



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

- Helps in designing Web page through unobtrusive JS
- Separates functionality between presentation and structure of Web page

Lightweight

- Reduced library size is in kilobytes (KB)
- Browser caches the library across several Websites instead of downloading for each if using CDN

Easy to use

- Simple and robust syntax → Reduced lines of code
- Using CSS3 selector specification eliminates the need to learn JQuery syntax.

Big and focused library

- Developers perform variety of functions through single library
- To make tasks easier, jQuery offers several utility functions

Benefits of jQuery over JS

2-2

Extensibility

- Comes with a plugin framework → simple to extend
- Includes both 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

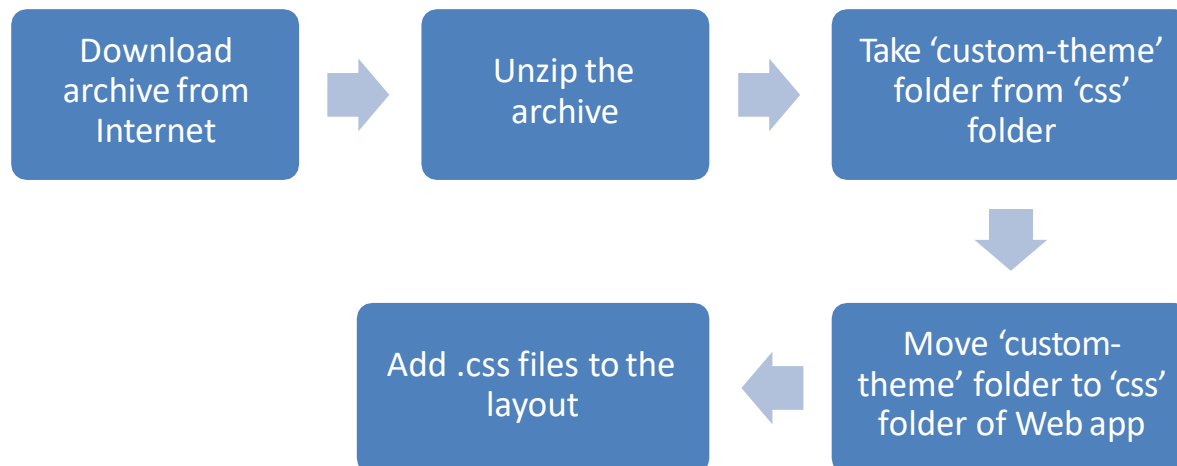
- Creates AJAX templates
- Offers smooth interfaces and efficient loading

Comprehensive Documentation

- Official website has in-depth documentation and tutorials, helps beginners for easy use

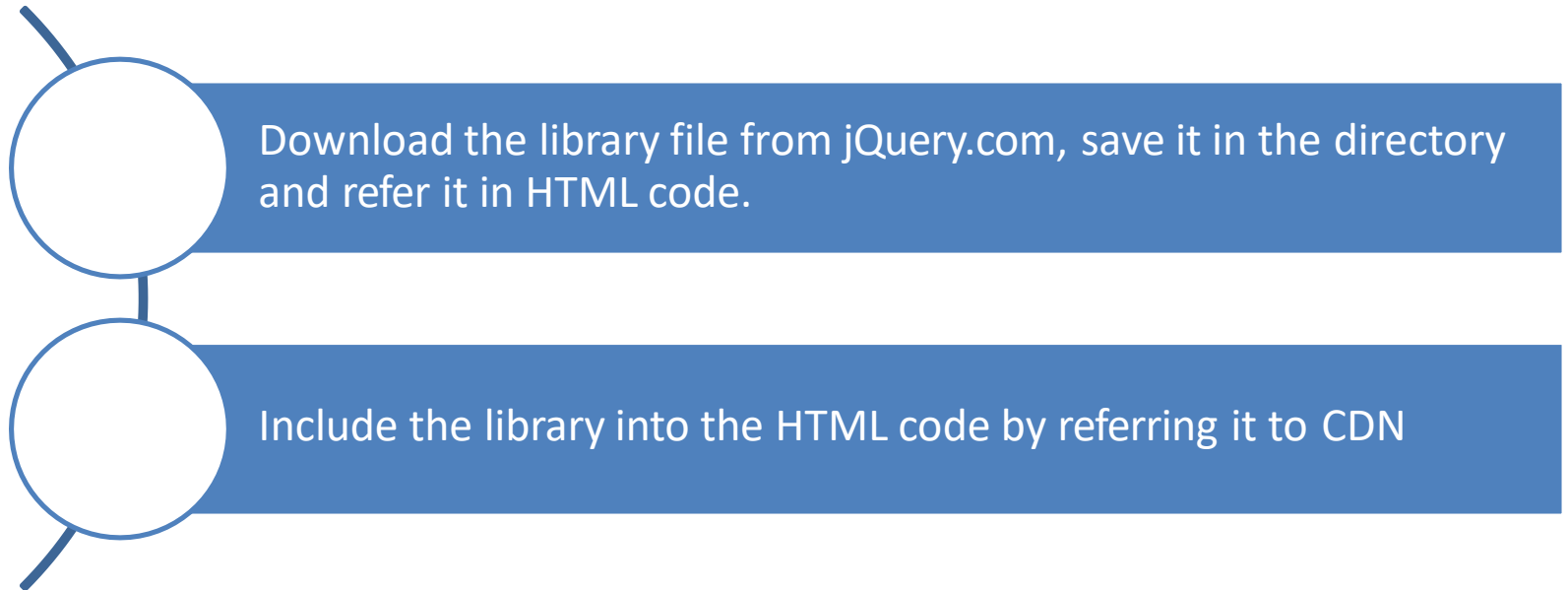
Using Bootstrap and jQuery

- jQuery UI Bootstrap theme allows using bootstrap-themed widgets w/t breaking the appearance of components
- Bootstrap and jQuery cannot exist together originally. However, new theme was introduced with relevant JS and CSS using jQuery and Bootstrap
- It also offers Bootstrap theme for several third party jQuery widgets
- Steps to use the theme:



Use of jQuery in Web Application

- jQuery library is a JS file
- Used for programming to develop Web application
- Two ways to use the file:



jQuery Syntax

- Customized syntax:

`$(selector).action()`

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

```
$ (document) .ready ( function () {  
    //Code jQuery functions here  
} ) ;
```

- This helps the executing code only after DOM load completely.

jQuery Functions

- Function definition can be done in four ways:

Basic Declaration

- Easy way of declaration
- Used for quick testing
- Not recommended to use

Declaration as a Variable name

- Defining a function through an expression assigned to a variable
- Variable is used as a function

Self-invoking Function Declaration

- Expression where script invokes automatically without being called
- No name and no explicit calls

User-defined Function Declaration

- Developers creating own functions
- **jQuery.fn** or **\$.fn** creates a user-defined function

jQuery Selectors

1-3

- Refers to a function in the form of expression to search matching element in DOM
- Allows 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**

Id Selector

- Refers to the id attribute of a tag for searching relevant element
- Id is unique, it is used to find a single tag at a time
- `document.getElementById()` function
- Syntax: `$('#<id>')`

Class Selector

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

Element Selector

- Access elements as per name
- 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 Extensible Markup Language (XML)
- Data exchanged in simple text format between a server and a client
- 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
- Objects are included 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 to JSON object using **JSON.parse()**
 - ✓ Convert string into JSON object or an array
 - ✓ String should be used in JSON format to avoid errors
- Convert Array / JSON object to string using **JSON.stringify()**

Event Delegation in jQuery 1-2

- Event is an exact moment when an action is performed by a user
- It is used for 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 (1-2)

- 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.
- 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.

Summary (2-2)

- 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.
- 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.