

Why Undergraduates Should Learn Web Development and Design Foundations with HTML5

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How to cite this paper: Me Me Khaing | Kyi Pyar "Why Undergraduates Should Learn Web Development and Design Foundations with HTML5" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-3 | Issue-5, August 2019, pp.2530-2532, <https://doi.org/10.31142/ijtsrd27941>



IJTSRD27941

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 known 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).

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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].

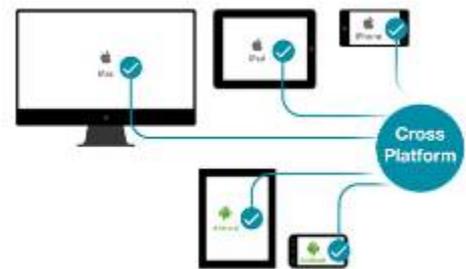


Fig1 HTML5 Cross-Platform

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

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

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

</html>
```

Fig2. Minium 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. Be default, a canvas has no border and no content. Canvas has several methods for drawing paths, boxes, circles, text, and adding images.

Element					
<canvas>	4.0	9.0	2.0	3.1	9.0

Fig3 Browser Supports the <canvas> element

TABLE1. The canvas element in HTML5

Type	Description	Syntax
Rectangle	To display the rectangle	<code><canvas id="myCanvas" width="100" style="border:1px solid #000000;"></canvas></code>

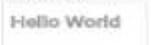
Types	Sample Pictures
Line	Draw a Line 
Circle	Draw a Circle 
Stroke Text	Stroke Text Hello World 
Circular Gradient	Draw Circular Gradient 

Fig4 HTML5 Canvas

Video and Audio

A video could only be played in a browse with a plug-in like flash before HTML5. The HTML5 **<video>** element identifies a standard way to insert a video in a web page.

Element					
<video>	4.0	9.0	3.5	4.0	10.5

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.

TABLE2 HTML Video Media Types and Video Tags

File Format	Media Type	Tag	Description
MP4	Video/mp4	<video>	Defines a video or movie
WebM	Video/webm	<source>	Defines multiple media resources for media elements, such as <video> and <audio>
ogg	Video/ogg	<track>	Defines text tracks in media players

```
<video width="400" controls>
<source src="Mr.Bean.mp4" type="video/mp4">
<source src="Mr.Bean.ogg" type="video/ogg">
<source src="Mr.Bean.webm" type="video/webm">
</video>
```

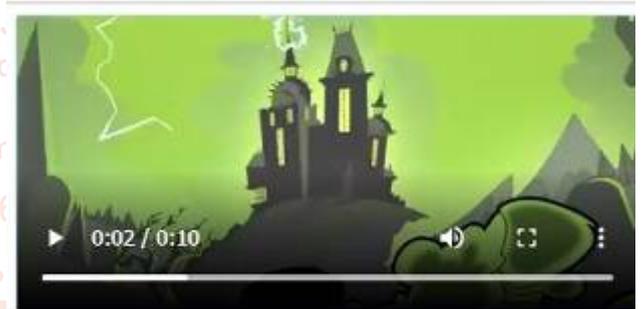


Fig6. Output of Video Tag

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

TABLE3. HTML Audio Media Types and Audio Tags

File Format	Media Type	Tag	Description
MP3	Audio/mpeg	<audio>	Defines sound content
OGG	Audio/ogg	<source>	Defines multiple media resources for media elements such as <video> and <audio>
WAV	Audio/wav		

```
<audio controls>
<source src="Rainbow.mp3" type="audio/mpeg">
<source src="Rainbow.ogg" type="audio/ogg">
</audio>
```

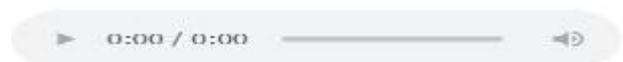


Fig7 Output of Audio Tag

Local Offline Storage

Web applications can store with web **storage**, data locally within the user browser. Application data had to be stored in cookies, include in every server request before HTML5. Web storage is more secure and 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 showed in many ways, depending on the type attribute.

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



Fig8. Web form created using HTML5 input element

If user click the submit



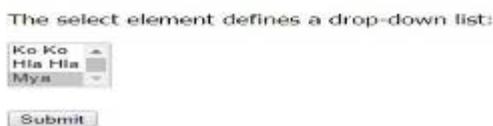
Fig9. Web form appeared when click the submit button

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

Input Element



The Select Element



Text Area

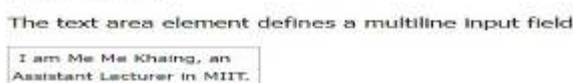


Fig10 Web form created using HTML5 elements

Button Element



Form Element

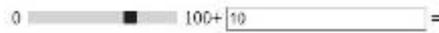


Fig11 Web form created using HTML5 elements

Content Specific Elements

HTML offers new elements for better document structure.

TABLE4 New Elements in HTML5

Tag	Description	Syntax
<article>	To display self-contained content	<article><p>There are some article examples</p></article>
<figcaption>	To display caption of the figure	<figcaption>Fig1. Example</figcaption>
<figure>	To display image	<figure></figure>
<footer>	To display address and contact information	<footer><p>contact information:MeMe Khaing</p></footer>
<header>	To display the important header	<header><h1>Example 1</h1><h2>Example2</h2></header>
<nav>	To display the navigation link	<nav>Html</nav>
<time>	To display date and time picker	<time datetime="2019-07-11 15:00"> Finished time

All the HTML5 features mentioned above supports 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.

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