HTML

Shristi Technology Labs

Contents

Introduction to HTML

- Is a markup language understood by web browsers.
- Primarily designed for desired look and feel.
- Easy to learn.
- Structure of web pages
- It is the “mother tongue” of the browsers
- Documents are described with HTML tags
- Uses fixed set of predefined tags
- Describes appearance as well as structure of the data

Features of HTML5

- New generation HTML
- powerful standard for the developing advanced web pages
- Support by major browsers(latest versions)
- New features based on HTML, CSS, DOM, and Javascript
- Reduces the need for external plugins (like Flash)
- Better error handling
- More markup to replace scripting
- HTML5 should be device independent

HTML Elements/Tags

- Elements give the structure of HTML Documents
- All elements have the same format - begins with **“<”** end with **“>”** .
- Elements represent how to be present data in the web browser
  - ** indicates bold , <table> indicates table creation**
- The tags can be
  - Empty ***
***
  - With body content *** Hello World***
  - With Attributes ***<input type = “text”>***
  - With body content & attributes

```
<form name="form1">
    <input type="text" name="username">
</form>
```

HTML File Structure

- **<!Doctype html>** specifies that this is a HTML5 document
- The root tag is **<html>**
- The file can be saved as anyname.html or anyname.htm
- It has two child tags as ***<head> and <body>***

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Home Page</title>
</head>
<body>

</body>
</html>
```

<head> and <body> tag

<head> tag

- Defines the header part oh html
- Has child tags as ***<title>, <meta> , <style>, <script>*** ,**<link>**

title - specifies the title for the webpage

meta - specifies the content type

link - used to call an external css page

style - specifies that css is written inside this tag

script - specifies that javascript is written inside the tag

<body>

- All child tags are added here
- Specifies the data

Child tags of <head>

<script>

- is used to define a client-side script, like JavaScript.
- Can either contains scripting statements or can point to an external script file through **src** attribute
- Used for form validation, & dynamic changes of content.

<meta>

- Used to specify content type, character set and author details
- Used by search engines

<style>

- Used for adding styling to the page

<link>

- Used to add external stylesheet to this page

HTML File Structure

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Home Page</title>
    <link rel="stylesheet" href="styles/extstyle.css">
    <style type="text/css">
        /* css code goes here*/
    </style>
    <script src = "course.js"></script>
    <script>
        //javascript code goes here
    </script>
</head>
<body>

</body>
</html>
```

HTML Tags

- Basic Formatting Tags
- Image <img> tag
- Anchor <a> Tag
- Table
- Form Tags

Basic Formatting Tags

- **This will be in bold**
- ** This tag is similar to bold**
- **** *This text will be italised* ****
- **<u>** This text will be underlined **</u>**
- Heading tags from **<h1> to <h6>**
- **<hr/>** - used for Horizontal line
- **
** - used to give a break and move onto next line
- ** ** This is used for paragraphs ** **
- **<pre>** maintains the content written as such -formatted text **</pre>**

Example

```
<!DOCTYPE html>
<html>
<head>
    <title>My Page</title>
</head>
<body>
    Hello<br>
    <i>welcome to html</i>

    <h1>welcome to html</h1>
    <h2>welcome to html</h2>
    <h3>welcome to html</h3>
    <h4>welcome to html</h4>
    <h5>welcome to html</h5>
    <h6>welcome to html</h6>
    <br/>
    <strong>Learning HTML is easy </strong>
    <pre>
     11, R.K Nagar
        Chennai
        TN
    </pre>
</body>
</html>
```

<img> tag

- Images are defined with the <img> tag
- Has attributes as
  - src(source)
  - alt (alternative text)
  - width
  - height

```
<img src="panda1.jpg" height="300px" width="300px" alt="panda" />
```

Anchor tag

- To open a link or a move to a different webpage use **<a>** tag
- The website address is specified using **href** attribute**.**
- Use **target="_blank"** to open the url in a new window

```
<a href="http://www.shristitechlabs.com">View Shristitechlabs</a>
```

- To propagate in the same page also **<a>** tag is used

eg:

On the top of the page write ***< a name = "top">***

On the bottom of the page use ***< a href="#top>Goto Top***

When you click **Goto Top** it will take to the top of the page

Example: <a> tag

```
<body>

<a name="top"></a>
Hello Welcome to HTML
 <a href="#bottom">GO DOWN</a>

 ----
 --
 Some text here

--

---




 <a name="bottom"></a>
 <a href="#top">GOTo Top</a>

</body>
```

List – Ordered

- uses ***<ol>*** tag
- adds the list value using ***<li>*** tag
- Has attribute -
  - start(specifies start number)
  - type(number or alphabet)

```
<ol  type="1" start="10">
  <li> Apple </li>
  <li> Orange </li>
  <li> Mango </li>
  <li> Grapes </li>
</ol>
```

List – Unordered

- uses ***<ul>*** tag
- adds the list value using ***<li>*** tag
- Has attribute -
  - type(square/disc/circle)

```
<ul type="square" >
  <li> Sony </li>
  <li> Samsung</li>
  <li> Nokia </li>
  <li> Moto G </li>
 </ul>
```

List – Description List

Description List:<dl>

Description term:<dt> - name or term

Description data:<dd> - can be paragraph or list

```
<dl>
 <dt>Chapter 1</dt>
    <dd>Overview</dd>
    <dd>Architecture</dd>
    <dd>Advantages</dd>
 <dt>Chapter 2</dt>
    <dd>
        <p> Lorem ipsum dolor sit amet, consectetur adipisicing elit. Dolorem officia
        dicta reiciendis eveniet autem eius odio odit obcaecati ducimus accusamus
        tempora, tenetur a, quas rem nemo optio commodi laudantium repudiandae.
        </p>
    </dd>
</dl>
```

<table> tag

- **<table>** is used to display the tabular data as rows and columns.
- Three different elements are used to insert data in the table
- **<tr>** - represents **table row**
- **<td>** - represents **table data** each cell value of the table.
- **<th> -** represents table head
- **<table>** has attributes like border ,cellpadding , cellspacing
- **<td>** has attributes like
  - **colspan** to merge one or more columns
  - **rowspan** to merge one or more rows

Example

```
<table border="1" >
    <tr>
        <th>Name</th>
        <th>Subject</th>
        <th>Marks</th>
    </tr>
    <tr>
        <td>Ram</td>
        <td rowspan="2">Maths</td>
        <td>100</td>
    </tr>
    <tr>
        <td>Tom</td>
        <td>100</td>
    </tr>
    <tr>
        <td>Shyam</td>
        <td >Maths</td>
        <td>100</td>
    </tr>
    <tr>
        <td colspan="3">Total :300</td>

    </tr>
</table>
```

<fieldset> and <legend>

- Used to differentiate the tables with names

```
<fieldset>
    <legend align="right">Student Details</legend>
    <table border="1" >
        <tr>
            <th>Name</th>
            <th>Subject</th>
            <th>MArks</th>
        </tr>
        <tr>
            <td>Ram</td>
            <td >Maths</td>
            <td>100</td>
        </tr>
        <tr>
            <td>Shyam</td>
            <td >Maths</td>
            <td>100</td>
        </tr>
    </table>
</fieldset>
```

Block and inline elements

- A block element is an element that takes up the full width available.

Example for block elements

  – <h1>, <p>, <li>,

Example of inline elements

  – , <a>

```
<div> This is a demo </div> Welcome
<h1>This is a heading</h1>Hello

<span>Inside Span</span> Outside
```

Form Elements

- HTML Forms are used to collect user input.
- **<form>** element defines an HTML form

Form elements are :

- Textfield
- Password
- Radio
- Checkbox
- Select(dropdown)
- Textarea
- Submit
- Reset
- Button

Form tag

- **<form>** is used for creating form tag
- All form elements MUST be inside form tag
- Has attributes like
  - **name** used while validating a form
  - **method** specifies whether **get/post** is used to carry form values
  - **action** specifies the address that gets called on clicking submit

```
<form action="demo1.html" method="get" name="form1">

    Name<input type = "text" name = "n1" />

    Password<input type="password" name="n2" />

        <input type="submit" value="CLICK HERE">
        <input type="reset" value="CLEAR">
    </form>
```

Text Field

- <input> is used for one line input field for text input
- Has attributes like
  - **type** specifies the field type
  - **name** is used to retrieve value of form field in the backend(servlet)
  - **id** is used to retrieve value of form field in javascript
  - **value** specifies the default value
  - **placeholder** is seen in the background as text

```
Name<input type="text" name="uname" id="username" value = "Ram" placeholder="Enter name">
```

Password

- <input tag is used for one line input field for text input
- Has attributes like
  - **type** specifies the field type
  - **name** is used to retrieve value of form field in the backend (servlet)
  - **id** is used to retrieve value of form field in javascript
  - **value** specifies the default value
  - **placeholder** is seen in the background as text

```
Password<input type="password" name="pass" id="password" placeholder="enter password">
```

Radio Button

- Allows user to select ONE in a limited number of choice
- Has attributes like
  - **type** specifies the field type
  - **name** is used to retrieve value in the backend(has to be same name)
  - **id** is used to retrieve value of form field in javascript
  - **value** specifies the value of the radio button

```
Gender<input type="radio" name="r1" value="Male" checked="checked"/>Male
      <input type="radio" name="r1" value="female"/>Female<br>
```

Checkbox

- Allows the user to select ZERO or MORE options of a limited number of choices.
- Has attributes like
  - **type** specifies the field type
  - **name** is used to retrieve value in the backend(has to be same name)
  - **id** is used to retrieve value of form field in javascript
  - **value** specifies the value of the checkbox

```
Hobbies
<input type="checkbox" name="c1" value="Sports"/>Sports
<input type="checkbox" name="c1" value="Dance"/>Dance
<input type="checkbox" name="c1" value="Music"/>Music
<input type="checkbox" name="c1" value="Reading"/>Reading
```

Dropdown

- **<select>** tag defines a **drop-down** list
- Has a child tag <option> which specifies the list
- **<select>** has attributes like
  - **name** is used to retrieve value in the backend
  - **multiple** allows to select multiple values
  - **size** specifies the number of elements that will be shown

```
Select Language
<select name="lan" multiple="multiple"  size="3">
    <option value="Java">Java</option>
    <option value="JSP">JSP</option>
    <option value="Spring">Spring</option>
    <option value="Hibernate">Hibernate
    </select>
```

Textarea

- **<textarea>** is used for multi-line input
- Has attributes like **rows** and **cols**

```
<textarea rows="10" cols="10"></textarea>
```

Submit/Reset button

- **<input type="submit">** defines a button for **submitting** a form to a form-handler.
- Form-handler is a server page with a script for processing input data.
- The form-handler is specified in the form's **action** attribute
- **<input type="reset">** will clear all the values entered in the form

```
<input type="submit" value="Register">
<input type="reset" value="Reset">
```

Button

- **<button>** is used for creating button
- Can be used when you want to handle events using javascript
- Will not submit the values to the server page.

```
<button>Add</button>
```

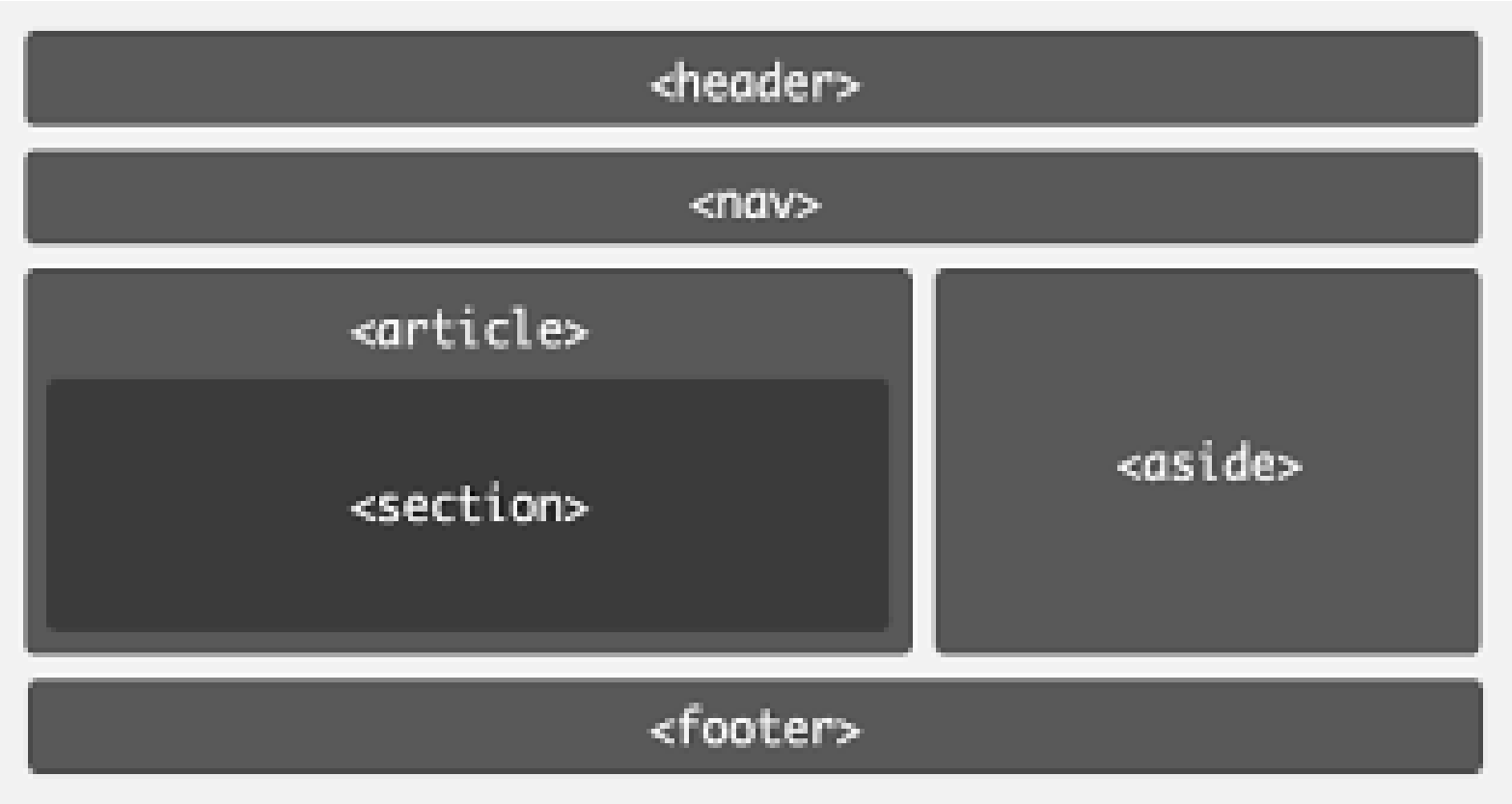
Structural Elements

Structural Elements

HTML5 has elements for better document structure

- header
- nav
- article
- section
- aside
- footer

Structural Elements



<header> tag

- Represents a group of introductory or navigational aids.

e.g.,

- table of contents, a search form, any relevant logos

```
<header>
    <h1>ABC Academy</h1>
    <h3>Training Simplified</h3>
</header>
```

<nav> tag

- Represents a section of a page that links to other pages or to parts within the page

e.g.,

- a section with navigation links.

```
<nav>
 <h1>Navigation</h1>
 <ul>
    <li><a href="articles.html">Index of articles</a></li>
    <li><a href="today.html">Things for today</a></li>
    <li><a href="success.html">success story</a></li>
 </ul>
</nav>
```

<article> tag

- Represents a self-contained composition in a document, page, application, or site that is reusable.

e.g.,

- a forum post, a magazine or newspaper article, a blog entry, user-submitted comment, any other independent item of content

```
<article>
<h1>My Favorite Trains</h1>
    <P>
        I love my trains. My favorite train of all time is MalgudiExpress.
        It is fun to see them pull some coal cars.
    </P>
</article>
```

<section> tag

- Represents a generic document or application section.

e.g.,

- Chapters, various tabbed pages in a tabbed dialog box
- A Web site's home page could be split into sections for an introduction, news items, & contact information.

```
<section>
    <h1>Introduction to Lambda</h1>
    <p>
    A Lambda Expression can be defined as a method without name, access specifier and also return type.
    They are useful while working with anonymous inner classes in Java and provides a convenient way to
    create anonymous functions.
    </p>
    <p>
    Lambda expressions are built upon functional interfaces. Functional interfaces are interfaces that
    have a single abstract method. Lambdas can be applied in many different contexts, ranging from simple
    anonymous functions to sorting and filtering Collections.
    </p>
</section>
```

<aside> tag

- Represents a section of a page that consists of content that is tangentially related to the content around the aside element,
- Are separate from the main content and represented as sidebars in printed typography

e.g.,

- author profile in a blog

```
<aside>
 <h1>Switzerland</h1>
 <p>
  Switzerland, a land-locked country in the middle of geographic Europe,
  has not joined the geopolitical European Union, though it is a signatory
  to a number of European treaties.
 </p>
</aside>
```

<footer> tag

- Represents a footer for its nearest ancestor sectioning content.
- Is not a sectioning content

e.g.,

- contact details of author, copyright information

```
<footer>
    <P>Published by Shristi Technology Labs</P>
</footer>
```

Form Elements and Attributes

Form Elements - <output> tag

<output>

- represents the result of a calculation (like one performed by a script).
- This tag should be added inside the form to get the result

```
<input type="number" name="num1" value="50" /><br>
<input type="number" name="num2" value="120" /><br>
<input type="button" value="Add"
        onclick="out.value = parseInt(num1.value)+parseInt(num2.value)" >
<output name="out"></output>
```

Form Elements - <datalist> tag

<datalist>

- tag specifies a list of pre-defined options for an <input> element.
- Is used to provide an "autocomplete" feature on <input> elements.
- Can see a drop-down list of pre-defined options as they input data.
- Use the <**input**> element's **list** attribute to bind it together with <datalist> element.

```
<h2>Datalist</h2>
<input list="city" name="mcity"/>
<datalist id="city">
    <option value="Bangalore">
    <option label="Chennai" >
    <option value="Pune" >
    <option value="Cochin">
</datalist>
```

Datalist Vs Select

Datalist

- Used for suggesting the value from the large array of values
- Is a text field and user can have only one value
- User can choose the values from list or can input their own value
- Can’t have one for label and another one for real value of that selection

Select

- Helps to list down the only valid value for that field.
- User can choose one or many only from the list
- User can’t choose own value
- Can have one for label and another one for value which can be different each other.

Form Input types <input type=“ ”>

- color
- email
- month
- number
- range
- search
- Tel
- date
- datetime
- datetime-local
- time
- url
- week

```
Age: <input type="number" name="age" /><br />
Phone<input type="tel" name="phone"><br>
Date<input type="date"  name="date" ><br>
Month<input type="month"  name="month"><br>
Range <input type="range" name="num1" value="90"  /> <br>
Date-Time<input type="datetime-local" name="datetime"><br>
Email<input type="email" name="email" ><br>
Color<input type="color" name="color"><br>
```

Form Attributes

- autocomplete
- autofocus
- form
- formaction
- formenctype
- formmethod
- formnovalidate
- formtarget
- disabled
- height and width
- list
- min and max
- multiple
- pattern (regexp)
- placeholder
- required
- step
- readonly

Example for Form Attributes

```
Username <input type="text" name="fname" value="Ram" readonly /><br />
Name: <input type="text" name="name" required autofocus/><br />
Company: <input type="text" name="company" value="Shristi" disabled /><br />
Age: <input type="number" name="age" required min="18" max="80" step="2"/><br />
Phone<input type="tel" pattern="[0-9]{10}" name="phone"><br>
Date<input type="date"  name="date" min="2016-12-31" max="2017-06-30"><br>
Month<input type="month" placeholder="032001" name="month" min="2017-01" MAX="2017-06">
Range <input type="range" name="num1" value="90"  />
Date-Time<input type="datetime-local" name="datetime"><br>
Email<input type="email" name="email" required><br>
Color<input type="color" name="color"><br>
```

Example for Form Overrides

```
<form action="basic.html" method="get" id="userform">
Enter Name: <input type="name"  name="username" required /><br/>
    <input type="submit" value="Add"  formtarget="_blank" /><br/>
    <input type="submit" value="submit without validation" formnovalidate><br/>
    <input type="submit" value="Edit" formaction="tabledemo.html" formmethod="post">
</form>
```

contenteditable attribute

- The contenteditable attribute specifies whether the content of an element is editable or not.

```
<p contenteditable="true">
    This content can be changed. Modify this.
</p>
```

Audio and Video

Media Elements

- Multimedia can be in different formats.
  eg. Pictures, music, sound, video, films, animations, etc...
- Web page contains multimedia elements of different formats.

Media Elements

- **<audio>** - to add audio content
- **<video>** - to add video content
- **<source>** - to define source for audio and video
- **<track>** - to define tracks for audio and video
- **<iframe>** - to embed you tube videos in a container

<video> element

- <video> element specifies a standard way to embed a video/movie on a web page
- **controls** attribute adds video controls like **play**, **pause**, **volume**
- Supported video formats : mp4, WebM, and ogg
- <source> element allows you to specify alternative video files which the browser may choose from.

Has DOM methods, properties and events.

- **Methods** – play(), pause(), load()
- **Properties** – videoWidth, videoHeight
- **Events** – play, pause, empty

Example

```
<h1>Video</h1>
<video id="movie1" src="movie.mp4" height="300" width="500" controls >
</video>
<br>
<video width="320" height="240" controls autoplay>
    <source src="movie.mp4" type="video/mp4">
    <source src="movie.ogg" type="video/ogg">
</video>
```

<audio> element

- <audio> element specifies a standard way to embed a audio on a web page
- **controls** attribute adds audio controls like **play**, **pause**, **volume**
- Supported audio formats : mp3, wav, and ogg
- <source> element allows you to specify alternative audio files which the browser may choose from

Has DOM methods, properties and events.

  - **Methods** – play(), pause(), load()
  - **Properties** – videoWidth, videoHeight
  - **Events** – play, pause, empty

Example

```
<h1>Audio</h1>
 <audio src="song.mp3" controls></audio>
 <h1>Audio - Another Way</h1>
 <audio controls>
    <source src="song.mp3" type="audio/mpeg">
 </audio>
```

Embed Videos

- Embed videos from youtube using iframe

```
<h1>Embed Video in page</h1>

<div style="position:relative;height:0;padding-bottom:56.25%">
    <iframe src="https://www.youtube.com/embed/rO3uyUvmwcw?ecver=2"
            style="position:absolute;width:500;height:340;left:0"
            width="640" height="360" frameborder="0" allowfullscreen>
    </iframe>
</div>
```

Canvas

<canvas> tag

- Is a container for graphics to draw graphics, using JavaScript
- Can draw all kinds of graphics from simple lines, to complex graphic objects.
- Is a drawable region with height and width attributes.
- Has several methods for drawing
  - ***paths, boxes, circles, characters, and adding images.***

Example

```
<!DOCTYPE html>
<html>
<head>
</head>
<body>
<h1> Creating a rectangle inside a canvas(drawable area)</h1>
    <canvas id="myCanvas" style="border:1px solid blue;">
    Your browser does not support the canvas element.
</canvas>
<script >
    var c=document.getElementById("myCanvas");
    var context1=c.getContext("2d");
    context1.fillStyle="green";
    context1.fillRect(0,0,200,200);
</script>
</body>
</html>
```

JavaScript APIs for html5

- Drag and Drop
- Geolocation
- Webstorage
- Application Cache
- Selector

Webstorage API

- Web pages can store data locally within the user's browser.
- Web Storage is more secure and faster.
- Data is not included with every server request, but used ONLY when asked for.
- Is possible to store large amounts of data, without affecting the website's performance.
- Used to store unstructured data
- Supported by all browsers

Types of WebStorage

Two new objects for storing data on the client

Local Storage

- Stores data with no expiration date
- Data is available anytime even if browser is closed
- Use **localStorage.clear()** to clear the data.
- The storage limit is far larger (at least 5MB) and information is never transferred to the server(cookies travel back and forth)

Session Storage

- Stores data for one session
- Data is deleted when user closes the browser window
- Opening a new window starts new session

Methods **-** setItem() , getItem(), removeItem(), clear()

Summary

- What is HTML?
- Style and Structure
- HTML Tags
  - Basic Formatting Tags
  - Image, Anchor, List, Table, Form
  - Structural Tags
  - New Form Elements
  - New Form Attributes
  - Audio and Video
  - Canvas
- Webstorage API

Thank You