HTML5

1. Ways to reduce the load time of a web application

There are quite a lot of ways you can reduce load time:
• Enable browser caching
• Optimize images
• Minify resources
• Minimize HTTP Requests
• Reduce redirects

2. optimize a website’s assets

There are several ways to do this, for example: file concatenation, file compression, CDN Hosting, offloading assets, refining code etc.

3. "Web development" and "Web design".

Web development includes a lot of processes, and Web Design is part of it. Web design is used to represent page layouts and graphical user interface. Web development is a wider term to mean planning, coding, testing, debugging etc.

4. What web browser do you use?

Because web developers should be familiar with all browsers in terms of testing their web projects the best answer here is: All of them.

5. HTML5 , UTF-8, VIEWPORT

HTML stands for HyperText Markup Language. It is the most popular markup language for creating websites that can be viewed in a web browser.

The <!DOCTYPE html> declaration defines that this document is an HTML5 document
The <html> element is the root element of an HTML page
The <head> element contains meta information about the HTML page
The <title> element specifies a title for the HTML page
The <body> element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

UTF-8 is encoding, encoding is how the unicode numbers are translated in binary to be stored in the system.

The viewport is the part of the webpage that the user can currently see. The scrollbars move the viewport to show other parts of the page.
<meta name="viewport" content="width=device-width, initial-scale=1.0">
The width=device-width part sets the width of the page to follow the screen-width of the device
The initial-scale=1.0 part sets the initial zoom level when the page is first loaded by the browser.

6. HTML elements and tags?

HTML elements communicate to the browser how to render text. When surrounded by angular brackets <> they form HTML tags, which come in pairs and surround text.

7. DOCTYPE

The <!DOCTYPE html> declaration defines that this document is an HTML5 document.
The term DOCTYPE means Document Type Definition and tells the browser which type of HTML is used on a webpage. Browsers use DOCTYPE to determine how to render a page. Failing to use DOCTYPE will load your page in Quirks Mode.

8. bulleted list and numbered list?

Bulleted lists use the <ul> tag, which stands for “unordered,” whereas <ol> is used to create an ordered list.

9. HTML and HTML5?

HTML was a simple language for laying out text and images on a webpage, whereas HTML5 can be viewed as a development platform that does what HTML does and more, including better support for audio, video, and interactive graphics. It has a number of new elements, supports offline data storage for applications, and has more robust exchange protocols.

10. cookies, sessionStorage, and localStorage.

Cookies are small text files that websites place in a browser for tracking or login purposes,
Local storage: local storage is used to store some data in browser's memory permanently until you manually delete or clear the browser's history
Session Storage: stores data temporarily until the browser gets closed.

11. new APIs that come standard with HTML5?

Among others: Media API, Text Track API, Application Cache API, User Interaction, Data Transfer API, Command API, and the History API.

12. create links to sections on the same page?

Links can be created using the <a> tag, with referencing through the use of the # symbol. For example, we can have: BACK TO TOP

13. UI/UX Developer? What does he do?

UI/UX – User Interface/ User Experience, and the developer has to work for better User Interaction with functionality. The focus is to provide a better interface for a user through front-end coding.

14. XHTML, html4, and html5? Which one do you use typically?

XHTML was the cleaner and stricter version of HTML-4. Whereas HTML5 is the latest, smartest, and fastest version of HTML.

Html is a hypertext markup language whereas XHTML is an extensible hypertext markup language. Both languages are used to create web pages. XHTML is XML based while HTML is SGML based. Compared to HTML, XHTML is strict and does not allow the users to get away with the lapses in coding and structures.

File extensions of HTML: .html, .htm
File extensions of XHTML: .xhtml, .xht, .xml, .html, .htm.

15. Hypertext link?

A hypertext link is a special tag that links one page to another page or resource. If you click the link, the browser jumps to the link's destination.

16.TABLES

A table is an arrangement of information or data, typically in rows and columns, or possibly in a more complex structure.

Below tags are used to make a table
<table> for wrapping table
<tr> create a table row that stores data elements
<th> represent the table heading
<td> represents a column in a row

Can I nest tables within tables?
Yes, a table can be embedded inside a cell in another table.

17. FORMS

Form tag used to group up the input element so that we can submit
Forms are used to collect information from the user

action - link path - destination path
get - not secure, we can't large data files
post - secure

The basic syntax for a form is: <FORM ACTION="[URL]">...</FORM>
When the form is submitted, the form data is sent to the URL specified in the ACTION attribute. This URL should refer to a server-side (e.g., CGI) program that will process the form data. The form itself should contain

* at least one submit button (i.e., an <INPUT TYPE="submit" ...> element),
* form data elements (e.g., <INPUT>, <TEXTAREA>, and <SELECT>) as needed, and
* additional markup (e.g., identifying data elements, presenting instructions) as needed.

18. create a link that opens a new window

<a target="_blank" href=...> opens a new, unnamed window.
<a target="example" href=...> opens a new window named "example",

19. How do I let people download a file from my page?

Once the file is uploaded to the server, you need only use an anchor reference tag to link to it. An example would be:
Download Foo Now! (100kb ZIP)

20. How do I keep people from stealing my source code and/or images?

Because copies of your HTML files and images are stored in a cache, it is impossible to prevent someone from being able to save them onto their hard drive. If you are concerned about your images, you may wish to embed a watermark with your information into the image.

21. display an image on my page

Use an IMG element. The SRC attribute specifies the location of the image. The ALT attribute provides alternate text for those not loading images. For example:
<img src="logo.gif" alt="ACME Products">

22. My hyperlink or image is not displaying correctly, what is wrong with it?

Ans. It could be any number of things, but the most common mistakes are leaving out a tag bracket or quote missing for href, src, or alt text may be the issue. You should also verify the link itself.

23. responsive website?

Ans: Any website that means to be responsive, when it fits any system screen resolution device types, looks good at any size, and understandable to the user.

24. inline, inline-block and block

Basically, a block element will take up the whole width available, and comes with a line break before and after. Examples of block level elements are: headings (i.e <h1>), paragraphs (<p>), divisions ( ) etc. In contrast,
inline elements take up only the space they need, and do not force line breaks. Examples of inline elements are: anchors (<a>), spans () etc.

Block: It can add margins and padding to the page.
Inline- Element: In this, you cannot add space to top and bottom paddings to the page, but you can add space to the left and right on an inline element.
Inline-block: padding and margins added on all four sides.

25. Does HTML need a compiler?

Ans: No, HTML need not have any compiler, because it is a front end language, whereas Java, C, C+ need a compiler to convert the code into machine understandable language.

26. document and window?

Ans: Window is the first thing that loads into the browser. It has properties like inner width, inner height, length, name.
The Document gets loaded inside the window object. It is similar to HTML, PHP, and other documents which are loaded into the browser and has properties like title, URL, cookies, etc.

27. HTML DOM

The Document Object Model (DOM) is a programming API for HTML and XML documents. It defines the logical structure of documents and the way a document is accessed and manipulated.

When a web page is loaded, the browser creates a Document Object Model of the page. The HTML DOM model is constructed as a tree of Object

28. new HTML5 markup elements?
Among several: <article>, <aside>, <bdi>, <command>, <details>, <figure>, <figcaption>, <summary>, <header>, <footer>, <hgroup>, <mark>, <meter>, <nav>, <progress>, <ruby>, <rt>, <section> and <time>.

29. <b> vs tag and <i> vs tag?

<b> is a presentational element used to give a bolder look to text. Whereas gives a bolder look and strong importance in search results.
<i> is a presentational element used to give italic look to text. Whereas gives italic look and emphasis in search results.

30. Canvas and SVG

Canvas used to create graphics in web pages by using javascript
Canvas has several methods for drawing paths, boxes, circles, text, and adding images.

Draw Circular Gradient

```
<canvas id="myCanvas" width="200" height="100" style="border:1px solid #d3d3d3;">
Your browser does not support the HTML canvas tag.</canvas>
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");
// Create gradient
var grd = ctx.createRadialGradient(75,50,5,90,60,100);
grd.addColorStop(0,"red");
grd.addColorStop(1,"white");
// Fill with gradient
ctx.fillStyle = grd;
ctx.fillRect(10,10,150,80);
</script>
```

SVG: The Scalable Vector Graphics (SVG) is an XML-based image format that is used to define two-dimensional vector-based graphics for the web. Unlike raster images (Ex .jpg, .gif, .png, etc.), a vector image can be scaled up or down to any extent without losing the image quality.

```
<svg width="300" height="200">
   <circle cx="150" cy="100" r="70" style="fill:lime; stroke:black; stroke-width:3;" />
</svg>
```

Canvas loses its quality if zoom is increased but svg is not

31. used tools to debug any page have issues

We use chrome, firefox and firebug Devtools as they are browser inbuilt. But W3C Validation is the best HTML Debugging tool.

32. API (Application program interface)

It is a set of protocols that provides blocks for computer programmers and web developers to build software applications. It allows developers to build web pages.

33. Debugging

Debugging involves locating and correcting code errors in a computer program that has thousands of lines of code. debugging corrects the code errors.

34. Semantic Elements

Engine Optimization.
Semantic elements = elements with a meaning.
A semantic element clearly describes its meaning to both the browser and the developer.
Examples of non-semantic elements: and - Tells nothing about its content.
Examples of semantic elements: <form>, <table>, and <article> - Clearly defines its content.

New Semantic Elements
Semantic elements : header, nav, section, article, aside, and footer
Form controls : calendar, date, time, email, url and search
Media tags : audio, video, and canvas

35. Data attributes

Data attributes used to store custom data directly inside html tags so they are easily accessible from the css and js.

35. What is web accessibility?

Web accessibility means to provide access to the website for differently-abled and disabled persons. So that disabled persons can understand, navigate, and interact with the web easily.

36. Geo Location

Geolocation api used to locate user position

37. Common Lists

HTML Lists are used to specify lists of information. All lists may contain one or more list elements. There are three different types of HTML lists:

Ordered List or Numbered List (ol)
Aries
Bingo

Unordered List or Bulleted List (ul)
Aries
Bingo
Leo

Description List or Definition List (dl)
<dl> tag defines the start of the list.
<dt> tag defines a term.
<dd> tag defines the term definition (description).

```
<dl>
  <dt>Aries</dt>
  <dd>-One of the 12 horoscope sign.</dd>
  <dt>Bingo</dt>
  <dd>-One of my evening snacks</dd>
</dl>
```

39. Empty elements

Html elements with no content are called empty elements :
 <hr> etc.

40. Span tag

Can be used for adding color on text, background on text etc.

41. IFRAME

An HTML iframe is used to display a web page within a web page

42. Microdata

Microdata is set of additional html tags for specifying the additional information to help search engines read your site properly

43. What is difference between div and span in Html

44. What is semantic tags and non semantic tags in Html

45. What is difference between html and html5

46. What is Iframe tag in Html5

47. What are the formatting tags in html

48. What is attribute in html

BEM Methodology

Block — A standalone component which can be used multiple times across a site. Examples: a container, form, or navigation bar.

Element — A child of a BEM block. Examples: a button that is only ever a child of a form block, a header which is only ever a child of a container block.

Modifier — Any specific visual detail or style to a BEM element. Example: two buttons, one with a dark modifier which is black, and one with a light modifier which is white.

```
<element class="block__element--modifier"></element>
```

```
<div class="composition">
   <img class="composition__photo composition__photo--p1">
   <img class="composition__photo composition__photo--p2">
   <img class="composition__photo composition__photo--p3">
</div>
```

```
.composition{
   position:relative;
   &__photo{
      width: 56%; position: absolute; border: 5px solid black;
      height: 200px;
    &--p1{left: 0; top: 0;}
```

```
    &--p2{ right: 0; top: 2rem; }
    &--p3{ left: 20%; top: 10rem;}
    &:hover{
      transform: scale(1.05) translateY(-.5rem)
    }
  }
  &:hover &__photo:not(:hover){
    transform: scale(.95)
  }
}
```

CSS3

1. ways to apply CSS styles to a web page?

CSS can be applied in the following three ways:
Linked: Create a separate .css file and add all the styles for the web page there. Make sure the file is linked to the HTML document(s) using the link tag
Embedded: Inside the HTML document, open a style tag and inside that, add all styles just like you'd do on a linked file.
Inline: This is done by adding a style attribute inside an HTML element.

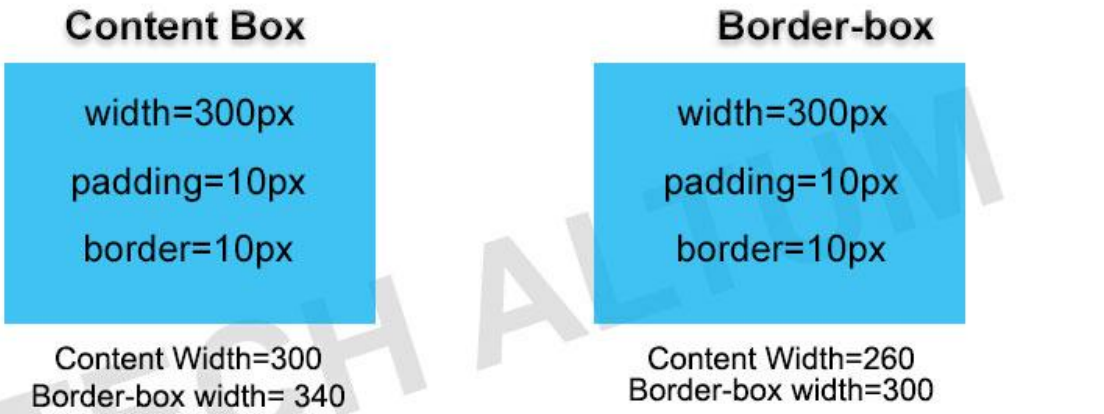
2. CSS box model.

The CSS box model is made up of margins, borders, padding, and content. The box model provides a more structured way to space elements in relationship to each other in web pages. In your browser's developer tools, the CSS box model is found at the end of the CSS section

CSS Box Sizing
The CSS box-sizing property allows us to include the padding and border in an element's total width and height.

Box-sizing content-box considers width equals to content width. Adding border and padding can increase the size of the box.

Box-sizing border-box considers width equal to the total border-box. Adding border and padding will not change the size of the box.



Margin Collapse in CSS: What, Why, and How

Top and bottom margins of elements are sometimes collapsed into a single margin that is equal to the largest of the two margins.
Only one type of margin can collapse Vertical (top and bottom). Margin collapse never applies to horizontal (left and right) margins.

https://medium.com/@joseph0crick/margin-collapse-in-css-what-why-and-how-328c10e37ca0

```
h1 {
  margin: 0 0 50px 0;
}

h2 {
  margin: 20px 0 0 0;
}
```

In this example the h1 element has a bottom margin of 50px and the h2 element has a top margin of 20px. So, the vertical margin between h1 and h2 should have been 70px (50px + 20px). However, due to margin collapse, the actual margin ends up being 50px.

3. CSS vs CSS3

Cascading Style Sheets (CSS) is a stylesheet language used to describe the presentation of a document written in HTML or XML
CSS describes how elements should be rendered on screen, on paper, in speech, or on other media.
CSS3 is the latest version of CSS.
CSS3 provides JavaScript and mobile development features with additional features such as transitions, transformations, gradients, animations, responsive design and more.
CSS3 supports HSL RGBA, HSLA and the gradient colors.

4. What is grouping used for in CSS?

Grouping allows several elements of HTML to have the very same styles applied. It uses a single declaration and selectors and is separated by commas. For example:
h1, h2, .my-class { font-weight: light;}

5. Class selector and how does it differ from an ID selector?

Class selectors are used to apply style to multiple HTML elements identified with the same class. Class selectors are called within the CSS document by a ‘.’, followed by the class name, like this:
.class { color: black; }

The difference between classes and IDs is that an HTML element can accept multiple classes, but only one ID. That means IDs are unique for HTML elements.

6. visibility: hidden and display: none?

Although these two properties seem similar, there is quite an important difference between the two:
• visibility: hidden hides the element, but it will still take up space, this way affecting the layout of the document.
• display: none also hides the element, but will not take up space, and the page will appear as if the element is not present.

7. CSS preprocessors and why do we use them?
A CSS preprocessor is a tool which allows you to create css code much faster in a more structured manner.
CSS preprocessors convert code written in a preprocessed language like SASS or LESS into the same old CSS we've been using for such a long time now. The main advantages of using preprocessors are:
• Ability to define variables
• Ability to use nested syntax
• Ability to create and use mixins (functions)
• Use of mathematical and operational functions,
However, there are also some disadvantages like updating issues and debugging difficulties.

8. child selectors in CSS?

Child selectors represent a way of grouping (for styling) a set of elements that descend from a parent element. Example
section > span { background-color: #eee; }

9. What are grid systems and why do we use them in web pages?

Grid systems are structured rules that enable content to be stacked horizontally and vertically in a consistent and sustainable way. They find heavily usage in today's websites because they offer increased productivity while coding, they're versatile and ideal for responsive layouts

10. shorthand properties

Shorthand properties cannot be applied to any css property but only a few like: border, outline, padding, background etc. Short- hand properties reduce file size thus improving page load time. The trick stands for listing all property values on a single line, in a predefined order that must be respected. An example would be:

```
div {
background-color: #ccc; background-image: url("img.png"); background-repeat: no-repeat;
background-position: right top;
}
```
This would be exactly the same as:
```
div { background: #ccc url("img.png") no-repeat right top; }
```

11. z-index

The z-index property specifies the stack order of an element within the document area (or a part of it). An element with greater stack order will always be in front of an element with a lower stack order. However, z-index only works on positioned elements (position:absolute, position:relative, or position:fixed).

12.new CSS properties introduced with CSS3?

The following is a list of new properties added in CSS3:
- border-radius
- box-shadow
- text-shadow
- text-stroke
- background-size
- text-overflow
- resize
- transition

13. pseudo-classes are and their usage.

Pseudo classes are used to define a special state of an element. Do note that pseudo classes are not defined in the markup. They can be used for:
- Styling an element on mouse over (hover)
- Styling an element when it gets focus
- Styling visited/unvisited links

:focus represents the state when the element is currently selected to receive input and :active represents the state when the element is currently being activated by the user.

:focus is when an element is able to accept input - the cursor in an input box or a link that has been tabbed to. :active is when an element is being activated by a user - the time between when a user presses a mouse button and then releases it.

14. What is the CSS selector which allows you to target every element in a web page?

Called the universal selector and signed with an asterisk (*), it sets all HTML elements the same styling rules as defined in the property declarations. For example:

* { margin: 0; padding: 10px; }

15. Position property

Position specifies where exactly the element has to appear.
Absolute : it displays the element exactly in specified position
X and y coordinates calculated from the browser
Relative : just like absolute , x and y coordinates calculated from previous element
Fixed : same as absolute , when we scroll webpage fixed element will not be scrolled, appears in fixed position

16. Media queries

Media query is a css technique introduced in css3 it uses @media rule to include a blocks of Css properties only if the condition is true.

```
.class{
  @media only screen and (max-width: 1024px) and (orientation: portrait) {

  }
}
```

17. CSS SELECTORS

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

i. Simple selectors (select elements based on name, id, class)

ii. Combinator selectors (select elements based on a specific relationship between them)
descendant selector (space)
child selector (>)
adjacent sibling selector (+)
general sibling selector (~)

iii. Pseudo-class selectors (select elements based on a certain state)

A pseudo-class is used to define a special state of an element

a:hover MUST come after

a:link and a:visited in the CSS definition in order to be effective!

a:active MUST come after a:hover in the CSS definition in order to be effective!

Pseudo-class names are not case-sensitive.

iv. Pseudo-elements selectors (select and style a part of an element)

A CSS pseudo-element is used to style specified parts of an element.

For example, it can be used to:

Style the first letter, or line, of an element

Insert content before, or after, the content of an element

v. Attribute selectors (select elements based on an attribute or attribute value)

The [attribute] selector is used to select elements with a specified attribute.

```
a[target] { background-color: yellow; }
```

The [attribute="value"] selector is used to select elements with a specified attribute and value.

```
a[target="_blank"] { background-color: yellow; }
```

The [attribute~="value"] selector is used to select elements with an attribute value containing a specified word.

```
[title~="flower"] { border: 5px solid yellow; }
```

The [attribute|="value"] selector is used to select elements with the specified attribute starting with the specified value.

```
[class|="top"] { background: yellow; }
```

The [attribute^="value"] selector is used to select elements whose attribute value begins with a specified value.

```
[class^="top"] { background: yellow; }
```

The [attribute$="value"] selector is used to select elements whose attribute value ends with a specified value.

```
[class$="test"] { background: yellow; }
```

The [attribute*="value"] selector is used to select elements whose attribute value contains a specified value.

```
[class*="te"] { background: yellow; }
```

The attribute selectors can be useful for styling forms without class or ID:

```
input[type="text"]   {width: 150px; display: block }
input[type="button"] {width: 120px; display: block; }
```

Selector	Example	Example description
[attribute]	[target]	Selects all elements with a target attribute
[attribute=value]	[target=_blank]	Selects all elements with target="_blank"
[attribute~=value]	[title~=flower]	Selects all elements with a title attribute containing the word "flower"
[attribute|=value]	[lang|=en]	Selects all elements with a lang attribute value starting with "en"
[attribute^=value]	a[href^="https"]	Selects every <a> element whose href attribute value begins with "https"
[attribute$=value]	a[href$=".pdf"]	Selects every <a> element whose href attribute value ends with ".pdf"
[attribute*=value]	a[href*="w3schools"]	Selects every <a> element whose href attribute value contains the substring "w3schools"

18. ellipsis for line limit

The line-clamp property truncates text at a specific number of lines.

```
p{
    overflow: hidden;
   text-overflow: ellipsis;
   -webkit-line-clamp: 1;
   display: -webkit-box;
   -webkit-box-orient: vertical;
}
```

19. GRID & FLEXBOX

The basic difference between CSS Grid Layout and CSS Flexbox Layout is that
flexbox was designed for layout in one dimension - either a row or a column.
Grid was designed for two-dimensional layout - rows, and columns at the same time

The Flexbox layout module has many properties that control the layout and position of the elements.

The grid system is responsive, and the columns will re-arrange automatically depending on the screen size.

20. Linear Gradients & Radial Gradients

CSS gradients let you display smooth transitions between two or more specified colors.

Linear Gradients
With this type of gradient, the color transition can take place left, right, up, down, and diagonally.
background-image: linear-gradient(direction, color-stop1, color-stop2, ...);
background-image: linear-gradient(to right, rgba(255,0,0,0), rgba(255,0,0,1));

Radial Gradients (defined by their center)
background-image: radial-gradient(shape size at position, start-color, ..., last-color);
background-image: radial-gradient(circle, red, yellow, green);

21. Specificity Hierarchy

Every selector has its place in the specificity hierarchy.
There are four categories which define the specificity level of a selector:

i . Inline styles - An inline style is attached directly to the element to be styled. Example: <h1 style="color: #ffffff;">.
ii . IDs - An ID is a unique identifier for the page elements, such as #navbar.
iii . Classes, attributes and pseudo-classes - This category includes .classes, [attributes] and pseudo-classes such as :hover, :focus etc.
iv . Elements and pseudo-elements - This category includes element names and pseudo-elements, such as h1, div, :before and :after.

22. How do floats work?

Ans: It pushes the element to the right or left. Float property has four values, and they are inherited, left, right and none.

23. Margin & padding

Margin property specifies margin (gap) between elements to elements surrounding the element
Padding property specifies padding (gap) between border and content of the element

24. Normalize css vs Resetting

Normalize is correction of some common bugs
Resetting removes all native styles provided by browser

25. CSS Animations

CSS allows animation of HTML elements without using JavaScript or Flash!
An animation lets an element gradually change from one style to another.

The @keyframes rule specifies the animation code. The animation is created by gradually changing from one set of CSS styles to another. During the animation, you can change the set of CSS styles many times. ... 0% is the beginning of the animation, 100% is when the animation is complete.

```
div {
  width: 100px; height: 100px; background-color: red; position: relative;
  animation: myfirst 5s linear 2s infinite alternate;
}

@keyframes myfirst {
  0%   {background-color:red; left:0px; top:0px;}
  25%  {background-color:yellow; left:200px; top:0px;}
  50%  {background-color:blue; left:200px; top:200px;}
  75%  {background-color:green; left:0px; top:200px;}
  100% {background-color:red; left:0px; top:0px;}
}
```

26 . Image Sprites

An image sprite is a collection of images put into a single image. A web page with many images can take a long time to load and generates multiple server requests. Using image sprites will reduce the number of server requests and save bandwidth.

background: url(img_navsprites.gif) 0 0; - Defines the background image and its position (left 0px, top 0px)

```
<ul id="navlist">
  <li id="home"><a href="default.asp"></a></li>
</ul>

#navlist {  position: relative;}
#navlist li {margin: 0; padding: 0; list-style: none; position: absolute; top: 0;}
#navlist li, #navlist a {height: 44px; display: block;}
#home {left: 0px; width: 46px; background: url('img_navsprites_hover.gif') 0 0;}
#home a:hover {background: url('img_navsprites_hover.gif') 0 -45px;}
```

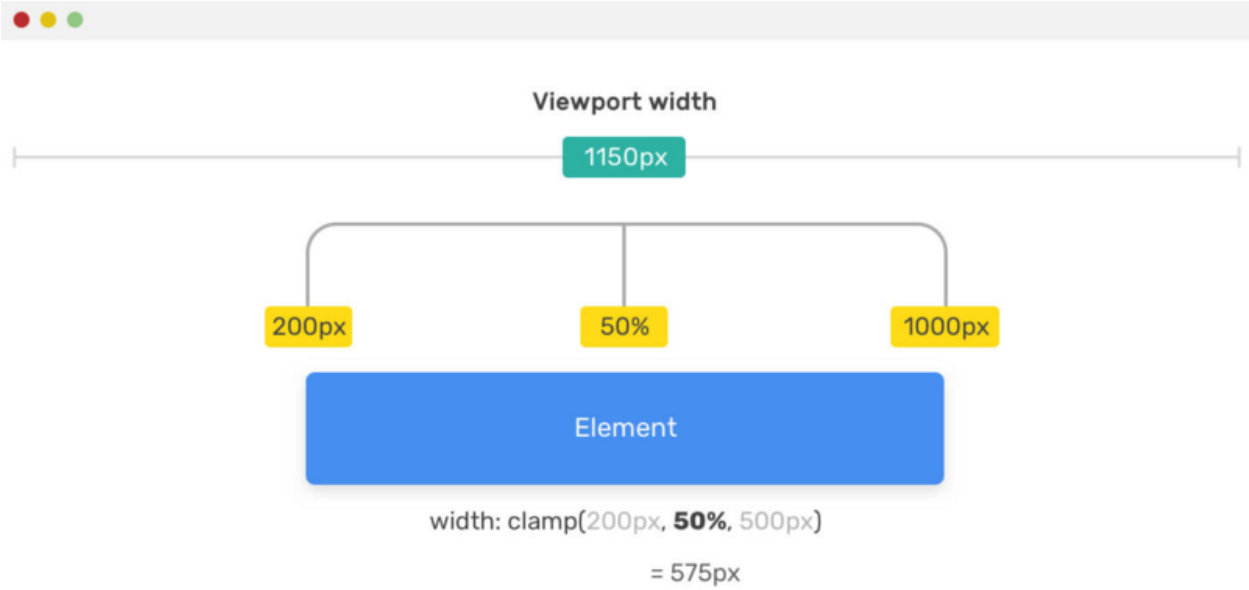
27 . 2D Transforms Methods

CSS transforms allow you to move, rotate, scale, and skew elements.
transform property you can use the following 2D transformation methods:

- translate()
- rotate()
- scale()
- skew()
- matrix()

```
transform: translate(50px, 100px);
```

28. min (), max (), clamp () in CSS



The above calculation process is as follows:

The width will never be less than 200px
The width will not exceed 1000px

```
/* Setting clamp property of heading */
@supports (font-size: clamp(16px, 5vw, 34px)) {
    h1 {
          font-size: clamp(16px, 5vw, 34px); [321 * 5% = 16.5px]
```

```
        }
}

/* Setting clamp property of box */
.box {
    width: clamp(150px, 50%, 400px);
    height: 8rem; padding: clamp(10px, 5vw, 50px);
    background: #5f76e8;
}
```

the h1 font-size value will be 4% of the viewport width. But only if that value is bigger than 2rem and smaller than 4rem.

29. Css Units

CSS has several different units for expressing a length.

There are two types of length units: absolute and relative.

The absolute length units are fixed and a length expressed in any of these will appear as exactly that size.

px *	pixels (1px = 1/96th of 1in)
cm	centimeters
mm	millimeters
in	inches (1in = 96px = 2.54cm)
pt	points (1pt = 1/72 of 1in)
pc	picas (1pc = 12 pt)

Relative length units specify a length relative to another length property. Relative length units scale better between different rendering medium.

em	Relative to the font-size of the element (2em means 2 times size of the current font)
rem	Relative to font-size of the root element
vw	Relative to 1% of the width of the viewport*
vh	Relative to 1% of the height of the viewport*
%	Relative to the parent element
ex	Relative to the x-height of the current font (rarely used)
ch	Relative to the width of the "0" (zero)
vmin	Relative to 1% of viewport's* smaller dimension
vmax	Relative to 1% of viewport's* larger dimension

Examples :

 .

```
div { font-size: 30px;}
span {font-size: 0.5em;} 0.5 * 30 = 15px
span {font-size: 2em;} 2 * 30 = 60px;

html { font-size:16px; }
div { font-size: 3rem; }
```

31. What is difference between PX,unit,em,rem in css

32. What are breakpoints for viewport responsive device

33. Why we use box-sizing in css

SASS-SCSS - Installation

Create a project folder
mkdir projectname
Create index file : cd projectname > touch index.html
Create css folder : mkdir css > touch style.css

Install scss
sudo apt install nodejs
npm init : creates package.json
npm install node-sass --save-dev

Create sass files
../mkdir sass > cd sass > touch main.scss (sasy css)

Compile scss to css :: package.json

```
"scripts": {
  "compile:sass" : "node-sass sass/main.scss css/style.css -w"
},
```

sass > npm run compile:sass

Description: Sass stands for Syntactically Awesome Stylesheet

Sass provides two distinct syntax: SASS and SCSS
Sass: Sass stylesheets use Ruby like syntax with no braces, no semicolons and a strict indentation. In Sass, the variable sign is ! instead of $ and assignment sign is = instead of :.
Ex: !primary-color= pink

SCSS provides the CSS friendly syntax to close the gap between Sass and CSS. SCSS is called Sassy CSS.

```
$primary-color: hotpink;
@mixin border-radius($radius) { -webkit-border-radius: $radius;}
.my-element { color: $primary-color; width: 100%;  }
.my-other-element { @include border-radius(5px);  }
```

The @mixin directive lets you create CSS code that is to be reused throughout the website

The @include directive is created to let you use (include) the mixin.
Sass : Imports

Create scss files and import into main.scss
sass > abstracts > _variables.scss, _mixins.scss ...etc

```
@import "abstracts/variables";
@import "abstracts/mixins";
@import "abstracts/functions";
@import "abstracts/typography";
```

__variables.scss

```
$font-stack:    Helvetica, sans-serif;
$primary-color: #333;
body {
  color: $primary-color;
}
```

__mixins.scss

```
@mixin border-radius($radius) {
    -webkit-border-radius: $radius;
       -moz-border-radius: $radius;
        -ms-border-radius: $radius;
            border-radius: $radius;
}
.box { @include border-radius(10px); }

@mixin bordered($color, $width: 2px) {
    color: #77C1EF;
    border: $width solid black;
    width: 500px;
}
```

```
.style  {
    @include bordered($color:#77C1EF, $width: 5px);
}
```

Sass Inheritance/ Extend

@extend is used to share a set of CSS properties from one selector to another. It is a very important and useful feature of Sass.

```
.message {
    border: 1px solid #ccc;
    padding: 10px;
    color: #333;
}
.success {
    @extend .message;
    border-color: green;
}
```

LESS (Leaner Style Sheets) - Installation

With node js

npm install -g less
lessc styles.less styles.css

Or include in html file

<link rel="stylesheet/less" type="text/css" href="styles.less" />
<script src="https://cdn.jsdelivr.net/npm/less@4.1.1" ></script>

Description
Less is an extension of CSS. It is also known as a CSS preprocessor.
Less is a CSS preprocessor that facilitates you to customize, manage and reuse the style sheets for the web page. Less is an extension of CSS and a dynamic stylesheet language which can be run on client side or server side.

Less and SASS both are examples of CSS preprocessors because both are compiled and produce CSS syntaxes that are read by the web browser.

```
@clr_black: #000;
@clr_white: #FFFFFF;
@clr_yellow: #F3A828;

.flex_wrap(@argument){
    -webkit-flex-wrap: @argument;  // for Safari/Chrome.
    -moz-flex-wrap: @argument;  // mozilla browser
    -ms-flex-wrap: @argument;  // Internet Explorer 10 // edge
    -o-flex-wrap: @argument; // Opera
    flex-wrap: @argument;
}
.clear {
  &:after {
    content: " ";clear: both;
```

```
    display: block; height: 0;
  }
}
```

POSTCSS

npm i postcss -D

npm i gulp -g
npm init -y
npm i gulp gulp-postcss -D

GIT & GitHub

Git : Version Control System (VCS) for tracking changes in computer files

Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Store versions in a project history in just one directory
Go back to any version of project any time we wanted to
Work on new features without messing up the main codebase
Easily collaborates with other programmers

GitHub :
Github is a code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere.

Create and use a repository
Start and manage a new branch
Make changes to a file and push them to GitHub as commits
Open and merge a pull request

==========
Distributed Version control
Coordinates work between multiple developers
Who made what changes and when
Revert back at any time
Local & remote repos

Concepts of Git:

Keeps track of code history
Takes 'snapshots' of your files
You decide when to take a snapshot by making a 'commit'
You can visit any snapshot at any time
You can stage files before committing

Basic Commands

$ git init => initialize local git repository

$ git add <file> => add files to index
$ git status => check status of working tree
$ git commit => committed changes in index
$ git push => push to remote repository
$ git pull => pull latest from remote repository
$ git clone => clone repository into a new Directory
$ git rm --cached index.html => removes file
$ git add *.html => adds multiple files with same extension
$ git add . => adds all the files at the same time
$ git checkout login => creates new branch & navigate to required branch
$ git merge login => merges branches together

:wq

Steps:

Create project folder with index files and add code in html file

Open git bash

$ git init
$ git config --global user.name 'test name'
$ git config --global user.email 'email address'
$ git add index.html // Make changes and commit
$ git commit -m 'changes 1'
$ git remote add origin https://github.com/.../pro0.git
$ git push origin master

Create new branch

git checkout -b new-branch
Update the content and add then commit
git add, git commit,
git push origin new-branch

merge new-branch with master

git branch master
git merge login
git push origin master

Github

create a new repository
git branch -M main
git remote add origin https://github.com/.../pro0.git
git push origin master

push an existing repository
git remote add origin https://github.com/.../pro0.git
git branch -M main
git push -u origin main

Usage: Existing branches

$> git branch
main
another_branch
feature_inprogress_branch
$> git checkout feature_inprogress_branch

Scenarios in which we can use github

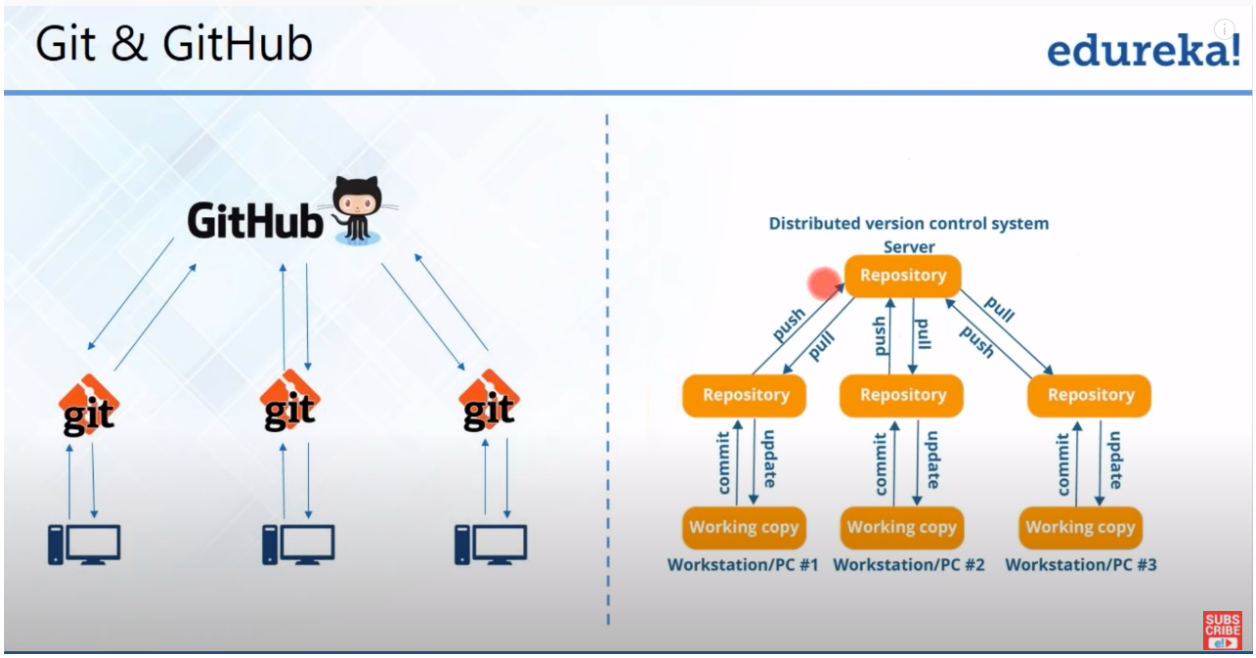
1. New project

Initialise Repository
Commit
Config git
Add remote
Push
Github account credential
If required, push again

2. Existing Project

Make changes
Commit
Push

Screens



Collaboration

OWNER GIVES COLLABORATOR ACCESS TO THEIR REPO.
Go to your GitHub repo
Add a file called “tenlines.txt” and put the text from the etherpad into the file. Commit your changes.
Click on the Settings tab.
Manage access
$ git clone URL-of-Origin-Repo Directory-Address-of-Local-Repo

git init
git remote -v
git remote add origin "pasturl"
git remote -v
git status
git pull origin master

git add .
git commit -m "content name"
git push origin master

https://www.datacamp.com/tutorial/git-push-pull

First Load the data into the master after creating branches to split the task

Create New Branch: git checkout -b branchName
Navigate to Branch: git checkout branchName
Check branches: git branch -a
Check files within branch: git ls-files
Check current branch: git branch

Merge Branches with master

git checkout master
git pull origin master
git merge test
git push origin master

Please enter a commit message to explain why this merge is necessary, especially if it merges an updated upstream into a topic branch.

1. **press "i" (i for insert)**
2. **write your merge message**
3. **press "esc" (escape)**
4. **write ":wq" (write & quit)**
5. **then press enter**