strategy | consulting | digital | technology | operations

Front End Development

Module 1: HTML5 for Front End Development

Module 1 Objectives

- Upon completing this module, the learner will be able to:
  - Understand the fundamentals of HTML5
  - Understand and use HTML5 – 2D graphics
    - Canvas API
    - SVG API
  - Use HTML5 Media(Audio and Video) features
  - Understand and use HTML5 APIs :
    - Geolocation
    - Local and Session Storage
    - App Cache
    - Working with History

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Module 1 Agenda

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Topic Name	Duration
HTML5 Fundamentals	**45 min**
HTML5 – 2D Graphic	20min
HTML5 Multimedia feature	20 min
HTML5 APIs	3 Hours

History of HTML5

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- HTML5 is a collaborative effort between the World Wide Web Consortium (W3C) and the Web Hypertext Application Technology Working Group (WHATWG).
- WHATWG was working with web forms and applications, and W3C was working with XHTML 2.0.
- In 2006, they decided to collaborate and create a new version of HTML.
- In 2011, however, the groups came to the conclusion that they had different goals: the W3C wanted to publish a "finished" version of "HTML5", while the WHATWG wanted to continue working on a Living Standard for HTML.
- Since then, the WHATWG has been working on this specification, and the W3C has been copying fixes made by the WHATWG into their fork of the document.

HTML5 Features

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- HTML5 tags are backwards compatible.
- New tags for audio and video eliminating need of plugins such as Flash or Java.
- Dynamic script enabled graphics using Canvas.
- New API to work with Geolocation, Histo Offline Application and many more.
- New input types like date and time.
- New attributes like placeholder , require
- Unlike HTML,HTML 5 needs CSS3 to desi the look and feel of a page.

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HTML4 v/s HTML5

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

HTML4	HTML5
Audio and Video are not part of HTML4 specification	Audio and Videos are integral part of HTML5 specifications e.g. <audio> and <video> tags
Vector Graphics is possible with the help of technologies such as VML, Silverlight, Flash etc.	Vector graphics is integral part of HTML5 e.g. SVG and canvas
It is almost impossible to get true GeoLocation of an user browsing any website especially if it comes to mobile devices.	JS GeoLocation API in HTML5 helps identify location of user browsing any website (provided user allows it)
Browser cache can be used as temporary storage.	Application Cache, Web SQL database and Web storage is available as client side storage. Accessible using JavaScript interface in HTML5 compliant browsers.
Works with all old browsers	Most of modern browser have started supporting HTML5 specification e.g. Firefox, Mozilla, Opera, Chrome, Safari etc.
Does not allow JavaScript to run in browser. JS runs in same thread as browser interface.	Allows JavaScript to run in background. This is possible due to JS Web worker API in HTML5

Choosing a suitable browser

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

HTML	HTML5
Gecko(Firefox)	Gecko 2.0 is expected to provide a good support to HTML 5.Since this version is not yet released, firefox browser is not yet ready to provide a good support to HTML 5.0
Trident (Internet Explorer)	This engine has very less support for HTML 5. As a result the most commonly used browser in the world is expected to score poor in compatibility test.
Webkit Engine(Safari/Chrome/Mobile Browsers)	This engine provides a wide range of support for implementing HTML 5 features. In spite of some level of incompatibility, webkit engine scores top in compatibility test and the browser which runs on this engine will be the most opted for HTML 5. Chrome runs on webkit engine.
Presto(Opera browser)	Opera is long been considered as technically superior browser with a decent support for HTML 5, but it scores poor in playing animations or running other complex applications

Assessing Browser capabilities

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- There is no single popular browser that implements all features of HTML5.
- A number of sites are available to provide a detailed chart of the features supported by your browser.
- Some of them are :
  - http://html5test.com
  - https://caniuse.com
- The site html5test.com rates your browser compatibility by providing a score and detailed list of elements and features which the browser can render.

Activity 1

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- In this activity, you will:
  - Browse the site http://html5test.com and understand the capabilities of the following browsers :
    - Google Chrome
    - Internet Explorer 9
    - Firefox

Activity Duration: 10 minutes

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Knowledge Check

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Do HTML5 provide old browser support? State true or false.

HTML5 - DOCTYPE

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- HTML5 is defined in terms of its DOM representation after parsing, so it doesn't need a DOCTYPE for validation, but we still want legacy browsers to render pages in standards-compliant mode.
- The new HTML5 DOCTYPE declaration :

```
<!DOCTYPE html>
```

- The DOCTYPE contains no URL's, no version numbers.
- The DOCTYPE must be located at the very top / beginning of the HTML5 document, before any HTML5 elements.

HTML5 – Content Types

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Sectioning

- Elements that define sections in the document, for example **article**, **aside,** and **title**

Heading

- Section headers, for example **h1**, **h2**, and **hgroup**

Flow

- Elements used in the body of documents and applications, for example **form**, **h1**, and **small**

Embedded

- Content that imports other resources into the document, for example **audio**, **video**, **canvas**, and **iframe**

Interactive

- Content that users interact with, for example **audio** or **video** controls, **button,** and **textarea**

Phrasing

- Text and text markup elements, for example **mark**, **kbd**, **sub**, and **sup**

Metadata

- Elements—commonly found in the head section— that set up the presentation or behavior of the rest of the document, for example **script, style**, and **title**

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HTML5 – Content Sectioning Elements

2f48696768207065726f726d616e63652c2044656c6976657265642c2f48696768207065726f726d616e63652c2044656c6976657265642c2f48696768207065726f726d616e63652c2044656c6976657265642c2f48696768207065726f726d616e63652c2044656c6976657265642c2f48696768207065726f726d616e63652c2044656c6976657265642c2f48696768207065726f726d616e63652c2044656c6976657265642c2f48696768207

- HTML5 has come up new elements for sectioning the contents on web page.

Tag	Description
<address> You can contact us at www.Accenture.com. </address>	• <address> element supplies contact information for its nearest <article> or <body>. • Other tags like email and anchor can be embedded inside the address tag.
<article> <header> Science </header> texts here..... </article>	• <article> element represents a self-contained composition in a document, page, application, or site. Example : a forum post, blog, magazine article.

HTML5 – Content Sectioning Elements

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Tag	Description
<hgroup> History of the Computers Personal computer revolution </hgroup>	• <hgroup> element represents a multi-level heading for a section of a document. It groups a set of <h1>–<h6> elements.
<nav> Navigation link a link b </nav>	• <nav> element represents a section of a page whose purpose is to provide navigation links, either within the current document or to other documents.
<header> Main Page Title <img src="some-logo.png" alt="Some logo"> </header>	• <header> element represents navigational aids, logo, search form.

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HTML5 – Content Sectioning Elements

Tag	Description
<aside> Click here for revenue details. </aside>	• <aside> element represents content connected indirectly to main content. Example : sidebar links
<footer> Copy rights &copy rights reserved. </footer>	• <footer> typically contains information about the author of the section, copyright data or links to related documents.
<section> Heading <img src="bird.jpg" alt="bird"> </section>	• <section> element represents a standalone section of functionality contained within an HTML document. Example section containing of heading.

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HTML5 – Inline Text Semantics

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

- HTML5 inline text semantics are to define meaning, structure or style to a word , line or an arbitrary piece of text.

Tag	Description
<details> <summary> Batman's secret identity </summary> Bruce Wayne </details>	• The summary tag is intended to work along with the details tag to provide a summary element visible to the user. • When the user clicks the summary, all other content in the details element, which was previously hidden, becomes available.
<figure> <figcaption> Lilies, Lal Bagh </figcaption> </figure>	• A figure is a semantic element that describes one or more images with an optional caption. • The <figure> tag does not directly display any images; it's meant as a container for holding any type of image (including the standard <img> tag but could also include SVG or canvas images). • The image can be supplied with an optional caption using the <figcaption> tag.

HTML5 – Inline Text Semantics

Tag	Description
 It is now at <time>6:30</time> every morning. 	• <time> element is for presenting dates and times in a machine readable format.
 The wbr tag is used to mark a space in a long word where it would be ap<wbr>propriate to break the word if necessary. 	• <wbr> element is used to mark a space in a long word where it would be appropriate to break the word if necessary.

HTML5 – Inline Text Semantics

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657

Tag	Description	Attributes
<meter value="6.7" min="0" max="8" low="3" high="7" optimum="7">5 </meter>	Meter tag is used to markup measurements, specifically a scalar measurement within a known range.	value=The intial value min=minimum value max=maximum value high=highest limit low=lowest limit optimum = decides the RGB value
Your download is <progress> 55% </progress> complete	The progress tag is used to markup values in the process of changing	value=The initial value min=minimum value max=maximum value

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Demonstration

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

HTML5 New semantics

- Content Sectioning
- Inline Text Sectioning

Knowledge Check(1 of 2)

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Which of the below are content sectioning elements in HTML5?
  1. <header>
  2. <footer>
  3. <summary>
  4. <section>

Knowledge Check(2 of 2)

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- State true or false:

  <figure> tag display any images as it a container for holding any type of image.

HTML5 Web Forms : New Input Types

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- HTML 5 forms have enhanced form controls which takes cares of challenges faced by developers while developing forms.

Type	Description
tel	Telephone Number
email	Email address
url	Web URL
search	Term to supply to a search engine
range	Numeric selector within a range of values, typically visualized as a slider
number	Number value only
color	Color Picker
datetime	Full date time display
time	Time indicator
date	Select calendar date
week	Select week of given year
month	Select month of a given year

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HTML5 Web Forms : New Attributes

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Atttribute	Description
autofocus	Specifies which field would gain focus automatically on page load.
placeholder	Specifies a value to be shown to user. The placeholder value disappears as user starts typing.
required	Specifies the field to be a mandatory field and form cannot be submitted until a value has been entered.
multiple	Specifies multiple values are allowed in the field. Can be used with email or file type.
pattern	Specify a regular expression pattern that a text type into a given input field must match.
autocomplete	It signals browser to auto complete the given input field.
min+max	Used with input field like number, date to set the maximum and minimum value.
step	Specifies the how much the field value has to be incremented when used with number or range.
form	It is used to associate form fields with a form element they are not nested inside.

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HTML5 Web Forms : New Elements

Element	Description
datalist	It represents a set of option elements that represent predefined options for other controls.
output	It represents the result of a calculation.

Demonstration

- HTML5 :
  - New Input Types
  - Attributes
  - New Form Elements

Knowledge Check

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Which attribute specifies that user must fill a value in the element before submitting the form?
  1. placeholder
  2. mandatory
  3. required
  4. inputmandatory

Module 2 Agenda

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Topic Name	Duration
HTML5 Fundamentals	45 min
HTML5 – 2D Graphic	**20min**
HTML5 Multimedia feature	20 min
HTML5 APIs	3 Hours

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HTML5 – 2D Graphics

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- HTML5's facilities for dynamic graphics— graphics that can change in response to user input, data.
- There are 2 API's that provides graphic's support :
  - Canvas
  - SVG

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Canvas

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

- The HTML5 specification introduces the <*canvas*> webpage element, which provides a blank container.
- It provides a graphics container for drawing text, images dynamically and manipulate them using JavaScript as opposed to element to hold text-based elements.
- Canvas includes 2D context for drawing and manipulating dynamic images.
- Canvas provides pixel surface and JavaScript API for drawing shapes to it.

```
<canvas width="640" height="480" id="container">

</canvas>
```

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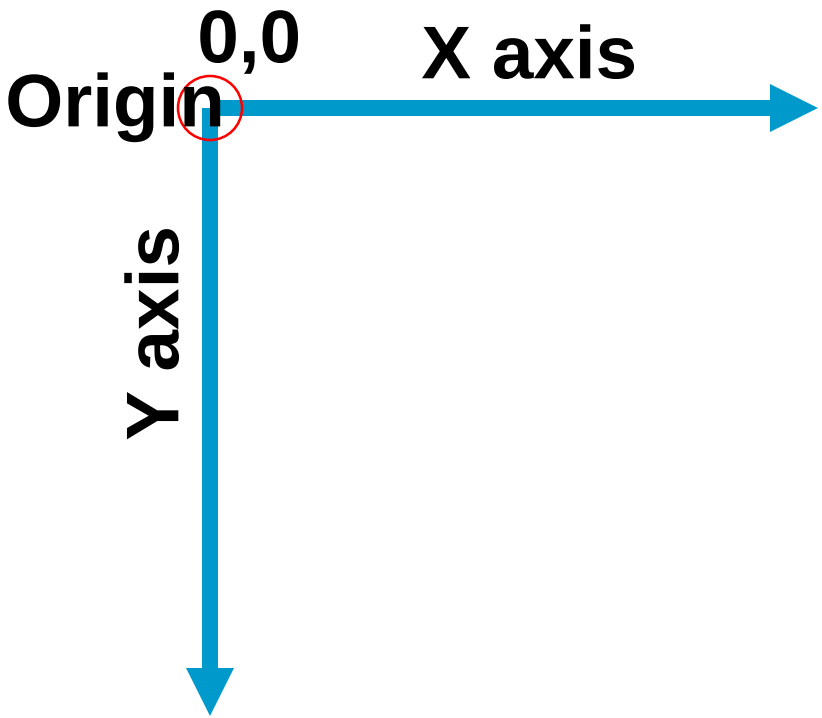
Canvas Coordinates

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657



Canvas Fallback

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- If the browser support for Canvas is not available then an alternate image or text between the <canvas> element can be displayed in its place.

```
<canvas width=“640” height=“480” id=“container”>
        Your browser does not support HTML5 Canvas API.
</canvas>
<canvas id=“myCanvas” height="100" width="100" style="border: 2px solid;">
        <img src="noCanvas.JPG"/>
</canvas>
```

Canvas : Implementing in 4 Steps

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Step 1: Add canvas element to the document and give a suitable id.

```
<canvas width="640" height="480" id="container">
        Your browser does not support HTML5 Canvas API.
</canvas>
```

- Step 2: To draw on canvas , using Canvas JavaScript API we need to get the reference of the canvas on our page.

```
<script>
        function draw()
        {
        var canvas=document.getElementById("container");
        }
</script>
```

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Canvas : Implementing in 4 Steps

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Step 3: Setup the canvas's context where the drawing is rendered.

```
<script>
            function draw()         {
            var canvas=document.getElementById("container");
            var context=canvas.getContext("2d");

            }
</script>
```

- Step 4: After the context reference has been received various methods of context object can be used for drawing on canvas.

```
<script>
            function draw()         {
             var canvas=document.getElementById("container");
             var context=canvas.getContext("2d");
             context.strokeStyle="red";
             context.fillRect(70,70,50,50)
            }
</script>
```

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Canvas : Drawing Shapes

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Methods For drawing lines :

Method	Description
beginPath	Resets/begins a new drawing path
moveTo(x,y)	Used to reposition the starting point
lineTo(x,y)	Sets the destination end point for the line
stroke	Strokes the line, which makes the line visible

```
<script>
function draw(){
 var  canvas=document.getElementById("container");
 var context=canvas.getContext("2d");
context.beginPath();
context.moveTo(0,0);
context.lineTo(200,300);
context.stroke();
}
</script>
```

Demonstration

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Draw line in canvas

Canvas : Drawing Shapes

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Drawing arc :

```
arc(centreX, centreY, radius, startAngle, endAngle, direction);
```

- Parameter of arc method :

Parameters	Description
X, Y	The first two parameters are the X and Y coordinates for the center of the circle.
radius	The third parameter is the radius. This is the length of the distance from the center point of the circle to the curve.
startAngle, endAngle	The fourth and fifth parameters specify the starting and ending angles of the arc to be drawn. This is measured in radians, not in degrees.
counterclockwise	The final parameter specifies the drawing direction of the arc.

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Canvas : Drawing Shapes

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Drawing rectangle :

```
rect(x,y,width,height)

fillRect(x,y,width,height);

strokeRect(x,y,width,height);
```

- Parameter of rect method :

Parameters	Description
x,y	The x-coordinate and y-coordinate define the starting position of the rectangle. This is the top-left corner of the rectangle.
width	This defines the width of the rectangle.
height	This defines the height of the rectangle.

Canvas : Drawing Shapes

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

- Drawing text :

fillText(text, x, y [, maxWidth])

strokeText(text, x, y [, maxWidth])

Canvas : Drawing Shapes

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

- Drawing image :

drawImage(imageElement, x, y)
drawImage(imageElement, x, y, width, height)

Parameters	Description
x,y	The x-coordinate and y-coordinate define the starting position of image with respect to the rendering canvas.
width	This defines the width of the image.
height	This defines the height of the image.

Canvas : Gradient

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

Method	Description
createLinearGradient(x0, y0, x1, y1)	This method returns a CanvasGradient object that represents a linear gradient that paints along the line given by the coordinates represented by the arguments. The four arguments represent the starting point (x1,y1) and end point (x2,y2) of the gradient.
addColorStop(offset, color)	This method adds a color stop with the given color to the gradient at the given offset. Here 0.0 is the offset at one end of the gradient, 1.0 is the offset at the other end.
createRadialGradient(x0, y0, r0, x1, y1, r1)	This method returns a CanvasGradient object that represents a radial gradient that paints along the cone given by the circles represented by the arguments. The first three arguments define a circle with coordinates (x1,y1) and radius r1 and the second a circle with coordinates (x2,y2) and radius r2.

Canvas : Gradient

```
// Create Linear gradient
var grd = ctx.createLinearGradient(0,0,200,0);
grd.addColorStop(0,"red");
grd.addColorStop(1,"white");

// Fill with gradient
ctx.fillStyle = grd;
ctx.fillRect(10,10,150,80);
```

```
// Create Radical gradient
var grd = ctx.createRadialGradient(75,50,5,90,60,100);
grd.addColorStop(0,"red");
grd.addColorStop(1,"white");

// Fill with gradient
ctx.fillStyle = grd;
ctx.fillRect(10,10,150,80);
```

Demonstration

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Various shapes in Canvas
  - Arc
  - Circle
  - Rectangle
  - Text
  - Image
  - Gradient

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Knowledge Check(1 of 2)

- Which of the following method is to mention the start point of the line to draw a straight line in canvas?
  1. moveFrom(x,y)
  2. startFrom(x,y)
  3. moveTo(x,y)
  4. startTo(x,y)

Knowledge Check(2 of 2)

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Which of the below method will draw a circle in canvas?
  1. arc(start,stop)
  2. circle(start,stop)
  3. arc(start,stop,radius,startangle,stopangle)
  4. circle(start,stop,radius,startangle,stopangle)

SVG : Scalable Vector Graphics

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- It is an expressive language for two dimensional graphics.
- Enables you to create two-dimensional **Vector** Images, which can be **scaled** infinitely without impacting the Quality.
- SVG can be used to draw objects similar to Canvas, the major difference is that in SVG the objects are selectable.

SVG : Scalable Vector Graphics

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Inline SVG can be added to an HTML page using the <svg> element.
- The opening and closing tags can contain other shapes and visual objects

```
<svg width="300" height="300">
  ...
</svg>
```

Attribute	Description
viewBox	Defines the starting location. The viewBox attribute allows you to specify that a given set of graphics stretch to fit a particular container element. The value of the viewBox attribute is a list of four numbers min-x, min-y, width and height, separated by whitespace and/or a comma.
width,height	width and height of the SVG image.

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SVG : Elements

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

Elements
<text>
<line>
<rect>
<circle>
<ellipse>
<polygon>
<lineargradient>
<radialgradient>

SVG : Scalable Vector Graphics Elements

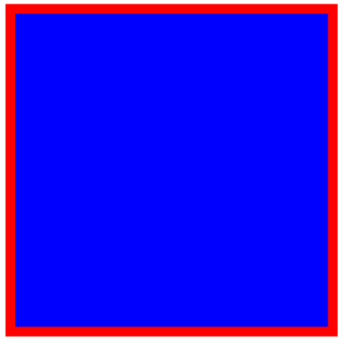
2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

- Circle :

```
<svg  width="300" height="200">
<circle cx="50" cy="50" r="25" fill="red"/>
</svg>
```

- Rectangle :

```
<svg  width="300" height="200">
<rect x="10" y="10" width="100" height="100"
fill="blue" stroke="red" stroke-width="3" />
</svg>
```



- Polygon

```
<svg width="300" height="200">
            <polygon  points="20,10 300,20, 170,50" fill="red" />
</svg>
```

SVG : Scalable Vector Graphics

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

- Line

```
<svg  width="300" height="200">
<line x1="0" y1="0" x2="200" y2="100" style="stroke:red;stroke-width:2"/>
</svg>
```

- Eclipse

```
<svg width="300" height="200">
<ellipse cx="100" cy="50" rx="100" ry="50" fill="red" />
</svg>
```

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SVG : Scalable Vector Graphics

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f48696768207

- Linear Gradient

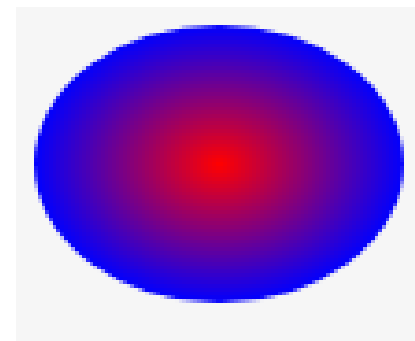
```
<svg width="120" height="240">
  <defs>
    <linearGradient  id="Gradient">
      <stop offset="0%" stop-color="red"/>
      <stop offset="100%" stop-color="blue"/>
    </linearGradient >
  </defs>
<rect x="20" y="20" rx="25" ry="25" width="100"
height="100" fill="url(#Gradient)"/>
</svg>
```

SVG : Scalable Vector Graphics

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Radical Gradient

```
<svg width="120" height="240">
  <defs>
    <radialGradient  id="Gradient">
      <stop offset="0%" stop-color="red"/>
      <stop offset="100%" stop-color="blue"/>
    </radialGradient >
  </defs>
<rect x="20" y="20" rx="25" ry="25" width="100"
height="100" fill="url(#Gradient)"/>
</svg>
```

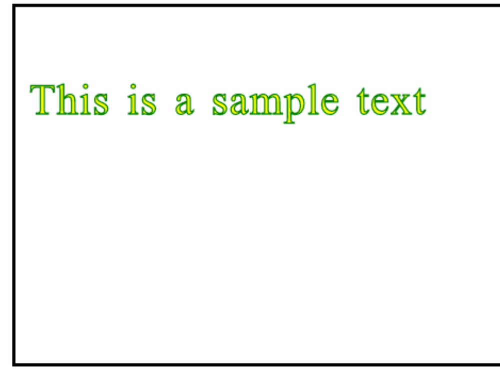


SVG : Scalable Vector Graphics

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Text

```
<svg style="border:4px solid black" width="700px"
height="500px">
 <text x="20" y="150"  style="stroke:green;
                                    stroke-width:2px;
                                    font-size:60px;
                                    fill:yellow;
                                    letter-spacing:2;
                                    word-spacing:6; ">
                              This is a sample text
 </text></svg>
```



- Image

```
<svg viewBox="0 0 400 400">
 <image x="340" y="350" xlink:href="Image1.JPG"
width="100px“ height="100px"/>
</svg>
```

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Demonstration

- SVG
  - Circle
  - Polygon
  - Rectangle
  - Eclipse
  - Line
  - Text
  - Image

Knowledge Check

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- State true or false SVG graphics do not loose graphics quality on zoomed or re-sized.

Canvas v/s SVG

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

SVG	Canvas
Vector based (composed of shapes)	Raster based (composed of pixel)
Multiple graphical elements, which become the part of the DOM	Single HTML element similar to <img> in behavior
Modified through script and CSS	Modified through script only
Give better performance with smaller number of objects or larger surface, or both	Give better performance with smaller surface or larger number of objects, or both
Better scalability — can be printed with high quality at any resolution	Poor scalability — not suitable for printing on higher resolution

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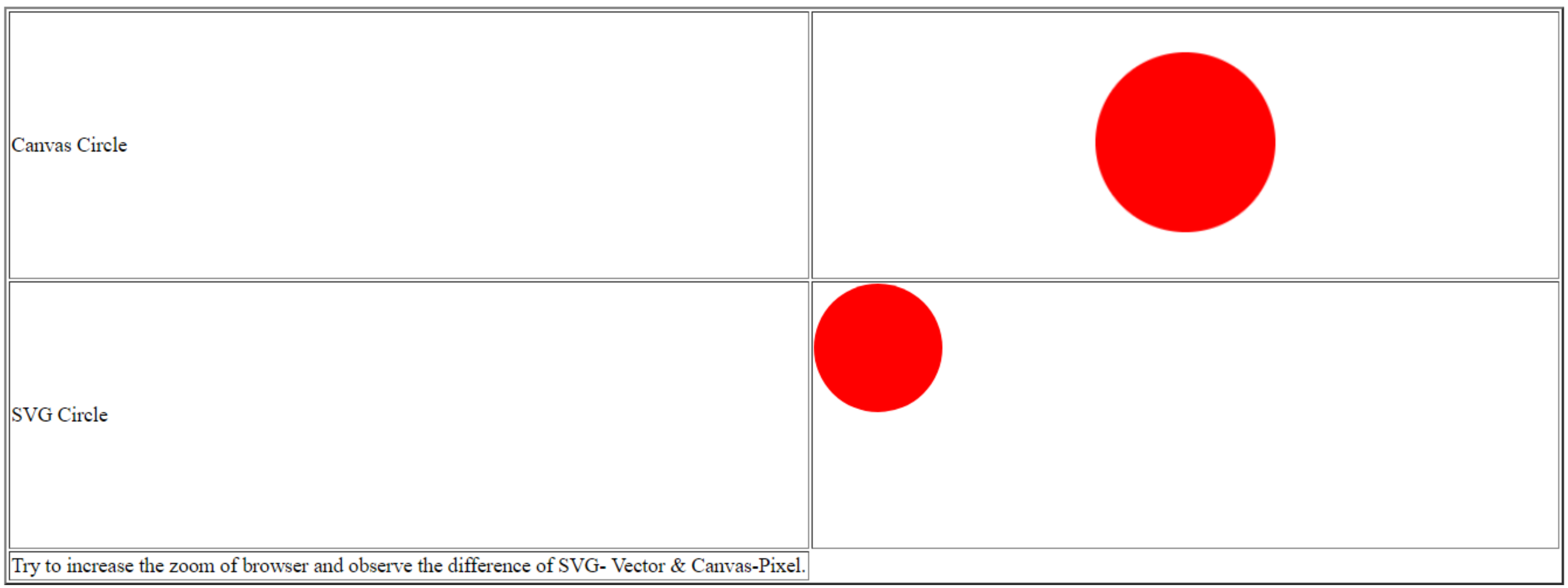
Compare SVG and Canvas

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Create a html document with canvas and SVG circle.

Magnify the document and observer the difference.



Module 2 Agenda

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

Topic Name	Duration
HTML5 Fundamentals	45 min
HTML5 – 2D Graphic	30 min
HTML5 Multimedia feature	**20 min**
HTML5 APIs	3 Hours

HTML5 Multimedia Support

- Until HTML5, embedding audio and video on the web page was achieved by means of third party plugins e.g. QuickTime, Real Player, Silverlight or Adobe Flash Player.

- With introduction of HTML5 video and audio element this problem is resolved which makes multimedia a seamless part of webpage.

- Although the browser state is to be considered when using HTML5's multimedia elements but the elements have been designed with backward compatibility in mind.

Video Element

- Video element can be included in a webpage as below :

```
<video src=“example.mp4"></video>
```

Video Element Attributes

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

Attribute	Description
src	This attribute specifies the video to play. It can be a local resource within your own website or something exposed through a public URL on the Internet.
controls	controls is a Boolean attribute, so no value is required. Its inclusion in the markup tells the browser to make the controls visible and accessible to the user.
autoplay	This attribute tells the browser to start playing the video as soon as it loads. If this attribute is omitted, the video plays only when told to through player controls or JavaScript.
audio	This attribute accepts only a single value : muted which causes video default state to mute.

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Video Element Attributes

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

Attribute	Description
poster	This attribute specifies an image to show in the place allocated to the video until the user starts to play the video. Use this when you're not using autoplay. It's very useful for providing a professional image or artwork to represent the video. If it's omitted, the poster appears in the first frame of the video.
width /height	These attributes control the amount of space the video will occupy on the page. Omitting these causes the video to display in its native size.
loop	This attribute tells the browser to continuously play the video after it completes. If this attribute is omitted, the video stops after it plays through completely.

Demonstration

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

Video Element

Video Element Methods

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

Method	Description
play()	Plays the video from its current position.
pause()	Pauses the video at its current position.
volume	Allows the user to control the volume of the video.
currentTime	Represents the current position of the video. Increase or descrease this value to move forward or backward in the video.

Audio Element

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Certain websites are entirely about sound e.g.
  - Websites with dictionaries where to listen to pronunciation sound is required
  - Games need sound effects
  - Kids learning websites

- Initially this was again managed using plugins, with HTML5 audio element this can be natively managed.

```
<audio src="example.mp3"></audio>
```

Audio Element Attributes

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

Attribute	Description
autoplay	This boolean attribute if specified, the audio will automatically begin to play back as soon as it can do so without stopping to finish loading the data.
autobuffer	This boolean attribute if specified, the audio will automatically begin buffering even if it's not set to automatically play.
controls	If this attribute is present, it will allow the user to control audio playback, including volume, seeking, and pause/resume playback.

Audio Element Attributes

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657

Attribute	Description
loop	This boolean attribute if specified, will allow audio automatically seek back to the start after reaching at the end.
preload	This attribute specifies that the audio will be loaded at page load, and ready to run. Ignored if autoplay is present.
src	The URL of the audio to embed. This is optional; you may instead use the <source> element within the video block to specify the video to embed

Demonstration

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

Audio Element

Browser Support Fallback

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- All browsers do not support all video\audio formats.
- <source> element allows to specify multiple alternative video or audio for media element.
- When the video/audio element has defined <source> , the browser goes through all source element from top and plays the first one that it supports.

```
<video controls height="400" width="600" poster="picture.jpg">
        <source src="samplevideo.ogv" type="video/ogg"/>
        <source src="samplevideo.mp4" type="audio/mp4"/>
        <object>
        <p>Video is not supported by this browser.</p>
        </object>
</video>
```

Knowledge Check(1 of 2)

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Which video attribute tells the browser to start playing the video as soon as it loads?
  1. loop
  2. preload
  3. poster
  4. autoplay

Knowledge Check(1 of 2)

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Which attribute if present will allow the user to control audio playback, including volume, seeking, and pause/resume playback?
  1. src
  2. controls
  3. preload
  4. autoplay

Module 2 Agenda

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

Topic Name	Duration
HTML5 Fundamentals	45 min
HTML5 – 2D Graphic	30 min
HTML5 Multimedia feature	20 min
HTML5 APIs	**3 Hours**

Geolocation API

- Use to retrieve geographical location of a user.
- The location information is provided as a set of latitude and longitude coordinates along with certain other metadata.

Geolocation API: Browser Support

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f48696768207

- Run the below script to check support for geolocation object.

```
// check for Geolocation support
if (navigator.geolocation) {
  console.log('Geolocation is supported!');
}
else {
  console.log(‘Geolocation is not supported for this Browser/OS version yet.');
}
```

Geolocation API: Finding Location

- To retrieve the current location of user device :

```
getCurrentPosition(positionCallback, [positionErrorCallback], [positionOptions])
```

```
function updateLocation(){
	div1=document.getElementById("currentLocation");
	// check for Geolocation support
	if (navigator.geolocation) {
		navigator.geolocation.getCurrentPosition(showPosition);
	}
	else {
		div1.innerHTML='Geolocation is not supported for this Browser/OS version yet.';
	}
}
function showPosition(position){
	 div1.innerHTML="Latitude: " + position.coords.latitude +
	 "<br>Longitude: " + position.coords.longitude;
 }
```

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Demonstration

- Geolocation
  - Find Latitude and Longitude

Geolocation API: Finding Location

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- To monitor the user location and to keep track of the changes in the location.

navigator.geolocation.watchPosition()

```
navigator. Geolocation.watchPosition(
function(position)
{
    document.getElementById('location').innerHTML =
'Latitude: ' +
position.coords.latitude +
' Longitude: ' +
position.coords.longitude +
' with an accuracy of: ' +
position.coords.accuracy + 'm'
})
```

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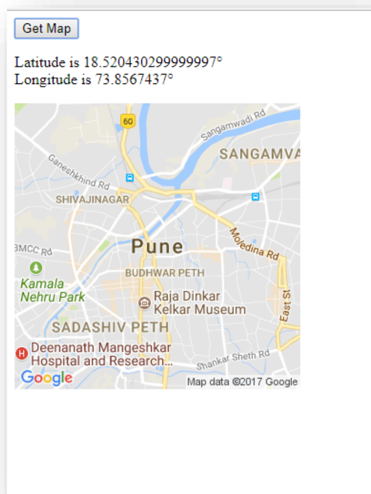
Geolocation API: Map

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Embed Google Static Map using current latitude and longitude using below url :

"https://maps.googleapis.com/maps/api/staticmap?center=" + latitude + "," + longitude + "&zoom=13&size=300x300&sensor=false"



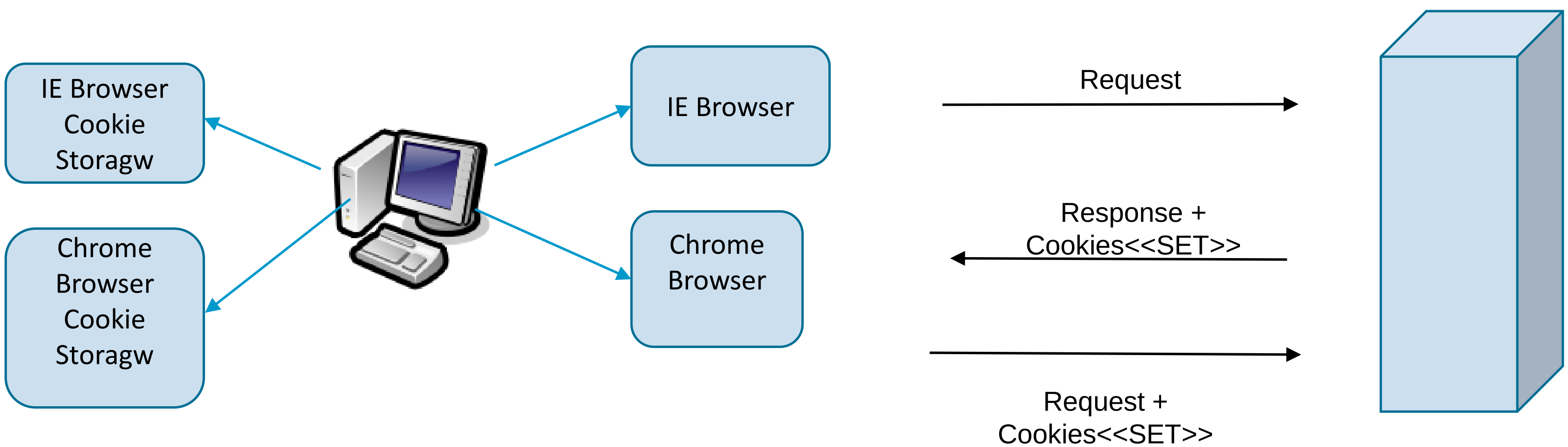
Knowledge Check

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Which of the below method will retrieve periodic updates about current geolocation of the device?
  1. getCurrentPosition()
  2. watchPosition()
  3. getUpdatedPosition()
  4. getCoords()

Cookies

- Cookies are small pieces of data which a server can store in the browser.
- The cookie is sent by the browser along with all future HTTP requests to the server that set the cookie.
- Size of each cookie can be 4KB and 20 Cookies per domain.
- Each tab/same instance of browser can access them.



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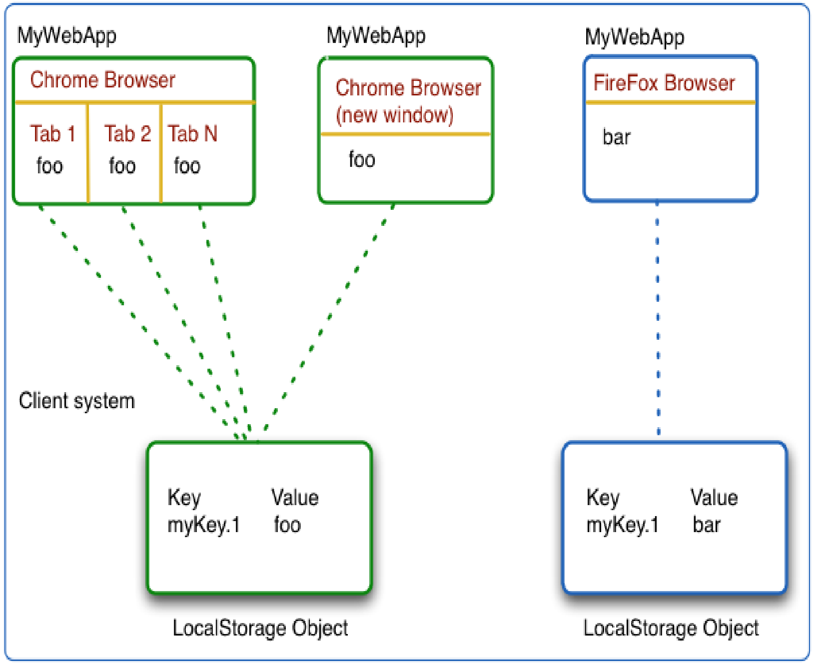
WebStorage

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- HTML5 comes with the supports for development of Web applications that can be used in offline mode.
- Data in webstorage is sandboxed.
- Data remains on client.
- Web storage allows to save only strings.
- Web Storage can be considered as an improvement of cookies.
- It is a persistence medium that allow to store the data in browser via a key value pair.
- There are two types of web storage :
  - Local
  - Session



Local

- Local storage stores data with no expiration data
- Using Local Storage, data can be retrieved from all the windows in the same domain even if the browser is restarted.
- Steps to create local storage of data

  Check for the browser compatibility

1. Set the local storage data. This is stored in key-value pairs

```
if(typeof(Storage)!=="undefined")
  {   alert(“Yes! localStorage and sessionStorage support!”);   }
```

2. Retrieve the value and use it for further processing

```
localStorage.setItem("MyName", name.value);
```

```
alert(localStorage.getItem("MyName"));
```

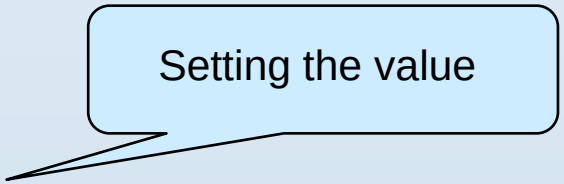
Local

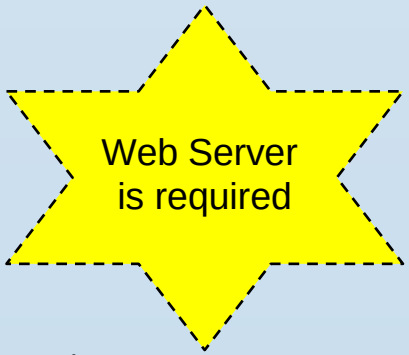
```
<head>
   <script>
      function SetValueClick() {
         var name = document.getElementById("txt");
         localStorage.setItem("MyName", name.value);
      }

      function GetValueClick() {
         alert(localStorage.getItem("MyName"));
      }
   </script>
</head>
<body>

Enter Your Name: <input id="txt" type="text" /> <p />

<input id="Button1" type="button" value="Set Value" onclick="SetValueClick()" />
   <input id="Button2" type="button" value="Get Value" onclick="GetValueClick()" />
</body>
</html>
```





Session Storage

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- Session storage stores data for one session
- In Session Storage, data is available only in the window it was stored in and is lost when the browser window is closed.
- Session storage object is used to set and get the data

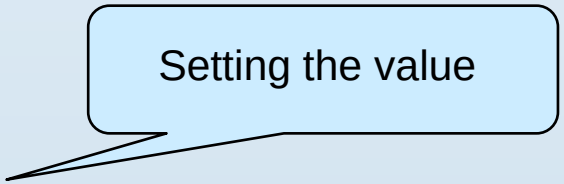
Session Storage

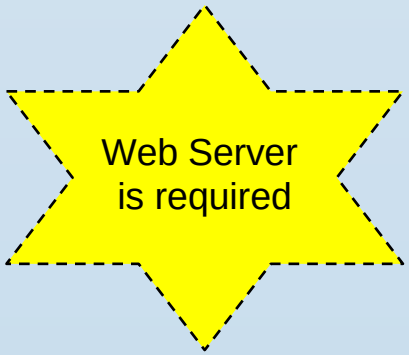
```
<head>
   <script>
      function SetValue() {
         var name = document.getElementById("txt");
         sessionStorage.setItem("MyName", name.value);
      }

      function GetValue() {
         alert(sessionStorage.getItem("MyName"));
      }
   </script>
</head>
<body>

Enter Your Name: <input id="txt" type="text" /> <p />

<input id="Button1" type="button" value="Set Value" onclick="SetValue()" />
   <input id="Button2" type="button" value="Get Value" onclick="GetValue()" />
</body>
</html>
```





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Demonstration

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- Webstorage
  - Local Storage
  - Session Storage

Knowledge Check

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Which storage can span to multiple windows and last beyond current session?
  1. Local Storage
  2. Session Storage
  3. Both 1 and 2
  4. None of above

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Offline Web Application (App Cache)

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- HTML5 supports ApplicationCache by which your web application can remain cached for offline browsing.
- Developer can mark the files to be cached.
- Advantages:
  - Offline Browsing
  - Reduced Server Load
  - Faster browsing
- To make an offline version of a web application , cache manifest file needs to be created and included as a value of manifest attribute in document's html tag.

Cache Manifest

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- The cache manifest file defines which files can be cached by the browser.
- The cache manifest has an appcache or manifest extension, and it is referenced in the html tag manifest attribute.

```
<html manifest="application.appcache">
```

- The catch is this must be included on every page. If it’s not there, the browser won’t cache the page.
- The begins with the words CACHE MANIFEST and then lists all the files in of web application, one per line:

```
CACHE MANIFEST
example.html
acn.jpg
```

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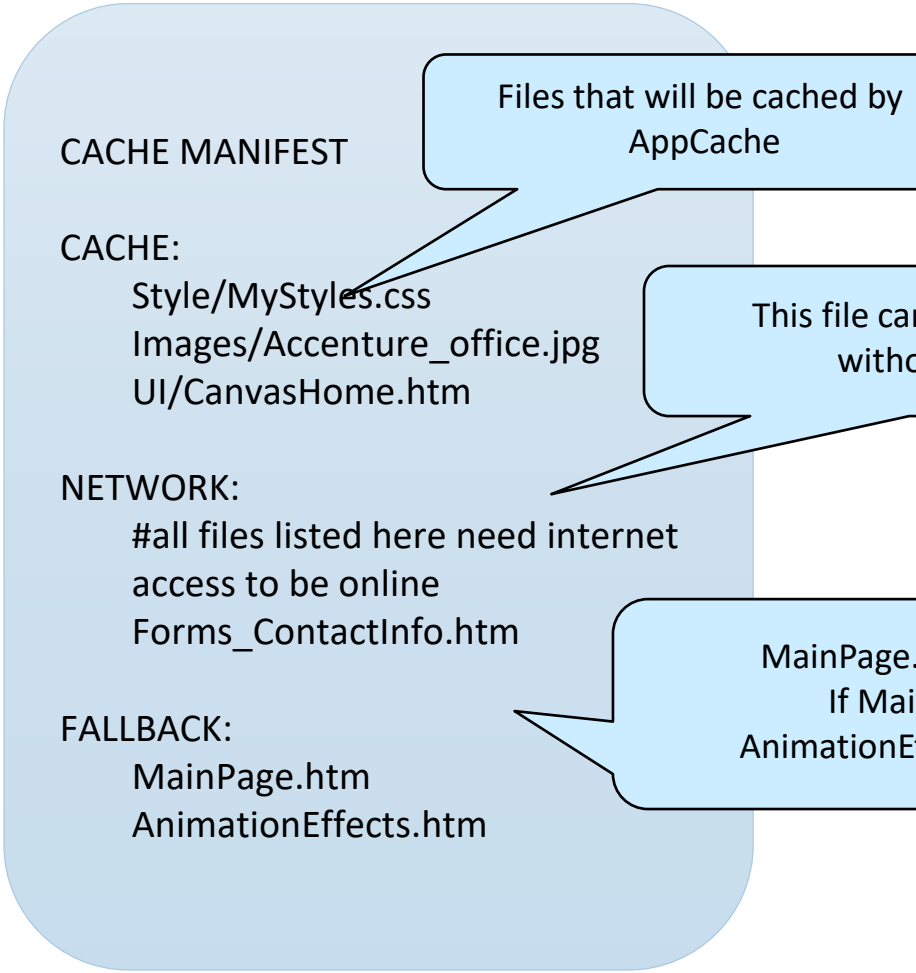
Cache Manifest

- CACHE MANIFEST file has three section :
  - CACHE MANIFEST - add files that you want to be cached here, once downloaded
  - NETWORK – add files that you do not want to be cached, i.e. files that can work only online.
  - FALLBACK – add files that specify fallback pages if a page is inaccessible



Create Offline Application : Step 1

- The contents of the manifest file are begin with CACHE MANIFEST followed by the files that are to be stored and made available for offline use.

```
CACHE MANIFEST

CACHE:
    Style/MyStyles.css
    Images/Accenture_office.jpg
    UI/CanvasHome.htm

NETWORK:
    #all files listed here need internet access to be online
    Forms_ContactInfo.htm

FALLBACK:
    MainPage.htm AnimationEffects.htm
```

Create Offline Application : Step 2 & 3

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Modify the web page indicating it to refer the manifest
  - Attribute “manifest” must be specified for every html file that needs to be cached and hence be available offline.

```
<html manifest=”details.manifest”>  OR <html manifest=”details.appCache”>
```

- Configure the web server
  - Ensure that the web server is configured to serve manifest files with MIME type text/cache-manifest
  - Check if browser supports offline applications
  - Go offline and browse the application

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Demonstration

Follow above three steps and create an offline web application.

Knowledge Check

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

- Which of below are the advantage of Application Cache?
  1. Offline Browsing
  2. Faster response
  3. Reduced server load
  4. All of above

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HTML History API

2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f4869676820706572666f726d616e63652e2044656c6976657265642e2f48696768207

- HTML5 history API gives access to browser navigation history via JavaScript.
- The browser maintains a browsing history. Every time the user navigates within the same website, the URL of the new page is placed at the top of the stack.
- When the user clicks the "back" button, the pointer in the stack is moved to the previous element on the stack. If the user clicks the "forward" button again, the pointer is moved forward to the top-most element on the stack.
- If the user clicks "back" and then click on a new link, the top-most element on the stack will be overwritten with the new URL.

History Object

- We can have access to history object via window object.

```
window.history
```

- History object functions:

Function	Description
back()	back() function moves the browsing history back to the previous URL. Calling back() has the same effect as if the user clicked the browser's "back" button.
forward()	forward() function moves the browsing history forward to the next page in the history. Calling forward() has the same effect as clicking the browser's "forward" button.
go(index)	go(index) function can move the history either back(negative value) or forward(positive value) depending on the index you pass as parameter to the go() function.

Demonstration

2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070657266f726d616e63652e2044656c6976657265642e2f486967682070

History Object Demo

Knowledge Check

2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070657266f726d616e63652c2044656c6976657265642c2f486967682070

- State true or false

go(index) function can move the history only forward.

Module 1 Summary

- Upon completing this module, you should now be able to:
  - Create HTML form with new input types and attributes
  - Create 2D graphics
  - Use HTML5 media features
  - Work with Geolocation API
  - Create Offline Application
  - Manage browser history
  - Work with webstorage

Questions