Responsive Design

by Sophia

WHAT'S COVERED

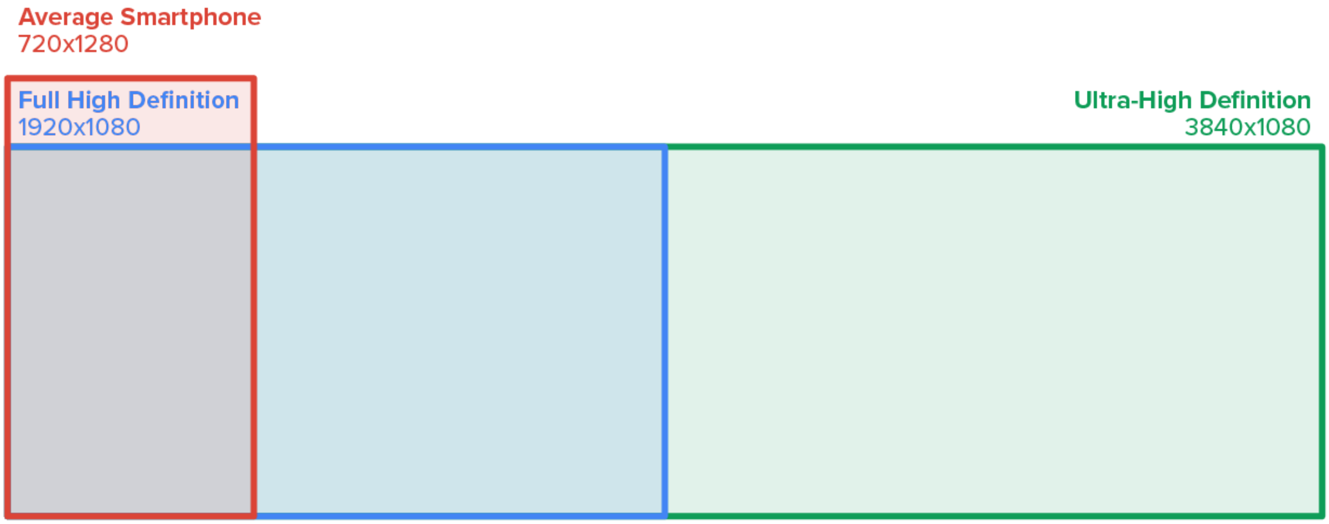
In this lesson, you will learn about the concept of responsive web design (RWD) and the tools and methods used to address RWD. This will include media queries, flexbox, and content swapping. You will be introduced to Bootstrap, a framework that makes it easier for developers to build responsive content. Lastly, you will learn about the benefits of designing using the mobile-first approach and see it in action.

Specifically, this lesson will cover the following:

1. Responsive Web Design (RWD)

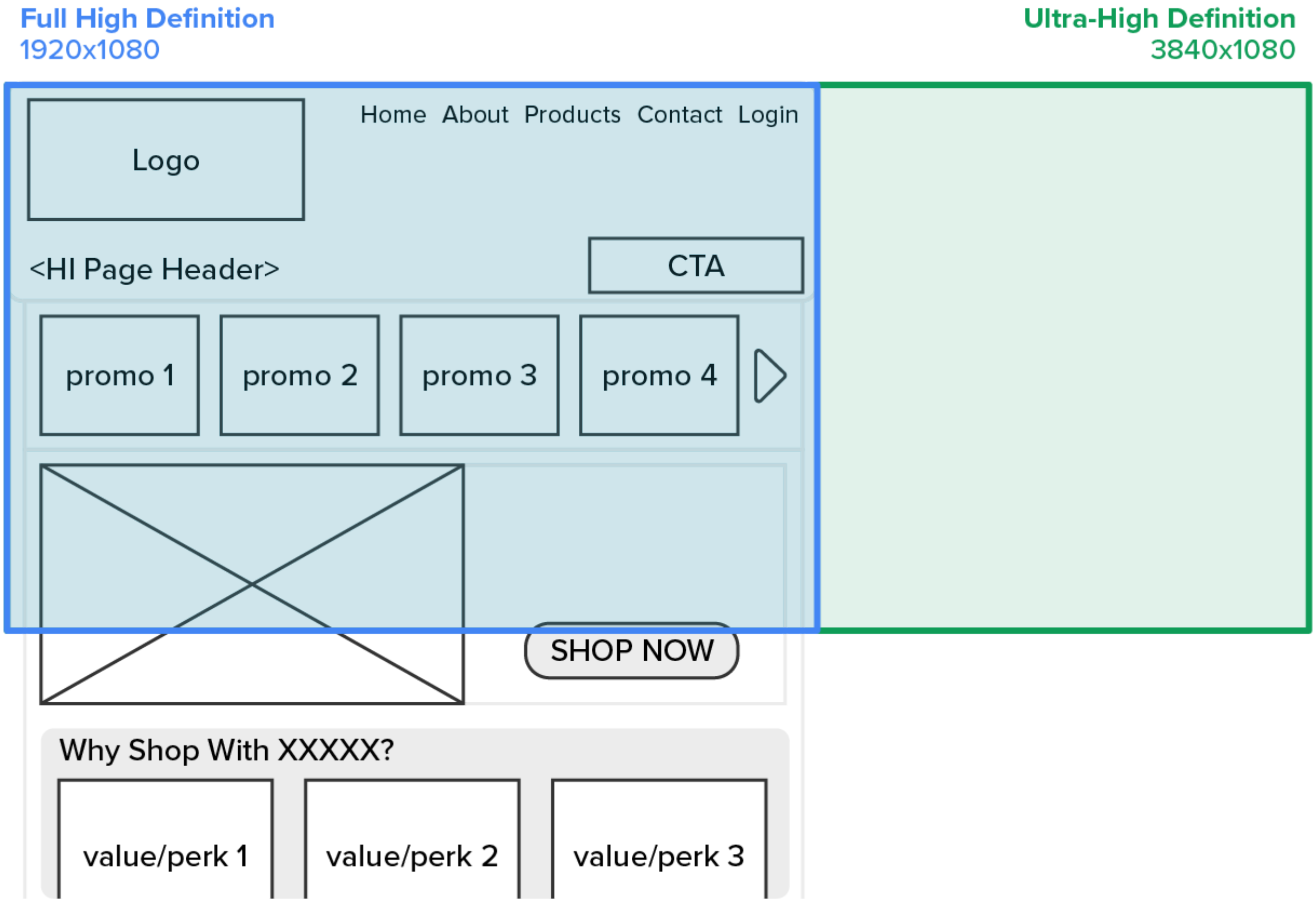
Responsive web design (RWD) is an approach to designing and coding a website to not only look good but also function well on as many different types of devices and screen sizes as possible. It has become increasingly important that websites are designed to look and function well on both mobile devices as well as the traditional desktop.

The typical desktop computer screen today is around 1,600 up to 3,840 **pixels** wide, usually about 1,080 pixels high. Smartphones, which are typically handled in portrait mode with the phone standing tall in the user's hands, are commonly around 720 pixels wide, up to 1,440.

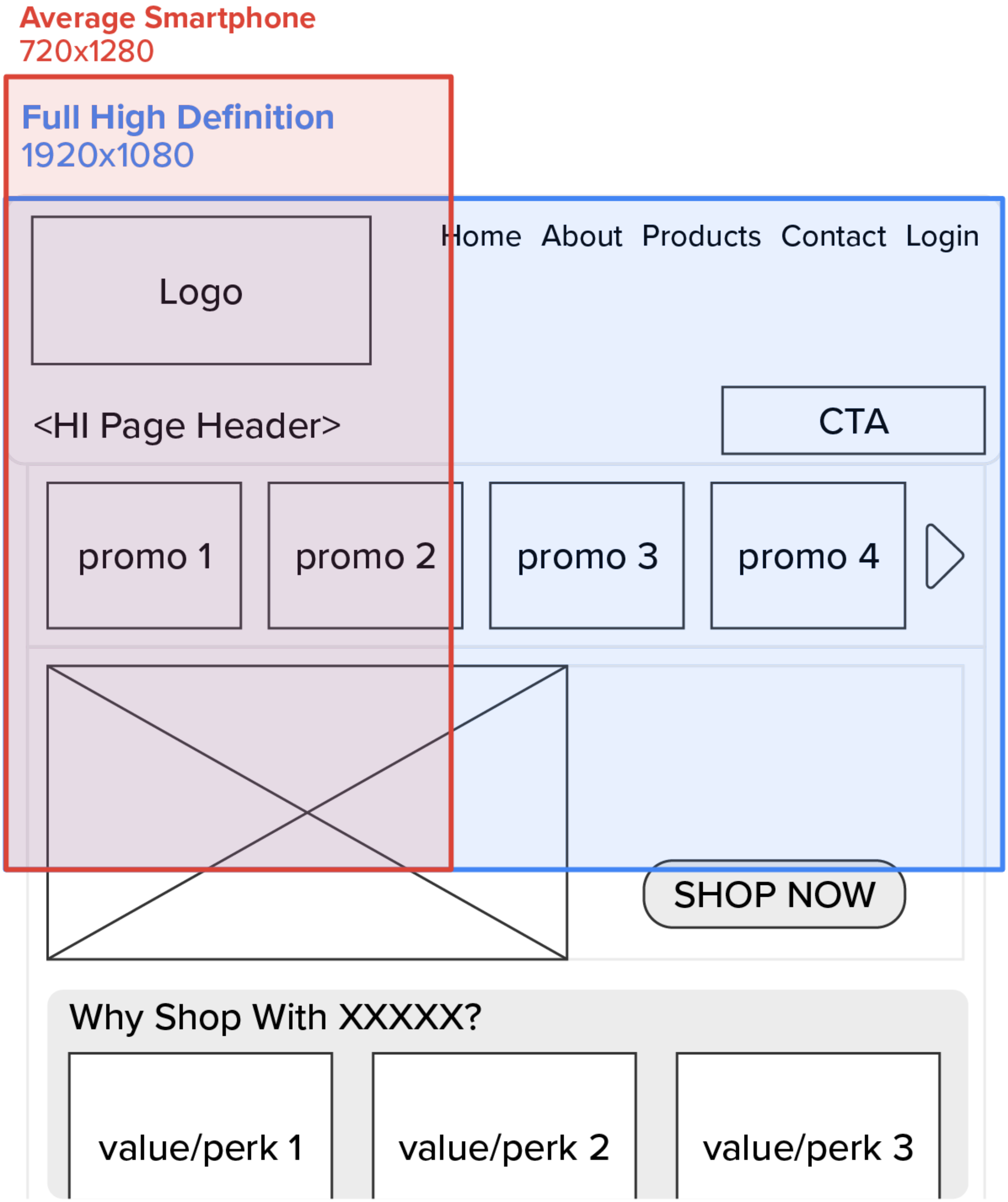


KEY CONCEPT

What about screen height? The height of a screen is not an important consideration in RWD as it is expected that users will scroll down to see more content. However, avoiding the appearance of the dreaded horizontal scrollbar is at the forefront of RWD and one of the goals behind RWD.



The width of typical desktop screens allows for more items and content to be arranged horizontally from left to right. Navigation menus can be easily displayed in full text on the screen. Sidebar sections can be positioned along the left or right side of the screen without forcing the user to use a horizontal scrollbar. However, when you try to view such a layout on a mobile device, you will see that much of the content that would otherwise be visible on the screen is cut off, forcing the user to have to scroll to the right to see the full page.



To solve this problem, RWD incorporates several coding techniques provided by Cascading Style Sheets (CSS) to dynamically detect the size of a screen and reposition and rearrange content as needed.

TERMS TO KNOW

Responsive Design

The same as responsive web design; an approach to web development that enables a website to automatically adapt to different device screen sizes.

Pixels

Short for “picture elements”; the smallest addressable elements in a raster image or digital display screen.

1a. Media Queries

The first RWD tool CSS provides to developers is the **media query**. Most of CSS is relatively passive.

EXAMPLE

You write CSS style rules, and those rules get applied whenever an element in the page meets the rule.

Media queries are active CSS tools that take action based on the width of the visible area and activate or deactivate entire blocks of style rules.

EXAMPLE

Media queries allow us to completely adjust the CSS related to the layout and page organization whenever the visible area reduces below a specified width or within a specific range.

Media queries include the “@media” keyword followed by a media type, a //CSS style block or condition, and, lastly, a style block of CSS rules to be applied.

EXAMPLE

```
@media [not|only] [screen|print|all] (feature: value)
{
    //CSS style block
}
```

The **media type** values include “screen,” “print,” and “all” and are optional as the value of “all” is the default value. This value refers to the type of device being used. Today, only the “screen” and “print” specific values can be applied whether the device uses a screen to render the content or a printer to print the content.

IN CONTEXT

When media queries were introduced in CSS version 2 (CSS2), the plan was to be able to control the CSS styling based on many more device types, including computer screens, printers, handheld devices, and televisions. However, in practice, only screen and print were actually used and thus became the focus of media queries in our current version of CSS version 3 (CSS3).

The **media feature rule** allows the developer to set conditions that must be satisfied in order for the style block to be applied. Most commonly, this is used to set a minimum or maximum screen width threshold, but additional features can also be used such as orientation, preferred-contrast setting, resolution, and more.

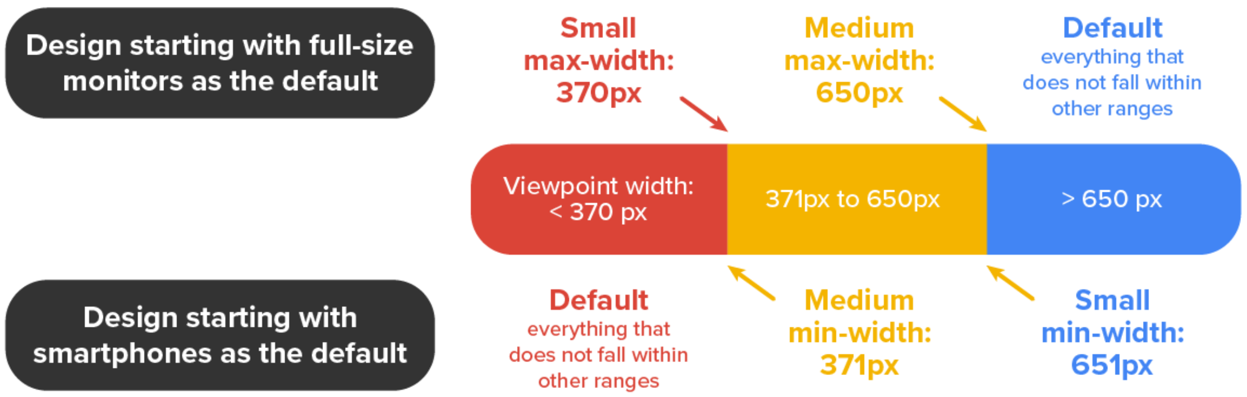
EXAMPLE

```
@media (max-width: 480px)
{
    //CSS style block
}
```

REFLECT

In the example above, when the screen width is between 0 and up to 480 pixels wide, the style block will be active. Once the screen width grows beyond the threshold of 480, the style block will deactivate. Depending on the original design, whether you started by designing the site for mobile screens or for a full desktop screen, you can adjust your condition to use either max-width or min-width.

The following diagram helps illustrate the use of min-width versus max-width.


Design starting with full-size monitors as the default
Small max-width: 370px
Medium max-width: 650px
Default everything that does not fall within other ranges
Viewpoint width: < 370 px
371px to 650px
> 650 px
Design starting with smartphones as the default
Default everything that does not fall within other ranges
Medium min-width: 371px
Small min-width: 651px

When you design a site for full-size screens, your default CSS will be everything beyond the maximum width of the next size down. Setting a media query threshold as max-width 650px means that anything larger than 650 pixels wide will assume the default styling. Once the screen width shrinks to 650 pixels or less, the medium CSS styling will be applied. When the width shrinks down further to 370 or less, the small CSS styling will be applied.

On the flip side, if you start with your site designed for mobile devices, you will instead use min-width. For example, setting the media query to min-width 371 means that a screen that is 370 pixels wide or smaller assumes the default small CSS style. Once the screen grows beyond 370, the medium CSS styles are applied. When the screen grows beyond 650, the large CSS style will be applied.

With the mechanism for detecting screen sizes and activating the associated set of CSS styles, we can now focus on the CSS properties and features that allow us to rearrange the content based on the activation and deactivation of media query style blocks.

TERMS TO KNOW

Media Query

A CSS feature that can be configured to activate or deactivate CSS style rules based on set conditions.

Media Type

The condition of a media query that specifies what type of device should receive the CSS style rules.

Media Feature Rule

A media query condition that tests a given feature of a device to determine if and when a set of CSS style rules should be activated or deactivated.

1b. Flexbox

The first and easiest method of changing content arrangement is to use the **CSS flexbox** feature. Flexbox is used to designate a container as a flexbox container, and its children (the items directly inside the container) become the flex items.

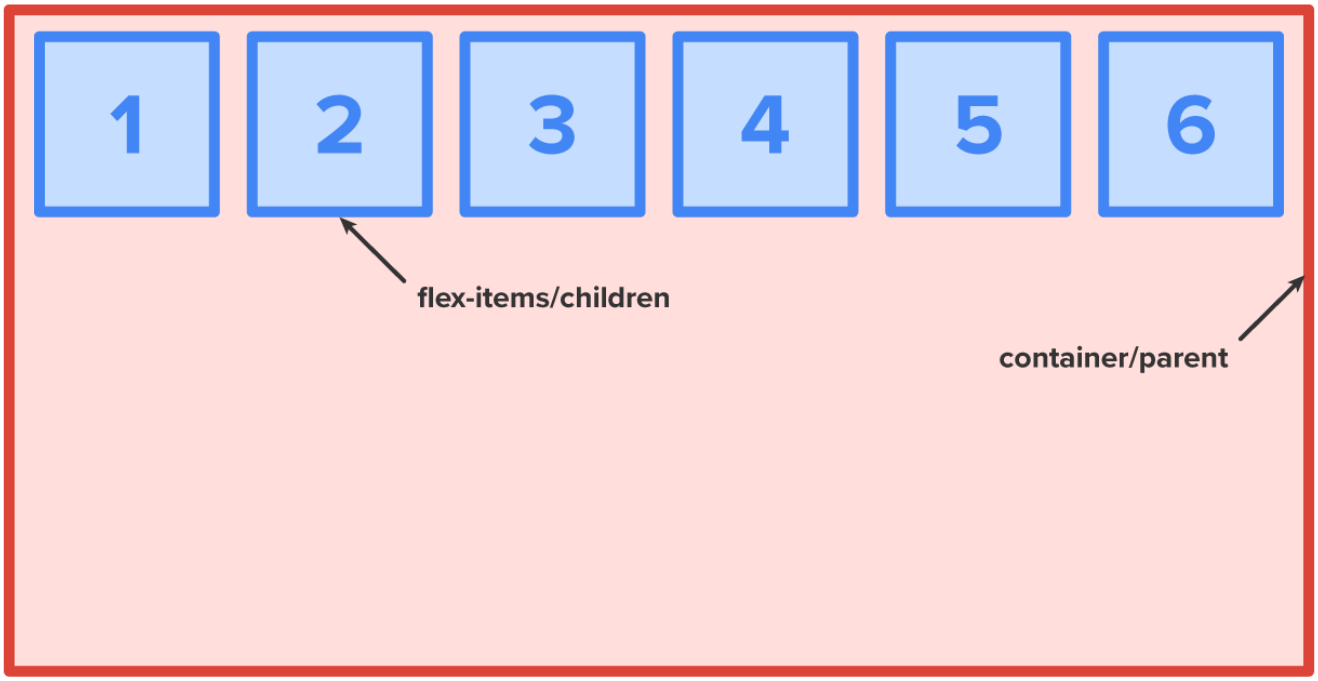
EXAMPLE

HTML:

```
<div id='container'>
   <div>1</div>
   <div>2</div>
   <div>3</div>
   <div>4</div>
   <div>5</div>
   <div>6</div>
   <div>7</div>
</div>
```

CSS:

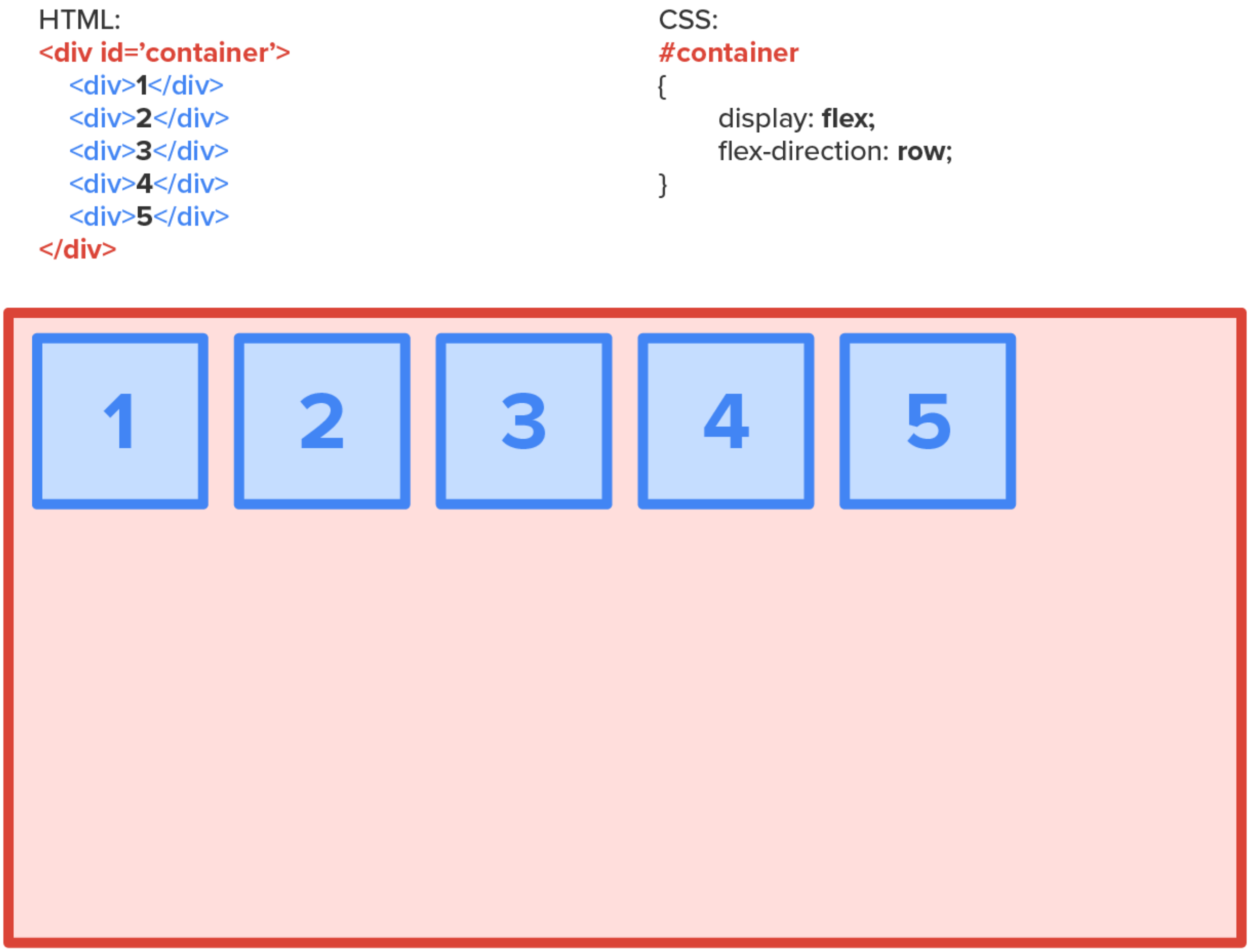
```
#container
{
      display: flex;
}
```



Regardless of what HTML element the flex items actually are, their behavior is overridden to make them behave like a flex item and automatically arrange themselves to make the most of the space available. Flexbox contains a number of additional CSS properties that can be configured to change how the flex items arrange themselves. One property relevant to responsive design is the flex-direction. **Flex-direction** is a property of a flex container that determines if its flex items will line up horizontally across the screen as a row or if they will stack on top of each other as a column.

The flex items line up horizontally in the following design:

EXAMPLE



HTML:

```
<div id='container'>
   <div>1</div>
   <div>2</div>
   <div>3</div>
   <div>4</div>
   <div>5</div>
</div>
```

CSS:

```
#container
{
      display: flex;
      flex-direction: row;
}
```

The flex items line up vertically in the following design:

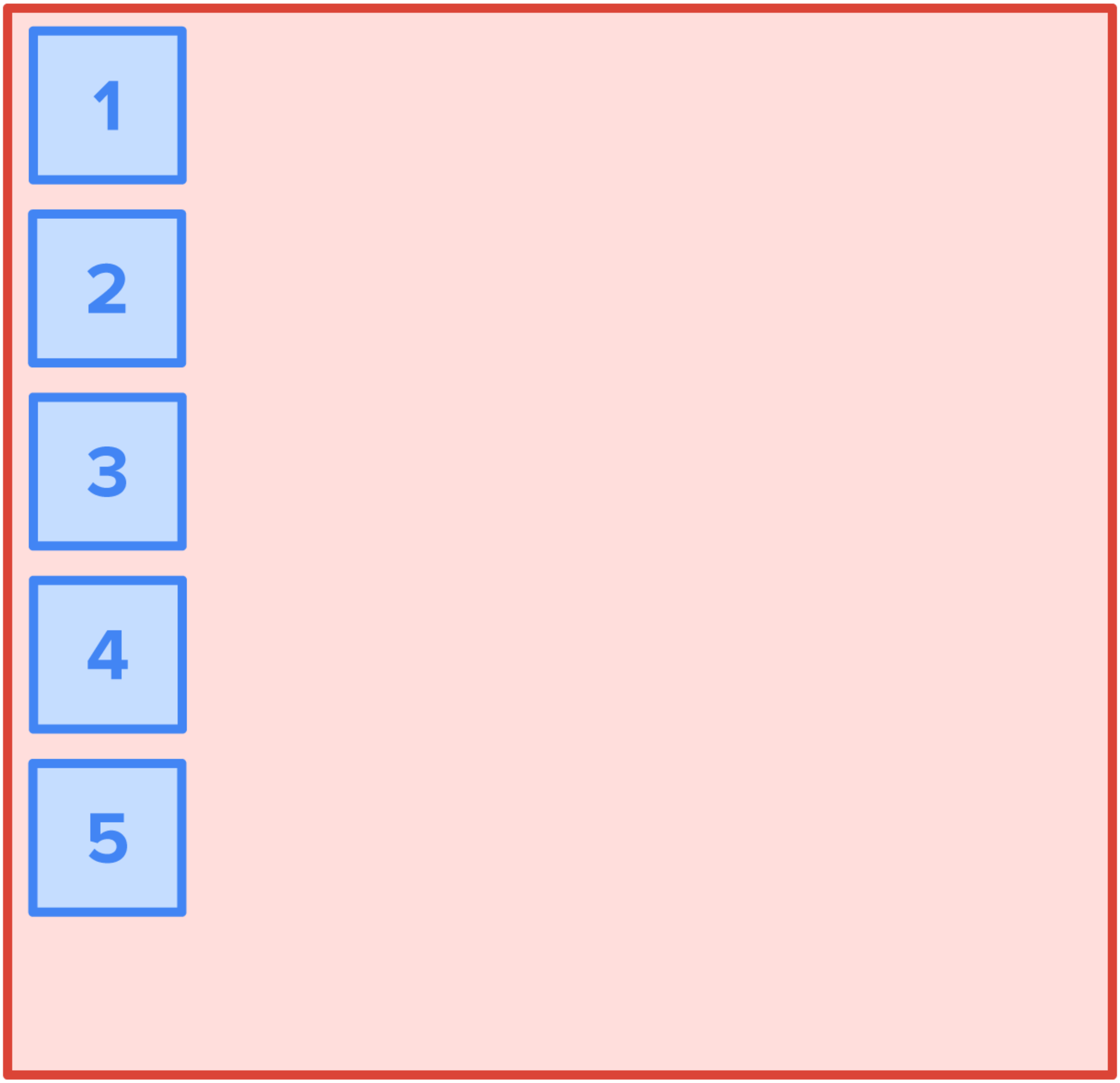
EXAMPLE

HTML:

```
<div id='container'>
   <div>1</div>
   <div>2</div>
   <div>3</div>
   <div>4</div>
   <div>5</div>
</div>
```

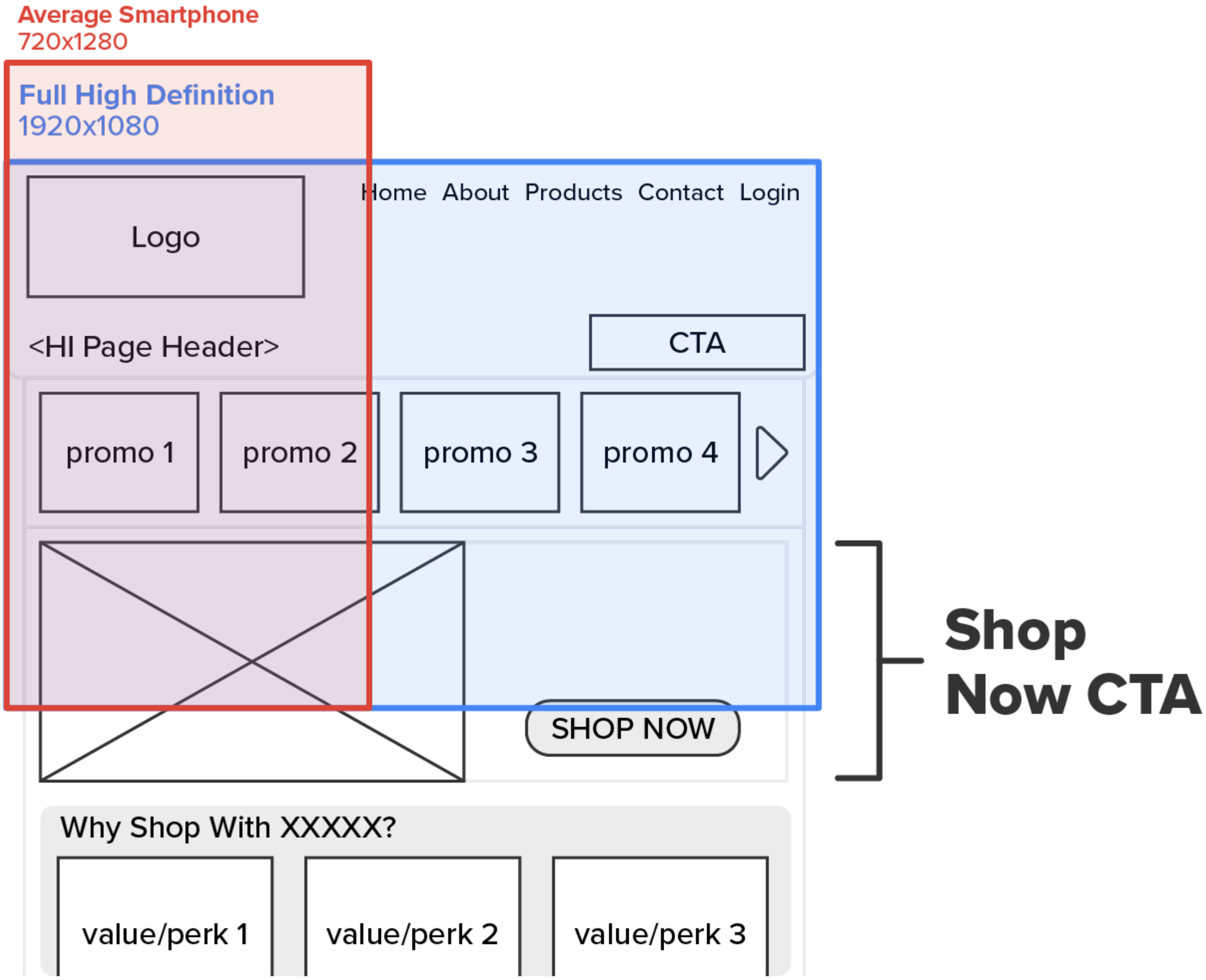
CSS:

```
#container
{
      display: flex;
      flex-direction: column;
}
```



In the following sample wireframe, the screen sizes for average smartphones and full high-definition screens are overlaid over the content. In this case, there would not be enough space to show the entire call-to-action area on a smaller device.

➦ EXAMPLE



One easy approach to handle this issue for smaller screens is to make a container around the entire element (or set of elements) and have its only children being the image and the box containing the “Shop Now” button. The container will use the flex-direction set to “row” as the default for larger screens.

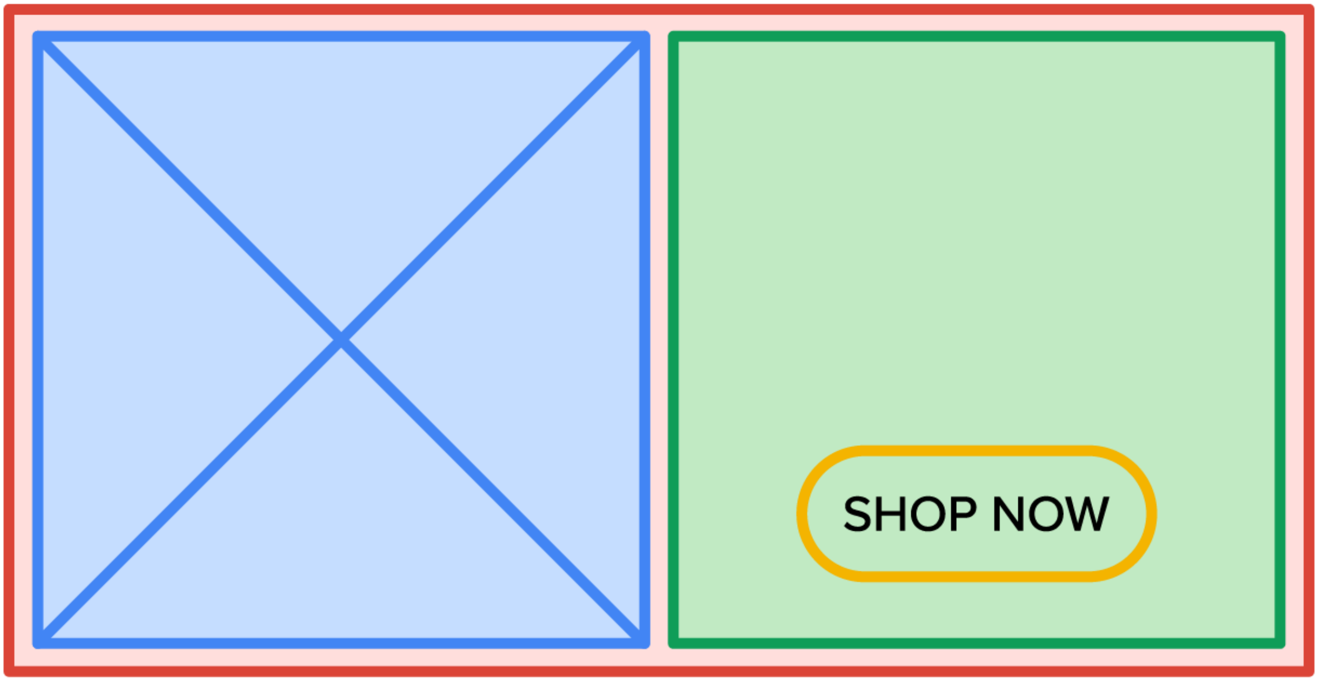
➦ EXAMPLE

HTML:

```
<div id=’container’>
   <img>
   <div>
      <button>SHOP NOW</button>
   </div>
</div>
```

CSS:

```
#container
{
      display: flex;
      flex-direction: row;
}
```



The container will change the flex-direction value to “column” when the screen width is too narrow. This will allow both the image and the “Shop Now” buttons to be visible without scrolling to the left or right.

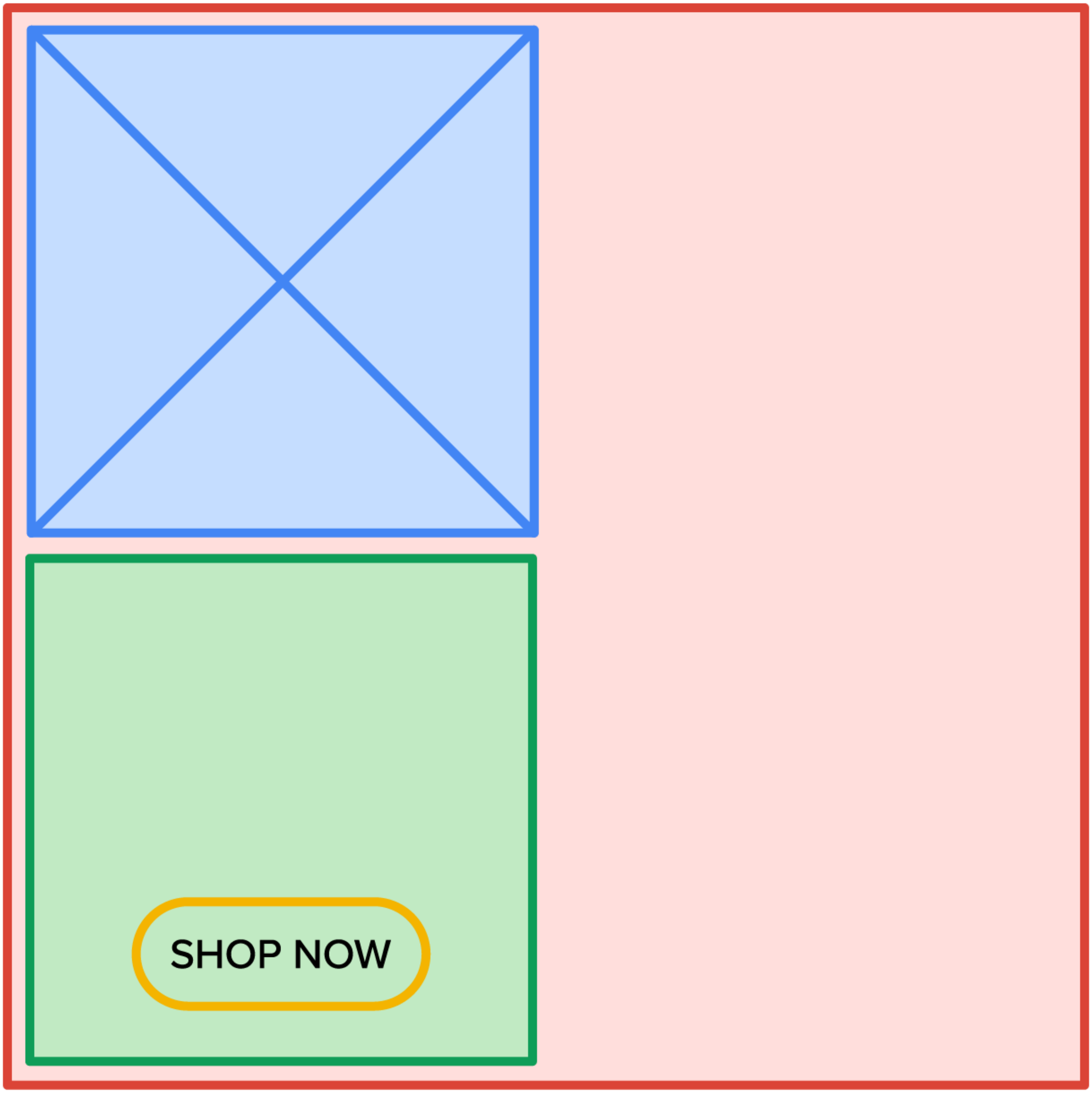
EXAMPLE

HTML:

```
<div id='container'>
   <img>
   <div>
      <button>SHOP NOW</button>
   </div>
</div>
```

CSS:

```
#container
{
      display: flex;
      flex-direction: column;
}
```



Changing the flex-direction value from row to column will stack the two elements within the container, allowing them to fit on a narrow device screen.

THINK ABOUT IT

But how can we do this dynamically? We employ the use of media queries to activate a CSS style rule that overrides the flex-direction with the column value when the screen is below a specific width.

To do this, we start with the default design and style. If we are starting with mobile-first, we begin by setting the default CSS to use flex-direction as a “column.” Then, we set up a media query to detect larger screens and activate a set of CSS that overrides the default CSS values. In this case, the media query would detect that the screen is wide enough and thus would activate the CSS block to override the default CSS, changing the flex-direction from “column” to “row.”

This is just one way that CSS media queries can be used with flexbox to provide effective RWD. The other method of adjusting content based on screen width is to use the content swap method.

TERMS TO KNOW

CSS Flexbox
A CSS layout management model that allows responsive elements within a container to be automatically arranged based on screen sizes. Also called *flexbox*.

Flex-Direction
A property of flexbox that determines whether flex items within a container stack horizontally (row) or vertically (column).

1c. Content Swap

Next, let’s take a look at how to accomplish content swapping using CSS. No code will be introduced yet so that you have the opportunity to explore the concept without getting distracted by programming details. The **content swap method** uses two copies of the same content: one copy is designed for larger screens, and one copy is designed for smaller screens. The trick is that only one of the two copies is visible at one time. This technique is commonly used to implement the **hamburger navigation menu** for mobile devices. In a hamburger menu, an entire menu is created as a popup or dropdown from the hamburger icon, which is an icon consisting of three horizontal bars.

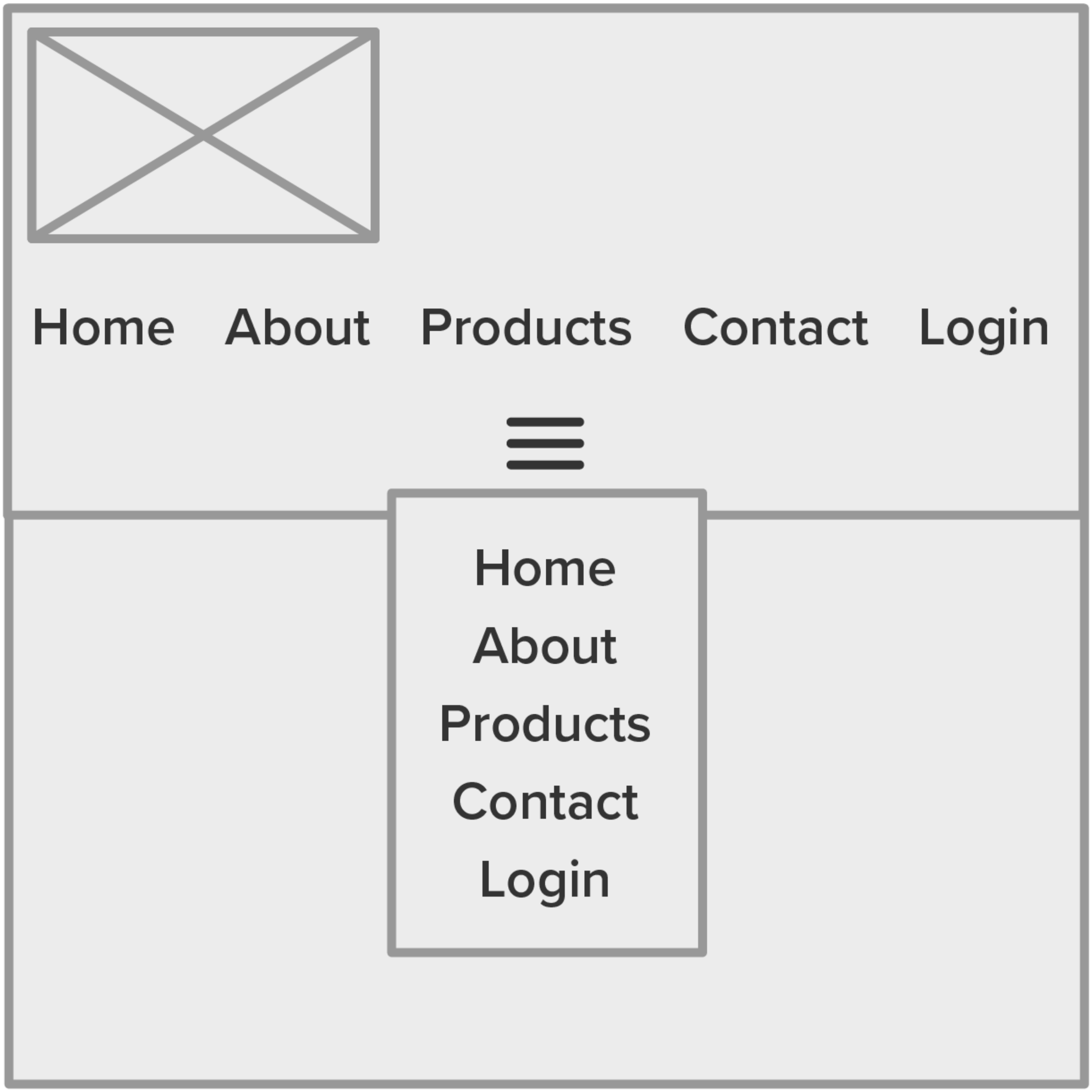
EXAMPLE

On most websites, the navigation menu runs horizontally across the top of the page. When the screen becomes too narrow and the menu won’t fit, instead of just changing the direction of the menu items (as it would likely take up the entire vertical screenspace), the menu is replaced by the hamburger icon. Users can then access the navigation menu by hovering over or clicking on the hamburger icon.

To accomplish this, we build the navigation menu twice on the same page. One version assumes a full-size screen and lists the menu items horizontally. The second version uses the CSS tooltip technique to add a popup menu when the user hovers over or taps on the hamburger icon.

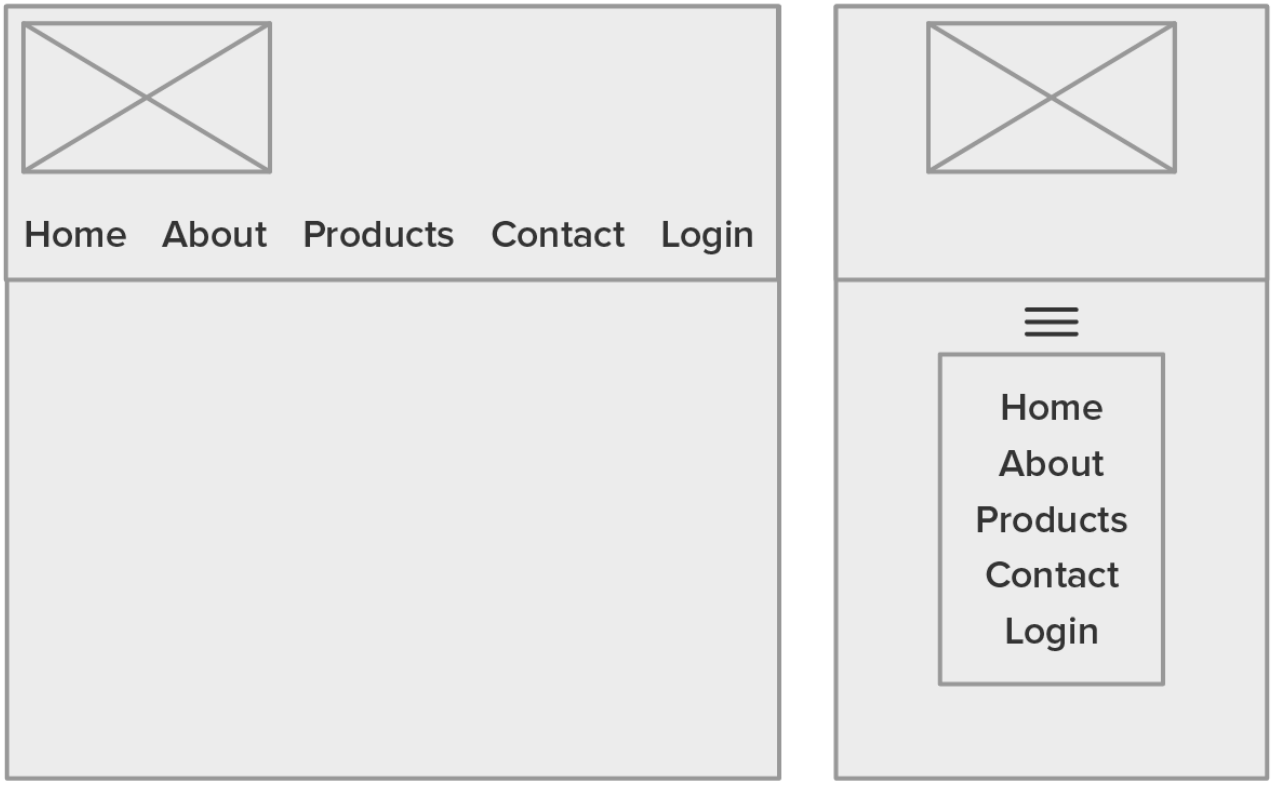
The following page has both menu versions visible.

EXAMPLE



By default, both menus are visible and confusing. One of these two menus needs to be hidden, while the other is visible. We accomplish this with the CSS visibility property. The media query is then used to swap the visibility of both items when the screen becomes too narrow, making the default disappear and the alternative version appear.

↪ EXAMPLE



Additional RWD considerations are as follows:

- Use percentages as units of measurement for most elements, and avoid specifying dimensions using pixels.
- Use the "**rem**" unit of measurement for font sizes.
- Use media queries to adjust alignment.

TERMS TO KNOW

Content Swap Method
A responsive web design technique that replaces entire sections of content with another by swapping the visibility of the two sections.

Hamburger Navigation Menu
An icon consisting of three stacked lines that indicate a hidden menu.

Rem
A unit of measurement for fonts in web development that sizes fonts relative to the font-size value of the root HTML element.

2. Mobile-First Design

With over half of the web traffic today coming from mobile devices, it has become a common practice to start a web design project from the perspective of mobile devices. As a result, many developers have adopted the “mobile-first” approach to designing the layout and responsiveness of a website. There are a number of long-term benefits to this approach.

- A shift toward mobile: Within the last couple of decades, there has been a consistent increase in mobile web traffic. Today, more than half of the web traffic generated today comes from mobile devices. Starting a site design from the perspective of mobile users helps ensure that the site is designed well for the larger mobile audience. Furthermore, should there be any compromises that need to be made to the design or layout for RWD, they will be on the desktop side.

- Content prioritization: Mobile devices offer less space for content, particularly if we are referring to the “above the fold.” Designers need to take advantage of every pixel of space, and forcing them to do so helps prioritize the content. This also helps improve the user’s experience as they are able to quickly determine the site’s relevance and then quickly get to using the site.

- Performance optimization: Mobile devices’ Internet connections are not as robust as a wired office connection. Additionally, since mobile devices work on limited battery power, their processors are also more limited compared to desktop systems. As a result, it is important to design a site from the mobile perspective as it reinforces the need to optimize resources and loading times. While this may be critical to mobile devices, the benefits are also extended to desktop users as well.

- Progressive enhancements: Starting with a mobile-first approach allows developers to progressively enhance the design and functionality of a site as the screen sizes increase. We already have a wide range of screen sizes; thus, starting with the smallest size and progressively moving upward helps ensure a consistent look and feel for a site.

- Future-proofing: By designing from the mobile perspective and developing robust media queries and RWD strategy, you are preparing your site for the future. Having a framework and robust strategy to make your site responsive helps by allowing a site to easily adjust to new device types and screen sizes.

- Increased creativity due to design constraints: Just as the NASA Apollo space program’s strict requirements for weight and volume inspired lots of creativity and ingenuity and set the stage for technology advancements that still impact us today, placing performance constraints and limitations on a website project fosters creative solutions and innovative approaches.

3. Bootstrap

One tool that has become a popular choice for many web developers, particularly front-end developers, is the **Bootstrap** framework. Bootstrap is a framework that simplifies the process of building responsive webpages by abstracting away the details of implementing responsiveness. Developers instead just need to focus on understanding how to apply specific attribute values to HTML elements to make them responsive.

Bootstrap has released version 5, which provides a wide range of features and utilities for doing more than just resizing elements. Bootstrap includes tools to easily implement well-designed tables, grid layouts, progress bars, loading spinners, **pagination**, dropdowns, and much more.

LEARN MORE

Take a quick look at all the features listed for Bootstrap in the left navigation menu of w3schools.com.

DID YOU KNOW

Bootstrap was originally designed and developed at Twitter in mid-2010 and was originally known as Twitter Blueprint prior to being released as open source (Bootstrap, n.d.).

Additionally, Bootstrap is not the only option for RWD frameworks. The w3schools.com organization has developed an effective and more robust alternative to Bootstrap called **W3.CSS**.

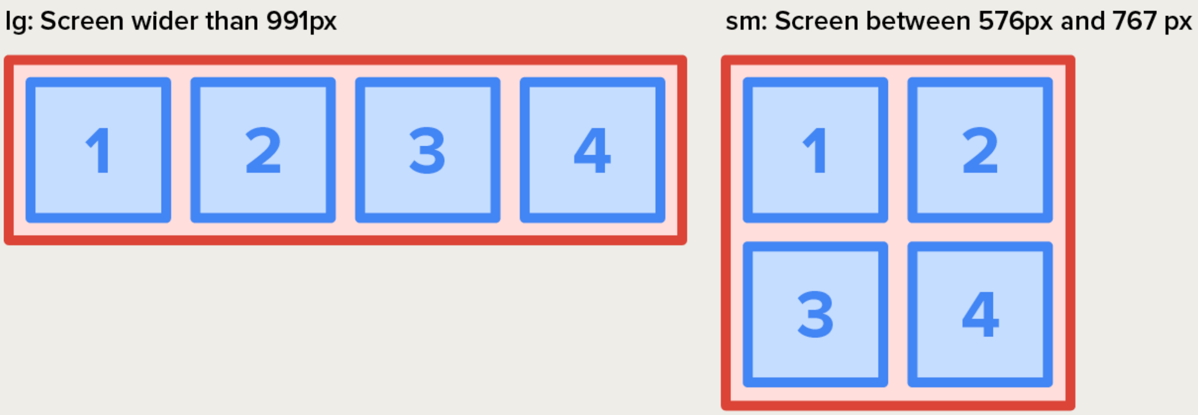
Regardless of which framework you choose, the main idea is simple: first, every row of elements on a page uses a 12-column grid; second, they come with lots of pre-built and pre-formatted elements that can easily be implemented by simply creating an HTML element and assigning it the correct class attributes.

The 12-column grid concept is shared among Bootstrap and W3.CSS and is used to provide proportional width values to elements. Each element can accept a portion of the 12 columns, and the portions can be adjusted based on different screen sizes. In other words, think of the width of a webpage being divided equally into 12 parts or units. Each element can be assigned to take up and maintain a portion of the 12 units.

EXAMPLE

```
<div class="row">
    <div class="col-lg-3 col-sm-6">1</div>
    <div class="col-lg-3 col-sm-6">2</div>
    <div class="col-lg-3 col-sm-6">3</div>
    <div class="col-lg-3 col-sm-6">4</div>
```

```
</div>
```


lg: Screen wider than 991px
sm: Screen between 576px and 767 px
1
2
3
4
1
2
3
4

In the example above, you see that the four inner <div> elements have a class attribute that contains two values.

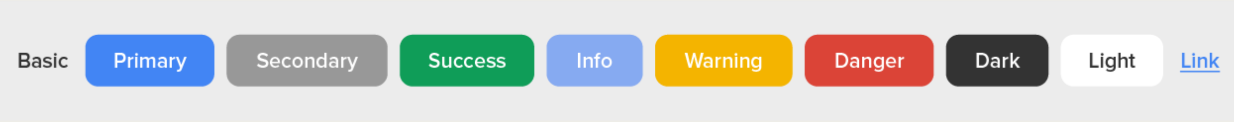
The first is “col-lg-3.” “Col” means that this element will take up horizontal space. “Lg” means that this rule will be applied for larger screens, that is, screen sizes between 992 pixels and 1,199 pixels. The “3” at the end means that it will occupy 3 units of the available 12. The result is that, on larger screens, the four green squares will each occupy 3 of the 12 units, instructing the four squares to occupy ¼ of the available width.

The second value is “col-sm-4.” “Col” means the same in this case. However, the “sm” means this will be applied when screens are between 576 pixels and 767 pixels. Finally, the “6” means that each element will occupy 6 of the 12 units of width. As a result, only two elements occupy the width of the screen, as 6 units equal half of the 12 units and thus half of the available width.

Bootstrap contains eight pre-formatted buttons and two standard buttons that can easily be deployed by applying the “btn” class along with the format modifier class as shown in the following example.

EXAMPLE

The first option is solid buttons:

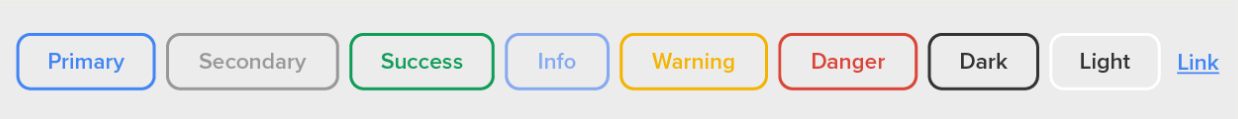


Solid buttons are created using the following code:

```
<button type="button" class="btn">Basic</button>
<button type="button" class="btn btn-primary">Primary</button>
<button type="button" class="btn btn-secondary">Secondary</button>
<button type="button" class="btn btn-success">Success</button>
<button type="button" class="btn btn-info">Info</button>
```

```
<button type="button" class="btn btn-warning">Warning</button>
<button type="button" class="btn btn-danger">Danger</button>
<button type="button" class="btn btn-dark">Dark</button>
<button type="button" class="btn btn-light">Light</button>
<button type="button" class="btn btn-link">Link</button>
```

Outlined buttons are created using the following code:



Outlined buttons are created using the following code:

```
<button type="button" class="btn btn-outline-primary">Primary</button>
<button type="button" class="btn btn-outline-secondary">Secondary</button>
<button type="button" class="btn btn-outline-success">Success</button>
<button type="button" class="btn btn-outline-info">Info</button>
<button type="button" class="btn btn-outline-warning">Warning</button>
<button type="button" class="btn btn-outline-danger">Danger</button>
<button type="button" class="btn btn-outline-dark">Dark</button>
<button type="button" class="btn btn-outline-light text-dark">Light</button>
```

While everything provided by Bootstrap and W3.CSS frameworks can be recreated manually, there is a lot of value to be gained by utilizing these features. Using Bootstrap or W3.CSS saves a developer time, costs little to no money, and improves the consistency and quality of the work produced.

TERMS TO KNOW

Bootstrap
A free and open-source CSS framework designed for creating responsive, mobile-first front-end interfaces.

Pagination
The process of dividing content up into discrete pages.

W3.CSS
A small robust free CSS framework designed for creating responsive, mobile-first front-end interfaces.

4. Real-World RWD Example

RWD starts with the designing of webpage wireframes. Let’s take another look at the wireframes for the bakery with the mobile-first approach in mind. We will use the Figma.com web application to build the wireframes for the homepage.

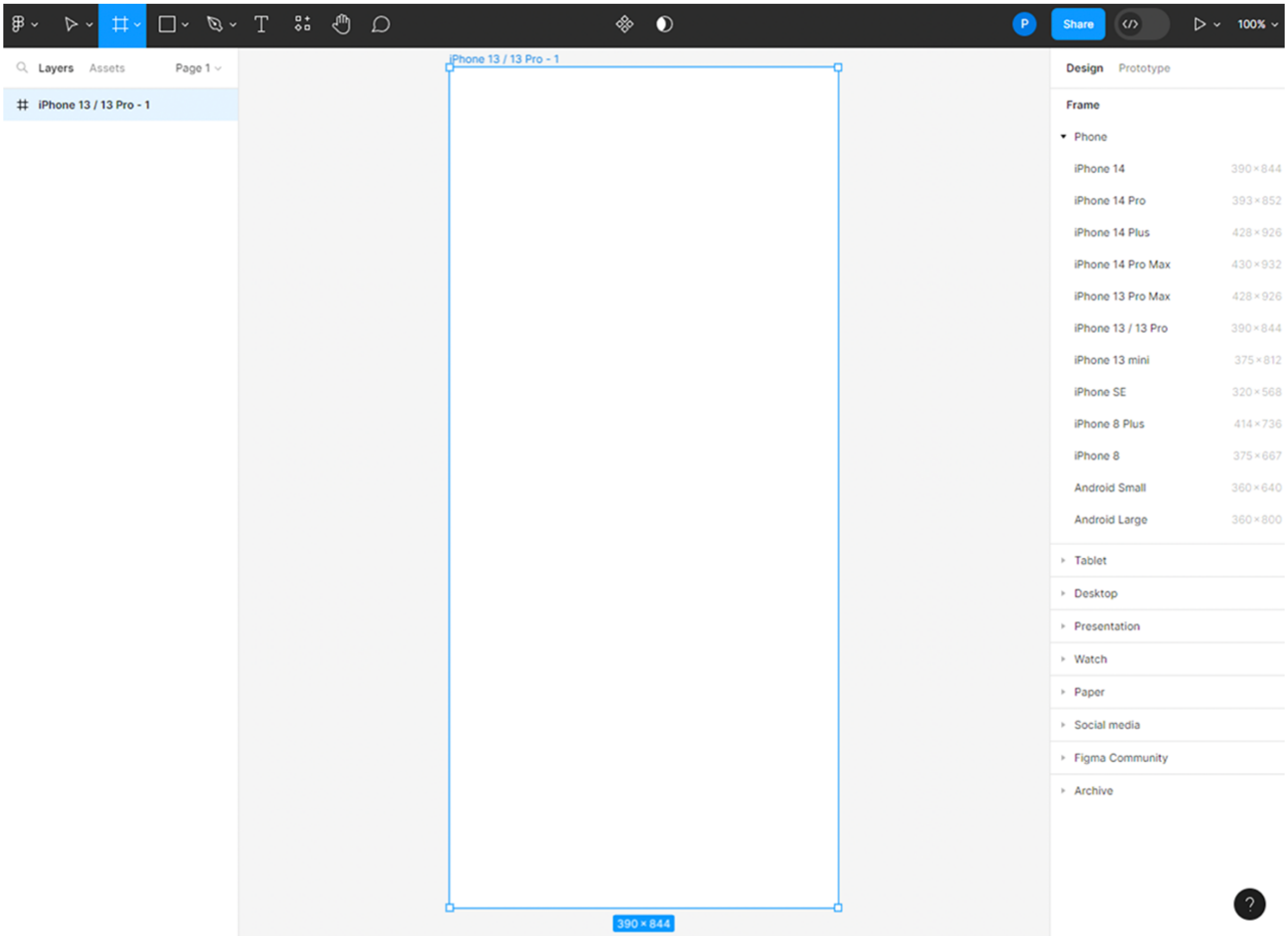
MAKE THE CONNECTION

You will create a wireframe for your client in Touchstone Task 1: Selecting Your Client and Planning Your Website Design. Now is a great time to start building your wireframe design skills. You can practice with the bakery example if you have not already defined your own client.

TRY IT

Directions: The first step is to go to figma.com and start a new document. We will begin by placing a “frame” that is sized for an iPhone 13 Pro.

The Figma screen should look like this:



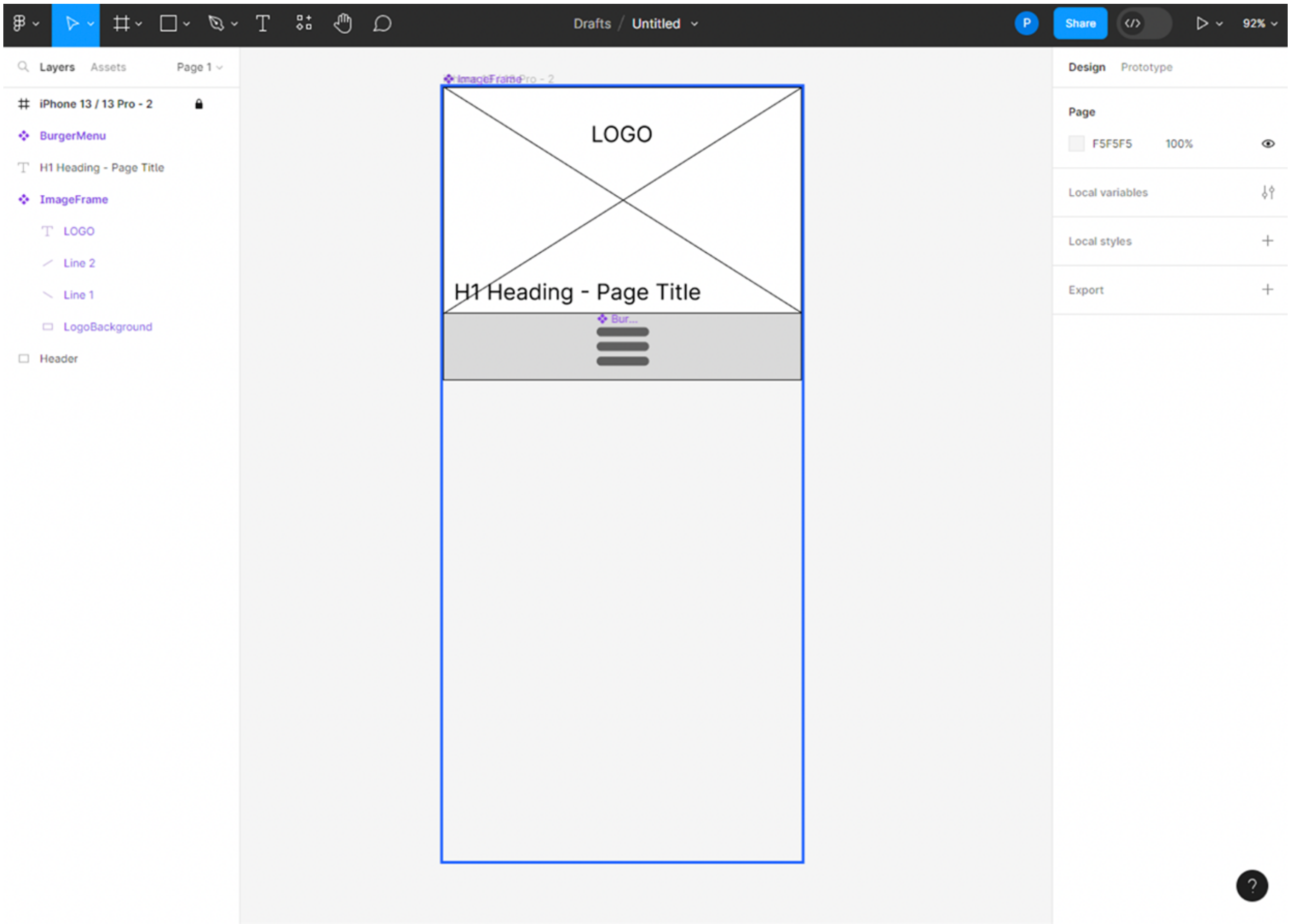
REFLECT

The frame helps inform the developer where the screen boundaries are located. When you use the frame tool, you are given categories of device types, including phone, tablet, desktop, presentations, and more. Each category has a list of common screen sizes and resolutions.

TRY IT

Directions: Next, we will build the desired elements to the dimensions of the frame, using the frame to keep the content within the left and right limits. Add your header content including the logo, Level 1 heading, and hamburger menu.

The Figma screen should look something like this:



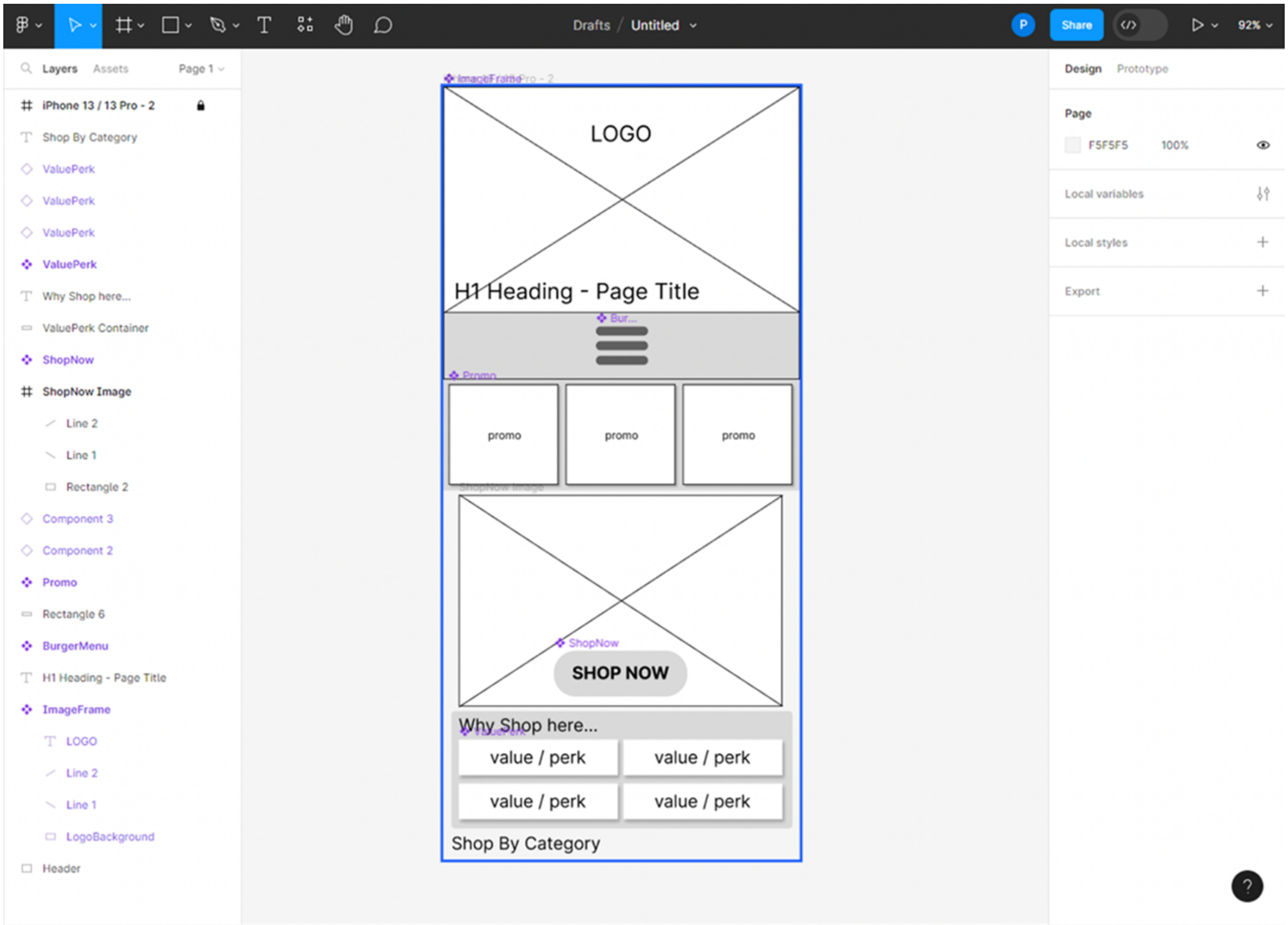
REFLECT

The frame created by selecting it from the right menu represents the iPhone 13 Pro screen size of 390 by 844 and can be edited like other elements. In the example above, we have added a blue stroke 3 pixels thick extending to the outside of the shape. This makes it much clearer as to where the screen boundaries are located.

TRY IT

Directions: Next, we begin building the body elements. In this case, we place promos, the Shop Now CTA, and then the value/perks of doing business with the bakery.

The Figma screen should look something like this:



REFLECT

At this point, notice that we are almost out of vertical space. Not a problem! Vertical scrolling is expected. However, this does mark the end of the “above the fold” area. Anything else added to the page should have a lower priority. Only the highest priority elements and content should be placed on the fold.

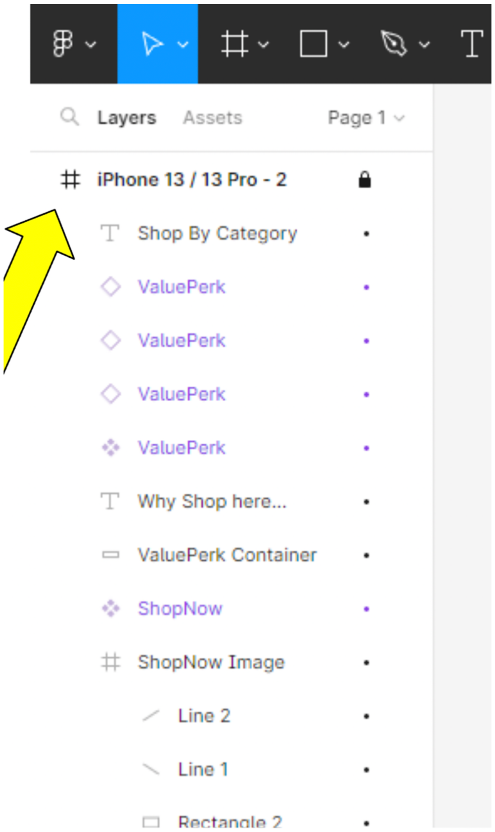
You also may notice that, when you try to add more content to the frame, it gets cut off. This is because you are creating items that are embedded in the frame. The left outline pane displays all your items nested under the iPhone frame.

TRY IT

Directions: We need to highlight the elements and drag them out of the frame. That way, the frame can sit above the elements, the fill color will be changed to transparent, and the outline will remain as an overlay on top of the elements.

1. Click on the first element nested under the frame, hold down the “Shift” key, and then select the last item.
2. Then, click and drag one of the highlighted items to the blank space below the list, to the left corner, and release.

EXAMPLE



iPhone 13 / 13 Pro - 2

Shop By Category

ValuePerk

ValuePerk

ValuePerk

ValuePerk

Why Shop here...

ValuePerk Container

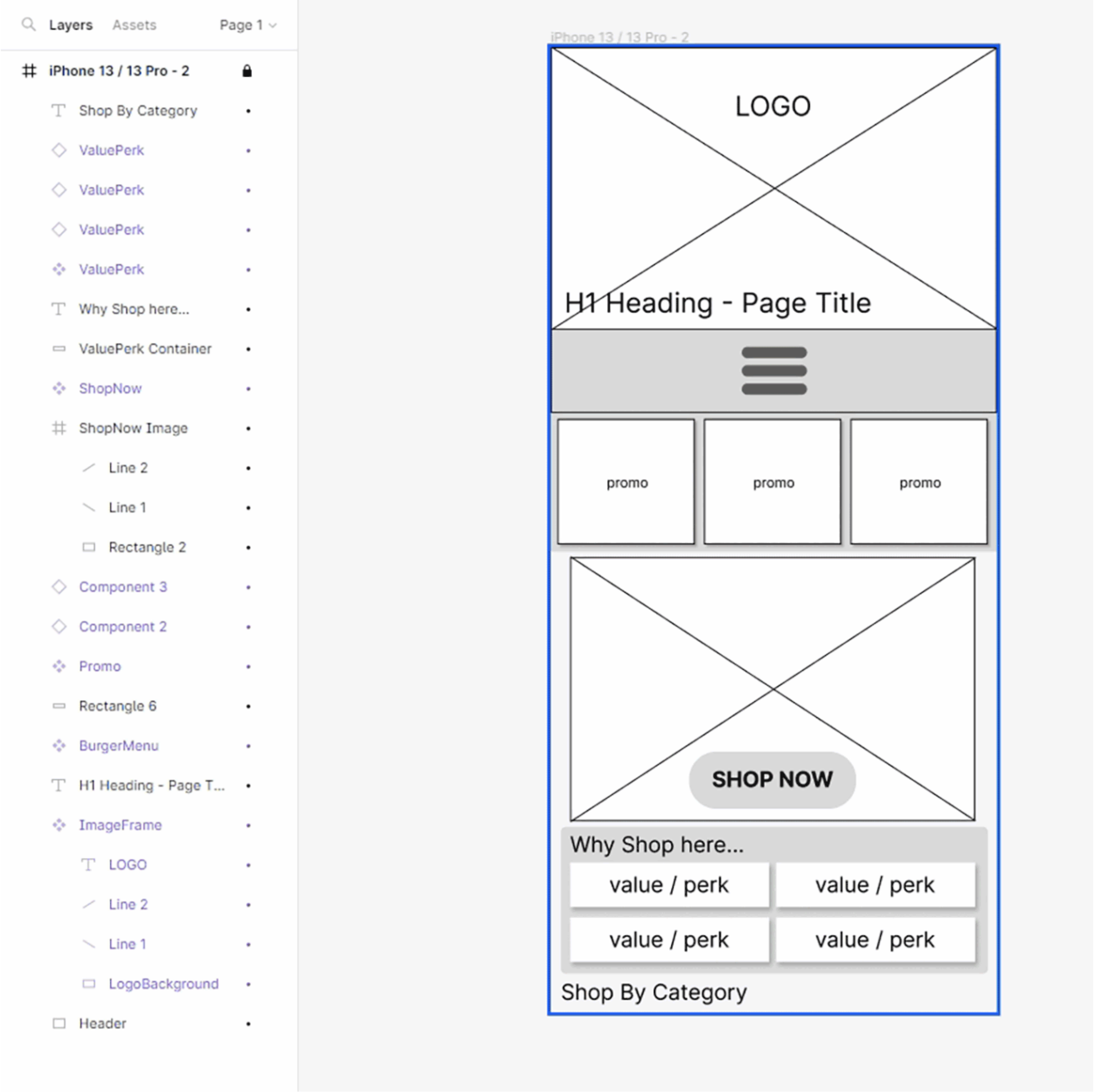
ShopNow

ShopNow Image

Line 2

Line 1

Rectangle 2



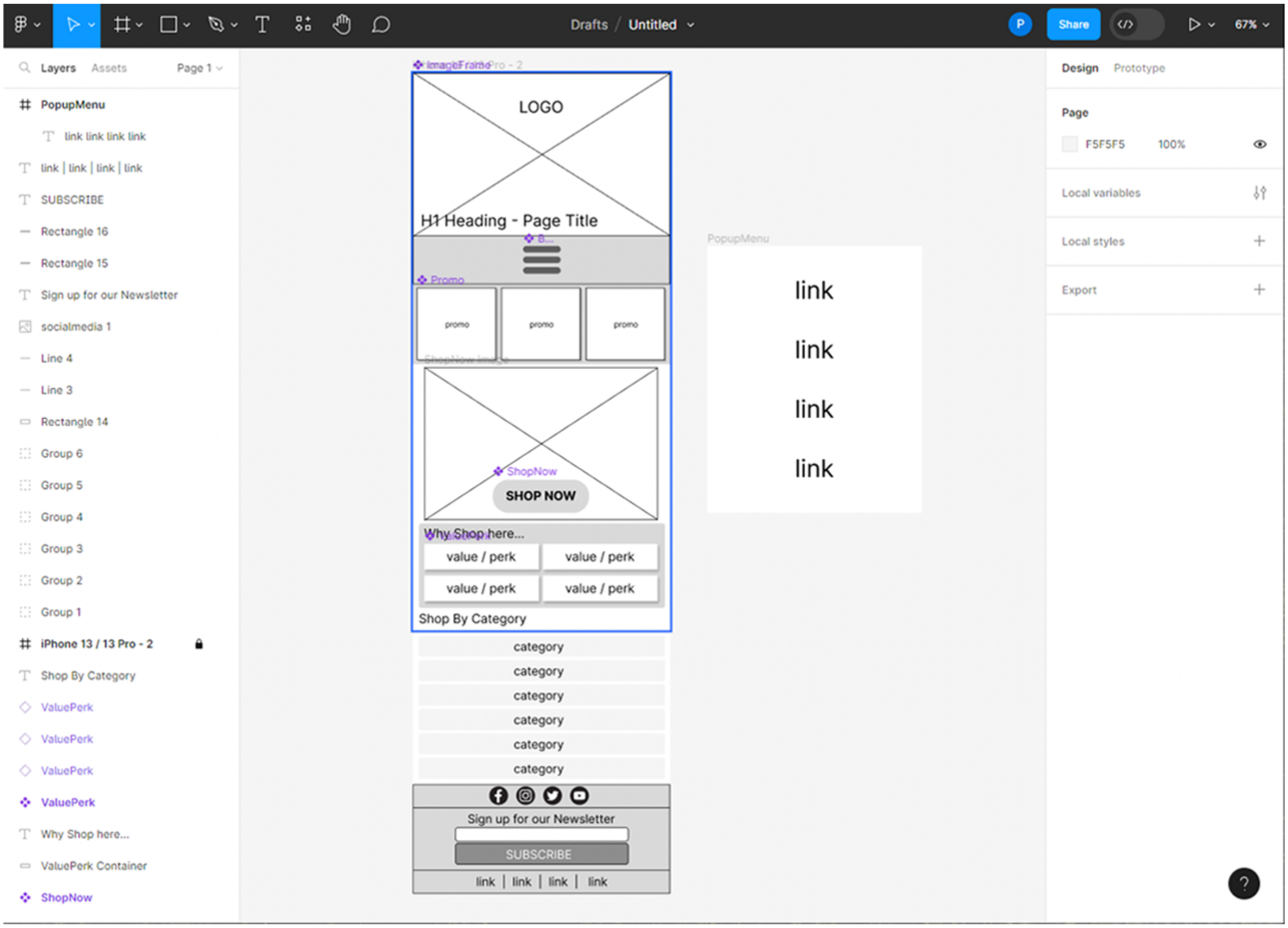
REFLECT

This will cause the list of items to unindent out from under the frame and no longer be cut off by the frame.

TRY IT

Directions: At this point, you can continue creating the items for the remaining elements down to the footer.

The Figma screen should look something like this:



REFLECT

Your wireframe should be almost complete if you have been following along.

HINT

Figma has functions that you can use to make it easier to create and reuse complex elements, groups, and components.

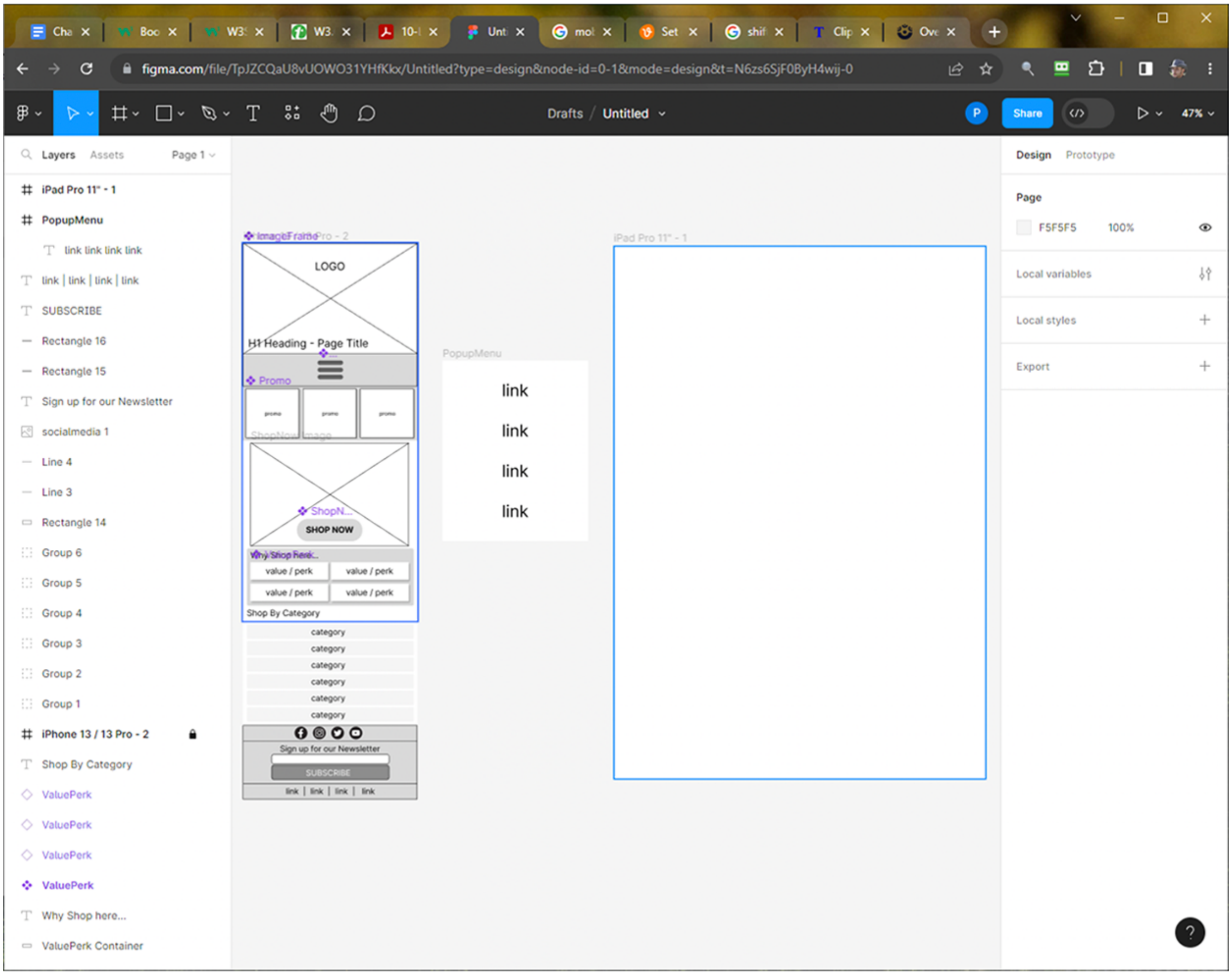
Function Name	Description
Select Multiple Items	When you hold down “Shift” on the keyboard, you can click on additional items to select them. The multiple items selected can be moved together, deleted, resized, etc.
Group Items Together	Additionally, you can select multiple items and then right-click on one of them and choose “Group Selected” to group them together. Groups allow you to treat the multiple related items as one when you need to reposition or resize the element.
Create Reusable Components	Components allow you to group items together and reuse that item as a source model for the copies. This means that when making a component and copying it multiple times, any changes to the original component will be replicated to all of the copies. Components are very helpful when you have multiples of the same compound element,

	such as gallery image placeholders and menus. To make a component, select multiple items, right-click one, and select “Create Component.”

TRY IT

Directions: The next step involves adding a frame to the side of the first wireframe for the next larger device and rebuilding the layout to include all items, fill the space appropriately, and make use of the added space.

The Figma screen should look something like this:



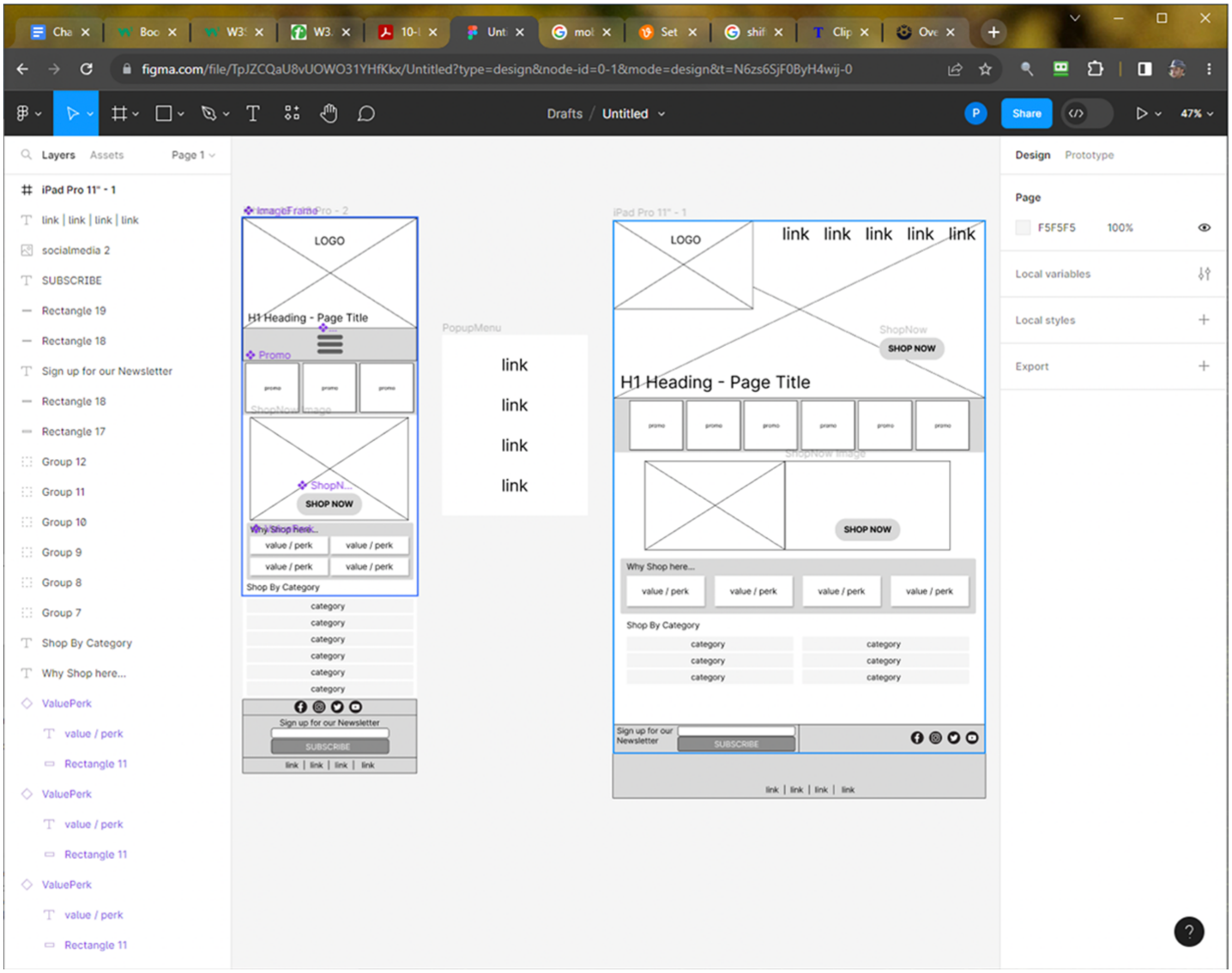
REFLECT

For the bakery website, we create a frame for the iPad Pro 11 and place it to the side of our first frame.

TRY IT

Directions: Build the items into the page again, starting with the header and then moving down.

The Figma screen should look something like this:



REFLECT

Remember that with additional screenspace, you can employ different design styles and layouts that work with your mobile design and take advantage of the space. Another example would be to increase the height of the categories buttons and include an image.

TRY IT

Directions: The next step is to repeat the process for as many device types and sizes as needed. It may be that the tablet size is enough; however, for screens that are much larger than a tablet, the elements might stretch across the screen and the page may lose its visual impact. It may be worth setting up one final media query threshold to handle anything larger and setting a fixed width limit to the body of the page.

EXAMPLE

If the device's screen is wider than 900 pixels, then limit the width of the BODY element so that as the screen continues to get wider, the page stops stretching past a certain limit, such as 900 pixels. It may be that instead of limiting the BODY to a particular width, a site can take advantage of wider screens to display additional information or give the user more screenspace to use the site's features.

REFLECT

If you practiced with the bakery website, you'll need to repeat the steps with the details specific to your client for the final project.

Regardless of what direction the project takes, wireframes are an ideal tool for playing with different layout styles, designs, and organizational approaches. Wireframes allow developers and designers to be given a set of required elements and to be able to not only include all elements but also experiment with layouts and designs in an effort to maximize their impact.

Wireframes also help with the design process when addressing RWD. Taking the time to think about how elements will be reorganized based on the available horizontal screenspace goes a long way in making implementing the layouts easier.

SUMMARY

In this lesson, you learned about the concept of **responsive web design (RWD)** and how we use **media queries**, **flexbox**, and **content swap** to make a site responsive. You learned why we design with the **mobile-first** approach and its benefits. Lastly, you learned about **Bootstrap** and the alternative W3.CSS, which are frameworks that can greatly increase productivity by abstracting away the smaller details of making a site responsive.

Source: This Tutorial has been adapted from "The Missing Link: An Introduction to Web Development and Programming " by Michael Mendez. Access for free at https://open.umn.edu/opentextbooks/textbooks/the-missing-link-an-introduction-to-web-development-and-programming. License: Creative Commons attribution: CC BY-NC-SA.

REFERENCES

Bootstrap. (n.d.). *About · Bootstrap v5.3*. getbootstrap.com/docs/5.3/about/overview/#history

TERMS TO KNOW

Bootstrap

A free and open-source CSS framework designed for creating responsive, mobile-first front-end interfaces.

CSS Flexbox

A CSS layout management model that allows responsive elements within a container to be automatically arranged based on screen sizes. Also called *flexbox*.

Content Swap Method

A responsive web design technique that replaces entire sections of content with another by swapping the visibility of the two sections.

Flex-Direction

A property of flexbox that determines whether flex items within a container stack horizontally (row) or vertically (column).

Hamburger Navigation Menu

An icon consisting of three stacked lines that indicate a hidden menu.

Media Feature Rule

A media query condition that tests a given feature of a device to determine if and when a set of CSS style rules should be activated or deactivated.

Media Query

A CSS feature that can be configured to activate or deactivate CSS style rules based on set conditions.

Media Type

The condition of a media query that specifies what type of device should receive the CSS style rules.

Pagination

The process of dividing content up into discrete pages.

Pixels

Short for “picture elements”; the smallest addressable elements in a raster image or digital display screen.

Rem

A unit of measurement for fonts in web development that sizes fonts relative to the font-size value of the root HTML element.

Responsive Design

The same as responsive web design; an approach to web development that enables a website to automatically adapt to different device screen sizes.

W3.CSS

A small robust free CSS framework designed for creating responsive, mobile-first front-end interfaces.