

CSS

What is Css

- CSS stands for Cascading Stylesheets
 - NOT a programming language
 - Styling language used to style websites
-

Methods to add CSS

Inline CSS

Add styles directly in the HTML element.

```
<h1 style="background-color: blue">Hello</h1>
```

Internal CSS

Using <style> tags within a HTML document inside the head tag.

```
<style>
  h2 {
    background-color: darkblue;
  }
</style>
```

External CSS < Recommend

Linking an external CSS file to the HTML document. Link using **link** tag inside **head** tag.

```
<link rel="stylesheet" href="./style.css" /> Link it in html file inside head
```

```
//External css file styling
h3 {
  background-color: gold;
}
```

Common Css Properties

Colors:

- background-color - sets background color of the element

- color – set font color of the text

Ways to set Color:

- Color Name – red,blue
- Hex value – #ffffff(White), #000000(black)
- RGB – (255, 255, 255) White, (0,0,0) Black

Size:

- width – set width of the element
- height – set height of the element

Fonts:

- font-family – set the style of the font [*Import fonts from google, Use fallback/Web Safe font we fonts*]
- font-size – set the size of the font
- font-weight – set the thickness/boldness of letters
- font-style – set bold, italic

Border:

- border-color – Set color for border
- border-style– Set style for border like [solid ,dashed ,double dashed]
- border-width – Set the thickness of the border line.

```
/* Color */
background-color:red;
color: aqua;

/* Width and height */
width: 100%;
height: 100vh;

/* Fonts */
font-size: 24px;
font-weight: 700;
font-family: Inter, sans-serif;

/* Border */
border: 4px solid pink;
```

Css responsive Box

1 Fixed Dimensions (Not Responsive)

```
div {  
  width: 400px;  
  height: 400px;  
}
```

- The `<div>` has a fixed width and height.
- ❌ Not responsive — it stays 400px wide regardless of screen size.
- May cause layout issues on smaller screens (overflow, horizontal scroll).

2 Full-Width Responsive (But Too Wide)

```
div {  
  width: 100%;  
  height: 400px;  
}
```

- ✅ Responsive — the `<div>` stretches to fill the entire width of its parent container.
- ⚠️ Can look too wide on large screens, especially if the parent container is full-width.

3 Controlled Responsiveness with max-width

```
div {  
  width: 100%;  
  max-width: 400px;  
  height: 400px;  
}
```

- ✅ Responsive and visually controlled.
- The `<div>` adapts to smaller screens but never exceeds 400px in width.
- Ideal for maintaining layout consistency across devices.

If the screen width is less than 400px, here's what happens with this CSS setup:

- `width: 100%` makes the element stretch to fill the entire width of its parent container — which, in this case, is less than 400px.
- `max-width: 400px` ensures the element never exceeds 400px, but it doesn't force it to be 400px.
- Result: The element will shrink to match the screen width (e.g., 320px on a small phone), making it fully responsive and visually contained.
- `height: 400px` remains fixed, so the element will still be 400px tall regardless of screen size.

- **Summary:** When screen width < 400px, the element adapts to fit the screen (thanks to `width: 100%`), but never grows beyond 400px (due to `max-width`). Height stays fixed at 400px. This combo ensures responsive width with controlled maximum size.

Key Takeaways

Fixed Dimensions

When you set a fixed width and height (like 400px), the element does not adapt to different screen sizes. It remains the same size regardless of the device, which can break layouts on smaller screens.

Full-Width Responsiveness

Changing the width to 100% makes the element stretch across the entire width of its parent container. This makes it responsive, but it can look too wide on large screens if not constrained.

Controlled Responsiveness

By combining full-width with a maximum width, the element becomes responsive while respecting a visual boundary. It adapts to smaller screens but never grows beyond the defined maximum, maintaining a clean and consistent layout.

Vh & Vw

vh = viewport height

1vh = 1% of the browser window's height

vw = viewport width

1vw = 1% of the browser window's width

These units are relative to the visible screen size, not the parent container — which makes them ideal for full-screen layouts and responsive design.

Used To build full-height sections (like hero banners) Fullscreen Hero Section.

Css Specificity

Specificity determines which CSS rule is applied when multiple rules target the same element. It's like a scoring system — the rule with the highest score wins.

Selector Type	Specificity Value
Inline styles	1000
ID selectors (<code>#id</code>)	100
Class selectors (<code>.class</code>), attributes, pseudo-classes	10
Element selectors (<code>div</code> , <code>p</code> , <code>h1</code>) and pseudo-elements	1

Example:

- `h1` → 1 point
- `.title` → 10 points
- `#main` → 100 points
- `style="color: red"` → 1000 points

If multiple rules apply to the same element:

- The one with higher specificity wins.
- If specificity is equal, the **last declared** rule wins.
- Avoid using **!important** by writing smarter selectors

Css Selectors

Selectors are patterns used in CSS to target and style specific HTML elements. They tell the browser: "Apply these styles to these elements."

- They define **where** your styles apply.
- Help you write **clean, maintainable CSS**.
- Crucial for **responsive design, interactivity, and component styling**.
- **Best practice** is combine a [Class/id with elements] to look for a specific element in a class/id.

Types of CSS Selectors

1. Universal Selector (`*`)

- Targets **all elements** on the page.
- Example use: reset margins or padding globally.

2. Element Selector (**div, p, h1, etc.**)

- Targets specific HTML tags.
- Styles all instances of that tag.

3. Class Selector (**.classname**)

- Targets elements with a specific class.
- Reusable across multiple elements.
- Can add multiple classes to a single element

4. ID Selector (**#idname**)

- Targets a single unique element with a specific ID.
- Should be used sparingly — very high specificity.

5. Attribute Selector (**[type="text"]**)

- Targets elements based on attributes.
- Useful for styling form inputs, links, etc.

6. Group Selector (**h1, p, a**)

- Applies the same styles to multiple elements at once.

7. Descendant Selector (**div p**)

- Targets elements inside another element.
- Example: all `<p>` tags inside a `<div>`.

8. Child Selector (**ul > li**)

- Targets **direct children** only.

9. Pseudo-Class Selector (**:hover, :focus, :nth-child**)

- Targets elements in a specific state or position.
- Example: change button color on hover.

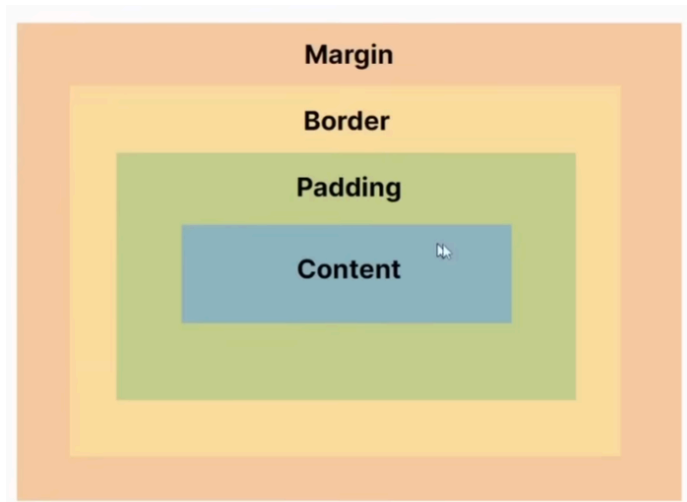
10. Pseudo-Element Selector (**::before, ::after**)

- Targets parts of an element — useful for adding decorative content.

Box Model

The box model divides the elements on our page into four different layers as below

- Content
- Padding
- Border
- Margin



Default **box-sizing :content-box;** you need to change box-sizing to **border-box;**

Display

- Block - you can change the width
- Inline - Default width cannot be changed
- Inline-block

Position

Static « Default

Follows the normal flow of the page

Relative

Follows the normal flow of the page

Can change position by using top, right, bottom, left

Absolute

Doesn't follow the normal flow of the page

Can change position by using top, right, bottom, left

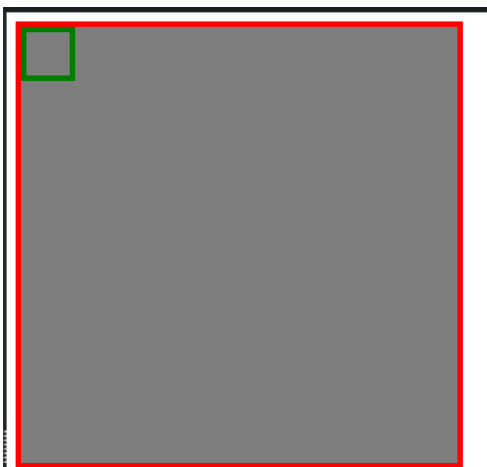
Position will be based on the **nearest "position: relative"** parent if no parents available will take the Viewport.

The elements in absolute position do not take the default size/width.

```
<div class="relative">  
<div class="absolute">  
</div>  
</div>
```

```
.relative {  
  border: 5px solid red;  
  width: 400px;  
  height: 400px;  
  background: grey;  
  position: relative;  
}  
  
.absolute {  
  border: 5px solid green;  
  width: 40px;  
  height: 40px;  
  background: grey;  
  position: absolute;  
  top: 0;  
}
```

Visual



Fixed

Does not follow the normal flow of the page

Can change position by using top, right, bottom, left

Position will be based on the viewport (screen)

Sticky

Follows the normal flow of the page, until the user scrolls past a certain point

Then it will become "position: fixed".

It will be displayed until the element is displayed in the Browser.

Media Queries

A CSS feature that allows us to make our websites look good on all screen sizes.

CSS Breakpoints (max-width)

Small Smartphones

480px

Large Smartphones

640px

Tablets

768px

Laptops

1024px

Desktops

1280px

```
@media (max-width:480px) {  
  .title {  
    font-size: 30px;  
    background-color: black;  
    color: white;  
  }  
}
```

Animations

- An animation lets an element gradually change from one style to another.
- You can change as many CSS properties you want, as many times as you want.
- To use CSS animation, you must specify some keyframes for the animation.
- Keyframes hold what styles the element will have at certain times.

```
h1 {  
  animation: pointdown 2s infinite;  
}  
  
@keyframes pointdown {  
  
  0%{  
    transform: translateY(0);  
  }  
  
  50%{  
    transform: translateY(25px);  
  }  
  
  100%{  
    transform: translateY(50px);  
  }  
  
}
```

Transition

- CSS transitions allow you to change property values smoothly, over a given duration.
- Mouse over the element below to see a CSS transition effect:

CSS Transition Speed Curve

The [transition-timing-function](#) property specifies the speed curve of the transition effect.

This property can have one of the following values:

- ease – transition will start slow, then go fast, and end slow (this is default)
- linear – transition will keep the same speed from start to end
- ease-in – transition will start slow
- ease-out – transition will end slow

- ease-in-out - transition will have a slow start and end
- cubic-bezier(n,n,n,n) - lets you define your own values in a cubic-bezier function

BEM

- BEM (Block Element Modifier) is a naming method for writing CSS classes to keep code organised.
- Naming method: block_element -- modifier
- B - Block (Standalone component)
- E - Element (Parts of the block)
- M - Modifier (Variations/modification of blocks and elements)
- Using this method makes it easy to read ,organise and modify code by other Developers.

e.g:

```
<div class="box">
  <h2 class="title">Text</h2>
  <p class="text">Text</p>
  <button class="button">Text</button>
</div>
```






```
<div class="box">
  <h2 class="box_title">Text</h2>
  <p class="box__paragraph">Text</p>
  <button class="box_button box_button--active">Text</button>
</div>
```



Misc

Lorem40 - shortcut to add dummy text content in Vscode

Quick Summary

 Topic	 Summary / Key Points	 Example / Notes
What is CSS	Cascading Style Sheets. Not a programming language — used to style web pages.	—

Ways to Add CSS	Inline: Inside HTML element. Internal: Inside <code><style></code> in <code><head></code> . External: Linked <code>.css</code> file (✅ Recommended).	<code><link rel="stylesheet" href="style.css" /></code>
Colors	<code>background-color</code> , <code>color</code> . Values: Name, Hex, RGB.	<code>color: red; / color: #000; / color: rgb(255,255,255);</code>
Size	Control element size.	<code>width, height</code>
Fonts	Font style and appearance.	<code>font-family, font-size, font-weight, font-style</code>
Borders	Outline of element.	<code>border: 4px solid pink;</code>
Responsive Box	<code>width: 100%</code> = full width. <code>max-width</code> = limits max size. <code>height</code> stays fixed.	Combines flexibility + control.
Viewport Units	<code>1vh</code> = 1% of screen height. <code>1vw</code> = 1% of screen width.	Used for full-screen sections.
Specificity	Determines which CSS rule wins.	Inline = 1000ID = 100Class = 10Element = 1
Selectors	Target HTML elements for styling.	<code>*</code> – all elements <code>div</code> – element. <code>class</code> – class <code>#id</code> – ID <code>[attr]</code> – attribute <code>:hover</code> – pseudo-class <code>::before</code> – pseudo-element

Box Model	Defines spacing of elements.	Content → Padding → Border → Margin
box-sizing	Defines how width/height are calculated.	<code>content-box</code> (default) → doesn't include padding/border. <code>border-box</code> → includes padding/border ✅
Display Types	Controls how elements appear.	<code>block</code> – full width <code>inline</code> – can't set width <code>inline-block</code> – both inline + resizable
Position	Controls element placement.	<code>static</code> – default <code>relative</code> – offset but keeps space <code>absolute</code> – positioned to nearest relative parent <code>fixed</code> – attached to viewport <code>sticky</code> – toggles between relative & fixed
Media Queries	Make sites responsive on different screen sizes.	<code>@media (max-width:768px){ .title{font-size:20px;} }</code>
Breakpoints	Common screen sizes.	480px (small phones), 640px (large phones), 768px (tablets), 1024px (laptops), 1280px (desktops)
Animations	Smooth visual effects using keyframes.	<code>@keyframes move{0%{top:0;}100%{top:50px;}}</code>
Transitions	Smooth change of property values.	<code>transition: all 0.5s ease-in-out;</code>

Transition Timing	Controls animation speed curve.	<code>ease</code> , <code>linear</code> , <code>ease-in</code> , <code>ease-out</code> , <code>cubic-bezier()</code>
BEM (Block Element Modifier)	Naming convention for cleaner CSS.	<code>block__element--modifier</code> → <code>.card__title--highlight</code>
Best Practices	<div>✔ Use external CSS</div> <div>✔ Use <code>max-width</code> + <code>width:100%</code> for responsiveness</div> <div>✔ Avoid <code>!important</code></div> <div>✔ Use BEM for maintainability</div>	–

Mini Project

Mini Project: Personal Portfolio Card Section

Project Goal

Build a **responsive card section** for a personal portfolio or “team members showcase” that demonstrates **all CSS fundamentals**: layout, responsiveness, box model, positioning, typography, colors, borders, animations, transitions, and media queries.

Project Requirements

1. Structure / Layout

- **Container** for cards (centered on page, full-width with `max-width` for control).
- **3–4 cards** inside a row on large screens.
- On smaller screens (tablets/phones), cards should stack **1 per row** using **media queries**.
- Use **flexbox or grid** to manage layout.

2. Card Design

Each card should include:

- Profile image (circle or rounded edges)
- Name (heading)
- Job title (subheading)
- Short description (paragraph)
- A “View Profile” button

CSS Features to Practice:

- **Box Model:** padding, margin, borders
- **Typography:** font-family, font-size, font-weight, font-style
- **Colors:** background-color, text color, hover effects
- **Borders:** solid, dashed, rounded corners (`border-radius`)
- **Shadow & Effects:** box-shadow for card elevation

3. Responsiveness

- **Width:** Cards should be flexible (`width: 100% + max-width`)
- **Height:** Keep it visually balanced (fixed or min-height)
- **Media Queries:** Adjust font size, button size, card layout based on screen size

4. Interaction / Animations

- Button should **change color** on hover (transition effect)

- Card image or entire card can **slightly move/scale** on hover (use transform + transition)
- Optional: subtle **keyframe animation** for card entrance (fade-in or slide-up on page load)

5. Advanced CSS Concepts

- **Specificity:** Combine element, class, ID selectors to style components
- **Pseudo-classes:** `:hover` for button and card
- **Pseudo-elements:** `::before` or `::after` for decorative touches (like a ribbon or underline)
- **BEM Naming:** Name your classes with `block__element--modifier` convention

6. Visual Goals

- Modern, clean design
- Balanced spacing and alignment
- Responsive: Looks good on phone, tablet, desktop
- Interactive: Animations and hover effects enhance UX

7. Extra Features to Challenge Yourself

- Add **social icons** that appear on hover (using pseudo-elements or absolute positioning)
- Include **sticky header** above the cards
- Make **cards equal height** dynamically using CSS (Flexbox feature)

✓ **Key Concepts Practiced**

- Inline, internal, external CSS planning
- Colors, fonts, borders, box model
- Fixed vs responsive width/height
- Viewport units (vh, vw) for hero section or container height
- Flexbox/Grid layout
- Positioning: relative + absolute for decorative elements
- Media queries for responsive breakpoints
- Animations & transitions for interaction
- BEM for clean structure
- Pseudo-classes/elements for advanced styling

💡 **Tip for Practice:**

1. Start by sketching the layout on paper or Figma.
2. Build the **HTML structure** first.
3. Apply **basic styling**, then layer on responsiveness and animations.
4. Use **BEM naming** from day one.

🎨 **Mini Project Blueprint: Responsive Portfolio Card Section**

1. Project Overview

Create a **portfolio card section** showcasing team members or personal projects. Each card is interactive, responsive, and visually appealing. This project will cover:

- Layout (flex/grid)
- Box model & spacing
- Colors, fonts, borders
- Animations & transitions
- Responsiveness with media queries
- Advanced CSS (pseudo-classes, pseudo-elements, BEM)

2. Layout Structure

Container

- Full-width container, max-width: 1200px
- Centered horizontally
- Padding: 20px
- Display: flex (or grid)
- Gap between cards: 20px

Cards

- Width: 100% (max-width: 300px)
- Height: auto (content determines height)
- Background: white (`#ffffff`)
- Border-radius: 10px
- Box-shadow: subtle (`0 4px 8px rgba(0,0,0,0.1)`)

- Padding: 20px
- Margin-bottom: 20px (for stacked mobile layout)

3. Card Content

Each card contains:

1. **Profile Image / Project Thumbnail**

- Circular image (`border-radius: 50%`)
- Size: 100px x 100px (responsive)
- Centered horizontally

2. **Name / Project Title**

- Heading (h2/h3)
- Font-size: 24px
- Font-weight: 700

3. **Subtitle / Job Title / Short Info**

- Paragraph or small heading
- Font-size: 16px
- Color: `#555555`

4. **Description / Short Bio**

- Paragraph, line-height: 1.5
- Font-size: 14–16px

5. **Call-to-Action Button**

- Text: “View Profile” or “See Project”
- Background-color: #007BFF
- Text-color: #ffffff
- Padding: 10px 20px
- Border-radius: 5px
- Hover effect: slightly darker shade (#0056b3) with transition

4. Color Scheme

- Background: #f0f2f5 (light gray for page)
- Card: #ffffff (white)
- Primary text: #222222 (dark)
- Secondary text: #555555 (gray)
- Accent / Buttons: #007BFF (blue)

Optional: add soft hover accent colors for decorative pseudo-elements.

5. Fonts

- Primary font: Inter, sans-serif
- Fallback: Arial, Helvetica, sans-serif
- Headings: bold, 700
- Body text: regular, 400
- Optional: Italics for minor text or quotes

6. Spacing & Box Model

- Card padding: 20px
- Card margin: 20px
- Gap between flex items: 20px
- Image margin-bottom: 10px
- Heading margin-bottom: 5px
- Description margin-bottom: 10px

7. Responsiveness & Breakpoints

Use media queries to adapt layout:

Screen	Layout
≥1024px	3–4 cards per row
768px–1023px	2 cards per row
<768px	1 card per row (stacked)

Typography adjustments:

- Reduce heading size by 2–4px on smaller screens
- Reduce paragraph font size slightly
- Buttons full-width on mobile

8. Hover & Animation Effects

- **Card hover:**

- Slight upward lift (`transform: translateY(-5px)`)
- Shadow deepens (`box-shadow: 0 8px 16px rgba(0,0,0,0.2)`)
- Transition: `all 0.3s ease-in-out`

- **Button hover:**

- Darker background
- Smooth transition

- **Optional animations:**

- Fade-in cards on page load (`opacity 0 → 1`)
- Slide-up cards (`transform: translateY(20px) → 0`) using keyframes

9. Positioning & Pseudo-elements

- Use `relative` on card container
- `absolute` for decorative shapes, icons, or badges
- Use `::before` or `::after` for decorative lines, ribbons, or small icons

10. BEM Naming Convention Example

- Container: `portfolio`
- Card: `portfolio__card`
- Image: `portfolio__card-image`

- Name: `portfolio__card-name`
- Job: `portfolio__card-job`
- Button: `portfolio__card-button`
- Modifier: `portfolio__card--highlighted` (optional variant)

11. Visual Goals

- Modern, minimalistic, clean
- Balanced spacing
- Hover and animations create interactivity
- Responsive for all devices

Your Tasks

1. Create HTML structure for the container + cards
2. Style cards based on above blueprint using **external CSS**
3. Add **responsive behavior** with media queries
4. Add **hover effects and optional animations**
5. Test across multiple screen sizes
6. Optional: add **sticky header** or **social icons**

Wireframe

Perfect! Here's a **full-page ASCII wireframe** for a clean, modern portfolio website. It includes all sections — header, hero/banner, portfolio cards, about, and footer — along with spacing, layout, and responsive hints.

```
=====
=====
|                                HEADER / NAVBAR                                |
|-----|
| LOGO (left)                    NAV LINKS (right: Home About Work Contact) |
| Background: #ffffff, sticky top, padding: 20px                            |
| Links hover: underline / color #007BFF                                   |
=====
=====

=====
=====
|                                HERO / BANNER SECTION                        |
|-----|
| Full viewport height (100vh)                                              |
| Background: gradient or image                                             |
| Centered content:                                                         |
| -----|
| |                                |                                           |
| | MAIN HEADING (H1, 48px)         |                                           |
| | Subheading (H2, 24px)           |                                           |
| | BUTTON CTA (#007BFF, hover: darker blue, transition 0.3s)             |
| -----|
=====
=====

=====
=====
|                                PORTFOLIO CARD SECTION                      |
|-----|
| Container: max-width 1200px, centered, padding: 20px                    |
| Card Row: Desktop 3 per row, Tablet 2 per row, Mobile 1 per row          |
```


Card Gap: 20px			

PORTFOLIO__CARD		PORTFOLIO__CARD	
-----		-----	
IMAGE (100x100)		IMAGE (100x100)	
-----		-----	
NAME (H3, 24px)		NAME (H3, 24px)	
JOB TITLE (16px)		JOB TITLE (16px)	
DESCRIPTION		DESCRIPTION	
(Paragraph)		(Paragraph)	
BUTTON CTA		BUTTON CTA	
-----		-----	
PORTFOLIO__CARD (Third card)			

=====

=====

=====

=====

ABOUT / INFO SECTION			

Alternating blocks: image left, text right and vice versa			
Padding: 40px 20px			
Section heading: H2 36px, paragraph 16px			
Responsive: stack image above text on mobile			
Example:			

IMAGE (300x300)		TEXT: H2 + paragraph	

=====

=====

=====

=====

FOOTER			

Background: #222222, Text: #ffffff, Padding: 20px			
Left: Copyright © 2025			
Right: Social Icons (hover: color #007BFF)			

Links: Home About Work Contact			
=====			
=====			
=====			
=====			
PAGE-WIDE STYLING			

Font: Inter, sans-serif			
Colors:			
Primary Accent: #007BFF			
Background: #f0f2f5			
Card BG: #ffffff			
Footer BG: #222222			
Box-shadow: subtle on cards, lift on hover			
Border-radius: 10px on cards			
Responsive Breakpoints:			
Mobile: <768px, stack cards & sections			
Tablet: 768px-1023px, 2 cards per row			
Desktop: >1024px, 3 cards per row			
=====			
=====			

✔ Notes for Implementation

- Use **flexbox or grid** for layouts (cards, navbar, alternating about section).
- Add **hover transitions** for cards and buttons.
- Keep **consistent spacing** across all sections (20–40px).
- Hero section can use **vh/vw units** for full-screen responsiveness.

- Use **media queries** for mobile/tablet responsiveness.

```
=====
|                                     ABOUT / INFO SECTION                                     |
|-----|
| Alternating blocks: image left, text right and vice versa |
| Padding: 40px 20px |
| Section heading: H2 36px, paragraph 16px |
| Responsive: stack image above text on mobile |
| Example: |
| ----- |
| | IMAGE (300x300) | | TEXT: H2 + paragraph | |
| ----- |
=====

=====
|                                     FOOTER                                     |
|-----|
| Background: #222222, Text: #ffffff, Padding: 20px |
| Left: Copyright © 2025 |
| Right: Social Icons (hover: color #007BFF) |
| Links: Home About Work Contact |
=====
```

```
=====
|                                     PAGE-WIDE STYLING                                     |
|-----|
| Font: Inter, sans-serif |
| Colors: |
|   Primary Accent: #007BFF |
|   Background: #f0f2f5 |
|   Card BG: #ffffff |
|   Footer BG: #222222 |
| Box-shadow: subtle on cards, lift on hover |
| Border-radius: 10px on cards |
| Responsive Breakpoints: |
|   Mobile: <768px, stack cards & sections |
|   Tablet: 768px-1023px, 2 cards per row |
|   Desktop: >1024px, 3 cards per row |
=====
```