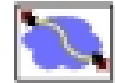




15-441 Computer Networking

Lecture 25 – The Web



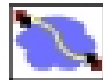
Outline

- HTTP intro and details
- Persistent HTTP
- HTTP caching
- Content distribution networks

Lecture 25: 4.20.2004

3

HTTP Basics



- HTTP layered over bidirectional byte stream
 - Almost always TCP
- Interaction
 - Client sends request to server, followed by response from server to client
 - Requests/responses are encoded in text
- Stateless
 - Server maintains no information about past client requests

Lecture 25: 4.20.2004

3



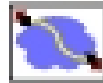
How to Mark End of Message?

- Size of message → Content-Length
 - Must know size of transfer in advance
- Delimiter → MIME-style Content-Type
 - Server must "escape" delimiter in content
- Close connection
 - Only server can do this

Lecture 25: 4.20.2004

4

HTTP Request



- Request line
 - Method
 - GET – return URI
 - HEAD – return headers only of GET response
 - POST – send data to the server (forms, etc.)
 - URL (relative)
 - E.g., /index.html
 - HTTP version

Lecture 28: 4/28/2006

8

HTTP Request (cont.)

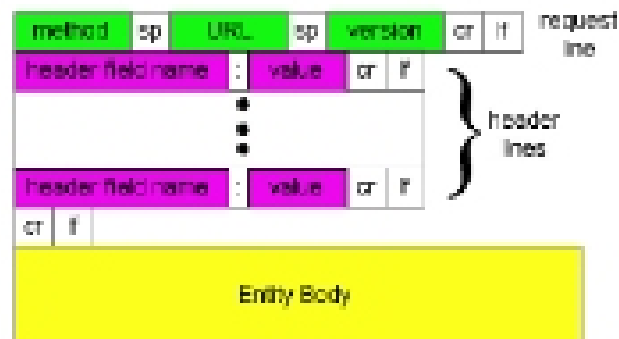
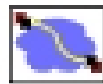


- Request headers
 - Authorization – authentication info
 - Acceptable document types/encodings
 - From – user email
 - If-Modified-Since
 - Referrer – what caused this page to be requested
 - User-Agent – client software
- Blank-line
- Body

Lecture 28: 4/28/2006

9

HTTP Request



Lecture 28: 4/28/2006

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HTTP Request Example

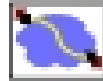


```
GET / HTTP/1.1
Accept: */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.5; Windows NT
5.0)
Host: www.intel-iris.net
Connection: Keep-Alive
```

Lecture 28: 4/28/2006

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HTTP Response

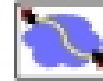


- Status-line
 - HTTP version
 - 3 digit response code
 - 1XX – informational
 - 2XX – success
 - 200 OK
 - 3XX – redirection
 - 301 Moved Permanently
 - 302 Moved Temporarily
 - 304 Not Modified
 - 4XX – client error
 - 404 Not Found
 - 5XX – server error
 - 505 HTTP Version Not Supported
 - Reason phrase

Lecture 28: 4/28/2004

8

HTTP Response (cont.)

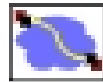


- Headers
 - Location – for redirection
 - Server – server software
 - WWW-Authenticate – request for authentication
 - Allow – list of methods supported (get, head, etc)
 - Content-Encoding – E.g. gzip
 - Content-Length
 - Content-Type
 - Expires
 - Last-Modified
- Blank-line
- Body

Lecture 28: 4/28/2004

9

HTTP Response Example



```
HTTP/1.1 200 OK
Date: Tue, 27 Mar 2001 03:49:38 GMT
Server: Apache/1.3.14 (Unix) (Red-Hat/Linux) mod_ssl/2.7.1
       OpenSSL/0.9.5a DAV/1.0.2 PHP/4.0.1pl2 mod_perl/1.24
Last-Modified: Mon, 29 Jan 2001 17:54:18 GMT
ETag: "7a11f-10ed-3a75ee4e"
Accept-Ranges: bytes
Content-Length: 4333
Keep-Alive: timeout=15, max=100
Connection: Keep-Alive
Content-Type: text/html
.....
```

Lecture 28: 4/28/2004

11

Outline



- HTTP intro and details
- **Persistent HTTP**
- HTTP caching
- Content distribution networks

Lecture 28: 4/28/2004

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