College of Information Studies
University of Maryland Hornbake Library Building College Park, MD 20742-4345

The Web

Session 4

INST 301

Introduction to Information Science

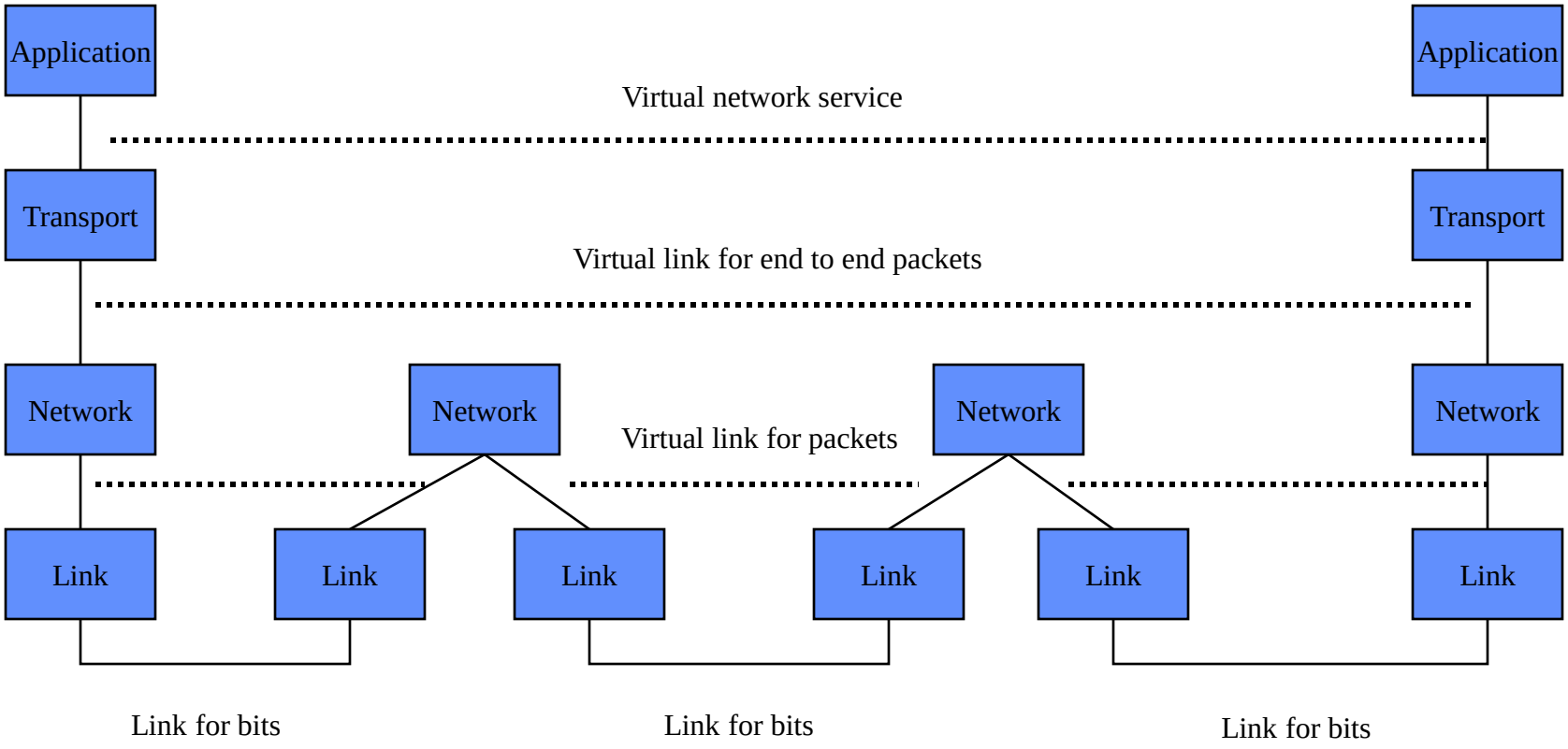
Outline

- Using The Internet

- The Web

- Creating Web pages

TCP/IP layer architecture



Transmission Control Protocol (TCP)

- Built on the network-layer version of UDP
- Guarantees delivery all data
  - Retransmits missing data
- Guarantees data will be delivered in order
  - “Buffers” subsequent packets if necessary
- No guarantee of delivery time
  - Long delays may occur without warning

User Datagram Protocol (UDP)

- The Internet's basic transport service
  - Sends every packet immediately
  - Passes received packets to the application
- No delivery guarantee
  - Collisions can result in packet loss
- Example: sending clicks on web browser

File Transfer Program (FTP)

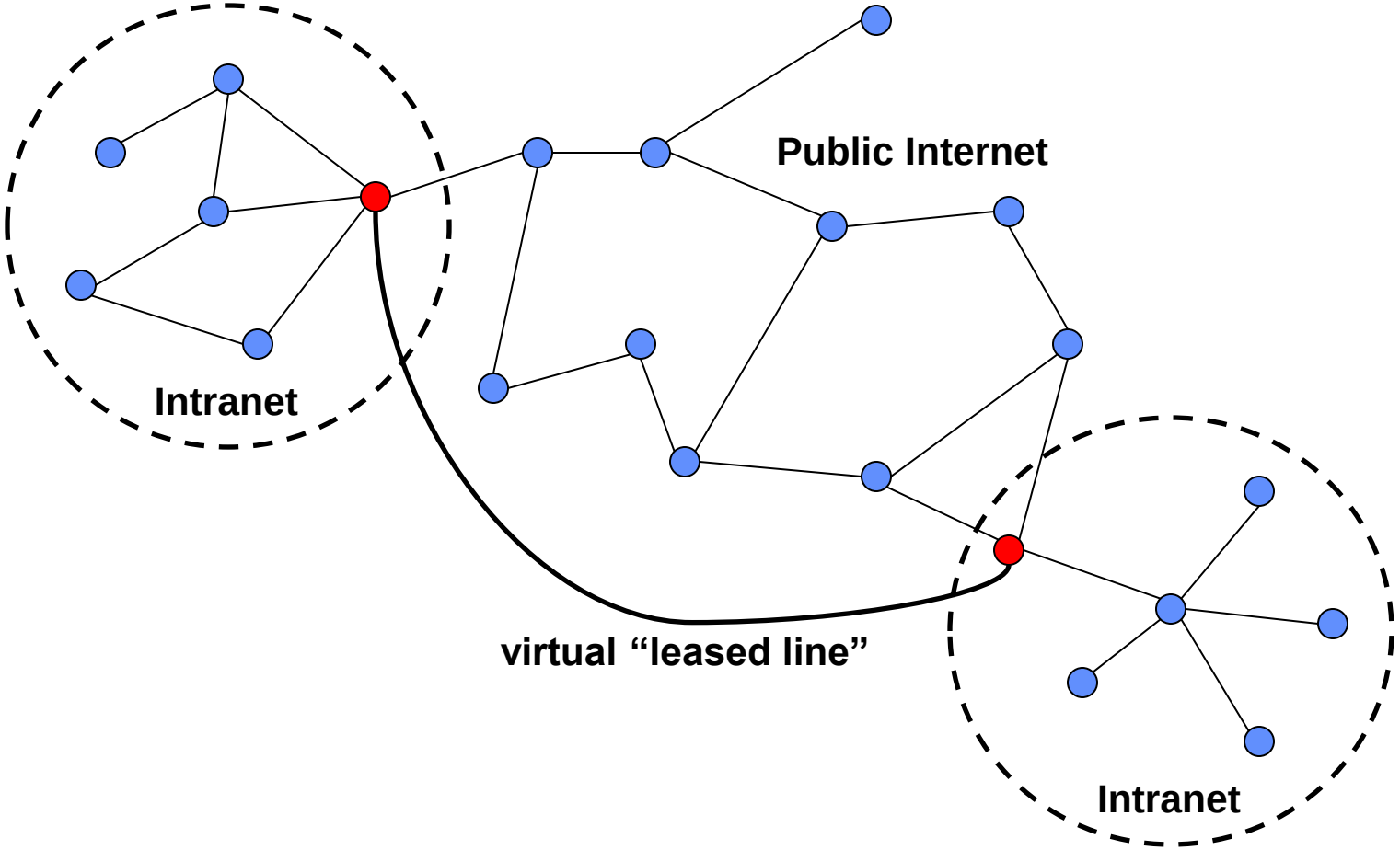
- Used to move files between machines
  - Upload (put) moves from client to server
  - Download (get) moves files from server to client
- Both visual and command line interfaces available
- Normally requires an account on the server
  - Userid “anonymous” provides public access

Hands On: Graphical Secure FTP

- Install WinSCP (Windows) or Fetch (Mac)
  - In Network at https://terpware.umd.edu/
- SFTP to “terpconnect.umd.edu”
- Change directory to “/pub/USERID”
- Upload or download files
- You can see these files at: http://terpconnect.umd.edu/~USERID/

Virtual Private Networks

a secure private network over the public Internet



Outline

- Using The Internet
  - The Web
- Creating Web pages

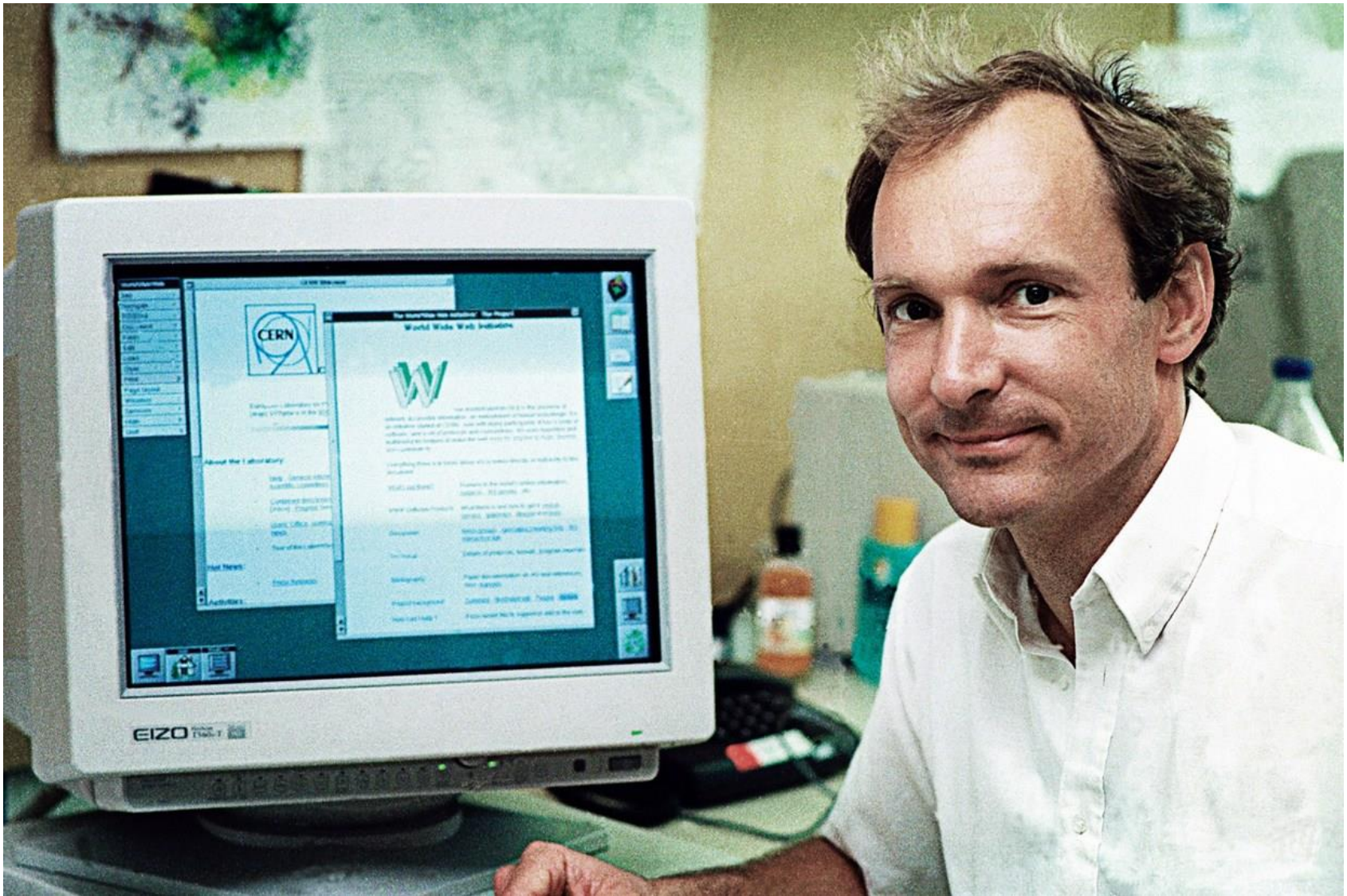
The ARPANET

J.C.R. Licklider

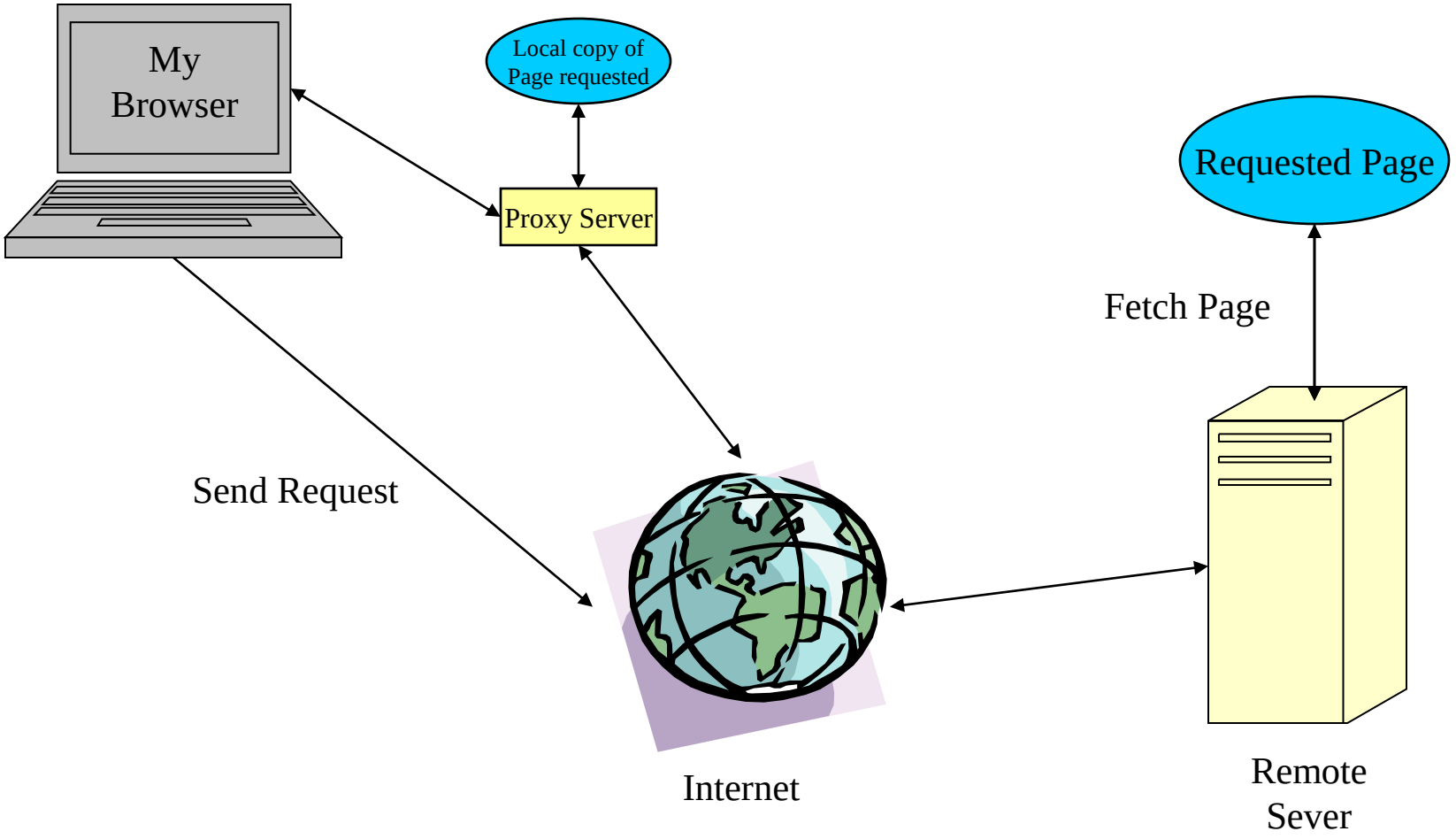
Bob Taylor

Larry Roberts

The Web

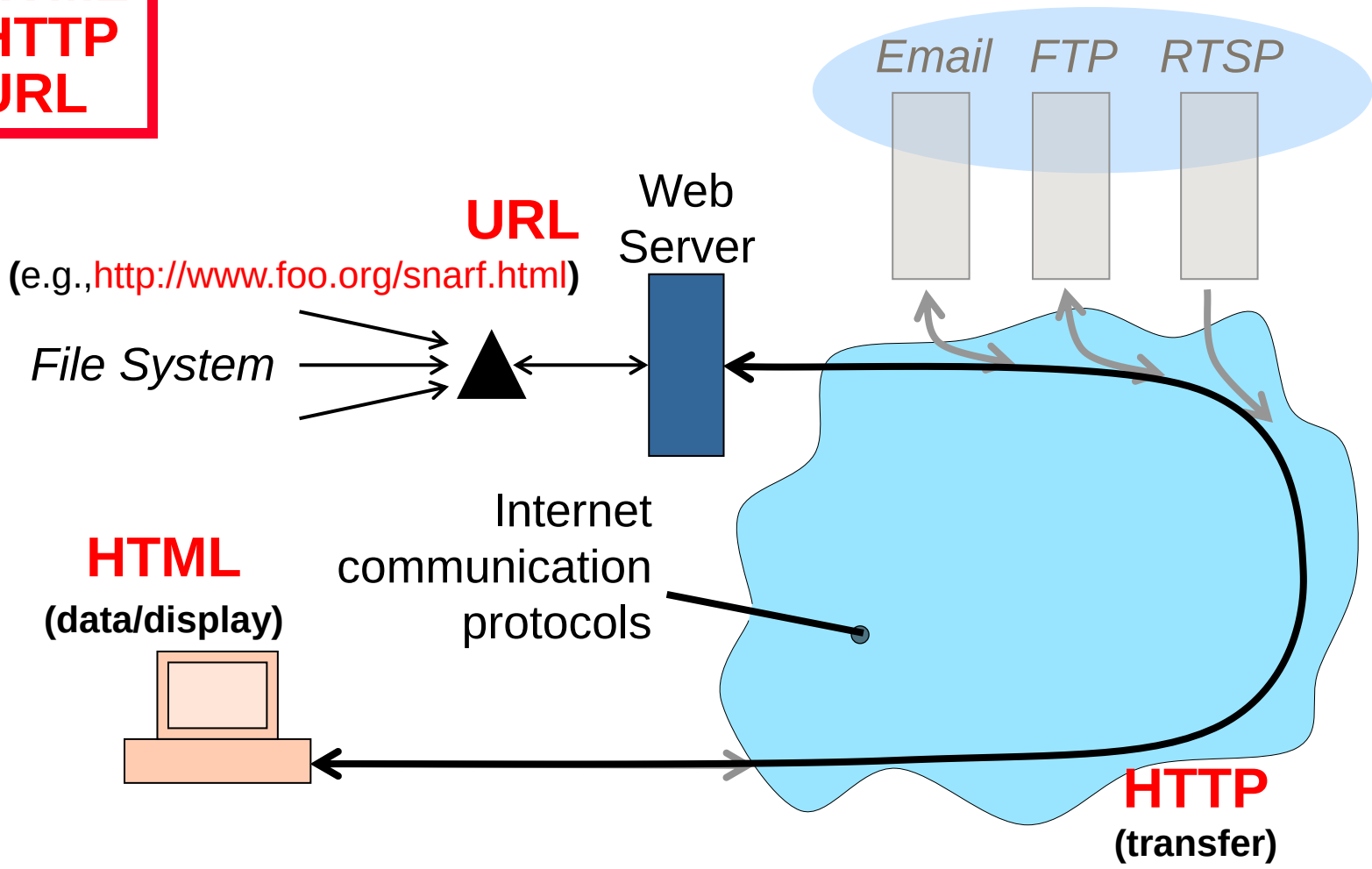


The World-Wide Web



"The Web"

HTML
HTTP
URL

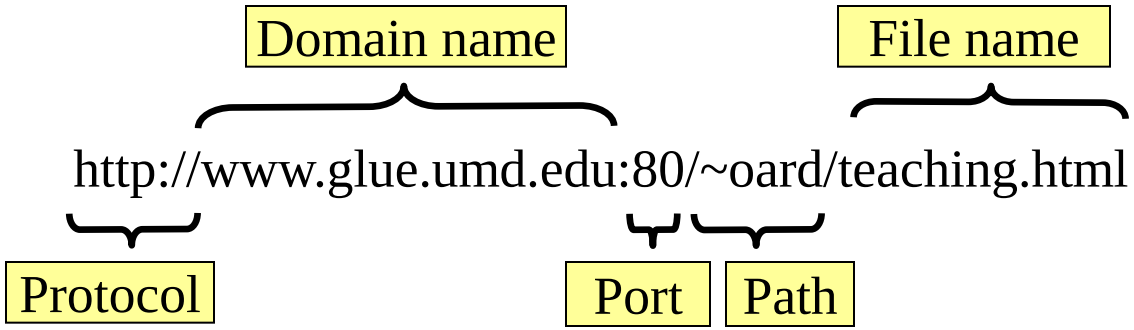


Web Standards

- HTML
  - How to write and interpret the information
- URL
  - Where to find it
- HTTP
  - How to get it

Uniform Resource Locator (URL)

- Uniquely identify Web pages



HyperText Markup Language (HTML)

- Simple document structure language for Web
- Advantages
  - Adapts easily to different display capabilities
  - Widely available display software (browsers)
- Disadvantages
  - Does not directly control layout

Outline

- Using the Internet
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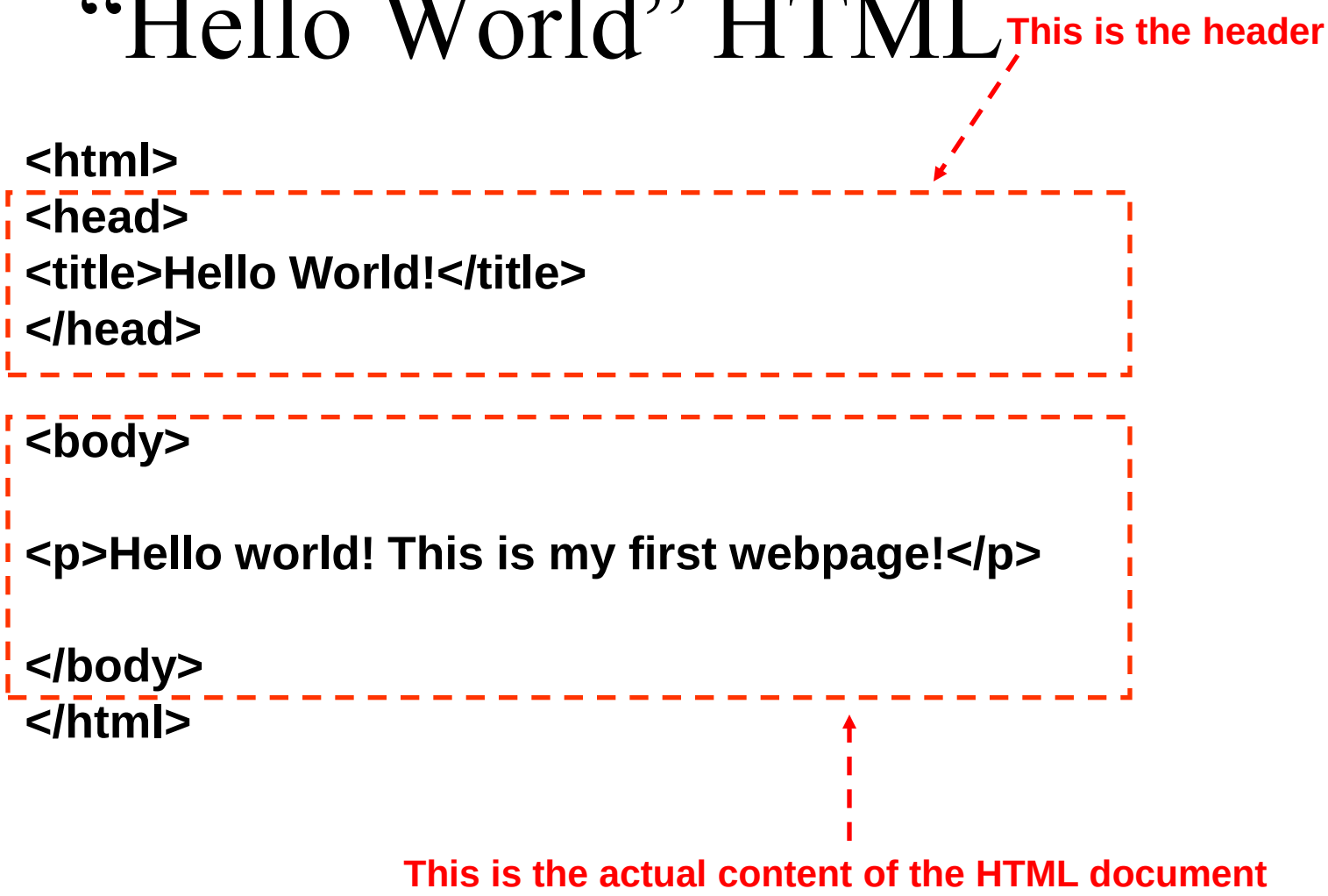
“Hello World” HTML



Hands On:
Learning HTML From Examples

- Use Internet Explorer to find a page you like
  - http://terpconnect.umd.edu/~oard
- Right-click and select view souce
  - Opens a notepad window with the source
- Compare HTML source with the Web page
  - Observe how each effect is achieved

Hands On: “Adopt” a Web Page

- Modify the HTML source using notepad
  - For example, change the page to yours
- Save the HTML source somewhere
  - In the “File” menu, select “Save As”
  - **Put the name in quotes (e.g.,** “test.html”)
- FTP it to your ../pub directory on terpconnect
- View it
  - http://terpconnect.umd.edu/~(yourlogin)/test.html

Tips

- Edit files on your own machine
  - Upload when you're happy
- Save early, save often!
- Reload browser to see changes
- File naming
  - **Don't use spaces**
  - Punctuation matters

HTML Editors

- Several are available
  - Dreamweaver
  - Microsoft Word
- You may still need to edit the HTML file
  - Some editors use browser-specific features
  - Some HTML features may be unavailable
  - File names may be butchered when you upload
- Verbose HTML can make hand-editing difficult

HTML Structure

- “Tags” mark structure
  - <html>a document</html>
  - an ordered list
  - something in italics
- Tag name in angle brackets <>
  - Not case sensitive (unlike XML)
- Open/Close pairs
  - Close tag is sometimes optional (unlike XML)

Logical Structure Tags

- Head
  - Title
- Body
  - Headers: <h1> <h2> <h3> <h4> <h5>
  - Lists: <ol>, <ul> (can be nested)
  - Paragraphs:<p>
  - Definitions: <dt><dd>
  - Tables: <table> <tr> <td> </td> </tr> </table>
  - Role: <cite>, <address>, , …

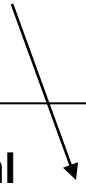
Physical Structure Tags

- Bold:
- Italics:
- Typeface:
- Size:
- Color:

(Hyper)Links

index.html

```
<html>
<head>
<title>Hello World!</title>
</head>
<body>
<p>Hello world! This is my first webpage!</p>
<p>Click <a href="test.html">here</a> for another page.</p>
</body>
</html>
```



test.html

```
<html>
<head>
<title>Another page</title>
</head>
<body>
<p>This is another page.</p>
</body>
</html>
```

Hypertext “Anchors”

- Internal anchors: somewhere on the same page
  - Students
    - Links to: Student Information
- External anchors: to another page
  - iSchool
  - email papers
- URL may be complete, or relative to current page
  - 2
- File name (in URL) is case sensitive (on Unix servers)
  - Protocol and domain name are not case sensitive

Images

- <img src="*URL*"> *or* <img src="*path/file*">
  - <img src="http://www.clis.umd.edu/IMAGES/head.gif">
  - ALT: a text string
  - ALIGN: position of the image
  - WIDTH and HEIGHT: size of the image

- Can use as anchor:
  - <img src=*URL2*>

Tables

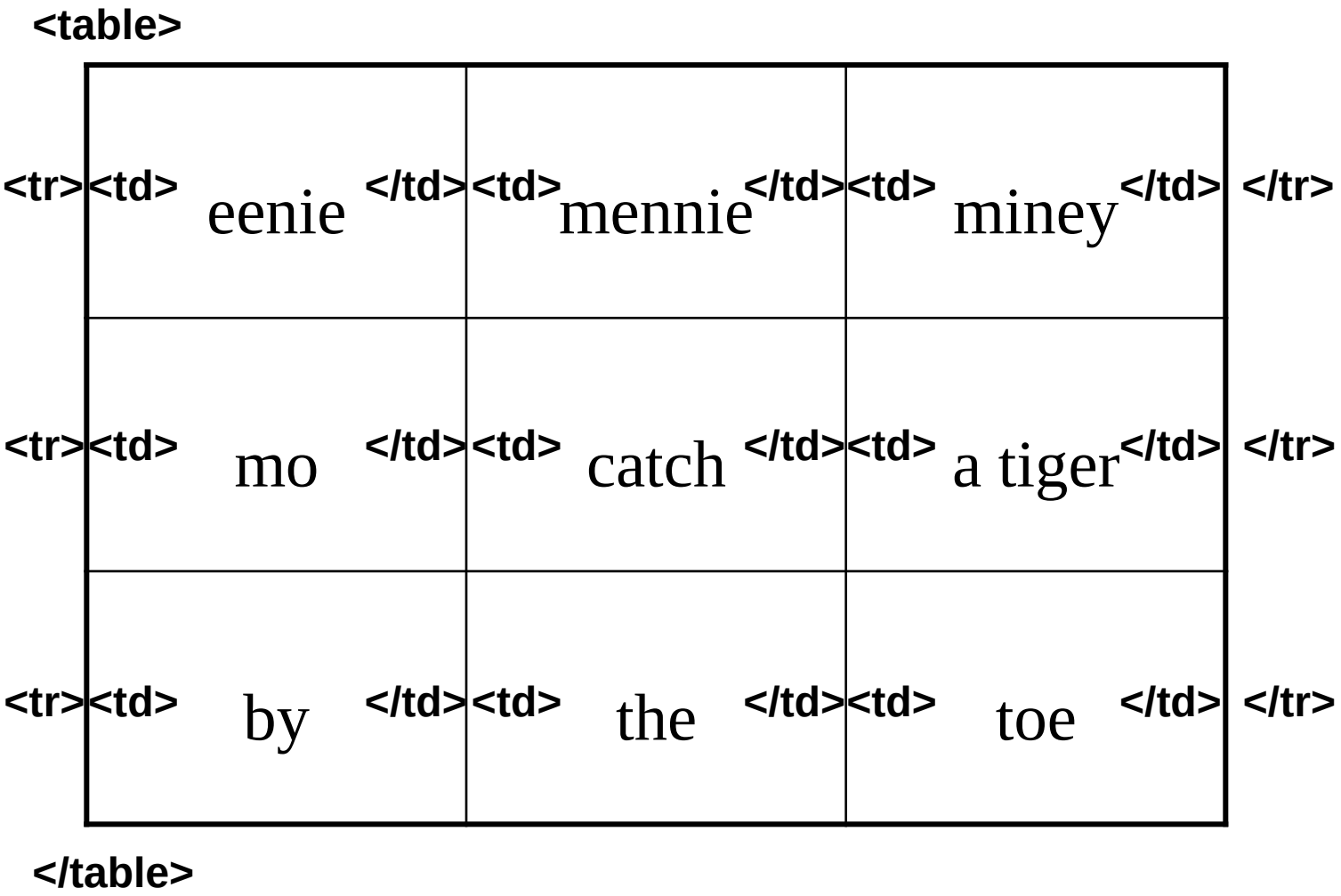

<table>
<tr><td> eenie </td><td> mennie </td><td> miney </td></tr>
<tr><td> mo </td><td> catch </td><td> a tiger </td></tr>
<tr><td> by </td><td> the </td><td> toe </td></tr>
</table>

Table Example

```
<table align=“center”>
<caption align=“right”>The caption</caption>
   < tr align=“LEFT”>
        <th> Header1 </th>
        <th> Header2</th>
   </tr>
   <tr><td>first row, first item </td>
        <td>first row, second item</td></tr>
   < tr><td>second row, first item</td>
        <td>second row, second item</td></tr>
</table>
```

Programming for the Web

- JavaScript [Client-side]
  - Server embeds a program in HTML
  - Browser runs the program when it gets to it
- PHP “Common Gateway Interface” [Server-side]
  - HTML form sends field values to the server
  - Server passes field values to a program
  - Program generates a Web page as a response
- Ajax
  - Server sends browser a generic program to run
  - Browser and server programs exchange XML-encoded data

JavaScript

```
<HTML>
<HEAD>
    <TITLE>My first script</TITLE>
</HEAD>
<BODY BGCOLOR=WHITE>
<H1>
    <SCRIPT LANGUAGE=JAVASCRIPT TYPE="TEXT/JAVASCRIPT">
        document.write("Hello, world!")
    </SCRIPT>
</H1>
</BODY></HTML>
```

What’s a Web Page?

- Content
- Structure
- Appearance
- Behavior

Why is There a Web?

- Affordable storage
  - 300,000 words/$ in 1995
- Adequate backbone capacity
  - 25,000 simultaneous transfers in 1995
- Adequate “last mile” bandwidth
  - 1 second/screen in 1995
- Display capability
  - 10% of US population in 1995
- Effective search capabilities
  - Lycos and Yahoo were started in 1995

Next Week …

Before You Go

On a sheet of paper, answer the following (ungraded) question (no names, please):

What was the muddiest point in today's class?