📘 Day 6: JavaScript DOM (Document Object Model) – In-Depth

🧠 DOM Kya Hota Hai? (Deep Concept)

> "DOM" ka full form hai: **Document Object Model**
> Jab browser koi HTML page ko load karta hai, wo us HTML ko **object tree** mein convert kar deta hai — jise JavaScript ke through access, modify, delete, ya add kiya ja sakta hai.

Yaani:

- Har HTML element → ek JavaScript object ban jaata hai
- Tu JS se kisi bhi HTML element ko **pakad sakta hai**
- Uska **text, style, structure** sab kuch change kar sakta hai

> DOM lets JavaScript **talk to your web page!**

🔍 Real-World Example:

Jese Instagram pe:

- **Like dabaya** → Heart red ho gaya ❤️
- **Comment likha** → Appear ho gaya 📝
- **Profile update kiya** → Live show ho gaya

Sab kuch DOM ke through hota hai!

🧩 DOM Tree Structure:

HTML code:

html
CopyEdit

```
<html>
  <body>
    <h1>Hello</h1>
    <p>This is paragraph</p>
  </body>
</html>
```

DOM tree:

css
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```
Document
└── html
    └── body
        ├── h1 → "Hello"
        └── p → "This is paragraph"
```

JavaScript se tu in nodes (h1, p) ko manipulate karega!

🛠️ DOM Access Methods (Selectors)

✅ 1. `getElementById("idName")`

> Sirf ek element ko pakadta hai jiska ID match karta ho

html
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```
<h2 id="myHeading">Welcome</h2>
```

```
<script>
  const heading = document.getElementById("myHeading");
  heading.innerText = "Welcome to DOM!";
</script>
```

✅ 2. `getElementsByClassName("className")`

Same class wale saare elements ka **HTMLCollection** deta hai

html
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```
<p class="text">Para 1</p>
<p class="text">Para 2</p>

<script>
  const paras = document.getElementsByClassName("text");
  paras[0].style.color = "blue";
</script>
```

✅ 3. `querySelector("CSS_Selector")`

Sirf **first match** karta hai CSS selector jaise

html
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```
<div class="box"></div>

<script>
  const box = document.querySelector(".box");
  box.style.backgroundColor = "green";
</script>
```

✅ 4. `querySelectorAll("CSS_Selector")`

Sab matching elements deta hai (like `NodeList`) — loop lagake handle karo

html
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```html
<li>Item 1</li>
<li>Item 2</li>

<script>
  const listItems = document.querySelectorAll("li");
  listItems.forEach(item => item.style.color = "purple");
</script>
```

🧠 DOM Properties You Must Know

Property	Kya karta hai?
`innerText`	Text change ya read karne ke liye
`value`	Input field se value nikalne ke liye
`style`	Inline CSS apply karne ke liye
`classList`	Class add/remove/toggle karne ke liye

🎯 Common DOM Tasks:

Kaam	Code
Text change	`element.innerText = "new text"`
Color change	`element.style.color = "red"`
Button pe click listener	`button.onclick = function() {}`

Input se value lena	`input.value`
Class add/remove	`element.classList.add("new Class")`

📌 Tasks (Only Questions – Tu khud solve karega like a champ 🧠)

✅ Task 1:

Ek `<h2>` tag bana, jisme text ho `"Hello User"`
Aur ek button bana → button pe click hone par `<h2>` ka text change ho jaye `"Welcome to DOM"`

✅ Task 2:

Input field se naam lo → jab "Greet Me" button dabao toh ek `<p>` tag me `"Hi, Aditya!"` jesa greet message dikhe

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✅ Task 3:

Ek paragraph lo jiska text color by default black ho.
Jab "Change Color" button dabao, wo **red color** ka ho jaye.

✅ Task 4 (Challenge):

Do input fields lo → username aur password
Aur ek button → jab dabao, dono values console pe print ho jayein

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✅ Task 5 (Creative):

Ek bulb image lo (off wali)
Jab "ON" button dabao → bulb image change ho jaye to **on bulb**
Aur "OFF" button dabao → back to **off bulb**

📝 GitHub Pe Push Karne Ke Liye:

1. Folder banao: `Day06/`
2. File: `index.html`
3. Add: `git add .`
4. Commit: `git commit -m "Day 6 - DOM basics and tasks"`
5. Push: `git push`

🔚 Recap:

- DOM = Webpage ko JS object ke form mein control karna
- Tu HTML ke kisi bhi tag ka **text, color, class, size** change kar sakta hai
- Real interaction ka first step = DOM 🔥