

Network Protocols

Or: Webservers Don't Speak English

Colin Gordon
csgordon@cs.washington.edu

University of Washington

CSE333 Section 8, 5/19/11



What's a Network Protocol?

- A standardized way for two computers to talk to each other
- At a low level:
 - ▶ A common transport medium
 - ▶ Common message formats
 - ▶ Common message meanings

Are Computers That Different from People?

Consider an employee communicating with her boss, and a browser with a web server:

	Employee/Boss	Browser/Server
Medium	Sound, Email, HR Complaints	Wires
Message Format	English Grammar	HTTP
Message Meaning	English Definition	HTTP methods
Messages	Request time off, fire employee	GET, POST, ...

What *bytes* are in a Network Protocol?

- Protocols often look an awful lot like file formats
 - ▶ Starts with a fixed header
 - ▶ One or more flag fields to indicate what type of message it is (request, confirmation, etc.)
 - ▶ Either a size field or an end-of-message indicator
 - ▶ Other content varies by message type

Mini-HTTP Requests

A simple HTTP Request:

```
GET /filepath HTTP/1.1  
Host: server  
Connection: close
```

Requests *filepath* from *server*.

Mini-HTTP Response

A simple (successful) HTTP Response:

```
HTTP/1.1 302 Found
Date: Wed, 18 May 2011 23:35:10 GMT
Server: Apache/2.2.18 (Fedora)
Location: http://www.cs.washington.edu/index.html
Content-Length: 236
Connection: close
Content-Type: text/html; charset=iso-8859-1
CR LF CR LF
<content>
```

Successful response, with content inline after a separator. For now, consider the response to be:

```
\r\n\r\nresponse
```