

# Introduction to Web Programming

CSC 242, Web Programming

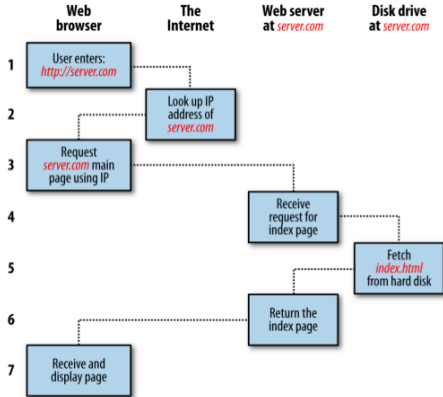
# The Internet

- The Internet is the global network of interconnected computer networks.
- The Internet protocol suite is a set of communications protocols that the internet uses to link devices worldwide.
- The Internet is the infrastructure for many information resources and services, for example, email and file sharing.

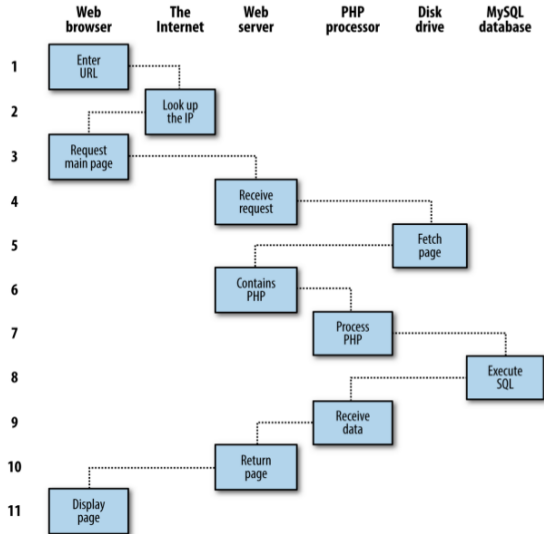
# The World Wide Web (WWW)

- The World Wide Web (the Web) is one way to access information over the internet.
- The Web uses Uniform Resource Locators (URLs) to identify resources.
- The Hypertext Transfer Protocol (HTTP) is the communication protocol for the Web.
- The Web uses a client-server model to access resources; the client sends a request and the server replies with a response.

# The Basic Request/Response Procedure



# The Dynamic Request/Response Procedure



# Uniform Resource Locator (URL) Syntax

scheme: [//authority]path[?query] [#fragment]

- **scheme:** e.g. http, ftp, mailto, file
- **authority:** has the form [user:password@]host[:port]
  - authentication: user name and password
  - host: name or IP address
  - port number
- **path:** contains data source
- **query:** contains attribute-value pairs
- **fragment:** contains fragment identifier providing direction to a secondary source

# Hypertext Transfer Protocol (HTTP)

- HTTP is a request-response protocol in the client-server computing model
- Form of a request:  
(Request Method) (Resource) HTTP/1.1  
(Request Header Fields)
- Form of a response:  
HTTP/1.1 (Status Code) (Reason Message)  
(Response Header Fields)  
(Blank Line)  
(Response Data)

# HTTP Example

## Request:

GET /index.html HTTP/1.1

Host: www.example.com

## Response:

HTTP/1.1 200 OK

Content-Type: text/html; charset=UTF-8

Content-Length: 79

<html>

<head><title>Title</title></head>

<body><h1>Example</h1></body>

</html>



# HTTP Request Methods

- GET
- HEAD
- POST
- PUT
- DELETE
- TRACE
- OPTIONS
- CONNECT
- PATCH

# Front End Development

- Authoring/markup
- Styling
- Scripting and programming

# Hypertext Markup Language (HTML)

- Language used to create web page documents
- Markup language
  - A system for identifying and describing the components of a document
  - The markup indicates the document's structure

# Cascading Style Sheets (CSS)

- Presentation – describe how the content should look
- Controls fonts, colors, background images, line spacing, etc.
- Provides methods for contextual presentation

# JavaScript/DOM scripting

- Scripting language used to add behaviors to web pages
- Can manipulate elements on the web page and the styles applied to them
- The Document Object Model (DOM) is the programming interface

# Backend Web Development

- Typically defined in terms of technology including:
  - Operating system
  - Web server
  - Database management system
  - Programming language
- Example: “LAMP Stack”
  - Linux
  - Apache
  - MySQL
  - PHP