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Vellore Institute of Technology

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School of Information Technology and Engineering
Digital Assignment - I, SEPTEMBER 2019
B.Tech, Fall-2019-2020

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COURSE NAME	Open Source Programming
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Q. Write a note on any one Open Source Tool.

Introduction to Bootstrap Frontend Framework

Bootstrap is a free and opensource frontend web framework for designing websites and web applications. It contains HTML and CSS based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. Unlike many web frameworks, it concerns itself with frontend development only.

Bootstrap is the second most starred project on GitHub, with over 95 thousand stars and more than 40 thousand forks.

In computers, the word bootstrap means to [boot](#): to load a program into a computer using a much smaller initial program to load in the desired program (which is usually an operating system).

In the physical world, a bootstrap is a small strap or loop at the back of a leather boot that enables you to pull the entire boot on and in general usage, bootstrapping is the leveraging of a small initial effort into something larger and more significant. There is also a common expression, "pulling yourself up by your own bootstraps," meaning to leverage yourself to success from a small beginning.

History of Bootstrap

Bootstrap, originally named Twitter Blueprint, was developed by Mark Otto and Jacob Thornton at Twitter as a framework to encourage consistency across internal tools. Before Bootstrap, various libraries were used for interface development, which led to inconsistencies and a high maintenance burden. According to Twitter developer Mark Otto:

"A super small group of developers and I got together to design and build a new internal tool and saw an opportunity to do something more. Through that process, we saw ourselves build something much more substantial than another internal tool. Months later, we ended up with an early version of Bootstrap as a way to document and share common design patterns and assets within the company.

After a few months of development by a small group, many developers at Twitter began to contribute to the project as a part of Hack Week, a hackathon style week for the Twitter development team. It was renamed from Twitter Blueprint to Bootstrap, and released as an open source project on August 19,

2011. It has continued to be maintained by Mark Otto, Jacob Thornton, and a small group of core developers, as well as a large community of contributors.

On January 31, 2012, Bootstrap 2 was announced. This release added the twelve column grid layout and responsive design components, as well as changes to many of the existing components. The Bootstrap 3 release was announced on 19 August 2013, moving to a mobile first approach and using a flat design. On October 29, 2014, Mark Otto announced Bootstrap 4 was in development. The first alpha version of Bootstrap 4 was deployed on August 19, 2015.

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 colour, 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 end 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. For example, Bootstrap has provisioned for light- and dark-coloured tables, page headings, more prominent pull quotes, and text with a highlight.

Bootstrap also comes with several JavaScript components in the form of jQuery plugins. They provide additional user interface elements such as dialog boxes, tooltips, and carousels. Each Bootstrap component consists of an HTML structure, CSS declarations, and in some cases accompanying JavaScript code. They also extend the functionality of some existing interface elements, including for example an auto-complete function for input fields.

Example of a webpage using Bootstrap framework rendered in Firefox
The most prominent components of Bootstrap are its layout components, as they affect an entire web page. The basic layout component is called "Container", as every other element in the page is placed in it. Developers can choose between a fixed-width container and a fluid-width container.

Bootstrap 4

Bootstrap 4 is the latest version of the widely popular front-end framework, Bootstrap. Bootstrap 4 has a lot of new exciting features and capabilities that make building responsive designs even easier than before. The biggest add-on is that it is heavily built on Flexbox.

Mark Otto announced Bootstrap 4 on October 29, 2014. 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 4 was finalized on January 18, 2018.

Significant changes include:

- Major rewrite of the code
- Replacing Less with Sass
- Addition of Reboot, a collection of element-specific CSS changes in a single file, based on Normalize
- Dropping support for IE8, IE9, and iOS 6
- CSS Flexible Box support
- Adding navigation customization options
- Adding responsive spacing and sizing utilities
- Switching from the pixels unit in CSS to root ems
- Increasing global font size from 14px to 16px
- Dropping the panel, thumbnail, pager, and well components
- Dropping the Glyphicons icon font
- Huge number of utility classes
- Improved form styling, buttons, drop-down menus, media objects and image classes

Bootstrap 4 supports the latest versions of the Google Chrome, Firefox, Internet Explorer, Opera and Safari (except on Windows). It additionally supports back to IE9 and the latest Firefox Extended Support Release (ESR).

Bootstrap 5

Bootstrap 5 is the upcoming major version of the framework. Major changes include:

- Switch from jQuery library to native JavaScript
- Dropping support for IE10
- Moving testing infrastructure from QUnit to Jasmine

Bootstrap Tools

- *Bootply*

Bootply is known as the playground for Bootstrap. It's not only a Bootstrap editor and builder, but it's also home to a pretty extensive code repository. The editor enables you to drag and drop Bootstrap components then edit the code as you please. Bootply is also integrated with other popular Bootstrap plugins, micro-libraries and frameworks. Some of the tools you can leverage are Font Awesome, jQuery + jQuery UI, Bootstrap Select, FuelUX, AngularJS, Google Maps, and much more. Pricing: Free or \$4/month to download source code.

- *Jetstrap*

Jetstrap is a premium web-based interface building tool for Bootstrap 3 that helps developers and designers get websites up and running fast. Develop for all devices and access your work from anywhere. Jetstrap allows you to drag and drop Bootstrap components into the builder then edit the code further. Instead of digging through docs, grab snippets of clean markup and quickly use complicated components. Pricing: \$16 – \$99 per month.

- *Divshot*

Divshot is not only a visual Bootstrap editor, but also an application grade hosting environment built for developers. The Bootstrap builder (known as Architect) enables you to create production quality code that's properly nested with every new component. It also supports all other popular CSS frameworks like Foundation and Racthet, with new ones being added regularly. Pricing: Free – \$100/month (with hosting).

- *Pinegrow*

Pinegrow is a desktop app for Mac, Windows & Linux that lets you mockup & design webpages faster with multipage editing, CSS & LESS styling and smart components for Bootstrap, Foundation and other frameworks. The stylesheet editor lets you attach, detach, duplicate and reorder stylesheets. Pinegrow doesn't try to take over your workflow. Rather, it is a tool that can be used to save effort and time, where it makes sense. Pricing: \$49.95 for a onetime personal license.

- *LayoutIt*

LayoutIt is a simple but effective Bootstrap interface builder to make your frontend coding easier. You can start from scratch or use one of the base templates. Simply drag and drop the Bootstrap elements onto the canvas and download the HTML. From there, you can add your own styling and integrate it with any programming language. Pricing: Free

- *Pingendo*

Pingendo is a visual desktop application that helps you to prototype responsive web pages based on Bootstrap. Like most Bootstrap builders, you can add content from a rich collection of ready to use Bootstrap elements. You can start with a blank canvas or start your pages from a collection of ready to use layouts. From there you can drag, resize, and customize your contents. Pricing: Free Update!

- *Bootstrap Starter Kit*

Bootstrap Starter Kit is more than just another Bootstrap template, it's a collection of unique, professional Content Blocks, that can be pieced together by you to create unlimited layouts to suit any business. Use the drag and drop HTML Builder to quickly and visually create your perfect site, or copy and paste your chosen blocks for greater control. Whatever your level of knowledge using Bootstrap and HTML, anyone can build a great responsive Bootstrap website.
