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

Theory:

HTML Elements Used

1. <!DOCTYPE html>: Declares the document type and version of HTML

2. <html>: Root element of the HTML document

3. <head>: Contains metadata and document information

4. <body>: Contains the visible webpage content

5. <div>: Container element for layout organization

6. <section>: Semantic element for thematic grouping of content

7. <header>: Introductory content container

8. <form>: Container for interactive input elements

9. <img>: Embeds images in the document

CSS Implementation Methods

1. Inline CSS

  - Applied directly to HTML elements using the style attribute

  - Highest specificity in the CSS cascade

  - Example: <div style="color: blue;">

2. Internal CSS

  - Defined within <style> tags in the HTML document head

  - Applies to elements within the same document

  - Example:

  css

  <style>

     .header { background: #f8f9fa; }

  </style>

<u>3. External CSS</u>

 - Stored in a separate .css file

 - Linked using <link> tag in HTML head

 - Promotes reusability and maintenance

 - Example: <link rel="stylesheet" href="styles.css">

Important HTML Tags:

<html>: Marks the beginning and end of an HTML document.

<head>: Contains meta-information like the document's title, links to stylesheets, and other metadata.

<title>: Defines the title that appears in the browser tab.

<body>: Contains the visible content of the page.

<div>: A generic container for grouping content together.

<h1>, <h2>, <h3>: Header tags for creating structured headings.

<p>: Defines a paragraph of text.

<a>: Creates a hyperlink to another webpage or resource.

<img>: Embeds an image in the page.

, <ol>, <li>: Defines unordered (bulleted) or ordered (numbered) lists.

<form>: Used to gather user input through various form elements.

<input>, <textarea>: Fields for receiving user input.

<button>: Represents a clickable button that can trigger actions or submit forms.

Key CSS Properties Demonstrated

1. Flexbox: For one-dimensional layouts

2. Grid: For two-dimensional layouts

3. Transitions: For smooth state changes

4. Media Queries: For responsive design

5. Box Model: For spacing and sizing

6. Typography: For text styling

7. Colors & Gradients: For visual hierarchy

Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Professional Portfolio</title>
  <!-- External CSS -->
  <style>
    /* Reset and base styles */
    * {
      margin: 0;
      padding: 0;
      box-sizing: border-box;
      font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
    }
    body {
      background: linear-gradient(135deg, #26ab12, #0fa245);
      min-height: 100vh;
      padding: 2rem;
    }
    .container {
      max-width: 800px;
      margin: 0 auto;
      background: white;
      border-radius: 15px;
      box-shadow: 0 10px 20px rgba(0,0,0,0.1);
      overflow: hidden;
    }
    .header {
      text-align: center;
      padding: 2rem;
      background: #f8f9fa;
    }
    .profile-img {
      width: 150px;
      height: 150px;
      border-radius: 50%;
      object-fit: cover;
      border: 5px solid white;
      box-shadow: 0 5px 15px rgba(0,0,0,0.2);
    }
    .section {
      padding: 2rem;
      border-bottom: 1px solid #eee;
    }
    .section-title {
      color: #2c3e50;
      margin-bottom: 1.5rem;
      font-size: 1.5rem;
      border-bottom: 2px solid #19ec11;
      display: inline-block;
    }
```

```css
    .skills-grid {

        display: grid;

        grid-template-columns: repeat(auto-fit,
minmax(200px, 1fr));

        gap: 1rem;

        margin-top: 1rem;

    }

    .contact-form {

        display: grid;

        gap: 1rem;

    }

</style>
```

<!-- Internal CSS -->

```css
<style>

    .project-card {

        background: #f8f9fa;

        padding: 1rem;

        border-radius: 8px;

        margin-bottom: 1rem;

        transition: transform 0.2s;

    }

    .project-card:hover {

        transform: translateY(-5px);

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

    }

    .skill-item {

        background: #e9ecef;

        padding: 0.8rem;

        border-radius: 6px;

        text-align: center;

    }

    input, textarea {

        padding: 0.8rem;

        border: 1px solid #ddd;

        border-radius: 4px;

        width: 100%;

    }

    button {

        background: #6bd74d;

        color: black;

        padding: 0.8rem 1.5rem;

        border: none;

        border-radius: 4px;

        cursor: pointer;

        transition: background 0.2s;

    }

    button:hover {

        background: #199104;

        color: white;

    }

</style>

</head>

<body>

    <div class="container">

    <!-- Header with inline CSS for specific
customization -->

    <header class="header"
style="background: linear-gradient(to right,
#f8f9fa, #e9ecef);">

        <img src="profile2.jpg" alt="Profile
Picture" class="profile-img">

        <h1 style="color: #2c5048; margin-top:
1rem;">Rushil Rohra</h1>

        <p style="color: #666; font-size:
1.1rem;">Full-Stack Developer</p>

    </header>

    <section class="section">
```

```html
        <h2 class="section-title">About Me</h2>

        <p>Passionate full-stack developer with expertise in building scalable web applications. Experienced in modern frameworks and cloud technologies. Committed to writing clean, efficient code and creating exceptional user experiences.</p>

      </section>

      <section class="section">

        <h2 class="section-title">Projects</h2>

        <div class="project-card">

          <h3>Resume Template</h3>

          <p>A resume template that is device responsive</p>

        </div>

        <div class="project-card">

          <h3>Currency Converter</h3>

          <p>Used basic JS concepts and API to make a simple currency converter</p>

        </div>

      </section>

      <section class="section">

        <h2 class="section-title">Skills</h2>

        <div class="skills-grid">

          <div class="skill-item">HTML</div>

          <div class="skill-item">CSS</div>

          <div class="skill-item">JAVA</div>

          <div class="skill-item">Python</div>

          <div class="skill-item">TypeScript</div>

          <div class="skill-item">ABC</div>

        </div>

      </section>

      <section class="section">

        <h2 class="section-title">Contact</h2>

        <form class="contact-form">

          <input type="text" placeholder="Name" required>

          <input type="email" placeholder="Email" required>

          <textarea placeholder="Message" rows="4" required></textarea>

          <button type="submit">Send Message</button>

        </form>

      </section>

    </div>

  </body>

</html>
```

```css
/* Reset and base styles */

* {

  margin: 0;

  padding: 0;

  box-sizing: border-box;

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

}

/* Layout and container styles */

body {

  background: linear-gradient(135deg, #40E0D0, #4169E1);

  min-height: 100vh;

  padding: 2rem;

  line-height: 1.6;

  color: #333;

}

.container {

  max-width: 800px;

  margin: 0 auto;

  background: white;
```

```css
    border-radius: 15px;

    box-shadow: 0 10px 20px rgba(0,0,0,0.1);

    overflow: hidden;

}

/* Header styles */

.header {

    text-align: center;

    padding: 2rem;

    background: #f8f9fa;

}

.profile-img {

    width: 150px;

    height: 150px;

    border-radius: 50%;

    object-fit: cover;

    border: 5px solid white;

    box-shadow: 0 5px 15px rgba(0,0,0,0.2);

    transition: transform 0.3s ease;

}

.profile-img:hover {

    transform: scale(1.05);

}

/* Section styles */

.section {

    padding: 2rem;

    border-bottom: 1px solid #eee;

}

.section:last-child {

    border-bottom: none;

}

.section-title {

    color: #2c3e50;

    margin-bottom: 1.5rem;

    font-size: 1.5rem;

    border-bottom: 2px solid #8df58d;

    display: inline-block;

    padding-bottom: 0.5rem;

}

/* Project styles */

.projects-container {

    display: grid;

    gap: 1.5rem;

    margin-top: 1rem;

}

/* Skills section */

.skills-grid {

    display: grid;

    grid-template-columns: repeat(auto-fit,
minmax(200px, 1fr));

    gap: 1rem;

    margin-top: 1rem;

}

/* Contact form */

.contact-form {

    display: grid;

    gap: 1rem;

    max-width: 600px;

    margin: 0 auto;

}

/* Typography */

h1 {

    font-size: 2.5rem;

    margin-bottom: 0.5rem;

}

h2 {
```

```css
    font-size: 2rem;

    margin-bottom: 1rem;

}

h3 {

    font-size: 1.5rem;

    margin-bottom: 0.5rem;

}

p {

    margin-bottom: 1rem;

    line-height: 1.6;

}

/* Links */

a {

    color: #94eea7;

    text-decoration: none;

    transition: color 0.2s ease;

}

a:hover {

    color: #2fe02f;

    text-decoration: underline;

}

/* Media Queries */

@media (max-width: 768px) {

    body {

        padding: 1rem;

    }

    .container {

        border-radius: 10px;

    }

    .section {

        padding: 1.5rem;

    }

    .skills-grid {

        grid-template-columns: repeat(auto-fit,
minmax(150px, 1fr));

    }

    h1 {

        font-size: 2rem;

    }

    h2 {

        font-size: 1.75rem;

    }

    h3 {

        font-size: 1.25rem;

    }

}

@media (max-width: 480px) {

    .profile-img {

        width: 120px;

        height: 120px;

    }

    .section {

        padding: 1rem;

    }

    .skills-grid {

        grid-template-columns: repeat(auto-fit,
minmax(120px, 1fr));

    }

}

/* Animations */

@keyframes fadeIn {

    from {

        opacity: 0;

        transform: translateY(20px);

    }
```
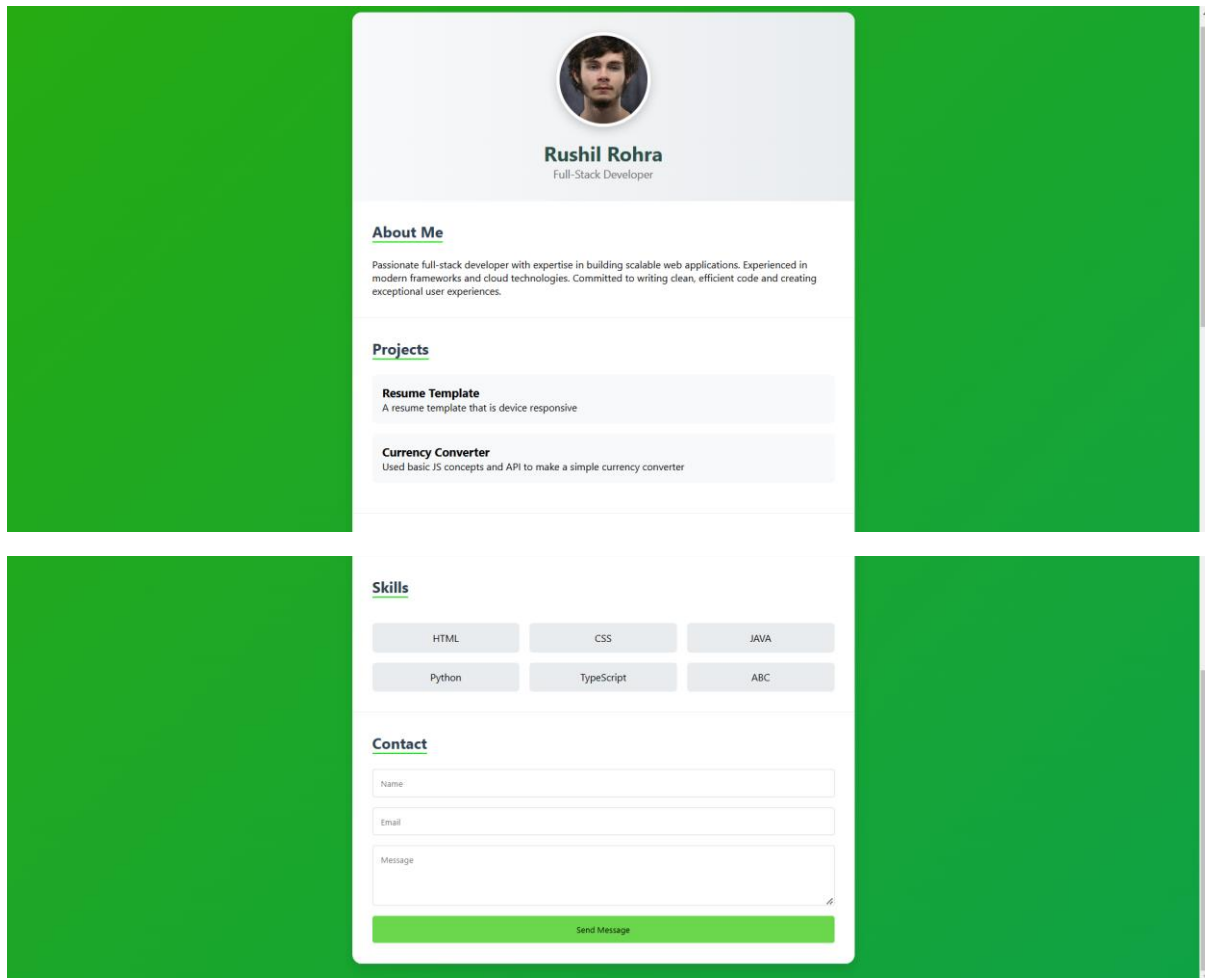
```css
    to {
        opacity: 1;
        transform: translateY(0);
    }
}
.section {
    animation: fadeIn 0.5s ease-out forwards;
}
/* Accessibility */
:focus {
    outline: 3px solid #3498db;
    outline-offset: 2px;
}
/* Print styles */
@media print {
```

```css
    body {
        background: none;
        padding: 0;
    }
    .container {
        box-shadow: none;
        border: 1px solid #ddd;
    }
    .profile-img {
        box-shadow: none;
    }
}
```

Output:

Conclusion:

The experiment successfully demonstrated the implementation and interaction of different CSS types in web development. External CSS proved most maintainable for large-scale styling, while inline CSS was useful for unique cases. The combination of all three types, when used appropriately, creates a well-structured and maintainable codebase. The portfolio website achieved both functionality and aesthetic appeal while maintaining responsive design principles.