

Internet - 204100

Dr. Matinee Kiewkanya

2013 Revision by Kittipitch Kuptavanich

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Overview

- Computer Network
- Internet
- TCP/IP
- Domain Names
- Internet Services

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Computer Network

- Telecommunication network that allows computers to exchange data.
- The physical connection established using either cable media or wireless media.
- The best-known computer network is the Internet.

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Computer Network

Pros	Cons
<ul style="list-style-type: none"> ■ Facilitates interpersonal communications ■ Allows sharing of files, data, and other types of information ■ Allows sharing of network and computing resources 	<ul style="list-style-type: none"> ■ May be insecure ■ May interfere with other technologies ■ May be difficult to set up

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TCP/IP

- Main protocol for the Internet
- Consists of
 - TCP (Transmission Control Protocol)
 - Breaks data down into packets
 - Combined received packets back into usable data
 - Error Checking/ Request for Resending
 - IP (Internet Protocol)
 - Use IP address to relay datagram across networks
 - Decide/Change datagram path (Routing)

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Internet Protocol

- The **Internet Protocol (IP)** is the principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries.



IP Address

- IP address (Internet Protocol address) is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network.
- Originally defined as a 32-bit number and this system, known as Internet Protocol Version 4 (IPv4)
- Newer system called IPv6 but the term IP address typically still refers to the addresses defined by IPv4.

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IP(v4) Address

- Consists of four decimal numbers (one byte each), each ranging from 0 to 255 (1 byte = 8 bit -> $2^8 = 256$) separated by dots. For example 172.16.254.1





Public vs Private IP

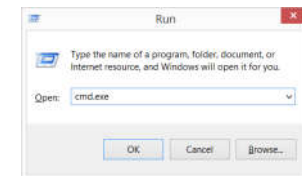
- Public IP
 - Can be referenced across networks
 - Managed/Assigned by governing organizations
 - Network Information Center (NIC)
 - Internet Assigned Numbers Authority (IANA)
- Private IP
 - Within LAN
 - Managed by system administrators

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Checking IP Address

Windows

- Open terminal
 - Press  + 
 - You will get run command windows
 - Type in cmd.exe



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Checking IP Address [2]

- You will terminal
- Enter ipconfig

```
>ipconfig
```

- You will get the following:

```
Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . : fe80::d858:5a39:d8f0:f781%3
IPv4 Address. . . . . : 172.16.0.143
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 172.16.0.254
```

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Domain Name

- Provides recognizable and memorizable names to numerically addressed Internet resources (IP address)
- Translated by **Domain Name Server (DNS)** to IP address (Name Resolution)



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Top Level of Domain Name

- Rightmost Section

- Can be:

- Entity Type
 - .com, .gov, .mil, etc.
- Country Code
 - .th, .jp, .uk, .cn, .mm

TLD	Intended Use (Original)
.com	Commercial
.net	Network Infrastructure
.org	Organization
.gov	Government (US)
.edu	Educational Organization
.mil	Military (US)
.int	International Organization (Treaty)
.biz	Business
.info	Informational Site

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Lower Levels of Domain Name

- Second-level Domain

- Subdomain of TLD

- .go.th, .ac.uk

- Not Subdomain of TLD

- www.google.com

- Other Subdomains

- www.cs.science.cmu.ac.th

- The leftmost characters (like 'www') indicate protocol.

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Services on the Internet

- E-mail
- WWW
- FTP, sFTP
- Telnet, ssh
- Web search engine
- Conversation
- Social Media
- Web Application

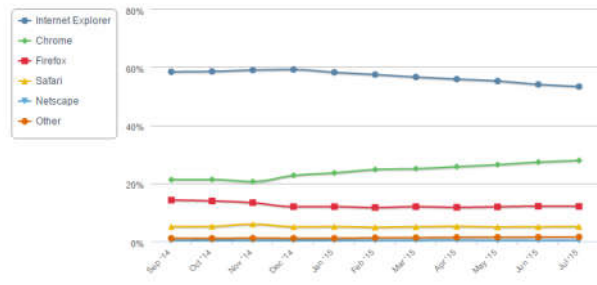
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E-mail

- A method of exchanging digital messages from an author to one or more recipients.
- An email address identifies an email box to which email messages are delivered

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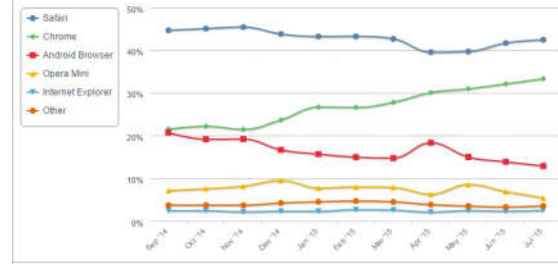
The Browser War — Desktop Version



September, 2014 to July, 2015. Source: netmarketshare.com

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The Browser War — Mobile Version



September, 2014 to July, 2015. Source: netmarketshare.com

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URL

- A uniform resource locator, abbreviated URL, also known as web address
- In most web browsers, the URL of a web page is displayed on top inside an address bar
- The format is `protocol://domain/path/file` e.g.
<http://www.cs.science.cmu.ac.th/matinee/picture/mypic.jpg>

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Some Terminology

- Web Page
 - Document file used to display information
 - Contains text, images, sound, etc.
- Website
 - Series of web pages hosted on a single domain
- Home Page
 - Default page of a website

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More Terminology

- Web Hosting
 - Host website on server, making it available on the WWW
- Internet Service Provider (ISP)
 - Provide access to the Internet
 - 3BB, AIS, TrueNet, ToT

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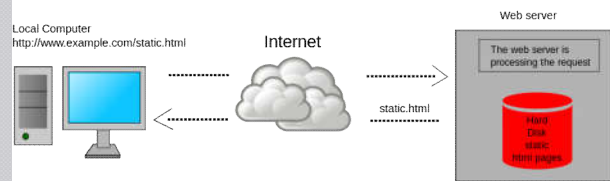
WWW Protocol

- **http://** HyperText Transfer Protocol
- **ftp://** File transfer Protocol
- **news://** UseNet News group
- **gopher://** gopher (160 servers worldwide)

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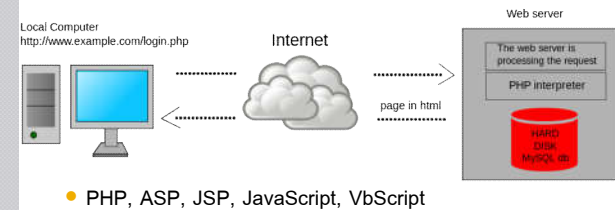
Static vs Dynamic Webpage

- A **static web page** is a web page that is delivered to the user exactly as stored, in contrast to **dynamic web pages** which are generated by a web application.
- Static Web Page
 - Just HTML



Dynamic Web Page

- Contents can change based on user's interaction
- May interact with database



- PHP, ASP, JSP, JavaScript, VbScript

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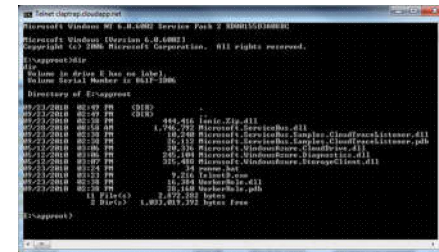
FTP

- File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet.



Telnet - SSH

- Provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection.



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Web search engine

- A software system that is designed to search for information on the World Wide Web
- Popular search engines: Google, Yahoo, Baidu, Bing, Yandex etc.
- Google also has many specialized search engines and other products
(<http://www.google.co.th/intl/en/about/products/>)
 - Google Scholar (scholar.google.com)
 - Google Finance
 - Google Trends
 - Google News



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Google Search Tricks

- Put words you want to search in between quotation marks ("") and Google will search for that exact word orders.
- You can ask google question like "What day is today?"
- Or you can type in a calculation problem, and Google will solve it for you. Or search for *calculator*.
- *site:* will limit the search result to a website.
- *goo.gl* helps shorten a link (URL)

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Google Image Search

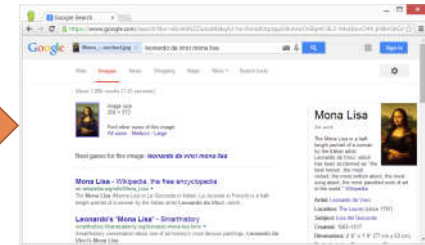
- <https://images.google.com>



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Search by Image

- Beside keywords, you can use image itself for searching with Google Image Search



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Search by Image [2]

- How to perform Search by Image



Drag and Drop

- Drag and drop an image from the web or computer into the search box



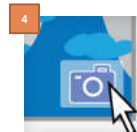
Upload an Image

- Click the camera icon
- Select "Upload an image".
- Choose image to upload.



Copy and Paste URL for an Image

- Right-click the image and copy the URL
- On images.google.com
 - Click the camera icon
 - Select "Paste the URL"



Right-click an Image on the Web

- Need web browser extension
- Just right-click on an image to search

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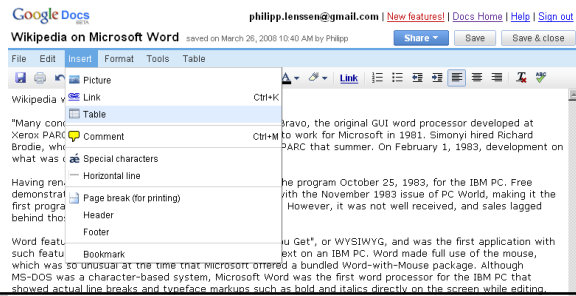
Conversation

- Conversation
 - USENET newsgroup
 - Online Chat
 - IRC
 - Instant messaging: LINE, google talk, skype, etc
 - Web board



Notable Cloud Applications

- Office Application: Google Documents, Microsoft Office Web App
- Online Collaboration



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Google Docs

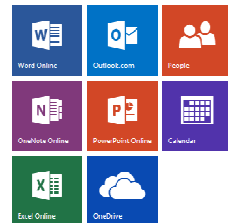
- <http://docs.google.com> or <https://drive.google.com>
 - Office Suite from Google
 - Free to Use



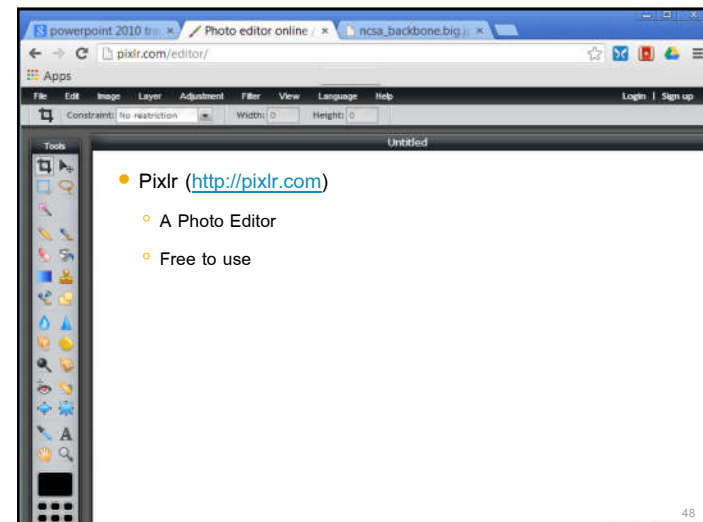
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Microsoft Office Online

- <http://office.com> or CMU Student e-mail login
 - Office Suite from Microsoft
 - Similar to Offline version of Microsoft Office
 - Free to Use

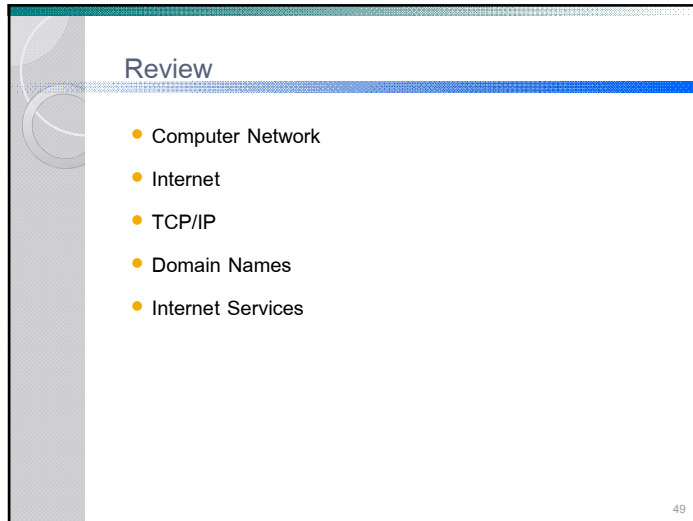


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- Pixlr (<http://pixlr.com>)
 - A Photo Editor
 - Free to use

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Review

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