

CMPT 165

Intro to Internet & WWW - Part 2

May 15th 2015

Admin

- Course textbook: “CMPT 165 Study Guide”
 - Details of course topics listed in “Table of Contents”
- Course website updated
<http://www.cs.sfu.ca/CourseCentral/165/lisat/>
- Class structure:
 - First part: ~35min. focus presentation
 - Second part: ~15min. personal guidance
- Q’s about lab will be answered at 2nd part of class
- Class slides: posted only after class by end of day
 - Don’t need to take notes for definitions, etc.
 - Use slide number

Admin

- Exercises: short (1%)
 - posted 1 week prior to due date
- Assignments: longer (7%)
 - Posted at 2 weeks prior to due date
- To get timely response, please email ALL technical questions (e.g. “Cannot install”, “how to...”, etc.) to:
cmpt165-d1-help@sfu.ca
- TA office hours

Today's agenda

Unit 1:

- Internet structure
- Client/server
- IP address
- Protocols
- URL
- MIME
- ...

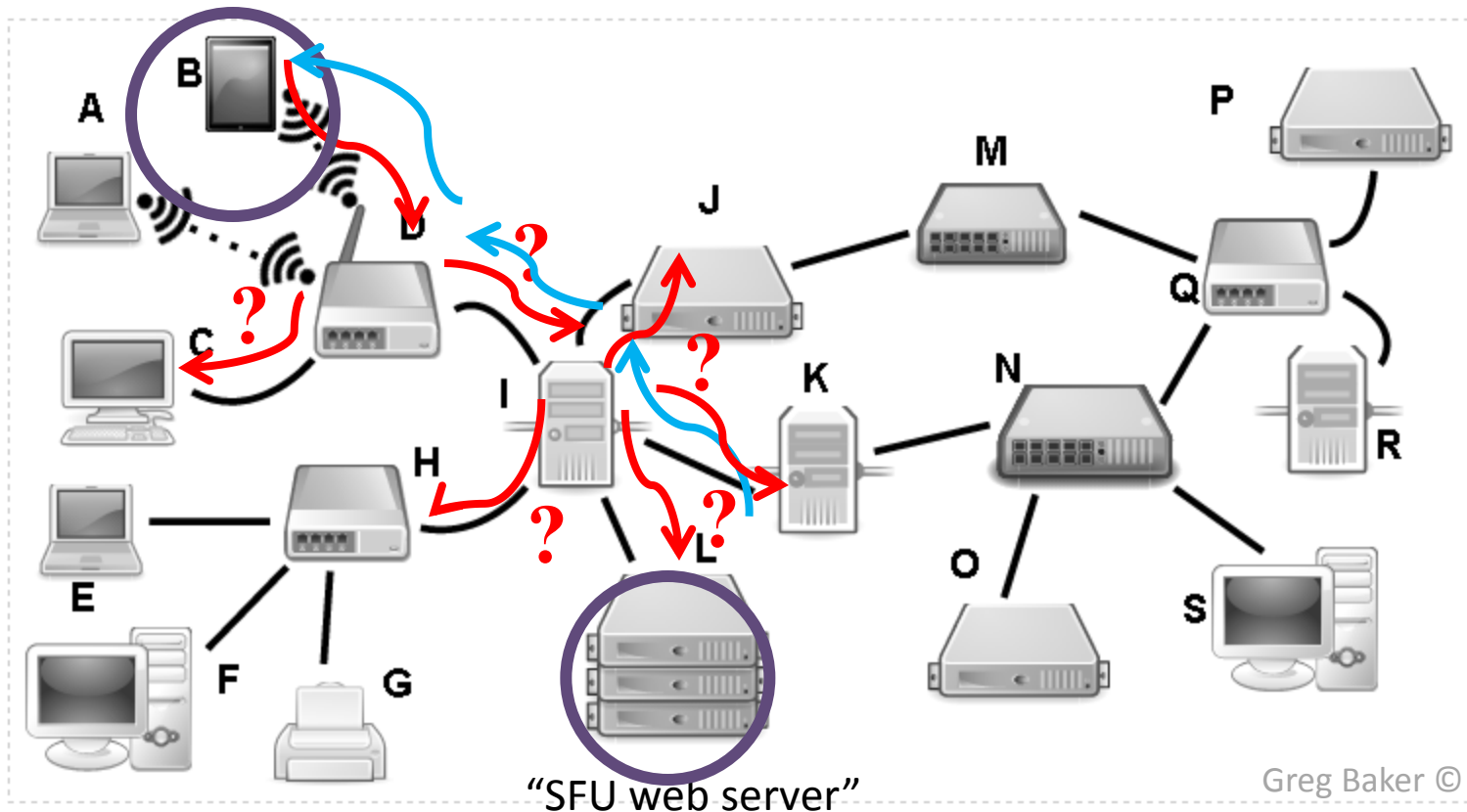
Unit 2:

- HTML markup: a quick intro
- Lab exercise 1

Internet Structure & Client-Server (reviewed)

Request to view the “www.sfu.ca” webpage

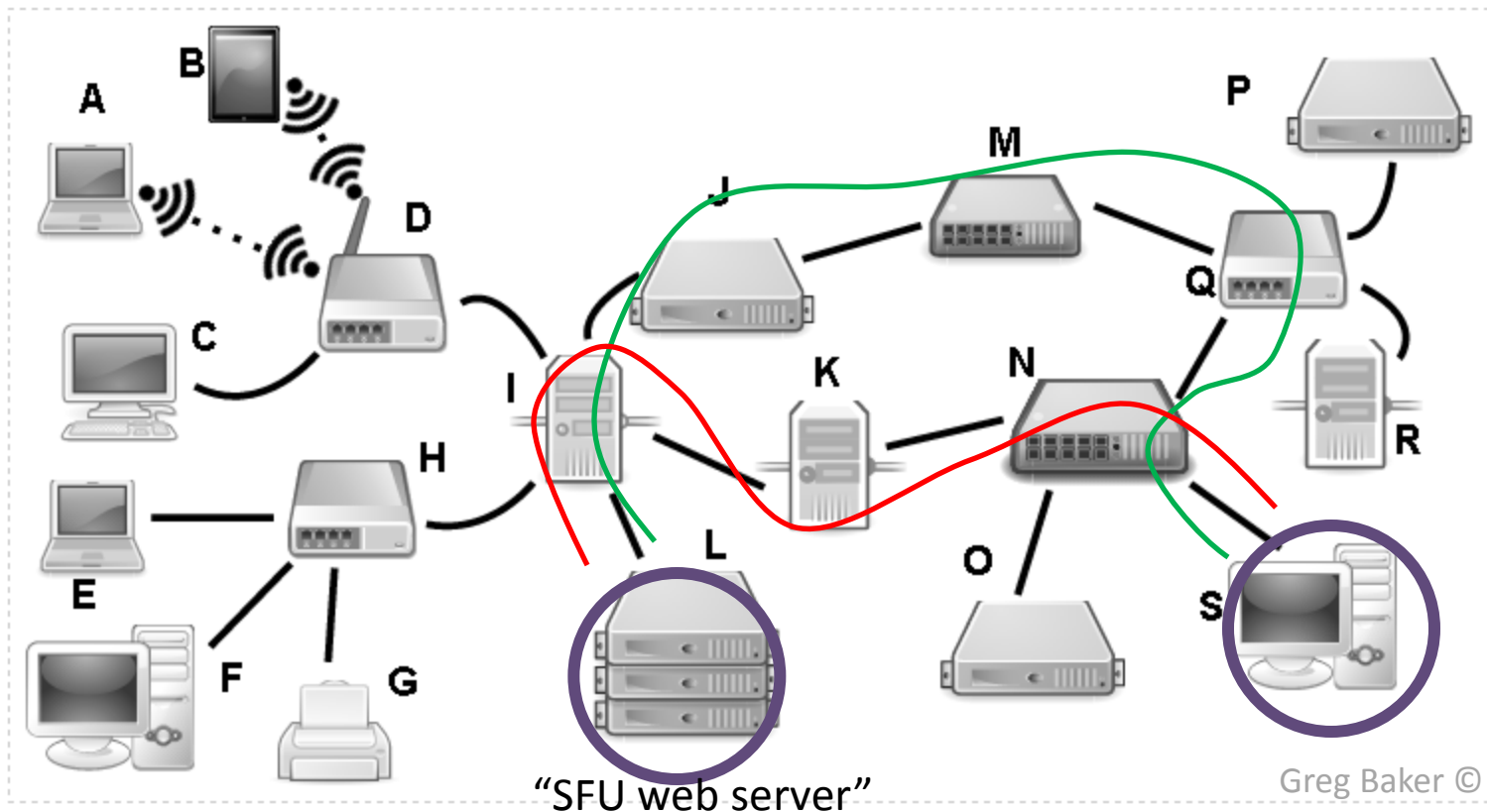
1. **Client (B):** requests the webpage for “www.sfu.ca”
2. **Network device (D):** relays request to the correct path
3. **Server (L):** receives + processes request + send data back



Client-Server communication (reviewed)

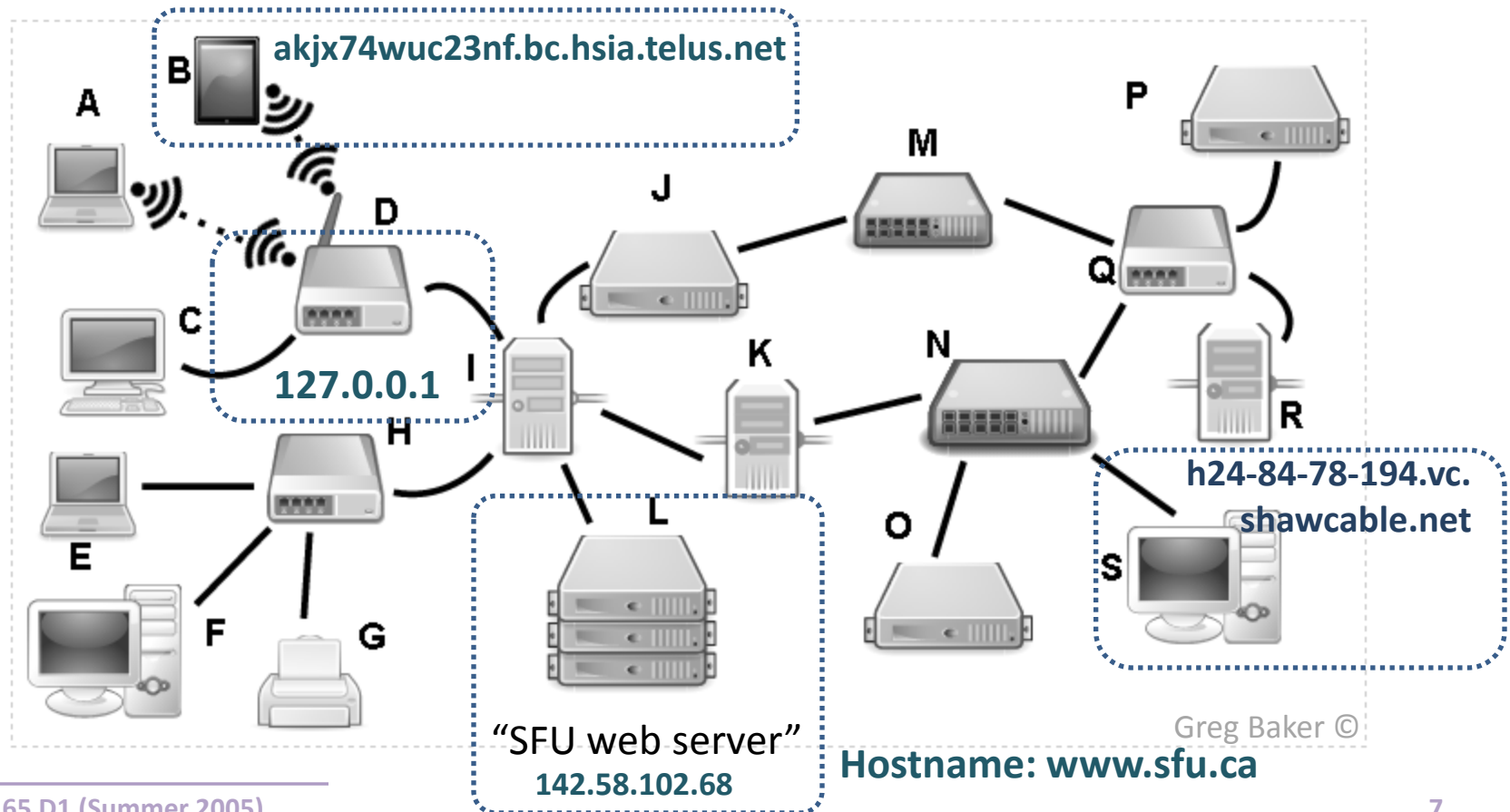
Client S request to view the “www.sfu.ca” webpage on your tablet...

1. **Client (S)**: requests the webpage for “www.sfu.ca”
2. **Network device (D)**: relays request to the correct path
3. **Server (L)**: receives + processes request + send data back



IP address (reviewed)

- **Domain Name System** (DNS) keeps track of every IP address, relation between domains and hosts
- **DNS software**: operate with this system
- Server dedicated for DNS: **Name Server**



Demo

`ipconfig` (`ifconfig-a` in Mac)

`nslookup`

In Mac:

Network Utility

→ Lookup tab

→ "Please enter an internet address to lookup"

→ Select Default Information

→ Uncheck "Use "dig" in place of "nslookup"

→ Lookup

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Protocols

- Like a language used by network devices
- Set of rules

TCP/IP (Transmission Control Protocol/ Internet Protocol)

- Network protocols governing how communication between devices operate
- e.g.
 - Border Gateway Protocol (BGP): exchange *routing* information between systems
 - ...

Other commonly used protocols

HTTP: HyperText Transfer Protocol

HTTPS: secured version of HTTP

FTP: File Transfer Protocol

- For transfer of files

SFTP: Secure File Transfer Protocol

SMTP: Simple Mail Transport Protocol

- Used by email clients

Uniform Resource Locator (URL)

http://www.sfu.ca/learning/study-abroad.html

Scheme: type of network protocol

Server: domain name of a server

Path: the location of a specific file stored on server

- More examples:
 - http://www.sfu.ca
 - https://my.sfu.ca
 - http://cmpt165.csil.sfu.ca/~lisat
 - ftp://ftp.mozilla.org/pub/mozilla/releases

Port Number

Port: a designation number for a protocol (which application software)

Examples:

20 & 21: File Transfer Protocol (FTP)

22: Secure Shell (SSH)

23: Telnet remote login service

25: Simple Mail Transfer Protocol (SMTP)

53: Domain Name System (DNS) service

80: Hypertext Transfer Protocol (HTTP) used in the World Wide Web

110: Post Office Protocol (POP3)

119: Network News Transfer Protocol (NNTP)

143: Internet Message Access Protocol (IMAP)

161: Simple Network Management Protocol (SNMP)

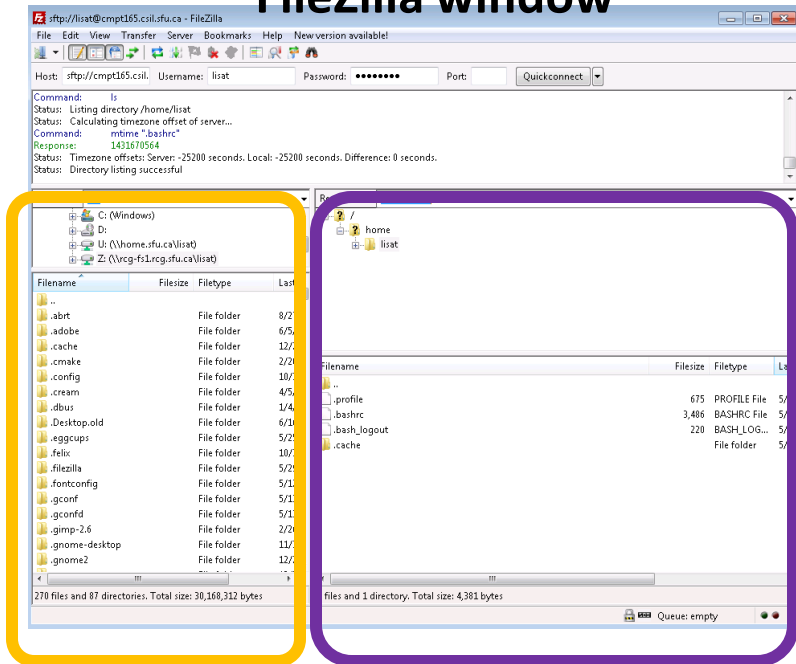
194: Internet Relay Chat (IRC)

443: HTTP Secure (HTTPS)

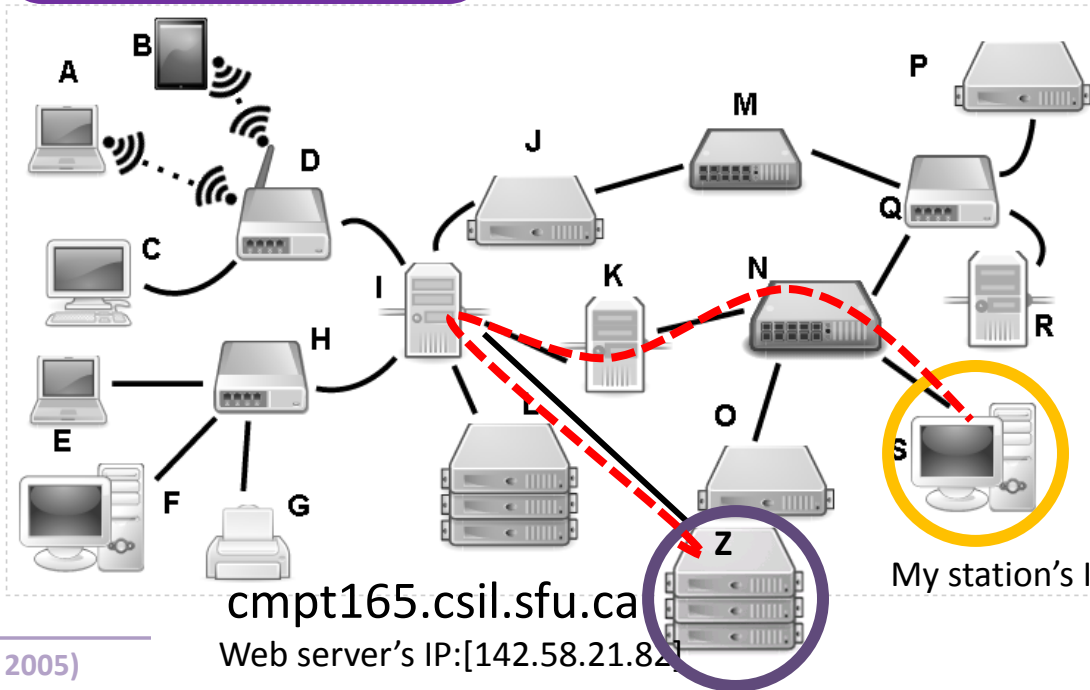
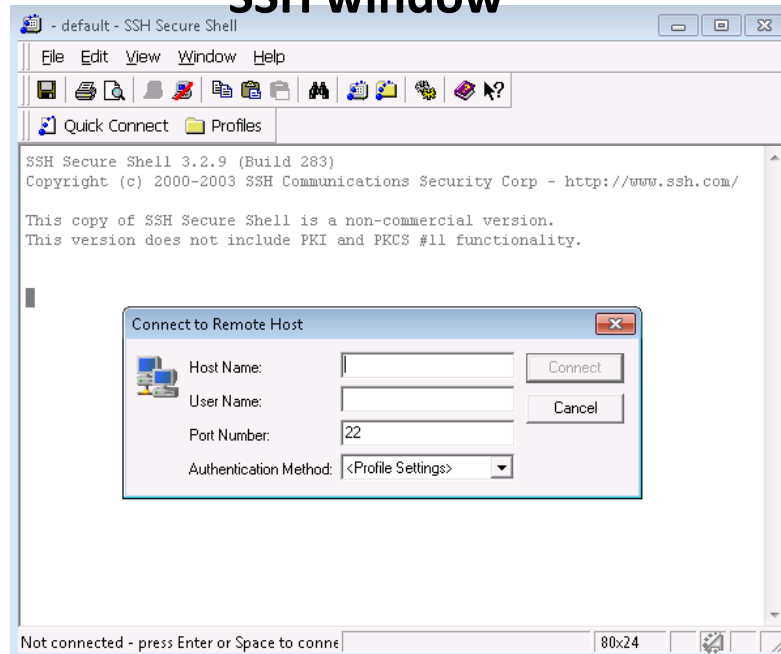
465: SMTP Secure (SMTPS)

...

FileZilla window



SSH window



MIME Types

“Multi-purpose Internet Mail Extensions”

- Tells an application software what the data being received contains
- E.g. web browser uses MIME to figure out how to display a webpage

MIME type	File contents	How it might be handled
text/html	HTML (web page)	display in browser as a web page
application/pdf	Acrobat file	open in Adobe Acrobat
application/msword	MS Word document	open in Word
image/jpeg	JPEG image	display in browser
audio/mpeg	MP3 audio	open with iTunes
video/quicktime	Quicktime video	open with Windows Media

type / subtype

Figure 1.4: Some example MIME types

- If unsure, browser asks “Download/Save?”

World Wide Web

- Consists of a set of software services running on the Internet + webpages (connected documents)
- Internet vs. WWW?
 - Hardware vs. software
 - Internet Protocol vs. HTTP
- World Wide Web Consortium (W3C)
 - made up of member organizations, each with staff working on developing “standards for the WWW”
 - Has 397 members as of April 2015 [wiki]

Questions on Unit 1?

(Ask questions on lab later)

CMPT 165

Unit 2 - Making webpages: a quick intro

Markup

- Webpages are described using “markup language”
- A language spoken to web browser, tells it how to display the webpage
- Markup → annotate

Left Page (Letter from Mr. Spaulter):

- Top:** "F" circled in red, with "See me after votes" written next to it.
- Date:** July 20, 2012
- Salutation:** Mr. Spaulter,
- Paragraph 1:** "Our immigration system is broken and in need of serious reform." Annotated with "Strong thesis" and "exaggeration - avoid hyperbole".
- Paragraph 2:** "For more than two months, the Senate debated a comprehensive immigration reform proposal that backs to fix all the country's immigration problems at once?" Annotated with "seems like you support the Senate bill which addresses all of these" and "contradicts earlier statement".
- Paragraph 3:** "Inadequate, unfair, and unfixable" - and it is precisely because the bill tries to address every issue at once that it is unworkable." Annotated with "286 based on word count" and "evidence!!".
- Paragraph 4:** "The Senate-passed legislation is over 1,000 pages" - which incorrectly says all the Senators have read, and there is no way the American people can be sure of what it does. Annotated with "Bill & analysis available online" and "redundant, paired adjectives".
- Paragraph 5:** "That ensures reforms are implemented in the proper order and significant progress is being made on each one." Annotated with "evidence?!"
- Paragraph 6:** "Likely, that nothing will be done at all." Annotated with "evidence?!"
- Section: Judiciary Committee:** "We are disturbed by the secret and underhanded way in which the immigration bill moved more it up." Annotated with "evidence?!" and "How much does a vote cost \$10? \$15?".
- Section: Senate Floor:** "passed in the waning days before the Senate vote." Annotated with "3 weeks of mark it up, including more amendments" and "Do you have evidence or are you just making an accusation?".

Right Page (Response from Mark Takano):

- Top:** "Please argue policy, not procedure!"
- Paragraph 1:** "That's why we will oppose any effort to pass immigration reform in one large comprehensive bill." Annotated with "Incorrect statement - unless all issues are addressed, the system remains broken".
- Paragraph 2:** "We remain confident that Congress can and should make significant progress on fixing our immigration system. We stand ready to work with you to accomplish this goal for the American people."
- Signature:** Sincerely,
- Text:** "Follow up questions: The assignment was to address what about the 11 million people already purposefully leave this out? If you don't understand the bill - come by my office and I'll explain it." Annotated with "Weak draft, re-do:".
- List:**
 - include evidence
 - remove tawdry allegations
 - address pathway issue
- Bottom:** "— Mark Takano, MC HS Teacher 1988-2012"

Markup

- Webpages are described using “markup language”
- A language spoken to web browser, tells it how to display the webpage
- Markup → annotate
- Name of this language

eXtensible HyperText Markup Language (XHTML)

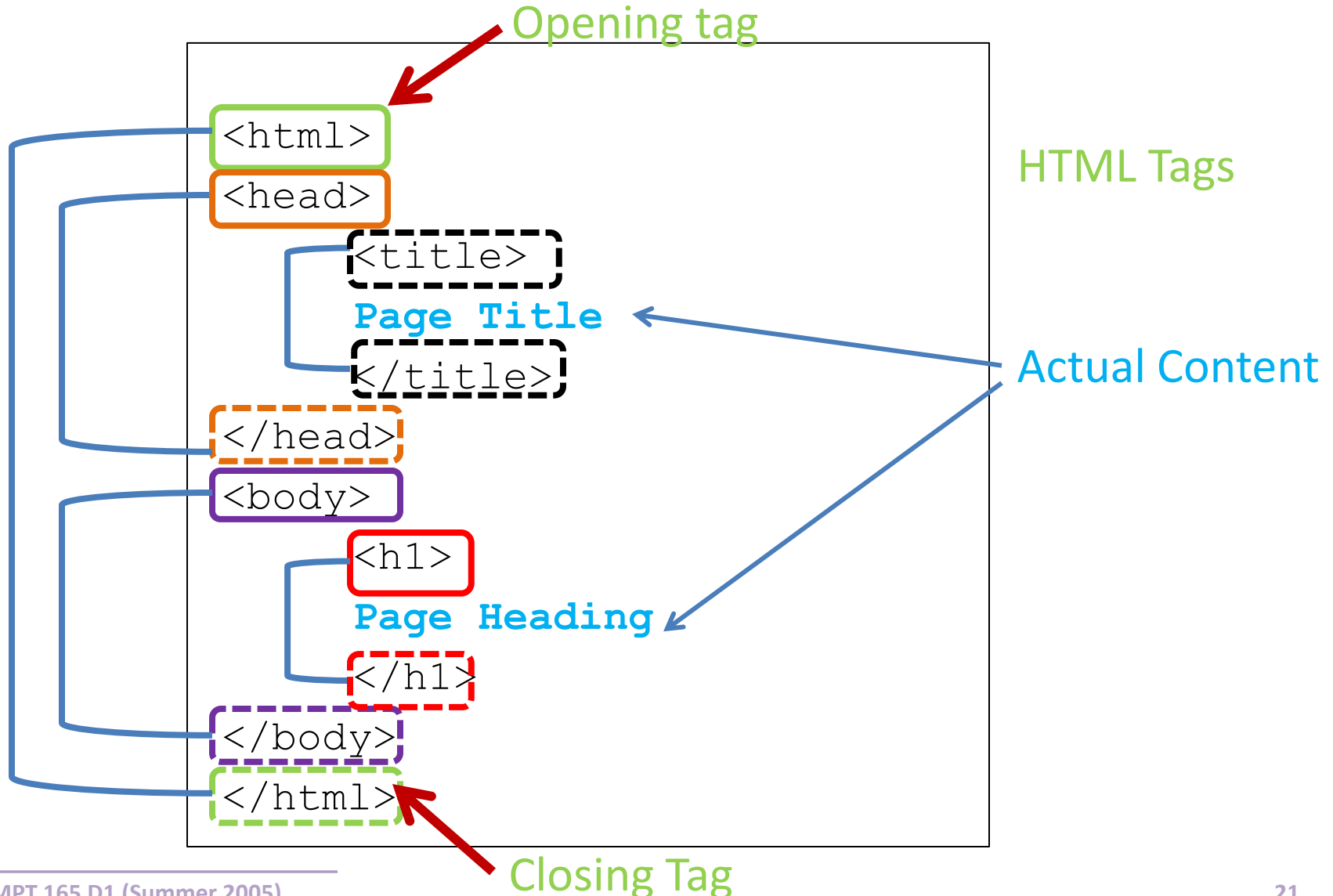
- HyperText:
 - Hyper → dynamic



- Older version: HTML
 - e.g. <http://www.sfu.ca/learning/study-abroad.html>
- Latest version HTML5

A simple XHTML

(A language spoken to web browser, tells it how to display the webpage)



HTML tags

`<html>`

`<head>`

`<body>`

`<h1>`

`<h2>`

`<h3>`

`<p>`

Key terms

Hardware
Software
Application software
Operating system
Malware

Data
Bits
Bytes
Memory storage

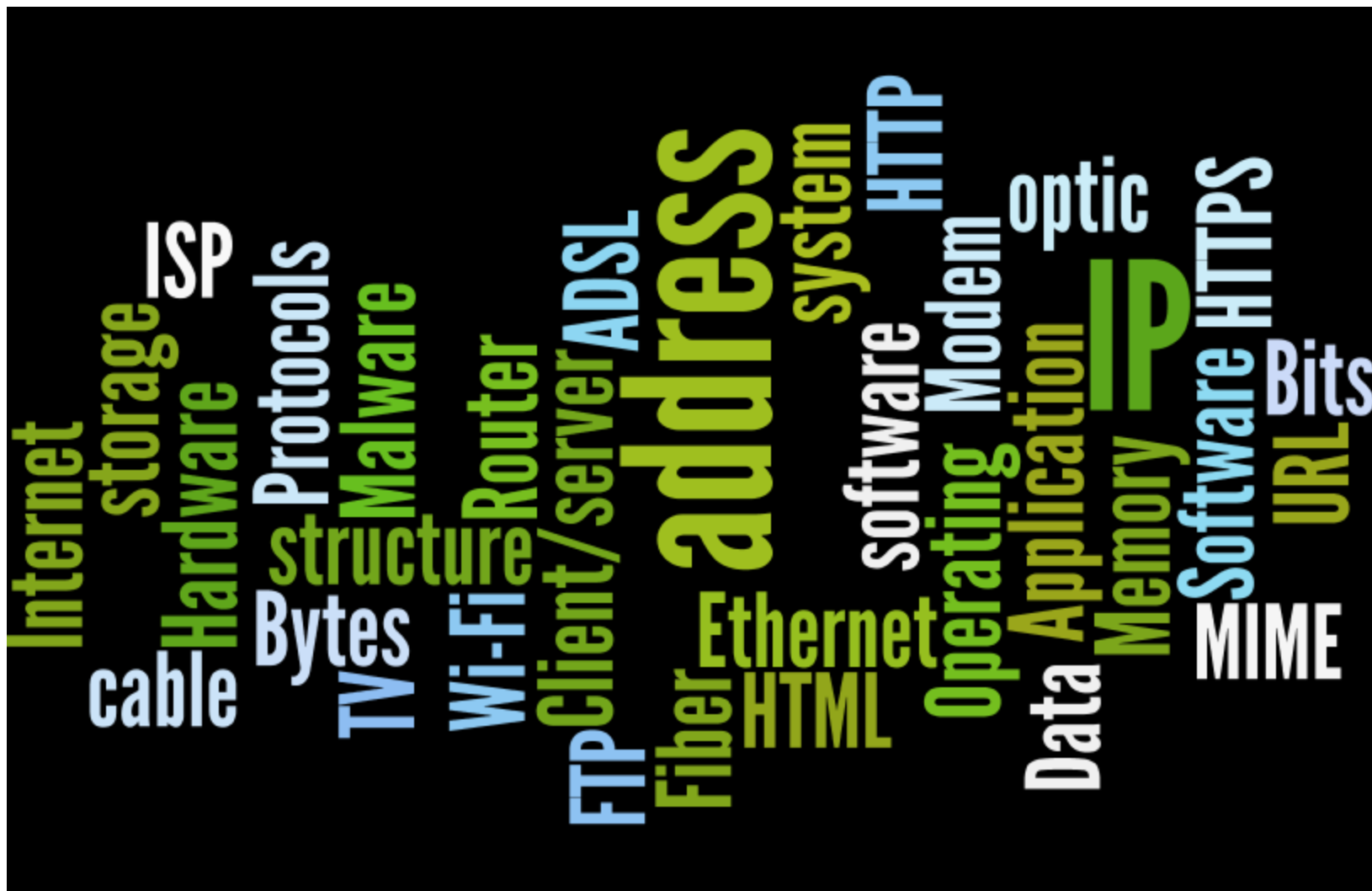
Internet structure
Modem
Router
ISP

Fiber optic
ADSL
TV cable
Ethernet
Wi-Fi

Client/server
IP address

Protocols
HTTP
FTP
HTTPS

URL
MIME
HTML
HTML Tags



Questions?