HTTP – a protocol example

David Morgan

HTTP is a language

- HTTP = HyperText Transfer Protocol
- a protocol = a language
- HTTP = a language

HTTP is a language?
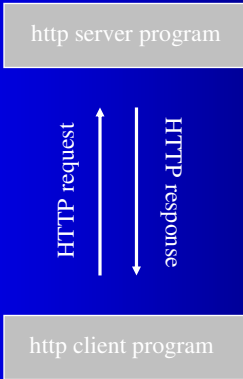
- Who speaks it?
- What do they discuss?
- What's it like?

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
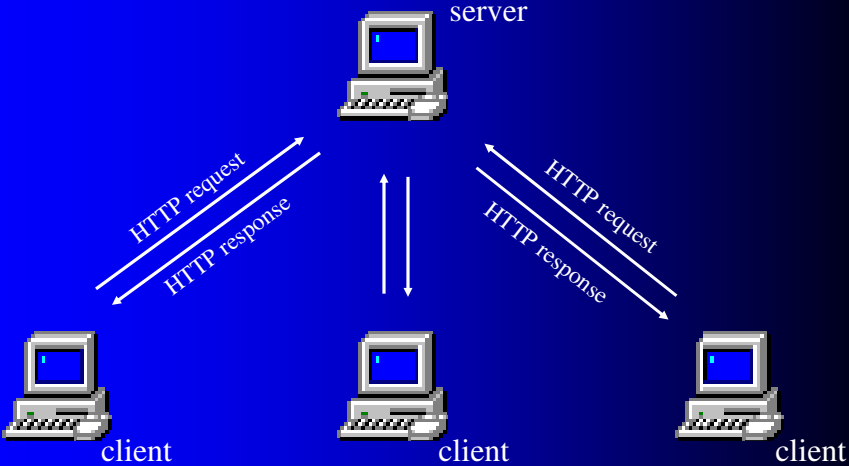- simple request-response behavior

An HTTP conversation

http server program
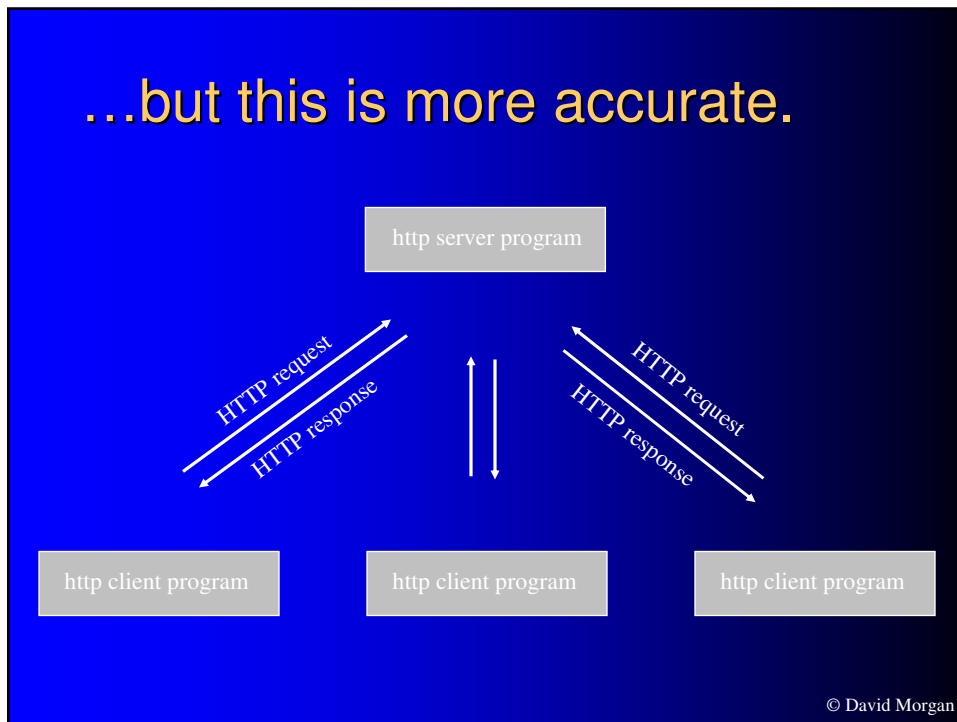
HTTP request

HTTP response

http client program

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I saw this in a book…

server

HTTP request

HTTP response

HTTP request

HTTP response

client   client   client

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…but this is more accurate.

http server program

HTTP request
HTTP response

HTTP request
HTTP response

http client program   http client program   http client program
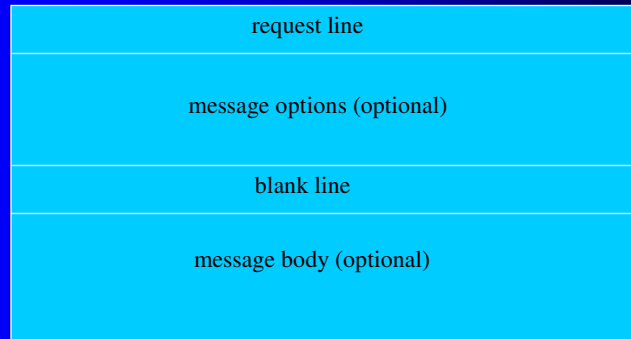
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HTTP particles of speech

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

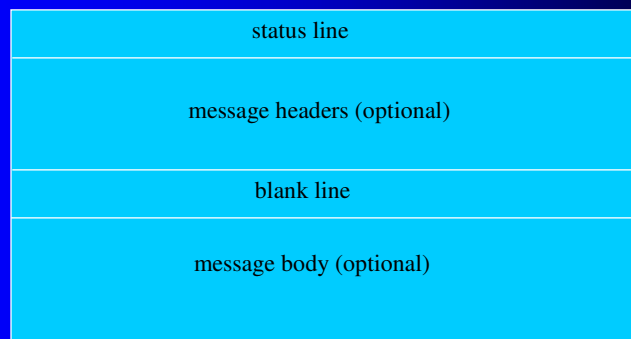© David Morgan

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HTTP request message format

request line
message options (optional)
blank line
message body (optional)

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HTTP reply message format

status line
message headers (optional)
blank line
message body (optional)

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Sample HTTP request message

request line

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

message options

blank line

no message body

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…corresponding reply message

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

message options

\r\n ← **blank line**

```
<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>...
```

message body

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But, how do they reach each other?

HTTP/1.1 200 OK\r\n
Server: Microsoft-IIS/4.0\r\n
Connection: keep-alive\r\n
Content-Location: http://homepage.smc.edu/morgan_david/Default.htm\r\n
Date: Fri, 27 Sep 2002 07:56:28 GMT\r\n
…
<title>David Morgan Computer Science Department Santa Monica College</title>
</head>
<body>...

http server program

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

http client program

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?

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