



HTML



Frontend

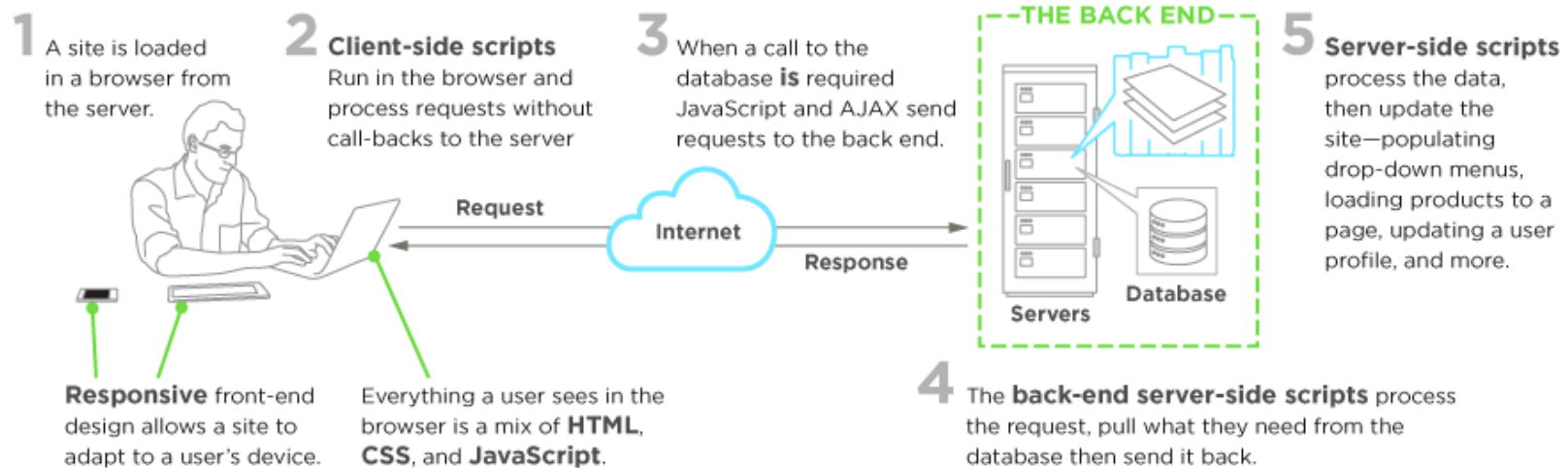


- Front-end web development is the practice of converting data to graphical interface for user to view and interact with data through digital interaction using HTML, CSS and JavaScript.
- A front-end developer architects and develops websites and applications using web technologies (i.e., HTML, CSS, DOM, and JavaScript), which run on the Open Web Platform or act as compilation input for non-web platform environments





Frontend





HTML

- HTML: Hypertext Markup Language is the standard markup language for documents designed to be displayed in a web browser.
- Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages.
- HTML is the backbone of any website development process, without which a web page doesn't exist.





- Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML.
- CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts.





JavaScript



- JavaScript (JS) is a high-level, interpreted scripting language that conforms to the ECMAScript specification.
- JavaScript lets you add interactive features to your Web sites, including dynamically updated content, controlled multimedia, animated images, and much more.





HTML



- HTML stands for HyperText Markup Language:
 - A *markup* language is a computer language that defines the structure and presentation of raw text.
 - In HTML, the computer can interpret *raw text* that is wrapped in HTML elements.
 - *HyperText* is text displayed on a computer or device that provides access to other text through links, also known as *hyperlinks*.





HTML Tag

- HTML is composed of elements. These elements structure the webpage and define its content.
- An HTML *element* is formed using a **tag**.

- EX:

<p> : tag is used to describe a paragraph
HTML element.

<h1> : Highest-level heading

<h6> : Lowest-level heading

**** : An image





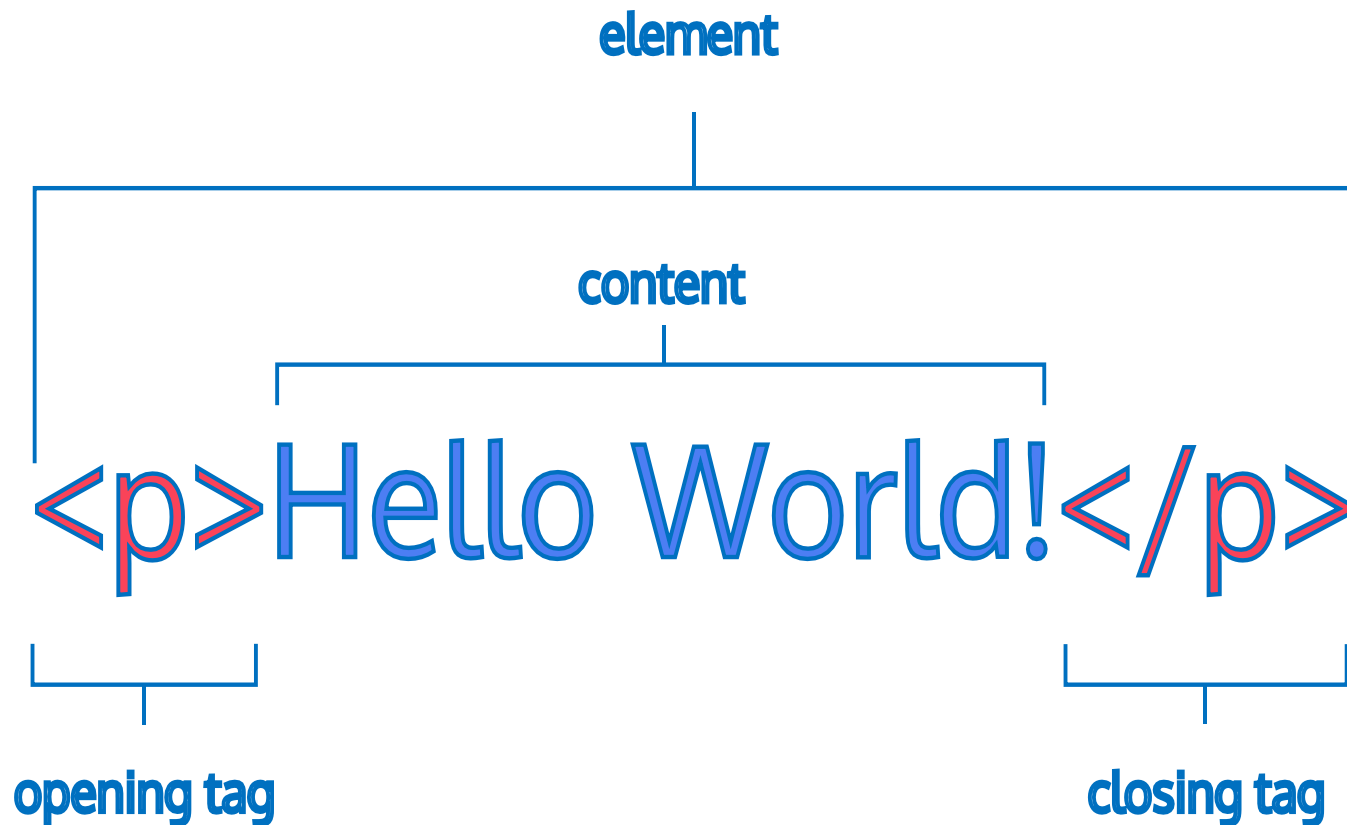
HTML Tag

- These tags are enclosed within angle braces.
- HTML elements contain both *opening* and *closing* tags to indicate where an element starts and ends.
 - Opening tag: **<tag name>**
 - Closing tag: **</tag name>**
 - EX: **<p>** has its closing tag **</p>**
<body> tag has its closing tag **</body>**
<div> tag has its closing tag **</div>**
- However, not all of these elements require the end tag. Some elements, the so-called *void elements*, do not have an end tag.
 - EX: **<hr/>** horizontal line
**
** line break tag





HTML Tag





Basic HTML File

- Basic HTML file to get a better understanding of how to use markup to define the structure of a web page.

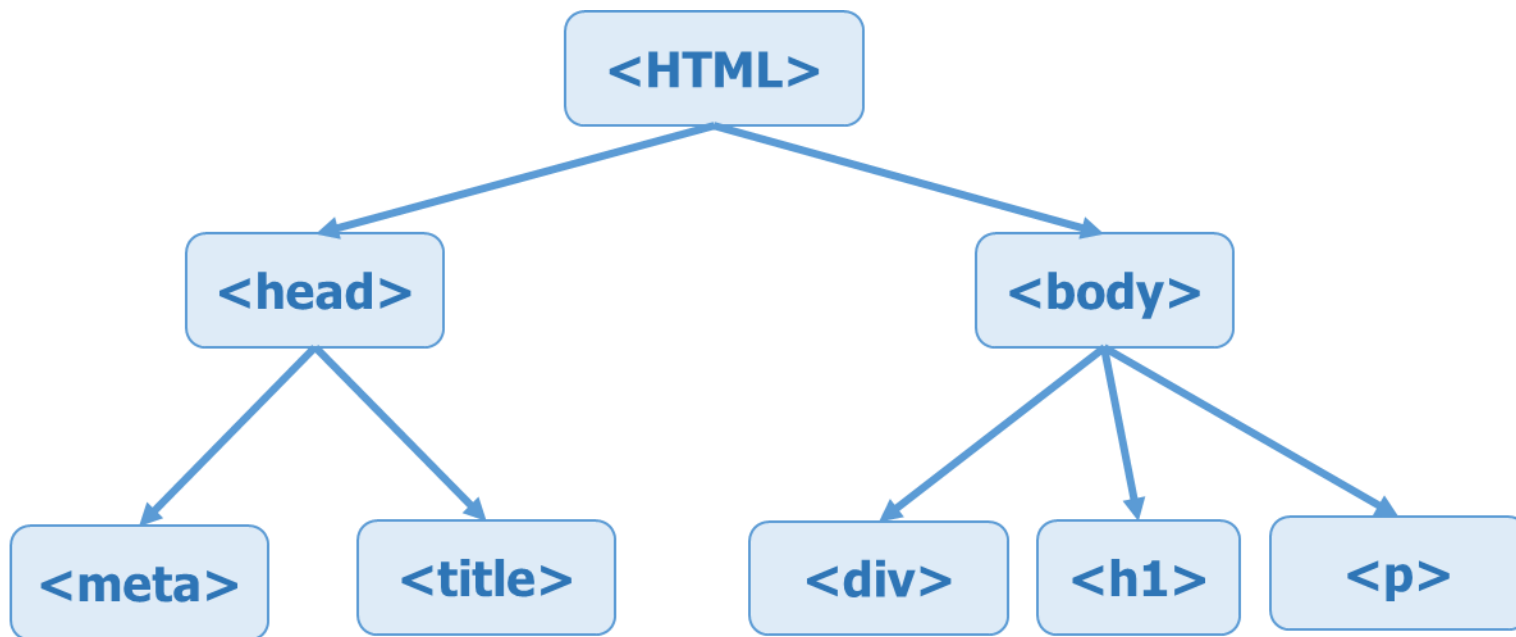
```
<DOCTYPE! html>
<html>
  <head>
    <title>Nong Lam University</title>
  </head>
  <body>
    <h1>First HTML File</h1>
    <p>Welcome to Nong Lam University</p>
  </body>
</html>
```





Basic HTML File

- The root element is html tag. Within this root element there are multiple elements.
- `<head>` and `<body>` tag within the root `<html>` element.





Basic HTML File



- The `<head>` tag contains supporting information about the file, links to Javascript files and CSS stylesheets.
- The `<body>` element contains the main content of an HTML file, the information that is rendered by your web browser.
- There can be only one `<body>` and `<head>` tag within an HTML file, and most of the HTML you write will exist within this element.





The Body

- One of the key HTML elements we use to build a webpage is the *body* element.
- Only content inside the opening and closing body tags can be displayed to the screen.
 - Exam opening and closing body tags look like:

```
<body>  
  
...  
  
</body>
```





HTML Structure



- HTML is organized as a collection of family tree relationships.
- When an element is contained inside another element, it is considered the child of that element.
- The child element is said to be nested inside of the parent element.
- Since there can be multiple levels of nesting, this analogy can be extended to grandchildren, great-grandchildren, and beyond.
- The relationship between elements and their ancestor and descendent elements is known as hierarchy.





HTML Attributes

- HTML attributes provide additional information about an HTML element. Attributes can be considered as properties of the element.
- An element may have a single attribute, many attributes, or no attributes at all.

```
<tagName attribute_name="...value..."></tagName>
```

- EX:

```
<p title="Welcome" style="color:red">  
    Hello, World!  
</p>
```





Id and Class attribute

- The id and class attributes can be used to identify specific HTML elements across your HTML page.
- The id attribute give any element a unique identifier.
- The class attribute is similar to the id attribute in that it is used to identify specific elements.
- Id and Class can later be used for things like applying specific styles with CSS or capturing input with some Javascript code.





Id attribute

- An id value should only be used for a single element.
- An id value must not contain any whitespace
- A single element cannot have multiple id values

```
<!-- Right -->
<p id="id1"></p>
<p id="id2"></p>
<!-- Wrong -->
<p id="number1 number2"></p>
<p id="number3"></p>
<p id="number3"></p>
```





Class attribute

- The same class value can be used across multiple elements
- An element can have multiple class values, separated by whitespaces
- Ex:

```
<p class="class1 class2"></p>
```

```
<p class="class3"></p>
```

```
<p class="class3"></p>
```





Basic tag

- Title web page: title tag
- Tag: `<title>title</title>`
- Location: inside head tag





Basic tag

- Style tag: the tag contain CSS code apply in webpapage.
- Tag: `<style> ... CSS code ...</style>`
- Location: inside head tag

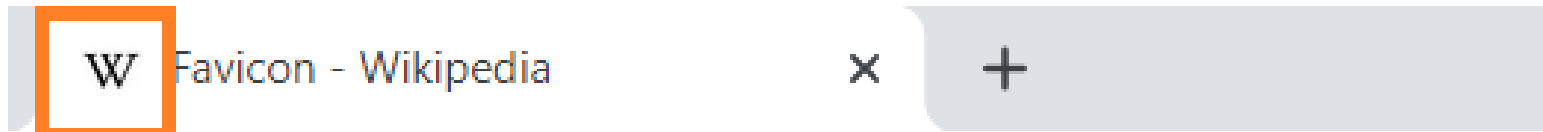
```
<style>
  h1 {color:red;}
  p {color:blue;}
</style>
```





Basic tag

- Favicon is icon for represent a webpage.
- Favicon web page: using link tag
- Tag: **`<link rel="shortcut icon" href="https://example.com/myicon.ico">`**
- Location: inside head tag





Basic tag

- Tag <a>: Hyperlinking

- connect to a HTML page or other web pages by creating a **hyperlink**.
- Attribute **href**: A URL connect to web address.
- An **absolute** URL: URL have three main components:
 - The **Protocol**: http://, https:// ftp://
 - The **Domain**: Domain name of website
 - The **path**: information direct to webpage
- A **relative** URL: provide less information than absolute URLs and generally refer to pages on the same domain.

▪ Ex: `Google`
`About`





Basic tag



- Block-level Elements

- Headings (<h1>-<h6>)
- Ordered and Unordered Lists (,)
- List Items ()
- Paragraphs (<p>)
- Logical divisions (<div>)





Basic tag



- Headings tag: h1 → h6
 - `<h1>`: Highest-level heading
 - `<h6>`: Lowest-level heading
 - The HTML standard has five additional text heading elements h2 → h6
 - You should use heading levels in structure of your HTML pages, an h2 element should be used for a header one level below an h1 element, an h3 element should be used a level below h2, and so on.





Basic tag

```
<html>
  <head>
    <title>h1 - h6 elements</title>
  </head>
  <body>
    <h1>Heading Level 1</h1>
    <h2>Heading Level 2</h2>
    <h3>Heading Level 3</h3>
    <h4>Heading Level 4</h4>
    <h5>Heading Level 5</h5>
    <h6>Heading Level 6</h6>
  </body>
</html>
```





Heading Level 1

Heading Level 2

Heading Level 3

Heading Level 4

Heading Level 5

Heading Level 6





Basic tag

- Lists: a bulleted or numbered list in web page content.
- Unordered Lists **** : a list begin a bulleted.
- Ordered Lists ****: a list begin a number.
- Attribute: **type**
 - Ex: **<ol type="I">** ****





Basic tag

- Unordered Lists

```
<html>
<head>
  <title>List of product</title>
</head>
<body>
  <h1>List of product</h1>
  <ul>
    <li>PC Gaming</li>
    <li>Monitor LCD</li>
    <li>SSD Desktop</li>
    <li>DDR4 </li>
  </ul>
</body>
</html>
```

List of product

- PC Gaming
- Monitor LCD
- SSD Desktop
- DDR4





Basic tag

- Order list

```
<html>
<head>
  <title>List of product</title>
</head>
<body>
  <h1>List of product</h1>
  <ol>
    <li>PC Gaming</li>
    <li>Monitor LCD</li>
    <li>SSD Desktop</li>
    <li>DDR4 </li>
  </ol>
</body>
</html>
```

List of product

1. PC Gaming
2. Monitor LCD
3. SSD Desktop
4. DDR4





Basic tag

- **Block Elements:** HTML tag can make full width in web page, making a block around content.
 - Ex: `<h1>`-`<h6>`, ``, ``, ``, `<p>`, `<div>`
- **Inline Elements:** HTML tag cannot make full width. Inline Elements do not start a new line, it's part of the content in a block.
 - Ex: `<a>`, `<i>`, ``, ``





Basic tag

```
<html>
<head>
  <title>Block vs Inline HTML Element</title>
</head>
<body>
  <h1>Block vs Inline HTML Element</h1>
  <p>Block element begin with new line.</p>
  <p>
    <b>Inline elements</b> inside
    <em>a block elements, </em>
    <a href="https://www.google.com">
      you can search here
    </a>
  </p>
</body>
</html>
```



Block vs Inline HTML Element

Block element begin with new line.

Inline elements inside *a block elements*, [you can search here](#)





Basic tag



- Div tag `<div>`: defines a division or a section for web page.
- Div tag is often used as a container for other HTML elements.
- Div tag does not render anything on web page, it's create a block and we can use style sheet to format.





Basic tag

```
<html>
  <head>
    <title>Div Tag</title>
  </head>
  <body>
    <h1>HTML Div tag</h1>
    <div>
      Content of div 1.
    </div>
    <div>
      Content of div 2.
    </div>
  </body>
</html>
```

HTML Div tag

Content of div 1.
Content of div 2.





Basic tag

```
<html>
<head>
  <title>Div Tag</title>
</head>
<body>
  <h1>HTML Div tag</h1>
  <div style='background-color: red'>
    Content of div 1.
  </div>
  <div style='background-color: blue'>
    Content of div 2.
  </div>
</body>
</html>
```

HTML Div tag

Content of div 1.

Content of div 2.





Basic tag

- Table tag **<table>**: defines an HTML table with multi row and column.
- The **<tr>** tag is used to create table rows.
- The **<td>**, **<th>** tag is used to create data cells.

```
<table border = "1">  
  <tr>  
    <td>Row 1, Column 1</td>  
    <td>Row 1, Column 2</td>  
  </tr>  
  
  <tr>  
    <td>Row 2, Column 1</td>  
    <td>Row 2, Column 2</td>  
  </tr>  
</table>
```

Row 1, Column 1	Row 1, Column 2
Row 2, Column 1	Row 2, Column 2





Basic tag



- Table Header, Body, and Footer
 - **<thead>** – to create a separate table header.
 - **<tbody>** – to indicate the main body of the table.
 - **<tfoot>** – to create a separate table footer.





Basic tag

```
<table border = "1" width = "100%">
  <thead>
    <tr>
      <td colspan = "3">Header of the table</td>
    </tr>
  </thead>
  <tfoot>
    <tr>
      <td colspan = "3">Footer of the table</td>
    </tr>
  </tfoot>
  <tbody>
    <tr>
      <td>Cell 1</td>
      <td>Cell 2</td>
      <td>Cell 3</td>
    </tr>
    <tr>
      <td>Cell 1</td>
      <td>Cell 2</td>
      <td>Cell 3</td>
    </tr>
  </tbody>
</table>
```





Basic tag

Header of the table		
Cell 1	Cell 2	Cell 3
Cell 1	Cell 2	Cell 3
Footer of the table		





HTML Forms



- HTML forms are how we receive user input on our web pages.
- If you've ever visited a blog and left a comment or used your credit card online to purchase something, you have used HTML forms to interact with the web page you were visiting.
- Ex: when you visit a website and you must login to access some function, You must provide the username and password for the website.





HTML Forms

- Input tag `<input>` define some control allow the user to input data.
- Input tag no need close tag.
- Label tag `<label>` using with input tag to make label for every input tag.

```
<form>
  <label for="username">
    Username:
    <input type="text" id="username" name="username">
  </label>
</form>
```

Username: |





HTML Forms

- Attribute type is used to define a type of form control.
- List of type

Value	Description
button	Defines a clickable button (mostly used with a JavaScript to activate a script)
checkbox	Defines a checkbox
color	Defines a color picker
date	Defines a date control (year, month, day (no time))
datetime-local	Defines a date and time control (year, month, day, time (no timezone))
email	Defines a field for an e-mail address
file	Defines a file-select field and a "Browse" button (for file uploads)





HTML Forms

Value	Description
hidden	Defines a hidden input field
image	Defines an image as the submit button
month	Defines a month and year control (no timezone)
number	Defines a field for entering a number
password	Defines a password field
radio	Defines a radio button
range	Defines a range control (like a slider control)
reset	Defines a reset button
search	Defines a text field for entering a search string
submit	Defines a submit button
tel	Defines a field for entering a telephone number
text	Default. Defines a single-line text field
time	Defines a control for entering a time (no timezone)
url	Defines a field for entering a URL
week	Defines a week and year control (no timezone)





HTML Forms



- To input a text with single line, you need to use input tag with type "text".
- To input a text with multi line, you need to use textarea tag <textarea>





HTML Forms

```
<form>
  <label for="name">
    Name:
    <input type="text" id="name" name="name">
  </label>
  <br/><br/>
  <label for="name">
    Address:
    <textarea id="address" name="address">
    </textarea>
  </label>
</form>
```

Name:

Address:





HTML Forms



- A `<button>` element should be used whenever you want to create a clickable button to perform some action on the page.
 - submit: submits form data to a server
 - reset: resets all the data in the current form
 - button: no default behavior.





HTML Forms

- `<select>` tag (with nested `<option>`) used to create a drop-down selection of items that a user can choose from.
- Including the `selected` attribute in an `<option>` element will show that option by default.

```
<form>
  <label for="selector">
    <p>Select your technology</p>
    <select id="selector">
      <option>C/C++</option>
      <option selected>JAVA</option>
      <option>PHP</option>
      <option>C#</option>
    </select>
  </label>
</form>
```

Select your technology





HTML





What is HTML5?

- HTML5 is the newest version of HTML, only recently
- gaining partial support by the makers of web browsers.
- It incorporates all features from earlier versions of HTML,
- including the stricter XHTML.
- It adds a diverse set of new tools for the web developer to use.





1. Audio and Videos are integral part of HTML5 specifications e.g. `<audio>` and `<video>` tags.
2. Vector graphics is integral part of HTML5 e.g. SVG and canvas.
3. JS GeoLocation API in HTML5 helps identify location of user browsing any website (provided user allows it).
4. Full duplex communication channels can be established with Server using Web Sockets.





5. Allows JavaScript to run in background. This is possible due to JS Web worker API in HTML5.
6. Application Cache, Web SQL database and Web storage is available as client side storage.
7. Retain Backward Compatibility with previous versions of HTML5.





Goals of HTML5

- Support all existing web pages. With HTML5, there is no requirement to go back and revise older websites.
- Reduce the need for external plugins and scripts to show website content.
- Improve the semantic definition (i.e. meaning and purpose) of page elements.
- Make the rendering of web content universal and independent of the device being used.
- Handle web documents errors in a better and more consistent fashion.





- **Semantics**: allowing you to describe more precisely what your content is.
- **Connectivity**: allowing you to communicate with the server in new and innovative ways.
- **Offline & Storage**: allowing webpages to store data on the client-side locally and operate offline more efficiently.
- **Multimedia**: making video and audio first-class citizens in the Open Web.





- **2D/3D Graphics & Effects**: allowing a much more diverse range of presentation options.
- **Performance & Integration**: providing greater speed optimization and better usage of computer hardware.
- **Device Access**: allowing for the usage of various input and output devices.
- **Styling**: letting authors write more sophisticated themes.





HTML 5 Tags

Tag	Description
<article>	This element is used to define an independent piece of content in a document, that may be a blog, a magazine or a newspaper article.
<aside>	It specifies that article is slightly related to the rest of the whole page.
<audio>	It is used to play audio file in HTML.
<bdi>	The bdi stands for bi-directional isolation. It isolates a part of text that is formatted in other direction from the outside text document.
<canvas>	It is used to draw canvas.
<data>	It provides machine readable version of its data.
<datalist>	It provides auto complete feature for textfield.
<details>	It specifies the additional information or controls required by user.



HTML 5 Tags

Tag	Description
<meter>	It is used to measure the scalar value within a given range.
<nav>	It is used to define the navigation link in the document.
<progress>	It specifies the progress of the task.
<rp>	It defines what to show in browser that don't support ruby annotation.
<rt>	It defines an explanation/pronunciation of characters.
<ruby>	It defines ruby annotation along with <rp> and <rt>.
<section>	It defines a section in the document.





HTML 5 Tags



Tag	Description
<summary>	It specifies a visible heading for <detailed> element.
<svg>	It is used to display shapes.
<time>	It is used to define a date/time.
<video>	It is used to play video file in HTML.
<wbr>	It defines a possible line break.





HTML 5 Tags

Tag	Description
<dialog>	It defines a window or a dialog box.
<figcaption>	It is used to define a caption for a <figure> element.
<figure>	It defines a self-contained content like photos, diagrams etc.
<footer>	It defines a footer for a section.
<header>	It defines a header for a section.
<main>	It defines the main content of a document.
<mark>	It specifies the marked or highlighted content.
<menuitem>	It defines a command that the user can invoke from a popup menu.





Q & A

