UNIT 1:HTML, CSS & Client Side Scripting

HTML5

HTML5 is the next major revision of the HTML standard superseding HTML 4.01, XHTML 1.0, and XHTML 1.1. HTML5 is a standard for structuring and presenting content on the World Wide Web.

HTML5 is a cooperation between the World Wide Web Consortium (W3C) and the Web Hypertext Application Technology Working Group (WHATWG).

The new standard incorporates features like video playback and drag-and-drop that have been previously dependent on third-party browser plug-ins such as Adobe Flash, Microsoft Silverlight, and Google Gears.

New Semantic Elements − These are like <header>, <footer>, and <section>.

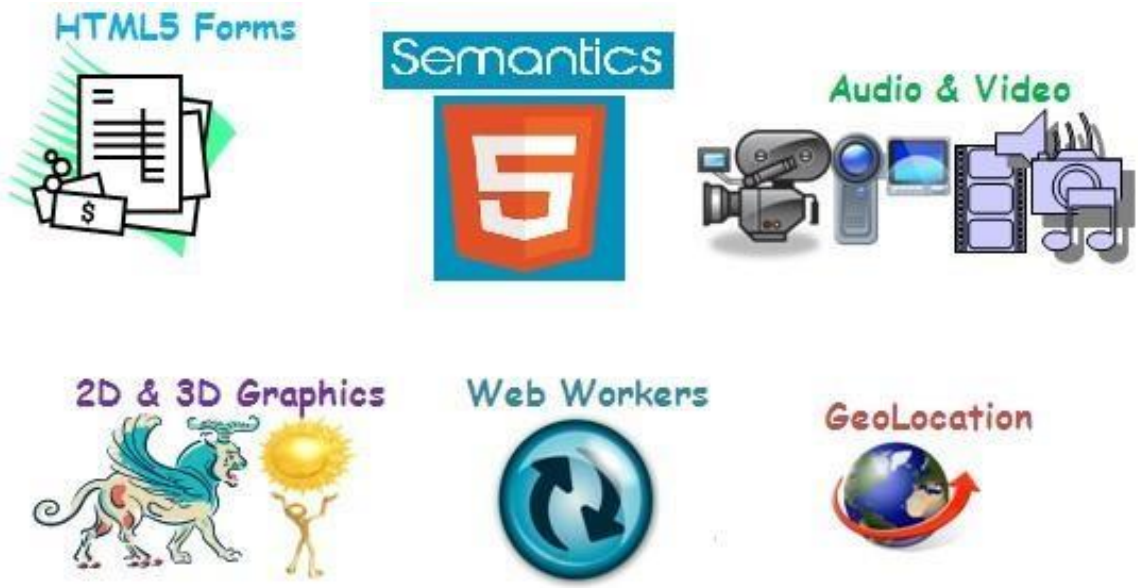
Forms 2.0 − Improvements to HTML web forms where new attributes have been introduced for <input> tag.

Audio & Video − You can embed audio or video on your webpages without resorting to third-party plugins.

Canvas (graphics) − These supports a two-dimensional drawing surface that you can program with JavaScript.

Web workers − The Web Workers are the separate JavaScript code which runs in the background of the web page without affecting the user Interface.

Geolocation − Now visitors can choose to share their physical location with your web application.



The <input> element in HTML5

Apart from the above-mentioned attributes, HTML5 input elements introduced several new values for the type attribute. These are listed below.

NOTE − Try all the following example using latest version of Opera browser.

Sr.No.	Type & Description
1	datetime A date and time (year, month, day, hour, minute, second, fractions of a second) encoded according to ISO 8601 with the time zone set to UTC.
2	datetime-local A date and time (year, month, day, hour, minute, second, fractions of a second) encoded according to ISO 8601, with no time zone information.
3	date A date (year, month, day) encoded according to ISO 8601.

4	month A date consisting of a year and a month encoded according to ISO 8601.
5	week A date consisting of a year and a week number encoded according to ISO 8601.
6	time A time (hour, minute, seconds, fractional seconds) encoded according to ISO 8601.

7	number It accepts only numerical value. The step attribute specifies the precision, defaulting to 1.
8	range The range type is used for input fields that should contain a value from a range of numbers.
9	email It accepts only email value. This type is used for input fields that should contain an e-mail address. If you try to submit a simple text, it forces to enter only email address in email@example.com format.

10	url It accepts only URL value. This type is used for input fields that should contain a URL address. If you try to submit a simple text, it forces to enter only URL address either in http://www.pes.edu format or in http://pes.edu format.
11	File The **<input type="file">** defines a file-select field and a "Browse" button for file uploads. To define a file-select field that allows multiple files to be selected, add the **multiple** attribute.
12	Search: defines a text field for entering a search string.

13	Color: Defines a color picker

The placeholder attribute:

HTML5 introduced a new attribute called placeholder. This attribute on <input> and <textarea> elements provide a hint to the user of what can be entered in the field. The placeholder text must not contain carriage returns or line-feeds.

Here is the simple syntax for placeholder attribute −

<input type = "text" name = "search" placeholder = "search the web"/> **The autofocus attribute:**

This is a simple one-step pattern, easily programmed in JavaScript at the time of document load, automatically focus one particular form field.

HTML5 introduced a new attribute called autofocus which would be used as follows − <input type = "text" name = "search" autofocus/>

The required attribute:

Now you do not need to have JavaScript for client-side validations like empty text box would never be submitted because HTML5 introduced a new attribute called required which would be used as follows and would insist to have a value − <input type = "text" name = "search" required/>

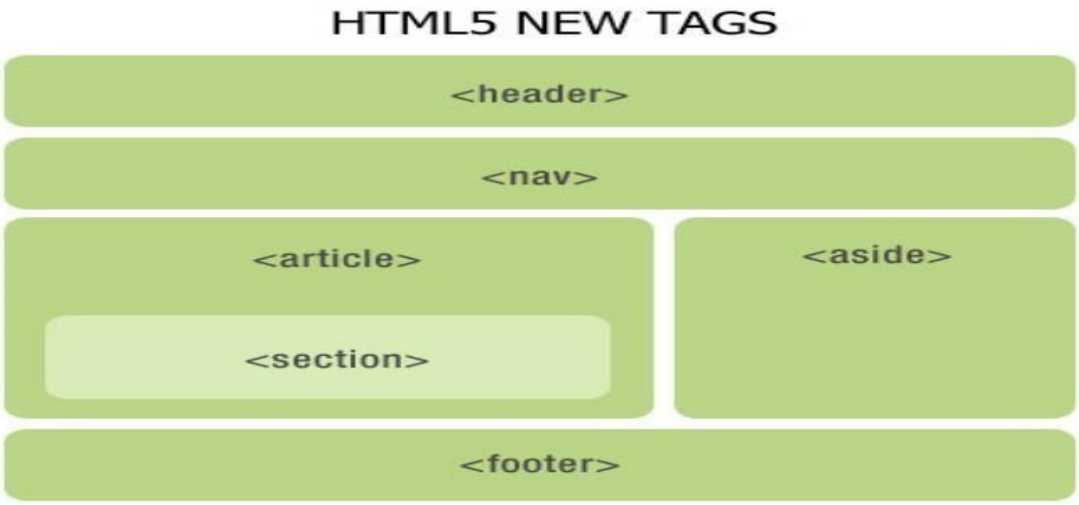
```
<html>
    <head>
        <title>New Input Types</title>
    </head>
    <body>
        <!-- Forms-->
<!-- Syntax: <form method="post" action="process.php" target="_blank"
                    <input type="..." name="..."
                    </form>
Input Types: Text Box, Text Area, Checkbox, Radio button, Dropdown list, Buttons
-->  <fieldset>
                <form action="/page.php">
                <legend> Students Details</legend>
                First Name: <input type="text" name="fname"> <br> <br>
Last Name:
            <input type="text" name="lname" value="Berners-Lee"> <br> <br>
Department:
```

```
<input type="radio" name="branch" value="CSE"> CSE
<input type="radio" name="branch" value="ECE"> ECE <input type="radio" name="branch" value="Mech"> MECH
<br><br> Semester:
<input type="checkbox" name="sem" value="III"> 3rd Semester
<input type="checkbox" name="sem" value="V"> 5th Semester
<input type="checkbox" name="sem" value="7th"> 7th Semester
<br><br>
Select Number:
<input type="number" name="phno" min="1" max="10"> <br> <br>
Birthday:
<input type="date" name="birthday"> <br><br>
Favorite Color:
<input type="color" name="Fcolor"><br><br>
Sports Interest(0-10):
<input type="range" name="vol" min="0" max="10"> <br> <br>
Email:
<input type="email" name="mail"> <br> <br>
</fieldset>
Time:
<input type="time" name="tt"> <br> <br>
Tel:
<input type="tel" name="phone" placeholder="10 digits" pattern="[09]{10}" required> <br> <br>
<input type="submit" Value="Submit"> <br> <br>
```

```
            <input type="reset" value="Reset"> <br> <br>

            </form>
        </body>
</html>
```

What are Semantic Elements?



In earlier versions of HTML, there were no globally accepted names for structural elements, and each developer used their own. That made it very hard for search engines to index web page content correctly.when a browser communicates with the code, it looks for some specific information to help with the display.
Hence, HTML5 introduced a consistent list of semantic elements to help search engines and developers.

Creating semantic elements in HTML5 is to give meaning to its traditional design layout.

It helps browsers quickly and efficiently understand the structure of the layout, and two, it helps web developers to systematically arrange or design web pages and give meaning to each section of the layout.

The elements are easy to remember, and fits where it needs.

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: <form>, <table>, and <article> - Clearly defines its content.

Many web sites contain HTML code like: to indicate navigation, header, and footer.

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

Index	Semantic Tag	Description
1.	<article>	Defines an article
2.	<aside>	Defines content aside from the page content
3.	<details>	Defines additional details that the user can view or hide
4.	<figcaption>	Defines a caption for a <figure> element
5.	<figure>	Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.
6.	<footer>	Defines a footer for a document or section
7.	<header>	Specifies a header for a document or section
8.	<main>	Specifies the main content of a document
9.	<mark>	Defines marked/highlighted text
10.	<nav>	Defines navigation links
11.	<section>	Defines a section in a document
12.	<summary>	Defines a visible heading for a <details> element
13.	<time>	Defines a date/time

Example:

HTML

```
<!DOCTYPE html>
<html> <body>
```

Header:

```
<header>
  <h1>Company A</h1>
```

Nav:

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

</header>
```

Hgroup:

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

Section:

```
<section>
<p>Top Stories</p>
   <section>
      <p>News</p>
```

Article:

```
      <article>Story 1</article>
      <article>Story 2</article>
      <article>Story 3</article>
  </section>
```

Aside:

```
<aside>
```

```
        <p>This is a sidebar, for example a terminology definition or a short
        background to a historical figure.</p>
        </aside>
        <section>
                <p>Sport</p>
                <article>Story 1</article>
                <article>Story 2</article>
                <article>Story 3</article>
      </section>
</section>
```

Footer:

```
<footer>
        <p>Author: Komal</p>
        <p><a href="mailto:komalbaheti@pes.edu</a></p>
</footer>
</body>
</html>
```

Audio and Video

Audio and Video tags are the two major addition to HTML5. It allows developers to embed a video or audio on their website. HTML5 video can use CSS and CSS3 to style the video tag. You can change the border, opacity, reflections, gradients, transitions, transformations, and even animations. HTML5 makes adding video super-fast and without having to build a video player. This saves time for the developer and offers the client a superior and more affordable solution.

2D and 3D graphics:

HTML 5 Tag The Canvas API provides a means for drawing graphics via JavaScript and the HTML element. It can be used for animation, game graphics, data visualization, photo manipulation, and real-time video processing. Canvas allows you to render graphics powered by JavaScript

HTML5 Geolocation API:

The Geolocation API of HTML5 helps in identifying the user's location, which can be used to provide location specific information or route navigation details to the use. There are many techniques used to identify the location of the user. The Geolocation API protects the user's privacy by mandating that the user permission should be sought and obtained before sending the location information of the user to any website. So the user will be prompted with a popover or dialog requesting for the user's permission to share the location information. The user can accept or deny the request.

Web Workers:

Web Workers are a simple means for web content to run scripts in background threads.
The worker thread can perform tasks without interfering with the user

interface. In addition, they can perform I/O using XMLHttpRequest(although the responseXML and channel attributes are always null).Once created, a worker can send messages to the JavaScript code that created it by posting messages to an event handler specified by that code (and vice versa).

Using web workers in HTML5 allows you to prevent the execution of bigger tasks from freezing up your web page. A web worker performs the job in the background, independent of other scripts and thus not affecting their performance. The process is also called threading, i.e., separating the tasks into multiple parallel threads. During the time, the user can browse normally, as the page stays fully responsive.