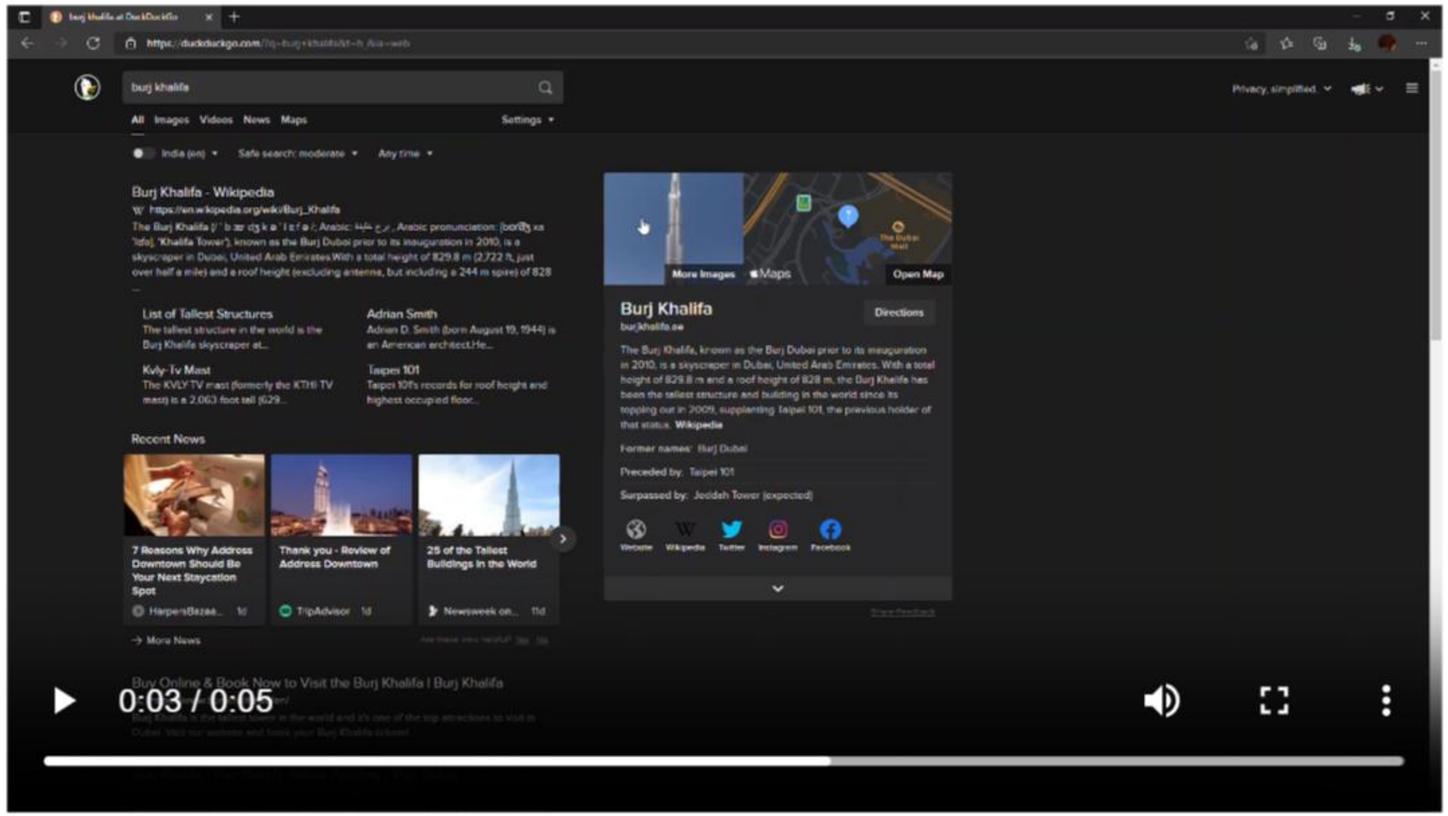
Slide Note

Let’s Watch Some Videos To See What Happens When We Look for a Term in Search Engines.

Slide Note

1. How is Google Maps able to show the phone number?

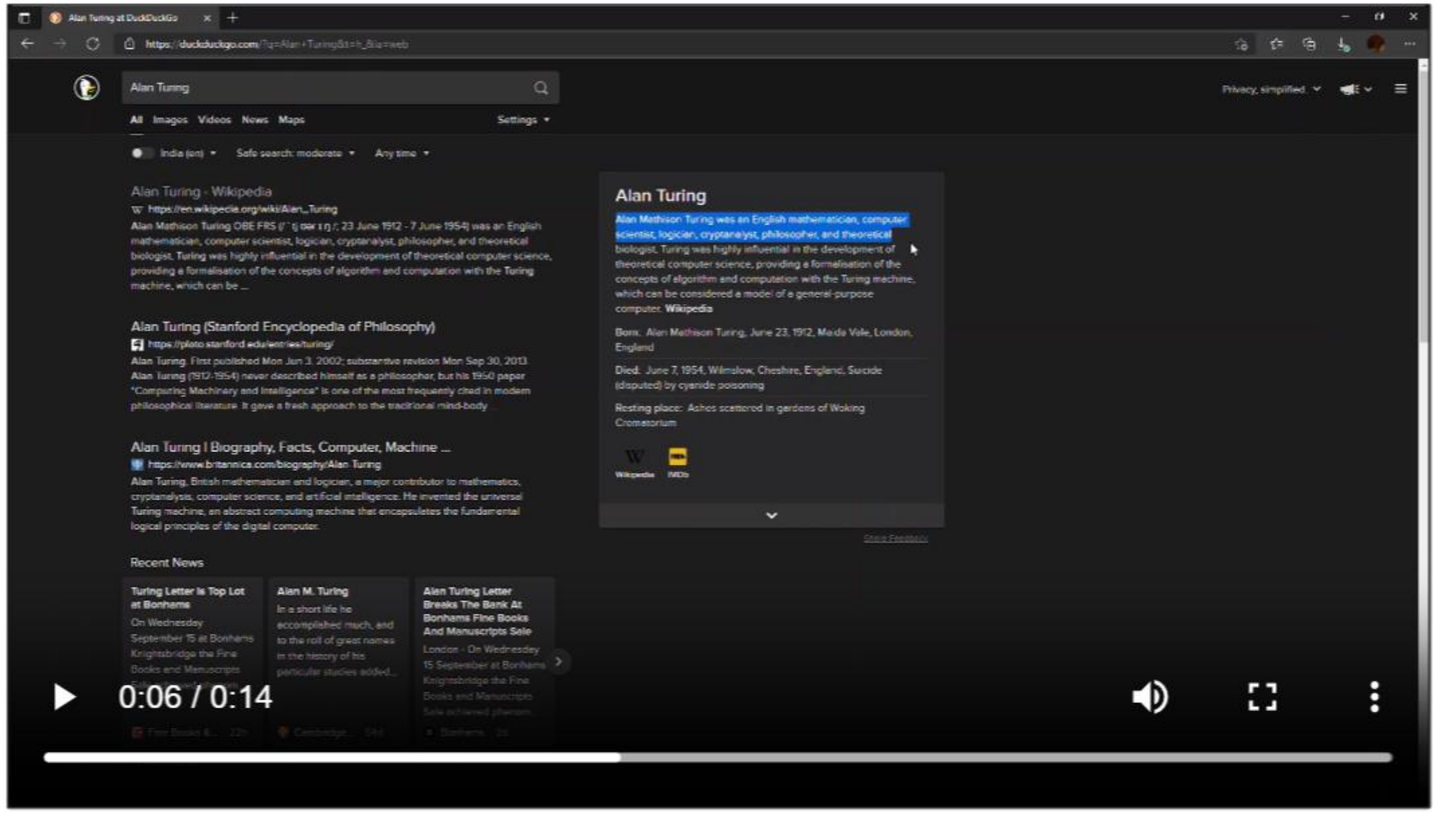


- How did the map of Burj Khalifa appear in the search results of DuckDuckGo?

Slide Note

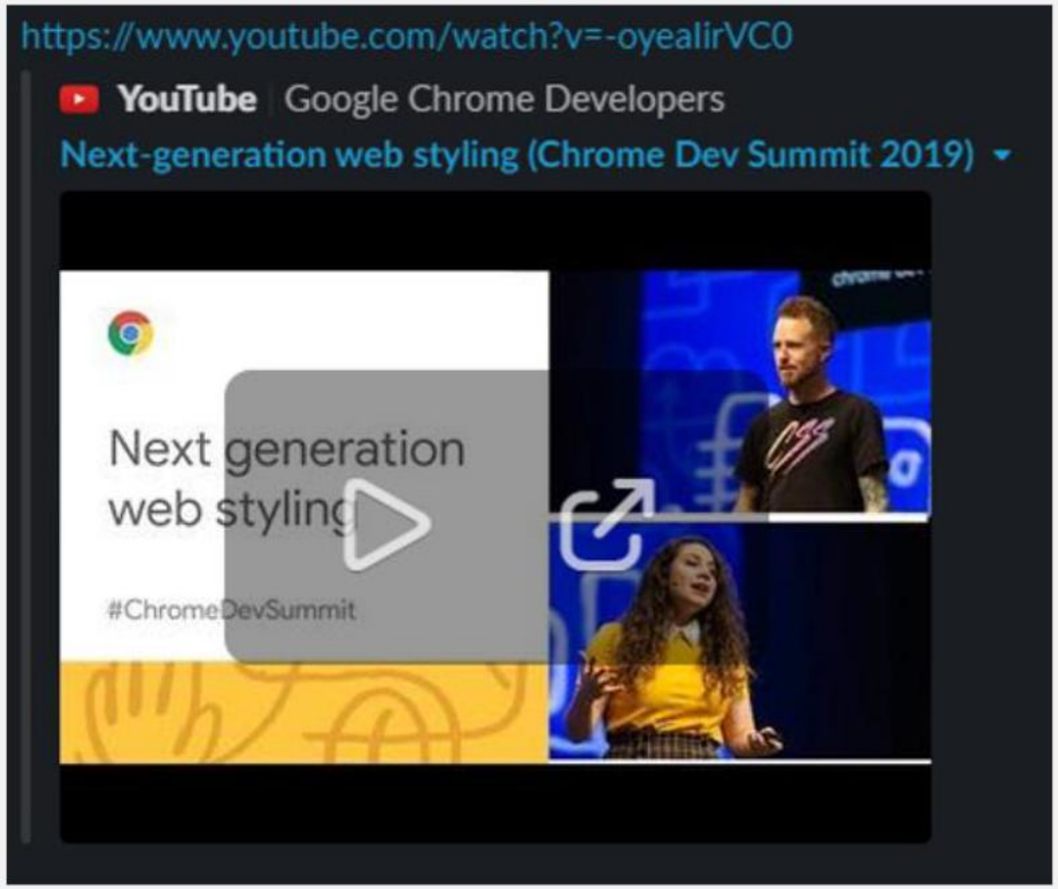
1. How did the picture of Alan Turing appear in the search results of DuckDuckGo?

2. Who owns the image? Wikipedia or Google?



- How did the photograph of Alan Turing appear in the search results of DuckDuckGo?

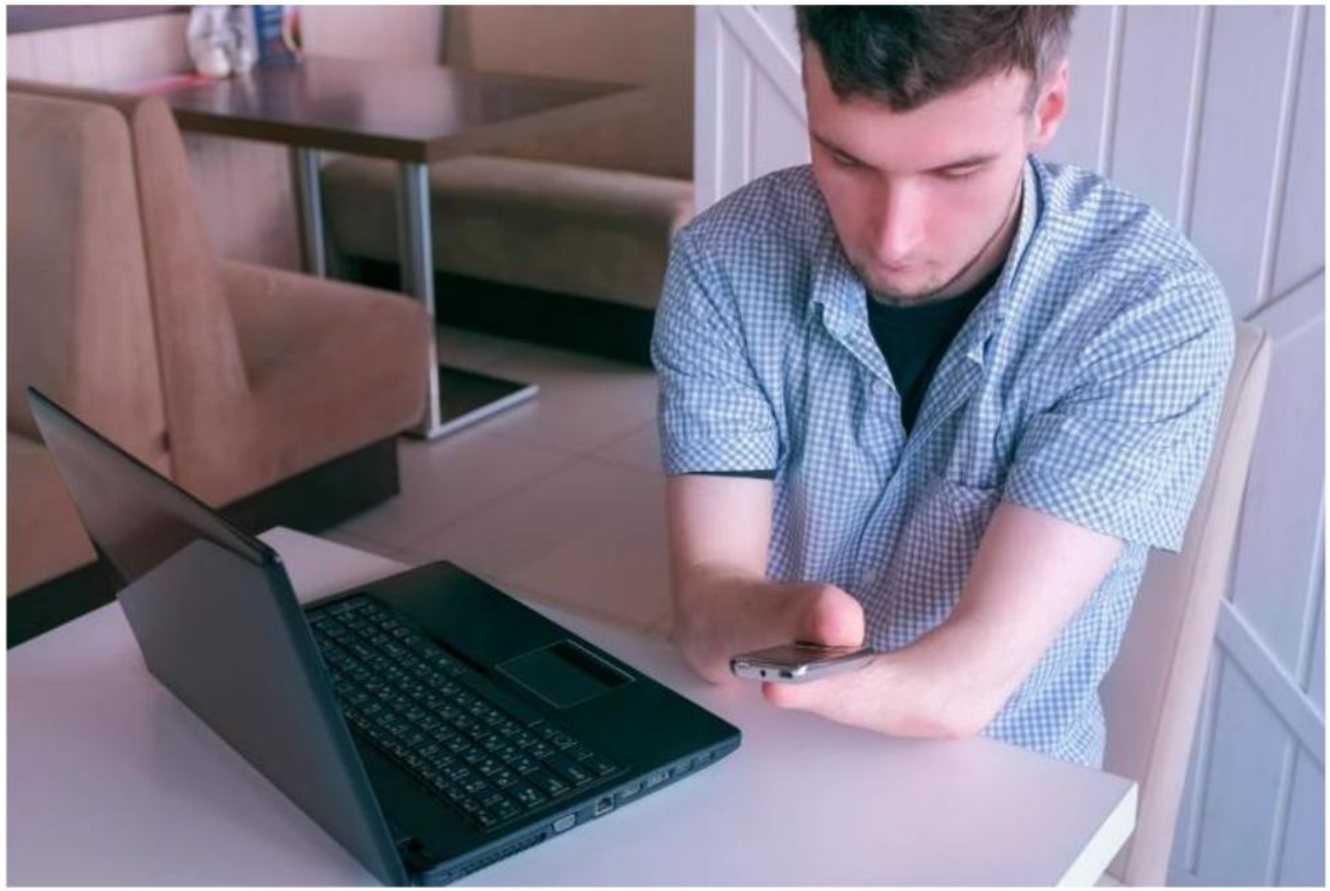
Slide Note



- How is a YouTube video made available in applications like Slack and Outlook when the links are shared?

Slide Note

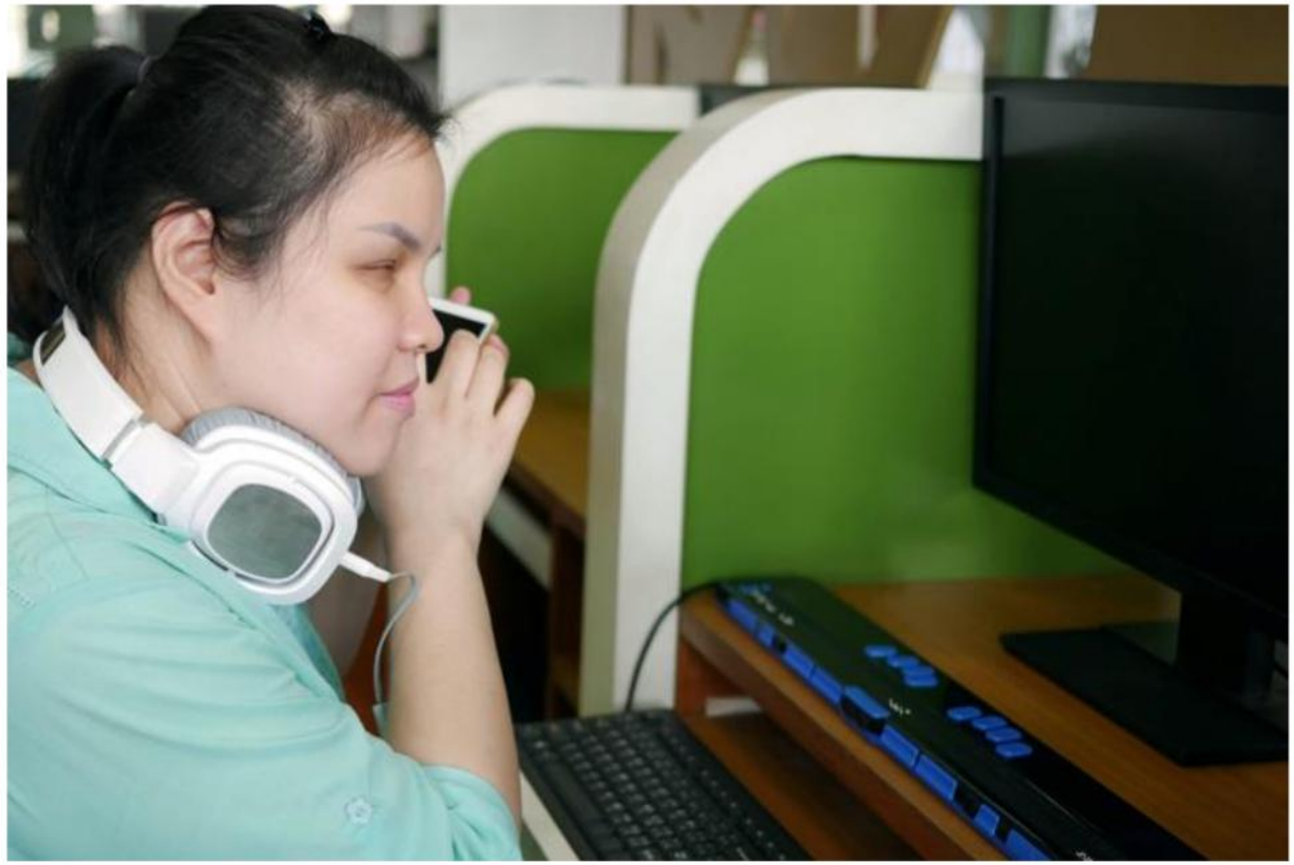
How do people with movement disabilities, which can range from purely physical issues (such as loss of limb or paralysis) to neurological/genetic disorders (weakening/loss of control of the limbs), access websites?



- How can people with mobility impairments access these websites?

Slide Note

How do people with visual impairments such as blindness, low-level vision and color blindness, access information on the web?



- Is your information accessible to people who are visually challenged?

Slide Note

Structure a Web Page Using Semantic HTML5 Elements

Slide Note

Learning Objectives

- Identify and explore semantic elements
- Identify the benefits of using semantic elements for SEO and screen readers
- Structure a web page using HTML5 semantic elements
- Create web pages using table elements
- Explain the use of ARIA labels by screen readers

Slide Note

Let's explore one of the most usable tags in web development to make divisions of content on the web page.

Slide Note

HTML Tag

- tag is the generic container for flow content.
- It defines a division or section in an HTML document.
- It has no effect on the content or layout until styled in some way.
- A line break is placed before and after the tag by the browsers.

```
<div>
    <img src="image1.png">
    <p> First Paragraph </p>
</div>
```

Slide Note

Compare the sample code 1 and sample code 2.

Sample code 1 is more generic in nature. We use
and tags here and
it does not convey any meaningful information.

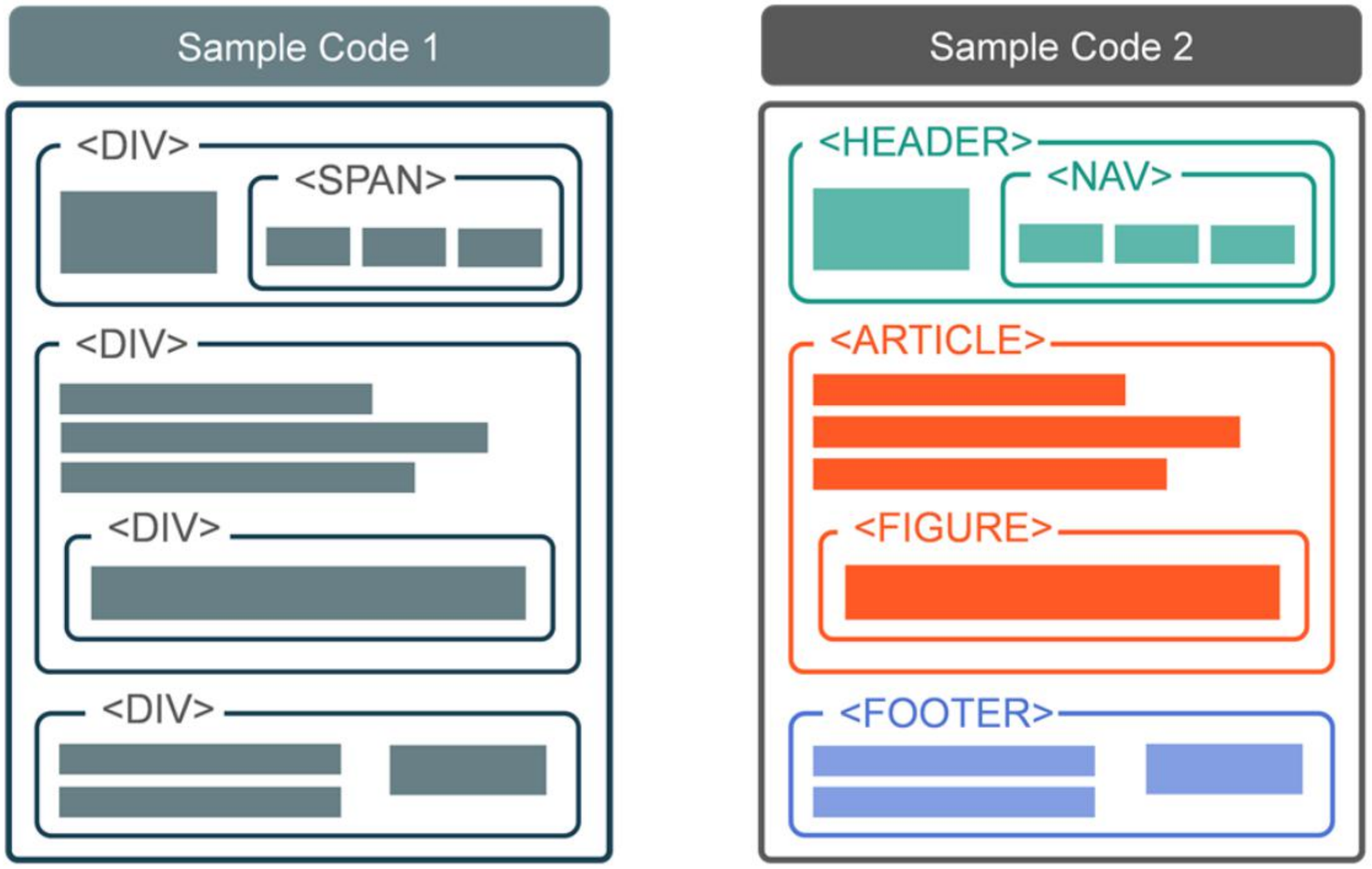
Sample code 2 uses semantic tags like
,
and
tags

that clearly defines its content.

Structure of the document remains the same whether we use semantic or non-sematic tags like the image seen above.

The semantic HTML tags help the search engines and other user devices to determine the importance and context of web pages.

Sample Code 1 vs. Sample Code 2



Slide Note

Write semantic markup by selecting and using HTML tags properly and by selecting tags that convey something about the information marked by the tags.

Non-semantic elements like
and don't tell the browser anything about the meaning of the content of the element.

Non-Semantic and Semantic Elements

```
<div id="header">
    Lorem ipsum dolor sit amet consectetur,
adipisicin elit.
     <span id="nav">
      Lorem ipsum dolor sit amet
     </span>
</div>
<div id="article">
     Lorem ipsum dolor sit amet consectrtur
    <div>
      <img src="flower.jpg">
      <span id="figcaption"></span>
    </div>
  </div>
<div id="footer">
    Lorem ipsum dolor sit amet consectetur
</div>
```

```
<header>
   Lorem ipsum dolor sit amet consectetur,
adipisicing elit.
  <nav>
   Lorem ipsum dolor sit amet
  </nav>
</header>
<article>
    Lorem ipsum dolor sit amet consectrtur
    <figure>
      <img src="flower.jpg">
      <figcaption></figcaption>
    </figure>
  </article>
<footer>
    Lorem ipsum dolor sit amet consectetur
</footer>
```

Slide Note

What Are Semantic Elements?

- Semantics is the study of the meanings of words and phrases in a language.
- In programming, semantic refers to the meaning of a piece of code.
- A semantic element clearly describes its meaning to both the browser and the developer.
- <h1>, <address>, <article>, <table>, and <form> are some examples of semantic elements as it clearly defines its content.
- and are examples of non-semantic elements; they are very generic and tell nothing about their content.

Slide Note

Understand the difference between semantic and non-semantic elements using the following demo codes.

Use chrome vox screen reader tool to demonstrate the demo.

Install screen reader chrome extension first and then execute.

Non-Semantic Headers and Semantic Headers

Though the page looks similar, when a screen reader reads the page, headers are identified and read as headers, unlike the one where div is used in a non-semantic example.

The demo code is used with CSS to get the same style, which will be covered in the coming sprints.

Non-semantic Links and Semantic-links

Look at how navigation links are properly identified by a screen reader in the semantic example, compared to the non-semantic example where a div is used to combine all the links.

Button and Links

Another common anti-pattern is to treat links as buttons by attaching JavaScript behavior to them.

Both buttons and links support some form of synthetic click activation. So, which one should you choose?

If clicking on the element will perform an *action* on the page, use .

If clicking on the element will *navigate* the user to a new page, then use .

The reason for this is that buttons and links are announced differently by screen readers. Using the correct element helps screen reader users know which outcome to expect.

Button and Div

Built-in accessibility features are available while using ` ` tags. We can use our button with a keyboard, finger, voice command, or other assistive technology. While using ` ` tags, additional coding like tabIndex attribute should be added to access via keyboard.

Semantic and Non-Semantic Elements

Demonstrate the difference between semantic and non-semantic elements. Click on Semantic and Non-semantic Elements to understand the difference.

DEMO

Slide Note

Search Engine Optimization (SEO):

• Finding blocks of meaningful code is significantly easier than searching through endless div s with or without semantic or namespaced classes

• Search engines will consider web page contents to identify important keywords and influence the page's search rankings

• Screen readers use semantic elements as a signpost to help visually challenged users navigate a page

Screen Readers:

A screen reader is a piece of assistive technology that is frequently used by a person with visual impairments or learning disabilities. It is also helpful for people learning English (or another language) and for the elderly.

Typically, a screen reader will start at the top of a website or document and read any text (including alternate text for images). Some screen readers allow the user to preview information, like the navigation bar or all the headings on a page and skip the user to the desired section of the page. For this reason, using navigation styles like headings is part of creating accessible documents.

Semantic Elements Benefits: SEO and Screen Reader

- Semantic elements make the process of searching keywords on web pages easier and faster.
- These elements are used for Search Engine Optimization (SEO) and screen readers.
- SEO refers to techniques that help the website rank higher in search engine results pages (SERPs).
- Search engines will consider web page contents to identify important keywords and influence the page's search rankings.
- This makes the website more visible to people who are looking for solutions that your brand, product, or service can provide via search engines like Google, Yahoo!, and Bing.
- A screen reader is a piece of assistive technology that is frequently used by a person with visual impairments or learning disabilities.

Slide Note

Search Engine Optimization (SEO) and Semantic Elements

- Standard HTML semantic elements (<h1>, <title>) are used by Google and other search engines as a core ranking metric.
- It highlights the most important parts of your page to let it stand out in SERPs (Search Engine Result Pages).
- It is a logical progression from the current practice of search engines to adopt HTML5 semantic elements into their ranking algorithms.
- Using semantic tags, Google bots focus on the page's real specific content and exclude other content that may be detrimental to the theme.

Slide Note

Accessibility and Semantic Elements

- The screen reader reads each header out as you progress through the content and notifies you about the headings, paragraphs, etc.
- It stops after each element and lets you go at whatever pace you are comfortable.
- It allows you to jump to the next/previous heading in many screen readers.
- You can also bring a list of all headings in many screen readers, allowing you to use them as a handy table of contents to find specific content.

```
<h1>My heading</h1>
<p>This is the first section of my document. </p>
<p>I'll add another paragraph here too. </p>
<ol>
  <li>Here is</li>
  <li>a list for</li>
  <li>you to read</li>
</ol>
<h2>My subheading</h2>
<p>
   This is the first subsection of my document.
   I'dlove people to be able to find this content!
</p>
<h2>My 2nd subheading</h2>
<p>
   This is the second subsection of my content.
   I think is more interesting than the last one.
</p>
```

Slide Note

• **Easier to read** – The easier it is to read and understand the code, the easier it makes your job, especially when there are thousands of lines of code.

• **Greater accessibility** – Search engines and assistive technologies can better understand the context and content of the website, giving a better user experience.

• **Keyboard support** – Semantic elements provide default keyboard support.

• **Consistent code** – For non-semantic elements, there are many ways to create a header element by giving it various class names. Creating a standard semantic element can make it simpler overall.

• **Better on mobile** – Semantic HTML is arguably lighter in file size than non-semantic spaghetti code as well as more responsive.

These elements suggest to the developer the type of data that will be populated.

Semantic Elements Benefits: Web Development

- Semantic elements:
  - Are easier to read
  - Provide greater accessibility
  - Support default keyboard actions
  - Ensure consistent code
  - Are lighter in file size than the non-semantic spaghetti code
  - Make a website look good even for mobile devices

Slide Note

Quick Check

All except one is benefitted from using semantic elements. Can you identify which of the given options?

1. Assistive Technology Users
2. The Server
3. The Search Engine
4. The Browser

Slide Note

Quick Check: Solution

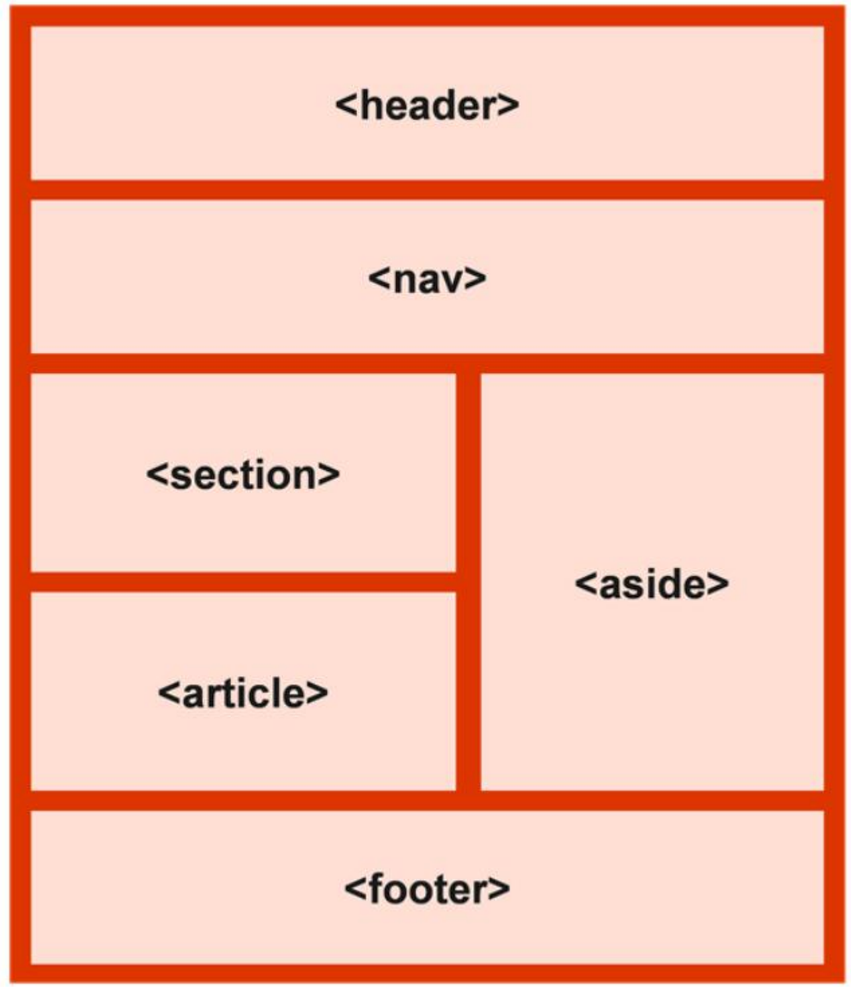
All except one is benefitted from using semantic elements. Can you identify which of the given options?

1. Assistive Technology Users
2. **The Server**
3. The Search Engine
4. The Browser

Slide Note

Popular Semantic Elements

- <header>
- <nav>
- <section>
- <article>
- <aside>
- <footer>



Slide Note

We can group the most common and important semantic elements into four categories

• Document structure tags

• Textual meaning tags

• Media type tags

• Correlation tags

Document Structure tags include
,
,
,
,
,
and

Textual Meaning tags include

,,,,

and

Media type tags include

Correlation tags include

,

and

More Semantic Elements

<main>	<details>	<figcaption>	<figure>
<mark>	<summary>	<dfn>	<time>

Slide Note

Div element are made to behave like buttons when clicking it by adding JavaScript code.

But all the built-in accessibility features available for button is not available to div elements.

Unlike button, when keyboard is used to navigate to div element using "Tab" key and pressing "Enter", the action event is not occurring and hence the text is not changing.

Use Button Instead of Div

Slide Note

Using Semantic Elements

Demonstrate the use of commonly used HTML5 semantic tags in a web page.

Click on the following link to understand how it can be used.

Semantic HTML5 Elements

DEMO

Slide Note

<article> and <section>

- The <section> and <article> elements are conceptually similar and interchangeable.
- Consider the following when making a choice:
  - An article is intended to be independently distributable or reusable.
  - A section is a thematic grouping of content.

```
<section>
  <p>Top Stories</p>
  <article>
    <p>News</p>
    <section>Story 1</section>
    <section>Story 2</section>
    <section>Story 3</section>
  </article>
  <article>
    <p>Sport</p>
    <section>Story 1</section>
    <section>Story 2</section>
    <section>Story 3</section>
  </article>
</section>
```

Slide Note

<header> and <hgroup>

- The <header> element is generally found at the top of a document, a section, or an article and usually contains the main heading and some navigation and search tools.
- The <hgroup> element should be used where you want the main heading with one or more sub-headings.

```
<header>
  <h1>Company A</h1>
  <ul>
    <li><a href="/home">Home</a></li>
    <li><a href="/about">About</a></li>
    <li><a href="/contact">Contact us</a></li>
  </ul>
  <form target="/search">
    <input name="q" type="search" />
    <input type="submit" />
  </form>
</header>

<hgroup>
  <h1>Heading 1</h1>
  <h2>Subheading 1</h2>
  <h2>Subheading 2</h2>
</hgroup>
```

Slide Note

<aside>

- An additional content, which may not be important for understanding an article but is related to the article, can be inserted into the aside section.
- It could be information about how many people read the article, who is the author of the article, and so on.

```
<article>
  <section>
    <h1>
      Climate Strikes: Rapid Action Needed to Stop Env
      ironmental Catastrophe
    </h1>
    <p>
      Saving the world is not an easy job but cutting
      greenhouse gas emissions and limiting climate
      change is action the planet urgently needs,
      say scientists.
    </p>
  </section>
  <aside>
    <p>Viewed by 6303 people</p>
    <p>
      Author: Ken Thompson, Senior technical
      specialist at Google, Mountain View, California
    </p>
  </aside>
</article>
```

Slide Note

<figure>

- The figure tag is used to markup photos, code blocks, diagrams, charts, illustrations, and other graphic content.
- The fig caption tag represents a caption or legend for a figure. It is optional and can be nested into the figure tag.

```
<aside>
  <p>Viewed by 6303 people</p>
  <p>
    Author: Ken Thompson, Senior technical sp
    ecialist at Google, Mountain View,
    California
  </p>
  <figure>
    <img src="john.jpeg" alt="John"/>
    <img src="maggie.jpeg" alt="Maggie"/>
    <figcaption>
      People who liked the article
    </figcaption>
  </figure>
</aside>
```

Slide Note

<details> and <summary>

- <details> creates a disclosure widget in which information is visible only when the widget is toggled into an "open" state.
- A summary or label must be provided using the <summary> element.
- A <details> widget can be in one of two states. The default closed state displays only the triangle and the label inside the <summary>.

```
<details open>
  <summary>System Requirements</summary>
  <p>
     Requires a computer running an operating system. T
     he computer must have some memory and ideally some
      kind of long-term storage.
     An input device as well as some form of
     output device is recommended.
  </p>
</details>
```

▼ System Requirements
Requires a computer running an operating system. The computer must have some memory and ideally some kind of long-term storage. An input device as well as some form of output device is recommended.

Slide Note

<footer> and <time>

- A <footer> is generally found at the bottom of a document, a section, or an article.
- The content is generally meta information, such as author details, legal information, and/or links to related information.
- <time> element represents a specific period.
- It may include the datetime attribute to translate dates into a machine-readable format, allowing for better search engine results or custom features such as reminders.

```
<footer>
  <small>
        &copy;Global Welfare Fund
        <time datetime="2019-10-19T11:21:00+02:00">
            Saturday, 19 October 2019
        </time>
  </small>
</footer>
```

Slide Note

Quick Check

Which element defines additional details?

A. <details>

B. <summary>

C. <main>

D. <aside>

Slide Note

Quick Check: Solution

Which element defines additional details?

A. **<details>**

B. <summary>

C. <main>

D. <aside>

Explanation:

The additional details that the user can view or hide on demand are specified by the <details> tag.

Options C and D are incorrect: Main content of the document is specified by the <main> element. The <aside> element defines some content aside from the content it is placed in.

Option B is incorrect because <summary> is a nested tag of <details> tag.

Slide Note

Create a Simple Table

Create a simple table using table, thead, tr, and td tags.

Table Demo

DEMO

Slide Note

HTML Tables

- HTML tables represent tabular data and are comprised of rows and columns of cells containing data.
- Following tags are used to create an HTML table:
  - <table>: Defines an HTML table
  - <thead>: Groups header content
  - <tbody>: Groups the body content
  - <tfoot>: Groups footer content
  - <tr>: Defines a row
  - <th>: Defines a header cell
  - <td>: Defines a data cell

```
<table border="1">
  <tr>
    <th>Countries</th>
    <th>Capitals</th>
  </tr>
  <tr>
    <td>USA</td>
    <td>Washington D.C</td>
  </tr>
  <tr>
    <td>Sweden</td>
    <td>Stockholm</td>
  </tr>
</table>
```

Countries	Capitals
USA	Washington D.C
Sweden	Stockholm

Slide Note

What Happens With Elements That Don’t Neatly Tie With the Semantic Markdown?

Slide Note

ARIA Labels

Slide Note

The above links can help understand how ARIA labels are used.

Use a screen reader while executing the above demos.

Using ARIA Labels with HTML Elements

Check how ARIA labels are used with HTML elements by clicking on ARIA Attributes.

DEMO

Slide Note

- ARIA attributes are divided into two categories: roles, and states & properties
- An ARIA role is added via a **role=""** attribute,
- ARIA states and properties are often used to support ARIA roles that exist on a page. Example aria-label="mobile-menu"

Accessible Rich Internet Applications (ARIA) Attributes

ARIA is a spec from the W3C that was created to improve the accessibility of web pages and applications by providing extra information to screen readers via HTML attributes.

- ARIA-label is a type of ARIA attribute which is used to provide an invisible label where a visible label cannot be used.
- It does not affect how elements are displayed or behave in browsers.
- It does not add new functionality and is meant to act only as an extra descriptive layer for the screen readers.

ARIA Role

ARIA State and Property

```
<nav class="mobile-class" role="navigation"
     aria-label="mobile-menu">
     List of Links
</nav>
```

Slide Note

Use HTML5 Semantic Elements as Much as Possible and Use Aria-Labels When Not