

# 5-Day Practical Bootcamp: 50 HTML & CSS Application Problems

## Day 4 — Visual Polish: Typography, Animations, Effects & Media

**Learning goals:** - Apply refined typographic systems (line length, vertical rhythm, type scales). - Create tasteful motion/interaction with transitions and keyframes that respect prefers-reduced-motion. - Use advanced CSS effects (clip-path, backdrop-filter, custom shapes) while maintaining accessibility. - Handle responsive images with `<picture>` and ensure captions are meaningful.

### Very Detailed Problem Statements (31–40)

#### 31. Typographic Article Page

- Build a long- form article page with `<article>` containing:
  - Title `<h1>`, subtitle `<h2>`, author/date metadata.
  - Body text styled with max line length ~65ch, `line-height:1.6`.
  - First paragraph styled as drop cap using `::first-letter` (large, floated left).
  - Headings follow typographic scale using `clamp()` for fluid sizing.
  - At least 2 blockquotes with `cite` attribution.
  - Footnotes section at bottom with `<ol>`; superscript links in body link to them.
- Accessibility: ensure color contrast  $\geq 4.5:1$ ; footnotes are link targets with `id`.
- Print stylesheet: black on white, links underlined with URL in parentheses using `a[href]::after { content: " (" attr(href) ")"; }`.

#### 32. Brand Style Guide (Static)

- Build a page documenting a fictitious brand:
  - Color palette section: show at least 5 swatches using `<div>` with token names and HEX codes. Each swatch labeled with text (not only color).
  - Typography scale: show examples of `<h1>`–`<h6>`, paragraph, small text.
  - Components section: buttons (primary, secondary, ghost), link states (default, hover, visited, focus).
  - Layout must be in a two- column grid with sticky nav linking to each section.
  - Accessibility: swatch text contrast must be readable; buttons have `aria-pressed` example states.

#### 33. Feature Teaser with Subtle Animation

- Create a 3- card teaser section promoting features.
- Each card: icon (placeholder SVG), heading, short text, CTA link.

- On hover/focus, card elevates with `transform: translateY(-4px)` and subtle shadow.
- Add keyframe fade-in on cards when page loads (`opacity 0→1`, `translateY(20px)→0`).
- Wrap animation rules inside `@media (prefers-reduced-motion: no-preference)`.
- Provide fallback background color so cards readable without shadows.

#### 34. Testimonials Carousel (CSS- only)

- Use radio inputs + labels for slide controls.
- Structure: `<section aria-label="Testimonials">` → `.slides` container with 3–4 `<blockquote>`.
- Each testimonial blockquote includes `<p>` and `<footer>` with author.
- Radio buttons hidden visually but accessible; labels styled as prev/next buttons.
- Ensure tab order: pressing tab highlights controls; `:focus-visible` outline.
- Provide `aria-live="polite"` on slide container so screen readers announce active change.
- Mobile: testimonials stacked vertically with controls below.

#### 35. Video Landing Page

- Hero section uses `<video autoplay muted loop>` as background with a poster image fallback.
- Overlay: heading `<h1>`, subhead `<p>`, and primary CTA.
- Provide a `<track>` element for captions (mock file). Add visible “Captions Available” text.
- Fallback: If video not supported, show `<img>` with same poster.
- Responsive: ensure text overlay remains readable by adding dark semi-transparent overlay with `::before`.
- Accessibility: pause button provided for motion-sensitive users (non-functional but styled).

#### 36. Glassmorphism Login Page (Static)

- Page background: full-screen photo with `background: cover`.
- Center card with `backdrop-filter: blur(20px)` and translucent background color.
- Inside card: `<h1>Login</h1>`, 2 inputs (email/password), remember me checkbox, login button.
- Inputs styled with frosted semi-transparent backgrounds.
- Provide fallback (no `backdrop-filter` support): solid light background.
- Accessibility: ensure input focus states are visible and high contrast.

#### 37. Neumorphism Control Panel

- Create a panel with 6 toggle buttons styled in neumorphic style.
- Each toggle: square or circular button with box-shadows to simulate raised surface.

- On active (via `.is-on` class or `aria-pressed="true"`), invert shadows to look pressed.
- Use CSS variables for shadow colors.
- Ensure high contrast mode alternative: add `.theme-contrast` class that overrides neumorphism to flat solid colors with visible borders.

### 38. Shaped Image Cards

- Build a 6- card gallery with unusual shapes:
  - Use `clip-path: polygon()` to create hexagon, triangle, and trapezoid shapes.
  - Provide fallback style: regular rectangle if `clip-path` unsupported (`@supports test`).
- Each card: image with caption overlay on hover (semi- transparent dark background, white text).
- Accessibility: captions always available in DOM under image as `<figcaption>` (visually hidden when not overlaid).

### 39. Call- to- Action Band Variations

- Create 3 visually distinct CTA bands stacked vertically:
  1. Solid background with centered heading + button.
  2. Outline style with two side- by- side buttons.
  3. Image background with dark overlay + heading.
- Each uses CSS variables for `--cta-bg`, `--cta-text`, etc. Variants implemented with modifier classes `.cta--solid`, `.cta--outline`, `.cta--image`.
- Buttons must have hover/focus transitions.
- Responsive: text/buttons stack on small screens.

### 40. Media- Rich Case Study Page

- Create a page for a design project case study.
- Structure: `<article>` with title `<h1>`, intro section, multiple content sections.
- Include at least 4 `<figure>`s with `<img>` + `<figcaption>` describing context.
- Add a side note `<aside>` with additional info aligned to right on desktop, stacked on mobile.
- Implement an image comparison block: two overlapping images with a slider placeholder bar (non- functional) styled to show side- by- side comparison.
- Ensure captions are descriptive; alt text explains each image.
- Print stylesheet must show images at full width with captions below.

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## Day 4 — Visual Polish: Typography, Animations, Effects & Media

**Learning goals:** - Establish readable typography (measure, leading, hierarchy, type scale) and spacing rhythm. - Apply tasteful transitions/animations while respecting `prefers-reduced-motion`. - Use media responsibly (`<picture>`, `srcset`, captions,

overlays) and modern effects (clip-path, mask, glass/neumorphism) with accessible fallbacks.

**Mini- demos (15 min):** Type scale with `clamp()` → vertical rhythm with a spacing scale → motion- safe keyframes → picture/source art- direction → backdrop-filter fallbacks.

## Very Detailed Problem Statements (31–40)

### 31. Typographic Article Page

- Files: `index.html`, `styles.css`.
- Content: Title (`<h1>`), deck/subtitle (`<p class="deck">`), author line (`<p class="byline">` with `<time>`), article body with at least 10 paragraphs, 2 level- 2 headings, 1 level- 3 heading, a blockquote, an ordered list and an unordered list, and footnotes section at end.
- Layout: centered `.container` max- width 70ch; body text measure between 60–75ch.
- Type system: define tokens `--step--2` .. `--step-3` and map to font-size via `clamp()`; headings scale proportionally; line- height 1.5–1.7 for body.
- Paragraph spacing uses a single rhythm variable (e.g., `--flow-space`) applied with a `.flow > * + * { margin-top: var(--flow-space); }` utility.
- Drop cap: first paragraph after `<h1>` gets a CSS drop cap using `::first-letter` with safe line- height and initial-letter fallback avoided; do not interfere with screen readers.
- Footnotes: implement with superscript links (`<sup><a href="#fn1" aria-label="Jump to footnote 1">1</a></sup>`) and an ordered list at end; provide back- links.
- Accessibility: ensure contrast  $\geq 7:1$  for body text; links underline only on hover/focus (keep visible cues otherwise using color + underline on focus).

### 32. Brand Style Guide (Static)

- Sections: Brand Overview, Color Tokens, Type Scale, Components.
- Color Tokens: present at least 6 CSS variables (`--brand`, `--surface`, `--accent`, `--success`, `--warning`, `--danger`) and show swatches with hex code and variable name; provide contrast sample with text on each swatch.
- Type Scale: display steps using live text samples (H1–H6, body, small); each sample shows applied font-size and line-height via CSS content in `::after`.
- Components: document at least 6 elements (Primary Button, Secondary Button, Link, Badge, Card, Input Field). Each has: default, hover, focus, disabled states. Focus style must be non- color- only (outline).
- Include a “Do/Don’t” grid with 4 pairs showing correct vs incorrect usage (e.g., contrast too low, button with insufficient padding).
- Print stylesheet: condense to one column and hide the Do/Don’t images.

### 33. Feature Teaser with Subtle Animation

- Create three promo cards in a responsive grid (auto-fit minmax 260px). Each card includes icon (SVG or emoji), title, 2-line description, and CTA link.
- Micro-interaction: on hover/focus, card translates up by 4px and shadow deepens; CTA underline animates from left to right using background-size transition.
- Motion safety: wrap animation rules in @media (prefers-reduced-motion: no-preference); otherwise keep static states.
- Provide keyboard parity: :focus-visible triggers the same visual affordances as :hover.
- Ensure icons are decorative (aria-hidden="true") unless meaningful.

#### 34. Testimonials Carousel (CSS- only)

- Use 4 testimonials in <figure> elements; each contains <blockquote> and <figcaption> with person's name and role.
- Navigation via a group of radio inputs (1 per slide) visually styled as dots; labels act as previous/next controls with for attributes.
- Only one slide visible at a time using CSS; transitions use opacity and transform guarded by reduced-motion media query.
- Provide a visible pause control mock (button[aria-pressed]) that visually toggles state; not functional.
- Keyboard: dot controls are naturally focusable; ensure focus outline visible against background.
- Announce active slide to screen readers using aria-live="polite" region that mirrors the current testimonial title (non-functional text OK for this exercise).

#### 35. Video Landing with Overlay

- Hero uses <video> element (muted, loop, playsinline, no autoplay required) with a poster image; overlay a headline, subhead, and CTA button within a centered container.
- Provide controls hidden visually but available on focus: when the video receives focus, show a minimal control bar (pure CSS reveal).
- Fallback: below the video, include a <figure> with a static image and caption "Video preview still". Add @media print to hide the video and show only the figure.
- Ensure the overlay text remains readable by adding a gradient overlay or text shadow while maintaining a minimum 4.5:1 contrast.

#### 36. Glassmorphism Login (Static)

- Full-bleed background image using semantic <img> within <figure> behind content (not CSS background), with alt="" and aria-hidden="true".
- Centered login panel uses backdrop-filter: blur(8px) with translucent background; provide fallback solid color for browsers without support using @supports not (backdrop-filter: blur(8px)).
- Panel contains: site mark, <h1>Sign in</h1>, email and password fields, Remember me (checkbox), and a Primary button.

- Accessibility: labels tied to inputs, autocomplete attributes set, and a link “Forgot password?” after the button.
- Respect reduced motion (no animated background). Ensure color contrast in both supported and fallback modes.

### 37. **Neumorphism Control Panel (Static)**

- Build a settings panel with 6 toggle buttons and 3 range sliders.
- Use soft shadow in/out styles to create raised/pressed effects; pressed state is toggled by `.is-on` class (visual only).
- Provide clear focus style (high- contrast outline) that overrides subtle shadows.
- Sliders include visible numeric value readouts (static text) aligned to the right.
- Ensure the entire panel works with keyboard tab order; tabbing to a toggle should present a distinct outline.

### 38. **Shaped Image Cards (Clip- Path)**

- Create a grid of 8 cards with images masked to shapes (hexagon and triangle) using `clip-path`; include a CSS fallback class `.shape--square` applied when `@supports not (clip-path: polygon(...))` is detected.
- Each card includes a title and short blurb; ensure images maintain `object-fit: cover` and consistent aspect ratio.
- Provide `:focus-visible` outlines that trace around the masked shape using an outer wrapper.
- Breakpoints: 4/2/1 columns.

### 39. **CTA Band Variations (Design Tokens)**

- Build three full- width call- to- action bands: Primary, Secondary, Outline.
- All bands share structure (heading, sentence, CTA button); styles vary only via CSS custom properties (e.g., `--cta-bg`, `--cta-text`, `--cta-border`).
- Implement spacing using a `.section` utility that controls vertical padding; do not hardcode padding on band elements.
- Add an inverted color scheme variant `.cta--invert` that swaps text/background tokens; test contrast.
- Include keyboard- accessible link/button with visible focus ring.

### 40. **Media- Rich Case Study**

- Page structure: Overview, Problem, Solution, Results, Gallery.
- Use `<figure>` with `srcset` responsive images; provide at least one `<picture>` with two `<source>` elements to demonstrate art direction (e.g., different crop for mobile).
- Introduce side notes using `<aside class="sidenote">` floated or placed in a CSS grid column; ensure reading order is logical for screen readers.
- Add a before/after comparison using two images in a split container with a draggable- look handle (visual only, no JS)—use a central divider and labels “Before” and “After”.
- Ensure all figures have `<figcaption>`; captions use smaller type token and muted color.

- Print stylesheet: stack everything single- column, show image captions below images, hide decorative side notes.
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