CP1406 – Week 5 Responsive Design Part Designing for Mobile Devices

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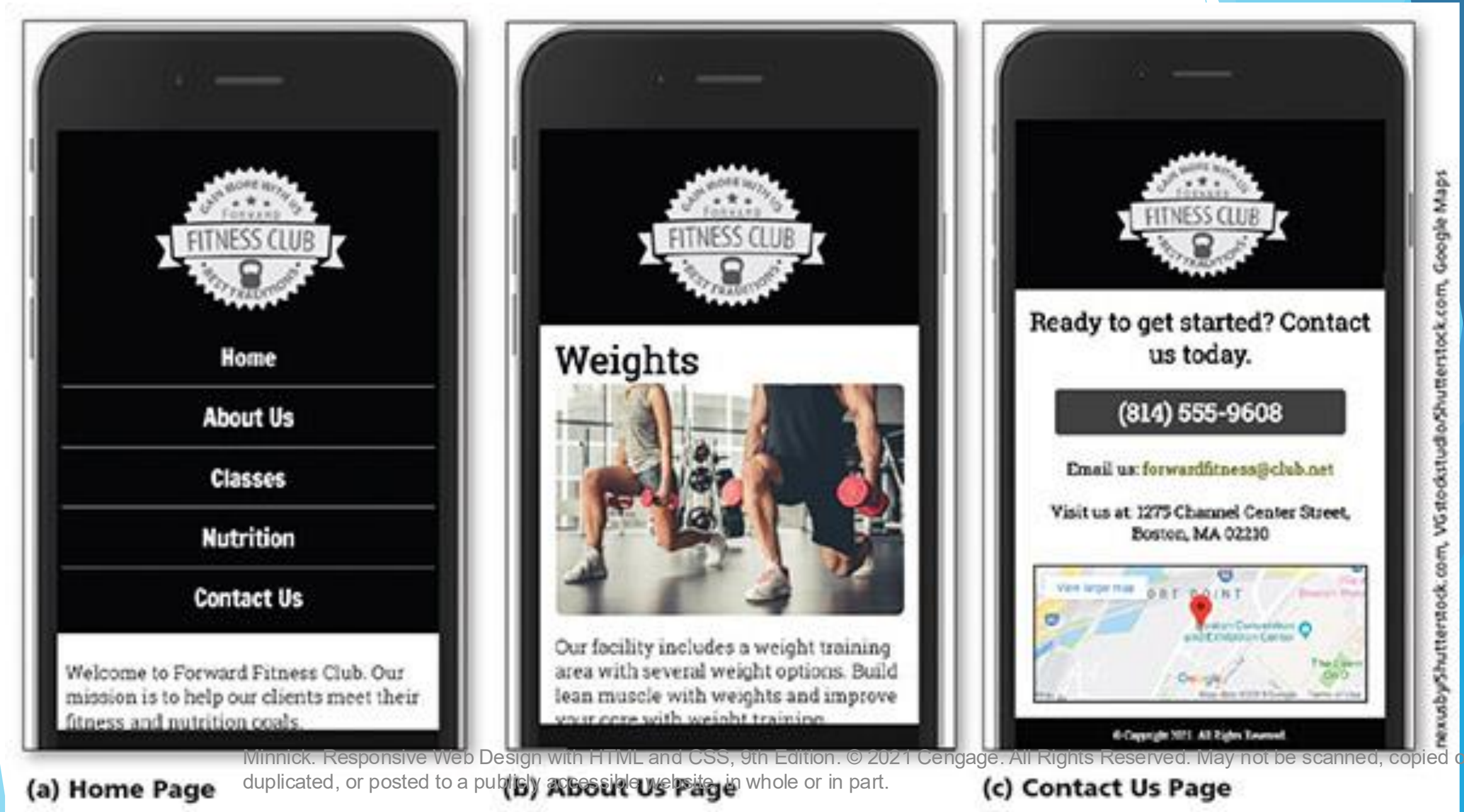
Introduction

- Responsive design is a website development strategy that strives to provide an optimal user experience of a website regardless of the device used
  - By applying responsive design principles, the webpage and content respond to the screen size of the user's device
    - Minimises unnecessary scrolling and zooming, making reading and interacting with the site as convenient and intuitive as possible

Project — Redesign a Website for Mobile Devices

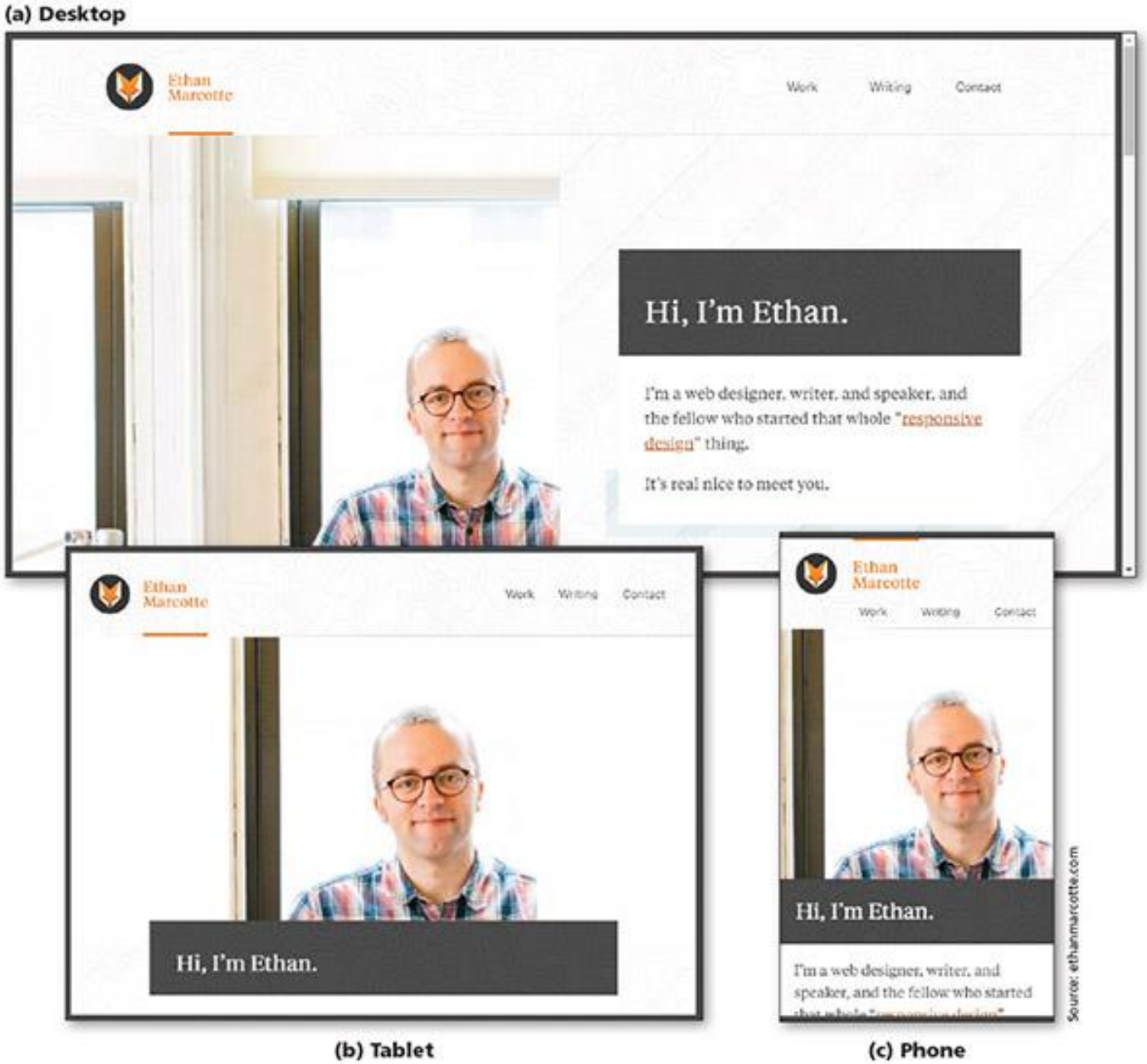


(a) Home Page (b) About Us Page (c) Contact Us Page

Exploring Responsive Design

- Content is easy to read and navigate on devices of three sizes: desktop browser, tablet, and phone
- Philosophy that is constantly refined as HTML and CSS standards, browsers, and technology evolve and improve

Exploring Responsive Design



Exploring Responsive Design

- Fluid layout
  - Applies proportional size measurements to the webpage wireframe and content
  - The viewport is the viewing area for the webpage;
    - refers to the area of the webpage that a user sees at any one time, regardless of device, browser, screen size, screen resolution, window size, or orientation

Exploring Responsive Design

- Responsive or flexible images
  - Shrink and grow based on the size of the viewport
  - Do not have height and width attributes or values in the HTML document
  - Use CSS rules to resize the image relative to the wireframe and viewport

Exploring Responsive Design

- Media queries
  - Allow the webpage developer to detect the approximate pixel size of the current viewport
  - Allow the developer to selectively apply CSS rules that work best for that viewport size

Designing for Mobile Devices

- Mobile website
  - Completely separate, parallel website optimised for mobile users to address problems with viewports
  - Identified with an m. or mo. prefix in the URL
  - Optimises the viewing experience for a wide range of devices using one website
  - Major downside: multiplies the work required to maintain what becomes two separate websites for the same organisation

Designing for Mobile Devices

- Mobile-first strategy
  - Employs responsive design principles
    - Web developer designs the flexible wireframe and essential content for the smallest viewport first, progressively adding more content as the viewport grows
    - Media queries are used to add styles for progressively larger viewports, progressing from tablet to laptop and desktop
  - More productive and effective way to build a website from scratch

Designing for Mobile Devices

- Implementation of the website development approach depends on many factors
  - Current environment
  - Target audience
  - Available resources
  - Time available to tackle the project

Designing for Mobile Devices

(a) Mobile-First Approach

(b) Traditional Approach

Using Responsive Design

- Webpage with a fluid layout adjusts the webpage design and content based on the size of the viewport
  - Responsive designs are based on fluid layouts
- Fixed layouts do not change in width based on the size of the viewport
  - Use fixed measurement units such as pixels to define the width of the areas of the wireframe that “fix” the width of the content regardless of the size of the viewport

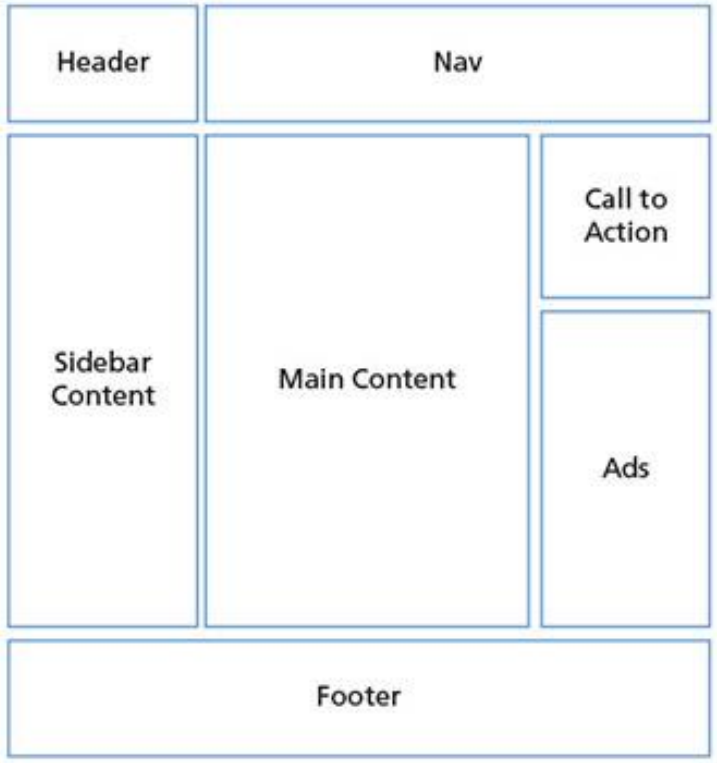
Creating a Fluid Layout

- A fluid layout requires a fluid grid, media queries, and responsive images
  - To create a fluid grid, you design a webpage that uses a grid or columns
  - A mobile viewport should use a single-column design, which is ideal for a smaller viewport
  - As the viewport's size increases, the number of columns can also increase

Following a Mobile-First Strategy

- It is better to use a single-column layout for a mobile display as this prevents scrolling horizontally
  - Displaying what mobile device users need and want on a single screen with minimal scrolling creates a more enjoyable experience
- Styling content for mobile devices requires that each page be analysed
  - Determine the most important content on the page and style that content

Following a Mobile-First Strategy



(a) Desktop Wireframe

(b) Mobile Wireframe

Following a Mobile-First Strategy

- Some key practices when designing for mobile viewports
  - Make use of 100% of the screen space
  - Design the navigation to be easy and intuitive
  - Keep load times minimal
  - Display essential page content and hide nonessential page content
  - Make the content easy to access and read
  - Design a simple layout

Following a Mobile-First Strategy

- When creating a website with a responsive design, a meta viewport element must be included within every HTML file
  - Provides the browser with information about the page's dimensions and how to adjust scaling on the webpage
- A mobile simulator displays an example of how a website would appear on a mobile device
  - Many available online

Following a Mobile-First Strategy

Source: hernandopa-fl.us

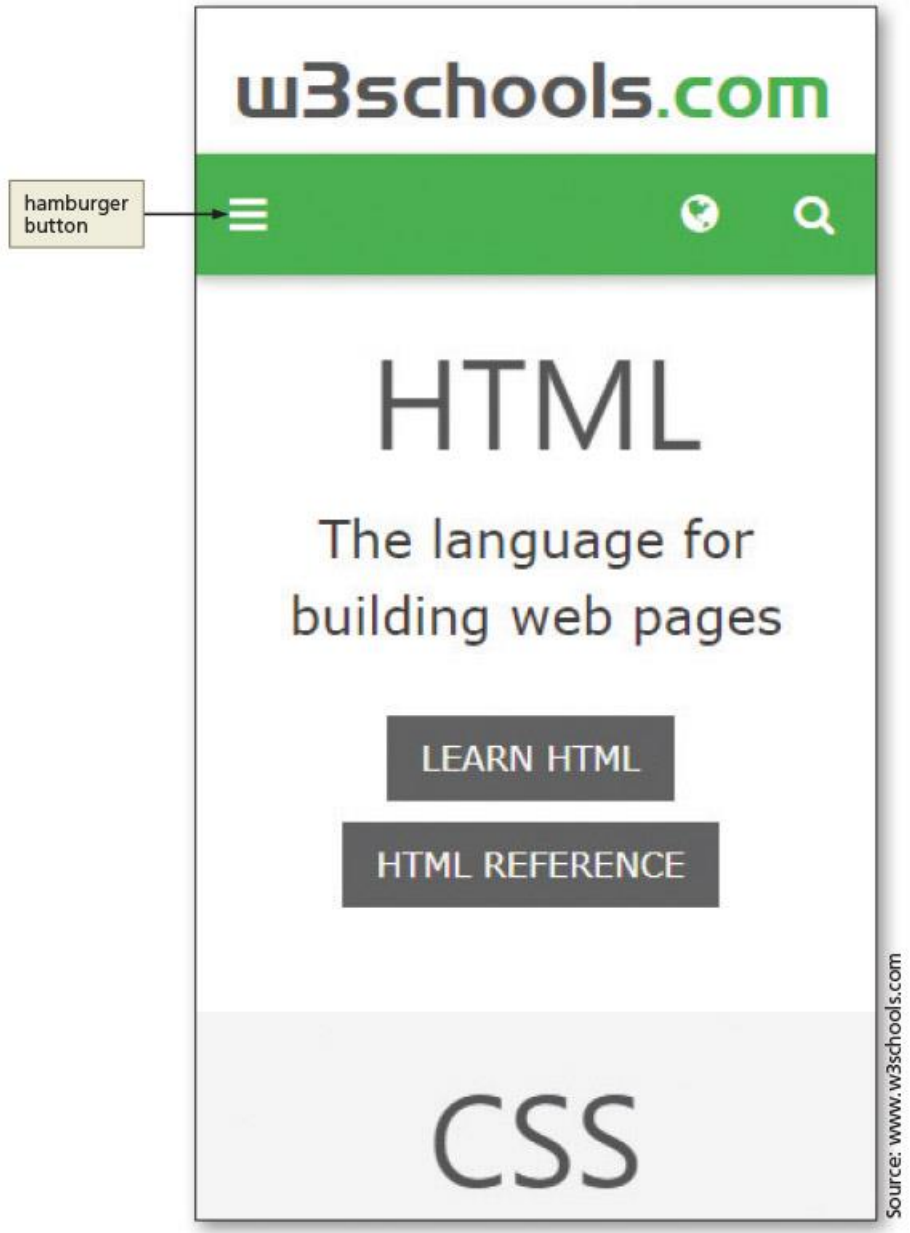
Following a Mobile-First Strategy

- Steps in a mobile-first strategy
  - First, analyse each page to determine the most essential content and whether to hide some of the content on a mobile device
- Depending on the design, you may want the company name or logo to remain at the top of the webpage as the user scrolls down
  - To accomplish this task, you create a fixed or sticky header, known as a sticky element

Following a Mobile-First Strategy

- The navigation system for a website can look different in each viewport
  - Many mobile viewport designs use a hamburger button or icon to display or toggle a navigation system
- Typography is a design element to consider when designing a website
  - Today, many custom fonts can be used by downloading them onto web servers or by linking to them in HTML files

Following a Mobile-First Strategy



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Following a Mobile-First Strategy

- A pseudo-class can be used with a selector to specify the state of an element
  - For example, you can specify a style to apply when a mouse hovers over an element
- Essential information can be added to the home page without removing the content for webpage visitors with a desktop device
  - The div element is used to accomplish this task

Following a Mobile-First Strategy

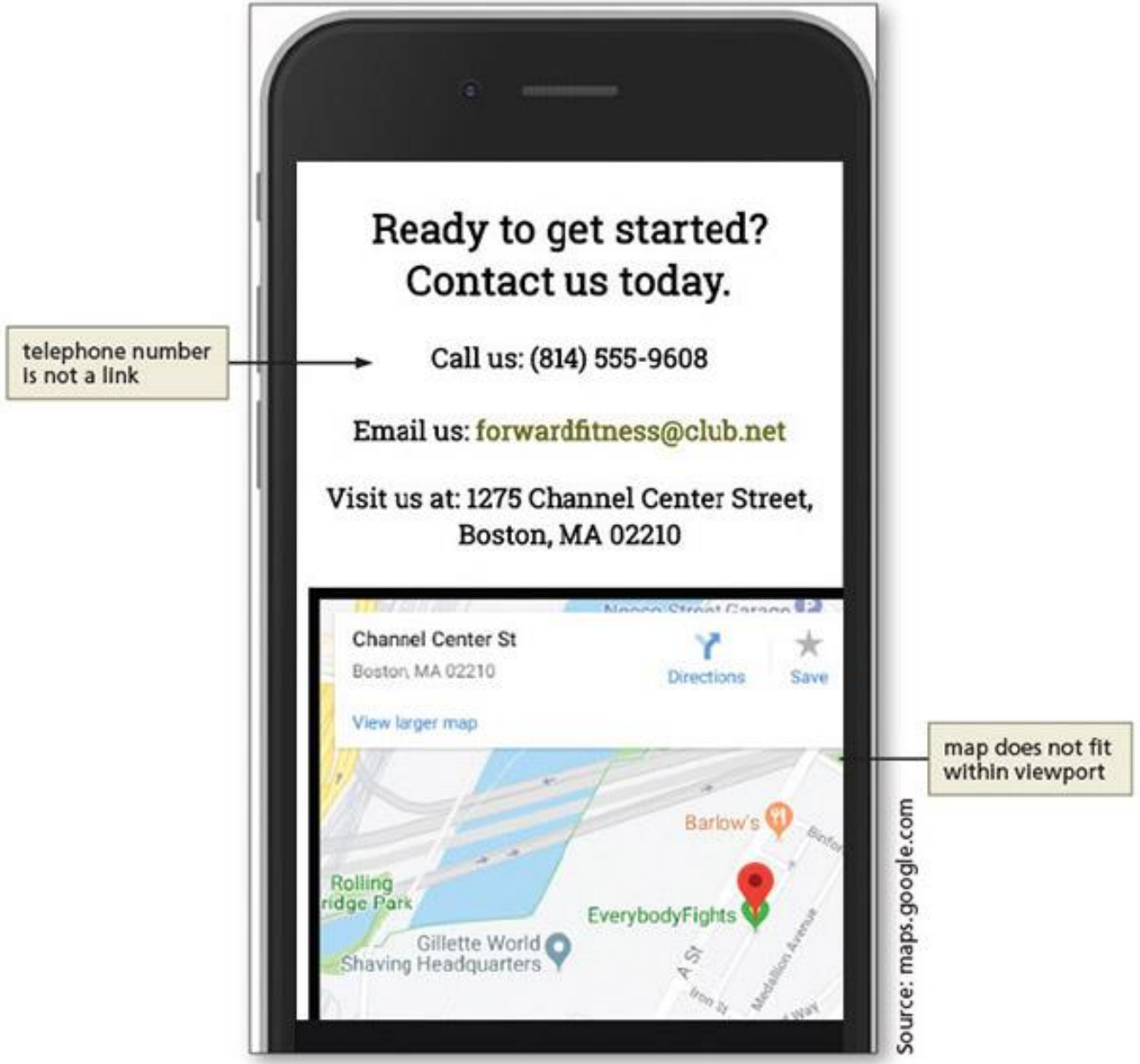
- By default, element borders use a 90-degree angle at each corner
  - You can see the angle when you specify a border all around an element
    - Images also have a default 90-degree angle at each corner
    - Change default appearance by applying rounded corners with CSS
    - CSS property to round corners is border-radius
      - e.g. `border-radius: 25px;`

Analyse the About Us Page for Mobile-First Design

use single-column layout

hide common exercises information

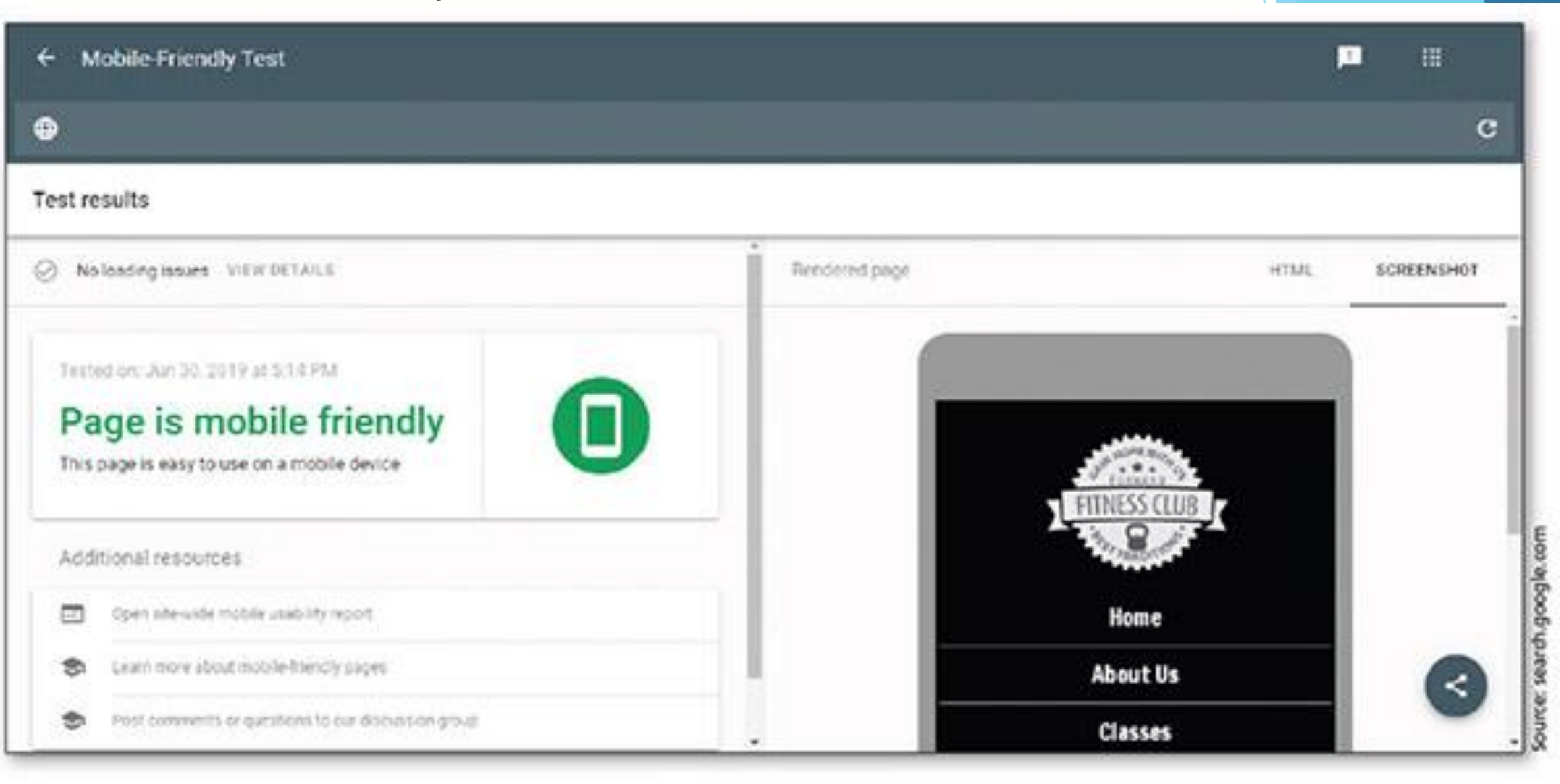
Analyse the About Us Page for Mobile-First Design



Mobile-Friendly Test

- Once you have completed your design for a mobile viewport, view and test it on as many smartphone devices as possible
  - Google Chrome's device mode is helpful during the design process
  - Testing on an actual device is optimal

Mobile-Friendly Test



Using Media Queries

- Media query
  - Detects the media type and capabilities of the device that the browser is running on
  - Applies styles that work well for that situation, based on the information provided
  - Applies styles to move, hide, or display content on the page, change text or colours, or add any other styles to make the page easier to read in a particular situation

Using Media Queries

- Basic example of a media query inserted into the link tag of an HTML page

```
<link rel="stylesheet“ href="css/styles.css“ media="screen">

<link rel="stylesheet“ href="css/stylesprint.css“
media="print">
```

Using Media Queries

- Breakpoints
  - Set to understand the code and syntax of how a media query detects viewport size
  - Point at which a webpage is required to change
  - Where different styles are applied to the webpage to cause it to change in a way that makes it easier to read and navigate for a particular viewport

Using Media Queries

Device	Minimum Viewport Width	Maximum Viewport Width
Small smartphones	320px	480px
Larger smartphones and tablets	481px	768px
Tablets in landscape orientation, laptops, and small desktop monitors	769px	1279px
Large desktop monitors	1280px	NA

Table 6–1 Common Viewport Breakpoints

Media Query Expressions

- Media queries can use a logical expressions to test whether a viewport has reached a particular breakpoint
  - Includes the name of a media query feature, a characteristic of the environment, and a breakpoint value to be tested
  - If the logical expression evaluates to “true,” the media query applies the styles that follow

Media Query Expressions

- Media query can also test for both minimum and maximum breakpoints
  - Example:
    - <link rel="stylesheet" href="css/styles-tablet.css "media="screen and (**min-width**: 481px) and (**max-width**: 768px)">
    - The code directs browsers to apply the styles-tablet.css stylesheet in the css folder when screens have a viewport width between 481px and 768px
      - When testing for minimum and maximum widths, the word “and” separates each part of the media attribute value

Media Query Expressions

- Another way to implement media queries is to code them directly into a single CSS file using the @media rule
  - Most common types are screen, print, and all

Media Query Expressions

Feature	Description
max-width min-width	Width of the viewport in pixels
max-resolution min-resolution	Resolution of the output device in dots per inch or dots per centimeter
max-height min-height	Height of the viewport in pixels
orientation	Orientation of the device (landscape or portrait)

Table 6–2 Common Media Query Features

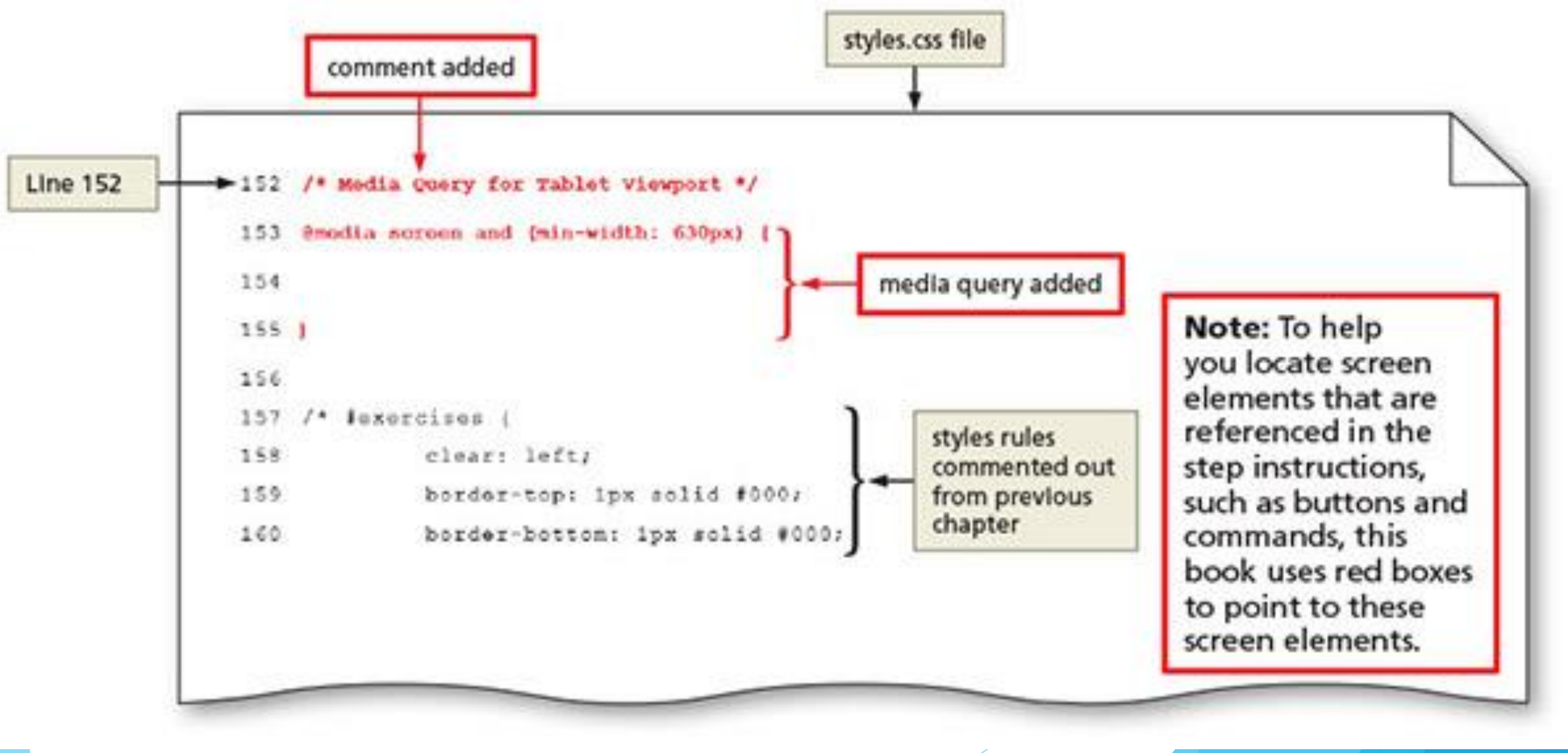
Adding Media Queries to an External Style Sheet

- Mobile-first strategy
  - Mobile styles are listed first as they are the default styles
  - Media queries are used to add styles for larger viewports, progressing from tablet to desktop
  - Styles created for the smaller viewports apply to larger viewports by default
  - To modify the appearance of an element for a larger viewport, a media query is created for the larger viewport, and then a new style is created

Designing for Tablet Viewports

- With so many tablet sizes, it is difficult to design a “one size fits all” layout for a tablet device
  - With the use of responsive web design and media queries, designing multiple tablet layouts is not required
  - If a particular tablet device has a viewport smaller than the minimum size specified in the media query, the layout will default to the mobile viewport layout

Designing for Tablet Viewports



Designing for Tablet Viewports

- Page design for a tablet viewport
  - When designing for a tablet viewport
    - Maintain the same color scheme, typography, and general look of the website
    - Website should look the same from viewport to viewport; only thing that should change is layout and placement of content
  - To determine ideal layout for a website's tablet viewport, review the mobile site to confirm where the content should be added and if any content should be hidden

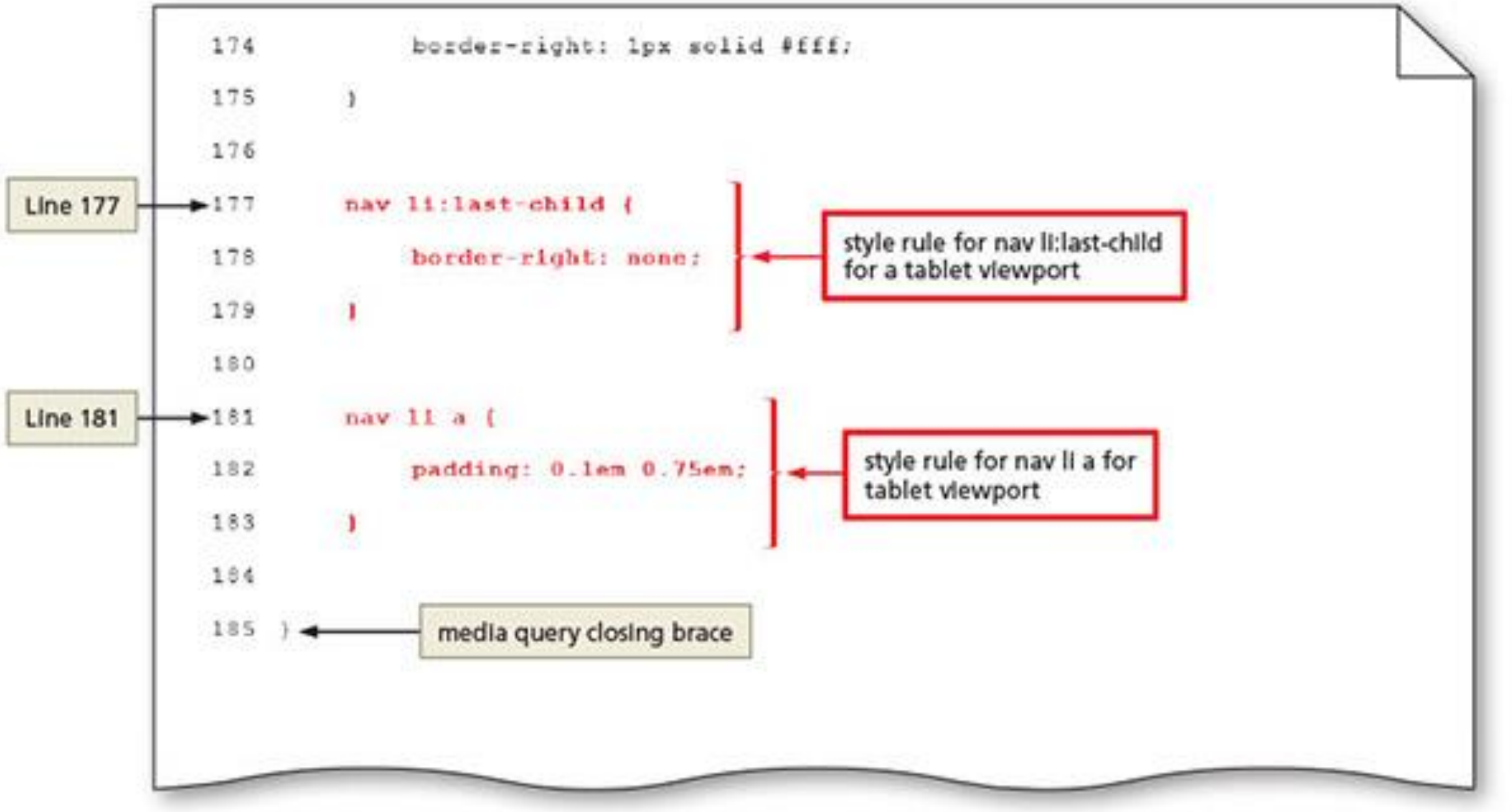
Designing for Tablet Viewports

- Navigation design for a tablet viewport
  - It is not necessary to maintain a vertical list of navigation buttons as a tablet screen is larger than a smartphone screen
    - Align the navigation buttons in a horizontal line; this frees space for the main content below the navigation area, improving its visibility by displaying it in the middle of the screen

Designing for Tablet Viewports

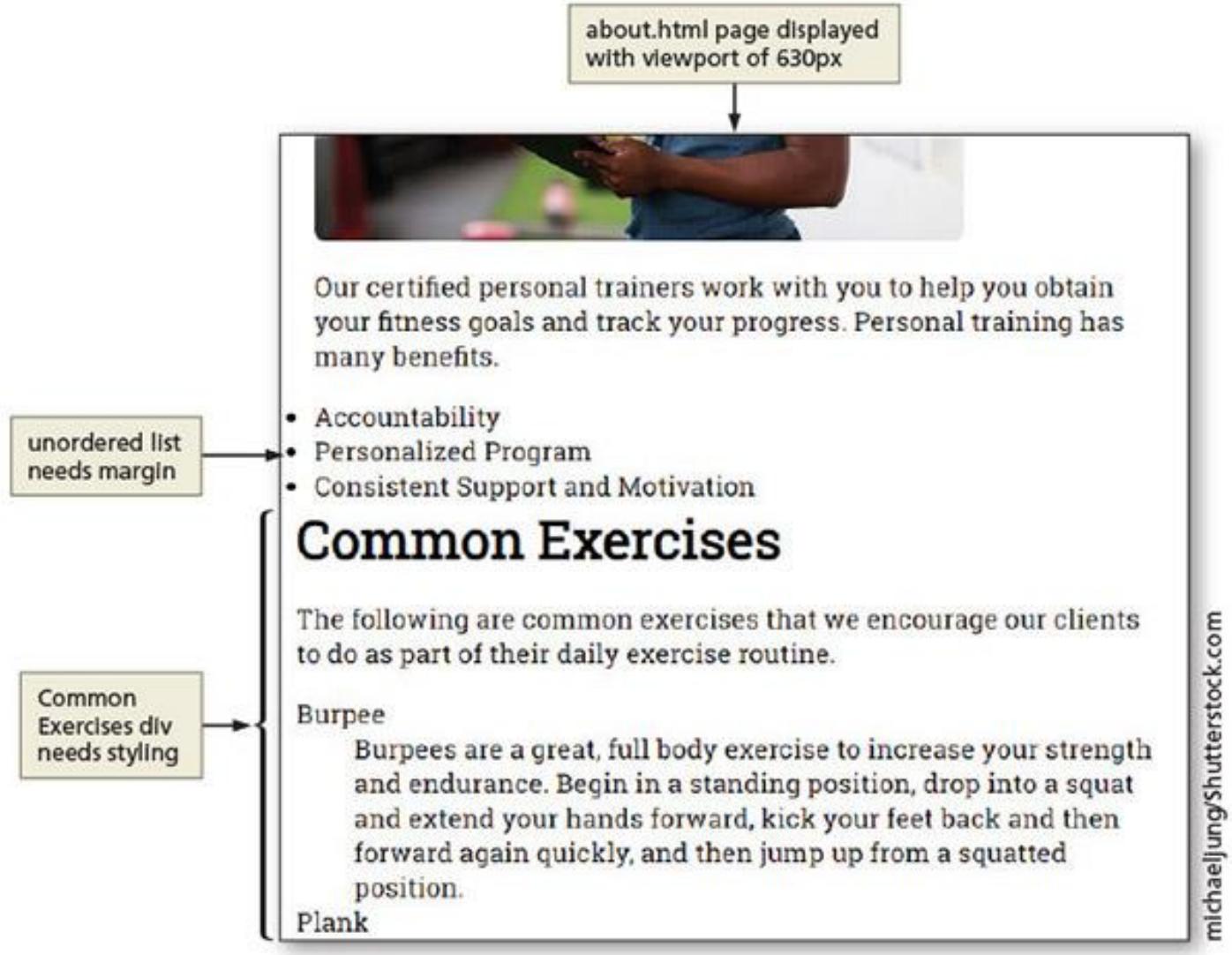
- Navigation design for a tablet viewport
  - Create a style rule to display the navigation list items as a single horizontal line when displayed in a tablet viewport
    - Add other properties and values that override the defaults already set for the mobile viewport

Designing for Tablet Viewports



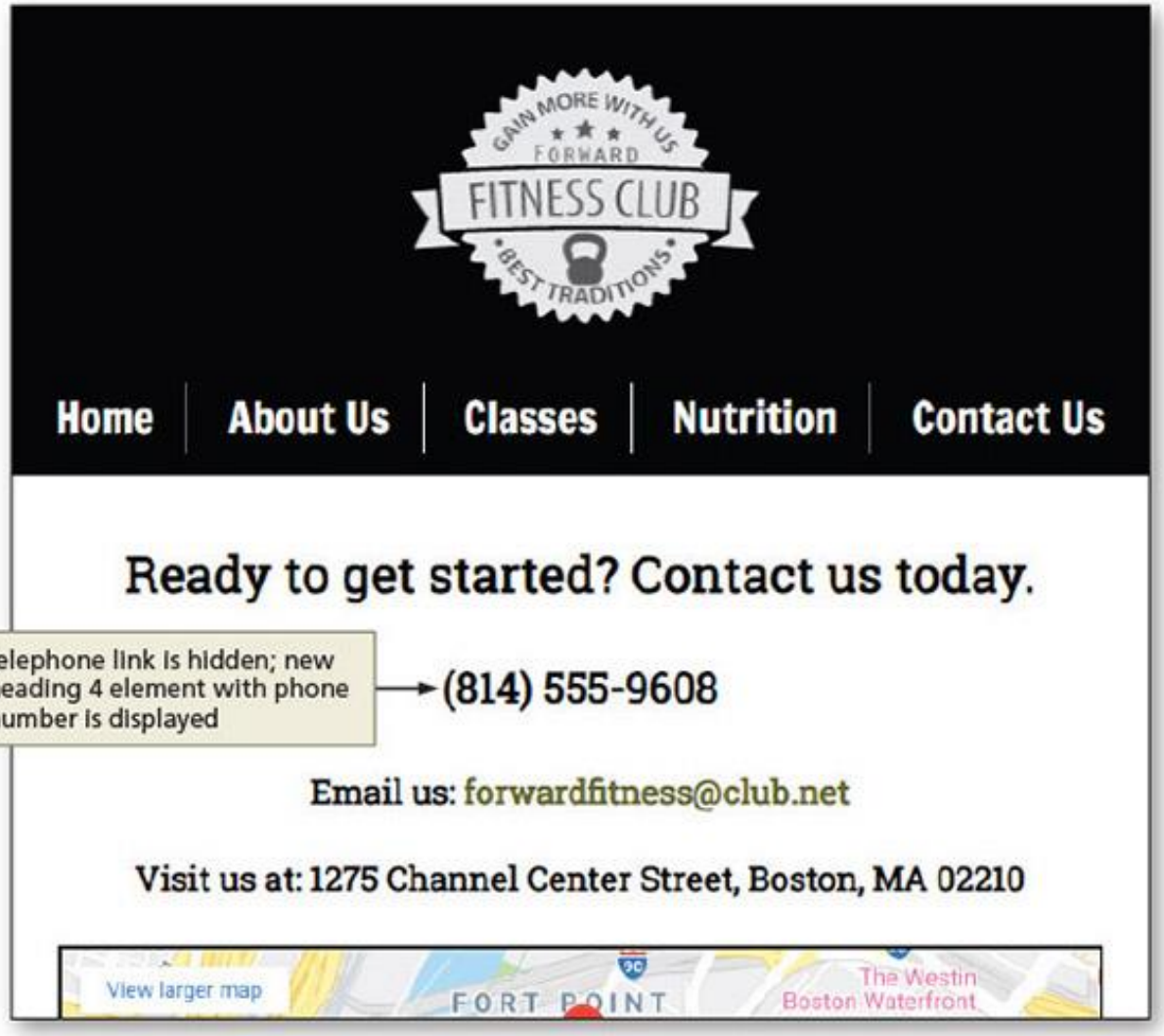
Designing for Tablet Viewports

- About Us page design for a tablet viewport



Designing for Tablet Viewports

- Contact Us page design for a tablet viewport

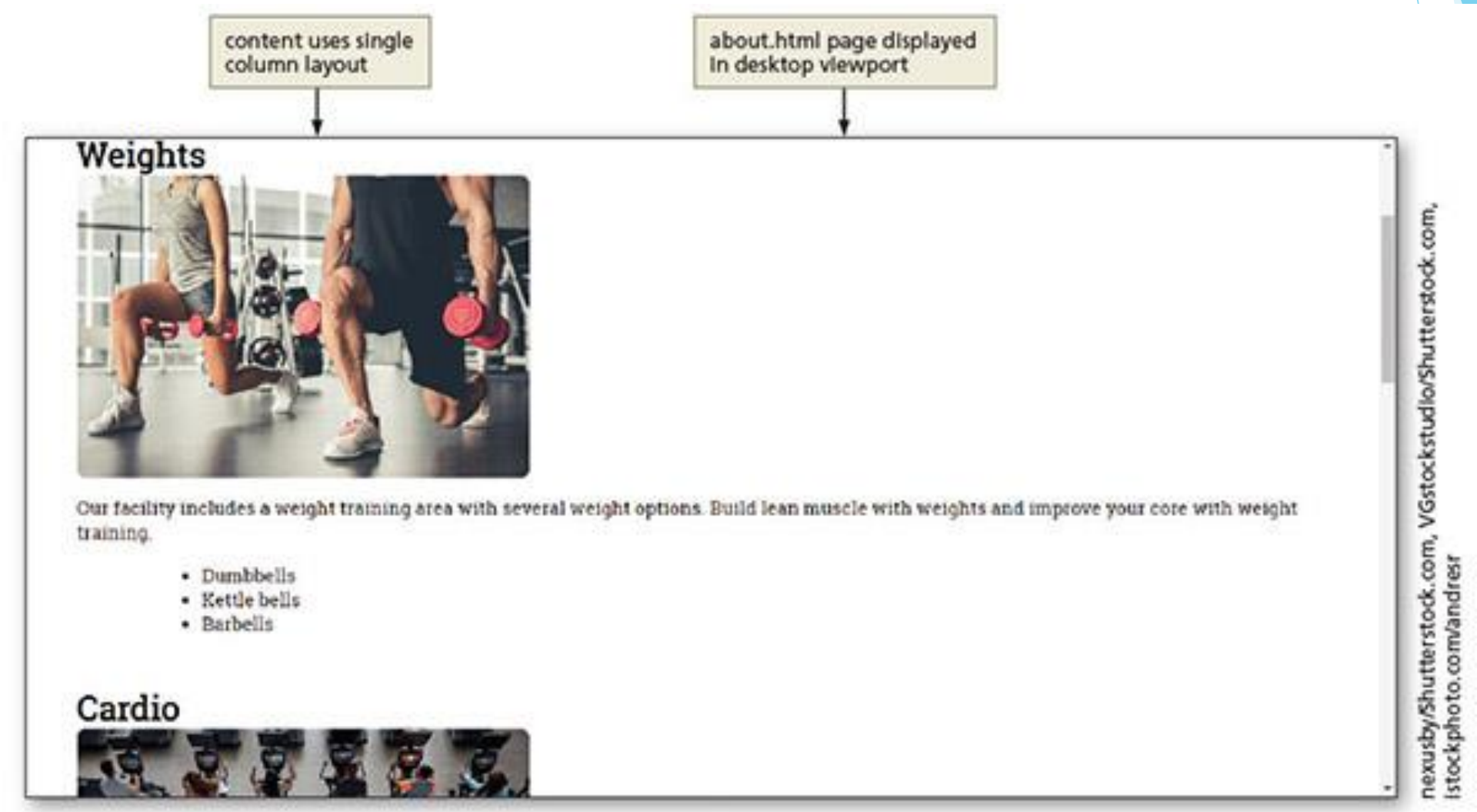


Designing for Tablet Viewports

- Principles of desktop viewport design
  - Use simple, intuitive navigation, clear images, and typography and apply the same colour scheme
  - Maintain the same look and feel of the site, but change some formatting to best accommodate the desktop viewport
  - Provides an opportunity for a multiple-column layout

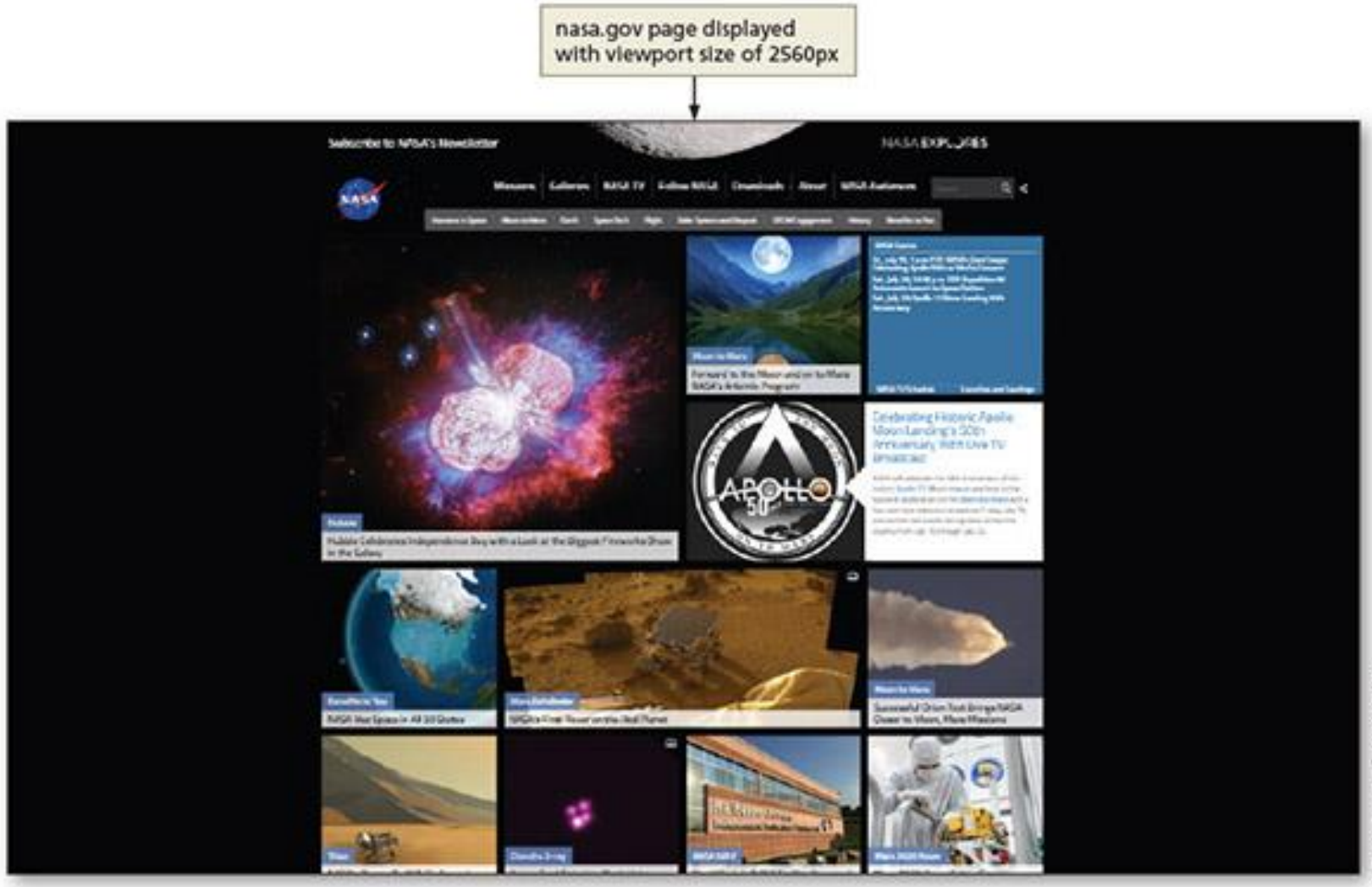
Designing for Tablet Viewports

- About Us page design for a desktop viewport



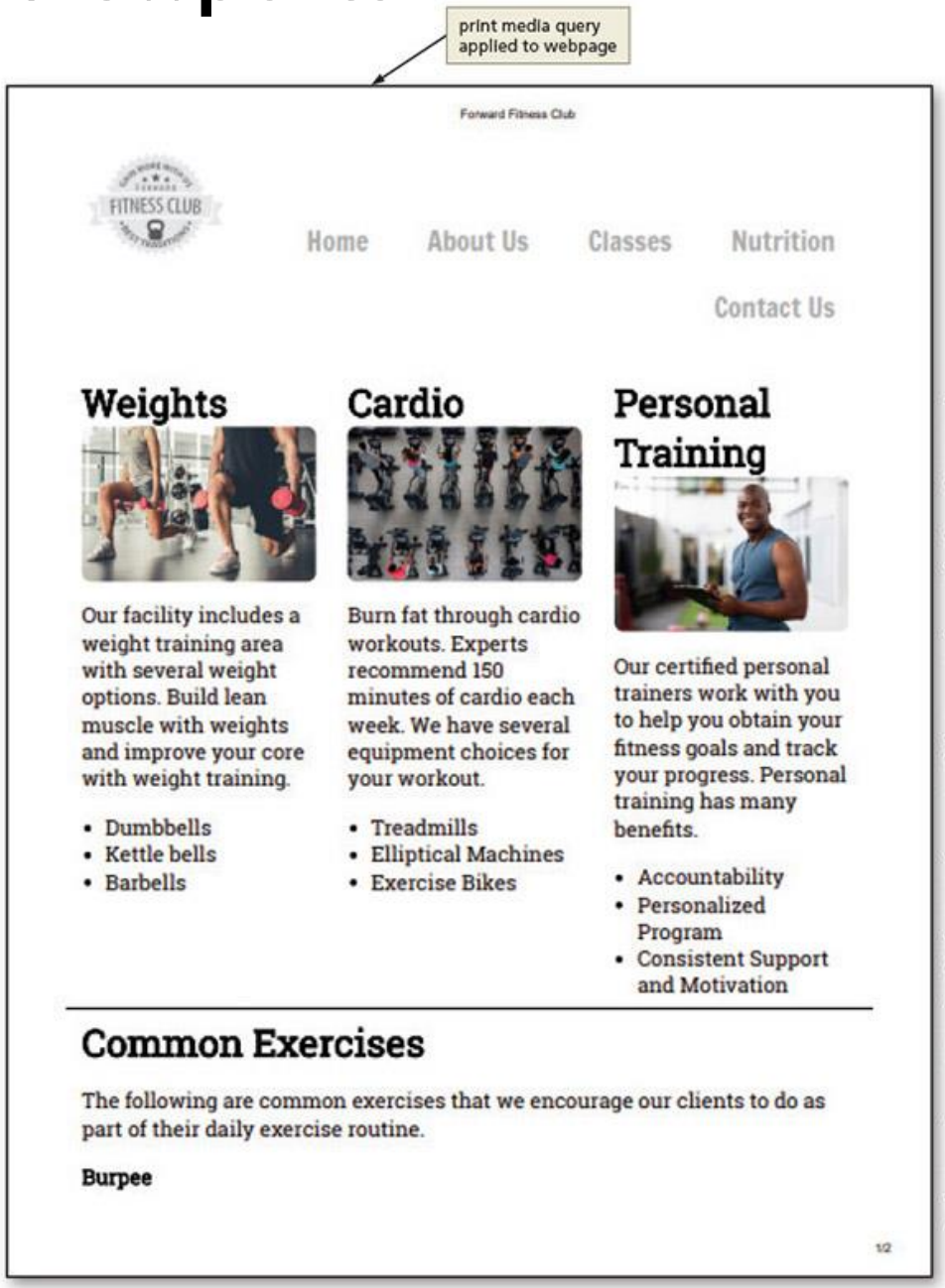
Designing for Tablet Viewports

- Media query for large viewports



Designing for Tablet Viewports

- Media query for print



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Modifying Breakpoints

- Breakpoint is the point at which different styles are applied to a webpage depending on the viewport
  - Determined by the content on the page

Using Dynamic Pseudo-Classes

- Pseudo-classes allow changes to the style of a link based on four link states: link, visited, hover, and active
  - Must be used in the following order: link, visited, hover, active

Using Dynamic Pseudo-Classes

Dynamic Pseudo-Class	Used to Style
:link	Unvisited link
:visited	Link that has been clicked
:hover	Link when the mouse is hovering over it
:active	Link at the moment it is clicked

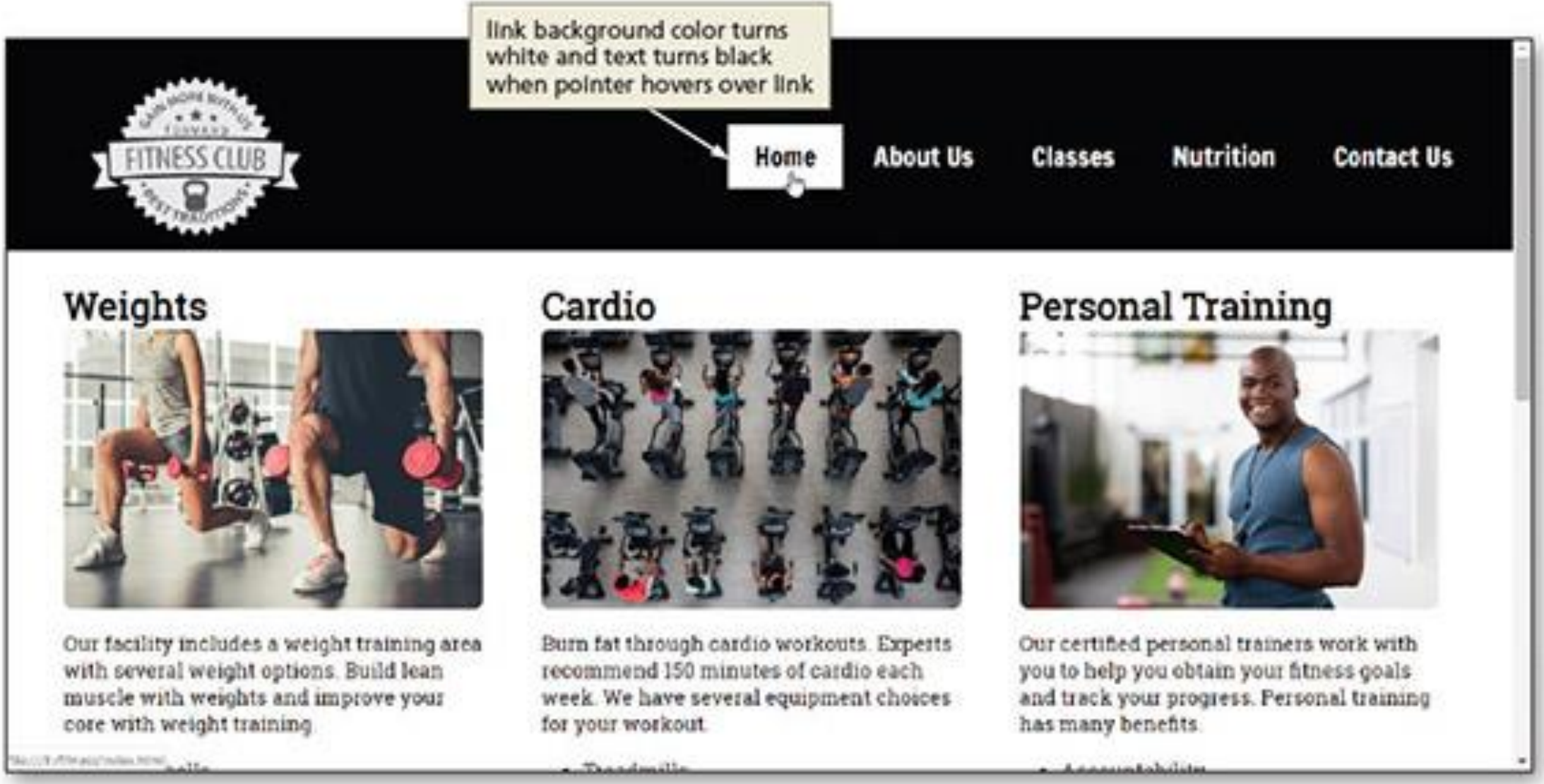
Using Dynamic Pseudo-Classes

- A pseudo-class is attached to a selector with a colon to specify a state or relation to the selector to give the web developer more control over that selector
  - A unique style for normal, visited, hover, and active links is defined by creating four separate style rules with a:link, a:visited, a:hover, and a:active as the selectors

Using Dynamic Pseudo-Classes

- It is not necessary to use all of the pseudo-classes
  - If omitted from the design, it is important to maintain the same order of the pseudo-class styles in the CSS code
- Often used in a desktop viewport
  - Not used in mobile and tablet devices as they do not have a hover or a click option

Using Dynamic Pseudo-Classes



Using Gradients

- Gradient is a gradual transition from one colour to another
  - CSS has two types
- Linear gradient
  - Can transition from several different angles
  - Default transition is from the top to the bottom
  - Can also transition up, left, right, or diagonally

Using Gradients

- Radial gradients
  - Specified by their centre
  - Colour begins in the center and transitions in a radial direction to another colour or colours
  - At least two colours must be specified

Using Gradients