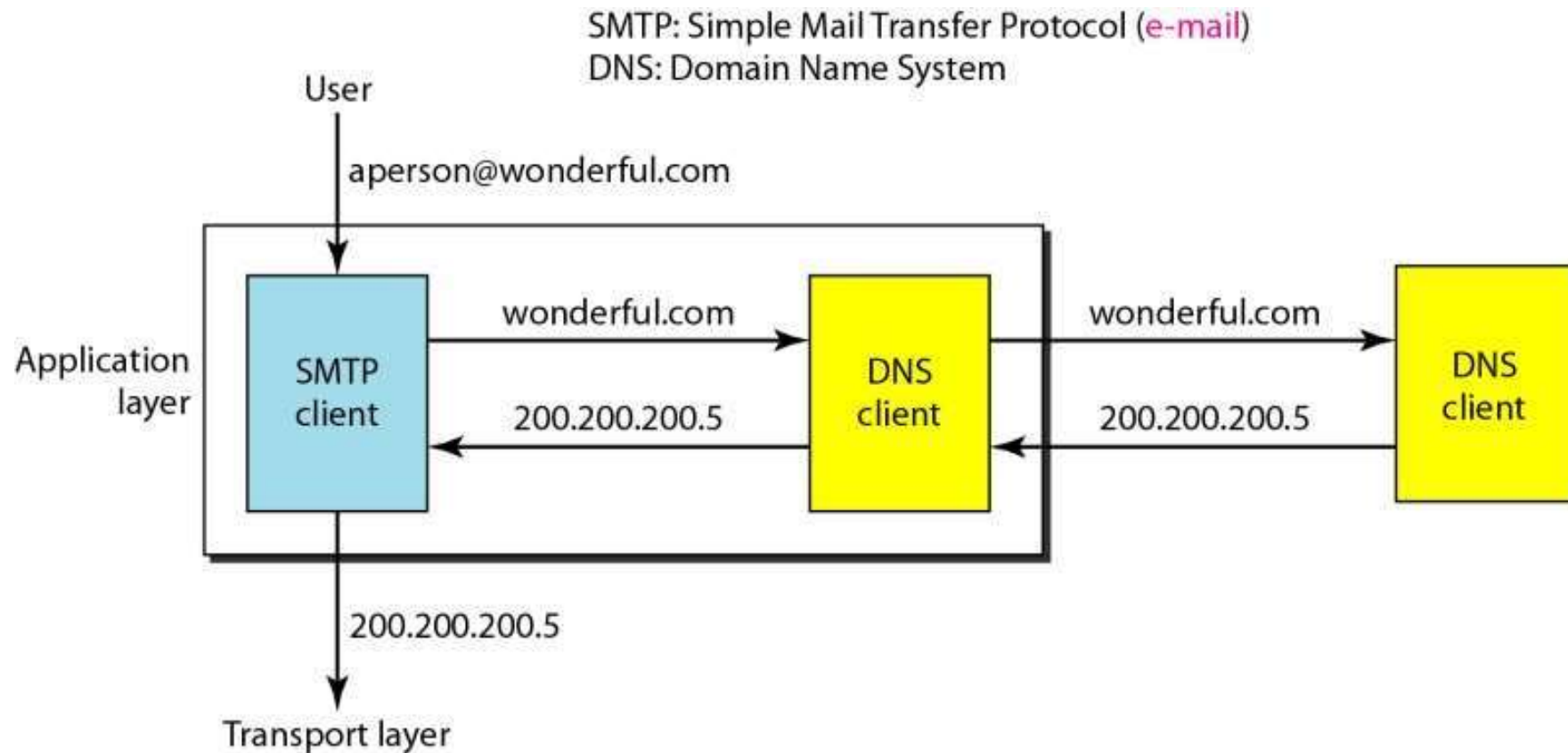


# UNIT-V

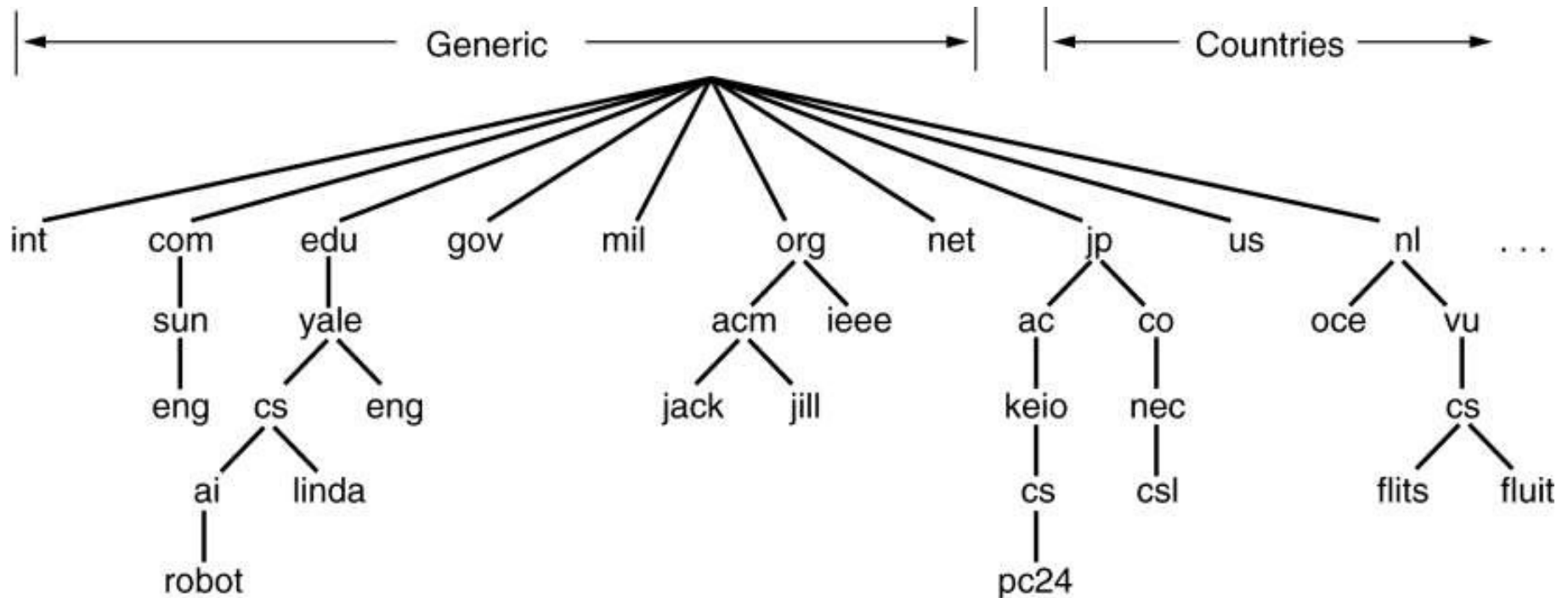
# DNS – The Domain Name System

- The DNS Name Space

Figure 25.1 *Example of using the DNS service*

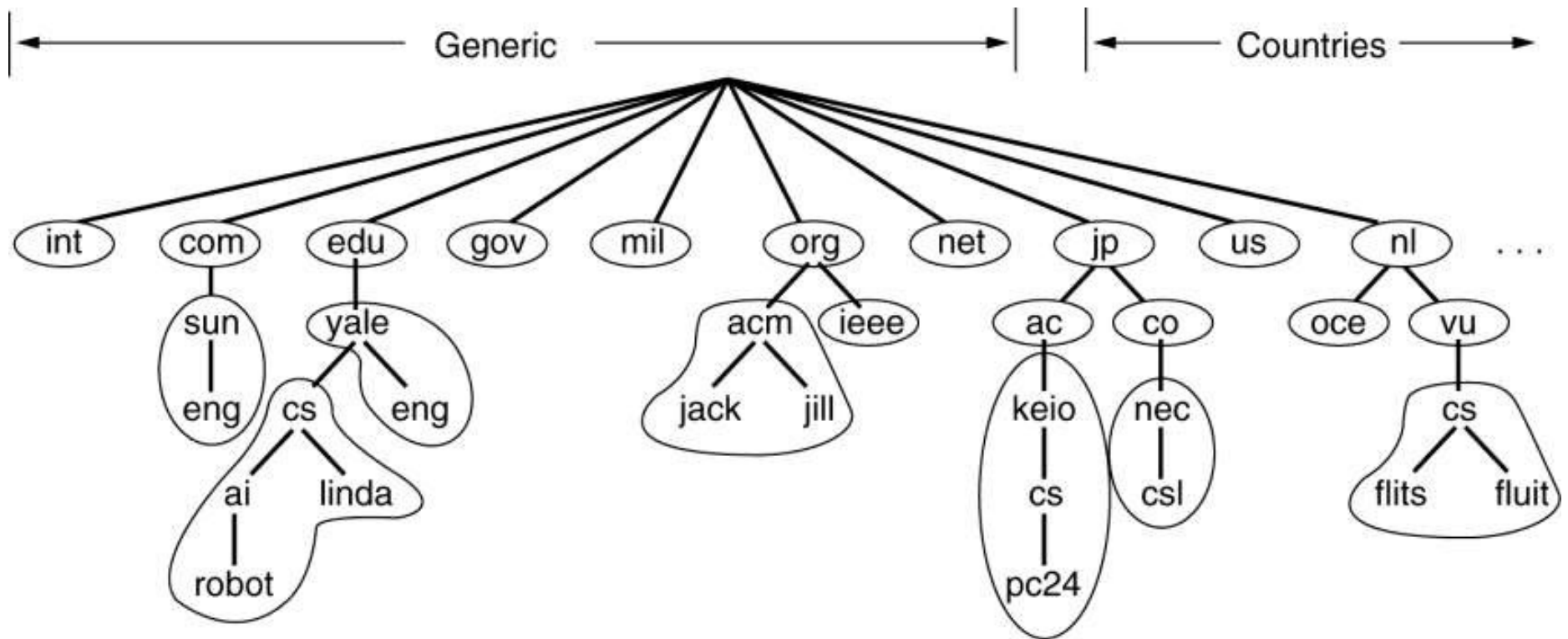


# The DNS Name Space



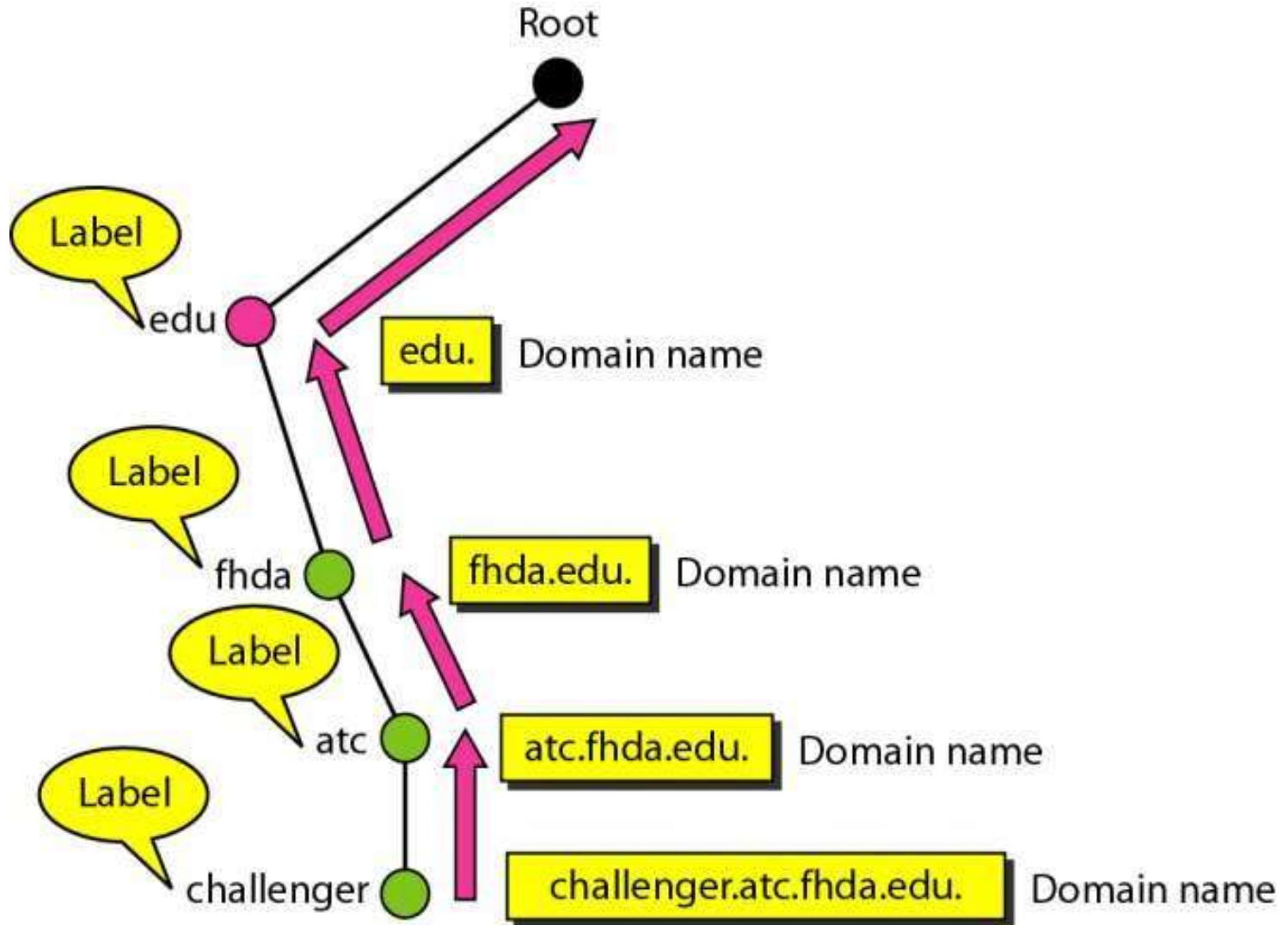
A portion of the Internet domain name space.

# Name Servers



Part of the DNS name space showing the division into zones.

Figure 25.3 *Domain names and labels*



---

## Figure 25.4 *FQDN and PQDN*

---

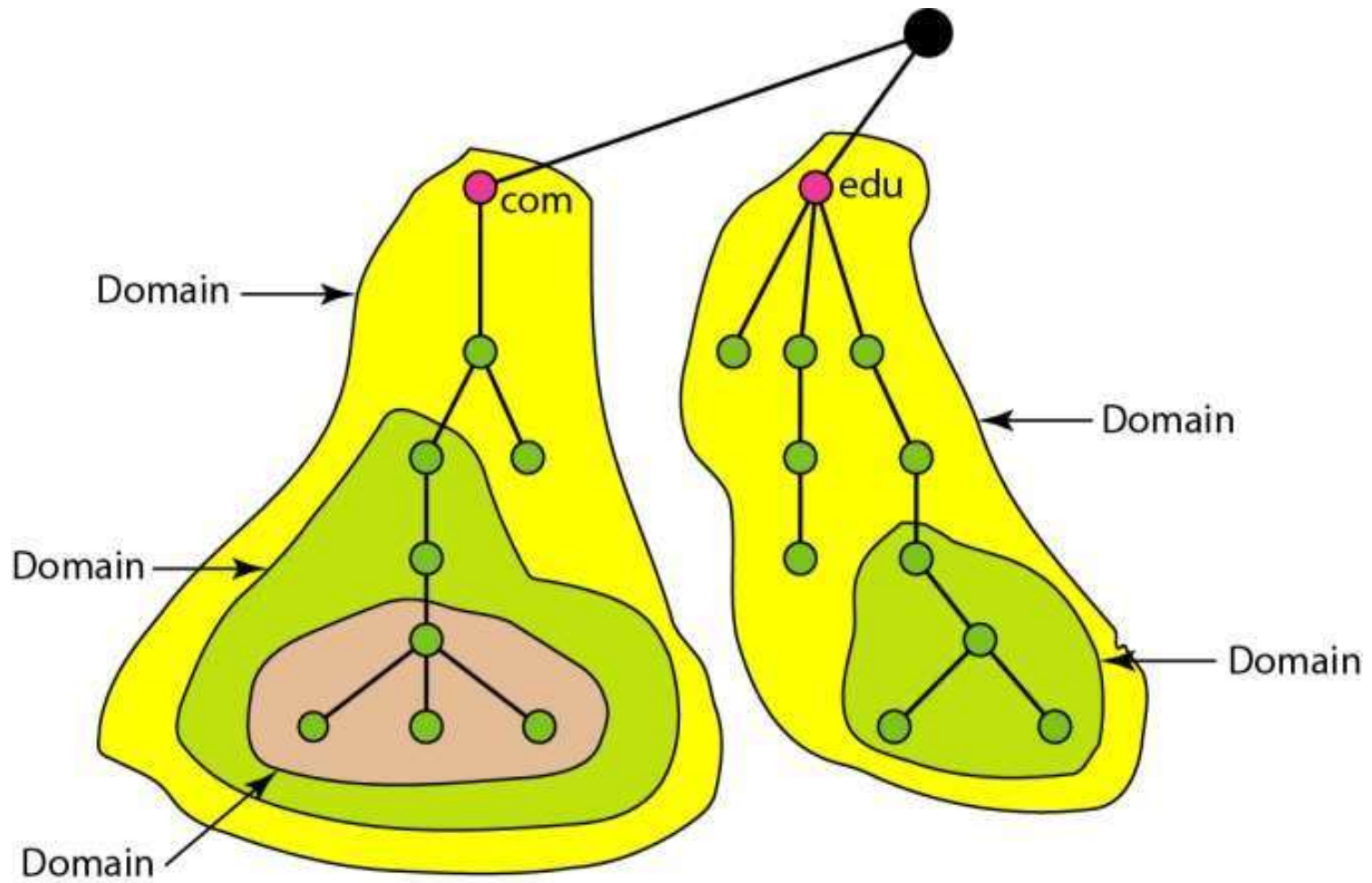
FQDN

challenger.atc.fhda.edu.  
cs.hmme.com.  
www.funny.int.

PQDN

challenger.atc.fhda.edu  
cs.hmme  
www

Figure 25.5 *Domains*



# Electronic Mail

- Architecture and Services
- The User Agent
- Message Formats
- Message Transfer
- Final Delivery

SMTP

POP3

IMAP

# The World Wide Web

- Architectural Overview
- Static Web Documents
- Dynamic Web Documents
- HTTP – The HyperText Transfer Protocol

# Architectural Overview

**WELCOME TO THE UNIVERSITY OF EAST PODUNK'S WWW HOME PAGE**

- Campus Information
  - [Admissions information](#)
  - [Campus map](#)
  - [Directions to campus](#)
  - [The UEP student body](#)
- Academic Departments
  - [Department of Animal Psychology](#)
  - [Department of Alternative Studies](#)
  - [Department of Microbiotic Cooking](#)
  - [Department of Nontraditional Studies](#)
  - [Department of Traditional Studies](#)

Webmaster@eastpodunk.edu

(a)

**THE DEPARTMENT OF ANIMAL PSYCHOLOGY**

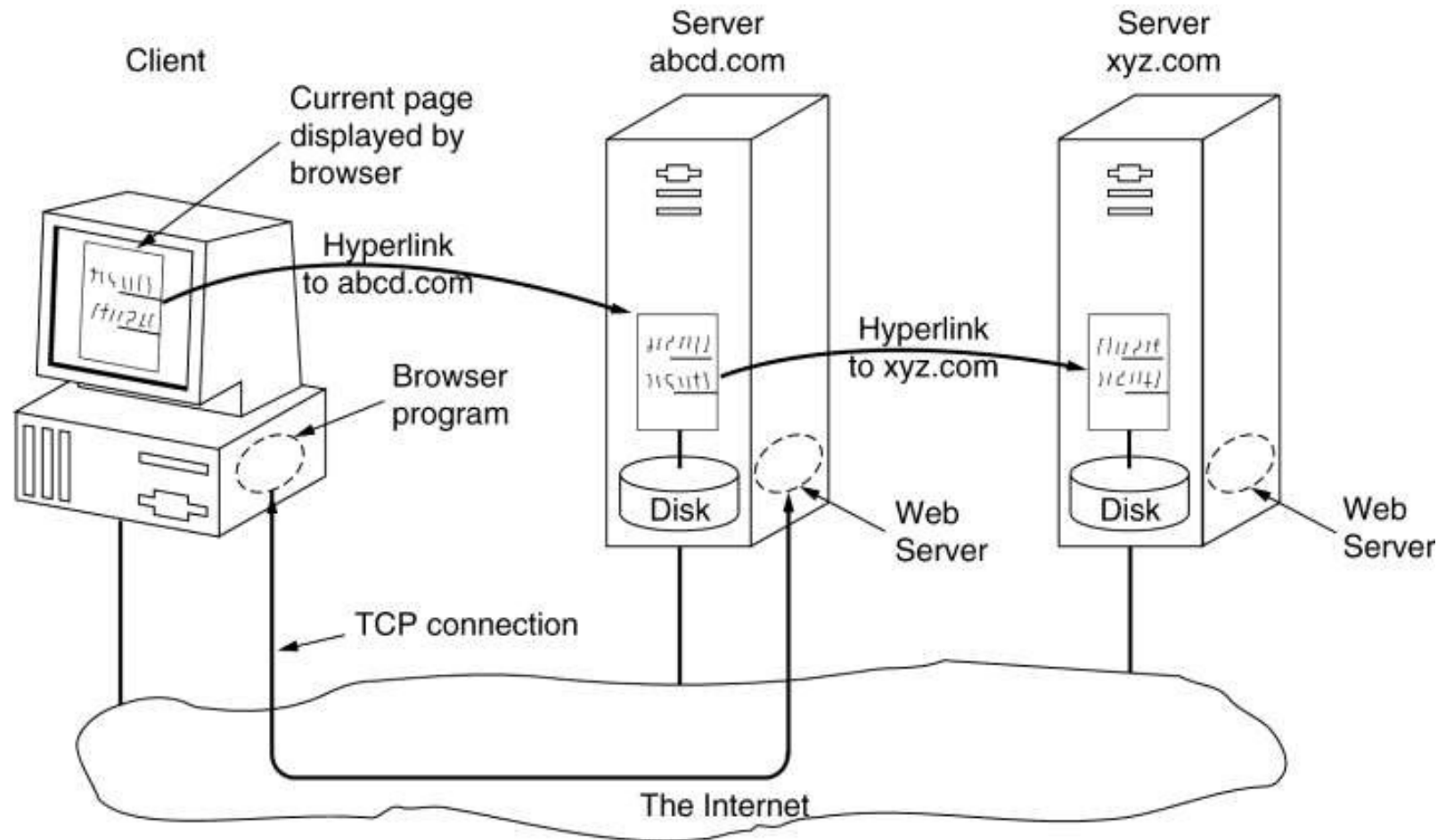
- [Information for prospective majors](#)
- Personnel
  - [Faculty members](#)
  - [Graduate students](#)
  - [Nonacademic staff](#)
- [Research Projects](#)
- [Positions available](#)
- Our most popular courses
  - [Dealing with herbivores](#)
  - [Horse management](#)
  - [Negotiating with your pet](#)
  - [User-friendly doghouse construction](#)
- [Full list of courses](#)

Webmaster@animalpsyc.eastpodunk.edu

(b)

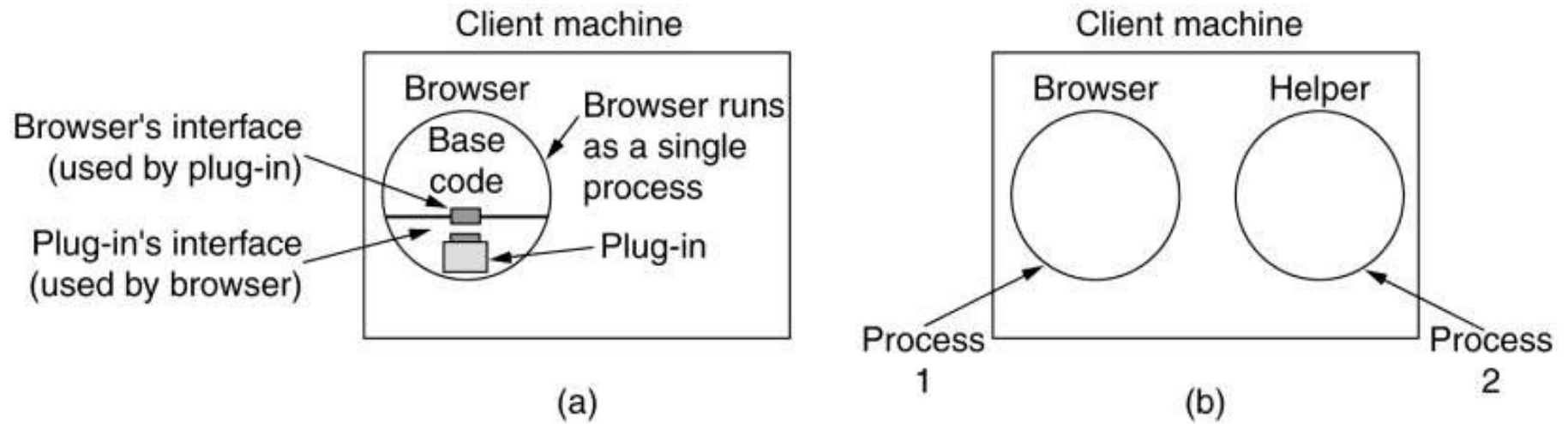
(a) A Web page (b) The page reached by clicking on Department of Animal Psychology.

# Architectural Overview (2)



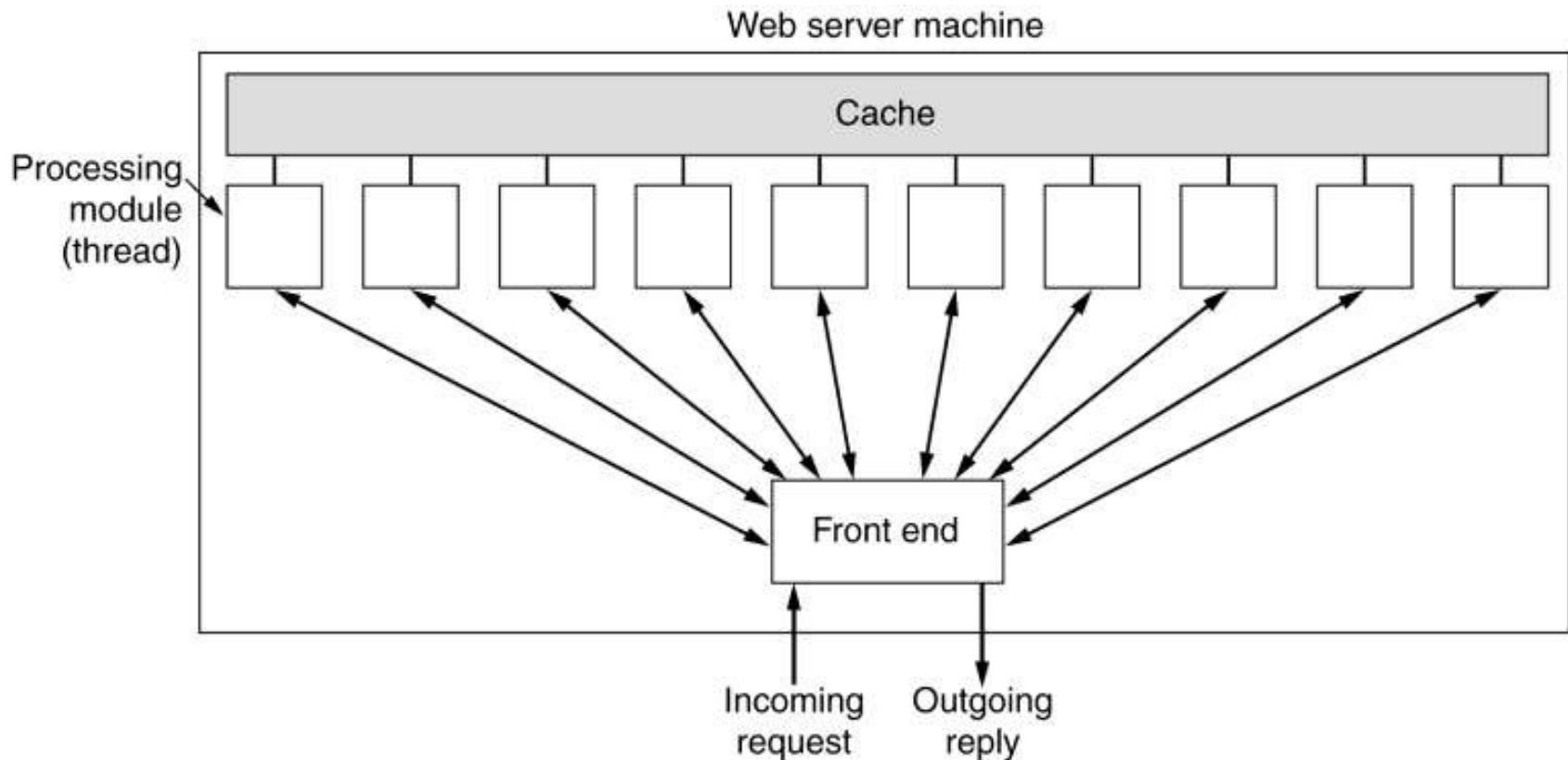
The parts of the Web model.

# The Client Side



(a) A browser plug-in. (b) A helper application.

# The Server Side



A multithreaded Web server with a front end and processing modules.

# URLs – Uniform Resource Locaters

Name	Used for	Example
http	Hypertext (HTML)	<a href="http://www.cs.vu.nl/~ast/">http://www.cs.vu.nl/~ast/</a>
ftp	FTP	<a href="ftp://ftp.cs.vu.nl/pub/minix/README">ftp://ftp.cs.vu.nl/pub/minix/README</a>
file	Local file	<a href="file:///usr/suzanne/prog.c">file:///usr/suzanne/prog.c</a>
news	Newsgroup	<a href="news:comp.os.minix">news:comp.os.minix</a>
news	News article	<a href="news:AA0134223112@cs.utah.edu">news:AA0134223112@cs.utah.edu</a>
gopher	Gopher	<a href="gopher://gopher.tc.umn.edu/11/Libraries">gopher://gopher.tc.umn.edu/11/Libraries</a>
mailto	Sending e-mail	<a href="mailto:JohnUser@acm.org">mailto:JohnUser@acm.org</a>
telnet	Remote login	<a href="telnet://www.w3.org:80">telnet://www.w3.org:80</a>

Some common URLs.

# Statelessness and Cookies

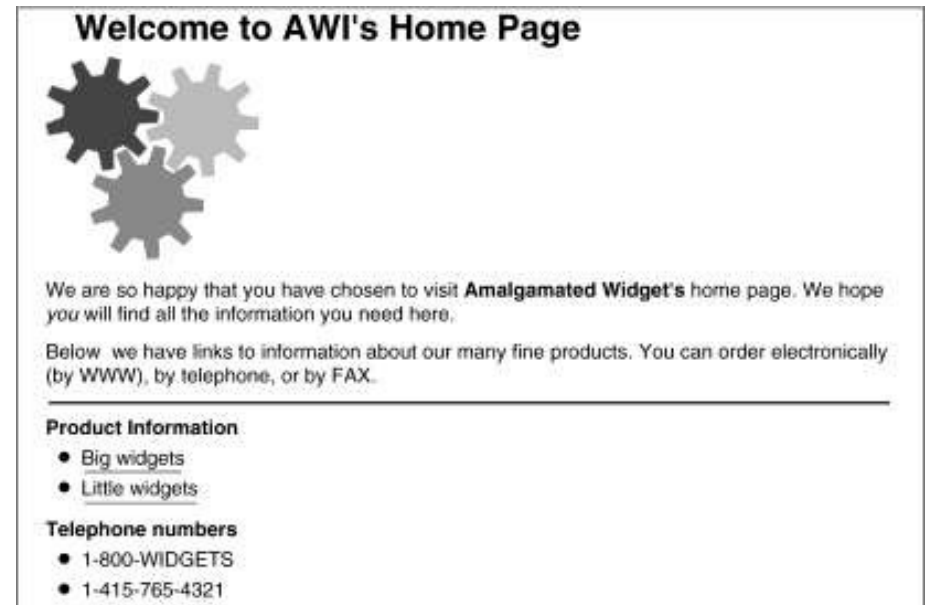
Domain	Path	Content	Expires	Secure
toms-casino.com	/	CustomerID=497793521	15-10-02 17:00	Yes
joes-store.com	/	Cart=1-00501;1-07031;2-13721	11-10-02 14:22	No
aportal.com	/	Prefs=Stk:SUNW+ORCL;Spt:Jets	31-12-10 23:59	No
sneaky.com	/	UserID=3627239101	31-12-12 23:59	No

Some examples of cookies.

# HTML – HyperText Markup Language

```
<html>
<head><title> AMALGAMATED WIDGET, INC. </title> </head>
<body> <h1> Welcome to AWI's Home Page</h1>
 <br>
We are so happy that you have chosen to visit <b> Amalgamated Widget's </b>
homepage. We hope <i> you </i> will find all the information you need here.
<p>Below we have links to information about our many fine products.
You can order electronically (by WWW), by telephone, or by fax. </p>
<hr>
<h2> Product information </h2>
<ul>
  <li> <a href="http://widget.com/products/big"> Big widgets </a>
  <li> <a href="http://widget.com/products/little"> Little widgets </a>
</ul>
<h2> Telephone numbers</h2>
<ul>
  <li> By telephone: 1-800-WIDGETS
  <li> By fax: 1-415-765-4321
</ul>
</body>
</html>
```

(a)



(b)

(a) The HTML for a sample Web page. (b) The formatted page.

# HTML (2)

Tag	Description
<code>&lt;html&gt; ... &lt;/html&gt;</code>	Declares the Web page to be written in HTML
<code>&lt;head&gt; ... &lt;/head&gt;</code>	Delimits the page's head
<code>&lt;title&gt; ... &lt;/title&gt;</code>	Defines the title (not displayed on the page)
<code>&lt;body&gt; ... &lt;/body&gt;</code>	Delimits the page's body
<code>&lt;h n&gt; ... &lt;/h n&gt;</code>	Delimits a level <i>n</i> heading
<code>&lt;b&gt; ... &lt;/b&gt;</code>	Set ... in boldface
<code>&lt;i&gt; ... &lt;/i&gt;</code>	Set ... in italics
<code>&lt;center&gt; ... &lt;/center&gt;</code>	Center ... on the page horizontally
<code>&lt;ul&gt; ... &lt;/ul&gt;</code>	Brackets an unordered (bulleted) list
<code>&lt;ol&gt; ... &lt;/ol&gt;</code>	Brackets a numbered list
<code>&lt;li&gt;</code>	Starts a list item (there is no <code>&lt;/li&gt;</code> )
<code>&lt;br&gt;</code>	Forces a line break here
<code>&lt;p&gt;</code>	Starts a paragraph
<code>&lt;hr&gt;</code>	Inserts a Horizontal rule
<code>&lt;img src="..."&gt;</code>	Displays an image here
<code>&lt;a href="..."&gt; ... &lt;/a&gt;</code>	Defines a hyperlink

A selection of common HTML tags.  
some can have additional parameters.

# Forms

```

<html>
<head> <title> A sample page with a table </title> </head>
<body>
<table border=1 rules=all>
<caption> Some Differences between HTML Versions </caption>
<col align=left>
<col align=center>
<col align=center>
<col align=center>
<col align=center>
<tr> <th>Item <th>HTML 1.0 <th>HTML 2.0 <th>HTML 3.0 <th>HTML 4.0 </tr>
<tr> <th> Hyperlinks <td> x <td> x <td> x <td> x </tr>
<tr> <th> Images <td> x <td> x <td> x <td> x </tr>
<tr> <th> Lists <td> x <td> x <td> x <td> x </tr>
<tr> <th> Active Maps and Images <td> &nbsp; <td> x <td> x <td> x </tr>
<tr> <th> Forms <td> &nbsp; <td> x <td> x <td> x </tr>
<tr> <th> Equations <td> &nbsp; <td> &nbsp; <td> x <td> x </tr>
<tr> <th> Toolbars <td> &nbsp; <td> &nbsp; <td> x <td> x </tr>
<tr> <th> Tables <td> &nbsp; <td> &nbsp; <td> x <td> x </tr>
<tr> <th> Accessibility features <td> &nbsp; <td> &nbsp; <td> &nbsp; <td> x </tr>
<tr> <th> Object embedding <td> &nbsp; <td> &nbsp; <td> &nbsp; <td> x </tr>
<tr> <th> Scripting <td> &nbsp; <td> &nbsp; <td> &nbsp; <td> x </tr>
</table>
</body>
</html>

```

(a)

(a) An HTML table.

(b) A possible rendition of this table.

Some Differences between HTML Versions

Item	HTML 1.0	HTML 2.0	HTML 3.0	HTML 4.0
Hyperlinks	x	x	x	x
Images	x	x	x	x
Lists	x	x	x	x
Active Maps and Images		x	x	x
Forms		x	x	x
Equations			x	x
Toolbars			x	x
Tables			x	x
Accessibility features				x
Object embedding				x
Scripting				x

(b)

# Forms (2)

```
<html>
<head> <title> AWI CUSTOMER ORDERING FORM </title> </head>
<body>
<h1> Widget Order Form </h1>
<form ACTION="http://widget.com/cgi-bin/widgetorder" method=POST>
<p> Name <input name="customer" size=46> </p>
<p> Street Address <input name="address" size=40> </p>
<p> City <input name="city" size=20> State <input name="state" size =4>
Country <input name="country" size=10> </p>
<p> Credit card # <input name="cardno" size=10>
Expires <input name="expires" size=4>
M/C <input name="cc" type=radio value="mastercard">
VISA <input name="cc" type=radio value="visacard"> </p>
<p> Widget size Big <input name="product" type=radio value="expensive">
Little <input name="product" type=radio value="cheap">
Ship by express courier <input name="express" type=checkbox> </p>
<p><input type=submit value="submit order"> </p>
Thank you for ordering an AWI widget, the best widget money can buy!
</form>
</body>
</html>
```

(a)

(a) The HTML for an order form.

(b) The formatted page.

### Widget Order Form

Name

Street address

City  State  Country

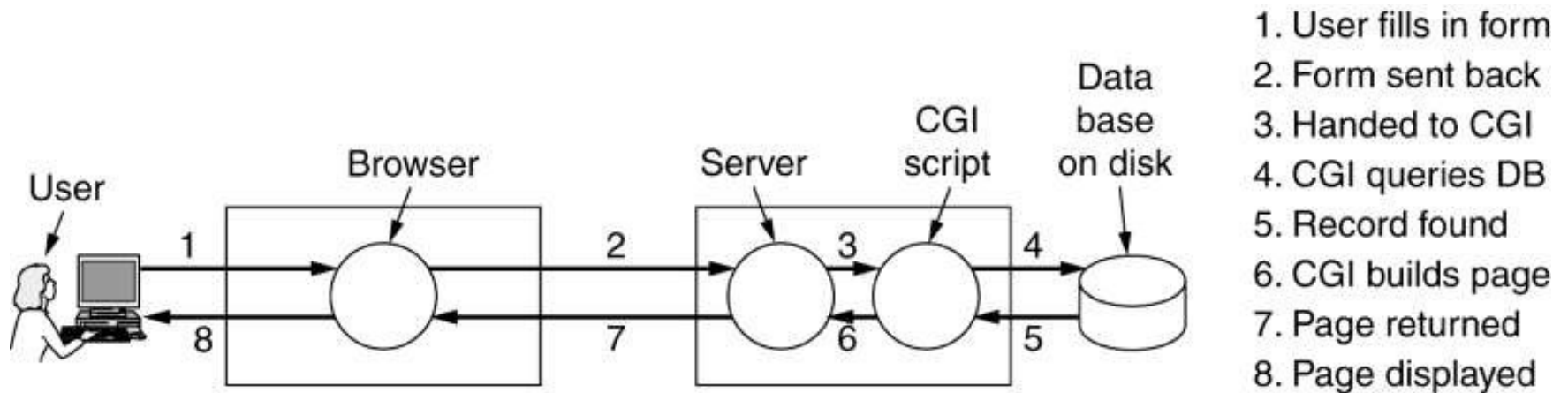
Credit card #  Expires  M/C  Visa

Widget size Big  Little  Ship by express courier

Thank you for ordering an AWI widget, the best widget money can buy!

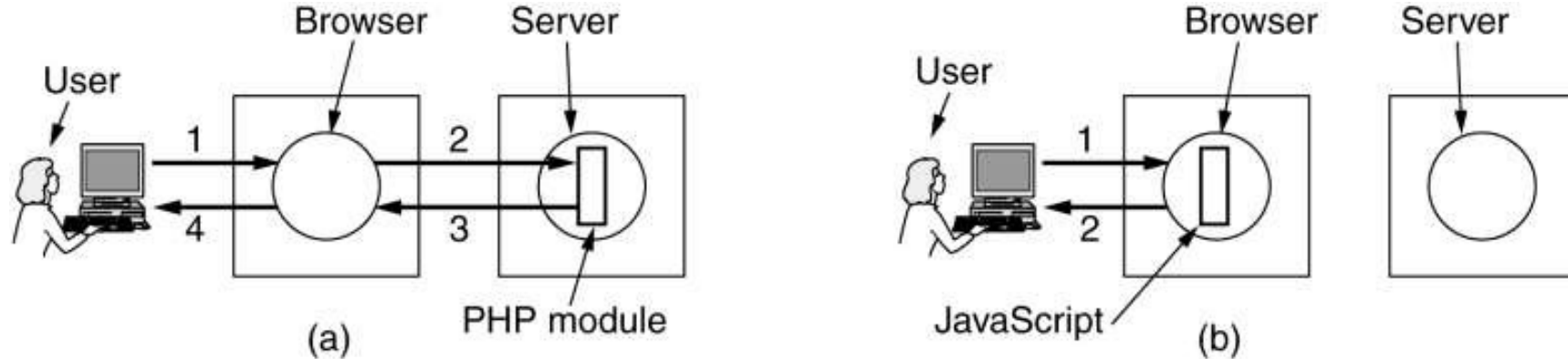
(b)

# Dynamic Web Documents



Steps in processing the information from an HTML form.

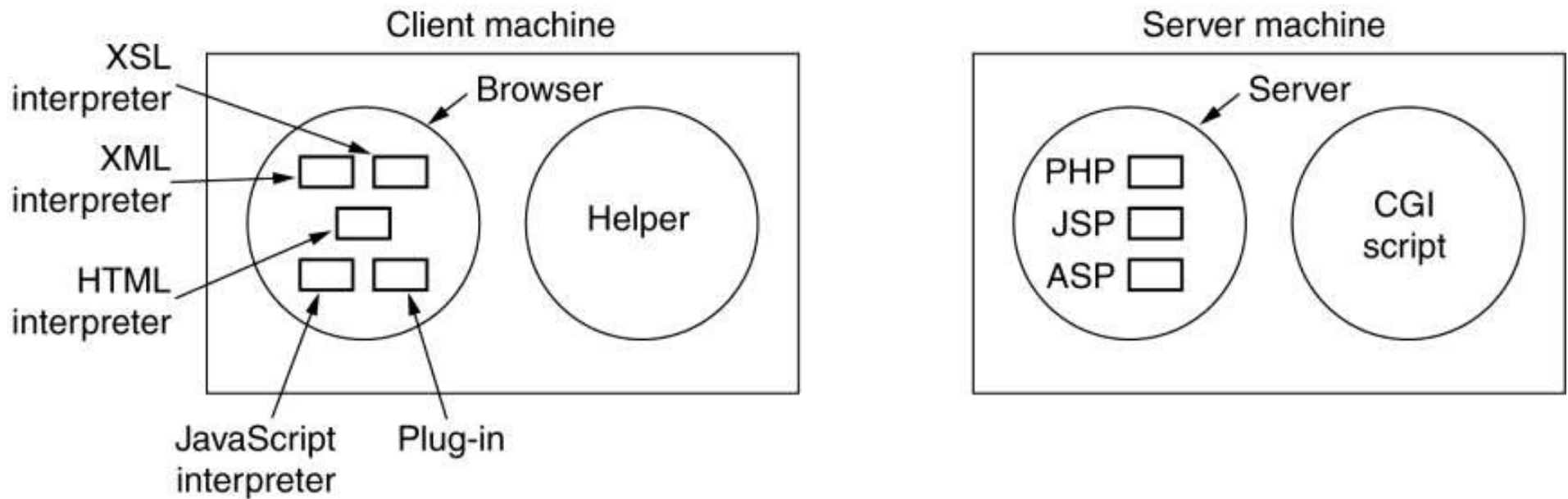
# Client-Side Dynamic Web Page Generation (2)



(a) Server-side scripting with PHP.

9/20/2023 (b) Client-side scripting with JavaScript.

# Client-Side Dynamic Web Page Generation (5)



The various ways to generate and display content.

# HTTP Methods

Method	Description
GET	Request to read a Web page
HEAD	Request to read a Web page's header
PUT	Request to store a Web page
POST	Append to a named resource (e.g., a Web page)
DELETE	Remove the Web page
TRACE	Echo the incoming request
CONNECT	Reserved for future use
OPTIONS	Query certain options

The built-in HTTP request methods.

# HTTP Methods (2)

<b>Code</b>	<b>Meaning</b>	<b>Examples</b>
1xx	Information	100 = server agrees to handle client's request
2xx	Success	200 = request succeeded; 204 = no content present
3xx	Redirection	301 = page moved; 304 = cached page still valid
4xx	Client error	403 = forbidden page; 404 = page not found
5xx	Server error	500 = internal server error; 503 = try again later

The status code response groups.

## 26-1 REMOTE LOGGING(TELNET)

*It would be impossible to write a specific client/server program for each demand. The better solution is a general-purpose client/server program that lets a user access any application program on a remote computer.*

*Topics discussed in this section:*

TELNET

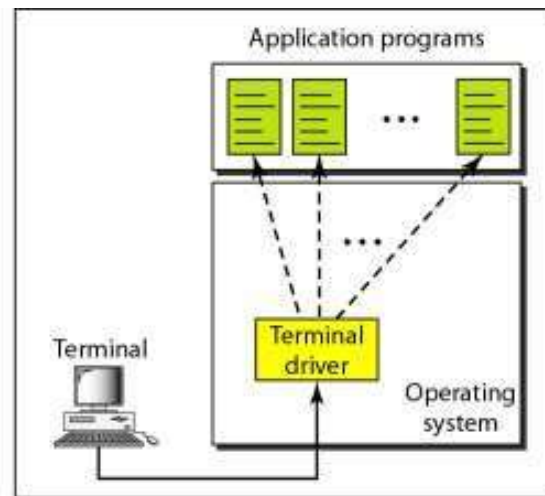


---

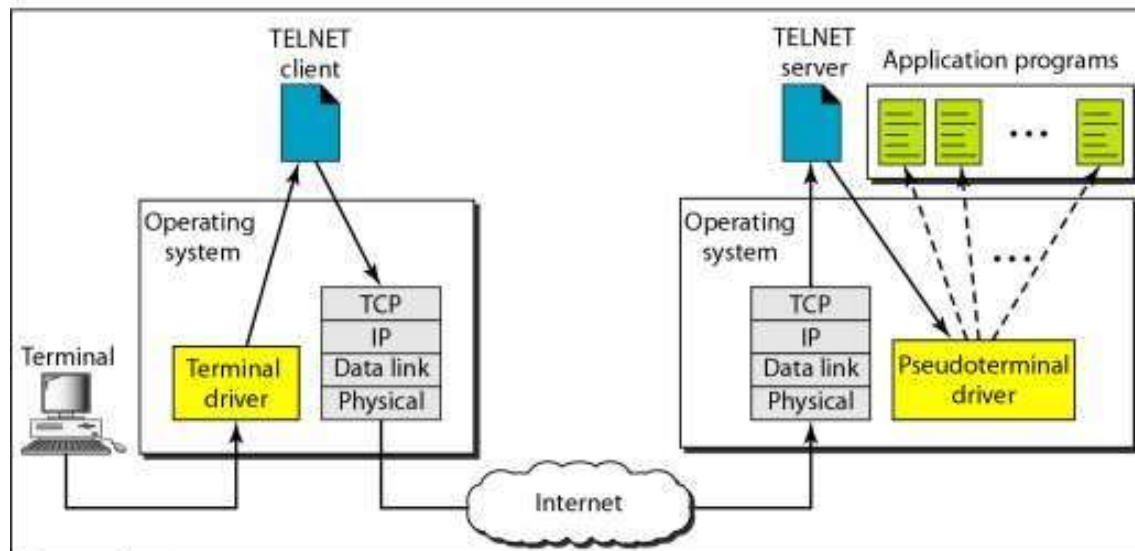
*Note*

**TELNET is a general-purpose client/server application program.**

Figure 26.1 *Local and remote log-in*

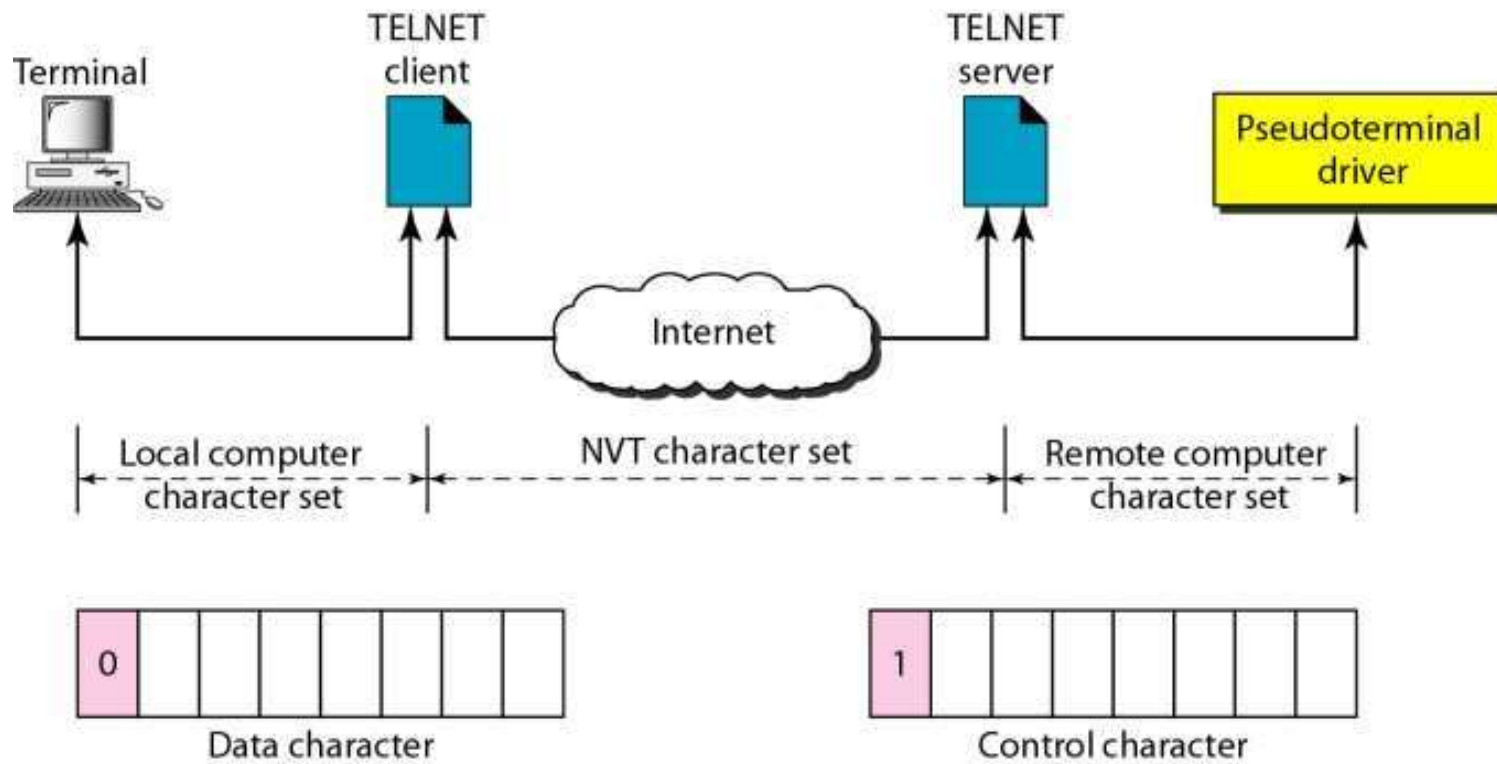


a. Local log-in



b. Remote log-in

Figure 26.2 *Concept of NVT*



**Table 26.1** *Some NVT control characters*

<i>Character</i>	<i>Decimal</i>	<i>Binary</i>	<i>Meaning</i>
EOF	236	11101100	End of file
EOR	239	11101111	End of record
SE	240	11110000	Suboption end
NOP	241	11110001	No operation
DM	242	11110010	Data mark
BRK	243	11110011	Break
IP	244	11110100	Interrupt process
AO	245	11110101	Abort output
AYT	246	11110110	Are you there?
EC	247	11110111	Erase character
EL	248	11111000	Erase line
GA	249	11111001	Go ahead
SB	250	11111010	Suboption begin
WILL	251	11111011	Agreement to enable option
WONT	252	11111100	Refusal to enable option
DO	253	11111101	Approval to option request
DONT	254	11111110	Denial of option request
IAC	255	11111111	Interpret (the next character) as control

---

Figure 26.3 *An example of embedding*

---



Typed at the remote terminal

---

Table 26.2 *Options*

<i>Code</i>	<i>Option</i>	<i>Meaning</i>
0	Binary	Interpret as 8-bit binary transmission.
1	Echo	Echo the data received on one side to the other.
3	Suppress go ahead	Suppress go-ahead signals after data.
5	Status	Request the status of TELNET.
6	Timing mark	Define the timing marks.
24	Terminal type	Set the terminal type.
32	Terminal speed	Set the terminal speed.
34	Line mode	Change to line mode.

**Table 26.3** *NVT character set for option negotiation*

<i>Character</i>	<i>Decimal</i>	<i>Binary</i>	<i>Meaning</i>
WILL	251	11111011	<ol style="list-style-type: none"><li>1. Offering to enable</li><li>2. Accepting a request to enable</li></ol>
WONT	252	11111100	<ol style="list-style-type: none"><li>1. Rejecting a request to enable</li><li>2. Offering to disable</li><li>3. Accepting a request to disable</li></ol>
DO	253	11111101	<ol style="list-style-type: none"><li>1. Approving an offer to enable</li><li>2. Requesting to enable</li></ol>
DONT	254	11111110	<ol style="list-style-type: none"><li>1. Disapproving an offer to enable</li><li>2. Approving an offer to disable</li><li>3. Requesting to disable</li></ol>

# -3 FILE TRANSFER

*Transferring files from one computer to another is one of the most common tasks expected from a networking or internetworking environment. As a matter of fact, the greatest volume of data exchange in the Internet today is due to file transfer.*

*Topics discussed in this section:*

File Transfer Protocol (FTP)

Anonymous FTP

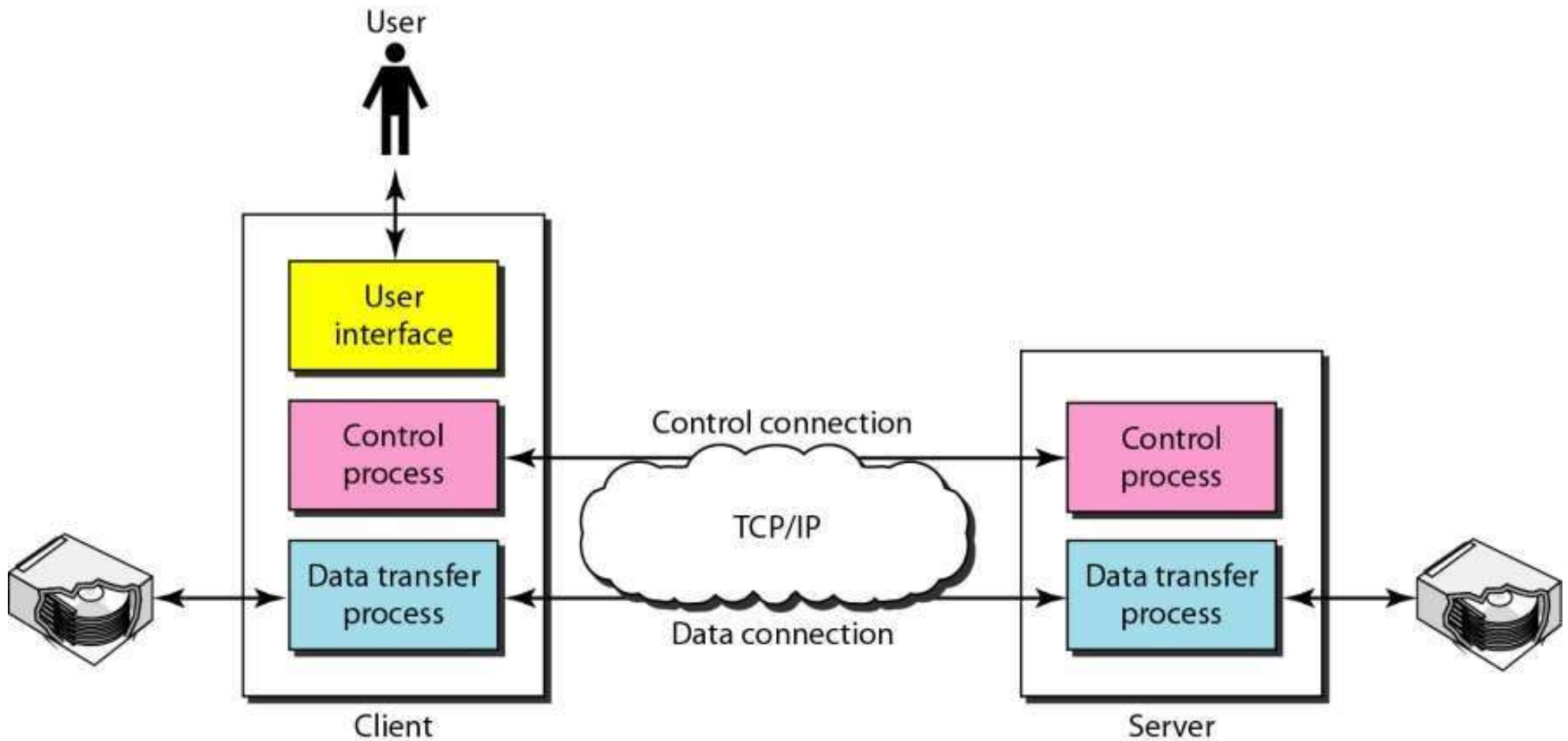


---

*Note*

- FTP uses the services of TCP.
- It needs two TCP connections.
- The well-known **port 21** is used for the control connection and the well-known **port 20** for the data connection.

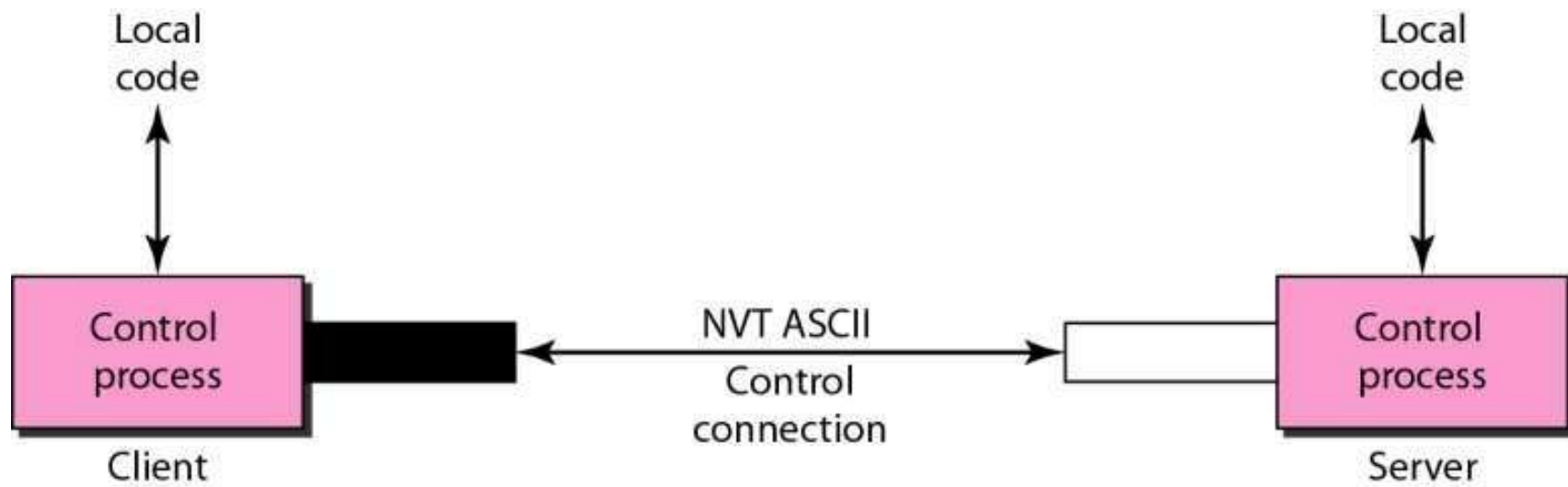
Figure 26.21 *FTP*



---

Figure 26.22 *Using the control connection*

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---

Figure 26.23 *Using the data connection*

---

