

# LECURE 23 — EVENT BUBBLING, CAPTURING & DELEGATION

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## 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

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## 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

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## 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 

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### 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

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## 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
```

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## BUBBLING VS CAPTURING

Feature	Bubbling	Capturing
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Direction	Child → Parent	Parent → Child
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Default	<input checked="" type="checkbox"/> Yes	 No
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useCapture	false	true
e		

# 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

## 📝 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

# IMPORTANT EVENT PROPERTIES

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

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## 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");
```

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## ◆ Child Listener (Bubbling)

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

👉 false = bubbling (default)

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## ◆ Parent Listener (Capturing + Stop)

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

👉 true = capturing

👉 stopPropagation = upar nahi jayega

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## ◆ GrandParent Listener

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

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## ⟳ 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 hogा

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## 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.”