Basics of JQuery

Session 3

Objectives

At the end of this session, you will be able to:

➢ Explain the basics of jQuery and its usage with Bootstrap

➢ Outline selectors and functions in jQuery

➢ Describe JSON and its usage in jQuery

➢ Explain conversions to JSON

➢ Describe the concept of event delegation and its usage in jQuery

Introduction

- A lightweight and concise JS library

- Helps to make JS programming easy and faster

- Feature rich and open source library which simplifies complex tasks

- Easy to use API which is compatible with browsers

- Common tasks into built-in methods

- Reduce time in writing lines of code

Benefits of jQuery over JS (1-2)

Unobtrusive JS	• Web page designing through unobtrusive JS • Separates functionality between presentation and structure of Web page
Lightweight	• Reduced library size is in kilobytes (KB) • Browser cache the library throughout Websites instead of downloading it
Easy to use	• Simple and robust syntax • Reduced lines of code • Library uses CSS3 selector specification
Big and focused library	• Perform variety of functions through single library • jQuery offers several utility functions

Benefits of jQuery over JS (2-2)

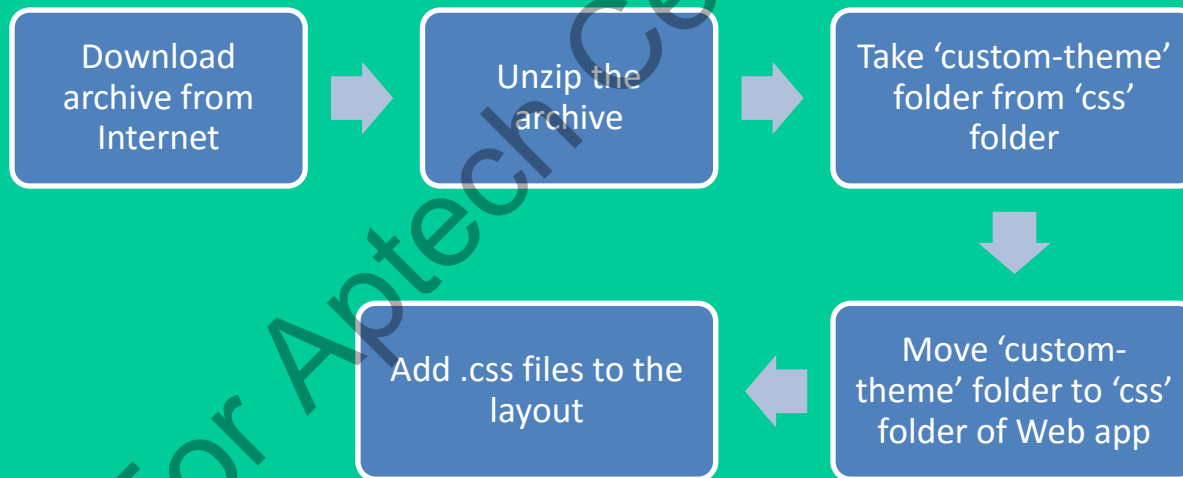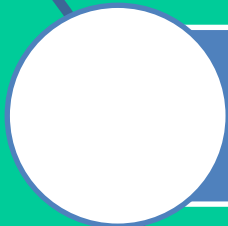|	
Extensibility	• Plugin framework – third party and official plugins • Any feature can be included through plugin
Browser Compatibility	• Resolves cross browser issues • jQuery implemented compatibility code
Strong Community	• Exclusive community where developers improve functionality • Offers several plugins which accelerate Web development process
AJAX Support	• Creates AJAX templates • Offers smooth interfaces and efficient loading
Comprehensive Documentation	• Official website has in-depth documentation and tutorials • Helps beginners for easy use

Using Bootstrap and jQuery

- jQuery UI Bootstrap theme allows using bootstrap-themed widgets

- Bootstrap and jQuery cannot exists together originally

- New theme was introduced with relevant JS and CSS using jQuery and Bootstrap

- Bootstrap theme for third party widgets

- Steps to use the theme:

Download archive from Internet	→	Unzip the archive	→	Take 'custom-theme' folder from 'css' folder

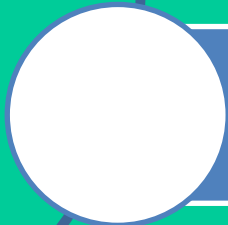| Add .css files to the layout	←	Move 'custom-theme' folder to 'css' folder of Web app

Use of jQuery in Web Application

- jQuery library is a JS file

- Used for programming in jQuery to develop Web application

- Two ways to use the file:

Download the library file from jQuery.com and refer it in HTML code and finally, save the downloaded file in the directory

Include the library into the HTML code while referring it to CDN

jQuery Syntax

- Customized syntax:

    $(selector).action()

- Web developer finds and selects HTML element and triggers desired actions

- jQuery code exists in **document ready** event. Syntax is:

    $(document).ready(function()

    {

    //Code jQuery functions here

    });

- Wait for DOM to load fully before requests or responses are handled by HTML pages

jQuery Functions

- Function definition can be done in four ways:

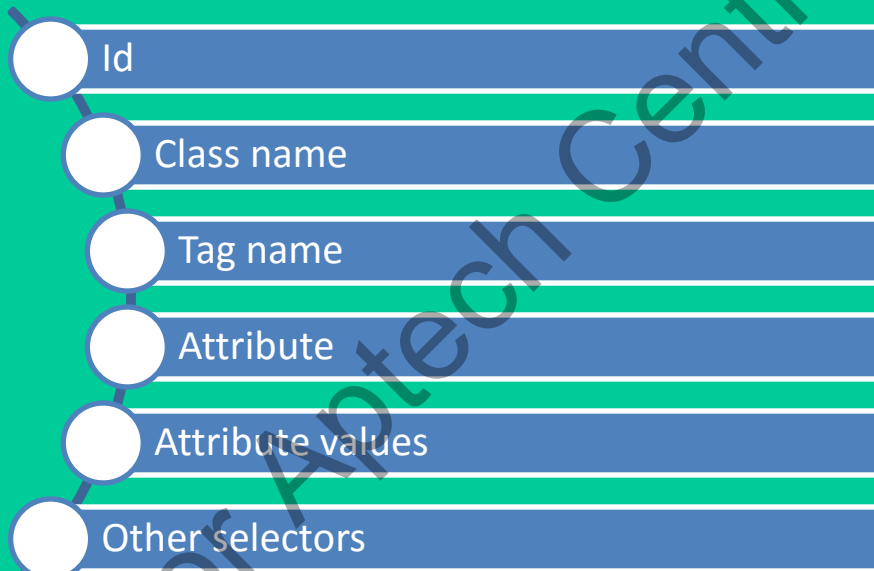| Basic Declaration	Declaration as a Variable name	Self-invoking Function Declaration	User-defined Function Declaration
• Easy way of declaration • Used for quick testing • Not recommended to use	• Defining a function through an expression assigned to a variable • Variable is used as a function	• Expression where script invokes automatically without being called • No name and no explicit calls	• Developers creating own functions • jQuery.fn or $.fn creates a user-defined function

jQuery Selectors (1-3)

- A function in the form of expression to search matching element in DOM
- Offers selecting single or multiple HTML elements
- Selectors begin with jQuery identifier ($) followed by parentheses
- Library allows to access elements by:

- Id
- Class name
- Tag name
- Attribute
- Attribute values
- Other selectors

jQuery Selectors (2-3)

Id Selector

- Refers to the id attribute of a tag to search relevant element
- Id is unique and used to find single tag at a time
- Document.getElementById() function
- Syntax: $('#<id>')

Class Selector

- Search HTML elements having specified class
- getElementsByClassName() function
- Syntax: $('.<class>')

jQuery Selectors (3-3)

Element Selector

- Access elements as per name
- Specify element selector within parentheses followed with $ character
- Syntax is: $(<element>)

Checked Selector

- Access and select all selected radio buttons and checkboxes
- Specify :checked in double quotes within parentheses followed by $ character
- Syntax is: $(":checked")

JSON and Conversions to JSON

- It is a lightweight format used for exchanging and storing data

- Alternate to eExtensible Markup Language (XML)

- Data exchanged between a server and a client

- Exchange in simple text format

- Independent of programming language

- Convert an object into JSON and send it to the server or vice versa

- Free from complex parsing

Creating JSON Objects

- Similar to JS objects

- Written in the form of key/value or name/value pairs

- Name is in double quotes and is separated by value with a colon

- Syntax: {"name":value}

Data Access from JSON Object

- Use dot (.) notation and corresponding property name

- Syntax: <Object>.<propertyName>;

- Example: var firstName = employeeJSON.firstName;

- JSON object is created when document is loaded

Using JSON Arrays

- JSON arrays hold several objects

- To store the data of more than one employee in JSON object

- Include objects in square brackets separated by comma (,) notation

- Example of JSON array holding colors of rainbow:

["Red", "Blue", "Green", "Yellow", "Violet", "Indigo", "Orange"]

Converting String to JSON Object

- Parse a string using JSON.parse()

- Convert string into JSON object or an array

- String should be used in JSON format to avoid errors

Event Delegation in jQuery (1-2)

- Event is an exact moment when an action is performed by a user

- Designing of dynamic Web pages

- Event listener listens to the raised event which is associated with source of event

- Event handler is a custom function that conveys for handling an event

- Event delegation assigns single listener to a parent element

- On() and delegate() methods enables event delegation

Event Delegation in jQuery (2-2)

- Main features are – event bubbling and target property

- Boost performance

- Target property is the element that originated the event

- Benefits of event delegation:

  - Less handler to take up memory

  - Better performance

  - Reduced risk of crashing

  - No re-assigning handlers

Summary (1-3)

- jQuery is a lightweight, open-source JS library that makes JS programming easier and more efficient.

- jQuery uses unobtrusive JS, offers a variety of reusable functions, is extensible, and is compatible with modern browsers.

- Web developers can either download the jQuery file or include it by referring to a CDN for using jQuery in their Web applications.

- The customized syntax of jQuery is $(*selector*).*action*().

- There are four ways of declaring a function in jQuery, which are basic, as a variable, self-invoking, and user-defined.

Summary (2-3)

- A jQuery Selector refers to a function in the form of an expression for searching the matching element in the DOM.

- The jQuery library allows selecting the HTML elements by ID, class name, tag name, attribute, and attributed values.

- JSON is a lightweight format for exchanging and storing data as well as an easier alternative to XML.

- Unlike in JS, the key or name in JSON is always a string.

- Each name/value pair in JSON format is referred to as a property.

- A JSON object is a collection of properties, each separated by a colon.

Summary (3-3)

- The JSON.stringify()method converts a JSON object into a JSON string.

- The JSON.parse()method converts a JSON string into a JSON object or array.

- Event delegation allows assigning a single listener to a parent element, which will listen for all descendants corresponding to a selector.

- The on() and delegate() methods facilitate delegating an event in jQuery.

- Event bubbling in which an event bubbles upwards from the source element in the DOM tree.

- Event bubbling and target property are the main features of event delegation.