# Department of Computing

**CS344: Web Engineering**

**Class: Spring 2025**

# Lab 5: Responsive Web Design and CSS Grid

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BSCS 13-E

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**Lab 5: Responsive Web Design and CSS Grid**

**Introduction**

In this lab, you will create a fully responsive web page using **CSS Grid** and **media queries**. You will also apply **CSS transitions** and **hover effects** to enhance the interactivity of the page. The goal is to practice creating adaptable layouts that work on both desktop and mobile devices.

**Objectives**

The objective of this lab is to:

* Design a **responsive layout** using **CSS Grid**.
* Use **media queries** to adapt the layout to different screen sizes.
* Implement **CSS transitions** and **hover effects** to improve interactivity.

**Tools/Software Requirement**

* Text Editor (e.g., Notepad++, Sublime Text, or Visual Studio Code)
* Web Browser for testing (Google Chrome, Mozilla Firefox, etc.)

**Description**

In this lab, you will build a web page layout for a **services company**. The page will have a **header**, a **hero section**, a **services section**, and a **footer**. You will apply **CSS Grid** for the layout and ensure that the design is responsive using **media queries**. You will also add hover animations using **CSS transitions**.

**Lab Tasks**

**Task 1: Setup HTML Structure**

* Create an HTML file with the following structure:
  + **Header** with logo and navigation.
  + **Hero Section** with a heading and call-to-action button.
  + **Services Section** displaying three services using a grid layout.
  + **Footer** with company information and social media links.

**Task 2: Responsive Grid Layout**

* Implement a **3-column grid layout** for the services section.
* Add **media queries** to switch the layout to **2 columns** on medium screens (1024px) and **1 column** on small screens (768px).

**Task 3: Hover Effects and Transitions**

* Add a **hover effect** to each service box so it **scales up** on hover.
* Use **CSS transitions** to make the hover effect smooth.

## Pitfalls

1. Failure to upload the solution on LMS.

## Incorrect use of grid-template-columns leading to misaligned layouts.

## Ineffective media queries causing the layout to not adjust properly for different screen sizes.

## Failure to make images responsive, leading to distortion or overflow.

## Poorly implemented hover effects or transitions resulting in inconsistent interactions.

## Ignoring mobile-first design, leading to poor user experience on smaller devices.

## Inconsistent use of spacing, margins, and padding, resulting in cluttered or uneven layouts.

## Deliverables

**Code:**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Zen Inc - Innovative Tech Startup</title>

<style>

/\* Reset and Base Styles \*/

\* {

margin: 0;

padding: 0;

box-sizing: border-box;

font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;

}

body {

line-height: 1.6;

color: #333;

background-color: #f8f9fa;

}

a {

text-decoration: none;

color: inherit;

}

img {

max-width: 100%;

height: auto;

}

.container {

max-width: 1200px;

margin: 0 auto;

padding: 0 20px;

}

/\* Header Styles \*/

header {

background-color: #1a202c;

color: white;

padding: 1rem 0;

position: sticky;

top: 0;

z-index: 100;

}

.header-container {

display: flex;

justify-content: space-between;

align-items: center;

}

.logo {

font-size: 1.8rem;

font-weight: bold;

}

.logo span {

color: #38b2ac;

}

nav ul {

display: flex;

list-style: none;

}

nav ul li {

margin-left: 2rem;

transition: color 0.3s ease;

}

nav ul li:hover {

color: #38b2ac;

}

/\* Hero Section Styles \*/

.hero {

background-image: linear-gradient(rgba(0, 0, 0, 0.7), rgba(0, 0, 0, 0.7)), url('https://via.placeholder.com/1600x800');

background-size: cover;

background-position: center;

color: white;

text-align: center;

padding: 5rem 0;

}

.hero h1 {

font-size: 3rem;

margin-bottom: 1rem;

}

.hero p {

font-size: 1.2rem;

max-width: 800px;

margin: 0 auto 2rem;

}

.cta-button {

display: inline-block;

background-color: #38b2ac;

color: white;

padding: 0.8rem 2rem;

border-radius: 30px;

font-weight: bold;

transition: background-color 0.3s ease, transform 0.3s ease;

}

.cta-button:hover {

background-color: #2c7a7b;

transform: translateY(-3px);

}

/\* Services Section Styles \*/

.services {

padding: 5rem 0;

}

.section-header {

text-align: center;

margin-bottom: 3rem;

}

.section-header h2 {

font-size: 2.5rem;

margin-bottom: 1rem;

color: #1a202c;

}

.section-header p {

max-width: 800px;

margin: 0 auto;

color: #666;

}

.services-grid {

display: grid;

grid-template-columns: repeat(3, 1fr);

gap: 2rem;

}

.service-box {

background-color: white;

border-radius: 8px;

overflow: hidden;

box-shadow: 0 5px 15px rgba(0, 0, 0, 0.1);

transition: transform 0.3s ease, box-shadow 0.3s ease;

}

.service-box:hover {

transform: scale(1.05);

box-shadow: 0 10px 25px rgba(0, 0, 0, 0.2);

}

.service-content {

padding: 1.5rem;

}

.service-icon {

font-size: 3rem;

color: #38b2ac;

margin-bottom: 1rem;

text-align: center;

}

.service-box h3 {

margin-bottom: 1rem;

color: #1a202c;

}

/\* Footer Styles \*/

footer {

background-color: #1a202c;

color: white;

padding: 3rem 0;

}

.footer-container {

display: grid;

grid-template-columns: repeat(3, 1fr);

gap: 2rem;

}

.footer-col h3 {

margin-bottom: 1.5rem;

font-size: 1.3rem;

}

.footer-col p {

margin-bottom: 1rem;

}

.social-links {

display: flex;

gap: 1rem;

margin-top: 1rem;

}

.social-links a {

display: inline-block;

width: 40px;

height: 40px;

background-color: #2d3748;

border-radius: 50%;

text-align: center;

line-height: 40px;

transition: background-color 0.3s ease, transform 0.3s ease;

}

.social-links a:hover {

background-color: #38b2ac;

transform: translateY(-5px);

}

.copyright {

text-align: center;

margin-top: 3rem;

padding-top: 1.5rem;

border-top: 1px solid #2d3748;

}

/\* Responsive Media Queries \*/

@media screen and (max-width: 1024px) {

.services-grid {

grid-template-columns: repeat(2, 1fr);

}

}

@media screen and (max-width: 768px) {

.header-container {

flex-direction: column;

padding: 1rem 0;

}

nav ul {

margin-top: 1rem;

}

nav ul li {

margin: 0 1rem;

}

.hero h1 {

font-size: 2.2rem;

}

.services-grid {

grid-template-columns: 1fr;

}

.footer-container {

grid-template-columns: 1fr;

text-align: center;

}

.social-links {

justify-content: center;

}

}

</style>

</head>

<body>

<!-- Header Section -->

<header>

<div class="container header-container">

<div class="logo">Zen<span>Inc</span></div>

<nav>

<ul>

<li><a href="#">Home</a></li>

<li><a href="#">Solutions</a></li>

<li><a href="#">About</a></li>

<li><a href="#">Contact</a></li>

</ul>

</nav>

</div>

</header>

<!-- Hero Section -->

<section class="hero">

<div class="container">

<h1>Simplifying Technology Through Zen Innovation</h1>

<p>We build intuitive, minimalist tech solutions that bring harmony to your digital experience.</p>

<a href="#" class="cta-button">Discover Our Approach</a>

</div>

</section>

<!-- Services Section -->

<section class="services">

<div class="container">

<div class="section-header">

<h2>Our Solutions</h2>

<p>Zen Inc creates technology that works in harmony with your business needs and user expectations.</p>

</div>

<div class="services-grid">

<!-- Service 1 -->

<div class="service-box">

<div class="service-content">

<div class="service-icon">🧠</div>

<h3>AI Integration</h3>

<p>Smart AI solutions that seamlessly integrate with your existing systems to automate workflows and enhance productivity.</p>

</div>

</div>

<!-- Service 2 -->

<div class="service-box">

<div class="service-content">

<div class="service-icon">🌿</div>

<h3>Mindful UX Design</h3>

<p>Thoughtfully crafted user experiences that minimize friction and create intuitive, calming digital environments.</p>

</div>

</div>

<!-- Service 3 -->

<div class="service-box">

<div class="service-content">

<div class="service-icon">⚡</div>

<h3>Clean Energy Tech</h3>

<p>Sustainable technology solutions that reduce environmental impact while optimizing performance and efficiency.</p>

</div>

</div>

</div>

</div>

</section>

<!-- Footer Section -->

<footer>

<div class="container">

<div class="footer-container">

<div class="footer-col">

<h3>About Zen Inc</h3>

<p>Founded in 2025, Zen Inc is a forward-thinking tech startup dedicated to creating harmonious digital solutions that simplify complex technological challenges.</p>

</div>

<div class="footer-col">

<h3>Connect With Us</h3>

<p>Zen Inc, Islamabad</p>

<p>Phone: +92 321 9854008</p>

<p>Email: faseeh@zeninc.tech</p>

</div>

<div class="footer-col">

<h3>Join Our Community</h3>

<p>Follow us on social media for insights, updates, and tech mindfulness tips.</p>

<div class="social-links">

<a href="#">FB</a>

<a href="#">TW</a>

<a href="#">IG</a>

<a href="#">LI</a>

</div>

</div>

</div>

<div class="copyright">

<p>&copy; 2025 Zen Inc. Finding balance in technology.</p>

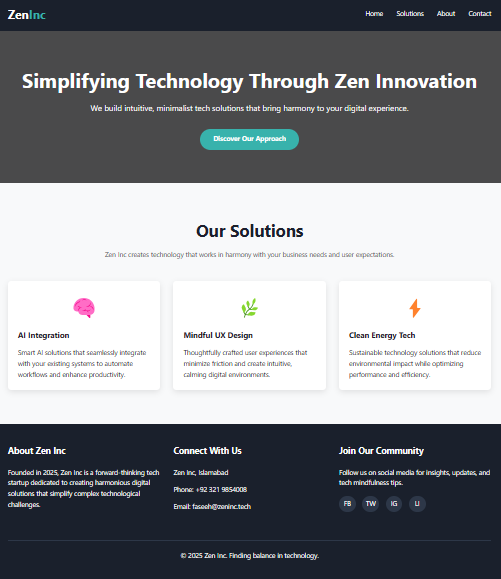
</div>

</div>

</footer>

</body>

</html>

A screenshot of a website

AI-generated content may be incorrect.A screenshot of a computer

AI-generated content may be incorrect.