Basic HTML and HTML5

1. Say Hello to HTML Elements

Description

Welcome to freeCodeCamp's HTML coding challenges. These will walk you through web development step-by-step. First, you'll start by building a simple web page using HTML. You can edit `code` in your `code editor` , which is embedded into this web page. Do you see the code in your code editor that says `<h1>Hello</h1>` ? That's an HTML `element` . Most HTML elements have an `opening tag` and a `closing tag` . Opening tags look like this: `<h1>` Closing tags look like this: `</h1>` The only difference between opening and closing tags is the forward slash after the opening bracket of a closing tag. Each challenge has tests you can run at any time by clicking the "Run tests" button. When you pass all tests, you'll be prompted to submit your solution and go to the next coding challenge.

Instructions

To pass the test on this challenge, change your `h1` element's text to say "Hello World".

Challenge Seed

```
<h1>Hello</h1>
```

Solution

```
<h1>Hello World</h1>
```

2. Headline with the h2 Element

Description

Over the next few lessons, we'll build an HTML5 cat photo web app piece-by-piece. The `h2` element you will be adding in this step will add a level two heading to the web page. This element tells the browser about the structure of your website. `h1` elements are often used for main headings, while `h2` elements are generally used for subheadings. There are also `h3` , `h4` , `h5` and `h6` elements to indicate different levels of subheadings.

Instructions

Add an `h2` tag that says "CatPhotoApp" to create a second HTML `element` below your "Hello World" `h1` element.

Challenge Seed

```
<h1>Hello World</h1>
```

Solution

```
<h1>Hello World</h1>
<h2>CatPhotoApp</h2>
```

3. Inform with the Paragraph Element

Description

`p` elements are the preferred element for paragraph text on websites. `p` is short for "paragraph". You can create a paragraph element like this: `<p>I'm a p tag!</p>`

Instructions

Create a `p` element below your `h2` element, and give it the text "Hello Paragraph". Note: As a convention, all HTML tags are written in lowercase, for example `<p></p>` and not `<P></P>` .

Challenge Seed

```
<h1>Hello World</h1>
<h2>CatPhotoApp</h2>
```

Solution

```
// solution required
```

4. Fill in the Blank with Placeholder Text

Description

Web developers traditionally use `lorem ipsum text` as placeholder text. The 'lorem ipsum' text is randomly scraped from a famous passage by Cicero of Ancient Rome. Lorem ipsum text has been used as placeholder text by typesetters since the 16th century, and this tradition continues on the web. Well, 5 centuries is long enough. Since we're building a CatPhotoApp, let's use something called `kitty ipsum text` .

Instructions

Replace the text inside your `p` element with the first few words of this kitty ipsum text: `Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.`

Challenge Seed

```
<h1>Hello World</h1>

<h2>CatPhotoApp</h2>

<p>Hello Paragraph</p>
```

Solution

```
// solution required
```

5. Uncomment HTML

Description

Commenting is a way that you can leave comments for other developers within your code without affecting the resulting output that is displayed to the end user. Commenting is also a convenient way to make code inactive without having to delete it entirely. Comments in HTML starts with `<!--` , and ends with a `-->`

Instructions

Uncomment your `h1` , `h2` and `p` elements.

Challenge Seed

```
<!--
<h1>Hello World</h1>

<h2>CatPhotoApp</h2>

<p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
-->
```

Solution

```
<h1>Hello World</h1>

<h2>CatPhotoApp</h2>

<p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
```

6. Comment out HTML

Description

Remember that in order to start a comment, you need to use `<!--` and to end a comment, you need to use `-->` Here you'll need to end the comment before your `h2` element begins.

Instructions

Comment out your `h1` element and your `p` element, but not your `h2` element.

Challenge Seed

```
<!--
<h1>Hello World</h1>

<h2>CatPhotoApp</h2>

<p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
-->
```

Solution

```
<!--<h1>Hello World</h1>-->
<h2>CatPhotoApp</h2>
```

```
<!--<p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase
the red dot, hairball run catnip eat the grass sniff.</p> -->
```

7. Delete HTML Elements

Description

Our phone doesn't have much vertical space. Let's remove the unnecessary elements so we can start building our CatPhotoApp.

Instructions

Delete your `h1` element so we can simplify our view.

Challenge Seed

```
<h1>Hello World</h1>

<h2>CatPhotoApp</h2>

<p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
```

Solution

```
var code = "<h2>CatPhotoApp</h2><p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere
stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.</p>"
```

8. Introduction to HTML5 Elements

Description

HTML5 introduces more descriptive HTML tags. These include `header` , `footer` , `nav` , `video` , `article` , `section` and others. These tags make your HTML easier to read, and also help with Search Engine Optimization (SEO) and accessibility. The `main` HTML5 tag helps search engines and other developers find the main content of your page.
Note
Many of the new HTML5 tags and their benefits are covered in the Applied Accessibility section.

Instructions

Create a second `p` element after the existing `p` element with the following kitty ipsum text: `Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched.` Wrap the paragraphs with an opening and closing `main` tag.

Challenge Seed

```
<h2>CatPhotoApp</h2>

<p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
```

Solution

```
// solution required
```

9. Add Images to Your Website

Description

You can add images to your website by using the `img` element, and point to a specific image's URL using the `src` attribute. An example of this would be: `<img src="https://www.your-image-source.com/your-image.jpg">` Note that `img` elements are self-closing. All `img` elements **must** have an `alt` attribute. The text inside an `alt` attribute is used for screen readers to improve accessibility and is displayed if the image fails to load. Note: If the image is purely decorative, using an empty `alt` attribute is a best practice. Ideally the `alt` attribute should not contain special characters unless needed. Let's add an `alt` attribute to our `img` example above: `<img src="https://www.your-image-source.com/your-image.jpg" alt="Author standing on a beach with two thumbs up.">`

Instructions

Let's try to add an image to our website: Insert an `img` tag, after the `main` element. Now set the `src` attribute so that it points to this url: `https://bit.ly/fcc-relaxing-cat` Finally don't forget to give your image an `alt` text.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>


  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched.</p>
</main>
```

Solution

```
<h2>CatPhotoApp</h2>
<main>
  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>
  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched.</p>
</main>
```

10. Link to External Pages with Anchor Elements

Description

You can use `anchor` elements to link to content outside of your web page. `anchor` elements need a destination web address called an `href` attribute. They also need anchor text. Here's an example: `<a href="https://freecodecamp.org">this links to freecodecamp.org</a>` Then your browser will display the text **"this links to freecodecamp.org"** as a link you can click. And that link will take you to the web address https://www.freecodecamp.org.

Instructions

Create an `a` element that links to `http://freecatphotoapp.com` and has "cat photos" as its `anchor text`.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>



  <img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back.">

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched.</p>
</main>
```

Solution

```
// solution required
```

11. Link to Internal Sections of a Page with Anchor Elements

Description

`anchor` elements can also be used to create internal links to jump to different sections within a webpage. To create an internal link, you assign a link's `href` attribute to a hash symbol `#` plus the value of the `id` attribute for the element that you want to internally link to, usually further down the page. You then need to add the same `id` attribute to the element you are linking to. An `id` is an attribute that uniquely describes an element. Below is an example of an internal anchor link and its target element:

> <a href="#contacts-header">Contacts</a>
> ...
> <h2 id="contacts-header">Contacts</h2>

When users click the Contacts link, they'll be taken to the section of the webpage with the **Contacts** header element.

Instructions

Change your external link to an internal link by changing the `href` attribute to "#footer" and the text from "cat photos" to "Jump to Bottom". Remove the `target="_blank"` attribute from the anchor tag since this causes the linked document to open in a new window tab. Then add an `id` attribute with a value of "footer" to the `<footer>` element at the bottom of the page.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>

  <a href="http://freecatphotoapp.com" target="_blank">cat photos</a>

  <img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back.">

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff. Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched. Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched. Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff. Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur
```

```
catnip scratched.</p>
  <p>Meowwww loved it, hated it, loved it, hated it yet spill litter box, scratch at owner, destroy all furniture, especially couch or lay on arms while you're using the keyboard. Missing until dinner time toy mouse squeak roll over. With tail in the air lounge in doorway. Man running from cops stops to pet cats, goes to jail.</p>
  <p>Intently stare at the same spot poop in the plant pot but kitten is playing with dead mouse. Get video posted to internet for chasing red dot leave fur on owners clothes meow to be let out and mesmerizing birds leave fur on owners clothes or favor packaging over toy so purr for no reason. Meow to be let out play time intently sniff hand run outside as soon as door open yet destroy couch.</p>

</main>

<footer>Copyright Cat Photo App</footer>
```

Solution

```
<h2>CatPhotoApp</h2>
<main>

  <a href="#footer">Jump to Bottom</a>

  <img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back.">

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff. Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched. Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched. Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the red dot, hairball run catnip eat the grass sniff. Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in the sink fluffy fur catnip scratched.</p>
  <p>Meowwww loved it, hated it, loved it, hated it yet spill litter box, scratch at owner, destroy all furniture, especially couch or lay on arms while you're using the keyboard. Missing until dinner time toy mouse squeak roll over. With tail in the air lounge in doorway. Man running from cops stops to pet cats, goes to jail.</p>
  <p>Intently stare at the same spot poop in the plant pot but kitten is playing with dead mouse. Get video posted to internet for chasing red dot leave fur on owners clothes meow to be let out and mesmerizing birds leave fur on owners clothes or favor packaging over toy so purr for no reason. Meow to be let out play time intently sniff hand run outside as soon as door open yet destroy couch.</p>

</main>

<footer id="footer">Copyright Cat Photo App</footer>
```

12. Nest an Anchor Element within a Paragraph

Description

You can nest links within other text elements.

> <p>
> Here's a <a target="_blank" href="http://freecodecamp.org"> link to freecodecamp.org</a> for you to follow.
> </p>

Let's break down the example: Normal text is wrapped in the `p` element: `<p> Here's a ... for you to follow. </p>` Next is the `anchor` element `<a>` (which requires a closing tag `</a>`): `<a> ... </a>` `target` is an anchor tag attribute that specifies where to open the link and the value `"_blank"` specifies to open the link in a new tab `href` is an anchor tag attribute that contains the URL address of the link: `<a href="http://freecodecamp.org"> ... </a>` The text, **"link to freecodecamp.org"**, within the `anchor` element called `anchor text` , will display a link to click: `<a href=" ... ">link to freecodecamp.org</a>` The final output of the example will look like this:
Here's a link to freecodecamp.org for you to follow.

Instructions

Now nest the existing `a` element within a new `p` element (just after the existing `main` element). The new paragraph should have text that says "View more cat photos", where "cat photos" is a link, and the rest of the text is plain text.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>

  <a href="http://freecatphotoapp.com" target="_blank">cat photos</a>

  <img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back.">

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in
the sink fluffy fur catnip scratched.</p>
</main>
```

Solution

```
// solution required
```

13. Make Dead Links Using the Hash Symbol

Description

Sometimes you want to add `a` elements to your website before you know where they will link. This is also handy when you're changing the behavior of a link using `JavaScript`, which we'll learn about later.

Instructions

The current value of the `href` attribute is a link that points to "http://freecatphotoapp.com". Replace the `href` attribute value with a `#`, also known as a hash symbol, to create a dead link. For example: `href="#"`

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="http://freecatphotoapp.com" target="_blank">cat photos</a>.</p>

  <img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back.">

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in
the sink fluffy fur catnip scratched.</p>
</main>
```

Solution

```
// solution required
```

14. Turn an Image into a Link

Description

You can make elements into links by nesting them within an `a` element. Nest your image within an `a` element. Here's an example: `<a href="#"><img src="https://bit.ly/fcc-running-cats" alt="Three kittens running towards the camera."></a>` Remember to use `#` as your `a` element's `href` property in order to turn it into a dead link.

Instructions

Place the existing image element within an `anchor` element. Once you've done this, hover over your image with your cursor. Your cursor's normal pointer should become the link clicking pointer. The photo is now a link.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back.">

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in
the sink fluffy fur catnip scratched.</p>
</main>
```

Solution

```
// solution required
```

15. Create a Bulleted Unordered List

Description

HTML has a special element for creating `unordered lists`, or bullet point style lists. Unordered lists start with an opening `<ul>` element, followed by any number of `<li>` elements. Finally, unordered lists close with a `</ul>` For example:

> <ul>
>   <li>milk</li>
>   <li>cheese</li>
> </ul>

would create a bullet point style list of "milk" and "cheese".

Instructions

Remove the last two `p` elements and create an unordered list of three things that cats love at the bottom of the page.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your ankles chase the
red dot, hairball run catnip eat the grass sniff.</p>
  <p>Purr jump eat the grass rip the couch scratched sunbathe, shed everywhere rip the couch sleep in
the sink fluffy fur catnip scratched.</p>
</main>
```

Solution

```
// solution required
```

16. Create an Ordered List

Description

HTML has another special element for creating `ordered lists` , or numbered lists. Ordered lists start with an opening `<ol>` element, followed by any number of `<li>` elements. Finally, ordered lists close with a `</ol>` For example:

> <ol>
>   <li>Garfield</li>
>   <li>Sylvester</li>
> </ol>

would create a numbered list of "Garfield" and "Sylvester".

Instructions

Create an ordered list of the top 3 things cats hate the most.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>

</main>
```

Solution

```
// solution required
```

17. Create a Text Field

Description

Now let's create a web form. `input` elements are a convenient way to get input from your user. You can create a text input like this: `<input type="text">` Note that `input` elements are self-closing.

Instructions

Create an `input` element of type `text` below your lists.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>


</main>
```

Solution

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form>
        <input type="text">
  </form>
</main>
```

18. Add Placeholder Text to a Text Field

Description

Placeholder text is what is displayed in your `input` element before your user has inputted anything. You can create placeholder text like so: `<input type="text" placeholder="this is placeholder text">`

Instructions

Set the `placeholder` value of your text `input` to "cat photo URL".

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <input type="text">
</main>
```

Solution

```
// solution required
```

19. Create a Form Element

Description

You can build web forms that actually submit data to a server using nothing more than pure HTML. You can do this by specifying an action on your `form` element. For example: `<form action="/url-where-you-want-to-submit-form-data"></form>`

Instructions

Nest your text field inside a `form` element, and add the `action="/submit-cat-photo"` attribute to the form element.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <input type="text" placeholder="cat photo URL">
</main>
```

Solution

```
// solution required
```

20. Add a Submit Button to a Form

Description

Let's add a `submit` button to your form. Clicking this button will send the data from your form to the URL you specified with your form's `action` attribute. Here's an example submit button: `<button type="submit">this button submits the form</button>`

Instructions

Add a button as the last element of your `form` element with a type of `submit` , and "Submit" as its text.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <input type="text" placeholder="cat photo URL">
  </form>
</main>
```

Solution

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <input type="text" placeholder="cat photo URL">
    <button type="submit">Submit</button>
  </form>
</main>
```

21. Use HTML5 to Require a Field

Description

You can require specific form fields so that your user will not be able to submit your form until he or she has filled them out. For example, if you wanted to make a text input field required, you can just add the attribute `required` within your `input` element, like this: `<input type="text" required>`

Instructions

Make your text `input` a `required` field, so that your user can't submit the form without completing this field. Then try to submit the form without inputting any text. See how your HTML5 form notifies you that the field is required?

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <input type="text" placeholder="cat photo URL">
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

22. Create a Set of Radio Buttons

Description

You can use `radio button` s for questions where you want the user to only give you one answer out of multiple options. Radio buttons are a type of `input` . Each of your radio buttons can be nested within its own `label` element. By wrapping an `input` element inside of a `label` element it will automatically associate the radio button input with the label element surrounding it. All related radio buttons should have the same `name` attribute to create a radio button group. By creating a radio group, selecting any single radio button will automatically deselect the other buttons within the same group ensuring only one answer is provided by the user. Here's an example of a radio button:

> <label>
> <input type="radio" name="indoor-outdoor">Indoor
> </label>

It is considered best practice to set a `for` attribute on the `label` element, with a value that matches the value of the `id` attribute of the `input` element. This allows assistive technologies to create a linked relationship between the label and the child `input` element. For example:

> <label for="indoor">
>   <input id="indoor" type="radio" name="indoor-outdoor">Indoor
> </label>

Instructions

Add a pair of radio buttons to your form, each nested in its own `label` element. One should have the option of `indoor` and the other should have the option of `outdoor` . Both should share the `name` attribute of `indoor-outdoor` to create a radio group.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

23. Create a Set of Checkboxes

Description

Forms commonly use `checkboxes` for questions that may have more than one answer. Checkboxes are a type of `input` . Each of your checkboxes can be nested within its own `label` element. By wrapping an `input` element inside of a `label` element it will automatically associate the checkbox input with the label element surrounding it. All related checkbox inputs should have the same `name` attribute. It is considered best practice to explicitly define the relationship between a checkbox `input` and its corresponding `label` by setting the `for` attribute on the `label` element to match the `id` attribute of the associated `input` element. Here's an example of a checkbox: `<label for="loving"><input id="loving" type="checkbox" name="personality"> Loving</label>`

Instructions

Add to your form a set of three checkboxes. Each checkbox should be nested within its own `label` element. All three should share the `name` attribute of `personality` .

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <label for="indoor"><input id="indoor" type="radio" name="indoor-outdoor"> Indoor</label>
    <label for="outdoor"><input id="outdoor" type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

24. Check Radio Buttons and Checkboxes by Default

Description

You can set a checkbox or radio button to be checked by default using the `checked` attribute. To do this, just add the word "checked" to the inside of an input element. For example: `<input type="radio" name="test-name" checked>`

Instructions

Set the first of your `radio button` s and the first of your `checkbox` es to both be checked by default.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor"> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality"> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <p>Things cats love:</p>
  <ul>
    <li>cat nip</li>
    <li>laser pointers</li>
    <li>lasagna</li>
  </ul>
  <p>Top 3 things cats hate:</p>
  <ol>
    <li>flea treatment</li>
    <li>thunder</li>
    <li>other cats</li>
  </ol>
  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

25. Nest Many Elements within a Single div Element

Description

The `div` element, also known as a division element, is a general purpose container for other elements. The `div` element is probably the most commonly used HTML element of all. Just like any other non-self-closing element, you can open a `div` element with `<div>` and close it on another line with `</div>` .

Instructions

Nest your "Things cats love" and "Things cats hate" lists all within a single `div` element. Hint: Try putting your opening `div` tag above your "Things cats love" `p` element and your closing `div` tag after your closing `ol` tag so that both of your lists are within one `div` .

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>
```

```
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>

    <form action="/submit-cat-photo">
      <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
      <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
      <label><input type="checkbox" name="personality" checked> Loving</label>
      <label><input type="checkbox" name="personality"> Lazy</label>
      <label><input type="checkbox" name="personality"> Energetic</label><br>
      <input type="text" placeholder="cat photo URL" required>
      <button type="submit">Submit</button>
    </form>
  </main>
```

Solution

```
// solution required
```

26. Declare the Doctype of an HTML Document

Description

The challenges so far have covered specific HTML elements and their uses. However, there are a few elements that give overall structure to your page, and should be included in every HTML document. At the top of your document, you need to tell the browser which version of HTML your page is using. HTML is an evolving language, and is updated regularly. Most major browsers support the latest specification, which is HTML5. However, older web pages may use previous versions of the language. You tell the browser this information by adding the `<!DOCTYPE ...>` tag on the first line, where the " `...` " part is the version of HTML. For HTML5, you use `<!DOCTYPE html>` . The `!` and uppercase `DOCTYPE` is important, especially for older browsers. The `html` is not case sensitive. Next, the rest of your HTML code needs to be wrapped in `html` tags. The opening `<html>` goes directly below the `<!DOCTYPE html>` line, and the closing `</html>` goes at the end of the page. Here's an example of the page structure:

> <!DOCTYPE html>
> <html>
> <!-- Your HTML code goes here -->
> </html>

Instructions

Add a `DOCTYPE` tag for HTML5 to the top of the blank HTML document in the code editor. Under it, add opening and closing `html` tags, which wrap around an `h1` element. The heading can include any text.

Challenge Seed

Solution

```
<!DOCTYPE html>
<html>
```

```
  <h1> Hello world </h1>
</html>
```

27. Define the Head and Body of an HTML Document

Description

You can add another level of organization in your HTML document within the `html` tags with the `head` and `body` elements. Any markup with information about your page would go into the `head` tag. Then any markup with the content of the page (what displays for a user) would go into the `body` tag. Metadata elements, such as `link` , `meta` , `title` , and `style` , typically go inside the `head` element. Here's an example of a page's layout:

> <!DOCTYPE html>
> <html>
> <head>
>   <!-- metadata elements -->
> </head>
> <body>
>   <!-- page contents -->
> </body>
> </html>

Instructions

Edit the markup so there's a `head` and a `body` . The `head` element should only include the `title` , and the `body` element should only include the `h1` and `p` .

Challenge Seed

```
<!DOCTYPE html>
<html>
  <title>The best page ever</title>

  <h1>The best page ever</h1>
  <p>Cat ipsum dolor sit amet, jump launch to pounce upon little yarn mouse, bare fangs at toy run hide
in litter box until treats are fed. Go into a room to decide you didn't want to be in there anyway. I
like big cats and i can not lie kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching
attack your ankles chase the red dot, hairball run catnip eat the grass sniff. Meow i could pee on this
if i had the energy for slap owner's face at 5am until human fills food dish yet scamper. Knock dish off
table head butt cant eat out of my own dish scratch the furniture. Make meme, make cute face. Sleep in
the bathroom sink chase laser but pee in the shoe. Paw at your fat belly licks your face and eat grass,
throw it back up kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your
ankles chase the red dot, hairball run catnip eat the grass sniff.</p>

</html>
```

Solution

```
<!DOCTYPE html>
<html>
 <head>
  <title>The best page ever</title>
 </head>
 <body>
  <h1>The best page ever</h1>
  <p>Cat ipsum dolor sit amet, jump launch to pounce upon little yarn mouse, bare fangs at toy run hide
in litter box until treats are fed. Go into a room to decide you didn't want to be in there anyway. I
like big cats and i can not lie kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching
attack your ankles chase the red dot, hairball run catnip eat the grass sniff. Meow i could pee on this
if i had the energy for slap owner's face at 5am until human fills food dish yet scamper. Knock dish off
table head butt cant eat out of my own dish scratch the furniture. Make meme, make cute face. Sleep in
the bathroom sink chase laser but pee in the shoe. Paw at your fat belly licks your face and eat grass,
throw it back up kitty ipsum dolor sit amet, shed everywhere shed everywhere stretching attack your
```

```
ankles chase the red dot, hairball run catnip eat the grass sniff.</p>
 </body>
</html>
```

Basic CSS

1. Change the Color of Text

Description

Now let's change the color of some of our text. We can do this by changing the `style` of your `h2` element. The property that is responsible for the color of an element's text is the `color` style property. Here's how you would set your `h2` element's text color to blue: `<h2 style="color: blue;">CatPhotoApp</h2>` Note that it is a good practice to end inline `style` declarations with a `;` .

Instructions

Change your `h2` element's style so that its text color is red.

Challenge Seed

```
<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
<h2 style="color: red;">CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

2. Use CSS Selectors to Style Elements

Description

With CSS, there are hundreds of CSS `properties` that you can use to change the way an element looks on your page. When you entered `<h2 style="color: red">CatPhotoApp</h2>`, you were styling that individual `h2` element with `inline CSS`, which stands for `Cascading Style Sheets`. That's one way to specify the style of an element, but there's a better way to apply `CSS`. At the top of your code, create a `style` block like this:

> <style>
> </style>

Inside that style block, you can create a `CSS selector` for all `h2` elements. For example, if you wanted all `h2` elements to be red, you would add a style rule that looks like this:

> <style>
>   h2 {color: red;}
> </style>

Note that it's important to have both opening and closing curly braces (`{` and `}`) around each element's style rule(s). You also need to make sure that your element's style definition is between the opening and closing style tags. Finally, be sure to add a semicolon to the end of each of your element's style rules.

Instructions

Delete your `h2` element's style attribute, and instead create a CSS `style` block. Add the necessary CSS to turn all `h2` elements blue.

Challenge Seed

```
<h2 style="color: red">CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
```

```
      <p>Top 3 things cats hate:</p>
      <ol>
        <li>flea treatment</li>
        <li>thunder</li>
        <li>other cats</li>
      </ol>
    </div>

    <form action="/submit-cat-photo">
      <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
      <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
      <label><input type="checkbox" name="personality" checked> Loving</label>
      <label><input type="checkbox" name="personality"> Lazy</label>
      <label><input type="checkbox" name="personality"> Energetic</label><br>
      <input type="text" placeholder="cat photo URL" required>
      <button type="submit">Submit</button>
    </form>
  </main>
```

Solution

```
// solution required
```

3. Use a CSS Class to Style an Element

Description

Classes are reusable styles that can be added to HTML elements. Here's an example CSS class declaration:

> <style>
> .blue-text {
>   color: blue;
> }
> </style>

You can see that we've created a CSS class called `blue-text` within the `<style>` tag. You can apply a class to an HTML element like this: `<h2 class="blue-text">CatPhotoApp</h2>` Note that in your CSS `style` element, class names start with a period. In your HTML elements' class attribute, the class name does not include the period.

Instructions

Inside your `style` element, change the `h2` selector to `.red-text` and update the color's value from `blue` to `red` . Give your `h2` element the `class` attribute with a value of `'red-text'` .

Challenge Seed

```
<style>
  h2 {
    color: blue;
  }
</style>

<h2>CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

4. Style Multiple Elements with a CSS Class

Description

Classes allow you to use the same CSS styles on multiple HTML elements. You can see this by applying your `red-text` class to the first `p` element.

Instructions

Challenge Seed

```
<style>
  .red-text {
    color: red;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p>Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
```

```
      <label><input type="checkbox" name="personality" checked> Loving</label>
      <label><input type="checkbox" name="personality"> Lazy</label>
      <label><input type="checkbox" name="personality"> Energetic</label><br>
      <input type="text" placeholder="cat photo URL" required>
      <button type="submit">Submit</button>
    </form>
  </main>
```

Solution

```
// solution required
```

5. Change the Font Size of an Element

Description

Font size is controlled by the `font-size` CSS property, like this:

> h1 {
>   font-size: 30px;
> }

Instructions

Inside the same `<style>` tag that contains your `red-text` class, create an entry for `p` elements and set the `font-size` to 16 pixels (`16px`).

Challenge Seed

```
<style>
  .red-text {
    color: red;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

6. Set the Font Family of an Element

Description

You can set which font an element should use, by using the `font-family` property. For example, if you wanted to set your `h2` element's font to `sans-serif`, you would use the following CSS:

> h2 {
>   font-family: sans-serif;
> }

Instructions

Make all of your `p` elements use the `monospace` font.

Challenge Seed

```
<style>
  .red-text {
    color: red;
  }

  p {
    font-size: 16px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

7. Import a Google Font

Description

In addition to specifying common fonts that are found on most operating systems, we can also specify non-standard, custom web fonts for use on our website. There are many sources for web fonts on the Internet. For this example we will focus on the Google Fonts library. Google Fonts is a free library of web fonts that you can use in your CSS by referencing the font's URL. So, let's go ahead and import and apply a Google font (note that if Google is blocked in your country, you will need to skip this challenge). To import a Google Font, you can copy the font(s) URL from the Google Fonts library and then paste it in your HTML. For this challenge, we'll import the `Lobster` font. To do this, copy the following code snippet and paste it into the top of your code editor (before the opening `style` element): `<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">` Now you can use the `Lobster` font in your CSS by using `Lobster` as the FAMILY_NAME as in the following example: `font-family: FAMILY_NAME, GENERIC_NAME;` . The GENERIC_NAME is optional, and is a fallback font in case the other specified font is not available. This is covered in the next challenge. Family names are case-sensitive and need to be wrapped in quotes if there is a space in the name. For example, you need quotes to use the `"Open Sans"` font, but not to use the `Lobster` font.

Instructions

Create a `font-family` CSS rule that uses the `Lobster` font, and ensure that it will be applied to your `h2` element.

Challenge Seed

```
<style>
  .red-text {
    color: red;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

8. Specify How Fonts Should Degrade

Description

There are several default fonts that are available in all browsers. These generic font families include `monospace` , `serif` and `sans-serif` When one font isn't available, you can tell the browser to "degrade" to another font. For example, if you wanted an element to use the `Helvetica` font, but degrade to the `sans-serif` font when `Helvetica` isn't available, you will specify it as follows:

> p {
> font-family: Helvetica, sans-serif;
> }

Generic font family names are not case-sensitive. Also, they do not need quotes because they are CSS keywords.

Instructions

To begin with, apply the `monospace` font to the `h2` element, so that it now has two fonts - `Lobster` and `monospace` . In the last challenge, you imported the `Lobster` font using the `link` tag. Now comment out that import of the `Lobster` font(using the HTML comments you learned before) from Google Fonts so that it isn't available anymore. Notice how your `h2` element degrades to the `monospace` font. **Note**
If you have the Lobster font installed on your computer, you won't see the degradation because your browser is able to find the font.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
```

```
        <li>cat nip</li>
        <li>laser pointers</li>
        <li>lasagna</li>
      </ul>
      <p>Top 3 things cats hate:</p>
      <ol>
        <li>flea treatment</li>
        <li>thunder</li>
        <li>other cats</li>
      </ol>
    </div>

    <form action="/submit-cat-photo">
      <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
      <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
      <label><input type="checkbox" name="personality" checked> Loving</label>
      <label><input type="checkbox" name="personality"> Lazy</label>
      <label><input type="checkbox" name="personality"> Energetic</label><br>
      <input type="text" placeholder="cat photo URL" required>
      <button type="submit">Submit</button>
    </form>
  </main>
```

Solution

```
// solution required
```

9. Size Your Images

Description

CSS has a property called `width` that controls an element's width. Just like with fonts, we'll use `px` (pixels) to specify the image's width. For example, if we wanted to create a CSS class called `larger-image` that gave HTML elements a width of 500 pixels, we'd use:

> <style>
> .larger-image {
>   width: 500px;
> }
> </style>

Instructions

Create a class called `smaller-image` and use it to resize the image so that it's only 100 pixels wide. **Note**
Due to browser implementation differences, you may need to be at 100% zoom to pass the tests on this challenge.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }
</style>
```

```
<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .smaller-image {
    width: 100px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

10. Add Borders Around Your Elements

Description

CSS borders have properties like `style`, `color` and `width`. For example, if we wanted to create a red, 5 pixel border around an HTML element, we could use this class:

> <style>
>
> .thin-red-border {
>
>   border-color: red;
>
>   border-width: 5px;
>
>   border-style: solid;
>
> }
>
> </style>

Instructions

Create a class called `thick-green-border`. This class should add a 10px, solid, green border around an HTML element. Apply the class to your cat photo. Remember that you can apply multiple classes to an element using its `class` attribute, by separating each class name with a space. For example: `<img class="class1 class2">`

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .smaller-image {
    width: 100px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .smaller-image {
    width: 100px;
  }

  .thick-green-border {
    border-width: 10px;
    border-color: green;
    border-style: solid;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

11. Add Rounded Corners with border-radius

Description

Your cat photo currently has sharp corners. We can round out those corners with a CSS property called `border-radius`.

Instructions

You can specify a `border-radius` with pixels. Give your cat photo a `border-radius` of `10px`. Note: this challenge allows for multiple possible solutions. For example, you may add `border-radius` to either the `.thick-green-border` class or the `.smaller-image` class.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
  }

  .smaller-image {
    width: 100px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
  }

  .smaller-image {
    width: 100px;
    border-radius: 10px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

12. Make Circular Images with a border-radius

Description

In addition to pixels, you can also specify the `border-radius` using a percentage.

Instructions

Give your cat photo a `border-radius` of `50%`.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
    border-radius: 10px;
  }

  .smaller-image {
    width: 100px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A
cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

13. Give a Background Color to a div Element

Description

You can set an element's background color with the `background-color` property. For example, if you wanted an element's background color to be `green`, you'd put this within your `style` element:

> .green-background {
> background-color: green;
> }

Instructions

Create a class called `silver-background` with the `background-color` of silver. Assign this class to your `div` element.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
    border-radius: 50%;
  }

  .smaller-image {
    width: 100px;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div>
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

14. Set the id of an Element

Description

In addition to classes, each HTML element can also have an `id` attribute. There are several benefits to using `id` attributes: You can use an `id` to style a single element and later you'll learn that you can use them to select and modify specific elements with JavaScript. `id` attributes should be unique. Browsers won't enforce this, but it is a widely agreed upon best practice. So please don't give more than one element the same `id` attribute. Here's an example of how you give your `h2` element the id of `cat-photo-app` : `<h2 id="cat-photo-app">`

Instructions

Give your `form` element the id `cat-photo-form` .

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
    border-radius: 50%;
  }

  .smaller-image {
    width: 100px;
  }

  .silver-background {
    background-color: silver;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div class="silver-background">
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

15. Use an id Attribute to Style an Element

Description

One cool thing about `id` attributes is that, like classes, you can style them using CSS. However, an `id` is not reusable and should only be applied to one element. An `id` also has a higher specificity (importance) than a class so if both are applied to the same element and have conflicting styles, the styles of the `id` will be applied. Here's an example of how you can take your element with the `id` attribute of `cat-photo-element` and give it the background color of green. In your `style` element:

> #cat-photo-element {
> background-color: green;
> }

Note that inside your `style` element, you always reference classes by putting a `.` in front of their names. You always reference ids by putting a `#` in front of their names.

Instructions

Try giving your form, which now has the `id` attribute of `cat-photo-form`, a green background.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
    border-radius: 50%;
  }

  .smaller-image {
    width: 100px;
  }

  .silver-background {
    background-color: silver;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A cute orange cat lying on its back."></a>

  <div class="silver-background">
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo" id="cat-photo-form">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

16. Adjust the Padding of an Element

Description

Now let's put our Cat Photo App away for a little while and learn more about styling HTML. You may have already noticed this, but all HTML elements are essentially little rectangles. Three important properties control the space that surrounds each HTML element: `padding` , `margin` , and `border` . An element's `padding` controls the amount of space between the element's content and its `border` . Here, we can see that the blue box and the red box are nested within the yellow box. Note that the red box has more `padding` than the blue box. When you increase the blue box's `padding` , it will increase the distance (`padding`) between the text and the border around it.

Instructions

Change the `padding` of your blue box to match that of your red box.

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding: 20px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    padding: 10px;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```
// solution required
```

17. Adjust the Margin of an Element

Description

An element's `margin` controls the amount of space between an element's `border` and surrounding elements. Here, we can see that the blue box and the red box are nested within the yellow box. Note that the red box has a bigger `margin` than the blue box, making it appear smaller. When you increase the blue box's `margin` , it will increase the distance between its border and surrounding elements.

Instructions

Change the `margin` of the blue box to match that of the red box.

Challenge Seed

```html
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding: 20px;
    margin: 20px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    padding: 20px;
    margin: 10px;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```js
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding: 20px;
    margin: 20px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    padding: 20px;
    margin: 20px;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

18. Add a Negative Margin to an Element

Description

An element's `margin` controls the amount of space between an element's `border` and surrounding elements. If you set an element's `margin` to a negative value, the element will grow larger.

Instructions

Try to set the `margin` to a negative value like the one for the red box. Change the `margin` of the blue box to `-15px` , so it fills the entire horizontal width of the yellow box around it.

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding: 20px;
    margin: -15px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    padding: 20px;
    margin: 20px;
  }
</style>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding: 20px;
    margin: -15px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    padding: 20px;
    margin: 20px;
    margin-top: -15px;
  }
</style>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

19. Add Different Padding to Each Side of an Element

Description

Sometimes you will want to customize an element so that it has different amounts of `padding` on each of its sides. CSS allows you to control the `padding` of all four individual sides of an element with the `padding-top` , `padding-right` , `padding-bottom` , and `padding-left` properties.

Instructions

Give the blue box a `padding` of `40px` on its top and left side, but only `20px` on its bottom and right side.

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding-top: 40px;
    padding-right: 20px;
    padding-bottom: 20px;
    padding-left: 40px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```
// solution required
```

20. Add Different Margins to Each Side of an Element

Description

Sometimes you will want to customize an element so that it has a different `margin` on each of its sides. CSS allows you to control the `margin` of all four individual sides of an element with the `margin-top`, `margin-right`, `margin-bottom`, and `margin-left` properties.

Instructions

Give the blue box a `margin` of `40px` on its top and left side, but only `20px` on its bottom and right side.

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    margin-top: 40px;
    margin-right: 20px;
    margin-bottom: 20px;
    margin-left: 40px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 10px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    margin-top: 40px;
    margin-right: 20px;
    margin-bottom: 20px;
    margin-left: 40px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    margin-top: 40px;
    margin-right: 20px;
    margin-bottom: 20px;
    margin-left: 40px;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

21. Use Clockwise Notation to Specify the Padding of an Element

Description

Instead of specifying an element's `padding-top` , `padding-right` , `padding-bottom` , and `padding-left` properties individually, you can specify them all in one line, like this: `padding: 10px 20px 10px 20px;` These four values work like a clock: top, right, bottom, left, and will produce the exact same result as using the side-specific padding instructions.

Instructions

Use Clockwise Notation to give the ".blue-box" class a `padding` of `40px` on its top and left side, but only `20px` on its bottom and right side.

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 20px 40px 20px 40px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    padding: 20px 40px 20px 40px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```
// solution required
```

22. Use Clockwise Notation to Specify the Margin of an Element

Description

Let's try this again, but with `margin` this time. Instead of specifying an element's `margin-top` , `margin-right` , `margin-bottom` , and `margin-left` properties individually, you can specify them all in one line, like this: `margin: 10px 20px 10px 20px;` These four values work like a clock: top, right, bottom, left, and will produce the exact same result as using the side-specific margin instructions.

Instructions

Use `Clockwise Notation` to give the element with the `blue-box` class a margin of `40px` on its top and left side, but only `20px` on its bottom and right side.

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 20px 40px 20px 40px;
  }

  .red-box {
    background-color: crimson;
    color: #fff;
    margin: 20px 40px 20px 40px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

Solution

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 20px 40px 20px 40px;
  }
  .red-box {
    background-color: crimson;
    color: #fff;
    margin: 20px 40px 20px 40px;
  }

  .blue-box {
    background-color: blue;
    color: #fff;
    margin: 40px 20px 20px 40px;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box blue-box">padding</h5>
</div>
```

23. Use Attribute Selectors to Style Elements

Description

You have been given `id` or `class` attributes to elements that you wish to specifically style. These are known as ID and class selectors. There are other CSS Selectors you can use to select custom groups of elements to style. Let's bring out CatPhotoApp again to practice using CSS Selectors. For this challenge, you will use the `[attr=value]` attribute selector to style the checkboxes in CatPhotoApp. This selector matches and styles elements with a specific attribute value. For example, the below code changes the margins of all elements with the attribute `type` and a corresponding value of `radio`:

> [type='radio'] {
>   margin: 20px 0px 20px 0px;
> }

Instructions

Using the `type` attribute selector, try to give the checkboxes in CatPhotoApp a top margin of 10px and a bottom margin of 15px.

Challenge Seed

```
<link href="https://fonts.googleapis.com/css?family=Lobster" rel="stylesheet" type="text/css">
<style>
  .red-text {
    color: red;
  }

  h2 {
    font-family: Lobster, monospace;
  }

  p {
    font-size: 16px;
    font-family: monospace;
  }

  .thick-green-border {
    border-color: green;
    border-width: 10px;
    border-style: solid;
    border-radius: 50%;
  }

  .smaller-image {
    width: 100px;
  }
  .silver-background {
    background-color: silver;
  }
</style>

<h2 class="red-text">CatPhotoApp</h2>
<main>
  <p class="red-text">Click here to view more <a href="#">cat photos</a>.</p>

  <a href="#"><img class="smaller-image thick-green-border" src="https://bit.ly/fcc-relaxing-cat" alt="A
cute orange cat lying on its back."></a>

  <div class="silver-background">
    <p>Things cats love:</p>
    <ul>
      <li>cat nip</li>
      <li>laser pointers</li>
      <li>lasagna</li>
    </ul>
    <p>Top 3 things cats hate:</p>
    <ol>
      <li>flea treatment</li>
      <li>thunder</li>
      <li>other cats</li>
    </ol>
  </div>

  <form action="/submit-cat-photo" id="cat-photo-form">
    <label><input type="radio" name="indoor-outdoor" checked> Indoor</label>
    <label><input type="radio" name="indoor-outdoor"> Outdoor</label><br>
    <label><input type="checkbox" name="personality" checked> Loving</label>
    <label><input type="checkbox" name="personality"> Lazy</label>
    <label><input type="checkbox" name="personality"> Energetic</label><br>
    <input type="text" placeholder="cat photo URL" required>
    <button type="submit">Submit</button>
  </form>
</main>
```

Solution

```
// solution required
```

24. Understand Absolute versus Relative Units

Description

The last several challenges all set an element's margin or padding with pixels (`px`). Pixels are a type of length unit, which is what tells the browser how to size or space an item. In addition to `px` , CSS has a number of different length unit options that you can use. The two main types of length units are absolute and relative. Absolute units tie to physical units of length. For example, `in` and `mm` refer to inches and millimeters, respectively. Absolute length units approximate the actual measurement on a screen, but there are some differences depending on a screen's resolution. Relative units, such as `em` or `rem` , are relative to another length value. For example, `em` is based on the size of an element's font. If you use it to set the `font-size` property itself, it's relative to the parent's `font-size` . **Note** There are several relative unit options that are tied to the size of the viewport. They are covered in the Responsive Web Design Principles section.

Instructions

Add a `padding` property to the element with class `red-box` and set it to `1.5em` .

Challenge Seed

```
<style>
  .injected-text {
    margin-bottom: -25px;
    text-align: center;
  }

  .box {
    border-style: solid;
    border-color: black;
    border-width: 5px;
    text-align: center;
  }

  .yellow-box {
    background-color: yellow;
    padding: 20px 40px 20px 40px;
  }

  .red-box {
    background-color: red;
    margin: 20px 40px 20px 40px;

  }

  .green-box {
    background-color: green;
    margin: 20px 40px 20px 40px;
  }
</style>
<h5 class="injected-text">margin</h5>

<div class="box yellow-box">
  <h5 class="box red-box">padding</h5>
  <h5 class="box green-box">padding</h5>
</div>
```

Solution

```
// solution required
```

25. Style the HTML Body Element

Description

Now let's start fresh and talk about CSS inheritance. Every HTML page has a `body` element.

Instructions

We can prove that the `body` element exists here by giving it a `background-color` of black. We can do this by adding the following to our `style` element:

> body {
>   background-color: black;
> }

Challenge Seed

```
<style>

</style>
```

Solution

```
// solution required
```

26. Inherit Styles from the Body Element

Description

Now we've proven that every HTML page has a `body` element, and that its `body` element can also be styled with CSS. Remember, you can style your `body` element just like any other HTML element, and all your other elements will inherit your `body` element's styles.

Instructions

First, create a `h1` element with the text `Hello World` Then, let's give all elements on your page the color of `green` by adding `color: green;` to your `body` element's style declaration. Finally, give your `body` element the font-family of `monospace` by adding `font-family: monospace;` to your `body` element's style declaration.

Challenge Seed

```
<style>
  body {
    background-color: black;
  }

</style>
```

Solution

```
// solution required
```

27. Prioritize One Style Over Another

Description

Sometimes your HTML elements will receive multiple styles that conflict with one another. For example, your `h1` element can't be both green and pink at the same time. Let's see what happens when we create a class that makes text pink, then apply it to an element. Will our class *override* the `body` element's `color: green;` CSS property?

Instructions

Create a CSS class called `pink-text` that gives an element the color pink. Give your `h1` element the class of `pink-text` .

Challenge Seed

```
<style>
  body {
    background-color: black;
    font-family: monospace;
    color: green;
  }
</style>
<h1>Hello World!</h1>
```

Solution

```
<style>
  body {
    background-color: black;
    font-family: monospace;
    color: green;
  }
  .pink-text {
    color: pink;
  }
</style>
<h1 class="pink-text">Hello World!</h1>
```

28. Override Styles in Subsequent CSS

Description

Our "pink-text" class overrode our `body` element's CSS declaration! We just proved that our classes will override the `body` element's CSS. So the next logical question is, what can we do to override our `pink-text` class?

Instructions

Create an additional CSS class called `blue-text` that gives an element the color blue. Make sure it's below your `pink-text` class declaration. Apply the `blue-text` class to your `h1` element in addition to your `pink-text` class, and let's see which one wins. Applying multiple class attributes to a HTML element is done with a space between them like this: `class="class1 class2"` Note: It doesn't matter which order the classes are listed in the HTML element. However, the order of the `class` declarations in the `<style>` section are what is important. The second declaration will always take precedence over the first. Because `.blue-text` is declared second, it overrides the attributes of `.pink-text`

Challenge Seed

```
<style>
  body {
    background-color: black;
    font-family: monospace;
    color: green;
  }
  .pink-text {
    color: pink;
  }
</style>
<h1 class="pink-text">Hello World!</h1>
```

Solution

```
// solution required
```

29. Override Class Declarations by Styling ID Attributes

Description

We just proved that browsers read CSS from top to bottom in order of their declaration. That means that, in the event of a conflict, the browser will use whichever CSS declaration came last. Notice that if we even had put `blue-text` before `pink-text` in our `h1` element's classes, it would still look at the declaration order and not the order of their use! But we're not done yet. There are other ways that you can override CSS. Do you remember id attributes? Let's override your `pink-text` and `blue-text` classes, and make your `h1` element orange, by giving the `h1` element an id and then styling that id.

Instructions

Give your `h1` element the `id` attribute of `orange-text` . Remember, id styles look like this: `<h1 id="orange-text">` Leave the `blue-text` and `pink-text` classes on your `h1` element. Create a CSS declaration for your `orange-text` id in your `style` element. Here's an example of what this looks like:

> #brown-text {
>   color: brown;
> }

Note: It doesn't matter whether you declare this CSS above or below pink-text class, since id attribute will always take precedence.

Challenge Seed

```
<style>
  body {
    background-color: black;
    font-family: monospace;
    color: green;
  }
  .pink-text {
    color: pink;
  }
  .blue-text {
    color: blue;
  }
</style>
<h1 class="pink-text blue-text">Hello World!</h1>
```

Solution

```
// solution required
```

30. Override Class Declarations with Inline Styles

Description

So we've proven that id declarations override class declarations, regardless of where they are declared in your `style` element CSS. There are other ways that you can override CSS. Do you remember inline styles?

Instructions

Use an `inline style` to try to make our `h1` element white. Remember, in line styles look like this: `<h1 style="color: green;">` Leave the `blue-text` and `pink-text` classes on your `h1` element.

Challenge Seed

```
<style>
  body {
    background-color: black;
    font-family: monospace;
    color: green;
  }
  #orange-text {
    color: orange;
  }
  .pink-text {
    color: pink;
  }
  .blue-text {
    color: blue;
  }
</style>
<h1 id="orange-text" class="pink-text blue-text">Hello World!</h1>
```

Solution

```
// solution required
```

31. Override All Other Styles by using Important

Description

Yay! We just proved that inline styles will override all the CSS declarations in your `style` element. But wait. There's one last way to override CSS. This is the most powerful method of all. But before we do it, let's talk about why you would ever want to override CSS. In many situations, you will use CSS libraries. These may accidentally override your own CSS. So when you absolutely need to be sure that an element has specific CSS, you can use `!important` Let's go all the way back to our `pink-text` class declaration. Remember that our `pink-text` class was overridden by subsequent class declarations, id declarations, and inline styles.

Instructions

Let's add the keyword `!important` to your pink-text element's color declaration to make 100% sure that your `h1` element will be pink. An example of how to do this is: `color: red !important;`

Challenge Seed

```
<style>
  body {
    background-color: black;
    font-family: monospace;
    color: green;
  }
  #orange-text {
    color: orange;
  }
  .pink-text {
    color: pink;
  }
  .blue-text {
    color: blue;
  }
</style>
<h1 id="orange-text" class="pink-text blue-text" style="color: white">Hello World!</h1>
```

Solution

```
// solution required
```

32. Use Hex Code for Specific Colors

Description

Did you know there are other ways to represent colors in CSS? One of these ways is called hexadecimal code, or `hex code` for short. We usually use `decimals` , or base 10 numbers, which use the symbols 0 to 9 for each digit. `Hexadecimals` (or `hex`) are base 16 numbers. This means it uses sixteen distinct symbols. Like decimals, the symbols 0-9 represent the values zero to nine. Then A,B,C,D,E,F represent the values ten to fifteen. Altogether, 0 to F can represent a digit in `hexadecimal` , giving us 16 total possible values. You can find more information about hexadecimal numbers here. In CSS, we can use 6 hexadecimal digits to represent colors, two each for the red (R), green (G), and blue (B) components. For example, `#000000` is black and is also the lowest possible value. You can find more information about the RGB color system here.

> body {
>   color: #000000;
> }

Instructions

Replace the word `black` in our `body` element's background-color with its `hex code` representation, `#000000` .

Challenge Seed

```
<style>
  body {
    background-color: black;
  }
</style>
```

Solution

```
// solution required
```

33. Use Hex Code to Mix Colors

Description

To review, hex codes use 6 hexadecimal digits to represent colors, two each for red (R), green (G), and blue (B) components. From these three pure colors (red, green, and blue), we can vary the amounts of each to create over 16 million other colors! For example, orange is pure red, mixed with some green, and no blue. In hex code, this translates to being `#FFA500` . The digit `0` is the lowest number in hex code, and represents a complete absence of color. The digit `F` is the highest number in hex code, and represents the maximum possible brightness.

Instructions

Replace the color words in our `style` element with their correct hex codes.

Color	Hex Code
Dodger Blue	`#1E90FF`
Green	`#00FF00`
Orange	`#FFA500`
Red	`#FF0000`

Challenge Seed

```
<style>
  .red-text {
    color: black;
  }
  .green-text {
    color: black;
  }
  .dodger-blue-text {
    color: black;
  }
  .orange-text {
    color: black;
  }
</style>

<h1 class="red-text">I am red!</h1>

<h1 class="green-text">I am green!</h1>

<h1 class="dodger-blue-text">I am dodger blue!</h1>

<h1 class="orange-text">I am orange!</h1>
```

Solution

```
// solution required
```

34. Use Abbreviated Hex Code

Description

Many people feel overwhelmed by the possibilities of more than 16 million colors. And it's difficult to remember hex code. Fortunately, you can shorten it. For example, red's hex code `#FF0000` can be shortened to `#F00` . This shortened form gives one digit for red, one digit for green, and one digit for blue. This reduces the total number of possible colors to around 4,000. But browsers will interpret `#FF0000` and `#F00` as exactly the same color.

Instructions

Go ahead, try using the abbreviated hex codes to color the correct elements.

Color	Short Hex Code
Cyan	`#0FF`
Green	`#0F0`
Red	`#F00`
Fuchsia	`#F0F`

Challenge Seed

```
<style>
  .red-text {
    color: #000000;
  }
  .fuchsia-text {
    color: #000000;
  }
  .cyan-text {
    color: #000000;
  }
  .green-text {
    color: #000000;
  }
</style>

<h1 class="red-text">I am red!</h1>
```

```
<h1 class="fuchsia-text">I am fuchsia!</h1>

<h1 class="cyan-text">I am cyan!</h1>

<h1 class="green-text">I am green!</h1>
```

Solution

```
// solution required
```

35. Use RGB values to Color Elements

Description

Another way you can represent colors in CSS is by using `RGB` values. The RGB value for black looks like this: `rgb(0, 0, 0)` The RGB value for white looks like this: `rgb(255, 255, 255)` Instead of using six hexadecimal digits like you do with hex code, with `RGB` you specify the brightness of each color with a number between 0 and 255. If you do the math, the two digits for one color equal 16 times 16, which gives us 256 total values. So `RGB` , which starts counting from zero, has the exact same number of possible values as hex code. Here's an example of how you'd change the body background to orange using its RGB code.

> body {
> background-color: rgb(255, 165, 0);
> }

Instructions

Let's replace the hex code in our `body` element's background color with the RGB value for black: `rgb(0, 0, 0)`

Challenge Seed

```
<style>
  body {
    background-color: #F00;
  }
</style>
```

Solution

```
// solution required
```

36. Use RGB to Mix Colors

Description

Just like with hex code, you can mix colors in RGB by using combinations of different values.

Instructions

Replace the hex codes in our `style` element with their correct RGB values.

Color	RGB
Blue	`rgb(0, 0, 255)`

Red	`rgb(255, 0, 0)`
Orchid	`rgb(218, 112, 214)`
Sienna	`rgb(160, 82, 45)`

Challenge Seed

```
<style>
  .red-text {
    color: #000000;
  }
  .orchid-text {
    color: #000000;
  }
  .sienna-text {
    color: #000000;
  }
  .blue-text {
    color: #000000;
  }
</style>

<h1 class="red-text">I am red!</h1>

<h1 class="orchid-text">I am orchid!</h1>

<h1 class="sienna-text">I am sienna!</h1>

<h1 class="blue-text">I am blue!</h1>
```

Solution

```
<style>
  .red-text {
    color: rgb(255, 0, 0);
  }
  .orchid-text {
    color: rgb(218, 112, 214);
  }
  .sienna-text {
    color: rgb(160, 82, 45);
  }
  .blue-text {
    color:rgb(0, 0, 255);
  }
</style>

<h1 class="red-text">I am red!</h1>

<h1 class="orchid-text">I am orchid!</h1>

<h1 class="sienna-text">I am sienna!</h1>

<h1 class="blue-text">I am blue!</h1>
```

37. Use CSS Variables to change several elements at once

Description

CSS Variables are a powerful way to change many CSS style properties at once by changing only one value. Follow the instructions below to see how changing just three values can change the styling of many elements.

Instructions

In the `penguin` class, change the `black` value to `gray` , the `gray` value to `white` , and the `yellow` value to `orange` .

Challenge Seed

```
<style>
  .penguin {

    /* change code below */
    --penguin-skin: black;
    --penguin-belly: gray;
    --penguin-beak: yellow;
    /* change code above */

    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: 300px;
    height: 300px;
  }

  .penguin-top {
    top: 10%;
    left: 25%;
    background: var(--penguin-skin, gray);
    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }

  .penguin-bottom {
    top: 40%;
    left: 23.5%;
    background: var(--penguin-skin, gray);
    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 0%;
    left: -5%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(45deg);
    z-index: -1;
  }

  .left-hand {
    top: 0%;
    left: 75%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 30% 120%;
    transform: rotate(-45deg);
    z-index: -1;
  }

  .right-cheek {
    top: 15%;
    left: 35%;
    background: var(--penguin-belly, white);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .left-cheek {
    top: 15%;
    left: 5%;
    background: var(--penguin-belly, white);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .belly {
    top: 60%;
    left: 2.5%;
    background: var(--penguin-belly, white);
    width: 95%;
    height: 100%;
    border-radius: 120% 120% 100% 100%;
  }

  .right-feet {
    top: 85%;
    left: 60%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(-80deg);
    z-index: -2222;
  }

  .left-feet {
    top: 85%;
    left: 25%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(80deg);
    z-index: -2222;
  }

  .right-eye {
    top: 45%;
    left: 60%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .left-eye {
    top: 45%;
    left: 25%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .sparkle {
    top: 25%;
    left: 15%;
    background: white;
    width: 35%;
    height: 35%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: var(--penguin-beak, orange);
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: var(--penguin-beak, orange);
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  body {
    background:#c6faf1;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
    <div class="left-hand"></div>
    <div class="right-feet"></div>
    <div class="left-feet"></div>
  </div>
  <div class="penguin-top">
    <div class="right-cheek"></div>
    <div class="left-cheek"></div>
    <div class="belly"></div>
    <div class="right-eye">
      <div class="sparkle"></div>
    </div>
    <div class="left-eye">
      <div class="sparkle"></div>
    </div>
    <div class="blush-right"></div>
    <div class="blush-left"></div>
    <div class="beak-top"></div>
    <div class="beak-bottom"></div>
  </div>
</div>
```

Solution

```
var code = ".penguin {--penguin-skin: gray; --penguin-belly: white; --penguin-beak: orange;}"
```

38. Create a custom CSS Variable

Description

To create a CSS Variable, you just need to give it a `name` with `two dashes` in front of it and assign it a `value` like this:

> --penguin-skin: gray;

This will create a variable named `--penguin-skin` and assign it the value of `gray`. Now you can use that variable elsewhere in your CSS to change the value of other elements to gray.

Instructions

In the `penguin` class, create a variable name `--penguin-skin` and give it a value of `gray`

Challenge Seed

```
<style>
  .penguin {

    /* add code below */

    /* add code above */
    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: 300px;
    height: 300px;
  }

  .penguin-top {
    top: 10%;
    left: 25%;
    background: black;
    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }

  .penguin-bottom {
    top: 40%;
    left: 23.5%;
    background: black;
    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 0%;
    left: -5%;
    background: black;
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(45deg);
    z-index: -1;
  }

  .left-hand {
    top: 0%;
    left: 75%;
    background: black;
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 30% 120%;
    transform: rotate(-45deg);
    z-index: -1;
  }

  .right-cheek {
    top: 15%;
    left: 35%;
    background: white;
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .left-cheek {
    top: 15%;
    left: 5%;
    background: white;
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .belly {
    top: 60%;
    left: 2.5%;
    background: white;
    width: 95%;
    height: 100%;
    border-radius: 120% 120% 100% 100%;
  }

  .right-feet {
    top: 85%;
    left: 60%;
    background: orange;
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(-80deg);
    z-index: -2222;
  }

  .left-feet {
    top: 85%;
    left: 25%;
    background: orange;
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(80deg);
    z-index: -2222;
  }

  .right-eye {
    top: 45%;
    left: 60%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .left-eye {
    top: 45%;
    left: 25%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .sparkle {
    top: 25%;
    left: 15%;
    background: white;
    width: 35%;
    height: 35%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: orange;
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: orange;
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  body {
    background:#c6faf1;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
    <div class="left-hand"></div>
    <div class="right-feet"></div>
    <div class="left-feet"></div>
  </div>
  <div class="penguin-top">
    <div class="right-cheek"></div>
    <div class="left-cheek"></div>
    <div class="belly"></div>
    <div class="right-eye">
      <div class="sparkle"></div>
    </div>
    <div class="left-eye">
      <div class="sparkle"></div>
    </div>
    <div class="blush-right"></div>
    <div class="blush-left"></div>
    <div class="beak-top"></div>
    <div class="beak-bottom"></div>
  </div>
</div>
```

Solution

```
var code = ".penguin {--penguin-skin: gray;}"
```

39. Use a custom CSS Variable

Description

After you create your variable, you can assign its value to other CSS properties by referencing the name you gave it.

> background: var(--penguin-skin);

This will change the background of whatever element you are targeting to gray because that is the value of the `--penguin-skin` variable. Note that styles will not be applied unless the variable names are an exact match.

Instructions

Apply the `--penguin-skin` variable to the `background` property of the `penguin-top` , `penguin-bottom` , `right-hand` and `left-hand` classes.

Challenge Seed

```
<style>
  .penguin {
    --penguin-skin: gray;
    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: 300px;
    height: 300px;
  }

  .penguin-top {
    top: 10%;
    left: 25%;

    /* change code below */
    background: black;
    /* change code above */

    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }

  .penguin-bottom {
    top: 40%;
    left: 23.5%;

    /* change code below */
    background: black;
    /* change code above */

    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 0%;
    left: -5%;

    /* change code below */
    background: black;
    /* change code above */

    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(45deg);
    z-index: -1;
  }

  .left-hand {
    top: 0%;
    left: 75%;

    /* change code below */
    background: black;
    /* change code above */

    width: 30%;
    height: 60%;
    border-radius: 30% 30% 30% 120%;
    transform: rotate(-45deg);
    z-index: -1;
  }
  .right-cheek {
    top: 15%;
    left: 35%;
    background: white;
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .left-cheek {
    top: 15%;
    left: 5%;
    background: white;
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .belly {
    top: 60%;
    left: 2.5%;
    background: white;
    width: 95%;
    height: 100%;
    border-radius: 120% 120% 100% 100%;
  }

  .right-feet {
    top: 85%;
    left: 60%;
    background: orange;
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(-80deg);
    z-index: -2222;
  }

  .left-feet {
    top: 85%;
    left: 25%;
    background: orange;
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(80deg);
    z-index: -2222;
  }

  .right-eye {
    top: 45%;
    left: 60%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .left-eye {
    top: 45%;
    left: 25%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .sparkle {
    top: 25%;
    left: 15%;
    background: white;
    width: 35%;
    height: 35%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: orange;
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: orange;
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  body {
    background:#c6faf1;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
    <div class="left-hand"></div>
    <div class="right-feet"></div>
    <div class="left-feet"></div>
  </div>
  <div class="penguin-top">
    <div class="right-cheek"></div>
    <div class="left-cheek"></div>
    <div class="belly"></div>
    <div class="right-eye">
      <div class="sparkle"></div>
    </div>
    <div class="left-eye">
      <div class="sparkle"></div>
    </div>
    <div class="blush-right"></div>
    <div class="blush-left"></div>
    <div class="beak-top"></div>
    <div class="beak-bottom"></div>
  </div>
</div>
```

Solution

```
var code = ".penguin-top {background: var(--penguin-skin);} .penguin-bottom {background: var(--penguin-skin);} .right-hand {background: var(--penguin-skin);} .left-hand {background: var(--penguin-skin);}"
```

40. Attach a Fallback value to a CSS Variable

Description

When using your variable as a CSS property value, you can attach a fallback value that your browser will revert to if the given variable is invalid. **Note:** This fallback is not used to increase browser compatibility, and it will not work on IE browsers. Rather, it is used so that the browser has a color to display if it cannot find your variable. Here's how you do it:

> background: var(--penguin-skin, black);

This will set background to black if your variable wasn't set. Note that this can be useful for debugging.

Instructions

It looks like there is a problem with the variables supplied to the `.penguin-top` and `.penguin-bottom` classes. Rather than fix the typo, add a fallback value of `black` to the `background` property of the `.penguin-top` and `.penguin-bottom` classes.

Challenge Seed

```
<style>
  .penguin {
    --penguin-skin: black;
    --penguin-belly: gray;
    --penguin-beak: yellow;
    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: 300px;
    height: 300px;
  }

  .penguin-top {
    top: 10%;
    left: 25%;

    /* change code below */
    background: var(--pengiun-skin);
    /* change code above */

    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }

  .penguin-bottom {
    top: 40%;
    left: 23.5%;

    /* change code below */
    background: var(--pengiun-skin);
    /* change code above */

    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 0%;
    left: -5%;
    background: var(--penguin-skin, black);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(45deg);
    z-index: -1;
  }
```

```
    .left-hand {
      top: 0%;
      left: 75%;
      background: var(--penguin-skin, black);
      width: 30%;
      height: 60%;
      border-radius: 30% 30% 30% 120%;
      transform: rotate(-45deg);
      z-index: -1;
    }

    .right-cheek {
      top: 15%;
      left: 35%;
      background: var(--penguin-belly, white);
      width: 60%;
      height: 70%;
      border-radius: 70% 70% 60% 60%;
    }

    .left-cheek {
      top: 15%;
      left: 5%;
      background: var(--penguin-belly, white);
      width: 60%;
      height: 70%;
      border-radius: 70% 70% 60% 60%;
    }

    .belly {
      top: 60%;
      left: 2.5%;
      background: var(--penguin-belly, white);
      width: 95%;
      height: 100%;
      border-radius: 120% 120% 100% 100%;
    }

    .right-feet {
      top: 85%;
      left: 60%;
      background: var(--penguin-beak, orange);
      width: 15%;
      height: 30%;
      border-radius: 50% 50% 50% 50%;
      transform: rotate(-80deg);
      z-index: -2222;
    }

    .left-feet {
      top: 85%;
      left: 25%;
      background: var(--penguin-beak, orange);
      width: 15%;
      height: 30%;
      border-radius: 50% 50% 50% 50%;
      transform: rotate(80deg);
      z-index: -2222;
    }

    .right-eye {
      top: 45%;
      left: 60%;
      background: black;
      width: 15%;
      height: 17%;
      border-radius: 50%;
    }

    .left-eye {
      top: 45%;
      left: 25%;
      background: black;
      width: 15%;
      height: 17%;
      border-radius: 50%;
```

```
  }

  .sparkle {
    top: 25%;
    left: 15%;
    background: white;
    width: 35%;
    height: 35%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: var(--penguin-beak, orange);
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: var(--penguin-beak, orange);
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  body {
    background:#c6faf1;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
    <div class="left-hand"></div>
    <div class="right-feet"></div>
    <div class="left-feet"></div>
  </div>
  <div class="penguin-top">
    <div class="right-cheek"></div>
    <div class="left-cheek"></div>
    <div class="belly"></div>
    <div class="right-eye">
      <div class="sparkle"></div>
    </div>
    <div class="left-eye">
      <div class="sparkle"></div>
    </div>
    <div class="blush-right"></div>
    <div class="blush-left"></div>
    <div class="beak-top"></div>
    <div class="beak-bottom"></div>
  </div>
</div>
```

Solution

```
var code = ".penguin-top {background: var(--pengiun-skin, black);} .penguin-bottom {background: var(--pengiun-skin, black);}"
```

41. Improve Compatibility with Browser Fallbacks

Description

When working with CSS you will likely run into browser compatibility issues at some point. This is why it's important to provide browser fallbacks to avoid potential problems. When your browser parses the CSS of a webpage, it ignores any properties that it doesn't recognize or support. For example, if you use a CSS variable to assign a background color on a site, Internet Explorer will ignore the background color because it does not support CSS variables. In that case, the browser will use whatever value it has for that property. If it can't find any other value set for that property, it will revert to the default value, which is typically not ideal. This means that if you do want to provide a browser fallback, it's as easy as providing another more widely supported value immediately before your declaration. That way an older browser will have something to fall back on, while a newer browser will just interpret whatever declaration comes later in the cascade.

Instructions

It looks like a variable is being used to set the background color of the `.red-box` class. Let's improve our browser compatibility by adding another `background` declaration right before the existing declaration and set its value to red.

Challenge Seed

```
<style>
  :root {
    --red-color: red;
  }
  .red-box {

    background: var(--red-color);
    height: 200px;
    width:200px;
  }
</style>
<div class="red-box"></div>
```

Solution

```
var code=".red-box {background: red; background: var(--red-color);}"
```

42. Cascading CSS variables

Description

When you create a variable, it is available for you to use inside the element in which you create it. It also is available for any elements nested within it. This effect is known as cascading. Because of cascading, CSS variables are often defined in the :root element. `:root` is a pseudo-class selector that matches the root element of the document, usually the element. By creating your variables in `:root` , they will be available globally and can be accessed from any other selector later in the style sheet.

Instructions

Define a variable named `--penguin-belly` in the `:root` selector and give it the value of `pink` . You can then see how the value will cascade down to change the value to pink, anywhere that variable is used.

Challenge Seed

```
<style>
  :root {

    /* add code below */

    /* add code above */
  }

  body {
    background: var(--penguin-belly, #c6faf1);
  }

  .penguin {
    --penguin-skin: gray;
    --penguin-beak: orange;
    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: 300px;
    height: 300px;
  }

  .right-cheek {
    top: 15%;
    left: 35%;
    background: var(--penguin-belly, white);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .left-cheek {
    top: 15%;
    left: 5%;
    background: var(--penguin-belly, white);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .belly {
    top: 60%;
    left: 2.5%;
    background: var(--penguin-belly, white);
    width: 95%;
    height: 100%;
    border-radius: 120% 120% 100% 100%;
  }

  .penguin-top {
    top: 10%;
    left: 25%;
    background: var(--penguin-skin, gray);
    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }

  .penguin-bottom {
    top: 40%;
    left: 23.5%;
    background: var(--penguin-skin, gray);
    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 0%;
    left: -5%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(45deg);
    z-index: -1;
  }

  .left-hand {
    top: 0%;
    left: 75%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 30% 120%;
    transform: rotate(-45deg);
    z-index: -1;
  }

  .right-feet {
    top: 85%;
    left: 60%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(-80deg);
    z-index: -2222;
  }

  .left-feet {
    top: 85%;
    left: 25%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(80deg);
    z-index: -2222;
  }

  .right-eye {
    top: 45%;
    left: 60%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .left-eye {
    top: 45%;
    left: 25%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .sparkle {
    top: 25%;
    left: 15%;
    background: white;
    width: 35%;
    height: 35%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: var(--penguin-beak, orange);
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: var(--penguin-beak, orange);
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
    <div class="left-hand"></div>
    <div class="right-feet"></div>
    <div class="left-feet"></div>
  </div>
  <div class="penguin-top">
    <div class="right-cheek"></div>
    <div class="left-cheek"></div>
    <div class="belly"></div>
    <div class="right-eye">
      <div class="sparkle"></div>
    </div>
    <div class="left-eye">
      <div class="sparkle"></div>
    </div>
    <div class="blush-right"></div>
    <div class="blush-left"></div>
    <div class="beak-top"></div>
    <div class="beak-bottom"></div>
  </div>
</div>
```

Solution

```
var code = ":root {--penguin-belly: pink;}"
```

43. Change a variable for a specific area

Description

When you create your variables in `:root` they will set the value of that variable for the whole page. You can then over-write these variables by setting them again within a specific element.

Instructions

Change the value of `--penguin-belly` to `white` in the `penguin` class.

Challenge Seed

```
<style>
  :root {
    --penguin-skin: gray;
    --penguin-belly: pink;
    --penguin-beak: orange;
  }

  body {
    background: var(--penguin-belly, #c6faf1);
  }

  .penguin {

    /* add code below */

    /* add code above */

    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: 300px;
    height: 300px;
  }

  .right-cheek {
    top: 15%;
    left: 35%;
    background: var(--penguin-belly, pink);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .left-cheek {
    top: 15%;
    left: 5%;
    background: var(--penguin-belly, pink);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .belly {
    top: 60%;
    left: 2.5%;
    background: var(--penguin-belly, pink);
    width: 95%;
    height: 100%;
    border-radius: 120% 120% 100% 100%;
  }

  .penguin-top {
    top: 10%;
    left: 25%;
    background: var(--penguin-skin, gray);
    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }
  .penguin-bottom {
    top: 40%;
    left: 23.5%;
    background: var(--penguin-skin, gray);
    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 0%;
    left: -5%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(45deg);
    z-index: -1;
  }

  .left-hand {
    top: 0%;
    left: 75%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 30% 120%;
    transform: rotate(-45deg);
    z-index: -1;
  }

  .right-feet {
    top: 85%;
    left: 60%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(-80deg);
    z-index: -2222;
  }

  .left-feet {
    top: 85%;
    left: 25%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(80deg);
    z-index: -2222;
  }

  .right-eye {
    top: 45%;
    left: 60%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .left-eye {
    top: 45%;
    left: 25%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .sparkle {
    top: 25%;
    left: 15%;
    background: white;
    width: 35%;
    height: 35%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: var(--penguin-beak, orange);
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: var(--penguin-beak, orange);
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
    <div class="left-hand"></div>
    <div class="right-feet"></div>
    <div class="left-feet"></div>
  </div>
  <div class="penguin-top">
    <div class="right-cheek"></div>
    <div class="left-cheek"></div>
    <div class="belly"></div>
    <div class="right-eye">
      <div class="sparkle"></div>
    </div>
    <div class="left-eye">
      <div class="sparkle"></div>
    </div>
    <div class="blush-right"></div>
    <div class="blush-left"></div>
    <div class="beak-top"></div>
    <div class="beak-bottom"></div>
  </div>
</div>
```

Solution

```
var code = ".penguin {--penguin-belly: white;}"
```

44. Use a media query to change a variable

Description

CSS Variables can simplify the way you use media queries. For instance, when your screen is smaller or larger than your media query break point, you can change the value of a variable, and it will apply its style wherever it is used.

Instructions

In the `:root` selector of the `media query`, change it so `--penguin-size` is redefined and given a value of `200px`. Also, redefine `--penguin-skin` and give it a value of `black`. Then resize the preview to see this change in action.

Challenge Seed

```
<style>
  :root {
    --penguin-size: 300px;
    --penguin-skin: gray;
    --penguin-belly: white;
    --penguin-beak: orange;
  }

  @media (max-width: 350px) {
    :root {

      /* add code below */

      /* add code above */

    }
  }

  .penguin {
    position: relative;
    margin: auto;
    display: block;
    margin-top: 5%;
    width: var(--penguin-size, 300px);
    height: var(--penguin-size, 300px);
  }

  .right-cheek {
    top: 15%;
    left: 35%;
    background: var(--penguin-belly, white);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .left-cheek {
    top: 15%;
    left: 5%;
    background: var(--penguin-belly, white);
    width: 60%;
    height: 70%;
    border-radius: 70% 70% 60% 60%;
  }

  .belly {
    top: 60%;
    left: 2.5%;
    background: var(--penguin-belly, white);
    width: 95%;
    height: 100%;
    border-radius: 120% 120% 100% 100%;
  }

  .penguin-top {
    top: 10%;
    left: 25%;
    background: var(--penguin-skin, gray);
    width: 50%;
    height: 45%;
    border-radius: 70% 70% 60% 60%;
  }

  .penguin-bottom {
    top: 40%;
    left: 23.5%;
    background: var(--penguin-skin, gray);
    width: 53%;
    height: 45%;
    border-radius: 70% 70% 100% 100%;
  }

  .right-hand {
    top: 5%;
    left: 25%;
    background: var(--penguin-skin, black);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 120% 30%;
    transform: rotate(130deg);
    z-index: -1;
    animation-duration: 3s;
    animation-name: wave;
    animation-iteration-count: infinite;
    transform-origin:0% 0%;
    animation-timing-function: linear;
  }

  @keyframes wave {
      10% {
        transform: rotate(110deg);
      }
      20% {
        transform: rotate(130deg);
      }
      30% {
        transform: rotate(110deg);
      }
      40% {
        transform: rotate(130deg);
      }
    }

  .left-hand {
    top: 0%;
    left: 75%;
    background: var(--penguin-skin, gray);
    width: 30%;
    height: 60%;
    border-radius: 30% 30% 30% 120%;
    transform: rotate(-45deg);
    z-index: -1;
  }

  .right-feet {
    top: 85%;
    left: 60%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(-80deg);
    z-index: -2222;
  }

  .left-feet {
    top: 85%;
    left: 25%;
    background: var(--penguin-beak, orange);
    width: 15%;
    height: 30%;
    border-radius: 50% 50% 50% 50%;
    transform: rotate(80deg);
```

```
    z-index: -2222;
  }

  .right-eye {
    top: 45%;
    left: 60%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .left-eye {
    top: 45%;
    left: 25%;
    background: black;
    width: 15%;
    height: 17%;
    border-radius: 50%;
  }

  .sparkle {
    top: 25%;
    left:-23%;
    background: white;
    width: 150%;
    height: 100%;
    border-radius: 50%;
  }

  .blush-right {
    top: 65%;
    left: 15%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .blush-left {
    top: 65%;
    left: 70%;
    background: pink;
    width: 15%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-top {
    top: 60%;
    left: 40%;
    background: var(--penguin-beak, orange);
    width: 20%;
    height: 10%;
    border-radius: 50%;
  }

  .beak-bottom {
    top: 65%;
    left: 42%;
    background: var(--penguin-beak, orange);
    width: 16%;
    height: 10%;
    border-radius: 50%;
  }

  body {
    background:#c6faf1;
  }

  .penguin * {
    position: absolute;
  }
</style>
<div class="penguin">
  <div class="penguin-bottom">
    <div class="right-hand"></div>
```

```
      <div class="left-hand"></div>
      <div class="right-feet"></div>
      <div class="left-feet"></div>
    </div>
    <div class="penguin-top">
      <div class="right-cheek"></div>
      <div class="left-cheek"></div>
      <div class="belly"></div>
      <div class="right-eye">
        <div class="sparkle"></div>
      </div>
      <div class="left-eye">
        <div class="sparkle"></div>
      </div>
      <div class="blush-right"></div>
      <div class="blush-left"></div>
      <div class="beak-top"></div>
      <div class="beak-bottom"></div>
    </div>
  </div>
```

Solution

```
var code = "@media (max-width: 350px) {:root {--penguin-size: 200px; --penguin-skin: black;}}"
```

Applied Visual Design

1. Create Visual Balance Using the text-align Property

Description

This section of the curriculum focuses on Applied Visual Design. The first group of challenges build on the given card layout to show a number of core principles. Text is often a large part of web content. CSS has several options for how to align it with the `text-align` property. `text-align: justify;` causes all lines of text except the last line to meet the left and right edges of the line box. `text-align: center;` centers the text `text-align: right;` right-aligns the text And `text-align: left;` (the default) left-aligns the text.

Instructions

Align the `h4` tag's text, which says "Google", to the center. Then justify the paragraph tag which contains information about how Google was founded.

Challenge Seed

```
<style>
  h4 {

  }
  p {

  }
  .links {
    margin-right: 20px;

  }
  .fullCard {
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were Ph.D. students at Stanford
University.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

2. Adjust the Width of an Element Using the width Property

Description

You can specify the width of an element using the `width` property in CSS. Values can be given in relative length units (such as em), absolute length units (such as px), or as a percentage of its containing parent element. Here's an example that changes the width of an image to 220px:

> img {
>   width: 220px;
> }

Instructions

Add a `width` property to the entire card and set it to an absolute value of 245px. Use the `fullCard` class to select the element.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
  }
  p {
    text-align: justify;
  }
  .links {
    margin-right: 20px;
    text-align: left;
  }
  .fullCard {

    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
</style>
<div class="fullCard">
```

```
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were Ph.D. students at Stanford
University.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
<style>
  h4 {
    text-align: center;
  }
  p {
    text-align: justify;
  }
  .links {
    margin-right: 20px;
    text-align: left;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were Ph.D. students at Stanford
University.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

3. Adjust the Height of an Element Using the height Property

Description

You can specify the height of an element using the `height` property in CSS, similar to the `width` property. Here's an example that changes the height of an image to 20px:

> img {
>   height: 20px;
> }

Instructions

Add a `height` property to the `h4` tag and set it to 25px.

Challenge Seed

```
<style>
  h4 {
    text-align: center;

  }
  p {
    text-align: justify;
  }
  .links {
    margin-right: 20px;
    text-align: left;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were Ph.D. students at Stanford
University.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

4. Use the strong Tag to Make Text Bold

Description

To make text bold, you can use the `strong` tag. This is often used to draw attention to text and symbolize that it is important. With the `strong` tag, the browser applies the CSS of `font-weight: bold;` to the element.

Instructions

Wrap a `strong` tag around "Stanford University" inside the `p` tag (do not include the period).

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    height: 25px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were Ph.D. students at Stanford
University.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

5. Use the u Tag to Underline Text

Description

To underline text, you can use the `u` tag. This is often used to signify that a section of text is important, or something to remember. With the `u` tag, the browser applies the CSS of `text-decoration: underline;` to the element.

Instructions

Wrap the `u` tag only around the text "Ph.D. students". **Note**
Try to avoid using the `u` tag when it could be confused for a link. Anchor tags also have a default underlined formatting.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    height: 25px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were Ph.D. students at
<strong>Stanford University</strong>.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

6. Use the em Tag to Italicize Text

Description

To emphasize text, you can use the `em` tag. This displays text as italicized, as the browser applies the CSS of `font-style: italic;` to the element.

Instructions

Wrap an `em` tag around the contents of the paragraph tag to give it emphasis.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    height: 25px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at <strong>Stanford University</strong>.</p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a><br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

7. Use the s Tag to Strikethrough Text

Description

To strikethrough text, which is when a horizontal line cuts across the characters, you can use the `s` tag. It shows that a section of text is no longer valid. With the `s` tag, the browser applies the CSS of `text-decoration: line-through;` to the element.

Instructions

Wrap the `s` tag around "Google" inside the `h4` tag and then add the word Alphabet beside it, which should not have the strikethrough formatting.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    height: 25px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Google</h4>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
 <style>
  h4 {
    text-align: center;
    height: 25px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4><s>Google</s> Alphabet</h4>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

8. Create a Horizontal Line Using the hr Element

Description

You can use the `hr` tag to add a horizontal line across the width of its containing element. This can be used to define a change in topic or to visually separate groups of content.

Instructions

Add an `hr` tag underneath the `h4` which contains the card title. **Note**
In HTML, `hr` is a self-closing tag, and therefore doesn't need a separate closing tag.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    height: 25px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4><s>Google</s>Alphabet</h4>

      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at <strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a><br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

9. Adjust the background-color Property of Text

Description

Instead of adjusting your overall background or the color of the text to make the foreground easily readable, you can add a `background-color` to the element holding the text you want to emphasize. This challenge uses `rgba()` instead of `hex` codes or normal `rgb()`.

> rgba stands for:
> r = red
> g = green
> b = blue
> a = alpha/level of opacity

The RGB values can range from 0 to 255. The alpha value can range from 1, which is fully opaque or a solid color, to 0, which is fully transparent or clear. `rgba()` is great to use in this case, as it allows you to adjust the opacity. This means you don't have to completely block out the background. You'll use `background-color: rgba(45, 45, 45, 0.1)` for this challenge. It produces a dark gray color that is nearly transparent given the low opacity value of 0.1.

Instructions

To make the text stand out more, adjust the `background-color` of the `h4` element to the given `rgba()` value. Also for the `h4`, remove the `height` property and add `padding` of 10px.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    height: 25px;


  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Alphabet</h4>
      <hr>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

10. Adjust the Size of a Header Versus a Paragraph Tag

Description

The font size of header tags (`h1` through `h6`) should generally be larger than the font size of paragraph tags. This makes it easier for the user to visually understand the layout and level of importance of everything on the page. You use the `font-size` property to adjust the size of the text in an element.

Instructions

To make the heading significantly larger than the paragraph, change the `font-size` of the `h4` tag to 27 pixels.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    background-color: rgba(45, 45, 45, 0.1);
    padding: 10px;

  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard">
  <div class="cardContent">
    <div class="cardText">
      <h4>Alphabet</h4>
      <hr>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

11. Add a box-shadow to a Card-like Element

Description

The `box-shadow` property applies one or more shadows to an element. The `box-shadow` property takes values for `offset-x` (how far to push the shadow horizontally from the element), `offset-y` (how far to push the shadow vertically from the element), `blur-radius` , `spread-radius` and a color value, in that order. The `blur-radius` and `spread-radius` values are optional. Here's an example of the CSS to create multiple shadows with some blur, at mostly-transparent black colors:

> box-shadow: 0 10px 20px rgba(0,0,0,0.19), 0 6px 6px rgba(0,0,0,0.23);

Instructions

The element now has an id of `thumbnail` . With this selector, use the example CSS values above to place a `box-shadow` on the card.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    background-color: rgba(45, 45, 45, 0.1);
    padding: 10px;
    font-size: 27px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
  }



  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard" id="thumbnail">
  <div class="cardContent">
    <div class="cardText">
      <h4>Alphabet</h4>
      <hr>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
var code = "#thumbnail {box-shadow: 0 10px 20px rgba(0,0,0,0.19), 0 6px 6px rgba(0,0,0,0.23);}"
```

12. Decrease the Opacity of an Element

Description

The `opacity` property in CSS is used to adjust the opacity, or conversely, the transparency for an item.

> A value of 1 is opaque, which isn't transparent at all.
> A value of 0.5 is half see-through.
> A value of 0 is completely transparent.

The value given will apply to the entire element, whether that's an image with some transparency, or the foreground and background colors for a block of text.

Instructions

Set the `opacity` of the anchor tags to 0.7 using `links` class to select them.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    background-color: rgba(45, 45, 45, 0.1);
    padding: 10px;
    font-size: 27px;
  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;

  }
  #thumbnail {
    box-shadow: 0 10px 20px rgba(0,0,0,0.19), 0 6px 6px rgba(0,0,0,0.23);
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard" id="thumbnail">
  <div class="cardContent">
    <div class="cardText">
      <h4>Alphabet</h4>
      <hr>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

13. Use the text-transform Property to Make Text Uppercase

Description

The `text-transform` property in CSS is used to change the appearance of text. It's a convenient way to make sure text on a webpage appears consistently, without having to change the text content of the actual HTML elements. The following table shows how the different `text-transform` values change the example text "Transform me".

Value	Result
`lowercase`	"transform me"
`uppercase`	"TRANSFORM ME"
`capitalize`	"Transform Me"
`initial`	Use the default value
`inherit`	Use the `text-transform` value from the parent element
`none`	**Default:** Use the original text

Instructions

Transform the text of the `h4` to be uppercase using the `text-transform` property.

Challenge Seed

```
<style>
  h4 {
    text-align: center;
    background-color: rgba(45, 45, 45, 0.1);
    padding: 10px;
    font-size: 27px;

  }
  p {
    text-align: justify;
  }
  .links {
    text-align: left;
    color: black;
    opacity: 0.7;
  }
  #thumbnail {
    box-shadow: 0 10px 20px rgba(0,0,0,0.19), 0 6px 6px rgba(0,0,0,0.23);
  }
  .fullCard {
    width: 245px;
    border: 1px solid #ccc;
    border-radius: 5px;
    margin: 10px 5px;
    padding: 4px;
  }
  .cardContent {
    padding: 10px;
  }
  .cardText {
    margin-bottom: 30px;
  }
</style>
<div class="fullCard" id="thumbnail">
  <div class="cardContent">
    <div class="cardText">
      <h4>Alphabet</h4>
      <hr>
      <p><em>Google was founded by Larry Page and Sergey Brin while they were <u>Ph.D. students</u> at
```

```
<strong>Stanford University</strong>.</em></p>
    </div>
    <div class="cardLinks">
      <a href="https://en.wikipedia.org/wiki/Larry_Page" target="_blank" class="links">Larry Page</a>
<br><br>
      <a href="https://en.wikipedia.org/wiki/Sergey_Brin" target="_blank" class="links">Sergey Brin</a>
    </div>
  </div>
</div>
```

Solution

```
// solution required
```

14. Set the font-size for Multiple Heading Elements

Description

The `font-size` property is used to specify how large the text is in a given element. This rule can be used for multiple elements to create visual consistency of text on a page. In this challenge, you'll set the values for all `h1` through `h6` tags to balance the heading sizes.

Instructions

- Set the `font-size` of the `h1` tag to 68px.
- Set the `font-size` of the `h2` tag to 52px.
- Set the `font-size` of the `h3` tag to 40px.
- Set the `font-size` of the `h4` tag to 32px.
- Set the `font-size` of the `h5` tag to 21px.
- Set the `font-size` of the `h6` tag to 14px.

Challenge Seed

```
<style>






</style>
<h1>This is h1 text</h1>
<h2>This is h2 text</h2>
<h3>This is h3 text</h3>
<h4>This is h4 text</h4>
<h5>This is h5 text</h5>
<h6>This is h6 text</h6>
```

Solution

```
// solution required
```

15. Set the font-weight for Multiple Heading Elements

Description

You set the `font-size` of each heading tag in the last challenge, here you'll adjust the `font-weight` . The `font-weight` property sets how thick or thin characters are in a section of text.

Instructions

- Set the `font-weight` of the `h1` tag to 800.
- Set the `font-weight` of the `h2` tag to 600.
- Set the `font-weight` of the `h3` tag to 500.
- Set the `font-weight` of the `h4` tag to 400.
- Set the `font-weight` of the `h5` tag to 300.
- Set the `font-weight` of the `h6` tag to 200.

Challenge Seed

```
<style>
  h1 {
    font-size: 68px;

  }
  h2 {
    font-size: 52px;

  }
  h3 {
    font-size: 40px;

  }
  h4 {
    font-size: 32px;

  }
  h5 {
    font-size: 21px;

  }
  h6 {
    font-size: 14px;

  }
</style>
<h1>This is h1 text</h1>
<h2>This is h2 text</h2>
<h3>This is h3 text</h3>
<h4>This is h4 text</h4>
<h5>This is h5 text</h5>
<h6>This is h6 text</h6>
```

Solution

```
// solution required
```

16. Set the font-size of Paragraph Text

Description

The `font-size` property in CSS is not limited to headings, it can be applied to any element containing text.

Instructions

Change the value of the `font-size` property for the paragraph to 16px to make it more visible.

Challenge Seed

```
<style>
  p {
    font-size: 10px;
  }
</style>
<p>
  Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et
dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip
ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu
fugiat nulla pariatur.
</p>
```

Solution

```
// solution required
```

17. Set the line-height of Paragraphs

Description

CSS offers the `line-height` property to change the height of each line in a block of text. As the name suggests, it changes the amount of vertical space that each line of text gets.

Instructions

Add a `line-height` property to the `p` tag and set it to 25px.

Challenge Seed

```
<style>
  p {
    font-size: 16px;

  }
</style>
<p>
  Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et
dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip
ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu
fugiat nulla pariatur.
</p>
```

Solution

```
// solution required
```

18. Adjust the Hover State of an Anchor Tag

Description

This challenge will touch on the usage of pseudo-classes. A pseudo-class is a keyword that can be added to selectors, in order to select a specific state of the element. For example, the styling of an anchor tag can be changed for its hover state using the `:hover` pseudo-class selector. Here's the CSS to change the `color` of the anchor tag to red during its hover state:

> a:hover {
> color: red;
> }

Instructions

The code editor has a CSS rule to style all `a` tags black. Add a rule so that when the user hovers over the `a` tag, the `color` is blue.

Challenge Seed

```
<style>
  a {
    color: #000;
  }



</style>
<a href="http://freecatphotoapp.com/" target="_blank">CatPhotoApp</a>
```

Solution

```
<style>
  a {
    color: #000;
  }
  a:hover {
    color: rgba(0,0,255,1);
  }



</style>
<a href="http://freecatphotoapp.com/" target="_blank">CatPhotoApp</a>
```

19. Change an Element's Relative Position

Description

CSS treats each HTML element as its own box, which is usually referred to as the `CSS Box Model`. Block-level items automatically start on a new line (think headings, paragraphs, and divs) while inline items sit within surrounding content (like images or spans). The default layout of elements in this way is called the `normal flow` of a document, but CSS offers the position property to override it. When the position of an element is set to `relative`, it allows you to specify how CSS should move it *relative* to its current position in the normal flow of the page. It pairs with the CSS offset properties of `left` or `right`, and `top` or `bottom`. These say how many pixels, percentages, or ems to move the item *away* from where it is normally positioned. The following example moves the paragraph 10 pixels away from the bottom:

> p {
> position: relative;
> bottom: 10px;
> }

Changing an element's position to relative does not remove it from the normal flow - other elements around it still behave as if that item were in its default position. **Note**
Positioning gives you a lot of flexibility and power over the visual layout of a page. It's good to remember that no matter the position of elements, the underlying HTML markup should be organized and make sense when read from

top to bottom. This is how users with visual impairments (who rely on assistive devices like screen readers) access your content.

Instructions

Change the `position` of the `h2` to `relative`, and use a CSS offset to move it 15 pixels away from the `top` of where it sits in the normal flow. Notice there is no impact on the positions of the surrounding h1 and p elements.

Challenge Seed

```
<style>
  h2 {


  }
</style>
<body>
  <h1>On Being Well-Positioned</h1>
  <h2>Move me!</h2>
  <p>I still think the h2 is where it normally sits.</p>
</body>
```

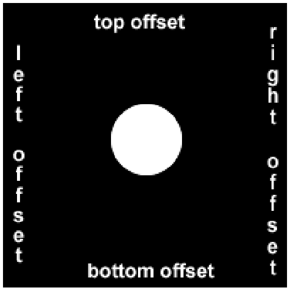
Solution

```
// solution required
```

20. Move a Relatively Positioned Element with CSS Offsets

Description

The CSS offsets of `top` or `bottom`, and `left` or `right` tell the browser how far to offset an item relative to where it would sit in the normal flow of the document. You're offsetting an element away from a given spot, which moves the element away from the referenced side (effectively, the opposite direction). As you saw in the last challenge, using the top offset moved the `h2` downwards. Likewise, using a left offset moves an item to the right.



Instructions

Use CSS offsets to move the `h2` 15 pixels to the right and 10 pixels up.

Challenge Seed

```
<head>
<style>
  h2 {
    position: relative;


  }
```

```
</style>
</head>
<body>
  <h1>On Being Well-Positioned</h1>
  <h2>Move me!</h2>
  <p>I still think the h2 is where it normally sits.</p>
</body>
```

Solution

```
// solution required
```

21. Lock an Element to its Parent with Absolute Positioning

Description

The next option for the CSS `position` property is `absolute`, which locks the element in place relative to its parent container. Unlike the `relative` position, this removes the element from the normal flow of the document, so surrounding items ignore it. The CSS offset properties (top or bottom and left or right) are used to adjust the position. One nuance with absolute positioning is that it will be locked relative to its closest *positioned* ancestor. If you forget to add a position rule to the parent item, (this is typically done using `position: relative;`), the browser will keep looking up the chain and ultimately default to the body tag.

Instructions

Lock the `#searchbar` element to the top-right of its `section` parent by declaring its `position` as `absolute`. Give it `top` and `right` offsets of 50 pixels each.

Challenge Seed

```
<style>
  #searchbar {



  }
  section {
    position: relative;
  }
</style>
<body>
  <h1>Welcome!</h1>
  <section>
    <form id="searchbar">
      <label for="search">Search:</label>
      <input type="search" id="search" name="search">
      <input type="submit" name="submit" value="Go!">
    </form>
  </section>
</body>
```

Solution

```
// solution required
```

22. Lock an Element to the Browser Window with Fixed Positioning

Description

The next layout scheme that CSS offers is the `fixed` position, which is a type of absolute positioning that locks an element relative to the browser window. Similar to absolute positioning, it's used with the CSS offset properties and also removes the element from the normal flow of the document. Other items no longer "realize" where it is positioned, which may require some layout adjustments elsewhere. One key difference between the `fixed` and `absolute` positions is that an element with a fixed position won't move when the user scrolls.

Instructions

The navigation bar in the code is labeled with an id of `navbar` . Change its `position` to `fixed` , and offset it 0 pixels from the `top` and 0 pixels from the `left` . Notice the (lack of) impact to the `h1` position, it hasn't been pushed down to accommodate the navigation bar and would need to be adjusted separately.

Challenge Seed

```
<style>
  #navbar {



    width: 100%;
    background-color: #767676;
  }
  nav ul {
    margin: 0px;
    padding: 5px 0px 5px 30px;
  }
  nav li {
    display: inline;
    margin-right: 20px;
  }
  a {
    text-decoration: none;
  }
</style>
<body>
  <header>
    <h1>Welcome!</h1>
    <nav id="navbar">
      <ul>
        <li><a href="">Home</a></li>
        <li><a href="">Contact</a></li>
      </ul>
    </nav>
  </header>
  <p>I shift up when the #navbar is fixed to the browser window.</p>
</body>
```

Solution

```
// solution required
```

23. Push Elements Left or Right with the float Property

Description

The next positioning tool does not actually use `position` , but sets the `float` property of an element. Floating elements are removed from the normal flow of a document and pushed to either the `left` or `right` of their containing parent element. It's commonly used with the `width` property to specify how much horizontal space the floated element requires.

Instructions

The given markup would work well as a two-column layout, with the `section` and `aside` elements next to each other. Give the `#left` item a `float` of `left` and the `#right` item a `float` of `right` .

Challenge Seed

```
<head>
  <style>
  #left {

    width: 50%;
  }
  #right {

    width: 40%;
  }
  aside, section {
    padding: 2px;
    background-color: #ccc;
  }
  </style>
</head>
<body>
  <header>
    <h1>Welcome!</h1>
  </header>
  <section id="left">
    <h2>Content</h2>
    <p>Good stuff</p>
  </section>
  <aside id="right">
    <h2>Sidebar</h2>
    <p>Links</p>
  </aside>
</body>
```

Solution

```
// solution required
```

24. Change the Position of Overlapping Elements with the z-index Property

Description

When elements are positioned to overlap (i.e. using `position: absolute | relative | fixed | sticky`), the element coming later in the HTML markup will, by default, appear on the top of the other elements. However, the `z-index` property can specify the order of how elements are stacked on top of one another. It must be an integer (i.e. a whole number and not a decimal), and higher values for the `z-index` property of an element move it higher in the stack than those with lower values.

Instructions

Add a `z-index` property to the element with the class name of `first` (the red rectangle) and set it to a value of 2 so it covers the other element (blue rectangle).

Challenge Seed

```
<style>
  div {
    width: 60%;
    height: 200px;
    margin-top: 20px;
  }

  .first {
    background-color: red;
    position: absolute;

  }
  .second {
    background-color: blue;
    position: absolute;
    left: 40px;
    top: 50px;
    z-index: 1;
  }
</style>

<div class="first"></div>
<div class="second"></div>
```

Solution

```
// solution required
```

25. Center an Element Horizontally Using the margin Property

Description

Another positioning technique is to center a block element horizontally. One way to do this is to set its `margin` to a value of auto. This method works for images, too. Images are inline elements by default, but can be changed to block elements when you set the `display` property to block.

Instructions

Center the `div` on the page by adding a `margin` property with a value of auto.

Challenge Seed

```
<style>
  div {
    background-color: blue;
    height: 100px;
    width: 100px;

  }
</style>
<div></div>
```

Solution

```
var code = "div {background-color: blue; height: 100px; width: 100px; margin: auto;}"
```

26. Learn about Complementary Colors

Description

Color theory and its impact on design is a deep topic and only the basics are covered in the following challenges. On a website, color can draw attention to content, evoke emotions, or create visual harmony. Using different combinations of colors can really change the look of a website, and a lot of thought can go into picking a color palette that works with your content. The color wheel is a useful tool to visualize how colors relate to each other - it's a circle where similar hues are neighbors and different hues are farther apart. When two colors are opposite each other on the wheel, they are called complementary colors. They have the characteristic that if they are combined, they "cancel" each other out and create a gray color. However, when placed side-by-side, these colors appear more vibrant and produce a strong visual contrast. Some examples of complementary colors with their hex codes are:

> red (#FF0000) and cyan (#00FFFF)
> green (#00FF00) and magenta (#FF00FF)
> blue (#0000FF) and yellow (#FFFF00)

This is different than the outdated RYB color model that many of us were taught in school, which has different primary and complementary colors. Modern color theory uses the additive RGB model (like on a computer screen) and the subtractive CMY(K) model (like in printing). Read here for more information on this complex subject. There are many color picking tools available online that have an option to find the complement of a color. **Note**
For all color challenges: Using color can be a powerful way to add visual interest to a page. However, color alone should not be used as the only way to convey important information because users with visual impairments may not understand that content. This issue will be covered in more detail in the Applied Accessibility challenges.

Instructions

Change the `background-color` property of the `blue` and `yellow` classes to their respective colors. Notice how the colors look different next to each other than they do compared against the white background.

Challenge Seed

```
<style>
  body {
    background-color: #FFFFFF;
  }
  .blue {
    background-color: #000000;
  }
  .yellow {
    background-color: #000000;
  }
  div {
    display: inline-block;
    height: 100px;
    width: 100px;
  }
</style>
<div class="blue"></div>
<div class="yellow"></div>
```

Solution

```
// solution required
```

27. Learn about Tertiary Colors

Description

Computer monitors and device screens create different colors by combining amounts of red, green, and blue light. This is known as the RGB additive color model in modern color theory. Red (R), green (G), and blue (B) are called primary colors. Mixing two primary colors creates the secondary colors cyan (G + B), magenta (R + B) and yellow (R + G). You saw these colors in the Complementary Colors challenge. These secondary colors happen to be the complement to the primary color not used in their creation, and are opposite to that primary color on the color wheel. For example, magenta is made with red and blue, and is the complement to green. Tertiary colors are the result of combining a primary color with one of its secondary color neighbors. For example, within the RGB color model, red (primary) and yellow (secondary) make orange (tertiary). This adds six more colors to a simple color wheel for a total of twelve. There are various methods of selecting different colors that result in a harmonious combination in design. One example that can use tertiary colors is called the split-complementary color scheme. This scheme starts with a base color, then pairs it with the two colors that are adjacent to its complement. The three colors provide strong visual contrast in a design, but are more subtle than using two complementary colors. Here are three colors created using the split-complement scheme:

Color	Hex Code
orange	#FF7F00
cyan	#00FFFF
raspberry	#FF007F

Instructions

Change the `background-color` property of the `orange` , `cyan` , and `raspberry` classes to their respective colors. Make sure to use the hex codes and not the color names.

Challenge Seed

```
<style>
  body {
    background-color: #FFFFFF;
  }

  .orange {
    background-color: #000000;
  }

  .cyan {
    background-color: #000000;
  }

  .raspberry {
    background-color: #000000;
  }

  div {
    height: 100px;
    width: 100px;
    margin-bottom: 5px;
  }
</style>

<div class="orange"></div>
<div class="cyan"></div>
<div class="raspberry"></div>
```

Solution

```
// solution required
```

28. Adjust the Color of Various Elements to Complementary Colors

Description

The Complementary Colors challenge showed that opposite colors on the color wheel can make each other appear more vibrant when placed side-by-side. However, the strong visual contrast can be jarring if it's overused on a website, and can sometimes make text harder to read if it's placed on a complementary-colored background. In practice, one of the colors is usually dominant and the complement is used to bring visual attention to certain content on the page.

Instructions

This page will use a shade of teal (`#09A7A1`) as the dominant color, and its orange (`#FF790E`) complement to visually highlight the sign-up buttons. Change the `background-color` of both the `header` and `footer` from black to the teal color. Then change the `h2` text `color` to teal as well. Finally, change the `background-color` of the `button` to the orange color.

Challenge Seed

```
<style>
  body {
    background-color: white;
  }
  header {
    background-color: black;
    color: white;
    padding: 0.25em;
  }
  h2 {
    color: black;
  }
  button {
    background-color: white;
  }
  footer {
    background-color: black;
    color: white;
    padding: 0.5em;
  }
</style>
<header>
  <h1>Cooking with FCC!</h1>
</header>
<main>
  <article>
    <h2>Machine Learning in the Kitchen</h2>
    <p>Join this two day workshop that walks through how to implement cutting-edge snack-getting
algorithms with a command line interface. Coding usually involves writing exact instructions, but
sometimes you need your computer to execute flexible commands, like <code>fetch Pringles</code>.</p>
    <button>Sign Up</button>
  </article>
  <article>
    <h2>Bisection Vegetable Chopping</h2>
    <p>This week-long retreat will level-up your coding ninja skills to actual ninja skills. No longer
is the humble bisection search limited to sorted arrays or coding interview questions, applying its
concepts in the kitchen will have you chopping carrots in O(log n) time before you know it.</p>
    <button>Sign Up</button>
  </article>
</main>
<br>
<footer>&copy; 2018 FCC Kitchen</footer>
```

Solution

```
// solution required
```

29. Adjust the Hue of a Color

Description

Colors have several characteristics including hue, saturation, and lightness. CSS3 introduced the `hsl()` property as an alternative way to pick a color by directly stating these characteristics. **Hue** is what people generally think of as 'color'. If you picture a spectrum of colors starting with red on the left, moving through green in the middle, and blue on right, the hue is where a color fits along this line. In `hsl()` , hue uses a color wheel concept instead of the spectrum, where the angle of the color on the circle is given as a value between 0 and 360. **Saturation** is the amount of gray in a color. A fully saturated color has no gray in it, and a minimally saturated color is almost completely gray. This is given as a percentage with 100% being fully saturated. **Lightness** is the amount of white or black in a color. A percentage is given ranging from 0% (black) to 100% (white), where 50% is the normal color. Here are a few examples of using `hsl()` with fully-saturated, normal lightness colors:

Color	HSL
red	hsl(0, 100%, 50%)
yellow	hsl(60, 100%, 50%)
green	hsl(120, 100%, 50%)
cyan	hsl(180, 100%, 50%)
blue	hsl(240, 100%, 50%)
magenta	hsl(300, 100%, 50%)

Instructions

Change the `background-color` of each `div` element based on the class names (`green` , `cyan` , or `blue`) using `hsl()` . All three should have full saturation and normal lightness.

Challenge Seed

```
<style>
  body {
    background-color: #FFFFFF;
  }

  .green {
    background-color: #000000;
  }

  .cyan {
    background-color: #000000;
  }

  .blue {
    background-color: #000000;
  }

  div {
    display: inline-block;
    height: 100px;
    width: 100px;
  }
</style>

<div class="green"></div>
<div class="cyan"></div>
<div class="blue"></div>
```

Solution

```
// solution required
```

30. Adjust the Tone of a Color

Description

The `hsl()` option in CSS also makes it easy to adjust the tone of a color. Mixing white with a pure hue creates a tint of that color, and adding black will make a shade. Alternatively, a tone is produced by adding gray or by both tinting and shading. Recall that the 's' and 'l' of `hsl()` stand for saturation and lightness, respectively. The saturation percent changes the amount of gray and the lightness percent determines how much white or black is in the color. This is useful when you have a base hue you like, but need different variations of it.

Instructions

All elements have a default `background-color` of `transparent` . Our `nav` element currently appears have a `cyan` background, because the element behind it has a `background-color` set to `cyan` . Add a `background-color` to the `nav` element so it uses the same `cyan` hue, but has `80% saturation` and `25% lightness` values to change its tone and shade.

Challenge Seed

```
<style>
  header {
    background-color: hsl(180, 90%, 35%);
    color: #FFFFFF;
  }

  nav {

  }

  h1 {
    text-indent: 10px;
    padding-top: 10px;
  }

  nav ul {
    margin: 0px;
    padding: 5px 0px 5px 30px;
  }

  nav li {
    display: inline;
    margin-right: 20px;
  }

  a {
    text-decoration: none;
    color: inherit;
  }
</style>

<header>
  <h1>Cooking with FCC!</h1>
  <nav>
    <ul>
      <li><a href="#">Home</a></li>
      <li><a href="#">Classes</a></li>
      <li><a href="#">Contact</a></li>
    </ul>
  </nav>
</header>
```

Solution

```
var code = "nav {background-color: hsl(180, 80%, 25%);}"
```

31. Create a Gradual CSS Linear Gradient

Description

Applying a color on HTML elements is not limited to one flat hue. CSS provides the ability to use color transitions, otherwise known as gradients, on elements. This is accessed through the `background` property's `linear-gradient()` function. Here is the general syntax: `background: linear-gradient(gradient_direction, color 1, color 2, color 3, ...);` The first argument specifies the direction from which color transition starts - it can be stated as a degree, where 90deg makes a vertical gradient and 45deg is angled like a backslash. The following arguments specify the order of colors used in the gradient. Example: `background: linear-gradient(90deg, red, yellow, rgb(204, 204, 255));`

Instructions

Use a `linear-gradient()` for the `div` element's `background` , and set it from a direction of 35 degrees to change the color from `#CCFFFF` to `#FFCCCC` . **Note**
While there are other ways to specify a color value, like `rgb()` or `hsl()` , use hex values for this challenge.

Challenge Seed

```
<style>

  div{
    border-radius: 20px;
    width: 70%;
    height: 400px;
    margin: 50px auto;

  }

</style>

<div></div>
```

Solution

```
var code = "<style> div{border-radius: 20px; width: 70%; height: 400px; margin: 50px auto; background:
linear-gradient(35deg, #cff, #fcc);}</style><div></div>"
```

32. Use a CSS Linear Gradient to Create a Striped Element

Description

The `repeating-linear-gradient()` function is very similar to `linear-gradient()` with the major difference that it repeats the specified gradient pattern. `repeating-linear-gradient()` accepts a variety of values, but for simplicity, you'll work with an angle value and color stop values in this challenge. The angle value is the direction of the gradient. Color stops are like width values that mark where a transition takes place, and are given with a percentage or a number of pixels. In the example demonstrated in the code editor, the gradient starts with the color `yellow` at 0 pixels which blends into the second color `blue` at 40 pixels away from the start. Since the next color stop is also at 40 pixels, the gradient immediately changes to the third color `green` , which itself blends into the fourth color value `red` as that is 80 pixels away from the beginning of the gradient. For this example, it helps to think about the color stops as pairs where every two colors blend together. `0px [yellow -- blend -- blue] 40px [green -- blend -- red] 80px` If every two color stop values are the same color, the blending isn't noticeable because it's between the same color, followed by a hard transition to the next color, so you end up with stripes.

Instructions

Make stripes by changing the `repeating-linear-gradient()` to use a gradient angle of `45deg` , then set the first two color stops to `yellow` , and finally the second two color stops to `black` .

Challenge Seed

```
<style>

  div{
    border-radius: 20px;
    width: 70%;
    height: 400px;
    margin:  50 auto;
    background: repeating-linear-gradient(
      90deg,
      yellow 0px,
      blue 40px,
      green 40px,
      red 80px
    );
  }

</style>

<div></div>
```

Solution

```
var code = "background: repeating-linear-gradient(45deg, yellow 0px, yellow 40px, black 40px, black
80px);"
```

33. Create Texture by Adding a Subtle Pattern as a Background Image

Description

One way to add texture and interest to a background and have it stand out more is to add a subtle pattern. The key is balance, as you don't want the background to stand out too much, and take away from the foreground. The `background` property supports the `url()` function in order to link to an image of the chosen texture or pattern. The link address is wrapped in quotes inside the parentheses.

Instructions

Using the url of `https://i.imgur.com/MJAkxbh.png` , set the `background` of the whole page with the `body` selector.

Challenge Seed

```
<style>
  body {

  }
</style>
```

Solution

```
var code = "body {background: url('https://i.imgur.com/MJAkxbh.png')}"
```

34. Use the CSS Transform scale Property to Change the Size of an Element

Description

To change the scale of an element, CSS has the `transform` property, along with its `scale()` function. The following code example doubles the size of all the paragraph elements on the page:

> p {
>   transform: scale(2);
> }

Instructions

Increase the size of the element with the id of `ball2` to 1.5 times its original size.

Challenge Seed

```
<style>
  .ball {
    width: 40px;
    height: 40px;
    margin: 50 auto;
    position: fixed;
    background: linear-gradient(
      35deg,
      #ccffff,
      #ffcccc
    );
    border-radius: 50%;
  }
  #ball1 {
    left: 20%;
  }
  #ball2 {
    left: 65%;

  }


</style>

<div class="ball" id= "ball1"></div>
<div class="ball" id= "ball2"></div>
```

Solution

```
var code = "#ball2 {left: 65%; transform: scale(1.5);}"
```

35. Use the CSS Transform scale Property to Scale an Element on Hover

Description

The `transform` property has a variety of functions that lets you scale, move, rotate, skew, etc., your elements. When used with pseudo-classes such as `:hover` that specify a certain state of an element, the `transform` property can easily add interactivity to your elements. Here's an example to scale the paragraph elements to 2.1 times their original size when a user hovers over them:

> p:hover {
>   transform: scale(2.1);
> }

NOTE: Applying a transform to a `div` element will also affect any child elements contained in the div.

Instructions

Add a CSS rule for the `hover` state of the `div` and use the `transform` property to scale the `div` element to 1.1 times its original size when a user hovers over it.

Challenge Seed

```
<style>
  div {
    width: 70%;
    height: 100px;
    margin:  50px auto;
    background: linear-gradient(
      53deg,
      #ccfffc,
      #ffcccf
    );
  }



</style>

<div></div>
```

Solution

```
var code = "div:hover {transform: scale(1.1);}"
```

36. Use the CSS Transform Property skewX to Skew an Element Along the X-Axis

Description

The next function of the `transform` property is `skewX()` , which skews the selected element along its X (horizontal) axis by a given degree. The following code skews the paragraph element by -32 degrees along the X-axis.

> p {
>   transform: skewX(-32deg);
> }

Instructions

Skew the element with the id of `bottom` by 24 degrees along the X-axis by using the `transform` property.

Challenge Seed

```
<style>
  div {
    width: 70%;
    height: 100px;
    margin:  50px auto;
  }
  #top {
    background-color: red;
  }
  #bottom {
    background-color: blue;

  }
</style>

<div id="top"></div>
<div id="bottom"></div>
```

Solution

```
var code = "#bottom {background-color: blue; transform: skewX(24deg);}"
```

37. Use the CSS Transform Property skewY to Skew an Element Along the Y-Axis

Description

Given that the `skewX()` function skews the selected element along the X-axis by a given degree, it is no surprise that the `skewY()` property skews an element along the Y (vertical) axis.

Instructions

Skew the element with the id of `top` -10 degrees along the Y-axis by using the `transform` property.

Challenge Seed

```
<style>
  div {
    width: 70%;
    height: 100px;
    margin: 50px auto;
  }
  #top {
    background-color: red;

  }
  #bottom {
    background-color: blue;
    transform: skewX(24deg);
  }
</style>

<div id="top"></div>
<div id="bottom"></div>
```

Solution

```
var code = "#top {background-color: red; transform: skewY(-10deg);}"
```

38. Create a Graphic Using CSS

Description

By manipulating different selectors and properties, you can make interesting shapes. One of the easier ones to try is a crescent moon shape. For this challenge you need to work with the `box-shadow` property that sets the shadow of an element, along with the `border-radius` property that controls the roundness of the element's corners. You will create a round, transparent object with a crisp shadow that is slightly offset to the side - the shadow is actually going to be the moon shape you see. In order to create a round object, the `border-radius` property should be set to a value of 50%. You may recall from an earlier challenge that the `box-shadow` property takes values for `offset-x` , `offset-y` , `blur-radius` , `spread-radius` and a color value in that order. The `blur-radius` and `spread-radius` values are optional.

Instructions

Manipulate the square element in the editor to create the moon shape. First, change the `background-color` to transparent, then set the `border-radius` property to 50% to make the circular shape. Finally, change the `box-shadow` property to set the `offset-x` to 25px, the `offset-y` to 10px, `blur-radius` to 0, `spread-radius` to 0, and color to blue.

Challenge Seed

```
<style>
.center
{
  position: absolute;
  margin: auto;
  top: 0;
  right: 0;
  bottom: 0;
  left: 0;
  width: 100px;
  height: 100px;

  background-color: blue;
  border-radius: 0px;
  box-shadow: 25px 10px 10px 10px green;
}

</style>
<div class="center"></div>
```

Solution

```
var code = ".center {background-color: transparent; border-radius: 50%; box-shadow: 25px 10px 0px 0
blue;}"
```

39. Create a More Complex Shape Using CSS and HTML

Description

One of the most popular shapes in the world is the heart shape, and in this challenge you'll create one using pure CSS. But first, you need to understand the `::before` and `::after` pseudo-elements. These pseudo-elements are used to add something before or after a selected element. In the following example, a `::before` pseudo-element is used to add a rectangle to an element with the class `heart` :

> .heart::before {
> content: "";
> background-color: yellow;

> border-radius: 25%;
> position: absolute;
> height: 50px;
> width: 70px;
> top: -50px;
> left: 5px;
> }

For the `::before` and `::after` pseudo-elements to function properly, they must have a defined `content` property. This property is usually used to add things like a photo or text to the selected element. When the `::before` and `::after` pseudo-elements are used to make shapes, the `content` property is still required, but it's set to an empty string. In the above example, the element with the class of `heart` has a `::before` pseudo-element that produces a yellow rectangle with `height` and `width` of 50px and 70px, respectively. This rectangle has round corners due to its 25% border radius and is positioned absolutely at 5px from the `left` and 50px above the `top` of the element.

Instructions

Transform the element on the screen to a heart. In the `heart::after` selector, change the `background-color` to pink and the `border-radius` to 50%. Next, target the element with the class `heart` (just `heart`) and fill in the `transform` property. Use the `rotate()` function with -45 degrees. Finally, in the `heart::before` selector, set its `content` property to an empty string.

Challenge Seed

```
<style>
.heart {
  position: absolute;
  margin: auto;
  top: 0;
  right: 0;
  bottom: 0;
  left: 0;
  background-color: pink;
  height: 50px;
  width: 50px;
  transform: ;
}
.heart::after {
  background-color: blue;
  content: "";
  border-radius: 25%;
  position: absolute;
  width: 50px;
  height: 50px;
  top: 0px;
  left: 25px;
}
.heart::before {
  content: ;
  background-color: pink;
  border-radius: 50%;
  position: absolute;
  width: 50px;
  height: 50px;
  top: -25px;
  left: 0px;
}
</style>
<div class = "heart"></div>
```

Solution

```
<style>
.heart {
  position: absolute;
  margin: auto;
  top: 0;
```

```
    right: 0;
    bottom: 0;
    left: 0;
    background-color: pink;
    height: 50px;
    width: 50px;
    transform: rotate(-45deg);
  }
  .heart::after {
    background-color: pink;
    content: "";
    border-radius: 50%;
    position: absolute;
    width: 50px;
    height: 50px;
    top: 0px;
    left: 25px;
  }
  .heart::before {
    content: "";
    background-color: pink;
    border-radius: 50%;
    position: absolute;
    width: 50px;
    height: 50px;
    top: -25px;
    left: 0px;
  }
  </style>
  <div class = "heart"></div>
```

40. Learn How the CSS @keyframes and animation Properties Work

Description

To animate an element, you need to know about the animation properties and the `@keyframes` rule. The animation properties control how the animation should behave and the `@keyframes` rule controls what happens during that animation. There are eight animation properties in total. This challenge will keep it simple and cover the two most important ones first: `animation-name` sets the name of the animation, which is later used by `@keyframes` to tell CSS which rules go with which animations. `animation-duration` sets the length of time for the animation. `@keyframes` is how to specify exactly what happens within the animation over the duration. This is done by giving CSS properties for specific "frames" during the animation, with percentages ranging from 0% to 100%. If you compare this to a movie, the CSS properties for 0% is how the element displays in the opening scene. The CSS properties for 100% is how the element appears at the end, right before the credits roll. Then CSS applies the magic to transition the element over the given duration to act out the scene. Here's an example to illustrate the usage of `@keyframes` and the animation properties:

> ```
> #anim {
>   animation-name: colorful;
>   animation-duration: 3s;
> }
> @keyframes colorful {
>   0% {
>     background-color: blue;
>   }
>   100% {
>     background-color: yellow;
>   }
> }
> ```

For the element with the `anim` id, the code snippet above sets the `animation-name` to `colorful` and sets the `animation-duration` to 3 seconds. Then the `@keyframes` rule links to the animation properties with the name `colorful`. It sets the color to blue at the beginning of the animation (0%) which will transition to yellow by the end of the animation (100%). You aren't limited to only beginning-end transitions, you can set properties for the element for any percentage between 0% and 100%.

Instructions

Create an animation for the element with the id `rect` , by setting the `animation-name` to rainbow and the `animation-duration` to 4 seconds. Next, declare a `@keyframes` rule, and set the `background-color` at the beginning of the animation (`0%`) to blue, the middle of the animation (`50%`) to green, and the end of the animation (`100%`) to yellow.

Challenge Seed

```
<style>
  div {
    height: 40px;
    width: 70%;
    background: black;
    margin: 50px auto;
    border-radius: 5px;
  }

  #rect {


  }




</style>
<div id="rect"></div>
```

Solution

```
// solution required
```

41. Use CSS Animation to Change the Hover State of a Button

Description

You can use CSS `@keyframes` to change the color of a button in its hover state. Here's an example of changing the width of an image on hover:

> <style>
>   img:hover {
>   animation-name: width;
>   animation-duration: 500ms;
>   }
>
>   @keyframes width {
>   100% {
>   width: 40px;
>   }
>   }
> </style>
>
> <img src="https://bit.ly/smallgooglelogo" alt="Google's Logo" />

Instructions

Note that `ms` stands for milliseconds, where 1000ms is equal to 1s. Use CSS `@keyframes` to change the `background-color` of the `button` element so it becomes `#4791d0` when a user hovers over it. The `@keyframes` rule should only have an entry for `100%` .

Challenge Seed

```
<style>
  button {
    border-radius: 5px;
    color: white;
    background-color: #0F5897;
    padding: 5px 10px 8px 10px;
  }

  button:hover {
    animation-name: background-color;
    animation-duration: 500ms;
  }


</style>

<button>Register</button>
```

Solution

```
// solution required
```

42. Modify Fill Mode of an Animation

Description

That's great, but it doesn't work right yet. Notice how the animation resets after `500ms` has passed, causing the button to revert back to the original color. You want the button to stay highlighted. This can be done by setting the `animation-fill-mode` property to `forwards` . The `animation-fill-mode` specifies the style applied to an element when the animation has finished. You can set it like so: `animation-fill-mode: forwards;`

Instructions

Set the `animation-fill-mode` property of `button:hover` to `forwards` so the button stays highlighted when a user hovers over it.

Challenge Seed

```
<style>
  button {
    border-radius: 5px;
    color: white;
    background-color: #0F5897;
    padding: 5px 10px 8px 10px;
  }
  button:hover {
    animation-name: background-color;
    animation-duration: 500ms;
    /* add your code below this line */

    /* add your code above this line */
  }
  @keyframes background-color {
    100% {
      background-color: #4791d0;
    }
  }
</style>
<button>Register</button>
```

Solution

```
var code = "button:hover {animation-name: background-color; animation-duration: 500ms; animation-fill-
mode: forwards;}"
```

43. Create Movement Using CSS Animation

Description

When elements have a specified `position` , such as `fixed` or `relative` , the CSS offset properties `right` , `left` , `top` , and `bottom` can be used in animation rules to create movement. As shown in the example below, you can push the item downwards then upwards by setting the `top` property of the `50%` keyframe to 50px, but having it set to 0px for the first (`0%`) and the last (`100%`) keyframe.

> @keyframes rainbow {
>   0% {
>   background-color: blue;
>   top: 0px;
>   }
>   50% {
>   background-color: green;
>   top: 50px;
>   }
>   100% {
>   background-color: yellow;
>   top: 0px;
>   }
> }

Instructions

Add a horizontal motion to the `div` animation. Using the `left` offset property, add to the `@keyframes` rule so rainbow starts at 0 pixels at `0%` , moves to 25 pixels at `50%` , and ends at -25 pixels at `100%` . Don't replace the `top` property in the editor - the animation should have both vertical and horizontal motion.

Challenge Seed

```
<style>
  div {
    height: 40px;
    width: 70%;
    background: black;
    margin: 50px auto;
    border-radius: 5px;
    position: relative;
  }

#rect {
  animation-name: rainbow;
  animation-duration: 4s;
}

@keyframes rainbow {
  0% {
    background-color: blue;
    top: 0px;
  }
  50% {
    background-color: green;
    top: 50px;

  }
  100% {
    background-color: yellow;
    top: 0px;

  }
}
</style>

<div id="rect"></div>
```

Solution

```
var code = "@keyframes rainbow {0% {background-color: blue; top: 0px; left: 0px;} 50% {background-color: green; top: 50px; left: 25px;} 100% {background-color: yellow; top: 0px; left:-25px;}}"
```

44. Create Visual Direction by Fading an Element from Left to Right

Description

For this challenge, you'll change the `opacity` of an animated element so it gradually fades as it reaches the right side of the screen. In the displayed animation, the round element with the gradient background moves to the right by the 50% mark of the animation per the `@keyframes` rule.

Instructions

Target the element with the id of `ball` and add the `opacity` property set to 0.1 at `50%` , so the element fades as it moves to the right.

Challenge Seed

```
<style>

  #ball {
    width: 70px;
    height: 70px;
    margin: 50px auto;
    position: fixed;
    left: 20%;
    border-radius: 50%;
    background: linear-gradient(
      35deg,
      #ccffff,
      #ffcccc
    );
    animation-name: fade;
    animation-duration: 3s;
  }

  @keyframes fade {
    50% {
      left: 60%;

    }
  }

</style>
```

```
<div id="ball"></div>
```

Solution

```
var code = "@keyframes fade {50% { left: 60%; opacity: 0.1;}}"
```

45. Animate Elements Continually Using an Infinite Animation Count

Description

The previous challenges covered how to use some of the animation properties and the `@keyframes` rule. Another animation property is the `animation-iteration-count` , which allows you to control how many times you would like to loop through the animation. Here's an example: `animation-iteration-count: 3;` In this case the animation will stop after running 3 times, but it's possible to make the animation run continuously by setting that value to infinite.

Instructions

To keep the ball bouncing on the right on a continuous loop, change the `animation-iteration-count` property to `infinite` .

Challenge Seed

```
<style>

  #ball {
    width: 100px;
    height: 100px;
    margin: 50px auto;
    position: relative;
    border-radius: 50%;
    background: linear-gradient(
      35deg,
      #ccffff,
      #ffcccc
    );
    animation-name: bounce;
    animation-duration: 1s;
    animation-iteration-count: 3;
  }

  @keyframes bounce{
    0% {
      top: 0px;
    }
    50% {
      top: 249px;
      width: 130px;
      height: 70px;
    }
    100% {
      top: 0px;
    }
  }
</style>
<div id="ball"></div>
```

Solution

```
// solution required
```

46. Make a CSS Heartbeat using an Infinite Animation Count

Description

Here's one more continuous animation example with the `animation-iteration-count` property that uses the heart you designed in a previous challenge. The one-second long heartbeat animation consists of two animated pieces. The `heart` elements (including the `:before` and `:after` pieces) are animated to change size using the `transform` property, and the background `div` is animated to change its color using the `background` property.

Instructions

Keep the heart beating by adding the `animation-iteration-count` property for both the `back` class and the `heart` class and setting the value to infinite. The `heart:before` and `heart:after` selectors do not need any animation properties.

Challenge Seed

```
<style>
  .back {
    position: fixed;
    padding: 0;
    margin: 0;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
    background: white;
    animation-name: backdiv;
    animation-duration: 1s;

  }

  .heart {
    position: absolute;
    margin: auto;
    top: 0;
    right: 0;
    bottom: 0;
    left: 0;
    background-color: pink;
    height: 50px;
    width: 50px;
    transform: rotate(-45deg);
    animation-name: beat;
    animation-duration: 1s;

  }
  .heart:after {
    background-color: pink;
    content: "";
    border-radius: 50%;
    position: absolute;
    width: 50px;
    height: 50px;
    top: 0px;
    left: 25px;
  }
  .heart:before {
    background-color: pink;
    content: "";
    border-radius: 50%;
    position: absolute;
    width: 50px;
    height: 50px;
    top: -25px;
    left: 0px;
  }

  @keyframes backdiv {
    50% {
      background: #ffe6f2;
    }
  }

  @keyframes beat {
    0% {
      transform: scale(1) rotate(-45deg);
    }
    50% {
      transform: scale(0.6) rotate(-45deg);
    }
  }

</style>
<div class="back"></div>
<div class="heart"></div>
```

Solution

```
// solution required
```

47. Animate Elements at Variable Rates

Description

There are a variety of ways to alter the animation rates of similarly animated elements. So far, this has been achieved by applying an `animation-iteration-count` property and setting `@keyframes` rules. To illustrate, the animation on the right consists of two "stars" that each decrease in size and opacity at the 20% mark in the `@keyframes` rule, which creates the twinkle animation. You can change the `@keyframes` rule for one of the elements so the stars twinkle at different rates.

Instructions

Alter the animation rate for the element with the class name of `star-1` by changing its `@keyframes` rule to 50%.

Challenge Seed

```
<style>
  .stars {
    background-color: white;
    height: 30px;
    width: 30px;
    border-radius: 50%;
    animation-iteration-count: infinite;
  }

  .star-1 {
    margin-top: 15%;
    margin-left: 60%;
    animation-name: twinkle-1;
    animation-duration: 1s;
  }

  .star-2 {
    margin-top: 25%;
    margin-left: 25%;
    animation-name: twinkle-2;
    animation-duration: 1s;
  }

  @keyframes twinkle-1 {
    20% {
      transform: scale(0.5);
      opacity: 0.5;
    }
  }

  @keyframes twinkle-2 {
    20% {
      transform: scale(0.5);
      opacity: 0.5;
    }
  }

  #back {
    position: fixed;
    padding: 0;
    margin: 0;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
    background: linear-gradient(black, #000099, #66c2ff, #ffcccc, #ffeee6);
  }
</style>

<div id="back"></div>
<div class="star-1 stars"></div>
<div class="star-2 stars"></div>
```

Solution

```
var code = "@keyframes twinkle-1 {50% {transform: scale(0.5); opacity: 0.5;}}"
```

48. Animate Multiple Elements at Variable Rates

Description

In the previous challenge, you changed the animation rates for two similarly animated elements by altering their `@keyframes` rules. You can achieve the same goal by manipulating the `animation-duration` of multiple elements. In the animation running in the code editor, there are three "stars" in the sky that twinkle at the same rate on a continuous loop. To make them twinkle at different rates, you can set the `animation-duration` property to different values for each element.

Instructions

Set the `animation-duration` of the elements with the classes `star-1` , `star-2` , and `star-3` to 1s, 0.9s, and 1.1s, respectively.

Challenge Seed

```
<style>
  .stars {
    background-color: white;
    height: 30px;
    width: 30px;
    border-radius: 50%;
    animation-iteration-count: infinite;
  }
  .star-1 {
    margin-top: 15%;
    margin-left: 60%;
    animation-duration: 1s;
    animation-name: twinkle;
  }

  .star-2 {
    margin-top: 25%;
    margin-left: 25%;
    animation-duration: 1s;
    animation-name: twinkle;
  }

  .star-3 {
    margin-top: 10%;
    margin-left: 50%;
    animation-duration: 1s;
    animation-name: twinkle;
  }

  @keyframes twinkle {
    20% {
      transform: scale(0.5);
      opacity: 0.5;
    }
  }

  #back {
    position: fixed;
    padding: 0;
    margin: 0;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
    background: linear-gradient(black, #000099, #66c2ff, #ffcccc, #ffeee6);
  }
</style>

<div id="back"></div>
<div class="star-1 stars"></div>
<div class="star-2 stars"></div>
<div class="star-3 stars"></div>
```

Solution

```
// solution required
```

49. Change Animation Timing with Keywords

Description

In CSS animations, the `animation-timing-function` property controls how quickly an animated element changes over the duration of the animation. If the animation is a car moving from point A to point B in a given time (your `animation-duration`), the `animation-timing-function` says how the car accelerates and decelerates over the course of the drive. There are a number of predefined keywords available for popular options. For example, the default value is `ease` , which starts slow, speeds up in the middle, and then slows down again in the end. Other options include `ease-out` , which is quick in the beginning then slows down, `ease-in` , which is slow in the beginning, then speeds up at the end, or `linear` , which applies a constant animation speed throughout.

Instructions

For the elements with id of `ball1` and `ball2` , add an `animation-timing-function` property to each, and set `#ball1` to `linear` , and `#ball2` to `ease-out` . Notice the difference between how the elements move during the animation but end together, since they share the same `animation-duration` of 2 seconds.

Challenge Seed

```
<style>

  .balls {
    border-radius: 50%;
    background: linear-gradient(
      35deg,
      #ccffff,
      #ffcccc
    );
    position: fixed;
    width: 50px;
    height: 50px;
    margin-top: 50px;
    animation-name: bounce;
    animation-duration: 2s;
    animation-iteration-count: infinite;
  }
  #ball1 {
    left:27%;

  }
  #ball2 {
    left:56%;

  }

@keyframes bounce {
  0% {
    top: 0px;
  }
  100% {
    top: 249px;
  }
}

</style>

<div class="balls" id="ball1"></div>
<div class="balls" id="ball2"></div>
```

Solution

```
// solution required
```

50. Learn How Bezier Curves Work

Description

The last challenge introduced the `animation-timing-function` property and a few keywords that change the speed of an animation over its duration. CSS offers an option other than keywords that provides even finer control over how the animation plays out, through the use of Bezier curves. In CSS animations, Bezier curves are used with the `cubic-bezier` function. The shape of the curve represents how the animation plays out. The curve lives on a 1 by 1 coordinate system. The X-axis of this coordinate system is the duration of the animation (think of it as a time scale), and the Y-axis is the change in the animation. The `cubic-bezier` function consists of four main points that sit on this 1 by 1 grid: `p0` , `p1` , `p2` , and `p3` . `p0` and `p3` are set for you - they are the beginning and end points which are always located respectively at the origin (0, 0) and (1, 1). You set the x and y values for the other two points, and where you place them in the grid dictates the shape of the curve for the animation to follow. This is done in CSS by declaring the x and y values of the `p1` and `p2` "anchor" points in the form: `(x1, y1, x2, y2)` . Pulling it all together, here's an example of a Bezier curve in CSS code: `animation-timing-function: cubic-bezier(0.25, 0.25, 0.75, 0.75);` In the example above, the x and y values are equivalent for each point (x1 = 0.25 = y1 and x2 = 0.75 = y2), which if you remember from geometry class, results in a line that extends from the origin to point (1, 1). This animation is a linear change of an element during the length of an animation, and is the same as using the `linear` keyword. In other words, it changes at a constant speed.

Instructions

For the element with the id of `ball1` , change the value of the `animation-timing-function` property from `linear` to its equivalent `cubic-bezier` function value. Use the point values given in the example above.

Challenge Seed

```
<style>

  .balls{
    border-radius: 50%;
    background: linear-gradient(
      35deg,
      #ccffff,
      #ffcccc
    );
    position: fixed;
    width: 50px;
    height: 50px;
    margin-top: 50px;
    animation-name: bounce;
    animation-duration: 2s;
    animation-iteration-count: infinite;
  }
  #ball1 {
    left: 27%;
    animation-timing-function: linear;
  }
  #ball2 {
    left: 56%;
    animation-timing-function: ease-out;
  }

@keyframes bounce {
  0% {
    top: 0px;
  }
  100% {
    top: 249px;
  }
}

</style>

<div class="balls" id="ball1"></div>
<div class="balls" id="ball2"></div>
```

Solution

```
// solution required
```

51. Use a Bezier Curve to Move a Graphic

Description

A previous challenge discussed the `ease-out` keyword that describes an animation change that speeds up first and then slows down at the end of the animation. On the right, the difference between the `ease-out` keyword (for the blue element) and `linear` keyword (for the red element) is demonstrated. Similar animation progressions to the `ease-out` keyword can be achieved by using a custom cubic Bezier curve function. In general, changing the `p1` and `p2` anchor points drives the creation of different Bezier curves, which controls how the animation progresses through time. Here's an example of a Bezier curve using values to mimic the ease-out style: `animation-timing-function: cubic-bezier(0, 0, 0.58, 1);` Remember that all `cubic-bezier` functions start with `p0` at (0, 0) and end with `p3` at (1, 1). In this example, the curve moves faster through the Y-axis (starts at 0, goes to `p1` y value of 0, then goes to `p2` y value of 1) than it moves through the X-axis (0 to start, then 0 for `p1` , up to 0.58 for `p2`). As a result, the change in the animated element progresses faster than the time of the animation for that segment. Towards the end of the curve, the relationship between the change in x and y values reverses - the y value moves from 1 to 1 (no change), and the x values move from 0.58 to 1, making the animation changes progress slower compared to the animation duration.

Instructions

To see the effect of this Bezier curve in action, change the `animation-timing-function` of the element with id of `red` to a `cubic-bezier` function with x1, y1, x2, y2 values set respectively to 0, 0, 0.58, 1. This will make both elements progress through the animation similarly.

Challenge Seed

```
<style>
  .balls{
    border-radius: 50%;
    position: fixed;
    width: 50px;
    height: 50px;
    margin-top: 50px;
    animation-name: bounce;
    animation-duration: 2s;
    animation-iteration-count: infinite;
  }
  #red {
    background: red;
    left: 27%;
    animation-timing-function: linear;
  }
  #blue {
    background: blue;
    left: 56%;
    animation-timing-function: ease-out;
  }
  @keyframes bounce {
    0% {
      top: 0px;
    }
    100% {
      top: 249px;
    }
  }
</style>
<div class="balls" id= "red"></div>
<div class="balls" id= "blue"></div>
```

Solution

```
// solution required
```

52. Make Motion More Natural Using a Bezier Curve

Description

This challenge animates an element to replicate the movement of a ball being juggled. Prior challenges covered the `linear` and `ease-out` cubic Bezier curves, however neither depicts the juggling movement accurately. You need to customize a Bezier curve for this. The `animation-timing-function` automatically loops at every keyframe when the `animation-iteration-count` is set to infinite. Since there is a keyframe rule set in the middle of the animation duration (at `50%`), it results in two identical animation progressions at the upward and downward movement of the ball. The following cubic Bezier curve simulates a juggling movement: `cubic-bezier(0.3, 0.4, 0.5, 1.6);` Notice that the value of y2 is larger than 1. Although the cubic Bezier curve is mapped on an 1 by 1 coordinate system, and it can only accept x values from 0 to 1, the y value can be set to numbers larger than one. This results in a bouncing movement that is ideal for simulating the juggling ball.

Instructions

Change value of the `animation-timing-function` of the element with the id of `green` to a `cubic-bezier` function with x1, y1, x2, y2 values set respectively to 0.311, 0.441, 0.444, 1.649.

Challenge Seed

```
<style>
  .balls {
    border-radius: 50%;
    position: fixed;
    width: 50px;
    height: 50px;
    top: 60%;
    animation-name: jump;
    animation-duration: 2s;
    animation-iteration-count: infinite;
  }
  #red {
    background: red;
    left: 25%;
    animation-timing-function: linear;
  }
  #blue {
    background: blue;
    left: 50%;
    animation-timing-function: ease-out;
  }
  #green {
    background: green;
    left: 75%;
    animation-timing-function: cubic-bezier(0.69, 0.1, 1, 0.1);
  }

  @keyframes jump {
    50% {
      top: 10%;
    }
  }
</style>
<div class="balls" id="red"></div>
<div class="balls" id="blue"></div>
<div class="balls" id="green"></div>
```

Solution

```
// solution required
```

Applied Accessibility

1. Add a Text Alternative to Images for Visually Impaired Accessibility

Description

It's likely that you've seen an `alt` attribute on an `img` tag in other challenges. `Alt` text describes the content of the image and provides a text-alternative for it. This helps in cases where the image fails to load or can't be seen by a user. It's also used by search engines to understand what an image contains to include it in search results. Here's an example: `<img src="importantLogo.jpeg" alt="Company logo">` People with visual impairments rely on screen readers to convert web content to an audio interface. They won't get information if it's only presented visually. For images, screen readers can access the `alt` attribute and read its contents to deliver key information. Good `alt` text provides the reader a brief description of the image. You should always include an `alt` attribute on your image. Per HTML5 specification, this is now considered mandatory.

Instructions

Camper Cat happens to be both a coding ninja and an actual ninja, who is building a website to share his knowledge. The profile picture he wants to use shows his skills and should be appreciated by all site visitors. Add an `alt` attribute in the `img` tag, that explains Camper Cat is doing karate. (The image `src` doesn't link to an actual file, so you should see the `alt` text in the display.)

Challenge Seed

```html
<img src="doingKarateWow.jpeg">
```

Solution

```html
<img src="doingKarateWow.jpeg" alt="Someone doing karate">
```

2. Know When Alt Text Should be Left Blank

Description

In the last challenge, you learned that including an `alt` attribute on img tags is mandatory. However, sometimes images are grouped with a caption already describing them, or are used for decoration only. In these cases `alt` text may seem redundant or unnecessary. In situations when an image is already explained with text content, or does not add meaning to a page, the `img` still needs an `alt` attribute, but it can be set to an empty string. Here's an example: `<img src="visualDecoration.jpeg" alt="">` Background images usually fall under the 'decorative' label as well. However, they are typically applied with CSS rules, and therefore not part of the markup screen readers process. **Note** For images with a caption, you may still want to include `alt` text, since it helps search engines catalog the content of the image.

Instructions

Camper Cat has coded a skeleton page for the blog part of his website. He's planning to add a visual break between his two articles with a decorative image of a samurai sword. Add an `alt` attribute to the `img` tag and set it to an empty string. (Note that the image `src` doesn't link to an actual file - don't worry that there are no swords showing in the display.)

Challenge Seed

```html
<h1>Deep Thoughts with Master Camper Cat</h1>
<article>
  <h2>Defeating your Foe: the Red Dot is Ours!</h2>
  <p>To Come...</p>
</article>

<img src="samuraiSwords.jpeg">

<article>
  <h2>Is Chuck Norris a Cat Person?</h2>
  <p>To Come...</p>
</article>
```

Solution

```
// solution required
```

3. Use Headings to Show Hierarchical Relationships of Content

Description

Headings (`h1` through `h6` elements) are workhorse tags that help provide structure and labeling to your content. Screen readers can be set to read only the headings on a page so the user gets a summary. This means it is important for the heading tags in your markup to have semantic meaning and relate to each other, not be picked merely for their size values. *Semantic meaning* means that the tag you use around content indicates the type of information it contains. If you were writing a paper with an introduction, a body, and a conclusion, it wouldn't make much sense to put the conclusion as a subsection of the body in your outline. It should be its own section. Similarly, the heading tags in a webpage need to go in order and indicate the hierarchical relationships of your content. Headings with equal (or higher) rank start new implied sections, headings with lower rank start subsections of the previous one. As an example, a page with an `h2` element followed by several subsections labeled with `h4` tags would confuse a screen reader user. With six choices, it's tempting to use a tag because it looks better in a browser, but you can use CSS to edit the relative sizing. One final point, each page should always have one (and only one) `h1` element, which is the main subject of your content. This and the other headings are used in part by search engines to understand the topic of the page.

Instructions

Camper Cat wants a page on his site dedicated to becoming a ninja. Help him fix the headings so his markup gives semantic meaning to the content, and shows the proper parent-child relationships of his sections. Change all the `h5` tags to the proper heading level to indicate they are subsections of the `h2` ones. Use `h3` tags for the purpose.

Challenge Seed

```
<h1>How to Become a Ninja</h1>
<main>
  <h2>Learn the Art of Moving Stealthily</h2>
  <h5>How to Hide in Plain Sight</h5>
  <h5>How to Climb a Wall</h5>

  <h2>Learn the Art of Battle</h2>
  <h5>How to Strengthen your Body</h5>
  <h5>How to Fight like a Ninja</h5>

  <h2>Learn the Art of Living with Honor</h2>
  <h5>How to Breathe Properly</h5>
  <h5>How to Simplify your Life</h5>
</main>
```

Solution

```
// solution required
```

4. Jump Straight to the Content Using the main Element

Description

HTML5 introduced a number of new elements that give developers more options while also incorporating accessibility features. These tags include `main` , `header` , `footer` , `nav` , `article` , and `section` , among others. By default, a browser renders these elements similarly to the humble `div` . However, using them where appropriate gives additional meaning in your markup. The tag name alone can indicate the type of information it contains, which adds semantic meaning to that content. Assistive technologies can access this information to provide better page summary or navigation options to their users. The `main` element is used to wrap (you guessed it) the main content, and there should be only one per page. It's meant to surround the information that's related to the central topic of your page. It's not meant to include items that repeat across pages, like navigation links or banners. The `main` tag also has an embedded landmark feature that assistive technology can use to quickly navigate to the main content. If you've ever seen a "Jump to Main Content" link at the top of a page, using a main tag automatically gives assistive devices that functionality.

Instructions

Camper Cat has some big ideas for his ninja weapons page. Help him set up his markup by adding opening and closing `main` tags between the `header` and `footer` (covered in other challenges). Keep the `main` tags empty for now.

Challenge Seed

```
<header>
  <h1>Weapons of the Ninja</h1>
</header>



<footer></footer>
```

Solution

```
// solution required
```

5. Wrap Content in the article Element

Description

`article` is another one of the new HTML5 elements that adds semantic meaning to your markup. `Article` is a sectioning element, and is used to wrap independent, self-contained content. The tag works well with blog entries, forum posts, or news articles. Determining whether content can stand alone is usually a judgement call, but there are a couple simple tests you can use. Ask yourself if you removed all surrounding context, would that content still make sense? Similarly for text, would the content hold up if it were in an RSS feed? Remember that folks using assistive technologies rely on organized, semantically meaningful markup to better understand your work. **Note about `section` and `div`**
The `section` element is also new with HTML5, and has a slightly different semantic meaning than `article` . An `article` is for standalone content, and a `section` is for grouping thematically related content. They can be used within each other, as needed. For example, if a book is the `article` , then each chapter is a `section` . When there's no relationship between groups of content, then use a `div` .

> <div> - groups content
> <section> - groups related content
> <article> - groups independent, self-contained content

Instructions

Camper Cat used `article` tags to wrap the posts on his blog page, but he forgot to use them around the top one. Change the `div` tag to use an `article` tag instead.

Challenge Seed

```
<h1>Deep Thoughts with Master Camper Cat</h1>
<main>
  <div>
    <h2>The Garfield Files: Lasagna as Training Fuel?</h2>
    <p>The internet is littered with varying opinions on nutritional paradigms, from catnip paleo to
hairball cleanses. But let's turn our attention to an often overlooked fitness fuel, and examine the
protein-carb-NOM trifecta that is lasagna...</p>
  </div>

  <img src="samuraiSwords.jpeg" alt="">

  <article>
    <h2>Defeating your Foe: the Red Dot is Ours!</h2>
    <p>Felines the world over have been waging war on the most persistent of foes. This red nemesis
combines both cunning stealth and lightening speed. But chin up, fellow fighters, our time for victory
may soon be near...</p>
  </article>

  <img src="samuraiSwords.jpeg" alt="">

  <article>
    <h2>Is Chuck Norris a Cat Person?</h2>
    <p>Chuck Norris is widely regarded as the premier martial artist on the planet, and it's a complete
coincidence anyone who disagrees with this fact mysteriously disappears soon after. But the real
question is, is he a cat person?...</p>
  </article>
</main>
```

Solution

```
// solution required
```

6. Make Screen Reader Navigation Easier with the header Landmark

Description

The next HTML5 element that adds semantic meaning and improves accessibility is the `header` tag. It's used to wrap introductory information or navigation links for its parent tag and works well around content that's repeated at the top on multiple pages. `header` shares the embedded landmark feature you saw with `main` , allowing assistive technologies to quickly navigate to that content. **Note**
`header` is meant for use in the `body` tag of your HTML document. This is different than the `head` element, which contains the page's title, meta information, etc.

Instructions

Camper Cat is writing some great articles about ninja training, and wants to add a page for them to his site. Change the top `div` that currently contains the `h1` to a `header` tag instead.

Challenge Seed

```
<body>

  <div>
    <h1>Training with Camper Cat</h1>
  </div>


  <main>
    <section id="stealth">
      <h2>Stealth &amp; Agility Training</h2>
      <article><h3>Climb foliage quickly using a minimum spanning tree approach</h3></article>
      <article><h3>No training is NP-complete without parkour</h3></article>
    </section>
    <section id="combat">
      <h2>Combat Training</h2>
      <article><h3>Dispatch multiple enemies with multithreaded tactics</h3></article>
      <article><h3>Goodbye world: 5 proven ways to knock out an opponent</h3></article>
    </section>
    <section id="weapons">
      <h2>Weapons Training</h2>
      <article><h3>Swords: the best tool to literally divide and conquer</h3></article>
      <article><h3>Breadth-first or depth-first in multi-weapon training?</h3></article>
    </section>
  </main>
</body>
```

Solution

```
// solution required
```

7. Make Screen Reader Navigation Easier with the nav Landmark

Description

The `nav` element is another HTML5 item with the embedded landmark feature for easy screen reader navigation. This tag is meant to wrap around the main navigation links in your page. If there are repeated site links at the bottom of the page, it isn't necessary to markup those with a `nav` tag as well. Using a `footer` (covered in the next challenge) is sufficient.

Instructions

Camper Cat included navigation links at the top of his training page, but wrapped them in a `div` . Change the `div` to a `nav` tag to improve the accessibility on his page.

Challenge Seed

```
<body>
  <header>
    <h1>Training with Camper Cat</h1>

    <div>
      <ul>
        <li><a href="#stealth">Stealth &amp; Agility</a></li>
        <li><a href="#combat">Combat</a></li>
        <li><a href="#weapons">Weapons</a></li>
      </ul>
    </div>

  </header>
  <main>
    <section id="stealth">
      <h2>Stealth &amp; Agility Training</h2>
      <article><h3>Climb foliage quickly using a minimum spanning tree approach</h3></article>
      <article><h3>No training is NP-complete without parkour</h3></article>
    </section>
    <section id="combat">
```

```
      <h2>Combat Training</h2>
      <article><h3>Dispatch multiple enemies with multithreaded tactics</h3></article>
      <article><h3>Goodbye world: 5 proven ways to knock out an opponent</h3></article>
    </section>
    <section id="weapons">
      <h2>Weapons Training</h2>
      <article><h3>Swords: the best tool to literally divide and conquer</h3></article>
      <article><h3>Breadth-first or depth-first in multi-weapon training?</h3></article>
    </section>
  </main>
</body>
```

Solution

```
// solution required
```

8. Make Screen Reader Navigation Easier with the footer Landmark

Description

Similar to `header` and `nav`, the `footer` element has a built-in landmark feature that allows assistive devices to quickly navigate to it. It's primarily used to contain copyright information or links to related documents that usually sit at the bottom of a page.

Instructions

Camper Cat's training page is making good progress. Change the `div` he used to wrap his copyright information at the bottom of the page to a `footer` element.

Challenge Seed

```
<body>
  <header>
    <h1>Training</h1>
    <nav>
      <ul>
        <li><a href="#stealth">Stealth &amp; Agility</a></li>
        <li><a href="#combat">Combat</a></li>
        <li><a href="#weapons">Weapons</a></li>
      </ul>
    </nav>
  </header>
  <main>
    <section id="stealth">
      <h2>Stealth &amp; Agility Training</h2>
      <article><h3>Climb foliage quickly using a minimum spanning tree approach</h3></article>
      <article><h3>No training is NP-complete without parkour</h3></article>
    </section>
    <section id="combat">
      <h2>Combat Training</h2>
      <article><h3>Dispatch multiple enemies with multithreaded tactics</h3></article>
      <article><h3>Goodbye world: 5 proven ways to knock out an opponent</h3></article>
    </section>
    <section id="weapons">
      <h2>Weapons Training</h2>
      <article><h3>Swords: the best tool to literally divide and conquer</h3></article>
      <article><h3>Breadth-first or depth-first in multi-weapon training?</h3></article>
    </section>
  </main>


  <div>&copy; 2018 Camper Cat</div>
```

```
</body>
```

Solution

```
// solution required
```

9. Improve Accessibility of Audio Content with the audio Element

Description

HTML5's `audio` element gives semantic meaning when it wraps sound or audio stream content in your markup. Audio content also needs a text alternative to be accessible to people who are deaf or hard of hearing. This can be done with nearby text on the page or a link to a transcript. The `audio` tag supports the `controls` attribute. This shows the browser default play, pause, and other controls, and supports keyboard functionality. This is a boolean attribute, meaning it doesn't need a value, its presence on the tag turns the setting on. Here's an example:

> <audio id="meowClip" controls>
>   <source src="audio/meow.mp3" type="audio/mpeg" />
>   <source src="audio/meow.ogg" type="audio/ogg" />
> </audio>

Note
Multimedia content usually has both visual and auditory components. It needs synchronized captions and a transcript so users with visual and/or auditory impairments can access it. Generally, a web developer is not responsible for creating the captions or transcript, but needs to know to include them.

Instructions

Time to take a break from Camper Cat and meet fellow camper Zersiax (@zersiax), a champion of accessibility and a screen reader user. To hear a clip of his screen reader in action, add an `audio` element after the `p`. Include the `controls` attribute. Then place a `source` tag inside the `audio` tags with the `src` attribute set to "https://s3.amazonaws.com/freecodecamp/screen-reader.mp3" and `type` attribute set to "audio/mpeg". **Note** The audio clip may sound fast and be difficult to understand, but that is a normal speed for screen reader users.

Challenge Seed

```
<body>
  <header>
    <h1>Real Coding Ninjas</h1>
  </header>
  <main>
    <p>A sound clip of Zersiax's screen reader in action.</p>



  </main>
</body>
```

Solution

```
// solution required
```

10. Improve Chart Accessibility with the figure Element

Description

HTML5 introduced the `figure` element, along with the related `figcaption` . Used together, these items wrap a visual representation (like an image, diagram, or chart) along with its caption. This gives a two-fold accessibility boost by both semantically grouping related content, and providing a text alternative that explains the `figure` . For data visualizations like charts, the caption can be used to briefly note the trends or conclusions for users with visual impairments. Another challenge covers how to move a table version of the chart's data off-screen (using CSS) for screen reader users. Here's an example - note that the `figcaption` goes inside the `figure` tags and can be combined with other elements:

> <figure>
>   <img src="roundhouseDestruction.jpeg" alt="Photo of Camper Cat executing a roundhouse kick">
>   <br>
>   <figcaption>
>   Master Camper Cat demonstrates proper form of a roundhouse kick.
>   </figcaption>
> </figure>

Instructions

Camper Cat is hard at work creating a stacked bar chart showing the amount of time per week to spend training in stealth, combat, and weapons. Help him structure his page better by changing the `div` tag he used to a `figure` tag, and the `p` tag that surrounds the caption to a `figcaption` tag.

Challenge Seed

```html
<body>
  <header>
    <h1>Training</h1>
    <nav>
      <ul>
        <li><a href="#stealth">Stealth &amp; Agility</a></li>
        <li><a href="#combat">Combat</a></li>
        <li><a href="#weapons">Weapons</a></li>
      </ul>
    </nav>
  </header>
  <main>
    <section>

      <!-- Add your code below this line -->
      <div>
        <!-- Stacked bar chart will go here -->
        <br>
        <p>Breakdown per week of time to spend training in stealth, combat, and weapons.</p>
      </div>
      <!-- Add your code above this line -->

    </section>
    <section id="stealth">
      <h2>Stealth &amp; Agility Training</h2>
      <article><h3>Climb foliage quickly using a minimum spanning tree approach</h3></article>
      <article><h3>No training is NP-complete without parkour</h3></article>
    </section>
    <section id="combat">
      <h2>Combat Training</h2>
      <article><h3>Dispatch multiple enemies with multithreaded tactics</h3></article>
      <article><h3>Goodbye world: 5 proven ways to knock out an opponent</h3></article>
    </section>
    <section id="weapons">
      <h2>Weapons Training</h2>
      <article><h3>Swords: the best tool to literally divide and conquer</h3></article>
      <article><h3>Breadth-first or depth-first in multi-weapon training?</h3></article>
    </section>
  </main>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
// solution required
```

11. Improve Form Field Accessibility with the label Element

Description

Improving accessibility with semantic HTML markup applies to using both appropriate tag names as well as attributes. The next several challenges cover some important scenarios using attributes in forms. The `label` tag wraps the text for a specific form control item, usually the name or label for a choice. This ties meaning to the item and makes the form more readable. The `for` attribute on a `label` tag explicitly associates that `label` with the form control and is used by screen readers. You learned about radio buttons and their labels in a lesson in the Basic HTML section. In that lesson, we wrapped the radio button input element inside a `label` element along with the label text in order to make the text clickable. Another way to achieve this is by using the `for` attribute as explained in this lesson. The value of the `for` attribute must be the same as the value of the `id` attribute of the form control. Here's an example:

> <form>
>   <label for="name">Name:</label>
>   <input type="text" id="name" name="name">
> </form>

Instructions

Camper Cat expects a lot of interest in his thoughtful blog posts and wants to include an email sign up form. Add a `for` attribute on the email `label` that matches the `id` on its `input` field.

Challenge Seed

```
<body>
  <header>
    <h1>Deep Thoughts with Master Camper Cat</h1>
  </header>
  <section>
    <form>
      <p>Sign up to receive Camper Cat's blog posts by email here!</p>


      <label>Email:</label>
      <input type="text" id="email" name="email">


      <input type="submit" name="submit" value="Submit">
    </form>
  </section>
  <article>
    <h2>The Garfield Files: Lasagna as Training Fuel?</h2>
    <p>The internet is littered with varying opinions on nutritional paradigms, from catnip paleo to
hairball cleanses. But let's turn our attention to an often overlooked fitness fuel, and examine the
protein-carb-NOM trifecta that is lasagna...</p>
  </article>
  <img src="samuraiSwords.jpeg" alt="">
  <article>
    <h2>Defeating your Foe: the Red Dot is Ours!</h2>
    <p>Felines the world over have been waging war on the most persistent of foes. This red nemesis
combines both cunning stealth and lightening speed. But chin up, fellow fighters, our time for victory
may soon be near...</p>
  </article>
  <img src="samuraiSwords.jpeg" alt="">
  <article>
    <h2>Is Chuck Norris a Cat Person?</h2>
    <p>Chuck Norris is widely regarded as the premier martial artist on the planet, and it's a complete
```

```
coincidence anyone who disagrees with this fact mysteriously disappears soon after. But the real
question is, is he a cat person?...</p>
  </article>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
// solution required
```

12. Wrap Radio Buttons in a fieldset Element for Better Accessibility

Description

The next form topic covers accessibility of radio buttons. Each choice is given a `label` with a `for` attribute tying to the `id` of the corresponding item as covered in the last challenge. Since radio buttons often come in a group where the user must choose one, there's a way to semantically show the choices are part of a set. The `fieldset` tag surrounds the entire grouping of radio buttons to achieve this. It often uses a `legend` tag to provide a description for the grouping, which is read by screen readers for each choice in the `fieldset` element. The `fieldset` wrapper and `legend` tag are not necessary when the choices are self-explanatory, like a gender selection. Using a `label` with the `for` attribute for each radio button is sufficient. Here's an example:

> ```
> <form>
>  <fieldset>
>   <legend>Choose one of these three items:</legend>
>   <input id="one" type="radio" name="items" value="one">
>   <label for="one">Choice One</label><br>
>   <input id="two" type="radio" name="items" value="two">
>   <label for="two">Choice Two</label><br>
>   <input id="three" type="radio" name="items" value="three">
>   <label for="three">Choice Three</label>
>  </fieldset>
> </form>
> ```

Instructions

Camper Cat wants information about the ninja level of his users when they sign up for his email list. He's added a set of radio buttons and learned from our last lesson to use label tags with `for` attributes for each choice. Go Camper Cat! However, his code still needs some help. Change the `div` tag surrounding the radio buttons to a `fieldset` tag, and change the `p` tag inside it to a `legend` .

Challenge Seed

```
<body>
  <header>
    <h1>Deep Thoughts with Master Camper Cat</h1>
  </header>
  <section>
    <form>
      <p>Sign up to receive Camper Cat's blog posts by email here!</p>
      <label for="email">Email:</label>
      <input type="text" id="email" name="email">


      <!-- Add your code below this line -->
      <div>
        <p>What level ninja are you?</p>
        <input id="newbie" type="radio" name="levels" value="newbie">
        <label for="newbie">Newbie Kitten</label><br>
```

```
        <input id="intermediate" type="radio" name="levels" value="intermediate">
        <label for="intermediate">Developing Student</label><br>
        <input id="master" type="radio" name="levels" value="master">
        <label for="master">Master</label>
      </div>
      <!-- Add your code above this line -->


      <input type="submit" name="submit" value="Submit">
    </form>
  </section>
  <article>
    <h2>The Garfield Files: Lasagna as Training Fuel?</h2>
    <p>The internet is littered with varying opinions on nutritional paradigms, from catnip paleo to
hairball cleanses. But let's turn our attention to an often overlooked fitness fuel, and examine the
protein-carb-NOM trifecta that is lasagna...</p>
  </article>
  <img src="samuraiSwords.jpeg" alt="">
  <article>
    <h2>Defeating your Foe: the Red Dot is Ours!</h2>
    <p>Felines the world over have been waging war on the most persistent of foes. This red nemesis
combines both cunning stealth and lightening speed. But chin up, fellow fighters, our time for victory
may soon be near...</p>
  </article>
  <img src="samuraiSwords.jpeg" alt="">
  <article>
    <h2>Is Chuck Norris a Cat Person?</h2>
    <p>Chuck Norris is widely regarded as the premier martial artist on the planet, and it's a complete
coincidence anyone who disagrees with this fact mysteriously disappears soon after. But the real
question is, is he a cat person?...</p>
  </article>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
// solution required
```

13. Add an Accessible Date Picker

Description

Forms often include the `input` field, which can be used to create several different form controls. The `type` attribute on this element indicates what kind of input will be created. You may have noticed the `text` and `submit` input types in prior challenges, and HTML5 introduced an option to specify a `date` field. Depending on browser support, a date picker shows up in the `input` field when it's in focus, which makes filling in a form easier for all users. For older browsers, the type will default to `text` , so it helps to show users the expected date format in the label or as placeholder text just in case. Here's an example:

> <label for="input1">Enter a date:</label>
> <input type="date" id="input1" name="input1">

Instructions

Camper Cat is setting up a Mortal Kombat tournament and wants to ask his competitors to see what date works best. Add an `input` tag with a `type` attribute of "date", an `id` attribute of "pickdate", and a `name` attribute of "date".

Challenge Seed

```
<body>
  <header>
    <h1>Tournaments</h1>
  </header>
  <main>
```

```
    <section>
      <h2>Mortal Kombat Tournament Survey</h2>
      <form>
        <p>Tell us the best date for the competition</p>
        <label for="pickdate">Preferred Date:</label>

        <!-- Add your code below this line -->



        <!-- Add your code above this line -->

        <input type="submit" name="submit" value="Submit">
      </form>
    </section>
  </main>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
<body>
  <header>
    <h1>Tournaments</h1>
  </header>
  <main>
    <section>
      <h2>Mortal Kombat Tournament Survey</h2>
      <form>
        <p>Tell us the best date for the competition</p>
        <label for="pickdate">Preferred Date:</label>
        <input type="date" id="pickdate" name="date">
        <input type="submit" name="submit" value="Submit">
      </form>
    </section>
  </main>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

14. Standardize Times with the HTML5 datetime Attribute

Description

Continuing with the date theme, HTML5 also introduced the `time` element along with a `datetime` attribute to standardize times. This is an inline element that can wrap a date or time on a page. A valid format of that date is held by the `datetime` attribute. This is the value accessed by assistive devices. It helps avoid confusion by stating a standardized version of a time, even if it's written in an informal or colloquial manner in the text. Here's an example: `<p>Master Camper Cat officiated the cage match between Goro and Scorpion <time datetime="2013-02-13">last Wednesday</time>, which ended in a draw.</p>`

Instructions

Camper Cat's Mortal Kombat survey results are in! Wrap a `time` tag around the text "Thursday, September 15<sup>th</sup>" and add a `datetime` attribute to it set to "2016-09-15".

Challenge Seed

```
<body>
  <header>
    <h1>Tournaments</h1>
  </header>
  <article>
```

```
    <h2>Mortal Kombat Tournament Survey Results</h2>

    <!-- Add your code below this line -->

    <p>Thank you to everyone for responding to Master Camper Cat's survey. The best day to host the vaunted Mortal Kombat tournament is Thursday, September 15<sup>th</sup>. May the best ninja win!</p>

    <!-- Add your code above this line -->

    <section>
      <h3>Comments:</h3>
      <article>
        <p>Posted by: Sub-Zero on <time datetime="2016-08-13T20:01Z">August 13<sup>th</sup></time></p>
        <p>Johnny Cage better be there, I'll finish him!</p>
      </article>
      <article>
        <p>Posted by: Doge on <time datetime="2016-08-15T08:12Z">August 15<sup>th</sup></time></p>
        <p>Wow, much combat, so mortal.</p>
      </article>
      <article>
        <p>Posted by: The Grim Reaper on <time datetime="2016-08-16T00:00Z">August 16<sup>th</sup></time></p>
        <p>Looks like I'll be busy that day.</p>
      </article>
    </section>
  </article>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
// solution required
```

15. Make Elements Only Visible to a Screen Reader by Using Custom CSS

Description

Have you noticed that all of the applied accessibility challenges so far haven't used any CSS? This is to show the importance of a logical document outline, and using semantically meaningful tags around your content before introducing the visual design aspect. However, CSS's magic can also improve accessibility on your page when you want to visually hide content meant only for screen readers. This happens when information is in a visual format (like a chart), but screen reader users need an alternative presentation (like a table) to access the data. CSS is used to position the screen reader-only elements off the visual area of the browser window. Here's an example of the CSS rules that accomplish this:

> .sr-only {
>   position: absolute;
>   left: -10000px;
>   width: 1px;
>   height: 1px;
>   top: auto;
>   overflow: hidden;
> }

Note
The following CSS approaches will NOT do the same thing:

- `display: none;` or `visibility: hidden;` hides content for everyone, including screen reader users
- Zero values for pixel sizes, such as `width: 0px; height: 0px;` removes that element from the flow of your document, meaning screen readers will ignore it

Instructions

Camper Cat created a really cool stacked bar chart for his training page, and put the data into a table for his visually impaired users. The table already has an `sr-only` class, but the CSS rules aren't filled in yet. Give the `position` an absolute value, the `left` a -10000px value, and the `width` and `height` both 1px values.

Challenge Seed

```
<head>
  <style>
  .sr-only {
    position: ;
    left: ;
    width: ;
    height: ;
    top: auto;
    overflow: hidden;
  }
  </style>
</head>
<body>
  <header>
    <h1>Training</h1>
    <nav>
      <ul>
        <li><a href="#stealth">Stealth &amp; Agility</a></li>
        <li><a href="#combat">Combat</a></li>
        <li><a href="#weapons">Weapons</a></li>
      </ul>
    </nav>
  </header>
  <section>
    <h2>Master Camper Cat's Beginner Three Week Training Program</h2>
    <figure>
      <!-- Stacked bar chart of weekly training-->
      <p>[Stacked bar chart]</p>
      <br />
      <figcaption>Breakdown per week of time to spend training in stealth, combat, and weapons.
</figcaption>
    </figure>
    <table class="sr-only">
      <caption>Hours of Weekly Training in Stealth, Combat, and Weapons</caption>
      <thead>
        <tr>
          <th></th>
          <th scope="col">Stealth &amp; Agility</th>
          <th scope="col">Combat</th>
          <th scope="col">Weapons</th>
          <th scope="col">Total</th>
        </tr>
      </thead>
      <tbody>
        <tr>
          <th scope="row">Week One</th>
          <td>3</td>
          <td>5</td>
          <td>2</td>
          <td>10</td>
        </tr>
        <tr>
          <th scope="row">Week Two</th>
          <td>4</td>
          <td>5</td>
          <td>3</td>
          <td>12</td>
        </tr>
        <tr>
          <th scope="row">Week Three</th>
          <td>4</td>
          <td>6</td>
          <td>3</td>
          <td>13</td>
        </tr>
      </tbody>
    </table>
  </section>
  <section id="stealth">
    <h2>Stealth &amp; Agility Training</h2>
    <article><h3>Climb foliage quickly using a minimum spanning tree approach</h3></article>
    <article><h3>No training is NP-complete without parkour</h3></article>
  </section>
  <section id="combat">
    <h2>Combat Training</h2>
    <article><h3>Dispatch multiple enemies with multithreaded tactics</h3></article>
    <article><h3>Goodbye, world: 5 proven ways to knock out an opponent</h3></article>
  </section>
  <section id="weapons">
    <h2>Weapons Training</h2>
    <article><h3>Swords: the best tool to literally divide and conquer</h3></article>
    <article><h3>Breadth-first or depth-first in multi-weapon training?</h3></article>
  </section>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
// solution required
```

16. Improve Readability with High Contrast Text

Description

Low contrast between the foreground and background colors can make text difficult to read. Sufficient contrast improves the readability of your content, but what exactly does "sufficient" mean? The Web Content Accessibility Guidelines (WCAG) recommend at least a 4.5 to 1 contrast ratio for normal text. The ratio is calculated by comparing the relative luminance values of two colors. This ranges from 1:1 for the same color, or no contrast, to 21:1 for white against black, the strongest contrast. There are many contrast checking tools available online that calculate this ratio for you.

Instructions

Camper Cat's choice of light gray text on a white background for his recent blog post has a 1.5:1 contrast ratio, making it hard to read. Change the `color` of the text from the current gray (`#D3D3D3`) to a darker gray (`#636363`) to improve the contrast ratio to 6:1.

Challenge Seed

```
<head>
  <style>
  body {
    color: #D3D3D3;
    background-color: #FFF;
  }
  </style>
</head>
<body>
  <header>
    <h1>Deep Thoughts with Master Camper Cat</h1>
  </header>
  <article>
    <h2>A Word on the Recent Catnip Doping Scandal</h2>
    <p>The influence that catnip has on feline behavior is well-documented, and its use as an herbal
supplement in competitive ninja circles remains controversial. Once again, the debate to ban the
substance is brought to the public's attention after the high-profile win of Kittytron, a long-time
proponent and user of the green stuff, at the Claw of Fury tournament.</p>
    <p>As I've stated in the past, I firmly believe a true ninja's skills must come from within, with no
external influences. My own catnip use shall continue as purely recreational.</p>
  </article>
</body>
```

Solution

```
// solution required
```

17. Avoid Colorblindness Issues by Using Sufficient Contrast

Description

Color is a large part of visual design, but its use introduces two accessibility issues. First, color alone should not be used as the only way to convey important information because screen reader users won't see it. Second, foreground and background colors need sufficient contrast so colorblind users can distinguish them. Previous challenges covered having text alternatives to address the first issue. The last challenge introduced contrast checking tools to help with the second. The WCAG-recommended contrast ratio of 4.5:1 applies for color use as well as gray-scale combinations. Colorblind users have trouble distinguishing some colors from others - usually in hue but sometimes lightness as well. You may recall the contrast ratio is calculated using the relative luminance (or lightness) values of the foreground and background colors. In practice, the 4.5:1 contrast ratio can be reached by shading (adding black to) the darker color and tinting (adding white to) the lighter color. Darker shades on the color wheel are considered to be shades of blues, violets, magentas, and reds, whereas lighter tinted colors are oranges, yellows, greens, and blue-greens.

Instructions

Camper Cat is experimenting with using color for his blog text and background, but his current combination of a greenish `background-color` with maroon text `color` has a 2.5:1 contrast ratio. You can easily adjust the lightness of the colors since he declared them using the CSS `hsl()` property (which stands for hue, saturation, lightness) by changing the third argument. Increase the `background-color` lightness value from 35% to 55%, and decrease the `color` lightness value from 20% to 15%. This improves the contrast to 5.9:1.

Challenge Seed

```
<head>
  <style>
  body {
    color: hsl(0, 55%, 20%);
    background-color: hsl(120, 25%, 35%);
  }
  </style>
</head>
<body>
  <header>
    <h1>Deep Thoughts with Master Camper Cat</h1>
  </header>
  <article>
    <h2>A Word on the Recent Catnip Doping Scandal</h2>
    <p>The influence that catnip has on feline behavior is well-documented, and its use as an herbal
supplement in competitive ninja circles remains controversial. Once again, the debate to ban the
substance is brought to the public's attention after the high-profile win of Kittytron, a long-time
proponent and user of the green stuff, at the Claw of Fury tournament.</p>
    <p>As I've stated in the past, I firmly believe a true ninja's skills must come from within, with no
external influences. My own catnip use shall continue as purely recreational.</p>
  </article>
</body>
```

Solution

```
var code = "body {color: hsl(0, 55%, 15%); background-color: hsl(120, 25%, 55%);}"
```

18. Avoid Colorblindness Issues by Carefully Choosing Colors that Convey Information

Description

There are various forms of colorblindness. These can range from a reduced sensitivity to a certain wavelength of light to the inability to see color at all. The most common form is a reduced sensitivity to detect greens. For example, if two similar green colors are the foreground and background color of your content, a colorblind user may not be able to distinguish them. Close colors can be thought of as neighbors on the color wheel, and those combinations should be avoided when conveying important information. **Note**
Some online color picking tools include visual simulations of how colors appear for different types of colorblindness. These are great resources in addition to online contrast checking calculators.

Instructions

Camper Cat is testing different styles for an important button, but the yellow (`#FFFF33`) `background-color` and the green (`#33FF33`) text `color` are neighboring hues on the color wheel and virtually indistinguishable for some colorblind users. (Their similar lightness also fails the contrast ratio check). Change the text `color` to a dark blue (`#003366`) to solve both problems.

Challenge Seed

```
<head>
  <style>
  button {
    color: #33FF33;
    background-color: #FFFF33;
    font-size: 14px;
    padding: 10px;
  }
  </style>
</head>
<body>
  <header>
    <h1>Danger!</h1>
  </header>
  <button>Delete Internet</button>
</body>
```

Solution

```
// solution required
```

19. Give Links Meaning by Using Descriptive Link Text

Description

Screen reader users have different options for what type of content their device reads. This includes skipping to (or over) landmark elements, jumping to the main content, or getting a page summary from the headings. Another option is to only hear the links available on a page. Screen readers do this by reading the link text, or what's between the anchor (`a`) tags. Having a list of "click here" or "read more" links isn't helpful. Instead, you should use brief but descriptive text within the `a` tags to provide more meaning for these users.

Instructions

The link text that Camper Cat is using is not very descriptive without the surrounding context. Move the anchor (`a`) tags so they wrap around the text "information about batteries" instead of "Click here".

Challenge Seed

```
<body>
  <header>
    <h1>Deep Thoughts with Master Camper Cat</h1>
  </header>
  <article>
    <h2>Defeating your Foe: the Red Dot is Ours!</h2>
    <p>Felines the world over have been waging war on the most persistent of foes. This red nemesis
combines both cunning stealth and lightening speed. But chin up, fellow fighters, our time for victory
may soon be near. <a href="">Click here</a> for information about batteries</p>
  </article>
</body>
```

Solution

```
// solution required
```

21. Use tabindex to Add Keyboard Focus to an Element

Description

The HTML `tabindex` attribute has three distinct functions relating to an element's keyboard focus. When it's on a tag, it indicates that element can be focused on. The value (an integer that's positive, negative, or zero) determines the behavior. Certain elements, such as links and form controls, automatically receive keyboard focus when a user tabs through a page. It's in the same order as the elements come in the HTML source markup. This same functionality can be given to other elements, such as `div` , `span` , and `p` , by placing a `tabindex="0"` attribute on them. Here's an example: `<div tabindex="0">I need keyboard focus!</div>` **Note**
A negative `tabindex` value (typically -1) indicates that an element is focusable, but is not reachable by the keyboard. This method is generally used to bring focus to content programmatically (like when a `div` used for a pop-up window is activated), and is beyond the scope of these challenges.

Instructions

Camper Cat created a new survey to collect information about his users. He knows input fields automatically get keyboard focus, but he wants to make sure his keyboard users pause at the instructions while tabbing through the items. Add a `tabindex` attribute to the `p` tag and set its value to "0". Bonus - using `tabindex` also enables the CSS pseudo-class `:focus` to work on the `p` tag.

Challenge Seed

```
<head>
  <style>
  p:focus {
    background-color: yellow;
  }
  </style>
</head>
<body>
  <header>
    <h1>Ninja Survey</h1>
  </header>
  <section>
    <form>


      <p>Instructions: Fill in ALL your information then click <b>Submit</b></p>
      <label for="username">Username:</label>
      <input type="text" id="username" name="username"><br>
      <fieldset>
        <legend>What level ninja are you?</legend>
        <input id="newbie" type="radio" name="levels" value="newbie">
        <label for="newbie">Newbie Kitten</label><br>
        <input id="intermediate" type="radio" name="levels" value="intermediate">
        <label for="intermediate">Developing Student</label><br>
        <input id="master" type="radio" name="levels" value="master">
        <label for="master">9th Life Master</label>
      </fieldset>
      <br>
      <fieldset>
      <legend>Select your favorite weapons:</legend>
      <input id="stars" type="checkbox" name="weapons" value="stars">
      <label for="stars">Throwing Stars</label><br>
      <input id="nunchucks" type="checkbox" name="weapons" value="nunchucks">
      <label for="nunchucks">Nunchucks</label><br>
      <input id="sai" type="checkbox" name="weapons" value="sai">
      <label for="sai">Sai Set</label><br>
      <input id="sword" type="checkbox" name="weapons" value="sword">
      <label for="sword">Sword</label>
      </fieldset>
      <br>
      <input type="submit" name="submit" value="Submit">
    </form><br>
  </section>
  <footer>&copy; 2018 Camper Cat</footer>
</body>
```

Solution

```
// solution required
```

22. Use tabindex to Specify the Order of Keyboard Focus for Several Elements

Description

The `tabindex` attribute also specifies the exact tab order of elements. This is achieved when the value of the attribute is set to a positive number of 1 or higher. Setting a tabindex="1" will bring keyboard focus to that element first. Then it cycles through the sequence of specified `tabindex` values (2, 3, etc.), before moving to default and `tabindex="0"` items. It's important to note that when the tab order is set this way, it overrides the default order (which uses the HTML source). This may confuse users who are expecting to start navigation from the top of the page. This technique may be necessary in some circumstances, but in terms of accessibility, take care before applying it. Here's an example: `<div tabindex="1">I get keyboard focus, and I get it first!</div>` `<div tabindex="2">I get keyboard focus, and I get it second!</div>`

Instructions

Camper Cat has a search field on his Inspirational Quotes page that he plans to position in the upper right corner with CSS. He wants the search `input` and submit `input` form controls to be the first two items in the tab order. Add a `tabindex` attribute set to "1" to the search `input`, and a `tabindex` attribute set to "2" to the submit `input`.

Challenge Seed

```
<body>
  <header>
    <h1>Even Deeper Thoughts with Master Camper Cat</h1>
    <nav>
```

```
        <ul>
          <li><a href="">Home</a></li>
          <li><a href="">Blog</a></li>
          <li><a href="">Training</a></li>
        </ul>
      </nav>
    </header>
    <form>
      <label for="search">Search:</label>


      <input type="search" name="search" id="search">
      <input type="submit" name="submit" value="Submit" id="submit">


    </form>
    <h2>Inspirational Quotes</h2>
    <blockquote>
      <p>&ldquo;There's no Theory of Evolution, just a list of creatures I've allowed to live.&rdquo;<br>
      - Chuck Norris</p>
    </blockquote>
    <blockquote>
      <p>&ldquo;Wise men say forgiveness is divine, but never pay full price for late pizza.&rdquo;<br>
      - TMNT</p>
    </blockquote>
    <footer>&copy; 2018 Camper Cat</footer>
  </body>
```

Solution

```
// solution required
```

Responsive Web Design Principles

1. Create a Media Query

Description

Media Queries are a new technique introduced in CSS3 that change the presentation of content based on different viewport sizes. The viewport is a user's visible area of a web page, and is different depending on the device used to access the site. Media Queries consist of a media type, and if that media type matches the type of device the document is displayed on, the styles are applied. You can have as many selectors and styles inside your media query as you want. Here's an example of a media query that returns the content when the device's width is less than or equal to 100px: `@media (max-width: 100px) { /* CSS Rules */ }` and the following media query returns the content when the device's height is more than or equal to 350px: `@media (min-height: 350px) { /* CSS Rules */ }` Remember, the CSS inside the media query is applied only if the media type matches that of the device being used.

Instructions

Add a media query, so that the `p` tag has a `font-size` of 10px when the device's height is less than or equal to 800px.

Challenge Seed

```
<style>
  p {
    font-size: 20px;
  }

  /* Add media query below */
```

```
</style>

<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus quis tempus massa. Aenean erat nisl,
gravida vel vestibulum cursus, interdum sit amet lectus. Sed sit amet quam nibh. Suspendisse quis
tincidunt nulla. In hac habitasse platea dictumst. Ut sit amet pretium nisl. Vivamus vel mi sem. Aenean
sit amet consectetur sem. Suspendisse pretium, purus et gravida consequat, nunc ligula ultricies diam,
at aliquet velit libero a dui.</p>
```

Solution

```
<style>
  p {
    font-size: 20px;
  }

  @media (max-height: 800px) {
    p {
      font-size: 10px;
    }
  }
</style>

<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus quis tempus massa. Aenean erat nisl,
gravida vel vestibulum cursus, interdum sit amet lectus. Sed sit amet quam nibh. Suspendisse quis
tincidunt nulla. In hac habitasse platea dictumst. Ut sit amet pretium nisl. Vivamus vel mi sem. Aenean
sit amet consectetur sem. Suspendisse pretium, purus et gravida consequat, nunc ligula ultricies diam,
at aliquet velit libero a dui.</p>
```

2. Make an Image Responsive

Description

Making images responsive with CSS is actually very simple. Instead of applying an absolute width to an element: `img { width: 720px; }` You can use:

> img {
>   max-width: 100%;
>   display: block;
>   height: auto;
> }

The `max-width` property of 100% scales the image to fit the width of its container, but the image won't stretch wider than its original width. Setting the `display` property to block changes the image from an inline element (its default), to a block element on its own line. The `height` property of auto keeps the original aspect ratio of the image.

Instructions

Add style rules for the `img` tag to make it responsive to the size of its container. It should display as a block-level element, it should fit the full width of its container without stretching, and it should keep its original aspect ratio.

Challenge Seed

```
<style>

</style>

<img src="https://s3.amazonaws.com/freecodecamp/FCCStickerPack.jpg" alt="freeCodeCamp stickers set">
```

Solution

```
// solution required
```

3. Use a Retina Image for Higher Resolution Displays

Description

With the increase of internet connected devices, their sizes and specifications vary, and the displays they use could be different externally and internally. Pixel density is an aspect that could be different on one device from others and this density is known as Pixel Per Inch(PPI) or Dots Per Inch(DPI). The most famous such display is the one known as a "Retina Display" on the latest Apple MacBook Pro notebooks, and recently iMac computers. Due to the difference in pixel density between a "Retina" and "Non-Retina" displays, some images who have not been made with a High-Resolution Display in mind could look "pixelated" when rendered on a High-Resolution display.
The simplest way to make your images properly appear on High-Resolution Displays, such as the MacBook Pros "retina display" is to define their `width` and `height` values as only half of what the original file is. Here is an example of an image that is only using half of the original height and width:

> <style>
>   img { height: 250px; width: 250px; }
> </style>
> <img src="coolPic500x500" alt="A most excellent picture">

Instructions

Set the `width` and `height` of the `img` tag to half of their original values. In this case, both the original `height` and the original `width` are 200px.

Challenge Seed

```
<style>

</style>

<img src="https://s3.amazonaws.com/freecodecamp/FCCStickers-CamperBot200x200.jpg" alt="freeCodeCamp
sticker that says 'Because CamperBot Cares'">
```

Solution

```
// solution required
```

4. Make Typography Responsive

Description

Instead of using `em` or `px` to size text, you can use viewport units for responsive typography. Viewport units, like percentages, are relative units, but they are based off different items. Viewport units are relative to the viewport dimensions (width or height) of a device, and percentages are relative to the size of the parent container element. The four different viewport units are:

- `vw: 10vw` would be 10% of the viewport's width.
- `vh: 3vh` would be 3% of the viewport's height.
- `vmin: 70vmin` would be 70% of the viewport's smaller dimension (height vs. width).
- `vmax: 100vmax` would be 100% of the viewport's bigger dimension (height vs. width).

Here is an example that sets a body tag to 30% of the viewport's width. `body { width: 30vw; }`

Instructions

Set the `width` of the `h2` tag to 80% of the viewport's width and the `width` of the paragraph as 75% of the viewport's smaller dimension.

Challenge Seed

```
<style>

</style>

<h2>Importantus Ipsum</h2>
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus quis tempus massa. Aenean erat nisl,
gravida vel vestibulum cursus, interdum sit amet lectus. Sed sit amet quam nibh. Suspendisse quis
tincidunt nulla. In hac habitasse platea dictumst. Ut sit amet pretium nisl. Vivamus vel mi sem. Aenean
sit amet consectetur sem. Suspendisse pretium, purus et gravida consequat, nunc ligula ultricies diam,
at aliquet velit libero a dui.</p>
```

Solution

```
var code = "h2 {width: 80vw;} p {width: 75vmin;}"
```

CSS Flexbox

1. Use display: flex to Position Two Boxes

Description

This section uses alternating challenge styles to show how to use CSS to position elements in a flexible way. First, a challenge will explain theory, then a practical challenge using a simple tweet component will apply the flexbox concept. Placing the CSS property `display: flex;` on an element allows you to use other flex properties to build a responsive page.

Instructions

Add the CSS property `display` to `#box-container` and set its value to flex.

Challenge Seed

```
<style>
  #box-container {
    height: 500px;

  }

  #box-1 {
    background-color: dodgerblue;
    width: 50%;
    height: 50%;
  }

  #box-2 {
    background-color: orangered;
    width: 50%;
    height: 50%;
  }
</style>
<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

2. Add Flex Superpowers to the Tweet Embed

Description

To the right is the tweet embed that will be used as the practical example. Some of the elements would look better with a different layout. The last challenge demonstrated `display: flex` . Here you'll add it to several components in the tweet embed to start adjusting their positioning.

Instructions

Add the CSS property `display: flex` to all of the following items - note that the selectors are already set up in the CSS: `header` , the header's `.profile-name` , the header's `.follow-btn` , the header's `h3` and `h4` , the `footer` , and the footer's `.stats` .

Challenge Seed

```
<style>
  body {
    font-family: Arial, sans-serif;
  }
  header {

  }
  header .profile-thumbnail {
    width: 50px;
    height: 50px;
    border-radius: 4px;
  }
  header .profile-name {

    margin-left: 10px;
  }
  header .follow-btn {

    margin: 0 0 0 auto;
  }
  header .follow-btn button {
    border: 0;
    border-radius: 3px;
    padding: 5px;
  }
  header h3, header h4 {

    margin: 0;
  }
  #inner p {
    margin-bottom: 10px;
    font-size: 20px;
  }
  #inner hr {
    margin: 20px 0;
    border-style: solid;
    opacity: 0.1;
  }
  footer {

  }
  footer .stats {

    font-size: 15px;
  }
  footer .stats strong {
    font-size: 18px;
  }
  footer .stats .likes {
    margin-left: 10px;
  }
  footer .cta {
    margin-left: auto;
  }
  footer .cta button {
    border: 0;
    background: transparent;
  }
</style>
<header>
  <img
src="https://pbs.twimg.com/profile_images/378800000147359764/54dc9a5c34e912f34db8662d53d16a39_400x400.png"
 alt="Quincy Larson's profile picture" class="profile-thumbnail">
  <div class="profile-name">
    <h3>Quincy Larson</h3>
    <h4>@ossia</h4>
  </div>
  <div class="follow-btn">
    <button>Follow</button>
  </div>
</header>
<div id="inner">
  <p>I meet so many people who are in search of that one trick that will help them work smart. Even if
you work smart, you still have to work hard.</p>
  <span class="date">1:32 PM - 12 Jan 2018</span>
  <hr>
</div>
<footer>
  <div class="stats">
    <div class="Retweets">
      <strong>107</strong> Retweets
    </div>
    <div class="likes">
      <strong>431</strong> Likes
    </div>
  </div>
  <div class="cta">
    <button class="share-btn">Share</button>
    <button class="retweet-btn">Retweet</button>
    <button class="like-btn">Like</button>
  </div>
</footer>
```

Solution

```
<style>
  body {
    font-family: Arial, sans-serif;
  }
  header {
   display: flex;
  }
  header .profile-thumbnail {
    width: 50px;
    height: 50px;
    border-radius: 4px;
  }
  header .profile-name {
    display: flex;
    margin-left: 10px;
  }
  header .follow-btn {
    display: flex;
    margin: 0 0 0 auto;
  }
  header .follow-btn button {
    border: 0;
    border-radius: 3px;
    padding: 5px;
  }
  header h3, header h4 {
    display: flex;
    margin: 0;
  }
  #inner p {
    margin-bottom: 10px;
    font-size: 20px;
  }
  #inner hr {
    margin: 20px 0;
    border-style: solid;
    opacity: 0.1;
  }
  footer {
    display: flex;
  }
  footer .stats {
    display: flex;
    font-size: 15px;
  }
  footer .stats strong {
    font-size: 18px;
  }
  footer .stats .likes {
    margin-left: 10px;
  }
  footer .cta {
    margin-left: auto;
  }
  footer .cta button {
    border: 0;
    background: transparent;
  }
</style>
<header>
  <img
src="https://pbs.twimg.com/profile_images/378800000147359764/54dc9a5c34e912f34db8662d53d16a39_400x400.png"
 alt="Quincy Larson's profile picture" class="profile-thumbnail">
  <div class="profile-name">
    <h3>Quincy Larson</h3>
    <h4>@ossia</h4>
  </div>
  <div class="follow-btn">
    <button>Follow</button>
  </div>
</header>
<div id="inner">
  <p>I meet so many people who are in search of that one trick that will help them work smart. Even if
you work smart, you still have to work hard.</p>
  <span class="date">1:32 PM - 12 Jan 2018</span>
  <hr>
</div>
<footer>
  <div class="stats">
    <div class="Retweets">
      <strong>107</strong> Retweets
    </div>
    <div class="likes">
      <strong>431</strong> Likes
    </div>
  </div>
  <div class="cta">
    <button class="share-btn">Share</button>
    <button class="retweet-btn">Retweet</button>
    <button class="like-btn">Like</button>
  </div>
</footer>
```

3. Use the flex-direction Property to Make a Row

Description

Adding `display: flex` to an element turns it into a flex container. This makes it possible to align any children of that element into rows or columns. You do this by adding the `flex-direction` property to the parent item and setting it to row or column. Creating a row will align the children horizontally, and creating a column will align the children vertically. Other options for `flex-direction` are row-reverse and column-reverse. **Note**
The default value for the `flex-direction` property is `row`.

Instructions

Add the CSS property `flex-direction` to the `#box-container` element, and give it a value of `row-reverse`.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;

  }
  #box-1 {
    background-color: dodgerblue;
    width: 50%;
    height: 50%;
  }

  #box-2 {
    background-color: orangered;
    width: 50%;
    height: 50%;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

4. Apply the flex-direction Property to Create Rows in the Tweet Embed

Description

The `header` and `footer` in the tweet embed example have child items that could be arranged as rows using the `flex-direction` property. This tells CSS to align the children horizontally.

Instructions

Add the CSS property `flex-direction` to both the `header` and `footer` and set the value to row.

Challenge Seed

```
<style>
  body {
    font-family: Arial, sans-serif;
  }
  header {
    display: flex;

  }
  header .profile-thumbnail {
    width: 50px;
    height: 50px;
    border-radius: 4px;
  }
  header .profile-name {
    display: flex;
    margin-left: 10px;
  }
  header .follow-btn {
    display: flex;
    margin: 0 0 0 auto;
  }
  header .follow-btn button {
    border: 0;
    border-radius: 3px;
    padding: 5px;
  }
  header h3, header h4 {
    display: flex;
    margin: 0;
  }
  #inner p {
    margin-bottom: 10px;
    font-size: 20px;
  }
  #inner hr {
    margin: 20px 0;
    border-style: solid;
    opacity: 0.1;
  }
  footer {
    display: flex;

  }
  footer .stats {
    display: flex;
    font-size: 15px;
  }
  footer .stats strong {
    font-size: 18px;
  }
  footer .stats .likes {
    margin-left: 10px;
  }
  footer .cta {
    margin-left: auto;
  }
  footer .cta button {
    border: 0;
    background: transparent;
  }
</style>
<header>
  <img
src="https://pbs.twimg.com/profile_images/378800000147359764/54dc9a5c34e912f34db8662d53d16a39_400x400.png"
 alt="Quincy Larson's profile picture" class="profile-thumbnail">
  <div class="profile-name">
    <h3>Quincy Larson</h3>
    <h4>@ossia</h4>
  </div>
  <div class="follow-btn">
    <button>Follow</button>
  </div>
</header>
<div id="inner">
  <p>I meet so many people who are in search of that one trick that will help them work smart. Even if
you work smart, you still have to work hard.</p>
  <span class="date">1:32 PM - 12 Jan 2018</span>
  <hr>
</div>
<footer>
```

```
  <div class="stats">
    <div class="Retweets">
      <strong>107</strong> Retweets
    </div>
    <div class="likes">
      <strong>431</strong> Likes
    </div>
  </div>
  <div class="cta">
    <button class="share-btn">Share</button>
    <button class="retweet-btn">Retweet</button>
    <button class="like-btn">Like</button>
  </div>
</footer>
```

Solution

```
var code = "header {flex-direction: row;} footer {flex-direction: row;}"
```

5. Use the flex-direction Property to Make a Column

Description

The last two challenges used the `flex-direction` property set to row. This property can also create a column by vertically stacking the children of a flex container.

Instructions

Add the CSS property `flex-direction` to the `#box-container` element, and give it a value of column.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;

  }
  #box-1 {
    background-color: dodgerblue;
    width: 50%;
    height: 50%;
  }

  #box-2 {
    background-color: orangered;
    width: 50%;
    height: 50%;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

6. Apply the flex-direction Property to Create a Column in the Tweet Embed

Description

The tweet embed `header` and `footer` used the `flex-direction` property earlier with a row value. Similarly, the items inside the `.profile-name` element would work well stacked as a column.

Instructions

Add the CSS property `flex-direction` to the header's `.profile-name` element and set the value to column.

Challenge Seed

```
<style>
  body {
    font-family: Arial, sans-serif;
  }
  header, footer {
    display: flex;
    flex-direction: row;
  }
  header .profile-thumbnail {
    width: 50px;
    height: 50px;
    border-radius: 4px;
  }
  header .profile-name {
    display: flex;

    margin-left: 10px;
  }
  header .follow-btn {
    display: flex;
    margin: 0 0 0 auto;
  }
  header .follow-btn button {
    border: 0;
    border-radius: 3px;
    padding: 5px;
  }
  header h3, header h4 {
    display: flex;
    margin: 0;
  }
  #inner p {
    margin-bottom: 10px;
    font-size: 20px;
  }
  #inner hr {
    margin: 20px 0;
    border-style: solid;
    opacity: 0.1;
  }
  footer .stats {
    display: flex;
    font-size: 15px;
  }
  footer .stats strong {
    font-size: 18px;
  }
  footer .stats .likes {
    margin-left: 10px;
  }
  footer .cta {
    margin-left: auto;
  }
  footer .cta button {
    border: 0;
    background: transparent;
  }
</style>
<header>
  <img src="https://pbs.twimg.com/profile_images/378800000147359764/54dc9a5c34e912f34db8662d53d16a39_400x400.png" alt="Quincy Larson's profile picture" class="profile-thumbnail">
  <div class="profile-name">
    <h3>Quincy Larson</h3>
    <h4>@ossia</h4>
  </div>
  <div class="follow-btn">
    <button>Follow</button>
  </div>
</header>
<div id="inner">
  <p>I meet so many people who are in search of that one trick that will help them work smart. Even if you work smart, you still have to work hard.</p>
  <span class="date">1:32 PM - 12 Jan 2018</span>
  <hr>
</div>
<footer>
  <div class="stats">
    <div class="Retweets">
      <strong>107</strong> Retweets
    </div>
    <div class="likes">
      <strong>431</strong> Likes
    </div>
  </div>
  <div class="cta">
    <button class="share-btn">Share</button>
    <button class="retweet-btn">Retweet</button>
    <button class="like-btn">Like</button>
  </div>
</footer>
```

Solution

```
// solution required
```

7. Align Elements Using the justify-content Property

Description

Sometimes the flex items within a flex container do not fill all the space in the container. It is common to want to tell CSS how to align and space out the flex items a certain way. Fortunately, the `justify-content` property has several options to do this. But first, there is some important terminology to understand before reviewing those options. Here is a useful image showing a row to illustrate the concepts below. Recall that setting a flex container as a row places the flex items side-by-side from left-to-right. A flex container set as a column places the flex items in a vertical stack from top-to-bottom. For each, the direction the flex items are arranged is called the **main axis**. For a row, this is a horizontal line that cuts through each item. And for a column, the main axis is a vertical line through the items. There are several options for how to space the flex items along the line that is the main axis. One of the most commonly used is `justify-content: center;` , which aligns all the flex items to the center inside the flex container. Others options include:

- `flex-start` : aligns items to the start of the flex container. For a row, this pushes the items to the left of the container. For a column, this pushes the items to the top of the container.
- `flex-end` : aligns items to the end of the flex container. For a row, this pushes the items to the right of the container. For a column, this pushes the items to the bottom of the container.
- `space-between` : aligns items to the center of the main axis, with extra space placed between the items. The first and last items are pushed to the very edge of the flex container. For example, in a row the first item is against the left side of the container, the last item is against the right side of the container, then the other items between them are spaced evenly.

- `space-around` : similar to `space-between` but the first and last items are not locked to the edges of the container, the space is distributed around all the items

Instructions

An example helps show this property in action. Add the CSS property `justify-content` to the `#box-container` element, and give it a value of center. **Bonus**
Try the other options for the `justify-content` property in the code editor to see their differences. But note that a value of center is the only one that will pass this challenge.

Challenge Seed

```
<style>
  #box-container {
    background: gray;
    display: flex;
    height: 500px;

  }
  #box-1 {
    background-color: dodgerblue;
    width: 25%;
    height: 100%;
  }

  #box-2 {
    background-color: orangered;
    width: 25%;
    height: 100%;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

8. Use the justify-content Property in the Tweet Embed

Description

The last challenge showed an example of the `justify-content` property. For the tweet embed, this property can be applied to align the items in the `.profile-name` element.

Instructions

Add the CSS property `justify-content` to the header's `.profile-name` element and set the value to any of the options from the last challenge.

Challenge Seed

```
<style>
  body {
    font-family: Arial, sans-serif;
  }
  header, footer {
    display: flex;
    flex-direction: row;
  }
  header .profile-thumbnail {
    width: 50px;
    height: 50px;
    border-radius: 4px;
  }
  header .profile-name {
    display: flex;
    flex-direction: column;

    margin-left: 10px;
  }
  header .follow-btn {
    display: flex;
    margin: 0 0 0 auto;
  }
  header .follow-btn button {
    border: 0;
    border-radius: 3px;
    padding: 5px;
  }
  header h3, header h4 {
    display: flex;
    margin: 0;
  }
  #inner p {
    margin-bottom: 10px;
    font-size: 20px;
  }
  #inner hr {
    margin: 20px 0;
    border-style: solid;
    opacity: 0.1;
  }
  footer .stats {
    display: flex;
    font-size: 15px;
  }
  footer .stats strong {
    font-size: 18px;
  }
  footer .stats .likes {
    margin-left: 10px;
  }
  footer .cta {
    margin-left: auto;
  }
  footer .cta button {
    border: 0;
    background: transparent;
  }
</style>
<header>
  <img src="https://pbs.twimg.com/profile_images/378800000147359764/54dc9a5c34e912f34db8662d53d16a39_400x400.png" alt="Quincy Larson's profile picture" class="profile-thumbnail">
  <div class="profile-name">
    <h3>Quincy Larson</h3>
    <h4>@ossia</h4>
  </div>
  <div class="follow-btn">
    <button>Follow</button>
  </div>
</header>
<div id="inner">
  <p>I meet so many people who are in search of that one trick that will help them work smart. Even if you work smart, you still have to work hard.</p>
  <span class="date">1:32 PM - 12 Jan 2018</span>
  <hr>
</div>
<footer>
  <div class="stats">
    <div class="Retweets">
      <strong>107</strong> Retweets
    </div>
    <div class="likes">
      <strong>431</strong> Likes
    </div>
  </div>
  <div class="cta">
    <button class="share-btn">Share</button>
    <button class="retweet-btn">Retweet</button>
    <button class="like-btn">Like</button>
  </div>
</footer>
```

Solution

```
var code = "header .profile-name {display: flex; flex-direction: column; justify-content: center;
margin-left: 10px;}"
```

9. Align Elements Using the align-items Property

Description

The `align-items` property is similar to `justify-content` . Recall that the `justify-content` property aligned flex items along the main axis. For rows, the main axis is a horizontal line and for columns it is a vertical line. Flex containers also have a **cross axis** which is the opposite of the main axis. For rows, the cross axis is vertical and for columns, the cross axis is horizontal. CSS offers the `align-items` property to align flex items along the cross axis. For a row, it tells CSS how to push the items in the entire row up or down within the container. And for a column, how to push all the items left or right within the container. The different values available for `align-items` include:

- `flex-start` : aligns items to the start of the flex container. For rows, this aligns items to the top of the container. For columns, this aligns items to the left of the container.
- `flex-end` : aligns items to the end of the flex container. For rows, this aligns items to the bottom of the container. For columns, this aligns items to the right of the container.
- `center` : align items to the center. For rows, this vertically aligns items (equal space above and below the items). For columns, this horizontally aligns them (equal space to the left and right of the items).
- `stretch` : stretch the items to fill the flex container. For example, rows items are stretched to fill the flex container top-to-bottom. This is the default value if no `align-items` value is specified.
- `baseline` : align items to their baselines. Baseline is a text concept, think of it as the line that the letters sit on.

Instructions

An example helps show this property in action. Add the CSS property `align-items` to the `#box-container` element, and give it a value of center. **Bonus**
Try the other options for the `align-items` property in the code editor to see their differences. But note that a value of center is the only one that will pass this challenge.

Challenge Seed

```
<style>
  #box-container {
    background: gray;
    display: flex;
    height: 500px;

  }
  #box-1 {
    background-color: dodgerblue;
    width: 200px;
    font-size: 24px;
  }

  #box-2 {
    background-color: orangered;
    width: 200px;
    font-size: 18px;
  }
</style>

<div id="box-container">
  <div id="box-1"><p>Hello</p></div>
  <div id="box-2"><p>Goodbye</p></div>
</div>
```

Solution

```
// solution required
```

10. Use the align-items Property in the Tweet Embed

Description

The last challenge introduced the `align-items` property and gave an example. This property can be applied to a few tweet embed elements to align the flex items inside them.

Instructions

Add the CSS property `align-items` to the header's `.follow-btn` element. Set the value to center.

Challenge Seed

```
<style>
  body {
    font-family: Arial, sans-serif;
  }
  header, footer {
    display: flex;
    flex-direction: row;
  }
  header .profile-thumbnail {
    width: 50px;
    height: 50px;
    border-radius: 4px;
  }
  header .profile-name {
    display: flex;
    flex-direction: column;
    justify-content: center;
    margin-left: 10px;
  }
  header .follow-btn {
    display: flex;

    margin: 0 0 0 auto;
  }
  header .follow-btn button {
    border: 0;
    border-radius: 3px;
    padding: 5px;
  }
  header h3, header h4 {
    display: flex;
    margin: 0;
  }
  #inner p {
    margin-bottom: 10px;
    font-size: 20px;
  }
  #inner hr {
    margin: 20px 0;
    border-style: solid;
    opacity: 0.1;
  }
  footer .stats {
    display: flex;
    font-size: 15px;
  }
  footer .stats strong {
    font-size: 18px;
  }
  footer .stats .likes {
    margin-left: 10px;
  }
  footer .cta {
    margin-left: auto;
  }
  footer .cta button {
    border: 0;
    background: transparent;
  }
</style>
<header>
  <img
src="https://pbs.twimg.com/profile_images/378800000147359764/54dc9a5c34e912f34db8662d53d16a39_400x400.png"
 alt="Quincy Larson's profile picture" class="profile-thumbnail">
  <div class="profile-name">
    <h3>Quincy Larson</h3>
    <h4>@ossia</h4>
  </div>
  <div class="follow-btn">
    <button>Follow</button>
  </div>
</header>
<div id="inner">
  <p>I meet so many people who are in search of that one trick that will help them work smart. Even if
you work smart, you still have to work hard.</p>
  <span class="date">1:32 PM - 12 Jan 2018</span>
  <hr>
</div>
<footer>
  <div class="stats">
    <div class="Retweets">
      <strong>107</strong> Retweets
    </div>
    <div class="likes">
      <strong>431</strong> Likes
    </div>
  </div>
  <div class="cta">
    <button class="share-btn">Share</button>
    <button class="retweet-btn">Retweet</button>
    <button class="like-btn">Like</button>
  </div>
</footer>
```

Solution

```
// solution required
```

11. Use the flex-wrap Property to Wrap a Row or Column

Description

CSS flexbox has a feature to split a flex item into multiple rows (or columns). By default, a flex container will fit all flex items together. For example, a row will all be on one line. However, using the `flex-wrap` property tells CSS to wrap items. This means extra items move into a new row or column. The break point of where the wrapping happens depends on the size of the items and the size of the container. CSS also has options for the direction of the wrap:

- `nowrap` : this is the default setting, and does not wrap items.
- `wrap` : wraps items from left-to-right if they are in a row, or top-to-bottom if they are in a column.
- `wrap-reverse` : wraps items from right-to-left if they are in a row, or bottom-to-top if they are in a column.

Instructions

The current layout has too many boxes for one row. Add the CSS property `flex-wrap` to the `#box-container` element, and give it a value of wrap.

Challenge Seed

```
<style>
  #box-container {
    background: gray;
    display: flex;
    height: 100%;

  }
  #box-1 {
    background-color: dodgerblue;
    width: 25%;
    height: 50%;
  }

  #box-2 {
    background-color: orangered;
    width: 25%;
    height: 50%;
  }
  #box-3 {
    background-color: violet;
    width: 25%;
    height: 50%;
  }
  #box-4 {
    background-color: yellow;
    width: 25%;
    height: 50%;
  }
  #box-5 {
    background-color: green;
    width: 25%;
    height: 50%;
  }
  #box-6 {
    background-color: black;
    width: 25%;
    height: 50%;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
  <div id="box-3"></div>
  <div id="box-4"></div>
  <div id="box-5"></div>
  <div id="box-6"></div>
</div>
```

Solution

```
// solution required
```

12. Use the flex-shrink Property to Shrink Items

Description

So far, all the properties in the challenges apply to the flex container (the parent of the flex items). However, there are several useful properties for the flex items. The first is the `flex-shrink` property. When it's used, it allows an item to shrink if the flex container is too small. Items shrink when the width of the parent container is smaller than the combined widths of all the flex items within it. The `flex-shrink` property takes numbers as values. The higher the number, the more it will shrink compared to the other items in the container. For example, if one item has a `flex-shrink` value of 1 and the other has a `flex-shrink` value of 3, the one with the value of 3 will shrink three times as much as the other.

Instructions

Add the CSS property `flex-shrink` to both `#box-1` and `#box-2` . Give `#box-1` a value of 1 and `#box-2` a value of 2.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }
  #box-1 {
    background-color: dodgerblue;
    width: 100%;
    height: 200px;

  }

  #box-2 {
    background-color: orangered;
    width: 100%;
    height: 200px;

  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

13. Use the flex-grow Property to Expand Items

Description

The opposite of `flex-shrink` is the `flex-grow` property. Recall that `flex-shrink` controls the size of the items when the container shrinks. The `flex-grow` property controls the size of items when the parent container expands. Using a similar example from the last challenge, if one item has a `flex-grow` value of 1 and the other has a `flex-grow` value of 3, the one with the value of 3 will grow three times as much as the other.

Instructions

Add the CSS property `flex-grow` to both `#box-1` and `#box-2` . Give `#box-1` a value of 1 and `#box-2` a value of 2.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }

  #box-1 {
    background-color: dodgerblue;
    height: 200px;

  }

  #box-2 {
    background-color: orangered;
    height: 200px;

  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

14. Use the flex-basis Property to Set the Initial Size of an Item

Description

The `flex-basis` property specifies the initial size of the item before CSS makes adjustments with `flex-shrink` or `flex-grow`. The units used by the `flex-basis` property are the same as other size properties (`px` , `em` , `%` , etc.). The value `auto` sizes items based on the content.

Instructions

Set the initial size of the boxes using `flex-basis`. Add the CSS property `flex-basis` to both `#box-1` and `#box-2`. Give `#box-1` a value of `10em` and `#box-2` a value of `20em`.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }

  #box-1 {
    background-color: dodgerblue;
    height: 200px;

  }

  #box-2 {
    background-color: orangered;
    height: 200px;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }

  #box-1 {
    background-color: dodgerblue;
    height: 200px;
    flex-basis: 10em;
  }

  #box-2 {
    background-color: orangered;
    height: 200px;
    flex-basis: 20em;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

15. Use the flex Shorthand Property

Description

There is a shortcut available to set several flex properties at once. The `flex-grow` , `flex-shrink` , and `flex-basis` properties can all be set together by using the `flex` property. For example, `flex: 1 0 10px;` will set the item to `flex-grow: 1;` , `flex-shrink: 0;` , and `flex-basis: 10px;` . The default property settings are `flex: 0 1 auto;` .

Instructions

Add the CSS property `flex` to both `#box-1` and `#box-2` . Give `#box-1` the values so its `flex-grow` is 2, its `flex-shrink` is 2, and its `flex-basis` is 150px. Give `#box-2` the values so its `flex-grow` is 1, its `flex-shrink` is 1, and its `flex-basis` is 150px. These values will cause `#box-1` to grow to fill the extra space at twice the rate of `#box-2` when the container is greater than 300px and shrink at twice the rate of `#box-2` when the container is less than 300px. 300px is the combined size of the `flex-basis` values of the two boxes.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }
  #box-1 {
    background-color: dodgerblue;

    height: 200px;
  }

  #box-2 {
    background-color: orangered;

    height: 200px;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

16. Use the order Property to Rearrange Items

Description

The `order` property is used to tell CSS the order of how flex items appear in the flex container. By default, items will appear in the same order they come in the source HTML. The property takes numbers as values, and negative numbers can be used.

Instructions

Add the CSS property `order` to both `#box-1` and `#box-2`. Give `#box-1` a value of 2 and give `#box-2` a value of 1.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }
  #box-1 {
    background-color: dodgerblue;

    height: 200px;
    width: 200px;
  }

  #box-2 {
    background-color: orangered;

    height: 200px;
    width: 200px;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

17. Use the align-self Property

Description

The final property for flex items is `align-self` . This property allows you to adjust each item's alignment individually, instead of setting them all at once. This is useful since other common adjustment techniques using the CSS properties `float` , `clear` , and `vertical-align` do not work on flex items. `align-self` accepts the same values as `align-items` and will override any value set by the `align-items` property.

Instructions

Add the CSS property `align-self` to both `#box-1` and `#box-2` . Give `#box-1` a value of center and give `#box-2` a value of flex-end.

Challenge Seed

```
<style>
  #box-container {
    display: flex;
    height: 500px;
  }
  #box-1 {
    background-color: dodgerblue;

    height: 200px;
    width: 200px;
  }

  #box-2 {
    background-color: orangered;

    height: 200px;
    width: 200px;
  }
</style>

<div id="box-container">
  <div id="box-1"></div>
  <div id="box-2"></div>
</div>
```

Solution

```
// solution required
```

CSS Grid

1. Create Your First CSS Grid

Description

Turn any HTML element into a grid container by setting its `display` property to `grid` . This gives you the ability to use all the other properties associated with CSS Grid. **Note**
In CSS Grid, the parent element is referred to as the container and its children are called items.

Instructions

Change the display of the div with the `container` class to `grid` .

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    width: 100%;
    background: LightGray;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {display: grid;}"
```

2. Add Columns with grid-template-columns

Description

Simply creating a grid element doesn't get you very far. You need to define the structure of the grid as well. To add some columns to the grid, use the `grid-template-columns` property on a grid container as demonstrated below:

> .container {
>   display: grid;
>   grid-template-columns: 50px 50px;
> }

This will give your grid two columns that are each 50px wide. The number of parameters given to the `grid-template-columns` property indicates the number of columns in the grid, and the value of each parameter indicates the width of each column.

Instructions

Give the grid container three columns that are each `100px` wide.

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    width: 100%;
    background: LightGray;
    display: grid;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-columns: 100px 100px 100px;}"
```

3. Add Rows with grid-template-rows

Description

The grid you created in the last challenge will set the number of rows automatically. To adjust the rows manually, use the `grid-template-rows` property in the same way you used `grid-template-columns` in previous challenge.

Instructions

Add two rows to the grid that are `50px` tall each.

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 100px 100px 100px;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-rows: 50px 50px;}"
```

4. Use CSS Grid units to Change the Size of Columns and Rows

Description

You can use absolute and relative units like `px` and `em` in CSS Grid to define the size of rows and columns. You can use these as well: `fr` : sets the column or row to a fraction of the available space, `auto` : sets the column or row to the width or height of its content automatically, `%` : adjusts the column or row to the percent width of its container. Here's the code that generates the output in the preview:

> grid-template-columns: auto 50px 10% 2fr 1fr;

This snippet creates five columns. The first column is as wide as its content, the second column is 50px, the third column is 10% of its container, and for the last two columns; the remaining space is divided into three sections, two are allocated for the fourth column, and one for the fifth.

Instructions

Make a grid with three columns whose widths are as follows: 1fr, 100px, and 2fr.

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    width: 100%;
    background: LightGray;
    display: grid;
    /* modify the code below this line */

    grid-template-columns: auto 50px 10% 2fr 1fr;

    /* modify the code above this line */
    grid-template-rows: 50px 50px;
  }
</style>

<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-columns: 1fr 100px 2fr;}"
```

5. Create a Column Gap Using grid-column-gap

Description

So far in the grids you have created, the columns have all been tight up against each other. Sometimes you want a gap in between the columns. To add a gap between the columns, use the `grid-column-gap` property like this:

> grid-column-gap: 10px;

This creates 10px of empty space between all of our columns.

Instructions

Give the columns in the grid a `20px` gap.

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {grid-column-gap: 20px;}"
```

6. Create a Row Gap using grid-row-gap

Description

You can add a gap in between the rows of a grid using `grid-row-gap` in the same way that you added a gap in between columns in the previous challenge.

Instructions

Create a gap for the rows that is `5px` tall.

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {grid-row-gap: 5px;}"
```

7. Add Gaps Faster with grid-gap

Description

`grid-gap` is a shorthand property for `grid-row-gap` and `grid-column-gap` from the previous two challenges that's more convenient to use. If `grid-gap` has one value, it will create a gap between all rows and columns. However, if there are two values, it will use the first one to set the gap between the rows and the second value for the columns.

Instructions

Use `grid-gap` to introduce a `10px` gap between the rows and `20px` gap between the columns.

Challenge Seed

```
<style>
  .d1{background:LightSkyBlue;}
  .d2{background:LightSalmon;}
  .d3{background:PaleTurquoise;}
  .d4{background:LightPink;}
  .d5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>
<div class="container">
  <div class="d1">1</div>
  <div class="d2">2</div>
  <div class="d3">3</div>
  <div class="d4">4</div>
  <div class="d5">5</div>
</div>
```

Solution

```
var code = ".container {grid-gap: 10px 20px;}"
```

8. Use grid-column to Control Spacing

Description

Up to this point, all the properties that have been discussed are for grid containers. The `grid-column` property is the first one for use on the grid items themselves. The hypothetical horizontal and vertical lines that create the grid are referred to as lines. These lines are numbered starting with 1 at the top left corner of the grid and move right for columns and down for rows, counting upward. This is what the lines look like for a 3x3 grid:
column lines

1

2

3

4

row lines

1

2

3

4

To control the amount of columns an item will consume, you can use the `grid-column` property in conjunction with the line numbers you want the item to start and stop at. Here's an example:

> grid-column: 1 / 3;

This will make the item start at the first vertical line of the grid on the left and span to the 3rd line of the grid, consuming two columns.

Instructions

Make the item with the class `item5` consume the last two columns of the grid.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}

  .item5 {
    background: PaleGreen;
    /* add your code below this line */


    /* add your code above this line */
  }

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".item5 {grid-column: 2 / 4;}"
```

9. Use grid-row to Control Spacing

Description

Of course, you can make items consume multiple rows just like you can with columns. You define the horizontal lines you want an item to start and stop at using the `grid-row` property on a grid item.

Instructions

Make the element with the `item5` class consume the last two rows.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}

  .item5 {
    background: PaleGreen;
    grid-column: 2 / 4;
    /* add your code below this line */


    /* add your code above this line */
  }

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".item5 {grid-row: 2 / 4;}"
```

10. Align an Item Horizontally using justify-self

Description

In CSS Grid, the content of each item is located in a box which is referred to as a cell. You can align the content's position within its cell horizontally using the `justify-self` property on a grid item. By default, this property has a value of `stretch`, which will make the content fill the whole width of the cell. This CSS Grid property accepts other values as well: `start` : aligns the content at the left of the cell, `center` : aligns the content in the center of the cell, `end` : aligns the content at the right of the cell.

Instructions

Use the `justify-self` property to center the item with the class `item2`.

Challenge Seed

```
<style>
  .item1{background: LightSkyBlue;}

  .item2 {
    background: LightSalmon;
    /* add your code below this line */


    /* add your code above this line */
  }

  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".item2 {justify-self: center;}"
```

11. Align an Item Vertically using align-self

Description

Just as you can align an item horizontally, there's a way to align an item vertically as well. To do this, you use the `align-self` property on an item. This property accepts all of the same values as `justify-self` from the last challenge.

Instructions

Align the item with the class `item3` vertically at the `end` .

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}

  .item3 {
    background: PaleTurquoise;
    /* add your code below this line */


    /* add your code above this line */
  }

  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".item3 {align-self: end;}"
```

12. Align All Items Horizontally using justify-items

Description

Sometimes you want all the items in your CSS Grid to share the same alignment. You can use the previously learned properties and align them individually, or you can align them all at once horizontally by using `justify-items` on your grid container. This property can accept all the same values you learned about in the previous two challenges, the difference being that it will move **all** the items in our grid to the desired alignment.

Instructions

Use this property to center all our items horizontally.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".container {justify-items: center;}"
```

13. Align All Items Vertically using align-items

Description

Using the `align-items` property on a grid container will set the vertical alignment for all the items in our grid.

Instructions

Use it now to move all the items to the end of each cell.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
    /* add your code below this line */


    /* add your code above this line */
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".container {align-items: end;}"
```

14. Divide the Grid Into an Area Template

Description

You can group cells of your grid together into an area and give the area a custom name. Do this by using `grid-template-areas` on the container like this:

> grid-template-areas:
>   "header header header"
>   "advert content content"
>   "footer footer footer";

The code above merges the top three cells together into an area named `header`, the bottom three cells into a `footer` area, and it makes two areas in the middle row; `advert` and `content`. **Note**
Every word in the code represents a cell and every pair of quotation marks represent a row. In addition to custom labels, you can use a period (`.`) to designate an empty cell in the grid.

Instructions

Place the area template so that the cell labeled `advert` becomes an empty cell.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
    /* change code below this line */

    grid-template-areas:
      "header header header"
      "advert content content"
      "footer footer footer";
    /* change code above this line */
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;

    grid-template-areas:
      "header header header"
      ". content content"
      "footer footer footer";
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

15. Place Items in Grid Areas Using the grid-area Property

Description

After creating an areas template for your grid container, as shown in the previous challenge, you can place an item in your custom area by referencing the name you gave it. To do this, you use the `grid-area` property on an item like this:

> .item1 { grid-area: header; }

This lets the grid know that you want the `item1` class to go in the area named `header`. In this case, the item will use the entire top row because that whole row is named as the header area.

Instructions

Place an element with the `item5` class in the `footer` area using the `grid-area` property.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}

  .item5 {
    background: PaleGreen;
    /* add your code below this line */


    /* add your code above this line */
  }

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
    grid-template-areas:
      "header header header"
      "advert content content"
      "footer footer footer";
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".item5 {grid-area: footer;}"
```

16. Use grid-area Without Creating an Areas Template

Description

The `grid-area` property you learned in the last challenge can be used in another way. If your grid doesn't have an areas template to reference, you can create an area on the fly for an item to be placed like this:

> item1 { grid-area: 1/1/2/4; }

This is using the line numbers you learned about earlier to define where the area for this item will be. The numbers in the example above represent these values:

> grid-area: horizontal line to start at / vertical line to start at / horizontal line to end at / vertical line to end at;

So the item in the example will consume the rows between lines 1 and 2, and the columns between lines 1 and 4.

Instructions

Using the `grid-area` property, place the element with `item5` class between the third and fourth horizontal lines and between the first and fourth vertical lines.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}

  .item5 {
    background: PaleGreen;
    /* add your code below this line */


    /* add your code above this line */
  }

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr 1fr 1fr;
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".item5 {grid-area: 3/1/4/4;}"
```

17. Reduce Repetition Using the repeat Function

Description

When you used `grid-template-columns` and `grid-template-rows` to define the structure of a grid, you entered a value for each row or column you created. Lets say you want a grid with 100 rows of the same height. It isn't very practical to insert 100 values individually. Fortunately, there's a better way - by using the `repeat` function to specify the number of times you want your column or row to be repeated, followed by a comma and the value you want to repeat. Here's an example that would create the 100 row grid, each row at 50px tall.

> grid-template-rows: repeat(100, 50px);

You can also repeat multiple values with the repeat function and insert the function amongst other values when defining a grid structure. Here's what that looks like:

> grid-template-columns: repeat(2, 1fr 50px) 20px;

This translates to:

> grid-template-columns: 1fr 50px 1fr 50px 20px;

Note
`1fr 50px` is repeated twice followed by 20px.

Instructions

Use `repeat` to remove repetition from the `grid-template-columns` property.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    /* change the code below this line */

    grid-template-columns: 1fr 1fr 1fr;

    /* change the code above this line */
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-columns: repeat(3, 1fr);}"
```

18. Limit Item Size Using the minmax Function

Description

There's another built-in function to use with `grid-template-columns` and `grid-template-rows` called `minmax`. It's used to limit the size of items when the grid container changes size. To do this you need to specify the acceptable size range for your item. Here is an example:

> grid-template-columns: 100px minmax(50px, 200px);

In the code above, `grid-template-columns` is set to create two columns; the first is 100px wide, and the second has the minimum width of 50px and the maximum width of 200px.

Instructions

Using the `minmax` function, replace the `1fr` in the `repeat` function with a column size that has the minimum width of `90px` and the maximum width of `1fr`, and resize the preview panel to see the effect.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    /* change the code below this line */

    grid-template-columns: repeat(3, 1fr);

    /* change the code above this line */
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-columns: repeat(3, minmax(90px, 1fr));}"
```

19. Create Flexible Layouts Using auto-fill

Description

The repeat function comes with an option called auto-fill. This allows you to automatically insert as many rows or columns of your desired size as possible depending on the size of the container. You can create flexible layouts when combining `auto-fill` with `minmax`. In the preview, `grid-template-columns` is set to

> repeat(auto-fill, minmax(60px, 1fr));

When the container changes size, this setup keeps inserting 60px columns and stretching them until it can insert another one. **Note**
If your container can't fit all your items on one row, it will move them down to a new one.

Instructions

In the first grid, use `auto-fill` with `repeat` to fill the grid with columns that have a minimum width of `60px` and maximum of `1fr`. Then resize the preview to see auto-fill in action.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 100px;
    width: 100%;
    background: LightGray;
    display: grid;
    /* change the code below this line */

    grid-template-columns: repeat(3, minmax(60px, 1fr));

    /* change the code above this line */
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }

  .container2 {
    font-size: 40px;
    min-height: 100px;
    width: 100%;
    background: Silver;
    display: grid;
    grid-template-columns: repeat(3, minmax(60px, 1fr));
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>
<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
<div class="container2">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-columns: repeat(auto-fill, minmax(60px, 1fr));}"
```

20. Create Flexible Layouts Using auto-fit

Description

`auto-fit` works almost identically to `auto-fill`. The only difference is that when the container's size exceeds the size of all the items combined, `auto-fill` keeps inserting empty rows or columns and pushes your items to the side, while `auto-fit` collapses those empty rows or columns and stretches your items to fit the size of the container. **Note** If your container can't fit all your items on one row, it will move them down to a new one.

Instructions

In the second grid, use `auto-fit` with `repeat` to fill the grid with columns that have a minimum width of `60px` and maximum of `1fr`. Then resize the preview to see the difference.

Challenge Seed

```
<style>
  .item1{background:LightSkyBlue;}
  .item2{background:LightSalmon;}
  .item3{background:PaleTurquoise;}
  .item4{background:LightPink;}
  .item5{background:PaleGreen;}

  .container {
    font-size: 40px;
    min-height: 100px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: repeat(auto-fill, minmax(60px, 1fr));
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }

  .container2 {
    font-size: 40px;
    min-height: 100px;
    width: 100%;
    background: Silver;
    display: grid;
    /* change the code below this line */

    grid-template-columns: repeat(3, minmax(60px, 1fr));

    /* change the code above this line */
    grid-template-rows: 1fr 1fr 1fr;
    grid-gap: 10px;
  }
</style>

<div class="container">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
<div class="container2">
  <div class="item1">1</div>
  <div class="item2">2</div>
  <div class="item3">3</div>
  <div class="item4">4</div>
  <div class="item5">5</div>
</div>
```

Solution

```
var code = ".container {grid-template-columns: repeat( auto-fill, minmax(60px, 1fr));} .container2
{grid-template-columns: repeat(auto-fit, minmax(60px, 1fr));}"
```

21. Use Media Queries to Create Responsive Layouts

Description

CSS Grid can be an easy way to make your site more responsive by using media queries to rearrange grid areas, change dimensions of a grid, and rearrange the placement of items. In the preview, when the viewport width is 300px or more, the number of columns changes from 1 to 2. The advertisement area then occupies the left column completely.

Instructions

When the viewport width is `400px` or more, make the header area occupy the top row completely and the footer area occupy the bottom row completely.

Challenge Seed

```
<style>
  .item1 {
    background: LightSkyBlue;
    grid-area: header;
  }

  .item2 {
    background: LightSalmon;
    grid-area: advert;
  }

  .item3 {
    background: PaleTurquoise;
    grid-area: content;
  }

  .item4 {
    background: lightpink;
    grid-area: footer;
  }

  .container {
    font-size: 1.5em;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr;
    grid-template-rows: 50px auto 1fr auto;
    grid-gap: 10px;
    grid-template-areas:
      "header"
      "advert"
      "content"
      "footer";
  }

  @media (min-width: 300px){
    .container{
      grid-template-columns: auto 1fr;
      grid-template-rows: auto 1fr auto;
      grid-template-areas:
        "advert header"
        "advert content"
        "advert footer";
    }
  }

  @media (min-width: 400px){
    .container{
      /* change the code below this line */

      grid-template-areas:
        "advert header"
        "advert content"
        "advert footer";

    /* change the code above this line */
    }
  }
</style>

<div class="container">
  <div class="item1">header</div>
  <div class="item2">advert</div>
  <div class="item3">content</div>
  <div class="item4">footer</div>
</div>
```

Solution

```
<style>
  .item1 {
    background: LightSkyBlue;
    grid-area: header;
  }

  .item2 {
    background: LightSalmon;
    grid-area: advert;
  }

  .item3 {
    background: PaleTurquoise;
    grid-area: content;
  }

  .item4 {
    background: lightpink;
    grid-area: footer;
  }

  .container {
    font-size: 1.5em;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: 1fr;
    grid-template-rows: 50px auto 1fr auto;
    grid-gap: 10px;
    grid-template-areas:
      "header"
      "advert"
      "content"
      "footer";
  }

  @media (min-width: 300px){
    .container{
      grid-template-columns: auto 1fr;
      grid-template-rows: auto 1fr auto;
      grid-template-areas:
        "advert header"
        "advert content"
        "advert footer";
    }
  }

  @media (min-width: 400px){
    .container{
      /* change the code below this line */

      grid-template-areas:
        "header header"
        "advert content"
        "footer footer";
    /* change the code above this line */
    }
  }
</style>

<div class="container">
  <div class="item1">header</div>
  <div class="item2">advert</div>
  <div class="item3">content</div>
  <div class="item4">footer</div>
</div>
```

22. Create Grids within Grids

Description

Turning an element into a grid only affects the behavior of its direct descendants. So by turning a direct descendant into a grid, you have a grid within a grid. For example, by setting the `display` and `grid-template-columns` properties of the element with the `item3` class, you create a grid within your grid.

Instructions

Turn the element with the `item3` class into a grid with two columns with a width of `auto` and `1fr` using `display` and `grid-template-columns` .

Challenge Seed

```
<style>
  .container {
    font-size: 1.5em;
    min-height: 300px;
    width: 100%;
    background: LightGray;
    display: grid;
    grid-template-columns: auto 1fr;
    grid-template-rows: auto 1fr auto;
    grid-gap: 10px;
    grid-template-areas:
      "advert header"
      "advert content"
      "advert footer";
  }
  .item1 {
    background: LightSkyBlue;
    grid-area: header;
  }

  .item2 {
    background: LightSalmon;
    grid-area: advert;
  }

  .item3 {
    background: PaleTurquoise;
    grid-area: content;
    /* enter your code below this line */


    /* enter your code above this line */
  }

  .item4 {
    background: lightpink;
    grid-area: footer;
  }

  .itemOne {
    background: PaleGreen;
  }

  .itemTwo {
    background: BlanchedAlmond;
  }

</style>

<div class="container">
  <div class="item1">header</div>
  <div class="item2">advert</div>
  <div class="item3">
    <div class="itemOne">paragraph1</div>
    <div class="itemTwo">paragraph2</div>
  </div>
  <div class="item4">footer</div>
</div>
```

Solution

```
var code = ".item3 {grid-template-columns: auto 1fr; display: grid;}"
```

Responsive Web Design Projects

1. Build a Tribute Page

Description

Objective: Build a CodePen.io app that is functionally similar to this: https://codepen.io/freeCodeCamp/full/zNqgVx. Fulfill the below user stories and get all of the tests to pass. Give it your own personal style. You can use HTML, JavaScript, and CSS to complete this project. Plain CSS is recommended because that is what the lessons have covered so far and you should get some practice with plain CSS. You can use Bootstrap or SASS if you choose. Additional technologies (just for example jQuery, React, Angular, or Vue) are not recommended for this project, and using them is at your own risk. Other projects will give you a chance to work with different technology stacks like React. We will accept and try to fix all issue reports that use the suggested technology stack for this project. Happy coding! **User Story #1:** My tribute page should have an element with a corresponding `id="main"` , which contains all other elements. **User Story #2:** I should see an element with a corresponding `id="title"` , which contains a string (i.e. text) that describes the subject of the tribute page (e.g. "Dr. Norman Borlaug"). **User Story #3:** I should see a `div` element with a corresponding `id="img-div"` . **User Story #4:** Within the `img-div` element, I should see an `img` element with a corresponding `id="image"` . **User Story #5:** Within the `img-div` element, I should see an element with a corresponding `id="img-caption"` that contains textual content describing the image shown in `img-div` . **User Story #6:** I should see an element with a corresponding `id="tribute-info"` , which contains textual content describing the subject of the tribute page. **User Story #7:** I should see an `a` element with a corresponding `id="tribute-link"` , which links to an outside site that contains additional information about the subject of the tribute page. HINT: You must give your element an attribute of `target` and set it to `_blank` in order for your link to open in a new tab (i.e. `target="_blank"`). **User Story #8:** The `img` element should responsively resize, relative to the width of its parent element, without exceeding its original size. **User Story #9:** The `img` element should be centered within its parent element. You can build your project by forking this CodePen pen. Or you can use this CDN link to run the tests in any environment you like: `https://cdn.freecodecamp.org/testable-projects-fcc/v1/bundle.js` . Once you're done, submit the URL to your working project with all its tests passing. Remember to use the Read-Search-Ask method if you get stuck.

Instructions

Challenge Seed

Solution

```
// solution required
```

2. Build a Survey Form

Description

Objective: Build a CodePen.io app that is functionally similar to this: https://codepen.io/freeCodeCamp/full/VPaoNP. Fulfill the below user stories and get all of the tests to pass. Give it your own personal style. You can use HTML, JavaScript, and CSS to complete this project. Plain CSS is recommended because that is what the lessons have covered so far and you should get some practice with plain CSS. You can use Bootstrap or SASS if you choose. Additional technologies (just for example jQuery, React, Angular, or Vue) are not recommended for this project, and using them is at your own risk. Other projects will give you a chance to work with different technology stacks like React. We will accept and try to fix all issue reports that use the suggested technology stack for this project. Happy coding! **User Story #1:** I can see a title with `id="title"` in H1 sized text. **User Story #2:** I can see a short explanation with `id="description"` in P sized text. **User Story #3:** I can see a `form` with `id="survey-form"` . **User Story #4:** Inside the form element, I am required to enter my name in a field with `id="name"` . **User Story #5:** Inside the form element, I am required to enter an email in a field with `id="email"` . **User Story #6:** If I enter an email that is not formatted correctly, I will see an HTML5 validation error. **User Story #7:** Inside the form, I can enter a number in a field with `id="number"` . **User Story #8:** If I enter non-numbers in the number input, I will see an HTML5 validation error. **User Story #9:** If I enter numbers outside the range of the number input, which are defined by the `min` and `max` attributes, I will see an HTML5 validation error. **User Story #10:** For the name, email, and number input fields inside the form I can see corresponding labels that describe the purpose of each field with the following ids: `id="name-label"` , `id="email-label"` , and `id="number-label"` . **User Story #11:** For the name, email, and number input fields, I can see placeholder text that gives me a description or instructions for each field. **User Story #12:** Inside the form element, I can select an option from a dropdown that has a corresponding `id="dropdown"` . **User Story #13:** Inside the form element, I can select a field from one or more groups of radio buttons. Each group should be grouped using the `name` attribute. **User Story #14:** Inside the form element, I can select several fields from a series of checkboxes, each of which must have a `value` attribute. **User Story #15:** Inside the form element, I am presented with a `textarea` at the end for additional comments. **User Story #16:** Inside the form element, I am presented with a button with `id="submit"` to submit all my inputs. You can build your project by forking this CodePen pen. Or you can use this CDN link to run the tests in any environment you like: `https://cdn.freecodecamp.org/testable-projects-fcc/v1/bundle.js` Once you're done, submit the URL to your working project with all its tests passing. Remember to use the Read-Search-Ask method if you get stuck.

Instructions

Challenge Seed

Solution

```
// solution required
```

3. Build a Product Landing Page

Description

Objective: Build a CodePen.io app that is functionally similar to this: https://codepen.io/freeCodeCamp/full/RKRbwL. Fulfill the below user stories and get all of the tests to pass. Give it your own personal style. You can use HTML, JavaScript, and CSS to complete this project. Plain CSS is recommended because that is what the lessons have covered so far and you should get some practice with plain CSS. You can use Bootstrap or SASS if you choose. Additional technologies (just for example jQuery, React, Angular, or Vue) are not recommended for this project, and using them is at your own risk. Other projects will give you a chance to work with different technology stacks like React. We will accept and try to fix all issue reports that use the suggested technology stack for this project. Happy coding! **User Story #1:** My product landing page should have a `header` element with a corresponding `id="header"` . **User Story #2:** I can see an image within the `header` element with a corresponding `id="header-img"` . A company logo would make a good image here. **User Story #3:** Within the `#header` element I can see a `nav` element with a corresponding `id="nav-bar"` . **User Story #4:** I can see at least three clickable elements inside the `nav` element, each with the class `nav-link` . **User Story #5:** When I click a `.nav-link` button in the `nav` element, I am taken to the corresponding section of the landing page. **User Story #6:** I can watch an embedded product video with `id="video"` . **User Story #7:** My landing page has a `form` element with a corresponding `id="form"` . **User Story #8:** Within the form, there is an `input` field with `id="email"` where I can enter an email address. **User Story #9:** The `#email` input field should have placeholder text to let the user know what the field is for. **User Story #10:** The `#email` input field uses HTML5 validation to confirm that the entered text is an email address. **User Story #11:** Within the form, there is a submit `input` with a corresponding `id="submit"` . **User Story #12:** When I click the `#submit` element, the email is submitted to a static page (use this mock URL: https://www.freecodecamp.com/email-submit) that confirms the email address was entered and that it posted successfully. **User Story #13:** The navbar should always be at the top of the viewport. **User Story #14:** My product landing page should have at least one media query. **User Story #15:** My product landing page should utilize CSS flexbox at least once. You can build your project by forking this CodePen pen. Or you can use this CDN link to run the tests in any environment you like: `https://cdn.freecodecamp.org/testable-projects-fcc/v1/bundle.js` Once you're done, submit the URL to your working project with all its tests passing. Remember to use the Read-Search-Ask method if you get stuck.

Instructions

Challenge Seed

Solution

```
// solution required
```

4. Build a Technical Documentation Page

Description

Objective: Build a CodePen.io app that is functionally similar to this: https://codepen.io/freeCodeCamp/full/NdrKKL. Fulfill the below user stories and get all of the tests to pass. Give it your own personal style. You can use HTML, JavaScript, and CSS to complete this project. Plain CSS is recommended because that is what the lessons have covered so far and you should get some practice with plain CSS. You can use Bootstrap or SASS if you choose. Additional technologies (just for example jQuery, React, Angular, or Vue) are not recommended for this project, and using them is at your own risk. Other projects will give you a chance to work with different technology stacks like React. We will accept and try to fix all issue reports that use the suggested technology stack for this project. Happy coding! **User Story #1:** I can see a `main` element with a corresponding `id="main-doc"` , which contains the page's main content (technical documentation). **User Story #2:** Within the `#main-doc` element, I can see several `section` elements, each with a class of `main-section` . There should be a minimum of 5. **User Story #3:** The first element within each `.main-section` should be a `header` element which contains text that describes the topic of that section. **User Story #4:** Each `section` element with the class of `main-section` should also have an id that corresponds with the text of each `header` contained within it. Any spaces should be replaced with underscores (e.g. The `section` that contains the header "Javascript and Java" should have a corresponding `id="Javascript_and_Java"`). **User Story #5:** The `.main-section` elements should contain at least 10 `p` elements total (not each). **User Story #6:** The `.main-section` elements should contain at least 5 `code` elements total (not each). **User Story #7:** The `.main-section` elements should contain at least 5 `li` items total (not each). **User Story #8:** I can see a `nav` element with a corresponding `id="navbar"` . **User Story #9:** The navbar element should contain one `header` element which contains text that describes the topic of the technical documentation. **User Story #10:** Additionally, the navbar should contain link (`a`) elements with the class of `nav-link` . There should be one for every element with the class `main-section` . **User Story #11:** The `header` element in the navbar must come before any link (`a`) elements in the navbar. **User Story #12:** Each element with the class of `nav-link` should contain text that corresponds to the `header` text within each `section` (e.g. if you have a "Hello world" section/header, your navbar should have an element which contains the text "Hello world"). **User Story #13:** When I click on a navbar element, the page should navigate to the corresponding section of the `main-doc` element (e.g. If I click on a `nav-link` element that contains the text "Hello world", the page navigates to a `section` element that has that id and contains the corresponding `header` . **User Story #14:** On regular sized devices (laptops, desktops), the element with `id="navbar"` should be shown on the left side of the screen and should always be visible to the user. **User Story #15:** My Technical Documentation page should use at least one media query. You can build your project by forking this CodePen pen. Or you can use this CDN link to run the tests in any environment you like: `https://cdn.freecodecamp.org/testable-projects-fcc/v1/bundle.js` Once you're done, submit the URL to your working project with all its tests passing. Remember to use the Read-Search-Ask method if you get stuck.

Instructions

Challenge Seed

Solution

```
// solution required
```

5. Build a Personal Portfolio Webpage

Description

Objective: Build a CodePen.io app that is functionally similar to this: https://codepen.io/freeCodeCamp/full/zNBOYG. Fulfill the below user stories and get all of the tests to pass. Give it your own personal style. You can use HTML, JavaScript, and CSS to complete this project. Plain CSS is recommended because that is what the lessons have covered so far and you should get some practice with plain CSS. You can use Bootstrap or SASS if you choose. Additional technologies (just for example jQuery, React, Angular, or Vue) are not recommended for this project, and using them is at your own risk. Other projects will give you a chance to work with different technology stacks like React. We will accept and try to fix all issue reports that use the suggested technology stack for this project. Happy coding! **User Story #1:** My portfolio should have a welcome section with an id of `welcome-section` . **User Story #2:** The welcome section should have an `h1` element that contains text. **User Story #3:** My portfolio should have a projects section with an id of `projects` . **User Story #4:** The projects section should contain at least one element with a class of `project-tile` to hold a project. **User Story #5:** The projects section should contain at least one link to a project. **User Story #6:** My portfolio should have a navbar with an id of `navbar` . **User Story #7:** The navbar should contain at least one link that I can click on to navigate to different sections of the page. **User Story #8:** My portfolio should have a link with an id of `profile-link` , which opens my GitHub or FCC profile in a new tab. **User Story #9:** My portfolio should have at least one media query. **User Story #10:** The height of the welcome section should be equal to the height of the viewport. **User Story #11:** The navbar should always be at the top of the viewport. You can build your project by forking this CodePen pen. Or you can use this CDN link to run the tests in any environment you like: `https://cdn.freecodecamp.org/testable-projects-fcc/v1/bundle.js` Once you're done, submit the URL to your working project with all its tests passing. Remember to use the Read-Search-Ask method if you get stuck.

Instructions

Challenge Seed

Solution

```
// solution required
```