

Experiment 1

Aim: Apply fundamental design principles to create a visually appealing and user-friendly frontend interface using HTML and CSS.

Theory:

HTML5 Semantics

HTML5 introduced several **semantic** elements to make web pages more meaningful and accessible. Semantic elements clearly define their purpose both for developers and search engines, improving **SEO** and accessibility.

1. Importance of Semantic HTML

- Improves **readability** for developers.
- Helps **search engines** understand page content better (**SEO boost**).
- Enhances **accessibility** for screen readers.
- Improves **maintainability** of code.

2. Important HTML5 Semantic Elements

Element	Description
<code><header></code>	Represents introductory content (e.g., logo, navigation, or heading).
<code><nav></code>	Defines navigation links, such as menus or breadcrumbs.
<code><section></code>	Groups related content together (useful for articles, topics).
<code><article></code>	Represents independent, self-contained content (e.g., blog post, news).
<code><aside></code>	Defines content that is indirectly related to the main content (e.g., sidebars, advertisements).
<code><footer></code>	Contains footer information like copyright, contact details, etc.
<code><figure></code> & <code><figcaption></code>	Used for embedding images, charts, or illustrations with captions.
<code><main></code>	Defines the main content of a document.
<code><mark></code>	Highlights text within a paragraph.

<code><time></code>	Represents a specific time or date.
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Types of CSS

CSS is used to style HTML elements, and it comes in different types:

1. Inline CSS

- Applied directly to an HTML element using the `style` attribute.
- **Pros:** Quick to apply, useful for small modifications.
- **Cons:** Not reusable, hard to maintain, reduces readability.

Example:

```
<p style="color: blue; font-size: 16px;">This is inline CSS.</p>
```

2. Internal (Embedded) CSS

- Defined within a `<style>` tag inside the `<head>` of an HTML document.
- **Pros:** Useful for small projects, styles only a single page.
- **Cons:** Not reusable across multiple pages.

Example:

```
<head>
  <style>
    p {
      color: blue;
      font-size: 16px;
    }
  </style>
</head>
```

3. External CSS

- Defined in a separate `.css` file and linked to an HTML document using `<link>`.
- **Pros:** Best for large projects, reusable, improves maintainability.
- **Cons:** Requires an extra HTTP request to fetch the CSS file.

Example:

css

```
/* styles.css */
p {
  color: blue;
  font-size: 16px;
}
```

html

```
<head>
  <link rel="stylesheet" href="styles.css">
</head>
```

CSS Selectors

CSS selectors define which HTML elements should be styled.

1. Basic Selectors

Selector	Example	Description
<code>*</code>	<code>* { margin: 0; }</code>	Selects all elements.
<code>element</code>	<code>p { color: red; }</code>	Selects all <code><p></code> elements.
<code>#id</code>	<code>#header { background: gray; }</code>	Selects element with <code>id="header"</code> .
<code>.class</code>	<code>.btn { font-size: 14px; }</code>	Selects elements with class <code>btn</code> .

2. Attribute Selectors

Selector	Example	Description
<code>[attr]</code>	<code>[type] { color: red; }</code>	Selects all elements with the <code>type</code> attribute.
<code>[attr="value"]</code>	<code>[type="text"] { color: blue; }</code>	Selects elements with <code>type="text"</code> .

3. Pseudo-Classes

Selector	Example	Description
<code>:hover</code>	<code>a:hover { color: red; }</code>	Applies styles when the user hovers over a link.
<code>:first-child</code>	<code>p:first-child { font-weight: bold; }</code>	Styles the first child of a parent.

4. Combinators

Selector	Example	Description
<code>descendant</code>	<code>div p { color: red; }</code>	Selects all <code><p></code> inside <code><div></code> .
<code>child (>)</code>	<code>div > p { color: blue; }</code>	Selects direct child <code><p></code> inside <code><div></code> .

Design Principles

Design principles are the rules and guidelines for creating aesthetically pleasing and user-friendly interfaces.

1. Visual Hierarchy

- Emphasizes important elements using **size, color, contrast, and spacing**.
- Example: Headlines are larger and bold, while normal text is smaller.

2. Consistency

- Maintain a uniform **color scheme, typography, and layout** throughout the design.
- Example: Using the same font and button styles across all pages.

3. White Space

- Also known as **negative space**, it helps improve readability and focus.
- Example: Using margins and padding to create breathing space around text.

4. Contrast

- Use contrasting colors to make elements stand out.
- Example: Dark text on a light background improves readability.

5. Alignment

- Keeps elements neatly arranged for a structured design.
- Example: Text and images aligned in a grid layout.

6. Simplicity

- Avoid clutter by keeping designs **clean and minimalistic**.
- Example: Minimal color schemes and fewer unnecessary elements.

7. Feedback & Accessibility

- Provide **visual feedback** (hover effects, error messages).
- Ensure **accessibility** (alt text for images, proper contrast for readability).

Summary

Topic	Key Points
HTML5 Semantics	Improves accessibility, SEO, and readability. Key elements: <code><header></code> , <code><nav></code> , <code><section></code> , <code><article></code> , <code><footer></code> .
Types of CSS	Inline CSS (quick but not reusable), Internal CSS (applies to a single page), External CSS (best for large projects).
CSS Selectors	Basic (element, ID, class), Attribute, Pseudo-classes (<code>:hover</code>), Combinators (<code>></code>).

Design Principles	Visual hierarchy, consistency, white space, contrast, alignment, simplicity, accessibility.
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Code: <!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

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

<title>Jai Desar - Personal Portfolio</title>

<link rel="stylesheet" href="style.css">

</head>

<body>

<header>

<section class="hero" id="about">

<h1>Hi, I'm Jai Desar</h1>

<p>Web Developer - Cybersecurity Enthusiast - Computer Engineering Student</p>

<nav>

About

Education

Experience

Projects

Skills

Contact

</nav>

</section>

</header>

<section id="education" class="section">

<h2>Education</h2>

<table>

<tr>

<th>Level</th>

<th>Institution</th>

<th>Period</th>

</tr>

<tr>

<td>B.E. Computer Engineering</td>

<td>VESIT, Mumbai University</td>

<td>2023-2027</td>

</tr>

<tr>

<td>HSC</td>

<td>Matoshree Prabhodini</td>
<td>2021-2023</td>

<td>SSC</td>
<td>DAV Public School</td>
<td>2021-2023</td>

Experience

Web Developer | Internship | Mumbai

December 2024 -- Present

- Working on a large-scale project for university management services
- Implementing solutions using Django framework and PostgreSQL database
- Managing institute programs, courses, staff, students, exams, and classes

Awakening the Scientist Competition | 2024

First place winner - Demonstrated scientific and engineering principles through internal combustion engine (ICE) presentation

Projects

College Management System

Django-based web application with PostgreSQL integration for institutional management

Chatbot for Rajasthan's Colleges

Botpress-powered chatbot providing comprehensive college information and web-integrated responses

Library Management System

```

        <p>Java-based MVC application with PostgreSQL integration for efficient library
resource management</p>
    </div>
    <div class="project-card">
        <h3>Green-Gauge</h3>
        <p>Climate education app with AI-powered scanner for calculating carbon footprint of
daily items</p>
    </div>
</section>

<section id="skills" class="section">
    <h2>Skills</h2>
    <div class="project-card">
        <ul>
            <li>Django</li>
            <li>React</li>
            <li>DSA</li>
            <li>Firebase</li>
            <li>PostgreSQL, MongoDB</li>
            <li>C/C++, Java</li>
        </ul>
    </div>
</section>

<section id="contact" class="section">
    <h2>Contact Me</h2>
    <form class="contact-form">
        <input type="text" placeholder="Your Name" required>
        <input type="email" placeholder="Your Email" required>
        <input type="text" placeholder="Subject">
        <textarea rows="5" placeholder="Your Message" required></textarea>
        <button type="submit">Send Message</button>
    </form>
</section>

<footer>
    <a href="https://github.com/Ghostblaster08">GitHub</a>
    <a href="https://www.linkedin.com/in/jai-desar-b8b12930a/">LinkedIn</a>
    <a href="mailto:jaiksdesar@gmail.com">Email</a>
</footer>
</body>
</html>
html {
    font-family: Arial, sans-serif;

```



```
margin-bottom: 10px;
background-color: #497D74;
background-image: url('wallpaper.jpg');
background-size: cover;
}
```

```
nav {
background-color: palegoldenrod;
color: white;
padding: 10px;
text-align: center;
border-radius: 10px;
margin-bottom: 10px;
position: sticky;
top: 0;
margin: 10px;
backdrop-filter: blur(100px);
}
```

```
nav a {
color: #333;
text-decoration: none;
margin: 0 15px;
font-weight: bold;
}
```

```
.hero {
background: inherit;
color: white;
padding: 10px;
text-align: center;
border-radius: 10px;
margin: 10px;
backdrop-filter: blur(10px);
box-shadow: 0 0 2000px 0 rgba(255, 255, 255, 0.5);
}
```

```
table {
text-align: center;
color: white;
margin-left: auto;
margin-right: auto;
border: solid 1px black;
width: 80%;
```

```
    max-width: 1000px;
    background: inherit;
    backdrop-filter: blur(10px);
    box-shadow: 0 0 20px 0 rgba(255, 255, 255, 0.5);
    margin-bottom: 30px;
}
```

```
th, td {
    padding: 10px;
    border: 1px solid rgba(255, 255, 255, 0.2);
}
```

```
.profile {
    width: 100px;
    height: 100px;
    border-radius: 50%;
    margin: 10px;
}
```

```
footer {
    background-color: palegoldenrod;
    color: #333;
    padding: 10px;
    text-align: center;
    border-radius: 10px;
    margin: 10px;
    backdrop-filter: blur(100px);
}
```

```
footer a {
    color: #333;
    text-decoration: none;
    margin: 0 15px;
    font-weight: bold;
}
```

```
.section {
    background: inherit;
    color: white;
    padding: 20px;
    border-radius: 10px;
    margin: 20px 10px;
    backdrop-filter: blur(10px);
    box-shadow: 0 0 20px 0 rgba(255, 255, 255, 0.5);
}
```

```
}
```

```
.project-card {  
  background: rgba(255, 255, 255, 0.1);  
  border-radius: 10px;  
  padding: 15px;  
  margin: 10px 0;  
}
```

```
.contact-form {  
  max-width: 600px;  
  margin: 0 auto;  
  padding: 20px;  
}
```

```
.contact-form input,  
.contact-form textarea {  
  width: 100%;  
  padding: 10px;  
  margin: 10px 0;  
  border-radius: 5px;  
  border: 1px solid rgba(255, 255, 255, 0.2);  
  background: rgba(255, 255, 255, 0.1);  
  color: white;  
}
```

```
.contact-form button {  
  background-color: palegoldenrod;  
  color: #333;  
  padding: 10px 20px;  
  border: none;  
  border-radius: 5px;  
  cursor: pointer;  
  font-weight: bold;  
}
```

Nu Html Checker

To exit full screen, press and hold **Esc**

This tool is an ongoing experiment in better HTML checking, and its behavior remains subject to change

Showing results for contents of text-input area

Checker Input

Show ☒ source ☐ outline ☐ image report [Options...](#)

Check by **text input** ☐ CSS

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Jai Desar - Personal Portfolio</title>
  <link rel="stylesheet" href="style.css">
</head>
<body>
  <header>
    <section class="hero" id="about">
      
      <h1>Hi, I'm Jai Desar</h1>
      <p>Web Developer - Cybersecurity Enthusiast - Computer Engineering Student</p>
      <nav>
        <a href="#about">About</a>
        <a href="#education">Education</a>
```

[Check](#)

Use the Message Filtering button below to hide/show particular messages, and to see total counts of errors and warnings.

[Message Filtering](#)

Document checking completed. No errors or warnings to show.

Source

```
1. <!DOCTYPE html>
2. <html lang="en">
3. <head>
4.   <meta charset="UTF-8">
5.   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6.   <title>Jai Desar - Personal Portfolio</title>
7.   <link rel="stylesheet" href="style.css">
8. </head>
9. <body>
```



The W3C CSS Validation Service

W3C CSS Validator results for TextArea (CSS level 3 + SVG)

To exit full screen, press and hold **Esc**

Jump to: [Validated CSS](#)

W3C CSS Validator results for TextArea (CSS level 3 + SVG)

Congratulations! No Error Found.

This document validates as [CSS level 3 + SVG](#) !

To show your readers that you've taken the care to create an interoperable Web page, you may display this icon on any page that validates. Here is the XHTML you could use to add this icon to your Web page:



```
<p>
  <a href="http://jigsaw.w3.org/css-validator/check/referer">
    
  </a>
</p>
```



```
<p>
  <a href="http://jigsaw.w3.org/css-validator/check/referer">
    
  </a>
</p>
```

(close the img tag with > instead of /> if using HTML <= 4.01)



The W3C validators rely on community support for hosting and development.

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If you like, you can download a copy of this image to keep in your local web directory, and change the XHTML fragment above to reference your local image rather than the one on this server.