Day 36

"Web Development + Security"

Events, Event Bubbling, setInterval & setTimeout in JavaScript:

What Are Events in JavaScript?

An event is an action that happens in the browser — e.g., user clicks a button, moves the mouse, presses a key, submits a form, or loads the page.

JavaScript can listen for and respond to these events using event listeners.

Common Event Types

Category	Examples
Mouse	click, dblclick, mouseover, mouseout, mousedown, mouseup
Keyboard	keydown, keyup, keypress
Form	submit, change, focus, blur
Window	load, resize, scroll, DOMContentLoaded
Touch	touchstart, touchend, touchmove

Example: a basic <div> and button:

Code: without any JS

```
index.html > html
2   <html lang="en">
3   <head>
4       <meta charset="UTF-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1.0">
6       <title>Document</title>
7   </head>
8   <body>
9       <div class="container">
10          <div class="box">Aditya Kumar</div>
11      </div>
12      <button id="btn">Cick me!</button>
13      <script src="script.js">
14      </script>
15  </body>
16  </html>
```
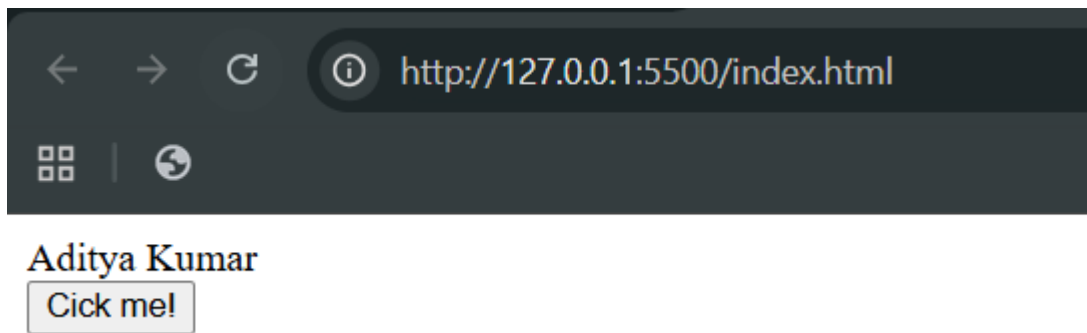
Output:

Example:

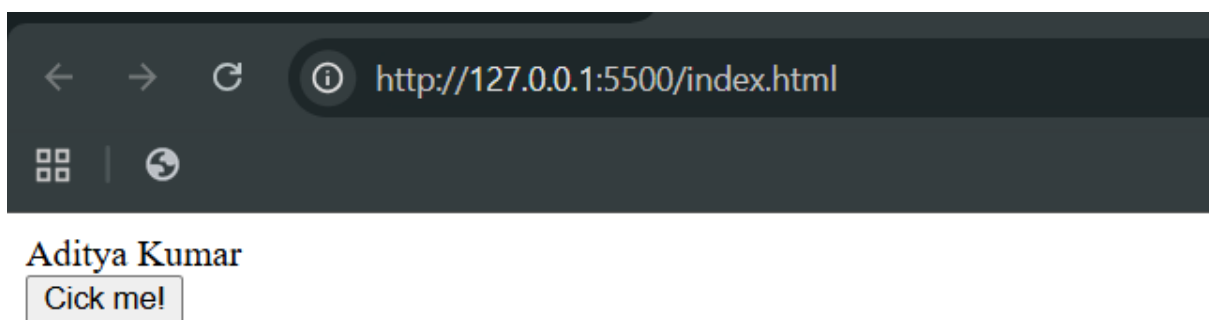Adding a very basic event listener, where the alert box will come when we click the button:
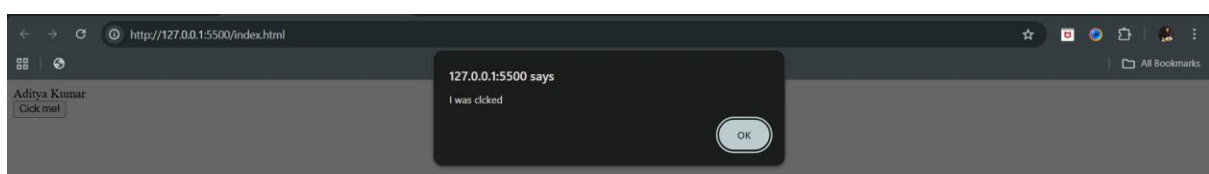
Code:

Index.html: as shown above

Script.js:

```js
let buttbyadi = document.getElementById("btn");

buttbyadi.addEventListener("click", ()=>{
    alert("I was clcked");
})
```

Output:

Before any click:

After the click: the alert came

Example:

When we click the button, the text above the button will change:

Index.html: as shown above

Script.js: here we said that we want to target that element whose class be .box, which obviously be the first of its kind, as querySelector will target the first one

```js
let buttbyadi = document.getElementById("btn");

buttbyadi.addEventListener("click", ()=>{
    document.querySelector(".box").innerHTML = "<b>You clicked me!</b>";
})
```

Output:

Before click:

After click:

Example:

When we double click the button, the text above the button will change:

Index.html: as shown above

Script.js: here we said that we want to target that element whose class be .box, which obviously be the first of its kind, as querySelector will target the first one
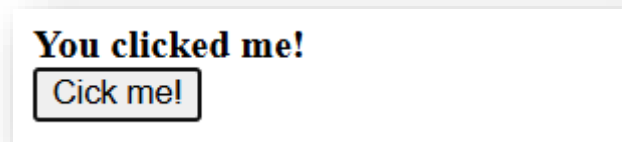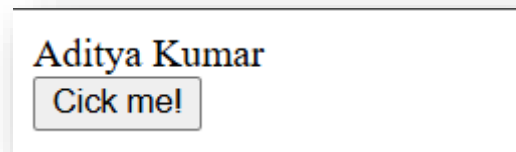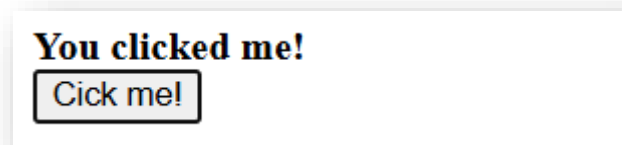
```js
let buttbyadi = document.getElementById("btn");

buttbyadi.addEventListener("dblclick", ()=>{
    document.querySelector(".box").innerHTML = "<b>You clicked me!</b>";
})
```

Output:

Before click:

Aditya Kumar
Cick me!

After double click:

You clicked me!
Cick me!

What is eventBubbling?

When an event occurs on an element:

1. It first triggers on that element,
2. Then bubbles up to its parents.
    This is called Event Bubbling.

The opposite (from top to bottom) is Event Capturing.
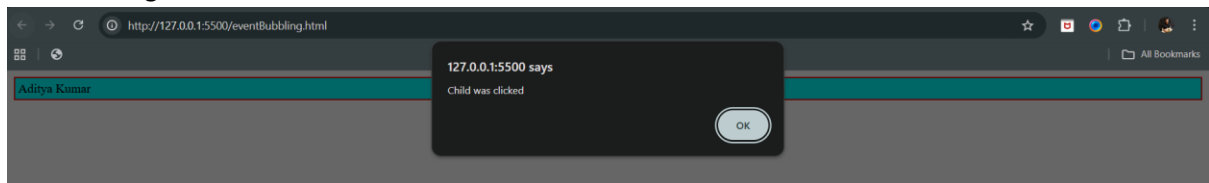
Example:

First a basic <div>s: without any JS

Now, adding the JS: we are doing double click, such that it should show the alert box. It is an example of event bubbling.
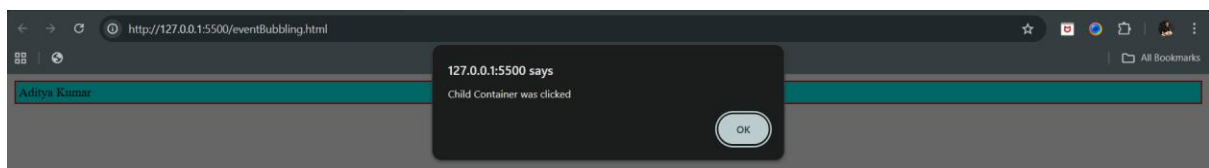
```html
eventBubbling.html > ⬡ html > ⬡ body > ⬡ script
  2    <html lang="en">
  4    <head>
  5        <meta charset="UTF-8">
  6        <meta name="viewport" content="width=device-width, initial-scale=1.0">
  7        <title>Event bubbling</title>
  8        <style>
  9            .child {
 10                background-color: █aqua;
 11                border: 2px solid █red;
 12                margin: 4px;
 13                padding: 4px;
 14                cursor: pointer;
 15            }
 16        </style>
 17    </head>
 18
 19    <body>
 20        <div class="container">
 21            <span class="childContainer">
 22                <div class="child">Aditya Kumar</div>
 23            </span>
 24        </div>
 25
 26        <script>
 27            document.querySelector(".child").addEventListener("contextmenu", () => {
 28                alert("Child was clicked");
 29            })
 30
 31            document.querySelector(".childContainer").addEventListener("contextmenu", () => {
 32                alert("Child Container was clicked");
 33            })
 34
 35            document.querySelector(".container").addEventListener("contextmenu", () => {
 36                alert("Container was clicked");
 37            })
 38        </script>
 39    </body>
```
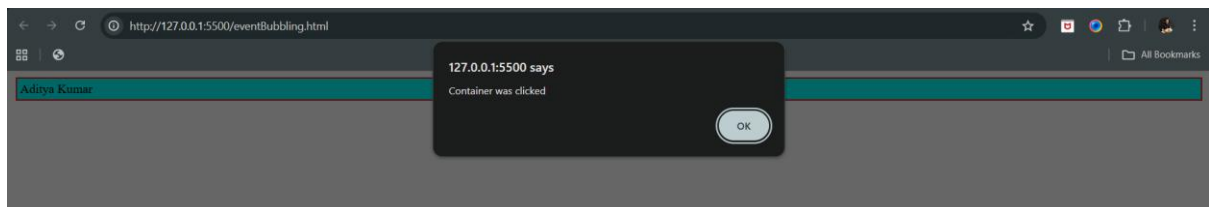
Output:

When we right clicked:

When we clicked ok:

When we again clicked ok:

Now, suppose we don't want something like this, then we can stop the propagation: using the .stopPropagation

Code:

```
eventBubbling.html > 🌐 html > 🌐 body > 🌐 script > ⊘ addEventListener("contextmenu") callback
 2    <html lang="en">
 4    <head>
 8        <style>
 9            .child {
10                background-color: ■aqua;
11                border: 2px solid ■red;
12                margin: 4px;
13                padding: 4px;
14                cursor: pointer;
15            }
16        </style>
17    </head>
18
19    <body>
20        <div class="container">
21            <span class="childContainer">
22                <div class="child">Aditya Kumar</div>
23            </span>
24        </div>
25
26        <script>
27            document.querySelector(".child").addEventListener("contextmenu", (e) => {
28                e.stopPropagation();
29                alert("Child was clicked");
30            })
31
32            document.querySelector(".childContainer").addEventListener("contextmenu", (e) => {
33                e.stopPropagation();
34                alert("Child Container was clicked");
35            })
36
37            document.querySelector(".container").addEventListener("contextmenu", (e) => {
38                e.stopPropagation();
39                alert("Container was clicked");
40            })
41        </script>
42    </body>
```

Output:

Only one alert will come when we right click on the output.

Now, we will be understanding, setinterval:

Example: changing the color of the child after every 3s:

Code:

```html
eventBubbling.html > html > body > script > getRandomColor
2    <html lang="en">
4    <head>
17   </head>
18
19   <body>
20       <div class="container">
21           <span class="childContainer">
22               <div class="child">Aditya Kumar</div>
23           </span>
24       </div>
25
26       <script>
27           //Generating random color
28           function getRandomColor(){
29               let val1 = Math.ceil(0+Math.random()*255);
30               let val2 = Math.ceil(0+Math.random()*255);
31               let val3 = Math.ceil(0+Math.random()*255);
32               return `rgb(${val1}, ${val2}, ${val3})`
33           }
34
35           setInterval(() => {
36               document.querySelector(".child").style.background = getRandomColor();
37           },3000)
38       </script>
39   </body>
40
41   </html>
```

Output:

At start:

Aditya Kumar

After 3 sec:

Aditya Kumar

Example: changing the color of the child after first 3s:

```html
eventBubbling.html > html
 2    <html lang="en">
19    <body>
20        <div class="container">
21            <span class="childContainer">
22                <div class="child">Aditya Kumar</div>
23            </span>
24        </div>
25
26        <script>
27            //Generating random color
28            function getRandomColor(){
29                let val1 = Math.ceil(0+Math.random()*255);
30                let val2 = Math.ceil(0+Math.random()*255);
31                let val3 = Math.ceil(0+Math.random()*255);
32                return `rgb(${val1}, ${val2}, ${val3})`
33            }
34
35            setTimeout(() => {
36                document.querySelector(".child").style.background = getRandomColor();
37            },3000)
38        </script>
39    </body>
40
41    </html>
```

--The End--