

Web Programming

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What should a Web developer know?

Basic Internet Technologies

The HTML and XHTML

The CSS (Style Sheets)

Client Side Scripting

Server Side Scripting

AJAX & XML & RSS

Database Management (SQL)

How to run your own web servers?

To Develop ...

Web Application

References

- All E-books about our discussion
- <http://www.w3schools.com>

■ **What is the Internet?**

- The Internet is a connection of all worldwide networks using the same network communication protocol.

■ **What is the Web?**

- The Web is a term that is used to refer to the many files that are written in HTML. HTML allows users to view text, graphic, video, sound, etc. The World Wide Web (www) enables you to access documents linked across the Internet.

■ **What is HTML?**

- HTML (Hypertext Markup Language) is a set of special codes embedded in text which add formatting and linking information. HTML consists of “tags” inserted by the user which enable the production of the WEB page on the Internet. For example, in the statement `Sample`, the `` indicates the start of bold and the `` indicates the ending of the bold.

■ **What is a browser?**

- A browser is software that allows you to view or browse an HTML document, i.e., Netscape.

■ **Do I need a special software package to write my HTML file?**

- No, you can use any text editor or word processor to write your HTML code. One of the most popular ones is Microsoft Notepad, which can be found under START, PROGRAMS, ACCESSORIES using Windows 95.

Internet Fundamentals

Web Application Software Development

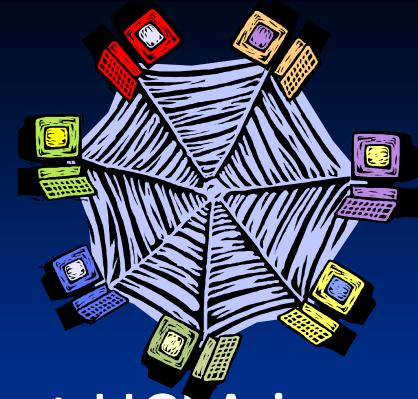
Essential Materials

Introduction



- This is an introductory course to the latest technologies for creating and processing the Web content.
- Enough examples will be provided to you to clarify the principle concepts.
- You are advised to get more information from the bookstore, the library and the online materials.

Internet History

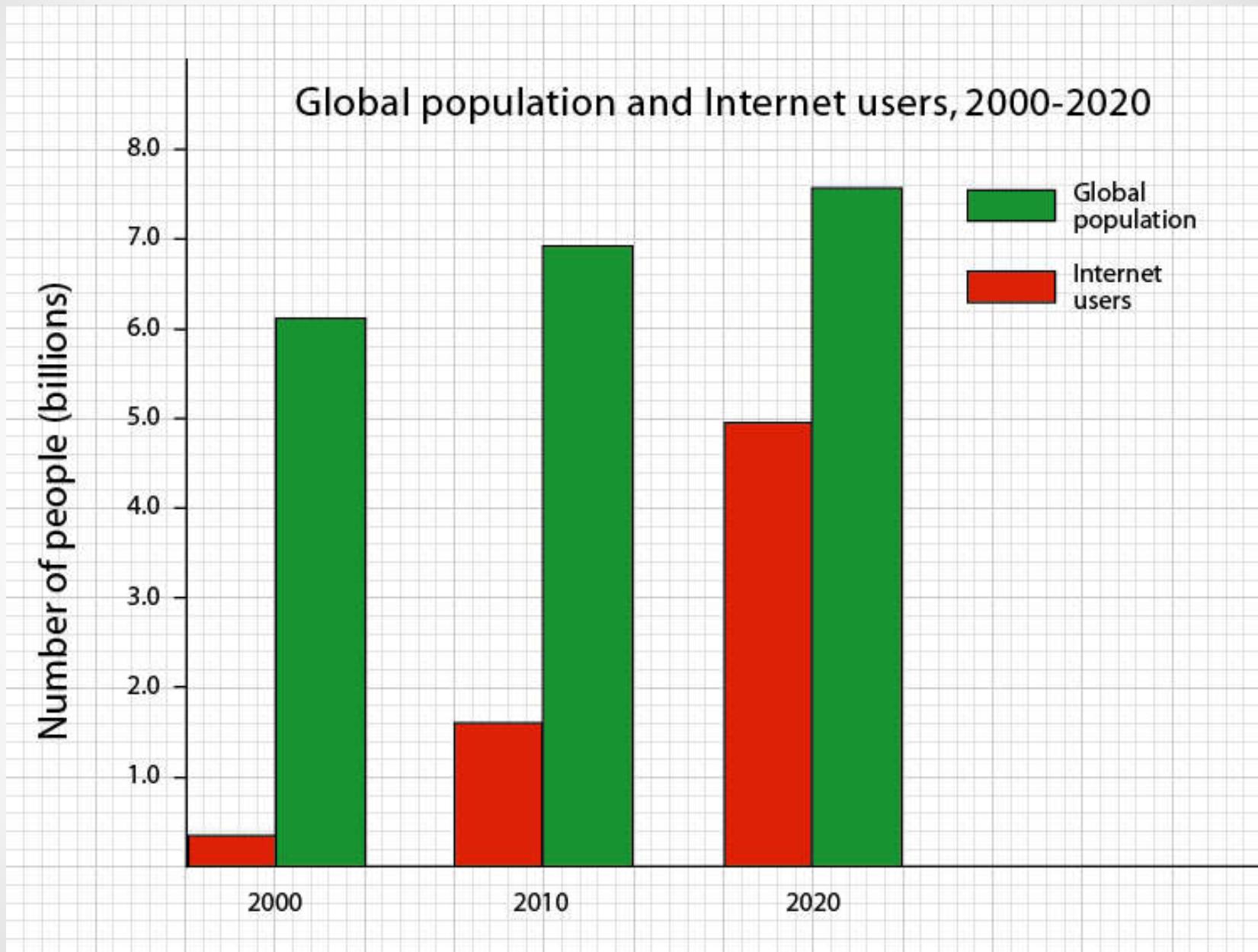


- The first node of **ARPAnet** was established at UCLA in 1969.
- In the late 1970s and 1980s, many networks were developed (BITNET, CSNET, NSFnet) locally.
- Internet is a huge collection of computers connected in a communications network.
- The Internet cannot continue to grow indefinitely. So... when will it stop?

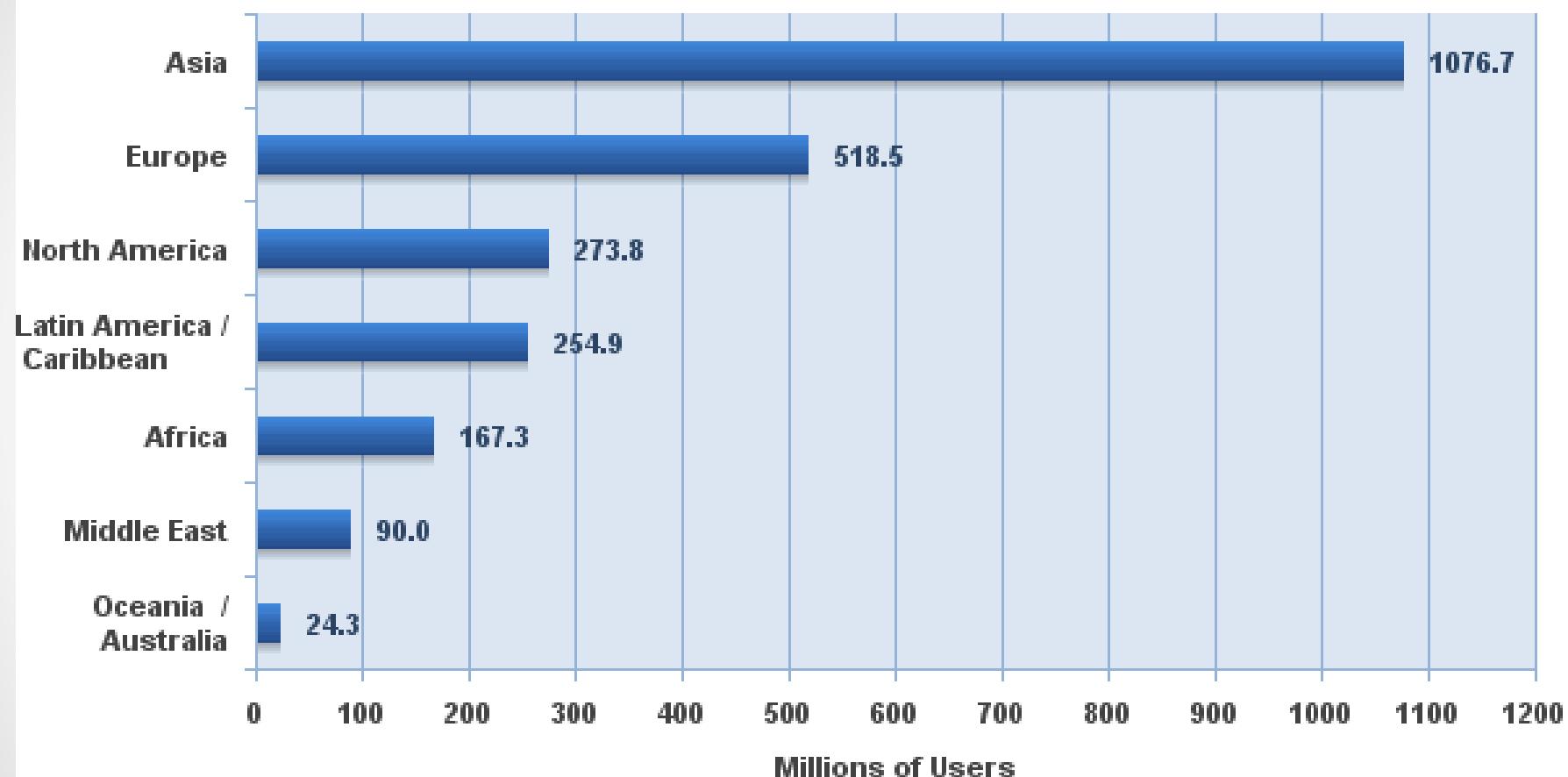
Estimation of Computers connected to the Internet

Year	Number of Computers on the Internet
1983	562
1984	1,024
1990	290,000
1991	500,000
1995	4,852,000
1996	9,472,000
1999	43,230,000
2000	73,000,000

From 2000 to 2009, the number of Internet users globally rose from 394 million to 1.858 billion.



Internet Users in the World by Geographic Regions - 2012 Q2

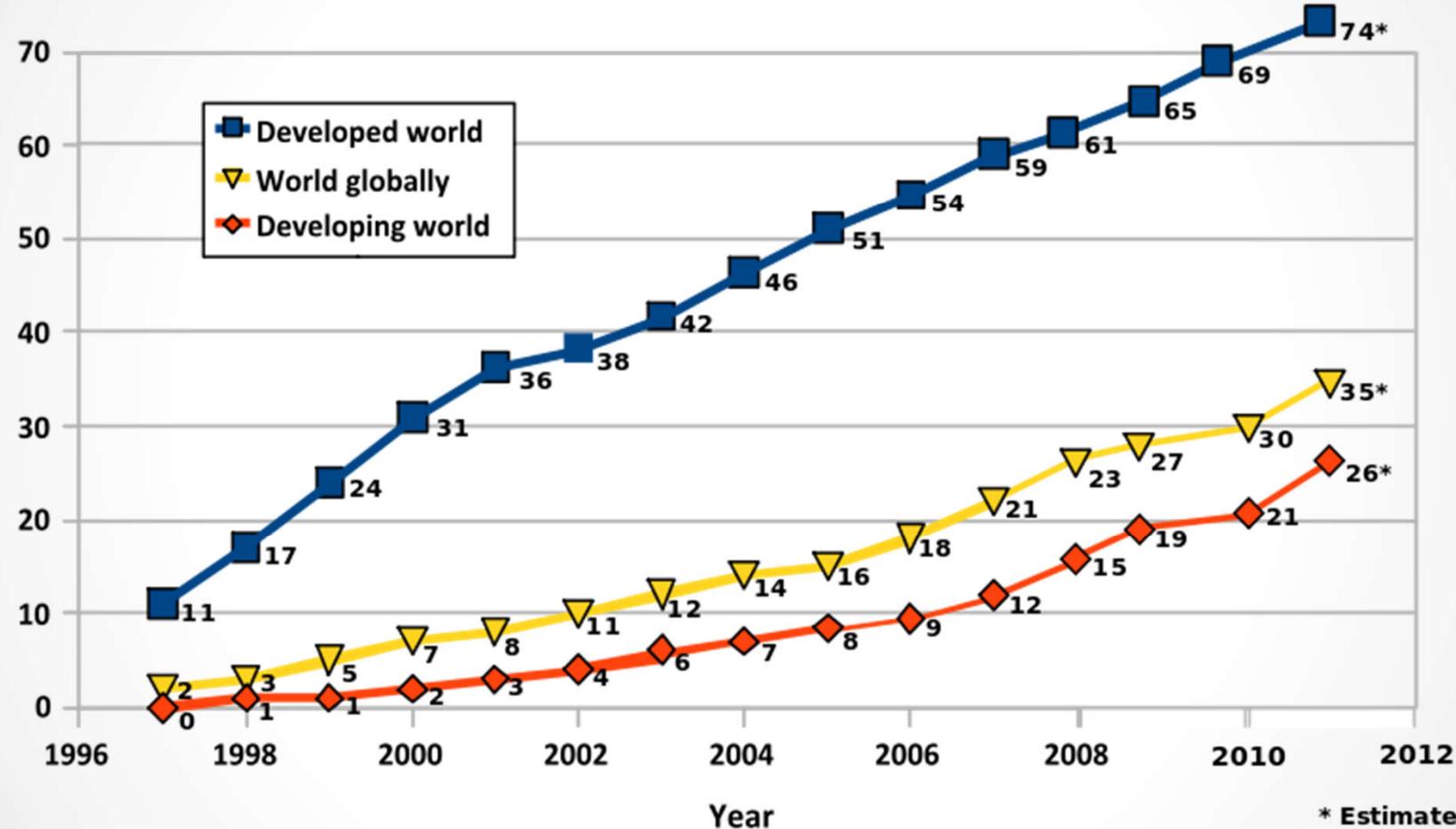


Source: Internet World Stats - www.internetworldstats.com/stats.htm

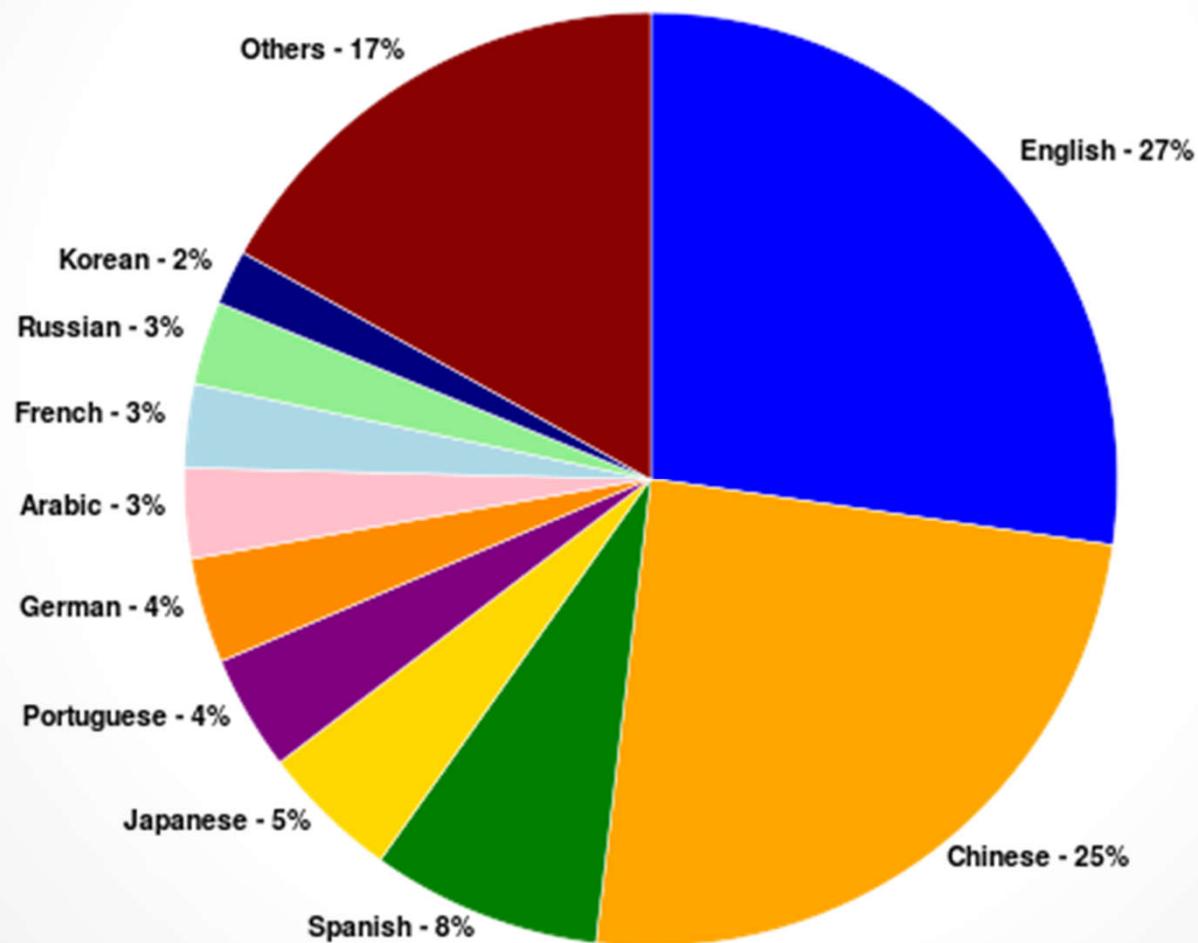
2,405,518,376 Internet users estimated for June 30, 2012

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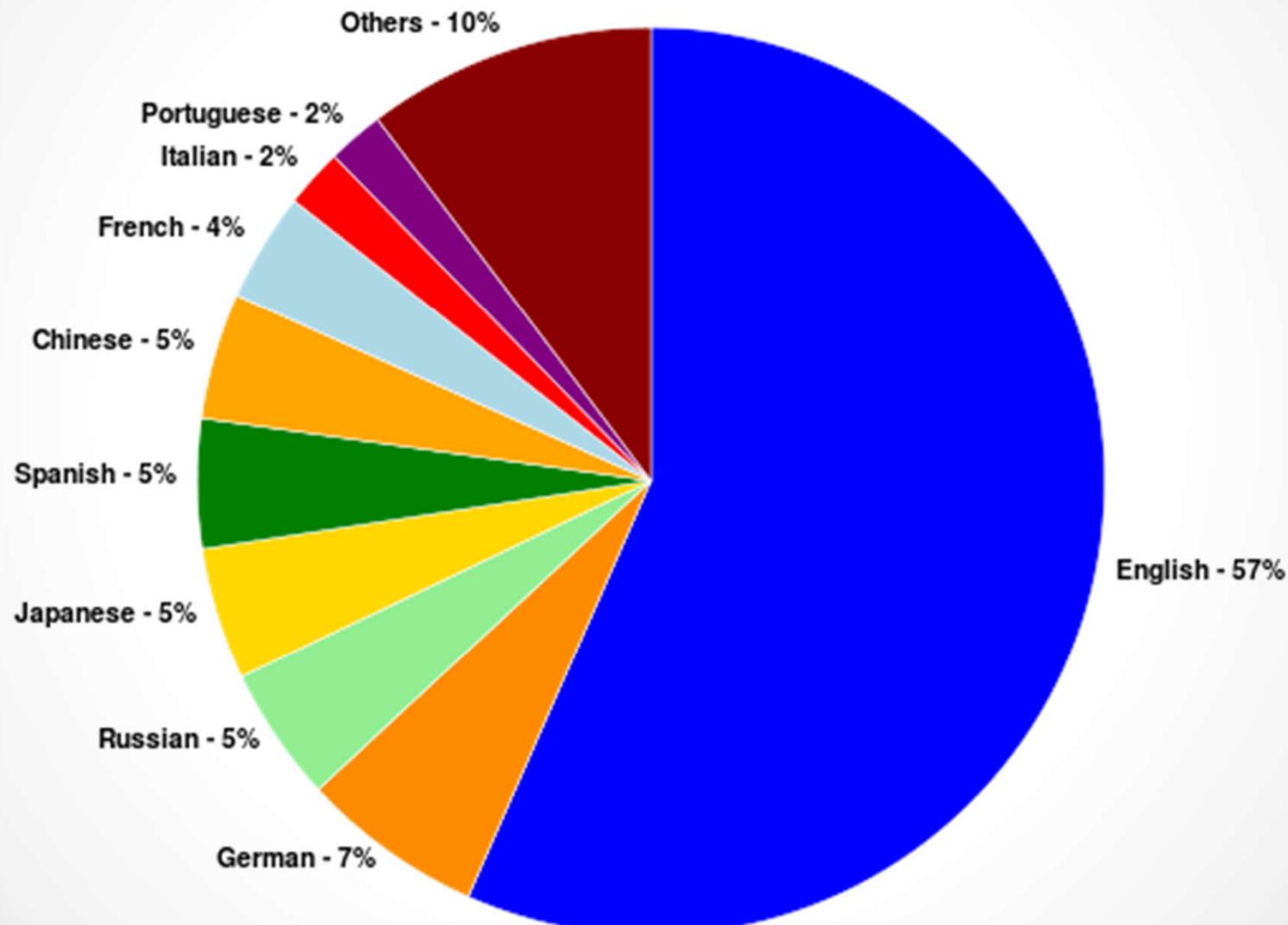
Internet users per 100 inhabitants



Internet Users By Language



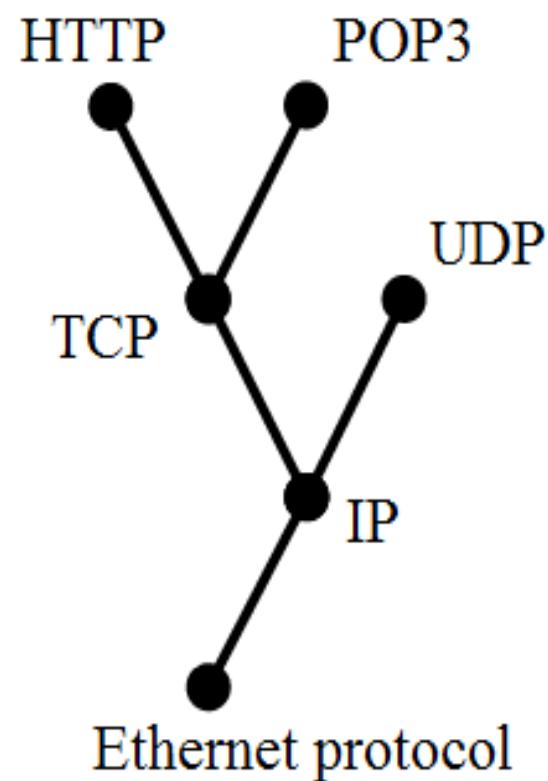
Websites By Language



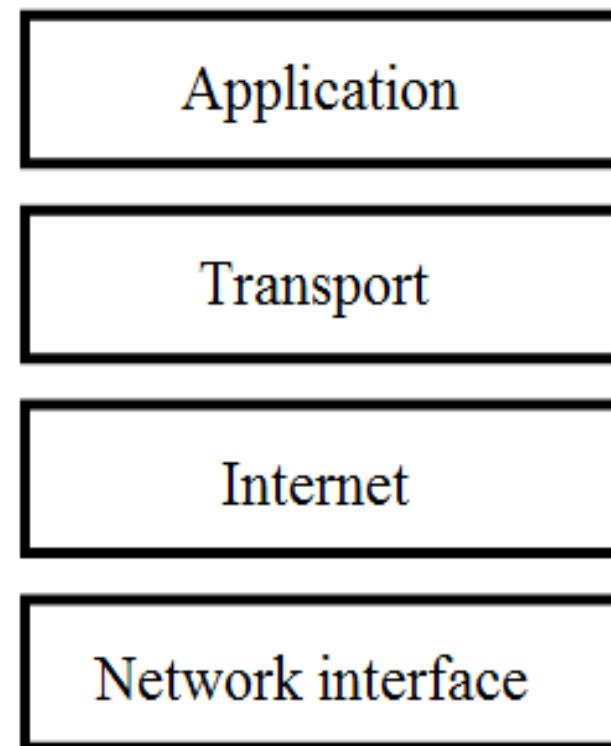
Common Network Protocols



- It is a special set of rules that end points in a telecommunication connection use when they communicate.
- **Transmission Control Protocol (TCP)** – To exchange messages with other Internet points at the information packet level.
- **Internet Protocol (IP)** – To send and receive messages at the Internet Address level.
- **Hypertext Transfer Protocol (HTTP)** – To deliver HTML, sound, audio files on the World Wide Web.



TCP/IP - model

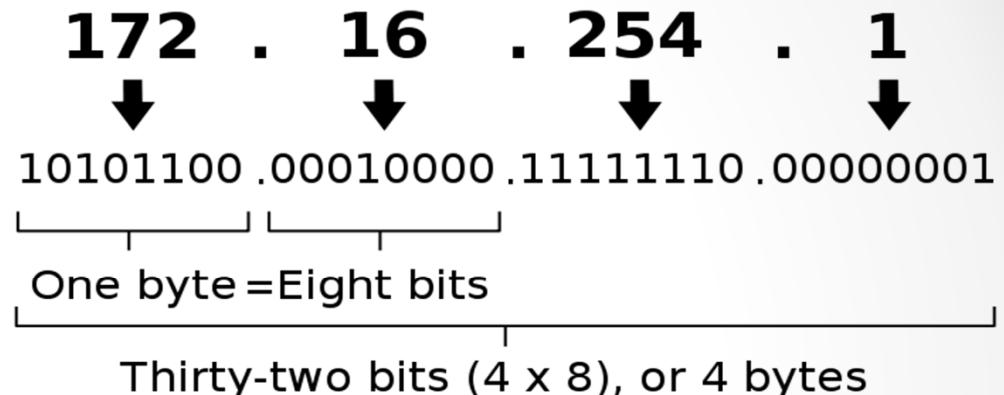


Internet Protocol Address

- The Internet devices are identified by
 - Names for people
 - Numeric addresses for computers
- The IP address is a unique 32-bit number
 - Divided into 4 parts (1 byte each)
 - 191.57.126.0
- Next generation : IPv6 – 128-bit number
 - 2001:0db8:85a3:0042:0000:8a2e:0370:7334

IP v4 & IPv6

An IPv4 address (dotted-decimal notation)



An IPv6 address (in hexadecimal)

2001:0DB8:AC10:FE01:0000:0000:0000:0000

↓ ↓ ↓ ↓ L

2001:0DB8:AC10:FE01:: Zeroes can be omitted

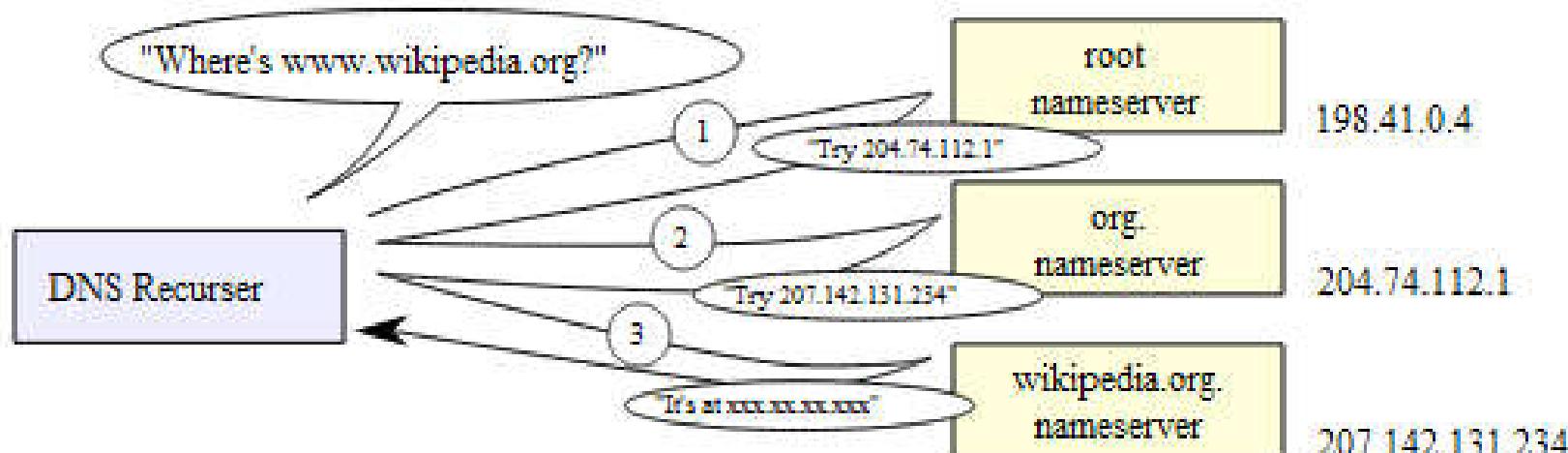
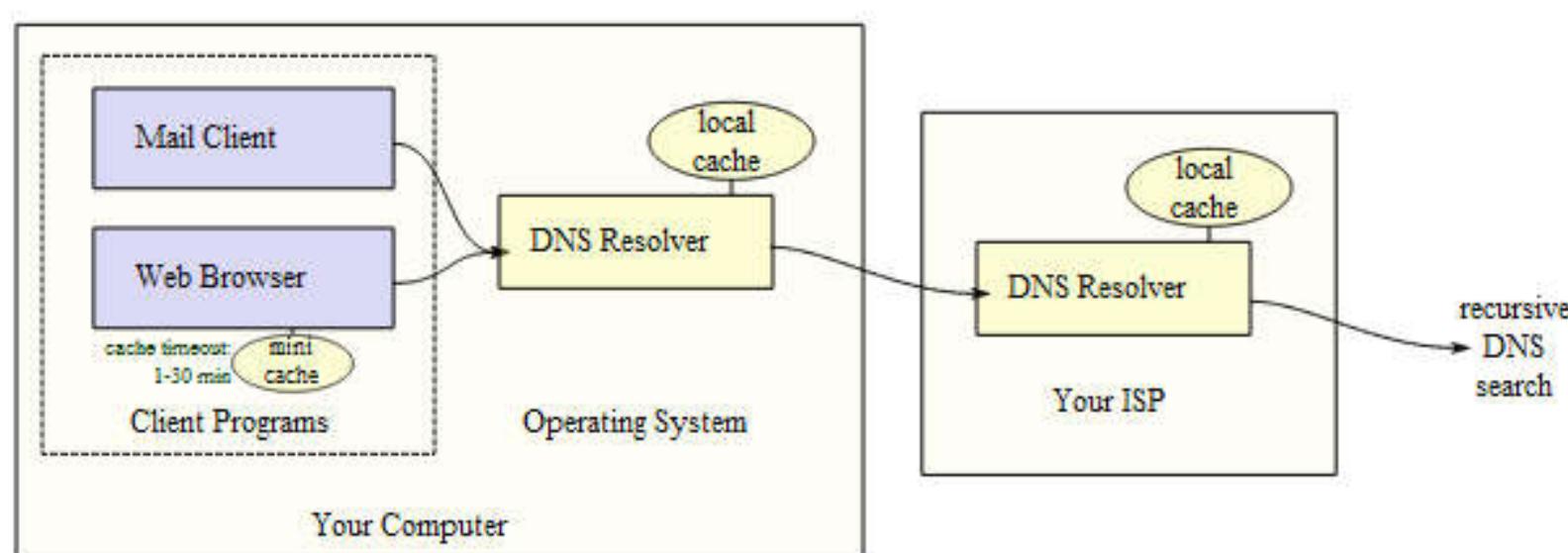
0010000000000001:000011011011000:101011000010000:1111111000000001:
0000000000000000:0000000000000000:0000000000000000:0000000000000000

uses 128-bit addresses, allowing for 2^{128} ,
or approximately 3.4×10^{38} addresses

Domain Name & DNS

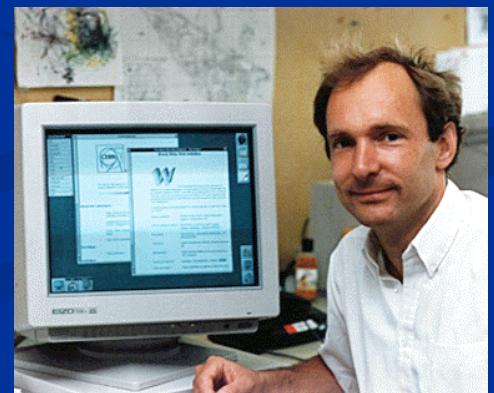
- People have difficulty dealing with and remembering numbers, machines on the Internet also have textual names.
 - www.wikipedia.com
 - It is the machine providing web services on the wiki domain.
- There are name servers on the Internet that provide **Domain Name Services (DNS)**.
 - `ns.cuhk.edu.hk`, `137.189.6.6`
 - It replies the name or IP address of any machine in the CUHK domain.

DNS



The World Wide Web

- Affectionately called “The Web”
- It is a collection of information stored on the networked computers over the world.
- The WWW was proposed in 1989 by Tim Berners-Lee at CERN.



How does the Web work?

- The web information is stored in the Web pages.
 - In **HTML** format.
- The web pages are stored in the computers called Web servers.
- The computer reading the pages is called web clients with specific web browser.
 - **Most commonly Internet Explorer.**
- The web server waits for the request from the web clients over the Internet.
 - **Internet Information Server (IIS) or Apache.**

Web or Internet?

- **They are not the same things.**
- The Internet is a collection of computers or networking devices connected together.
 - They have communication between each other.
 - Decentralized design that there is no centralized body controls how the Internet functions.
- The Web is a collection of documents that are interconnected by hyper-links.
 - These documents are accessed by web browsers and provided by web servers.

Internet Terminology

■ Client

- Any computer on the network that requests services from another computer on the network.

■ Server

- Any computer that receives requests from client computers, processes and sends the output.

■ Web Page

- Any page that is hosted on the Internet.

■ Web Development

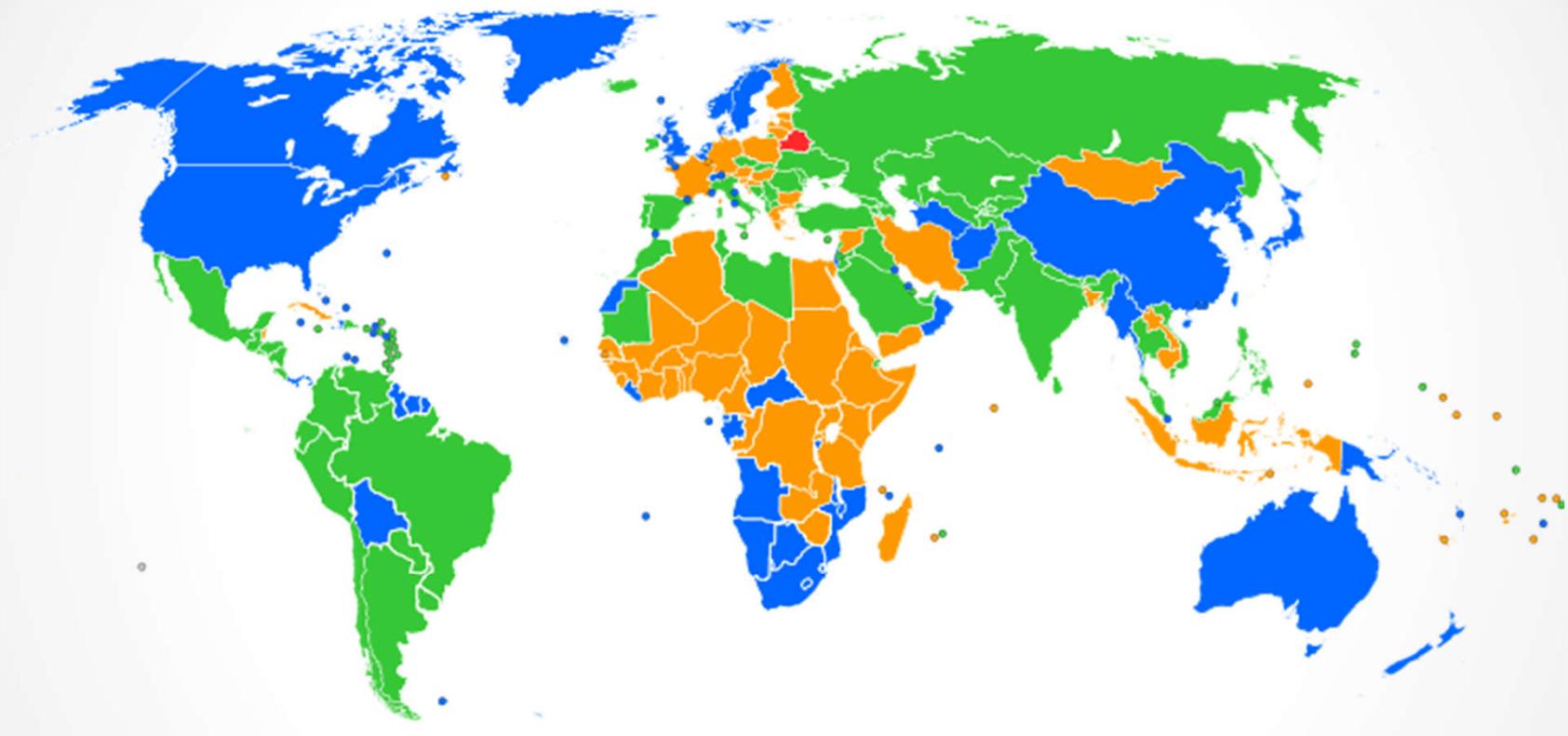
- The process of creating, modifying web pages.

Web Browser (Web Client)

- It is a program that retrieves information from the Web.
 - Microsoft Internet Explorer (IE)
 - Most commonly used browsers
 - Netscape, Mozilla, Chrom ,Safari,...
 - Many different computing platforms
 - Opera
 - The fastest browser on Earth
 - Lynx
 - Text based web client



Countries by most used web browser



- Internet Explorer
- Mozilla Firefox
- Google Chrome
- Opera

Web Server

- It is a program that waits for requests from the web browser.
- It provides four major functions
 - **Serving web pages**
 - Running gateway programs (CGI) and returning output
 - Controlling access to the server
 - Monitoring and logging all access
- E.g. Apache, IIS, TomCat, ...



Usage of Webservers

