CSS 3

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Module 1: CSS basics

- Introduction
- How CSS works?
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Introduction to CSS

- CSS stands for Cascading Style Sheets.
- CSS is used to apply styles (look and formatting) to the content on our web page.
- CSS is a specification.
- CSS is a complementary language to HTML.

How CSS works?

CSS is a specification. Hence it is interpreted by the browser in its own way. Browsers are also free to write their own CSS properties.

Including CSS in web page

- Using Inline Styles
- Using the <style> Element
- Using @import inside a <style> element
- Using the <link> Element

Using Inline Styles

```
<h1 style="color: red; background-color:#413;">Welcome</h1>
```

In Inline style, CSS is contained inside an HTML attribute called ‘style’.

Using the <style> Element

```
<style>
    header {
    color: red;
    background-color: #413;
    font-size: 2.3em;
    }
</style>
```

The <style> element is included inside HTML & it contains CSS code.

Using @import inside a <style> element

```
<style>
        @import url(css/style.css);
</style>
```

You may write css into a separate .css file & include it inside HTML file using @import.

Using the <link> Element

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

- The <link> element is placed inside <head>.
- This is the most recommended way of including css into HTML.

Module 2: CSS Selectors

- What is a selector?
- Basic selectors
- Advanced selectors
- Pseudo-class
- Pseudo-element

What is a selector?

Selector is the part of a CSS rule set that actually selects the content you want to style. For example:

.css file

```
p { color: black; }
```

.html file

```
<p>This is black text.</p>
```

Basic selectors

Basic selectors set simple rules to choose contents for applying styles. Here are few basic selectors:

- Universal selector
- Element type selector
- ID selector
- Class selector
- Attribute Selector
- Multiple Selectors

Universal selector

The universal selector works like a wild card character (asterisk), selecting all elements on a page. For example using the following selector, all elements in html page will be green in color.

```
* { color: green; }
```

Element type selector

Element type selector matches one or more elements of the same name. In the following example, ass <ul> elements in HTML page will set the given list-style & border.

```
ul {
list-style: none;
border: solid 1px #ccc;
}
```

ID selector

An ID selector is declared using a hash symbol (#) preceding a string of characters also called as element ID. This selector matches HTML element having same ID. For example:

```
#container {
    width: 960px;
    margin: 0 auto;
}
```

Class selector

Class selector is declared with a dot preceding a string of one or more characters. The class selector matches all elements on the page that have their class attribute set to the same value as the class. The class selector is the most useful of all CSS selectors.

```
.box {
padding: 20px; margin: 10px; width: 240px;
}
<div class="box"></div>
```

Attribute selector

The attribute selector targets elements based on the presence and/or value of HTML attributes, and is declared using square brackets.

```
input[type="text"] {
    background-color: #444;
    width: 200px;
}
```

```
<input type="text">
```

Multiple selectors

We can combine multiple selectors together. For example we are combining class & element type selector together:

```
p.box {
color: blue;
}
```

The above selector will set color to blue for all <p> elements & class as ‘box’.

Advanced selectors

Advanced selectors give more control over setting custom rule for selecting content where styles will be applied. Advanced selectors are also called as ‘combinators’. Here are the types of advanced selectors:

- Descendant selector
- Child selector
- General Sibling selector
- Adjacent Sibling selector

Descendant selector

Descendant selector allows you to limit the targeted elements to the ones who are descendants of another element. For example:

```
#container .box {
float: left; padding-bottom: 15px;
}
```

This declaration block will apply to all elements that have a class of box that are inside an element with an ID of container.

Child selector

Child selector is same as descendant selector, only difference is child selector is applied only on '*immediate children*'. Here we distinguish between parent & child selectors using greater than symbol (>).

```
#container > .box {
float: left;
padding-bottom: 15px;
}
```

Now the style will be applied to only immediate children of element id 'container'.

General Sibling selector

General sibling selector matches elements based on sibling relationship. This type selector is declared using tilde(~) character.

```
h2 ~ p {
margin-bottom: 20px;
}
```

Here all paragraph <p> elements those are having <h2> as sibling will be applied the style.

Adjacent sibling selector

Adjacent selector is applicable on only '*immediate sibling*' of the parent element. It is defined used plus (+) symbol.

```
p + p {
text-indent: 1.5em;
margin-bottom: 0;
}
```

This example will apply the specified styles only to paragraph elements that immediately follow other paragraph elements.

Pseudo-class

A pseudo-class is used to define a special state of an element. This special state may be a link is visited, activated, hovered etc.

```
selector:pseudo-class {    property:value; }
a:hover {  color: red; }
a:active { color: blue; }
div:hover { background-color: blue; }
```

Pseudo-element

Pseudo-element is used to style specified parts of an element. For example, it can be used to:

- Style the first letter, or line, of an element.
- Insert content before, or after, the content of an element.

selector::pseudo-element { property:value; }

Here we use double colon (::) to distinguish between selector & pseudo element.

Pseudo-element continue…

```
p::first-line {
    color: #ff0000;
    font-variant: small-caps;
}
```

The above pseudo element will apply the style on first line of every paragraph <p> element.

CSS Pseudo elements

Selector	Example	Example description
::after	p::after	Insert something after the content of each <p> element
::before	p::before	Insert something before the content of each <p> element
::first-letter	p::first-letter	Selects the first letter of each <p> element
::first-line	p::first-line	Selects the first line of each <p> element
::selection	p::selection	Selects the portion of an element that is selected by a user

Module 3: CSS box model

- What is a box model?
- Box model components
- States of HTML elements
- Margin
- Borders
- Padding
- Outlining
- Visibility & Display

CSS box model

The box model refers to the (usually) invisible rectangular area that is created for each HTML element.

Box model components

1) Content:

Content is a visible part of HTML element that you want to show to end user.

2) Padding:

The padding is the space around the content. It can be defined for an individual side i.e. padding-left, padding-right, padding-top, padding-bottom.

3) Border:

The border of an element is defined using the border property. This is a shorthand property that defines the element's border-width, border-style, and border-color. For example, border: 4px dashed orange.

Box model components

4) Margin:

Margin is similar to padding except unlike padding, the margin portion of an element exists outside the element. A margin creates space between the targeted element and surrounding elements.

States of HTML elements

Every HTML element has three different states:

- Invisible state
- Block state
- Inline state

Invisible state

Invisible state elements are not supposed to be rendered by browser. For example <style>, <meta> tags etc.

Block state

- A block-level element is more of a structural, layout related element.
- A block level element will naturally span the entire available width, without concern about how much horizontal space it actually needs.
- As a result of that, a block level element will automatically push following content to a new line.
- Thus block level element can be seen as a paragraph.
- Block-level elements include elements like , <p>, <section> etc.

Inline state

An inline element only takes up the space it needs to render its content and after that, more inline elements can be displayed.

The width and height properties are ignored for inline elements. Instead, you can use the line-height property to make an inline element smaller or bigger, as the space between each line grows or shrinks.

Inline elements include elements like , <b>, and etc.

Margin

Margin is an outer, invisible border around your element.

The default value for the margin properties is auto, which usually translates to zero.

```
<style type="text/css">
.box {
        background-color:    DarkSeaGreen;
        width: 100px;
        height: 100px;
        margin-top: 10px;
        margin-right: 5px;
        margin-bottom: 10px;
        margin-left: 5px;
}
</style>
```

```
<div class="box">
        Box
</div>
```

Margin with shorthand

You can also specify only ‘margin’ property instead of specific properties like margin-top, margin-right etc. This is called as shorthand properties.

```
<div class="box" style="margin: 10px 10px 10px 10px;">
```

Sets top, right, bottom & left margin as 10px.

```
<div class="box" style="margin: 10px 20px 10px;">
```

Sets top & bottom margin as 10px & left/right as 10 & 20px.

```
<div class="box" style="margin: 10px 20px;">
```

Sets top/bottom margin as 10px & left/right as 20px.

```
<div class="box" style="margin: 10px;">
```

Sets all margins top/bottom/right/left as 10px.

Relative Margins using ‘em’

- CSS allows us to define relative size unit using ‘*em*’.
- A single ‘em’ is always equal to whatever the value is of the font-size property on the element to which the em unit is applied.

```
.box {
        margin: 1em;
}
<div class="box" style="font-size: 1em;">Box</div>

<div class="box" style="font-size: 2em;">Box 2</div>

<div class="box" style="font-size: 3em;">Box 3</div>
```

Relative Margins using ‘rem’

- Using ‘em’ unit sometime becomes complicated when their value is inherited by parent element.

```
html {   font-size: 22px;    }
.box {    font-size: 20px;  padding: 1.5em;    }
p {
    font-size: 14px;
    padding: 2rem;
}
```

- Instead of calculating their value based on the element’s font-size value, rem units calculate their value based on the font-size value set on the root element (hence "rem," or "root em").

Negative margins

Margin can be declared as negative value as well. It is used to negate the effect of padding.

```
.box-header {
    margin: -10px -10px 10px -10px;
    padding: 5px 10px;
}
```

Borders

HTML elements doesn't have a border by default.

You can give border to any element as follows:

```
.box {
    width: 100px;
    height: 100px;
    border-color: red;
    border-width: 2px;
    border-style: solid;
}
<div class="box">Hello, world!</div>
```

The border-width can be absolute or relative value.

Border style can be one of hidden, dotted, dashed, solid, double, groove, ridge, inset and outset.

Border with shorthand

```
.box {
    width: 100px;
    height: 100px;
    border-style: solid dashed ridge dotted;
    border-color: red green blue orange;
    border-width: 1px 2px 3px 4px;
}
```

You can mention border top, right, bottom & left properties using shorthand as shown above. You can combine style, color & width as single property as follows:

```
.box {
    border: 2px solid blue;
}
```

Border with radius


```
.box {
        border: 3px solid blue;
        border-radius: 5px;
}
```

Padding

Padding is an inner, invisible border around HTML element.

```
.box {
        padding-top: 5px;
        padding-right: 10px;
        padding-bottom: 5px;
        padding-left: 10px;
}
```

Padding with shorthand

Sets top, right, bottom & left padding as 10px.

Sets top & bottom padding as 10px & left/right as 20px.

Sets top/bottom padding as 10px & left/right as 20px.

Sets all padding top/bottom/right/left as 10px.

Relative Padding

You can provide relative padding using ‘em’ units.

```
.box {
        padding: 1em;
}
<div class="box" style="font-size: 2em;">
```

Outlining

- Outline is an extra border for HTML element.

```
.box {
        outline-width: 3px;
        outline-style: solid;
        outline-color: pink;
}
```

- You cannot apply a different outline width, style and color for the four sides of an element, like you can with the border.
- The outline is not a part of the element's dimensions, like the border.

Outlining with shorthand


```
.box {
    outline: 3px solid red;
}
```

Visibility property

- Sometimes you want to show or hide an element depending upon a condition. This is possible using ‘visibility’.

```
<div class="box" style="visibility: hidden;">Box 2</div>
```

- Note that making an element hidden still reserves space for the element.

Display property

- Display element will control the existence of an element in the view.

```
<div class="box" style="display: none;">Box 2</div>
```

- Display property can have 3 possible values: none, inline or block.

Module 4: CSS Dimensions

- Width & height.
- Minimum width/ height.
- Overflow

Width & height

- We can apply width & height properties to only block level elements like , <p>, <section> etc. This is because block elements use entire available horizontal space & only required vertical space.
- Inline elements like etc. ignore width & height.

```
.box {    width: auto;     height: auto;     } //Auto adjust
.box {    width: 100px;    height: 200px;    } //Absolute values
.box {    width: 25%;      height: 30%;      } //Relative values
```

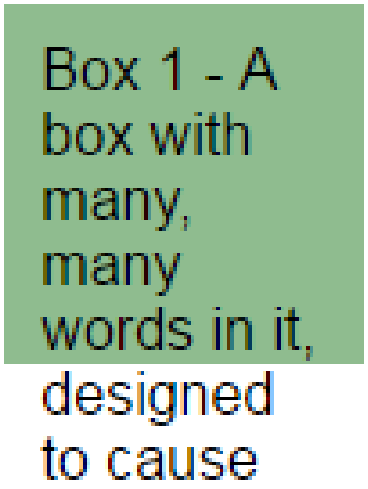
Minimum & maximum width & height

```
.box {      width: 100px;     height: 200px;    }

<div class="box"></div>

<div class="box" style="min-height: 300px; min-width:
200px;">

<div class="box" style="max-height: 300px; max-width:
200px;">
```

‘overflow’ property

Sometimes an element has larger contents than its dimensions. In such case, ‘overflow’ property helps browser to display hidden contents or not. If you wish to scroll in case larger contents then use overflow as ‘scroll’.

```
<div class="box" style="overflow: visible;">
```



‘overflow’ property values

‘overflow’ property can have four possible values:

1. Visible (default): It expands the contents beyond the border.
2. Hidden: Contents going beyond border are kept hidden.
3. Auto: It leaves the problem up to the browser to handle.
4. Scroll: Provides scroll bars to view overflow contents.

Module 5: CSS Positioning

- Relative positioning
- Absolute positioning
- Fixed positioning
- Floating positioning

Positioning of elements

- Positioning elements in web page is very important aspect of css. Correct positioning makes web page impressive & attractive.
- Positioning is mentioned using ‘position’ property which can have following values:
  1. Static
  2. Relative
  3. Absolute
  4. Fixed
  5. Floating

Static position

- In ‘static’ positioning, elements are placed from top to bottom, within the available space of their parent.
- ‘static’ is a default positioning.

```
#inner-div { position: static }

<div id=‘outer-div’>

        <div id=‘inner-div’>XXX</div>

</div>
```

Relative position

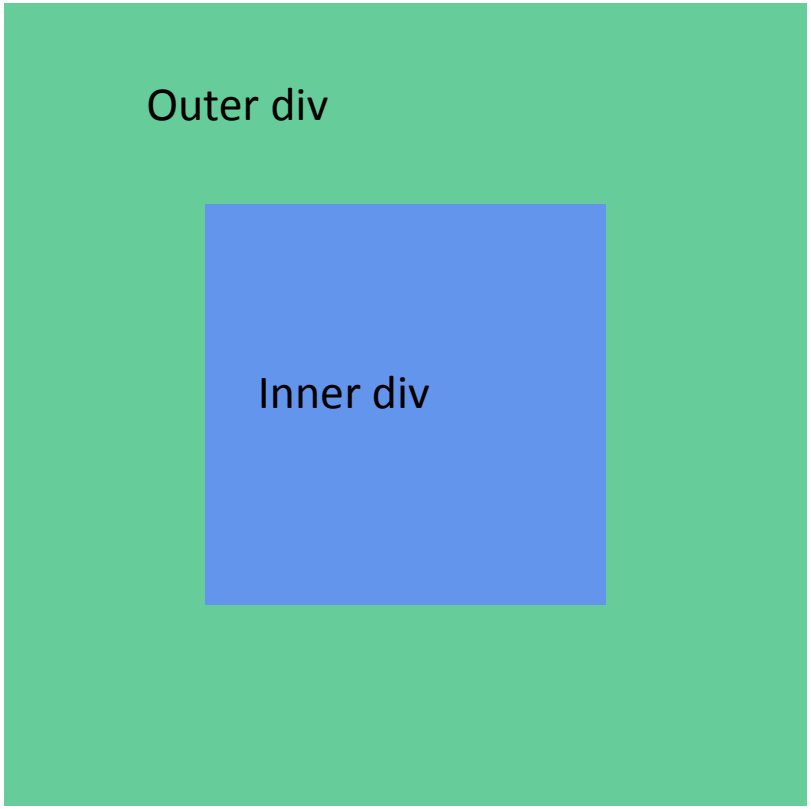
- In ‘relative’ positioning, elements are placed relative to its parent element.
- ‘static’ is a default positioning.

#outer-div { *width: 100px, height: 100px* }

#inner-div { *width: 50px, height: 50px, top: 100px, left: 100px, position: relative* }

```
<div id=‘outer-div’>
        <div id=‘inner-div’>XXX</div>
</div>
```

Relative position continue…



Absolute position

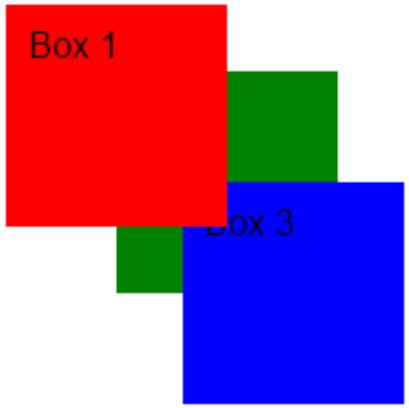
- Using absolute positioning, you can position your element at any location with respect to browser window or parent element.
- Absolute positioning comes with few properties like top, bottom, left & right.

```
#absolute-element {
        position: absolute;
        width: 100px;       height: 100px;
        top: 35px;       left: 35px;
}
<div id='absolute-element'></div>
```

z-index property

- In case, elements overlapped then which element should be shown top is controlled by a property called ‘z-index’.

```
<div class="box" style="background-color: red; top: 10px; left: 10px; z-index: 3;">Box 1</div>
<div class="box" style="background-color: green; top: 60px; left: 60px; z-index: 1;">Box 2</div>
<div class="box" style="background-color: blue; top: 100px; left: 100px; z-index: 2;">Box 3</div>
```



Fixed position

- Fixed position is same like absolute. Only in case of scroll up or down the position of fixed element remains at the designated place.

.menu-fixed { position: fixed; top: 0; right: 0; }

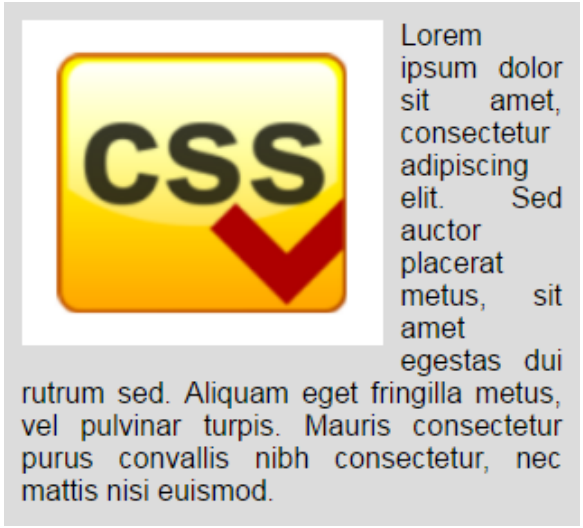
HTML CSS Result

```
/* apply a natural box layout model to all elements, but allowing
components to change */
html {
  box-sizing: border-box;
}
*, *:before, *:after {
  box-sizing: inherit;
}
body {
  background-color: #F5F7FA;
  line-height: 1.2;
}
/**
```

‘float’ property

The ‘float’ property allows us to take a block level element out of the normal order and let other elements float around it.

```
.image {      float: left;      }

<div class="container">

      <img src="myimage.png" class="image">

      Lorem ipsum dolor sit amet....

</div>
```



Module 6: Fonts

- Types of fonts
- Applying fonts
- Font weight
- Font style
- Font size

Introduction to fonts

- Web page is a media of sharing information with users. A web page involves text, images, videos etc. However, the most important component is the text because most of web page information is shared using text only.
- Optimizing typography of web page increases its accessibility, readability and usability. Hence we need to learn how to style our text.

Serif & Sans-serif fonts

- There are basically two types of fonts Serif & Sans-serif. For example:

```
<p style="font-family:serif;">This is your browsers default serif font</p>
<p style="font-family:sans-serif;">This is your browsers default sans-serif font</p>
```

- Serif fonts are small decorative flourish at the end where as Sans-serif does not flourish.

Serif fonts

American Typewriter

Bookman

Clearface

Didot

Elephant

Footlight

Georgia

Hightower Text

Imprint

Janson

Korinna

Lexicon

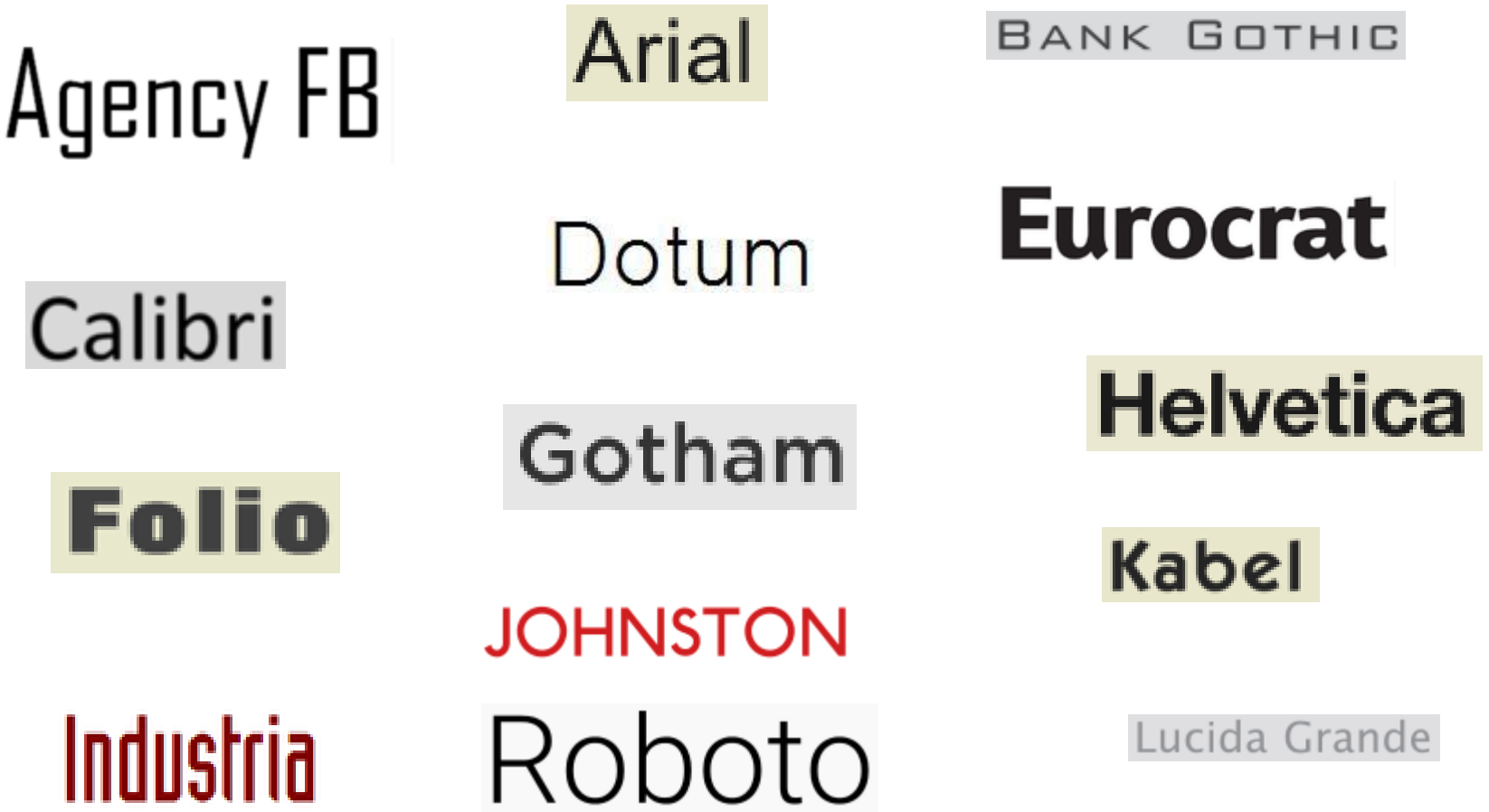
MS Serif

New York

Times New Roman

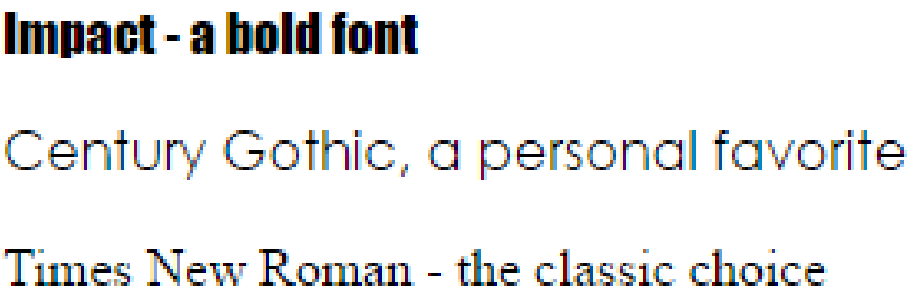
Utopia

Sans-serif fonts



Applying fonts

```
<p style="font-family: Impact, sans-serif; ">Impact - a bold font</p>

<p style="font-family: Century Gothic, sans-serif; ">Century Gothic, a personal favorite</p>

<p style="font-family: Times New Roman, Times, serif; ">Times New Roman - the classic choice</p>
```



Font weight

The font-weight property defines how bold you text is. The possible font weight values are:

normal, bold, bolder, lighter, 100, 200, 300, 400, 500, 600, 700, 800, 900, and inherit.

```
<style>
.weight200 {font-weight:200 }
.weight800 {font-weight:800 }
</style>
<p class="weight200">Text with 200 weight</p>
<p class="weight800"> Text with 800 weight </p>
```

Font style

The font-style property defines whether or not your text is italic or oblique.

```
p.normal {    font-style: normal;    }
```

This is a paragraph, normal.

```
p.italic {    font-style: italic;    }
```

This is a paragraph, italic.

```
p.oblique {    font-style: oblique;    }
```

This is a paragraph, oblique.

Italic vs Oblique font style

The italic font style is decorative where as oblique font style is a simple slanted version of normal font.

Font size

Font size can be mentioned either in ‘em’ or in ‘percentage’.

```
.textLarge {    font-size: 2em;    }
.textRegular{    font-size:1em;    }
body {    font-size:100%;    }
p {    font-size: 130%    }
.smallerText {    font-size: 50%;    }
```

Module 7: Text

- Text alignment
- Text spacing
- Text transformation
- Text decoration
- Text indentation
- Text alignment

Text alignment

We can use ‘text-align’ property to specify the alignment.

```
p {   text-align: right;   }
```

The ‘text-align’ can have following options:

1. left (default)
2. right
3. center
4. justify

Word spacing

- Word spacing features allows us to define custom space between two words.
- Word spacing reduces text readability.
- Word spacing can be used for headings or block quotes.

```
h2 {   word-spacing: 2.2em;   }
```

```
<h2>This is extra word-spacing</h2>
```

This is extra word-spacing

Letter spacing

The letter-spacing property lets you to control the space between two letters.

```
h2 {   letter-spacing: 0.25em;   }
```

```
<h2>Extra space between letters</h2>
```

Extra space between letters

Text transformation

Using text transformation properties you can transform your text to uppercase, lowercase, or capitalize.

```
p {  text-transform: uppercase;  }
```

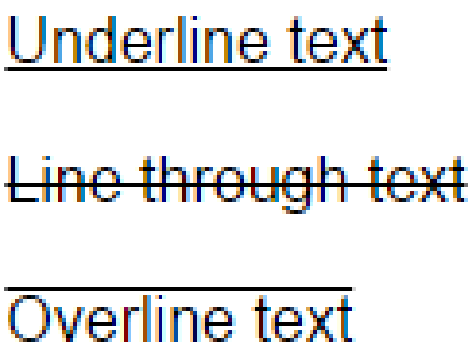
```
<p style="text-transform: uppercase;">This is my uppercase text.</p>
```

THIS IS MY UPPERCASE TEXT.

Text decoration

Using text-decoration property, we can decorate our text. For example we can give underline, line through or overline to the text.

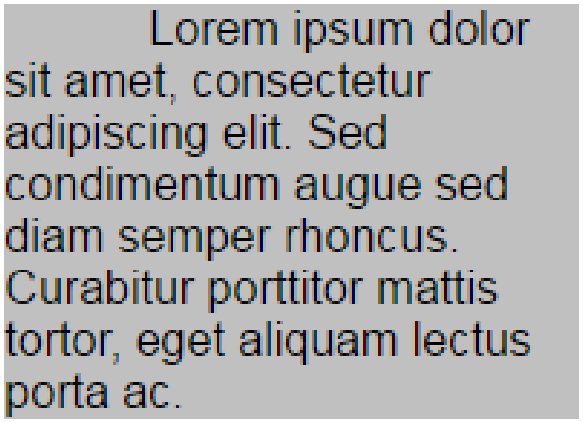
```
<div style="text-decoration: underline;">Underline text</div>
<div style="text-decoration: line-through;">Line through text</div>
<div style="text-decoration: overline;">Overline text</div>
```



Text indent

Using text-indent property, we can set the offset of starting first line of text.

```
p {   text-indent: 100px;   }

p {   text-indent: 2em;   }

p {   text-indent: 10%;   }
```



Text alignment

'text-align' property allows us to specify the text alignment.

```
<p style="text-align: left;">Left aligned text</p>

<p style="text-align: right;">Right aligned text</p>

<p style="text-align: center;">Center aligned text</p>

<p style="text-align: justify;">Justify aligned text</p>
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Suspendisse a lectus mattis, consequat mi vitae, tristique ipsum. In hac habitasse platea dictumst. Integer sit amet aliquet dolor.

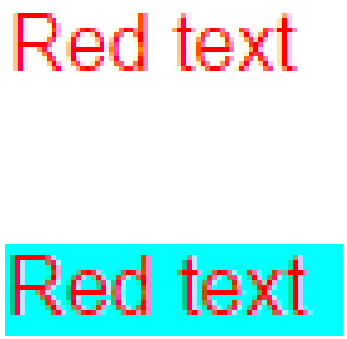
Module 8: Color & Background

- Applying color
- Background image
- CSS transitions

Text color & background color

Text color & background color can be set using ‘color’ & ‘background-color’ properties respectively.

```
<p style="color: Red;">Red text</p>

<p style="background-color: Cyan; color: Red;">Red text</p>
```



Different ways to set color

Color can be set in different ways as follows:

```
<p style="color: Red;">Red text</p>

<p style="color: rgb(255,0,0);">Red text</p>

<p style="color: #ff0000;">Red text</p>
```

Refer to the color guide at http://www.cssportal.com/css3-color-names/

Background image

Apart from background color, we can also set background as image using ‘background-image’ property.

```
.box {    background-image: 'blue_background.png';}
```

```
<div class="box">Welcome to CSS</div>
```

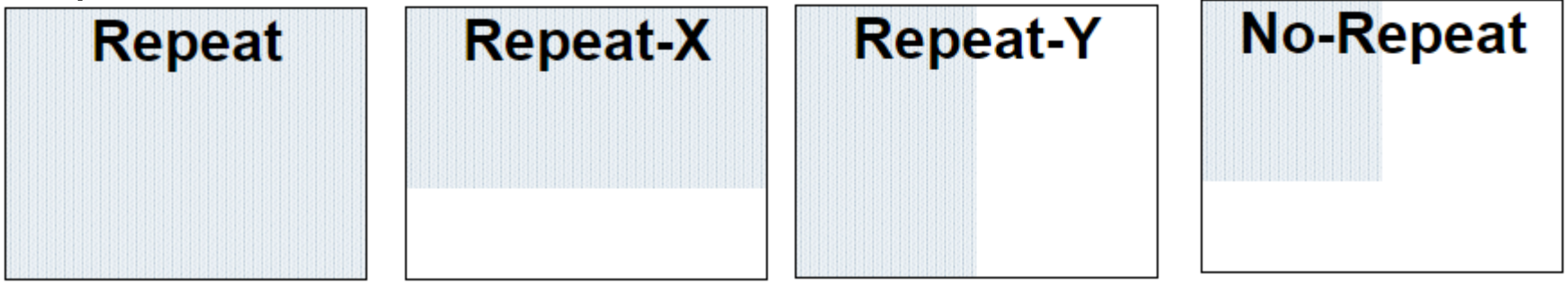
Repeating background image

The size of your container can be bigger than image size. In such cases CSS by default repeats the image so that whole container's background will be occupied by the image. CSS also provides us flexibility to control the image repeats using 'background-repeat' property with possible values:

- repeat (default)
- repeat-x
- repeat-y
- no-repeat

Repeating background image example

```
<div class="box" style="background-repeat: repeat;">Repeat</div>

<div class="box" style="background-repeat: repeat-x;">Repeat-
X</div>

<div class="box" style="background-repeat: repeat-y;">Repeat-
Y</div>

<div class="box" style="background-repeat: no-repeat;">No-
Repeat</div>
```



Background image positioning

We can specify position of background image using 'background-position' property. Here are few possible combinations of background positioning:

```
<div class="box" style="background-position: top left;">
<div class="box" style="background-position: top right;">
<div class="box" style="background-position: bottom right;">
<div class="box" style="background-position:20% 50%;">
<div class="box" style="background-position: 20px 50px;">
<div class="box" style="background-position: top 50%;">
```

CSS transitions

CSS transitions allows to change property values smoothly (from one value to another), over a given duration. It includes total four properties:

transition-property: It specifics which property the transition is applied to - be it color, background, border, and so. Possible values are none, all, property, initial & inherit.

transition-duration: It specifies how many second or milliseconds a transition takes to complete.

CSS transitions continue…

transition-timing-function: With the transition timing function, you can change the speed-curve of the transition effect. Possible values are linear, ease-in, ease-out, ease-in-out, cubic-beizer.

transition-delay: The transition-delay property specifies when the transition effect will start. Possible values are time, initial & inherit.

Thank you!!