



Handling Images in HTML

It is said that a picture is better than thousand words. Pictures or images attract majority of persons and convey an important message to the audience. If a web page shows a picture, the user will immediately pay attention to it. Further, it is observed that pictures increase degree of understanding and acceptance in general.

Images are added to a web page using the `` tag in HTML. We have already added an image as a background in the previous chapter. There are other ways to include an image on a web page. For example, the following line would add the image called `rainbow.jpg` into the page.

```

```

The above example uses `src` attribute which is described below along with other attributes that may be used with the image tag.

The image element (image tag with the image content and attributes) does not cause a line break, hence it is known as an inline element.

The `src` attribute

The `src` attribute provides information about location of the image. The location here refers to the source of the image. It tells the browser where to find the image. Many times we use URL as an image location. Without mentioning the source of the image, it is impossible for browser to find and display an image. To include an image from an URL given as `"http://pritisajja.info/images/img1.jpg"` we may write following tag.

```

```

The image file specified should have a proper image format such as `bmp`, `gif`, `tiff` or `jpg`.

Consider a scenario where you are surfing the Internet and liked an image. How would you get its complete URL to include it in an HTML code ? Answer is simple. The first option is to right click on the image and copy the image link. Another option is to save the image into the local memory of your computer. While opting for the second option you must be careful about the copyrights for the image.

When tags like `<p>` or `<h1>` are used with the content, the tags just have to display the content in a particular style. While using the image tag, we need not have to provide any content, but the source of image with some attributes. That is why the image tag is called an empty tag. However, when an HTML document containing image is displayed in a browser, the browser needs to retrieve the image. The image must be available to your local computer or server. If you have used an URL, check that your internet connection is working.

It is a good practice to create a separate folder/directory for images. This approach is better, especially when the website is large and uses multiple images. Code to add three images one by one in an HTML is shown in code listing 3.1.

```

<html>
<head>
  <title>My favourite food ....!</title>
</head>

<!-- ----- -->
<body>
  <h1> My favourite food ....!</h1>

<!-- ----- -->
  <h1> <u> Chocolates </u></h1>

<p>

<h1>
Chocolates are good for health, better for hunger and best for mood !
Do not forget to clean your teeth until it is too late !
</h1>
</p>

<!-- ----- -->
<h1><u> Fruits and Dry Fruits </u></h1>
<p>

<h1>
  Do not think dry fruits are dry, though they are dried fruits !
  They are really really very interesting !
</h1>
</p>

<!-- ----- -->
<h1> <u> Ice creams </u> </h1>

<p>

<h1>
  Ice creams are really cool ! These become coolest when you taste them !
</h1>
</p>

<!-- ----- -->
</body>
</html>

```

Code Listing 3.1 : Adding multiple images on a web page

Code listing 3.1 contains some dotted lines. This dotted line will not be displayed in the web page as they are embedded within comment tags (<!-- and -->). The line simply divides the code section into separate blocks for ease of reading and better understanding. As browser will accept only valid HTML statements, we cannot directly enter a dotted line. We have to embed the line within comments tag.

Figure 3.1 shows output of the HTML given in code listing 3.1.

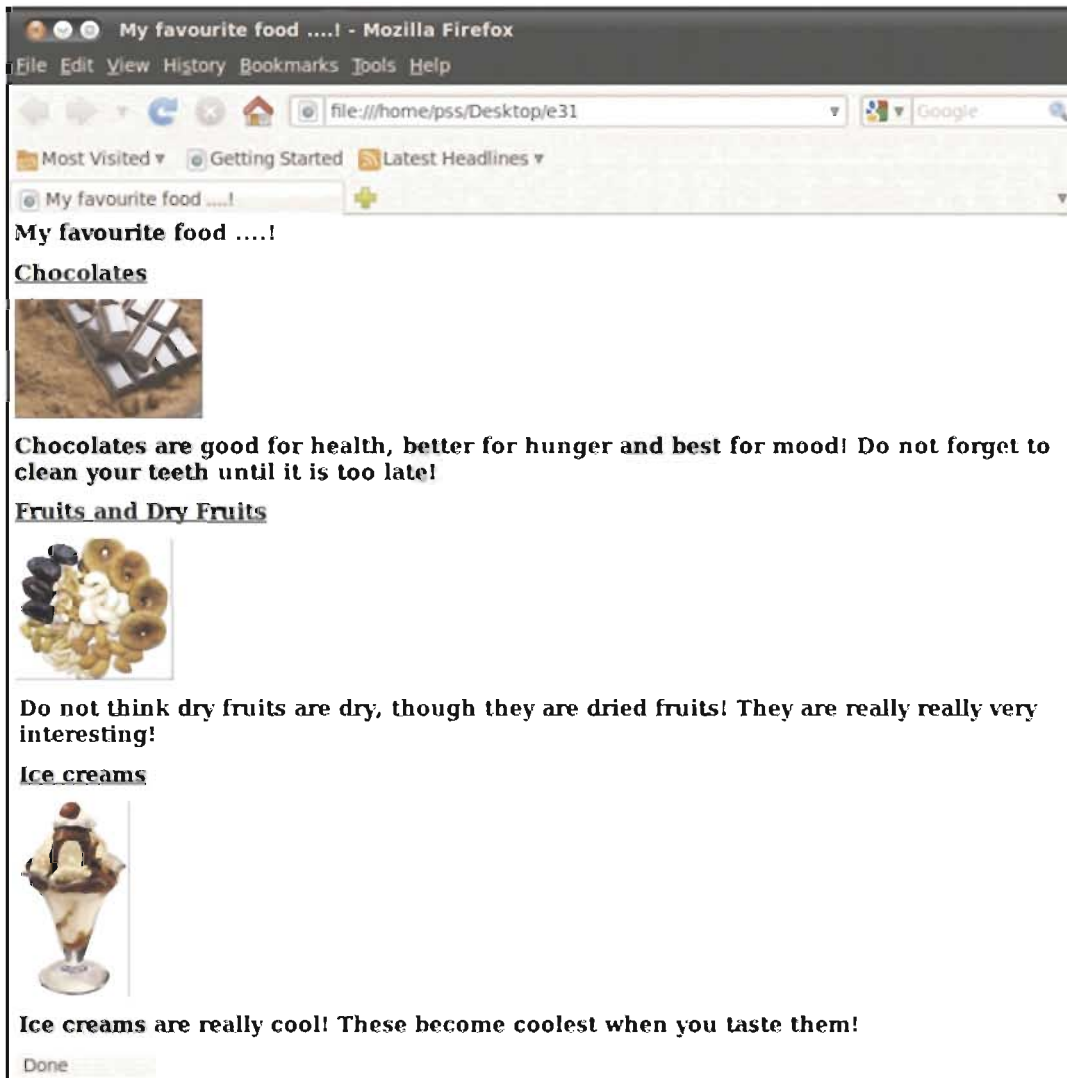


Figure 3.1 : Multiple images on a web page

The browser will get all the images from the given source one by one and display them in the order in which they are mentioned in the HTML code. Users generally see a page display along with all its images.

The alt attribute

The alt attribute along with an image tag describes the source image. It is always advisable to define this attribute, as it describes the image. The example of the alt attribute is as follows:

```

```

This attribute is quite useful. The first reason is it describes the image, which is many times necessary. Another reason is due to some reasons if the browser does not display the image, the reader will at least know, what to expect as a picture. The third reason is, when the web page is read by

the software such as screen reader (special software designed for visually challenged people) and search engine, the interpretation of the image becomes easy.

The height and width attributes

The height and width attributes specify the values of height and width of the image in pixels as illustrated below.

```

```

Here, the width attribute indicates the browser how wide the image should appear on the page. The height attribute specifies how tall the image should appear on the page. Values of both width and height attributes can be specified using the number of pixels. It is not compulsory to use both the width and height arguments together; you can use any one of them. However, using only one attribute will not be much useful.

By providing additional information about the height and width of an image to the browser, presentation and loading of the image in a browser become smooth and efficient. Here, the browser knows the amount of space to be allocated to the image. It is to be noted that your image should not be greater than your screen. However, it is possible to accommodate larger image into an HTML code. It is also not advisable to magnify or shrink your images by using much higher or lower height and width values. Doing this will ruin quality and visibility of the image.

The align attribute

The align attribute is used to align the given image within the page or any element that contains the image. Example for the same is as follows.

```

```

The align attribute can take one of the values shown in table 3.1.

Value	Purpose
Top	The image is aligned at the top of the current line of text.
Middle	The image is aligned in such a way that the middle of the image appears at the current text.
Bottom	The bottom of the image is aligned with the baseline of the current line of text.
Left	The image is aligned to the left side of the containing window or element.
Right	The image is aligned to the right side of the containing window or element.

Table 3.1 : Possible values for the align attribute

The border attribute

An image on a web page can be highlighted with a border. By default, images do not have borders. To create a border around an image, the following attribute can be used.

The border attribute was created to specify the width of the border in pixels:

```

```

Some browsers (such as the Internet Explorer) highlight image when link is given to the image; that is when an image is used as a link, it is highlighted with a border.

The id attribute

With the help of the id attribute, you can specify an identifier (name) for the image. Later the image can be referred by the identifier in a script written in a programming language such as java. The tag below shows how to use name attribute.

```

```

Adding space around image

To add space around an image vspace and hspace attributes are used. To add space over and under the image the vspace attribute is used. In a similar way, to add space to the left and right of the image the hspace attribute is used. The example given below illustrates the use of these attributes.

```

```

This attribute will be helpful when the image is inline with the text leaving no gaps. Leaving the vertical and horizontal gaps makes the image clearer and the page more readable. Code listing 3.2 shows an example of HTML code that leaves some gap surrounding the image of chocolates.

```
<html>
<head>
  <title>My favourite food ....!</title>
</head>
<!-- ----- -->
<body>
  <h1> My favourite food ....!</h1>
<!-- ----- -->
<h1> <u> Chocolates </u></h1>
<p>
  
<h1>
  Chocolates are good for health, better for hunger and best for mood !
  Do not forget to clean your teeth until it is too late !
</h1>
</p>
<!-- ----- -->
</body>
</html>
```

Code Listing 3.2 : HTML code illustrating hspace and vspace

When you see the HTML code illustrated in code listing 3.2 in a browser, it will look like figure 3.2. You may notice the horizontal and vertical gaps introduced by `hspace` and `vspace` attributes. Add some more images within the HTML code and see how your browser treats the images.



Figure 3.2 : Illustrating `hspace` and `vspace`

Now you have observed that the `hspace` and `vspace` attributes add spaces on both the sides of the image. That is, when `hspace` is used, it adds space to the left as well as to the right sides of the image. Similarly, when `vspace` is used, it adds space to the top as well as to the bottom of the image. To add image at only one side, we need to modify image appropriately. An alternative is to print a blank image beside the original image. However, the spacing and alignment will be difficult to manage in the second alternative.

Try to remove the "chocolate.png" file from your computer memory and see what happens. Will it print the alternative description of the image such as "Here comes the sweet image" ? You may find the output as shown in figure 3.3.



Figure 3.3 : Displaying alternative description in absence of image

Low Resolution Image

High resolution image takes lot of space and time for loading it on web page. Till the high resolution (original) image is loaded, we may temporarily publish a low resolution image on the page as illustrated below.

```

```

To get low resolution image, you can use resize, crop or resample the image using techniques supported by a suitable image editing tool.

By adding an attribute managing the alternative low resolution image, we may solve problems of browser speed as well as size of the image; however, we have to create and store an alternative image. Further, the low resolution image may appear fuzzy and vague.

Embedding Images of Various Formats

So far, we have incorporated bmp (bit mapped picture) file into the image tag. But there are some other formats of image that can be embedded into the image tag. Among the various image formats, formats such as bmp, jpeg, png, tiff and gif are very popular. The description of these image formats are shown in table 3.2.

Image file format	Description
BMP	Bitmap graphic files for Windows and OS/2
GIF	Graphics Interchange File
JPEG	Joint Photographic Expert Group file
JPG	JPEG/JIFF Image file
PNG	Portable Network Graphics bitmap graphic file
TIFF	Tag Image File Format bitmap file

Table 3.2 : Image formats

Digital cameras and web pages normally use jpg/jpeg files; as these formats drastically compress the data in the files. The image formats jpg and jpeg are good for continuously toned images such as photographs. Commercially tiff format images are used very much, as they offer highest quality and good amount of compression of the image with minimum loss. Tiff format is actually one of the good lossless image formats. Other file formats such as gif and png also use the lossless compression technology. However, png format is comparatively slower in reading and writing.

Image as a Hot Spot

Many times the browser will take some time to load the big image. Above this, when we have multiple images on one or more pages, it will be confusing for users that which image should be considered first. Have you noticed some online shopping sites for books, jewelry, mobile phone and other such items ? On a single page you might have seen small images of many items displayed with brief information of each. When you find a particular item interesting, you may click the small image to go to the page containing detailed information as well as bigger, good quality image of the selected item. This can be done by applying a link to each of the small image on a page. You can say that here the image is considered as hot text. Since there is no text here, it is identified as hot spot. The small image itself has a link to the other suitable page. Code Listing 3.3 illustrates HTML code that uses such two small images and leads to two different web pages.

```

<html>
  <head>
    <title> Image Hot Spot </title>
  </head>
  <!-- ----- -->
  <body>
    <h1> Either you can go to office or go to temple!</h1>

    <p> <h2>Click on any image below to see its larger version </h2> </p>

    <br>
  <!-- ----- adding links to the images ----- -->

    <a href="big_office.html"></img></a></p>

    <a href="big_temple.html"></img></a></p>
  <!-- ----- -->
  </body>
</html>

```

Code Listing 3.3 : HTML code for image as hot spot

Save this code as main.html. When you see the code in a browser, it will look as shown in figure 3.4.

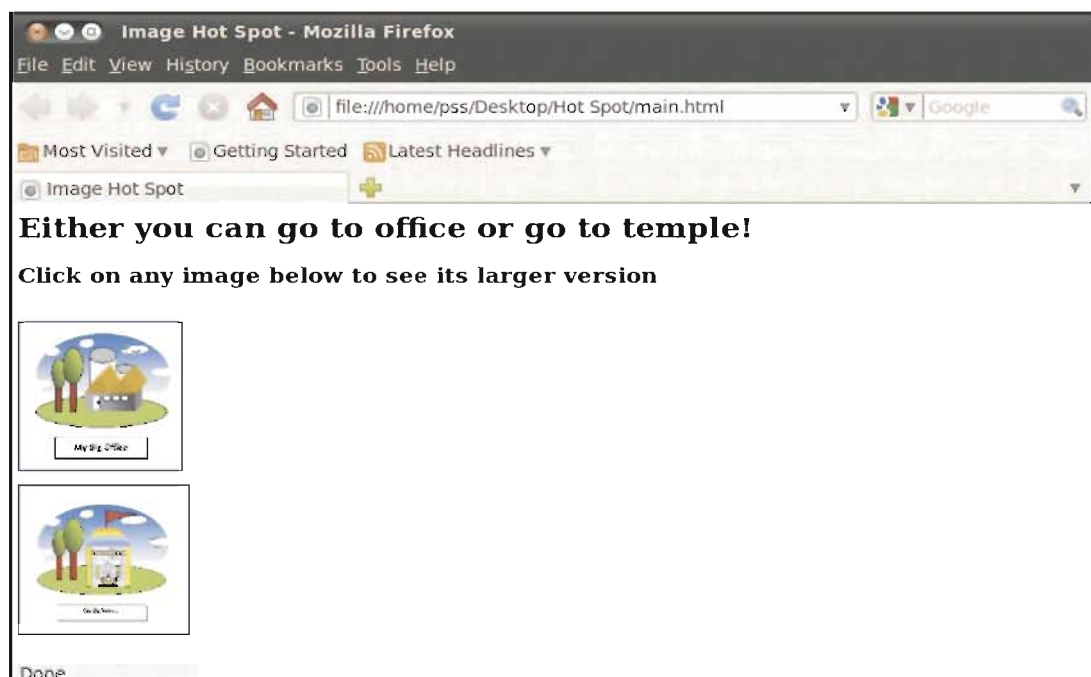


Figure 3.4 : Using image as hot spot

Besides the HTML code shown in code listing 3.3, we also need four images. We need one small image for office called small_office.bmp and another image called big_office.bmp. Similarly, we also need one small image for temple called small_temple.bmp and another image called big_temple.bmp. You can create the images or you may use the existing images by renaming them.

When you see the main.html file in a browser, you can see the output as shown in figure 3.4; provided two small figures for an office (small_office.bmp) and a temple (small_temple.bmp) are available.

Once you correctly visualize both the images in the main.html page in a browser; you may try clicking on images. When you click on first image the href tag (given below) redirects you to another page (big_office.html) considering the small image as hot spot.

```
<a href="big_office.html"></img></a></p>
```

Note that your big_office.html file must be ready with big office image embedded in it.

By clicking on the first image you will see the screen as shown in figure 3.5.

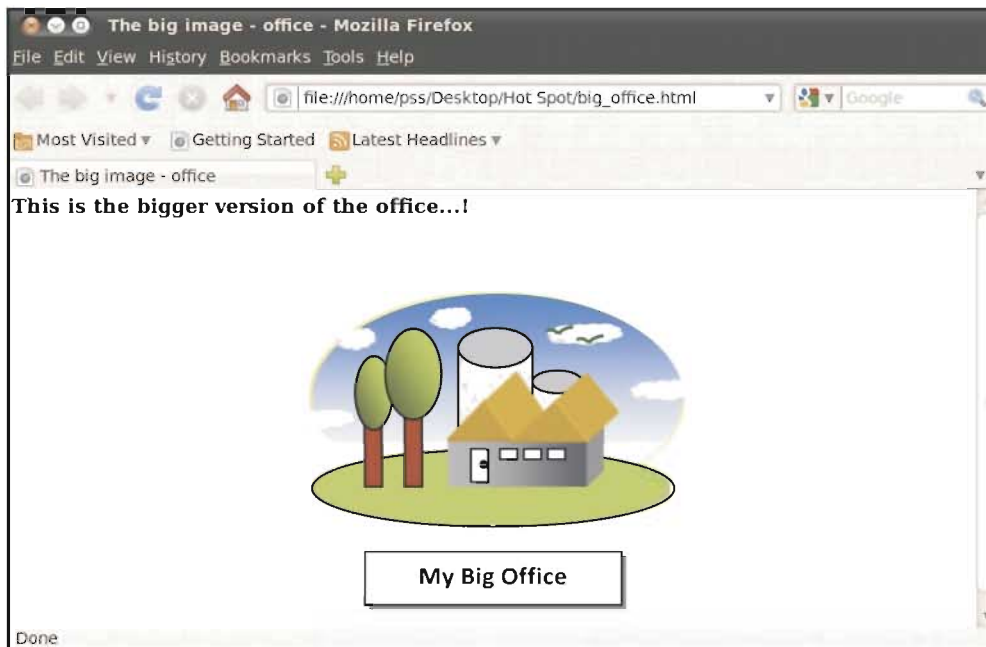


Figure 3.5 : When you click on the first image

HTML code for creation of big_office.html is given in code listing 3.4.

```
<html>
  <head>
    <title> The big image - office </title>
  </head>
  <!-- ----- -->
  <body>
    <h1> This is the bigger version of the office...! </h1>
    <br>
    <br>
    <br>
    </img>
  <!-- ----- -->
</body>
</html>
```

Code Listing 3.4 : Code for the first image

Similarly, when you click on the second image shown in figure 3.4, you will see output as shown in figure 3.6.

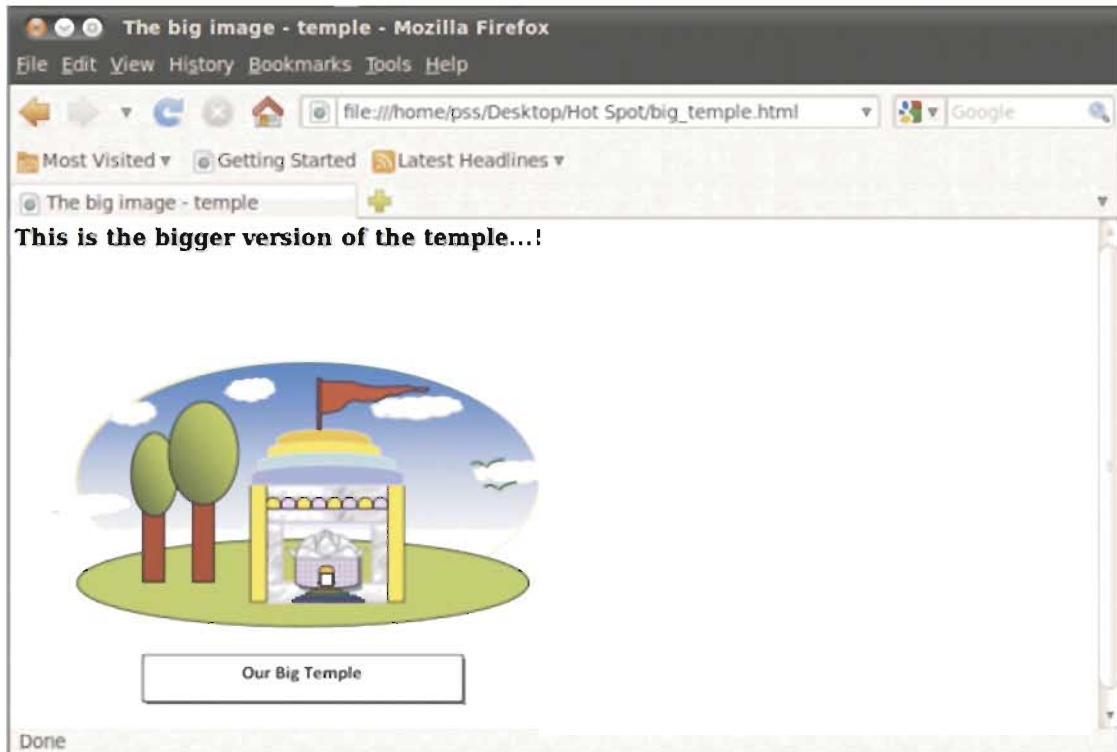


Figure 3.6 : When you click on the second image

HTML code (big_temple.html) that generates figure 3.6 is illustrated in code listing 3.5.

```
<html>
  <head>
    <title> The big image - temple </title>

  </head>
  <!-- ----- -->
  <body>
    <h1> This is the bigger version of the temple...! </h1>
    <br>
    <br>
    <br>

    </img>

  <!-- ----- -->

  </body>

</html>
```

Code Listing 3.5 : Code for the second image

Observe that to complete the above example you require four images and three HTML files as follows :

1.	Small_office.bmp	→	a small image of office in bmp format (or any valid image format).
2.	Small_temple.bmp	→	a small image of temple in bmp format.
3.	Big_office.bmp	→	a big image of office in bmp format.
4.	Big_temple.bmp	→	a big image of temple in bmp format.
5.	Main.html	→	a file HTML code with two small images, reference to the other two HTML files, and some text in it.
6.	Big_office.html	→	a file HTML code with bigger image of the office.
7.	Big_temple.html	→	a file HTML code with bigger image of the temple.

You may try to add some more small images in a main page. Small images are also identified as thumbnails. When you click on such small images arranged in a systematic way within a web page, each image will lead to the detailed (or bigger) version of it.

Image Map

In previous section we have added a link to an image. It is also possible to add multiple links to an image. Here each link points to a different reference. To create multiple links within a single image, we need to create multiple clickable locations within the image. Clicking on each such location, a particular reference (page) can be opened. Each such location is called a hot spot. Consider you have some kind of drawing of an area showing different places such as a corporate office, shopping mall, temple, police station, and fire brigade. On each of this location, we may create a link. For example on temple location, we may set a link that leads to a page containing information about the temple. The linked page may show some photos, news, brief history about the temple, and directions for how to reach the temple. In case you have a map (suppose map of India), then some regions of the map (states like Gujarat, Maharashtra, etc.) can be defined as hot spots. When one clicks on such hot spot, new web page can be opened.

Consider the image as shown in figure 3.7. The image contains a temple, an office, a mall, a fire brigade and a police station. These utilities are located on two main roads called "Shri M K Gandhi Marg" and "Shri Netaji Marg". On each of these five buildings and two roads a link is set. That is, on seven different areas seven different links are set. As stated earlier, these areas on which the links is to be set are known as hot spots. The hot spots must be big and visible enough; so that users can easily identify them and click. Otherwise, users will find it difficult to select the hotspot and follow the link. Further, the image should convey information that by clicking on each such area/ hot spot, the user may be redirected to a new web page showing detailed information about the selected area. For example, "click on temple to know more ..." message can be given to the user when the image shown in figure 3.7 is displayed in a browser. Generate the image shown in figure 3.7 using appropriate image creation tool and name it as city.bmp.

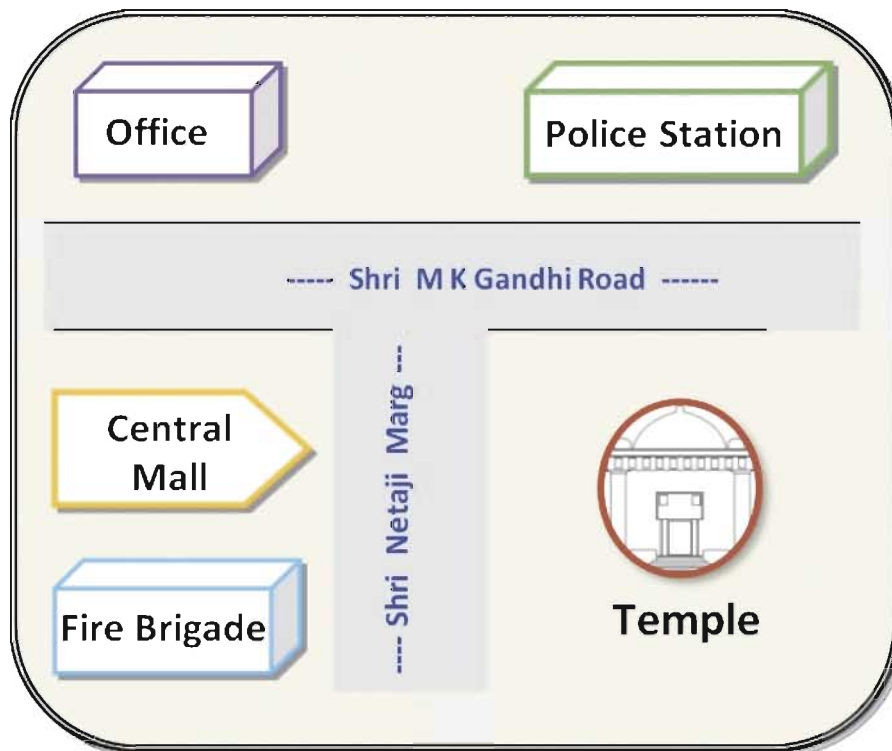


Figure 3.7 : A scenario of a city market place

The location of a hot spot is mentioned using x and y co-ordinates measured from the top left hand corner of the image. These coordinates are used in two ways :

- To specify where the hot spots are
- To compare the coordinates provided by user through a click.

The browser at the user's side identifies the coordinate of the user's click and takes user to the referred web page. For this, <map> and <area> tags are used along with a usemap attribute into its image tag. The map tag has an attribute called map. The map attribute value must be matching with the usemap attribute value. See the following example.

```

```

Here, the "#roadmap" is the name of identifier of usemap we have created. Within the <map> and </map> tags, the hot spot co-ordinates and their corresponding links are to be specified. Here, the temple co-ordinates are (518,378,70) and its shape is circular. We can embed this information in map tags as follows.

```
<map name="roadmap">
<area shape="circle" coords="518,378,70" alt="Temple" href="Temple.html">
<!-- ----About co-ordinates of other hot spots ---->
</map>
```

The co-ordinates given in the second line of the above HTML segment represents temple in the city.bmp file shown in figure 3.7. As the temple is specified in circular area, we have used "circle" value to its shape. Suppose, the temple is in a rectangular shape, we need to use shape value as "rect". The area tag must mention the shape of a hotspot. The valid possible shapes are circle,

rectangle and polygon. The rectangle is specified by rect; circle is specified by circle; and polygon is specified by poly. Alternatively, full names such as rectangle are also used. See example below illustrating area tag with different shapes.

- `<area shape="poly" coords="32,301,183,301,239,352,188,399,32,399" alt="Central Mall" href="CentralMall.html">`
- `<area shape="rect" coords="32,432,233,532" alt="Fire Brigade" href="FireBrigade.html">`
- `<area shape="circle" coords="518,378,70" alt="Temple" href="Temple.html">`

Code listing 3.6 shows a complete HTML code to generate an image map using the scene of city shown in figure 3.7.

```
<html>
<body>
<p>Click on the location presented on map to look in detail:</p>
<!-- ----- -->


<!-- ----- -->
<map name="roadmap">

<area shape="rect" coords="46,37,219,141" alt="Office" href="Office.html">

<area shape="rect" coords="407,38,632,142" alt="Police Station" href="PoliceStation.html">

<area shape="poly" coords="32,301,183,301,239,352,188,399,32,399" alt="Central Mall"
href="CentralMall.html">

<area shape="rect" coords="32,432,233,532" alt="Fire Brigade" href="FireBrigade.html">

<area shape="circle" coords="518,378,70" alt="Temple" href="Temple.html">

</map>
<!-- ----- -->
</body>
</html>
```

Code Listing 3.6 : HTML code for image map

The output of code listing 3.6 will look as shown in figure 3.8 in a browser.

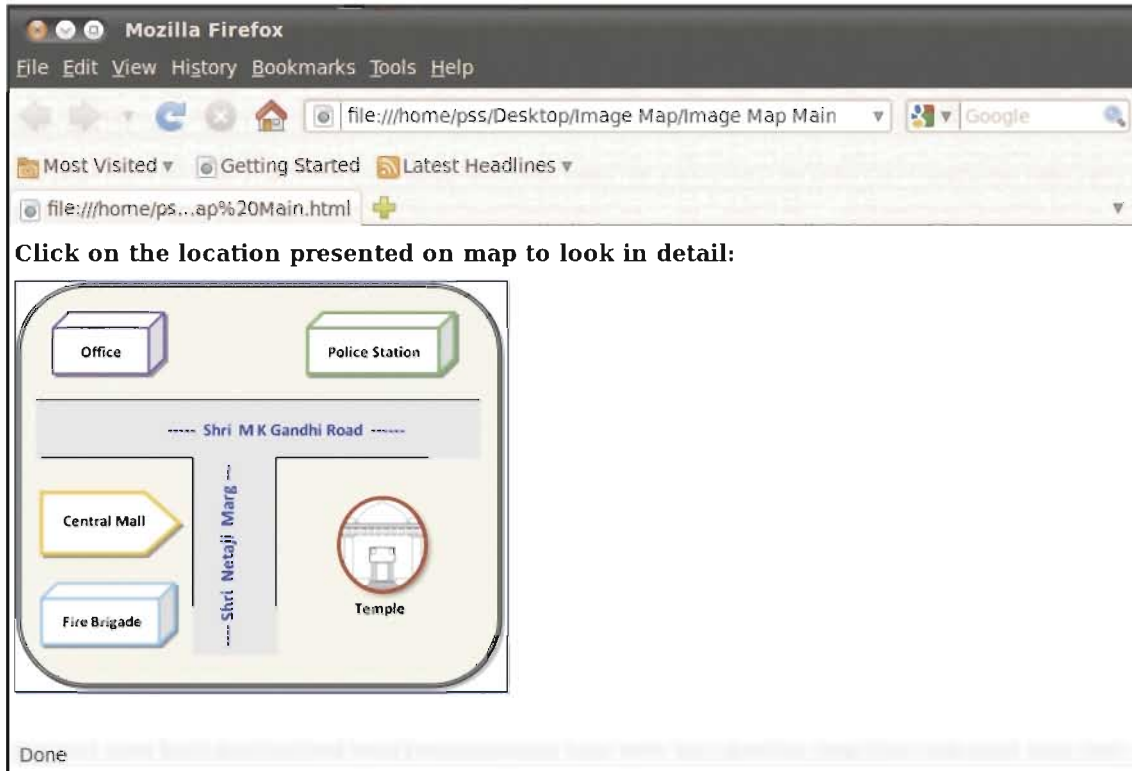


Figure 3.8 : Image map in a browser

When you click on the circular image of temple shown in figure 3.8, you will be redirected to a new page showing details about the temple. See figure 3.9 illustrating another file showing temple details.

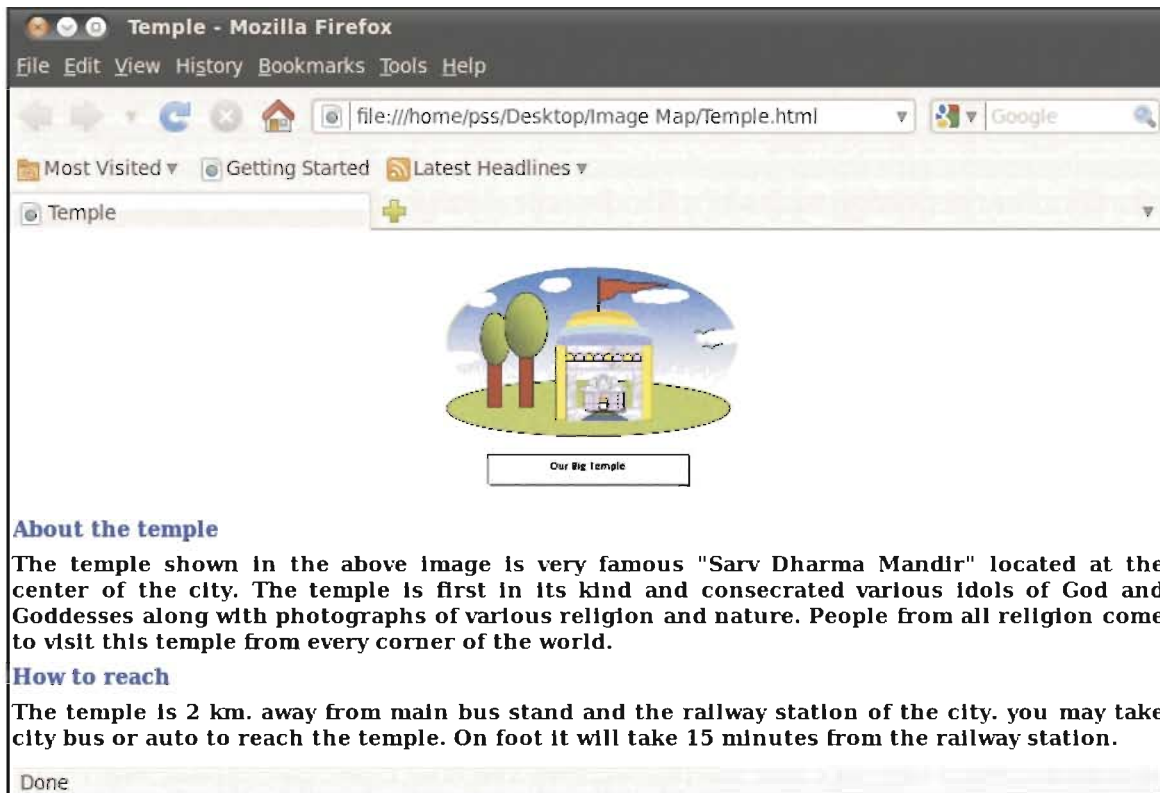


Figure 3.9 : Temple details

Code listing 3.7 shows the code which is required to generate the web page shown in figure 3.9.

```
<html>
<head> <title> Temple </title> </head>

<body>
  <center>
     </img>
  </center>

  <!-- ----- -->

  <h1> <font color="blue">About the temple </font> </h1>

  <p align="justify"> <b>

    The temple shown in the above image is very famous "Sarv Dharma Mandir"

    located at the center of the city. The temple is first in its kind and

    consecrated various idols of God and Goddesses along with photographs

    of various religion and nature. People from all religion come to visit

    this temple from every corner of the world.

  </b>
</p>
  <!-- ----- -->
  <h1> <font color="blue"> How to reach </font> </h1>

  <p align =justify> <b>

    The temple is 2 km. away from main bus stand and the railway station of the city.

    you may take city bus or auto to reach the temple. On foot it will take 15 minutes

    from the railway station.

  </b>
  </p>
</body>
</html>
```

Code Listing 3.7 : Code for the temple detail

Similarly, you can prepare HTML files for office (Office.html), police station (PoliceStation.html), fire brigade (FireBrigade.html), and central mall (CentralMall.html). Verify that all the files work individually and try them from clicking the main HTML file showing overall scene of the city.

Linking Multimedia Files

A video as well as an audio file can be integrated into an HTML document using an anchor tag as illustrated below.

```
<a href="food.mp4"> follow this recipe and enjoy delicious food...! </a>
```

The example shown in previous line includes a movie file called "food.mp4". You should have a video/movie file with you. When the user clicks the words "Enjoy this... !" displayed on the web page, the video file will be shown in appropriate software. If the referred movie file is available on some other website or remote place, first it will be transferred to the user's computer. Such files are stored in local directory of user's computer as temporary internet files. If the required software is not found while executing the movie file, browser will ask you to choose alternative software from the computer or from the Internet.

Following is an example which adds a sound file in an HTML code.

```
<a href="song.mp3"> Enjoy this song...! </a>
```

Besides the mov file format, there are other formats for a video file. To name a few, these formats are avi, wmv, meg or mpeg, and swf. Some of these require downloading a video player that executes the files.

Summary

In this chapter we have learnt how to add image in an HTML document. Besides addition of one or more images into an HTML document, we have seen how to arrange image on the monitor screen using attributes like align, hspace and vspace. We have also used an image as hot spot. Not only the whole image, but part of image (such as a geographical map) can also be linked to different web pages using image map features. At the end, information about how to add video and audio files to an HTML is given. Using the information provided in this chapter, users are able to accommodate not only plain text and numbers into an HTML document, but video, animation, images and audio can also be included in a web page.

EXERCISE

1. Explain how images can be added into an HTML document by giving suitable example.
2. Write a short note on various attributes of the image tag in HTML.
3. Define hot spot. Also explain how an image can be defined and used as a hot spot in HTML.
4. Write a short note on image map.
5. Choose the correct option from the following :
 - (1) Which of the following tag is used to insert a video file into an HTML document ?
(a) img (b) image (c) href (d) ime

- (2) As the image element does not cause a line break, it is also referred to as which of the following ?
- (a) An online image (b) An inline image
(c) An outline image (d) Blank image
- (3) Which one of the following is a valid image file format ?
- (a) Img (b) Move (c) Mp3 (d) Png
- (4) Which of the following is provided when we use alt attribute of an image ?
- (a) Alternative description (b) Alt key definition
(c) Alternative image (d) Alternative HTML link
- (5) Which of the following attributes specify the values of height and width of the image in pixels ?
- (a) Img src (b) Height and width
(c) H and V (d) Any of the above
- (6) Which of the following is not a valid image format ?
- (a) Imv (b) Png (c) Bmp (d) Gif
- (7) Which of the following concept is used to display whole image as a link ?
- (a) Image as hot spot (b) Hot text
(c) Active link (d) Any of this
- (8) Which of the following are the two types of image maps ?
- (a) Shopper side and user side (b) Server side and client side
(c) Vendor side and supplier side (d) All of these
- (9) Which of the following tag is used to add an image map ?
- (a) Image name (b) Htemp (c) Map (d) Alt

LABORATORY EXERCISE

1. Consider the example discussed in code listing 3.1 of this chapter. It prints images of chocolate, dry fruit and ice-cream. Extend the HTML code in such a way that if you click on chocolate image, it will lead you to a new HTML page describing chocolates. You may include more images of chocolates, some facts about chocolates, history of chocolates and recipe of making chocolates at home.

If you click on dry fruits image, it will lead you to a new HTML page describing the dry fruits. Similarly, if you click on ice-cream image, it will lead you to a new HTML page describing various ice-creams.

2. Create a page called index.html. Put some smaller three images of your favourite personalities on the index page. They can be your school teachers, your friends, sports persons or great authors. Also prepare three web pages that display some information about each of these three persons including a big photograph. Set link on each of the smaller photograph on the index page in such a way that it leads to the full biography of the selected person. You need to set three links on the three small photographs. (Hint: To create a link from an image, add an <a> element, and put the link of bigger picture in the href attribute of the <a> element.)
3. You may use the approach discussed in the above example 1 to develop your family tree. Create a web page with one or more images of your grandfather and grandmother. Develop other pages in such a way that, when you click on the image of your grandfather, a new page will appear with some more related pictures.
4. Implement the image map showing city scenario as discussed in this chapter.
5. Complete the school website project you did in Chapter 2 by adding the photo gallery. You may add logo of your school on the main page too.
6. Use an existing video file and embed it into a web page. Alternatively, you may create a video file through your mobile or any other device and embed it into a web page.

