UNIT-I

Introduction to Web Programming

Introduction:

Web programming involves creating web pages, web applications, and other online content that can be displayed in a web browser. Web programming is accomplished using a variety of programming languages, including HTML, CSS, JavaScript, PHP, Python, Ruby, and Java. Each of these languages has its strengths and weaknesses, and the choice of language depends on the needs of the project. The Internet is a vast network of computers, and servers, which communicate with each other. The Internet is a vast network that connects billions of computers and other electronic devices all around the world. You can get nearly any information, communicate with anyone on the globe, and do a lot more with the Internet. All of this is possible by connecting a computer to the Internet, generally known as going online. When someone says a computer is online, they are simply referring to the fact that it is linked to the Internet.

Key Components of Web Programming

HTML: HTML stands for HyperText Markup Language. It is used to design web pages using a markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. A markup language is used to define the text document within tag which defines the structure of web pages.

CSS : Cascading Style Sheets is a stylesheet language used to design the webpage to make it attractive. The reason for using CSS is to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML that makes up each web page.

JavaScript: JavaScript is the most powerful and versatile programming language used in the web. It is a lightweight, cross-platform, single-threaded and interpreted programming language. It is a commonly used programming language to create dynamic and interactive elements in web applications. It is easy to learn, compiled language.

Creating a Website:

Create a website using **HTML** (**Hypertext Markup Language**) is the foundation of web development. HTML allows you to **structure content**, define **headings**, **paragraphs**, **lists**, and **links**, and create **visually appealing web pages**.

To create a website using HTML, you need to understand the various tags and attributes. HTML tags are used to structure the content, while attributes provide additional information.

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
   <meta charset="utf-8">
   <title>GeeksForGeeks</title>
</head>
<body style="background-color:#D5F5E3 ">
   <img src=
"https://upload.wikimedia.org/wikipedia/commons/4/43/GeeksforGeeks.svg"
      style="display: block;  margin-left:
            auto;margin-right: auto;
            width: 10%;">
   <h1 style="color:green;text-align:center">
      <strong>GeeksForGeeks</strong>
   </h1>
   <h1><strong>Table of Content</strong></h1>
   <h2><strong>C++</strong></h2>
   <div>C++ is an object-oriented programming language
```

```
        that is widely used for competitive programming,
        Data structure, and Algorithms, developing
        operating Systems, etc.
    </div>
    <h3><em>Some of its topic are given below:- </em></h3>
    <ul>
        <li>
            <a href=
"https://www.geeksforgeeks.org/c-plus-plus/?ref=shm#Basics">
            Basics
            </a>
        </li>
        <li><a href=
"https://www.geeksforgeeks.org/difference-c-structures-c-structures/">
                Difference Between C Structures and C++ Structures</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/comparison-of-inheritance-in-c-and-java/">
                Comparison of Inheritance in C++ and Java</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/static-keyword-in-java/">
                Comparison of static keyword in C++ and Java</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/comparison-of-exception-handling-in-c-and-java/">
```

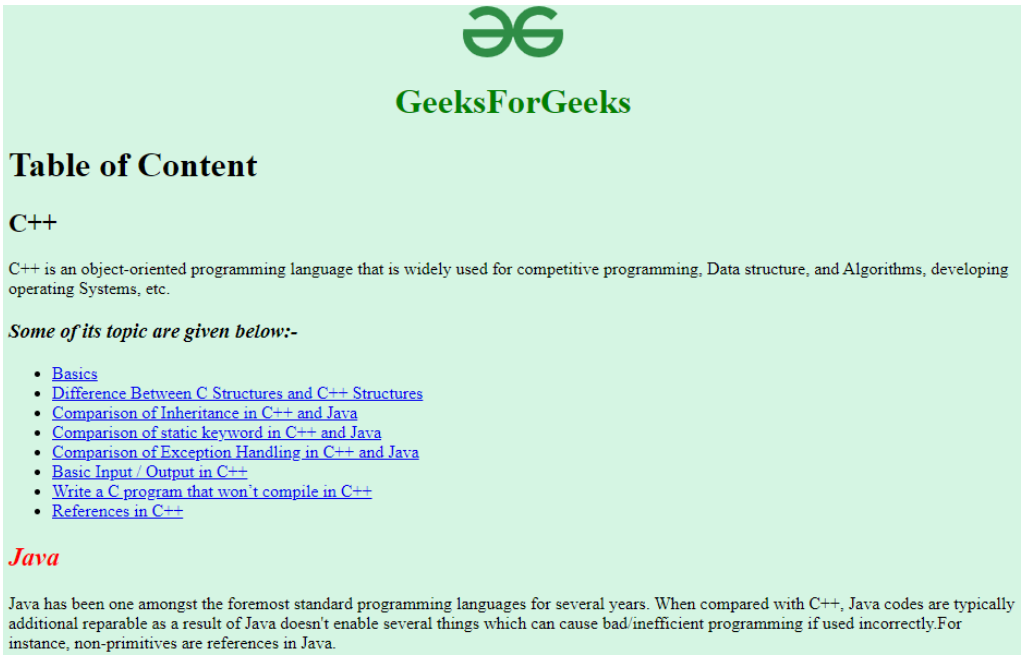
```
            Comparison of Exception Handling in C++ and Java</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/basic-input-output-c/">
            Basic Input / Output in C++</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/write-a-c-program-that-wont-compile-in-cpp/">
            Write a C program that won’t compile in C++</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/references-in-c/">
            References in C++</a></li>
    </ul>
    <h2 style="color:red;"><em>Java</em></h2>
    <div>Java has been one amongst the foremost standard
        programming languages for several years. When
        compared with C++, Java codes are typically
        additional reparable as a result of Java
        doesn't enable several things which can
        cause bad/inefficient programming if used
        incorrectly.For instance, non-primitives are
        references in Java.
    </div>
    <h3><em>Some of its Topics are given below:- </em></h3>
    <ul>
```

```
        <li><a href=
"https://www.geeksforgeeks.org/introduction-to-java/">
            Introduction to Java</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/c-vs-java-vs-python/">
            C++ vs Java vs Python</a></li>
        <li>
           <a href=
"https://www.geeksforgeeks.org/jvm-works-jvm-architecture/">
            How JVM Works – JVM Architecture?</a>
        </li>
        <li><a href=
"https://www.geeksforgeeks.org/java-basic-syntax/">
            Java Basic Syntax</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/java-identifiers/">
            Java Identifiers</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/variable-scope-in-java/">
            Scope of Variables In Java</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/decision-making-javaif-else-switch-break-continue-jump/">
            Decision Making in Java (if, if-else, switch, break, continue, jump)
```

```
            </a></li>
        <li><a href=
"https://www.geeksforgeeks.org/java-arithmetic-operators-with-examples/">
                Java Arithmetic Operators with Examples</a></li>
    </ul>
    <h2 style="color: blue;">
        Python</h2>
        <div> Python language is being employed in website
            development, Machine Learning applications,
            at the side of all innovative technology in
            Software World. Python language is extremely
            compatible for Beginners, additionally for
            knowledgeable programmers with alternative
            programming languages like C++ and Java.
        </div>
        <h3><em>Some of its topics given below are:- </em></h3>
        <ul>
            <li><a href=
"https://www.geeksforgeeks.org/python-language-introduction/">
                    Python Language Intro</a></li>
            <li><a href=
"https://www.geeksforgeeks.org/structuring-python-programs/">
                    Structures</a></li>
```

```
        <li><a href=
"https://www.geeksforgeeks.org/python-keywords/">
            Keywords</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/python-if-else/">
            Decision Making</a></li>
        <li><a href=
"https://www.geeksforgeeks.org/python-3-basics/">
            Python 3 basics</a></li>
    </ul>
    <h1 style="text-align: center">Thank You</h1>
</body>
</html>
```

Output:



GeeksForGeeks

Table of Content

C++

C++ is an object-oriented programming language that is widely used for competitive programming, Data structure, and Algorithms, developing operating Systems, etc.

Some of its topic are given below:-

- Basics
- Difference Between C Structures and C++ Structures
- Comparison of Inheritance in C++ and Java
- Comparison of static keyword in C++ and Java
- Comparison of Exception Handling in C++ and Java
- Basic Input / Output in C++
- Write a C program that won't compile in C++
- References in C++

Java

Java has been one amongst the foremost standard programming languages for several years. When compared with C++, Java codes are typically additional reparable as a result of Java doesn't enable several things which can cause bad/inefficient programming if used incorrectly.For instance, non-primitives are references in Java.

HTML Tags:

Head Tag

The head tag <head> contains all the elements describing the document.

Title Tag

The title tag <title> specifies the HTML page title, which is shown in the browser's title bar.

Body Tag

The body tag <body> is where you insert your web page's content.

Paragraph Tag

A paragraph tag <p> is used to define a paragraph on a web page.

Heading Tag

The HTML heading tag is used to define the heading of the HTML document. The <h1> tag defines the most important tag, and <h6> defines the least.

Let's practice using these tags and create a web page with them:

```
<html>
<head>
<title>My First Page</title>
</head>
<body>
        <p>Welcome to html</p>
        <h1>This is heading 1</h1>
        <h2>This is heading 2</h2>
        <h3>This is heading 3</h3>
        <h4>This is heading 4</h4>
        <h5>This is heading 5</h5>
</body>
</html>
```

HTML Elements:

An **HTML Element** consists of a **start tag**, **content**, and an **end tag**, which together define the element's structure and functionality. Elements are the basic building blocks of a webpage and can represent different types of content, such as text, links, images, or headings.

For example, the element for paragraphs includes opening and closing tags with text content in between.

Syntax:

<tagname >Your Contents... **</tagname>**

HTML Element Code Example:

In this example is a starting tag, is an ending tag and it contains some content between the tags, which form an element

```
<!-- HTML code to illustrate HTML elements -->
<!DOCTYPE html>
<html>
<head>
   <title>HTML Elements</title>
</head>
<body>
   <p>Welcome to GeeksforGeeks!</p>
</body>
</html>
```

HTML attributes:

HTML Attributes are special words **used within the opening tag of an HTML element**. They provide additional information about HTML elements. HTML attributes are used to configure and adjust the element's behavior, appearance, or functionality in a variety of ways. Each attribute has a name and a value, formatted as **name="value"**. Attributes tell the browser how to render the element or how it should behave during user interactions.

Syntax:

<tagname attribute_name = "attribute_value"> content… </tagname>

This HTML code demonstrates the use of the **src attribute** within the <img> tag to display an image.

```
<!DOCTYPE html>
<html>

<head>
   <title>HTML img src Attribute</title>
</head>

<body>
   <img src=
"https://media.geeksforgeeks.org/wp-content/cdn-uploads/Geek_logi_-low_res.png">
</body>

</html>
```

Components of Attribute

An HTML attribute consists of two primary components:

1. attribute_name: This is the name of the attribute, which specifies what kind of additional information or property you are defining for the element. Common attribute names include href, src, class, id, etc.

2. attribute_value: The value is assigned to the attribute to define the specific setting or behavior. It is always placed in quotes.

CSS Preview:

Webflow's Style panel gives you a visual interface to design with the same CSS properties used across the web. With CSS preview, you can watch the code write itself as you make style changes on your site.

You can access CSS preview from the **Style panel** by clicking the "**more options**" dots and choosing **CSS preview**. You can also open CSS preview via the top bar of the Designer by clicking the **Webflow logo** and choosing **CSS preview** from the hamburger menu that appears on hover.

Online CSS Editor allows you to edit an entire CSS file at once with a dynamic preview shown below. The preview will show the exact line you're editing, and it will update as you type. If you want to show the entire file then move focus to the start or the end of the CSS text. When you have finished editing your CSS, be sure to validate the code with CSS Validator.

History of HTML:

The history of HTML (HyperText Markup Language) began in 1989 when Tim Berners-Lee proposed a hypertext system for the internet. The first version of HTML was released in 1993.

Versions of HTML

HTML 1.0: The first version of HTML, released in 1993, included tags for structuring web pages.

HTML 2.0: Published in 1995, this version included new features in addition to those of HTML 1.0.

HTML 3.0: Introduced by Dave Raggett in 1997, this version included new features and improved capabilities for webmasters.

HTML 4.0: Released in 1999, this version was widely used.

HTML 5.0: Released in 2014, this version is an extension of HTML 4.01.

HTML stands for **HyperText Markup Language**. It is the standard language used to create and structure content on the web.

- HTML is a markup language, not a programming language, meaning it annotates text to define how it is structured and displayed by web browsers.
- It forms the building blocks of all websites and is complemented by CSS for style and JavaScript for interactivity.

In a nutshell, HTML is all about **organizing and displaying information** on a webpage. We can think of it as the **bones** or **structure** of a webpage.

Basic HTML Code Example

```
<!DOCTYPE html>
<html>

<head>
  <title>My First Webpage</title>
</head>

<body>
  <h1>Welcome to My Webpage</h1>
  <p>This is my first paragraph of text!</p>
</body>

</html>
```

Difference between Old HTML and HTML5:

HTML stands for **Hyper Text Markup Language**. It is used to design web pages using a markup language. HTML is a combination of Hypertext and Markup language. Hypertext defines the link between the web pages. A markup language is used to define the text document within the tag which defines the structure of web pages. This language is used to annotate (at the note for the computer) text so that a machine can understand it and manipulate text accordingly.

Features of HTML:

- It allows the creation of hyperlinks with the <a> tag, connecting different web pages.
- Uses tags to mark elements and content, such as headings (<h1> to <h6>).
- It supports embedding images (<img>), videos (<video>), and audio (<audio>) for multimedia content.
- It provides form elements like <form>, <input>, and <button> for user input and data submission.
- Semantic tags like <article>, <section>, and <nav> for better document structure and accessibility.

HTML 5 is the fifth and current version of HTML. It has improved the markup available for documents and has introduced application programming interfaces(API) and Document Object Model(DOM). It has introduced various new features like drag and drop, geo-location services

Features of HTML5:

- Introduced new semantic elements like <header>, <footer>, <section>, and <article> for improved structure.
- Enhances multimedia capabilities with native support for audio and video elements.
- Provides the localStorage API, allowing web applications to store data locally on the user's device.
- Enables websites to access a user's geographical location.
- Uses SQL database to store data offline.

HTML	HTML5
It didn't support audio and video without the use of flash player support.	It supports audio and video controls with the use of <audio> and <video> tags.
It uses cookies to store temporary data.	It uses SQL databases and application cache to store offline data.
Does not allow JavaScript to run in the browser.	Allows JavaScript to run in the background. This is possible due to JS Web worker API in HTML5.
Vector graphics are possible in HTML with the help of various technologies such as VML, Silver-light, Flash, etc.	Vector graphics are additionally an integral part of HTML5 like SVG and Canvas.
It does not allow drag and drop effects.	It allows drag and drop effects.
Not possible to draw shapes like circle, rectangle, triangle etc.	HTML5 allows to draw shapes like circle, rectangle, triangle etc.
It works with all old browsers.	It supported by all new browser like Firefox, Mozilla, Chrome, Safari, etc.
<HTML>,<Body> , and <Head> tags are mandatory while writing a HTML code.	These tags can be omitted while writing HTML code.

How to check your HTML Code:

You can check your HTML code using a browser's developer tools, an online HTML validator, or an online HTML tester.

Using a browser's developer tools

1. Right-click on any part of the page
2. Select Inspect
3. In the Elements tab, you can see the HTML code and CSS used to create the page
   Using an online HTML validator

- **W3C Markup Validation Service**: A free tool that checks HTML code for errors and ensures it follows W3C rules
- **HTML Tidy**: A web browser application that fixes invalid HTML code and improves the layout and formatting
- **Tiiny.host's HTML Tester**: An updated tester that provides accurate results
  Using an online HTML tester
- **LambdaTest's HTML Tester**: A free tool that processes HTML code and shows a live preview of how it will appear in a browser
- **CodePen**: An online coding platform where you can run HTML code
- **JSFiddle**: An online coding platform where you can run HTML code