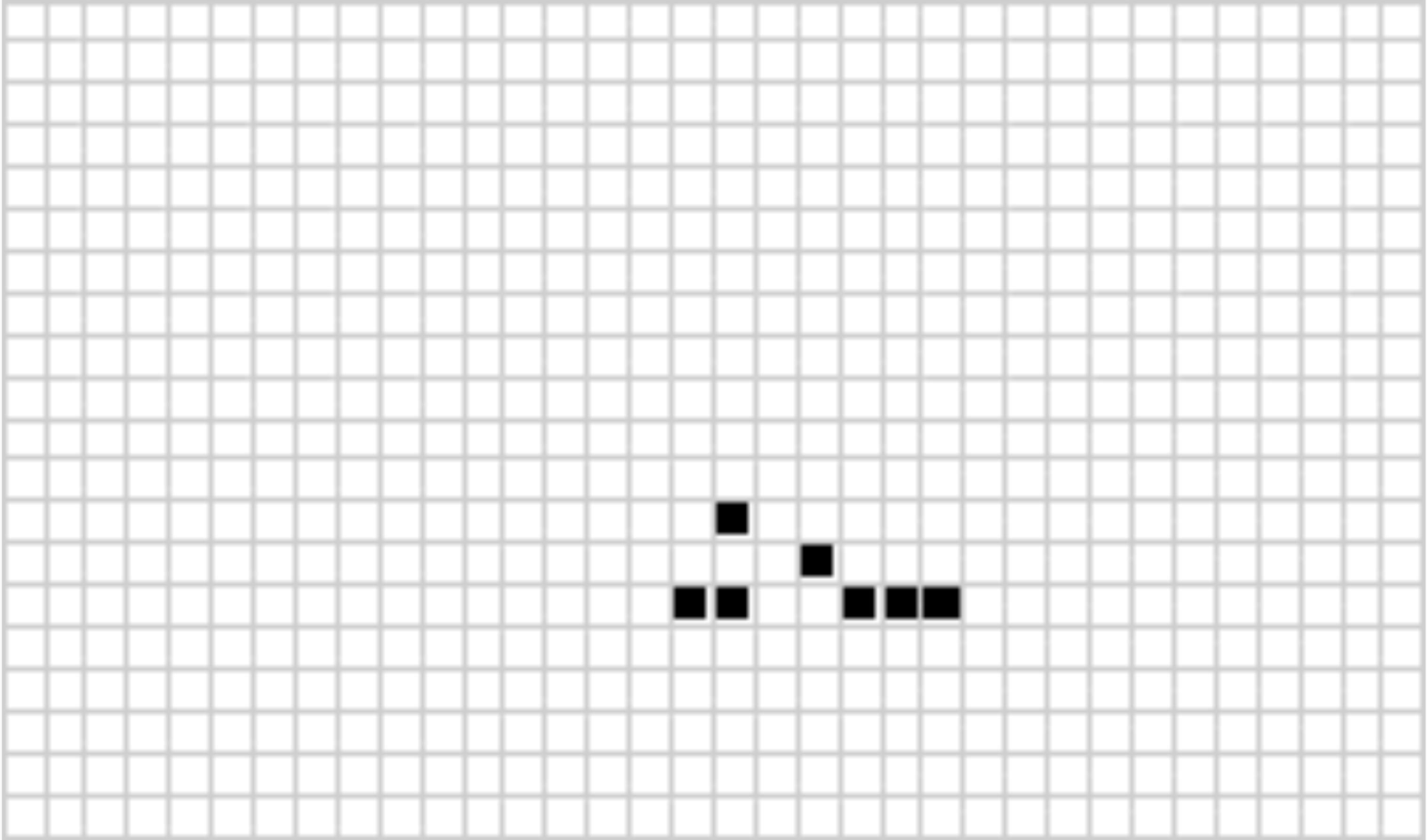


game of life





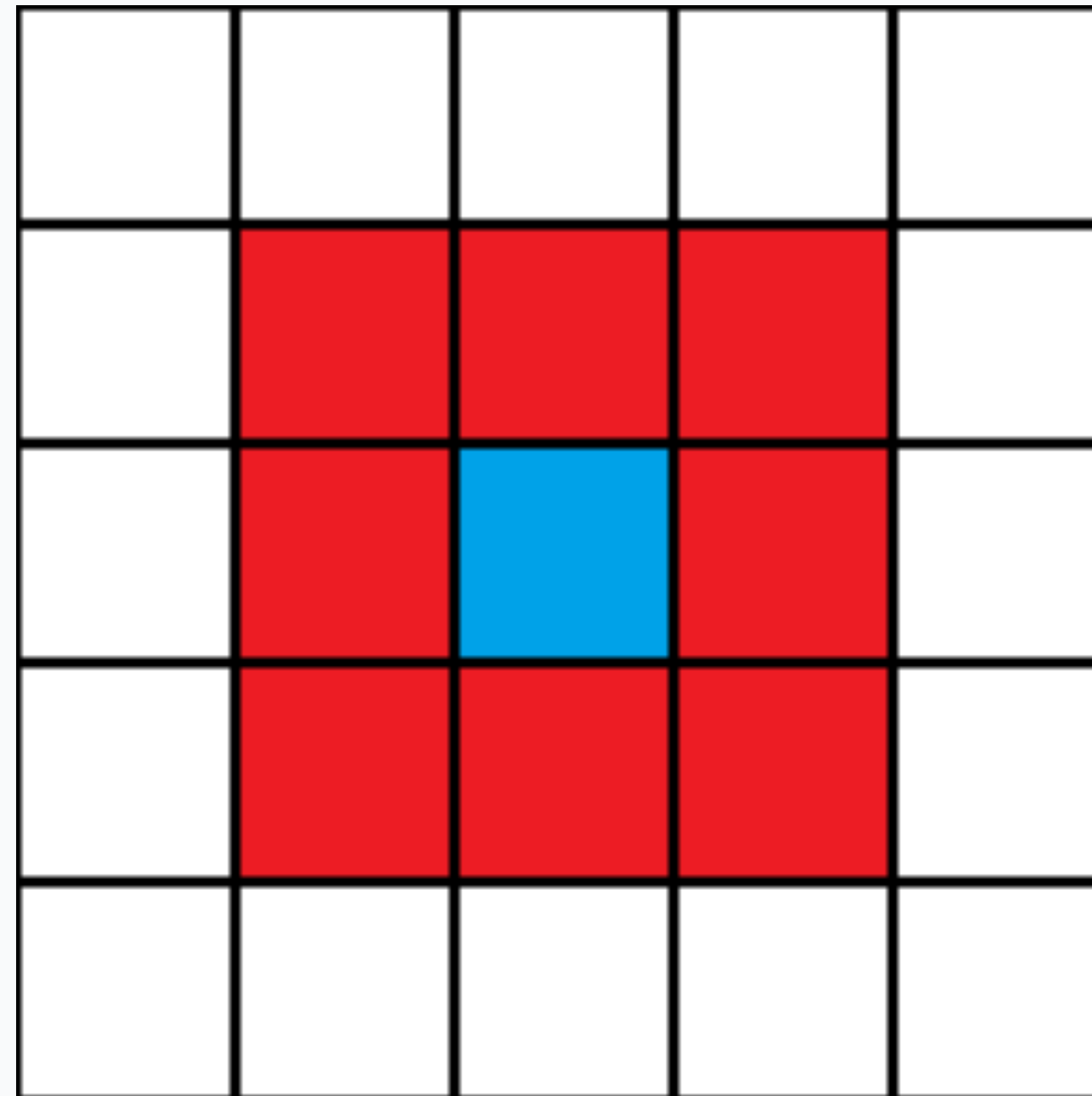
game of life

- "Zero-player" game (see *animation*)
- Rooted in Von Neumann's quest for artificial/simulated life
- Created by Jon Conway in 1970
- Sparked niche field: **cellular automaton**
- Simple rules can produce complex behavior

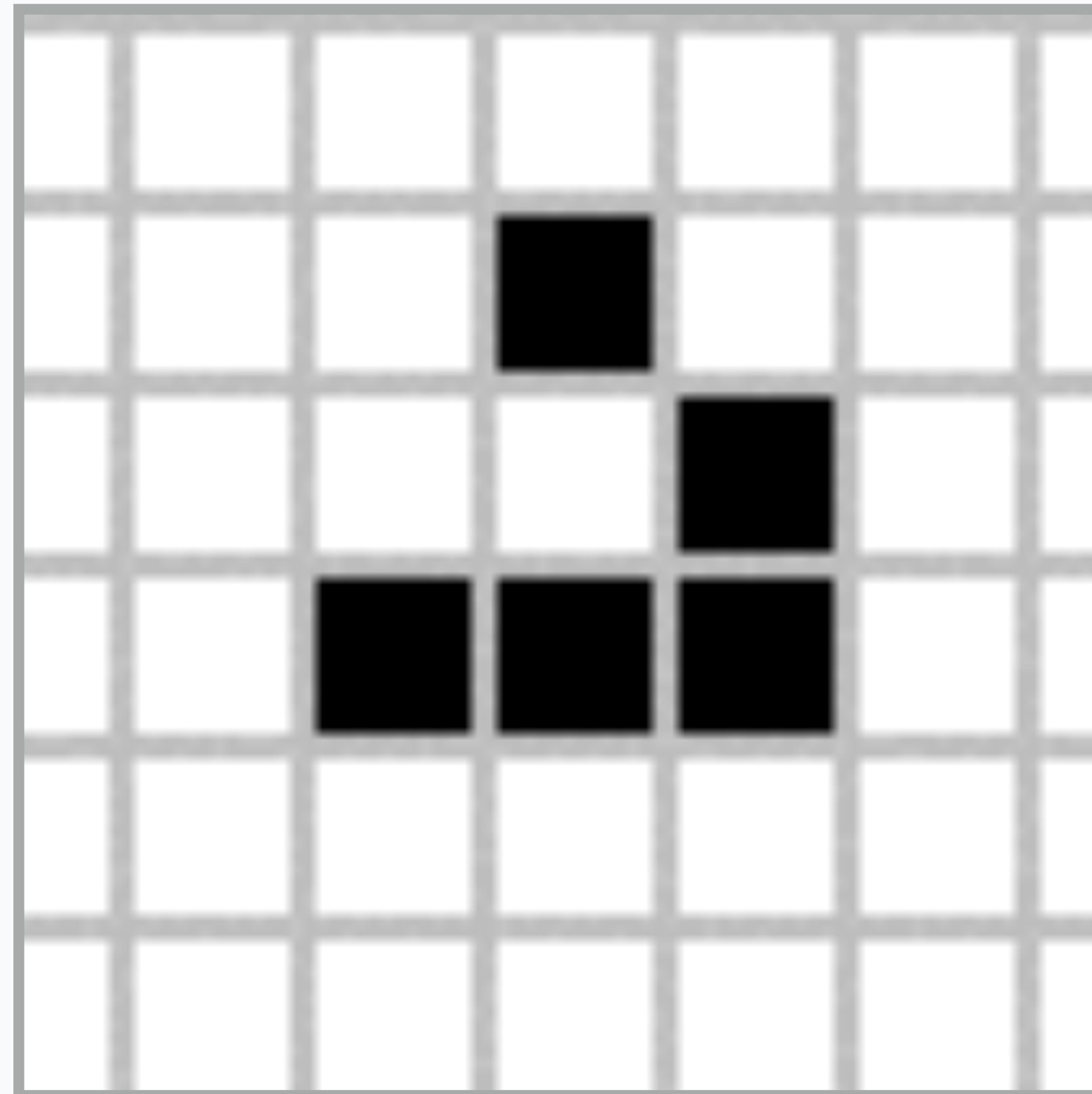
rules

- 2D grid of cells that are currently on or off (dead or alive)
- Each step, grid updates all-at-once
- Currently alive cell
 - ◉ "Underpopulation": dies given fewer than 2 live neighbors
 - ◉ "Overcrowding": dies given greater than 3 live neighbors
 - ◉ Otherwise, lives on
- Currently dead cell
 - ◉ "Birth": comes to life given exactly 3 live neighbors
 - ◉ Otherwise, remains dead

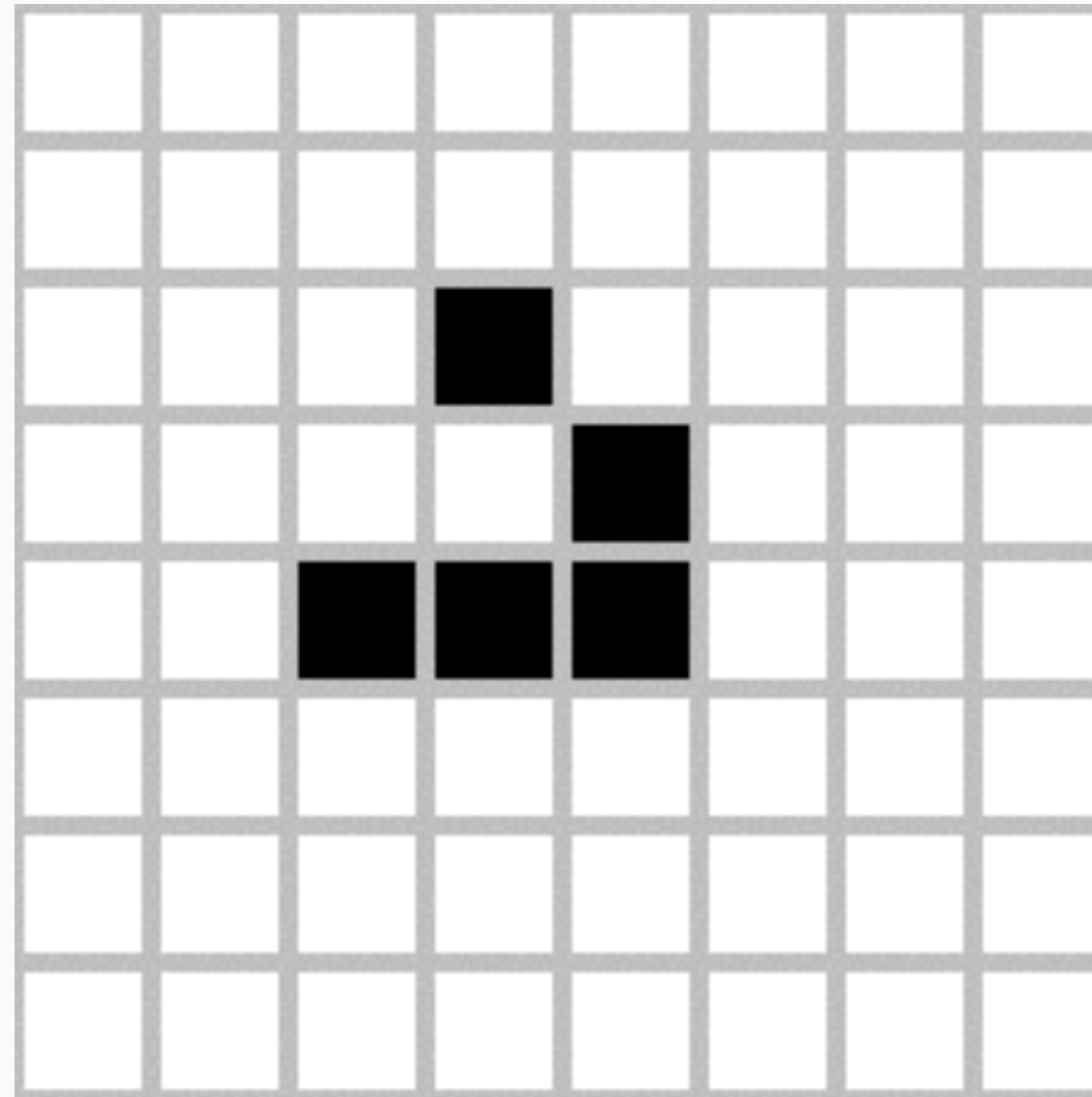
neighbors



game of life



game of life



Responding to User Activity

- Event Handlers
- Default Events
- Bubbling and Propagation of Events

<https://jsbin.com/sarohuyivu/1/edit?html,js,output>

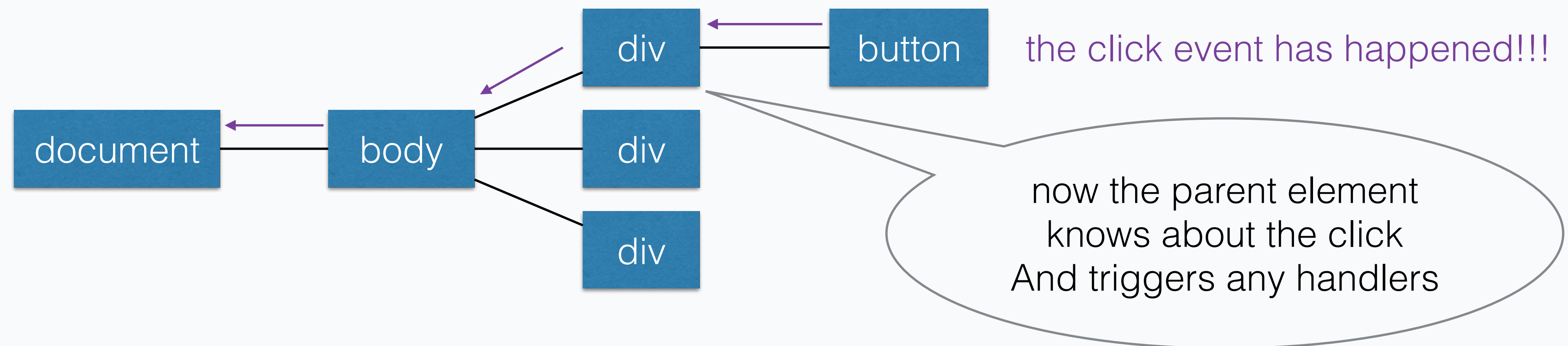
Event Handlers

```
element.addEventListener('click', function(event) {  
    // Run this code on click  
});
```

- JS that handles things that happen in the DOM
- Event examples:
 - click
 - (form) submit
 - hover
 - mouseover

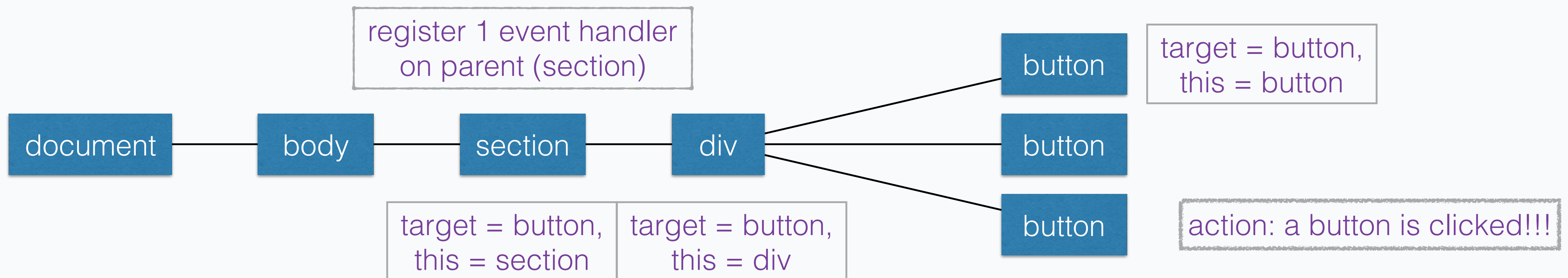
Event Propagation/Bubbling

- An event is directed to its intended target
 - If there is an event handler it is triggered
- From here, the event *bubbles* up to the containing elements
- This continues to the document element itself



Event Delegation

- The process of using event propagation to handle events at a higher level in the DOM
- Allows for a single event listener



Manipulating the DOM

- Changing Attributes for Style
- Making Elements
- Putting them into the DOM
- Remove Elements
- innerHTML and the DOM HTML Reader

Changing style attributes

```
element.style.backgroundColor = "blue";
```

● CSS

- background-color →
- border-radius →
- font-size →
- list-style-type →
- word-spacing →
- z-index →

● JavaScript

- backgroundColor
- borderRadius
- fontSize
- listStyleType
- wordSpacing
- zIndex

Changing CSS Classes

- *classList* is HTML5 way to modify which classes are on an Element

```
document.getElementById( "MyElement" ).classList.add( 'class' );
```

```
document.getElementById( "MyElement" ).classList.remove( 'class' );
```

```
if ( document.getElementById( "MyElement" ).classList.contains( 'class' ) )
```

```
document.getElementById( "MyElement" ).classList.toggle( 'class' );
```

Workshop!