

✨ LECURE 23 — EVENT BUBBLING, CAPTURING & DELEGATION

🌱 FIRST-THOUGHT PRINCIPLE (Desi Soch)

Soch lo **ek ghar** 🏠 hai:

- Andar room me shor hua → poore ghar me fail gaya
- Gate se shor aaya → andar tak pahucha

👉 Event flow bhi bilkul aisa hi hota hai

🧠 EVENT FLOW (MOST IMPORTANT)

Jab bhi koi event hota hai, **3 phases** hote hain:

- 1 **Capturing Phase** → Bahar se andar
- 2 **Target Phase** → Actual element
- 3 **Bubbling Phase** → Andar se bahar

📌 Default behavior = Bubbling

🔴 1. EVENT BUBBLING (DEFAULT)

💠 Definition

👉 Jab **child element pe event hota hai**, to wo **parent** → **grandparent** tak chala jata hai

📌 *Andar se bahar* bubble hota hai 🗨️

🔧 Example (Bubbling)

```
<div id="grandparent">
  <div id="parent">
    <button id="child">Child</button>
```

```
</div>

</div>

child.addEventListener("click", () => {
  console.log("Child clicked");
}, false);

parent.addEventListener("click", () => {
  console.log("Parent clicked");
}, false);


grandparent.addEventListener("click", () => {
  console.log("Grandparent clicked");
}, false);
```

Output (child pe click)

Child clicked

Parent clicked



Grandparent clicked


 **Reason:** Default behavior = bubbling

2. EVENT CAPTURING (TRICKLING)

Definition

 Event **sabse bahar wale element se start hota hai**
aur **andar ki taraf jata hai**

 Bahar se andar 

 Default nahi hota → **true likhna padta hai**



Example (Capturing)

```
child.addEventListener("click", () => {  
    console.log("Child clicked");  
}, true);  
  
parent.addEventListener("click", () => {  
    console.log("Parent clicked");  
}, true);  
  
grandparent.addEventListener("click", () => {  
    console.log("Grandparent clicked");  
}, true);
```

Output

```
Grandparent clicked  
Parent clicked  
Child clicked
```

BUBBLING VS CAPTURING

Feature	Bubbling	Capturing
Direction	Child → Parent	Parent → Child
Default	 Yes	 No
useCapture	false	true

3. EVENT DELEGATION (BOSS CONCEPT)

Definition

- 👉 Har child pe listener lagane ki jagah
 - 👉 **Parent pe ek hi listener** lagao
 - 👉 **event.target** se decide karo kaunsa child
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Example (Delegation)

```
<div id="menu">

  <button id="home">Home</button>

  <button id="about">About</button>

  <button id="contact">Contact</button>

</div>

menu.addEventListener("click", (event) => {

  if (event.target.tagName === "BUTTON") {

    console.log(event.target.id + " clicked");

  }

});
```

Output

```
home clicked

about clicked

contact clicked
```

Advantage

- Less code
 - Better performance
 - Dynamic elements handle ho jaate hain
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IMPORTANT EVENT PROPERTIES

Property	Meaning
event.target	Actual element
event.currentTarget	Jispe listener laga
stopPropagation()	Event ko aage jaane se roke



SMALL PROJECT — EVENT FLOW DEMO



HTML STRUCTURE

```
<div id="grandParent">  
  <div id="parent">  
    <div id="child"></div>  
  </div>  
</div>
```

- 👉 Teen level ka structure banaya
 - 👉 Taaki **flow clear** dikhe
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JAVASCRIPT

```
const grandParent = document.getElementById("grandParent");  
  
const parent = document.getElementById("parent");  
  
const child = document.getElementById("child");
```

◆ Child Listener (Bubbling)

```
child.addEventListener("click", () => {  
    console.log("✅ Child Clicked");  
}, false);
```

👉 false = bubbling (default)

◆ Parent Listener (Capturing + Stop)

```
parent.addEventListener("click", (event) => {  
    console.log("🟡 Parent Clicked");  
    event.stopPropagation();  
}, true);
```

👉 true = capturing

👉 stopPropagation = upar nahi jayega

◆ GrandParent Listener

```
grandParent.addEventListener("click", () => {  
    console.log("🔴 GrandParent Clicked");  
}, false);
```



CURRENT OUTPUT FLOW

Child pe click karne par 👉

1 Capturing phase
→ Parent clicked

2 Target phase
→ Child clicked

3 Bubbling phase

→ ❌ Parent ke aage nahi gaya (stopPropagation)

👉 GrandParent print nahi hoga



INTERVIEW ONE-LINERS

- Default event flow = Bubbling
 - true → Capturing
 - false → Bubbling
 - event.target ≠ event.currentTarget
 - Delegation = Parent listener + event.target
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DESI EXAMPLES (YAAD RAKHNE KE LIYE)

- **Bubbling** → Ghar ke andar se shor poore mohalla me
 - **Capturing** → Mohalla se shor ghar ke andar
 - **Delegation** → Gate pe ek chowkidar sab dekh lega 😊
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QUICK SUMMARY (30 SEC)

- Bubbling → andar se bahar (default)
 - Capturing → bahar se andar (true)
 - Delegation → Parent pe ek listener
 - stopPropagation() → flow todta hai
 - Large apps me delegation **best practice**
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GOLDEN LINE

“Event flow samajh gaya, to DOM events master ho gaye.”