

Without the World Wide Web –
Information Exchange wouldn't have
happened at this scale.

With the World Wide Web

Exchanging information is possible on
a massive scale – You can share your
thoughts with the world with a click of a
button.

What is the medium of these data
exchanges?

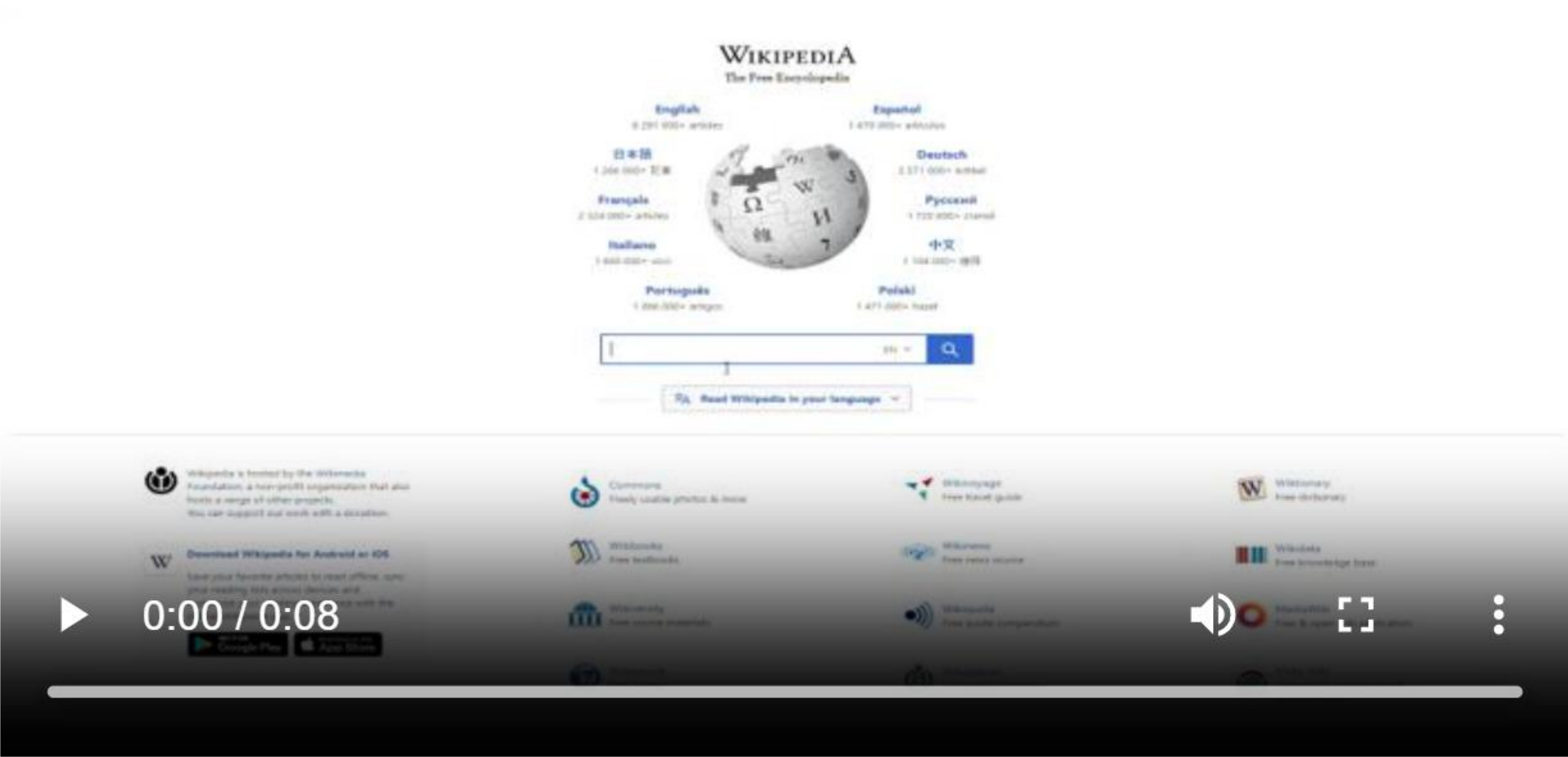


How has the invention of the internet and the World Wide Web changed our world?

How is relevant information displayed on our screen when searched?

Look at one of the most popular websites, Wikipedia.com, and notice how any information related to science, medicine, astronomy, etc., are searched. How does the relevant data in detail get populated?

Where is this data stored?



How does a website like wikipedia.org populate relevant data when searched?

Look at any famous news website.

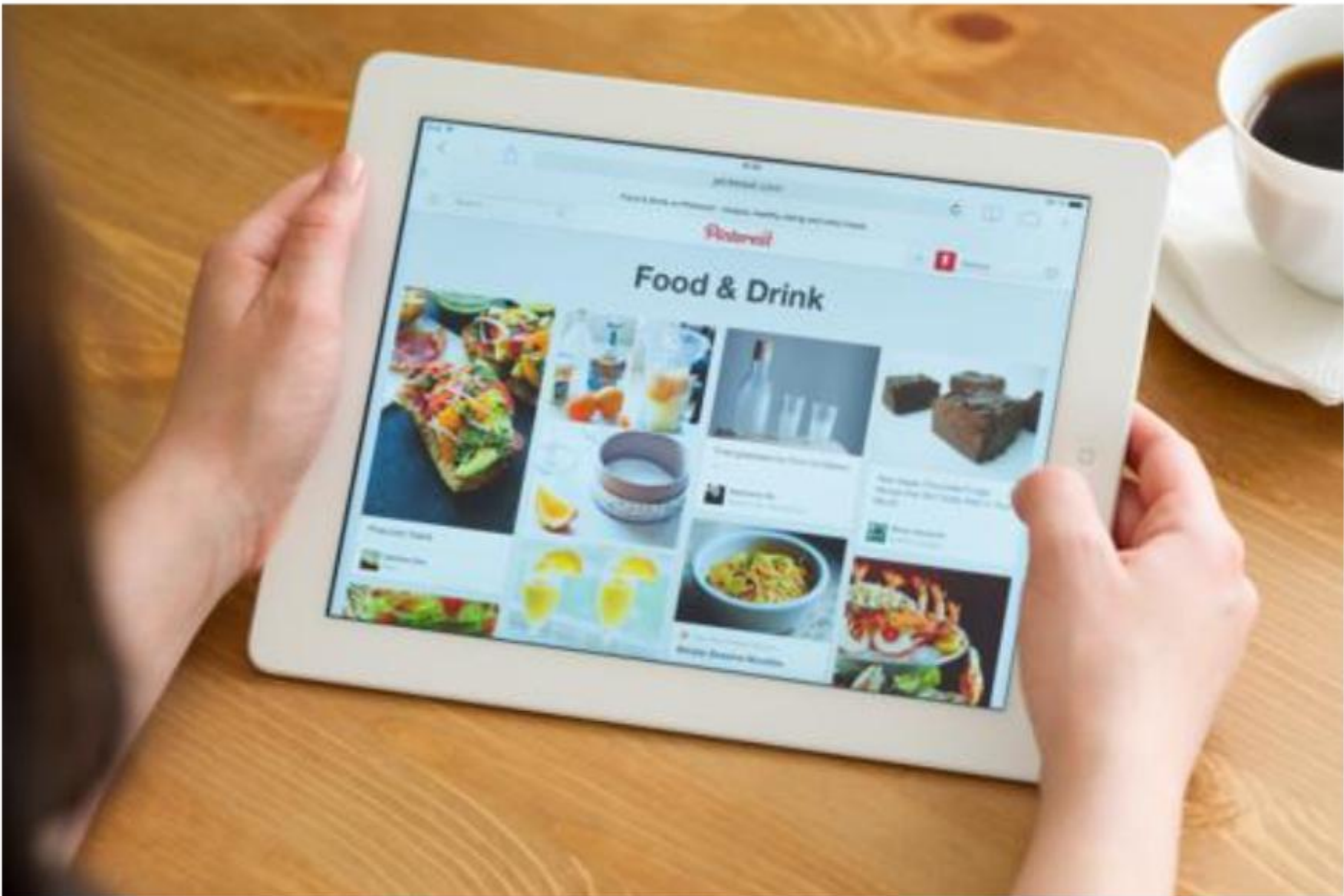
Each day, the news is dynamically updated with new content and images, all within the same website.

How is this possible?



The content of news websites gets dynamically updated every day. How does this happen?

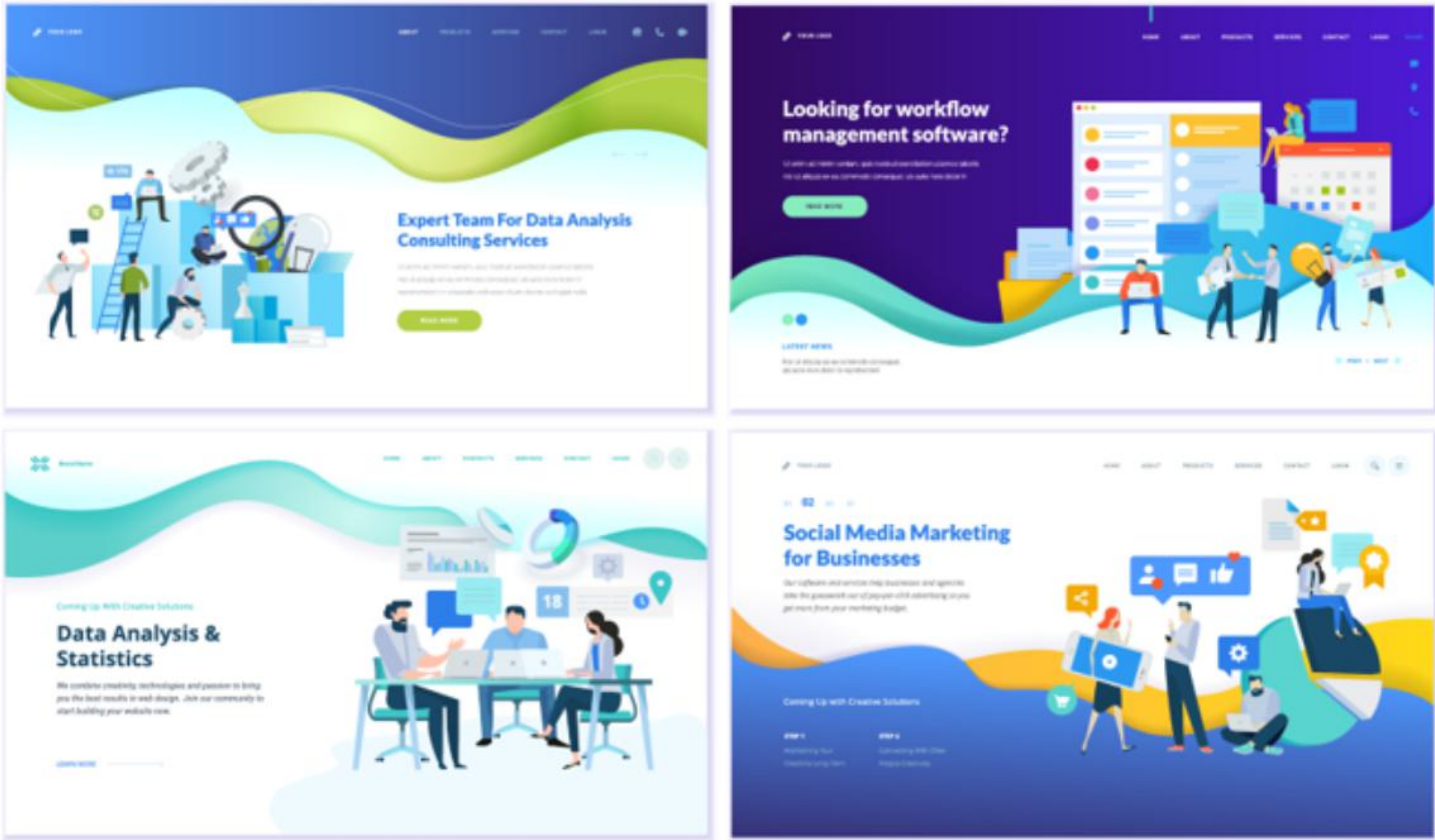
Look at a beautiful website like Pinterest.
How do colorful and attractive images get displayed with animations?



We can see colorful and attractive images on display every time we go to the Pinterest website.
How does this happen?

There are numerous organizations which give awards to websites that have exceptional design, creativity and innovation.

Why are creative and innovatively-designed websites becoming more and more recognized?



Why are creatively-designed websites appreciated more and always on high demand?

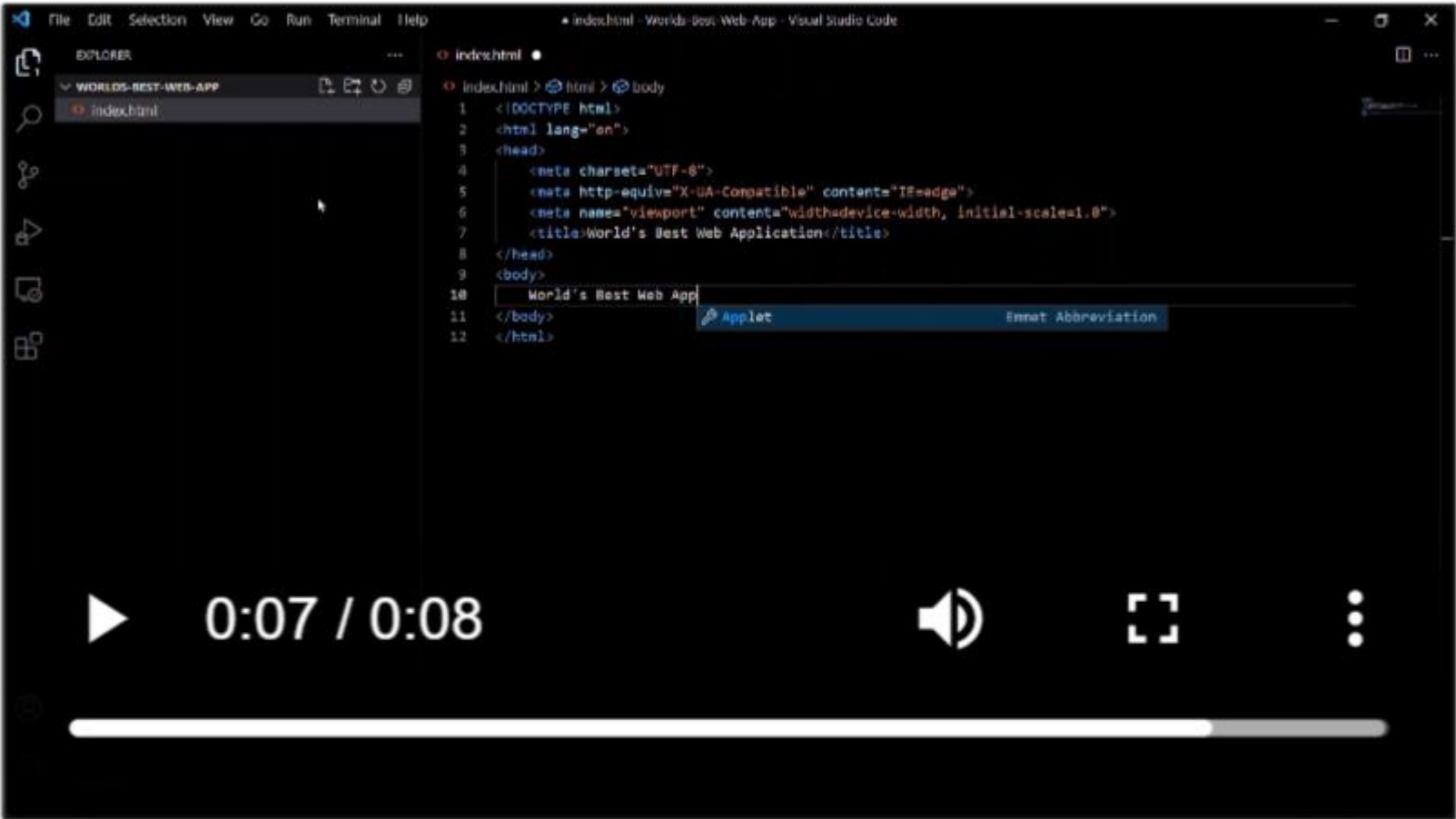
How can you access this information?
Using browsers
Why are browsers needed? Why can't we read all this information directly?
Information is shared in Hyper Text Markup Language, which is human-friendly to read.
Thus, we need browsers to access this information.



Is it possible to read the information displayed on a website directly without browsers?

- How are browsers able to interpret this data? What is used to create this data?

How Do Browsers Interpret Data?



How can we create information in a manner that can be interpreted by all the browsers?

Develop a Web Page Using HTML5



Learning Objectives

- Explain the anatomy of an HTML document and identify the various HTML elements
- Create a web page using HTML5 elements
 - Heading
 - Paragraph
 - Image
 - Anchor
 - List
- Install a live server to deliver web pages
- Use Emmet Tool Kit and a multi-cursor feature in VS Code



World Wide Web



Tim Berners-Lee

- World Wide Web (www), or simply the Web, is the leading information retrieval service on the Internet.
- In 1989, Tim Berners-Lee proposed an Internet-based hypertext system for researchers to use and share documents.
- The Web gives users access to a vast set of documents connected to each other through hyperlinks.
- A hypertext document with its corresponding text and hyperlinks is written in Hyper Text Markup Language (HTML). It is assigned an online address called a Uniform Resource Locator (URL).

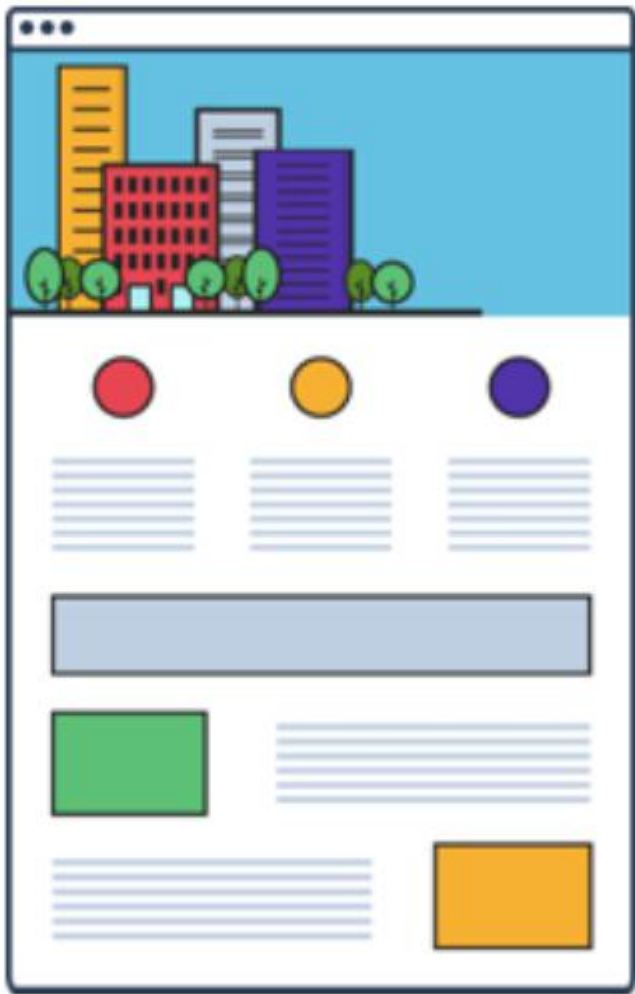
Website: A group of World Wide Web pages usually containing hyperlinks to each other and made available online by an individual, company, educational institution, government, or organization.

Website vs. Web Page

- A website is a collection of web pages displayed over the internet using a web browser.
- A web page is a single page that holds information in the form of text or media.



Website



Web Page

You can design impactful web pages using HTML and CSS, and interactive web pages using JavaScript.

JavaScript will be introduced in the next course.

Building Blocks of a Website

**Hyper Text
Markup
Language
(HTML)**

**Cascading Style
Sheets (CSS)**

JavaScript (JS)

HTML stands for Hyper Text Markup Language.

It's the standard **markup** language for documents to be displayed in Web Browsers.

The markup tells web browsers how to display a web page's words and images.

Markup is the text that appears between two angle brackets (e.g.,)

Hypertext is the ability to make hyperlinks that links to contents.

"Hypertext" refers to links that connect web pages to one another, either within a single website or between websites. Links are a fundamental aspect of the Web.

Hypertext is the method by which Internet users navigate the web. By clicking on special text called hyperlinks, users are brought to new pages.

HTML elements are the building blocks of HTML Pages.

With HTML constructs, lists, tables, images and other objects such as interactive forms can be embedded into the web page.

Open Wikipedia.org or any popular website, then open Developer Tools and view the HTML tags inside it.

Hypertext Markup Language (HTML)

```
<!DOCTYPE html>
<html>
<head>
<title>Web Page</title>
</head>
<body>
    
</body>
</html>
```

- HTML is one of the building blocks of a web page.
- It is a standard **markup** language used to display documents on web browsers.
- The **markup** tells web browsers how to display words and images on a web page.
- Hypertext, is an umbrella term that contains a hyperlink. Clicking on this link gives users access to more information about a particular word or topic.
- It helps organise text, saves on space and allows the internet users to navigate the web effectively.

The image on the slide shows different structural designs for the web pages displayed.

In any web page, different types of data (text, image, video) can be displayed in different ways.

HTML helps in structuring the layouts and identifying the way data will be rendered through its HTML elements.

Role of HTML in Web Page Design

- An HTML document helps in designing the structural layer of a web page.
- This structural layer provides foundation to the presentation and behavioral layer.
- Presentation layer contains instructions on how the elements of the structure will be displayed.
- The behavioral layer provides instructions on how these elements will interact.



Note: Selected portion of the browser is viewed as output.

Description about the tags used in a simple first html document

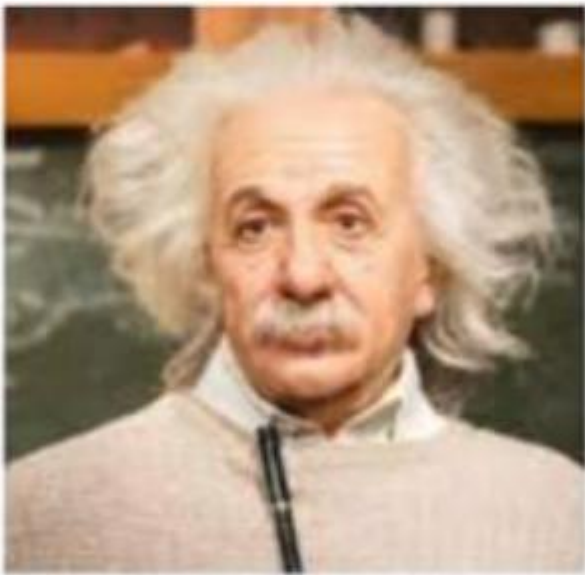
- 1. : An instruction to the web browser about the version used for writing the HTML page.
- 2. : Wraps all the content on the page. It is sometimes known as the root element.
- 3. : Acts as a container for everything you want to include on the HTML page. This content isn't the page that will be shown to the viewers. This includes keywords and the page description that would appear in the search results, CSS to style content, character set declarations, and more. You'll learn more about this in the next article of the series.
- 4. : Specifies the character set for your document to Unicode Text Format (UTF-8), which includes most characters from the vast majority of human written languages. With this setting, the page can now handle any textual content it might contain.
- 5. : Sets the title of the page which is available in the browser window.
- 6. : Contains all the content that is displayed on the page, including text, images, videos, games, playable audio tracks, or whatever else.
- 7. : Comments are inserted in the HTML code to make it more readable and understandable. Comments are ignored by the browser and are not displayed.

Anatomy of an HTML Document

```
<!DOCTYPE html>
<html>
<head>
<title>Web Page</title>
</head>
<body>
  <h1>My Favorite Inspirer</h1>
  <h2>Albert Einstein</h2>
  
  <p>Albert Einstein was German-born physicist who developed the special and general theories of relativity and won the Nobel prize for physics in 1921 for his explanation of the photoelectric effect.
</p>
</body>
</html>
```

My Favorite Inspirer

Albert Einstein



Albert Einstein was German-born physicist who developed the photoelectric effect

Open a notepad and create a simple HTML document which has title and some text content in the body.

First Web Page

Create an HTML document in a notepad or text editor to observe the anatomy of an HTML document.

[Create a simple web page in notepad](#)

DEMO



An HTML element is defined by its tag name, its opening, and its closing tags. The text to display on a web page is specified within the tags.

The main parts of an element are:

- **The opening tag:** This consists of the name of the element (in this case, p), wrapped in opening and closing angle brackets. This states where the element begins or starts to take effect — in this case, where the paragraph begins.
- **The closing tag:** This is the same as the opening tag, except that it includes a *forward slash* before the element name. This states where the element ends — in this case where the paragraph ends. Failing to add a closing tag is one of the standard beginner errors and can lead to strange results.
- **The content:** This is the content of the element, which in this case, is just text.
- **HTML Element:** The opening tag, the closing tag, and the content together comprise the element.

Anatomy of an HTML Element

Main parts of an element are:

- The Opening Tag
- The Closing Tag
- The Content
- The Element



HTML Elements

- **Nesting Elements:** Elements can be placed within other elements. This is called nesting.

```
<p>My cat is <strong>very</strong> grumpy.</p>
```

- **Empty Elements:** Some HTML elements consist of a single tag, that is typically used to insert/embed something in the document. They do not have an end tag.

```

```


Elements can Also Have Attributes

- HTML attributes are special words used inside the opening tag to control an element's behavior.
- Attributes are a modifier of an HTML element type.
- Attributes usually come in name/value pairs like: **name="value"**

The diagram shows the HTML code `<p class="text">Hello world!</p>` with labels and brackets identifying its parts. The opening tag `<p class="text">` is labeled "Opening tag". The closing tag `</p>` is labeled "Closing tag". The attribute `class="text"` is labeled "Attribute", with `class` as the "Attribute" and `"text"` as the "Value". The text `Hello world!` is labeled "Enclosed text content".

Use the HTML template code generated by the Emmet (in the VS code) while editing html file.

Then, contents inside the can be edited directly since the basic structure of HTML is auto generated.

Begin Coding With VS Code Editor

Download and install VS code, then create a simple web page using basic HTML elements.

Click on [VS Code](#) to download it.

Use the VS code editor to execute the following demo code:
[Creating header and paragraph elements in anHTML file](#)

DEMO



- Heading Tags - Represents six levels of section headings. H1 is the highest section level and H6 is the lowest section level.
 - Paragraph Tags - Represents blocks of text separated from adjacent blocks by blank lines.
- Note: Selected portion of the browser is viewed as output.

Heading and Paragraph Tags

```
<body>  
  <h1>Main Heading</h1>  
  <h2>Sub Heading</h2>  
  <p>  
    Lorem ipsum dolor sit amet  
    consectetur, adipisicing elit  
  </p>  
</body>
```

HTML Code

Main Heading

Sub Heading

Lorem ipsum dolor sit amet consectetur, adipisicing elit.

Output

- Image Tags - Used to embed an image in the document
- Anchor Tags - Creates a hyperlink to web pages, files, email addresses or location in the same page
- Horizontal rule or HR Tags: Horizontal rule to separate sections which is deprecated in the latest HTML 5 version

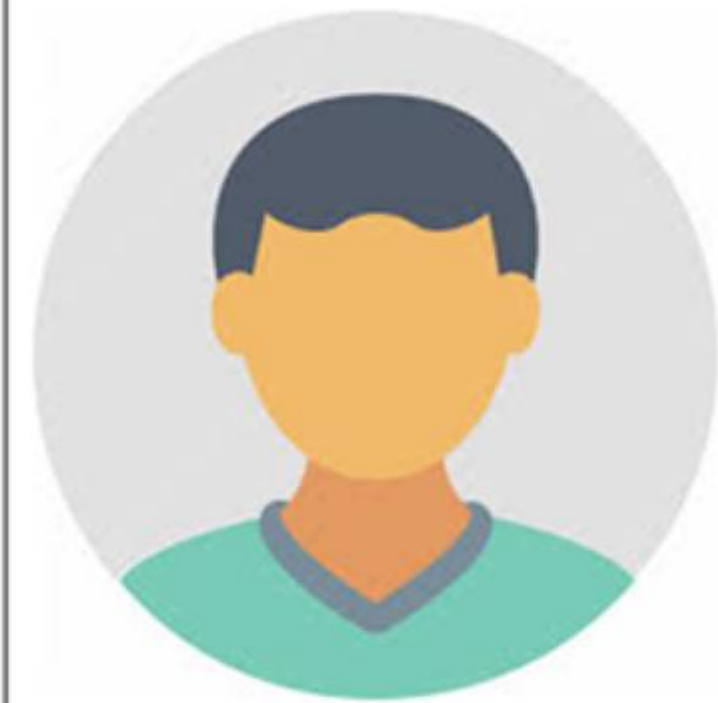
Look at the src attribute inside tag which is a mandatory attribute that is used to specify the path of the image. Similarly, anchor tags also have a mandatory attribute called href, which specifies the location of the page to navigate when the anchor text is clicked.

Note: Selected portion of the browser is viewed as output.

Image and Anchor Tags

```
<body>
  <h1>Profile Page</h1>
  <hr/>
  
  <h3>
    <a href="https://www.linkedin.com">
      Technical Specialist
    </a>
  </h3>
</body>
```

Profile Page



[Technical Specialist](https://www.linkedin.com)

- List Tags - Represents list of items
 - Ordered list tags
 - Unordered list tags
 - Definition list tags

Three types of list are present.

Ordered List: The HTML

element represents an ordered list. These lists can be Numerical or Alphabetical. Default is a

decimal number.

Unordered List: The HTML

element represents an unordered list. Default values are small black circles called

Bullets. These can be changed to Square or Disc shapes.

Note: Selected portion of the browser is viewed as output.

Ordered and Unordered List Tags

```
<body>
  <h3>Grocery list</h3>
  <ol>
    <li>Milk</li>
    <li>Bread</li>
    <li>Vegetables</li>
    <li>Eggs</li>
  </ol>
  <hr>
  <h3>Programming languages</h3>
  <ul>
    <li>C++</li>
    <li>Java</li>
    <li>Python</li>
    <li>C#</li>
  </ul>
</body>
```

Grocery list

1. Milk
2. Bread
3. Vegetables
4. Eggs

Programming languages

- C++
- Java
- Python
- C#

Definition Lists: The **HTML**

element represents a description list. The element encloses a list of groups of terms (specified using the element) and descriptions (provided by elements). Common uses for this element is to implement a glossary or to display metadata (a list of key-value pairs).

Note: Selected portion of the browser is viewed as output.

Definition List Tags

```
<body>
  <h3>Biological Terms</h3>
  <dl>
    <dt>Anatomy</dt>
    <dd>
      The study of the inside of
      the body and outside the
      body.
    </dd>
    <dt>Genetics</dt>
    <dd>
      The study of heredity and
      the variation of inherited
      characteristics.
    </dd>
  </dl>
</body>
```

Biological Terms

Anatomy

The study of the inside of the body and outside the body.

Genetics

The study of heredity and the variation of inherited characteristics.

Demo examples to understand some basic HTML elements like

,, and

> and

tags should be emphasized in the demo code.

Commonly Used HTML Elements

Create a simple example code to implement image, anchor and list tags.

Click on this [link](#) to create image, anchor, and list tags in an HTML file.

DEMO



Quick Check

What do we call an element that does not have a closing tag?

1. An empty element
2. A normal element
3. A text-only element
4. A closed element



Quick Check: Solution

What do we call an element that does not have a closing tag?

1. **An empty element**
2. A normal element
3. A text-only element
4. A closed element





Think and Tell

Web pages created so far have been accessed in the browser from the local system.

How do web browsers access web pages on the internet?

Here are the answers for the question posed in the previous slide:

When the user types the URL(Uniform Resource Locator) in the address bar of the web page, the request is sent to the corresponding web server

A URL is nothing more than the address of a given unique resource on the Web

The web server sends the web page requested.

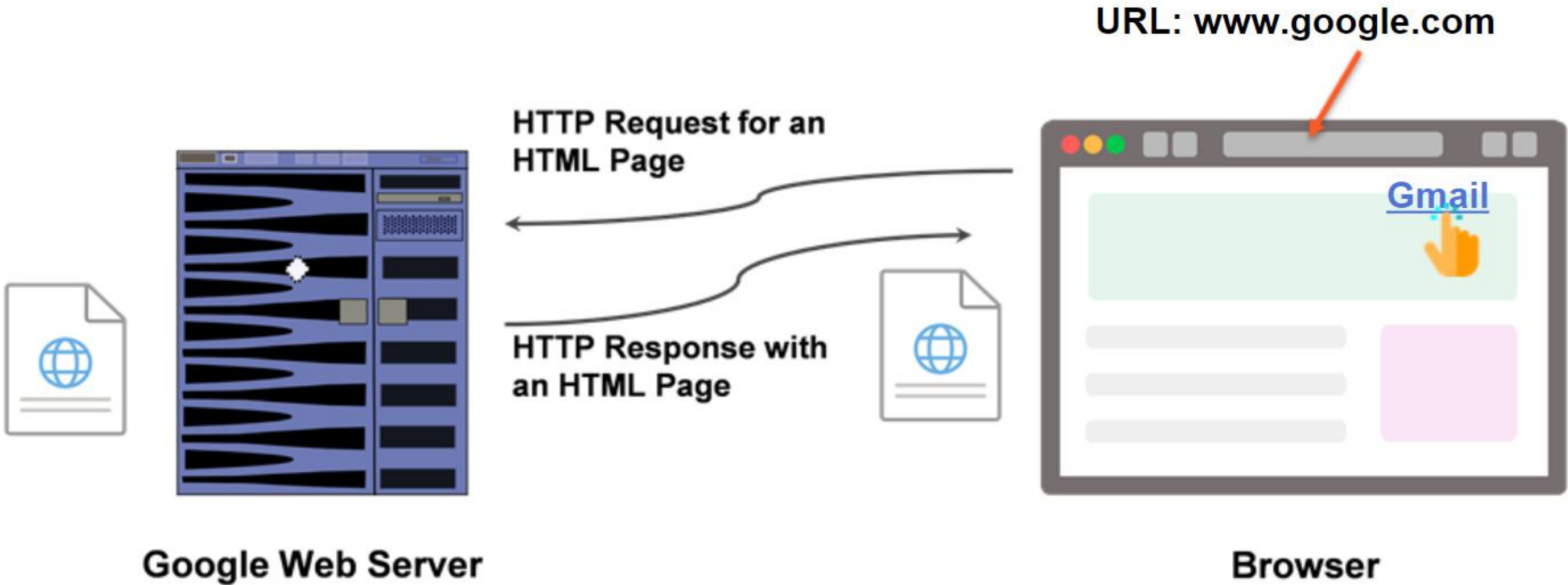
Browsers render the web page received.

When you want to access Google, the browser sends a request to the Google server.

And then the Google's server sends the markup of the page to the browser.

The browser then renders the page.

Browser Rendering Web Pages on the Internet

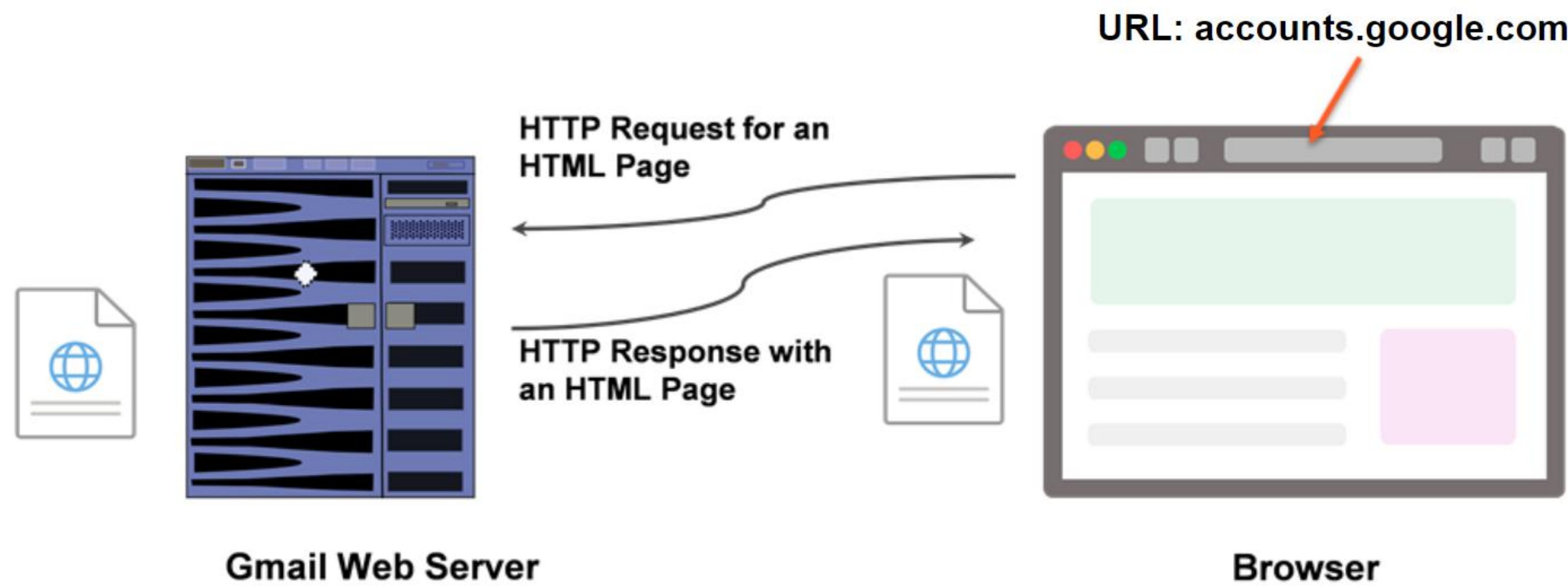


When the user clicks the Gmail hyperlink in the webpage, the request is sent to Gmail web server

Gmail Web server sends the web page as response.

The browser renders the web page received.

Browser Rendering Web Pages by Clicking Hyperlinks



Live Server

- Live server is a local development server with live reload feature for static and dynamic pages.
- The live server reloads the page automatically after every change is made to the file content. This in turn accelerates development.
- Install Live server using [VS Code extension](#).

Look at the following syntax:

- 1. HTML5 code generation
- 2. Child syntax
- 3. Multiplication syntax

CSS workflow will be covered in the coming sprints.

Emmet Toolkit

- This is an essential toolkit for web developers. It greatly helps in improving the workflow of HTML and CSS.
- It can use short snippets to generate HTML and CSS.
- Emmet snippets and expansions are built right into the VS Code.

Child: >

```
nav>ul>li
<nav>
  <ul>
    <li></li>
  </ul>
</nav>
```

Sibling: +

```
div+p+bq
<div></div>
<p></p>
<blockquote></blockquote>
```

Multiplication: *

```
ul>li*3
<ul>
  <li></li>
  <li></li>
  <li></li>
</ul>
```


Execute with the VS code shortcut keys for the selected text:

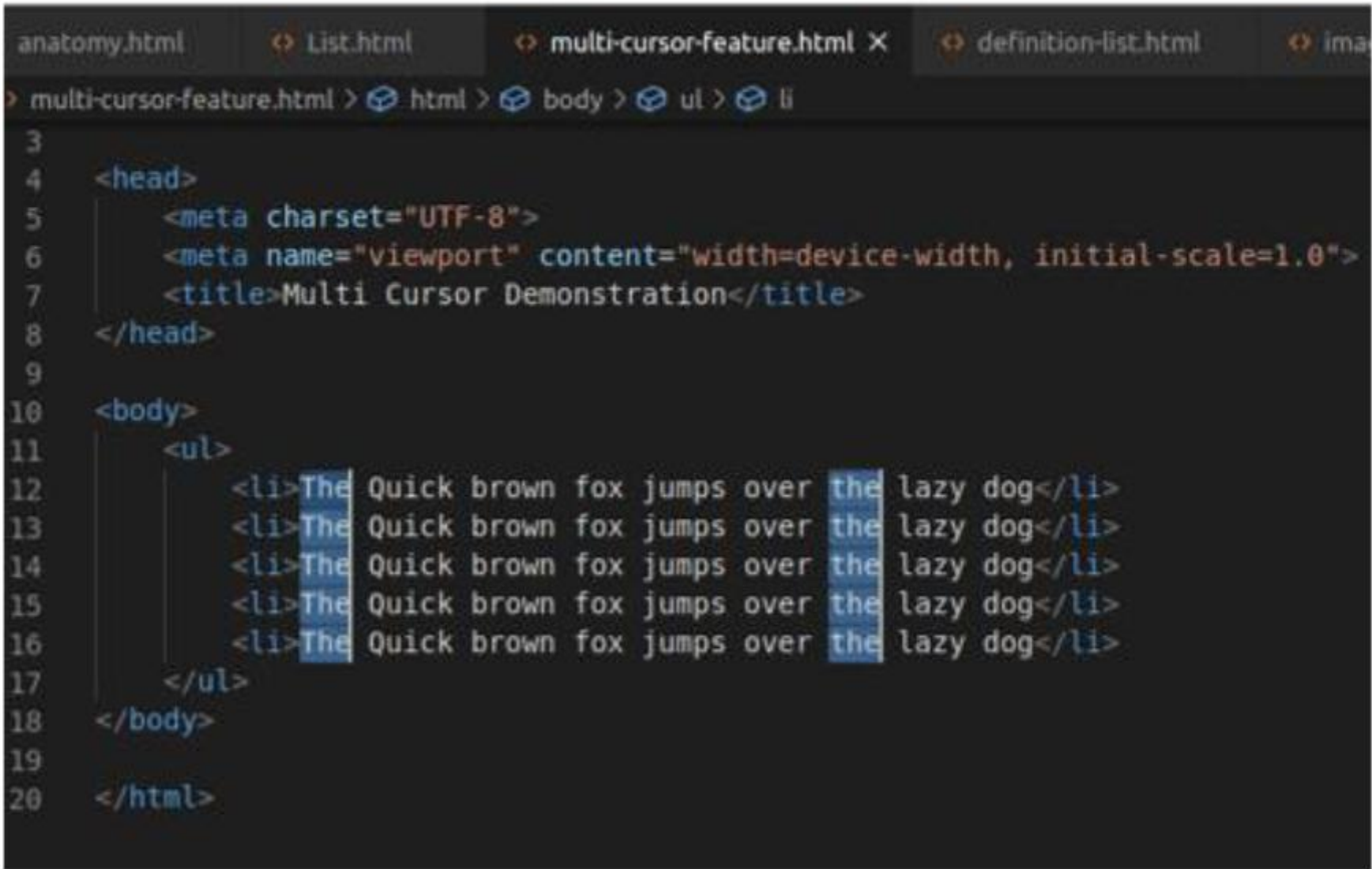
Add multi-cursor below/above - CTRL+ALT+up/down

Add multi-cursor to next occurrence - CTRL+D

Add multi-cursor to all occurrences - CTRL+SHIFT+L

VS Code Multi-Cursor Feature

The multi-cursor feature helps by adding multiple cursors at various occurrences and by updating the text simultaneously.

A screenshot of the Visual Studio Code editor interface. The top panel shows several open files: anatomy.html, List.html, multi-cursor-feature.html (active), definition-list.html, and ima... The active file, multi-cursor-feature.html, is shown in the editor. The breadcrumb navigation at the top of the editor indicates the path: multi-cursor-feature.html > html > body > ul > li. The code is an HTML document. The head section includes meta tags for charset (UTF-8), viewport (width=device-width, initial-scale=1.0), and a title (Multi Cursor Demonstration). The body section contains a single tag with five elements. Each contains the text 'The Quick brown fox jumps over the lazy dog'. The word 'the' in each list item is highlighted with a blue selection background, and a vertical cursor is positioned at the end of each 'the' word, demonstrating the multi-cursor feature. The line numbers 3 through 20 are visible on the left side of the editor.

```
3
4 <head>
5   <meta charset="UTF-8">
6   <meta name="viewport" content="width=device-width, initial-scale=1.0">
7   <title>Multi Cursor Demonstration</title>
8 </head>
9
10 <body>
11   <ul>
12     <li>The Quick brown fox jumps over the lazy dog</li>
13     <li>The Quick brown fox jumps over the lazy dog</li>
14     <li>The Quick brown fox jumps over the lazy dog</li>
15     <li>The Quick brown fox jumps over the lazy dog</li>
16     <li>The Quick brown fox jumps over the lazy dog</li>
17   </ul>
18 </body>
19
20 </html>
```

- Use the Emmet toolkit for the demonstration.
- 1. Create nested HTML elements using Child syntax (>)
 - 2. Create multiple list items using Multiplication syntax (*)
 - 3. Create a heading and paragraph element under list item using sibling syntax (+)
- UI > li
- li*4
- li>h3+p

Emmet With Multi-Cursors

Demonstrate how we can use some productivity-enhancing tools to quickly generate or update an HTML code.

Click on [Demo Link](#) to see how it works.

DEMO



Quick Check

How many heading tags are there in the HTML5 tag?

- A. 3
- B. 5
- C. 6
- D. 7



Quick Check: Solution

How many heading tags are there in the HTML5 tag?

- A. 3
- B. 5
- C. **6**
- D. 7

