JavaScript Event Handling Notes for Beginners

1. What is an Event?

- An **event** is an action that happens in the browser, like:

    - Clicking a button

    - Moving the mouse

    - Pressing a key

    - Submitting a form

- JavaScript can **listen** to these events and **react** by running code.

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2. Event Handler Attribute (Inline Method)

Syntax:

```
<element event="functionName()">
```

Example:

```
<button onclick="sayHello()">Click Me</button>

<script>
function sayHello() {
    alert("Hello!");
}
</script>
```

Explanation:

- `onclick` is the **event handler attribute**.

- When the button is clicked, the `sayHello()` function runs.

- Other event attributes include:

  - `onmouseover` → when mouse moves over an element

  - `onmouseout` → when mouse leaves an element

  - `onchange` → when an input value changes

Pros:

- Simple and easy to understand for beginners.

Cons:

- Can only assign **one function** to an event.

- Mixing HTML and JavaScript is **not ideal** for large projects.

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3. Using `addEventListener` (Modern Method)

Syntax:

```
element.addEventListener(event, function, useCapture);
```

- **event** → the type of event (e.g., `"click"`, `"mouseover"`)

- **function** → the function to run when the event occurs

- **useCapture** → optional, usually `false`

Example:

```
<button id="myButton">Click Me</button>

<script>
let button = document.getElementById("myButton");

button.addEventListener("click", function() {
    alert("Hello!");
});
</script>
```

Explanation:

- `getElementById` gets the button element.

- `addEventListener("click", ...)` listens for a click event.

- Multiple listeners can be added to the **same element**.

Pros:

- Can attach **multiple event handlers** to the same element.

- Keeps JavaScript **separate from HTML** (cleaner code).

Cons:

- Slightly more code than inline handlers.

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4. Quick Comparison

Feature	Inline (`onclick`)	`addEventListener`
Assign multiple handlers	❌	✅
Keeps HTML clean	❌	✅

Easy for beginners	✅	✅ (slightly more complex)
Modern best practice	❌	✅

5. Example with Multiple Events

```html
<button id="btn">Click Me</button>

<script>
let btn = document.getElementById("btn");

// First event
btn.addEventListener("click", () => {
    alert("Button clicked!");
});

// Second event
btn.addEventListener("mouseover", () => {
    console.log("Mouse is over the button!");
});
</script>
```

- Clicking the button → shows alert

- Hovering over the button → logs a message in console