Semantic HTML

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Semantics

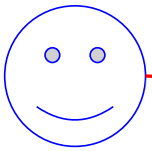
- Semantics in programming refers to the meaning of a piece of code.
- In HTML,
  - Focus is on what is the role or purpose of an HTML element?
  - Instead of what does that element look like?

Example of Semantics in HTML

- Example of semantic element in HTML:
  - The h1 element is a semantic element.
    - The h1 element gives the text it wraps a meaning/role that the text being wrapped is a top level heading of our page.
    - By default browser's user agent stylesheet will style an h1 element with a large font size to make it look like a heading.

Use Right Element for Semantic Value

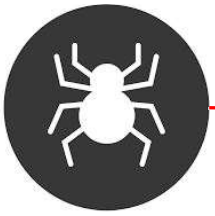
- By providing appropriate style, we could make any element look like a top level heading.
  -
```
<span style="font-size: 32px; margin: 21px 0;">
    Not a top-level heading!
</span>
```
This code will display the text look like top level heading.
- The above code will render the text to look like a top level heading, but it has no semantic value.
- We need to use right HTML element for the right job.
- Why using right element for semantic value is important?
  - A webpage is read not only by humans.



Humans read this

HTML: HyperText Markup Language

HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript).



Machines read this

```
<article class="main-page-content" lang="en-US"><header><h1>HTML: HyperText Markup Language</h1></header><div class="section-content"><p><strong>HTML</strong> (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (<a href="/en-US/docs/Web/CSS">CSS</a>) or functionality/behavior (<a href="/en-US/docs/Web/JavaScript">JavaScript</a>).</p>
```


Benefits of Writing Semantic Markup

- SEO uses for page's search rankings.
- Screen reader can use it to help visually impaired users navigate a page.
- If only divs are used, it is very difficult to find blocks of meaningful code.
- Suggests to the developer the type of data that will be populated.

SEO: Search Engine Optimization

- SEO (Search Engine Optimization) is the process of making a website more visible in search engines' results pages.
  - It is also referred to as improving search rankings.
- Search engines crawl web, following links from page to page, and index the content that is found.
- When we search, the search engine displays the indexed content.
- Crawlers follow some rules.
  - If we follow those rules when doing SEO for a website, we can improve search optimization of our website.

SEO: Search Engine Optimization

- SEO methods fall into three categories:
  - Technical: Use semantic tags.
  - Copywriting: Use visitors' vocabulary.
  - Popularity: Other established sites link to our site.
- One of three methods is Technical:
  - We tag the content using semantic HTML.
  - When crawlers explore our website, they should find the content that we want indexed.

Questions to Think When Deciding HTML Elements

- We need to ask questions to ourselves :
- What element(s) best describe/represent the data that we are populating.
- Is it a list of data?
  - Is data ordered?
  - Is data unordered?
- Is it an article with sections and an aside of related information?
- Does data represent list of definitions?
- Is it a figure or image that needs a caption?
- Should we have a header and footer in addition to the global site-wide header and footer.

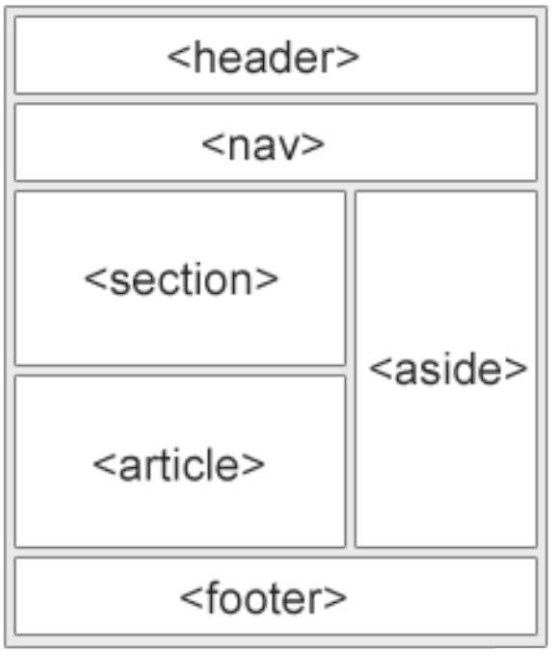
Semantic Elements

- There are some 100 semantics elements available. Some are
- <article>
- <aside>
- <details>
- <figcaption>
- <figure>
- <footer>
- <form>
- <header>
- <main>
- <mark>
- <nav>
- <section>
- <summary>
- <time>

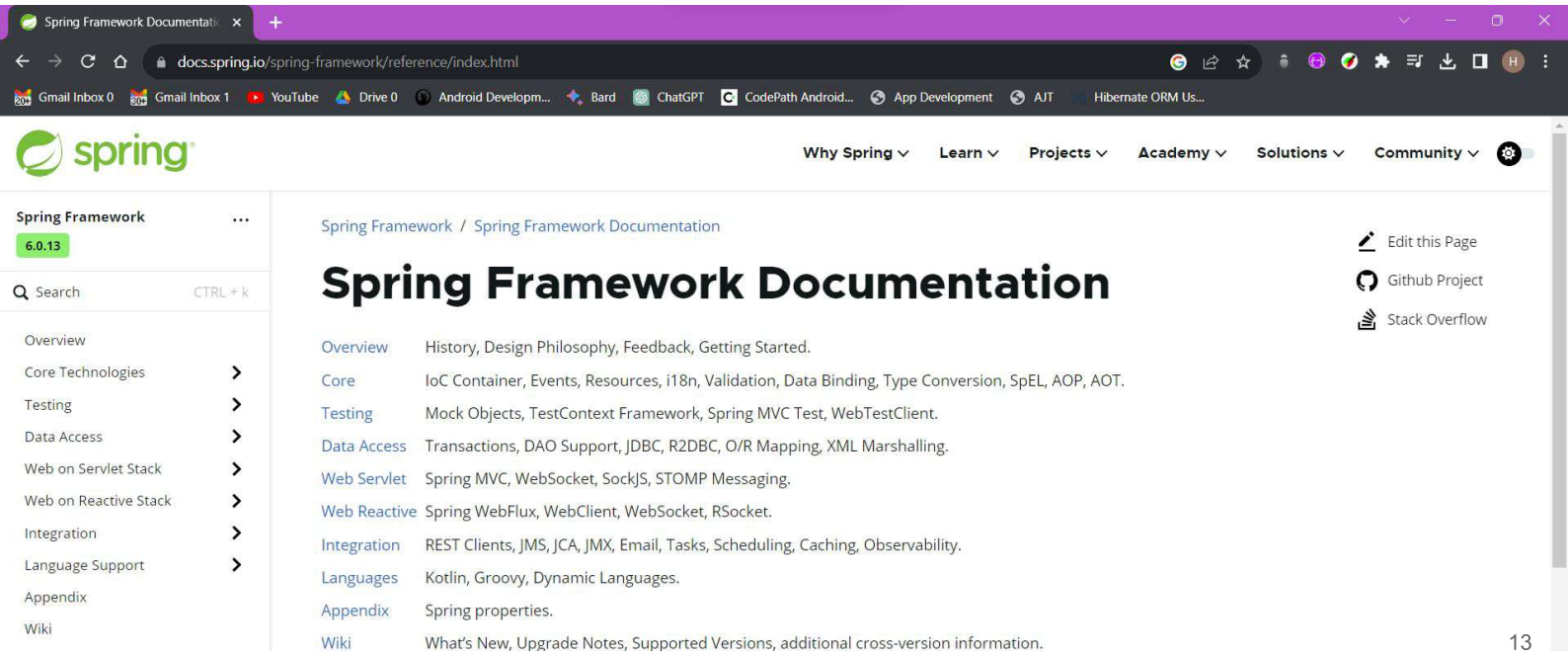
Semantic Elements and Non-semantic Elements

- A semantic element clearly describes its meaning to both the browser and the developer.
- Examples of non-semantic elements: (Do not convey anything about content)
  -
  -
- Examples of semantic elements: (They clearly define content)
  - <form>
  - <table>
  - <article>
  - <aside>

Typical Parts in a Webpage



Example of a Webpage



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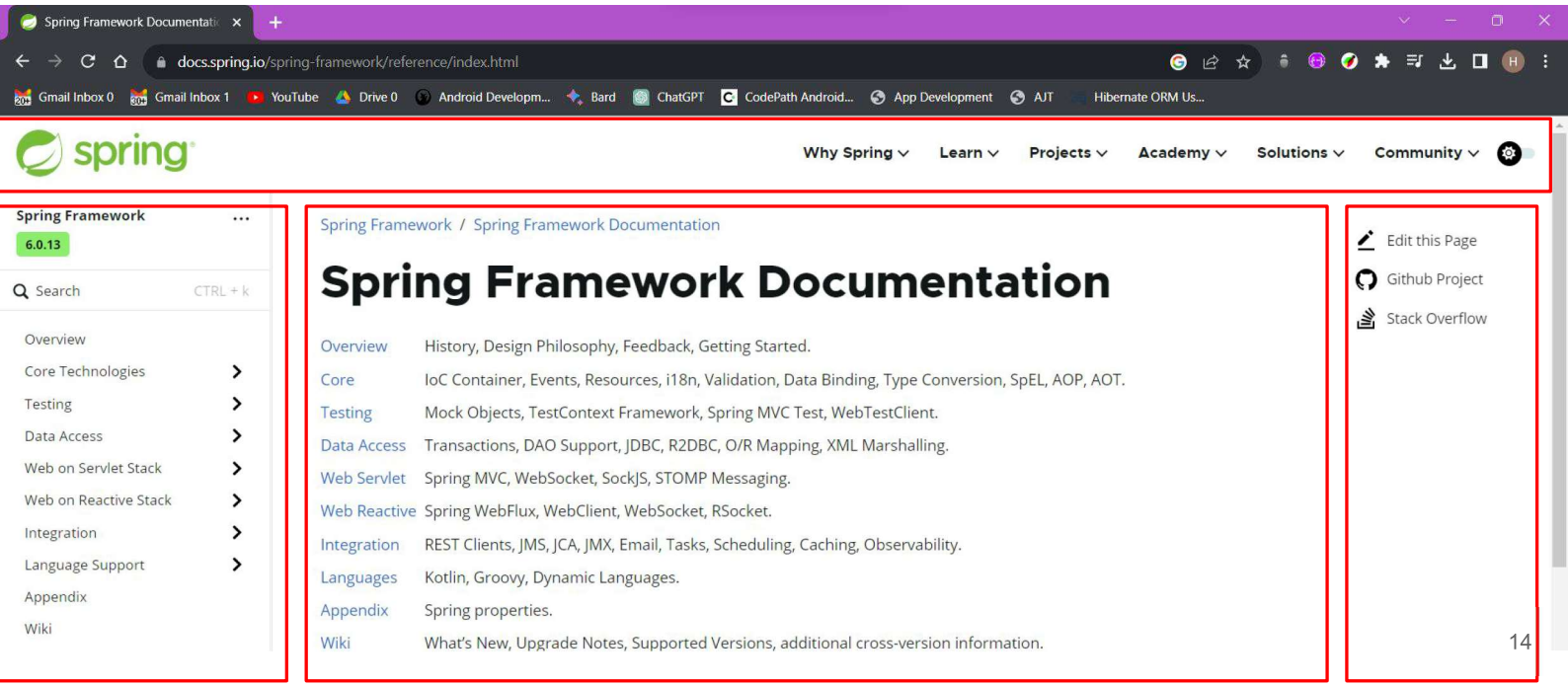
Example of a Webpage



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HTML <section> Element

- The **<section> element** is a generic container that is used to **group** together **content** that is **thematically related**.
  - For example, the **title of a chapter** and the **content of the chapter** are **related**, so we can group them using <section>
- It's often used to **divide** a document **into chapters**, **headers**, **footers**, or any other group of content.
- We can use <section> element for the following:
  - Chapters
  - Introduction
  - News items
  - Contact information

Example of Section

<section>

1. Legal

Copyright © 2012-2023

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<section>

2. Getting Help

If you have trouble with Spring Boot, we would like to help.

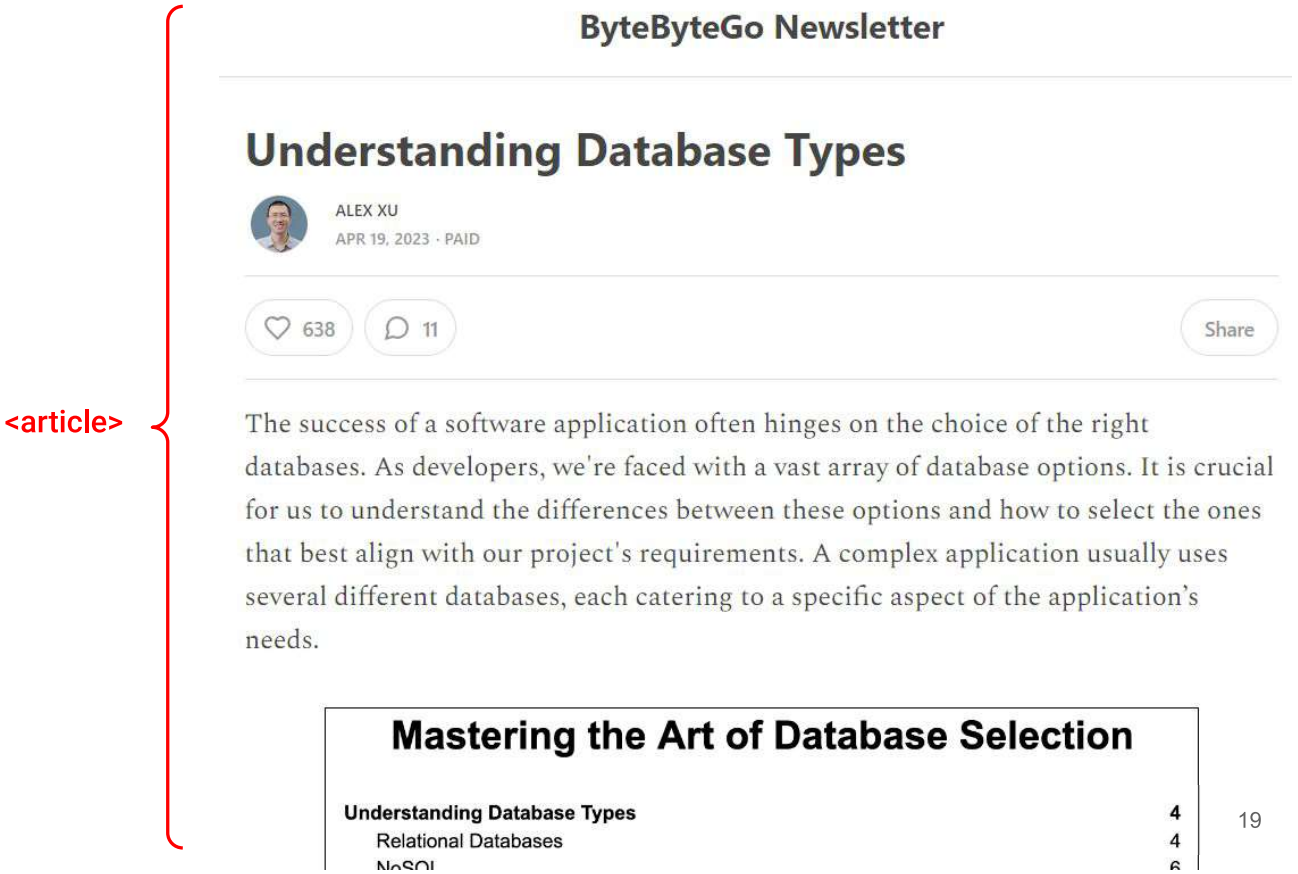
- Try the How-to documents. They provide solutions to the most common questions.
- Learn the Spring basics. Spring Boot builds on many other Spring projects. Check the spring.io web-site for a wealth of reference documentation. If you are starting out with Spring, try one of the guides.
- Ask a question. We monitor stackoverflow.com for questions tagged with `spring-boot`.
- Report bugs with Spring Boot at github.com/spring-projects/spring-boot/issues.

Example of HTML <section> Element

```
<section>
   <h2>Chapter 1</h2>
   <p>Content of Chapter 1...</p>
</section>
<section>
   <h2>Chapter 2</h2>
   <p>Content of Chapter 2...</p>
</section>
```


HTML <article> Element

- The **<article> element** is more specific and is used to define a **self-contained** piece of **content** that could be **distributed** and **reused independently**.
- It is **suitable** for content like
  - Blog posts.
  - Newspaper articles.
  - Forum posts.
  - User comments.
  - Product cards.
- The **content inside** an **<article>** should make **sense** on its **own** and **should not rely** on the **surrounding content** for **meaning**.

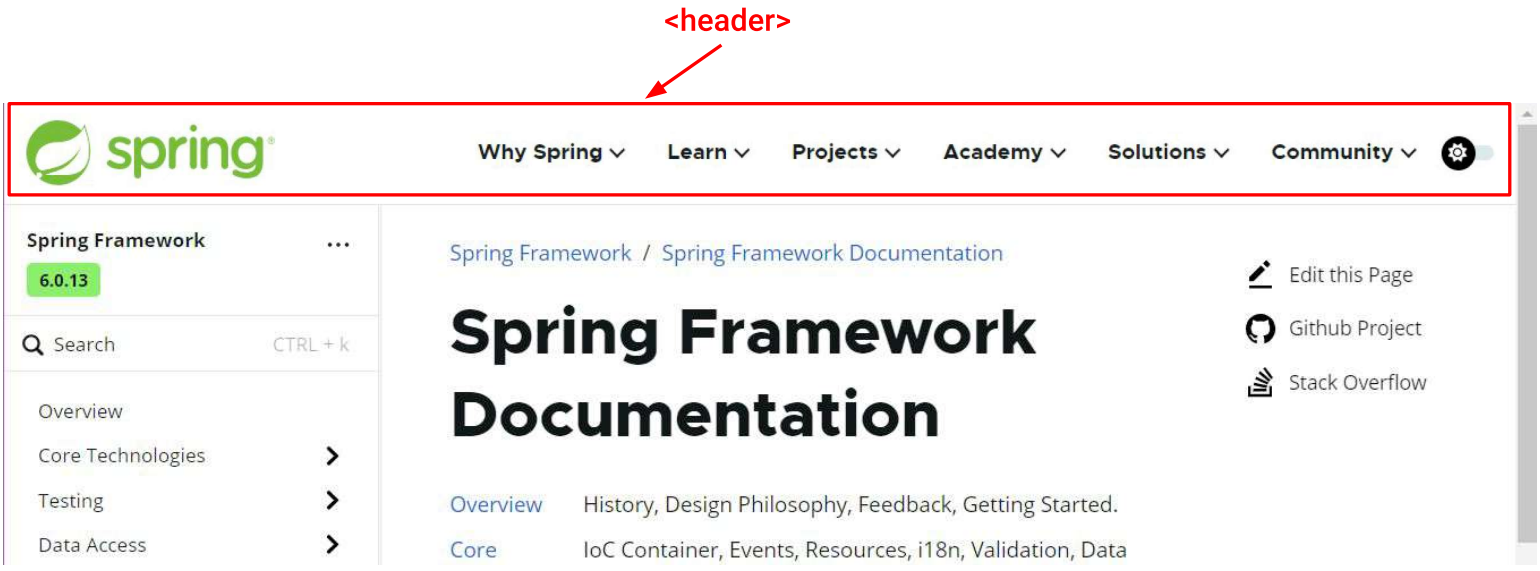


Example of HTML <article> Element

```
<article>
  <h2>Article Title</h2>
  <p>Content of the article...</p>
  <p>Content of the article...</p>
</article>
```

HTML <header> Element

- The **<header> element** represents a **container** for **introductory content** or a set of **navigational links**.
- A <header> element generally contains:
  - One or more **heading elements** (<h1> to <h6>)
  - **Logo** or icon.
  - **Authorship** information (Author or Organization or both or Timestamp)
- We can have **several <header>** elements in **one HTML document**.
  - However, we **cannot place** a **<header> within** another **<header>** or **<footer>** or **<address>** element.

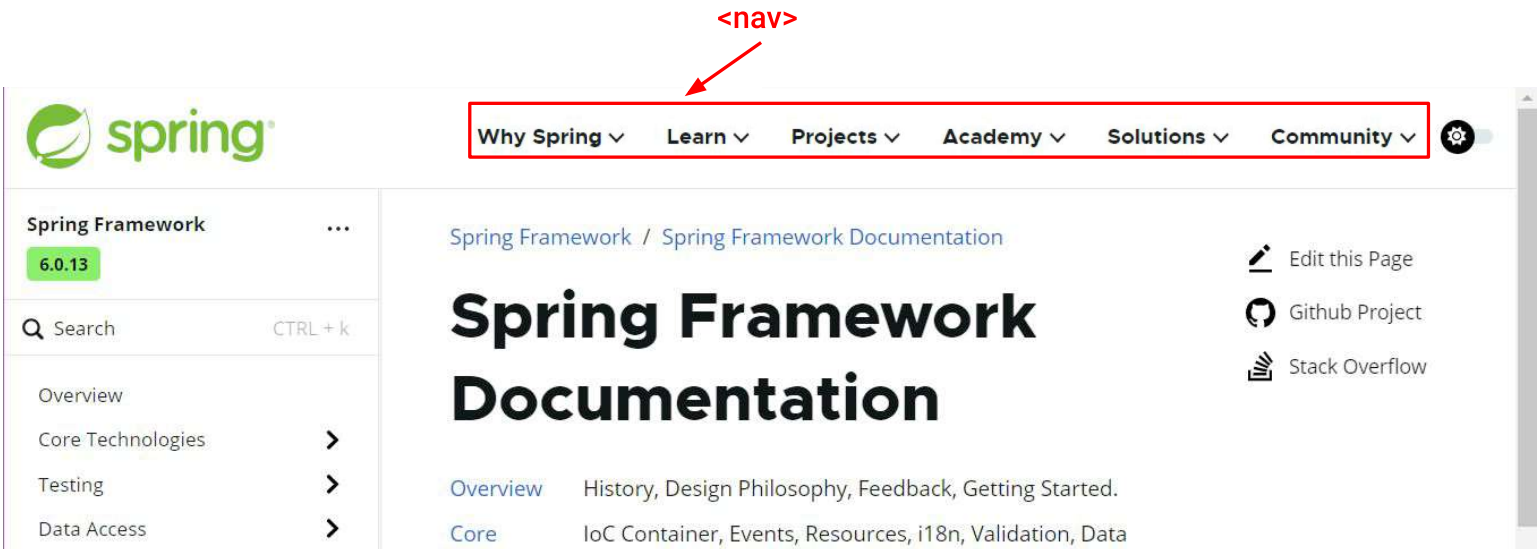


Example of HTML <header> Element

```
<article>
  <header>
    <h1>Article Title</h1>
    <p>Published on <time datetime="2023-11-12">November 12, 2023</time> by
Author Name</p>
  </header>

  <p>This is the content of the article...</p>
  <p>More paragraphs and details...</p>

  <!-- Additional content of the article -->
</article>
```


HTML <nav> Element

- The <nav> element defines a set of navigation links.
- The <nav> element is to be used for major blocks of navigation links.
  - We should not place all links of a document inside <nav> element.
- Browsers have screen readers (disabled users use it):
  - Screen readers can use this element to determine whether to omit the initial reading of the content of <nav>.

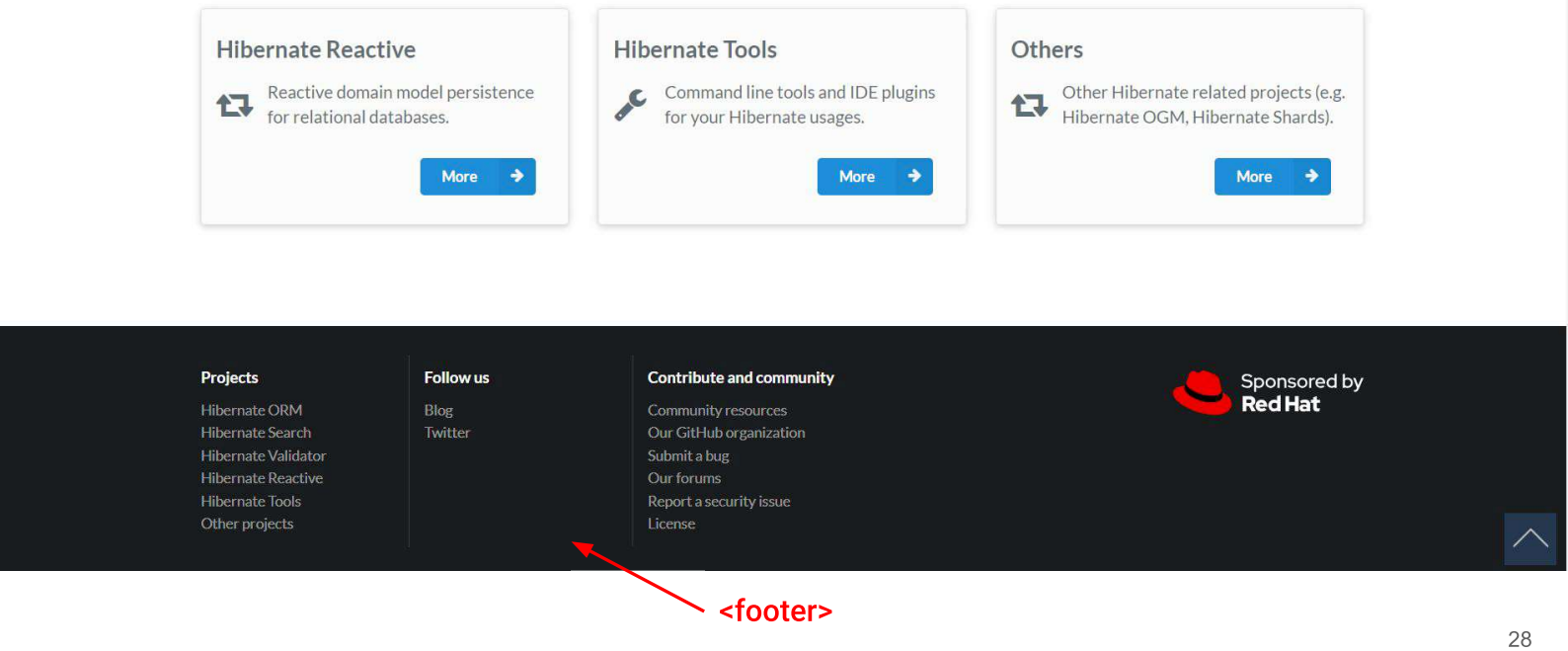


Example of HTML <nav> Element

```
<header>
    <h1>Website Name</h1>
    <nav>
      <ul>
        <li><a href="/">Home</a></li>
        <li><a href="/about">About Us</a></li>
        <li><a href="/services">Services</a></li>
        <li><a href="/contact">Contact Us</a></li>
      </ul>
    </nav>
</header>
```

HTML <footer> Element

- The <footer> element defines the footer of a document or section.
- A <footer> typically contains:
  - Copyright information.
  - Authorship information.
  - Sitemap.
  - Contact information.
  - Back to top links.
  - Related documents.
- We can have several <footer> elements in one document.
- This <footer> element and its content is very important for SEO.

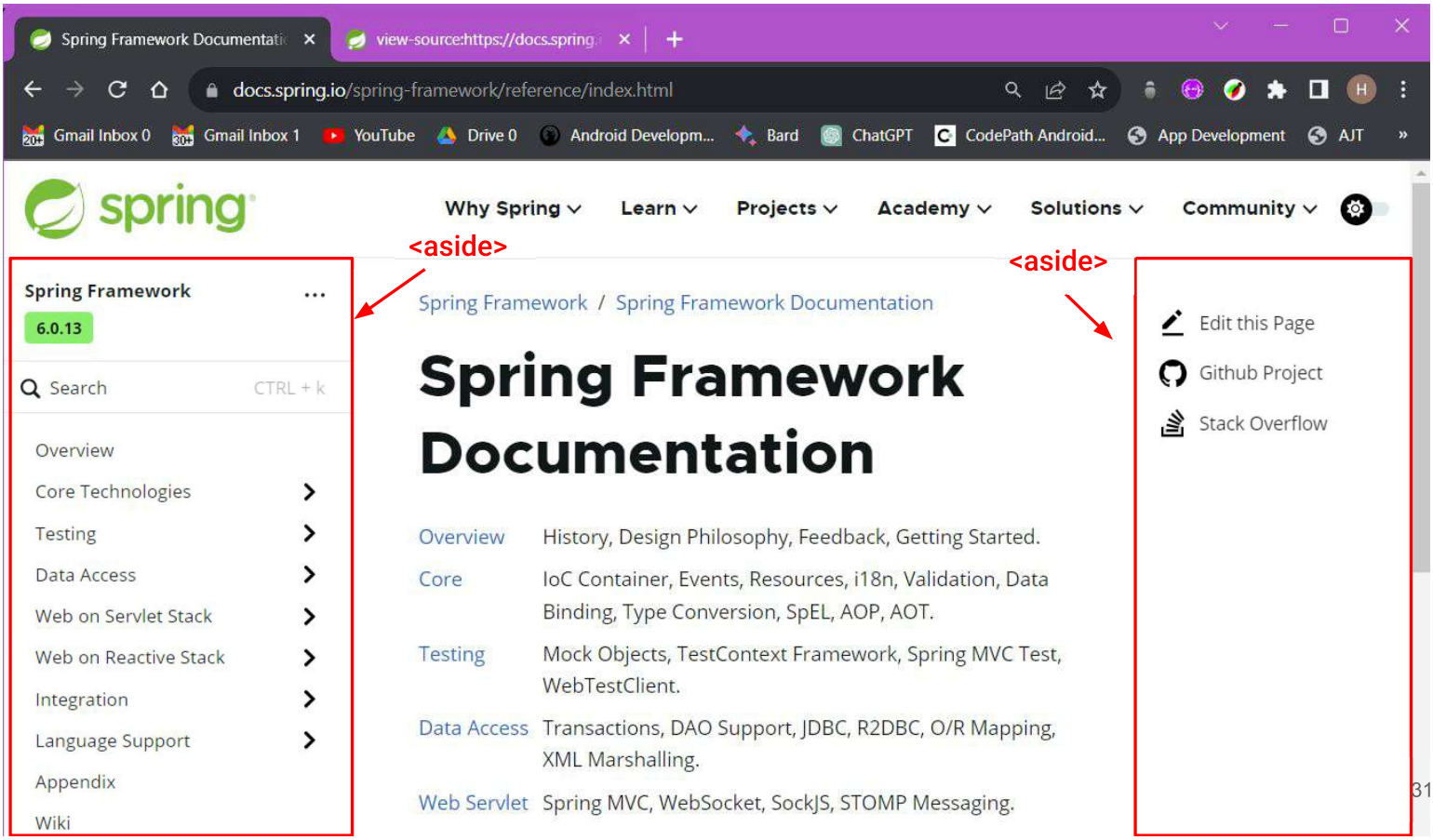


Example of <footer> Element

```
<footer>
  <p>&copy; 2023 Example Page. All rights reserved.</p>
  <nav>
    <ul>
      <li><a href="/about">About Us</a></li>
      <li><a href="/contact">Contact Us</a></li>
      <li><a href="/privacy">Privacy Policy</a></li>
    </ul>
  </nav>
</footer>
```


HTML <aside> Element

- The **<aside> element** defines some **content aside** from the content that is placed in (like **sidebar**).
- The **content** of **<aside> should** be **directly related** to the **surrounding content**.

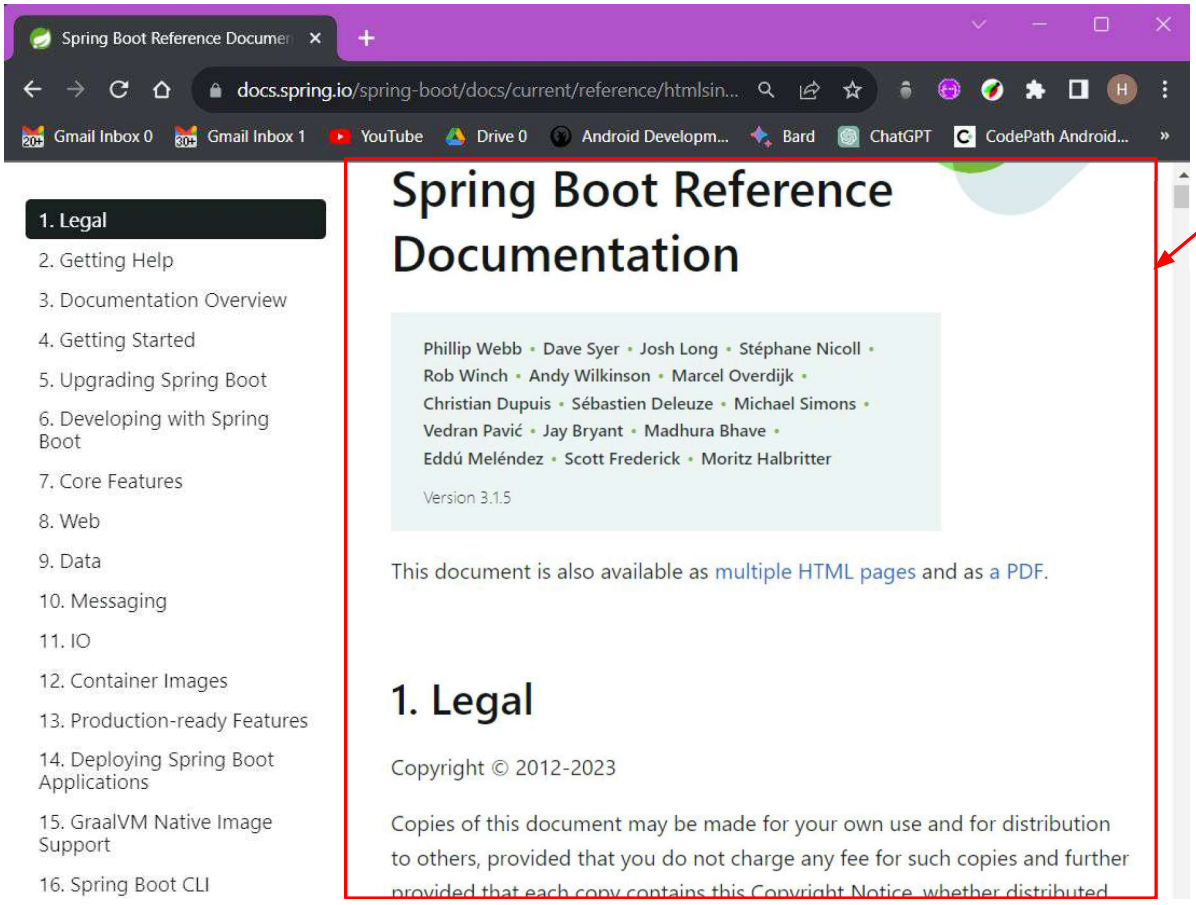


Example of HTML <aside> Element

```
<aside>
    <section>
      <h2>Related Links</h2>
      <ul>
        <li><a href="/related-article-1">Related Article 1</a></li>
        <li><a href="/related-article-2">Related Article 2</a></li>
        <li><a href="/related-article-3">Related Article 3</a></li>
      </ul>
    </section>

    <section>
      <h2>Advertisement</h2>
      <p>Check out our special offers!</p>
      <!-- Additional ad content -->
    </section>
</aside>
```

HTML <main> Element

- The <main> element specifies the main content of a document.
- The content inside <main> should be unique to the document.
  - It should not contain content that is repeated in all documents:
    - Sidebars, Navigation links, Copyright information, Site logos., Search forms, etc.
    - The must not be more than one <main> element in a document.
- The <main> element should not be a child of an <article>, <aside>, <footer>, <header>, or <nav> element.



Example of HTML <main> Element

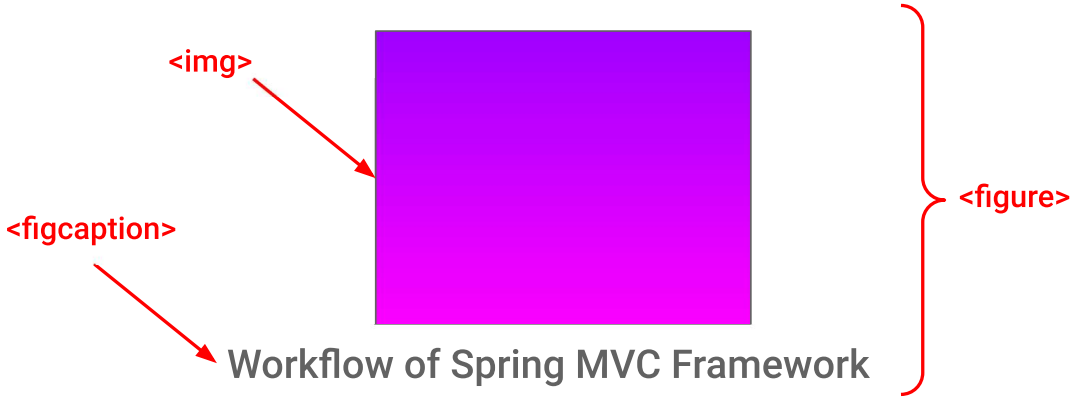
```
<body>
...
<main>
    <section>
      <h2>Welcome to Our Website</h2>
      <p>Thank you for visiting our website. Explore our content to learn more about who we are and what we offer.</p>
    </section>

    <section>
      <h2>Featured Services</h2>
      <ul>
        <li>Service 1: Description of Service 1</li>
        <li>Service 2: Description of Service 2</li>
        <li>Service 3: Description of Service 3</li>
      </ul>
    </section>
</main>
</body>
```


HTML <figure> and <figcaption> Elements

- The **<figure>** element specifies **self-contained content**.
  - Code listings.
  - Illustrations.
  - Diagrams.
  - Photos.
- The **<figcaption>** element defines a **caption** for a **<figure> element**.
  - The <figcaption> element can be **placed** as the **first child** element or the **last child** element **of <figure>** element.
- The **actual image itself** is **defined** by **<img>** element.

Example of HTML <figure> and <figcaption> Elements

```
<figure>
  <img src="/media/springmvc/flow.jpg" alt="Spring MVC Workflow" />
  <figcaption>Workflow of Spring MVC Framework</figcaption>
</figure>
```



References

- https://developer.mozilla.org/en-US/docs/Glossary/Semantics
- https://www.w3schools.com/html/html5_semantic_elements.asp