JavaScript EventListener Guide: Basic to Advanced

An EventListener is a function that waits for a specific event on a DOM element and reacts to it.
Syntax: element.addEventListener(event, callback);
element → the element to watch, event → event type, callback → function to run when event occurs.

1■■ Basic Click Event

```
<button id="myBtn">Click Me</button>
<script>
const btn = document.getElementById("myBtn");
btn.addEventListener("click", () => {
  alert("Button clicked!");
});
</script>
```

2■■ Mouse Events Example

```
<div id="box" style="width:150px;height:150px;background:lightblue;margin:20px;">Hover
<script>
const box = document.getElementById("box");
box.addEventListener("mouseover", () => { box.style.backgroundColor = "orange"; });
box.addEventListener("mouseout", () => { box.style.backgroundColor = "lightblue"; });
box.addEventListener("mousedown", () => { box.style.transform = "scale(0.9)"; });
box.addEventListener("mouseup", () => { box.style.transform = "scale(1)"; });
</script>
```

3■■ Keyboard Events Example

```
<input type="text" id="myInput" placeholder="Type here">
<script>
const input = document.getElementById("myInput");
input.addEventListener("keydown", (e) => { console.log(`Key pressed: ${e.key}`); });
input.addEventListener("keyup", (e) => { console.log(`Key released: ${e.key}`); });
</script>
```

4■■ Event Object Example

```
document.addEventListener("click", (e) => {
  console.log(`Clicked on: ${e.target.tagName} at (${e.clientX}, ${e.clientY})`);
});
```

5■■ Removing Event Listeners

```
function handleClick() { alert("Clicked!"); }
btn.addEventListener("click", handleClick);
btn.removeEventListener("click", handleClick);
```

6■■ Event Delegation

```html
<ul id="list">
  <li>Item 1</li>
  <li>Item 2</li>
</ul>
<script>
const ul = document.getElementById("list");
ul.addEventListener("click", (e) => {
  if(e.target.tagName === "LI") alert(`You clicked ${e.target.textContent}`);
});
</script>
```

7■■ Event Bubbling & Capturing

```js
element.addEventListener("click", callback, true);  // capturing
element.addEventListener("click", callback, false); // bubbling (default)
```

8■■ Mini Project: Interactive Color Box

```html
<div id="colorBox" style="width:200px;height:200px;background:lightgray;text-align:cent
<script>
const box = document.getElementById("colorBox");
box.addEventListener("mouseover", () => box.style.backgroundColor = "yellow");
box.addEventListener("mouseout", () => box.style.backgroundColor = "lightgray");
box.addEventListener("mousedown", () => box.style.backgroundColor = "orange");
box.addEventListener("mouseup", () => box.style.backgroundColor = "yellow");
document.addEventListener("keydown", (e) => {
  if(e.key === "r") box.style.backgroundColor = "red";
  if(e.key === "g") box.style.backgroundColor = "green";
});
</script>
```