

The background is a solid teal color with various faint, white line drawings and sketches overlaid. These include architectural elements like a brick wall, a staircase, and a building facade. There are also scientific or technical sketches, such as a circular structure with concentric rings, a ladder, and a diagram with nodes and lines. A small crescent moon is visible in the upper right corner.

# JavaScript

## *Working with Events*

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# Event Driven JavaScript

Making your website or app react to events

# Event-driven JavaScript

- Events happen – mostly – in the **browser**
  - either system-dependent (`scroll`, `load`, etc)
  - or initiated by the user (`click`, `mouseover`, `hover`)
  - Also: events thrown by **external systems** (`http-connection`, `websockets`)
- Events are fired by (elements on the) **page**
- Events are always written in **lowercase**.

- Events *can* be captured and **trigger the execution** of a script
  - Capturing is **not required**
  - If not captured, an event simply **dies**, without something happening
  - Events '**bubble up**' the DOM tree (most of them)
- Some events can be fired by all elements
  - like `mouseover`
- Some by only some elements
  - like `change`

# Events example

- **Window**

- load
- resize
- unload
- scroll

- **input, select, textarea**

- change
- focus
- blur

- **button**

- focus, blur

- **visible elements**

- mouseover
- mouseup
- mouseout
- mousedown
- mousemove

- **all**

- click

- **...dozens of others  
(countless!)**

# Relatively new: mobile events

Photoshop PSD file d

- touch
- tap
- swipe
- pinch
- zoom
- rotate
- orientationchange
- And more...



# Events ARE NOT HTML-attributes

- Don't do this inline: (*deprecated!*)
  - onload
  - onmouseover
  - etc
  - `<button onclick="doFunction()">`
- Instead, use `addEventListener()`
  - load
  - mouseover
  - etc.
- Write a function, the **Event handler**, to do something
  - This can be an anonymous function or named function, like
  - `onLoad()`
  - `onMouseover()` etc.

In short, NEVER do this:



```
HTML

<button onclick="alert('Hello, this is my old-fashioned event handler!');">
  Press me
</button>
```



Instead, do something like:

HTML

</> Play



```
<input id="textBox" type="text" />
<div id="output"></div>
```

Or, use `document.getElementById(...)`

JS

</> Play



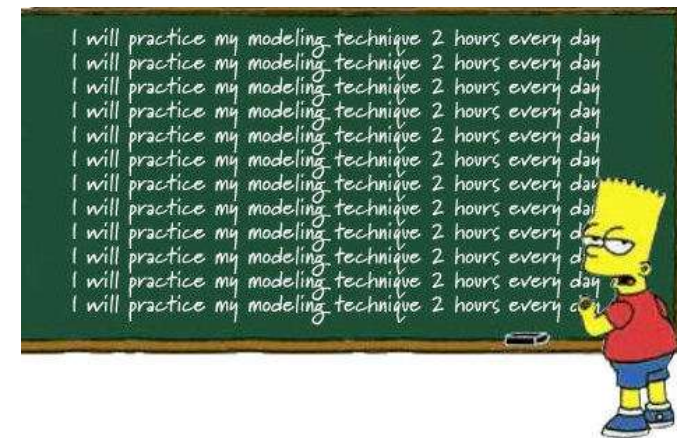
```
const textBox = document.querySelector("#textBox");
const output = document.querySelector("#output");
textBox.addEventListener("keydown", (event) => {
  output.textContent = `You pressed "${event.key}".`;
});
```

The event is passed as a parameter to the event handling function

# Mini workshop

Create the example from the previous slide

- Catch a keypress
- Show in the console, or show in the page which key was pressed
- Q: How can you get an overview of all event-properties available in the `event` object?



# Example – getting the cursor location

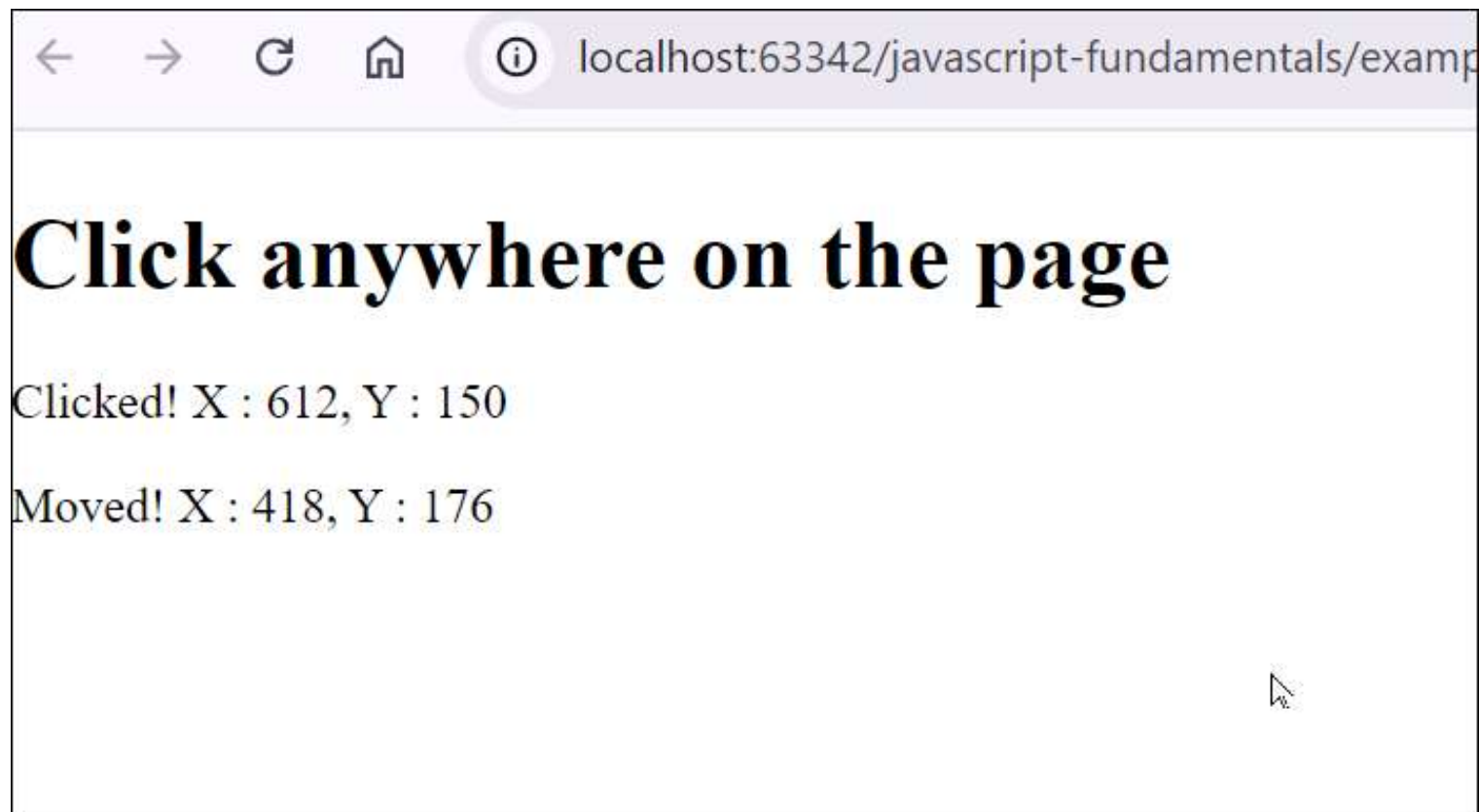
```
<script>
  // example: catching mouse clicks and mouse moves.
  window.addEventListener('load', function(){
    document.addEventListener('click', handleClick);
    document.addEventListener('mousemove', handleMove);
  });

  // Event handlers
  function handleClick(evt){
    const xCoord = evt.clientX;
    const yCoord = evt.clientY;
    const msg = 'Clicked! X : ' + xCoord + ', Y : ' + yCoord;
    document.getElementById('coords').innerHTML = msg;
  }

  function handleMove(evt){
    const xCoord = evt.clientX;
    const yCoord = evt.clientY;
    const msg = 'Moved! X : ' + xCoord + ', Y : ' + yCoord;
    document.getElementById('mouseMove').innerHTML = msg;
  }
</script>
```

```
<h1>Click anywhere on the page</h1>
<p id="coords"></p>
<p id="mouseMove"></p>
```

# Sample output

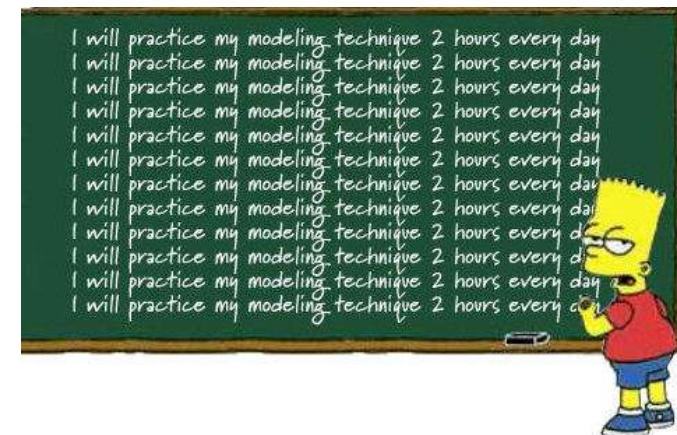


The **events** are `click` and `mousemove`.

The **properties** used are `clientX` and `clientY`.

# Workshop #30

- Create a script where after a button is clicked, all links in the page change background colour.
- Usage:
  - A simple HTML-page, containing some hyperlinks
  - An array of colours
  - `getElementsByTagName()` or `document.querySelectorAll()`
  - Loop over a `NodeList` object



# Sample output

## Change link backgrounds on mouse click

This is for learning to work with JavaScript events

Lorem ipsum [dolor sit amet](#), consectetur adipiscing elit. Aenean in eros urna. Ut posuere ultrices sagittis libero sed convallis facilisis, lacus quam malesuada tellus, at condimentum felis sem quis ligula. Sed eu porttitor fermentum. Cum sociis natoque [penatibus et magnis dis parturient](#) montes, nascetur ridiculus mus commodo, nulla et aliquet ullamcorper, massa nibh viverra enim, sit amet tincidunt velit purus eu ipsum interdum rhoncus. Sed tellus nunc, rhoncus vel semper vitae, vehicula sit amet nunc. Pellentesque id eros [dignissim vitae at justo](#). Phasellus rutrum sem ac nibh condimentum ac vestibulum justo vehicula. Sed accumsan libero sollicitudin quis pulvinar tortor aliquet.

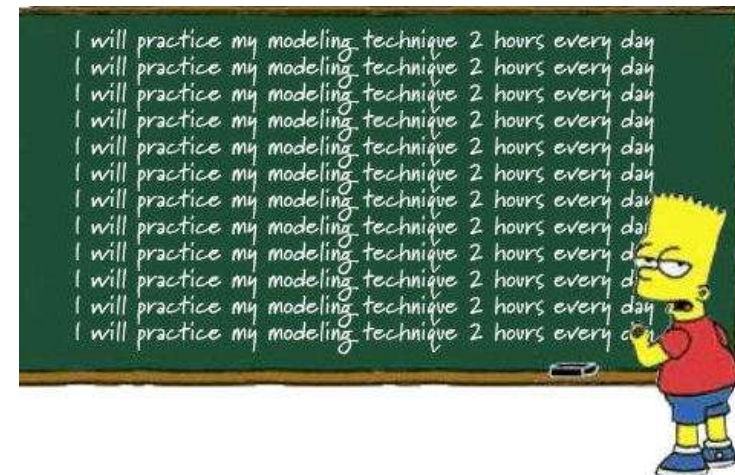
Change link backgrounds





# Workshop #31

- Write a script that **checks a value** in a form:
- a `<textarea>` element must contain **no more than xx characters**. Set this number yourself.
  - (Yes, like Twitter, Mastodon and other Social Media Platforms)
- Show **how many characters** the visitor can still type
- Show if the number of characters is **exceeded**.
- the check takes place **after each character** is typed in the textarea
  - Tip: use the event `input`




# Sample output

## Character Counter Example

Type in the textarea below. The maximum allowed characters are 100.

```
Lorem ipsum dolor sit,  
bladybladybla
```



You can type 64 more characters.

Color (CSS-class) if OK

## Character Counter Example

Type in the textarea below. The maximum allowed characters are 100.

```
Lorem ipsum dolor sit,  
bladybladybla<script>  
// Maximum number of characters  
allowe const maxChars = 100;
```

You have exceeded the limit by 5 characters!

Color (CSS-class) if Not OK



# Workshop #32

- An input field must contain a number smaller than 10
- This check takes place after this input field has lost focus
  - This comes in handy for age checks, not exceeding a certain value, etc.
- This is an easy one!

## Number Validation Example

Enter a number smaller than 10:

## Number Validation Example

Enter a number smaller than 10:

Please enter a number smaller than 10.

