,”
<http://java.sun.com/products/servlet/whitepaper.html>