# Mastering CSS Stylesheets and Design

## **1. Introduction to CSS**

* **1.1 What is CSS?**
* **1.2 How CSS Works with HTML**
* **1.3 CSS Syntax**
* **1.4 Including CSS in HTML**
  + Inline Styles
  + Internal Stylesheets
  + External Stylesheets
  + @import Rule

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## **2. Basic Selectors**

* **2.1 Type Selectors**
* **2.2 Class Selectors**
* **2.3 ID Selectors**
* **2.4 Universal Selector**
* **2.5 Grouping Selectors**
* **2.6 Combinator Selectors**
  + Descendant Selector
  + Child Selector
  + Adjacent Sibling Selector
  + General Sibling Selector

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## **3. CSS Specificity and Inheritance**

* **3.1 Understanding Specificity**
* **3.2 The Cascade and Order of Precedence**
* **3.3 Inheritance in CSS**
* **3.4 The !important Declaration**

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## **4. Basic Styling**

* **4.1 Colors and Backgrounds**
  + Color Names, Hex Codes, RGB, RGBA, HSL, HSLA
  + Background Colors
  + Background Images
  + Background Positioning and Repeating
  + CSS Gradients
* **4.2 Text Styling**
  + Font Families
  + Font Sizes and Units
  + Font Weights and Styles
  + Text Alignment and Justification
  + Text Decoration and Transformation
  + Line Height and Letter Spacing
* **4.3 List Styles**
  + Unordered and Ordered Lists
  + Custom List Markers
* **4.4 Link Styling**
  + Default Link Styles
  + Hover, Active, and Visited States
  + Removing Underlines and Adding Effects

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## **5. The CSS Box Model**

* **5.1 Content Area**
* **5.2 Padding**
* **5.3 Borders**
  + Border Styles, Widths, and Colors
  + Border Radius for Rounded Corners
* **5.4 Margin**
* **5.5 Box Sizing (content-box vs border-box)**
* **5.6 Outline Property**

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## **6. Layout Basics**

* **6.1 The display Property**
  + Block, Inline, Inline-Block
  + None, Visibility Hidden
* **6.2 Positioning Elements**
  + Static Positioning
  + Relative Positioning
  + Absolute Positioning
  + Fixed Positioning
  + Sticky Positioning
  + The z-index Property
* **6.3 Floating Elements**
  + Using Floats
  + Clearing Floats
  + The Clearfix Hack
* **6.4 Overflow and Clipping Content**

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## **7. Advanced Selectors**

* **7.1 Attribute Selectors**
  + Presence and Value Selectors
  + Substring Matching Selectors
* **7.2 Pseudo-Classes**
  + Structural Pseudo-Classes (:first-child, :nth-child(), etc.)
  + UI Element States (:enabled, :disabled, :checked)
  + Negation Pseudo-Class (:not())
* **7.3 Pseudo-Elements**
  + ::before and ::after
  + ::first-letter and ::first-line
  + ::selection

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## **8. Responsive Web Design**

* **8.1 Introduction to Responsive Design**
* **8.2 Viewport Meta Tag**
* **8.3 Media Queries**
  + Syntax and Usage
  + Breakpoints and Responsive Design Strategies
* **8.4 Responsive Units**
  + Percentages
  + em, rem
  + Viewport Units (vw, vh, vmin, vmax)
* **8.5 Responsive Images**
  + Using srcset and sizes
  + Picture Element

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## **9. CSS Flexbox Layout**

* **9.1 Introduction to Flexbox**
* **9.2 Flex Container Properties**
  + display: flex and display: inline-flex
  + flex-direction
  + flex-wrap
  + flex-flow
  + justify-content
  + align-items
  + align-content
* **9.3 Flex Item Properties**
  + order
  + flex-grow
  + flex-shrink
  + flex-basis
  + flex
  + align-self
* **9.4 Practical Flexbox Layouts**

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## **10. CSS Grid Layout**

* **10.1 Introduction to CSS Grid**
* **10.2 Grid Container Properties**
  + display: grid and display: inline-grid
  + Defining Columns and Rows (grid-template-columns, grid-template-rows)
  + Grid Lines and Tracks
  + Grid Gaps (grid-gap, row-gap, column-gap)
  + Grid Template Areas
  + Implicit vs. Explicit Grids
  + Alignment (justify-items, align-items, place-items)
* **10.3 Grid Item Properties**
  + Placing Items (grid-column, grid-row)
  + Spanning Items Across Tracks
  + Layering Grid Items
  + Item Alignment (justify-self, align-self, place-self)
* **10.4 Advanced Grid Techniques**
  + Named Grid Lines
  + The minmax() Function
  + Auto-Fit and Auto-Fill
  + Responsive Grids with Media Queries

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## **11. CSS Transitions and Animations**

* **11.1 CSS Transitions**
  + Transition Properties (transition-property, transition-duration, etc.)
  + Timing Functions (ease, linear, ease-in-out)
  + Transition Delays
* **11.2 CSS Animations**
  + Defining Animations with @keyframes
  + Animation Properties (animation-name, animation-duration, etc.)
  + Iteration Counts and Direction
  + Animation Fill Modes
  + Chaining and Sequencing Animations

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## **12. CSS Transforms**

* **12.1 2D Transforms**
  + Translation (translateX(), translateY())
  + Rotation (rotate())
  + Scaling (scale())
  + Skewing (skewX(), skewY())
  + Transform Origin
* **12.2 3D Transforms**
  + 3D Translation and Rotation
  + Perspective and Transform Style
* **12.3 Combining Transforms**

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## **13. Advanced Styling Techniques**

* **13.1 Shadows and Glows**
  + Box Shadows
  + Text Shadows
* **13.2 Advanced Backgrounds**
  + Multiple Backgrounds
  + Background Blend Modes
* **13.3 Gradients**
  + Linear Gradients
  + Radial Gradients
  + Conic Gradients
  + Repeating Gradients
* **13.4 Filters**
  + Applying Filters (blur(), brightness(), contrast(), etc.)
  + Backdrop Filters

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## **14. CSS Variables (Custom Properties)**

* **14.1 Defining and Using Variables**
* **14.2 Variable Scope**
* **14.3 Variable Fallbacks**
* **14.4 Dynamic Updates with JavaScript**

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## **15. CSS Functions and Calculations**

* **15.1 The calc() Function**
* **15.2 The min(), max(), and clamp() Functions**
* **15.3 Trigonometric Functions**
* **15.4 Practical Uses in Layouts**

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## **16. Advanced Responsive Design**

* **16.1 Responsive Typography**
  + Fluid Type with calc() and Viewport Units
* **16.2 CSS Grid and Flexbox in Responsive Design**
  + Creating Adaptive Layouts
* **16.3 Responsive Navigation Menus**
  + Hamburger Menus
  + Dropdowns and Mega Menus
* **16.4 Responsive Tables and Data Visualization**

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## **17. Accessibility in CSS**

* **17.1 Understanding Web Accessibility**
* **17.2 Accessible Color Contrast**
* **17.3 Focus States and Keyboard Navigation**
* **17.4 Screen Reader Friendly CSS**
* **17.5 Using ARIA Attributes**

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## **18. CSS Preprocessors**

* **18.1 Introduction to Preprocessors**
  + Advantages and Use Cases
* **18.2 SASS (Syntactically Awesome Style Sheets)**
  + Variables and Nesting
  + Mixins and Functions
  + Extends and Inheritance
  + Control Directives and Expressions
* **18.3 LESS (Leaner Style Sheets)**
  + Variables and Mixins
  + Operations and Functions
* **18.4 Stylus**
* **18.5 Setting Up a Preprocessor Workflow**

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## **19. CSS Methodologies and Architecture**

* **19.1 BEM (Block Element Modifier)**
* **19.2 OOCSS (Object-Oriented CSS)**
* **19.3 SMACSS (Scalable and Modular Architecture for CSS)**
* **19.4 ITCSS (Inverted Triangle CSS)**
* **19.5 Choosing the Right Methodology**

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## **20. Advanced CSS Features**

* **20.1 CSS Shapes**
  + Wrapping Content Around Shapes
* **20.2 Clipping and Masking**
  + The clip-path Property
  + SVG Masks and Clip Paths
* **20.3 CSS Custom Fonts and Font Loading**
  + Using @font-face
  + Font Formats and Performance
* **20.4 Variable Fonts**
  + Understanding Variable Fonts
  + Implementing Variable Font Axes

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## **21. CSS Frameworks**

* **21.1 Introduction to Frameworks**
  + Benefits and Drawbacks
* **21.2 Bootstrap**
  + Grid System
  + Components and Utilities
* **21.3 Tailwind CSS**
  + Utility-First CSS
  + Customization and Theming
* **21.4 Materialize CSS**
* **21.5 Bulma**
* **21.6 Using Frameworks vs. Writing Custom CSS**

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## **22. Modern CSS Workflow**

* **22.1 CSS Resets and Normalization**
* **22.2 PostCSS and Autoprefixer**
* **22.3 Linting CSS with Stylelint**
* **22.4 CSS Modules**
* **22.5 CSS-in-JS**
  + Styled-Components
  + Emotion
* **22.6 Integrating CSS with Build Tools**
  + Webpack
  + Parcel
  + Gulp

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## **23. Performance Optimization**

* **23.1 Critical CSS and Above-the-Fold Content**
* **23.2 Minimizing Repaints and Reflows**
* **23.3 CSS Minification and Compression**
* **23.4 Content Delivery Networks (CDNs)**
* **23.5 Browser Rendering and the Paint Process**
* **23.6 Efficient Use of Selectors**

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## **24. Browser Compatibility and Feature Detection**

* **24.1 Vendor Prefixes**
  + When and How to Use Them
* **24.2 The @supports Rule**
  + Feature Queries
* **24.3 Polyfills and Graceful Degradation**
* **24.4 Tools for Testing and Debugging**
  + Can I Use
  + Browser DevTools

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## **25. The Future of CSS**

* **25.1 Upcoming CSS Features**
  + Subgrid in CSS Grid
  + Container Queries
  + CSS Houdini and the Extensible Web
  + New Pseudo-Classes and Elements
* **25.2 Staying Updated with CSS Specifications**
* **25.3 Experimental Features and Flags**

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## **26. Best Practices and Professional Tips**

* **26.1 Organizing CSS Code**
  + File Structure and Naming Conventions
* **26.2 Commenting and Documentation**
* **26.3 CSS Debugging Techniques**
  + Common Issues and Solutions
* **26.4 Writing Maintainable and Scalable CSS**
* **26.5 Naming Conventions and Style Guides**

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## **27. Projects and Case Studies**

* **27.1 Building a Responsive Layout from Scratch**
* **27.2 Creating Interactive Elements with CSS**
* **27.3 Designing Complex Grid and Flexbox Layouts**
* **27.4 Styling Forms and Inputs**
* **27.5 Implementing Dark Mode with CSS**

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## **28. Resources and Further Learning**

* **28.1 Recommended Books and Tutorials**
* **28.2 Online Courses and Workshops**
* **28.3 CSS Specifications and Documentation**
  + MDN Web Docs
  + W3C CSS Specifications
* **28.4 Community and Support**
  + Forums and Discussion Groups
  + Blogs and Newsletters
* **28.5 Practice Projects and Challenges**
  + CodePen
  + CSSBattle

#software/webdev/css