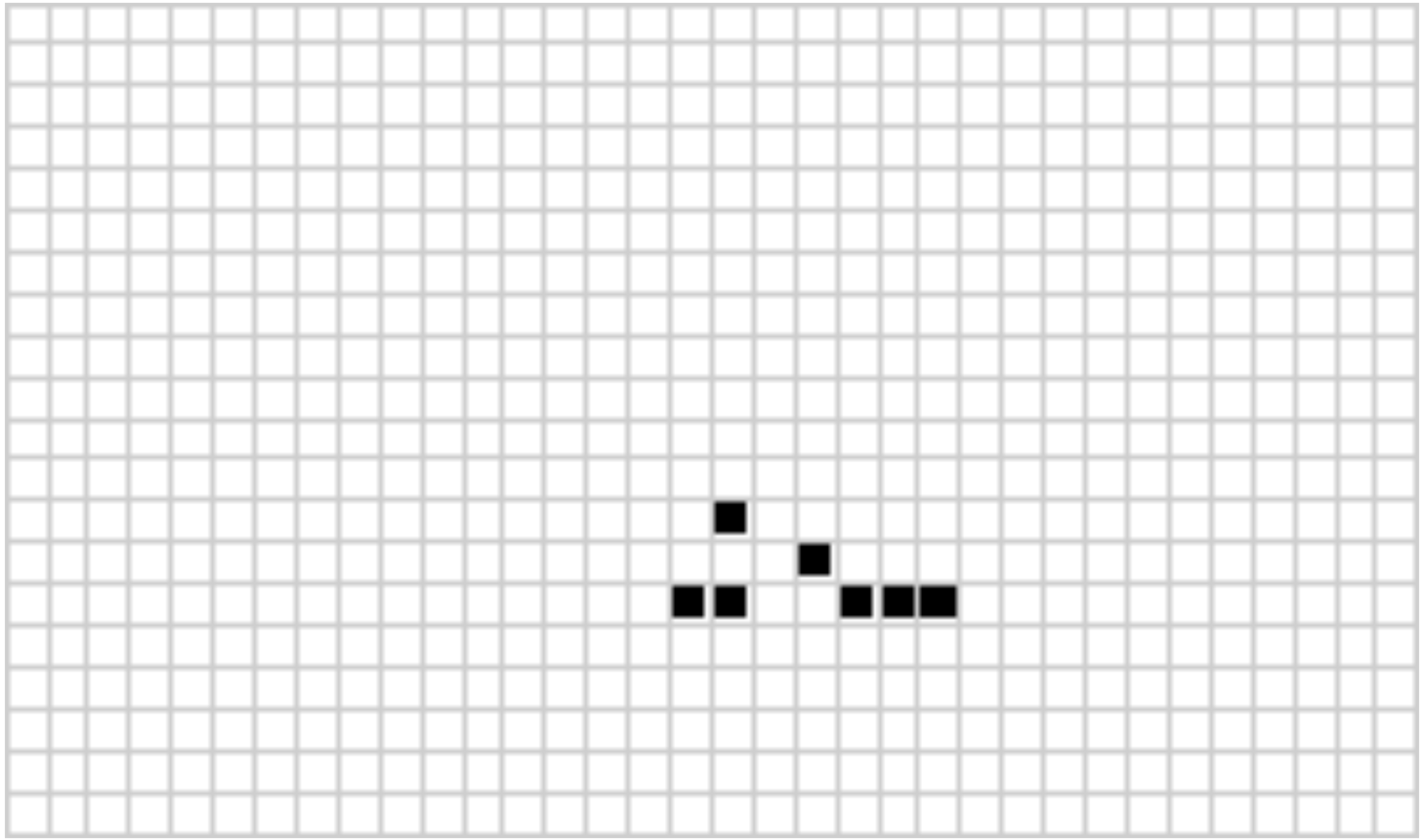
game of life



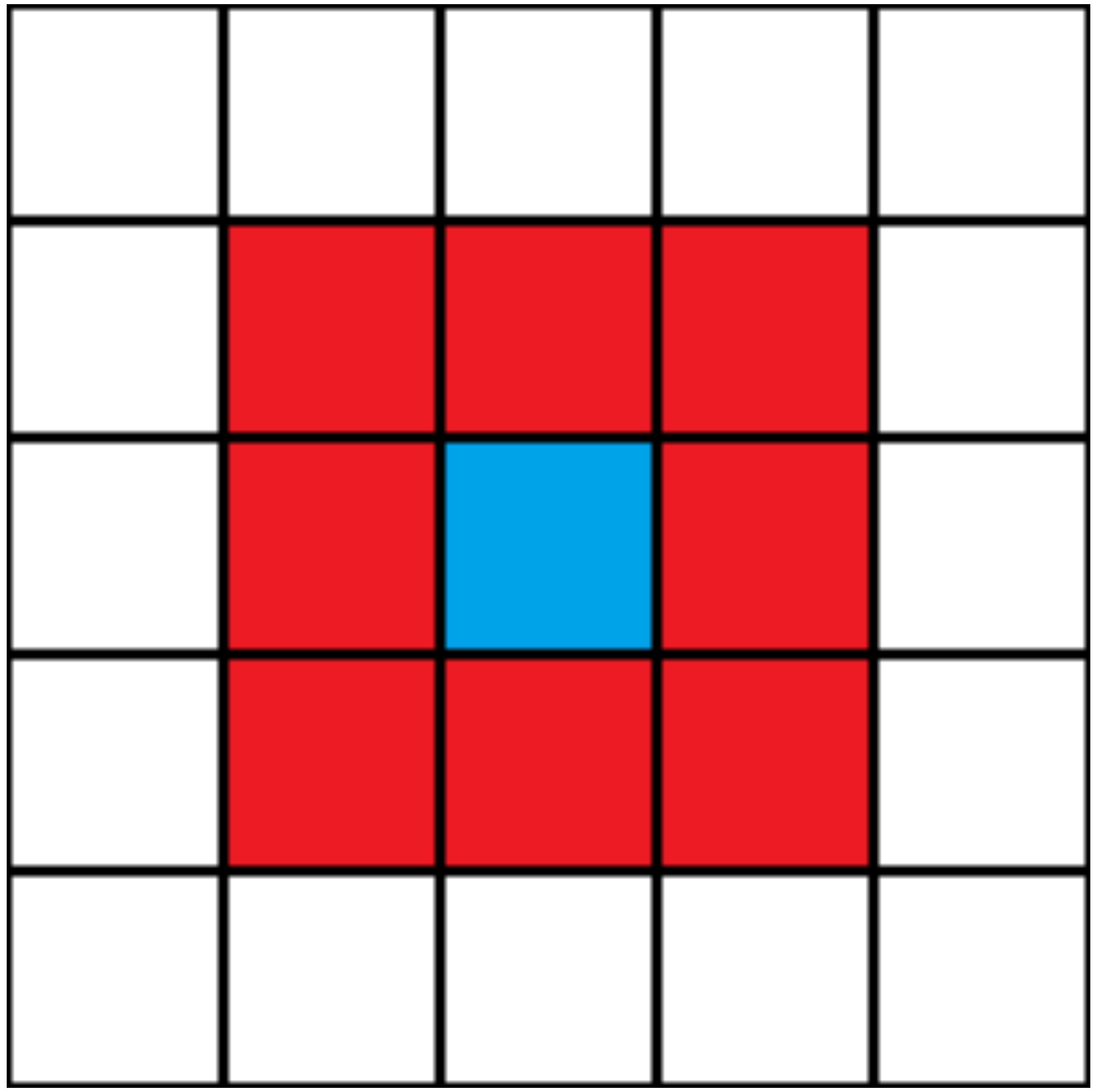
game of life

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

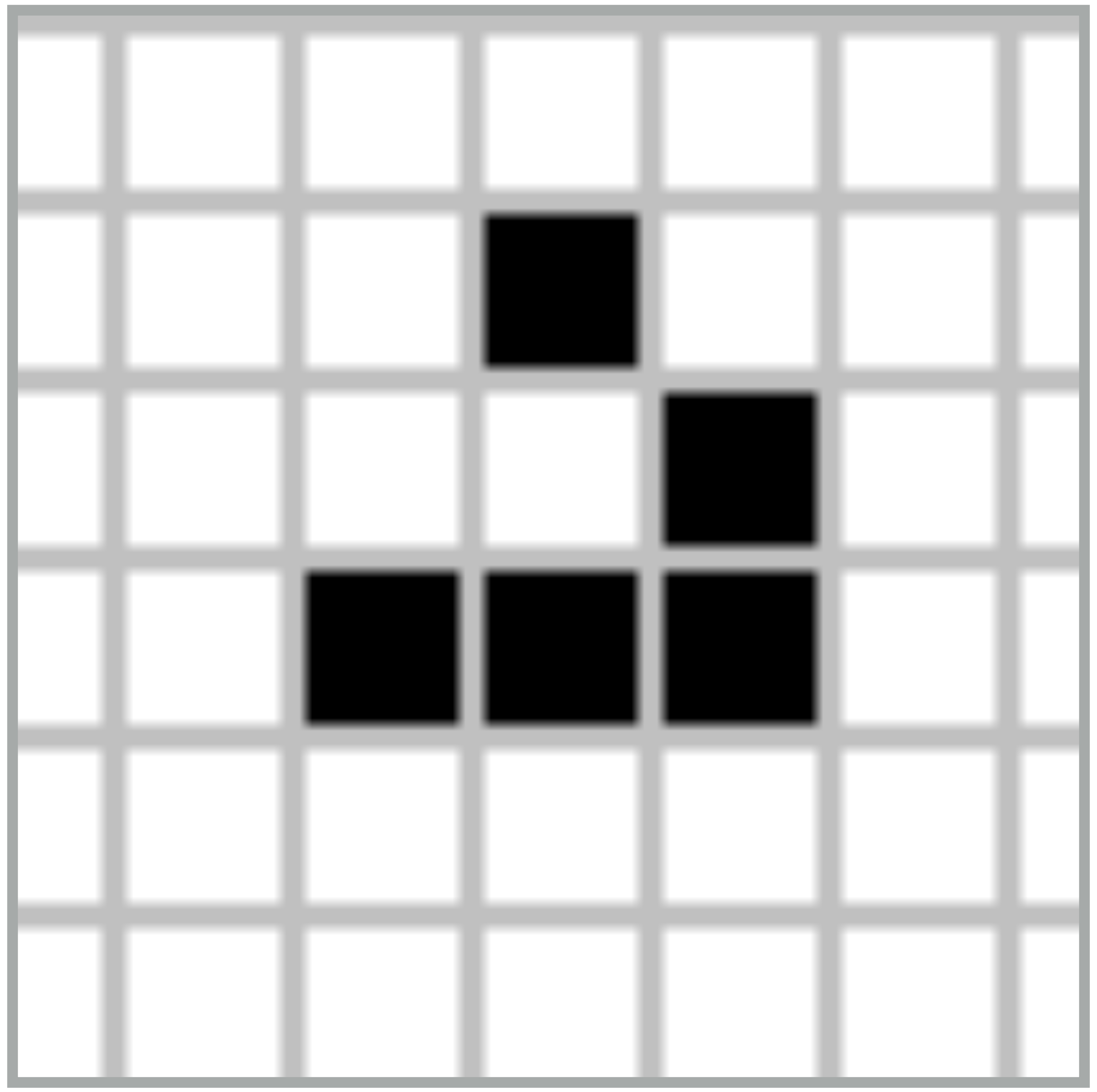
rules

- **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

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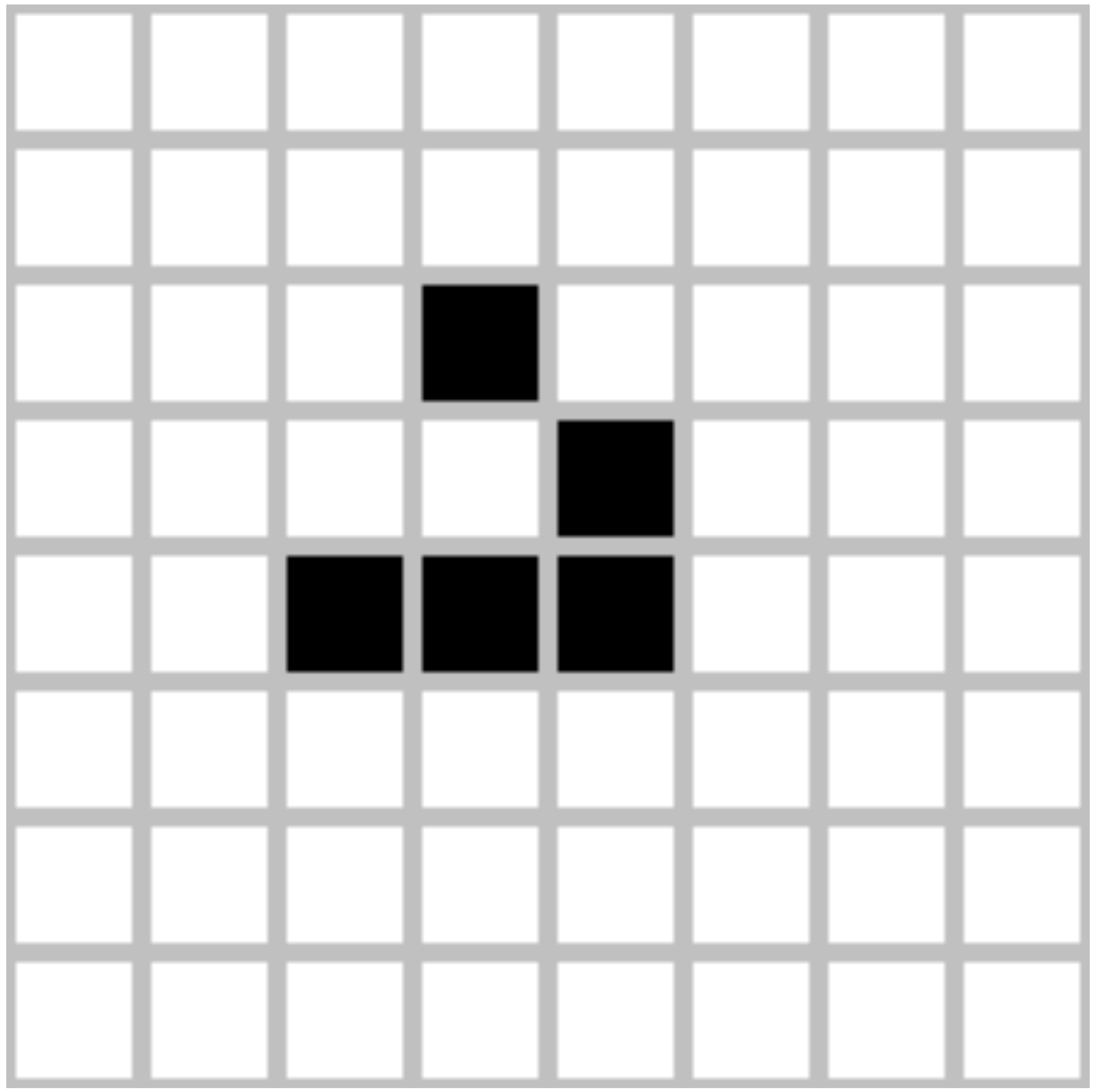


`this` and the `.bind` method

`this`…

- …is the "context" for a function.
- …is determined when a function is *invoked*, not when it is defined.

- To determine what `this` is for any function, take a look at its *call-site*.

types of context binding and call-site

- Default binding: `func();`
- `new` binding: `new func();`
- Implicit binding: `obj.func();`
- Explicit binding: e.g. `func.call(obj);`

the `.bind` method

- Requires one argument, a `thisArg`.
- Returns a new function whose `this` is always the thisArg.
- Does *not* invoke the function.

```
var boundFunc = oldFunc.bind(thisArg);
boundFunc(); //invoked with thisArg as `this`
```

Manipulating the DOM

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

Changing style attributes

```
document.getElementById("MyElement").style.backgroundColor = “blue”;
```

CSS	JavaScript
background-color	backgroundColor
border-radius	borderRadius
font-size	fontSize
list-style-type	listStyleType
word-spacing	wordSpacing
z-index	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');
```

Responding to User Activity

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

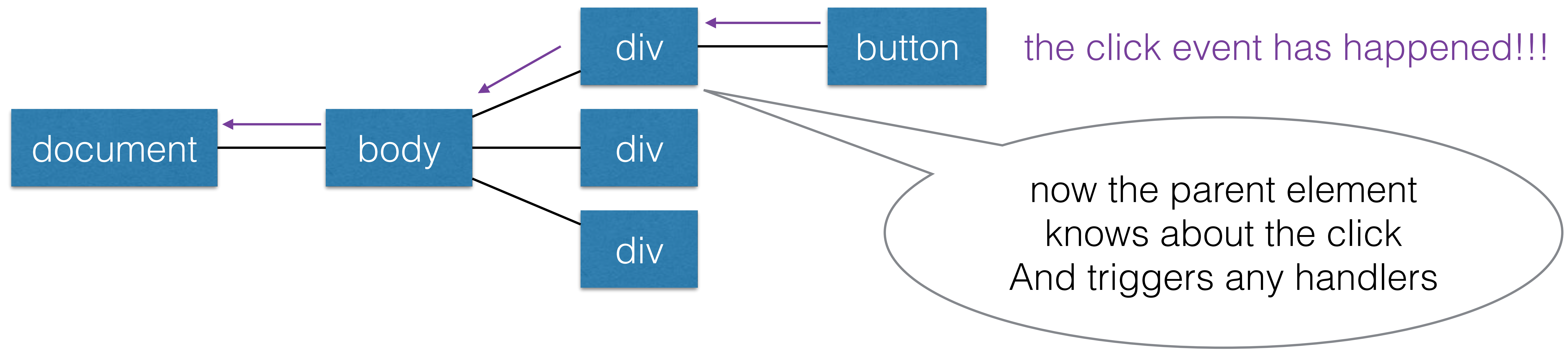
Event Handlers

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

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

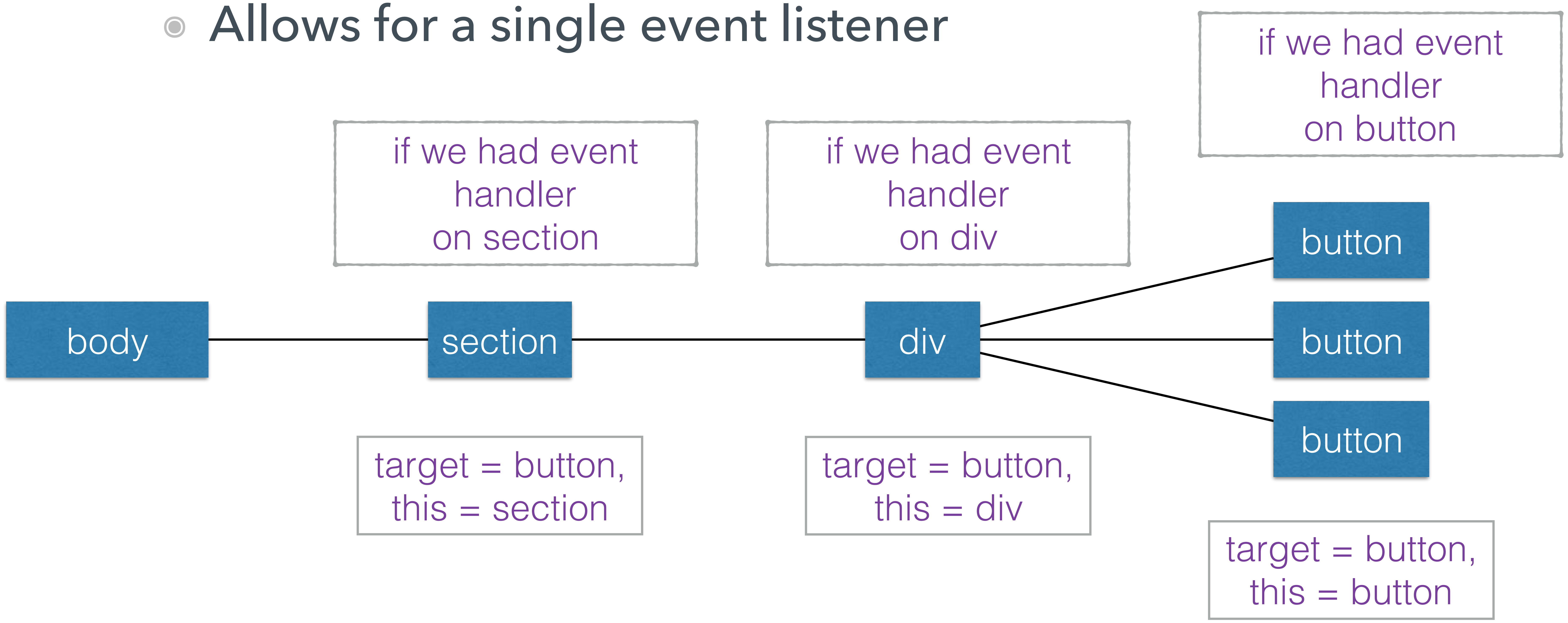
Event Propagation/Bubbling

- 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


document
body
div
div
div
button
the click event has happened!!!
now the parent element knows about the click And triggers any handlers

Event Delegation

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


if we had event handler on section
if we had event handler on div
if we had event handler on button
body
section
div
button
button
button
target = button, this = section
target = button, this = div
target = button, this = button

workshop