

Class 13: Additional Responsive Considerations

- Media Queries for Accessibility (& Touch)
- Responsive Images
- Additional Flexbox Properties
- Single-Page Websites & Document Fragment Links

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Review: Media Queries

Media queries allow you to apply different CSS rules based on the characteristics of the user's device.

Navigation **Menu** (“Mobile First”)

```
nav menu {  
  display: flex;  
  flex-direction: column;  
  gap: 1em;  
}
```

Navigation **Bar** (Wide Breakpoint)

```
@media (min-width: 700px) {  
  nav menu {  
    flex-direction: row;  
  }  
}
```

Review: Testing Responsiveness

- ✓ Resize browser window
 - Always accurate
 - Great for checking responsiveness!
- ✗ Dev Tools: Responsive Design Mode
 - Helpful for checking specific/popular devices
 - Bad for testing usable content for all screen sizes



Review: Responsive Breakpoints

Any time the presentation of your content changes to keep the content usable, you have a **responsive breakpoint**.

Responsive Breakpoint $\neq$ Media Query Breakpoint

Sometimes, a responsive breakpoint is the same as a media query breakpoint, but not always.

Additional Responsive Considerations

Media Queries for Accessibility

- `(prefers-reduced-motion: reduce)`
Minimize non-essential motion and animation.
- `(prefers-contrast: more)` or `(prefers-contrast: less)`
Increase or decrease contrast for better readability.
- `(prefers-color-scheme: dark)`
Switch to a dark theme for better visibility in low-light environments.

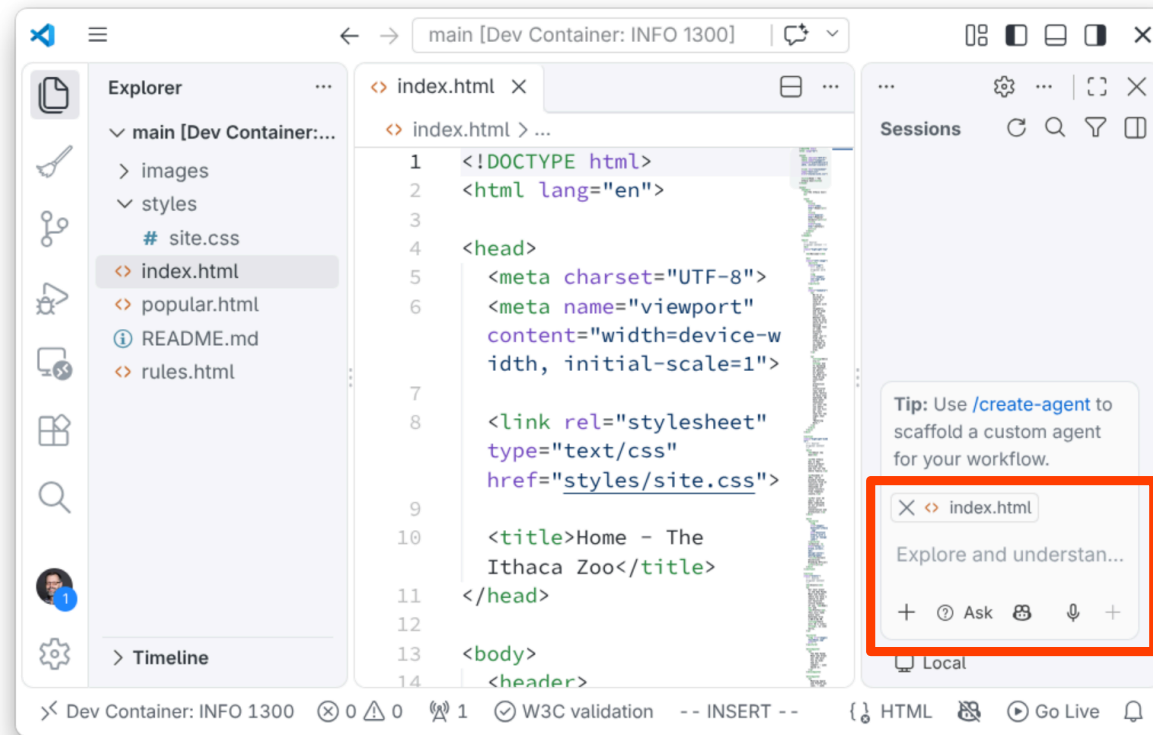
Activity: Dark Mode

In the activity codespace, add a media query to change the website's theme when the user prefers a dark color scheme.

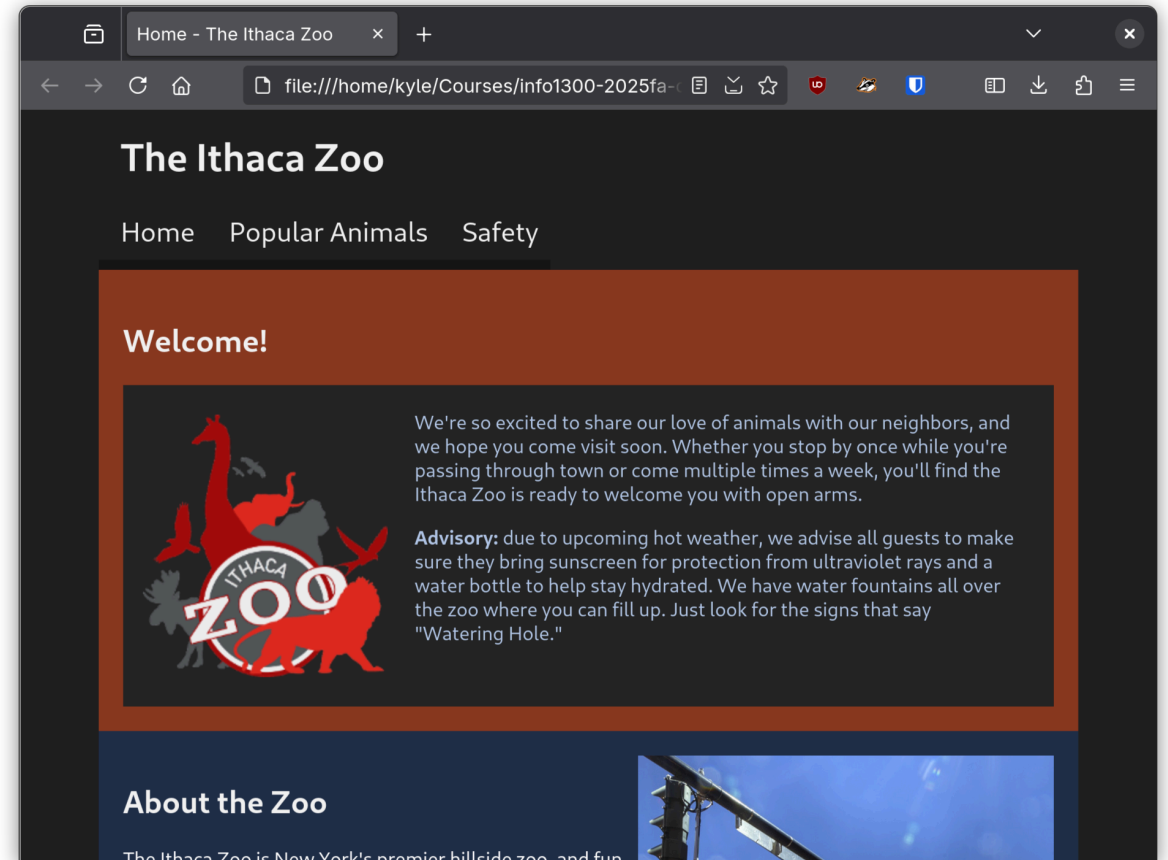
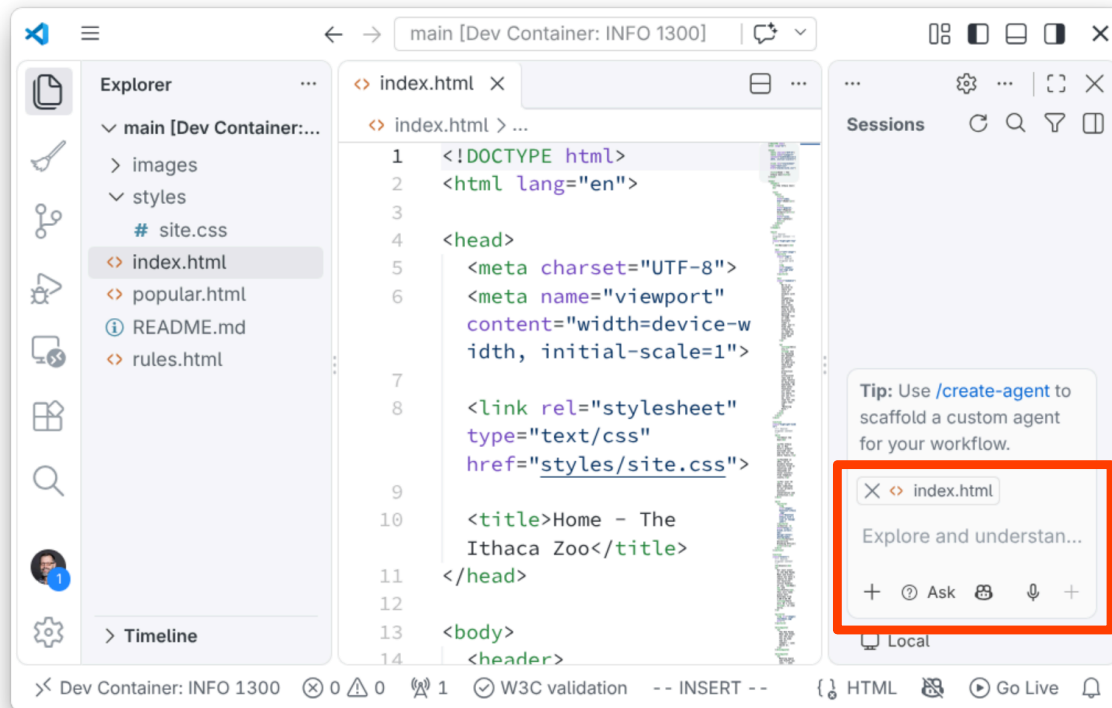
```
@media (prefers-color-scheme: dark) {  
  /* TODO: Add CSS rules to change the website's theme to dark mode. */  
}
```

GitHub Copilot

GitHub Copilot is a code completion and programming AI-assistant.



Walkthrough: GitHub Copilot & Dark Mode



Caution: AI Assistants

AI assistants make mistakes.

In the industry, expert programmers **evaluate** AI output and modify it to ensure correctness.

You have learned the foundational principles of static front-end web development, so that you have the knowledge to evaluate AI output and modify it to ensure correctness.

Use your knowledge to use AI responsibly and effectively; never blindly accept AI output as correct.

Review: “Clickable/Tappable” Area



- A finger is less precise compared to a mouse/trackpad.
- “Touch” requires **larger** “clickable” targets.

Media Queries for “Touch”

```
@media (pointer: coarse) {  
  /* TODO: CSS to make "tappable" areas larger. */  
}
```

Feature	Common Devices
pointer: coarse	Touchscreens (phones, tablets)
pointer: fine	Mouse, trackpad

Activity: Large “Tappable” Areas

In the activity codespace, increase the tappable area of the “See the Animals” button.

```
@media (pointer: coarse) {  
  /* TODO: CSS to make "tappable"  
     areas larger. */  
}
```

Our Animals

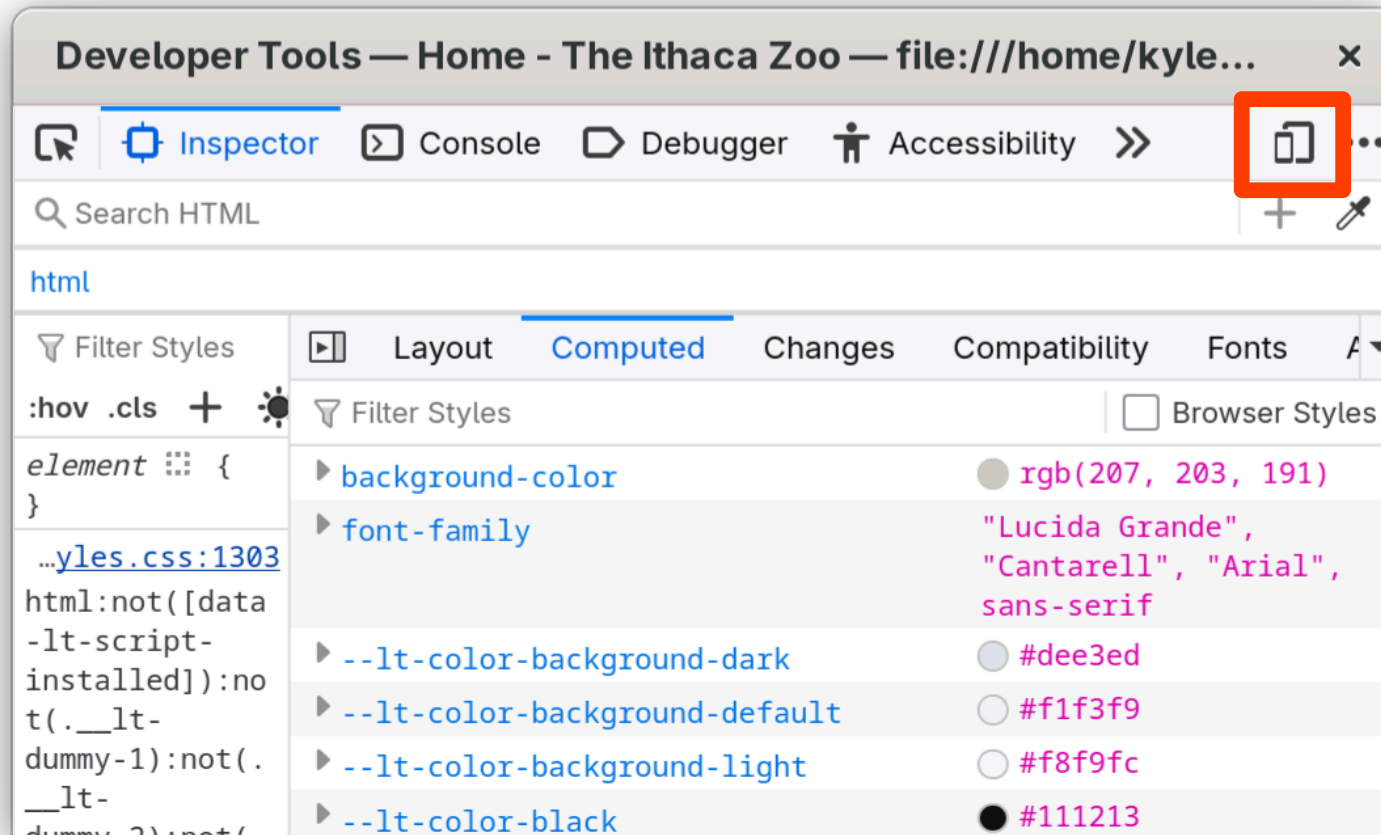
We host a wide variety of animals in climate-controlled biomes designed to perfectly match their natural environments.



See the Animals

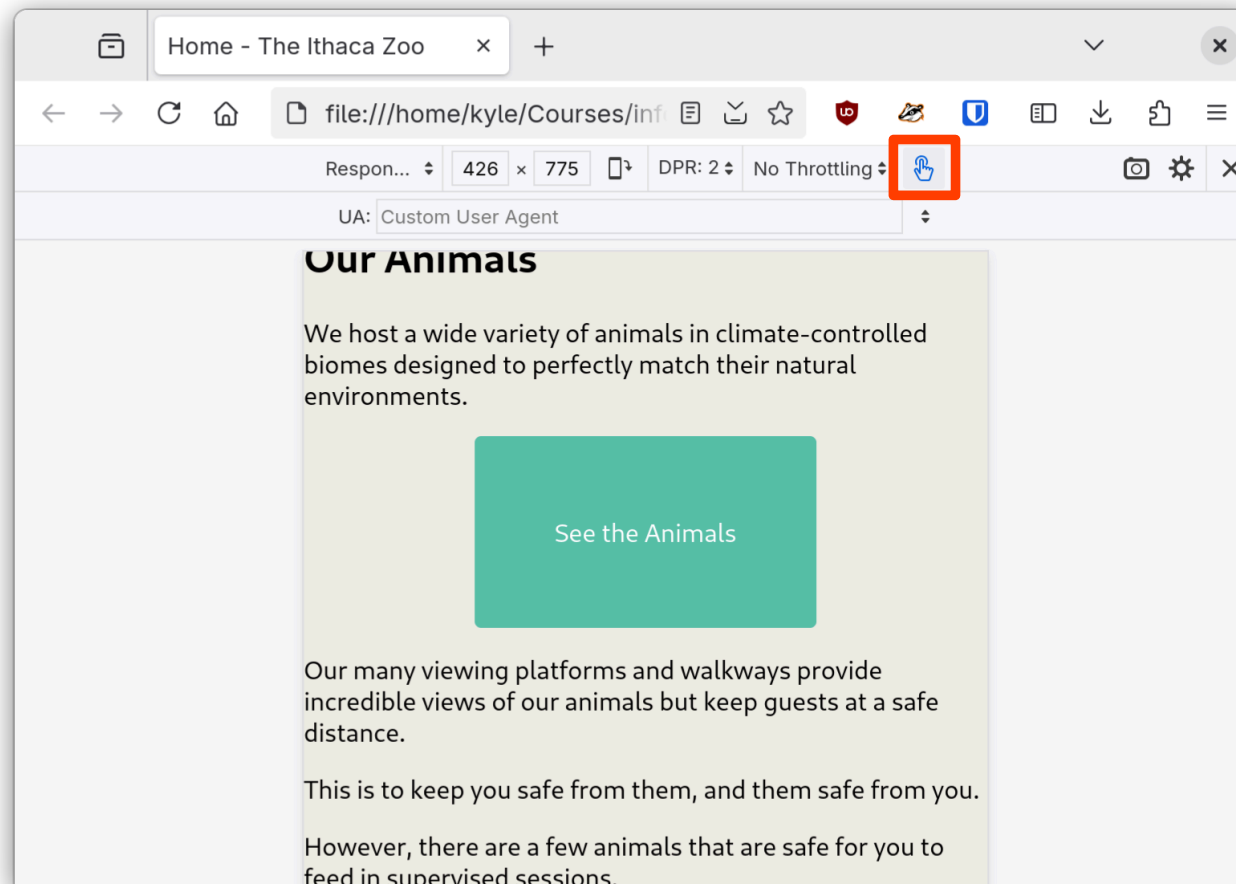
Our many viewing platforms and walkways provide incredible views of our animals but keep guests at a safe

Demo: Responsive Design Mode



Note: Firefox shown; Chrome's icon is in the **top-left** corner of Dev Tools.

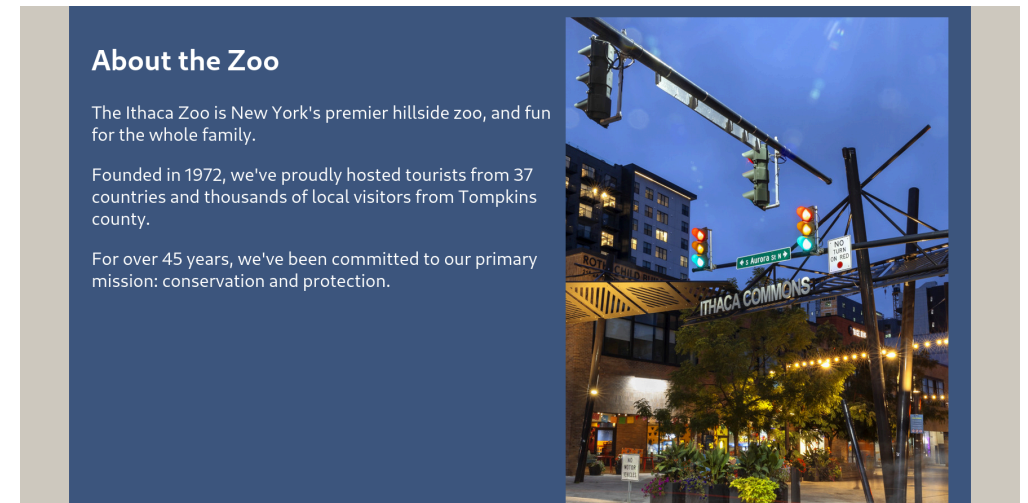
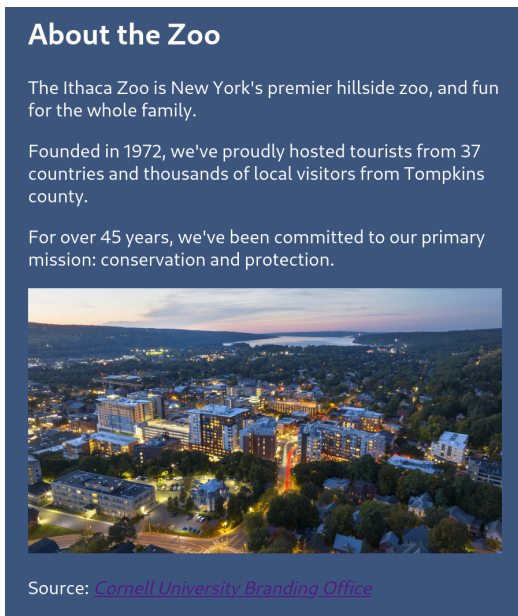
Responsive Design Mode: Simulate Touch



Note: Firefox shown; Chrome simulates touch by default in Dev Tools.

Responsive Images

Depending on the screen size, you may want to load different images or change the shape of the images.



Tip: Preserve Aspect Ratio and Prevent Overflow

Adding a `block-size: auto` tells the browser to preserve your images' aspect ratio when resizing them.

`max-inline-size: 100%` declares that images can never be rendered at a size wider than their containing element.

```
img {  
  max-inline-size: 100%;  
  block-size: auto;  
}
```

Responsive Images: `<picture>` vs. `object-fit`

There are two primary methods for responsive images:

`<picture>` and `srcset`

Use this method when you have **multiple** image **files**, and you want to load different images using **media queries**.

`object-fit` and `object-position`

Use this method when you have **one** image file, and you want to change how the image is **cropped** or **resized** using media queries.

<picture> and srcset

Requirements: *multiple* image files.

```
<picture>
  <source srcset="images/mcgraw-tower-portrait.jpg" media="(min-width: 500px)">
  
</picture>
```

Note: You can add a <source> element for *every responsive breakpoint* of your content.

Demo: `<picture>` and `srcset`

About the Zoo

The Ithaca Zoo is New York's premier hillside zoo, and fun for the whole family.

Founded in 1972, we've proudly hosted tourists from 37 countries and thousands of local visitors from Tompkins county.

For over 45 years, we've been committed to our primary mission: conservation and protection.



Source: [Cornell University Branding Office](#)

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object-fit and object-position

Use to change how the image is **cropped** or **resized**.

Events

Our next event is the Red Panda Meet and Greet, where you have a chance to meet our favorite little bundles of joy, *Red* and *Fluffy*. This will take place next Saturday from 1:00-4:30 PM. **There will be a line**, so come early.



The Red Panda Meet and Greet was the most fun my kids had all summer! - John Smith Sr.

Meeting Apple and Fluffy was cool. - John Smith Jr.

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object-fit and object-position

Requirements: *one* image file.

```
img {  
  /* make image square */  
  aspect-ratio: 1;  
  
  /* fill container with image */  
  object-fit: cover;  
  
  /* align image to top left */  
  object-position: top left;  
  
  /* fill container */  
  width: 100%;  
}
```

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Reference Documentation:

Review the reference documentation for employing these properties:

- `object-fit`
- `object-position`
- `aspect-ratio`

More Flexbox

flex-basis , flex-grow , and flex-shrink

`flex-basis` is the initial size of a child element before it is placed in a flexbox container.

`flex-grow` is the ability for a child to grow.

`flex-shrink` is the ability for a child to shrink.

```
nav menu li {  
  flex-basis: 200px; /* initial size of child element */  
  flex-grow: 1; /* allow flex item to grow */  
  flex-shrink: 1; /* allow flex item to shrink (default) */  
}
```

Shorthand: **flex**

flex is a shorthand property for **flex-grow**, **flex-shrink**, and **flex-basis**.

flex

```
nav menu li {  
  flex: 1 1 200px;  
}
```

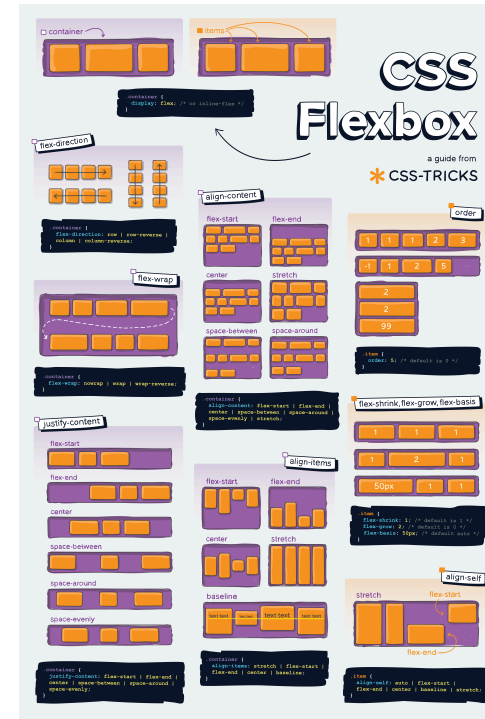
Equivalent to:

```
nav menu li {  
  flex-basis: 200px;  
  flex-grow: 1;  
  flex-shrink: 1;  
}
```

Flexbox Alignment

Use the **reference documentation** to utilize these Flexbox properties:

- gap
- justify-content
- align-content
- align-items
- align-self
- order
- flex-wrap



Source: [A Complete Guide to Flexbox](#)

Single-Page Websites

Single-Page Websites

A website that consists of a single HTML page with multiple sections that users can navigate to by clicking links in a navigation menu.

When clicked, the links **scroll** the user to a specific section of the page.

Document Fragment Links

A **document fragment link** is a link that points to a specific **element** within the same webpage.

```
<section id="section-name">  
  <h2>Section Title</h2>  
  <p>Section content goes here.</p>  
</section>
```

```
<a href="#section-name">Jump to Element</a>
```

When the user clicks **Jump to Element**, the browser scrolls to the element with the ID `section-name`.

Activity: Document Fragment Links

On your handout, plan the document fragment links for the Apple Harvest Festival website.

```
<section id="section-name">  
  <h2>Section Title</h2>  
  <p>Section content goes here.</p>  
</section>
```

```
<a href="#section-name">Jump to Section</a>
```

What's Next?

Friday (10/9) - Quiz 5 **Online Only** (Sections Canceled)

Monday (10/12) - **No Class** (Fall Break)

Wednesday (10/14) - Class 14: Exam II Q&A (Optional)

Thursday (10/15) - **(Big)** Homework 7 Due

Monday (10/19) - Class 15: Exam II