What is the Internet?

A computer network consisting of a worldwide network of computer networks that use standardized network protocols to facilitate data transmission and exchange.
1964, On Distributed Communications
Networks

Centralized, decentralized, and distributed

A decentralized network represents a less-hierarchical structure than a centralized network. Complete reliance on a single point is not required.

The foundational concept of decentralized networks would be deployed in tandem with what came to be known as “packet-switching,” which entails breaking up communications into small parts, sending them along, and reconstructing them at the end.
The Internet and the World Wide Web
The Internet and the World Wide Web

The Internet and the Web are separate but related things.

The Internet is a massive network of networks, a networking infrastructure that connects computers globally.

The Web is a way of accessing information over the medium of the Internet, an information sharing model that is built on top of the Internet.

The Web is just one of the ways that information can be disseminated over the Internet but it is the one we are focused on in this class.
Internet Access
1980s–Present

• Personal Computing
• Portable Computing
• Mobile Computing
• Ubiquitous Computing
IBM 5150
1981
Apple PowerBook 540c
1993
Apple iPhone
2007
Ubiquitous Computing
The Open Web and its Discontents

In many ways we are experiencing the afterglow of the technological promise of freedom and openness.

Networked tools and digital media still offer lots of possibilities but also significant problems.

What are some of the dystopian aspects of the Internet and the Web today?
Re-Decentralization

“A new Decentralized Web has the potential to be open, empowering users around the globe to control and protect their own personal data better than before.”

Decentralized Web Summit
Future of Blockchain
scet.berkeley.edu/future-blockchain-berkeley-perspective
Digital Media Storage

Modern vernacular of 1s and 0s

On/Off

Electrical impulses (+5v / -5v)

- Single 0 or 1 = 1 “bit”
- A group of 8 bits = 1 “byte”
- 1 million bytes ≈ 1 “megabyte”
- 1,024 megabytes = 1 “gigabyte”
- 1,000 gigabytes = 1 “terabyte”
00101011
Testing upload...
Digital Media Transfer

Megabits (Mb)

Internet connection speed is normally measured in megabits.

Megabits (Mb) are not the same as megabytes (MB).

8 bits = 1 byte; therefore, a megabyte is 8 times the size of a megabit.

The average Internet connection speed in the United States in 2015 was 12.6 Mb/second.
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Introduction and Overview

The graph shows the transistor count doubling every two years. The x-axis represents the date of introduction, and the y-axis represents the transistor count. The curve indicates the exponential growth in transistor count over time, starting from early models like the Intel 4004 in 1971 and reaching modern processors such as the Power9 in 2017.
Moore’s Law
Describes a constant rate of change in computer processor speed

The number of transistors that can be placed inexpensively on an integrated circuit doubles every two years.

The number of transistors is closely connected to processor speed, memory, etc.

Computer processor speed has doubled approximately every two years.

Moore’s Law seems to be plateauing but has held steady for the past 40 years.

Digital media is in a constant state of flux.
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Class 1
Introduction and Overview
Course Content

Web Design and Computer Principles

Unix command line
HTML
CSS
Web graphics
Design and accessibility
Website layout
Responsive design
Interactivity with JavaScript
Web forms
Web audio and video
Web hosting and domain names
Guiding Principles

Open Source

- Anyone is free to use it
- Usually free of charge
- Source code is made available
- Can be modified and redistributed
Guiding Principles

Net Neutrality

The principle that Internet service providers should enable access to all content and applications regardless of the source, and without favoring or blocking particular products or websites.
Guiding Principles
Web Standards

The formal, non-proprietary standards and technical specifications that define and describe aspects of the World Wide Web and its interoperability.

These include:
- HTML5
- CSS
- JavaScript
- SVG
- WOFF
Introductions

Me

Joshua Clayton
Clinical Assistant Professor

jclayton@cs.nyu.edu

Fall 2018 office hours
• Monday, 2:30–4:00 p.m.
• Wednesday, 10:30 a.m.–12:00 p.m.

Room 420, Warren Weaver Hall

cs.nyu.edu/cs/faculty/clayton
Syllabus

Attendance

You are expected to come to all classes and arrive on time.

Please let me know in advance if you will be out for any reason.

Please let me know if you miss class due to illness.

Computers are welcome in class but not required.

If you ever feel overwhelmed or need extra help, I will be available to you.
Syllabus

Textbook


5th Edition

Jennifer Robbins

There will be nine assignments over the course of the semester.

Details of each assignment will be posted on the class website.

All assignments are due before class, submitted via NYU Classes.

Do your best to turn work in on time. 10% will be deducted for each class day after the deadline.

No assignments will be accepted after three classes or after the final exam.
Syllabus

Grading Rubric

Assignments: 40%
Midterm exam: 25%
Final exam: 35%
For Next Class

Review class website

Read chapter 2, “How the Web Works” of *Learning Web Design*
Introduction to Web Design & Computer Principles
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Class 1
Introduction and Overview