

Comparative Analysis of Bootstrap and UIKit framework

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Abstract - Nowadays front-end web framework plays most important role in web development. Front-end web frameworks like Bootstrap, UIKit support responsive web design and different kind of devices. This paper compares Bootstrap and UIKit from developers as well as users point of view. A prototype has been developed using both the frameworks.

Key Words: Web development, Front-end web framework, Lightweight, Modular, Grid.

1.INTRODUCTION

These days web applications are developed for different purposes like Ecommerce, Blogs, social networking etc. Front-end framework plays important role in web development. A front-end web framework has standard classes and scripts for making development easier. It combines HTML, CSS and Javascript for effective designs and animation effects. These frameworks also help in making designs responsive. All frameworks differ in many factors, which are shown below with the help of analysis, small prototype and its outcome.

2.BOOTSTRAP

This is the most popular, free and open source front-end web framework in web development. It was originally named as Blueprint and released as an open source project on 19th August 2011. The latest version is Bootstrap 3, released on 19th August 2013. It is based on Grid system. It supports the latest versions of Google Chrome, Firefox, Internet Explorer, Opera, and Safari (except on Windows). For comparison purpose, I have used Bootstrap 3.3.7 as it uses flat design and mobile first approach.

3.UIKIT

This is a lightweight and modular front-end framework, used to develop fast and powerful interfaces. It is created by YooTheme in the year 2013. This is one of the underrated frameworks that is lightweight, modular. It supports both LESS and SaSS pre-processors. This framework is also built using CSS3 and Javascript. It also provides some interesting components which are not in Bootstrap.

4.DIRECTORY STRUCTURE

A directory structure makes developer's task easy. Figure 1 and Figure 2 depict the directory structure of Bootstrap 3.3.7 and UIKit 2.27.4 respectively. Both the frameworks follow same directory structure; but they differ in sizes. As directory structure of both the framework is so simple, it becomes easy for developers to search for files during development.

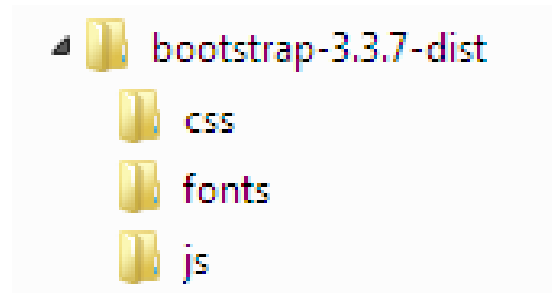


Fig -1: Directory structure of Bootstrap 3.3.7

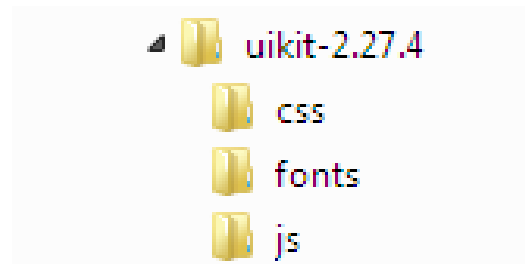


Fig -2: Directory structure of UIKit 2.27.4

5.DATEPICKER COMPONENT PROTOTYPE

The Datepicker component is the mostly used form component in almost every application. Bootstrap does not provide class for Datepicker, so it has to be coded through JQueryUI; but UIKit has predefined class for Datepicker. The outcome of developed prototype is shown in Fig -3 and Fig -4 for Bootstrap and UIKit respectively.

Following is Bootstrap code snippet used for creating Datepicker.

```

<!DOCTYPE html>
<html lang="en">
  <head><meta charset="utf-8">
    <meta name="viewport" content="width=device-
width, initial-scale=1">
    <title>Demo bootstrap</title>
    <script src="../sem 6/jquery-3.2.1.min.js"> </script>
    <link href="../sem 6/bootstrap-3.3.7-
dist/css/bootstrap.min.css" rel="stylesheet"/>
    <link href="../sem 6/bootstrap-3.3.7-
dist/css/bootstrap-datepicker.css" rel="stylesheet"/>
    <script src="../sem 6/bootstrap-3.3.7-
dist/js/bootstrap.min.js"></script>
    <script src="../sem 6/bootstrap-3.3.7-
dist/js/bootstrap-datepicker.js"></script>
  </head>
  <body>
    <script type="text/javascript">
    $(function(){
    $('#datepicker').datepicker();
    });
    </script>
    <div class="container">
    <form class="form-horizontal">
    <div class="form-group">
    <label class="control-label"
for="date">Date</label>
    <input style="width:250px;"class="form-control"
id="datepicker" placeholder="dd/mm/yyyy" type="text"/>
    </div>
    </form>
    </div>
  </body>
</html>

```

Following is UIkit code snippet used for creating Datepicker

```

<!DOCTYPE html>
<html lang="en-gb" dir="ltr">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-
width, initial-scale=1">
    <script src="../sem 6/jQuery_v2.1.4.js"> </script>
    <script src="../sem 6/uikit-2.27.4/js/uikit.js"></script>
    <link rel="stylesheet" href="../sem 6/uikit-
2.27.4/css/uikit.css" />
    <script src="../sem 6/uikit-
2.27.4/js/components/datepicker.js"></script>
    <link rel="stylesheet" href="../sem 6/uikit-
2.27.4/css/components/datepicker.css" />
  </head>
  <body>

```

```

<div class="uk-container">
  <form style="padding:5%;" class="uk-form">
    <label>Date: </label>
    <input type="text" data-uk-
datepicker="{format:'DD.MM.YYYY'}"
placeholder="dd/mm/yyyy">
  </form>
</div>
</body>
</html>

```

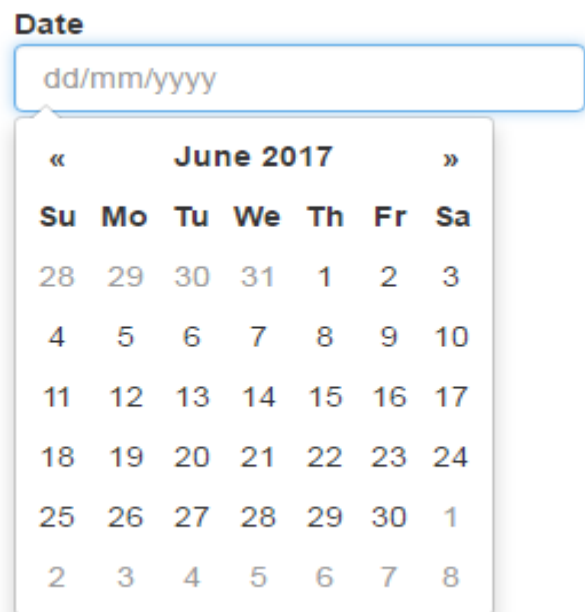


Fig -3: Datepicker in Bootstrap

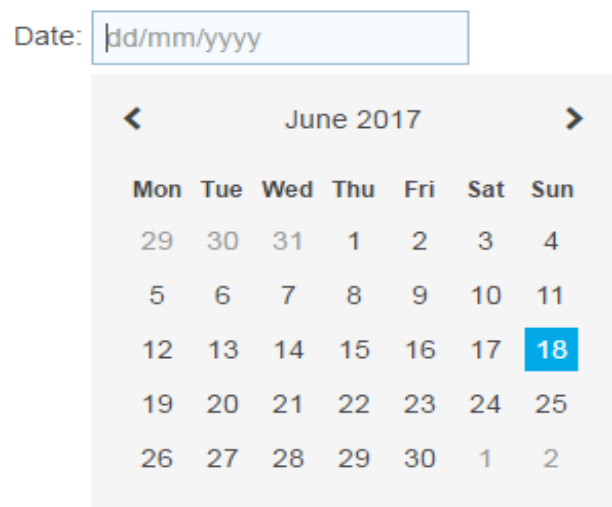


Fig -4: Datepicker in UIkit

6. TECHNICAL FACTORS

A front-end web framework is rated as best framework when it provides unique features as well as the other technical factors gives good results. Chart -1 and Chart -2 depict the storage space consumed by framework and JS, CSS files respectively of Uikit and Bootstrap. The Uikit framework's JS file is larger because it focuses mainly on JQuery scripting rather than the built-in CSS classes. As the Uikit framework is lightweight, it takes less time to load web pages than that in Bootstrap.

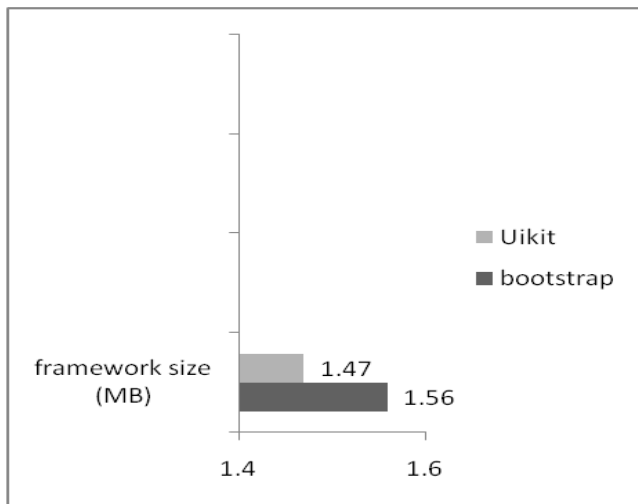


Chart -1: Framework storage consumption

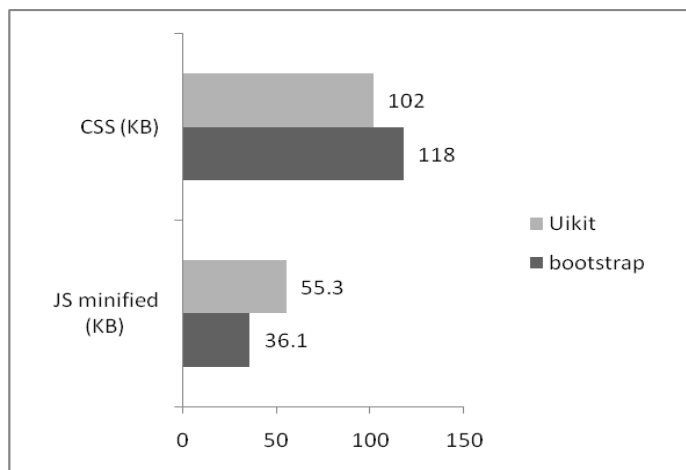


Chart -2: CSS and JS file size

The Uikit has a lot of unique styling as compare to Bootstrap. Even though framework size of Uikit is smaller than Bootstrap, it provides more powerful and flexible customization mechanism. Bootstrap uses Glyphicons whereas Uikit uses Font Awesome. The Font Awesome provides more icons than Glyphicons, so again Uikit becomes advanced.

The Table -1 compares different factors and features of Bootstrap and Uikit. All the differences are obtained based on proper research. It shows where both the frameworks lack or give best results.

Table -1: Comparison of factors/ features of Bootstrap and Uikit framework

Factors/ Features	Bootstrap	Uikit
Grid	It is based on 12 column layout. To remove padding between each column, one need to modify JS file	It is based on 10 columns layout. To remove padding, just add 'uk-grid-collapse' class.
Dynamic grid	Does not support dynamic grid.	It allows developer to create dynamic and responsive grid layout with the help of grid component. Grid items arrange themselves according to the device size.
Autocomplete	One need to manually code to show pre-generated values while typing in form input.	It has predefined class (uk-autocomplete) that allows users to choose from pre-generated values while typing.
Documentation	It is well organized and provides live examples and templates.	Documentation is complex for beginners.
Timepicker/ Datepicker	JQueryUI is needed to create these form fields	It has pre-defined classes for both, so no need of JQueryUI.
Animation	Bootstrap has built-in animations for limited components	Uikit has built-in animations which can be used for various components.
Popularity	This is the most popular framework	This is less popular framework. It is hard to find learning resources for a beginner developer.

3. CONCLUSION

As per the studies, both the frameworks are good for front-end web development. Though UIKit is less popular and has fewer resources for learning, it is better when compared to Bootstrap. The UIKit framework is not only beneficial for designing small informative websites, but also for complex and big website's projects because of its performance, responsiveness, customization and components.

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REFERENCES

- [1] https://en.wikipedia.org/wiki/Front-end_web_development
- [2] <http://getbootstrap.com/components/>
- [3] [https://en.wikipedia.org/wiki/Bootstrap_\(front-end_framework\)](https://en.wikipedia.org/wiki/Bootstrap_(front-end_framework))
- [4] <https://getuikit.com/docs/introduction>
- [5] <https://getuikit.com/v2/docs/components.html>
- [6] Bootstrap: Responsive Web Development, By Jake Spurlock