Introduction

What is HTML & Why HTML?

HTML stands for Hyper Text Markup Language
It is not a programming language
HTML helps us to create the main structure of a webpage
With the help of markup tag we can display text, image, video etc. on the
webpage

History of HTML

Tim Berners-Lee created HTML in 1991

Tag, content, attribute, element

What is Tag & its syntax?

Tag is the heart of html; HTML document is mainly built with tag. Tag Syntax: <keyword>; Inside the angular brackets we need to write predefined keywords to use html tag. Small / capital letters both can be used when writing html tag; however small letter is prefered.

Example: This is a paragraph

In the example, is an opening tag, is a closing tag and This is a paragraph is called content

In between the starting tag to end tag we have content Everything from starting tag to end tag is called Element

What are the types of Tag?

There are 2 types of html tag:

- 1. Pair/container tag
- 2. empty tag

Pair tag has starting and ending; However, empty tag has no closing tag.

Some of the example of pair tag and empty tags are given below:

```
<!-- Some examples of Pair/Container Tag -->
<html>
  . . .
</html>
<head>
  . . .
</head>
<body>
</body>
...
<h1>...</h1>
<!-- Some examples of Empty Tag -->
<br />
<hr />
<img />
<input />
. . .
```

What is attribute & how to use attribute?

Attribute helps tag to extend its capabilities In the following example, is tag; src, height, width are the attributes Attribute Syntax: attributeName="attributeValue"

Structure of an HTML document

In the following example a basic structure of a HTML document

HTML basic structure

</body>

HTML document has 2 important parts: head, body

<!DOCTYPE html>
<html>
<head>
 TITLE, META TAG ETC.

</head>
<body>
 CONTENT OF THE WEBPAGE

Always use <!DOCTYPE html> to tell the browser what type of document to expect; remember it is not a tag, just a declaration

Every HTML document must have https://www.ntml and Inside https://www.ntml and Inside https://www.ntml and Inside https://www.ntml and Inside https://www.ntml and <a href="https://www.ntml and htt

Inside head tag we use meta tag, set title etc.

Inside body tag we write everything that we want to display on web page.

Environment setup

Editor: VScode / Notepad++ / Sublime Browser: Google Chrome / Firefox Version Control: GitHub

First HTML Program

Example of a basic webpage

Here, lang attribute refers to the language; attribute value en refers to english Inside <head> tag we have set title of the webpage using <title> tag Inside <body> tag we are displaying some text. here
 tag creates a line break

Inside Head Tag

Example:

```
<head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
```

```
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<meta name="description" content="Free complete html tutorials 2021" />
<meta name="keywords" content="HTML, html, html5" />
<meta name="author" content="Anisul Islam" />
link rel="stylesheet" href="style.css" />
<style>
    body {
        background-color: aquamarine;
      }
      </style>
      <script src="index.js"></script>
      <title>Document</title>
</head>
```

Inside <head> tag we can define metadata(document title, character set, links, scripts, styles), other information that will not be visible to the users meta tag provides information to the browsers and search engines about the webpage

- <meta charset="UTF-8" /> defines the character encoding for the HTML document.
- <meta http-equiv="X-UA-Compatible" content="IE=edge" /> for supporting older version of IE.
- <meta name="viewport" content="width=device-width, initial-scale=1.0" /> defines that webpage width is related to devices width and initial zoom level is 1.
- css file to html. Inside of href attribute we give the css file name.
- <style> ... </style> we can use <style> ... </style> tag directly inside the head tag for designing html elements.
- <script src="index.js"></script> generally connects js file to html. we can also use<script> ... </script> tag directly inside the body tag.

Debugging

After writing your html code you can check the validity on this website https://validator.w3.org/

Typography

Headings, Paragraph, Horizontal rule

Example

```
cbody>
    <!--6 heading tags-->
    <h1>This is a h1</h1>
    <h2>This is a h2</h2>
```

```
<h3>This is a h3</h3>
<h4>This is a h4</h4>
<h5>This is a h5</h5>
<h6>This is a h6</h6>

<!--to create a paragrap use p tag-->
This is a paragraph. I am writing a paragraph here.
<!--to create a horizontal rule use hr tag-->
<hr size="2" />
</body>
```

There are 6 HTML heading levels. <a>h1> is the largest level and <a>h6> is the smallest level. by default, heading tags and paragraph tag create new line (block level element)

<hr size="2"/> here <hr/> is an empty tag responsible for creating horizontal rule and size attribute set the heights of the horizontal rule in pixel

Styling html elements

```
<!DOCTYPE html>
<html lang="en">
 <head>
   <meta charset="UTF-8" />
   <meta http-equiv="X-UA-Compatible" content="IE=edge" />
   <meta name="viewport" content="width=device-width, initial-scale=1.0" />
   <style>
     body {
       background-color: #222;
     }
     h1 {
       /* color: white; */
       /* color: #fff; */
       color: rgb(255, 255, 255);
       text-align: center;
     }
   </style>
   <title>Document</title>
 </head>
   <h1>India is my motherland. I miss India a lot.</h1>
   I also miss my family
 </body>
</html>
```

From the example:

you can see that for styling html elements inside the html documents we can use style tag or style attribute

style attribute in HTML: style="property: value; property: value..." (from the example you can see that tag has style attribute where paragraph color is set as green)

style tag in HTML: <style> ... </style> tag must be used inside the head tag as shown in this example. In this example you can see that <h1> and <body> tag has styling property like color, text-align, background-color.

To set color of an html element we can use color name / hexadecimal color code / rgb color / hsl code as a value of color property as shown in this example for h1 tag.

some tools for selecting color

```
-> htmlcolorcodes:
->https://htmlcolorcodes.com/
-> imagecolorpicker:
-> https://imagecolorpicker.com/
-> colorhunt:
-> https://colorhunt.co/
-> colorzilla:https://chrome.google.com/webstore/detail/colorzilla/bhlhnicpbhignbdhedgjhgdocnmhomnp?hl=en
```

Text Formatting tags

Example

```
<del>This is a deleted text</del> <br />
<!-- sup (superscript), sub(subscript) -->
H<sub>2</sub>0 <br />
(a+b)<sup>2</sup> <br />
<!-- pre tag helps to show text as you want to formatted -->

    This is a
        life changing documentation
        Read,learn, enjoy
        ofcourse share with others

</body>
```

=> How to write bangla in html documentation

Entity, comment

Comment syntax example

<!-- This is a comment -->

Entity syntax example

© < > > ♥

First example shows the example of a html comment second example shows an example of entity

To create an entity first write & then give a keyword and then give a semicolon © will create copyright symbol

&It; will create less than symbol

> will create greater than symbol

♥ will create hearts symbol

How to add symbol, icons, and emoji

Unicode character website: https://unicode-table.com/en/ W3School emoji link: https://www.w3schools.com/charsets/ref_emoji.asp iconfinder icon link: https://www.iconfinder.com/

Font Style

Some common style property such as font-size, font-family, color, background-color, font-weight, font-style for styling text

In the following example, we are setting the h1's background color as green, font color as white, font size 5rem or 80px and font family is fantasy

List, Link, Media:

HTML List

Mainly there are 2 types of list available in html: ordered list, unordered list

ol (ordered list) tag is used for creating ordered list

ul (unordered list) tag is used for creating unordered list

li (list) tag is a common tag for both ordered and unordered list example

```
</body>
```

HTML Link

link tag <a> ... is used for visiting other pages or websites.

Inside <a> link href="url" attribute is used where we give the address where we want to visit based on click

Inside <a> link target="_blank" attribute is used to open a new tab for the visited page/site

As shown in the following example we can send email by clicking the link for that we have to use href="mailto:EMAIL_ADDRESS_HERE"

As shown in the following example we can call somone by clicking the link for that we have to use href="tel:PHONE_NUMBER_HERE"

HTML Image

For adding image on webpage we use tag as shown in the following **example.**

some common attribute for tag: src, alt, height, width, title syntax for adding image: src attribute needs the image address alt attribute shows some text about image if image is not found title attribute shows some tooltip text when we hover over the image height and width attribute helps us to set the height and width of image we can use tag inside of <a> tag so that when we

click an image it will take us to a link.

iframe

iframe helps us to display any website, youtube video or map inside our own webpage iframe Example

```
<iframe
width="560"
height="315"
src="https://www.youtube.com/embed/oN8aS_HW4k8"
title="YouTube video player"
allowfullscreen
>
</iframe>
```

How to add audio in webpage:

<audio> ... </audio> tag helps us to add audio in our webpage

<audio> ... </audio> tag has some attributes such as controls autoplay muted height width

audio example shows how to add aduio source by using <source /> tag

Inside <source /> tag we must define the src="" src address/name and also the type="" of audio

as the example shows there are 2 <source /> tag is used if the first format is not supported by the browser then second one will work. if first and second both is not supported by the browser then Your browser does not support the audio element. will work.

How to add video in webpage

```
<video> ... </video> tag helps us to add video in our webpage <video> ... </video> tag has some attributes such as controls auto play muted height width
```

video Example:

Table, Form

HTML Basic Table

- tag is used to create table.
- <thead> tag is used to create table head.
- tag is used to create table body.
- <tfoot> tag is used to create table footer.
- tag is used to create table row.
- tag is used to create table data cell.
- tag is used to create table header cell.
- <caption> tag is used to create table caption.

Follow the image to understand td, tr,

```
101
  Anis
  3.92
 102
  Rabeya
  3.45
 103
  Rasel
  3.45
 </body>.
```

HTML Table rowspan, colspan

rowspan="N" attribute is used to tell that a cell will expand N number of rows.

colspan="N" attribute is used to tell that a cell will expand N number of columns. An example of rowspan is given below:

```
<!DOCTYPE html>
<html lang="en">
 <head>
   <title>Document</title>
   <style>
     table,
     th,
     td {
      border: 1px solid;
      border-collapse: collapse;
   </style>
 </head>
 <body>
   <caption>
       Student Table
     </caption>
     <thead>
       ID
        Name
        GPA
```

```
</thead>
   101
    Anis
    3.92
   102
    Rabeya
    3.45
   103
    Rasel
   </body>
</html>
-> An example of rowspan is given
helow:
<!DOCTYPE html>
```

```
<html lang="en">
 <head>
  <title>Document</title>
  <style>
    table,
    th,
    td {
     border: 1px solid;
     border-collapse: collapse;
  </style>
 </head>
 <body>
  <caption>
     Student Table
    </caption>
    <thead>
     >
       ID
       Name
       Phone
     </thead>
    101
       Anis
       017
       018
     102
       Rabeya
       019
       015
     </body>
</html>
-> An example of colspan and rowspan
is given below:
<!DOCTYPE html>
<html lang="en">
 <head>
```

```
<title>Document</title>
  <style>
   table,
   th,
   td {
    border: 1px solid;
    border-collapse: collapse;
   }
  </style>
 </head>
 <body>
  <caption>
    Student Table
   </caption>
   <thead>
    ID
     Name
     GPA
     Phone
    </thead>
   101
     Anis
     3.45
     017
     018
    102
     Rabeya
     019
     015
    102
     Rabeya
     3.95
     019
     015
    </body>
</html>
```

Accessible table

An example of accessible table using scope is given below:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <title>Document</title>
  <style>
    table,
    th,
    td {
     border: 1px solid;
     border-collapse: collapse;
    }
  </style>
 </head>
 <body>
  <caption>
     Student Table
    </caption>
    <thead>
     Student ID
      Name
      Age
     </thead>
    >
      101
      Anis
      31
     102
      Rabeya
      30
     </body>
</html>
An example of table using <colgroup> & <col> tags is given below:
<!DOCTYPE html>
<html lang="en">
```

```
<head>
  <title>Document</title>
  <style>
   table,
   th,
   td {
    border: 1px solid;
    border-collapse: collapse;
  </style>
 </head>
 <body>
  <caption>
    Student Table
   </caption>
   <colgroup>
    <col span="2" style="background-color: tomato" />
   <thead>
    Student ID
      Name
      Age
    </thead>
   101
      Anis
      31
    102
      Rabeya
      30
    </body>
</html>
```

HTML Form

HTML <form> Elements:

<form> element is used to create a html form. form help us to collect user data.

<input /> element is the most used form element.

- <label> element is used for labelling form elements. It helps the form elements accessible byguiding the screen reader. <label for="name"> element has for="name" element has for="name"> element has for="name" element is id value.
- <select> helps to create dropdown menu.
- <option> helps to create options for dropdown menu.
- <textarea> helps to create multiple lines text input field.
- <fieldset>
- <legend>
- <output>
- <datalist> & list="" attributes

Form attributes:

- <form action="/home" method="post" autocomplete="on">-> enable the
 autocomplete option.
- <form action="/home" method="post" autocomplete="on" enctype="text/plain">->
 sends data without encoding.

name="" attribute is used to set the name of any element which is essential for getting data in server side especially.

<input /> element types

type="" attribute can change the visualization of <input /> element.

- <input type="text"/> creates a single line text input field.
- <input type="email"/> creates a single line email input field.
- <input type="password"/> creates a single line password input field.
- <input type="number"/> creates a single line number input field.
- <input type="checkbox"/> creates a checkbox input field.
- <input type="radio"/> creates a radio button input field.

- <input type="button"/> creates a clikable button.
- <input type="submit"/> creates a submit button for form.
- <input type="color"/> creates a color picker input field.
- <input type="date"/> creates a date picker.
- <input type="month"/> creates a month picker.
- <input type="time"/> creates a time picker.
- <input type="week"/> creates a week picker.
- <input type="image"/> creates a image selector.
- <input type="file"/> creates a file selector.
- <input type="url"/> creates a url selector.
- <input type="tel"/> creates a input field for telephone number.
- <input type="search"/> is used for searching.
- <input type="hidden"/> creates a input field which is not visible to user.
- <input type="range" min="" max=""/> creates a range by setting min and max value, default range is 0 to 100.

Input attributes:

value="" attribute is used to set initial value for input field.

readonly attribute is used to set an input field as readonly.

checked attribute is used to set an input field already checked.

disabled attribute is used to make a input field disable.

size="" attribute is used to set the number of characters for an input field.

maxlength="" attribute is used to set the maximum number of characters for an input field.

max="" attribute is used to set the maximum input value for an input field.

min="" attribute is used to set the minimum input value for an input field.

pattern="" attribute is used to set a regular expression for validating an input field.

placeholder="" attribute is used to give a hint to the users.

required attribute specifies that an input element must be filled before submitting the form.

step="" attribute specifies steps for input field.

autofocus attribute makes an input field automatically focus when the page is loaded.

height="" width="" attribute is used to set input elements height and width.

list="id_of_datalist" attribute is used to set input elements height and width.

A form example is given below:

```
<form action="/" method="post">
   <div>
      <datalist id="usernames">
        <option value="anis"></option>
        <option value="linkon"></option>
        <option value="ridoy"></option>
      </datalist>
      <label for="username">Username: </label>
      <input</pre>
       type="text"
       id="username"
       name="username"
       size="30"
       autofocus
       reauired
       list="usernames"
     />
   </div>
   <br />
   <div>
      <label for="password">Password: </label>
      <input type="password" id="password" name="password" required />
   </div>
   <br />
   <div>
      <label for="email">Email: </label>
      <input type="email" id="email" name="email" autocomplete />
   </div>
```

```
<br />
<div>
  <label for="phone">phone: </label>
  <input type="tel" id="phone" name="phone" />
<br />
<div>
  <label for="dob">Date of birth: </label>
  <input type="date" id="dob" name="dob" />
</div>
<br />
<div>
  <label for="month">favourite Month: </label>
  <input type="month" id="month" name="month" />
</div>
<br />
<div>
  <label for="random">Select a random number from 1 to 5: </label>
  <input</pre>
   type="number"
    id="random"
    name="random"
   min="1"
   max="5"
    value="3"
  />
</div>
<br />
<div>
  <label for="profile">Select your image: </label>
  <input type="image" id="profile" name="profile" />
</div>
<br />
<div>
  <label for="file">Select a file: </label>
  <input type="file" id="file" name="file" />
</div>
<br />
<div>
  <label for="color">Select favourite color: </label>
  <input type="color" id="color" name="color" />
</div>
<br />
  <label for="website">Paste your website's url: </label>
  <input type="url" id="website" name="website" />
</div>
<!-- checkbox disable-->
<br />
<div>
  Religion:
  <div>
    <input type="checkbox" id="muslim" checked />
```

```
<label for="muslim">muslim</label>
    </div>
    <div>
      <input type="checkbox" id="hindu" />
      <label for="hindu">hindu</label>
    </div>
    <div>
      <input type="checkbox" id="other" disabled />
      <label for="other">other</label>
    </div>
 </div>
 <!-- radiobutton -->
 <br />
 <div>
    Gender:
    <div>
      <input type="radio" id="male" name="gender" />
      <label for="male">male</label>
    </div>
    <div>
      <input type="radio" id="female" name="gender" />
      <label for="female">female</label>
    </div>
    <div>
      <input type="radio" id="other" name="gender" />
      <label for="other">other</label>
    </div>
 </div>
 <!-- dropdown menu -->
 <div>
    <label for="department">Department: </label>
    <select name="department" id="department">
      <option value="cse">CSE</option>
      <option value="eee">EEE</option>
      <option value="llb">LLB</option>
    </select>
 </div>
 <!-- texture -->
 <br />
 <div>
    <label for="message">Message: </label> <br />
    <textarea name="" id="message" cols="30" rows="10"></textarea>
 <!-- button -->
 <br />
 <div>
    <button type="submit">Save Data/button>
    <button type="reset">Clear</button>
 </div>
</form>
```

HTML5 Sematic Elements

div - non semantic tag div can help to divide screen

Introduction to HTML5

HTML5 developed in 2014

HTML5'S Objectives

adding more semantic tags more form types improve accessibility improved storage facilities improved graphics & media remove few things

HTML5 Semantic elements: <header> <nav> <main> <article> <aside> <section> <footer> <figure> <figcaption> <details> <summary> <mark> <time>

sematic tags vs non semantic tags

semantic tags are meaningful tags for human, search engine. example: <form> <h1> etc.

non-semantic tags are not meaningful tags for human, search engine. example: <div> etc.

sematic tags vs non semantic tags example is given below:

see the semantic image:

Details and figure elements:

- <details> elements have tewo states: closed, open
- <summary> a short summary of details is provided by summary element
- <figure> can have diagram, photos inside of it.
- <figcaption> can set the figure caption.

An example of details, summary elements are given below:

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

```
<title>Document</title>
   <style>
     details[open] > summary {
       background-color: aqua;
   </style>
 </head>
 <body>
   <details>
     <summary>Maidul Islam
     My Name is Maidul Islam. I am 31 years old. I have done my masters in
     Software, Web & cloud
   </details>
   <!-- no need to understand this part cause I just tested using javascript
here -->
   <!-- <script>
     const details = document.querySelector("details");
     details.addEventListener("toggle", () => {
       if (details.open) {
         console.log("open");
       } else {
         console.log("close");
       }
     });
   </script> -->
   <figure>
      <img src="./images/list.png" alt="list" />
      <figcaption>fig1: list image</figcaption>
   </figure>
 </body>
</html>
```

Web accessibility:

what is web accessibility?

making website supportive for disable people and search engine

How to check web accessibility?

we can use some tools like axe DevTools - Web Accessibility Testing

Tips for making website accessible:

Use Semantic elements over non semantic elements. In the following example button is more accessible than div for making a button. Semantic elements help the screen readers.

<div>Click me</div>
<button>Click me</button>

Use Heading tags in order

use one h1 element in a webpage keep sequence when using: h1 -> h2 -> h3 ... (follow top-down order) Use alt attribute

use alt attribute for element

alt attribute provides more info to the blind people low bandwidth might not render the image so the alt will help here alt attributes helps technologies like search engines title attribute can be used when we hover over image to get extra

information

Contrast ratio checker

use contrast ratio checker for foreground and background color:

https://webaim.org/resources/contrastchecker/

Declare the languages

<html lang="en">

Meaningful Link txt

make link text descriptive, understandable and clear Visit website

Form related matterss

use label and bind input elements with label by using id and for value same. example is given below:

Email: <input type="email" id="email" />

Graphics

progress bar and svg <progress min="0" max="100" value="70"> </progress> you will learn more about svg and canvas in CSS and Javascript playlist

Projects:

webdesign porichiti and html