HTTP – a protocol example

HTTP = HyperText Transfer Protocol
a protocol = a language
HTTP = a language
HTTP is a language?

- Who speaks it?
- What do they discuss?
- What’s it like?

HTTP as a language

- spoken between pairs of programs
  - an http client program
  - an http server program
  - they’re written specially to speak it
- discussing server giving objects it houses to client
- simple request-response behavior
An HTTP conversation

http server program

HTTP request

HTTP response

http client program

I saw this in a book...

server

HTTP request

HTTP response

client

client

client

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...but this is more accurate.

HTTP particles of speech

- HTTP messages
- 2 kinds
  - request messages
  - response messages
- written in ASCII
HTTP request message format

<table>
<thead>
<tr>
<th>request line</th>
</tr>
</thead>
<tbody>
<tr>
<td>message options (optional)</td>
</tr>
<tr>
<td>blank line</td>
</tr>
<tr>
<td>message body (optional)</td>
</tr>
</tbody>
</table>

HTTP reply message format

<table>
<thead>
<tr>
<th>status line</th>
</tr>
</thead>
<tbody>
<tr>
<td>message headers (optional)</td>
</tr>
<tr>
<td>blank line</td>
</tr>
<tr>
<td>message body (optional)</td>
</tr>
</tbody>
</table>
Sample HTTP request message

GET /morgan_david/ HTTP/1.0
Connection: Keep-Alive
User-Agent: Mozilla/4.61 (X11; I; Linux 2.2.12-20 i686)
Host: homepage.smc.edu
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, image/png, */*
Accept-Encoding: gzip
Accept-Language: en
Accept-Charset: iso-8859-1,*,utf-8

...corresponding reply message

HTTP/1.1 200 OK
Server: Microsoft-IIS/4.0
Connection: keep-alive
Content-Location: http://homepage.smc.edu/morgan_david/Default.htm
Date: Fri, 27 Sep 2002 07:56:28 GMT
Content-Type: text/html
Accept-Ranges: bytes
Last-Modified: Fri, 13 Sep 2002 19:50:05 GMT
ETag: "b2998dc15e5bc21:7f7f8"
Content-Length: 1928

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<meta http-equiv="Content-Language" content="en-us">
<meta name="GENERATOR" content="Microsoft FrontPage 4.0">
<meta name="ProgId" content="FrontPage.Editor.Document"/>
<title>David Morgan Computer Science Department Santa Monica College</title>
</head>
<body>...
But, how do they reach each other?

GET morgan_david/HTTP 1.0
Connection: Keep-Alive
User-Agent: Mozilla/4.61 [en] (X11; I; Linux 2.2.12-20 i686)
Host: homepage.smc.edu
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, image/png, */*
Accept-Encoding: gzip
Accept-Language: en
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