10. HTML :-

```
<button id="change-appearance">Change
Appearance</button>
<p id="paragraph">Lorem ipsum dolor
<span class="highlight">sit amet</span>,
consectetur adipiscing elit.</p>
```

CSS :

```
font size : 18px;
}
.highlight {
background-color : yellow;
}
.highlight :hover {
background-color : orange;
}
.changed-appearance {
font-size : 24 px;
color: blue;
}
```

Java Script :

```
const paragraph = document.getElementById
                  ('paragraph');
const button = document.getElementById ('change-
               appearance');
button.addEventListener ('click', () => {
paragraph.classList.toggle ('changed-appearnce');
});
```

2. HTML :

```
Input id = "num1" type = "number">
input id = "num2" type = "number">
button id = "check" > Check Equal
input id = " word' type = "text" >
button id = "search"> Search word
p id = "result" >
```

Java Script :-

```
const num1 =
document.getElementById ('num1');
const num2 = document.getElement Byid ('num2');
const check2 = document.getElement Byid ('check');
const word = document.get flement Byid ('word');
const search = document.getElement Byid ('search');
const result = document.getElement Byid ('result');
```

---

3 HTML :

```
<form id = "form'>
Name : <input type = "text"
   id = "name" >
Email : <input type = "email"
   id = "email">
<button id = "submit">
 Submit </button>
</form>
```

Java Script :-

```
const form = document.
getElementById ('form');
const submitbutton =
document.getElementById ('submit');
```

Submit Button . add Event Listerner ('click', (e) => {

```
const name =
document.get Element Byid
('name'). value;
const email =
document .getElementById
('email'). value;
if (!name || !email){
 alert ("Please fillout all
   feilds");
   e. preventDefault ();
}
```

4. HTML:-

```
<div class="red" onmouseover="document.body.style.
backgroundColor='red'></div>
<div class="green" onmouseover="document.body.
style.backgroundColor='green'></div>
<div class="blue" onmouseover="document.body.
style.backgroundColor='blue'></div>
<button onclick="window.scrollBy(1,0); setTimeout
(()=> window.scrollBy(-1,0), 50)">Shake</button>
```

CSS:-

```
.red {background-color: red; width: 50px; height: 50px;}
.green {background-color: green; width: 50px; height: 50px;}
.blue {background-color: blue; width: 50px; height: 50px;}
```

---

5. What is DOM?:-

Document Object Model is like a map of an HTML document. It helps JavaScript interact with the document.

Creating HTML Elements Dynamically:-

1. Create element: const element = document.createElement('tagName')
2. Add text: element.textContent = 'text'
3. Append to parent:
   parrent.appendChild(element)

Traversing DOM:-

1. document.getElementById('id')
2. document.getElementById('classname')

6. What are Regular Expressions?

Regular expressions (regex) are patterns to match text.

Why use Regex in Java Script?

1. Validate data (email, password)
2. Search text
3. Format input

Password Validation Example:-

Regex pattern : `^(?=.*[A-Z])(?=.*\d).{8,}$`

- 8+ characters
- 1+ uppercase
- 1+ number

3 .Essential Regex Methods.

1. test() - check if pattern matches
2. exec() - Find match and subgroups
3. match() - Find match and subgroups.

---

7. HTML:-

```
<button onclick="showText()">Show</button>
<button onclick="hideText()">Hide</button>
<div id="text" style="display:none;">Hidden Text</div>
```

CSS :-

```
.red { background-color: red; width: 50px; height: 50px; }
.blue { background-color: blue; width: 50px; height: 50px; }
```

8. HTML :

```
<img src = "image 1.jpg" onclick = "this.src = this.src == 'image 1.jpg' ? 'image 2.jpg' : 'image 1.jpg'">
<span onmouseover = "this.style.color = 'red', this.style.color = 'black', this.style.font-weight = 'normal'"> Hover over me! </span>
```

---

9. HTML :

```
<input type = "text" id = "search" onkeyup = "autocomplete()">
<div id = "suggestions"></div>
```

Java Script :

```
function autocomplete() {
const input = document.getElementById("search");
const query = input.value.trime();
if (query.length >2) {
fetch ('/autocomplete ? q=' + query)
.then (response => response.json())
.then (data => {
document.getElementById ("suggestions").innerHTML = data.join ("
"); }); }}
```

Server - Side Code (Node.js) :

```
const http = require ('http');
http.createServer ((req, res) => {
const query = req.url.split ('=') [1];
const suggestions = ['Apple', 'Google', 'Amazon'];
res.end (JSON.stringify (suggestions.filters (s => s.includes
(query)))); }).listen (3000);
```

10

HTML:-

```
<input id="num" type="number">
<button onclick="calculate()">Calculate</button>
<p id="result"></p>
```

Java Script :-

```
function calculate() {
  const num = num.value;
  result.innerHTML = ${factorial(num)} | ${sumDigits(num)}
  | ${isPalindrome(num)};
}
function factorial(n){
return n*(n-1) || 1;
}
function sumDigits(n) {
return [...n].reduce((a,b)=>parseInt(a)+parseInt(b),0);
function isPalindrome(n) {
  return n===[...n].reverse().join('')? 'Yes':'No';
}
```