React

ANIL JOSEPH

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Agenda

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Anil Joseph

Introduction

- Over 20 years of experience in the industry
- Technologies
  - C, C++
  - Java, Enterprise Java
  - .NET & .NET Core
  - **UI Technologies: React, Angular, jQuery, ExtJs**
  - Mobile: Native Android, React Native
- Worked on numerous projects
- Conducting trainings for corporates (700+)

Software

Node.js & NPM

Yarn

(Optional)

HTML, CSS, JavaScript, TypeScript Editor

(Visual Studio Code)

Browsers(Chromium)

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HTML

- The HyperText Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser.
- HTML was first created by Tim Berners-Lee, Robert Cailliau, and others in 1989.
- Versions
  - HTML2, HTML3, HTML4, HTML5

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What is HTML 5

- HTML 5 comprises of
  - Markup
  - JavaScript API's
- Most HTML5 features are supported by the modern browsers.

HTML5 Features

- More descriptive markup(Semantic) — New tags introduced that are more descriptive
- Better Interface and Applications — Easier to create more richer and interactive applications.
- Multimedia with less reliance on plug-ins — No requirement of using Flash or Silverlight for video, audio and vector graphics.
- Backward Compatible
- JavaScript libraries available for common functionalities like Forms, Sockets, Local Storage etc.

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HTML Markup

- html
- head
- body
- div(division)
- p (paragraph)
- form
- input
- select, option
- textarea
- button
- label

- h1,h2,h3,h4,h5,h6
- img
- table
- thead
- tbody
- th, tr, td
- ol, ul(lists)
- li (list item)

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Semantic Markup

- header
  - For an introduction of a document or section, could include navigation
- footer
  - For a footer of a document or section, could include the name of the author, the date of the document, contact information, or copyright information
- nav
  - Defines the navigation
- main
  - The main content area consists of content that is directly related to or expands upon the central topic of a document, or the central functionality of an application.
- section
  - For a section in a document. Such as chapters, headers, footers, or any other sections of the document
- article
  - Specifies independent, self-contained content, could be a news-article, blog post, forum post, or other articles which can be distributed independently from the rest of the site

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Semantic Markup

- aside
  - For content aside from the content it is placed in. The aside content should be related to the surrounding content
- canvas
  - For making graphics with a script
- figure
  - For grouping a section of stand-alone content, could be a video
- figcaption
  - The caption of the figure section
- time
  - For defining a time or a date, or both

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Semantic Markup

- audio
  - For multimedia content, sounds, music or other audio streams
- video
  - For video content, such as a movie clip or other video streams
- datalist
  - A list of options for input values
- mark
  - For text that should be highlighted
- details & summary
  - represents a disclosure widget
- progress
  - represents the completion progress of a task
- meter
  - Displaying a scalar measurement within a known range

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Getting Started

- HTML 5 pages can be viewed on any browser
- However, features of HTML 5 are implemented by only the latest browsers
- The doc type for HTML 5
  - <!DOCTYPE html>
  - Much simpler than earlier versions

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Javascript API's

- DOM Manipulation
- Forms
- Geolocation
- Web Storage
- Web Workers
- Media Capture
- Web Notifications
- Offline Web Applications
- Server Sent Events
- Web Sockets
- XMLHttpRequest
- Canvas 2D Context & WebGL

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HTML DOM

- The Document Object Model (DOM) is the data representation of the objects that comprise the structure and content of a document on the web.
- Its an object-oriented representation of the web page and can be modified with a scripting language such as JavaScript.
- The document object represents the DOM
- The DOM API's are used to access and manipulate the DOM.

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Window

- The window object represents a window/tab containing a DOM document.
- All global JavaScript objects, functions, and variables automatically become members of the window object.
- Properties available on window object
  - history
  - location
  - screen
  - navigator
  - many more…

Events

- document: DOMContentLoaded
  - When the DOM is ready
- window:load
  - When the page and all resources are loaded
- window:beforeunload
  - When the user is leaving the page, can be cancelled
- window:unload
  - When the user is leaving the page
- document: readyStateChange
  - The current state of the page

Form Field Types

- text
- passsword
- email
- url
- range
- number
- date
- datetime
- color
- tel
- search

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Methods and Properties

- boolean checkValidity();
  - Validates the control against constraints.
  - If any constraints are not satisfied, then the user-agent fires the ***invalid*** event and the method returns false.
  - If all constraints are satisfied does nothing, the method returns true
- readonly attribute ValidityState validity;
  - Returns the validity state of the control
- readonly attribute DOMString validationMessage;
  - Return a suitably localized message that the user agent would show the user if this were the only form control with a validity constraint problem.
- void setCustomValidity(in DOMString error);
  - set the ***custom validity error*** message to the value of the given message argument.

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Validity States

- **valueMissing**
  - Returns true if a required element is empty.
- **typeMismatch**
  - Applies to all the new type attributes. For example, if an email value is incorrect, this attribute returns true.
- **patternMismatch**
  - Returns true when an element contains the pattern attribute and doesn't conform to the regular expression.
- **tooLong**
  - When any element surpasses its max length property this attribute will return true.
- **rangeUnderflow** and **rangeOverflow**
  - If an element's min or max attributes are above or below the specified values, this attribute will return true.
- **stepMismatch**
  - When an element with the step attribute doesn't conform to the required step value, this attribute returns true.
- **valid**
  - If any of the values listed above return true, this attribute returns false to indicate the field is invalid. Otherwise, if all the conditions are met, it will return true.

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Additional Form Support

- autofocus
  - Support for placing the focus on a specific form element.
- required
  - Support for enabling the input field as required.
- placeholder
  - Support for placing a placeholder text in a form field
- pattern
  - Define a regular expression for validation
- contenteditable
  - Support for inline content editing

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AJAX

- Asynchronous JavaScript and XML.
- Ajax is methodology to asynchronously invoke a server endpoint using the HTTP(s) protocol from a browser application using JavaScript. The data exchange is in XML format.
- Lately the preferred data format is JSON.
- All browsers provide a JavaScript object called XMLHttpRequest which is the core object for AJAX.
- There are many high-level libraries built over XMLHttpRequest
- Fetch API is one such library which is part of HTML5

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Browser Storage

- HTML 5 introduces a new mechanism for storing data on the client
  - Web Storage
- Easy to use, powerful and reasonably secure.
- Other mechanisms
  - Web SQL Databases
  - Indexed Databases

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Web Storage

- Allows us to store information as key-value pairs on the client-side
- Unlike cookies the information stored does not get exchanged to the server.
- Browsers restricts every domain to store to 5mb to 10mb of data on the client.
- Currently supported by most browsers.
- Web Storage gives us 2 scopes to store information
  - localStorage: A key/value pair, tied to the domain and persists across browser sessions.
  - sessionStorage: A key/value pair tied to the domain and erased when the browser session ends.
- The API's are implemented as javascript functions using the
  - window.localStorage object
  - window.sessionStorage object

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Web Storage Methods and events

- Methods
  - setItem(key, value)
  - getItem(key)
  - removeItem(key)
  - clear()
- Events
  - storage

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Thank You

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