

A Comparative Analysis of Form-Controls, Layouts and Drop down Using Html 5 and Bootstrap 4

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Abstract

The comparative analysis of form controls, layouts and dropdown using Html 5 and Bootstrap 4 in more than a few dimensions is extremely difficult to choose from accurately without any discrepancies. Both frameworks have similar parameters and features but functions differently. The choice of usage becomes practically challenging. There is simply no way that both frameworks can be considered one less important than the other. We implemented the work with HTML 5 and Bootstrap 4. Our expected results show that Programmers and web developers should choose the best development tool depending on what they intend to develop. This work could be beneficial to programmers, web designers and to research communities who will deal with the website development.

1. INTRODUCTION

1.1 Background to the study

HTML5 is the Standard Markup Language used to create web pages and applications, HTML (HyperText Markup Language) can be described as a fundamental building block of the web Tim,(2019). HTML pages are made to give a particular command and can be coded alongside CSS and JavaScript, Individual HTML elements are defined by tags within open and close angle brackets (< and >) to show the content and layout of a particular page. Unlike previous HTML versions, The two separate group responsible for the creation of HTML 5 are the World Wide Web Consortium and the Web Hypertext Application Technology Working Group.

HTML5 consists of special elements for semantic labelling such elements include <section>, <nav>, <article>, <aside>, <header>, <footer> and <main>, the elements states the content type associated with each element. Hence, the structuring content are efficient and helps in search. The HTML5 site has better chances of ranking highly in search results. Some multimedia elements can also be added to the website which will further simplify a wide selection of new application Interfaces. Some of the elements include <audio> and <video> tags. One of the advantages of HTML5 is that it permits sole based plugins which makes development more responsive therefore the site does not rely on proprietary third-party plugins to create complex and powerful web projects. HTML 5 comprises of CSS3 and JavaScript which makes the site more powerful and flexible for the creation of dynamic web pages.

On the other hand, Bootstrap, originally named Twitter Blueprint, was developed by two major persons. The names of the developers are Mark Otto and Jacob Thornton. The Bootstrap framework was developed to encourage consistency across the internal development tools. Bootstrap is an open source frontend web framework for designing websites and web applications programs Dan, (2017). Similar with the HTML framework, bootstrap contains CSS based design templates for typography, forms, buttons, navigation and the JavaScript extensions which is optional. Unlike many web frameworks, Bootstrap concerns itself with frontend development only hence it is referred to as a bootstrap front-end framework with a focus on providing tools for faster front-end development. Many web development designers used the bootstrap front end framework is used by most web developers for major projects. Bootstrap is a major framework that deals on responsive web design. A responsive web design is an approach that allows the web pages to respond with the user's device of any sort. Bootstrap saves the designer from having to write lengthy code, since it is intended to create responsive websites. It allows a website to work optimally on varied screen sizes from small screen size as a smartphone to a big screen size of a personal computer or on a desktop. Recently, web developers have available plenty of advanced frameworks within their range that help them work efficiently, effectively and effortlessly. However, it is one such framework that has made web development considerably more streamlined and makes things a lot flexible. Bootstrap framework is mainly focused to simplify the web development process.

1.2 Statement of the Problem

The implementation of the HTML5 and Bootstrap frameworks in more than a few dimensions is extremely difficult for website developers because both frameworks have similar parameters. The choice of usage becomes practically challenging. There is simply no way that the two frameworks can be considered one less important than the other. That is what the work intends to address.

1.3 Aim and Objectives of the Study

The aim of this work is to give a comparative analysis of form controls, layouts and dropdowns using bootstrap 4 and html 5.

To achieve this aim, the following objectives are to:

1. design a prototype showing the functionality of form controls, layouts and dropdowns using bootstrap4 and html 5.
2. analyze the behavior of the different parameters using bootstrap4 and html 5.
3. compare the results gotten from the behavior of the analyzed parameters

1.4 Significance of the Study

This work could be beneficial to programmers, web designers and to research communities who deal website development. Considering the use of HTML5 and Bootstrap 4, the benefit of this work can be summarized in the following ways:

1. web designers will be able to know the exact framework to apply in website development.

2. Web application can suite the device which it is designed for thereby making the application responsive.
3. Web designers will experience ease and more user-friendly platform to work with, this will further promote flexibility and efficiency.

1.5. Scope of the Study

The scope of this work focuses on the comparative analysis of form controls, layouts and dropdowns using bootstrap 4 and html 5. The work further examines the behavior of the different parameters used for the analysis, thereby stating a clear distinction between the two frameworks.

1.6 Limitation of the Study

The study will not be able to address the different features of HTML5 and Bootstrap 4 other than the form controls, layouts and dropdowns which is the major focus of the work.

1.7 Definition of Terms

HTML: HTML is an acronym that stands for Hypertext Markup Language, it is a standardized system for developing web pages with the used of tags files to achieve font, color, graphic, and hyperlink effects on website.

Application Software: Application software is a program designed for end users. And the software placed higher than the system software, some of the software includes database programs, word processors Excel spreadsheets etc.

User-friendly: User-friendly is a phenomenon that describes the easy to use application. It is mostly a software interface. It is "friendly" to the user, this simply means it is not difficult to learn understand or use.

Website: A website is a set of related web pages with a single domain name. it can also be said to be a collection of publicly accessible, interlinked Web pages that share a single domain name.

2.0 LITERATURE REVIEW

2.1 Overview of web Development

Web development also known as web programming, is the creation of dynamic web applications. There are different web applications such as social networking sites like Facebook or e-commerce sites. The two major servers that are required to keep the sites running are front-end development (client-side development) and back-end development (server-side development). Front-end development refers to constructing a direct interface with the user what a user sees when they load a web application which comprises of the content, design and how you interact with it Jason,(2016). Web development is done with three different code languages which are HTML, CSS and JavaScript. HTML is a special code for 'marking up' text in order to turn it into meaningful web page thereby forming the backbone of any web application. CSS, which stands for Cascading Style Sheets, is a code for setting style rules for the appearance of web pages. CSS makes the site attractive and intuitive Finally, JavaScript is an object-oriented scripting language that's widely used to create interactive add functionality effect s within web browsers. Back-end

development describes the server side of development where the operations are controlled from. The bank-end development consists of the server, an application and a database. The codes written by the server-side development is what communicates the database information to the browser. The website may include text, images, sounds and other contents and may be interactive Lisa,(2017) .

Web development is the work involved in developing a web site for the Internet or intranet which is known as a personal or private network. Web development can range from developing a simple single static page of plain text to complex web-based internet applications which is referred to as web application. Some other transactions that can take place using the web application are electronic businesses, and social network services Aaron(2018). A more comprehensive list of tasks to which web development commonly refers, may include web engineering, web design, web content development, client liaison, client-side and server-side scripting, web server and network security configuration, and e-commerce development.

2.2 Overview of Bootstrap

The first alpha version of Bootstrap 4 was released on August 19, 2015. The first beta version was released on 10 August 2017. Mark suspended work on Bootstrap 3 on September 6, 2016, to free up time to work on Bootstrap 4. Bootstrap is a web framework that focuses on simplifying the development of informative web pages (as opposed to web apps). The primary purpose of adding it to a web project is to apply Bootstrap's choices of color, size, font and layout to that project. As such, the primary factor is whether the developers in charge find those choices to their liking. Once added to a project, Bootstrap provides basic style definitions for all HTML elements. The result is a uniform appearance for prose, tables and form elements across web browsers. In addition, developers can take advantage of CSS classes defined in Bootstrap to further customize the appearance of their contents Ethan, (2018). For example, Bootstrap contains light and dark colored tables, page headings, prominent quotes, and text with a highlight. Bootstrap also comes with several JavaScript components in the form of jQuery plugins. They also make available additional user interface elements such as radio buttons, dialog boxes, tooltips, and carousels. The Bootstrap components comprises of HTML structures, as well as CSS declarations, and most times some cases accompanying JavaScript code. They also extend the operations of some existing interface elements, used for auto-complete function for input fields. The most prominent components of Bootstrap are its layout components, as they affect an entire web page. The basic layout component is called "Container", this is because every other element in the page is placed in it. There are two types of containers that developers can choose from, and they are fixed-width container and a fluid-width container. While the fluid-width container always fills the width of the web page, the fixed width container uses one of the four predefined fixed widths, depending on the size of the screen showing the page. The different sizes are as follows

- Smaller than 576 pixels
- 576–768 pixels
- 768–992 pixels
- 992–1200 pixels
- Larger than 1200 pixels

Once a container is in place, other Bootstrap layout components implement a CSS grid layout through defining rows and columns.

2.3. Overview of HTML 5

HTML 5 is a software package stack that defines the features and behaviors of web page content by implementing a markup based language pattern to it. HTML 5 ranks fifth current major version with its sub version as XHTML Campbell, (2017). Recommendation status in October 2014 proves that the goals were to improve the language both easily readable by humans and consistently understood by computers and devices such as web browsers Terry (2018). HTML 5 includes detailed processing models to encourage more interoperable implementations; it extends, improves and rationalizes the markup available for documents and introduces markup and application programming interfaces for complex web applications.

| S/N | YARD STICK | HTML5 | BOOTSTRAP 4 |
|-----|-------------------|--|--|
| 1 | Functionality | Hypertext Markup language for developing less responsive webpages, with less graphics except with the addition of the cascading style sheet. | Most popular HTML, CSS and JS framework for developing responsive, and mobile first applications |
| 2 | framework | This is a markup language for the web | This is a frontend framework |
| 3 | contents | Contains less buttons, menus and slide shows than Bootstrap 4 | Contains more buttons, menus, and slide shows than HTML 5 |
| 4 | Editable platform | Editing codes is complex | It is more flexible to edit codes |
| 5 | Elements | HTML 5 contains elements known as tags that have specific functions. | Bootstrap contains effective web elements you can use easily. |
| 6 | Features | Features of the font-control element for HTML 5 include the following: color, face, point size, size, and weight | Features of the font-control element for HTML 5 include the following: font-size, line-height, font-family, margin-top and margin-bottom. |
| 7 | Layouts | HTML layout are described as Input elements | Bootstrap layouts are commonly known as 'Containers'. Containers are the most basic layout element in Bootstrap and are required when using the default grid system. |

3.0 MATERIALS AND METHOD

3.1 Comparison between HTML 5 and BOOTSTRAP 4

Both HTML 5 and BOOTSTRAP 4 are used for web development. But these two concepts differ based on their functionality and platform environment. The difference between the HTML 5 and BOOTSTRAP 4 can be seen in table 1

3.2 Analysis of Development tools

3.2.1 Form- Control with Bootstrap

There are two different kinds of form-controls. They include:

1. Stacked form
2. Inline form

Stacked Form

In a stacked form, the objects appear Vertically in a formation that reads up to down rather than left to right. An example of a stacked form is shown thus:

```
<form action="/action_page.php">
  <div class="form-group">
    <label for="email">Email address:</label>
    <input type="email" class="form-control" id="email">
  </div>
  <div class="form-group">
    <label for="pwd">Password:</label>
    <input type="password" class="form-control" id="pwd">
  </div>
  <div class="form-group form-check">
    <label class="form-check-label">
      <input class="form-check-input" type="checkbox"> Remember me
    </label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email:

Password:

Remember me

Inline form

In an Inline form, the objects appear horizontally in a formation that reads left to right rather than up to down. An example of an inline form is shown thus:

```
<form class="form-inline" action="/action_page.php">
  <label for="email">Email address:</label>
  <input type="email" class="form-control" id="email">
  <label for="pwd">Password:</label>
  <input type="password" class="form-control" id="pwd">
  <div class="form-check">
    <label class="form-check-label">
      <input class="form-check-input" type="checkbox"> Remember me
    </label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email: Password: Remember me

Dropdown

A dropdown menu is a toggleable menu that allows the user to choose one value from a predefined list:

Download button

Link 1

Link 2

Link 3

An example of a stacked form is shown thus:

```
<div class="dropdown">
  <button type="button" class="btn btn-primary dropdown-toggle" data-toggle="dropdown">
    Dropdown button
  </button>
</div class="dropdown-menu">
```

```
<a class="dropdown-item" href="#">Link 1</a>  
<a class="dropdown-item" href="#">Link 2</a>  
<a class="dropdown-item" href="#">Link 3</a>  
</div>  
</div>
```

The .dropdown class indicates a dropdown menu.

To open the dropdown menu, use a button or a link with a class of .dropdown-toggle and the data-toggle="dropdown" attribute.

Add the .dropdown-menu class to a <div> element to actually build the dropdown menu. Then add the .dropdown-item class to each element (links or buttons) inside the dropdown menu.

Layouts

Bootstrap layouts are commonly known as ‘Containers’. Containers are the most basic layout element in Bootstrap and are required when using the default grid system. Components and options for laying out your Bootstrap application includes wrapping containers, a powerful grid system, a flexible media object, and responsive utility classes.

An example of layouts are shown thus:

```
<div class="container-fluid">  
...  
</div>  
// Extra small devices (portrait phones, less than 576px)  
// No media query since this is the default in Bootstrap  
  
// Small devices (landscape phones, 576px and up)  
@media (min-width: 576px) { ... }  
  
// Medium devices (tablets, 768px and up)  
@media (min-width: 768px) { ... }  
  
// Large devices (desktops, 992px and up)  
@media (min-width: 992px) { ... }  
  
// Extra large devices (large desktops, 1200px and up)  
@media (min-width: 1200px) { ... }
```

3.3 Form Element for HTML 5

HTML5 provides a number of ways to natively validate form fields; certain input types such as email and url, for example, as well as the required and pattern attributes. You may, however, want to use these input types and attributes for styling or semantic reasons without preventing the form being submitted. The new Boolean novalidate attribute allows a form to be submitted without native validation of its fields.

forms no longer need to have the action attribute defined. You no longer need to explicitly state the URL to use it for form submission. If omitted, the form will behave as though the action were set to the current page. You can write or override the URL defined in the form's action attribute with the formaction attribute of the button input types that activate form submission.

The <input> Element

The most important form element is the <input> element.

The <input> element can be displayed in several ways, depending on the type attribute.

Example

```
<input name="firstname" type="text">
```

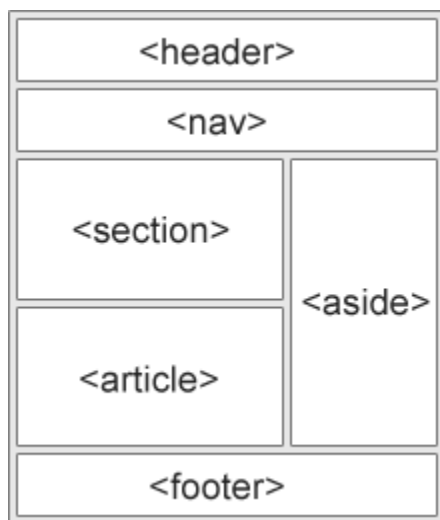
LAYOUT

Websites often display content in multiple columns (like a magazine or newspaper).

HTML offers several semantic elements that define the different parts of a web page. They include the following

1. <header> - The header tag defines a header for a document or a section
2. <nav> - The nav tag defines a container for navigation links
3. <section> - The section tag defines a section in a document
4. <article> - The article tag defines an independent self-contained article
5. <aside> - The aside tag defines content aside from the content (like a sidebar)

6. <footer> - The footer tag defines a footer for a document or a section
7. <details> - The details tag defines additional details
8. <summary> - The summary tag defines a heading for the <details> element



Example

Create a drop-down list with four options:

```
<select>
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="mercedes">Mercedes</option>
  <option value="audi">Audi</option>
<
/selected>
```

The <select> element is used to create a drop-down list.

The <option> tags inside the <select> element define the available options in the list.

CONCLUSION

A large number of programmers and web developers design websites often and they need the right tool to get the exact design required. In this work, it was demonstrated that both the HTML5 and Bootstrap are used for web development, but they have their differences. The implementation of the HTML5 and Bootstrap frameworks in more than a few dimensions is extremely difficult for website developers because both frameworks have similar parameters. The choice of usage becomes practically challenging. There is simply no way that the two frameworks can be considered one less important than the other.

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