

CS320 Web and Internet Programming

Introduction to Java Servlets

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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 ServletException, IOException
    {
        PrintWriter out = response.getWriter();
        out.println( "Hello World" );
    }
}
```

Some Simple Observations

- ◆ Inherits from `HttpServlet`
- ◆ There's no `main()` method
 - Who "runs" `HelloWorld`?
- ◆ `doGet()`
 - `HttpServletRequest`
 - `HttpServletResponse` → sent back to the client browser

Compilation – The Hard Way

- ◆ `javac HelloWorld.java`
 - Where is the servlet library?
 - How to include it in compilation?
- ◆ Copy `HelloWorld.class` to the right directory

Compilation – The Slightly Smarter Way

- ◆ Set environment variable
 - `.bashrc`
- ◆ Use `-d` option of `javac`

Generate HTML

- ◆ Set content type to "text/html"
- ◆ Output a HTML page using `println()`
 - `<html>`
 - `<head>`, `<title>`
 - `<body>`
- ◆ Validate
 - `validator.w3c.org`
 - Sometimes useful for debugging

Package

- ◆ The advantages of using packages
- ◆ The necessity of using packages
 - A Class without a package qualifier cannot be used in a class that belongs to a package (enforced in JDK 1.4)
 - All servlets generated from JSPs are in packages

Package Example

- ◆ Package and directory structure
 - cs320.stu31.HelloWorld
- ◆ package statement
- ◆ URL to access a packaged servlet

Servlet Life Cycle

- ◆ Loaded for the first time – `init()`
- ◆ Per request – `service()`
 - dispatch to `doXxx()`
- ◆ Unloaded – `destroy()`
 - When requested by the admin or manager user
 - When the servlet is idle for a long time

I/O Re-examined

- ◆ Java application
 - Input
 - Console, GUI
 - File
 - CLP, Resource
 - Output
 - Console, GUI
 - File
- ◆ Servlet
 - Input ??
 - Output ??

File I/O Example

- ◆ Read `numbers1.txt` and `number2.txt`
- ◆ Display the numbers that appear in both files in a HTML table
 - `<table>`
 - `<tr>`
 - `<td>`

More About Files

- ◆ Paths
 - Absolute path
 - Relative path
 - *File path on the CS server??*
- ◆ Permissions
 - Who owns the file?
 - Who can read/write the file?

Servlet Debugging Tips

◆ Debugging servlets could be rather hard

◆ Section 3.8

- Use print statements
- Invest some time in a good IDE
 - ◆ Netbeans - <http://www.netbeans.org/>
 - ◆ Eclipse (WTP) - <http://www.eclipse.org/>
- Follow good programming practice
- Check out HTML source
- Restart server