School of Infocomm

C219 Front-end Web Development

# Lesson 3

## Web Development using HTML5 & CSS3

# Recap

Lesson 2

# Introduction

Three languages define front-end web development — HTML, CSS, and JavaScript.

- HTML — Content
- CSS — Design
- JS — Interactivity

Remembering this can help one determine which language to use, especially in cases where it is possible to do something in more than one way.

# What is HTML5

HTML is a markup language used for structuring and presenting content on the World Wide Web. HTML5 is the latest specification of the HTML language.

HTML5 objectives:

- Encourage semantic (meaningful) markup
- Separate design from content
- Promote accessibility and design responsiveness
- Reduce the overlap between HTML, CSS, and JavaScript
- Support rich media while eliminating the need for plugins such as Flash or Java

# HTML5 Features

Here are some of the new HTML5 features:

- Semantic elements like <header>, <nav>, <main>, <article>, <section> and <footer>
- Canvas
- SVG
- Audio
- Video
- Web Storage
- Web Workers
- Geolocation
- Drag & Drop

# HTML5 Advantages

HTML5 is the current and right version of the language. It is:

- Easier to write and maintain
- Better for Search Engine Optimization
- Better for the blind and visually impaired
- Better for users on mobile devices
- Better for users on slower internet connections
- Fewer chances of design breaks
- Easier to add media
- Easier to create interactive applications
- Deprecated features will likely stop being supported at some point, breaking your page

# HTML5 SVG

The Scalable Vector Graphics (SVG) is an XML-based image format that is used to define two-dimensional vector based graphics for the web.

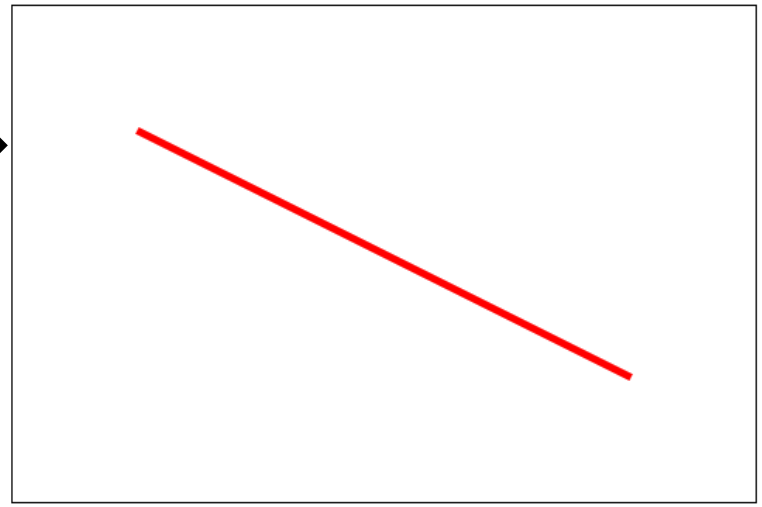
Advantages of using SVG:

- SVG loads faster than images
- SVG images can be searched, indexed, scripted, and compressed
- SVG images can be created and modified using JavaScript in real time
- SVG images can be printed with high quality at any resolution
- SVG content can be animated using the built-in animation elements

# Drawing Shapes using SVG

Drawing a line:

```
<svg width="300" height="200">
<line x1="50" y1="50" x2="250" y2="150" style="stroke:red;
stroke-width:3;" />
</svg>
```



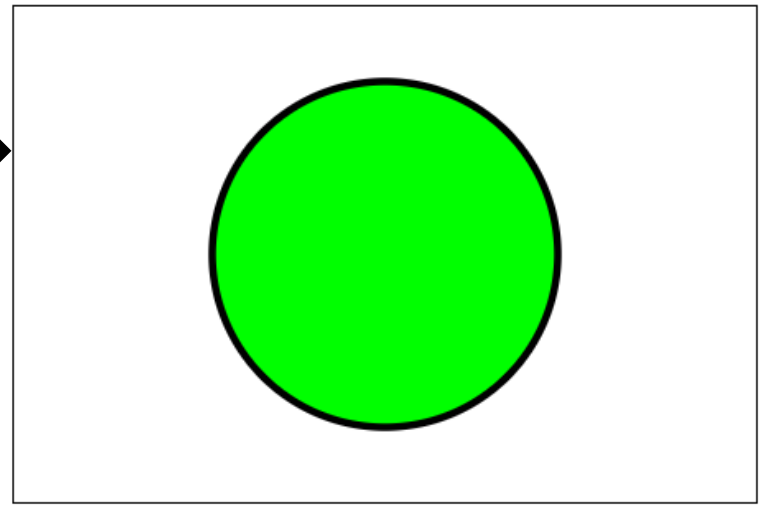
The attributes x1, y1, x2 and y2 of the <line> element draw a line from (x1, y1) to (x2, y2). The point of origin (0, 0) is the top left corner.

Now, try drawing an X using two lines.

# Drawing Shapes using SVG

Drawing a circle:

```
<svg width="300" height="200">
<circle cx="150" cy="100" r="70" style="fill:lime; stroke:black;
stroke-width:3;" />
</svg>
```



The attributes cx and cy of the <circle> element defines the co-ordinates of the center of the circle and the attribute r specifies the radius of the circle.

Now, try drawing three circles in different sizes and colours.

# Using Illustrator to Create SVGs

Adobe Illustrator features a convenient way of generating efficient SVG code. You can save your vector illustration to SVG like so:

- File > Save As...
- Save as type > SVG
- SVG Profiles > SVG 1.1
- You can click SVG Code... to preview the generated codes
- Once you are done, click OK and it will be saved as an SVG file which can be edited in any code editor.

# Exercise 1

Using Illustrator, create an SVG logo for a tourism company called WX (World Xplore).

Requirements:

- Your logo must consist of vector shapes only[1]
- The letters WX must be part of the logo
- Logo height should be 100px or below
- Insert the logo in the home page (index.html)

[1] Convert all your text to outlines

# HTML5 Semantic Elements

A semantic element clearly describes its meaning to both the browser and the developer.

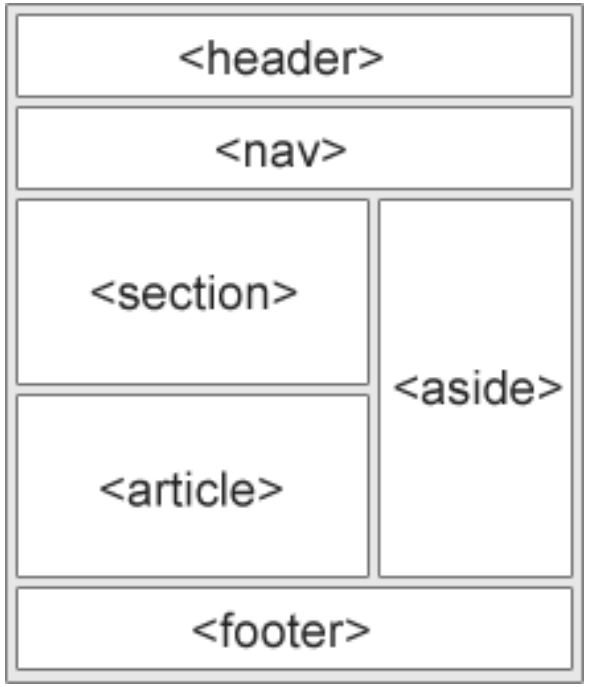
- Examples of non-semantic elements:  and  - Tells nothing about its content.
- Examples of semantic elements: <nav>, <footer>, and <article> - Clearly defines its content.

Many websites contain HTML codes like:    to indicate navigation, header, and footer. With HTML5, you can simply use <nav>, <header> and <footer>.

# HTML5 Semantic Elements

There are some semantic elements that can be used to define different parts of a web page:

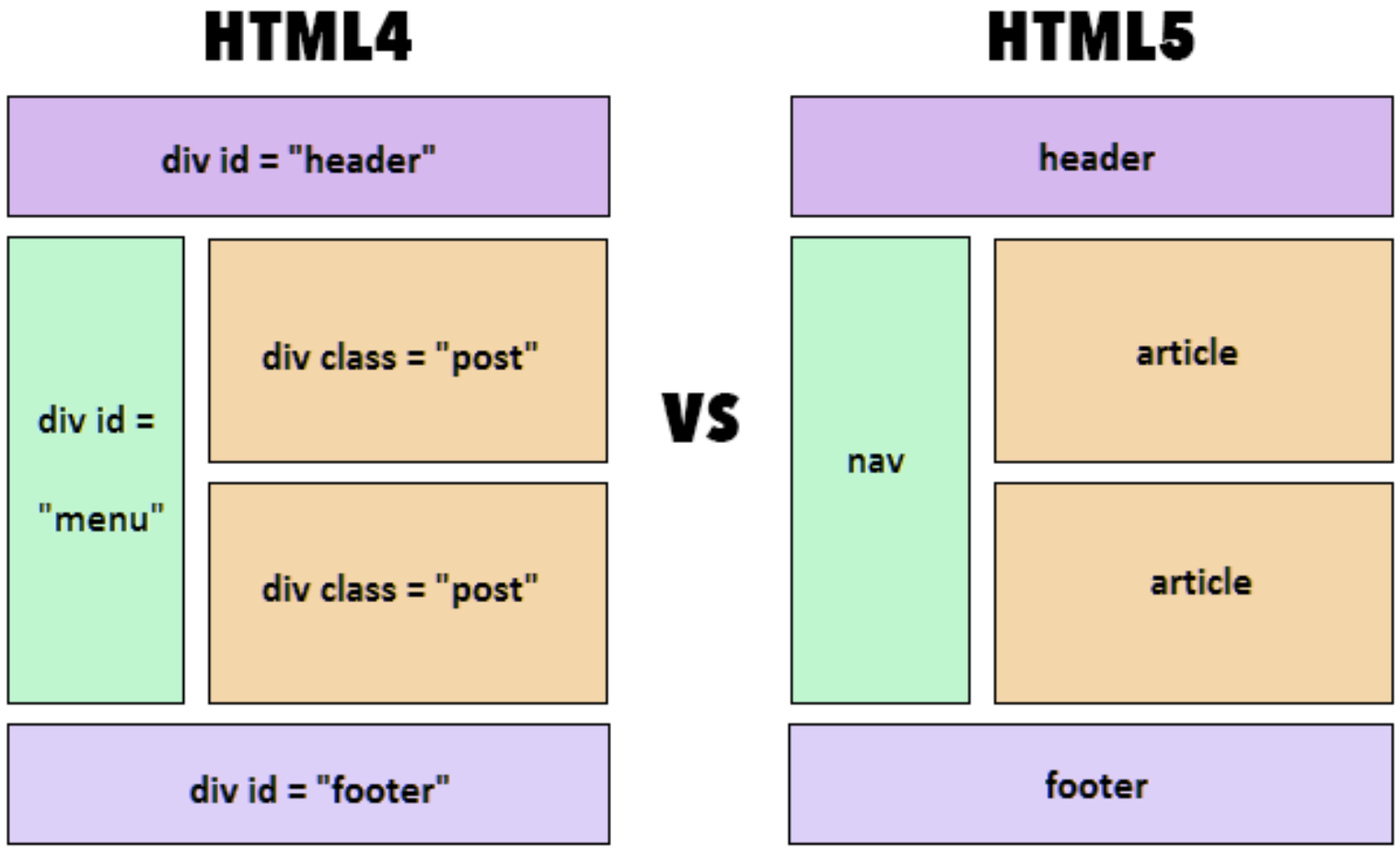
- <article>
- <aside>
- <details>
- <figcaption>
- <figure>
- <footer>
- <header>
- <main>
- <nav>
- <section>




Click here to view the full list of HTML5 semantic elements.

Note: Semantic elements do not control the layout of the web page. For that, you will have to use CSS.

# HTML4 vs HTML5 Semantic Elements



# HTML5 Nav

The <nav> HTML element represents a section of a page whose purpose is to provide navigation links.

A document may have several <nav> elements, for example, one for site navigation and one for intra-page navigation.

```
<nav class="main-menu">
  <ul>
    <li><a href="#">Home</a></li>
    <li><a href="#">About</a></li>
    <li><a href="#">Contact</a></li>
  </ul>
</nav>
```

# Exercise 2

Design a navigation menu for WX.

Requirements:

- Add the navigation menu to the index.html file earlier
- Menu items must be Home, Package Tours, Rediscover Singapore, Cruises, Contact Us
- Style your navigation using external CSS
- You must use a custom font
- You are not allowed to use any framework

Resources:

- https://www.w3schools.com/tags/tag_nav.asp
- https://www.w3schools.com/cssref/pr_class_float.asp
- https://www.w3schools.com/css/css_inline-block.asp
- https://fonts.google.com

# Examples of Navigation Design

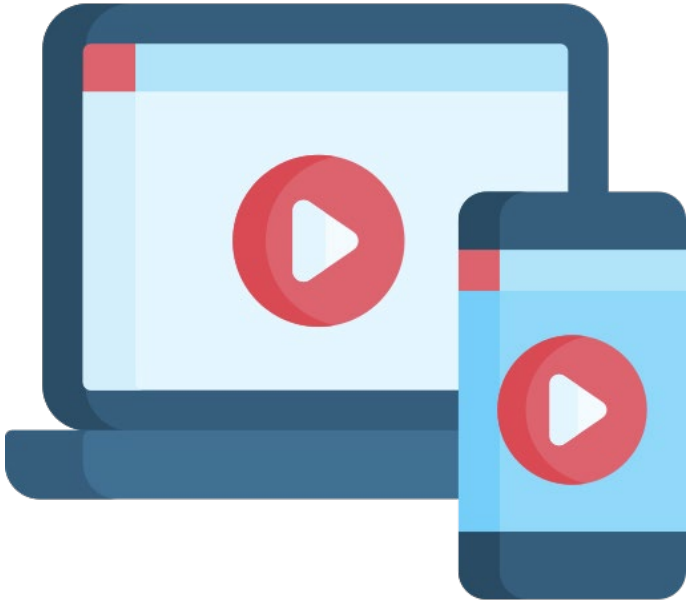
Here are some examples of good navigation design. You are encouraged to seek inspiration from websites with good navigation design for your reference.

- https://www.teamviewer.com
- https://water.org
- https://www.fitbit.com
- https://www.uchicago.edu
- https://punkave.com

# HTML5 Video

In the early days, native web technologies such as HTML didn't have the ability to embed video and audio on the Web, so plugin-based technologies like Flash and Silverlight (both of which are now obsolete) — became popular for handling such content. This kind of technology worked, but it had a number of problems, including not working well with HTML/CSS features, security issues, and accessibility issues.

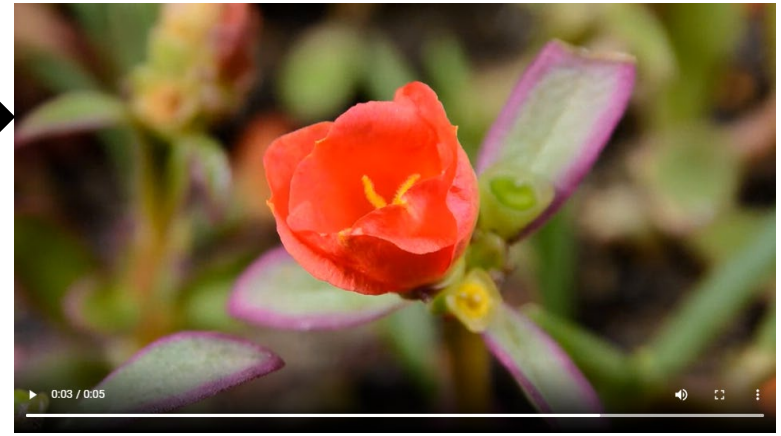
The newly introduced HTML5 <video> element provides a standard way to embed videos in web pages.



# Embedding a Video

Embedding a video:

```
<video width="600" controls>
<source src="videos/flower.mp4" type="video/mp4">
</video>
```




In a similar manner to the <img> element, include a path to the video inside the src attribute.

Like other HTML elements, this element supports attributes. <video> attributes include autoplay, controls and loop.

# Exercise 3

Add a full screen video playing in the background of the web page from Exercise 2.

Requirements:

- The video must be muted, play automatically, loop infinitely, and no controls should be shown.
- The video should fill up the entire browser viewport
- Size of video must be less than 20 mb
- Video content must be relevant to tourism

Resources:

- https://developer.mozilla.org/en-US/docs/Web/HTML/Element/video
- Free Stock Videos - https://www.pexels.com/videos

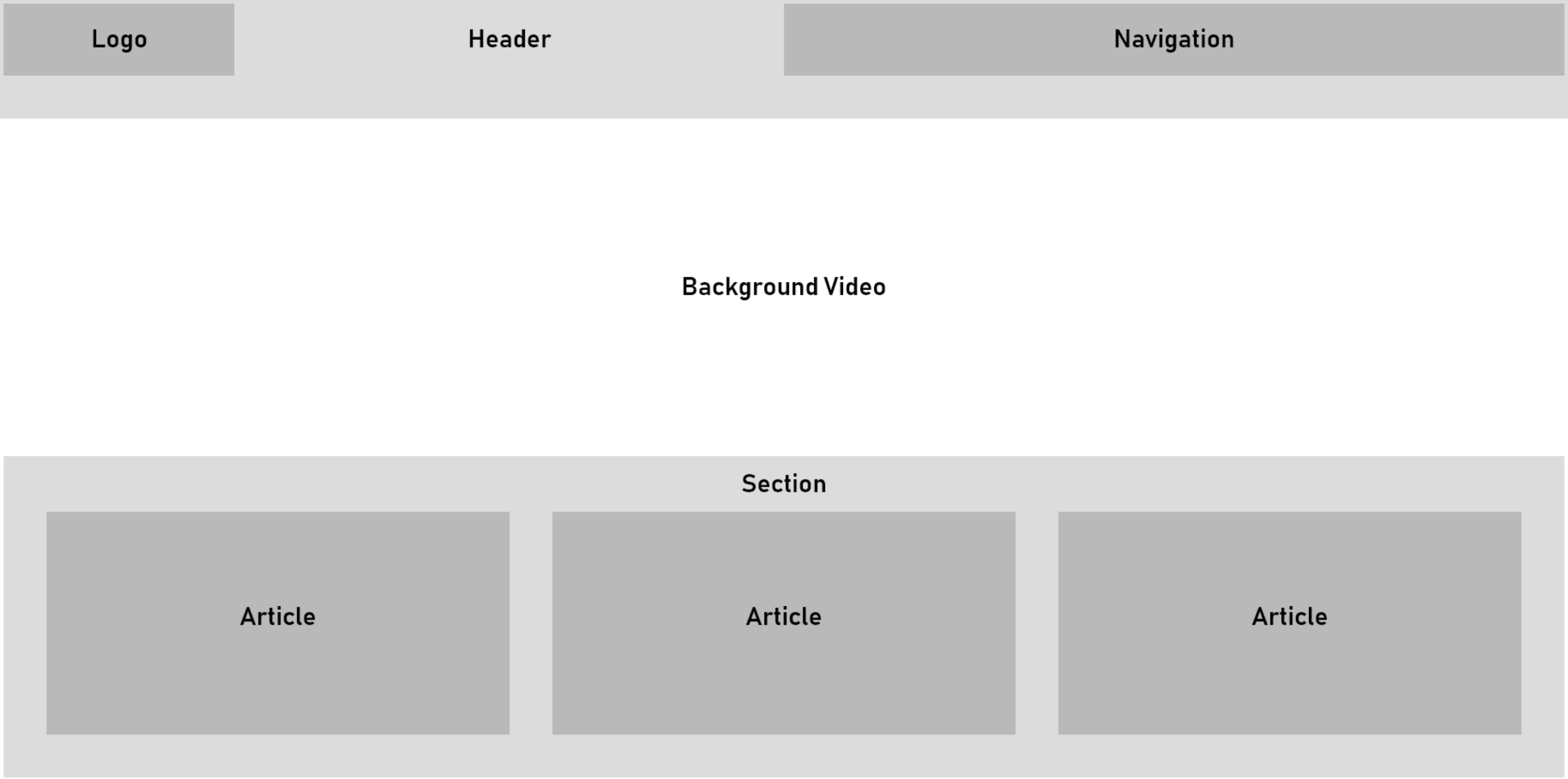
# L03 Assignment

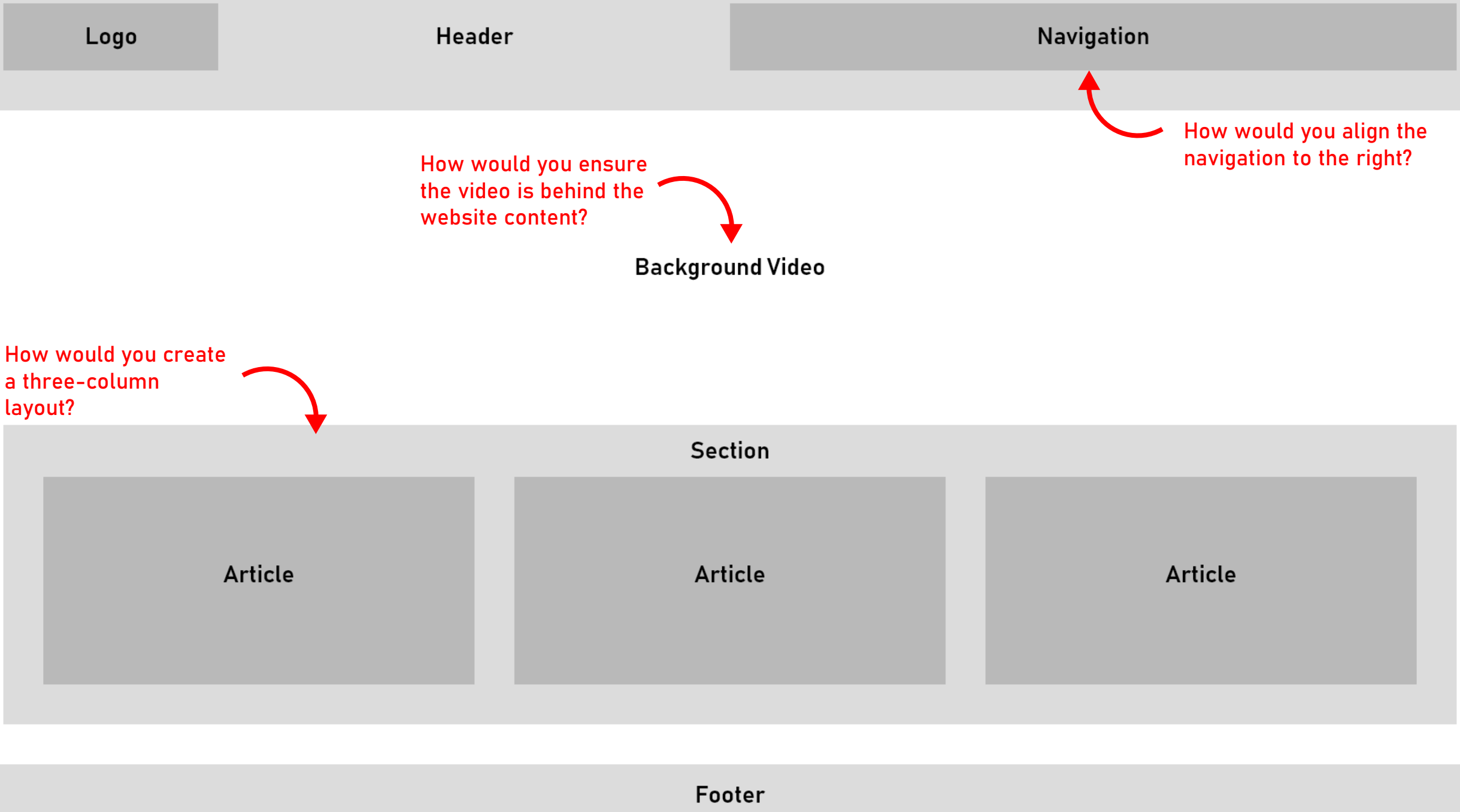
## Complete the home page design for WX.

Requirements:

- Design a low-fidelity wireframe for the home page*
- Code the home page:
  - Continue from the same index.html file from Exercise 3
  - Add a section, three articles and a footer using HTML5 semantic elements.
  - Include your own text and images. Your content can be anything relevant.
  - Style your home page using external CSS.

* Refer to the next slide for a sample wireframe of your home page design. This is just an example, your actual layout can be different, but the key elements must be there.


Logo
Header
Navigation
Background Video
Section
Article
Article
Article
Footer


Logo
Header
Navigation
How would you align the navigation to the right?
How would you ensure the video is behind the website content?
Background Video
How would you create a three-column layout?
Section
Article
Article
Article
Footer

# Deliverables

## Individual Submission:

- Wireframe for WorldXplore's home page
  - Upload a JPG file only, XD file not required

- Home page for WorldXplore (`index.html`) with:
  - CSS file (`style.css`)
  - Video in `videos` folder
  - Images in `images` folder
  - Zip everything and submit

Submit all deliverables by 2359 today