CSCI-UA-4-005

Intro to Web Design + Computer Principles

Responsive Design: Day 1

Professor Emily Zhao

M/W 12:30PM – 1:45PM

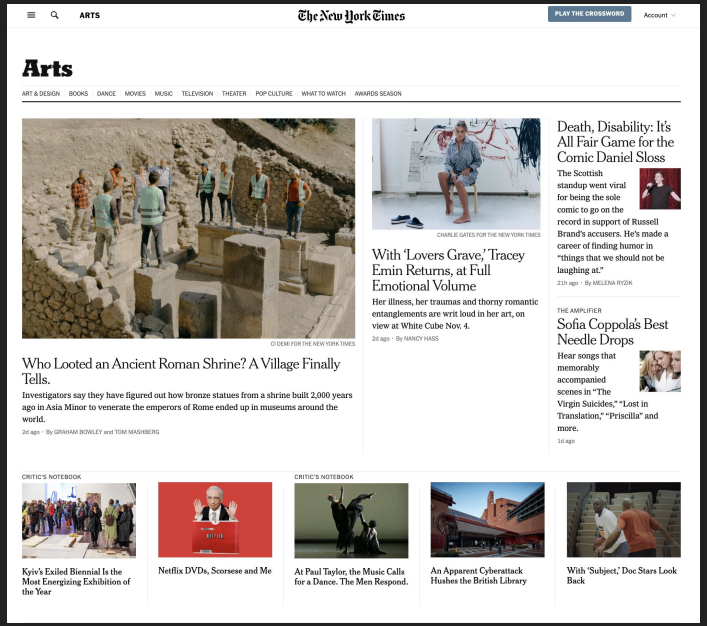
Agenda

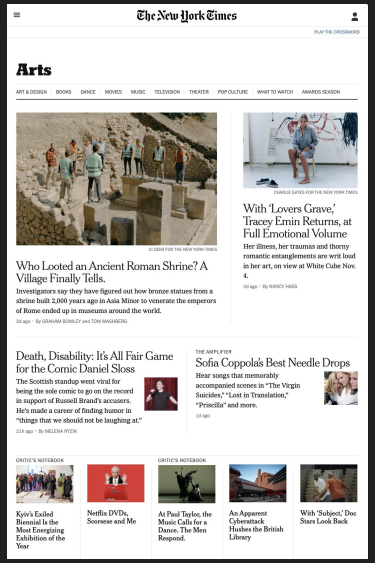
- Responsive Design
  - Mobile-first approach
  - `px` vs `rem`
  - Media Queries
- Assignment #7 Introduction
- Open Workshop

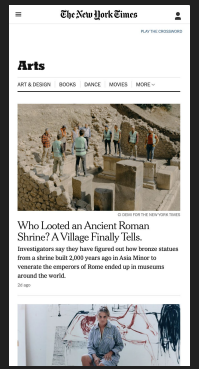
Responsive Design

Responsive Design

The goal of responsive design is to create a user-friendly experience regardless of whether the website is accessed on a desktop computer, laptop, tablet, smartphone, or any other device with a web browser.

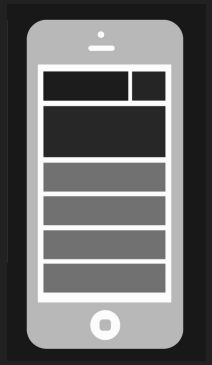


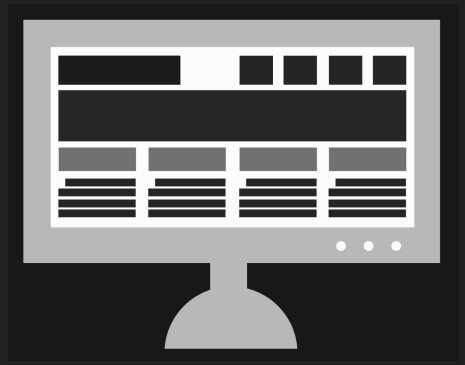




Foundations of Responsive Design

- Mobile-First Approach
- Relative Units
- Media Queries
- Flexible Layouts
- Flexible Images





* Mobile-First

— Content-first
— Essential functionality
— Lifestyle/news-focused

Desktop

— Traditional
— Feature-rich
— Office-based

** more and more recommended in a mobile-centric world*

Units of Length

There are two types of length units in CSS:

- `absolute`
- `relative`

Alternative specifications:

- `auto` (browser calculates length)
- `inherit` (from the parent element)

Units of Length

ABSOLUTE

`px`

RELATIVE

`%`

`em`

`rem`

For styling related to fonts, `%` and `em` are equal can be used interchangeably

For non-font-related elements, `%` is relative to parent container while `em` is related to font-size

Stands for "root em",

relative to the font size of the root element (usually the `<html>` element)

Units of Length Review/Demo

Media Queries

Media queries are a fundamental part of responsive web design, allowing you to create websites that adapt and respond to different screen sizes and devices.

They are a CSS feature that enables you to apply styles and layout changes based on the characteristics of the user's device, such as screen width, height, orientation, and more.

Media queries make it possible to create a single website that looks and functions well on various devices, from large desktop monitors to small smartphones.

CSS Rule Set

```
body {
  background-color: cyan;
}
```

CSS Rule Set with a Media Query

```
@media (min-width: 480px) {
    body {
        background-color: yellow;
    }
}
```

Common Conditions

- `width` and `height`: You can set conditions based on the width and height of the device's screen.
- `min-width` and `max-width`: Specify a range of screen widths.
- `orientation`: Adjust styles based on the device's orientation (landscape or portrait).
- `device-pixel-ratio`: Target high-resolution screens (e.g., Retina displays).
- `aspect-ratio`: Set styles based on the aspect ratio of the screen.
- `color`: Detect whether the device supports color or is grayscale.

Media Type

Media types describe the general category of a device. Except when using the not or only logical operators, the media type is optional and the `all` type will be implied.

- `all`: Suitable for all devices
- `print`: Intended for paged material and documents viewed on a screen in print preview mode
- `screen`: Intended primarily for screens
- `speech`: Intended for speech synthesizers

Logical Operators

The logical operators `not`, `and`, and `only` can be used to compose a complex media query. You can also combine multiple media queries into a single rule by separating them with commas.

- `and`: used for combining multiple media features together into a single media query, requiring each chained feature to return true for the entire query to be true
- `not`: used to negate a media query, returning true if the query would otherwise return false
- `only`: used to apply a style only if an entire query matches and is useful for preventing older browsers from applying selected styles

Combining Conditions

```
@media only screen and (min-width: 480px) {
    body {
        background-color: orange;
    }
}
```

Basic Stylesheet Linking

```
<link rel="stylesheet" href="styles.css">
```

Link with Media Query

```
<link rel="stylesheet" media="only screen and
(min-width: 640px)" href="tablet.css">
```

Viewport Meta Tag

To ensure that media queries work correctly on mobile devices, it's important to include the viewport meta tag in the HTML `<head>` section of your web pages. This tag helps control the initial scale and width of the viewport.

```
<meta name="viewport" content="width=device-width,
initial-scale=1">
```

Simple Media Query Demo

Breakpoints

PORTRAIT	Smartphone	480px	30rem *(if default font-size is 16px)*
	Tablet	768px	48rem *(if default font-size is 16px)*
LANDSCAPE	Notebook	1024px	64rem *(if default font-size is 16px)*
	Laptop	1200px	75rem *(if default font-size is 16px)*
	Desktop/TV	1200px+	

Revisiting NYC Website

Making Ghibli Website Responsive

Responsive Ghibli Site

Homepage:	adjust margins/padding around text
Filmmakers:	remove flexbox on smaller screens
Films:	make grid layout responsive at various screen widths

Homework

- Assignment #7 (due midnight)
- Assignment #8 (due next week)