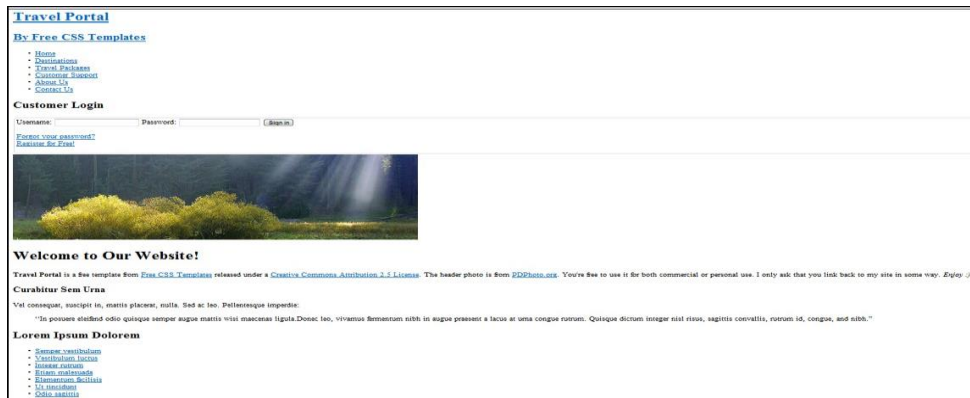# INTRODUCTION TO CSS

In this lecture we will get introduced with how to style the web pages to make them eye-catching and more organized.

4.1 Introduction
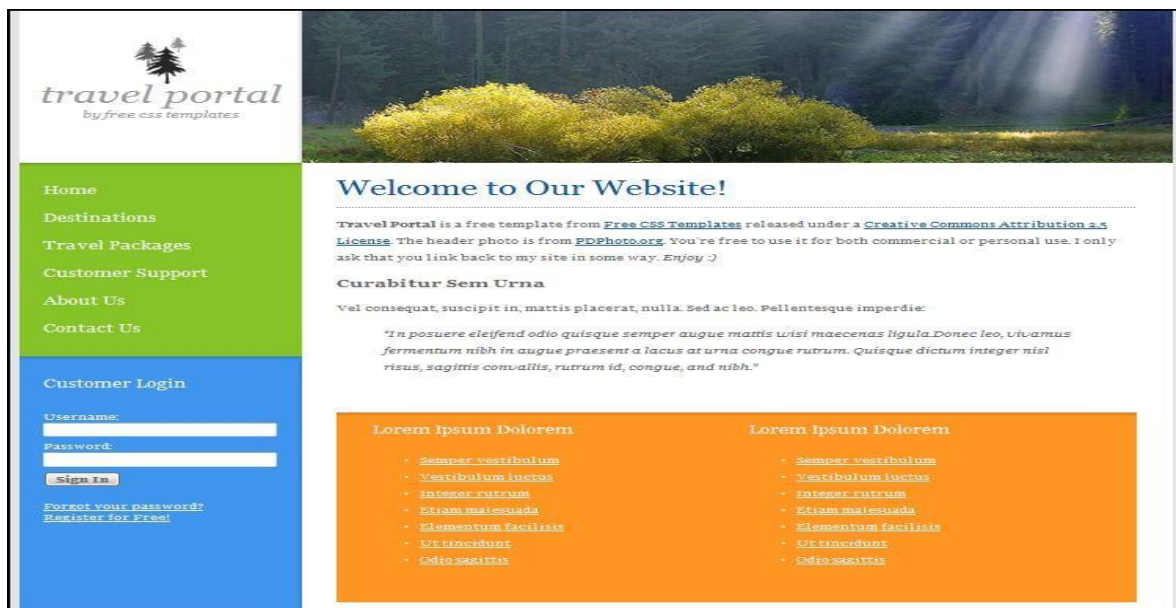
CSS stands for **C**ascading **S**tyle **S**heets. CSS is effectively the clothing that we put on a web page. CSS is an tremendous addition to plain HTML. With plain HTML you define the colors and sizes of text and tables throughout your pages. If you want to change a specific element you will have to change the entire document.
With CSS we define the colors and sizes in "styles". Then as you write your web pages you refer to the styles. In short, we can say that we use CSS to control the style and layout of multiple Web pages all at once.

Let us show you how CSS works!

Simple Web page before applying CSS

Simple Web page after applying CSS

4.2 How to define styles?

Styling information for a web page can be defined in three ways

    4.2.1 Inline
    4.2.2 Embedded (page-level style)
    4.2.3 CSS (external style-sheet)

4.3 Inline style

As already mentioned, that every HTML tag possesses some attributes. In case of Inline way of styling, we apply the style using the attribute right inside the elements of your HTML code, and this method of styling is referred to as *inline CSS* .This attribute specifies style information for the current element only.

Below is the general form for setting inline CSS in any HTML element.
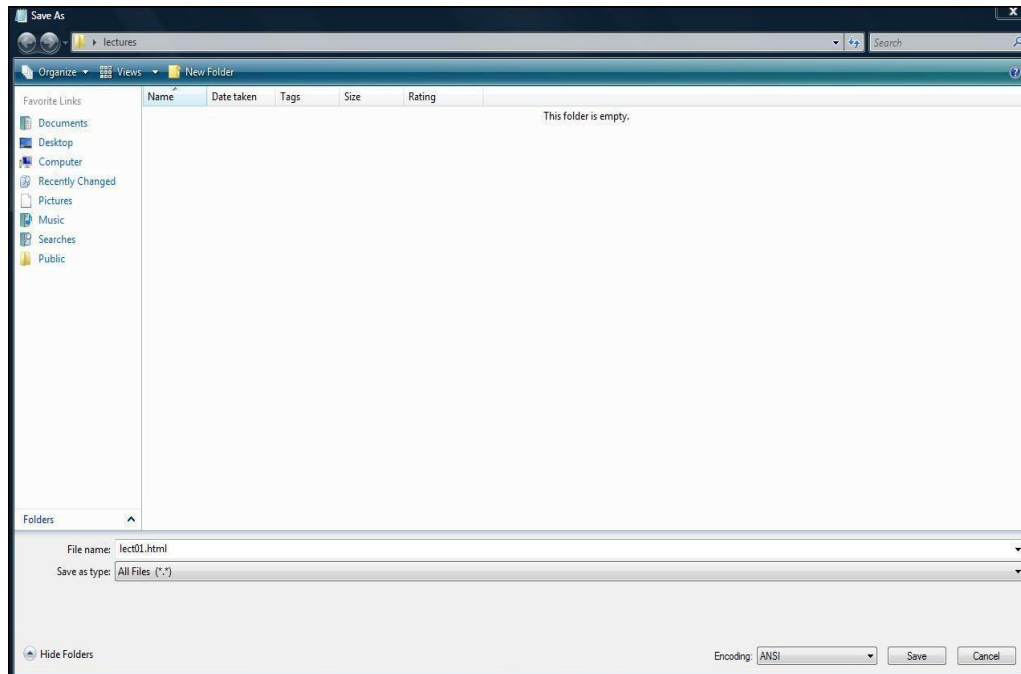
Pseudo Code

```
<htmltag style="attribute: value ; attribute : value;"></htmltag>
```

    Task: Open Notepad (Go to start menu click at run and type Visual Code)

Explanatory Note: To add inline styling to a web site we can use any Text editor in this case we are using Visual Code.

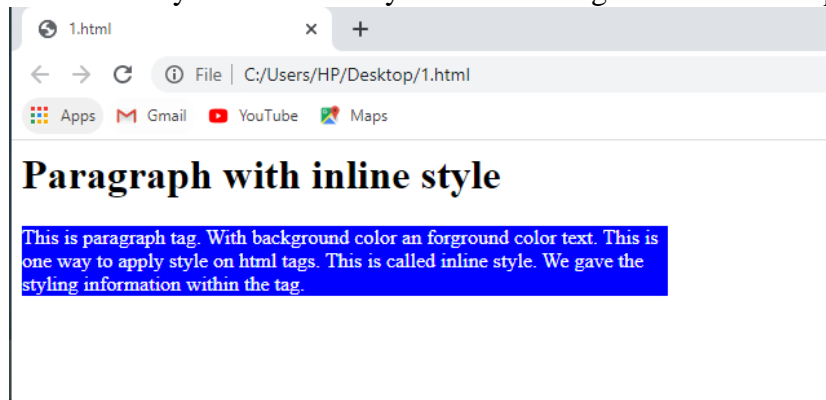1. **Task:** Write following line of code into text editor.

Lets add some Inline CSS styling to our html file	In this code styling information is given within the tag. Inline styling has the highest priority out of any method of styling. This styling detracts from the true aim of using CSS, so we use it rarely. To use Inline styling we use style attribute defined inside the tag of the element which is to be styled. For example, To apply background effect to a paragraph we have used the style attribute of the tag p. This tag is for the paragraph element.

```
<html>
<head>
</head>
<body>
<h1>Paragraph With Inline Style</h1>
<p style="background-color:blue;color:white;width:500px">
This is paragraph tag ?ith background color and foreground color text.
This is one way to apply style on html tag. This is called inline style.
we gave the styling information within the tag.
</p>
</body>
</html>
```

2. **Task :** Now Save html file (Press ctrl+s) . Type any name for the file and don't forget to change the extension from .txt to html or htm. Also choose All File option from bottom **[important]**.

Choose a file name and file type

3. Open the file in any web browser by double clicking on it and the output will be:

4.4 Embedded styling

Embedded style is fairly an intermediary between inline styles and an external style sheet. An internal style sheet should be used when a single document has a unique style. The style element requires both start and end tags <style>...</style> which are inserted between the <head>...</head> tags of your html file. The type attribute of the style tag defines the type of style sheet being used so we'll put text/css as the value.

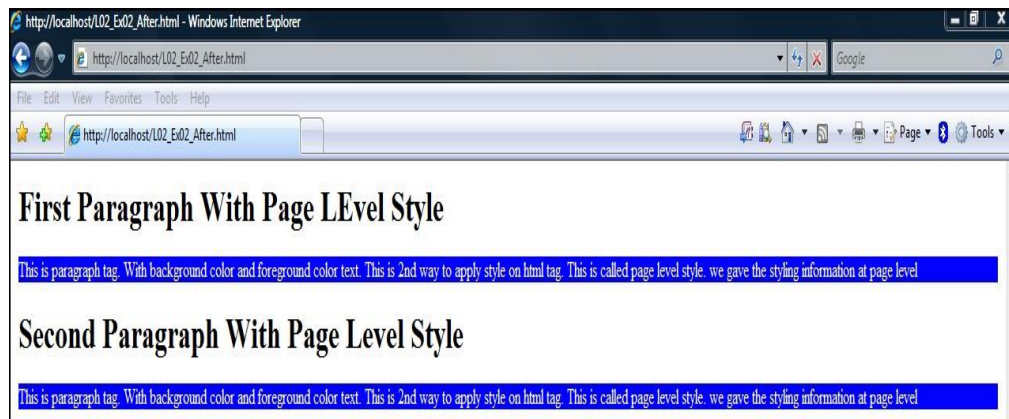Below is the general form for setting embedded CSS in any HTML element.

Pseudo Code

```
<style type="text/css"> htmltag{attribute: value;}</style>
```

Explanatory Note: To add embedded styling to a web site we can use any Text editor.

1. **Task:** Write following line of code into text editor.

Add This code to your html file	
```<html><head><style type="text/css">p{background-color: blue;color:white;widht:500px;}</style></head><body> First Paragraph With Page LEvel Style This is paragraph tag. With background color and foreground color text.This is 2nd way to apply style on html tag.This is called page level style. we gave the styling information at page level Second Paragraph With Page Level Style This is paragraph tag. With background color and foreground color text.This is 2nd way to apply style on html tag. This is called page level style.we gave the styling information at page level </body></html>```	In this code styling information is given within the tag. Embedded styles are styles that are embedded in the head of the document. Embedded styles affect only the tags on the page they are embedded in. Styling information is same as we add it into inline style. End result is same only difference is definition of style you will get more on it in next lecture.

2. **Task:** Now Save html file (Press ctrl+s) .

3. **Task:** Open the file in any web browser by double clicking on it and the output will be:

4.5 External styling

Using external style sheets is the definitive web designer tool in that it allows you to apply formatting to many different web pages at once with a single .css file.An external style sheet is simply a text file containing a list of CSS rules sets. The file is saved with a .css extension and saved to any directory that can be accessed by the web pages using it.

Below is the general form for setting External CSS in any HTML element.

Pseudo Code

```
Selector {attribute: value;}
```

Explanatory Note: To add external styling to a web site we can use any Text editor.

We have to perform two tasks separately. **There are two files css and html.**

1. **Task:** We write our Html file (see HTML lecture for more details)

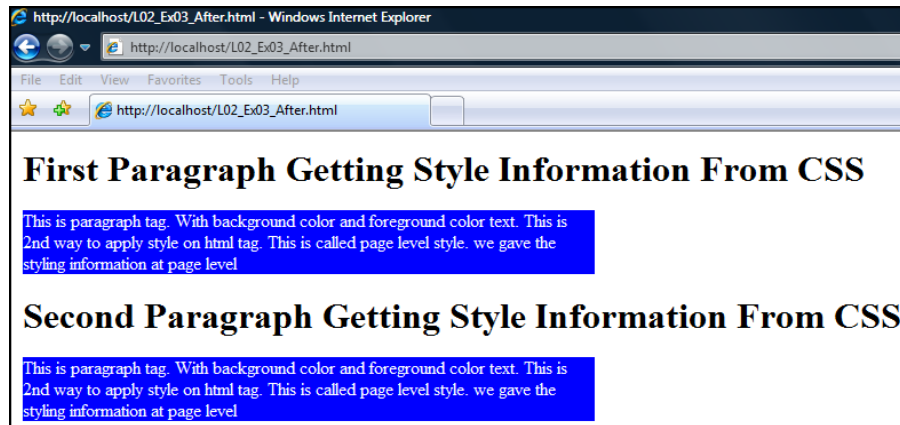| **Add This code to your html file**	

``html
<html><head>
<link rel="stylesheet" type="text/css" href="L02_Ex03.css"/>
</head><body>
 First Paragraph Getting Style Information From CSS
 This is paragraph tag. With background color and
foreground color text. This is 2nd way to apply style
on html tag. This is called page level style.
 Second Paragraph Getting Style Information From CSS
 This is paragraph tag. With background color and
foreground color text. This is 2nd way to apply style
on html tag. This is called page level style.
</body></html>
``
	In this code one line of code is included in the head tag of HTML. No other changes are required to link the external styling to our web page. Link tag with three attributes **rel type** and **href** are used to include an external styling to our web page. Value of href is equal to name of the file containing our styling whose extension is .css .

2. **Task:** Write following lines of code into separate file.

Add this code to your .css file	

``css
p
{
background-color:blue;
color:white;
width:500px;
}
``
	In this code styling information for the p tag is typed in our .css file. As a result all the p tags of the web page referenced to this .css sheet will style their p tags according to this formatting.

3. Task: Now Save css file (Press ctrl+s).While creating a style-sheet, Just save the file as *Filename*.css and put it in the same directory as your referenced html file.

4. Task: Open the html file in to web browser by double clicking on it and the output will be:

CSS Tags

In this lecture we will get knowledge regarding different types of selectors and the precedence of these selectors.

In addition to setting a style for a HTML element, CSS allows you to specify your own selectors called "Tag", "id" and "class".

3.1 Tag Selector

Styling information applied using a default tag of HTML is called a tag selector. The tag selector is used to redefine existing HTML tags. Select this option if you want to change the formatting options for an HTML tag, such as the H1 (heading 1) tag or the UL (unordered list) tag.

If we define css style for a tag then this style will be applied for all appearances of that tag in our html file. For example, if we add style for tag p then all <p> that occur in html file will have that style.

Note: Html tag is called also selector while Attribute-value pair is called declaration.

We have to perform two tasks separately. **There are two files css and html.**

1. **Task:** We write our Html file (see HTML lecture for more details)

Add This code to your html file	
| ```
<html><head><link rel="stylesheet" type="text/css" href="L03_Ex01_After.css"/>
</head><body>
<h1>First Paragraph </h1><p>Cascading Style Sheets (CSS) is a style sheet
language used to describe the presentation semantics (the look and formatting)
of a document written in a markup language. Its most common application is to
style web pages written in HTML and XHTML.</p>
<h1>Second Paragraph </h1>
<p>CSS is designed primarily to enable the separation of document content (written
in HTML or a similar markup language) from document presentation, including elements
such as the layout, colors, and fonts.[citation needed] This separation can improve
content accessibility, provide more flexibility.
</p>
<h1>Third Paragraph</h1>
<p>
CSS can also allow the same markup page to be presented in different styles for different
rendering methods, such as on-screen, in print, by voice (when read out by a speech-based
browser or screen reader) and on Braille-based, tactile devices.
</p></body></html>
``` | In this code one line of code is included in the head tag of HTML .And this line is referencing our style-sheet. In this code we have used three p tags to display three paragraphs in our web page. Now in our .CSS file we will straightly use name of paragraph tag to apply formatting on all three paragraphs at once. |

Task: Write following lines of code into a separate file.

Add this code to your .css file	In this styling information is typed in our .css file. When you use the tag selector; the style definition is automatically applied to any text or other element that has been formatted with the corresponding tag. Thus, if you've formatted a paragraph with the p tag and then create an p style it will automatically apply to the paragraph.
| ```css
p
{
background-color:blue;
color:white;
width:500px;

}
``` | |

3. **Task:** Now save css file (Press ctrl+s).While creating a style-sheet, just save the file as *Filename*.css and put it in the same directory as your referenced html file.

4. **Task:** Open the html file in to web browser by double clicking on it and the output will be:

3.2 ID Selectors

ID selectors initiate such rules in embedded or external style sheets that focus individual HTML elements. To apply different styling to an Html tag we need to assign a unique name to that element. The id selector uses the id attribute of the HTML element, and is defined with a "#". ID is assigned to an element in the html file while this id is used in .css file to assign styling to the element.

IDs allow you to get very specific about which elements your styles are applied to. This is basically a subject of staying organized and can also help a lot once you start creating more complex CSS selectors.

We have to perform two tasks separately. **There are two files css and html.**

1. **Task:** We write our Html file (see HTML lecture for more details)

Add This code to your html file	
```<html><head> <link rel="stylesheet" type="text/css" href="L03_Ex02_After.css"/></head> <body> <h1>First Paragraph </h1> <p id="p1">Cascading Style Sheets (CSS) is a style sheet language used to describe the presentation semantics (the look and formatting) of a document written in a markup language.</p> <h1>Second Paragraph </h1> <p id="p2"> CSS is designed primarily to enable the separation of document content written in HTML or a similar markup language) from document presentation, including elements such as the layout, colors, and fonts.[citation needed]. </p> <h1>Third Paragraph</h1> <p> CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices. </p></body></html>```	In this code one line of code is included in the head tag of HTML .And this line is referencing our style-sheet. In this code we have used three p tags to display three paragraphs in our web page. In addition to this we have used ID attribute of p tag to assign unique value to the two p tags separately.

2. **Task:** Write following lines of code into a separate file.

Add this code to your .css file	In this code styling information is typed in our .css file. Now in our .CSS file we have straightly used id value of paragraph tags to apply formatting on the two paragraphs separately.
| ```css
p
{
background-color:blue;
color:white;
width:400px;
}
#p1
{
background-color:green;
color:white;
width:400px;
}
#p2
{
background-color:red;
color:white;
width:400px;
}
``` | |

3. Task: Now save css file (Press ctrl+s).While creating a style-sheet, just save the file as *Filename*.css and put it in the same directory as your referenced html file.

4. Task: Open the html file in to web browser by double clicking on it and the output will be:

Explanatory Note: So resultantly we have used id selector and applied different formatting or styling on same type of HTML tag. This is p tag in current example.

3.3 Class Selectors

A CSS class selector will allow you to put one or more style declarations into a group and give it any name you like so that you can apply it to specific web page components.

This allows you to set a particular style for any HTML elements with the same class. The syntax you use is simply a "." followed by any name you like . class is assigned to an element in the html file while this class name is used in .css file to assign styling to group of elements.

We have to perform two tasks separately. **There are two files css and html.**

1. **Task:** We write our Html file (see HTML lecture for more details)

Add This code to your html file	

`<html><head>`
 	
`<link rel="stylesheet" type="text/css" href="L03_Ex03_After.css"/>`
 	
`</head><body>`
 	
`<h1>First Paragraph </h1> <p class="pra1">Cascading Style Sheets (CSS)`
 	
`is a style sheet language used to describe the presentation semantics`
 	
`of a document written in a markup language. Its most common application`
 	
`is to style web pages written in HTML and XHTML.</p>`
 	
`<h1>Second Paragraph </h1>`
 	
`<p id="p2">`
 	
`CSS is designed primarily to enable the separation of document content`
 	
`(written in HTML or a similar markup language) from document presentation,`
 	
`including elements such as the layout, colors, and fonts.[citation needed]`
 	
`</p><h1>Third Paragraph</h1>`
 	
`<p class="pra1">`
 	
`CSS can also allow the same markup page to be presented in different styles`
 	
`for different rendering methods, such as on-screen, in print, by voice`
 	
`when read out by a speech-based browser or screen reader) and on Braille-based,`
 	
`tactile devices. </p></body></html>`
	In this code one line of code is included in the head tag of HTML .And this line is referencing our style-sheet. In this code we have used three p tags to display three paragraphs in our web page. In addition to this we have used Class attribute of p tag to assign a class to the two p tags separately.
	All the elements with the same class name will have same formatting.
	One ID can be assigned to only one element
	But one class name can be assigned to more than one elements.

3. **Task:** Write following lines of code into a separate file.

Add this code to your .css file	In this code styling information is typed in our .css file.
| ```css
p
{
background-color:blue;
color:white;
width:400px;
}
.pra1
{
background-color:green;
color:white;
width:400px;
}
#p2
{
background-color:red;
color:white;
width:400px;
}
``` | Now in our .CSS file we have straightly used class name of paragraph tags to apply formatting on the two paragraphs separately. Paragraphs with no class name doest have any formatting so no formatting is applied to them. As there is no tag selector is used as well. |

3. **Task:** Now save css file (Press ctrl+s).While creating a style-sheet, just save the file as *Filename*.css and put it in the same directory as your referenced html file.

4. **Task:** Open the html file in to web browser by double clicking on it and the output will be:

Note: A good practice is to name classes according to their *function* rather than their *appearance*. Classes can be a very effective method of applying different styles .The difference between an ID and a class is that an ID can be used to identify one element, whereas a class can be used to identify more than one.

Color Selection

In this lecture we will explore Colors in CSS, color setting methods, Hexadecimal Color codes, background color and background image properties.

4.1 Introduction

The colors selection is very vital part of look and feel of any web site, so please spend a suitable amount of time on surfing a number of websites and ponder on the available color range, color matching and color contrast.

There are many methods to define color in css.

- **Color Name**

  - Define colors by simply entering the name of the desired color.

  - **Format to define Color name is :**

    .mycolors{color:blue; background-color:green;}

- **Hexadecimal value**

  - Define colors with the use of hexadecimal values, similar to defining colors in plain HTML.

  - Hexadecimal form is a pound sign (#) followed by at most, 6 hex values (0-F)

  - **Format to define Hexadecimal is**

    .mycolors{color:#00002F; background-color:#FFCE02;}

  - Hexadecimal number has values from 0 to 9, A , B , C , D, E , F... e.g if you want to write 10 in hexadecimal then you have to write A and if you want to write 255 in hexadecimal then we you have to write FF.

  - Hex Code of pure RED color which id FF0000 and GREE Color WHICH is 00FF00 and BLACK color which is 000000 and WHITE COLOR which is FFFFF.

  - A color code FFAA20 specifies that this color contain RED component equal to FF(255 maximum part of red color)] and Green component equal to AA (170 in decimal) and BLUE is 20(32 in decimal).Look at ref [1] for more details

- **RGB value**

    - Define colors with the use of RGB values, by simply entering the values for amounts of Red, Green and Blue.

    - **Format to define rgb color is :**

      .mycolors{color:rgb(255,201,202); background-color:rgb(40,51,110);}

    - Colors are made up by three components RED GREEN and BLUE.

    - In rgb: r stands for red g stands for green and b stands for blue.

Below are a screenshots of some websites presenting the use of very reasonable background colors and background images . he lowest value that can be given to one of the light sources is 0 (hex 00). The highest value is 255 (hex FF).

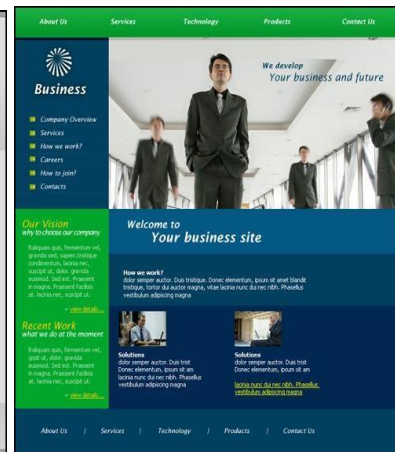Figure: 1   Figure: 2   Figure: 3

Now let's find out the how we can apply background color and set background image in Html using CSS styling.

CSS properties used for background effects:

- background-color
- background-image
- background-repeat
- background-attachment
- background-position

As name identifies that background color will help us applying a color at the background of an element.

We have to perform two tasks separately. **There are two files css and html.**

    1. Task: We write our Html file (see HTML lecture for more details)

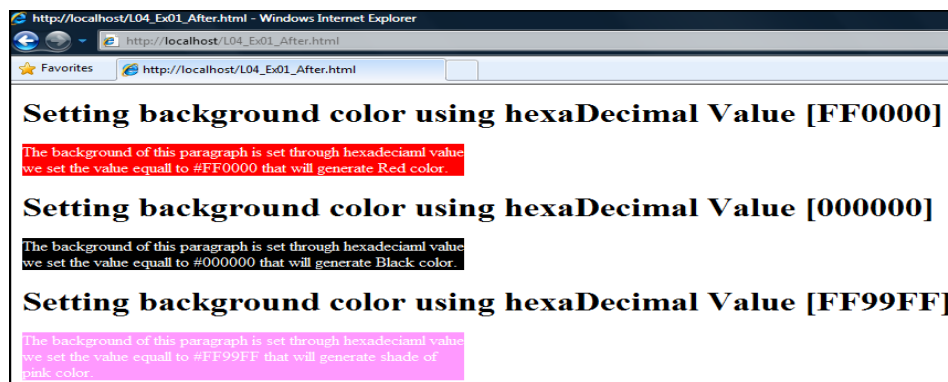| Add This code to your html file	

``html
<html><head>
<link rel="stylesheet" type="text/css" href="L04_Ex01_After.css"/>
</head><body>
<h1>Setting background color using hexaDecimal Value [FF0000]</h1>
<p id="p1">
The background of this paragraph is set through hexadeciaml value
we set the value equall to #FF0000 that will generate Red color.</p>
<h1>Setting background color using hexaDecimal Value [000000]</h1>
<p id="p2">The background of this paragraph is set through hexadeciaml
value we set the value equall to #000000 that will generate Black color.
</p><h1>Setting background color using hexaDecimal Value [FF99FF]</h1>
<p id="p3">The background of this paragraph is set through hexadeciaml
value we set the value equall to #FF99FF that will generate shade of pink
color.</p></body></html>
``
	In this code one line of code is included in the head tag of HTML .And this line is referencing our style-sheet. In this code we have used three p tags to display three paragraphs in our web page. In addition to this we have used ID attribute of p tag to assign unique value to the two p tags separately.

    4. Task: Write following lines of code into a separate file.

Add this code to your .css file	In this case different styling

``css
#p1{
background-color:#FF0000;
color:white;
width:400px;
}
#p2{
background-color:#000000;
color:white;
width:400px;
}
#p3{
background-color:#FF99FF;
color:white;
width:400px;
}
``
	is applied to different paragraphs.
	Different background colors are applied to different paragraphs
	While the color attribute is maintained white in all the p elements
	Default value of a color is black
	i.e if no color is specified for an element e.g for H1element

	,then automatically it will be none other than black.

3. Task: Now save css file (Press ctrl+s).While creating a style-sheet, just save the file as *Filename*.css and put it in the same directory as your referenced html file.

4. Task: Open the html file in to web browser by double clicking on it and the output will be:

As now you just saw that how easily we can add color to the background of any element.

Note: Here we have used id selector to apply color to elements. But we can make use of Tag selector (specifically) and class selector (generically) to apply our color styling as well.

Now we learn the how we can add image to the background of any element.

It's very simple just use background image property. And you are done!

We have to perform two tasks separately. **There are two files css and html.**

1. Task: We write our Html file (see HTML lecture for more details)

Add This code to your html file	

``html
<html><head>
<link rel="stylesheet" type="text/css" href="L04_Ex02_After.css"/>
</head><body>
<h1>How to set background image </h1>
<p id="p1">
Here we set background-image of paragraph. following is sample text
taken from http://www.russianphotographs.net/doc.vphp?id=217
 	
Backgrounds present both opportunities and challenges to photographers.
</p><h1>By Default Background-Image Repeat Itself </h1>
<p id="p2">Here we set background-image of paragraph with default
repeat option. following is sample text taken from
http://www.russianphotographs.net/doc.vphp?id=217
 	
Backgrounds present both opportunities and challenges
to photographers.
</p><h1>Background Image With no-repeat</h1>
<p id="p3">Here we set background-image of paragraph with no-repeat
option. following is sample text taken from
http://www.russianphotographs.net/doc.vphp?id=217
 	
Backgrounds present both opportunities and challenges to photographers.
</p></body></html>
``
	In this code one line of code is included in the head tag of HTML .And this line is referencing our style-sheet. In this code we have used three p tags to display three paragraphs in our web page. In addition to this we have used ID attribute of p tag to assign unique value to the two p tags separately. Now we will use id's of these paragraphs to apply styling at them.

5. Task: Write following lines of code into a separate file.

Add this code to your .css file	

``css
#p1{
background-image: url('images/background.jpg');
color:white;
width:400px;
}
#p2{
background-image:url('images/twitter.jpg');
width:400px;
}
#p3{
background-image:url('images/twitter.jpg');
background-repeat: no-repeat;
width:400px;
}
``
	In this code three paragraphs will be displayed with three different background images. To apply background image to an element, we will use background-image property inside the id of that element. First paragraph will have background.jpg image in its background Second paragraph will have twitter.jpg in its background While third paragraph will also have twitter.jpg in its background.

3. Task: Now save css file (Press ctrl+s).While creating a style-sheet, just save the file as *Filename*.css and put it in the same directory as your referenced html file.

4. **Task:** Open the html file in to web browser by double clicking on it and the output will be:

4.2 Background-repeat

In the above example if we see carefully, the width of the each paragraph is 400px.In the paragraph one and two; image is repeated while in the third paragraph image is not repeated.

Reason is that if the Background image is smaller than the given size of the element then the image is repeated along the height and width of the element to completely fill the background of the element.

If we do not want to repeat the background image then we have to explicitly declare that we do not need to repeat the image in background. Method for this is follows

 background-repeat:no-repeat. By default, the image is repeated in both x and y direction so it covers the entire element.

The background-repeat property sets if/how a background image will be repeated. You can have a background image repeat vertically (y-axis), horizontally (x-axis), in both directions, or in neither direction

4.3 Background-position

The background-position property defines the initial position of an element.If you would like to define where exactly an image appears within an HTML element, you may use CSS's background-position. Please take note that there are three different ways of defining position: length, percentages, and keywords. For instance we are using Keyword.

Three ways to define the position of an element

- Keywords

  - center top bottom top left top center top right bottom left bottom center bottom right

- Percentages

  - background-position: 50% 50%;

- Lenghts

  - background-position: 200 200;

Note: If no background-position has been specified, the image is placed at the default top-left position of the element (0,0), which is located within the top-left corner of the element

See how background repeat and position property works!

1. **Task:** We write our Html file (see HTML lecture for more details)

Add This code to your html file	

``html
<html><head>
<link rel="stylesheet" type="text/css" href="L04_Ex03_After.css"/>
</head><body>
<h1>Move background-image at specific position.
Here it is at top right location </h1>
<p id="p1">Here we set background-image of paragraph and position
of image.following sample text taken from
http://www.russianphotographs.net/doc.vphp?id=217 </p>
</body></html>
``
	In this code one line of code is included in the head tag of HTML .And this line is referencing our style-sheet. In this code we have used p tags to display a paragraph in our web page. In addition to this we have used ID attribute of p tag to assign unique value to the p tag. Then we will use id' of the paragraphs to apply styling on it.

2. **Task:** Write following lines of code into a separate file.

Add this code to your .css file	
| ```
#p1
{
background-image: url('images/tree.jpg');
background-repeat: no-repeat;
background-position: right top;
width:400px;

}
``` | Now in the css file we have specified the position for our element with the p1 id whih is a paragraph in this example<br>It will be displayed at the right top position in thw web page. |

3. **Task:** Now save css file (Press ctrl+s).While creating a style-sheet, just save the file as *Filename*.css and put it in the same directory as your referenced html file.

Task: Open the html file in to web browser by double clicking on it and the output wi

4.4 Block-level Elements

A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can).

Examples of block-level elements:

- \<div>
- \<h1> - \<h6>
- \<p>
- \<form>
- \<header>
- \<footer>
- \<section>

Example to use \<div>	
| ```
1  <html>
2  <head></head>
3  <body>
4      <h1>Example of div</h1>
5      <div>
6          <img src="OR gate.png">
7      </div>
8  </body>
9  </html>
``` | Now we use div element to apply image and you see image starts at new line otherwise image does not displays in new line. In fact \<div> is very common and useful element in defining layout of a webpage. |
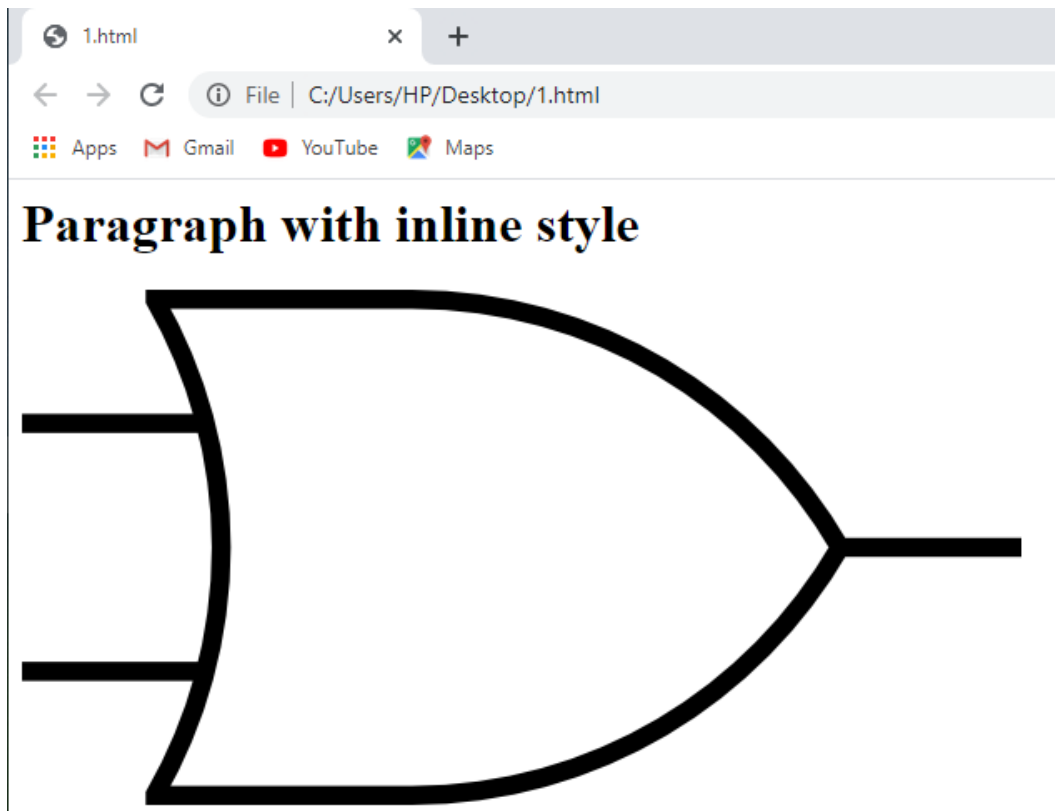
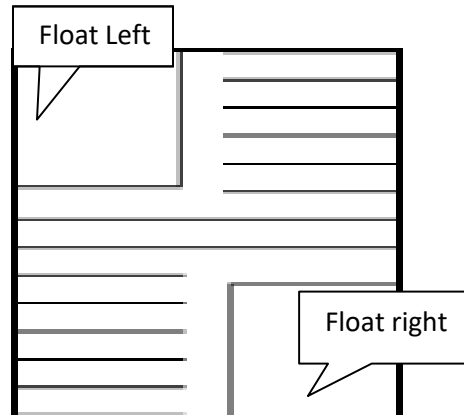After oping in web it appears as follows:

4.5 Inline Elements

An inline element does not start on a new line and only takes up as much width as necessary.

Examples of inline elements:

- <span>
- <a>
- <img>

4.5 Floating Property

Now we move to the most interesting part of CSS which is "Floating". **Float** is a CSS positioning property.

Left and Right Floating

You can float elements on the web page to the right or the left. With CSS float, an element (text /Image) can be moved to the left or right, allowing other elements to wrap

around it. Float is very often used for images.

For example, if you float an image to the left, any text or other elements following it will flow around it to the right. And if you float an image to the right, any text or other elements following it will flow around it to the left An image that is placed in a block of text without any float style applied to it, will display as the browser is set to display images.

Assessment:

Improve your previously designed webpages of University Admission website by applying CSS to it.

For further reading:
https://www.w3schools.com/htmL/default.asp