Web Technology Lab

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Introduction to the Internet

In the context of the Internet, "client side" and "server side" refer to different parts of a web application and how they interact with each other.

- **Client Side**

The client side refers to the part of the web application that runs on the user's device, typically in a web browser. It encompasses everything that the user interacts with directly. Key aspects include:

1. **Web Browser**: The software that renders web pages and interfaces with web applications. Examples include Google Chrome, Mozilla Firefox, and Safari.
2. **User Interface (UI)**: This includes the visual elements of a website or application, such as buttons, forms, images, and text. It's what users see and interact with.
3. **Client-Side Code**: This typically involves:
    - **HTML (Hypertext Markup Language)**: Structures the content of web pages.
    - **CSS (Cascading Style Sheets)**: Styles the visual presentation of HTML content.
    - **JavaScript**: Adds interactivity and dynamic behavior to web pages, such as handling user inputs, animations, and AJAX requests.
4. **Local Storage**: The client side can use local storage mechanisms like cookies, localStorage, and sessionStorage to store data temporarily or persistently on the user's device.
5. **Rendering**: The client side is responsible for rendering web pages, processing client-side scripts, and presenting data in a user-friendly way.

- **Server Side**

The server side refers to the part of the web application that runs on a server, which is a remote machine or a cloud service that hosts the web application. Key aspects include:

1. **Web Server**: The server that receives and processes requests from clients (browsers) and serves the appropriate content or responses. Examples include Apache, Nginx, and Microsoft IIS.
2. **Server-Side Code**: This code runs on the server and handles the logic of the web application. It typically involves:
    - **Server-Side Scripting Languages**: Languages like PHP, Python, Ruby, Java, Node.js, and .NET are used to generate dynamic content, interact with databases, and handle requests.
    - **APIs (Application Programming Interfaces)**: These are used to facilitate communication between the server and other applications or services.

3. **Databases**: The server side often interacts with databases to store, retrieve, and manipulate data. Examples include MySQL, PostgreSQL, MongoDB, and SQLite.
4. **Server-Side Processing**: This includes processing business logic, handling data requests and responses, performing computations, and managing authentication and authorization.
5. **Security and Authentication**: The server side handles secure communication, user authentication, and authorization to ensure that only authorized users can access certain resources or perform specific actions.

- **Interaction Between Client and Server Sides**

1. **Requests and Responses**: When a user interacts with a web page, the client side sends HTTP requests to the server side. The server processes these requests and sends back HTTP responses containing the requested data or resources.
2. **Dynamic Content**: The server can generate dynamic content based on user input or interactions, which is then sent to the client side for rendering.
3. **AJAX and APIs**: Asynchronous JavaScript and XML (AJAX) allows the client side to make asynchronous requests to the server side without reloading the entire page. APIs enable the client to communicate with the server for data retrieval or submission.

In summary, the client side is responsible for the user interface and experience, while the server side handles the application logic, data management, and communication with the client. Both sides work together to deliver a complete and functional web application.

Internet Protocol

- **IPv4 –**

IPv4, or Internet Protocol version 4, is one of the core protocols of the Internet, used for identifying devices on a network and routing data between them. It was the first widely adopted version of the Internet Protocol and has been in use since the early 1980s.

Here are the key features of IPv4:

1. **Address Format**: IPv4 uses 32-bit addresses, which are typically represented as four decimal numbers separated by periods (e.g., 192.168.1.1). This format allows for approximately 4.3 billion unique addresses.
2. **Header Structure**: IPv4 headers are relatively simple, but they include fields for essential information such as the source and destination IP addresses, protocol type, and header checksum.

3. **Address Exhaustion**: Due to the limited number of addresses (4.3 billion), IPv4 address space has become exhausted, leading to the need for solutions like Network Address Translation (NAT) to extend the usability of IPv4 addresses.
4. **NAT (Network Address Translation)**: NAT allows multiple devices on a local network to share a single public IP address. This helps conserve the limited IPv4 address space.
5. **Lack of Built-in Security**: IPv4 does not include built-in encryption or security features; however, additional protocols like IPsec can be used to provide security.
6. **Manual Configuration**: IPv4 addresses can be configured manually or automatically via DHCP (Dynamic Host Configuration Protocol).

IPv4 has been the backbone of the Internet for decades, but as the number of connected devices continues to grow, IPv6 has been introduced to address the limitations of IPv4, especially regarding address space and improved security.

- **IPv6 –**

IPv6, or Internet Protocol version 6, is the most recent version of the Internet Protocol, which is designed to identify and locate devices on a network and route traffic across the Internet. It was developed to address the limitations of IPv4, which is the previous version.

Here are some key features of IPv6:

1. **Expanded Address Space**: IPv6 uses 128-bit addresses, compared to IPv4's 32-bit addresses. This expansion allows for a vastly larger number of unique IP addresses—about 340 undecillion (3.4 x 10^38), compared to IPv4's roughly 4.3 billion.
2. **Simplified Header**: IPv6 has a simpler header structure compared to IPv4, which improves processing efficiency.
3. **Built-in Security**: IPv6 includes IPsec, a suite of protocols for securing Internet communications by encrypting and authenticating data, as a mandatory feature, whereas in IPv4, it is optional.
4. **No More Network Address Translation (NAT)**: IPv6 eliminates the need for NAT, which was commonly used in IPv4 to conserve address space and allow multiple devices to share a single IP address.
5. **Improved Multicast and Anycast**: IPv6 enhances multicast (sending data to multiple specific recipients) and introduces anycast (sending data to the nearest of multiple potential recipients).
6. **Auto-Configuration**: IPv6 supports Stateless Address Autoconfiguration (SLAAC), allowing devices to automatically configure their own IP addresses without the need for a DHCP server.

Overall, IPv6 is designed to provide a more scalable, secure, and efficient system for addressing and routing Internet traffic.

- **http:// -**

HTTP, or Hypertext Transfer Protocol, is the fundamental protocol used for transferring data over the World Wide Web. It is the foundation for data communication on the web and enables the retrieval and transmission of web pages, files, and other resources.

Here are some key aspects of HTTP:

1. **Protocol**: HTTP is an application-layer protocol in the TCP/IP protocol suite. It governs how requests and responses are formatted and transmitted between clients and servers.
2. **Request-Response Model**: HTTP operates on a request-response model. A client (usually a web browser) sends an HTTP request to a server, which processes the request and returns an HTTP response containing the requested resource or an error message.
3. **Stateless**: HTTP is a stateless protocol, meaning that each request from a client to a server is treated as an independent transaction. The server does not retain any information about previous requests from the client.
4. **Methods**: HTTP defines several request methods that specify the desired action to be performed on a resource. Common methods include:
    - GET: Retrieve data from the server.
    - POST: Submit data to be processed by the server.
    - PUT: Update or create a resource.
    - DELETE: Remove a resource.
    - HEAD: Retrieve the headers of a resource.
5. **Status Codes**: HTTP responses include status codes that indicate the outcome of the request. For example:
    - 200 OK: The request was successful.
    - 404 Not Found: The requested resource could not be found.
    - 500 Internal Server Error: The server encountered an error while processing the request.
6. **Headers**: HTTP headers are used to convey additional information about the request or response. Headers can include metadata such as content type, content length, and caching directives.
7. **HTTPS**: HTTP Secure (HTTPS) is an extension of HTTP that includes encryption via TLS (Transport Layer Security) or SSL (Secure Sockets Layer) to provide secure communication between clients and servers.

Overall, HTTP is essential for enabling web browsing and the functioning of web applications by facilitating the exchange of data between users and web servers.

- **https:// -**

HTTPS, or Hypertext Transfer Protocol Secure, is an extension of HTTP (Hypertext Transfer Protocol) that adds a layer of security to the data transmitted between a client (such as a web browser) and a server. HTTPS is used to ensure that the data exchanged is encrypted and secure from eavesdropping and tampering.

Here are some key aspects of HTTPS:

1. **Encryption**: HTTPS uses encryption to protect the data transmitted between the client and the server. This encryption is typically achieved through Transport Layer Security (TLS) or its predecessor, Secure Sockets Layer (SSL). The encryption ensures that any data exchanged—such as login credentials, payment information, or personal details—is secure from unauthorized access.
2. **Authentication**: HTTPS provides authentication through the use of digital certificates. When a client connects to a server using HTTPS, the server presents a certificate issued by a trusted Certificate Authority (CA). This certificate verifies the server's identity, helping to prevent "man-in-the-middle" attacks where an attacker might impersonate the server.
3. **Data Integrity**: HTTPS includes mechanisms to ensure that the data has not been altered during transmission. Integrity checks help verify that the data received by the client is the same as what was sent by the server, without tampering or corruption.
4. **Secure Connection**: When a website uses HTTPS, the URL in the browser's address bar starts with "https://" instead of "http://". Additionally, modern browsers often display a padlock icon to indicate that the connection is secure.
5. **Privacy**: By encrypting data, HTTPS helps protect user privacy and confidentiality. This is particularly important for sensitive transactions, such as online banking or shopping, where personal and financial information needs to be kept secure.

Overall, HTTPS is crucial for maintaining the security and privacy of data exchanged over the web, providing a safer browsing experience for users and helping to protect against various cyber threats.

5 Classes of IPv4

In IPv4, IP addresses are categorized into different classes to define the network and host portions of the address and to organize the allocation of address space. These classes are primarily used for routing purposes and to manage address assignments.

Class A

- **Address Range**: 0.0.0.0 to 127.255.255.255

- **Default Subnet Mask**: 255.0.0.0 or /8
- **Network Portion**: The first octet (8 bits)
- **Host Portion**: The remaining three octets (24 bits)
- **Number of Networks**: 128 (0 to 127, but 0 and 127 are reserved for special purposes)
- **Number of Hosts per Network**: Approximately 16 million (2^24 - 2, accounting for network and broadcast addresses)
- **Usage**: Reserved for very large networks, such as those used by major corporations or ISPs.

Class B

- **Address Range**: 128.0.0.0 to 191.255.255.255
- **Default Subnet Mask**: 255.255.0.0 or /16
- **Network Portion**: The first two octets (16 bits)
- **Host Portion**: The remaining two octets (16 bits)
- **Number of Networks**: 16,384 (128 to 191)
- **Number of Hosts per Network**: Approximately 65,534 (2^16 - 2)
- **Usage**: Suitable for medium-sized to large networks, such as those used by universities or large businesses.

Class C

- **Address Range**: 192.0.0.0 to 223.255.255.255
- **Default Subnet Mask**: 255.255.255.0 or /24
- **Network Portion**: The first three octets (24 bits)
- **Host Portion**: The remaining octet (8 bits)
- **Number of Networks**: 2,097,152 (192 to 223)
- **Number of Hosts per Network**: 254 (2^8 - 2)
- **Usage**: Commonly used for smaller networks, such as those in small businesses or local area networks (LANs).

Class D

- **Address Range**: 224.0.0.0 to 239.255.255.255
- **Default Subnet Mask**: Not applicable (Class D addresses are used for multicast, not for standard IP routing)
- **Usage**: Reserved for multicast groups. These addresses are used to send data to multiple recipients at once.

Class E

- **Address Range**: 240.0.0.0 to 255.255.255.255
- **Default Subnet Mask**: Not applicable
- **Usage**: Reserved for experimental purposes and future use. These addresses are not used in general networking.

Special Addresses

- **Loopback Address**: 127.0.0.0 to 127.255.255.255 (commonly 127.0.0.1), used for testing and diagnostics on the local machine.
- **Private Addresses**:
  - **Class A**: 10.0.0.0 to 10.255.255.255
  - **Class B**: 172.16.0.0 to 172.31.255.255
  - **Class C**: 192.168.0.0 to 192.168.255.255 These are reserved for use within private networks and are not routable on the public Internet.

CIDR (Classless Inter-Domain Routing)

While the class-based system is useful, it has limitations and is somewhat outdated. CIDR was introduced to provide more flexible and efficient IP address allocation, allowing for variable-length subnet masks (VLSM) and more precise control over IP address distribution.

In practice, while classful addressing is still a foundational concept, CIDR has largely supplanted class-based addressing for routing and network design.

Domain Names

Domain names are a crucial part of the Internet's infrastructure, providing a user-friendly way to identify and access websites and other online resources.

What is a Domain Name?

A domain name is a human-readable address that is used to identify and locate resources on the Internet. It translates IP addresses, which are numeric and harder to remember, into a format that is easier for people to use.

Structure of Domain Names

A domain name typically consists of two main parts:

1. **Second-Level Domain (SLD)**: This is the part of the domain name that is specific to the organization or entity. For example, in example.com, "example" is the SLD.
2. **Top-Level Domain (TLD)**: This is the suffix at the end of the domain name that follows the last dot. TLDs are categorized into several types:
   - **Generic Top-Level Domains (gTLDs)**: These are not tied to specific countries or regions and include common TLDs like .com, .org, .net, and newer ones like .tech, .blog, .xyz, etc.
   - **Country Code Top-Level Domains (ccTLDs)**: These represent specific countries or territories and consist of two letters. Examples include .uk (United Kingdom), .jp (Japan), .ca (Canada), and .au (Australia).

- **Sponsored Top-Level Domains (sTLDs)**: These are specialized TLDs that are sponsored by organizations representing specific communities or industries. Examples include .edu (education), .gov (government), and .mil (military).

Common TLDs and Their Uses

1. **.com**: Originally intended for commercial entities, .com has become the most popular and widely used TLD for all types of websites, including businesses, blogs, and personal sites.
2. **.org**: Short for "organization," this TLD is commonly used by non-profit organizations, community groups, and other entities that are not focused on commercial activities.
3. **.net**: Originally designed for network-related entities, such as Internet service providers, .net is now used by a wide range of organizations and individuals.
4. **.edu**: Reserved for educational institutions, primarily in the United States. Only accredited institutions can register a .edu domain.
5. **.gov**: Restricted to governmental entities and organizations in the United States. It is used by federal, state, and local government agencies.
6. **.mil**: Reserved for military use, primarily by the United States Department of Defense and affiliated organizations.
7. **.info**: Intended for informational websites, but it is open for general use.
8. **.biz**: Intended for businesses and commercial entities, similar to .com.
9. **.us**: The ccTLD for the United States, often used by U.S.-based individuals and organizations.

Domain Name Registration and Management

- **Domain Registration**: To use a domain name, you must register it through a domain registrar, which is an accredited organization that manages domain name registrations. Examples include GoDaddy, Namecheap, and Google Domains.
- **Domain Name System (DNS)**: The DNS is a hierarchical system that translates domain names into IP addresses. When you enter a domain name into your browser, DNS servers resolve it to the corresponding IP address so that your browser can connect to the correct server.
- **Domain Name Configuration**: Domain owners can configure various settings through their registrar, including DNS records (such as A records, MX records, and CNAME records) to direct traffic to the correct servers and services.

Choosing and Managing Domain Names

When selecting a domain name, consider the following:

- **Relevance**: Choose a name that reflects your brand or the purpose of your website.
- **Simplicity**: Keep it short, easy to spell, and memorable.

- **Extension**: Select a TLD that best fits your needs and audience.
- **Availability**: Ensure the domain name you want is available and not already taken.

In summary, domain names are essential for navigating the Internet, providing a simple and intuitive way to identify and access websites. They come in various forms and extensions, catering to different types of organizations and purposes.

TCP/IP

TCP/IP, which stands for Transmission Control Protocol/Internet Protocol, is a suite of communication protocols that is foundational to the Internet and most other networks.

1. **Internet and Web Browsing**: TCP/IP is the backbone of the Internet, enabling communication between computers and web servers. Web browsers use HTTP/HTTPS (Hypertext Transfer Protocol/Secure) over TCP/IP to load and display websites.
2. **Email**: Email protocols such as SMTP (Simple Mail Transfer Protocol), POP3 (Post Office Protocol version 3), and IMAP (Internet Message Access Protocol) operate over TCP/IP to send, receive, and store email messages.
3. **File Transfer**: Protocols like FTP (File Transfer Protocol) and SFTP (Secure File Transfer Protocol) use TCP/IP to transfer files between computers over a network.
4. **Remote Access and Management**: Services such as SSH (Secure Shell) and Telnet provide remote access to systems and network devices. SSH operates over TCP/IP to ensure secure communication.
5. **Streaming and Media**: Protocols like RTP (Real-time Transport Protocol) and RTSP (Real-Time Streaming Protocol) use TCP/IP to stream audio and video content over the Internet.
6. **VoIP (Voice over IP)**: TCP/IP supports VoIP technologies such as SIP (Session Initiation Protocol) and H.323, which enable voice communication over the Internet.
7. **Virtual Private Networks (VPNs)**: VPN protocols such as PPTP (Point-to-Point Tunneling Protocol), L2TP (Layer 2 Tunneling Protocol), and IPsec (Internet Protocol Security) use TCP/IP to create secure connections over public networks.
8. **IoT (Internet of Things)**: TCP/IP enables communication between IoT devices, allowing them to exchange data and interact with each other over the Internet.
9. **DNS (Domain Name System)**: DNS translates human-readable domain names into IP addresses using TCP/IP, making it possible to locate and access websites.
10. **Network Management**: Protocols such as SNMP (Simple Network Management Protocol) use TCP/IP to monitor and manage network devices.
11. **Gaming**: Online multiplayer games use TCP/IP to synchronize game data between players and game servers, providing a seamless gaming experience.
12. **Cloud Computing**: Cloud services rely on TCP/IP to provide scalable and flexible computing resources over the Internet.

These applications illustrate how TCP/IP forms the backbone of modern networking and communication, enabling a wide range of technologies and services that we use daily.

Browsers and its Connections

Browsers are software applications that allow users to access and interact with content on the World Wide Web. They interpret and display web pages and provide tools for navigating, searching, and interacting with online resources.

Key Functions of Browsers

1. **Rendering Web Pages**: Browsers convert HTML (Hypertext Markup Language), CSS (Cascading Style Sheets), and JavaScript into visual and interactive web pages.
2. **Managing User Interaction**: They handle user input, such as clicks and keyboard entries, and provide tools for navigation like back and forward buttons, bookmarks, and address bars.
3. **Security**: Browsers implement security features to protect users from malicious sites and attacks, such as SSL/TLS encryption for secure connections and phishing protection.
4. **Extensions and Plugins**: Many browsers support extensions and plugins to add functionalities, such as ad blockers, password managers, and productivity tools.

Connections and Communication

Browsers connect to the Internet and web servers through a series of network protocols and processes:

1. **DNS Resolution**: When you enter a URL (Uniform Resource Locator) into a browser, it first translates the domain name into an IP address using DNS (Domain Name System). This process involves sending a DNS query to a DNS server.
2. **Establishing a Connection**:
    - **TCP/IP**: Once the IP address is obtained, the browser establishes a connection to the web server using TCP/IP. TCP (Transmission Control Protocol) ensures that data packets are delivered accurately and in order.
    - **IP Address**: The browser uses the IP address to locate the web server on the Internet.
3. **HTTP/HTTPS Requests**:
    - **HTTP (Hypertext Transfer Protocol)**: The browser sends an HTTP request to the server to retrieve the web page. HTTP is stateless and operates over TCP/IP.
    - **HTTPS (HTTP Secure)**: For secure communication, browsers use HTTPS, which is HTTP over SSL/TLS (Secure Sockets Layer/Transport Layer

Security). This encrypts the data exchanged between the browser and the server.

4. **Server Response**: The web server responds to the browser's request by sending back the requested web page or other resources, such as images, CSS files, and JavaScript.
5. **Rendering the Page**: The browser processes the server's response, rendering the web page according to the HTML, CSS, and JavaScript provided. It also handles additional resources like images, videos, and external scripts.
6. **Handling Interactivity**: JavaScript running in the browser may interact with the server via AJAX (Asynchronous JavaScript and XML) or Fetch API to update parts of the page dynamically without needing to reload the entire page.
7. **Session Management**: Browsers manage sessions using cookies and local storage to keep track of user sessions, preferences, and other data between page visits.

Protocols and Technologies Involved

- **HTTP/HTTPS**: Protocols used for transferring web page data.
- **DNS**: Protocol for translating domain names to IP addresses.
- **TCP/IP**: The fundamental suite of protocols for network communication.
- **SSL/TLS**: Protocols for encrypting data transmitted over HTTPS.

Security Considerations

- **Secure Connections**: Browsers prioritize HTTPS connections to ensure data privacy and integrity.
- **Sandboxing**: Browsers use sandboxing to isolate web pages and prevent malicious code from affecting the underlying system.
- **Privacy Features**: Modern browsers include features like private browsing modes and tracking protection to enhance user privacy.

In summary, browsers are complex applications that act as intermediaries between users and web content. They use a range of protocols and technologies to ensure that web pages are retrieved, displayed, and interacted with securely and efficiently.

Web Applications

There are a variety of tools and environments available for writing web applications, each catering to different aspects of development. These tools can be broadly categorized into code editors, integrated development environments (IDEs), frameworks, and libraries.

Code Editors

1. **Visual Studio Code (VS Code)**

   - **Features**: Lightweight, highly customizable, with a rich ecosystem of extensions and support for numerous programming languages.
   - **Extensions**: Extensions for debugging, version control, and various frameworks.
2. **Sublime Text**
   - **Features**: Fast, minimalist, and highly customizable. Known for its powerful search and multi-editing capabilities.
   - **Plugins**: Supports a wide range of plugins through its package manager.
3. **Atom**
   - **Features**: Open-source and customizable, with a focus on collaboration through the Teletype package.
   - **Packages**: Includes support for a wide variety of languages and tools.
4. **Notepad++**
   - **Features**: Lightweight and fast, with support for syntax highlighting and code folding.
   - **Plugins**: Includes a range of plugins for extended functionality.

Integrated Development Environments (IDEs)

1. **WebStorm**
   - **Features**: Powerful IDE from JetBrains tailored for JavaScript, TypeScript, and front-end development.
   - **Tools**: Integrated support for debugging, version control, and code refactoring.
2. **Eclipse**
   - **Features**: Extensible and suitable for multiple programming languages, including JavaScript through plugins.
   - **Plugins**: Includes support for web development through various plugins.
3. **NetBeans**
   - **Features**: IDE with support for multiple languages and frameworks, including JavaScript, PHP, and HTML5.
   - **Tools**: Integrated support for debugging and profiling.
4. **IntelliJ IDEA**
   - **Features**: Robust IDE with support for a wide range of languages and frameworks, including web development.
   - **Tools**: Advanced code analysis, debugging, and version control integration.

Introduction to WWW

The World Wide Web (WWW) is a system of interlinked hypertext documents and resources that are accessed via the Internet. It allows users to view and interact with text, images, videos, and other media through web browsers. Here's an introduction to the WWW, covering its history, key components, and how it works:

History of the World Wide Web

1. **Origins and Development**:
    - **Early Concepts**: The idea of a global network of interconnected information can be traced back to concepts like Vannevar Bush's "Memex" in the 1940s and Ted Nelson's "Xanadu" in the 1960s.
    - **Creation of the WWW**: The modern WWW was developed by Tim Berners-Lee, a British computer scientist, while working at CERN (European Organization for Nuclear Research) in the late 1980s. His proposal in 1989 was to create a system that used hypertext to enable easy sharing and navigation of information across different computers.
2. **Launch**:
    - **1991**: The World Wide Web was officially launched to the public in 1991. The first website was created by Berners-Lee and went live at CERN.
    - **Growth**: The WWW rapidly expanded in the 1990s as web browsers became more accessible and user-friendly. Notable milestones included the release of Mosaic (the first widely used graphical web browser) and Netscape Navigator.
3. **Modern Era**:
    - **Web 2.0**: The early 2000s saw the emergence of Web 2.0, which emphasized user-generated content, social networking, and interactive web applications. Technologies such as AJAX facilitated more dynamic and responsive web experiences.
    - **Web 3.0**: Currently, there is discussion about Web 3.0, which aims to create a decentralized web using technologies like blockchain and smart contracts, emphasizing user privacy and control over data.

Key Components of the World Wide Web

1. **Web Browsers**:
    - **Function**: Software applications used to access and view websites. Examples include Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.
    - **Features**: Browsers render HTML/CSS content, execute JavaScript, and provide tools for navigation, bookmarking, and interacting with web applications.
2. **Web Servers**:
    - **Function**: Computers or software that host websites and deliver web pages to browsers. They handle HTTP/HTTPS requests and responses.
    - **Examples**: Apache, Nginx, Microsoft IIS.
3. **Web Pages**:
    - **Definition**: Documents that are accessible via the web, typically written in HTML (Hypertext Markup Language) and styled with CSS (Cascading Style Sheets). They may also include JavaScript for interactive features.
    - **Components**: May include text, images, videos, and hyperlinks to other pages or resources.
4. **Web Protocols**:

   - **HTTP (Hypertext Transfer Protocol)**: The protocol used for transferring web pages over the Internet. HTTP defines how messages are formatted and transmitted.
   - **HTTPS (HTTP Secure)**: An extension of HTTP that adds a layer of security using SSL/TLS encryption to protect data in transit.
5. **Domain Names and URLs**:
   - **Domain Names**: Human-readable addresses used to identify websites (e.g., www.example.com). They are translated into IP addresses by DNS (Domain Name System).
   - **URLs (Uniform Resource Locators)**: Addresses used to access resources on the web. A URL specifies the protocol (e.g., HTTP), domain, and path to a resource (e.g., https://www.example.com/page1).
6. **HTML, CSS, and JavaScript**:
   - **HTML (Hypertext Markup Language)**: The standard language for creating web pages and web applications. It defines the structure and content of a web page.
   - **CSS (Cascading Style Sheets)**: Used to style and layout web pages. CSS controls the visual presentation of HTML elements.
   - **JavaScript**: A programming language that enables interactive features and dynamic content on web pages. It can manipulate HTML and CSS, and handle events like clicks and form submissions.
7. **Web Frameworks and Libraries**:
   - **Frameworks**: Provide a structured way to build web applications, including front-end frameworks (e.g., React, Angular, Vue.js) and back-end frameworks (e.g., Django, Ruby on Rails, Express.js).
   - **Libraries**: Collections of pre-written code that help with specific tasks, such as jQuery for simplifying JavaScript or Bootstrap for responsive design.

How the World Wide Web Works

1. **Request and Response**:
   - **Client Request**: When a user enters a URL into a web browser, the browser sends an HTTP/HTTPS request to the web server hosting the desired web page.
   - **Server Response**: The web server processes the request and sends back an HTTP/HTTPS response containing the requested content (HTML, CSS, JavaScript, etc.).
2. **Rendering**:
   - **Parsing**: The browser parses the HTML to build the Document Object Model (DOM), applies CSS to style the content, and executes JavaScript to add interactivity.
   - **Display**: The browser displays the rendered content to the user.
3. **Interactivity**:
   - **AJAX/Fetch API**: Allows for asynchronous data loading and interaction with servers without refreshing the entire page. This is commonly used for dynamic updates and interactions in modern web applications.

Significance and Impact

- **Global Connectivity**: The WWW connects billions of people worldwide, facilitating communication, information sharing, and commerce.
- **Innovation**: It has driven innovations in technology, business, and society, including e-commerce, social media, online education, and digital entertainment.
- **Accessibility**: It democratizes access to information and services, making it possible for individuals and organizations to reach global audiences.

In summary, the World Wide Web is a fundamental component of modern digital life, providing a vast and interconnected platform for information, communication, and applications. Its evolution from a simple information-sharing system to a complex and dynamic ecosystem reflects its profound impact on society and technology.

Introduction to HTML

HTML stands for **HyperText Markup Language**. It is the standard language used to create and design webpages. HTML structures the content on the web by defining elements such as headings, paragraphs, links, images, and other content.

Basic Structure of an HTML Document

Here's a simple HTML document to illustrate the basic structure:

- **<!DOCTYPE html>**: This declaration defines the document type and version of HTML (HTML5 in this case). It helps browsers render the page correctly.
- **<html>**: This is the root element that contains all the content of the HTML document.
- **<head>**: Contains meta-information about the document, like the character set, title, and links to stylesheets.
- **<meta charset="UTF-8">**: Specifies the character encoding for the document (UTF-8 is a common encoding that supports most characters).
- **<title>**: Sets the title of the webpage, which appears in the browser tab.
- **<body>**: Contains the content of the HTML document that is visible on the webpage.
- **<h1>**: Represents a top-level heading. HTML has six levels of headings (<h1> through <h6>), with <h1> being the highest and most important.
- **<p>**: Defines a paragraph. Text within <p> tags is treated as a separate block of content.
- **<a href="...">**: Defines a hyperlink. The href attribute specifies the URL of the page the link goes to.

Common HTML Elements

- **Headings**: <h1>, <h2>, <h3>, <h4>, <h5>, <h6>

- **Paragraphs**: <p>
- **Links**: <a>
- **Images**: <img src="url" alt="description">

Image border in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>Controlling images with border</h1>
  <h2>Image without border</h2>
  <img

src="https://letsenhance.io/static/8f5e523ee6b2479e26ecc91b9c25261e/1015f/MainAfter.jpg"
    width="300"
  />
  <h2>image with border=3</h2>
  <img

src="https://letsenhance.io/static/8f5e523ee6b2479e26ecc91b9c25261e/1015f/MainAfter.jpg"
    border="3"
    width="300"
  />
 </body>
</html>
```

Controlling images with border

Image without border

image with border=3

Set image height and width in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h2>Normal image</h2>
  <img

src="https://letsenhance.io/static/8f5e523ee6b2479e26ecc91b9c25261e/1015f/MainAfter.jpg"
    width="500"
  />
  <h2>Image with height and width set</h2>
  <img

src="https://letsenhance.io/static/8f5e523ee6b2479e26ecc91b9c25261e/1015f/MainAfter.jpg"
    height="300"
    width="300"
  />
 </body>
</html>
```

Normal image

Image with height and width set

Introduction to HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h2>Align left</h2>
  <div>
   <img

src="https://letsenhance.io/static/8f5e523ee6b2479e26ecc91b9c25261e/1015f/Main
After.jpg"
     align="left"
     width="200"
    />
    <p>
     Lorem ipsum dolor sit amet consectetur adipisicing elit. Praesentium
     numquam, labore eum aut quam natus dicta nobis iste sequi quisquam.
     Expedita rem repudiandae deserunt natus, nobis vero sint! Enim,
     corporis. Molestias architecto cum esse veritatis inventore odio, alias
     unde, possimus sequi, quas aut deserunt voluptates dolore. Placeat,
     itaque deserunt a, dolorum deleniti iure dolorem dolore vitae debitis
     consequuntur sit qui? Dolorum autem excepturi delectus incidunt odio
     perferendis optio architecto veritatis itaque, ipsam maiores voluptate
     dolor adipisci sit accusamus corrupti exercitationem officia aperiam?
     Quaerat fugit ducimus debitis, harum nostrum magni totam. Sunt
     architecto, laudantium numquam labore accusantium, nemo provident, optio
     corrupti consectetur neque velit ipsum perferendis rerum distinctio ex.
     Itaque quam a voluptatum saepe ut corporis, sunt voluptates assumenda
     odit ipsam. Id quasi sequi ab consequuntur, possimus error deleniti
     fugiat necessitatibus facilis impedit quia dolores quos nobis? Accusamus
     facilis alias quos nobis vitae asperiores sint ratione eos aliquid
     dignissimos, explicabo accusantium. Illum est architecto consectetur
     unde sed quod veniam! Iusto, architecto amet. Aspernatur a consectetur
     fuga voluptas officiis amet nostrum provident at optio expedita omnis
     facilis, ut doloremque! Assumenda, dolorem adipisci!
    </p>
  </div>
  <h2>Alight right</h2>
  <div>
   <img
```

```
src="https://letsenhance.io/static/8f5e523ee6b2479e26ecc91b9c25261e/1015f/Main
After.jpg"
     align="right"
     width="200"
    />
    <p>
     Lorem ipsum dolor sit amet consectetur adipisicing elit. Praesentium
     numquam, labore eum aut quam natus dicta nobis iste sequi quisquam.
     Expedita rem repudiandae deserunt natus, nobis vero sint! Enim,
     corporis. Molestias architecto cum esse veritatis inventore odio, alias
     unde, possimus sequi, quas aut deserunt voluptates dolore. Placeat,
     itaque deserunt a, dolorum deleniti iure dolorem dolore vitae debitis
     consequuntur sit qui? Dolorum autem excepturi delectus incidunt odio
     perferendis optio architecto veritatis itaque, ipsam maiores voluptate
     dolor adipisci sit accusamus corrupti exercitationem officia aperiam?
     Quaerat fugit ducimus debitis, harum nostrum magni totam. Sunt
     architecto, laudantium numquam labore accusantium, nemo provident, optio
     corrupti consectetur neque velit ipsum perferendis rerum distinctio ex.
     Itaque quam a voluptatum saepe ut corporis, sunt voluptates assumenda
     odit ipsam. Id quasi sequi ab consequuntur, possimus error deleniti
     fugiat necessitatibus facilis impedit quia dolores quos nobis? Accusamus
     facilis alias quos nobis vitae asperiores sint ratione eos aliquid
     dignissimos, explicabo accusantium. Illum est architecto consectetur
     unde sed quod veniam! Iusto, architecto amet. Aspernatur a consectetur
     fuga voluptas officiis amet nostrum provident at optio expedita omnis
     facilis, ut doloremque! Assumenda, dolorem adipisci!
    </p>
   </div>
  </body>
</html>
```

Align left

Lorem ipsum dolor sit amet consectetur adipisicing elit. Praesentium numquam, labore eum aut quam natus dicta nobis iste sequi quisquam. Expedita rem repudiandae deserunt natus, nobis vero sint! Enim, corporis. Molestias architecto cum esse veritatis inventore odio, alias unde, possimus sequi, quas aut deserunt voluptates dolore. Placeat, itaque deserunt a, dolorum deleniti iure dolorem dolore vitae debitis consequuntur sit qui? Dolorum autem excepturi delectus incidunt odio perferendis optio architecto veritatis itaque, ipsam maiores voluptate dolor adipisci sit accusamus corrupti exercitationem officia aperiam? Quaerat fugit ducimus debitis, harum nostrum magni totam. Sunt architecto, laudantium numquam labore accusantium, nemo provident, optio corrupti consectetur neque velit ipsum perferendis rerum distinctio ex. Itaque quam a voluptatum saepe ut corporis, sunt voluptates assumenda odit ipsam. Id quasi sequi ab consequuntur, possimus error deleniti fugiat necessitatibus facilis impedit quia dolores quos nobis? Accusamus facilis alias quos nobis vitae asperiores sint ratione eos aliquid dignissimos, explicabo accusantium. Illum est architecto consectetur unde sed quod veniam! Iusto, architecto amet. Aspernatur a consectetur fuga voluptas officiis amet nostrum provident at optio expedita omnis facilis, ut doloremque! Assumenda, dolorem adipisci!

Alight right

Lorem ipsum dolor sit amet consectetur adipisicing elit. Praesentium numquam, labore eum aut quam natus dicta nobis iste sequi quisquam. Expedita rem repudiandae deserunt natus, nobis vero sint! Enim, corporis. Molestias architecto cum esse veritatis inventore odio, alias unde, possimus sequi, quas aut deserunt voluptates dolore. Placeat, itaque deserunt a, dolorum deleniti iure dolorem dolore vitae debitis consequuntur sit qui? Dolorum autem excepturi delectus incidunt odio perferendis optio architecto veritatis itaque, ipsam maiores voluptate dolor adipisci sit accusamus corrupti exercitationem officia aperiam? Quaerat fugit ducimus debitis, harum nostrum magni totam. Sunt architecto, laudantium numquam labore accusantium, nemo provident, optio corrupti consectetur neque velit ipsum perferendis rerum distinctio ex. Itaque quam a voluptatum saepe ut corporis, sunt voluptates assumenda odit ipsam. Id quasi sequi ab consequuntur, possimus error deleniti fugiat necessitatibus facilis impedit quia dolores quos nobis? Accusamus facilis alias quos nobis vitae asperiores sint ratione eos aliquid dignissimos, explicabo accusantium. Illum est architecto consectetur unde sed quod veniam! Iusto, architecto amet. Aspernatur a consectetur fuga voluptas officiis amet nostrum provident at optio expedita omnis facilis, ut doloremque! Assumenda, dolorem adipisci!

Ordered lists in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <center>
   <img
    src="https://img.freepik.com/free-vector/bird-colorful-logo-gradient-
vector_343694-
1365.jpg?size=338&ext=jpg&ga=GA1.1.2008272138.1723431600&semt=ais_hybrid"
     alt="delta_logo"
     height="150"
     width="150"
     align="middle"
    />
   <strong>
    <span>Delta Engineering Put. Ltd.</span>
   </strong>
  </center>
  <hr />
  <h2 align="center">Profile</h2>
  <center>
   <img

src="https://t4.ftcdn.net/jpg/04/99/26/07/360_F_499260734_DXjSvaZvk4TEQayFaY5sc
YimbwC8U05v.jpg"
     alt="intorduction"
     border="3"
     height="150"
    />
  </center>
  <p>
   Lorem ipsum dolor sit amet, consectetur adipisicing elit. Voluptatibus,
   optio! Blanditiis obcaecati illo nulla saepe accusantium pariatur ab hic
   autem eos aliquid dolore itaque, possimus impedit. Unde nemo libero autem.
   Nisi similique repellendus, alias tempora debitis, eaque voluptatem modi
   eius totam ipsam temporibus dolores aut quia, officia autem veniam sit
   animi praesentium aperiam aliquam commodi? Nostrum veniam error enim
   inventore.
  </p>
  <p>
   Lorem ipsum dolor sit amet, consectetur adipisicing elit. Voluptatibus,
```

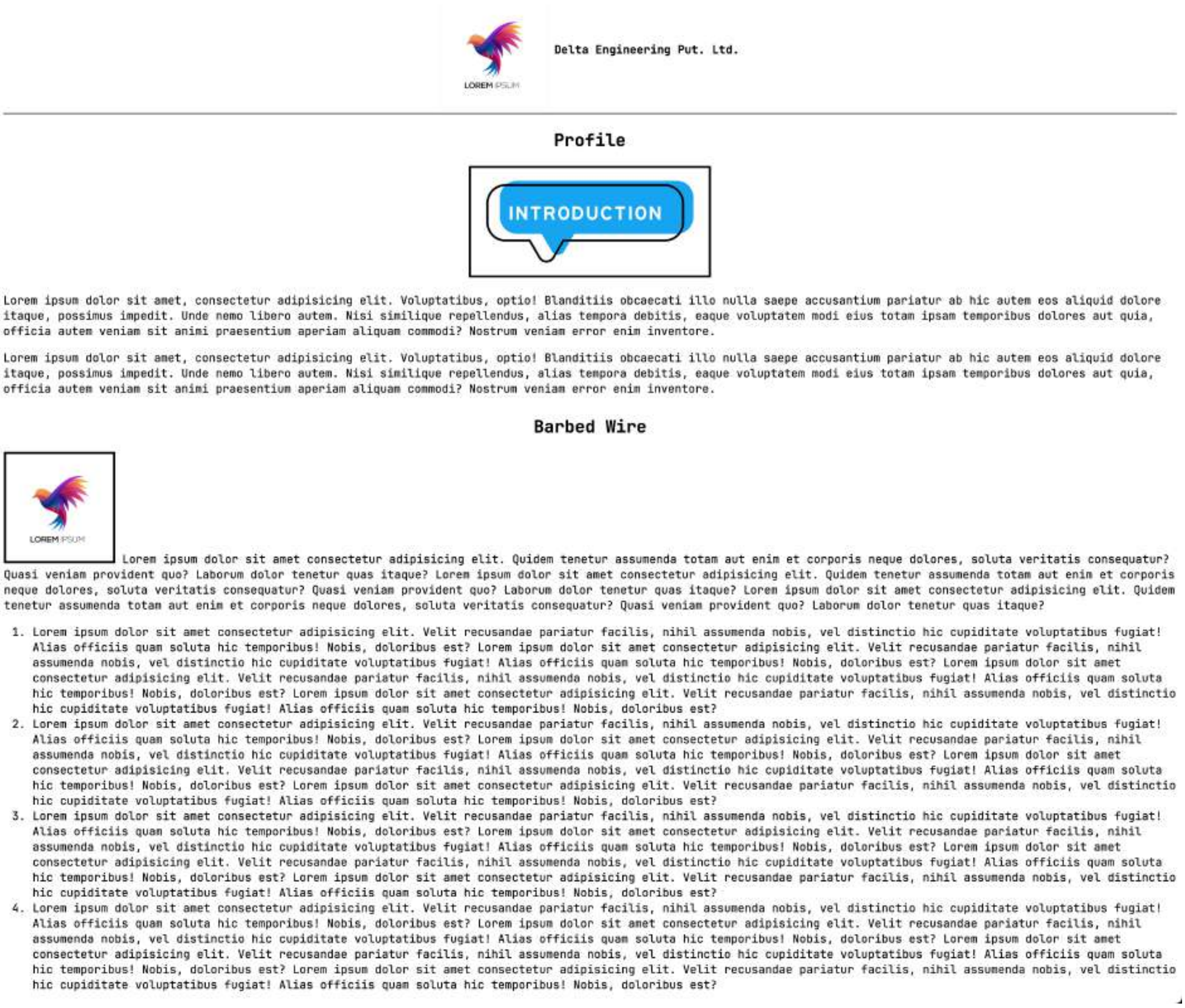
```
    optio! Blanditiis obcaecati illo nulla saepe accusantium pariatur ab hic
    autem eos aliquid dolore itaque, possimus impedit. Unde nemo libero autem.
    Nisi similique repellendus, alias tempora debitis, eaque voluptatem modi
    eius totam ipsam temporibus dolores aut quia, officia autem veniam sit
    animi praesentium aperiam aliquam commodi? Nostrum veniam error enim
    inventore.
   </p>
   <h2 align="center">Barbed Wire</h2>
   <div>
    <img
     src="https://img.freepik.com/free-vector/bird-colorful-logo-gradient-
vector_343694-
1365.jpg?size=338&ext=jpg&ga=GA1.1.2008272138.1723431600&semt=ais_hybrid"
     alt="random image"
     height="150"
     width="150"
     border="3"
     align="bottom"
    />
    Lorem ipsum dolor sit amet consectetur adipisicing elit. Quidem tenetur
    assumenda totam aut enim et corporis neque dolores, soluta veritatis
    consequatur? Quasi veniam provident quo? Laborum dolor tenetur quas
    itaque? Lorem ipsum dolor sit amet consectetur adipisicing elit. Quidem
    tenetur assumenda totam aut enim et corporis neque dolores, soluta
    veritatis consequatur? Quasi veniam provident quo? Laborum dolor tenetur
    quas itaque? Lorem ipsum dolor sit amet consectetur adipisicing elit.
    Quidem tenetur assumenda totam aut enim et corporis neque dolores, soluta
    veritatis consequatur? Quasi veniam provident quo? Laborum dolor tenetur
    quas itaque?
   </div>
   <ol>
    <li>
     Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit
     recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic
     cupiditate voluptatibus fugiat! Alias officiis quam soluta hic
     temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur
     adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda
     nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis
     quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit
     amet consectetur adipisicing elit. Velit recusandae pariatur facilis,
     nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus
     fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?
     Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit
     recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic
     cupiditate voluptatibus fugiat! Alias officiis quam soluta hic
     temporibus! Nobis, doloribus est?
    </li>
```


Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?

Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?

Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?

```
    </li>
  </ol>
 </body>
</html>
```



LOREM IPSUM Delta Engineering Pvt. Ltd.

Profile

INTRODUCTION

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Voluptatibus, optio! Blanditiis obcaecati illo nulla saepe accusantium pariatur ab hic autem eos aliquid dolore itaque, possimus impedit. Unde nemo libero autem. Nisi similique repellendus, alias tempora debitis, eaque voluptatem modi eius totam ipsam temporibus dolores aut quia, officia autem veniam sit animi praesentium aperiam aliquam commodi? Nostrum veniam error enim inventore.

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Voluptatibus, optio! Blanditiis obcaecati illo nulla saepe accusantium pariatur ab hic autem eos aliquid dolore itaque, possimus impedit. Unde nemo libero autem. Nisi similique repellendus, alias tempora debitis, eaque voluptatem modi eius totam ipsam temporibus dolores aut quia, officia autem veniam sit animi praesentium aperiam aliquam commodi? Nostrum veniam error enim inventore.

Barbed Wire

LOREM IPSUM Lorem ipsum dolor sit amet consectetur adipisicing elit. Quidem tenetur assumenda totam aut enim et corporis neque dolores, soluta veritatis consequatur? Quasi veniam provident quo? Laborum dolor tenetur quas itaque? Lorem ipsum dolor sit amet consectetur adipisicing elit. Quidem tenetur assumenda totam aut enim et corporis neque dolores, soluta veritatis consequatur? Quasi veniam provident quo? Laborum dolor tenetur quas itaque? Lorem ipsum dolor sit amet consectetur adipisicing elit. Quidem tenetur assumenda totam aut enim et corporis neque dolores, soluta veritatis consequatur? Quasi veniam provident quo? Laborum dolor tenetur quas itaque?

1. Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?
2. Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?
3. Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?
4. Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est? Lorem ipsum dolor sit amet consectetur adipisicing elit. Velit recusandae pariatur facilis, nihil assumenda nobis, vel distinctio hic cupiditate voluptatibus fugiat! Alias officiis quam soluta hic temporibus! Nobis, doloribus est?

Ordered, Unordered and Definition lists in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <ul type="circle">
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
  </ul>
  <ul type="disc">
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
  </ul>
  <ul type="square">
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
  </ul>
  <ul type="triangle">
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
   <li>Hello</li>
  </ul>
  <ol type="a" start="2">
   <li>hello from ol</li>
   <li>hello from ol</li>
   <li>hello from ol</li>
   <li>hello from ol</li>
   <li>hello from ol</li>
   <li>hello from ol</li>
  </ol>
  <ol type="A">
```

```
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
 </ol>
 <ol type="1" start="10" reversed>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
 </ol>
 <ol type="i" start="2">
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
 </ol>
 <ol type="I" start="100">
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
  <li>hello from ol</li>
 </ol>
 <dl>
  <dt>Unorded list</dt>
  <dd>
   The ul HTML element represents an unordered list of items, typically
   rendered as a bulleted list.
  </dd>
  <dt>Ordered list</dt>
  <dd>
   The ol HTML element represents an ordered list of items — typically
   rendered as a numbered list.
  </dd>
  <dt>Defination list</dt>
  <dd>
   The dl HTML element represents a description list. The element encloses
   a list of groups of terms (specified using the dt element) and
   descriptions (provided by dd elements). Common uses for this element are
```

```
      to implement a glossary or to display metadata (a list of key-value
      pairs).
    </dd>
  </dl>
 </body>
</html>
```

- Hello
- Hello
- Hello
- Hello
- Hello

- Hello
- Hello
- Hello
- Hello
- Hello

- Hello
- Hello
- Hello
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- Hello

- Hello
- Hello
- Hello
- Hello
- Hello

b. hello from ol
c. hello from ol
d. hello from ol
e. hello from ol
f. hello from ol
g. hello from ol

A. hello from ol
B. hello from ol
C. hello from ol
D. hello from ol
E. hello from ol
F. hello from ol

10. hello from ol
9. hello from ol
8. hello from ol
7. hello from ol
6. hello from ol
5. hello from ol

ii. hello from ol
iii. hello from ol
iv. hello from ol
v. hello from ol
vi. hello from ol
vii. hello from ol

C. hello from ol
CI. hello from ol
CII. hello from ol
CIII. hello from ol
CIV. hello from ol
CV. hello from ol

```
Unorded list
    The ul HTML element represents an unordered list of items, typically rendered as a bulleted list.
Ordered list
    The ol HTML element represents an ordered list of items — typically rendered as a numbered list.
Defination list
    The dl HTML element represents a description list. The element encloses a list of groups of terms (specified using the dt element) and descriptions (provided by dd
    elements). Common uses for this element are to implement a glossary or to display metadata (a list of key-value pairs).
```

In HTML, lists are used to group related items together. There are three main types of lists: ordered lists, unordered lists, and definition lists. Each serves a different purpose and has specific attributes associated with it.

- Ordered Lists

An ordered list is used when the order of the items is important, such as a sequence of steps or a ranking.

Attributes:

type: Specifies the type of numbering for list items.

- Values: “1” (default, numbers), “A” (uppercase letters), “a” (lowercase letters), “I” (uppercase Roman numerals), “I” (lowercase Roman numerals).

- start: Specifies the starting value of the first list item. Eg - <ol start="3">

- reversed: Indicates that the list should be displayed in reverse order (from high to low).
Eg - <ol reversed>

- Unordered Lists

An unordered list is used when the order of the items is not important. Items are typically marked with bullet points.

Attributes:
- type: Specifies the bullet style of the list items.
- Values: “disc” (default, filled circle), “circle” (hollow circle), “square” (filled square).
Eg - <ul type="square">

- Definition Lists <dl>

A definition list is used to group terms and their corresponding definitions, similar to a dictionary entry.

<dt> (Definition Term): Contains the term being defined.
<dd> (Definition Description): Contains the description or definition of the term.

Table in HTML

Table is a 2 dimensional matrix consisting of rows and columns.
All table related tags are included between <table> and </table>.

Row <tr> </tr>
Column <td> </td>
Header <th> </th>

Arrtibutes –

- Align – left centre right
- Valign – top center bottom
- Width -
- Border –
- Cell padding –
- Cell spacing -
- Colspan –
- Rowspan –

Caption tag – gives heading

Table border and width in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>Specifing border and width of table</h1>
  <table border="2" width="350">
   <tr>
    <th>NAME</th>
    <th>AGE</th>
   </tr>
   <tr align="center">
    <td>Shilpa</td>
    <td>21</td>
   </tr>
   <tr align="center">
    <td>Vaishali</td>
    <td>22</td>
   </tr>
```

```
  </table>
 </body>
</html>
```

NAME	AGE
Shilpa	21
Vaishali	22

Table cellpadding in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>Cellpadding of 10</h1>
  <table border="2" width="350">
   <tr>
    <th>NAME</th>
    <th>AGE</th>
   </tr>
   <tr align="center">
    <td>Shilpa</td>
    <td>21</td>
   </tr>
   <tr align="center">
    <td>Vaishali</td>
    <td>22</td>
   </tr>
  </table>
  <hr />
  <table border="2" width="350" cellpadding="10">
   <tr>
    <th>NAME</th>
    <th>AGE</th>
   </tr>
   <tr align="center">
    <td>Shilpa</td>
    <td>21</td>
   </tr>
   <tr align="center">
    <td>Vaishali</td>
    <td>22</td>
   </tr>
```

```
  </table>
 </body>
</html>
```

Cellpadding of 10

NAME	AGE
Shilpa	21
Vaishali	22

NAME	AGE
Shilpa	21
Vaishali	22

Table cellspacing in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>Cellspacing of 10</h1>
  <table border="2" width="350">
   <tr>
    <th>NAME</th>
    <th>AGE</th>
   </tr>
   <tr align="center">
    <td>Shilpa</td>
    <td>21</td>
   </tr>
   <tr align="center">
    <td>Vaishali</td>
    <td>22</td>
   </tr>
  </table>
  <hr />
  <table border="2" width="350" cellspacing="10">
   <tr>
    <th>NAME</th>
    <th>AGE</th>
```

```
    </tr>
    <tr align="center">
     <td>Shilpa</td>
     <td>21</td>
    </tr>
    <tr align="center">
     <td>Vaishali</td>
     <td>22</td>
    </tr>
   </table>
  </body>
</html>
```

Cellspacing of 10

NAME	AGE
Shilpa	21
Vaishali	22

NAME	AGE
Shilpa	21
Vaishali	22

Caption of Table and better borders in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <table
   border="1"
   width="750"
   cellspacing="0"
   cellpadding="5"
   align="center"
  >
   <caption>
    Time table and Fare list
   </caption>
```

```
<tr>
 <th rowspan="2">Name of Train</th>
 <th rowspan="2">Place</th>
 <th rowspan="2">Destination</th>
 <th colspan="2">Time</th>
 <th rowspan="2">Fare</th>
</tr>
<tr>
 <th>Arrival</th>
 <th>Departure</th>
</tr>
<tr align="center">
 <td>Rajdhani Express</td>
 <td>Bombay</td>
 <td>Delhi</td>
 <td>07.30</td>
 <td>08.45</td>
 <td>Rs. 989.00</td>
</tr>
<tr align="center">
 <td>Madras Mail</td>
 <td>Bombay</td>
 <td>Madras</td>
 <td>09.00</td>
 <td>10.15</td>
 <td>Rs. 450.00</td>
</tr>
<tr align="center">
 <td>Konya Express</td>
 <td>Bombay</td>
 <td>Bangalore</td>
 <td>11.30</td>
 <td>12.25</td>
 <td>Rs. 645.05</td>
</tr>
<tr align="center">
 <td>Konkan Express</td>
 <td>Bombay</td>
 <td>Mangalore</td>
 <td>13.30</td>
 <td>14.45</td>
 <td>Rs. 756.00</td>
</tr>
<tr align="center">
 <td>Deccan Express</td>
 <td>Bombay</td>
 <td>Madras</td>
```

```
    <td>13.30</td>
    <td>14.45</td>
    <td>Rs. 756.00</td>
   </tr>
  </table>
 </body>
</html>
```

Time table and Fare list

Name of Train	Place	Destination	Time		Fare
			Arrival	Departure	
Rajdhani Express	Bombay	Delhi	07.30	08.45	Rs. 989.00
Madras Mail	Bombay	Madras	09.00	10.15	Rs. 450.00
Konya Express	Bombay	Bangalore	11.30	12.25	Rs. 645.05
Konkan Express	Bombay	Mangalore	13.30	14.45	Rs. 756.00
Deccan Express	Bombay	Madras	13.30	14.45	Rs. 756.00

Linking document in HTML

Anchor tag
Included in body tag.

Types of hyperlinks –

- Internal
- External

Images as hyperlink –
<a><img />

Links to multiple pages in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1 align="center">Silicon Chip Tech</h1>
  <center>
   <img
    src="https://external-
content.duckduckgo.com/iu/?u=https%3A%2F%2Fwww.pngall.com%2Fwp-
content%2Fuploads%2F15%2FNotepad-
Transparent.png&f=1&nofb=1&ipt=8348d0628146cf94b8b2881efb109ae4209fcc48428
5c76567b47dc9ffcab46c&ipo=images"
    alt="notepad"
    width="100"
   />
  </center>
  <hr />
  <h2>SCT provides corporate training for the following products:</h2>
  <ul>
   <li><a href="links/html.html">HTML</a></li>
   <li><a href="links/js.html">Javascipt</a></li>
   <li><a href="links/cgi.html">CGI</a></li>
   <li><a href="links/java.html">Java</a></li>
   <li><a href="links/power.html">PowerBuilder</a></li>
   <li><a href="links/oracledev.html">Oracle Developer</a></li>
   <li><a href="links/dba.html">Oracle DBA</a></li>
  </ul>
  <h2 align="center">Click for more details</h2>
 </body>
</html>
```

Popup links as button in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>Planning a Holiday?</h1>
  <h2>Know about the Best places of the World from where you are!</h2>
  <p>
   My Home Site will give a detailed information about the best places
   throughout the World. Get all the required information about the best
   Restaurants, Resorts, Food n Drink, And much more...!!
  </p>
  <table width="750" align="center">
   <tr>
    <td colspan="5" bgcolor="grey">Answer Quick</td>
   </tr>
   <tr>
    <td></td>
    <td colspan="3" align="center">Wish to visit my home site?</td>
    <td></td>
   </tr>
   <tr>
    <td width="100"></td>
    <td align="center" width="50">
     <a href="1.html"><button>Yes</button></a>
    </td>
    <td width="100"></td>
    <td align="center" width="50" border="2"><button>No</button></td>
    <td width="100"></td>
   </tr>
  </table>
 </body>
```

</html>

Multiple buttons as links in HTML

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <center>
   <img
    src="https://img.freepik.com/free-vector/bird-colorful-logo-gradient-
vector_343694-
1365.jpg?size=338&ext=jpg&ga=GA1.1.2008272138.1723431600&semt=ais_hybrid"
    alt="delta_logo"
    height="150"
    width="150"
    align="middle"
   />
   <strong>
    <span>Delta Engineering Put. Ltd.</span>
   </strong>
  </center>
  <hr />
  <p align="center">
   <b>
    Lorem ipsum dolor sit amet, consectetur adipisicing elit. Voluptatibus,
    optio! Blanditiis obcaecati illo nulla saepe accusantium pariatur ab hic
    autem eos aliquid dolore itaque, possimus impedit. Unde nemo libero
    autem. Nisi similique repellendus, alias tempora debitis, eaque
    voluptatem modi eius totam ipsam temporibus dolores aut quia, officia
    autem veniam sit animi praesentium aperiam aliquam commodi? Nostrum
    veniam error enim inventore.
   </b>
  </p>
  <table cellspacing="20" align="center">
   <tr>
    <td>
     <a href="2.html"><button>Profile</button></a>
```

```
      </td>
      <td></td>
      <td>
       <a href="2.html"><button>Barbed Wire</button></a>
      </td>
      <td></td>
      <td>
       <a href="2.html"><button>Barbed Fence</button></a>
      </td>
      <td></td>
      <td>
       <a href="2.html"><button>Animal Fencing</button></a>
      </td>
     </tr>
   </table>
  </body>
</html>
```

Delta Engineering Pvt. Ltd.

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Voluptatibus, optio! Blanditiis obcaecati illo nulla saepe accusantium pariatur ab hic autem eos aliquid dolore itaque, possimus impedit. Unde nemo libero autem. Nisi similique repellendus, alias tempora debitis, eaque voluptatem modi eius totam ipsam temporibus dolores aut quia, officia autem veniam sit animi praesentium aperiam aliquam commodi? Nostrum veniam error enim inventore.

Profile Barbed Wire Barbed Fence Animal Fencing

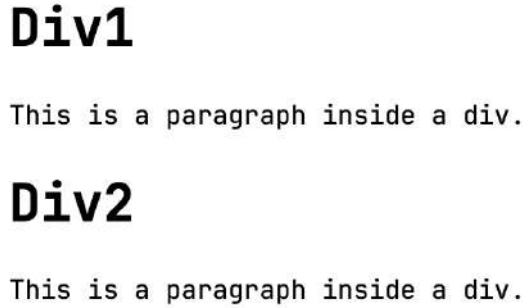
Div tag in HTML

The tag in HTML is a versatile container element used to group together content or other HTML elements. It stands for "division" and doesn't inherently style or format its content. However, it plays a crucial role in web design and layout when combined with CSS.

- Block-level element: The tag takes up the full width available, pushing the next elements to a new line.
- Container for grouping: It's commonly used to group elements for CSS styling or JavaScript interaction.
- Styling and Layout: While the tag itself has no visual effect, it's used extensively in conjunction with CSS for layout designs like grids, flexbox, or custom styles.

Eg –

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <div>
   <h1>Div1</h1>
   <p>This is a paragraph inside a div.</p>
  </div>
  <div>
   <h1>Div2</h1>
   <p>This is a paragraph inside a div.</p>
  </div>
 </body>
</html>
```



Marquee tag in HTML

The <marquee> tag in HTML is used to create scrolling text or images across the screen. It was introduced in early web development to add animation, but it's now obsolete and deprecated in modern web standards. Although it may still work in some browsers, its use is discouraged in favor of CSS or JavaScript-based solutions for creating animations.

Key points about the <marquee> tag:

- Scrolls content: It allows text or images to scroll horizontally or vertically across the webpage.
- Deprecated: The tag is outdated and not supported in HTML5. Use CSS animations or JavaScript for modern, compatible scrolling effects.

Attributes: The tag has attributes like direction, behavior, scrollamount, and loop to control the scrolling effect.

- Behavior – scroll, slide and alternate
- Direction – left, right, up, down
- Scrollammount – number of pixels to scroll
- Loop – number of times to loop. -1 -> infinite looping

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <marquee direction="left" scrollamount="5">Welcome to my website!</marquee>
 </body>
</html>
```

Frame tag in HTML

The <frame> HTML element defines a particular area in which another HTML document can be displayed. A frame should be used within a <frameset>.

Using the <frame> element is not encouraged because of certain disadvantages such as performance problems and lack of accessibility for users with screen readers. Instead of the <frame> element, <iframe> may be preferred.

Attributes -

- src
- name
- noresize
- scrolling
- marginheight
- marginwidth
- frameborder

index.html

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
 </head>
 <frameset rows="20%,80%">
  <frame src="title.html" name="first">
  <frameset cols="30%,70%">
   <frame src="image.html" name="second">
   <frame src="list.html" name="third">
  </frameset>
 </frameset>
</html>
```

Image.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <img
```

```
    src="https://external-
content.duckduckgo.com/iu/?u=https%3A%2F%2Fcdn.dribbble.com%2Fusers%2F39
88742%2Fscreenshots%2F7149635%2Fmedia%2Ffb27d5eb2b07aa6db3cdae31e6562
561.jpg&f=1&nofb=1&ipt=fc6647322bdce4469842f6836f51062e77984f2d52cb6b8e56c
12f4fe5ffcafe&ipo=images"
    alt="family photo"
    width="400"
   />
   <center>
    <h3>The SCT Family</h3>
   </center>
  </body>
</html>
```

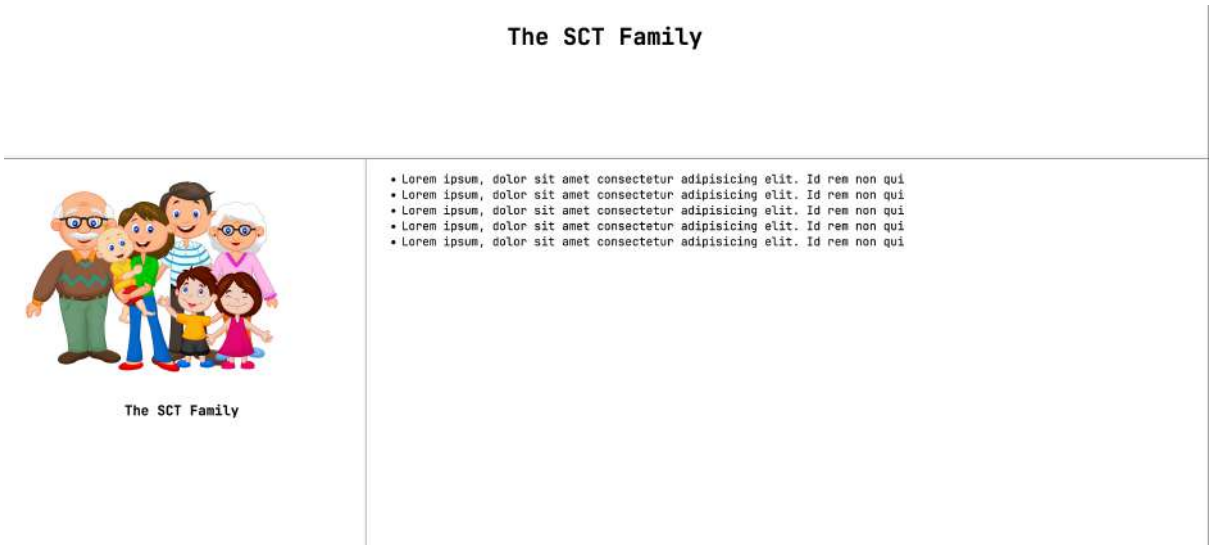
List.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <ul>
   <li>
    Lorem ipsum, dolor sit amet consectetur adipisicing elit. Id rem non qui
   </li>
   <li>
    Lorem ipsum, dolor sit amet consectetur adipisicing elit. Id rem non qui
   </li>
   <li>
    Lorem ipsum, dolor sit amet consectetur adipisicing elit. Id rem non qui
   </li>
   <li>
    Lorem ipsum, dolor sit amet consectetur adipisicing elit. Id rem non qui
   </li>
   <li>
    Lorem ipsum, dolor sit amet consectetur adipisicing elit. Id rem non qui
   </li>
  </ul>
 </body>
</html>
```

Title.html

```
<!doctype html>
<html lang="en">
 <head>
```

```
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <center>
   <h1>The SCT Family</h1>
  </center>
  <!-- <hr /> -->
 </body>
</html>
```



Index.html

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
 </head>
 <frameset rows="20%, 80%">
  <frame src="top.html" name="top" frameborder="0">
  <frameset cols="10%, 30%, 60%">
   <frame src="left.html" name="left" frameborder="0">
   <frame src="middle.html" name="middle" frameborder="0">
   <frameset rows="20%,80%">
    <frame src="right-top.html" name="right-top" frameborder="0">
    <frame src="right-bottom.html" name="right-bottom" frameborder="0">
   </frameset>
  </frameset>
 </frameset>
</html>
```

Left.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>
   <button>
    <strong>Profile</strong>
   </button>
  </h1>
  <h1>
   <button>
    <strong>Profile</strong>
   </button>
  </h1>
  <h1>
   <button>
    <strong>Profile</strong>
   </button>
  </h1>
  <h1>
   <button>
    <strong>Profile</strong>
   </button>
  </h1>
 </body>
</html>
```

Middle.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>Barbed Tapes</h1>
  <img
   src="https://external-
content.duckduckgo.com/iu/?u=http%3A%2F%2Fwww.lislesurplus.com%2Fmisc%2F
Lot-of-60-concertina-wire-barbed-tape-24-ss-galv%2FLot-of-60-concertina-wire-
barbed-tape-24-ss-galv-
```

```
1.jpg&f=1&nofb=1&ipt=d9635fddeadcedd50d7595ac31200cbe7d05e37acef9762470357e26e32fb0dc&ipo=images"
     alt="barbed wire"
     width="300"
     border="3"
   />
 </body>
</html>
```

Top.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <center>
   <img
    src="https://img.freepik.com/free-vector/bird-colorful-logo-gradient-vector_343694-1365.jpg?size=338&ext=jpg&ga=GA1.1.2008272138.1723431600&semt=ais_hybrid"
    alt="delta_logo"
    height="150"
    width="150"
    align="middle"
   />
   <strong>
    <span>Delta Engineering Put. Ltd.</span>
   </strong>
  </center>
 </body>
</html>
```

Right-bottom.html

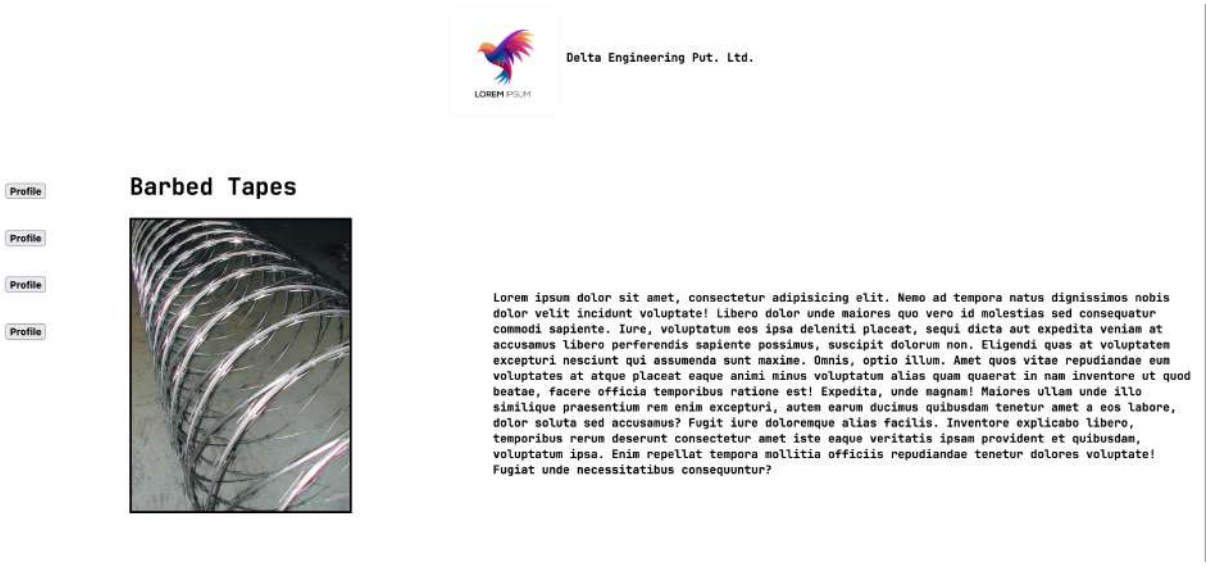
```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <strong>
   <p>
    Lorem ipsum dolor sit amet, consectetur adipisicing elit. Nemo ad
```

tempora natus dignissimos nobis dolor velit incidunt voluptate! Libero dolor unde maiores quo vero id molestias sed consequatur commodi sapiente. Iure, voluptatum eos ipsa deleniti placeat, sequi dicta aut expedita veniam at accusamus libero perferendis sapiente possimus, suscipit dolorum non. Eligendi quas at voluptatem excepturi nesciunt qui assumenda sunt maxime. Omnis, optio illum. Amet quos vitae repudiandae eum voluptates at atque placeat eaque animi minus voluptatum alias quam quaerat in nam inventore ut quod beatae, facere officia temporibus ratione est! Expedita, unde magnam! Maiores ullam unde illo similique praesentium rem enim excepturi, autem earum ducimus quibusdam tenetur amet a eos labore, dolor soluta sed accusamus? Fugit iure doloremque alias facilis. Inventore explicabo libero, temporibus rerum deserunt consectetur amet iste eaque veritatis ipsam provident et quibusdam, voluptatum ipsa. Enim repellat tempora mollitia officiis repudiandae tenetur dolores voluptate! Fugiat unde necessitatibus consequuntur?

```
    </p>
   </strong>
  </body>
</html>
```

Right-top.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body></body>
</html>
```



CSS

Index.html

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
  <link rel="stylesheet" href="style.css" />
 </head>
 <body>
  <h1>
   Welcome to <span class="Maxx">CYBERSHOP INC</span><br />
   the only online Cyber Mall!
  </h1>
  <hr />
  <div class="image-div">
   <div class="list-container">
    <p>
     An <span class="Maxx">CYBERSHOP INC</span>, we are proud of our avail
     our services, and every personal of the incorporation. Here are few
     the servics we offer
    </p>
    <ul>
     <li>E-Commerce Applications</li>
     <li>Virtual reality Module Development</li>
     <li>Cyberengineering</li>
    </ul>
    <div>
     <div class="div1">Virtual Developments</div>
     <div class="div2">Number one since 1994</div>
     <div class="div3">The cyber Mall on the WEB</div>
    </div>
   </div>
   <p>
    <span class="Maxx">CYBERSHOP INC</span> Products and services are known
    virtually all over the world.
   </p>
  </div>
 </body>
</html>
```

Style.css

```
.Maxx {
 font-size: 120%;
```

```
 color: "green";
 font-weight: bold;
 font-family: cursive;
}

h1 {
 max-width: fit-content;
 margin-right: auto;
 margin-left: auto;
}

.list-container {
 max-width: 50%;
}

.div1 {
 position: absolute;
 top: 120px;
 right: 350px;
 background-color: blue;
 width: 150px;
 height: 150px;
 color: white;
 text-align: center;
}

.div2 {
 position: absolute;
 top: 200px;
 right: 300px;
 background-color: green;
 width: 150px;
 height: 150px;
 color: white;
 text-align: center;
}

.div3 {
 position: absolute;
 top: 280px;
 right: 250px;
 background-color: goldenrod;
 width: 150px;
 height: 150px;
 color: white;
 text-align: center;
}
```

Layer.html

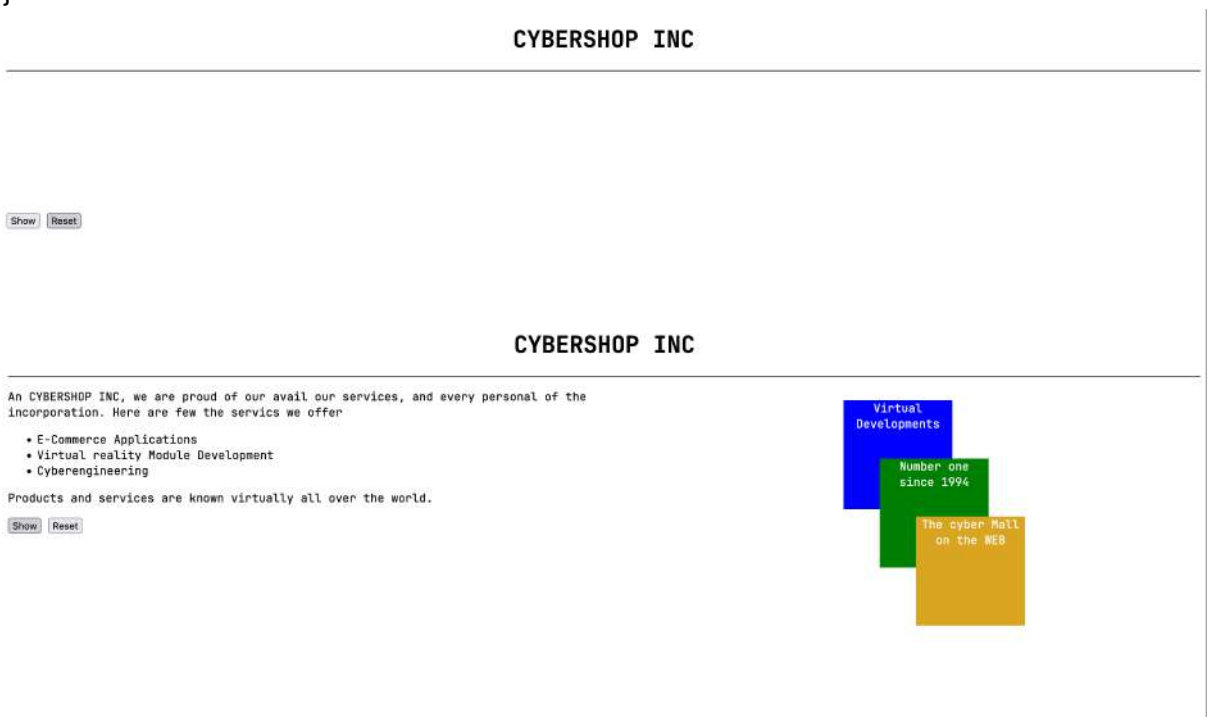
```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
  <link rel="stylesheet" href="styles2.css" />
 </head>
 <body>
  <div class="layer1">
   <h1>CYBERSHOP INC</h1>
   <hr />
  </div>
  <div class="layer2">
   <div class="image-div">
    <div class="list-container">
     <p>
      An CYBERSHOP INC, we are proud of our avail our services, and every
      personal of the incorporation. Here are few the servics we offer
     </p>
     <ul>
      <li>E-Commerce Applications</li>
      <li>Virtual reality Module Development</li>
      <li>Cyberengineering</li>
     </ul>
     <div>
      <div class="div1">Virtual Developments</div>
      <div class="div2">Number one since 1994</div>
      <div class="div3">The cyber Mall on the WEB</div>
     </div>
    </div>
    <p>Products and services are known virtually all over the world.</p>
   </div>
  </div>
  <div>
```

```
    <button onclick="show()">Show</button>
    <button onclick="reset()">Reset</button>
   </div>
   <script>
    const l1 = document.querySelector(".layer1");
    const l2 = document.querySelector(".layer2");
    function show() {
     // l1.style.visibility = "hidden";
     l2.style.visibility = "visible";
    }
    function reset() {
     // l1.style.visibility = "visible";
     l2.style.visibility = "hidden";
    }
   </script>
  </body>
</html>
```

Style2.css

```
h1 {
 max-width: fit-content;
 margin-right: auto;
 margin-left: auto;
}

.list-container {
 max-width: 50%;
}

.div1 {
 position: absolute;
 top: 120px;
 right: 350px;
 background-color: blue;
 width: 150px;
 height: 150px;
 color: white;
 text-align: center;
}

.div2 {
 position: absolute;
 top: 200px;
 right: 300px;
 background-color: green;
 width: 150px;
 height: 150px;
```

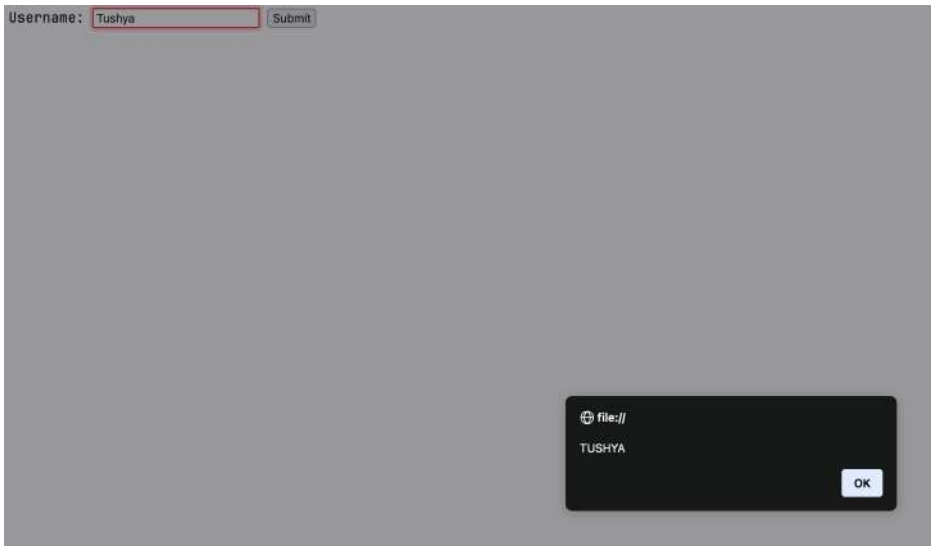
```
 color: white;
 text-align: center;
}

.div3 {
 position: absolute;
 top: 280px;
 right: 250px;
 background-color: goldenrod;
 width: 150px;
 height: 150px;
 color: white;
 text-align: center;
}

.layer2{
 visibility: hidden;
}
```



JavaScript

Q1. Check the contents entered in a form text element. If the text entered in the lowercase convert to uppercase. Make use of function toUpperCase().

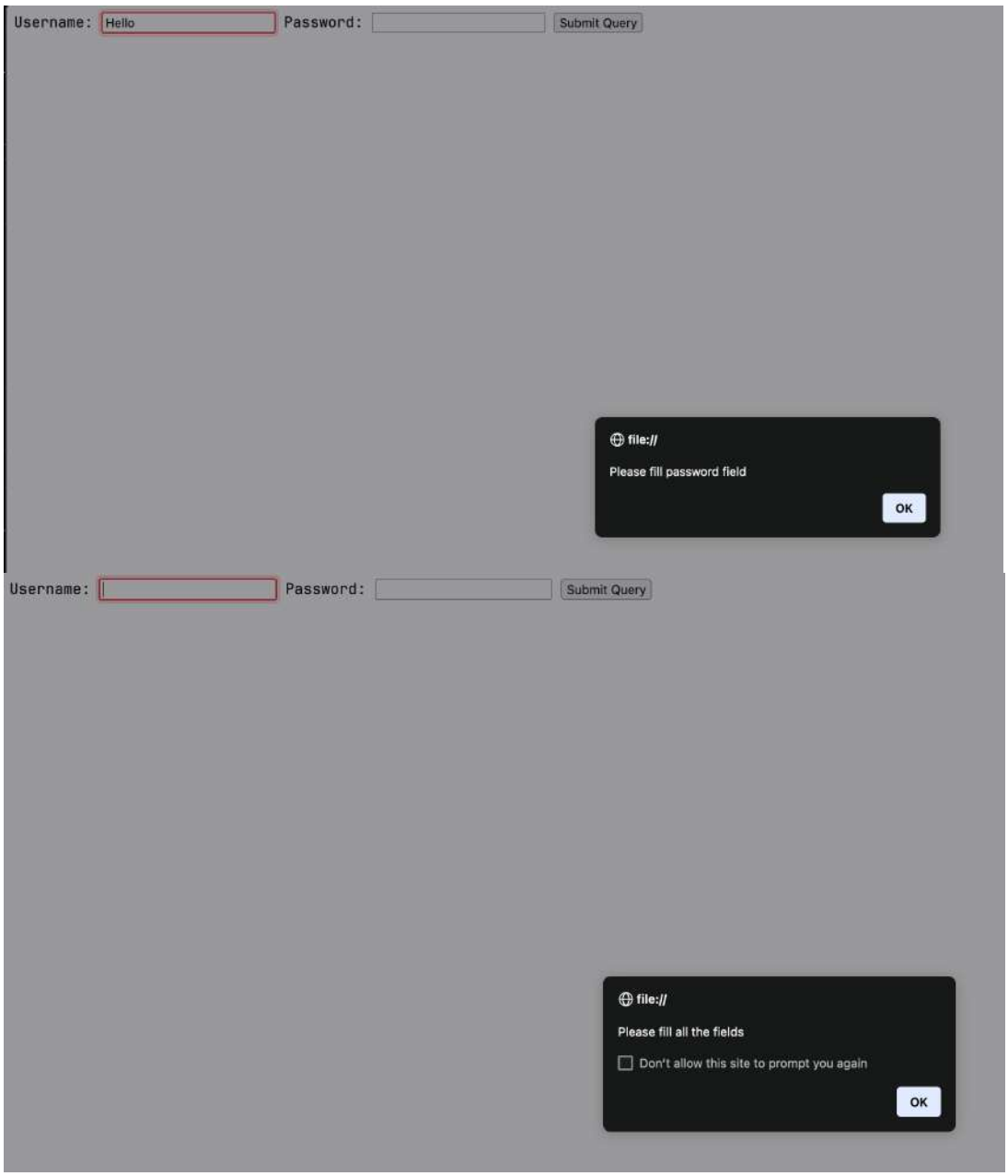
```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <form onsubmit="handleSubmit(event)">
   <label for="username">Username: </label>
   <input type="text" name="username" />
   <input type="submit" value="Submit" />
  </form>
  <script>
   function handleSubmit(e) {
    e.preventDefault();
    // const p = document.createElement("p");
    // p.innerText = e.target[0].value.toUpperCase();
    // document.body.appendChild(p);
    alert(e.target[0].value.toUpperCase());
    // e.target[0].value = e.target[0].value.toUpperCase();
   }
  </script>
 </body>
</html>
```

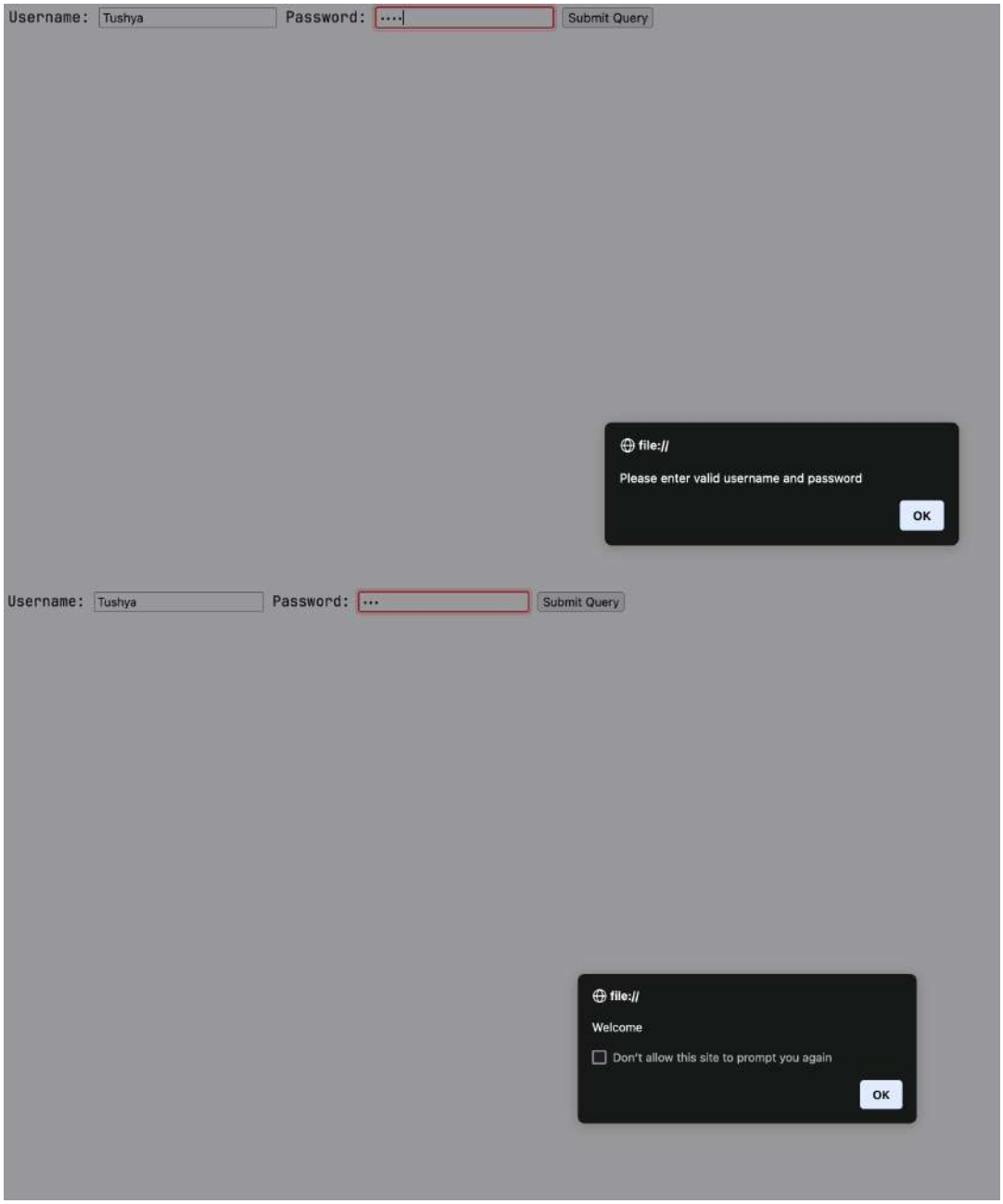


Q2. Write a JS code block to validate a username and password. If either the name or password field in not entered display a error message showing you forgot one of the required field. In case the fields entered do not match display an error match showing please enter a valid username and password. If the values match display the message match.

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <form id="form">
   <label for="username">Username: </label>
   <input type="text" name="username" />
   <label for="password">Password: </label>
   <input type="password" name="password" />
   <input type="submit" />
  </form>
  <script>
   const f = document.getElementById("form");
   f.addEventListener("submit", (e) => handleSubmit(e));

   const username = "Tushya";
   const password = "123";

   function handleSubmit(e) {
    e.preventDefault();
    const u = e.target[0].value;
    const p = e.target[1].value;
    if (u === "" && p === "") {
     alert("Please fill all the fields");
     return;
    } else if (p === "") {
     alert("Please fill password field");
     return;
    } else if (u === "") {
     alert("Please fill username field");
     return;
    }
    if (u === username && p === password) {
     alert("Welcome");
    } else {
     alert("Please enter valid username and password");
    }
```

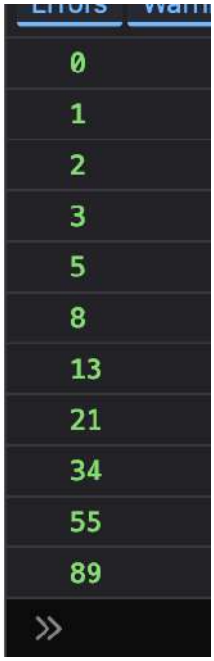
```
    }
   </script>
  </body>
</html>
```




Username: Tushya
Password: ••••
Submit Query
file://
Please enter valid username and password
OK
Username: Tushya
Password: •••
Submit Query
file://
Welcome
Don't allow this site to prompt you again
OK

Q3. Write a JS code block to print the Fibonacci series in the console.

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let n = prompt("Enter the number: ");
   const l = n.length;
   n = parseInt(n);
   const dis = n;
   let s = 0;
   let d;
   for (let i = 0; i < l; i++) {
    d = n % 10;
    n = Math.floor(n / 10);
    s += Math.pow(d, l);
   }
   if (s === dis) {
    alert(`${dis} is a armstrong number`);
   } else {
    alert(`${dis} is not a armstrong number`);
   }
  </script>
 </body>
</html>
```



Q4. Write a JS code block to check of a given number is a Armstrong number or not.

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   const n = parseInt(prompt("Enter number of elements: "));
   let a = 0;
   let b = 1;
   let temp = 0;
   console.log(a);
   let c = 0;
   while (c + 2 <= n) {
    console.log(b);
    temp = b;
    b = a + b;
    a = temp;
    c++;
   }
  </script>
 </body>
</html>
```

JavaScript

Q1. Write a program to show current time and date in a input field.

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <font color="red" size="+1">
   <form name="time_form">
    <center>
     <br />
     <br />
     Current Date & Time :
     <input name="date" size="19" value="" />
    </center>
   </form>
  </font>
  <script>
   function begin(form_name) {
    console.log(form_name);
    time_out = window.setTimeout(() => {
     display_date(form_name);
    }, 500);
   }
   function display_date(form_name) {
    form_name.date.value = new Date();
    time_out = window.setTimeout(() => {
     display_date(form_name);
    }, 1000);
   }
   begin(document.time_form);
  </script>
 </body>
</html>
```

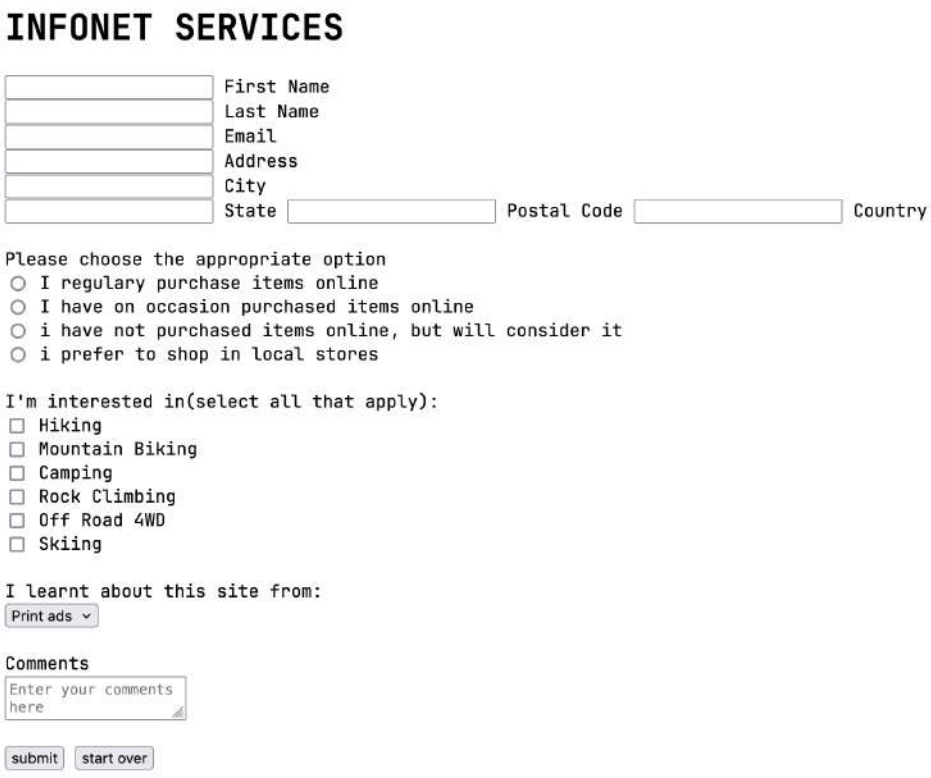
Q2. Write a program to check if any field is empty in a form.

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <h1>INFONET SERVICES</h1>
  <form id="main_form">
   <input type="text" name="fname" />
   <label for="fname">First Name</label>
   <br />
   <input type="text" name="lname" />
   <label for="lname">Last Name</label>
   <br />
   <input type="email" name="mail" />
   <label for="mail">Email</label>
   <br />
   <input type="text" name="address" />
   <label for="address">Address</label>
   <br />
   <input type="text" name="city" />
   <label for="city">City</label>
   <br />
   <input type="text" name="state" />
   <label for="state">State</label>
   <input type="text" name="pcode" />
   <label for="pcode">Postal Code</label>
   <input type="text" name="country" />
   <label for="country">Country</label>
   <br />
   <br />
   <label for="online">Please choose the appropriate option</label>
   <br />
   <input type="radio" name="online" id="regular" value="regular" />
   <label for="regular">I regulary purchase items online</label>
   <br />
   <input type="radio" name="online" id="occasion" value="occasion" />
   <label for="occasion">I have on occasion purchased items online</label>
   <br />
   <input type="radio" name="online" id="consider" value="consider" />
   <label for="consider">
    i have not purchased items online, but will consider it
   </label>
```

```
 <br />
 <input type="radio" name="online" id="local" value="local" />
 <label for="local">i prefer to shop in local stores</label>
 <br />
 <br />
 <label>I'm interested in(select all that apply):</label>
 <br />
 <input type="checkbox" name="hiking" />
 <label for="hiking">Hiking</label>
 <br />
 <input type="checkbox" name="mbiking" />
 <label for="mbiking">Mountain Biking</label>
 <br />
 <input type="checkbox" name="camping" />
 <label for="camping">Camping</label>
 <br />
 <input type="checkbox" name="rclimbing" />
 <label for="rclimbing">Rock Climbing</label>
 <br />
 <input type="checkbox" name="offroad" />
 <label for="offroad">Off Road 4WD</label>
 <br />
 <input type="checkbox" name="skiing" />
 <label for="skiing">Skiing</label>
 <br />
 <br />
 <label for="learn_from">I learnt about this site from:</label>
 <br />
 <select name="learn_from">
  <option value="p_ads">Print ads</option>
  <option value="friend">Friends</option>
  <option value="youtube">Youtube</option>
 </select>
 <br />
 <br />
 <label for="comments">Comments</label>
 <br />
 <textarea
  name="comments"
  placeholder="Enter your comments here"
 ></textarea>
 <br />
 <br />
 <input type="submit" value="submit" />
 <input type="reset" value="start over" />
</form>
<script>
```

```
    const form = document.getElementById("main_form");
    form.addEventListener("submit", (e) => {
      e.preventDefault();
      console.log(e);
      let sel_radio;
      let sel_check;
      for (let i = 0; i < e.target.elements.length - 1; i++) {
        if (i <= 7 || i === 19) {
          if (e.target[i].value === "") {
            alert("Enter all fields");
            break;
          }
        } else if (i > 7 && i <= 11) {
          if (e.target[i].checked) {
            sel_radio = true;
          }
        } else if (i > 11) {
          if (e.target[i].checked) {
            sel_check = true;
          }
        }
      }
      if (!(sel_radio && sel_check)) {
        alert("Enter all fields");
      }
    });
    form.addEventListener("reset", (e) => {
      for (let i = 0; i < e.target.elements.length - 1; i++) {
        if (i <= 7 || i === 19) {
          e.target[i].value = "";
        } else if (i > 7 && i <= 11) {
          e.target[i].checked = false;
        } else if (i > 11) {
          e.target[i].checked = false;
        }
      }
    });
  </script>
 </body>
</html>
```


INFONET SERVICES
dasdsa
First Name
dasda
Last Name
dasd@fdsg.com
Email
sdfs
Address
sdfsf
City
fsdfs
State
dsfsf
Postal Code
fsdfs
Country
Please choose the appropriate option
I regulary purchase items online
I have on occasion purchased items online
i have not purchased items online, but will consider it
i prefer to shop in local stores
I'm interested in(select all that apply):
Hiking
Mountain Biking
Camping
Rock Climbing
Off Road 4WD
Skiing
file://
Enter all fields
OK
I learnt about this site from:
Print ads
Comments
fdsf
submit
start over


INFONET SERVICES
First Name
Last Name
Email
Address
City
State
Postal Code
Country
Please choose the appropriate option
I regulary purchase items online
I have on occasion purchased items online
i have not purchased items online, but will consider it
i prefer to shop in local stores
I'm interested in(select all that apply):
Hiking
Mountain Biking
Camping
Rock Climbing
Off Road 4WD
Skiing
I learnt about this site from:
Print ads
Comments
Enter your comments here
submit
start over

Cookies

Q1. What are cookies? How to set cookies? Values supplied when creating a cookie.

Cookies are small files of information that a web server generates and sends to a web browser. Web browsers store the cookies they receive for a predetermined period of time, or for the length of a user's session on a website. They attach the relevant cookies to any future requests the user makes of the web server.

Cookies help inform websites about the user, enabling the websites to personalize the user experience. For example, ecommerce websites use cookies to know what merchandise users have placed in their shopping carts. In addition, some cookies are necessary for security purposes, such as authentication cookies.

To set cookies you can use the javascipt document.cookie funciton
document.cookie = "username=John Doe; expires=Mon, 11 Nov 2024 12:00:00 UTC; path=/";

To update a cookie you can use the same as above and change the fields as needed
document.cookie = "username=Tushya Gupta; expires= Mon, 11 Nov 2024 12:00:00 UTC; path=/";

To delete a cookie set its expire time to the past
document.cookie = "username=Tushya Gupta; expires= Mon, 11 Nov 2024 12:00:00 UTC; path=/";

To read a cookie you can store the document.cookie in a variable
Let x = document.cookie

Q2. Create a form and validate its files as given

Code –

```
<!doctype html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1" />
  <title>Silicon Chip Industries</title>
  <style>
   center {
    width: 50%;
    margin: auto;
    border: 2px solid black;
   }
   body {
    color: green;
```

```
    font-size: 12px;
    font-family: "Times New Roman";
   }
   h1 {
    text-shadow: 4px 4px 4px black;
    font-size: 32px;
   }
   h2 {
    font-family: "Comic Sans MS";
   }
  </style>
 </head>
 <body>
  <center>
   <h2>Silicon Chip Industries</h2>
   <h1>Pen Pal Informations</h1>
   <form>
    <label for="username">Enter your username</label>
    <br />
    <input type="text" name="username" />
    <br />
    <br />
    <label for="email">Enter your Email</label>
    <br />
    <input type="email" name="email" />
    <br />
    <br />
    <label for="sex">Please indicate your sex</label>
    <br />
    <input type="radio" name="sex" id="male" value="male" />
    <label for="male">Male</label>
    <input type="radio" name="sex" id="female" value="female" />
    <label for="female">Female</label>
    <br />
    <br />
    <label for="dob">Enter your DOB as DD/MM/YYYY</label>
    <br />
    <input type="date" name="dob" />
    <br />
    <br />
    <label for="hobbies"
     >Tell us about your hobbies and interests in the 'Text-box' bellow<br />We
     will keep your PenPal info posted for <b>One Year</b> from
     today</label
    >
    <br />
    <textarea rows="10" cols="100"></textarea>
```

```
      <br />
      <br />
      <label for="contact">
       Can we contact you with information about our products and services
      </label>
      <br />
      <input type="radio" name="contact" id="yes" value="yes" />
      <label for="yes">Yes</label>
      <input type="radio" name="contact" id="no" value="no" checked />
      <label for="no">No, Thanks</label>
      <br />
      <br />
      <input type="submit" value="Submit" />
      <input type="reset" value="Reset" />
      <input type="button" value="Abort" />
    </form>
    <h4>Thanks for stopping by our website</h4>
   </center>
   <script src="index.js"></script>
  </body>
</html>

const form = document.getElementsByTagName("form")[0];
form.addEventListener("submit", (e) => {
  e.preventDefault();
  const username = e.target[0];
  const email = e.target[1];
  const male = e.target[2].checked;
  const female = e.target[3].checked;
  const dob = e.target[4];
  const emp = [username, email, dob];
  for (let v in emp) {
   if (emp[v].value == "") {
    alert(` Please fill out the ${emp[v].name}` );
    return;
   }
  }
  if (username.value.length > 30) {
   alert("username length cannot be greater than 30");
   return;
  }
  if (!(email.value.includes("@") && email.value.includes("."))) {
   alert("Email must include @ and .");
   return;
  }
  if (email.value.length > 30) {
   alert("email length cannot be greater than 30");
```

```
  return;
 }
 const day = parseInt(dob.value.split("-")[2]);
 const month = parseInt(dob.value.split("-")[1]);
 const year = parseInt(dob.value.split("-")[0]);
 if (day > 31 || day < 1) {
  alert("Day can be between 1 and 31 only");
  return;
 }
 if (month > 12 || month < 1) {
  alert("Month can be between 1 and 12 only");
  return;
 }
 if (year > 2024 || year < 1900) {
  alert("Year can be between 1900 and 2024 only");
  return;
 }
 if (!(male || female)) {
  alert("Please enter sex");
  return;
 }
});
```


Silicon Chip Industries
Pen Pal Informations
Enter your username
123
Enter your Email
123@123.com
Please indicate your sex
Male Female
Enter your DOB as DD/MM/YYYY
09 / 01 / 2212
Tell us about your hobbies and interests in the 'Text-box' bellow
We will keep your PenPal info posted for One Year from today
Can we contact you with information about our products and services
Yes No, Thanks
Submit Reset Abort
Thanks for stopping by our website


Silicon Chip Industries
Pen Pal Informations
Enter your username
Enter your Email
123@123.com
Please indicate your sex
Male Female
Enter your DOB as DD/MM/YYYY
09 / 01 / 2212
Tell us about your hobbies and interests in the 'Text-box' bellow
We will keep your PenPal info posted for One Year from today
file://
Please fill out the username
OK
Submit Reset Abort
Thanks for stopping by our website