CSS FRAMEWORKS

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1. INTRODUCTION _

1.1 WHAT IS CSS ?

Cascading **S**tyle **S**heets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs, variations in display for different devices and screen sizes as well as a variety of other effects.

CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.

1.2 PROBLEMS IN CSS DEVELOPMENT?

1. Code Reuse
   It’s tough to reuse code in CSS. We have to write separate code for nearly all elements.
2. Coding takes too long
   To properly design a website it may take you thousand line of CSS code
3. No standard
   There no fix steps in designing website, it just depend on your requirement
4. Long debugging time
   It can take you very long to get pixel perfect design for your website. Also if any error occurs then debugging may take long time .
5. Special codes for different size screen
   It always recommended to have a responsive website, so that it is comfortable to be seen in all types of users screen. To add responsive special codes need to be for different sizes of screen.

1.3 WHAT ARE CSS FRAMEWORKS?

CSS frameworks are tools used by UI developers to make their job easier. Rather than reinventing the wheel each time a new project comes up; frameworks give developers the tools to quickly spin-up user interfaces that can be tweaked and iterated on throughout a project instead of spending time starting from a blank document. They’re also useful in large teams and help those of us that need to create a theme for use in more than one project.

In its simplest form, a CSS framework is a collection of CSS stylesheets that are prepped and ready to use. They’re tailored for use in common situations, like setting up navbars, and are often expanded upon by other technologies such as SASS and JavaScript. Think of it like a colleague giving you a completed CSS stylesheet for a home page you’re setting up. Basically, all you need to do is writeup your HTML with the appropriate structure, classes, and IDs and you’re off to the races. However, instead of that stylesheet being specifically for the home page you’re working on, it’s ready to accommodate a general “standard” of home page, having classes for things commonly found on other home pages (ie navbar, footer, slider, hamburger menu, 3 column layout). This allows you to quickly setup web pages without having to deep dive into some CSS, saving a bunch of time.

2.CSS FRAMEWORK

2.1 BENEFITS OF CSS FRAMEWORKS

1. **They provide code that you just don't need to write from scratch every time, like resets .**All these frameworks start with brilliant resets that cover all the bases and will have you covered for years to come.
2. **They encourage grid based design.** Which is a good thing. Grids don't mean boring! They just help you achieve better readability, scanability, balance visual weight, flexibity , expandability, and just overall page page cohesiveness.
3. **They come with documentation.** If you need help getting started, framework generally come with some support files. This can be particularly nice if you are designing a site you will be handing off to a client. You can just let them know what framework you used and refer them to that documentation for support requests.
4. **They relieve cross-browser concerns.** You can't undervalue this. We've all felt the burn of finding out our sites are borked in some browser or another at a hugely inopportune time. Frameworks are built to bring their magic to all browsers.
5. **They can help you learn CSS.** You might just literally not know how to pull off a solid multi-column layout. A framework may be a good place to get your feet wet understanding how CSS works.

2.2 TOP CSS FRAMEWORKS 2020

Here are a list of 10 Best CSS Frameworks in 2020

1. Bootstrap
2. Foundation
3. UIkit
4. Semantic UI
5. Bulma
6. Tailwind
7. Picnic CSS
8. PaperCSS
9. NES .css
10. Animated.css

3.Some CSS FRAMEWORKS _

3.1 BOOTSTRAP

Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains CSS- and (optionally) JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

Bootstrap is the seventh-most-starred project on GitHub, Bootstrap is a HTML, CSS & JS Library 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. For example, Bootstrap has provisioned for light- and dark-colored 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.

3.2 FOUNDATION

Foundation is a responsive front-end framework. Foundation provides a responsive grid and HTML and CSS UI components, templates, and code snippets, including typography, forms, buttons, navigation and other interface elements, as well as optional functionality provided by JavaScript extensions.

Foundation was designed for and tested on numerous browsers and devices. It is a mobile first responsive framework built with Sass/SCSS giving designers best practices for rapid development. The framework includes most common patterns needed to rapidly prototype a responsive site. Through the use of Sass mixins, Foundation components are easily styled and simple to extend.

Foundation is modular and consists essentially of a series of Sass stylesheets that implement the various components of the toolkit. Component stylesheets can be included via Sass or by customizing the initial Foundation download. Developers can adapt the Foundation file itself, selecting the components they wish to use in their project.

Adjustments are possible through a central configuration stylesheet. More profound changes are possible by changing the Sass variables.

The use of Sass stylesheet language allows the use of variables, functions and operators, nested selectors, as well as so-called mixins.

Since version 3.0, the configuration of Foundation also has a special "Customize" option in the documentation. Moreover, developers use on a form to choose the desired components and adjust, if necessary, the values of various options to their needs. The subsequently generated package already includes the pre-built CSS style sheet.

3.3 UIKIT

The **UIKit framework** is lightweight, easy to customize, and easy to append. It’s follows a modular structure where you’ll build page elements with reusable classes.

It’s perfect for structuring a new page without having to code your own grid or roll your own font stacks. This framework even comes with a unique icon set you can add into your page using a web font.

With UIKit you can run Sass or Less along with any package manager(usually npm).

Plus with a huge list of components you can embed anything from upload
fields to breadcrumbs and so much more

3.4 SEMANTIC UI

Semantic allows developers to build beautiful websites fast, with concise HTML, intuitive javascript, and simplified debugging, helping make front-end development a delightful experience. Semantic is responsively designed allowing your website to scale on multiple devices. Semantic is production ready and partnered with frameworks such as React, Angular, Meteor, and Ember, which means you can integrate it with any of these frameworks to organize your UI layer alongside your application logic.

Semantic is a UI framework designed for theming.

Key Features

- 50+ UI elements
- 3000 + CSS variables
- 3 Levels of variable inheritance (similar to SublimeText)
- Built with EM values for responsive design
- Flexbox friendly

Written in LESS.

Semantic UI is written in LESS which surfaces two issues:

1. We already use SCSS so there's complexity and cost to making a switch.
2. create-react-app supports SCSS but not LESS. You have to leave the beaten path to get it to work.

Concise HTML

Semantic UI treats words and classes as exchangeable concepts. Classes use syntax from natural languages like noun/modifier relationships, word order, and plurality to link concepts intuitively. Get the same benefits as BEM or SMACSS, but without the tedium.

Intuitive Javascript

Semantic uses simple phrases called behaviors that trigger functionality. Any arbitrary decision in a component is included as a setting that developers can modify.

3.5 BULMA

The Bulma framework is a free CSS solution based on the Flexbox layout. With Bulma, the extensive range of built-in features means faster turnaround and less CSS code writing.

Bulma is also fully open-source, which means that Bulma's original source code is freely available for download — there's no limit to how far you (and the growing Bulma community) can extend its functionality

Bulma is designed to help simplify the coding process, so it only makes sense that Bulma should have ease-of-use as a top priority. Bulma is not an everything-or-nothing framework; it's modular, and that means that you can use the pieces you want and leave the rest out. Bulma is an exclusively CSS framework; the only output is one CSS file (bulma.css). And if you want to take advantage of the aforementioned modularity to customize your variables, you can download the individual .sass source files. Otherwise, Bulma works just fine as a plug-and-play solution. All of this means that there's no JavaScript in Bulma.

Bulma comes with pretty much all of the components you need to give your site a crisp, functional appearance, including dropdown menus, navigation bars, panels, tabs, and tables.

4.SOME MORE DISCUSSION _

4.1 WHICH CSS FRAMWORK TO USE

There's more to choosing a framework than just knowing the options it offers. You'll need to consider factors like these:

- What type of framework your site needs
- Framework language
- Framework features
- Whether the framework is customizable and modular

What Type of Framework Do You Need?

First you need to know something about your site. Does it really even need a framework? Most sites with multiple pages benefit from frameworks. The exact number of pages can vary, but if you find yourself repeating the same HTML, CSS, or JavaScript on all your pages, a template or framework could help. Most frameworks add a lot of extra HTML, CSS, and JavaScript to the pages. If you're trying to keep bandwidth low for your customers, you might not want to use a framework at all, or just use minimal amounts of the framework. Some frameworks (such as Bootstrap) offer tools to help you build a version of the framework with only the elements your site needs.

Framework Language(s)

You should know the computer language(s) your framework uses. Some simple frameworks are just basic HTML templates, and more complex frameworks might include CSS and JavaScript. Some frameworks use Less or Sass to compile the CSS; others use Ruby or other programming languages to compile the pages once you're done building them. If you don't know the language(s) your framework uses, that framework will be challenging to implement.

Framework Features

Go through the features I've listed so far, and decide which features your site needs and which ones aren't necessary. Then consider whether your site needs these additional options:

- Responsive Web Design (RWD
- Mobile-friendly and mobile-first design.
- Browser support
- JavaScript requirements

Is the Framework Customizable and Modular?

Customizable frameworks let you add your own code to make your site look like something you built, rather than like other sites out there. But if a framework is too customized, you lose the benefits of a framework; you might as well just build the site from scratch.

Modular frameworks take customization into account. Most modular frameworks offer a base system, to which you can add features as needed. For example, Bootstrap offers many JavaScript scripts you can add to your site. If you never plan to use a carousel, you can compile Bootstrap without the carousel.js code, but the carousel is always available if you need it.

4.2 SOME DISADVANTAGES OF CSS FRAMWORKS

- **It changes the way you write your HTML**. Everything you write is wrapped up with some id or class with names based on framework. Using them , you end up using too many different div , you earlier won't do.
- **They can be bloat-y**. There may be CSS styles set up in a framework to accommodate tons of different layouts that you'll never use. If you are concerned about every byte of a web page, you are going to end up doing a lot of stripping away of unused code, which ruins the point of the framework.
- **In order to really benefit, and actually save time, you'll need to use one framework over and over.** To really get advantage of a framework, you really need to get comfortable with it. And it may take a long learning duration and practice which takes time.

REFERENCES

Book - HTML & CSS Design and Build Websites Jon Ducket

https://medium.com/html-all-the-things/what-is-a-css-framework-f758ef0b1a11

https://www.tutorialspoint.com/css/what_is_css.htm

https://en.wikipedia.org/wiki/Foundation_(framework)

https://cssframeworks.org/

https://www.mockplus.com/blog/post/css-framework