Why Undergraduates Should Learn Web Development and Design Foundations with HTML5

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ABSTRACT
Undergraduate students obtain creative knowledge and important skills by studying HTML5 in foundation of web programming and the principles underlying of HTML5 design and implementation. HTML 5 is the new and stylish standard for HTML. These topics build up students’ clasp of the power of creation, help students and improve their design skills. Understanding web programming thus helps students in ways key to many profession paths and interests. HTML5 provides the students everything to create animation, music, movies and can also be used to build convoluted web applications and also carries cross-platform. HTML5 standard novices the development of real-time collaborations in web browsers, which conducts to less work for web developers.

KEYWORDS: Web, users, HTML, HTML5 features

INTRODUCTION
Web development is the work concerned in developing a web site for the World Wide Web. Web development can set from developing a simple single static page of plain text to complex web-based web applications, electronic business, and social network services. Web is an information system commonly knowns world wide web (www) where documents and other web resources are recognized by Uniform Resource Locators (URLs, such as https://www.sample.com/), which may be interlinked by hypertext, and are available over public (Internet) and private (Intranet and Extranet).

Web resources may be any type of downloaded media, but web pages are hypertext media that have been designed in Hypertext Markup Language (HTML). HTML is the standard markup language for documents formatted to be displayed in a web browser. It can be served by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web pages may carry images, video, audio, and software components. that is widely usable across many platforms. HTML5 expresses the structure of a web page semantically and originally for the display of the document [2].

HTML5
HTML5 is the latest HTML standard, is being used widely design web pages that are rich in content. The array of new graphics and multimedia elements that it supports and the rich semantics, it uses eliminates the need for any additional plugins to display content. HTML5 is purely a set of new features made obtainable for developing web applications. It is particularly designed to improve the language with much better support for multimedia and server communication, making a web developer's job much easier [3]. With the development of HTML5 it has wide range of applications in multimedia direction. It can play video and audio and supports animations from the browser without the need of proprietary technologies [4].

HTML5 carries cross-platform, designed to display web pages on a Personal Computer (PC), or a Tablet, a Smartphone or a IOS phone and Android phone (Fig-1). HTML is invented by Tim Berners-Lee, first web page published August 6, 1991. It is intended as a standard way to structuring documents and standardized by W3C (World Wide Web Consortium - pack of super nerds). HTML5 is a new standard for HTML. The language used in practice change continuously as advances in our field and broadening uses of technology change how we model and design web pages. The rise of the Internet and the web, for example, fundamentally transformed the way many types of systems are designed, implemented, and deployed.
HTML5 Introduction

```html
<!DOCTYPE html>
<html>
<head>
<title>Title of the document</title>
</head>

<body>
The content of the document...........
</body>
</html>
```

Fig2. Minimum HTML5 Document

HTML5 provides some of the most interesting new features that include:
- Canvas
- Video and Audio
- Local Offline Storage
- Form Controls
- Content Specific elements

Canvas

The HTML `<canvas>` element is used to draw graphics, on the fly, via JavaScript. The `<canvas>` element is only a container for graphics. A canvas is a rectangular area on an HTML page. By default, a canvas has no border and no content. Canvas has several methods for drawing paths, boxes, circles, text, and adding images.

Table 1. The canvas element in HTML5

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangle</td>
<td>To display the rectangle</td>
<td><code>&lt;canvas id=&quot;myCanvas&quot; width=&quot;100&quot; style=&quot;border:1px solid #000000;&quot;&gt;&quot;&lt;/canvas&gt;</code></td>
</tr>
</tbody>
</table>

Fig3. Browser Supports the `<canvas>` element

Table 2. HTML Video Media Types and Video Tags

<table>
<thead>
<tr>
<th>File Format</th>
<th>Media Type</th>
<th>Tag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP4</td>
<td>Video/mp4</td>
<td><code>&lt;video&gt;</code></td>
<td>Defines a video or movie</td>
</tr>
<tr>
<td>WebM</td>
<td>Video/webm</td>
<td><code>&lt;source&gt;</code></td>
<td>Defines multiple media resources for media elements, such as <code>&lt;video&gt;</code> and <code>&lt;audio&gt;</code></td>
</tr>
<tr>
<td>ogg</td>
<td>Video/ogg</td>
<td><code>&lt;track&gt;</code></td>
<td>Defines text tracks in media players</td>
</tr>
</tbody>
</table>

Fig4. HTML5 Canvas

Fig5. Browser Supports the `<video>` and `<audio>` elements

HTML5 features `<audio>` and `<video>` tags make it simple to add media to a website. HTML5 has developed embedding of video by providing native support for many different file types.

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</tr>
<tr>
<td>ogg</td>
<td>Video/ogg</td>
<td><code>&lt;track&gt;</code></td>
<td>Defines text tracks in media players</td>
</tr>
</tbody>
</table>

Fig6. Output of Video Tag

Use the `<audio>` element to play an audio file in HTML.

Table 3. HTML Audio Media Types and Audio Tags

<table>
<thead>
<tr>
<th>File Format</th>
<th>Media Type</th>
<th>Tag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP3</td>
<td>Audio/mpeg</td>
<td><code>&lt;audio&gt;</code></td>
<td>Defines sound content</td>
</tr>
<tr>
<td>OGG</td>
<td>Audio/ogg</td>
<td><code>&lt;source&gt;</code></td>
<td>Defines multiple media resources for media elements such as <code>&lt;video&gt;</code> and <code>&lt;audio&gt;</code></td>
</tr>
<tr>
<td>WAV</td>
<td>Audio/wav</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig7. Output of Audio Tag
Local Offline Storage
Web applications can store data locally within the user browser. Application data had to be stored in cookies, included in every server request before HTML5. Web storage is more secure and a large amount of data can be stored locally, without affecting website performance. The data in HTML5 local storage will be available even if you end the session by closing your browser. Offline storage allows users to save data in the user's browser and makes web apps and games work without a connection.

Form Controls
The most important form element is the `<input>` element. The input element can be shown in many ways, depending on the type attribute.

```html
<form action="/videotest.html">
Enter your name:<br>
<input name="name" type="text"><br><br>
<input type="submit">
</form>
```

![Fig8. Web form created using HTML5 input element](image)

If user click the submit

![Fig9. Web form appeared when click the submit button](image)

In HTML5 `<form>` element defines a form for user input, `<input>` defines an input control, and `<select>` element defines a drop-down list. `<output>` elements define the result of a calculation. The `<option>` elements define an option that can be selected. By default, the first item in the drop-down list is selected. To define a pre-selected option, add the selected attribute to the option. The `<textarea>` element defines a multiline input field. The `<button>` element defines a clickable button.

### Content Specific Elements
HTML offers new elements for better document structure.

<table>
<thead>
<tr>
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<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;article&gt;</code></td>
<td>To display self-contained content</td>
<td><code>&lt;article&gt;&lt;p&gt;There are some article examples&lt;/p&gt;&lt;/article&gt;</code></td>
</tr>
<tr>
<td><code>&lt;figcaption&gt;</code></td>
<td>To display caption of the figure</td>
<td><code>&lt;figcaption&gt;Fig1. Example&lt;/figcaption&gt;</code></td>
</tr>
<tr>
<td><code>&lt;figure&gt;</code></td>
<td>To display image</td>
<td><code>&lt;figure&gt;&lt;img src=example.jpg alt=&quot;sample&quot; width=&quot;100&quot; height=&quot;200&quot;&gt;&lt;/figure&gt;</code></td>
</tr>
<tr>
<td><code>&lt;footer&gt;</code></td>
<td>To display address and contact information</td>
<td><code>&lt;footer&gt;&lt;p&gt;contact information:&lt;a href=memekhaing2012@gmail.com&gt;MeMe Khaing&lt;/a&gt;&lt;/p&gt;&lt;/footer&gt;</code></td>
</tr>
<tr>
<td><code>&lt;header&gt;</code></td>
<td>To display the important header</td>
<td><code>&lt;header&gt;&lt;h1&gt;Example 1&lt;/h1&gt;&lt;h2&gt;Example 2&lt;/h2&gt;&lt;/header&gt;</code></td>
</tr>
<tr>
<td><code>&lt;nav&gt;</code></td>
<td>To display the navigation link</td>
<td><code>&lt;nav&gt;&lt;a href=&quot;html&quot;&gt;Html&lt;/a&gt;&lt;/nav&gt;</code></td>
</tr>
<tr>
<td><code>&lt;time&gt;</code></td>
<td>To display date and time picker</td>
<td><code>&lt;time datetime=&quot;2019-07-11 15:00&quot;&gt;Finished time&lt;/time&gt;</code></td>
</tr>
</tbody>
</table>

All the HTML5 features mentioned above support feasibility for all students, users, and developers in developing web applications and designs without the use of plug-ins.

To reduce the code size for such kind of forms for web applications HTML5 is the best way to use. HTML5 is the basic language to learn for web technologies. HTML is that it is easy to code and also allows the use of templates, which makes designing a webpage easy. It is better than cookies because it allows for storage through multiple windows.

### REFERENCES
[4] https://www.w3schools.com