Csci 4131 Internet Programming
Spring 2024
January 17

Instructor: Dr. Dan Challou

Welcome Back, and Welcome to Internet Programming Spring 24!!!

- **Instructor:** Dan Challou
- email: chal0006@umn.edu
- office phone: 612 626-7305
- **course help email**: csci4131s24s1-help@umn.edu - goes to me and all the TAs
- Virtual and In-Person Office Hours – Zoom Meeting Information posted on the class Canvas site
- A bit on my background.

Agenda

- Course Logistics – Intro and Overview
- History of the Internet
- How Computers represent text
- Overview of WWW
  - Hardware and Software Models of WWW function
  - Course Technologies - HTML, CSS, JavaScript, …
  - A brief look at HTML
  - A 5000 foot view of the URI's, URL's, HTTP & HTTPS Protocols

TA's / Office Hours (Virtual, zoom meeting info on Class Canvas Site)

Grad TAs

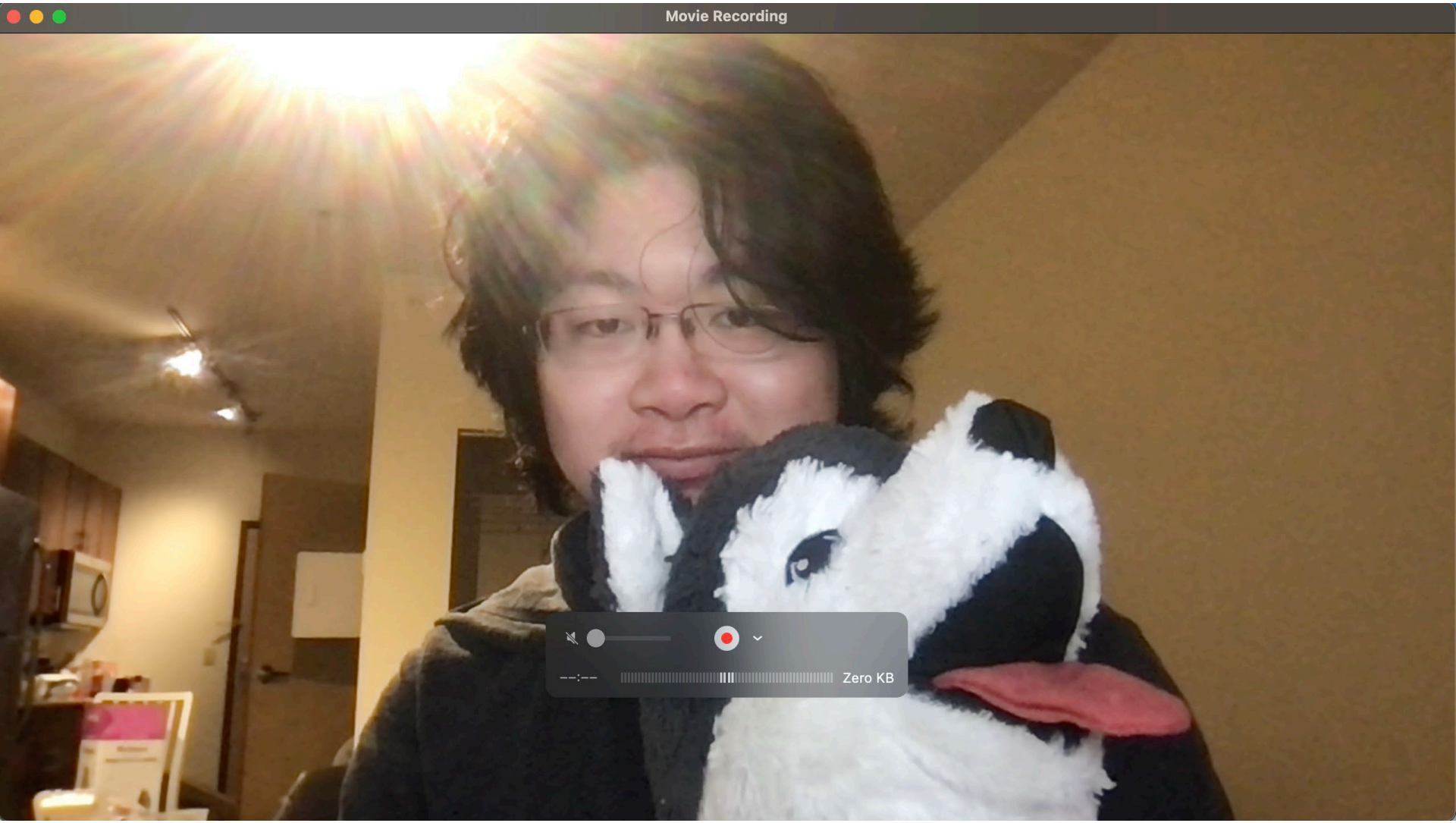
- Tianming Cui, email: cuixx327@umn.edu
- Chai-Wen Hsieh, email: hsieh123@umn.edu
- Chase Johnson, email: joh13266@umn.edu
- Leyan Sayeh, email: sayeh002@umn.edu

Undergrad TAs

- Enkhjin "Jinne" Boldbaatar, email: boldb002@umn.edu
- Andrei Anicescu, email: anice002@umn.edu

In-Person and Hybrid/Virtual office Hours, WILL BE Posted SOON (Later Today) Along with Dr Dan's in the item: **Calendar of Virtual and In-person Office Hours** accessible through the class Canvas site:

Tianming Cui

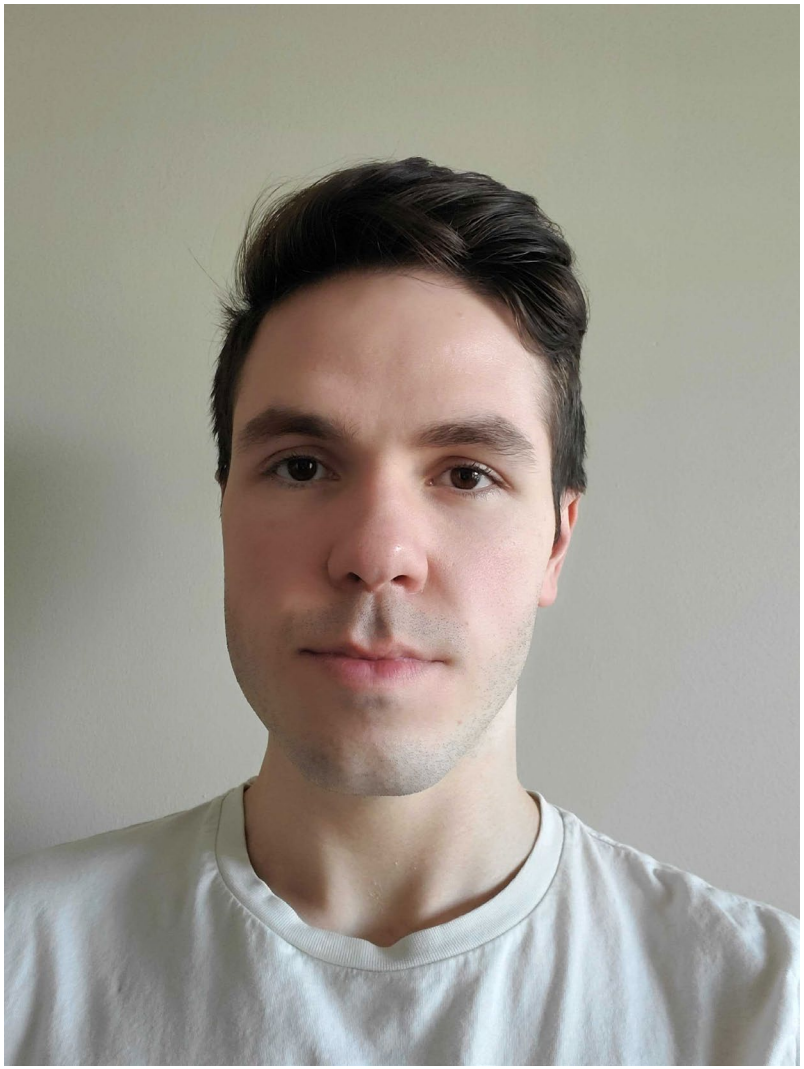


Chai-Wen Hsieh

Chase Johnson

Leyan Sayeh

Andrei Anicescu



Jinne Boldbaatar

Course Logistics

The Syllabus and Schedule can be all found on class website on Canvas – *lets have a look!*
https://canvas.umn.edu/courses/412716/assignments/syllabus

https://canvas.umn.edu/courses/412716/modules/items/11660621
Please check the course schedule and syllabus regularly – they are subject to change

Readings and Tutorials, Lecture Slides, Examples (Programs), and Homework assignments will be posted on Canvas, and you will submit your homework assignments via through Canvas as well

Please Check the Course Schedule (in the Resources Module at the top of the Home Page on the Class Canvas site regularly for changes to the course schedule)

Course email: csci4131s24s1-help@umn.edu

And finally, a look at the structure of Canvas for this course on canvas.umn.edu

Home Page / Resources Module + weekly modules
Syllabus
Announcements
Assignments
Media Gallery
Piazza
Discussions
Grades
GradeScope
Zoom
The Rest…

The course help email

- csci4131s24s1-help@umn.edu - goes to me and all the TAs

Use it instead of personal emails since it won't get buried and is logged automatically

Course Materials

Lecture Slides and most Examples are posted on the class Canvas site

zyBook and Tutorials(will enable you to complete HW1)

- **Read the Syllabus**
- **Access Zybooks Assignments Through Canvas:**
  - **Example: https://canvas.umn.edu/courses/412716/assignments/3702260**
  - **Review the Weekly Course Schedule Carefully: in the module Important Information and Resources on class Canvas home page**
- **To Do Before or After First Class Meeting, to get HW 1 done**
  - Review Lecture Notes (Lecture 1)
  - **Do zyBook Homework Assignment 1 (See your zybook, assignment is zyBook HW 1 (79 points))**
  - **Do the HTML tutorials listed at the links below:**
- www.w3schools.com
- https://www.w3schools.com/html/default.asp

- **Homework Programming Assignment 1 will be out by Friday (or earlier) and due next Friday 1/27 at 11:59pm**

Responses to email, piazza posts

- We will not commit to reading piazza or emails after the last office hour on Friday through Sunday
- Thus responses to email or piazza posts sent after the last office hour on Fridays are not likely to occur over (and most likely will not occur) over the weekend

Grading Policy – see Syllabus on Canvas

- **40% 3** Exams
- **15%** Final Project
- **25%** Six Individual HW Programming Projects
- **10%** Zybook Homework Assignments (Typically due on Saturdays at the end of the day - but subject to change)
- **10%** Class participation exercises

Grading Scale: Using the above weights, a total of:

93.0% -- 100.0%	A
90.0% -- 93.0%	A-
87.0% -- 90.0%	B+
83.0% -- 87.0%	B
80.0% -- 83.0%	B-
77.0% -- 80.0%	C+
73.0% -- 77.0%	C
70.0% -- 73.0%	C-
67.0% -- 70.0%	D+
60.0% -- 67.0%	D
0% -- 60.0%	F

For S/N grading, a satisfactory grade (S) requires a weighted score of C- (70%) or above.

Submissions or Submissions for in-class / exercises are due 1 hour after class ends.

- But, do your best to get them done by the end of class!!!!

NOTE Grading Policy on zyBooks Assignments – **Late Submissions Not Accepted!**

- **zyBooks Homework Assignments**
  - **Should be accessed through Canvas!!!!**
  - ***zyBooks homework assignments are due at the deadline specified in your zyBook. Late submissions will not be accepted. All assignments will be factored into your grade. zyBooks assignments cannot be made up after their due date without documentation of a legitimate absence which is in effect for at least 2 days.***
  - **For complete information on University Policies Regarding Make-up work and Legitimate Absences, please see:**
    - https://policy.umn.edu/education/makeupworkLinks to an external site.

Technology Policy

Bring a computer to class – but don't use it unless I ask you to do so (CODE ALONG) or you are taking notes with it

You are not participating in class if you are using your cell phone. Please silence it and put it away for the duration of the lecture.

Positive Class Participation Encouraged – Raise your hand!

Also, Please feel free to ask questions without raising your hand as well (e.g., Speak up)

Course Objectives

- Learn and use technologies that you will use to build your own personal website
- Build a “full stack” application over the course of the semester
- This semester – we will start with your some sort of contacts list (which you will create a webpage for as part of your first homework).

What this course does not do

- Cover everything necessary to build a production ready-for-deployment website

- What issue(s) prevent us from doing that in this course?

“Client” Side Technologies in Course Scope (Subject to Change)

- HTML /Forms
- CSS
- JavaScript / Forms
- Jquery (maybe, lots of info on this is out there, it is more important to learn the underlying technology – JavaScript)
- DOM
- HTTP Protocol
- XML
- Fetch & Ajax (Asynchonous Javascript and XML) / JSON

“Server” Side Technologies in Course Scope (Subject to Change)

- SQL
- Databases – **MySQL**, MongoDB?
- Node.js
- Python (not major part of the full stack application we will build and deploy)
- Some API – (Google Maps API?)
- Possibly a list of other APIs of your choosing

Exercise 1- **Submit via the Lecture 1, Exercise 1 Link in the week 1 module on the Class Canvas site**

Take 7 minutes (Or so) to think about the following and answer the following:

1) Why did you take this course (2 or 3 sentences)
2) Experience, with Client Side Scripting and Server Side Scripting (none, some, a lot) – if some or a lot please specify what languages and tools you have used

3) Your assessment of your expertise (beginner, intermediate, expert) in or with HTML, CSS, JavaScript, DOM, jQuery, Fetch, AJAX, JSON, node.js, XML, Pug, Python, SQL, MySQL, Express;

Thumbs up or raise hand when done!

One More Note

- HW 1 will be posted by Friday (1/19) and DUE NEXT Friday (1/26)

Questions?

What the heck is the Internet?

- https://www.youtube.com/watch?v=Dxcc6ycZ73M
- https://www.internetsociety.org/internet/history-internet/?gclid=Cj0KCQiAq5meBhCyARIsAJrtdr60MA4VF8hzSIk17zzwvPbhyjlQwnNCDoS57w5jCZ1gTtZsTNwipTgaAswIEALw_wcB
- https://www.airandspaceforces.com/article/0197arpanet/
- Jay and Silent Bob have a different view **(warning, this is egregiously stupid, and you will likely find it offensive)**:
  - https://www.youtube.com/watch?v=nv_F3nAPjsI

How does the Internet Work? (A High – Level view)

- https://www.youtube.com/watch?v=7_LPdttKXPc

History of the Internet

- Leonard Kleinrock – Packet Switching 1961
  - Showed the viability of Packet Switching vs. Circuit Switching (a physical connected path between two “terminals”)
- ARPANET, funded by DARPA, up and working in October 1969 (UCLA connected with SRI, UCSB, and University of Utah)
- First Transmission Protocol – Network Control Protocol - 1972
- Transmission Control Protocol / **Internet Protocol (TCP/IP) -** January 1, 1983

A Note on IP Addresses

- An Internet Protocol (IP) address is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network that uses the Internet Protocol for communication.[1]

- IP address serves two principal functions:
  - host or network interface identification,
  - location addressing.

- Its role has been characterized as follows:
  - "A name indicates what we seek.
  - An address indicates where it is.
  - A route indicates how to get there."[2]

Format of an Internet Address

- Initially – Internet Protocol Version 4.
- Format - 172.16.254.1 (for IPv4) – 32 bits
- How many devices can be addressed using this format?

Question:

- Are 2^{32} IP addresses sufficient for all the devices (computers, phones, refrigerators, IOT devices, etc.) that want to use it.
- Answer with reaction:

Thumbs up for yes

Thumbs for no

Supporting Data

- http://www.internetlivestats.com/internet-users/
- https://iot-analytics.com/number-connected-iot-devices/

How do you use the IP addresses?

How do you use the IP addresses?

Many ways

One common way, enter as part of a URL (Uniform Resource Locator) in your browser's address bar to access a Web Page (or Web site)

For example: https://www.umn.edu

Which consists of:

1) a scheme (https – the protocol)

2) And a host (www.umn.edu) – which DNS transforms into an ip address

Note, URLs can have more components than 1 and 2 (a path and a query string) – see: https://www.ibm.com/docs/en/cics-ts/5.1?topic=concepts-components-url

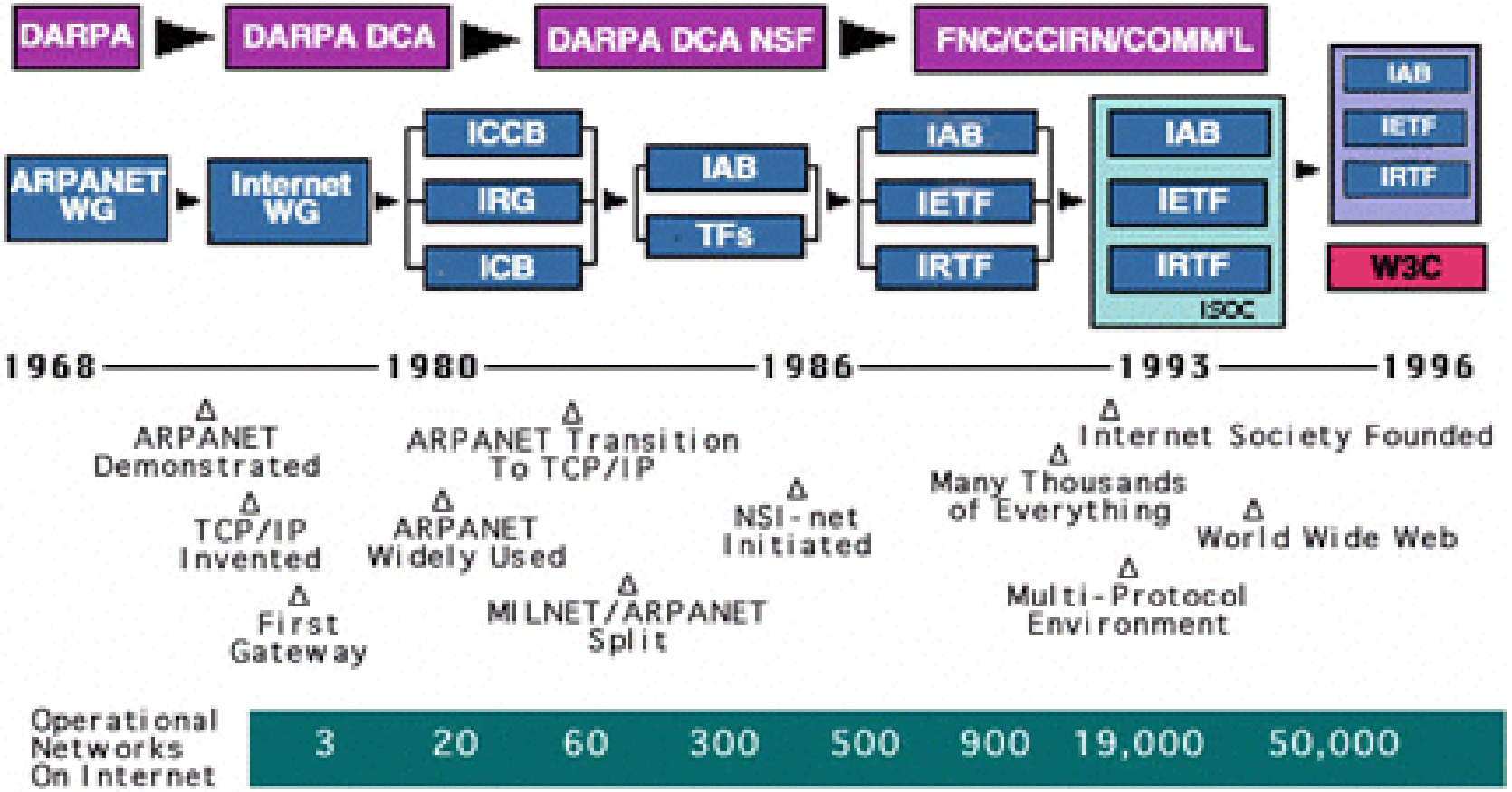
Internet == World Wide Web (www)?

Answer with reaction:

Thumbs up for yes

Thumbs down for no

Timeline – Evolution of The Internet

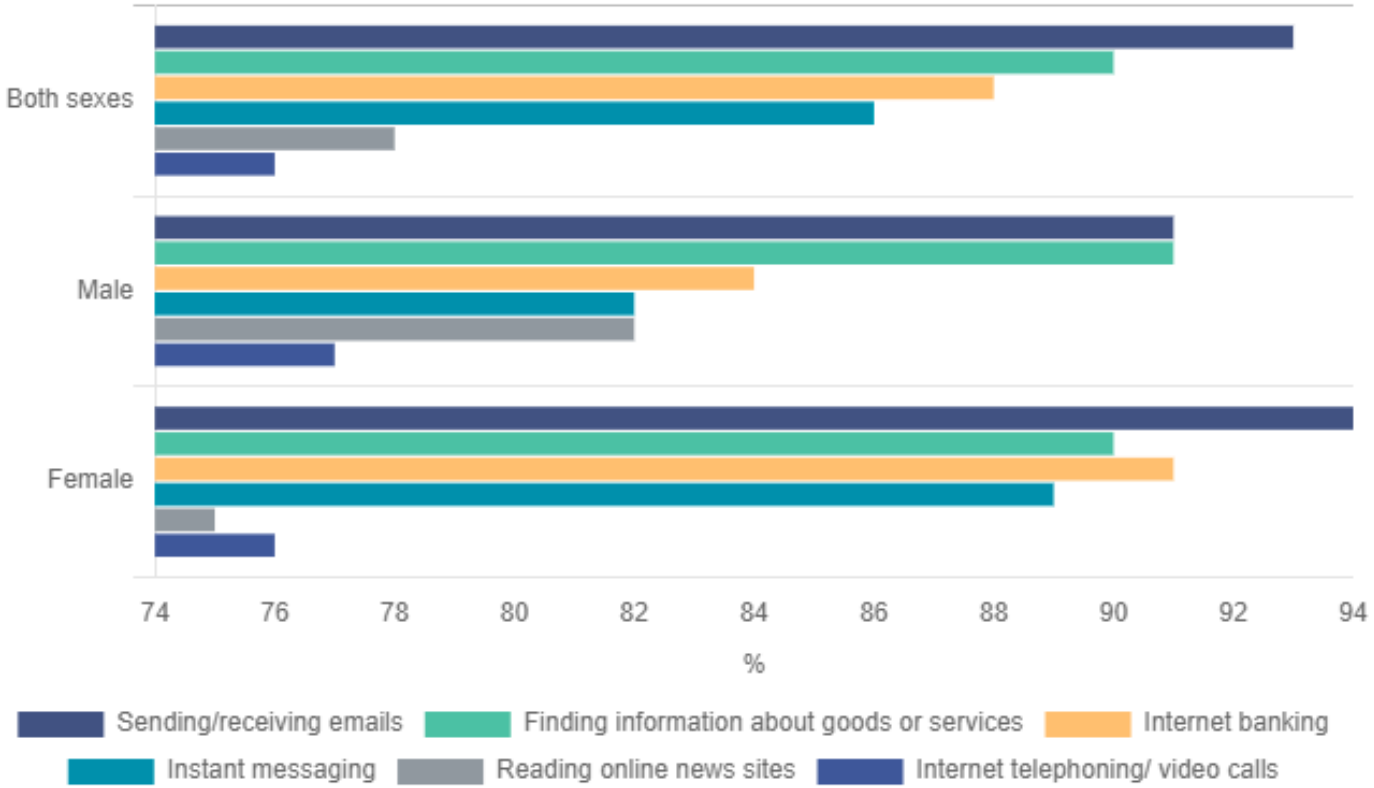


http://www.internetsociety.org/internet/what-internet/history-internet/brief-history-internet#LK64

Most Popular Browsers (any guesses on which is most popular?)

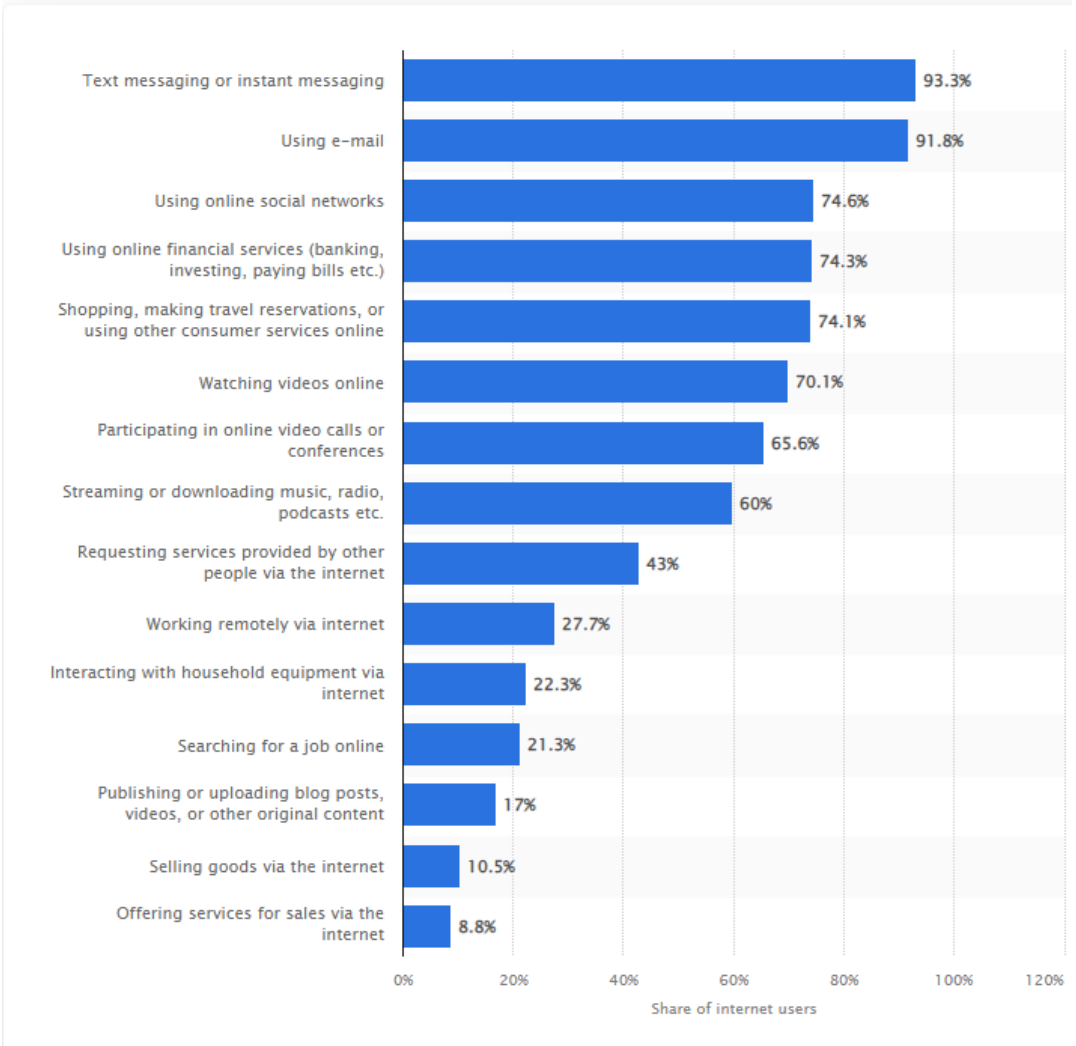
- http://www.w3schools.com/browsers/browsers_stats.asp

Figure 2.1 Individuals aged 16 years and over who used the internet in the last 3 months classified by sex and types of internet activities, 2023



https://www.cso.ie/en/releasesandpublications/ep/p-isshdcb/householddigitalconsumerbehaviour2023/internetactivities/

Most popular online activities of adult internet users in the United States as of November 2021



https://www.statista.com/statistics/183910/internet-activities-of-us-users/

A Different Point of View

- http://www.pewinternet.org/fact-sheet/internet-broadband/

Questions?

Next Time – HTML Continued, URLs

- More on HTML
  - Basics (paragraphs, links, …) revisited
  - Lists revisited
  - Tables

Make sure to do the zyBooks assignments and tutorials for Week 1 listed in the Week 1 Module on the Class Canvas site

Review the course schedule in Resources Module

Get going on Programming HW 1 when it comes out!