Concept of WWW.

- **WWW** is stands for World Wide Web.
- The **World Wide Web (WWW)** is a global information medium which users can read and write via computer connected to the internet.
- The Web, or World Wide Web, is basically a system of Internet servers that support specially formatted documents. The documents are formatted in a markup language called HTML (Hypertext Markup Language) that supports links to other documents, as well as graphics, audio, and video files.
- In short, **World Wide Web (WWW)** is collection of text pages, digital photographs, music files, videos, and animations you can access over the Internet.
- Web pages are primarily text documents formatted and annotated with Hypertext Markup Language (HTML). In addition to formatted text, web pages may contain images, video, and software components that are rendered in the user's web browser as coherent pages of multimedia content.
- The terms Internet and World Wide Web are often used without much distinction. However, the two are not the same.
- The Internet is a global system of interconnected computer networks. In contrast, the World Wide Web is one of the services transferred over these networks. It is a collection of text documents and other resources, linked by hyperlinks and URLs, usually accessed by web browsers, from web servers.
- There are several applications called **Web browsers** that make it easy to access the World Wide Web; For example: Firefox ,Microsoft's Internet Explorer, Chrome Etc.
- Users access the World-Wide Web facilities via a client called a browser, which provides transparent access to the WWW servers. User can access WWW via two way such us :

History of WWW:

- Tim Berners-Lee, in 1980 was investigating how computer could store information with random links. In 1989, while working at European Particle Physics Laboratory, he proposed to idea of global hypertext space in which any network-accessible information could be referred to by single **"universal Document Identifier".** After that in 1990, this idea expanded with further program and knows as **World Wide Web.**

Internet and WWW

- The Internet, linking your computer to other computers around the world, is a way of transporting content. The Web is software that lets you use that content…or contribute your own. The Web, running on the mostly invisible Internet, is what you see and click on in your computer's browser.

What is The Internet?

- The Internet is a massive network of networks, a networking infrastructure. It connects millions of computers together globally, forming a network in which any computer can communicate with any other computer as long as they are both connected to the Internet. Information that travels over the Internet does so via a variety of languages known as

protocols. So we can says that Internet is network of computer which connect to together and any computer communicate with any other computer.

What is The Web (World Wide Web)?

- The World Wide Web, or simply Web, is a way of accessing information over the medium of the Internet. It is an information-sharing model that is built on top of the Internet.
- The Web uses the HTTP protocol, only one of the languages spoken over the Internet, to transmit data. The Web also utilizes browsers, such as Internet Explorer or Firefox, to access Web documents called Web pages that are linked to each other via hyperlinks. Web documents also contain graphics, sounds, text and video.

Different between Internet and WWW

- **The Web** is a Portion of The Internet. The Web is just one of the ways that information can be disseminated over the Internet. **The Internet**, not the Web, is also used for email, which relies on SMTP, Usenet news groups, instant messaging and FTP. So the Web is just a portion of the Internet.

HTTP Protocol: Request and Response.

- HTTP stands for Hypertext Transfer Protocol.
- HTTP is based on the client-server architecture model and a stateless request/response protocol that operates by exchanging messages across a reliable TCP/IP connection.
- An HTTP "client" is a program (Web browser) that establishes a connection to a server for the purpose of sending one or more HTTP request messages. An HTTP "server" is a program (generally a web server like Apache Web Server) that accepts connections in order to serve HTTP requests by sending HTTP response messages.
- Errors on the Internet can be quite frustrating — especially if you do not know the difference between a 404 error and a 502 error. These error messages, also called HTTP status codes are response codes given by Web servers and help identify the cause of the problem.
- For example, "404 File Not Found" is a common HTTP status code. It means the Web server cannot find the file you requested. The file -- the webpage or other document you try to load in your Web browser has either been moved or deleted, or you entered the wrong URL or document name.
- HTTP is a stateless protocol means the HTTP Server doesn't maintain the contextual information about the clients communicating with it and hence we need to maintain sessions in case we need that feature for our Web-applications
- HTTP header fields provide required information about the request or response, or about the object sent in the message body. There are four types of HTTP message headers:
  - **General-header:**

  These header fields have general applicability for both request and response messages.
  - **Request-header:**

  These header fields have applicability only for request messages.
  - **Response-header:**

  These header fields have applicability only for response messages.
  - **Entity-header:**

  These header fields define Meta information about the entity-body.

- As mentioned, whenever you enter a URL in the address box of the browser, the browser translates the URL into a request message according to the specified protocol; and sends the request message to the server.
- For example, the browser translated the **URL http://www.test101.com/doc/index.html** into the following request message:

```
GET /docs/index.html HTTP/1.1
Host: www.test101.com
Accept: image/gif, image/jpeg, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)
```

Here,Step by step communication between client and server mention into followingfigure.

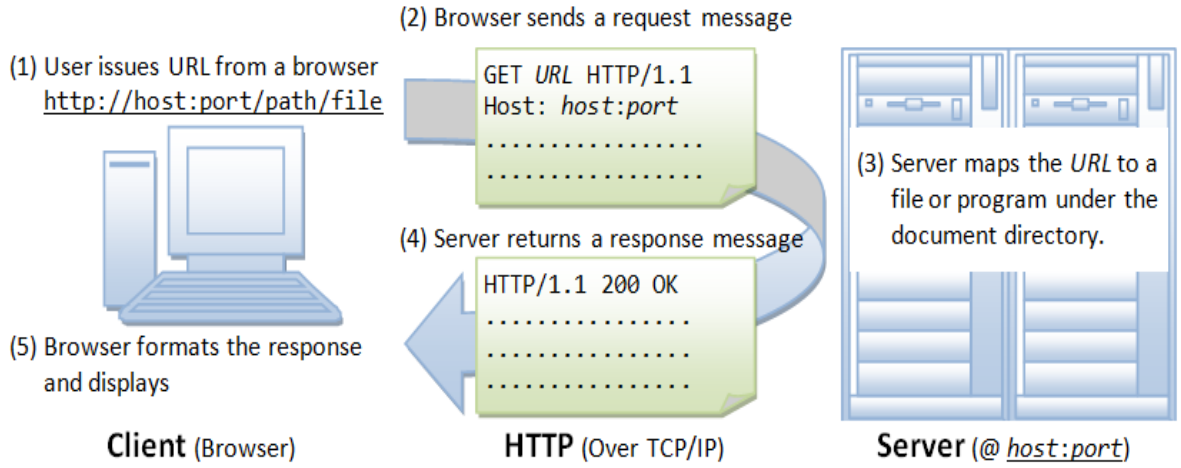

Fig 1: Communication between HTTP Client and HTTP Server

Web Browser and Web Server.

- Web server and web browser are the terms which are commonly used for website. The basic purpose of both is to develop a platform for internet web directory. So that any users can anytime access any kind of website. Major difference between them is on their function and how they perform their functions. Check for the detail of both topics before understanding the differences between them.

Web Browser

- Web browser is a client, program, software or tool through which we sent HTTP request to web server. The main purpose of web browser is to locate the content on the World Wide Web and display in the shape of web page, image, audio or video form.

- We can also call it a client server because it contacts the web server for desired information. If the requested data is available in the web server data then it will send back the requested information again via web browser.
- Microsoft Internet Explorer, Mozilla Firefox, Safari, Opera and Google Chrome are examples of web browser and they are more advanced than earlier web browser because they are capable to understand the HTML, JavaScript, AJAX, etc. Now days, web browser for mobiles are also available, which are called micro browser.

Web Server

- **Web server** is a computer system, which provides the web pages via HTTP (Hypertext Transfer Protocol). IP address and a domain name is essential for every web server.
- Whenever, you insert a URL or web address into your web browser, this sends request to the web address where domain name of your URL is already saved. Then this server collects the all information of your web page and sends to browser, which you see in form of web page on your browser.
- Lot of web server software is available in the market in shape of NCSA, Apache, Microsoft and Netscape. Storing, processing and delivering web pages to clients are its main function. All the communication between client (web browser) and server takes place via HTTP.
- Here, we can easily understand concept of web browser and web server by following figure.

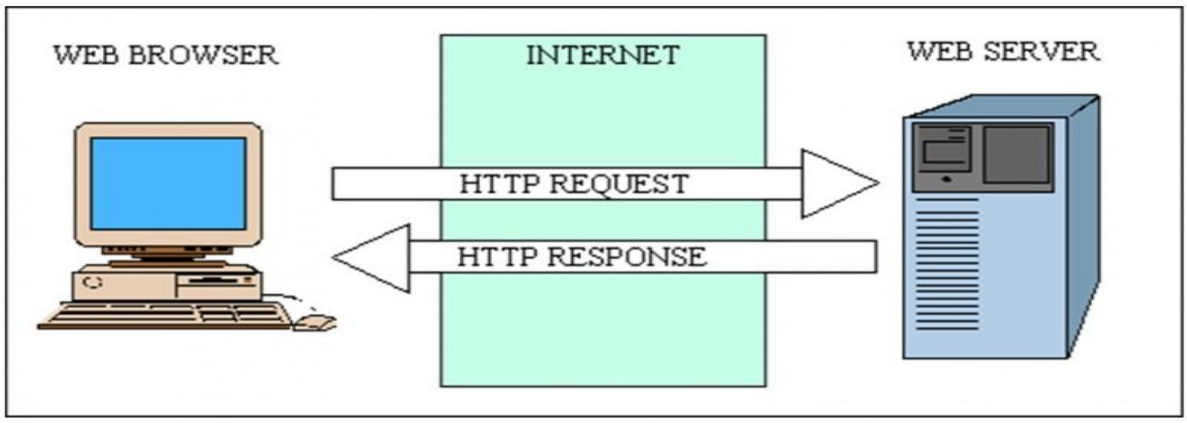

Fig 2: Communication between web Browser and Web Server

Feature of Web 2.0.

- Web 2.0 is term that was introduced in 2004 and refers to the second generation of the World Wide Web.The term "2.0" comes from the software industry, where new versions of software programs are labeled with an incremental version number.
- Some examples of features considered to be part of Web 2.0 are listed below:
  - **Blogs :**

    It also known as Web logs, these allow users to post thoughts and updates about their life on the Web.
  - **Wikis:**

    Wikis - sites like Wikipedia and others enable users from around the world to add and update online content.
  - **Social Networking:**

Sites like Facebook and MySpace allow users to build and customize their own profile sand communicate with friends.

- **Web Application:**

Web application is a broad range of new applications make it possible for users to run programs directly in a Web browser.as Web logs, these allow users to post thoughts and updates about their life on the Web.

- **User Participation:**

In traditional web the contents are solely provider by the web site owner or company, but in web 2.0 the users participate in content sourcing. This is also known as Crowd sourcing.
Examples: Wikipedia & You Tube.

- **Long Tail:**

The traditional web was like a retail business the product is sold directly to user and the revenue generated. But in web 2.0 the niche product is not sold directly but offered as a service on demand basis and income is generated as monthly fee and pay per consumption.

- **Rich User Experience :**

Traditional web are built with HTML and CSS CGI and had been offered as a static page. On the other hand Web 2.0 uses AjaxAsynchronous JavaScript + XML) presenting dynamic, rich user experience to users.
Example: Google Provided Google Maps and Google Suggest.

- Web 2.0 technologies provide a level user interaction that was not available before. Websites have become much more dynamic and interconnected, producing "online communities" and making it even easier to share information on the Web. Because most Web 2.0 features are offered as free services, sites like Wikipedia and Facebook have grown at amazingly fast rates.

Web Design Issues

Browser & Operating Systems

- Web pages are written using different HTML tags and viewed in browser window.
- The different browsers and their versions greatly affect the way a page is rendered, as different browsers sometimes interpret same HTML tag in a different way.
- Different versions of HTML also support different sets of tags.
- The support for different tags also varies across the different browsers and their versions.
- Same browser may work slightly different on different operating system and hardware platform.
- To make a web page portable, test it on different browsers on different operating systems.

Bandwidth and Cache

- Users have different connection speed, i.e. bandwidth, to access the Web sites.
- Connection speed plays an important role in designing web pages, if user has low bandwidth connection and a web page contains too many images, it takes more time to download.
- Generally, users have no patience to wait for longer time than 10-15 seconds and move to other site without looking at contents of your web page.
- Browser provides temporary memory called *cache* to store the graphics.
- When user gives the URL of the web page for the first time, HTML file together with all the graphics files referred in a page is downloaded and displayed.

Display Resolution

- Display resolution is another important factor affecting the Web page design, as we do not have any control on display resolution of the monitors on which user views our pages.
- Display or screen resolution is measured in terms of pixels and common resolutions are 800 X 600 and 1024 X 786.
- We have three choices for Web page design.
    - Design a web page with fixed resolution.
    - Make a flexible design using HTML table to fit into different resolution.
    - If the page is displayed on a monitor with a higher resolution, the page is displayed on left-hand side and some part on the right-hand side remains blank. We can use centered design to display page properly.
    - (Not For Exam) ~~Ideally we should use some frameworks for designing like Bootstrap/Material design.~~

Look & Feel

- Look and feel of the website decides the overall appearance of the website.
- It includes all the design aspects such as
    - Web site theme
    - Web typography
    - Graphics
    - Visual structure
    - Navigation etc…

1. Font Size

- Set the size of your font with size. The range of accepted values is from 1(smallest) to 7(largest).The default size of a font is 3.

```
<p><font size="5">Here is a size 5 font</font></p>
```

2. Font Color

- Set the color of your font with color.

```
<font color="#990000">This text is hexcolor #990000</font><br />
<font color="red">This text is red</font>
```

3. Font Face

- Choose a different font face using any font you have installed.

```
<p><font face="Bookman Old Style, Book Antiqua, Garamond">This paragraph has
had its font...</font></p>
```

4. Basefont - Set a Solid Base

- With the basefont tag you will be able to set the default font for your web page.

HTML Code:

```
<html><body>
<basefont size="2" color="green"><p>This paragraph has had its font...</p>
</basefont>
</body></html>
```

HTML - Hypertext Reference (href) or Hyperlinks

- The href attribute defines reference that the link refers to. Basically this is where the user will be taken if they wish to click this link.
- Use the <a> tags to define the start and ending of an anchor.
- Decide what type of href attribute you need and place this attribute into the opening tag.
- The text you place between the opening and closing tags will be shown as the link on a page. Use the demonstration below as a reference.
- Hypertext references can be Internal, Local, or Global.
- **Internal** - Links to anchors on the current page
- **Local** - Links to other pages within your domain
- **Global** - Links to other domains outside of your site

```
Internal - href="#anchorname"
Local - href="../pics/picturefile.jpg"
Global - href=http://www.xyz.com/
```

```
<a href="http://www.google.com/" target="_blank" >Google Home</a>
<a href="http://www.espn.com/" target="_blank" >ESPN Home</a>
<a href="http://www.yahoo.com/" target="  blank" >Yahoo Home</a>
```

Link Targets

- The target attribute defines whether to open the page in a separate window, or to open the link in the current browser window.

HTML Code:	
target=" _blank"	Opens new page in a new browser window
target=" _self"	Loads the new page in current window
target=" _parent"	Loads new page into a frame that is superior to where the link lies
target=" _top"	Loads new page into the current browser window, cancelling all frames

Anchors

- To link to sections of your existing page a name must be given to the anchor.
- In the example below, we've created a mini Table of Contents for this page.
- By placing blank anchors just after each heading, and naming them, we can then create reference links to those sections on this page as shown below.
- First, the headings of this page contain blank, named anchors. They look like this.

```
<h2>HTML Links and Anchors<a name="top"></a></h2>
<h2>HTML Text Links<a name="text"></a></h2>
<h2>HTML Email<a name="email"></a></h2>
```

- Now create the reference links, placing the # symbol followed by the name of the anchor in the href of the new link.

```
<a href="#top">Go to the Top</a>
<a href="#text">Learn about Text Links</a>
<a href="#email">Learn about Email Links</a>
```

HTML – Images

- Use the <img /> tag to place an image on your web page.

<imgsrc="sunset.gif" />

1. Image src

- Above we have defined the src attribute.
- Src stands for source, the source of the image or more appropriately, where the picture file is located.
- There are two ways to define the source of an image. First you may use a standard URL. (src=http://www.Xyz.com/pics/htmlT/sunset.gif) As your second choice, you may copy or upload the file onto your web server and access it locally using standard directory tree methods. (src="../sunset.gif")
- The location of this picture file is in relation to your location of your .html file.

URL Types:

Local Src	Location Description
src="sunset.gif"	picture file resides in same directory as .html file
src="../sunset.gif"	picture file resides in previous directory as .html file
src="../pics/sunset.gif"	picture file resides in the pic directory in a previous directory as .html file

- A URL cannot contain drive letters
- Therefore something like src="C:\\www\web\pics\" will not work. Pictures must be uploaded along with your .html file to your web server.

2. Alternative Attribute

- The alt attribute specifies alternate text to be displayed if for some reason the browser cannot find the image, or if a user has image files disabled.

<imgsrc="http://example.com/brokenlink/sunset.gif" alt="Beautiful Sunset" />

3. Image Height and Width

- To define the height and width of the image, rather than letting the browser compute the size, use the height and width attributes.

<imgsrc="sunset.gif" height="50" width="100">

4. Vertically and Horizontally Align Images

- Use the align and valign attributes to place images within your body, tables, or sections.

1. align (Horizontal)
    1. right 2. left 3. center
2. valign (Vertical)
    1. top 2. bottom 3. center

- Below is an example of how to align an image to the right of a paragraph

* This is paragraph 1, yes it is... *
* <imgsrc="sunset.gif" align="right">The image will appear along the...isn't it? *

5. Images as Links

- Images are very useful for links and can be created with the HTML below.

<imgsrc="sunset.gif">

HTML Forms

- A form will take input from the viewer and depending on your needs, you may store that data into a file, place an order, gather user statistics, register the person to your web forum, or maybe subscribe them to your weekly newsletter.

Making a Form

- <form> is main tag to build a form.
- It has a few optional attributes too. Below is an example of the form element.

<form action=”processform.php” method=”post”>
</form>

- The action attribute tells the HTML where to send the collected information, while the method attribute describes the way to send it.

Type of Input

- The main tag for collecting information from the user is <input>.
- The tag itself contains a name attribute, so that we can refer to the input by a name, and the size of the entry box in characters.
- There are quite few different types of input to choose from:
- <input type=”text”/> this is the default input type and accepts characters and numbers into a text box. It can also have a value attribute attached to it, which will give it an initial value.
- <input type=”password”/> this is similar to the above text box but anything that is typed cannot be seen; instead an asterisk is printed to cover up the entry. As the name suggests, this is used for password entry.
- <input type=”checkbox”/> this gives a box that can be toggled between checked and unchecked. It can initially be set to one or the other with checked=”checked”.
- <input type=”radio”/> this is similar to checkbox but in group of radio buttons only one can be selected at a time. This can also have an initial checked state on one of the radio buttons.
- <input type=”file”/>This will give a box to allow you to choose a file similar to when you open or save files usually on your machine. It can be used to select a file on the local machine for upload to a server.

- <input type=”submit”/> this allows a form to be submitted. When pressed, the information will be passed on for processing, usually to a script mentioned in the action attribute option of the form.
- <input type=”image”/> this will also submit the form when selected and, like the img tag, requires the src attribute to specify an associated image.
- <input type=”button”/> this makes a button available.
- <input type=”reset”/> this will reset the form to its initial state when selected.
- <input type=”hidden”/> this allows hidden data(not seen by the user) to be passed along with the form.

HTML Text Fields

- The <input> has a few attributes that you should be aware of.
- **type** - Determines what kind of input field it will be. Possible choices are text, submit, and password.
- **name** - Assigns a name to the given field so that you may reference it later.
- **size** - Sets the horizontal width of the field. The unit of measurement is in blank spaces.
- **maxlength** - Dictates the maximum number of characters that can be entered.

```
<form method="post" action="mailto:youremail@email.com">
Name: <input type="text" size="10" maxlength="40" name="name"><br />
Password: <input type="password" size="10" maxlength="10" name="password">
```

HTML Radio Buttons

- Radio buttons are a popular form of interaction. You may have seen them on quizzes, questionnaires, and other web sites that give the user a multiple choice question. that relate to the radio button.

```
<form method="post" action="mailto:youremail@email.com">
What kind of shirt are you wearing? <br />
 Shade:
<input type="radio" name="shade" value="dark">Dark
<input type="radio" name="shade" value="light">Light <br />
</form>
```

HTML Check Boxes

- Check boxes allow for multiple items to be selected for a certain group of choices. The check box's name and value attributes behave the same as a radio button.

```
<form method="post" action="mailto:youremail@email.com">
Select your favorite cartoon characters.
<input type="checkbox" name="toon" value="Goofy">Goofy
<input type="checkbox" name="toon" value="Donald">Donald
<input type="checkbox" name="toon" value="Bugs">Bugs Bunny
</form>
```

HTML Drop Down Lists

- Drop down menues are created with the <select> and <option> tags. <select> is the list itself and each <option> is an available choice for the user.

```
<form method="post" action="mailto:youremail@email.com">
College Degree?
<select name="degree">
<option>Choose One</option>
<option>Some High School</option>
<option>High School Degree</option>
</select>
</form>
```

HTML Selection List

- Yet another type of form, a highlighted selection list. This form will post what the user highlights. Basically just another type of way to get input from the user.
- The size attribute selects how many options will be shown at once before needing to scroll, and the selected option tells the browser which choice to select by default.

```
<form method="post" action="mailto:youremail@email.com">
Musical Taste
<select multiple name="music" size="4">
<option value="emo" selected>Emo</option>
<option value="metal/rock" >Metal/Rock</option>
<option value="hiphop" >Hip Hop</option><option value="ska" >Ska</option>
<option value="jazz" >Jazz</option>
</form>
```

HTML Text Areas

- Text areas serve as an input field for viewers to place their own comments onto forums and the like use text areas to post what you type onto their site using scripts. For this form, the text area is used as a way to write comments to somebody.
- Rows and columns need to be specified as attributes to the <textarea> tag.

1. CSS List Style Type

- Specify all the list properties in one declaration.
  - Unordered list styles: square, circle, disc (default), and none
  - Ordered list styles: upper-alpha, lower-alpha, upper-roman, lower-roman, decimal (default), and none

```
ol { list-style-type: upper-roman; }
ul { list-style-type: circle; }
```

2. CSS Lists with Images

- Specify an image as the list-item marker in a list:

```
ul { list-style-image: url("listArrow.gif"); }
ol { list-style-image: url("listArrow2.gif"); }
```

3. CSS List Position

- With Specify that the the list-item markers should appear inside the content flow (results in an extra indentation)

```
ul { list-style-position: inside; }
ol { list-style-position: outside; }
```

- **Note**: "Outside" is actually the default setting for indentation.

Explain CSS Links

1. CSS Anchor/Link States

- The four links states are:
  - a:link - a normal, unvisited link
  - a:visited - a link the user has visited
  - a:hover - a link when the user mouse over it
  - a:active - a link the moment it is clicked

```
a:link{color:#FF0000;}    /*unvisited link*/
a:visited{color:#00FF00;} /* visited link */
a:hover{color:#FF00FF;}  /* mouse over link */
a:active {color:#0000FF;} /* selected link */
```

2. Text Decoration

- The text-decoration property is mostly used to remove underlines from links.

```
a:link {text-decoration:none;}
a:visited {text-decoration:none;}
a:hover {text-decoration:underline;}
a:active {text-decoration:underline;}
```

3. Background Color

- The background-color property specifies the background color for links.

```
a:link {background-color:#B2FF99;}
a:visited {background-color:#FFFF85;}
a:hover {background-color:#FF704D;}
a:active {background-color:#FF704D;}
```

Explain CSS Position with example.

- With the knowledge of CSS Positioning we will be able to manipulate the exact position of your HTML elements.

1. Position Relative

- Relative positioning changes the position of the HTML element relative to where it normally appears.
- If we had a header that appears at the top of our page, we could use relative positioning to move it a bit to the right and down a couple of pixels. Below is an example.

```
h3 {position: relative; top: 15px;left: 150px;}
p {position: relative; left: -10px;}
```

2. Position Absolute

- With absolute positioning, you define the exact pixel value where the specified HTML element will appear.
- The point of origin is the top-left of the browser's viewable area, so be sure you are measuring from that point.

```
h3 {position: absolute; top: 50px;left: 45px;}
p{position: absolute; top: 75px;left: 75px;}
```

Explain CSS Layers. / z-index property

- CSS allows you to control which item will appear on top with the use of layers.
- In CSS, each element is given a priority.
- If there are two overlapping CSS positioned elements, the element with the higher priority will appear on top of the other.
- To manually define a priority, set the z-index value. The larger the value, the higher the priority the element will have.

```
h4{position: relative; top: 30px;left: 50px; z-index: 2;}
p {position: relative; z-index: 1;background-color: #FFCCCC;}
```

- This paragraph has a z-index of 1, which is less than the header.
- If we had not defined the z-index, by default the paragraph would have been on top of the header because it appears later in our HTML code.

Explain CSS Float property.

- With CSS float, an element can be pushed to the left or right, allowing other elements to wrap around it.
- Wrapping text around an image is easy when using the CSS Float attribute.
- You have a choice to either float the picture to the left or to the right and the rest is done for you.

```
img.floatLeft { float: left; margin: 4px;}
img.floatRight { float: right; margin: 4px;}
```