

# *The Hypertext Transfer Protocol*

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COMP 2405

## *Outline*

- History of HTTP
- The HTTP protocol
  - HTTP Requests
  - HTTP replies
- Summary

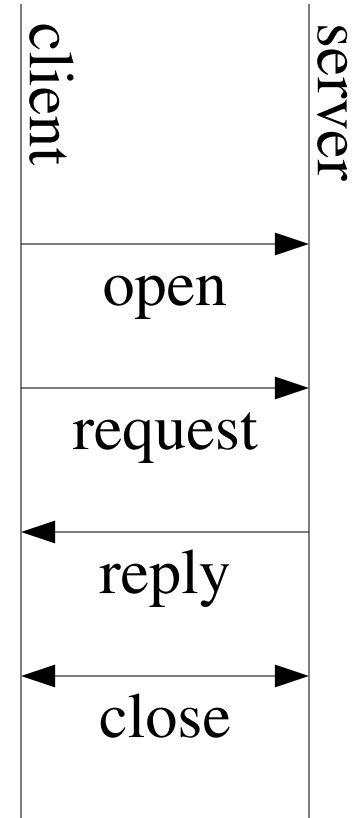
## *History of HTTP*

- Initial version (not standardized) by Tim Berners-Lee (CERN) and implemented in the World's first web browser/server (Dec. 1990)
- HTTP 0.9 defined in 1991
- HTTP 1.0 defined in 1996 as RFC 1945
- HTTP 1.1 defined in 1997 as RFC 2068



# HTTP Protocol Summary

- A typical HTTP transaction:
  - Client (browser) open connection to server
  - Client sends request to server
  - Server processes request
  - Server replies to client
  - Server closes connection
- Variants
  - Connection stays open
  - A proxy sits between client and server



## *The HTTP Request*

- Request includes a header and optional body, separated by a blank line

```
GET /~morin/index.html HTTP/1.1
Host: localhost:3128
User-Agent: Mozilla/5.0 (X11; U; Linux i686 (x86_64); en-US; rv:1.8
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
```

## *Main HTTP Request Types*

- GET
  - Get (retrieve) a document
- HEAD
  - Same as GET, but only retrieve header
- PUT
  - Put information on the server
- POST
  - Send information to the server
- OPTIONS
  - get information about the server

## *The HTTP Response*

- Response includes a header and optional body

```
HTTP/1.1 200 OK
Date: Wed, 03 Jan 2007 12:10:27 GMT
Server: Apache/2.0.54 (Fedora)
Last-Modified: Tue, 02 Jan 2007 16:01:12 GMT
ETag: "548268-1b2d-d6ce0200"
Accept-Ranges: bytes
Content-Length: 6957
Connection: close
Content-Type: text/html; charset=UTF-8

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "http://www.w3.org/TR/html4/loose.dtd">
<html>
....
</html>
```

## *Common Response Codes*

- 200 OK
  - Success
- 404 Not Found
  - The specified document does not exist
- 403 Forbidden
  - The specified document exists, but can not be accessed
- 301 & 302 Document Moved
  - The document is at the new (specified) location
- 4\*\* Error
  - Any 4\*\* message indicates an error has occurred

## *Summary*

- The basic HTTP transaction is a simple request from the client followed by a reply from the server
- Both requests and replies have a header followed by an optional body
- 200 indicates a success
- 4xx indicates an error
- We will see more complicated transactions and header fields later on