

# Data Communications and Networking Fourth Edition

Forouzan

## 第 27 章

万维网与超文本传输协议

**WWW and HTTP** 



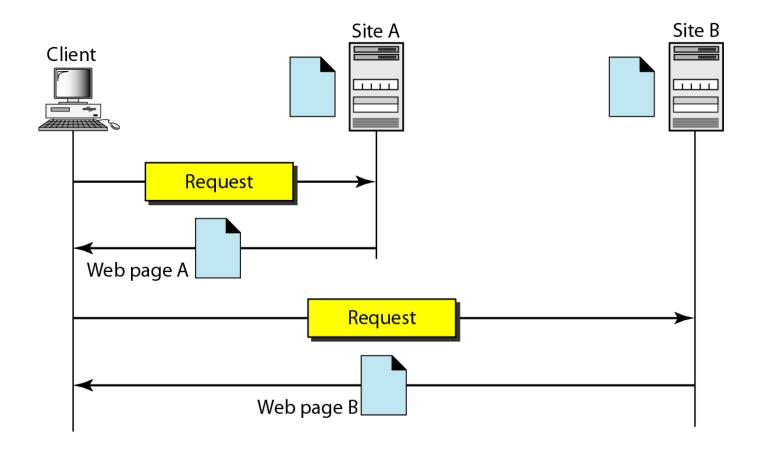
## 27-1 体系结构

现在,www是一个分布式的客户/服务器服务,在这种方式下,客户机用浏览器能够使用服务器提供的服务。然而,提供的服务是分布在许多称为站点的位置上。

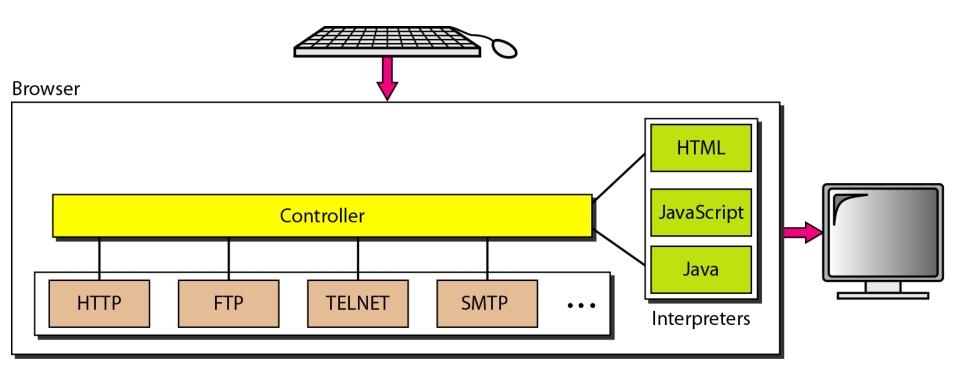
### **Topics discussed in this section:**

- □ 客户(浏览器)
- □服务器
- □ 统一资源定位符
- Cookies

#### 图 27.1 WWW 的体系结构

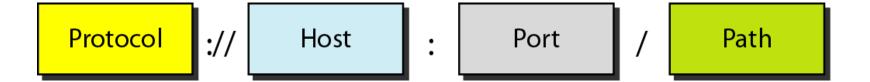


#### 图 27.2 浏览器





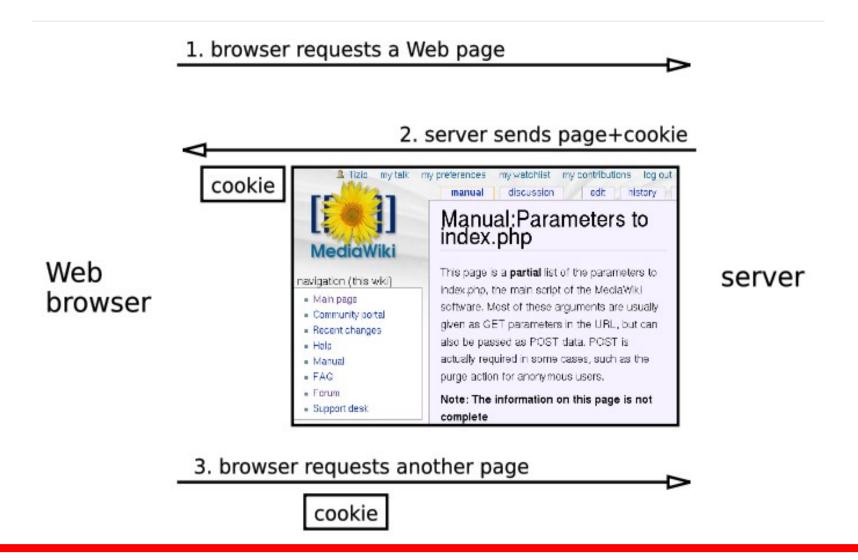
#### 图 27.3 URL



#### **Cookies**

- Cookie 机制采用的是在客户端保持状态的方案,是在用户端的会话状态的存贮机制,需要用户打开客户端的 Cookie 支持。 Cookie 的作用就是为了解决 HTTP 协议无状态的缺陷所作的努力。
- 只允许注册用户才能访问网站
- 电子支付时使用
- 登录门户网站
- 作为广告代理

#### Cookies 相关概述



## 27-2 WEB 文档

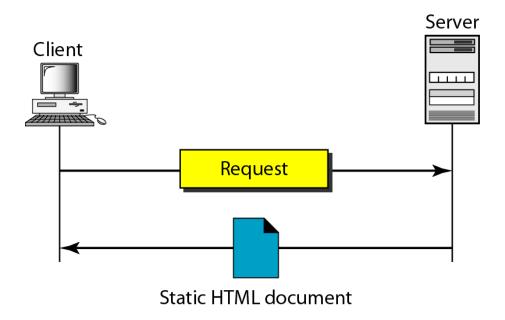
WWW 中的文档可以分为三大类: 静态文档、动态

文档和活动文档。基于文档内容的时间确定分配。

#### **Topics discussed in this section:**

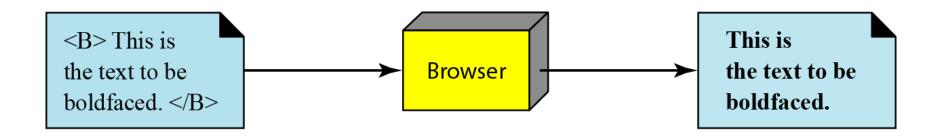
- □静态文档
- □ 动态文档
- □ 活动文档

#### 图 27.4 静态文档

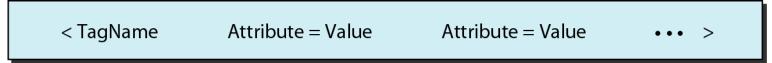




#### 图 27.6 粗体标签的效果



#### 图 27.7 起始标签和结束标签

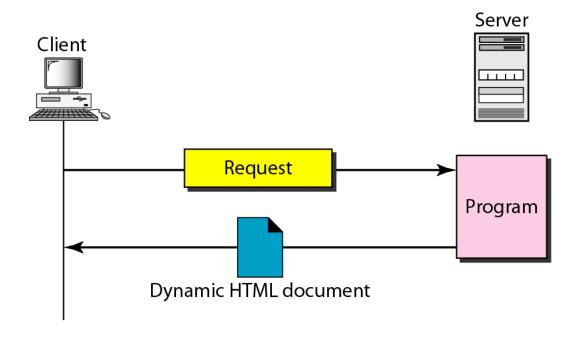


a. Beginning tag

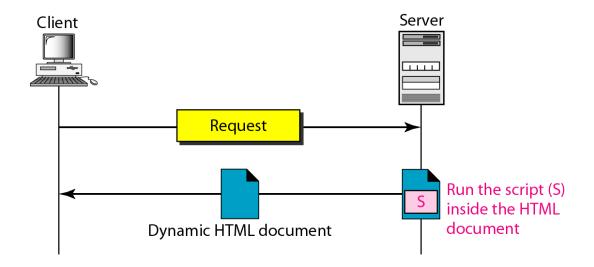
</TagName>

b. Ending tag

#### 图 27.8 使用 CGI 技术的动态文档



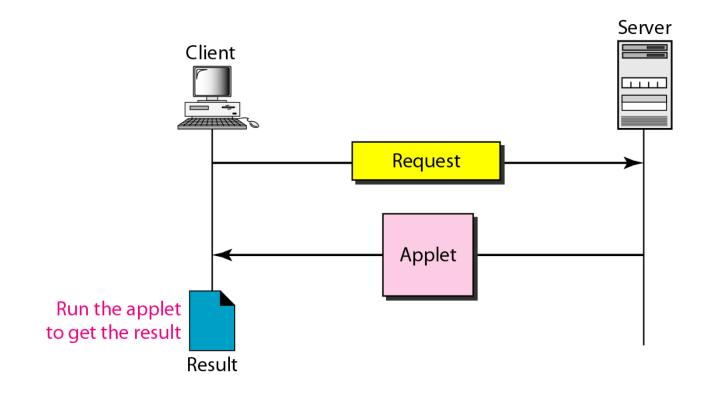
#### 图 27.9 使用服务器端脚本的动态文档



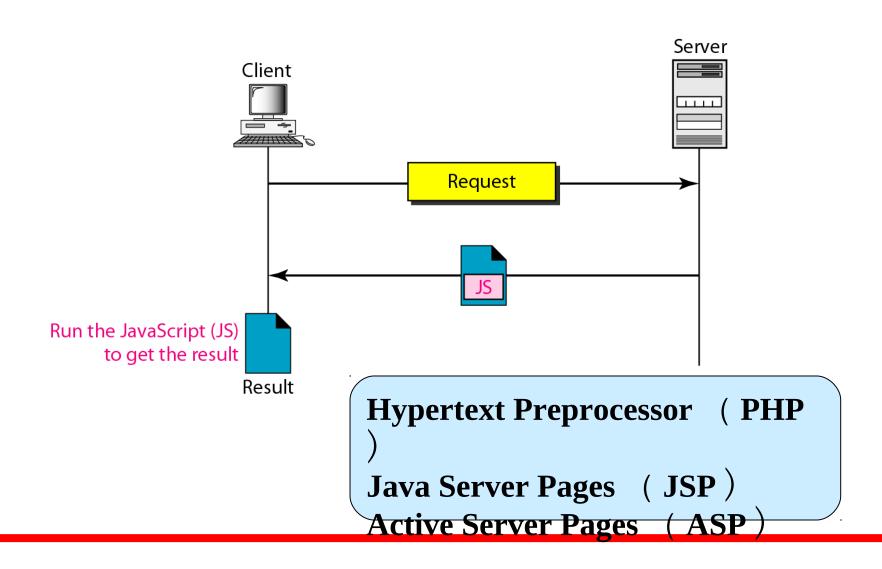
Note

□ 有时,动态文档可以称为服务器端的动态文档。

## 图 27.10 使用 Java applet 的活动文档



#### 图 27.11 使用客户端脚本的活动文档



## Note

□ 活动文档有时候可以认为是客户端的动 态文档。

#### 27-3 HTTP

超文本传输协议 (Hypertext Transfer Protocol, HTTP) 主要用于万维网上存取数据的协议, HTTP 在功能上像是 FTP 和 SMTP 的组合。

#### **Topics discussed in this section:**

- □ HTTP 事务
- □ 持续与非持续连接

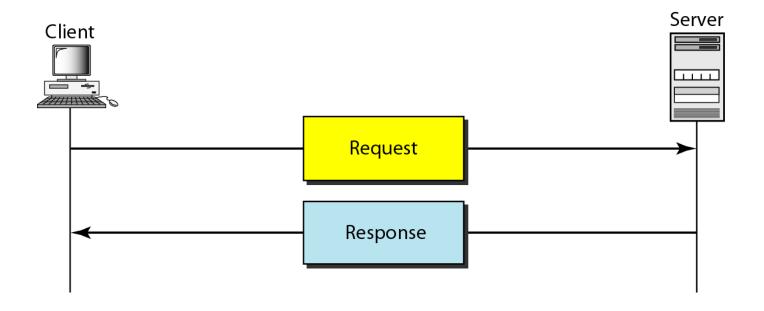


## Note

□ HTTP 在熟知端口 80 上使用 TCP 服务

0





#### 图 27.13 请求与响应报文

Request line **Headers** A blank line Body (present only in some messages)

Request message

Status line Headers A blank line Body (present only in some messages)

Response message

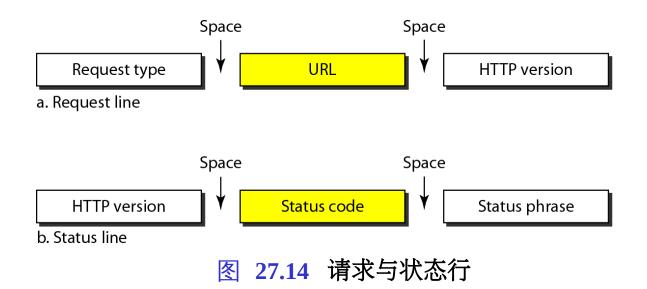


表 27.1 方法

Method	Action
GET	Requests a document from the server
HEAD	Requests information about a document but not the document itself
POST	Sends some information from the client to the server
PUT	Sends a document from the server to the client
TRACE	Echoes the incoming request
CONNECT	Reserved
OPTION	Inquires about available options

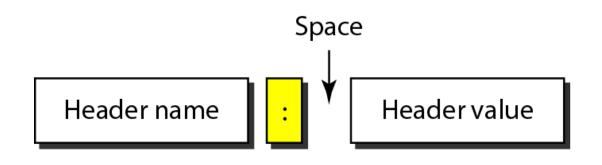
## 表 27.2 状态码

Code	Phrase	Description		
Informational				
100	Continue	The initial part of the request has been received, and the client may continue with its request.		
101	Switching	The server is complying with a client request to switch protocols defined in the upgrade header.		
Success				
200	OK	The request is successful.		
201	Created	A new URL is created.		
202	Accepted	The request is accepted, but it is not immediately acted upon.		
204	No content	There is no content in the body.		

## 表 27.2 状态码(续)

Code	Phrase	Description		
Redirection				
301	Moved permanently	The requested URL is no longer used by the server.		
302	Moved temporarily	The requested URL has moved temporarily.		
304	Not modified	The document has not been modified.		
Client Error				
400	Bad request	There is a syntax error in the request.		
401	Unauthorized	The request lacks proper authorization.		
403	Forbidden	Service is denied.		
404	Not found	The document is not found.		
405	Method not allowed	The method is not supported in this URL.		
406	Not acceptable	The format requested is not acceptable.		
Server Error				
500	Internal server error	There is an error, such as a crash, at the server site.		
501	Not implemented	The action requested cannot be performed.		
503	Service unavailable	The service is temporarily unavailable, but may be requested in the future.		

#### 图 27.15 头部格式



#### 表 27.3 通用头部

Header	Description
Cache-control	Specifies information about caching
Connection	Shows whether the connection should be closed or not
Date	Shows the current date
MIME-version	Shows the MIME version used
Upgrade	Specifies the preferred communication protocol

## 表 27.4 请求头部

Header	Description
Accept	Shows the medium format the client can accept
Accept-charset	Shows the character set the client can handle
Accept-encoding	Shows the encoding scheme the client can handle
Accept-language	Shows the language the client can accept
Authorization	Shows what permissions the client has
From	Shows the e-mail address of the user
Host	Shows the host and port number of the server
If-modified-since	Sends the document if newer than specified date
If-match	Sends the document only if it matches given tag
If-non-match	Sends the document only if it does not match given tag
If-range	Sends only the portion of the document that is missing
If-unmodified-since	Sends the document if not changed since specified date
Referrer	Specifies the URL of the linked document
User-agent	Identifies the client program

## 表 27.5 响应头部

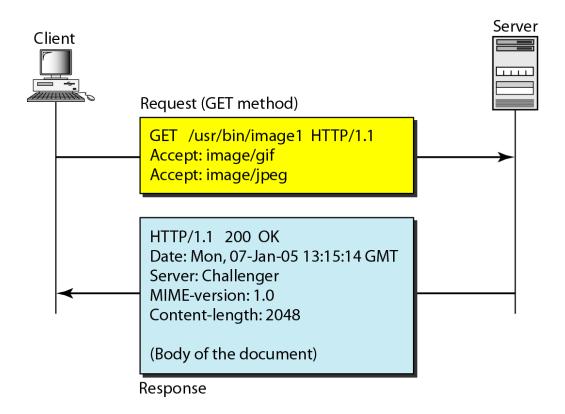
Header	Description
Accept-range	Shows if server accepts the range requested by client
Age	Shows the age of the document
Public	Shows the supported list of methods
Retry-after	Specifies the date after which the server is available
Server	Shows the server name and version number

## 表 27.6 实体头部

Header	Description
Allow	Lists valid methods that can be used with a URL
Content-encoding	Specifies the encoding scheme
Content-language	Specifies the language
Content-length	Shows the length of the document
Content-range	Specifies the range of the document
Content-type	Specifies the medium type
Etag	Gives an entity tag
Expires	Gives the date and time when contents may change
Last-modified	Gives the date and time of the last change
Location	Specifies the location of the created or moved document

## 例 27.1

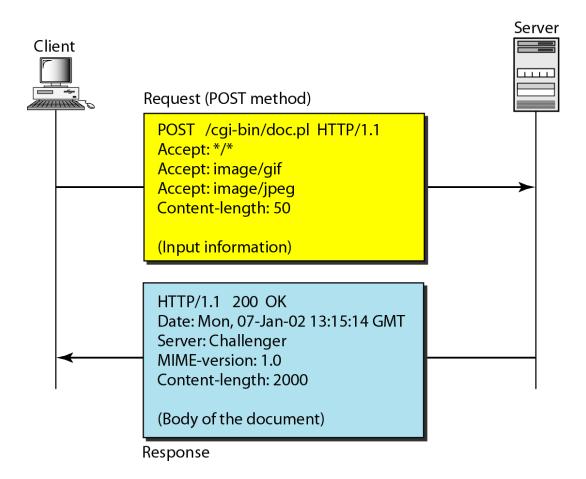
这个例子是检索文档。我们使用 GET 方法检索路径 为 /usr/bin/image1 的图像。请求行给出方法 (GET)、 URL 和 HTTP 版本 (1.1)。 其头部有两行, 以表明客户端可以接受 GIF 和 JPEG 格式的图像。请 求报文没有主体。响应报文包括状态行和四行的头部。 这些头部行定义了日期、服务器、 MIME 版本和文档 的长度。文档的主体位于头部之后。



#### 例 27.2

这个例子是客户端要向服务器发送数据,我们使用 POST 方法。请求行说明了方法 (POST), URL 和 HTTP 版本 (1.1)。其头部有 4 行,请求主体中包含了输入信息。响应报文包含了状态行和四行的头部。被创建的文档是一个 CGI 文档,它包含在响应报文的主体中。





## Note

□ HTTP 1.1 版本指定默认的连接是持续连接。