

#### 4.4

## Typography

The term typography means an art of giving style and appearance to the printed matter of a website. In typography, fonts play an important role in presenting the content in fancy style.

A font can be defined as a set of characters, including letters, numbers, punctuation marks, and symbols, of certain size and style. In a font, the height of characters is measured in points and width is measured in pitch. Note that each point is approximately 1/72 inch and pitch refers to how many characters can fit in an inch. The pitch of a character also defines its boldness and thickness; for example, the B character has a high pitch compared to B. To use a font, you need to install it on your system. Some of the most commonly used fonts are Arial, Times New Roman, Verdana, and Lucida Calligraphy.

Apart from fonts, you can also apply various text styles, such as italic, bold, and underline, on a document using CSS. These styles can be applied by setting various text properties of a document, such as text-decoration, text-shadow, text-indent, text-stroke, and text-wrap. The application of these properties helps the reader in understanding and identifying important terms and information in a document easily.

The font and style of a document should be decided after considering various factors, such as for whom the document is being written and what kind of information it contains. For example, a book meant to be read by elementary school children can have a combination of different fonts and text styles to make the content more

attractive and visually appealing. On the other hand, an article of a newspaper is generally written in a simple font and style.

## ■ Popular Font Families

Font represents the style and size of the text that is displayed in a Web browser. Apart from imparting a visual appeal to the content, fonts are also used to help users discriminate between different types of information. For example, you can apply different font sizes and styles to different levels of headings. The fonts are categorized into the following different font families:

- **Serif:** Refers to the font family in which the width of characters is proportional and the characters are displayed with serifs (serifs are semi-structural details at the ends of some of the strokes). Proportional width means each letter in the text has different width according to its height. Some of the fonts that are included in this family are Times New Roman, Georgia, Palatino Linotype, Sylfaen, Garamond, Book Antiqua, Bookman Old Style, Perpetua, Rockwell, and Cambria.
- **Sans-serif:** Refers to the font family in which the width of characters is proportional but does not have serifs. Some of the fonts that are included in this family are Microsoft Sans Serif, Verdana, Tahoma, Arial, Trebuchet MS, Arial Black, Lucida Sans Unicode, Franklin Gothic Medium, Arial Narrow, and Century Gothic.
- **Cursive:** Refers to the font family in which characters appear as human handwriting. Some of the fonts that are included in this family are Comic Sans MS, Monotype Corsiva, Bradley Hand ITC, French Script MT, Tempus Sans ITC, Mistral, Kristen ITC, Edwardian Script ITC, Maiandra GD, Blackadder ITC, and Vivaldi.
- **Fantasy:** Refers to the font family in which characters cannot be characterized under a single rule. Some of the fonts included in this family are Impact, Haettenschweiler, Papyrus, Copperplate Gothic Light, Copperplate Gothic Bold, Curlz MT, Felix Titling, Rockwell Extra Bold, Engravers MT, Juice ITC, Jokerman, Imprint MT Shadow, Goudy Stout, Castellar, Agency FB, Perpetua Titling MT, and Cooper Black.
- **Monospace:** Refers to the font family in which characters resemble the text written with a typewriter. The characters are not proportional, which means the width of each character is same. Some of the fonts of this family are Courier New, Lucida Console, OCR A Extended, Consolas, Lucida Sans Typewriter, Bitstream Vera Sans Mono, Andale Mono IPA, Andale Mono, OCRB, Monaco, and Terminal.

## ■ Exploring Font Properties in CSS

In HTML, you can change the size, style, and family of fonts using various CSS properties. CSS provides the following properties to perform different tasks that can be grouped according to their functionalities related to fonts and text:

- font-family ✓
- font-size ✓
- font-size-adjust
- font-stretch
- font-style
- font-variant✓
- font-weight
- font

My Name  
Chetan Agarwal

Now, let's discuss about these font properties in details.

### The font-family Property

The font-family property is used to specify the name of a font family for applying the specified font style on a text. Note that if you have specified a font family and that font family is not installed on your computer, then the Web browser displays the text in another font. You can specify more than one font family in the font-family property so that if one font is not installed on your computer, then the Web browser can display the second specified font.

The following code snippet shows an example of using the font-family property:

---

```
body {
    font-family: sans-serif;
}

h1{
    font-family: sans-serif, monospace;
}
```

---

In the preceding code snippet, we have specified the font-family property of the body selector as sans-serif. We have also specified the font-family property of the h1 selector as sans-serif and monospace. In case the sans-serif font family is not installed, the Web browser will display the heading in the monospace font.

## The font-size Property

The font-size property is used to change the size of the text. The value of the font-size property is often specified in pixels, as shown in the following code snippet:

```
p {  
    font-size:10px;  
}
```

The font size can be specified in the following three different ways:

- **Using the absolute values:** Absolute value refers to the absolute size of the font. Absolute sizes are predefined fixed sizes that cannot be changed by a user. The following font sizes are categorized under the absolute values:

- xx-small
- x-small
- small
- medium
- large
- x-large
- xx-large

The xx-small is the smallest text size, xx-large is the largest text size, and the rest comes in between. The following code snippet shows an example of the font-size property using the absolute values:

```
p {  
    font-size:x-small;  
}
```

- **Using the relative values:** Relative values refer to the values that are not fixed and calculated on the basis of the current font values. Consider a case in which an element has a child element and the font size of the child element is set with a relative value, which you can increase or decrease by specifying as smaller or larger. The smaller value displays the child element with font size one unit smaller than the font size of the parent element, and the larger value displays the child element with font size one unit larger than the font size of the parent element.

The following code snippet shows an example of the font-size property using a relative value:

```
p {  
    font-size: larger;  
}
```

In the preceding code snippet, the font of the child element p is displayed one size larger than its parent element.

- **Using the percentage value:** You can also increase or decrease the font size of the text by specifying a percentage value in the font-size property. The percentage value is relative to the size of the parent element, which is the base value. For instance, if you set the percentage value for the font size to 50%, then the font size increases 50% to its current size. The following code snippet shows an example of the font-size property using the percentage values:

```
p {  
    font-size: 20%;  
}
```

In the preceding code snippet, the font size of the text will be increased by 20%. In case you want to decrease the font size, specify the percentage in negative, such as -20%.

## **The font-size-adjust Property**

The font-size-adjust property is used to change the aspect value of the text on a Web page. The aspect value is the ratio of the font height of a lowercase letter to the actual height of the font. This ratio is also known as the x-height. For example, the aspect value of the Verdana font is 0.58, which means that when the font size of 100px, the height of a character written in lowercase of Verdana font is 58 pixels. In case of Times New Roman font, when the font size is 100px, its x-height is 46 pixels. This means that the aspect value of the Times New Roman font is 0.46. You can increase or decrease the height of the font by modifying its aspect value.

The following code snippet shows an example of using the font-size-adjust property:

```
p {  
    font-size-adjust: 0.5;  
}
```

In the preceding code snippet, the font size is adjusted to 0.5 x-height.

## The font-stretch Property

The font-stretch property is used to change the width of a font. Using this property, you can condense or expand the width of the font by specifying the following values:

- **ultra-condensed**
- **extra-condensed**
- **condensed**
- **semi-condensed**
- **normal**
- **semi-expanded**
- **expanded**
- **extra-expanded**
- **ultra-expanded**

The following code snippet shows an example of using the font-stretch property:

---

```
p {
  font-stretch: condensed;
}
```

---

In the preceding code snippet, the width of the font is decreased or condensed.

## The font-style Property

The font-style property is used to specify the style of the font. The possible values the font-style property are normal, italic, and oblique. The following code snippet shows an example of using the font-style property:

---

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

---

In the preceding code snippet, the style of the font is set to italic, which means the text will appear in italics.

## The font-variant Property

The font-variant property is used to display a font as normal or in small caps. When you set the font-variant property of a font to small caps, the font written in uppercase displays in the smaller version of the uppercase letters.

The following code snippet shows an example of the font-variant property:

```
p {
  font-variant: small-caps;
}
```

In the preceding code snippet, we have specified the font-variant property of the P element to small caps. The text written in the P element displays in the smaller version of the uppercase letters; for example, HELLO WORLD.

### **The font-weight Property**

The font-weight property is used to specify the weight of the font, such as the font boldness or thickness.

Font weight is a term used to signify the extent of boldness or thickness assigned to a character when a particular font is applied to it. For example, the font weight of a character written in the Cooper Black font, A, is more than the same letter, A, written in the Arial font. The possible values for the font-weight are lighter, normal, bold, bolder, and numbers from 100 to 900.

Table 6 presents the details of the numbers that are used with the font-weight property:

**Table 6: Number Values of the font-weight Property**

<b>Values</b>	<b>Description</b>
100	Represents the thin font
200	Represents the extra light (ultra light) font
300	Represents the light font
400	Represents the normal font
500	Represents the medium font
600	Represents the semi-bold (semi bold) font
700	Represents the bold font
800	Represents the extra bold (ultra bold) font
900	Represents the black (heavy) font

The following code snippet shows an example of applying the font-weight property:

```
p {
  font-weight:bold;
}
```

In the preceding code snippet, the value of the font-weight is set to bold, which means that the weight of the font has been increased.

### The font Property

Instead of defining all the properties, such as font-style, font-weight, and font-style, separately, you can specify the values of all these properties in the font property.

The following is an example of using the font property:

```
p {
  font:bold italic 30px verdana;
}
```

In the preceding code snippet, we have specified the values of the font-weight, font-style, font-size, and font-family properties as bold, italics, 30px, and Verdana, respectively, as the value of the font property.

Now, let's discuss about the Web font.

### Introducing Web Font

Web font is a feature that allows you to write text in fonts other than those existing in your system. The Web font feature is introduced in the latest version of CSS, that is, CSS3. This feature eliminates the restriction of using the limited number of fonts that are installed on your computer. You can also use the fonts that are available online by specifying their Uniform Resource Locator (URL) in the style sheet. In CSS3, you can define the name of the desired font by using the @font-face keyword in the style sheet.

The syntax for defining the Web font in your style sheet is as follows:

```
@font-face{
  font-family: <name>
  src: <source>
}
```

## CSS Color Modes

CSS enables you to use colors in your Web page. In the earlier versions of CSS, you can add colors in your Web page by using either the hexadecimal format, for instance # FFOFOO, or the RGB format, for instance rgb (171,205,239). Table 7 lists the color names and their hexadecimal and RGB format values:

**Table 7: Hexadecimal and RGB Values of Some Commonly Used Colors**

Color Name	Hexadecimal Value	RGB Value
aqua	#00ffff	0,255,255
black	#000000	0,0,0
blue	#0000ff	0,0,255
blueviolet	#8a2be2	138,43,226
brown	#a52a2a	165,42,42
gold	#ffd700	255,215,0
goldenrod	#daa520	218,165,32
gray	#808080	128,128,128
green	#008000	0,128,0
greenyellow	#adff2f	173,255,47
grey	#808080	128,128,128
lime	#00ff00	0,255,0
limegreen	#32cd32	50,205,50
linen	#faf0e6	250,240,230
magenta	#ff00ff	255,0,255
maroon	#800000	128,0,0
pink	#ffc0cb	255,192,203
purple	#800080	128,0,128
red	#ff0000	255,0,0
silver	#c0c0c0	192,192,192
violet	#ee82ee	238,130,238

**Table 7: Hexadecimal and RGB Values of Some Commonly Used Colors**

Color Name	Hexadecimal Value	RGB Value
wheat	#f5deb3	245.222.179
white	#ffffff	255.255.255
yellow	#ffff00	255.255.0
yellowgreen	#9acd32	154.205.50

The RGB format uses three elementary colors, Red, Green, and Blue, to specify the color of an element. CSS3 adds a new level, Alpha (A), the level of opacity, to this RGB format. Therefore, a new color specification is formed, which is known as RGBA. Prior versions of CSS use the opacity property to produce the opacity effect in the color of an element. CSS3 also introduces a new format of color specification, i.e., HSL.

Let's learn about these color specifications in the following sections:

- The Opacity property
- The RGBA value format
- The HSL and HSLA values format

## ■ The Opacity Property

The opacity property is used to produce transparency effect in an HTML element. When you use the opacity property for an HTML element, it is also applied to its child elements. The syntax to use the opacity property is as follows:

opacity: [number between 0-1];

Using the preceding syntax if you define the opacity of an element as 0.5, it means the element will be 50% transparent. This property is supported by new versions of all major browsers. However, some older browsers require some custom code to use the opacity property. For instance, the older versions of Firefox browser use the -moz- prefix, the Chrome browser use the -webkit- prefix, and the Safari browser use either the -khtml- or the -webkit- prefix.

The following code snippet shows the use of the opacity property for different browsers:

```
opacity: 0.5;
-moz-opacity: 0.5;
-webkit-opacity: 0.5;
-khtml-opacity: 0.5;
```

 Internet Explorer does not support the opacity property. An alternate to use the opacity property on the Internet Explorer browser is given in the following code snippet:

```
filter:alpha(opacity=50);
```

The following code snippet shows the use of opacity property:

```
h1{ background:#036; opacity:0.0;}
h2{ background:#036; opacity:0.2;}
h3{ background:#036; opacity:0.4;}
h4{ background:#036; opacity:0.6;}
h5{ background:#036; opacity:0.8;}
h6{ background:#036; opacity:1.0;}
```

In the preceding code snippet, the opacity value 1.0 makes an element completely visible (opaque), while the opacity value 0.0 makes the element completely invisible.

## ■ The RGBA Value Format

 The RGBA format takes four arguments in which the first three are same as in the RGB format, while the fourth argument is the alpha channel. This argument specifies the transparency or opacity level of the specified color. It takes a number between 0 and 1 as a value. The main advantage of using RGBA over the opacity property is that the transparency is not applied to child elements when RGBA format is used.

The following code snippet shows the use of RGBA format:

```
h1{background-color: rgba(153, 134, 117, 0.0);}
h2{background-color: rgba(153, 134, 117, 0.2);}
h3{background-color: rgba(153, 134, 117, 0.4);}
h4{background-color: rgba(153, 134, 117, 0.6);}
h5{background-color: rgba(153, 134, 117, 0.8);}
h6{background-color: rgba(153, 134, 117, 1.0);}
```

You should note that if the opacity or alpha value is set to 1.0, the respective element is completely visible (opaque); however, if the opacity or alpha value is set to 0.0, the element is completely invisible.

## HSL and HSLA Values Format

The HSL color format takes three parameters, Hue, Saturation, and Lightness. The Hue parameter specifies an angle of the color around the circular wheel; for instance,  $0^\circ$  (means red color),  $60^\circ$  (means yellow color),  $120^\circ$  (means green color), and  $180^\circ$  (means cyan color). Hue values are either integer or floats in the range  $0\text{--}360^\circ$ . Integer or float percentage values in the range  $0\text{--}100\%$ .

Saturation represents the mixing of white color with a base color. For instance,  $0\%$  means grayscale and  $100\%$  means full color. Lightness specifies the percentage of the brightness of the base color, where  $0\%$  means dark,  $50\%$  means average, and  $100\%$  means light.

The following code snippet shows the use of HSL format:

```
h1{background-color: hsl(320, 100%, 25%);}
h2{background-color: hsl(320, 100%, 50%);}
h3{background-color: hsl(320, 100%, 75%);}
```

You can also use the alpha channel with the HSL format, which together is called HSLA format.

The following code snippet shows the use of HSLA format:

```
h1{background-color: hsla(165, 35%, 50%, 0.0);}
h2{background-color: hsla(165, 35%, 50%, 0.2);}
h3{background-color: hsla(165, 35%, 50%, 0.4);}
h4{background-color: hsla(165, 35%, 50%, 0.6);}
h5{background-color: hsla(165, 35%, 50%, 0.8);}
h6{background-color: hsla(165, 35%, 50%, 1.0);}
```

In the preceding code snippet, the opacity or alpha value  $1.0$  shows the H6 element of HTML completely, while the opacity value  $0.0$  hides the element completely.

## Using Color Properties

You have learned that CSS enables you to add different types of colors in your Web page using different specifications. These specifications are RGB, RGBA, HSL, HSLA and opacity. Let's create a simple HTML document named ColorUseWP.html to show the different color effects using CSS code. Listing 10 shows the code of the ColorUseWP.html file:

#### ▲ Figure 19: Different Opacity Levels on Elements Color

## 4.6 | Stunning Aesthetics with CSS3

CSS allows you to apply and modify the styles already applied on the text of a Web page. For instance, you can change the color and direction of the text. CSS properties also allow you to change the indentation of the first line of text to give it a paragraph look. Moreover, you can also underline, overline, or strike out the text as per the requirement.

Table 8 lists the CSS properties used to customize the appearance of the text in a Web page:

**Table 8: CSS Text Properties**

Properties	Description
color	Specifies the color of the text in a Web page. The value of the color property can be the name of the color or the hex code for the color, such as #ff0000 is the hex code of red color.
direction	Specifies the direction of the text. The following are the possible values that are used with the direction property: <ul style="list-style-type: none"><li>• ltr: Changes the flow of the text from left to right</li><li>• inherit: Changes the flow of the text in the same direction as that of the parent element</li><li>• rtl: Changes the flow of the text from right to left</li></ul>

**Table 8: CSS Text Properties**

Properties	Description
hanging-punctuation	Defines whether or not the punctuation marks are defined outside the line box. The possible values to be used with the hanging-punctuation property are none, first, last, allow-end, and force-end.
letter-spacing	Specifies the space between characters.
line-break	Defines a set of line breaking rules to be used with text.
line-height	Specifies the height of a line.
text-indent	Shifts the first line of a block text to create a paragraph look. This property is not applicable to all the elements. It is applicable only to the element of the block type, such as heading, paragraph, and div. It is not applicable to elements, such as table and list. It also allows negative values. In case of negative values, the first line of the text will be indented to the left.
punctuation-trim	Specifies whether to trim the punctuation marks at the start or at the end of a line.
text-align	Sets the horizontal alignment of the text. The four possible values that are used with the text-align property are as follows: <ul style="list-style-type: none"><li>• center: Changes the text in the middle of the containing element</li><li>• justify: Fits the text in the containing element</li><li>• left: Aligns the text on the left-hand side of the containing element</li><li>• right: Aligns the text on the right-hand side of the containing element</li></ul>
text-align-last	Specifies the alignment of the last line of a text. The possible values are start, end, center, left, right, justify, and size.
text-autospace	Controls the left and right side spacing of the text.
text-decoration	Performs various actions on the text, such as underlining the text, overlining the text, striking out the text, and making the text to blink. The different values of the text-decoration property are as follows:

**Table 8: CSS Text Properties**

Properties	Description
<b>text-decoration</b>	<ul style="list-style-type: none"><li><b>underline:</b> Underlines the text</li><li><b>overline:</b> Draws a line over the text</li><li><b>line-through:</b> Strikes out the text</li><li><b>blink:</b> Makes the text to blink</li><li><b>none:</b> Does not alter the original text</li></ul>
<b>text-decoration-line</b>	Defines the decoration for the lines of an element. The possible values are as follows: <ul style="list-style-type: none"><li><b>none:</b> Provides no decoration</li><li><b>underline:</b> Underlines the text</li><li><b>overline:</b> Provides a line above the text</li><li><b>line-through:</b> Provides a line in the middle of the text</li></ul>
<b>text-decoration-color</b>	Defines the color of the text decoration line that is specified using the text-decoration-line property.
<b>text-decoration-style</b>	Defines the style of the text decoration line specified using the text-decoration-line property.
<b>text-decoration-skip</b>	Specifies the elements' content to skip the text decoration. The possible values are as follows: <ul style="list-style-type: none"><li><b>none:</b> Skips nothing</li><li><b>images:</b> Skips all images</li><li><b>spaces:</b> Skips all white spaces</li><li><b>ink:</b> Skips the drawn glyphs</li><li><b>all:</b> Skips all the content of the element</li></ul>
<b>text-emphasis-style</b>	Specifies the style of the emphasis mark on the text of an element.
<b>text-emphasis-color</b>	Specifies the color of the emphasis mark on the text of an element.
<b>text-emphasis</b>	Provides the emphasis mark on the text of an element. In this property, you can define the style and color of the emphasis mark.
<b>text-emphasis-position</b>	Specifies the position to draw the emphasis mark. The possible values are over and under.
<b>text-justify</b>	Specifies the method of justifying the text when the text-align property is set to justify.
<b>text-shadow</b>	Specifies a list of shadow effects to be applied on the text.

**Table 8: CSS Text Properties**

Properties	Description
text-transform	Transforms the characters of a text. The four possible values that are used with the text-transform property are as follows: <ul style="list-style-type: none"><li>• <b>Capitalize:</b> Transforms the first letter of each word in the text into upper case letter</li><li>• <b>Lowercase:</b> Transforms the text into lower case</li><li>• <b>Uppercase:</b> Transforms the text into upper case</li><li>• <b>None:</b> Does not make any change in the original text</li></ul>
text-outline	Provides an outline on the text.
text-overflow	Specifies the behavior of the text when it overflows the containing element.
text-stroke	Provides the outlining on the text. This property takes two values: text-stroke-color and text-stroke-width
text-underline-position	Sets the position of the underline specified on the text. The possible values are auto, over, under, and alphabetic.
text-wrap	Specifies the way of wrapping the text in an element.
white-space-collapse	Specifies the way of collapsing white spaces in an element.
white-space	Specifies the handling of white spaces in an element. The possible values are normal, nowrap, pre, pre-line, pre-wrap, and inherit.
word-break	Defines a rule that allows a word to break into the next line.
word-spacing	Defines the minimum and maximum spaces between words.
word-wrap	Allows long words to break and wrap in the next line.

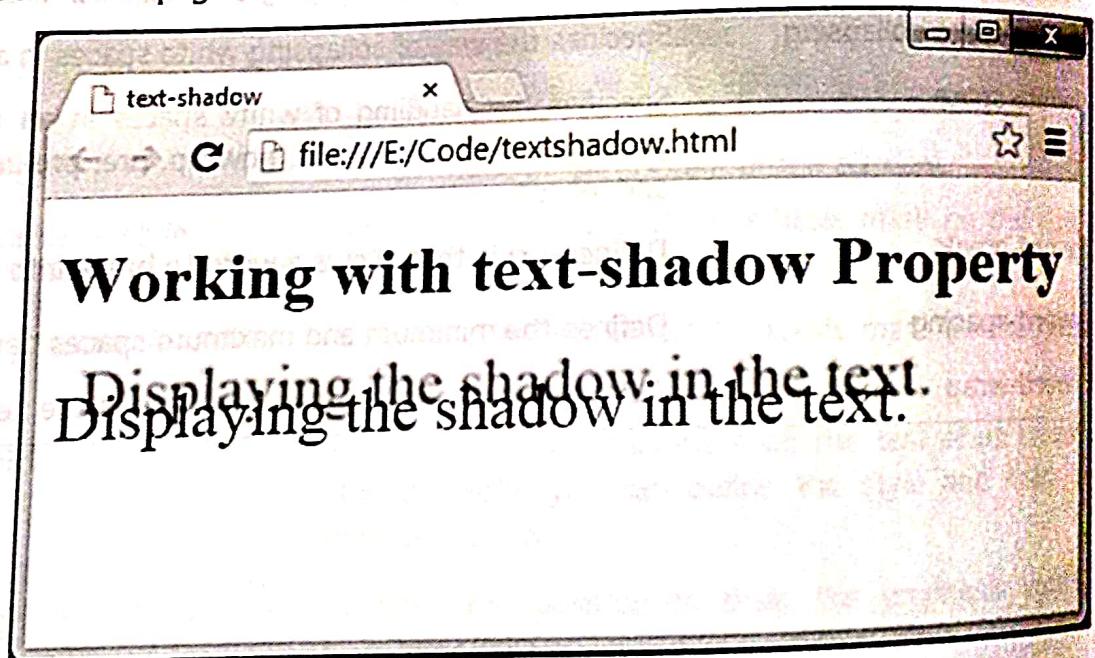
## ■ Using the text-shadow Property

The text-shadow property is used to display the shadow of text in a Web page. Let's create a Web page named `textshadow.html` to learn how to use the `text-shadow` property. Listing 16 shows the code to use the `text-shadow` property:

### ► Listing 16: Showing the Code for the `textshadow.html` File

```
<!DOCTYPE HTML>
<HEAD>
    <TITLE>text-shadow</TITLE>
    <STYLE>
        p{text-shadow: #ff0000 12px -12px 2px;}
    </STYLE>
</HEAD>
<BODY>
    <H1>Working with text-shadow Property</H1>
    <P style="font-size:30px;">Displaying the shadow in the
        text.</P>
</BODY>
</HTML>
```

In Listing 16, we have used the `text-shadow` property to display the shadow of the text in a Web page. The output of the `textshadow.html` file is shown in Figure 20.



▲ Figure 20: Text with Shadow

## Exploring Gradient Properties

CSS3 enables you to set a gradient background for an element. A gradient background is a variation of colors arranged from the lightest to darkest color or vice versa. It can be used as the background for an entire Web page or just within table cells or div elements. CSS3 provides you a variety of gradient options in which linear and radial gradients are popular ones.

### The Linear Gradient

The linear gradient shows the color combinations in lines format. The following code snippet shows how to produce linear gradient effects using CSS:

```
-webkit-linear-gradient(pos, #AAA B, #XXX Y);
-moz-linear-gradient(pos, #AAA B, #XXX Y);
```

In the preceding code snippet, the -webkit- and -moz- prefixes are used to display linear gradient effects on the Chrome and Firefox browsers. The description of other parameters is as follows:

- pos: Specifies the position of the first color, which gives direction to the gradient
- #AAA: Specifies the primary color
- B: Specifies the percentage from where the fade begins
- #XXX: Specifies the secondary color
- Y: Specifies the percentage from where the fade begins

The following code snippet shows how to produce linear gradient effects:

```
p {
    height: 100px;
    background: -moz-linear-gradient(top, #35425d 0%, #fff 100%);
    background: -webkit-gradient(linear, left top, left bottom,
        from(#35425d), to(#fff));
}
```

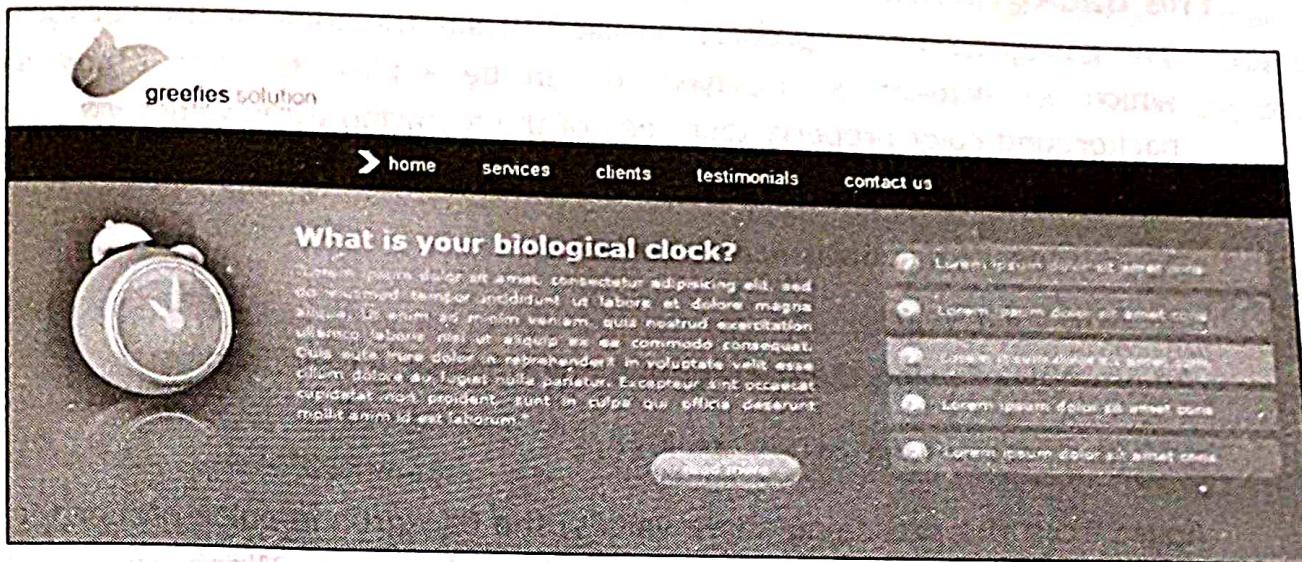
Let's create a sample HTML document named GradientUseWP.html to show the gradient effects using the CSS code. Listing 17 shows the code of the GradientUseWP.html file:

#### ► Listing 17: Showing the Code of the GradientUseWP.html File

```
<!DOCTYPE HTML>
<HEAD>
<TITLE>CSS Colors Web Page</TITLE>
```

## Exploring Background of a Web Page

The background of a Web page is the area on which the content of the Web page, such as text, tables, border, and images, is displayed. A Web page should have a background that expresses the motto of the Web page. For example, while constructing a Web page for an organization, the background can have logo that represents the organization, as shown in Figure 23:



▲ Figure 23: Dummy Website with the Logo of an Organization

Similarly, the Web page on wildlife can have the image of the wild animals background. While creating a Web page with text as the main content, such as Web tutorials or forms, it is important that the background should have lighter color than the text written on it to provide better readability. Similarly, while creating a Web page for entertainment, the background should preferably have vibrant colors. CSS provides you the following various properties to set the background of a Web page:

- **background-color**
- **background-image**
- **background-repeat**
- **background-attachment**
- **background-position**
- **background-clip**
- **background-origin**
- **background-size**

- background-quantity
- background-spacing
- background

Let's learn in detail about these properties one by one.

### The background-color Property

The background-color property is used to set the color of the background area of which an element is displayed. It can be applied to almost any element. The background-color property takes any of the following three values:

- Color name
- Hexadecimal equivalence of the color
- RGB color value

An example of using the background-color property is as follows:

```
h1 { background-color: #FFFFFF; }
```

Apart from the preceding three values, the background-color property can also take two more values, namely, transparent and inherit. When the value is set to transparent, the background color of the element becomes transparent to its parent element so that the background color of the parent element is visible through it. It is important to note that the element does not take or inherit the color of the parent element: it just becomes transparent so that the background color of the parent element is visible through it. Transparent is a default value, that is, if no value is set for the background-color property, it takes transparent as its default value. When you set the value of the background-color property to inherit, it takes or inherits the color of its immediate parent element.

### The background-image Property

The background-image property is used to set an image in the background of an element. It is similar to the background attribute of the body element of HTML 4.0. In case of the background attribute, the image could only be set for the body element; however, using the background-image property, you can virtually set background image for all elements. The background-image property is specified using two values, that is, either url, to specify the image, or none, when no image is used.

Some examples of using the background-image property are given in the following code snippet:

```
body { background-image: url("picture.jpg"); }
p { background-image: none; }
```

In the preceding code snippet, an image, picture.jpg, is specified for the BODY element and no image is used for the P element of HTML. The picture.jpg image is located in the local server. If the image is located in a different server, you have to provide the complete path of the image in the URL, as shown in the following code snippet:

```
body { background-image: url("http://www.google.com/images/picture.jpg");
}
```

While setting the background image for any element of an HTML page, you should specify the background color when the image is unavailable. If the image is available, it is placed on top of the background color, and in fact, the color is visible in the transparent parts of the image.

## The background-repeat Property

The background-repeat property allows you to tile the background images along the x-axis and the y-axis of an element. This property is used along with the background-image property only. The background-repeat property can take either of the following values:

- repeat-x: Tiles an image horizontally
- repeat-y: Tiles an image vertically
- repeat: Tiles an image both horizontally and vertically
- no-repeat: Does not tile an image

The following code-snippet shows how to use the background-repeat property:

```
<BODY style="background: url('pic_2.gif');background-repeat: repeat-y;">
```

## 4.7 CSS3 Transitions

Transition is a process of passing from one state to another. Generally whenever the value of a CSS property changes, the result is instantly rendered on Web page. However, when you apply transition effect on an element, it slowly transits from its old state to new. In CSS, you can apply the transition effect on content of your Web page using various transition properties. These transition properties are listed as follows:

- **transition-property:** Specifies the property to which you apply the transition
- **transition-duration:** Specifies the time duration or the length of a transition
- **transition-delay:** Delays the transition
- **transition-timing-function:** Changes the speed during the transition

An example of using the transition properties is as follows:

```
DIV {  
    transition-property: opacity;  
    transition-duration: 2s;  
    transition-timing-function: ease-in-out;  
}
```

## **4.8 ✓ CSS3 Transformations**

In CSS, you can use the transformation effect to change the position or direction of the content of your Web page. CSS allows you to apply this effect to the Web content with the help of the transform property. The possible values of the transform property are as follows:

- **transform:** Specifies the transform function to apply it on an element. The possible values of this property are matrix, rotate, scale, scaleX, scaleY, skew, skewX, skewY, translate, translateX, and translateY.
- **transform-origin:** Specifies the origin of the transformation for an element. The possible values of this property are left, right, center, bottom, top, and 50% 50%.

- **transform-style:** Specifies whether the transformation will apply in Two Dimension (2D) or Three Dimension (3D) on an element. The possible values of this property are flat and perspective 3D.
- **perspective:** Shows an element from different angles and perspectives.
- **perspective-origin:** Specifies the origin of the perspective for an element. The possible values of this property are left, right, center, bottom, top, <percentage>, and 50% 50%.
- **backface-visibility:** Specifies whether or not the back side of an element is visible. The possible values of this property are visible and hidden.

The following code snippet shows an example of using the transformation properties:

```
p {  
    -webkit-transform: rotate(45deg);  
    -webkit-perspective: 1200px;  
    -webkit-perspective-origin: right;  
}
```

In the preceding code snippet, we have defined the transform property to rotate the paragraph element. The perspective property has been set to 1200px and the perspective-origin property to right, which enables you to view the element at 1200 points from its right side.

#### 4.9

## Animations

Animation is a type of optical illusion that involves motions caused by some images one after another. CSS enables you to animate different elements of a Web page by providing different properties. These properties are listed as follows:

- **animation-name:** Specifies the name of the animation that is to be applied on element
- **animation-duration :** Specifies the time duration an animation takes to complete one cycle
- **animation-timing-function :** Specifies the progress of an animation