Off Topic

• Dorkbot DC is a monthly meeting of artists, designers, engineers, and others in the DC area who are interested in electronic art and physical computing in their broadest sense.

• Next Thursday, 4 February 2010, 7:00 PM - 9:00 PM (ET)

• at HacDC, DC's Hacker Space, 1525 Newton St NW, Washington DC 20010

• http://dorkbot.org/dorkbotdc/
CMSC 433
Programming Language Paradigms and Technologies
William Pugh

HTTP and Servlets
Jan 28th, 2010
Logistics

• Today’s cookies full
  • Cookie time added tomorrow at 1pm
• Waitlist? See me if unresolved
• Not on grades.cs.umd.edu? See/email me
• Only 36 responses to survey
Office hours

• Starting with:
  • Bill
    • Monday 11am-noon
    • Tuesday Thursday, 1:45-2:15pm
  • John

• Follow up survey: if those times are bad for you, fill out supplemental survey today and we’ll try to make sure you get covered. We’ll add more times tomorrow morning.
Project 1

• Due Tuesday, 11:59pm

• Checkout projects/AppEngine from course CVS repository

• Deploy sample guestbook application from Google’s java app engine documentation

• Add URL for your guestbook to spreadsheet

• Submit project
Course CVS repository

- get course account from grades.cs.umd.edu
- cs4330xx

- Create CVS repository in Eclipse
  - use /afs/csic/users/pugh/cs433/cs4330xx as repository root
  - with account and password from grades
  - connection type: extssh
Useful

• Right click on AppEngine/war/WEB-INF/lib
• Select Team -> Revert to Base
• For some reason, CVS thinks checkout changes the jar files
• Saves you having to send them back
Starting point

• Has only a hello world servlet, in package cmsc433.p1

• Package names aren’t the same as in the tutorial
  • encourage you to stick with cmsc433.p1, make you realize all the places where package names need to go
But all you need

• deploy the guestbook
• no need to guard against security problems
• record guestbook URL in form
• submit project
You may play with it

- Don’t have to match the functionality exactly
- We’ll just try using it
- Record and display entries and authors
Background

- You should already understand:
  - domain names
  - DNS
  - IP address
  - port
  - TCP socket

- If you don’t, I apologize on behalf of the CS department
- catch up on your own
Be the web browser

katydin:~ pugh$ telnet www.cs.umd.edu 80

Trying 128.8.127.3...


Escape character is '^]'.

GET / HTTP/1.0

HTTP/1.1 200 OK

Date: Thu, 28 Jan 2010 02:36:28 GMT

Server: Apache

Accept-Ranges: bytes
Be the web browser

- Connecting via Java
- See demos/BakeYourOwnWebServer in your CVS repository
HTTP protocol

• to get http://www.foo.com:8080/bar/baz.html
• connect to port 8080 at www.foo.com
• send: GET /bar/baz.html HTTP/1.0
• followed by a blank line
HTTP requests

- HTTP defines many request types.
- 99.99+% of ones seen in practice are GET, POST, or HEAD
HTTP GET requests

• All request parameters encoded in URL and first line of HTTP request
• GET requests can be bookmarked
• GET requests should not change state
  • should not buy anything
HTTP HEAD requests

• Like GET requests, except that only HTTP headers are returned

• no content
HTTP POST

• parameters encoded after all of the http headers
• handles big parameters (e.g., file uploads)
• may change state
• can’t be bookmarked
• if you hit “Back” or “Reload” in your browser, and you get a warning “Do you want to send a form again”
• it was a POST request
HTTP, continued

- request consists of a series of HTTP headers
  - followed by a blank line
  - followed, optionally, by content for a PUT request
Servlets and web containers

- Get used to editing XML and indirection
- war/ is the root directory for web content
- war/WEB-INF contains meta information
- war/WEB-INF/web.xml contains mapping from URL’s to servlet names and from servlet names to classnames
HttpServlet

public void doGet(HttpServletRequest req,
                  HttpServletResponse resp)
  throws IOException { … }

public void doPost(HttpServletRequest req,
                  HttpServletResponse resp)
  throws IOException { … }
HttpServletRequest

- Contains everything about the request from the user
HttpServletResponse

• Used to generate a response
• set content type, content, status code
javax.servlet.Filter

public void doFilter(
    ServletRequest req,
    ServletResponse response,
    FilterChain chain)
    throws IOException, ServletException {
    … }

• By editing web.xml, can have a filter applied to a range of requests (including all of them)

• Can do some checking, logging, set up response

  • must then chain request to get to other filters and final destination (servlet, jsp or html)
ServletRequest vs HttpServletRequest

• Filters are designed to handle more than just http
  • thus, the parameters are not http specific
  • But often, you just want methods only available in http versions

• What do you do?
  • Just cast and assume will only see http requests?
    • will get runtime exception if you see non http
OK,