DOM (Document Object Model)

Jab b hm html mein jo b cheez dhaiktay hain wo uss object ko hm uss ko node kahtay hain like hm nay aik div create kiyaa html page mein tu ye aik node hai , h1 aik node hai, img aik node hai,body aik node hai, matlab jo b hm html k page mein dhaiktay hain wo separate element ko hm aik node kahtay hain.

Achaaa tu DOM kiaa hai? tu jo b kuch b hm apnay html page mein dhaiktay hain wo dom hai matlab k kiaa h1 dom mein aata hai tu ans hai yes, hiaaa p dom mein ata hai hai tu ans hai yes. Matlab k jitney b nodes(h,p,img,div, etc) hain ye saray dom mein shamil hotay hain. Tu ham apni website mein jo kuch b dhaik rahay hain wo basically DOM hain.

Tu asal mein topic DOM nai hai balkay Asal mein topic hm nay parhna hai

(DOM MANiPULATION) :

Tu abi k liyee hm kahtay hain k jo b elements hain hmtl body mein wo un saray ko hm DOM kahtay hain matlab k wo saray dom mein shamil hotay hain.

Tu yahan par humara jo main topic hai wo hai dom manipulation. Tu iss ka kiaa matlab hai. Tu iss ka agar hm example lein tu jaisy k kisi jagah prr likhaa hota haii k click this to download tu jab hm uss par click karaty hain tu aik pop show hota hai k downloading start ho gaye hai ya fail matlab k koi change agaya haiii page par, screen par tu ye aik example ho gaye hai dom manipulation ki.

Agar doosri example k for eg hm aik koi note par rahay hain orr uss k neechay par likhaa hota hai k agar parh lo tu close btn click kar lena tu hm jab click krtay hain tu wo note close ho jata hai tu ye b aik example hai dom manipulation ki. And so on

**DOM Manipulation** means using JavaScript to change, add, or remove elements and content in that DOM

Tu matlab hm kuch btn,etc anything kuch press karein matlab ya siraf hover karein etc any thing magar jo pahlay page haii us prr kuch changes ayein tu ye dom manipulation hai. tu ye kisi b tareekay say ho sakti hai.

So for learning we need to learn something like

* Selecting element from html by id
* Text change karna
* Html change krna
* Css change karna
* Koi attribute change karna
* Event listener add karnaa

Tu ye thori bohat cheezain hain orr b hain magar majority baar yehi use hoti hain. Orr iss k baad bss humein apna common sense use karna haii kisi b cheez ko use krnay k liye like add remove animation etc jo b krna ho ho apna dimagh use krna hai…

SELECTING ELEMENTS : so there are many ways for selecting things from html like

* Get element by id
* Get element by class name
* Query selector
* Query selector all

Basically these are the ways thorough which we can select element from html in js

Jiss tarah hm simple CSS mein agar kisi cheez ko design etc kartay thay tu hum siraf like h1{ } and so on. Tu isse tarah hm js mein ye krtay hain k like

document.querySelector

document.getElementById // yahan prr hm siraf id k through element ko select kr sktay hain

document.getElementsByClassName //

tu example k liye agar hm ye lein

<h1 id="heading">Hello DOM</h1>

    <p class="para">This is a paragraph.</p>

    <p class="para">This is another paragraph.</p>

Tu for example agar h1 ko select krna chahein tu hum is tarah kr sktay hain

Document.getElementById(“heading”); orr yahan prr hm use exactly same id ko likhengay jiss ko ham select karna chahtay hain.

Iss ko ham print b kr sktay hain like

let headinggg = document.getElementById("heading");

console.log(headinggg);

tu ye humein wo tag de dega tu ye jo tag thaa jiss mein heading thi ye h1 thaa tu ye humein wo wali h1 tag print krwa k de dega...

Selecting Elements by Class Names:

Tu agar hm kisi element k class names say uss ko select krna chahein tu phirr hm document.getElementsByClassName(“className”);

Tu yahan prr humein iss prr dihaan raknaa hai k yahan prr elements haiii element nai qk same class tu aik say zyada elements ki ho sktii hai. And jab hm iss ko console prr print karengay tu ye humein array jaisay cheez mein dhikaye ga. Ye array hota nai hai magar array jaisa dhikaii deta hai. Ye iss tarah show hoga

HTMLCollection(4) [h1.checkclass, h1.checkclass, h1.checkclass, h1.checkclass]

Qk iss class k name say 4 h1 available hain tu iss nay saron ko select kr liyaa hai. Tu iss waja say iss ko array jaisay cheez mein humein dhikai deta hai and iss ko getElementsByClassName() yani k elements likha hota hai.

Ye ho getElementById() and getElementsByClassName() ye dono old methods hain aj kal jo sab say zyada use hotay hain wo querySelector() and querySelectorAll() ye do use hotay hain

QuerySelector : ab agar hm iss tarah likhein tu

document.querySelector("h1");

ye h1 ko select kr lega tu question ye ana chahiyee k konsa wala h1. Qk h1 tu bohat ho sktay hain page mein. Tu is ka ans hai k jo b page mein first one h1 ho tu ye query selector uss ko select krta hai. Iss ko hm koii variable mein b save kr sktay hain.

QuerySelectorAll : agar hm ye karein tu ye b humein array jaisa structure dega. Just like hm nay getElementsByClassId kiyaa thaa. Ye ho querySelectorAll hai tu ye jo b h1 hai sab ko select kr lega unlike queryselector. Ye h1 hm example k liye le rahay hain. Select koi b chez kr sktay hain

Tu abi tuk siraf hm nay element ko select karna seekha hai tu asal manipulation ham ab start karengay…

Changing Text: for changing any text of any element firstly select that element which is like

let h11 = document.querySelector("h1");

h11.textContent = "HardWorking with DOM";

h1.innerHTML = "inner html";

h1.innerText = "inner text";

tu agar hm iss ki aisay karein tu jo b pahlay h1 heading mein text likhaa thaa ab uss mein hardworking with dom likh kr ajaye ga.

Iss mein ham common sense use kr sktay hain k jab ham console.dir() ko use karein orr uss mein wo uss tag ki properties dhaik lein tu uss mein key value pair mein cheezain likhii hoti hainn. K h1 mein ye hai ye hai. Tu uss mein jo text hm nay likhaa hota hai h1 mein wo b mention likhaa hota hai. Tu ham nay jaisay change karna tha text ko tu jab ham nay wahan prr dhaika tu wo key value pair mein cheezain likhi hain tu uss ki key textContent uss ki key thii orr value jo thii wo humari wohi text thi jo h1 mein thi. Tu hm uss say b dhaik sktay hain k jin cheez ko humein change krna ho tu hm wahan say b dhaik sktay hain k ye change krna tu kr sktay hain. Tu manipulation mein poora yehi Logic hai k jiss element ki jonsi b property ko manipulate yani k change krna ho tu agar aapko confusion ho rai hai tu console.dir karo uss ko tu wo us ki sari properties uss tag ki print krwa dega tu wahan say hm dhaik sktay hain k humein change krnaa kiaa hai tu uss ki key ko dhaik lein orr js mein hm uss ko change kr lein poora manipulation ka yehi logic hai.

Tu ye teeno cheezain, textContent,innerHtml,innerText work krti hain for chaning text.

So what’s the difference bw them so agar hm chahtay hain k ye jo hm nay jo b element banaya haii iss mein kuch html daal dein yani k for eg hm nay h1 banaya hai orr uss mein text hai (abc) tu ab hm chahtay hain k ye jo abc hain hm iss ko js say change karein matlab iss ko italic kr dein yani k <i> </> ye wala tag daal dein poora tu hm ye innerHTMl k through karengay. Like

let h11 = document.querySelector("h1");

h11.innerHTML = "<i>italic innerHTML</i>";

tu ab iss mein ye hai k ye text ko b change kr lega aur sath sath mein itt ko italic b kr lega qk hm nay <i> tag laga diyaa jo. Tu agar hm iss tarah kuch krna chahtay hain matlab kuch html ko b add krna chahtay hain tu phir hm innerHTML ka use karengay.

innerText tub hm use karengay jab text ko change krna ho. textContent b wohi k jab text ko change krna ho.

Attribute Manipulation: in this topic we will discuss 3 topics

* getAttribute
* setAttribute
* removeAttribute

tu sab say pahlay hm ye samajtay hain k attribute asal mein hain kiaa. Tu jo humara html mein jo tag hota hai uss k ilawa jo b cheezain hoti hain un ko attribute kahtay hain like

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>DOM</title>

  </head>

<a href=""></a>

Like humara meta aik tag hai uss mein name aik attribute hai, content aik attribute hai. Iss a tag mein href aik attribute hai. Tu jo tag haii uss k ilawa jo b other cheezain hain wo attributes hain. Tu jo attribute manipulation jo haii wo bss yehi hai k in attribute mein kisi ko change kr lo ya remove kr lo etc.

Tu for eg agar hm nay <a> ko manipulate krna hai tu sab say pahlay tu iss ko select karein. Tu agar hm iss mein dhekein tu iss mein href mein kuch b nai diyaa huaa bilkul empty hai.

let a = document.querySelector("a");

tu ab agar hm a ko console.dir(a) karein tu dhekein gay k wahan pr a tag mein href empty hai. Tu hm yahan say iss ko change kr sktay hain like

let a = document.querySelector("a");

a.href = "https:www.google.com";

tu ab ho wahan href empty thaa wo ab iss mein ye link agayee hogi. Tu iss tarah jo simple method hai uss say ye change ho sakta hai magar hm aisa nai kartay hm yahan prr setAttribute,getAttribute ka use kartay hain.

setAttribute: tu ab for eg humein use tarah a tag mein href attribute ko change krna hai tu hm setAttribute ka use krtay hain. Like

a.setAttribute("href", "https://www.google.com");

here in setAttribute we will use 2 things. Pahlay hm nay batana hai k a tag ka hum nay change konsay attribute ko krna hai tu ham nay change krna hai href ko tu pahlay wo likh liyaa. Orr ab ye daalna hai k uss ki jagah prr daalna kiaa hai tu ham nay wo link daal di

tu iss mein hm kuch b jiss ko b hum set karna chahtay hain tu wo kr sktay hain. Tu bss siraf uss element ko select krna hai phirr querySelector mein uss ko batana hai k uss tag ki kiss Attribute ko change krna hai orr uss ki value de dein like

 <img src="" alt="BrokenImg" />

let bkimg = document.querySelector("img");

bkimg.setAttribute("src","https://unsplash.com/......");

tu jaisa k hm dhekein k img tag mein jo src attribute tha wo empty thaa. Tu agar hum nay uss ko set krna hai tu hm setAttribute ka use kr sktay hain. Tu pahlay uss attribute ka name do jiss ko change krna hai tu humein change src ko krna hai tu hm nay wo likha. Phir uss ki jagah likhnaa kiaa wo likhnaa hai tu hm nay ucc img ki link de dii fil haal yahan prr link nai hai magar hm yahan prr wo cheez dengay jo hm nay krni ho.

getAttribute: tu get attribute ki help say hm kisi attribute ko get kr sktay hain. Jaisay k

<a href="https://google.com">Download Now</a>

let aa = document.querySelector("a");

console.log(aa.getAttribute("href"));

hm nay sab say pahlay a tag ko select kiyaa. Ab humein a tag mein jo href attribute hai uss mein jo likhaa hai uss ko get krna hai tu hm get attribute ka use kr sktay hain. Tu ham nay aa.getAttribute likhaa or phirr uss mein href likh diyaa k huein iss attribute mein jo hai wo get krna hai tu uss mein jo b hai wo get ho jaye ga. Tu iss mein <https://google.com> hai tu humein ye mill jaye ga.

removeAttributes: tu iss mein humein agar poora attribute hi kisi tag ka urana hai tu hm iss remove attribute ka use kr sktay hain like hm nay ooper a tag mein href ka attribute use kiyaa hai tu for eg hm nay href ko hatana hai tu hm ye remove attribute ka use kr sktay hain. Like

let remove = document.querySelector("a");

remove.removeAttribute("href");

tu ab agar hm iss ko console mein elements mein dheikengay tu jo a tag hoga uss mein href hoga hi nai.

DYNAMIC DOM MANIPULATION:

Dynamic dom manipulation ka matlab hai k jo cheez na b ho ussay bana dena ya matlab kuch orr jo pahlay na ho orr tm dynamically ussay kr do. Like it includes

* createElement(kisi element ko add kr dena html mein jo pahlay say na ho)
* appentChild(aik element py aik extra element bana dena)
* removeChild(aik element say aik element hata dena)
* prepend(kisi element k start mein kuch add kr dena)
* append(page mein sab say pahlay iss cheez ko dal dega jo hm nay add ki hai)

and so on

Tu sub say pahlay step hai k pahlay element ko create karo, phir append/prepend karo. Jahan prr b element chahiyee wahan o

agar hm iss mein dhekein tu kiaa humain kahin prr h1 dhik raha hai ?

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Dynamic Dom</title>

  </head>

  <body>

    <script src="thirdscript.js"></script>

  </body>

</html>

Tu iss mein body mein kuch b naii hai tu chalo hm iss mein h1 ko add krtay hain js ki help say.

let hh1 = document.createElement("h1");

hh1.textContent = "Dynamically H1";

tu agar hm siraf yahan tuk likhein tu humein kuch b nazar nai aye ga na hi console py orr na hi page mein. Qk hm nay h1 heading siraf bana dii magar lagai kahii naii hai. Tu uss k liyee humein ye karna hai k

document.body.append(hh1);

tu ab iss nay body mein wohi jo hm nay dynamically h1 ko daala hai wo pahlay say html mein thaa hi naii magar ab agar hm page dhekein tu uss mein humein heading mill jaye gi.

Agar hum iss ko iss tarah likhein matlab append ka use karein tu humein jo console mein jo elements mein dhaiktay hain uss mein humein ye h1 script k baad mein nazar aye gi

let hh1 = document.createElement("h1");

hh1.textContent = "Dynamically H1";

document.body.append(hh1);

orr agar hm append ki jagah prepend ka use karein tu phirr ye script k ooper h1 nazar aye gi wohi console k elements mein.

let hh1 = document.createElement("h1");

hh1.textContent = "Dynamically H1";

document.body.prepend(hh1);

matlab k jo b cheez hogi wo uss say neechay show hogi jaisay for eg hm nay aik hh1 and hh2 banay aik mein append likha and doosray mein prepend likha tu

let hh1 = document.createElement("h1");

hh1.textContent = "Dynamically H1";

document.body.append(hh1);

let hh2 = document.createElement("h2");

hh2.textContent = "Dynamically h2";

document.body.prepend(hh2);

ye jo h2 hai ye hm nay likhaa tu h1 k below hai magar jab ham page mein dheikengay tu ye humein h1 k above show qk iss mein hm nay prepend use kiyaa tu jo b element ko hm add krna chahtay hain orr uss mein prepend use karein tu wo sub say ooper likh kar aata hai. Matlab agar hm nay append likhaa tu page mein sab say last element wo hoga jo hm nay append k through add kiyaa hai. Orr agar append ka use kiyaa tu page mein sab say first element wo hoga jo ham nay prepend ki help say add kiyaa hai. Page mein we can create anything dynamically not just h1. We can create img tag, h1, div, anything. So firstly creating any element we use document.createElement(“elementName”);

document.createElement("h1");

tu iss say aik empty h1 create ho jaye ga. Tu ye qk empty hai tu hm chalo iss mein kuch add kr detay hain using textContent. Like

mh1.textContent = "dynamic mh1";

we can also use innerText, and other for adding text. Ye ab page pr show nai hoga qk hm nay iss ko attach hi nai kiyaa body k sth. Tu uss k liyee ym ye kr sktay hain iss k 2 ways hain like

document.body.append = (mh1);

ya tu document likh kr body ko seleck kr k append/prepend kr lo ya phir

document.querySelector("body") = (mh1);

query selector ka use kr k body tag ko select kr k uss ko add kr lo

Now for eg humaray pass aik h1 hai and dosra h3 hai ab agar hm nay h2 to add krna hai tu ya tu append/prepend kr sktay hain. Magar agar hm nay append kiyaa tu h2 last mein ajaye ga orr agar prepend kiyaa tu sab say top pr ajaye ga h2. Magar hm chahtay hain k ye h1 and h3 k in between ajaye tu iss k liyee ham “insertBefore” ka use kr sktay hain. Tu uss mein ye attributes letay hain k kiss ko add krna haii orr kiss k before add krna hai tu humen h2 ko add krna hai orr h3 k before add krna hai tu ham iss karah karengay...

 <body>

    <h1>static h1</h1>

    <h3>static h3</h3>

    <script src="fourthscript.js"></script>

  </body>

let mh2 = document.createElement("h2");

mh2.textContent = "dynamic h2";

let h3 = document.querySelector("h3");

document.body.insertBefore(mh2, h3);

tu sab say pahlay ham nay apna aik h2 element create kiyaa. Phirr uss mein textContent say uss mein text add kiyaa. Now uss element ko select kiyaa like h3 above

Remove:

Agar humein for eg kisi element ko remove krna hai tu hm remove ka use kr sktay hain wo jo remove attribute thaa wo siraf attribute ko remove krta tha magar agar hm chahtay hain k poora ka poora element hi remove kr dein tu ye kr sktay hain like

let statich1 = document.querySelector("h1");

statich1.remove();

tu ye jo h1 heading hai ye fully remove ho jaye ga from page.

Append Child:

Tu for eg hm nay aik div banaya hai orr uss div k andar kisi cheez ko add krna hai tu hm ye append child k through karengay

let myh1 = document.createElement("h1");

myh1.textContent = "dynamically added myh1 in div...";

document.querySelector("div").appendChild(myh1);

tu hm nay jiss cheez mein b kuch dalna hai remove krna hai tu pahlay uss element ko select krna hai tu hm nay div mein headings thay uss div mein kuch orr element ko dalna tha tu pahlay hm nay div ko select kiyaa pphirr uss mein aphna myh1 ko put kr diyaaa

tu iss mein be append sab say last mein kisi cheez ki put karega or prepend sab say first mein

let pp1 = document.createElement("p");

pp1.textContent = " this is my Lorem ";

let sdp = sdiv.querySelectorAll("p")[1];

sdiv.insertBefore(pp1, sdp);

hm nay ye jo code likha hai iss mein nay aik new paragraph create kiyaa hai named pp1. Tu humaray html mein 2 divs hain. Ab ham chahtay hain k jo 2nd div heain uss mein 2 paragraphs hain tu ham chahtay hain k wo jo dono paragraphs hain un k beech mein jaye humara new pp1. Tu uss k liyee hm nay ye code likhaa hai k pahlay uss 2nd div ko seleck kiya phirr uss mein insertbefore likhaa orr hmaray pp1 ko add kr diya.

Styling Updates : ( changing CSS through JS)

Tu jiss tarah hm nay console.dir kr k element ki sari properties dhaiki thii console elements mein tu uss mein style ki property b hoti hai. Tu agar hm uss ko open karein tu jo css style mein jo b properties aati hain wo sarii k sari wahan available hoti hai. Tu humein ratta laganay ki need nai hai...

let h2 = document.querySelector("h2");

let p = document.querySelector("p");

// console.dir(h2);

h2.style.color = "red";

h2.style.backgroundColor = "brown";

p.style.color = "green";

p.style.borderTop = "5";

p.style.borderColor = "black";

h2.style.fontFamily = "monospace";

p.style.textTransform = "capitalize";

iss tarah jiss cheez ko b change krna ho change kr sktay hain css mein with the help of js.

ClassList:

Now hm nay agar iss tarah kuch likhaa hai k iss mein class banai hai k jiss mein pahlay say sari css likhee haii k ye jiss ko b attach krwa dein tu wo direct sari properties uss kii ho jayein gii like

<head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Sixth Dom Manipulation</title>

    <style>

      .check {

        font-weight: bold;

        background-color: greenyellow;

        color: aqua;

      }

    </style>

  </head>

  <body>

    <h2>heading 2</h2>

    <p>

      Lorem ipsum dolor sit, amet consectetur adipisicing elit. Modi ratione

    </p>

    <h1 class="check">this is h1</h1>

    <script src="sixthscript.js"></script>

  </body>

Tu iss mein hm nay aik class banaii hai css ki tu jab neechay hm nay iss ko h1 k sath attach kiyaa tu ye automatically wo sari properties lelega jo um nay uss mein bayaan ki thii like above.

Tu now agar hm nay js k through iss tarah ki class ko select krna hai ya remove tu wo with the help of classList.

Tu for eg kisi nay thousands of properties css ki use ki hain orr uss ko aik class mein rakh liyaa hai taakay k bss jab b need ho tu direct wo uss class ko attack krwa dein uss k sth tu bss wo sari properties automatically lelega. Tu hm ye js ki help sy kr sktay hain add() method ki help sy.

let h1 = document.querySelector("h1");

h1.classList.add("check");

tu iss say wo jo hm nay banaii hai check name say aik class tu ye iss h1 k sath lag jaye gii orr jo b properties iss check class mein hain wo sari apply ho jayengii iss h1 pr.

Remove Any Class : now agar kisi element prr koi class by default lagii haii orr hm uss ko remove krna chahtay hain tu hm remove method ka use kr skaty hain..

p.classList.remove("check");

this will remove that class from that element

Toggle: tu ye jo toggle hai agar koi lagi huee hai css class tu uss ko hata dega orr nai lagi huee tu laga dega. Matlab oppsite krta hai.

p.classList.toggle("check");

New Eg:

   <ul>

      <li>apple</li>

      <li>banana</li>

      <li>cherry</li>

      <li>mango</li>

      <li>watermelom</li>

      <li>Guava</li>

      <li>strawberry</li>

    </ul>

Ye hm nay ul add kiyaa hai

let li = document.querySelectorAll('ul li:nth-child(2n)');

tu iss mein hm nay querySelectorAll ka use kiyaa hai orr use mein li:nth-child(2n) ko likhaa hai tu iss ma matlab hai k ul mein li ko select karo orr aik ko choro uss k baad dosra phirr 3rd ko choro and 4th select karo 5th ko choro or 6th ko select karo and so on. Matlab aik ko choro or dosra select kar.

Agar hm nay nth:child(2) siraf ye likhaa hota tu iss ka matlab hai k siraf 2nd wala select karo and iss nay siraf 2nd wala child hi select kiyaa hota ul mein. Tu hm iss tarah nth:child() ki help say agar bohat childs hon orr koi aik ko select krna ho tu iss ka use kr sktay hain