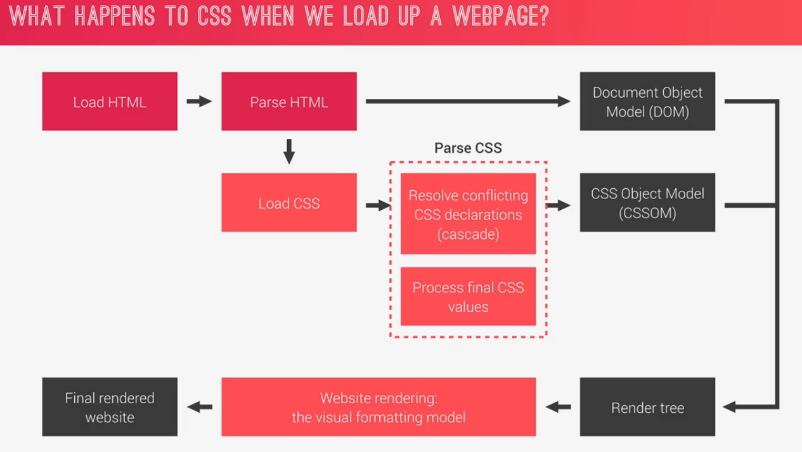
**Advanced css and sass Theory and tricks**

1. The best way to perform a basic reset using the universal selector
2. How to set project-wide font definitions
3. How to clip parts of elements using clip-path
4. The easiest way to center anything with the transform, top and left properties;
5. Alt description for images serve for SEO(Search engine optimization!!!!!!!!)
6. H1 is also important for SEO optimization. We can split the header with span and trick the SEO to pick more words for indexing the page.( ☺ )
7. How to create CSS animation using @keyframes and the animation property
8. What pseudo-elements and pseudo-classes are;
9. How and why to use the ::after pseudo-element;
10. How to create a creative hover animation effect using the transition property
11. **How CSS works?**

Three Pillars of writing Good HTML and CSS: Responsive Design, Maintainable and scalable code, Web performance

1. Responsive design: -Fluid layouts, -Media queries, -Responsive design, -Correct units, -Desktop-first vs. Mobile-first.
2. Maintainable and scalable code: -Clean, -Easy-to-understand, -Growth, -Reusable, -How to organize files, -How to name classes, -How to structure HTML.
3. Web performance: -Less HTTP requests, -Less code, -Compress code, -Use a CSS preprocessor, -Less images, -Compress images.
4. How css works behing the scenes - overview: The browser loads the HTML. -It parses the HTML and build a DOM(Document Object Model) tree. -It also loads the css liked from the HTML and parse it(Resolve conflicting CSS declarations-cascade, Process final CSS values->for different screens and percentages). After the CSS file is parses it is build into CSS Object Model(CSSOM)(similar to DOM). After all the parsing is done the browser engine takes the processed filed and makes a render tree for Website rendering: the visual formatting model(box-model, floats, positioning). Finally the website is rendered to the screen.



1. How CSS is parsed: The cascade and specificity. Terminology: a css rule is build with: selectors to select the html element; Declaration block that contains declarations, which are formed by a property and the declared value.
2. Cascade is the process of combining different stylesheets and resolving conflicts between different CSS rules and declarations, when more than one rule applies to a certain element. Sources of css: author, user(changing in browser), and Browser(the default declaration ex. A Link)
3. How the cascade conflict is resolved? Importance > Specificity > Source Order
4. Importance: 1.User !important declarations; 2.Author !important declarations; 3.Author declarations; 4.User declarations; 5.Default browser declarations;
5. Specificity: 1.Inline styles; 2.IDs; 3.Classes, pseudo-classes, attribute; 4.Elements, pseudo-elements
6. Source order: The last declaration in the code will override all other declarations and will be applied.
7. CASCADE and SPECIFICITY rules:
   1. Css declaration marked with !important have the highest priority
   2. But, only use !important as a last resource. It’s better to use correct specificityes – more maintainable code!
   3. Inline styles will always have priority over styles in external stylesheets;
   4. A selector what contains 1 ID is more specific than one with 1000 classes
   5. A selector that contains 1 class im more specific than one with 1000 elements
   6. The universal selector \* has no specificity value (0,0,0,0)
   7. Rely more on specificity than on the order of selectors
   8. But rely on order when using 3rd-party stylesheets – always put your author stylesheet last(our file)
8. Even if we use hover or other pseudo-elements it may be a problem if the specificity is higher on other css rule.
9. How css is processed: Value processing: 1.Declared value(author declarations) -> 2.Cascaded value(after the cascade) -> 3.Specified value(defaulting, if there is not cascaded value -> 4.Computed value(converting relative values to absolute) -> 5.Used value(final calculation, based on layout) -> 6.Actual value(browser and device restrications)
10. The size for text is default 16px set by the browser. If there is not value specified for some declarations the value for them is 0(ex. Padding, margin…)
11. How units are converted from relative to absolute PX
12. CSS Value Processing rules:
    1. Each property has an initial value, used if nothing is declared (and if there is no inheritance
    2. Browsers specify a root font-size for each page (usually 16px)
    3. Percentages and relative values are always converted to pixels
    4. Percentages are measured relative to their parent’s font-size, if used to specify font-size;
    5. Percentages are measured relative to their parent’s witdth, if used to specify lengths
    6. “Em” are measured relative to their parent font-size, if used to specify font-size;
    7. “Em” are measured relative to the current font-size, if used to specify lengths
    8. “rem” are always measured relative to the document’s root font-size
    9. “vh” and “vw” are simply percentage measurements of the viewport’s height and width.
13. Inheritance in CSS:
    1. Inheritance passes the values for some specific properties from parents to children – more maiontainable code
    2. Properties related to text are inherited: font-family, font-size, color
    3. Properties like margin, padding, border are not inherited
    4. The computed value of a property is what gets inherited, NOT the declared value
    5. Inheritance of a property only works if no one declares a value for that property
    6. The inherit keyword forces inheritance on a certain property
    7. The initial keyword resets a property to its initial value
14. How CSS renders a website: The visual formatting model => Algorithm that calculates boxes and determines the layout of these boxes, for each element in the render tree, in order to determine the final layout of the page.
    1. Dimensions of boxes: the box model
    2. Box type: inline, block and inline-block
    3. Positioning scheme: floats and positioning
    4. Stacking contexts
    5. Other elements in the render tree
    6. Viewport size, dimensions of images….
15. **The box Model**: Content(text, images…); Padding(transparent area around the content, inside of the box); Border(goes around the padding and the content); Margin(space between boxes); Fill area(area that gets filles with background color or background image-doesn’t contain the margin).
16. Total width = right border + right padding + specified width + left padding + left border

Total height = top border + top padding + specified height + bottom padding + bottom border

1. To solve this issue we use the box model with box-sizing: border-box =>total width = specified width and the total height = specified height
2. **Box types**: 1.inline(content is distributed in lines; Occupies only content’s space; No line-breaks; No heights and widths; Paddings and margins only horizontal-left and right)->display: inline; 2.block-level(Elements formatted visually as blocks; 100% of parent’s width; Vertically, one after another; Box-model applies as showed->display:block(display:flex, display:list-item, display:table); 3.inline-block(a mix of block and inline; Occupies only content’s space; No line-breaks, Box model applies as showed) -> display:inline-block.
3. **Position schemes**: 1.normal flow(default positioning scheme; NOT floated; NOT absolutely positioned; Elements laid out according to their source order)->default position: relative; 2.absolute positioning(Element is removed from the normal flow; No impact on surrounding content or elements; We use top bottom, left and right to offset the element from tis relatively positioned container)-> position: absolute, position:fixed) and 3.floats(Element is removed from the normal flow; Text and inline elements will wrap around the floated element; The container will not adjust its height to the element(need to use clearfix)-> float: left, float:right;
4. **Stacking context**-> z-index, but there are other declarations that can influence the stacking context: opacity, transform, a filter, other properties might create a different stacking context
5. CSS architecture, components and BEM. Maintainable and scalable code: Clean, Modular, reusable, ready for growth.
6. Architect mindset: Think(Think about the layout of your webpage or web app before writing code); Build( Build your layout in HTML and CSS with a consisten structure for naming classes); Architect(Create a logical architecture for your CSS with files and folders)
7. Thinking about the layout: Component-driven design -> Modular building blocks that make up interfaces; -Held together by the layout of the page; -Re-usable across a project, and between different projects; Independent, allowing us to use them anywhere on the page;
8. Building with meaningful class names: BEM => Block Element Modifier; BLOCK: standalone component that is meaningful on its own; ELEMNT: part of a block that has no standalone meaning; MODIFIER: a different version of a block or an element. In code: .block{}(recipe) ; .block\_\_element{}(info,title); .block\_\_element—modifier{}(round)
9. Architecting with files and folders: the 7-1 pattern: 7 different folders for partial Sass files, and 1 main Sass file to import all other files into a compiled CSS stylesheet. The 7 Folders: base/; components/; layout/; pages/; themes/; abstaracts/; vendors/.
10. How to use BEM method in practice
11. What is Sass and how does it work?
12. Sass is a CSS preprocessor, and extension of CSS that adds power and elegance to the basic language. Sass Source code ----Sass compiler---🡪Compiled css code.
13. Main Sass features:
    1. **Variables**: for reusable values such as colors, font-sizes, spacing etc.
    2. **Nesting**: to nest selectors inside of one another, allowing us to write less code
    3. **Operators**: for mathematical operation right inside of CSS
    4. **Partials and imports**: to write CSS in different files and importing them all into one single file;
    5. **Mixings**: to write reusable pieces of CSS code
    6. **Functions**: similar to mixins, with the difference that they produce a value that can than be used
    7. **Extends**: to make different selectors inherit declarations that are common to all of them
    8. **Control directives**: for writing complex code using conditionals and loops
14. We need to use clearfix when dealing with floats if the parent element hight collapses . //the after clears the float. We use it on the parent element
15. **Node.js** Allows developers to write and run JavaScript applications on the server. Developers started using node.js to also write tools to help them with local web development.
16. **NPM** is a simple command line interface that allows developers to install and manage packages on their local computers. There are all kinds of open source tools, libraries and frameworks needed for modern development. Modern web development could simply not exist without a package manager.
17. Using npm on the project: 1.npm init; npm install node-sass –save-dev(specify that we use the tool for developing-this is based on every library); if we move the project we can use “npm install” for intalling all the dependencies; npm uninstall jquery –save for uninstall the library
18. For compiling the scss file we need to define a script: “compile:sass”: “node-sass sass/main.scss css/style.css”. The browser doesn’t know that we use sass because it will use css.
19. Live-server installed globally : npm install live-server -g
20. Basic principles for responsive design: 1.**Fluid grids and layouts**(To allow content to easily adapt to the current viewport width used to browse the website. Uses % rather than px for all layout-related lengths; 2. **Flexible/Responsive Images**(Images behave differently than text content, and so we need to ensure that they also adapt nicely to the current viewport); 3.**Media Queries**( To change styles on certain viewport widths(breakpoints), allowing us to create different version of our website for different widths).
21. Layout types: Float layouts, Flexbox, CSS Grid.
22. Thing to learn: -thinking about components; -How and why to use utility classes; -How to use the background-clip property; -how to transform multiple properties simultaneously; -How to use the outline-offset property together with outline; -how to style elements that are NOT hovered while others are;
23. Using the Emmet for generating the HTML faster: “.text”-> creating a div with the class text; “section.section-about” creates a section with the class name section-about;
24. Can use outline instead of border and we can set an outline-offset to that
25. Feature section: How to include and use an icon font; Another way of creating the “skewed section” design; How and when to use the direct child selector;