Web Designing Assignment

Module - 2 (CSS and CSS 3)

1. What are the benefits of using CSS?

- **Consistency** – The primary advantage of CSS is that style is consistently used on many web pages. If modifications need to be made, the ability of one command line to manage multiple locations at once is very helpful. Change only one thing, and everything else will fall into place. Since you don't need to modify each page individually.
- **Easy to maintain** – CSS makes website building and maintenance easier. Because all the codes are on one page, it is easier to make changes or add a few lines without having to flip through numerous pages. Additionally, maintenance time and effort are greatly decreased because a modification made to one line of code is applied throughout the entire website.
- **Time-Saving** – CSS saves a lot of time and work in the web development process because it loads websites more quickly and is simpler to maintain. Here, less time guarantees the designer efficiency.
- **Better website speed** – A website should load more quickly in order to operate effectively. Nowadays, users typically only have to wait a few seconds for a webpage to load. Therefore, it's crucial to guarantee more speed. CSS is crucial to the success of businesses who wish to guarantee a faster and smooth website experience.
- **SEO-friendly** – CSS files made externally can be used to control design attributes. In this way, you reduce the quantity of HTML code. One particular advantage is SEO. In other words, search engine spiders won't go through all of those HTML codes. The website's clean code will eventually raise its position in search results.

2. What are the disadvantages of CSS?

- **Security Issues** – In today's technologically and data-driven society, security is crucial. CSS has a restricted level of security, which is one of its main drawbacks.
- **Cross-Browser Issues** – We can observe that the functionality of different browsers varies. In order to ensure that modifications made to the website using CSS codes are properly displayed across all browsers, need to be checked.
- **Confusion due to many CSS levels** – This problem is particularly effects for beginners. Since CSS has numerous levels, including CSS2, CSS3, and others, they could become confused while choosing to study it.

3. What is the difference between CSS2 and CSS3?

- **New features:** CSS3 adds a number of new features to CSS2, including:
- **Flexbox:** Flexbox is a layout module that makes it easier to create responsive layouts.
- **Grid:** Grid is a layout module that provides more control over the layout of elements on a web page.
- **Animations:** CSS3 adds support for animations, which can be used to create more dynamic web pages.
- **Transitions:** CSS3 adds support for transitions, which can be used to create smooth transitions between states of an element.
- **Custom properties:** CSS3 adds support for custom properties, which can be used to create reusable styles.
- **Improved support for media queries:** CSS3 improves the support for media queries, which can be used to adjust the layout of a web page for different screen sizes.
- **Better performance:** CSS3 code is typically more efficient than CSS2 code, which can lead to faster page load times.

4. Name a few CSS style components.

The main components of a CSS style include:

1. **Selectors**:** Selectors are used to target specific HTML elements to which the style will be applied. CSS selectors can target elements by their HTML tag name (element selectors), class names (class selectors), IDs (ID selectors), attributes, and more.

Example selectors:

- Element selector: `p { ... }`

- Class selector: `.my-class { ... }`

- ID selector: `#my-id { ... }`

2. **Properties:** Properties are the individual style attributes that you want to set for the selected elements. Each property corresponds to a specific aspect of an element's appearance, such as color, font size, margin, padding, or border.

Example properties:

- `color`: Sets the text color.

- `font-size`: Defines the font size.

- `margin`: Specifies the margin around an element.

- `padding`: Sets the padding inside an element.

- `border`: Controls the border of an element.

3. **Values:** Values are the settings or values you assign to CSS properties. Values can be specific (e.g., `12px`, `red`), relative (e.g., `em`, `%`), or keyword-based (e.g., `bold`, `left`).

Example values:

- `12px`: A specific pixel size.

- `red`: A specific color.

- `1em`: Relative size based on the element's font size.

- `left`: A keyword value indicating alignment.

4. **Declaration Block:** A declaration block is a set of one or more property-value pairs enclosed within curly braces `{}`. Each property-value pair is separated by a semicolon `;`.

Example declaration block:

```
css

p {

color: blue;

font-size: 16px;
```

}

5. **Rule Set**:** A rule set is a complete CSS rule that consists of a selector and its associated declaration block. It defines which HTML elements should be styled and how they should be styled.

Example rule set:

css

p {

color: blue;

font-size: 16px;

}

6. **Stylesheet**:** A stylesheet is a collection of CSS rule sets. Stylesheets can be included in an HTML document using the `<link>` element (external stylesheet) or within a `<style>` element in the HTML `<head>` section (internal stylesheet).

Example external stylesheet link:

html

<link rel="stylesheet" type="text/css" href="styles.css">

Example internal stylesheet:

html

<style>

p {

color: blue;

font-size: 16px;

}

</style>

By combining these components, you can create sophisticated and customized styles to control the visual presentation of HTML elements on your web page.

5. What do you understand by CSS opacity?

The **opacity** in CSS is the property of an element that describes the transparency of the element. It is the opposite of transparency & represents the degree to which the content will be hidden behind an element.
We can apply the opacity with different styling properties to the elements. A few of them are discussed below:

Image Opacity: The opacity property is used in the image to describe the transparency of the image. The value of opacity lies between 0.0 to 1.0 where a low value represents high transparency and a high value represents low transparency. The percentage of opacity is calculated as Opacity% = Opacity * 100.

6. How can the background color of an element be changed?

There are several ways to change the background color of an element using CSS. Here is a list of some of the most common ways:

1. Using `background-color` property

Use the `background-color` property. This property sets the background color of an element, and it can be specified using a named color (e.g. `red`), a hexadecimal color code (e.g. `#ff0000`), or a RGB/RGBA color value (e.g. `rgb(255, 0, 0)` or `rgba(255, 0, 0, 1)`). Here is an example:

```
/* Using a named color */
body {
  background-color: red;
}

/* Using a hexadecimal color code */
body {
  background-color: #ff0000;
}

/* Using a RGB/RGBA color value */
body {
```

```
  background-color: rgb(255, 0, 0);
}
```

2. Using `background` property

Use the `background` property. This property is a shorthand property for setting the `background-color` property, as well as other background-related properties such as `background-image`, `background-repeat`, `background-position`, and `background-size`. Here is an example:

```
body {
  background: red;
}
```

3. Using `background-image` property

Use the `background-image` property. This property sets an image as the background of an element. The image can be specified using a URL, and the background color of the element will be the color of the image. Here is an example:

```
body {
  background-image: url('https://example.com/image.png');
}
```

4. Using `background-clip` property

Use the `background-clip` property. This property specifies whether the background color or image of an element should extend to the border of the element or not. By default, the background extends to the border, but you can use the `border-box` value to clip the background at the border. Here is an example:

```
body {
  background-color: red;
```

```
  background-clip: border-box;
}
```

5. Using `filter` property

Use the `filter` property. This property allows you to apply various graphical effects to an element, such as color adjustments, blurring, and more. One of the effects that you can use with this property is the `brightness()` function, which allows you to adjust the brightness of an element's background color. Here is an example:

```
body {
  background-color: red;
  filter: brightness(50%);
}
```

7. How can image repetition of the backup be controlled?

This task can be achieved by using the *background-repeat property* that will help us to control the repetition of the image.
The **background-repeat property** in CSS is used to repeat the background image both horizontally and vertically. It also decides whether the background image will be repeated or not.

Syntax:
background-repeat: repeat|repeat-x|repeat-y|no-repeat|initial|inherit;

Example 1: In the example, we will make use of the repeat-x to repeat the image in the horizontal direction.

```
<!DOCTYPE html>
<html>
<head>
    <title>background-repeat property</title>
    <style>
        body {
```

```
            margin-top: 40px;
            background-image: url(
"https://media.geeksforgeeks.org/wp-content/uploads/geeks-25.png");
            background-repeat: repeat-x;
            background-size: 150px 100px;
        }
        h1 {
            text-align: center
        }
    </style>
</head>
<body>
    <h1>GeeksforGeeks</h1>
</body>
</html>
```

To control the repetition of an image in the background, use the *background-repeat* property. You can use no-repeat value for the background-repeat property if you do not want to repeat an image, in this case, the image will display only once.

Example

You can try to run the following code to learn how to work with the *background-repeat* property:

```
<html>
   <head>
      <style>
         body {
            background-image: url("/css/images/css.jpg");
            background-repeat: repeat;
         }
      </style>
   </head>
   <body>
      <p>Tutorials Point</p>
   </body>
</html>
```

8. What is the use of the background-position property?

The **background-position** property in CSS is mainly used to sets the initial position for the background image ie., it is used to set an image at a certain position. The position that is relative to the positioning layer, can be set by using the background-origin property.

Syntax: background-position: value;

Note: The background-image is placed default to the top-left corner of an element with a repetition on both horizontally & vertically.

Property values:

- **background-position: left top:** This property is used to set the image at the left top.
- **background-position: left center :**This property is used to set the image at the left center.
- **background-position: left bottom;** This property is used to set the image at the left bottom.
- **background-position: center top;** This property is used to set the image at the center top position.
- **background-position: center center;** This property is used to set the image at the center center position.
- **background-position: center bottom;** This property is used to set the image at the center bottom position.
- **background-position: right top;** This property is used to set the image at the right top position.
- **background-position: right center;** This property is used to set the image at the right center position.
- **background-position: right bottom;** This property is used to set the image at the right bottom position.
- **background-position: 25% 75%:** This property is used to set the image at 25% from the left and 75% from the top.
  - **Note:** For x%y% notation, here x% denotes the horizontal position & y% denotes the vertical position with respect to the initial position i.e, left top.
- **background-position: 30px 80px;**: This property is used to set the image at the 30px from left and 80px from top.
  - **Note**: For x-pos y-pos notation, here the units are represented in pixels or any other CSS units.

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9. Which property controls the image scroll in the background?

The background-attachment property sets whether a background image scrolls with the rest of the page, or is fixed.

CSS Syntax

background-attachment: scroll|fixed|local|initial|inherit;

Property Values

Value	Description
scroll	The background image will scroll with the page. This is default
fixed	The background image will not scroll with the page
local	The background image will scroll with the element's contents
initial	Sets this property to its default value.
inherit	Inherits this property from its parent element.

10. Why should background and color be used as separate properties?

There are two reasons behind this:

- It enhances the legibility of style sheets. The background property is a complex property in CSS, and if it is combined with color, the complexity will further increase.

- Color is an inherited property while the background is not. So this can make confusion further.

11. How to center block elements using CSS1?

Approach: There are two steps to center a block-level element –

Step 1: Define the external width – We need to define the external width. Block-level elements have the default width of 100% of the webpage, so for centering the block element, we need space around it. So for generating the space, we are giving it a width.

Step 2: Set the left-margin and the right-margin of the element to auto – Since we produced a remaining space by providing external width so now we need to align that space properly that's why we should use margin property. Margin is a property that tells how to align a remaining space. So for centering the element you must set left-margin to auto and right-margin to auto.

Syntax:

```
element {
   width:200px;
   margin: auto;
}
```

12. How to maintain the CSS specifications?

The CSS specifications are maintained by the World Wide Web Consortium (W3C). Even though every browser supports CSS, there are many inconsistencies in the supported specification version. Some browsers even have their own implementation of the specification and have proprietary (vendor) prefixes.

The Specification defines how CSS properties should be implemented by browser vendors along with detailed algorithms, code samples and tabular information.

The Specification also include:

- The syntax and data types of the language
- Detailed explanation on CSS Selectors

- How you can assign values to properties
- The Cascade (the "C" in CSS)
- How inheritance works
- The Box Model e.t.c

Explanation on some of these topic are short and easy to understand while others are explained in great detail.

The Specification also specify how stylesheets can be included in your web document and how to target specific media e.g print or screen.

The CSS Specification **prior to CSS3 was a single Specification**, CSS3 on the other hand **is divided into Modules** which are **Independent Specifications** that can be worked on by different author(s) at different paces, that's why we have Selector Level 3 Specification, CSS Color 4, CSS Backgrounds and so on. Some of these modules are revisions of CSS2.1, and some are newly created, but all fall under the banner of CSS3.

The Specification should be your guide if you need to understand how a specific property or feature works behind the scene and how it works with other CSS properties. And if you are comfortable reading algorithms you won't get bored reading the CSS Specification.

13. What are the ways to integrate CSS as a web page?

There are three ways of inserting a style sheet:

- External CSS
- Internal CSS
- Inline CSS

External CSS

With an external style sheet, you can change the look of an entire website by changing just one file!

Each HTML page must include a reference to the external style sheet file inside the <link> element, inside the head section.

Example
External styles are defined within the <link> element, inside the <head> section of an HTML page:

```
<!DOCTYPE html>
<html>
<head>
<link rel="stylesheet" href="mystyle.css">
</head>
<body>
<h1>This is a heading</h1>
<p>This is a paragraph.</p>
</body>
</html>
```

An external style sheet can be written in any text editor, and must be saved with a .css extension.

The external .css file should not contain any HTML tags.

Here is how the "mystyle.css" file looks:

"mystyle.css"

```
body {
  background-color: lightblue;
}

h1 {
  color: navy;
  margin-left: 20px;
}
```

Internal CSS

An internal style sheet may be used if one single HTML page has a unique style.

The internal style is defined inside the <style> element, inside the head section.

Example

Internal styles are defined within the <style> element, inside the <head> section of an HTML page:

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
  background-color: linen;
}
h1 {
  color: maroon;
  margin-left: 40px;
}
</style>
</head>
<body>
<h1>This is a heading</h1>
<p>This is a paragraph.</p>
</body>
</html>
```

Inline CSS

An inline style may be used to apply a unique style for a single element.

To use inline styles, add the style attribute to the relevant element. The style attribute can contain any CSS property.

Example

Inline styles are defined within the "style" attribute of the relevant element:

```
<!DOCTYPE html>
<html>
<body>
<h1 style="color:blue;text-align:center;">This is a heading</h1>
<p style="color:red;">This is a paragraph.</p>
</body>
</html>
```

14. What is embedded style sheets?

Embedded Stylesheet: It allows you to define styles for a particular HTML document as a whole in one place. This is done by embedding the **<style></style>** tags containing the CSS properties in the head of your document. Embedded style sheets are particularly useful for HTML documents that have unique style requirements from the rest of the documents in your project. However, if the styles need to be applied across multiple documents, you should link to an external style sheet instead of using individual embedded style sheets. Using embedded stylesheets holds a distinct advantage over inline styles which only allow you to address one HTML element at a time.

Syntax: The CSS syntax for embedded style sheets is exactly the same as other CSS code, apart from the fact that it is now wrapped within the <style></style> tags. The <style> tag takes the 'type' attribute that defines the type of style sheet being used (ie. text/CSS).

Example 1: Below is an HTML document with the CSS styling for the entire web page enclosed within the <style></style> tags. These properties would be applied to all corresponding elements in the HTML document.

```
<!DOCTYPE html>
<html>

<head>
   <title>Page Title</title>

   <!-- Embedded stylesheet -->
   <style>
      h2 {
         font-size: 1.5rem;
         color: #2f8d46;
         text-align: center;
      }

      p {
         font-variant: italic;
      }
   </style>
</head>
```

```
<body>
   <h2>Welcome To GFG</h2>
   <p>This document is using an embedded stylesheet!</p>
   <p>This is a paragraph</p>
   <p>This is another paragraph</p>
</body>

</html>
```

15. What are the external style sheets?

The external style sheet is generally used when you want to make changes on multiple pages. It is ideal for this condition because it facilitates you to change the look of the entire web site by changing just one file.

It uses the <link> tag on every pages and the <link> tag should be put inside the head section.

Example:

```
<head>
<link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
```

The external style sheet may be written in any text editor but must be saved with a .css extension. This file should not contain HTML elements.

Let's take an example of a style sheet file named "mystyle.css".

File: mystyle.css

```
body {
    background-color: lightblue;
}
h1{
    color: navy;
    margin-left: 20px;
}
```

16. What are the advantages and disadvantages of using external style sheets?

The advantages of External Style Sheets are as follows :

- With the help of External Style Sheets, the styles of numerous documents can be organized from one single file.
- In External Style Sheets, Classes can be made for use on numerous HTML element types in many forms of the site.
- In complex contexts, Methods like selector and grouping can be implemented to apply styles.

The disadvantages of External Style Sheets are as follows :

- An extra download is essential to import style information for each file.
- The execution of the file may be deferred till the external style sheet is loaded.
- While implementing style sheets, we need to test Web pages with multiple browsers in order to check compatibility issues.

17. What is the meaning of the CSS selector?

CSS selectors are used to "find" (or select) the HTML elements you want to style.

We can divide CSS selectors into five categories:

- Simple selectors (select elements based on name, id, class)
- Combinator selectors (select elements based on a specific relationship between them)
- Pseudo-class selectors (select elements based on a certain state)
- Pseudo-elements selectors (select and style a part of an element)
- Attribute selectors (select elements based on an attribute or attribute value)

18. What are the media types allowed by CSS?

Media types:

Media types describe the general category of a device. Except when using the not or only logical operators, the media type is optional and the all type is implied.

all - Suitable for all devices.

print - Intended for paged material and documents viewed on a screen in print preview mode. (Please see paged media for information about formatting issues that are specific to these formats.)

screen - Intended primarily for screens.

19. What is the rule set?

A rule set is a collection of one or more rules. You can associate the rule set with a realm authorization, factor assignment, command rule, or secure application role. The rule set evaluates to true or false based on the evaluation of each rule it contains and the evaluation type (All True or Any True).

Each (valid) declaration block is preceded by one or more comma-separated **selectors**, which are conditions selecting some elements of the page. A selector list and an associated declarations block, together, are called a **ruleset**, or often a **rule**.

A CSS ruleset (or rule) is visualized in the diagram below.