Complete note on CSS Selectors

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>CSS Selector Cheat Sheet</title>
  <style>
    /* ============================================= */
    /* CSS SELECTOR CHEAT SHEET                      */
    /* ============================================= */

    /* 1. BASIC SELECTORS */
    /* Element Selector */
    p {
      color: blue; /* Styles all <p> elements */
    }

    /* Class Selector */
    .button {
      background: red; /* Styles elements with class="button" */
      color: white;
      padding: 10px;
      display: inline-block;
    }

    /* ID Selector */
    #header {
      font-size: 24px; /* Styles the element with id="header" */
      color: green;
    }

    /* Universal Selector */
    * {
      margin: 0; /* Resets margin for all elements */
      padding: 0; /* Resets padding for all elements */
    }

    /* Grouping Selector */
    h1, h2, h3 {
      font-family: Arial; /* Styles all <h1>, <h2>, and <h3> */
    }

    /* ============================================= */
    /* 2. COMBINATORS */
```

```css
/* Descendant Selector (Space) */
div span {
  color: green; /* Styles <span> inside <div> */
}

/* Child Selector (>) */
ul > li {
  list-style: none; /* Styles direct <li> children of <ul> */
}

/* Adjacent Sibling Selector (+) */
h2 + p {
  margin-top: 10px; /* Styles <p> immediately after <h2> */
  color: orange;
}

/* General Sibling Selector (~) */
h2 ~ p {
  color: gray; /* Styles all <p> siblings after <h2> */
}

/* ================================================ */
/* 3. ATTRIBUTE SELECTORS */
/* Attribute Presence */
[disabled] {
  opacity: 0.5; /* Styles elements with the "disabled" attribute */
}

/* Exact Attribute Value */
input[type="text"] {
  border: 1px solid #ccc; /* Styles <input> with type="text" */
}

/* Attribute Starts With (^=) */
a[href^="https"] {
  color: purple; /* Styles links where href starts with "https" */
}

/* Attribute Ends With ($=) */
img[src$=".png"] {
  border: 2px solid black; /* Styles images with .png extension */
}

/* Attribute Contains (*=) */
[class*="error"] {
  color: red; /* Styles elements with "error" in their class */
}

/* ================================================ */
/* 4. PSEUDO-CLASSES */
```

```css
/* Hover State */
button:hover {
  background: yellow; /* Styles button on hover */
}

/* Focus State */
input:focus {
  outline: 2px solid blue; /* Styles input on focus */
}

/* First Child */
li:first-child {
  font-weight: bold; /* Styles the first <li> in a list */
}

/* Nth Child */
li:nth-child(2n) {
  background: #f0f0f0; /* Styles every even <li> */
}

/* Last Child */
tr:last-child {
  border-bottom: 3px solid black; /* Styles the last <tr> */
}

/* Negation Pseudo-Class */
input:not([type="submit"]) {
  width: 200px; /* Styles all inputs except submit buttons */
}


/* =============================================== */
/* 5. PSEUDO-ELEMENTS */
/* Before/After Content */
.blockquote::before {
  content: "“"; /* Adds content before the element */
  font-size: 24px;
}

.blockquote::after {
  content: "”"; /* Adds content after the element */
}

/* First Line/Letter */
p::first-line {
  font-weight: bold; /* Styles the first line of <p> */
}

p::first-letter {
  font-size: 2em; /* Styles the first letter of <p> */
}
```

```css
/* ============================================= */
/* 6. ADVANCED SELECTORS */
/* Case-Insensitive Attribute */
[class="btn" i] {
  background: green; /* Matches class="BTN", class="bTn", etc. */
}

/* :is() Selector */
:is(h1, h2, h3) > a {
  text-decoration: none; /* Styles links inside any heading */
}

/* ============================================= */
/* PROPERTIES WITH DIFFERENT VALUES */
/* Display Property */
.display-example {
  display: block; /* Default for <div> */
  display: inline; /* Makes element inline */
  display: inline-block; /* Inline but with block properties */
  display: none; /* Hides the element */
}

/* Position Property */
.position-example {
  position: static; /* Default positioning */
  position: relative; /* Relative to its normal position */
  position: absolute; /* Relative to the nearest positioned ancestor */
  position: fixed; /* Relative to the viewport */
  position: sticky; /* Toggles between relative and fixed */
}

/* Overflow Property */
.overflow-example {
  width: 100px;
  height: 100px;
  overflow: visible; /* Content overflows outside the box */
  overflow: hidden; /* Content is clipped */
  overflow: scroll; /* Adds scrollbars */
  overflow: auto; /* Adds scrollbars only if needed */
}

/* Background Property */
.background-example {
  background: red; /* Solid color */
  background: #ff0000; /* Hex color */
  background: rgb(255, 0, 0); /* RGB color */
  background: url("image.jpg"); /* Image as background */
  background: linear-gradient(red, blue); /* Gradient background */
}
```

```css
    /* Border Property */
    .border-example {
      border: 1px solid black; /* Solid border */
      border: 2px dotted red; /* Dotted border */
      border: 3px dashed green; /* Dashed border */
      border: 4px double blue; /* Double border */
    }
  </style>
</head>
<body>
  <h1>CSS Selector Cheat Sheet</h1>

  <!-- 1. BASIC SELECTORS -->
  <h2>1. Basic Selectors</h2>
  <p>This is a paragraph styled with the element selector.</p>
  <div class="button">Button with class selector</div>
  <div id="header">Header with ID selector</div>

  <!-- 2. COMBINATORS -->
  <h2>2. Combinators</h2>
  <div>
    <span>Span inside a div (descendant selector)</span>
  </div>
  <ul>
    <li>List item 1 (child selector)</li>
    <li>List item 2</li>
  </ul>
  <h2>Heading 2</h2>
  <p>Paragraph after h2 (adjacent sibling selector)</p>
  <p>Another paragraph after h2 (general sibling selector)</p>

  <!-- 3. ATTRIBUTE SELECTORS -->
  <h2>3. Attribute Selectors</h2>
  <button disabled>Disabled Button</button>
  <input type="text" placeholder="Text input">
  <a href="https://example.com">Link with https</a>
  <img src="image.png" alt="PNG Image">
  <div class="error-message">Error message</div>

  <!-- 4. PSEUDO-CLASSES -->
  <h2>4. Pseudo-Classes</h2>
  <button>Hover over me</button>
  <input type="text" placeholder="Focus on me">
  <ul>
    <li>First child</li>
    <li>Second child</li>
    <li>Third child</li>
  </ul>
  <table>
```

```html
      <tr>
        <td>Row 1</td>
      </tr>
      <tr>
        <td>Row 2</td>
      </tr>
      <tr>
        <td>Row 3</td>
      </tr>
    </table>
    <input type="text" placeholder="Not a submit button">
    <input type="submit" value="Submit">

    <!-- 5. PSEUDO-ELEMENTS -->
    <h2>5. Pseudo-Elements</h2>
    <blockquote class="blockquote">This is a quote.</blockquote>
    <p>This is a paragraph with a styled first line and first letter.</p>

    <!-- 6. ADVANCED SELECTORS -->
    <h2>6. Advanced Selectors</h2>
    <div class="btn">Button with case-insensitive class</div>
    <h3><a href="#">Link inside heading</a></h3>

    <!-- PROPERTIES WITH DIFFERENT VALUES -->
    <h2>Properties with Different Values</h2>
    <div class="display-example">Display Example</div>
    <div class="position-example">Position Example</div>
    <div class="overflow-example">Overflow Example</div>
    <div class="background-example">Background Example</div>
    <div class="border-example">Border Example</div>
  </body>
</html>
```