

By: Subham Kumar Panda

### **HTML Basics**

<button> Hello </button>
 paragraph of text

Creates a button with the text "Hello" inside. Creates a paragraph of text.

# HTML Syntax

Syntax = rules for writing HTML code (like grammar in English).

1. Elements should have an opening tag and a matching closing tag.



2. In HTML, extra spaces and newlines are combined into 1 space.

```
 paragraph of text 
 paragraph of text 
 paragraph of
 text
```

All 3 examples above will show the same result on the web page.

# **Attributes**

Attributes modify how an HTML element behaves.

### **CSS Basics**

```
One way of writing CSS code is using the <style> HTML element.
```

# **CSS Syntax**

```
CSS Selector = which element(s) will be modified
```

```
all the styles for this selector must be placed inside { ... }

background-color: red;
}

Property
(what we're modifying)
(what we're modifying the property to)
```

# **CSS Properties**

Here are some common CSS properties we can use:

```
color: white;
                         Sets the text color. Takes the same values as
                         background-color (color name, rgb, hex).
height: 36px;
                         Sets the height. Common values:
                            • Pixel value: 36px
                            • Percentage: 50%
width : 105px ;
                         Sets the width. Takes the same values as
                         height.
border : none ;
                         Removes the border.
border-radius : 2px ; Creates rounded corners.
                         Changes the mouse/cursor when hovering over the
cursor : pointer;
                         element.
border-color: red; Sets the border color.
border-style : solid
                         Sets the border style. Common values:
                            solid
                            dotted
                            dashed
border-width: 1px; Sets the border width.
```

# **How To Google CSS Properties**

We regularly use <u>Google</u> to search for CSS properties that we don't know or don't remember. When using Google, search what you're trying to accomplish. Examples:

"css rounded corners"

### **CSS Values**

Each CSS property has a set of values that are allowed ( background-color allows color values, cursor allows solid, dotted, dashed, etc.)

Here are some categories of values that are useful to know:

#### Color Values

```
1. A color name: red, white, black
```

2. RGB value: rgb (0, 150, 255);

RGB is a more precise way of measuring color. Every color can be created using a combination of red, green, and blue (RGB). In CSS, this is represented by rgb(...);

<sup>&</sup>quot;css text italic"

<sup>&</sup>quot;css adjust space between lines"

3. Hex value

Hex is another way to write RGB.



- Each character in Hex is base 16, which means it can have a value of 0, 1, 2, ... 8, 9, A, B, C, D, E, F (16 possible values).
- Using the first 2 characters, we can have 16 \* 16 = 256 possible values from 0 255:

- This is the same range as RGB (0 to 255), so the first 2 characters in Hex are used to represent red, the second 2 characters represent green, and the third 2 characters represent blue. Usually, it's easier to use a Hex to RGB calculator to convert.
- 4. RGBA value: rgba(0, 150, 255, 0.5);
  Same as RGB, except with an additional a-value (alpha value). The a-value determines how seethrough the color is. 0 = complete see-through, 1 = solid color and not see-through, 0.5 = 50% see-through.

#### Measurement Values

1. Pixels: 50px, 100px

Pixels (px) are a common unit of measurement in the digital world. For example: a 4K screen is 3840px by 2160px.

2. Percent: 50%, 100%

A relative measurement. For example, width: 50%; means 50% of the width of the page (or if the element is inside another element, 50% of the width of the container element).

3. em / rem: 1em, 1rem Relative measurements that are useful for accessibility. em = relative to the font-size of the element ( 2em means 2 times the font size). rem = relative to the font-size of the page, which is 16px by default ( 2rem means 2 times the font size of the page = 2 \* 16px = 32px by default).

### Class Attribute

... }

```
Class attribute = lets us target specific elements with CSS.
<button class = "subscribe-button" > Add a class to an element. The class name (the text
```

```
SUBSCRIBE
</button>
```

.subscribe-button

```
between the "...") can be anything you want,
but no spaces.
```

Target all elements on the page with class = "subscribe-button"

```
<button class = "youtube-button">
  SUBSCRIBE
</button>
<button class = "youtube-button">
JOIN
</button>
```

Multiple elements can have the same class

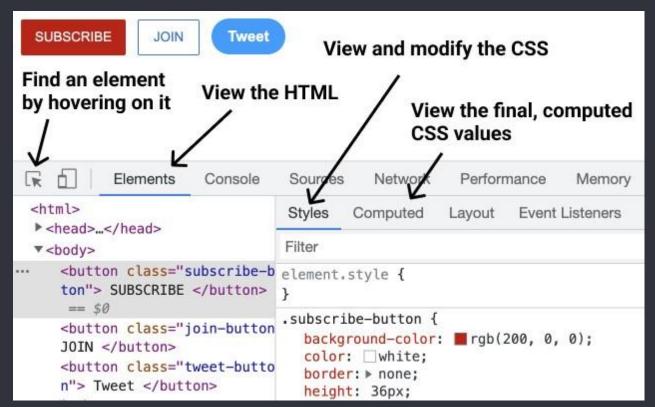
```
"youtube-button subscribe-button" >
<button class=</pre>
                                                                 An element can have multiple
  SUBSCRIBE
                                                                 classes, separated by space
</button>
                                Elements can be targeted by multiple CSS selectors.
button {
                                Here, all 3 CSS selectors will target the button above.
.youtube-button {
.subscribe-button {
```

### **CSS Pseudo-Classes**

```
.subscribe-button:hover
                                    These styles only apply when hovering over an element
{ ... }
                                   with class= "subscribe-button"
                                    These styles only apply when clicking on an element
 .subscribe-button:active {
                                   with class = "subscribe-button"
Intermediate CSS Properties
 .subscribe-button { opacity : 0.5; Sets how see-through an element is: 0.5 = 50%
  see-through.
   opacity: 0;
                     0 = complete see-through (invisible). opacity : 1 ;
      1 = not see-through (this is the default value).
   (often used when hovering).
   transition: background-color 1s;
                                           Transition background color over 1 second.
               color 0.15s;
  transition:
                                           Transition text color over 0.15 seconds.
   transition: duration1>Transition multiple properties by separating
                                           them with a comma.
     cproperty2> <duration2> ,
     ...;
   transition: background-color 0.15s, Transition both background color and text
    color 0.15s ;
                                           color over 0.15 seconds.
   box-shadow:
                <h-position> <v-position> <blur> <color> ;
 box-shadow: 3px 4px 5px black;
                                             Creates a shadow that's 3px to the right of
                                            the element, 4px to the bottom, with 5px of
                                            blur, and color of black.
  box-shadow: 3px 4px 0 rgba( 0, 0, 0, 0.15); Creates a shadow that's
                                     3px to the
                                                  right, 4px to the bottom, with no blur,
 }
                                                  and a very faint black color.
```

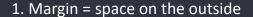
### **Chrome DevTools**

Lets us view (and modify) the HTML and CSS of a website directly in the browser. To open the DevTools: right-click > Inspect.



## **CSS Box Model**

- Determines how much space an element takes up.
- Determines how far away elements are from each other.

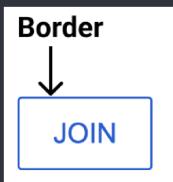








3. Border



```
.join-button {
  margin-right : 10px ;
  margin-left: 10px ;
  margin-top : 10px;
  margin-bottom: 10px ;
  margin-right : -20px;
```

Add 10px of space on the outside of the element.

Normal margin pushes things away from an element.

Negative margin pulls things towards an element like this:



margin: 10px; Shorthand for adding 10px of margin on all sides.

```
margin: 10px 20px;
                               Add 10px of margin top & bottom and 20px left &
                              right
   margin: <top> <left & right> <bottom>;
           <top> <right> <bottom> <left> ;
   padding-right: 10px; Add 10px of space on the inside of the element.
  padding-left : 10px;
  padding-top : 10px ;
  padding-bottom : 10px ;
   padding-right: -20px; Negative padding has no effect.
                               Shorthand for adding 10px of padding on all sides.
   padding : 10px ;
                               Add 10px of padding top & bottom and
   padding: 10px 20px;
                                                                    20px left &
                              right
   padding: <top> <left & right> <bottom>;
  padding : <top> <right> <bottom> <left> ;
   border-width: 1px; Sets the border width. border-style:
                                                               solid;
     Sets the border style (to a solid color). border-color: red; Sets the
  border color.
 border: <width> <style> <color> ; Shorthand for the 3 properties above.
 border : 1px solid red
Text Styles
 .title {
 font-family : Arial ;
                                           Change the font.
  font-family: Roboto, Verdana, Arial; A font-stack: if Roboto is not available, it
                                        will
                                           fall back to Verdana. If Verdana is not available it
                                           will fall back to Arial.
   font-size : 30px ;
                                 Change text size.
   font-weight : bold ;
                                 Change text thickness.
  font-weight : 700; font-
                                 Another way to specify font-weight. We can use: 100,
                                                                                200.
  style : italic ;
                                        ..., 900 . bold =
                                                             700 , regular =
                                  300,
                                                                              400,
                                 semibold
                                                      = 500
   text-align : center ;
                                Other values we can use: left, right, justified
   line-height: 24px; Adjust space between lines of text.
   text-decoration: underline; Underlines the text. text-
                         Removes underline.
  decoration : none;
 }
  by default have margin-top and margin-bottom. A common practice is to:
```

1. Reset the default margins.

```
p { margin-
  top: 0;
   margin-bottom: 0;
2. Then apply more precise margins.
 .title { margin-
  bottom : 16px ;
Text Elements (also called Inline Elements)
   • Text elements ( <strong>, <u>, <span>, <a>) appear within a line of text.
       >
        This is a < strong> text element </strong>
       Useful if we want to style only a part of the text.
   • <span> is the most generic text element (it doesn't have any default styles).
   • We can style text elements using a class:
        This is a <span class = "shop-link"> text element
      </span> 
       .shop-link { text-
       decoration: underline;
       }
The HTML Structure
 <!DOCTYPE html> Tells the browser to use a modern version of HTML.
< html>
                      <head> contains everything that's not visible like the title and description
   <head>
                     (a.k.a. metadata) as well as links to fonts and CSS stylesheets.
   </head>
                      <body> contains everything that's visible like buttons, text, images, etc.
   <body>
      . . .
   </body>
 </html>
Elements in the Head Section
 <head>
 <title> Title in the tab </title>
                                                      Sets the title in the tabs
  < link rel= "preconnect" href= "https://fonts.googleapis.com" >
   <link rel= "preconnect" href= "https://fonts.gstatic.com" crossorigin>
```

```
"stylesheet"
   link
                       rel=
                                                                                    href=
"https://fonts.googleapis.com/css2?family=Roboto:wght@400;500&display=sw
                                                                                      ap"
  Loads a font from Google onto the page. 1) Search "google fonts" in Google. 2) Pick the fonts and
  styles that you like. 3) Copy the code that Google provides into <head>
   <link rel = "stylesheet" href= "styles.css" > Loads a CSS file to the page
</head>
Filepaths
href= "styles.css"
                                    Looks for a file called styles.css beside the HTML file.
href="fold1/styles.css"
                                         Looks for a folder called fold1 beside the HTML file,
                                   then goes into the folder and looks for styles.css.
href= "fold1/fold2/styles.css" Go into fold1, go into fold2, look for
styles.css
Images
```

```
<img src = "image.png">
                            Loads an image image.png beside the HTML file.
 <img src ="pics/image.png" > Loads image.png in the pics folder.
< img class = "image" src = "pics/image.png" >
.image {
   width : 300px ;
                                Resizes the image to a width of 300px . Height will
                                resize to keep the image's dimensions.
   height: 300px;
                                If both width and height are set, the image may stretch.
   object-fit:
                  cover ;
                                Enlarges the image to cover the entire width * height
                                area without stretching or distorting.
   object-fit : contain;
                                Shrinks the image so that it's contained in the width *
                                height area.
 object-position : left;
                                Determines where the image is positioned in the width *
   object-position: right; height area.
  object-position : top ;
   object-position:
                        bottom;
```

# Inputs

```
<input type = "text" >
                                                   Creates a text box.
<input type = "text" placeholder =</pre>
                                                   Add a placeholder (a label) to the text box.
"Search" >
<input type = "checkbox" >
                                                   Creates a checkbox.
<input class= "search-bar" type=</pre>
                                           "text">
```

```
.search-bar {
  font-size : 30px ; Changes the font-size when typing into the text box.
}
.search-bar::placeholder {
  font-size : 30px ; Changes the font-size of the placeholder.
}
```

# **CSS Display Property**

# <div> Element

<div> is a container. We generally put other elements (including other <div> s) inside (nesting).

<div> s allow us to group elements together and create
more complex layouts.



# **Nested Layouts Technique**

There are 2 types of layouts:

1. Vertical Layout

2. Horizontal Layout



Most designs can be created using:

- Vertical layout inside horizontal layout inside vertical layout ... OR
- Horizontal layout inside vertical layout inside horizontal layout ...







### To Create the Vertical Layouts

- Use <div>s with display: block (most common)
- Use flexbox (explained later) with flex-direction: column
- Use CSS grid (explained later) with 1 column

### To Create the Horizontal Layouts

- Use <div>s with display: inline-block (not recommended)
- Use flexbox with flex-direction: row
- Use CSS grid with multiple columns

# **Inline CSS Styles**

Another way of writing css, using the style = "..." attribute:

```
<div style = "
```

```
background-color: red;
color: white;
" >
...
</div>
```

- Inline style = CSS is written within a line of HTML.
- Inline styles only affect the element with the style= "..." attribute (no selectors are needed).

# **CSS Grid**

```
.grid {
   display : grid ;
                                                   Turns an element into a grid container.
   grid-template-columns:
                                 100px 100px;
                                                  Sets how many columns are in the grid and
                                                how wide the columns are.
 column-gap : 20px ;
                                                  Sets space between the columns.
 row-gap: 40px;
                                                 Sets space between the rows.
 .grid {
  display:
  grid ;
   grid-template-columns:
                                 100px 1fr;
                                                1fr = the column will take up the remaining
                                           amount of space in the grid container.
   grid-template-columns :
                                 1fr 1fr; The columns will take up an equal amount of the
                                           remaining space (since they're both 1fr).
   grid-template-columns:
                                 1fr 2fr; The number in front of fr = relatively how much
                                           space the column gets. Here, the 2nd column gets
                                           twice the amount of space as the 1st.
   justify-content : center ;
                                           Aligns the columns horizontally in the center. Spread
  justify-content: space-between; out the columns evenly horizontally.
   align-items:
                   center;
                                           Aligns the columns vertically in the center.
}
```

For more examples, see grid.html.

# **Flexbox**

```
justify-content: center; Centers the elements in the flexbox horizontally.
  justify-content : space-between;
                                         Spreads out the elements in the flexbox evenly
  across the horizontal space.
 align-items : center ;
                                          Centers the elements in the flexbox vertically.
 align-items : space-between ;
                                            Spreads out elements evenly in the vertical space.
 .element-inside-flexbox {
   width: 100px;
                                      Sets the width of the flexbox element to 100px.
                                      Take up the remaining amount of space. The value 1
 flex : 1 ;
                                      determines relatively how much space.
                                      Don't shrink the element when resizing.
   flex-shrink : 0 ;
                                       Allow the element to shrink down when resizing.
 width: 0;
                                      Creates a flexbox where elements are placed
 <div style = "
  display: flex;
                                      horizontally (flex-direction: row; is the
   flex-direction: row;
                                      default so it's not mandatory to have that in the CSS)
                                      This element has a width of 100px.
   > Flexbox element 1
  This element takes up 1/3 of the remaining space.
   Flexbox element 2
   This element takes up 2/3 of the remaining space.
   Flexbox element 2
   </div>
flex-direction: column;
 .flexbox {
   display: flex; flex-
                                 Lays out elements vertically inside the flexbox. Also,
  direction: column;
                                 justify-content and align-items are reversed.
   justify-content : center;
                                         Centers elements vertically inside the flexbox.
   justify-content :
                        space-between;
                                          Spreads out elements evenly in the vertical space.
   align-items: center; Centers elements horizontally. align-items:
                                                                         space-
  between:
             Spreads out elements evenly horizontally.
```

### **CSS Position**

- Create elements that stick to the page while scrolling.
- Create elements that appear on top of other elements.

```
.element {
  position: static; This is the default value that every element starts with.
                            position: static; causes the element to display normally.
Position Fixed
 .fixed {
                           Positions the element in the browser window (sticks to the page while
 position :
                           scrolling).
 fixed;
  top: 0;
                            Places the element \emptyset px from the top of the browser window.
  bottom : 10px;
                            10px from the bottom of the browser window.
  left: 50px;
                            50px from the left of the browser window.
   right : 100px ;
                            100px from the right of the browser window.

    If you set opposite directions ( top / bottom or left /

                                 right), the element will stretch.
                            Using negative pixels places the element beyond the top edge.
  top:
          -5px;
                           Sets the element's width to 100px.
  width: 100px;
                           Sets the element's height to 100px .
  height :
             100px;

    When using width / height the element will not resize

                                 with the page.
                              • When using top/ bottom/ left/ right the
                                 element will resize with the page.
Position Absolute
 .absolute {
                             Positions the element on the page (it will scroll with the page and
 position:
                            will not stick when scrolling).
 absolute;
  top : 0 ;
                             Places the element \emptyset px from the top of the page.
  bottom : 10px ;
                             10px from the bottom of the page.
  left: 50px;
                             50px from the left of the page.
  right : 100px;
                             100px from the right of the page.
                             Sets the element's width to 100px.
  width : 100px ;
                             Sets the element's height to 100px .
 height: 100px;
```

#### Position Absolute Inside Position Fixed

• When a position: absolute element is inside a position: fixed element, it will be positioned relative to the fixed element.

- This rule also applies to any position value that is not position: static.
- This lets us place elements in the corners of other elements. For example, a "Close" button in the top-right corner.

```
<div style = "
  position: fixed;
  width: 100px;
   <button style = "
                         position: absolute; The position: absolute element
    will be placed in the
     top: 0;
                                  top-right of the position : fixed element.
     right: 0;
    Χ
   </button>
 </div>
Position Relative
                            The element will appear normally (as if it's position: static).
 .relative {
  position:
                            We can then push it around with top / bottom / left /
  relative;
                            right.
   top : 10px;
                             Places the element 10px from the top of its original position
                             (pushes it down by 10px) . Unlike margin, it won't
                                                                                   push the
                            rest of the page down.
   bottom : 10px ;
                             Places the element 10px from the bottom of its original position
                            (pushes it up by 10px).
                             Places the element 50px from the left of its original position.
   left:
            50px;
   right:
             100px;
                             Places the element 100px from the right of its original position.
                             Sets the element's width to 100px.
   width: 100px;
                            Sets the element's height to 100px .
  height:
             100px ;
}
```

#### Position Absolute Inside Position Relative

- When a position: absolute element is inside a position: relative element, it will be positioned relative to the relative element.
- Useful if we want to display an element normally (using position: relative), but still be able to place other elements in the corner (using position: absolute).

```
<div style = "
  position: relative;
  width: 100px;
" >
  <button style= "</pre>
```

Determines which elements appear in front and behind:

- Elements with a higher z-index appear in front of elements with a lower z-index. The default z-index is 0.
- Elements with position : static; always appear at the back. z-index has no effect.
- If the z-index is equal or both elements are position : static, the element that was written later in the code will appear in front.

```
.fixed { position : fixed ; This element will appear in front of the position :
   absolute ; z-index : 2 ; element because it has a higher z-index.
}
.absolute {
   position :
   absolute ; z-index
   : 1 ;
}
.static { This element will appear at the back since it's position : static. position
   : static ;
}
```

For more examples, see <u>position.html</u>.

# **Responsive Design**

Responsive design = making the website look good on any screen size.

```
@media ( min-width : 1000.02px
                                      Only apply this CSS code when the screen width is
) {
                                      over 1000px.
   .element {
   width: 600px;
}
```

We generally use a gap of .02px between the ranges (like above) because the browser can support fractional screen widths like 750.50px.

### **Advanced CSS Selectors**

```
With Comma
.class1 , .class2 { ... }
                                    Target multiple classes at the same time.
.class1 , p { ... }
                                    Target a class and all  s at the same time.
With Space
.class1 img { ... }
                                   Target <img> s that are
                                                          inside elements with
                                    class = "class1"
.class1 img ,
                                    Target <img>s that are inside elements with
 .class2 .tooltip { ... }
                                    class= "class1" AND .tooltip inside elements
                                    with class = "class2".
 .class2:hover .tooltip { ... }
```

with class= "class2".

Target .tooltip only when hovering over elements

For a full list of selectors, check out CSS Selectors.

### **Inheritance**

A text property set on the outer element will be passed down into inner elements:

```
<div style = "color: red;" >
  Paragraph 
                                    This paragraph will have red text.
</div>
For global text styles (styles we want on the entire page), we can set them on the <body>:
body { font-family: Roboto, Arial; All elements on the page by default
 will use color : rgb( 20, 20, 20 ); font-family : Roboto ,
 Arial and color:
                                rgb(20, 20, 20). This can be overridden.
}
```

# **CSS Specificity**

If multiple CSS selectors change the same property on the same element (see example below), CSS Specificity determines which selector "wins" (which style gets applied).

**CSS Specificity Rules** 

Here's the full set of <u>CSS Specificity Rules</u> ( you don't need to memorise all of these).

Usually, you just need to know a few useful rules and search Google for more if needed:

- 1. Inline CSS has higher priority than .class selectors.
- 2. .class selectors have higher priority than element name selectors (p).
- 3. Element name selectors ( p ) have higher priority than inheritance (from body ).
- 4. If 2 selectors have the same priority, the one that is written later wins.

#### General Rule of Thumb

A CSS selector that's more specific (targets a more specific set of elements) has higher priority.

### **Semantic Elements**

Elements that work the same way as <div>. However, they also give the HTML meaning when screen readers, search engines, or other devices read the website.

Common semantic elements include:

```
<header>, <nav>, <main>, <section>, etc.
```

Here's a list of <u>Semantic Elements</u>. They'll be covered in more detail in the accessibility course.

## Comments

Let us write code that the browser ignores. Useful for documenting how the code works.

```
<!-- This is a comment --> Syntax for a comment in HTML: <!-- ... -->

Paragraph of text. 
/* This is a comment */ Syntax for a comment in CSS: /* ... */
```

```
.title {
  color :
   green;
}
```

# **Other CSS Properties**

Here are some other CSS properties that were covered in the course.

```
.tooltip {
  pointer-events : none; Disables all interactions with the mouse (clicks, hovers, etc.)
  white-space: nowrap; Prevents the text inside the element from wrapping to multiple
}
```

