Benjamin Zhuang - Week 1 Day 3

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1. What is flow?
   - Flow is the normal layout of the block and inline elements are displayed before any changes are made to their layout.
2. How are inline elements and block elements displayed in flow? Out of flow?
   - In normal flow, **inline elements** are displayed in the inline direction (a direction similar to how words are displayed in a sentence) according to the Writing Mode of the document. **Block elements** are displayed one after another (similar to making new paragraphs). In English, **inline elements** are displayed one after another, from left to right; **block elements** are displayed from top to down.
   - When out of flow, the element creates a new Block Formatting Context. We can consider this as a new mini layout. The out of flow elements positions are independent with the rest of the page, taking up their own spaces.
3. When is float useful?
   - The float property is useful when attempting to wrap inline elements around another HTML element. The most common use is for wrapping text around images.
4. What would happen if I set float:left to a block element?
   - This element is first laid out in normal flow, then taken out of flow and pushed to the left as far as possible. Any inline elements will wrap around this block element.
5. What does clear do?
   - The clear property sets whether the element should be moved below the floating element preceding the cleared element.
   - The clear property can be both applied to **floating** and **non-floating** elements. When it is applied on the **non-floating** elements, it moves the **border edge** of the element down until it is below the **margin edge** of all relevant floating elements. The **top margin** of the cleared element is collapsed.
6. How is position useful?
   - The position property is required when you need to set the top, right, bottom, left properties. We can use this property to position elements in many ways, such as absolute, relative, etc.

7. What is the difference between position:fixed and position:absolute?
    - position:fixed will offset the element relative to the viewport (i.e. the browser window).
    - Position:absolute will offset the element relative to its nearest ancestor element.
8. What does z-index do?
    - Sets the stack order of elements, whether one should be displayed on top of the other if any overlap happens.
9. What is Flexbox?
    - A flexbox is a 1-dimensional layout method for arranging elements in row or column order.
    - It makes responsive web design easier because the container will automatically shrink/expand to fill in additional spaces when the viewport size changes.
10. What is a flex container? Can you explain some flex container properties?
    - A container that is using the flexbox layout design. Set by the property display:flex.
    - Some flex container properties are,
        - Flex-direction: determines the direction of flex items.
        - Justify-content: determines the position of flex items across the **main axis** (the direction set by flex-direction).
        - Align-items: determines the position of flex items across the **cross axis**.
11. What are flex items? Can you explain some flex item properties?
    - Flex items are direct child elements of a flex container.
    - Some flex element properties are,
        - Flex-basis: sets the initial main size of a flex item
        - Flex-grow: sets the grow factor of a flex item’s main size.
        - Align-self: Overrides the align-items value for a flex item.
12. What is a Grid?
    - Grid is a 2-dimensional layout design method via placing contents across rows and columns with gaps between rows and columns (i.e. gutters).
13. What is a grid container? Can you explain some grid container properties?
    - A container that is using the grid layout design. Sets by display:grid.
    - Some grid container properties are,
        - Grid-template-columns: sets the size of each column in the grid container.
        - Grid-template-rows: sets the size of each row in the grid container.
        - Gap: sets the space between rows and columns.

14. What are grid items? Can you explain some grid item properties?
    - Grid items are direct child elements of a grid container.
    - Some grid item properties are,
        - Grid-column: sets the start and end column line for a grid item.
        - Grid-row: sets the start and end row line for a grid item.
        - Grid-template-area: sets the layout and the name of grid items.
        - Grid-area: sets the layout of grid items.
15. What are the major differences between CSS transitions and animations?
    - CSS Transitions
        - Only move from the initial to the final state, no intermediate states.
        - Requires a trigger to run.
        - Runs forwards or in reverse when the trigger is removed.
        - Can only run once.
        - Easier to use with javascript.
    - CSS Animations
        - Can have intermediate states.
        - Can be looped over.
        - Can run in any direction (forward, reverse, or alternate direction).
        - Can run with or without a trigger.
        - More difficult to use with javascript but can be achieved with other animation libraries such as animation.js
16. What is responsive web design (RWD)? What are some examples of RWD on a website? How do we achieve this?
    - It is an approach to use HTML & CSS to create a great website UI across all screen sizes.
    - For example, suppose we are on a movie website. We might use vertical scrolls and layouts to adapt to smaller devices, such as mobile and small tablet devices. We might use a grid layout and vertical scrolls for displaying the movies on a larger device, such as a large tablet or laptop.
    - We can implement responsive web design with flexbox, grid, relative sizing for font size (rem, em) and the sizes for elements (%, vw, vh), or media queries and implement different layouts for various device sizes.
17. What is a CSS preprocessor? What are the advantages and disadvantages, if any, to using them over plain CSS?
    - It uses a CSS-based syntax and will be compiled into regular CSS when applying.
    - The advantages are possibilities for nested rules (more semantics), variables, functions, mixin, inheritance, and extending rules. You can also save time for repeated CSS rules.
    - The disadvantages are that you have to learn more syntaxes and have to compile the rules into regular CSS before using.

18. How do we declare a SCSS variable? How do we declare CSS variables?
    - We use a $ sign preceding the variable name for SCSS.
    - We use the var() function and declare the variable by var(--variable-name) for CSS.
19. What is the usage of ‘&’ in SCSS?
    - The & sign refers to the parent selector in a nested selector. & is useful for pseudo classes/elements.
20. What is @mixin? What are some use cases?
    - @mixin defines a set of properties that can be reused through stylesheets. It also accepts arguments (positional, optional, arbitrary number, keyword).
    - It is useful for dynamic styles and recycling repetition in declarations across stylesheets and avoiding non-semantic class names.
21. What is @extend? What are some use cases?
    - @extend also defines a set of properties that can be reused through stylesheets. However, it does not accept arguments.
    - It is useful for shared static styles but causing duplicated classes.
22. What is the usage of !important? What are some use cases?
    - !important is a way to override other CSS properties.
    - You should really avoid using this rule whenever possible because it can create some weird styles on the web pages.
    - Rather, consider the **specificity** of selectors and use them to style the webpage.
23. Could you explain accessibility, usability, and inclusion? Give some examples of each one in terms of web design.
    - Accessibility is to create equal user experiences for people with disabilities.
        - You will always need to use an alt tag for people using screen readers.
    - Usability is great user experiences (efficient, satisfying products) across all types of devices.
        - The layout of a shopping site should be responsive. It should also be efficient in terms of displaying and filtering items, and so on.
    - Inclusion is taking the design in consideration for everyone. It addresses diversity and ensures everyone can use the product to the greatest extent possible.
        - Adapting the product to meet the language, culture and other aspects for a particular stakeholder (date/timezone, etc.).