# CSS Frameworks

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[Bootstrap](https://getbootstrap.com/)

Bootstrap is widely considered one of the easiest frameworks to use due to its excellent documentation. I believe every built-in component is displayed with working code in the documentation giving users working examples that can be easily modified to suit user needs. There are also many pre-written bootstrap themes available that can be used to quickly create functional and professional websites. If you truly are a beginner, or new to the framework, there are countless hours of tutorials available to the general public for free. This reduces project development time and increases flexibility allowing developers to quickly adapt to customer needs. Testing is also decreased since the bootstrap framework is designed to look the same on all web browsers and platforms. This will give developers a consistent end product that can be deployed faster with reduced maintenance.

Bootstrap was ranked 1st by popularity in a recent State of CSS survey. Many developers enjoy Bootstrap due to its “mobile first” development approach. It uses a powerful grid system that is easy to develop and reuse. It allows for rapid development through reuse of integrated components that are easily customized. It was designed by Twitter and is used by Spotify, Intel, Walmart and Udemy among many other corporations large and small.

Bootstrap’s outstanding documentation makes it an ideal framework for beginners. The bootstrap web page offers many templates that can be used for a variety of different applications. Using mostly CSS and HTML, it’s not necessary to know JavaScript, jQuery or any other languages or frameworks. Although JavaScript is easily incorporated and there are examples available in the documentation.

A major disadvantage is its sheer size. All features are included by default and can increase loading times along with bandwidth usage. This is less than ideal if you are incorporating a website that is expecting a lot of traffic. Any features you aren’t using must be deleted manually. This may lead to unexpected results if developers are careless.

[Foundation](https://get.foundation/)

Foundation boasts the title of “The most advanced responsive front-end framework in the world.” It is available for installation using popular package managers, direct download and CDN links just like Bootstrap. However, they only have one breakpoint on their grid system at 768px. This means that tablet view will look the same as mobile view unless custom responsive design is implemented.

It is well documented with starter templates, instructional videos and tutorials. While Foundation may make designing faster, that doesn’t necessarily mean it will be easier. Foundation is designed for more customization at the cost of a larger learning curve. You shouldn’t let that keep you from trying this framework, though. The instructional videos mentioned above are easy to follow and informative. The large following means there are other independent tutorials that may be catered to issues that arise during development.

While it’s not nearly as popular as Bootstrap, it still maintains a large following and has over 28,800 stars on its GitHub repository. It is used by eBay, Disney, National Geographic and Cisco.

One of best advantages is you can write a site using Foundation and it will be completely unique from other sites using the same framework. This is due in part to the “building blocks” component making it easy to piece together a sight and customize it.

It is a time-consuming framework to learn and is not geared towards beginners. Although highly customizable, this comes at the cost of complexity. This can lead to longer development times and increased maintenance. More time must also be allocated for testing as well.

[Materialize CSS](https://materializecss.com/)

Materialize CSS is a newer framework geared towards reducing coding time. Most features are made available for use “out of the box” with a wide variety of JavaScript plugins. The product is well documented with fluid documentation giving nice examples of what changes you can expect based on the code. Material keeps the application or site design at the forefront of its development philosophy. The numerous components included make this evident while Bootstrap focuses on easily creating responsive websites or application with functionality in mind.

It is used by companies such as NASA, JPMorgan Chase, Unity and Google. Eventually all of Google’s applications and web sites will be based on the Material Design framework creating a consistent feel throughout the entire Google experience. Google recently released a theme editor to work exclusively with the framework.

Anytime a large expansive company, such as Google, implements standardization of any kind they create an instant advantage to follow that standardization. Everyone will want their application to work flawlessly with the popular standard and it will gain traction instantly. It can be guaranteed to work with the most popular browsers and will be cross platform out the box. The feature testing will have been completed by large teams dedicated to that specific feature. Material.io has 1st class quality tutorials covering a wide range of topics and implementation with several popular programming languages and devices. The framework is well documented and there are themes, starter kits, example applications, best practice guidelines among many other sources of documentation. Google has gone to great lengths to integrate Material Design with iOS and macOS by developing tooling and documentation to support this.

Disadvantages are in line with some of the advantages. Certain features that can be initially pleasing may become a hinderance over time. Think of a cute animation that you spend time developing and implementing at your landing page. The site or application gains popularity and is frequently used. That cute animation at your landing page may become annoying or considered a distraction from the main purpose of the application if you visit it more than several times a day. The heavy use of animations can also affect performance. With “net only” devices, such as Chrome Books, gaining popularity the heavy performance requirements may cause a laggy appearance to applications or websites on lower end budget devices. The “loud” color schemes and templates may also not be favored by your target demographic. Caution must be taken to keep the layout interesting while meeting accessibility best practices.

### *Summary:*

I believe Bootstrap is the most user friendly for my initial framework and knowledge base. I would rather learn one thing very well instead of learning multiple frameworks just to be familiar. Each of them has their own quirks and I feel each of them have their own place in production. If I was developing mobile only applications, I would probably lean towards Material. Material seems geared toward the use of Android devices and anything I would develop would likely be ported to Android and released before any cross-platform work to iOS. I don’t own any Apple devices and I would feel more comfortable making a very good application for something I know the interface of instead of a kind of ok application that works on both operating systems.