Chapter 0
Overview

Nguyễn Hữu Hiếu
nguyenhuuhieu@hcmut.edu.vn

Books and references

- Stepp,Miller,Kirst. Web Programming Step by Step.(1st Edition, 2009), Companion Website: http://www.webstepbook.com/
- Robin Nixon. Learning PHP, MySQL, JavaScript, CSS & HTML5. A Step-by-Step Guide to Creating Dynamic Websites. (3rd Edition, 2015).
- W3Schools, http://www.w3schools.com/html/default.asp

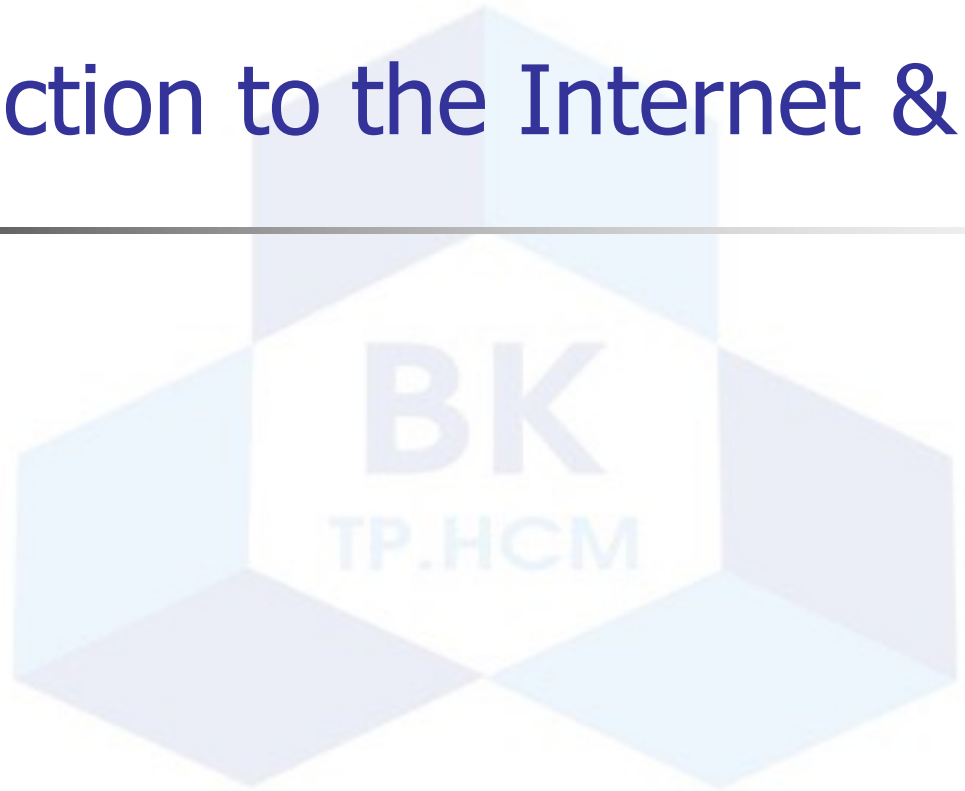
Content

- HTML5 + Forms
- CSS + CSS3
- JavaScript
- PHP

Grading

- Thực hành: 10%
- Thí nghiệm: 10%
- Assignment: 40%
- Final Exam: 40%

Introduction to the Internet & the Web



The Internet

- Developed beginning in the 1960s, sponsored by ARPA (Dept. of Defense Advanced Research Projects Agency).
- Protocol for communication between computers is called TCP/IP: Transmission Control Protocol / Internet Protocol.

Before the Web

- Internet was already existing
- Resources on the internet were found using command line tools like FTP
- Example:

– Run ftp program
– Enter "C host" (connects to a server) – Enter username
– Enter password
– Ls (lists files)
– Get file
– Cd (change directory)

- There were no links
- You had to know where the information was

The Invention

- 1989 – Tim Berners Lee proposes at CERN a way to organise information using hyperlinks
- 1990 – he develops the first browser – "World Wide Web"
- 1991 – first web server

Conclusions

- World wide web was first a way to link text documents
- It evolved into
  - Providing different kinds of content (images, video)
  - providing services for people (games, answers, news)
  - Providing means for people to create content (wikis, forums, social networking applications, blogs)
  - Providing services for computers

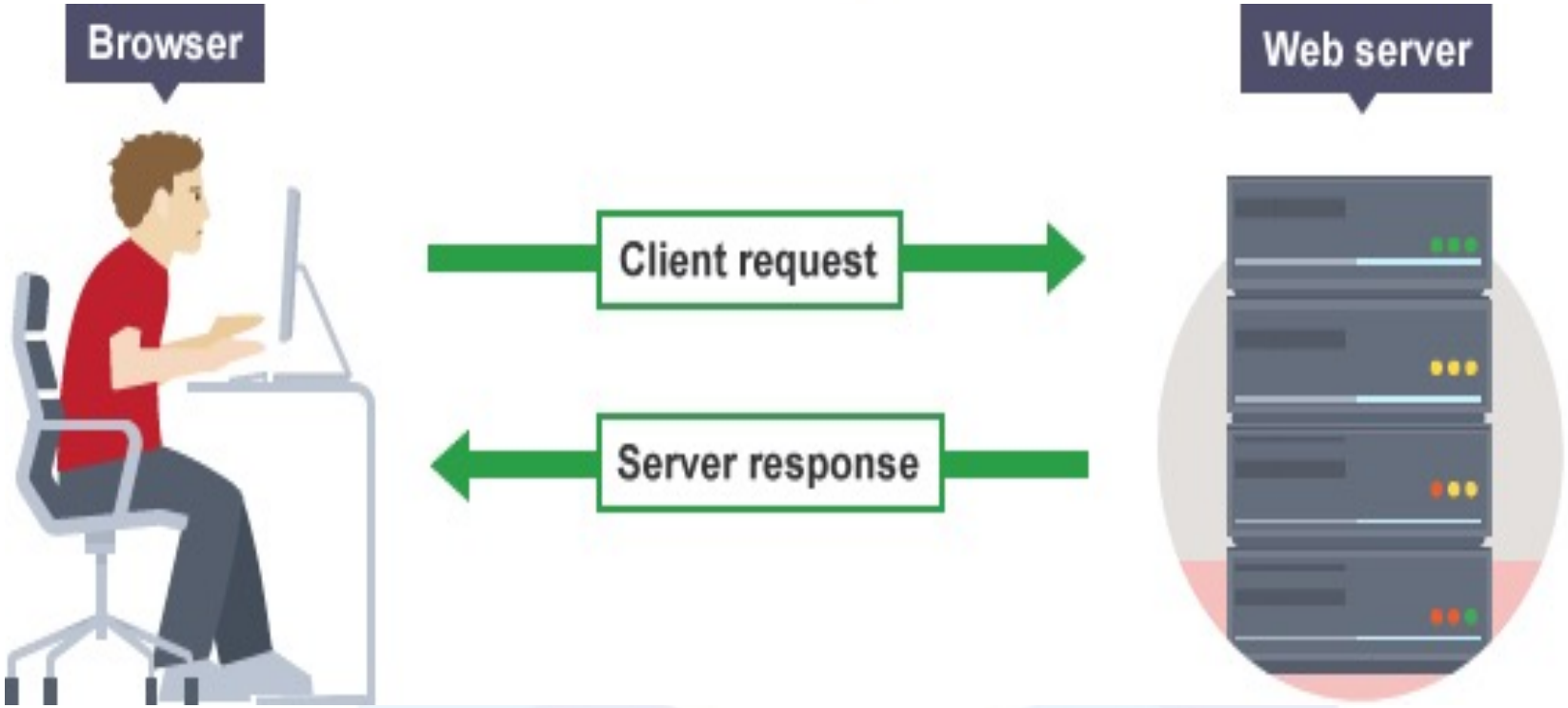
Conclusions

- The content was first static – text pages that were rarely changed and only by the owner
- Content became dynamic updated from the server's database
- Content became updated real time (without refreshing the page using asynchronous technologies)
- Content comes from different sources and it's aggregated on a page

How the web works

- The client-server model
- Client and server operate on machines which are able to communicate through a network
- The server waits for requests from a clients
- Server receives a requests from a client
  - Performs a the requested work
  - Or lookup the requested data
  - And send a response to the client
- Servers: file servers, web servers, name servers
- Clients: browsers, email clients

How the web works

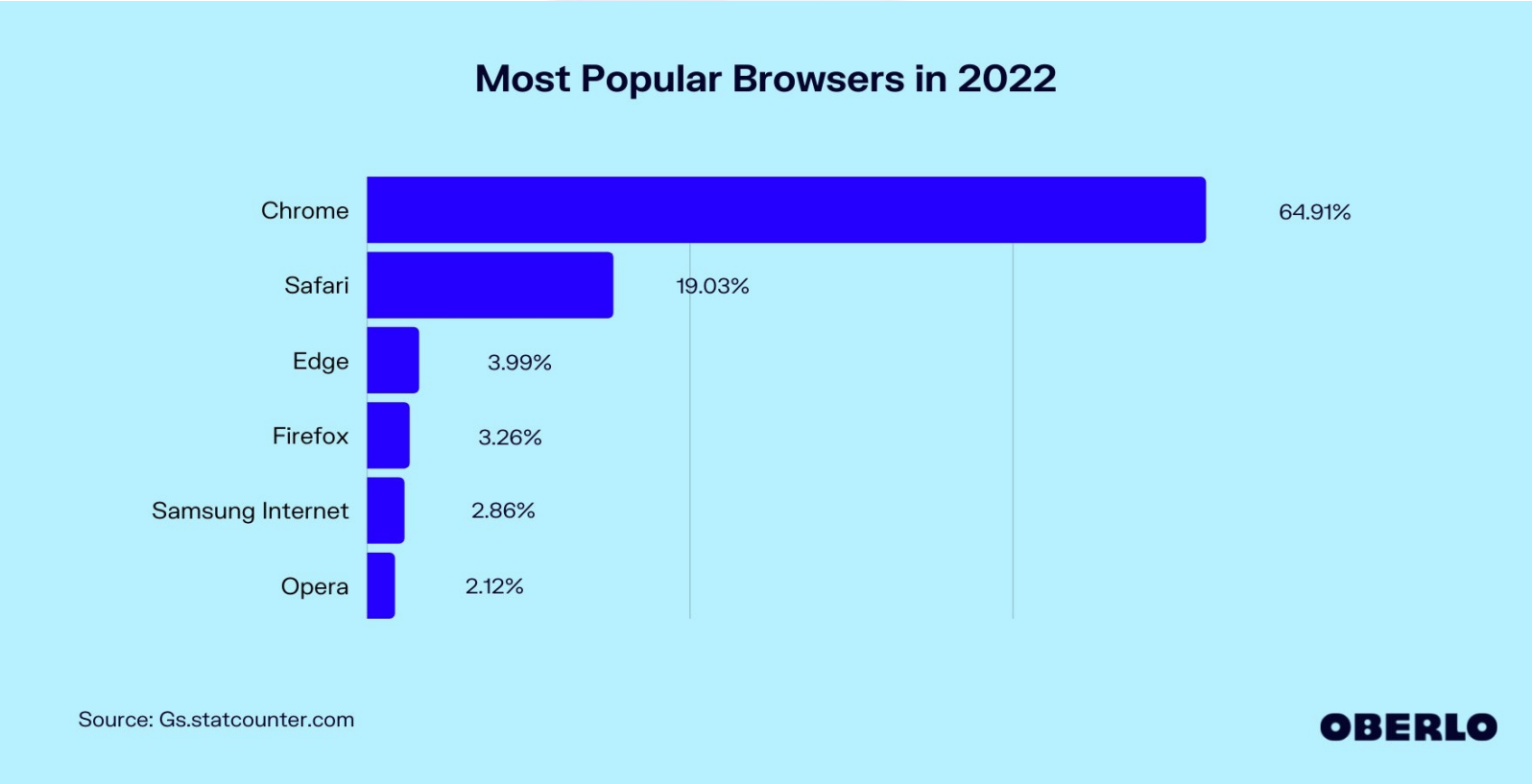


URL format

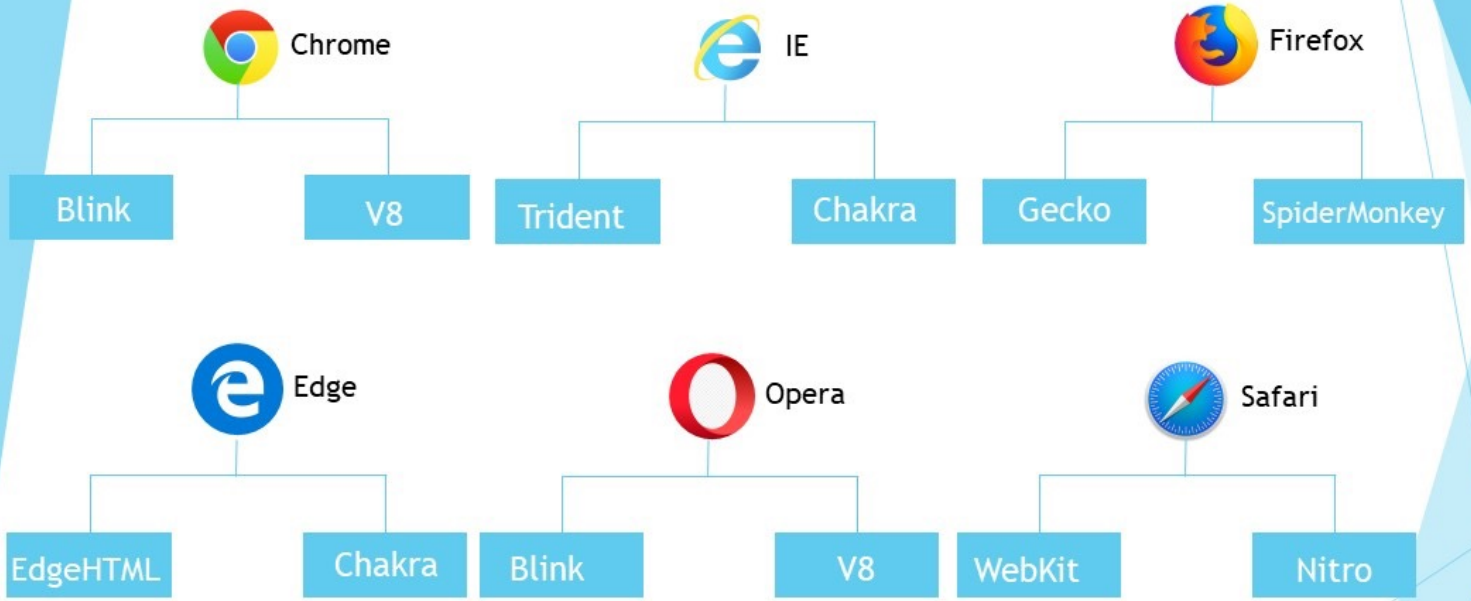
- URL: Uniform Resource Locator
- <scheme>://<server-domain-name>/<pathname>
  - <scheme> which protocol to use
  - http: Hypertext Transfer Protocol
  - file: which tells the client document is in a local machine
  - ftp: file transfer protocol
    <server-domain-name> identifies the server system
  - i.e. hcmut.edu.vn
    <pathname> tells the server where to find the file
- http://www.cse.hcmut.edu.vn/site/vi/Category

Web browsers and servers

- **A browser**: is a program that can retrieve files from the world wide web and render text, images, or sounds encoded in the files.
  - i.e. IE, Google Chrome, FireFox,…



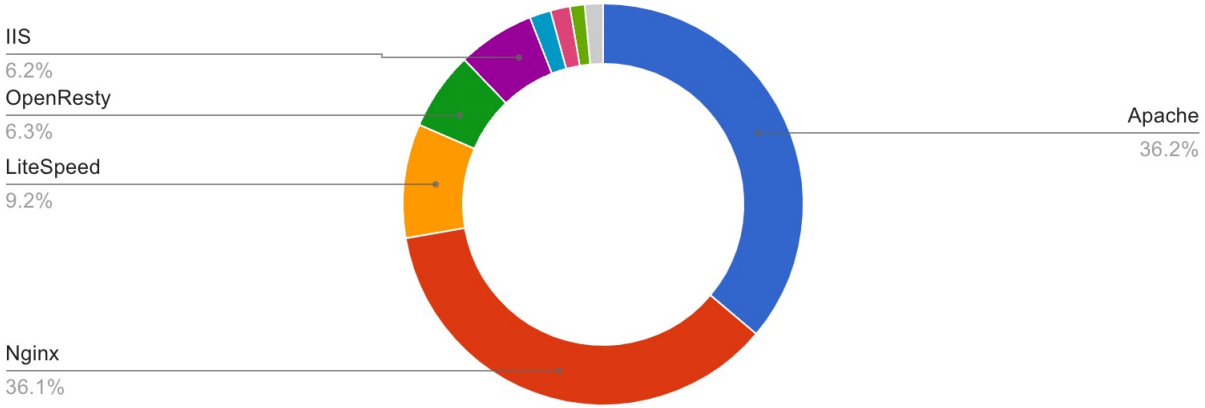
Rendering Engines & JavaScript Engines



LAMBDATEST

Web browsers and servers

- **A web server**: is an application which waits for client requests, fetches requested documents from disk and transmits them the client.
  - i.e Apache, IIS, Nginx,…



Source: https://www.wappalyzer.com/technologies/web-servers

- Nginx
- Apache
- LiteSpeed
- IIS
- OpenResty
- OpenGSE
- Express
- Next.js
- Tengine
- Nuxt.js

What happened when you click on hyperlink?

- Determine URL and extract domain name.
- Use the name server to get Internet Protocol (IP) address (DNS - Domain Name System)
- Make a Transmission Control Protocol (TCP) connect to port 80 and send a request for a web page once the server has accepted to connection.
- The server send the file and releases the TCP connection
- The client displays the document.

Stateless connection

- Both client and server release TCP connection after a page has been transferred.
- HTTP1.0 is stateless
  - Connections are not persistent
  - There is no indication to the server whether new transactions involve the same client
- HTTP 1.1 is persistent
  - By keeping track of the client IP addresses
  - However, there is no way of identifying a repeated visits to the site by the same user.
  - Furthermore, Internet Service Provider (ISP)s reallocate IP addresses to dial-up customers as new user dial in.

Cookies

- Request the browser to store a small data file (cookie) on the users hard disk.
- Which can serve to identify users only.
- For instance it could contain a key into a database on the server machine.
- Most browsers nowadays allow you to decide whether or not you want cookies on your machine.

W3C

- The World Wide Web Consortium (W3C) is an international community where Member organizations, a full-time staff, and the public work together to develop Web standards. Led by Web inventor Tim Berners-Lee and CEO Jeffrey Jaffe, W3C's mission is to lead the Web to its full potential.
- http://www.w3.org/Consortium/

Web Development Life Cycle

Table 1-4 Web Development Phases and Questions

WEB DEVELOPMENT PHASE	QUESTIONS TO ASK
Planning	• What is the purpose of this Web site? • Who will use this Web site? • What are the users' computing environments? • Who owns and authors the information on the Web site? • Who decides if/where the information goes on the Web site?
Analysis	• What tasks do the users need to perform? • What information is useful to the users? • What process considerations must be made?
Design and Development	• How will the Web pages be organized? • What type of Web site structure is appropriate for the content? • What forms of multimedia contribute positively to the Web site? • How can accessibility issues be addressed without limiting usability? • Do we need to design for an international audience?
Testing	• Is the Web site content correct? • Does the Web site function correctly? • Are users able to find the information they need and to complete desired tasks? • Is navigation easy?
Implementation and Maintenance	• How is the Web site published? • How is the Web site updated? • Who is responsible for content updates? • Who is responsible for structure updates? • How will users be notified about updates to the Web site? • Will the Web site be monitored?

Website design issues

- Browser and OS
- Bandwidth and cache
- Display resolution-800x600, 1024 x 768, mobile devices, tablets.
- Look and feel
- Web site theme
- Fonts, graphics and colors
- Presentation and access
- Page layout and linking
- Locating information
- Make design user-centric
- Sitemap

Tài Liệu Tham Khảo

- [1] Stepp,Miller,Kirst. Web Programming Step by Step.(1st Edition, 2009) Companion Website: http://www.webstepbook.com/
- [2] W3Schools, http://www.w3schools.com/html/default.asp