Servlet basics

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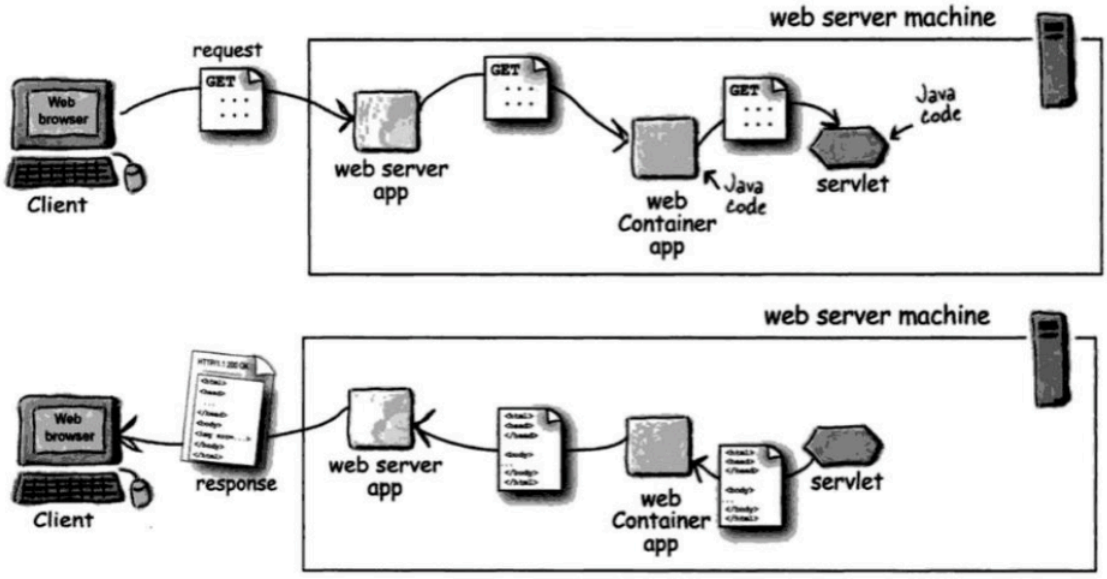
Agenda

1. Container
2. Servlet
3. Story: build a site
4. Demo
5. Notes

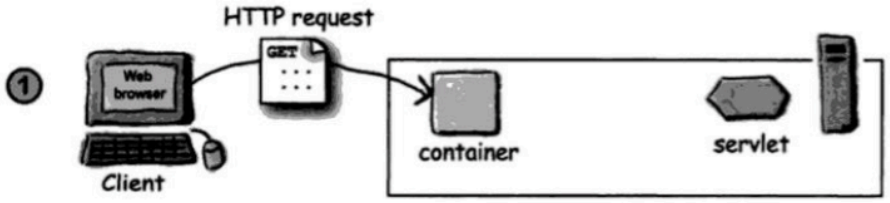
1.1 What is a container?



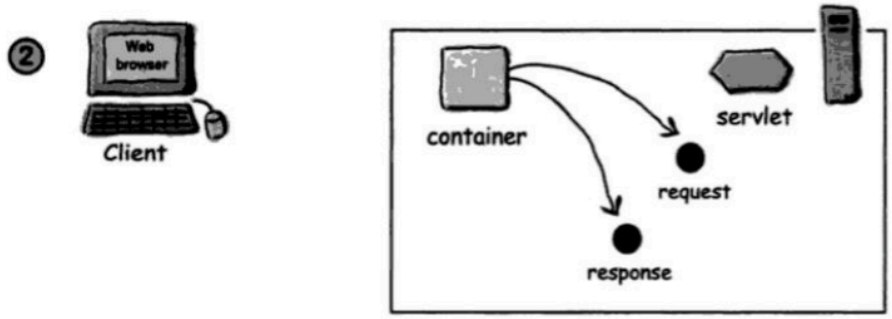
1.2 What does the Container give you?

- Communicate support
- Lifecycle management
- Multithreading support
- Declarative security
- JSP support

1.3 How the Container handles a request



User clicks a link that has a URL to a servlet instead of a static page.

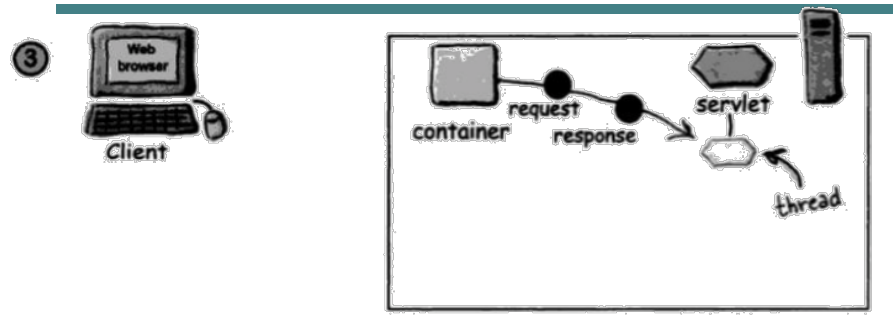


The container "sees" that the request is for a servlet, so the container creates two objects:

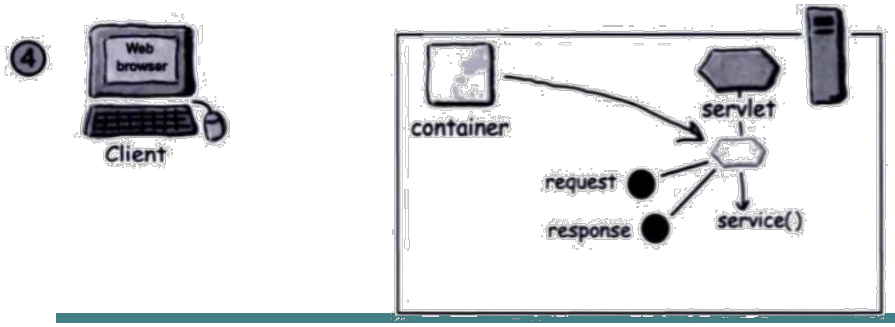
1) HttpServletResponse

2) HttpServletRequest

1.3 How the Container handles a request



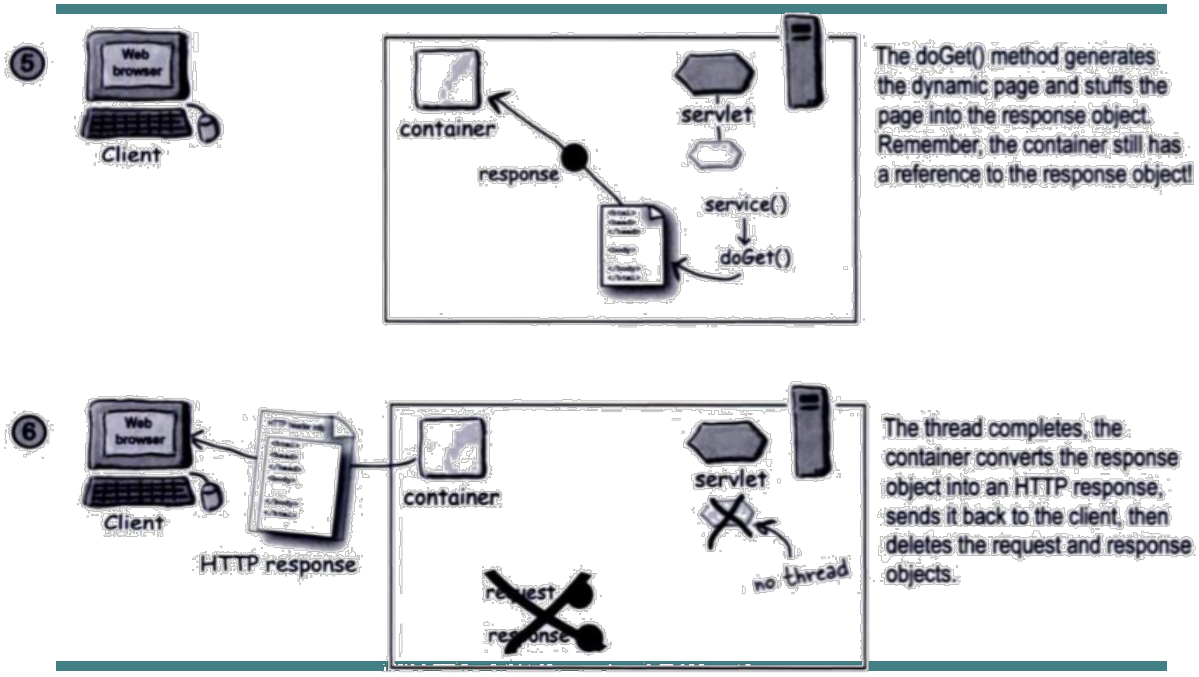
The container finds the correct servlet based on the URL in the request, creates or allocates a thread for that request, and passes the request and response objects to the servlet thread.



The container calls the servlet's service() method. Depending on the type of request, the service() method calls either the doGet() or doPost() method.

For this example, we'll assume the request was an HTTP GET.

1.3 How the Container handles a request



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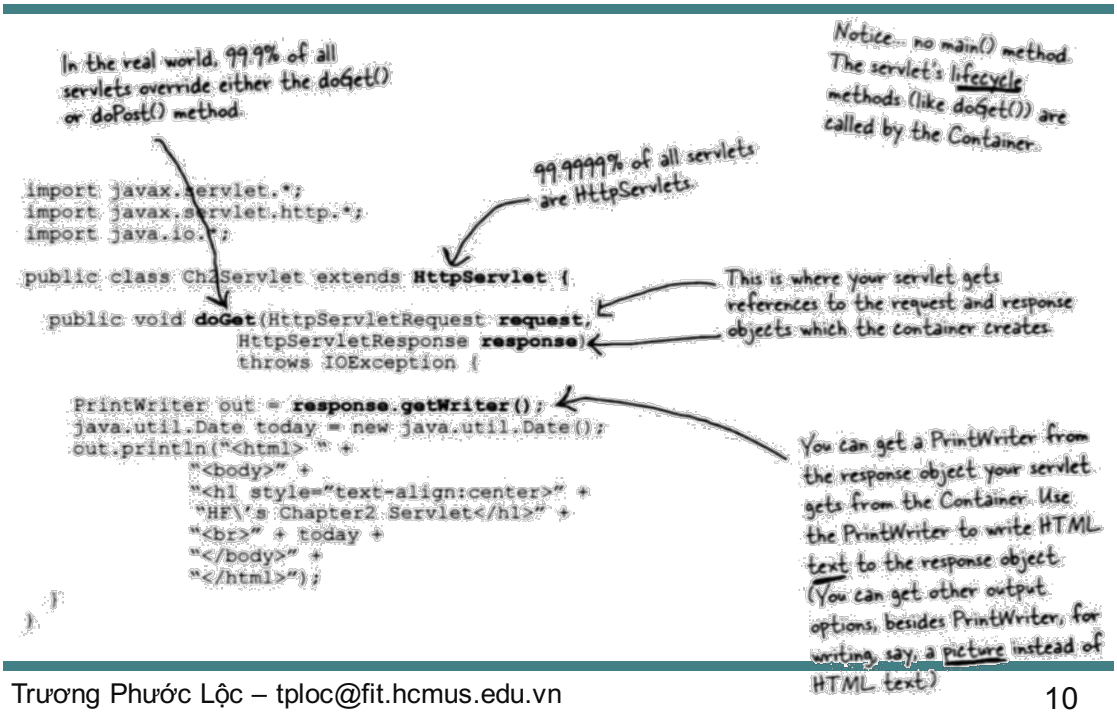
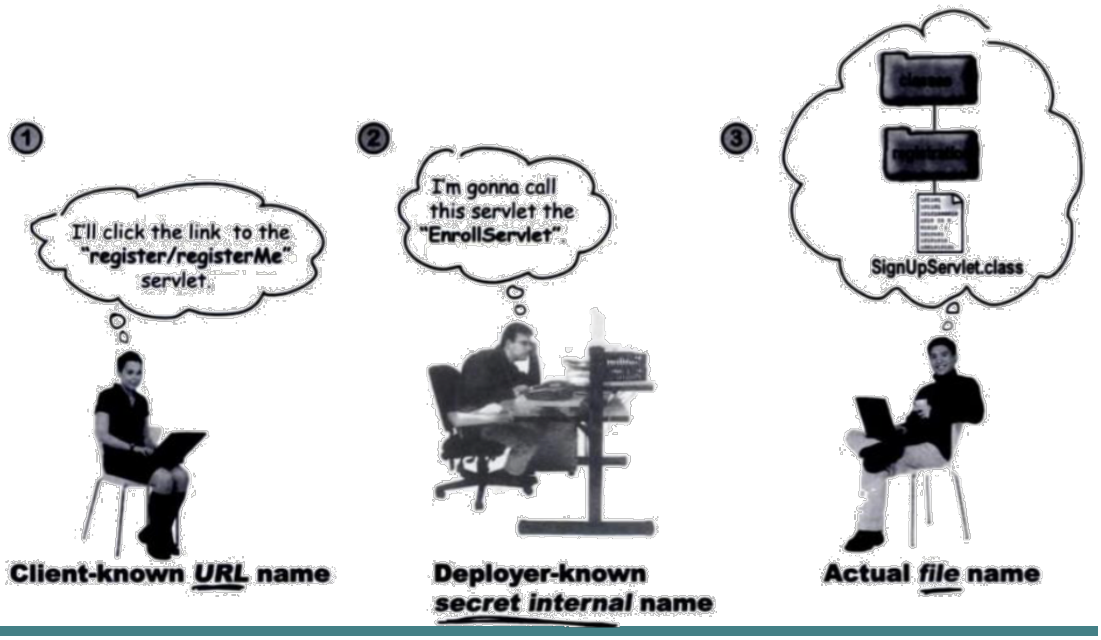
2. Servlet

- **Servlets** provide a component-based, platform-independent method for building Web-based applications.
- **Servlets** have access to the **entire family of Java APIs**, including the JDBC API to access enterprise databases

2.1 How it looks in code



2.2 A servlet can have THREE names



2.2 A servlet can have THREE names

1. **<servlet>**
   maps internal name to fully-qualified class name
2. **<servlet-mapping>**
   maps internal name to public URL name

This web app has two servlets.

There is a LOT more that goes into this opening <web-app> tag, but we don't want to show it right now (there's an example at the end of this chapter).

<web-app ...>

The <servlet-name> element is used to tie a <servlet> element to a specific <servlet-mapping> element. The end-user NEVER sees this name; it's used only in other parts of the DD.

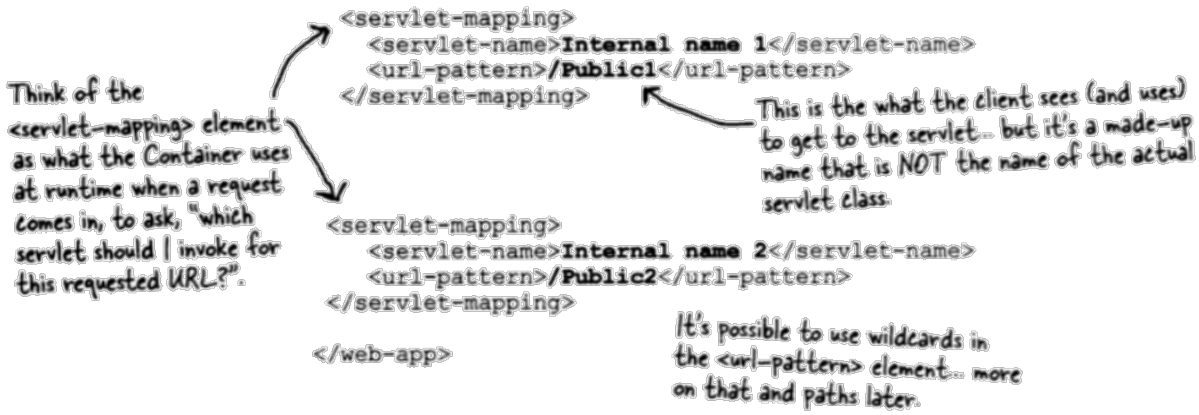
The <servlet> element tells the Container which class files belong to a particular web application.

```
<servlet>
  <servlet-name>Internal name 1</servlet-name>
  <servlet-class>foo.Servlet1</servlet-class>
</servlet>

<servlet>
  <servlet-name>Internal name 2</servlet-name>
  <servlet-class>foo.Servlet2</servlet-class>
</servlet>
```

You put in the fully-qualified name of the class (but you don't add the ".class" extension).

2.2 A servlet can have THREE names



2.3 Parameters

- String str = request.getParameter(“nameInput”)
- String []s = request.getParameterValues(“NameInput”)
- Map<String, String[]> m = request.getParameterMap()
- Enumeration<String> e = request.getParameterNames()

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3. Bob builds a Matchmaking Site

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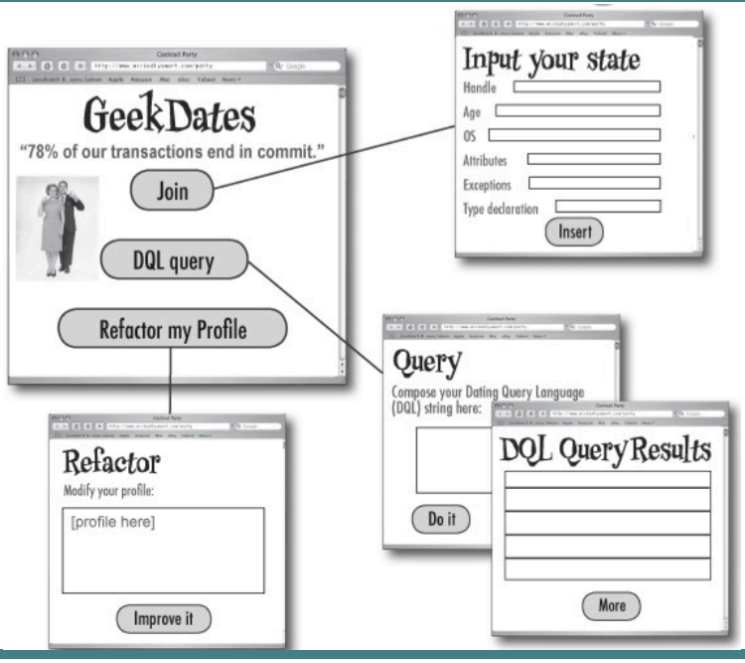
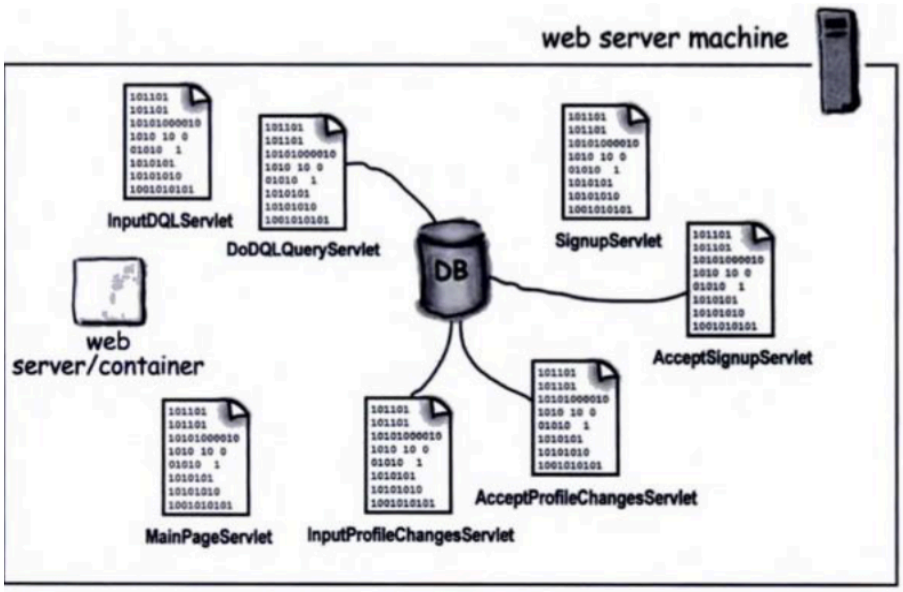


3. … one for each page

```
// import statements

public class DatingServlet extends HttpServlet {

  public void doGet(HttpServletRequest request,
                    HttpServletResponse response)
                    throws IOException {

    // business logic goes here, depending
    // on what this servlet is supposed to do
    // (write to the database, do the query, etc.)

    PrintWriter out = response.getWriter();

    // compose the dynamic HTML page
    out.println( "something really ugly goes here");
  }
}
```

3. …



The servlet does whatever it needs to do to process the request (like insert or search the database) and returns the HTML page in the HTTP response.

All of the business logic AND the client HTML page response is inside the servlet code.

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5.1 The deployment descriptor (DD)

The deployment descriptor (DD), provides a "declarative" mechanism for customizing your web applications without touching source code!

DD Benefits

- Minimizes touching source code that has already been tested.
- Lets you fine tune your app's capabilities, even if you don't *have* the source code.
- Lets you adapt your application to different resources (like databases), without having to recompile and test any code.
- Makes it easier for you to maintain dynamic security info like access control lists and security roles.
- Lets non-programmers modify and deploy your web applications while *you* can focus on the more interesting things. Like how appropriate your wardrobe isn't for a trip to Hawaii.

5.2 Servlet

- Form Data
- Client request
- Server response
- Filters
- Exceptions
- Cookies
- Session
- Database
- …

Hỏi đáp

Tài liệu tham khảo

- Tài liệu giảng dạy – ThS. Nguyễn Hoàng Anh, ĐH. Khoa học tự nhiên
- http://www.tutorialspoint.com/servlets/