**What is JQuery ?**

* Js library
* Write less do more
* Simplifies the code
* Find the elements using css selectors and do something using JQuery methods

**Syntax**

$(document).ready(function(){

$(‘#hello’).text(‘Hello World’);

})

$(selector).action();

$(this).hide(); - to select the current element

$(“p”).hide(); - to select p tag

$(“.testClass”).hide(); - to select a class

**AJAX - Asynchronous Javascript and XML**

**Asynchronous -** When you make a request to the server using AJAX, the browser doesn’t freeze up waiting for the response. Instead, your web application can continue to run and respond to user interaction.

Is a technique used in web development to create more dynamic and interactive web applications.

Parts of web pages can be updated without reloading the entire page.

* **AJAX** uses an **XMLHttpRequest (XHR)** object to communicate with the server in the background.
* Traditionally, AJAX relied on **XML to exchange data between the browser and server.** However, JSON(Javascript Object Notation) is now more commonly used for its simplicity and ease of use.

**How does AJAX work**

* A client event occurs
* Javascript creates an XMLHttpRequest object.
* The XMLHttpRequest object sends an asynchronous request to the server.
* The server processes the request.
* The server sends a response back to the webpage.
* Javascript processes the response and updates the web page accordingly.

**Benefits of AJAX**

* More dynamic and responsive user interfaces
* Reduced server load: only necessary data is exchanged between the browser and server, which can improve performance and scalability.

**Best practices**

* **Error handling**: handle errors to improve user experience.
* **security** : sanitize and validate inputs to avoid security risks.
* **Performance**: Optimize server side scripts for quick responses.
* **Fallbacks:** Provide fallbacks for users with javascript disabled.

**Challenges of AJAX**

* Browser compatibility
* SEO( search engine optimization) challenges
* Complexity
* Security concerns

**XML - Extensible markup language**

* It is a **structured format for data exchange**, often used to represent hierarchical data.
* In early AJAX applications, XML was a common choice for transmitting data between client and server side javascript because it offered a standardized way to structure information.
* Today, JSON(Javascript object notation) is more widely used for data exchange in AJAX due its simplicity and ease of parsing with javascript.

* Stores and transport data in a structured, human readable and machine readable format.
* Key features
* **Extensible:** You can define your own tags to represent specific data elements.
* **Platform independent**
* **Hierarchical Structure:** data is organized in a parent child relationship, making it easy to understand complex information.

**Example syntax of xml**

**<?xml version=”1.0” encoding=”UTF-8”?>**

**<book>**

**<title>The Lord of the rings</title>**

**<author>J.R.R. Tolkien</author>**

**</book>**

**what is XMLHttpRequest**

* XMLHttpRequest (XHR) Objects are used to interact with servers.
* You can retrieve data from a URL without having a full page refresh.

**What is ready state**

* Refers to the state of the XMLHttpRequest object.
* XHR also has a readystate property with different stages.
* 0 - unset
* 1 - opened
* 2 - headers received
* 3 - loading
* 4 - done - operation is complete and the response data is available.

**xhr.status**

Returns the HTTP status code of the XMLHttpRequest’s response.

It is used to determine whether the request was successful or not.

200 - ok, the request was successful

403 - forbidden

404 - page not found

400 - bad request

2 options in using JQuery

CDN - content delivery network

Asynchronous - doesn’t wait for a function to wait for complete

Synchronous - it will wait for a function to complete

**What is JQuery ?**

* Js library
* Write less do more
* Simplifies the code
* Find the elements using css selectors and do something using JQuery methods

**Syntax**

$(document).ready(function(){

$(‘#hello’).text(‘Hello World’);

})

$(selector).action();

$(this).hide(); - to select the current element

$(“p”).hide(); - to select p tag

$(“.testClass”).hide(); - to select a class

**AJAX - Asynchronous Javascript and XML**

**Asynchronous -** When you make a request to the server using AJAX, the browser doesn’t freeze up waiting for the response. Instead, your web application can continue to run and respond to user interaction.

Is a technique used in web development to create more dynamic and interactive web applications.

Parts of web pages can be updated without reloading the entire page.

* **AJAX** uses an **XMLHttpRequest (XHR)** object to communicate with the server in the background.
* Traditionally, AJAX relied on **XML to exchange data between the browser and server.** However, JSON(Javascript Object Notation) is now more commonly used for its simplicity and ease of use.

**How does AJAX work**

* A client event occurs
* Javascript creates an XMLHttpRequest object.
* The XMLHttpRequest object sends an asynchronous request to the server.
* The server processes the request.
* The server sends a response back to the webpage.
* Javascript processes the response and updates the web page accordingly.

**Benefits of AJAX**

* More dynamic and responsive user interfaces
* Reduced server load: only necessary data is exchanged between the browser and server, which can improve performance and scalability.

**Best practices**

* **Error handling**: handle errors to improve user experience.
* **security** : sanitize and validate inputs to avoid security risks.
* **Performance**: Optimize server side scripts for quick responses.
* **Fallbacks:** Provide fallbacks for users with javascript disabled.

**Challenges of AJAX**

* Browser compatibility
* SEO( search engine optimization) challenges
* Complexity
* Security concerns

**XML - Extensible markup language**

* It is a **structured format for data exchange**, often used to represent hierarchical data.
* In early AJAX applications, XML was a common choice for transmitting data between client and server side javascript because it offered a standardized way to structure information.
* Today, JSON(Javascript object notation) is more widely used for data exchange in AJAX due its simplicity and ease of parsing with javascript.

* Stores and transport data in a structured, human readable and machine readable format.
* Key features
* **Extensible:** You can define your own tags to represent specific data elements.
* **Platform independent**
* **Hierarchical Structure:** data is organized in a parent child relationship, making it easy to understand complex information.

**Example syntax of xml**

**<?xml version=”1.0” encoding=”UTF-8”?>**

**<book>**

**<title>The Lord of the rings</title>**

**<author>J.R.R. Tolkien</author>**

**</book>**

**what is XMLHttpRequest**

* XMLHttpRequest (XHR) Objects are used to interact with servers.
* You can retrieve data from a URL without having a full page refresh.

**What is ready state**

* Refers to the state of the XMLHttpRequest object.
* XHR also has a readystate property with different stages.
* 0 - unset
* 1 - opened
* 2 - headers received
* 3 - loading
* 4 - done - operation is complete and the response data is available.

**xhr.status**

Returns the HTTP status code of the XMLHttpRequest’s response.

It is used to determine whether the request was successful or not.

200 - ok, the request was successful

403 - forbidden

404 - page not found

400 - bad request

2 options in using JQuery

CDN - content delivery network

Asynchronous - doesn’t wait for a function to wait for complete

Synchronous - it will wait for a function to complete