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**Assignment-1**

**Q.1) Explain client server model along with diagram?**

* The client-server model is a popular architecture used in computer networking, where a client machine requests services or resources from a server machine over a network. This model allows for efficient sharing of resources and data between multiple devices in a network. In this model, the server is a central point that manages and provides access to shared resources, such as files, databases, applications, and hardware. Clients are the devices that request these services or resources from the server. The client sends a request for a service or resource to the server, which processes the request and responds back to the client with the requested service or resource. This communication happens through the network using protocols such as HTTP, FTP, SMTP, or TCP/IP.

**Q.2) What is HTML ? Explain six tags with example?**

* **The HyperText Markup Language** or HTML is the standard markup language for documents designed to be displayed in a web browser. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML is a markup language that web browsers use to interpret and compose text, images, and other material into visible or audible web pages.
* **Six tags:**

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| **Tag** | **Description** |
| <!DOCTYPE> | Defines the document type |
| [<html>](https://www.w3schools.com/tags/tag_html.asp) | Defines an HTML document |
| [<head>](https://www.w3schools.com/tags/tag_head.asp) | Contains metadata/information for the document |
| [<title>](https://www.w3schools.com/tags/tag_title.asp) | Defines a title for the document |
| [<body>](https://www.w3schools.com/tags/tag_body.asp) | Defines the document's body |
| [<h1> to <h6>](https://www.w3schools.com/tags/tag_hn.asp) | Defines HTML headings |
| <p> | Defines a paragraph |
| <br> | Inserts a single line break |
| <b> | Defines bold text |
| <mark> | Defines marked/highlighted text |
| <a> | Hyperlink element with a destination URL |

* **Example:**

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| **<!DOCTYPE html>** <!-- Declares the document type -->  **<html>** <!-- The root element of the HTML document -->  **<head>** <!-- Contains metadata about the document -->  **<title>My Webpage</title>** <!-- Sets the title of the document -->  **</head>**  **<body>** <!-- Contains the visible content of the document -->  **<h1>** HTML**!</h1**>  **<p>** is compatible with almost**</p>** all browsers **<br>** because it has been present**.</br>**  **<b>for a long time, and the</b>** browser<**mark>** made modifications**</mark>** to support all the features  **<a href="https://example.com">Visit Example.com</a>**  </body>  </html> |

**Q.3) Differentiate between html and html5?**

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| **Features** | **Html** | **Html5** |
| definition | A hypertext markup language (HTML) is the primary language for developing web pages. | HTML5 is a new version of HTML with new functionalities with markup language with Internet technologies. |
| Multimedia support | Language in **HTML** does not have support for video and audio. | **HTML5** supports both video and audio. |
| Storage | The HTML browser uses cache memory as temporary storage. | HTML5 has the storage options like:**application cache, SQL database,** and **web storage**. |
| Browser compatibility | HTML is compatible with almost all browsers because it has been present for a long time, and the browser made modifications to support all the features. | In HTML5, we have many new tags, elements, and some tags that have been **removed/modified**, so only some browsers are fully compatible with **HTML5**. |
| Graphics support | In HTML, vector graphics are possible with tools Like**Silver light, Adobe Flash, VML,** etc. | In HTML5, vector graphics are supported by default. |
| Threading | In HTML, the browser interface and JavaScript running in the same thread. | The HTML5 has the JavaScript Web Worker API, which allows the browser interface to run in multiple threads. |
| Storage | Uses cookies to store data. | Uses local storage instead of cookies |
| Vector and Graphics | Vector graphics are possible with the help of technologies like **VML, Silverlight, Flash,etc**. | Vector graphics is an integral part of **HTML5, SVG** and **canvas**. |
| Shapes | It is not possible to create shapes like **circles, rectangles, triangles**. | We can draw shapes like **circles, rectangles, triangles**. |
| Doc type | Doctype declaration in html is too long <! DOCTYPE HTML PUBLIC "- // W3C // DTD HTML 4.01 // EN" "http://www.w3.org/TR/html4/strict.dtd"> | The DOCTYPE declaration in html5 is very simple "<! DOCTYPE html> |
| Multimedia support | Audio and video are not the part of HTML4. | Audio and video are essential parts of HTML5,like: **<Audio>, <Video>**. |
| Vector Graphics | In HTML4, vector graphics are possible with the help of techniques like VML, Silver light and Flash. | Vector graphics are an integral part of **HTML5, SVG**, and **canvas**. |
|  | Html5 uses cookies. | It supplies local storage in place of cookies. |
| Shapes | It is not possible to draw shapes like circles, rectangles, triangles. | Using html5, you can draw shapes like **circles, rectangles, triangles**. |
| Browser Support | Works with all older browsers | A new browser supports this. |

**Q.4) What is internet write breif about internet history?**

* **The Internet** is a global network of computers and servers that allows individuals to share information and communicate with one another. It was developed over several decades and has revolutionized the way people communicate, access information, and conduct business.
* **History:** The roots of the Internet can be traced back to the 1960s, when the United States Department of Defense developed a network called ARPANET to connect their various research institutions. This network allowed researchers to share information and communicate with one another, and it quickly grew in popularity.
* In the 1970s, computer scientists developed a new communication protocol called TCP/IP, which allowed different computer networks to communicate with each other. This protocol became the foundation for the modern Internet.
* In the 1980s and 1990s, the Internet began to expand beyond academic and government circles and into the mainstream. Companies such as America Online (AOL) and CompuServe developed user-friendly interfaces that allowed individuals to access the Internet from their home computers. The World Wide Web, which was developed by British computer scientist Tim Berners-Lee in 1989, also played a major role in the growth of the Internet by making it easier to access and share information.

**Q.5) Explain what is css along with syntax and two examples.**

* CSS, which stands for Cascading Style Sheets, is a programming language used to describe the appearance and formatting of HTML and XML documents. It allows you to define how your content will be presented to the user, including colors, fonts, layout, and other stylistic elements. CSS syntax is composed of selectors and declarations. Selectors specify the HTML elements to be styled, and declarations define the style rules to be applied to those elements. A declaration consists of a property and a value, separated by a colon and enclosed in curly braces.

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| h1 {  font-size: 24px;  color: blue;  text-align: center;  } |

* **Here are two examples of CSS:**
* **Example 1:** In this example, the selector h1 targets all <h1> elements in the HTML document. The declarations within the curly braces define the style rules to be applied to those elements, including a font size of 24 pixels, blue text color, and center alignment.

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| .navbar {  background-color: black;  color: white;  padding: 10px;  text-align: center;  } |

* **Example 2**: In this example, the selector .navbar targets an HTML element with a class of "navbar". The declarations within the curly braces define the style rules to be applied to that element, including a black background color, white text color, 10 pixels of padding, and center alignment.

**Q.6) Write about following tags with syntax: list, table , images, forms, fonts and colors?**

1. **<list> tag:** The <list> tag is not a valid HTML tag. However, there are several types of lists in HTML that can be created using the <ul> (unordered list), <ol> (ordered list), and <dl> (definition list) tags.

* **Here's the syntax for an unordered list:**

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| <ul>  <li>List item 1</li>  <li>List item 2</li>  <li>List item 3</li>  </ul> |

1. **<table> tag:** The <table> tag is used to create a table in HTML. The table consists of rows and columns that can be filled with data.

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| <table>  <tr>  <th>Heading 1</th>  <th>Heading 2</th>  </tr>  <tr>  <td>Row 1, Column 1</td>  <td>Row 1, Column 2</td>  </tr>  <tr>  <td>Row 2, Column 1</td>  <td>Row 2, Column 2</td>  </tr>  </table> |

1. **<img> tag:** The <img> tag is used to insert an image into an HTML document. The 'src' attribute specifies the URL of the image, and the 'alt' attribute provides alternative text that is displayed if the image cannot be loaded.

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| <img src="image.jpg" alt="Alternative text"> |

1. **<form> tag:** The <form> tag is used to create an HTML form that allows users to enter data.

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| <form action="/submit-form" method="post">  <label for="name">Name:</label>  <input type="text" id="name" name="name"><br>  <label for="email">Email:</label>  <input type="email" id="email" name="email"><br>  <input type="submit" value="Submit">  </form> |

1. **Font tags:** Font tags like <font> and its attributes like 'size', 'color', face have been deprecated in HTML5 and should no longer be used.

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| <p style="font-size: 16px;">This text is 16px</p> |

1. **Color tags:** There are no specific color tags in HTML, but you can use the 'color' property in CSS to set the text color of an element, and the 'background-color' property to set the background color.

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| <p style="color: blue;">This text is blue</p> |

**Q.7) Draw a diagram along with explaination of http request message?**

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| **Request** |
| **Request Line:**  GET /path/to/resource HTTP/1.1  **Headers:**  Host: example.com  User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64;  x64) AppleWebKit/537.36 (KHTML, like  Gecko) Chrome/58.0.3029.110 Safari/537.36  Accept: text/html,application/xhtml+xml,application  /xml;q=0.9,image/webp,\*/\*;q=0.8  Accept-Language: en-US,en;q=0.8  Cookie: sessionid=1234567890  **Body:**  <optional request body> |

* **Explanation of the components:**
* **Request Line:** This contains the HTTP method, the path to the resource, and the HTTP version. In this example, the request line is "GET /path/to/resource HTTP/1.1", which means that the client is requesting a resource using the GET method, and the path to the resource is "/path/to/resource".
* **Headers**: These provide additional information about the request, such as the client's user agent, the types of content it can accept, and any cookies that should be sent along with the request. In this example, the headers include "Host", "User-Agent", "Accept", "Accept-Language", and "Cookie".
* **Body:** This is an optional component that contains any data that the client wants to send to the server. For example, if the client is submitting a form, the form data would be included in the request body. In this example, there is no request body.
* The HTTP request message is sent from the client to the server to request a resource, such as a web page or a file. The request message contains information about the resource being requested, as well as any additional information that the server needs to process the request. Once the server receives the request message, it will send a response message back to the client, which contains the requested resource or an error message if the resource cannot be found.

**Q.8) Draw a diagram and explain along with http response message?**

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| **Response** |
| **Status Line:**  HTTP/1.1 200 OK  **Headers:**  Content-Type: text/html  Content-Length: 1234  Cache-Control: no-cache, no-store  **Body:**  <response body> |

* **Explanation of the components:**
* **Status Line:** This contains the HTTP version, the status code, and a short description of the status. In this example, the status line is "HTTP/1.1 200 OK", which means that the server has successfully processed the request and is sending back a response with a status code of 200.
* **Headers:** These provide additional information about the response, such as the type of content being sent and how it should be cached. In this example, the headers include "Content-Type", which specifies that the content is in HTML format, "Content-Length", which specifies the size of the response body in bytes, and "Cache-Control", which specifies that the content should not be cached.
* **Body:** This is the actual content being sent back to the client. In the case of a web page, it would typically be HTML code. In this example, the response body is "<response body>", which represents whatever content the server is sending back.
* The HTTP response message is sent from the server to the client in response to an HTTP request message. The response message contains information about the status of the request, as well as any additional information that the client needs to process the response. Once the client receives the response message, it can display the content in the response body, or take other actions depending on the status code and other information in the response headers.

**Q.9) Differentiate between web client and web server?**

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| **Based on** | **Client** | **Server** |
| **Basic functionality** | Client relies on the services of server, and generates requests for various services. | Server authorizes the client's requests and facilitates them with the requested services. |
| **Configuration** | The configuration of client systems is simple. Their tasks are limited to generating requests. It has a basic hardware configuration. | The configuration of the server is more complex and sophisticated. Server has advanced hardware configuration. |
| **Efficiency** | The efficiency of client is limited. | The performance of server is high, and they are highly efficient. |
| **Tasks** | The common tasks for client are simple and mostly include requesting services. | The complex tasks like fulfilling client requests, storing and processing large datasets, data analysis are common for server. |
| **Switch off** | The client systems can be switch off without any fear. | Switching off servers may be disastrous for client systems that continuously request the services. |
| **Login Support** | There can be single user logins. | Server support multiple user login and request processing simultaneously. |
| **Examples** | Examples of clients are smartphones, desktops, laptops, etc. | Examples of servers are web servers, file servers, database servers, etc. |

**Q.10) Write Brief about html and it's version.?**

* The first version of HTML was written by Tim Berners-Lee in 1993. Since then, there have been many different versions of HTML.
* The most widely used version throughout the 2000's was HTML 4.01, which became an official standard in December 1999.
* Another version, XHTML, was a rewrite of HTML as an XML language. XML is a standard markup language that is used to create other markup languages. Hundreds of XML languages are in use today, including GML (Geography Markup Language), MathML, MusicML, and RSS (Really Simple Syndication). Since each of these languages was written in a common language (XML), their content can easily be shared across applications. This makes XML potentially very powerful, and it's no surprise that the W3C would create an XML version of HTML (again, called XHTML). XHTML became an official standard in 2000, and was updated in 2002. XHTML is very similar to HTML, but has stricter rules. Strict rules are necessary for all XML languages, because without it, interoperability between applications would be impossible.
* Most pages on the Web today were built using either HTML 4.01 or XHTML 1.0. However, in recent years, the W3C (in collaboration with another organization, the WHATWG), has been working on a brand new version of HTML, HTML5. Currently (2011), HTML5 is still a draft specification, and is not yet an official standard. However, it is already widely supported by browsers and other web-enabled devices, and is the way of the future.

**Q.11) Write brief about HTTP, FTP?**

**a) HTTP:** HTTP (Hypertext Transfer Protocol) is a communication protocol used to transfer data over the web. It's the foundation of the World Wide Web and allows web browsers, web servers, and other networked devices to communicate with each other.

* When you type a website address into your browser, the browser sends a request to the web server using HTTP, which then responds with the website's content. This content can include text, images, videos, and other resources
* HTTP is a stateless protocol, which means that it doesn't keep any information or data about previous requests or sessions. To maintain state across multiple requests, web applications use cookies or other methods to store and retrieve information.
* Over time, HTTP has evolved to support more advanced features such as authentication, encryption, and compression. The most recent version, HTTP/3, is designed to improve performance and security by using a new transport protocol called QUIC.

**b) FTP:** FTP (File Transfer Protocol) is a standard network protocol used to transfer files between computers over the internet. It's one of the oldest protocols still in use today, dating back to the early days of the internet.

* FTP works by establishing a connection between a client and a server, allowing the client to transfer files to or from the server. The protocol supports both anonymous and authenticated access, allowing users to upload or download files depending on their level of access.
* FTP uses two channels for communication: a control channel and a data channel. The control channel is used for sending commands and receiving responses, while the data channel is used for transferring files.
* FTP has several security vulnerabilities, including the use of plain text for authentication and the lack of encryption for data transfer. To address these issues, several secure versions of FTP have been developed, including SFTP (Secure File Transfer Protocol) and FTPS (FTP over SSL/TLS).
* Despite its security weaknesses, FTP remains a popular protocol for transferring large files, especially in industries such as media and entertainment where file sizes can be substantial.