NOTES

- HTML – Hyper Text Markup Language
- HTML5 is the latest version.
- HTML 5 features –
  - ✓ Doctype HTML
  - ✓ Supports Audio and Video elements
  - ✓ Geolocation support
  - ✓ Multi browser compatible
  - ✓ Offline browsing
  - ✓ Mobile responsive
- Useful extension of **VS Code** – Prettier – Code Formatter, HTML CSS Support, HTML Snippets
- Shit+! – will give the default HTML Script
- Combination of tag and content is called as an element.
- <div> tag is block level element – it takes both width & height.
- <section> - a section of a document, <article>.
- <p> - By default, browser allocates space around the paragraph tag

Block	Inline
Takes new line	It does'nt goes to new line
Entire width – view port	Element width – not entire view port
Eg – div, h1-h6, article & table	Eg – span, anchor, input

- <table> - collection of rows & columns. <thead> -> <tr>-> <th> - heading & <tbody> -><tr>-row -> <td> -data
- Rowspan – used to combine two rows. Colspan-used to divide single column to multiple columns. Rowspan & Colspan is applicable only inside tr tag on td tags.
- Border inside table tag is deprecated.
- <style> tag should be used within head tag – best use.
- Border collapse can be used for collapsing the border instead of having separate borders for each tag th, tr etc.
- Lists – Ordered List – Numbers by default & Unordered List – Bullets by default
- <mark> tag is used to highlight the selected text.
- <u> tag to underline text.
- <sup> to display the text in power (superscript). <sub> to display the text in base. (subscript)

Ordered List	Unordered List
Numbers by default	Bullets by default
Start & Type attributes shall be used to change the numbering Start="a" type="a"/"1"/"I"	List-style-type: square/circle/disc

- **Nested List** – You can use nested lists inside a list.
- **Anchor tag -** <a href=''><a> - target="_blank" is used to open the link in new tab else it will open in the same tab.

- ➤ **Semantic –** Semantic elements are elements with meaning. Eg - <table>, <form> h1-h6 etc. It has a purpose. We know what type of contents it holds **(Mock 1)**
- ➤ **Non-Semantic Elements –** Tells nothing about its content. Eg. <div>, <span> etc.

HTML Tasks:

https://github.com/rvsp/HTML-CSS/blob/master/Mini-tasks/001-HTML.md

Session 6

Forms:

- ➤ To get the details from the users. It can be created using <form> tag
- ➤ Input elements – types - text, radio, checkbox, submit, button, password, reset.
- ➤ To connect labels with fields for attribute in label and id attribute in input should be the same.
- ➤ Placeholder attribute set the grey out value in the input.
- ➤ Radio buttons can be grouped using name attribute in input field.
- ➤ In case of extracting values from radio buttons, value attribute can be used.
- ➤ To get value of **selected radio button value** –
  document.querySelector('input[type=""radio"][name="gender"]:checked').value
- ➤ For **Checkboxes values –** document.querySelectorAll('input[type="checkbox"]:checked') => gives array from that we can iterate and get values.
- ➤ Input values are stored in name attribute given in the input element and it is shown in url. Eg. username=Tharun&pass=Tharun etc.
- ➤ Submit sends the data to server and reloads the page. Reset button clears the values.
- ➤ **Input type button** accepts only the text whereas **button tag** accepts text as well as images. In Input type value acts as text for the button whereas button type it will not
- ➤ Select element is used to create a dropdown with options element inside it.
- ➤ Default value can be selected by using selected attribute against an option.
- ➤ To select multiple option from a drop down-multiple attribute can be used in select tag.
- ➤ To categorize the options with grouping optgroup tag with label can be used inside select.
- ➤ Required attribute is used to set the field as mandatory.
- ➤ To remove the autocomplete suggestions, autocomplete="off" can be used.'
- ➤ Value attribute is used to set the default value to the field.
- ➤ **Build in Form validations –** required, minlength, maxlength (strings), min, max (numbers), type (email, password, tel, datetime, radio etc), pattern **(Mock 1)**

  ```
  pattern="(?=.*\d)(?=.*[a-z])(?=.*[A-Z]).{8,}"
     title="Must contain at least one  number and one uppercase and
  lowercase letter, and at least 8 or more characters">
  ```
- ➤ **To remove box-shadow of button when clicked,**

```css
button:focus {
  box-shadow: none !important;
}
```

Method Attribute:

- ➤ It consists of get and post method.

Get	*Post*
Not preferred for sensitive data	Secured data – Sensitive Information
In URL – query data will be there once submitted	In URL, query will not be available.

➤ **Onsubmit –** to trigger a function to validate all the details in the form are filled/not. It is used in form tag. It will validate the form first and then after filling it send it to server.

➤ **Onclick –** It will send data to server and then checks for validation.

BEGINNER LEVEL

1. What is HTML5?

Sample answer:

HTML5 is a markup language used for structuring and displaying content on the internet. This includes animations, audio, images, and text, among many other things, and all without the need for additional software. HTML5 is the most recent and most advanced version of HTML.

2. What are the key differences between HTML and HTML5?

Sample answer:

HTML5 has made several steps forward compared to its previous versions. Notable changes include:

- HTML5 supports video, graphics, and audio, whereas HTML only supports them through third-party extensions
- HTML5 is mobile-friendly, whereas HTML is not
- HTML5 is compatible with all major web browsers, whereas HTML is not
- HTML5 offers several options for local storage, whereas HTML only offers cookies
- HTML5 supports multi-threading, whereas HTML operates only in one thread

multi-threading:

Multithreading is **the ability of a program or an operating system to enable more than one user at a time without requiring multiple copies of the program running on the computer**. Multithreading can also handle multiple requests from the same user.

3. What are tags in HTML5 and how many are required to make a basic web page?

Sample answer:

Tags are pieces of HTML5 code used to define the structure of the page. There are more than 100 tags in HTML5, with each one serving a unique purpose, such as positioning text or supporting audio.

In their most basic form, most web pages will need around four tags to get started. These are <html>, <head>, <title>, and <body>.

4. What are elements in HTML5?

Sample answer:

An HTML element is defined by a start tag, some content, and an end tag.

5. What are attributes in HTML5?

Sample answer:

HTML attributes provide additional information about HTML elements.

- All HTML elements can have **attributes**
- Attributes provide **additional information** about elements
- Attributes are always specified in **the start tag**
- Attributes usually come in name/value pairs like: **name="value"**

6. What is CSS and what is its relationship with HTML5?

Sample answer:

CSS, or Cascading Style Sheet, is a style sheet language used with HTML5 to format and display the elements specified by the markup language for the end user. While HTML5 defines the structure of a page, CSS specifies the document's style, including page layout, colors, and fonts.

7. What are the key HTML5 page structure elements?

Sample answer:
The most important HTML5 structure elements are:

- **<header>**, containing the header or top of the page
- **<footer>**, containing the footer or bottom of the page
- **<section>**, containing one section that is thematically similar to other sections
- **<article>**, containing standalone content
- **<nav>**, containing the navigation functionality of the page
- **<aside>**, containing secondary content

8. What is the role of drag and drop in HTML5?

Sample answer:
Drag and drop is a very common feature. It is when you "grab" an object and drag it to a different location.

9. What are input elements in HTML5?

Sample answer:
Input elements are used to create interactive controls that receive and process information from the user. For example, inputs could be used to process login details, collect customer feedback, or display a form.

10. What is meant by web storage in HTML5?

Sample answer:
Web storage refers to HTML5's new storage features. Previous HTML versions relied on cookies for storage in the server, but web storage now means data can be stored locally within the user's browser. Web storage also offers a larger storage limit and is more secure.

11. How do you link to another web page using HTML5?

Sample answer:

The anchor tag, or <a> tag in code, is used with the 'href' attribute to link to other web pages. The URL and linked text are both included in the element.

For example, a link to the Google homepage would look like this in HTML5 code:

Google Search Engine

12. What are the three types of lists in HTML5?

Sample answer:

The three types of HTML5 lists are:

1. **Ordered list**, which is used to group related items in a specific order
2. **Unordered list**, which is used to group related items in no particular order
3. **Description list**, which is used to group terms and their descriptions

INTERMEDIATE LEVEL

13. What are the key benefits of HTML5?

Sample answer:

HTML5 improves on its previous versions in a multitude of ways. Among its biggest strengths we have HTML5's:

- Compatibility with all web browsers and devices
- Cleaner code for developers
- Native support for multimedia content
- Quicker load times due to offline storage cache
- Introduction of geolocation

14. What is the role of formatting tags in HTML5?

Sample answer:
Formatting tags allow text to be stylized in HTML5 without the need for CSS. There are a number of HTML5 formatting tags, and the most popular ones include:

- **<b>** - used to make text bold
- **<i>** - used to italicize text
- **<u>** - used to underline text
- **<mark>** - used to highlight text
- **<strong>** - used to mark text as important

15. What types of graphics are supported by HTML5?

Sample answer:
Unlike previous versions, HTML5 offers inbuilt graphics features. The two types of graphics supported by HTML5 are:

- **SVG** (Scalable Vector Graphics), used to create vector-based graphics, such as diagrams and icons
- **Canvas**, used to draw graphics, such as shapes

16. What is new about the relationship between the <header> and <h1> tags in HTML5?

Sample answer:
The <header> tag is used to design the header of a web page and can contain a range of elements including text, logos, or a navigation bar.

The <h1> tag is the textual part of the header and is used to specify the most important section of a piece of content. It's often used alongside other header tags (through to <h6>) to format and prioritize content sections.

17. What are some of the new input types in HTML5?

Sample answer:

HTML5 introduces several new input types to create a more interactive user experience. The new input types include:

- **Date**, used to select a date from a drop-down calendar
- **Time**, used to enter a time
- **Email**, used to enter an email address
- **Tel**, used to enter a telephone number with a specific pattern
- **Color**, used to select a color from a color picker
- **Range**, used to select a range of values on a slider

18. What are image maps in HTML5?

Sample answer:

With HTML image maps, you can create clickable areas on an image.

Sample code:

```
<img src="workplace.jpg" alt="Workplace" usemap="#workmap">
<map name="workmap">
  <area shape="rect" coords="34,44,270,350" alt="Computer" href="computer.htm">
  <area shape="rect" coords="290,172,333,250" alt="Phone" href="phone.htm">
  <area shape="circle" coords="337,300,44" alt="Coffee" href="coffee.htm">
</map>
```

19. What are some of the most important APIs in HTML5?

Sample answer:

HTML5 supports a wide range of APIs. Some of the most popular ones include:

- **Geolocation API**, used to identify the user's location
- **Web Speech API**, which provides speech recognition functionality
- **Clipboard API**, which provides copy, cut, and paste functionality
- **History API**, which provides access to the browser navigation history
- **Web Notifications API**, used to send web-based notifications to users

20. How can a copyright symbol be added to the webpage using HTML5?

Sample answer:
The '**&copy**' code is used to generate the copyright symbol (©). As a best practice, it should be accompanied by a year and the name of the organization.

To include copyright information in the footer of a web page, the code would look like this:

<footer> <small>© Copyright *Date*, *Organization Name*</small> </footer>

21. What is the role of DOCTYPE in HTML5?

Sample answer:
All HTML pages (HTML5 included) need to have their document type declared in the first line of code. DOCTYPE instructs the browser how to interpret the document by indicating what type and version of markup language are being used.

For HTML5 documents, the following DOCTYPE declaration code is used:

<!DOCTYPE html>

22. What are the different types of storage in HTML5?

Sample answer:

HTML5 supports two types of web storage. These are:

1. **sessionStorage:** temporary storage available for the duration of the page session
2. **localStorage:** permanent storage available until data is deleted by the user

23. What is metadata in HTML5 and how is it specified?

Sample answer:

Metadata is data that describes other data, providing additional information about an HTML document. Its purpose is to help browsers, search engines and other web applications better interpret a document. Examples of metadata include the description, author, and keywords.

The <meta> tag is used to define metadata about an HTML document. <meta> tags are always enclosed within the <head> of the HTML document.

24. What are the new tags for multimedia in HTML5?

Sample answer:

Unlike previous versions, HTML5 allows developers to create multimedia objects without the need for additional plugins. The new tags that facilitate this are:

- **<audio>** - used to embed audio content
- **<video>** - used to embed video content

- **<embed>** - used to embed content from an external source
- **<source>** - used to embed multiple media resources
- **<track>** - used to specify text tracks (such as subtitles) for audio and video content

ADVANCED LEVEL

25. What are some of the main issues with HTML5?

Sample answer:
While HTML5 is an effective markup language, it can still pose problems to web developers. Some challenges include:

- Local storage is less secure
- Advanced features are not necessarily supported by all browsers
- Mobile compatibility requires additional coding
- Its limited access to hardware APIs
- Its steep learning curve

26. What are the best audio and video formats to use in HTML5?

Sample answer:
HTML5 supports MP3, Ogg, WebM, ADTS, FLAC, and WAV audio formats. A WAV file is uncompressed and typically large, making it unsuitable. Each browser supports its own set of audio formats; MP3 is the only audio format that is currently compatible with all major browsers.

In terms of video, HTML5 supports MP4, WebM, and Ogg formats. While MP4 is generally considered the recommended video format, not all browsers support it natively due to licensing issues. In these cases, WebM can be used as an alternative.

27. How can HTML5 be used for data storage purposes?

Sample answer:

While HTML5 doesn't include data storage functionality as part of its native specification, it's possible to store data through the integration of data-related APIs. These can be used with HTML5 documents to manipulate client-side databases with SQL.

The two HTML5 APIs for data storage and querying are:

- **IndexedDB API**, a standard maintained by the World Wide Web Consortium
- **Web SQL Database**, now considered deprecated

28. What is microdata in HTML5 and how is it created?

Sample answer:

Microdata lets you define your own customized elements and start embedding custom properties in your web pages

29. How is the Geolocation API implemented in HTML5?

Sample answer:

The HTML5 Geolocation API uses the device's GPS, WiFi or mobile signal to triangulate the user's latitude and longitude coordinates. The user must give their permission before geolocation services can be used on their device.

From the developer's point of view, the Geolocation API is implemented firstly by calling the geolocation.navigator object. Three methods are then used by the API to handle location data:

1. **getCurrentPosition** identifies the device's current location and returns a position object with data
2. **watchPosition** returns a value whenever the device location changes
3. **clearWatch** cancels the previous watchPosition call

30. What are some of the key global attributes in HTML5?

Sample answer:
Global attributes are attributes that can be applied to all HTML5 elements. Some of the most important global attributes are:

- **accesskey**, used to specify a keyboard shortcut for an element
- **class**, used to assign one or more class names to an element
- **dir**, used to specify the base direction of the element's text
- **data-***, used to store custom data specific to the web page
- **contenteditable**, used to indicate whether the content is editable or not

31. What is the role of the WebSocket API in HTML5?

Sample answer:
The WebSocket API facilitates two-way, interactive communication between the web browser and the web server. This enables a real-time, event-driven data transfer to and from the server. It's a very popular API

that brings speed, security, and flexibility.

32. When should <div> tags be used in HTML5?

Sample answer:

HTML5 introduces a number of new tags (such as <aside>, <footer>, and <header>) that take the place that <div> has traditionally occupied in previous HTML versions.

However, <div> should still be used in HTML5 when no other semantically appropriate element is available. Generally, this will be for styling purposes, such as wrapping the web page or introducing the opening paragraph.

33. What is the role of the Web Workers API in HTML5?

Sample answer:
The Web Workers API makes it possible to run scripts independently in a background thread, separate from the main execution thread of the HTML5 document. This allows developers to continue working on the page without affecting its performance, while scripts run in the background.

34. How can the performance of an HTML5 web page be measured?

Sample answer:
Measuring performance is an important step for developers to gauge the competitiveness of their web page and can be achieved using APIs and extensions. Popular solutions include the Navigation Timing API and the User Timing API.

These tools provide insights into specific performance metrics such as:

- **Page load speed:** The time it takes for the full page to load
- **Time to interact:** The time it takes for the user to be able to interact with the page
- **Bounce rate:** The proportion of users that leave the page without interacting with it

- **Error rate:** The proportion of visits to the page resulting in errors
- **Conversion rate:** The proportion of users that complete a specified action, such as subscribing to a mailing list

35. How can HTML5 web pages be optimized?

Sample answer:

If a web page is performing poorly, developers have several HTML5 optimization strategies at their disposal:

- Compress CPU-intensive assets such as high-resolution images
- Bundle code into single files to reduce the number of HTTP requests
- Minify code to remove all unnecessary whitespace
- Offload operations to the Graphics Processing Unit (GPU)
- Use CSS3 for animations and transitions