**Assignment-02**

**Q.1) What is CSS? Syntax & explain with suitable example?**

* **CSS:** CSS (Cascading Style Sheets) is a language used to describe the visual appearance of a document written in HTML (HyperText Markup Language) or XML (eXtensible Markup Language).
* It provides web designers and developers with a powerful toolset to control the layout, typography, color, and other visual aspects of a webpage. CSS separates the presentation of a document from its content, which allows for greater flexibility and easier maintenance of a website.
* When a web browser displays a webpage, it uses the HTML markup to render the content of the page, and the CSS rules to style the presentation of the content. CSS allows designers to control how HTML elements are displayed, and how they interact with other elements on the page.
* It also provides advanced features like animations, transitions, and responsive design, which enable web developers to create dynamic and engaging user interfaces.
* **Here is an example of the basic syntax of a CSS rule:**

|  |
| --- |
| selector {  property1: value1;  property2: value2;  /\* more properties and values \*/  } |

* The selector specifies which HTML element(s) the rule applies to. The properties and values within the curly braces define the styling information that should be applied to the selected element(s). For example, let's say we want to change the color of all headings in a webpage to red. We could do this using CSS like so:

|  |
| --- |
| h1, h2, h3 {  color: red;  } |

* Here, the selector h1, h2, h3 selects all h1, h2, and h3 elements on the page. The color property sets the text color of these elements to red.
* **Another example is changing the background color of the body of a webpage to gray:**

|  |
| --- |
| body {  background-color: gray;  } |

* Here, the selector **‘body’** selects the body element of the HTML document, and the **‘background-color’** property sets its background color to gray.
* CSS offers a wide range of properties and values that can be used to control the layout, typography, color, and other visual aspects of a webpage. By separating the presentation of a document from its content, CSS allows web developers to create more flexible, responsive, and accessible websites.

**Q.2) Explain java script variable along with its type?**

* In JavaScript, a variable is a named storage location that holds a value. Variables are an essential part of programming because they allow developers to store and manipulate data in their code. In JavaScript, there are several ways to declare a variable, but the most common are using the var, let, and const keywords. The syntax for declaring a variable is as follows:
* **Data Types:**
* JavaScript provides different **data types** to hold different types of values.
* **There are two types of data types in JavaScript.** 1) Primitive data type 2) Non-primitive (reference) data type.
* JavaScript is a **dynamic type language**, means you don't need to specify type of the variable because it is dynamically used by JavaScript engine.
* You need to use **var** here to specify the data type. It can hold any type of values such as numbers, strings etc. For example:

|  |
| --- |
| var a=7; //holding number  var b="More Group’s"; //holding string |

* **JavaScript primitive data types:**
* There are five types of primitive data types in JavaScript. They are as follows:

1. **String:** Represents sequence of characters e.g. "hello"
2. **Number:** Represents numeric values e.g. 100
3. **Boolean:** Represents boolean value either false or true
4. **Undefined:** Represents undefined value
5. **Null:** Represents null i.e. no value at all

* **JavaScript non-primitive data types :** The non-primitive data types are as follows:

1. **Object:** Represents instance through which we can access members
2. **Array:** Represents group of similar values
3. **RegExp:** Represents regular expression.

**Q.3) Express Java script events and brief about any 3 event of JS?**

* **JavaScript Events:** The change in the state of an object is known as an Event. In html, there are various events which represents that some activity is performed by the user or by the browser. When [javascript](https://www.javatpoint.com/javascript-tutorial) code is included in [HTML](https://www.javatpoint.com/html-tutorial), js react over these events and allow the execution. This process of reacting over the events is called Event Handling. Thus, js handles the HTML events via Event Handlers.
* **Some of the HTML events and their event handlers are:**
* **Mouse events:**

|  |  |  |
| --- | --- | --- |
| **Event Performed** | **Event Handler** | **Description** |
| **click** | onclick | When mouse click on an element |
| **mouseover** | onmouseover | When the cursor of the mouse comes over the element |
| **mouseout** | onmouseout | When the cursor of the mouse leaves an element |
| **mousedown** | onmousedown | When the mouse button is pressed over the element |
| **mouseup** | onmouseup | When the mouse button is released over the element |
| **mousemove** | onmousemove | When the mouse movement takes place. |

* **Keyboard events:**

|  |  |  |
| --- | --- | --- |
| **Event Performed** | **Event Handler** | **Description** |
| **Keydown & Keyup** | onkeydown & onkeyup | When the user press and then release the key |

* **Form Events:**

|  |  |  |
| --- | --- | --- |
| **Event Performed** | **Event Handler** | **Description** |
| focus | onfocus | When the user focuses on an element |
| submit | onsubmit | When the user submits the form |
| blur | onblur | When the focus is away from a form element |
| change | onchange | When the user modifies or changes the value of a form element |

**Q.4) Short note on jQuery and explain with its Feature?**

* **JQuery:** jQuery is a [JavaScript framework](https://en.wikipedia.org/wiki/JavaScript_library) designed to simplify [HTML](https://en.wikipedia.org/wiki/HTML) [DOM](https://en.wikipedia.org/wiki/Document_Object_Model) tree traversal and manipulation, as well as [event handling](https://en.wikipedia.org/wiki/Event_handling), [CSS animation](https://en.wikipedia.org/wiki/CSS_animation), and Ajax. jQuery is an open source JavaScript library that simplifies the interactions between an HTML/CSS document, or more precisely the Document Object Model (DOM), and JavaScript. **“Write less, do more.”**
* **Following are the important features of jQuery.**
* HTML manipulation
* DOM manipulation
* DOM element selection
* CSS manipulation
* Effects and Animations
* Utilities
* AJAX
* HTML event methods
* JSON Parsing
* Extensibility through plug-ins
* JQuery simplifies various tasks of a progammer by writing less code. Here is the list of important **Core features supported by jQuery −**
* **DOM manipulation**− The jQuery made it easy to select DOM elements, negotiate them and modifying their content by using cross-browser open source selector engine called Sizzle.
* **Event handling −** The jQuery offers an elegant way to capture a wide variety of events, such as a user clicking on a link, without the need to clutter the HTML code itself with event handlers.
* **AJAX Support**− The jQuery helps you a lot to develop a responsive and featurerich site using AJAX technology.
* **Animations −** The jQuery comes with plenty of built-in animation effects which you can use in your websites.
* **Lightweight −** The jQuery is very lightweight library - about 19KB in size (Minified and gzipped).
* **Cross Browser Support −** The jQuery has cross-browser support, and works well in IE 6.0+, FF 2.0+, Safari 3.0+, Chrome and Opera 9.0+
* **Latest Technology**− The jQuery supports CSS3 selectors and basic XPath syntax.

**Q.5) State and explain six applications of Java Script?**

* **Applications of Java-Script Programming:** Java-Script is one of the most widely used programming languages (Front-end as well as Back-end). It has it's presence in almost every area of software development.
* **Client side validation -** This is really important to verify any user input before submitting it to the server and Java-Script plays an important role in validting those inputs at front-end itself.
* **Manipulating HTML Pages**- Java-Script helps in manipulating HTML page on the fly. This helps in adding and deleting any HTML tag very easily using Java-Script and modify your HTML to change its look and feel based on different devices and requirements.
* **User Notifications**- You can use Java-Script to raise dynamic pop-ups on the webpages to give different types of notifications to your website visitors.
* **Back-end Data Loading -** Java-Script provides Ajax library which helps in loading back-end data while you are doing some other processing. This really gives an amazing experience to your website visitors.
* **Presentations -** Java-Script also provides the facility of creating presentations which gives website look and feel.
* **Server Applications -** Node JS is built on Chrome's Java-Script runtime for building fast and scalable network applications. This is an event based library which helps in developing very sophisticated server applications including Web Servers.

**Q.6) What are the advantage & Limitation of Java Script?**

* **Advantages of JavaScript:**
* **Less server interaction −** You can validate user input before sending the page off to the server. This saves server traffic, which means less load on your server.
* **Immediate feedback to the visitors −** They don't have to wait for a page reload to see if they have forgotten to enter something.
* **Increased interactivity −** You can create interfaces that react when the user hovers over them with a mouse or activates them via the keyboard.
* **Richer interfaces −** You can use JavaScript to include such items as drag-and-drop components and sliders to give a Rich Interface to your site visitors.
* **Limitations of JavaScript:** We cannot treat JavaScript as a full-fledged programming language. It lacks the following important features −
* Client-side JavaScript does not allow the reading or writing of files. This has been kept for security reason.
* JavaScript cannot be used for networking applications because there is no such support available.
* JavaScript doesn't have any multi-threading or multiprocessor capabilities.

**Q.7) Short note about Angular JS?**

* **AngularJS**is a Javascript open-source front-end structural framework that is mainly used to develop single-page web applications(SPAs).
* It is a continuously growing and expanding framework which provides better ways for developing web applications.
* It changes the static HTML to dynamic HTML. Its features like dynamic binding and dependency injection eliminate the need for code that we have to write otherwise.
* It was maintained mainly by [Google](https://en.wikipedia.org/wiki/Google) and a community of individuals and corporations.
* It is an excellent framework for building single phase applications and line of business applications.
* **Advantage of AngularJS:**

1. **Easy to Learn:** People with knowledge of HTML, JavaScript and CSS can easily learn AngularJS
2. **Testing:** Angular JS is designed in a way that we can test right from the start. So, it is very easy to test any of its components through unit testing and end-to-end testing.
3. **Model View Controller:** You just have to split your application code into MVC components i.e. Model, View and the Controller.
4. **It has a Two-Way Binding Feature:** AngularJS allows for an immediate synchronization between the view and the model. If any data is altered in the model, it reflects in the view and When changes are made in the view data, the model is revised accordingly.
5. **Supports SPA features:** The main motive for developing single-page applications is a faster website transition. A website will communicate with the web browser by dynamically replacing the existing web page with new Web server data, instead of the browser’s default method of loading completely new pages.
6. **Dependency Injection (DI):** Dependency Injection (DI) is a software design pattern that deals with how components get hold of their dependencies. The AngularJS injector subsystem is in charge of creating components, resolving their dependencies, and providing them to other components as requested.

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