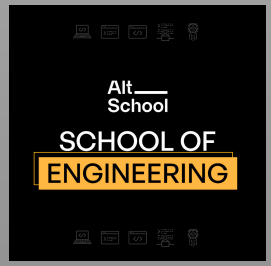


Circle - 08 • Assignment Presentation

Presentation Outline

1. JavaScript Roundup
2. Handy Array Methods
3. JS Conditional Statements
4. Asynchronous JavaScript
5. BOM, DOM & Events
6. ES Modules & Form Handling
7. Node + npm & Bundlers
8. Front-End Engineer – Duties In Practice


1. JavaScript Roundup

Spread Operator and Rest Parameter

The Spread Operator [`...oldCopy`] creates a new copy of an array/object

```
const originals = [1, 2, 3]
const clone = [...originals]   // new copy
clone.push(4)
//OR
// const clone = [...originals, 4]

console.log(originals) // → [1,2,3]
console.log(clone)     // → [1,2,3,4]

// rest parameter
function sum(...nums) {
  return nums.reduce((a, b) => a + b, 0)
}
console.log(sum(2+3+4+5+6+4)) // 24
```

```
[1, 2, 3]
[1, 2, 3, 4]
24
```

Cont’d

The Rest Syntax allows a function accept any amount of argument and gathers everything into one variable (an array).

Key takeaways

- Spread avoids accidental mutation
- Rest collects unknown arguments **and must be • last in the param list • only once • no default value**

2. Handy Array Methods

These methods are the everyday tools for working with lists.

Mutatable methods change the original array, and non mutable ones don't.

Method	What it does	Mutates?
`sort(cb)`	Arrange items, accepts compare fn	Yes
`reverse()`	Flip order in place	Yes
`slice(--)`	Copy a portion	No
`push(x)`	Add to end	Yes
`shift()`	Remove first	Yes
`unshift(x)`	Add to front	Yes

Note: use non-mutating methods (`slice` , `map` , `filter`) in React state to avoid bugs.

3. JS Conditional Toolkit

```
if (score > 90)                  // IF
  grade = 'A'
else if (score > 75)             // ELSE-IF
  grade = 'B'
else grade = 'C'

const msg = age >= 18            // TERNARY
  ? 'Vote!' : 'Grow up'

switch(day) {                    // SWITCH
  case 'Mon': …
}
```

- **Nested switch** → rarely worth the complexity.
- Pick the construct that keeps intent obvious.

4. Asynchronous JavaScript

```
async function getGitHubUser(name) {
  const res = await fetch(`https://api.github.com/users/${name}`)
  if (!res.ok) throw new Error('Network error')
  return res.json()
}

getGitHubUser('chrisroland')
  .then(user => console.log(user.name))
  .catch(console.error)
```

```
Chris Ebube Roland
```

- Promises tame callback hell
- `async/await` reads top-to-bottom
- `fetch()` supersedes old **XMLHttpRequest** for HTTP requests.
- Always handle errors (`try/catch` or `.catch()`)
- Callbacks still exist – `.map`, `.filter`, `.reduce` each expect one

5. BOM, DOM & Events

Layer	What it lets JS control
DOM	HTML & content structure
CSSOM	Stylesheets (classes, colors)
BOM	Browser Object Model e.g chrome – `window` , `history` , `navigator`

Note: the *window* object is global; *document* and styles live one layer below.

Events are created in Javascript using the following methods

- HTML attributes.
- DOM Property.
- `addEventListener`

- HTML attribute provides additional information about elements and control their behavior. In the Document Object Model (DOM), attributes are represented as properties of element nodes.

```
<p onmouseover="alert('You moused over this element!')">Hover here! </p>
```

- DOM Property

DOM (Document Object Model) is simply Javascript representation of your Html, DOM is an important aspect of Javascript. Through the DOM, we can search and modify html elements.

```
<div id="event">Events in Javascript</div>
<script>
  event.onmouseover = function () {
    alert('Hmm, Motion!')
  }
</script>

<!-- Creating an element through the DOM -->
<script>
  const newElement = document.createElement('p');
  const newText = document.createTextNode('Javascript is not for the weak');
  newElement.appendChild(newText);
  element.appendChild(newElement);
  console.log(newElement.textContent);
</script>
```

The main difference between "`innerHTML`" and "`textContent`" is that while `textContent` allows you to pass in text only, `innerHTML` allows you to pass in HTML text.

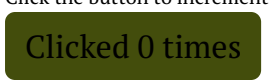
- `addEventListener`

```
<button id="btn">Clicked 0 times</button>

<script type="module">
  const btn = document.getElementById('btn')
  let count = 0

  btn.addEventListener('click', e => {
    count++
    e.currentTarget.textContent = `Clicked ${count} times`
  })
</script>
```

Click the button to increment the count.



`click` is the event while the function represents a handler which listens or responds to the click event.

Event Bubbling and Capturing

> Bubbling - This concept simply entails firing an event on the innermost element, then on successively less nested elements.

When the element is clicked, it runs the handlers on it, then up to its parent (We could refer to it as "Ascension" i.e moving upwards).

```
<div onclick="alert('Second div')">
  <div onclick="alert('First div')">
    <p onclick="alert('P Element')">P Element</p>
  </div>
</div>
```

In the example above, the handler on the "p" tag will run, followed by the handlers on the first and second divs respectively.

`p ⟶ div 1 ⟶ div 2`

> Capturing - This is the reverse of Bubbling, the event fires on the least nested element, then the following nested elements until it reaches the target element (moving downwards).

Event Delegation

Event delegation signifies assigning a single handler on a common parent to handle events on multiple child elements. This approach reduces the number of event listeners required and improves efficiency.

- `addEventListener` is preferred
- Understand **bubbling** vs **capturing**
- Use delegation for long lists

6. ES Modules + Dynamic import()

Export labels what a module shares while **import** pulls that piece into another file.

```
// utils/math.js
export function add(a, b) { return a + b }
export default function mul(a, b) { return a * b }

// main.js
import mul, { add } from './utils/math.js'

(async () => {
  if (performance.now() > 5000) {
    const { sparkle } = await import('./effects/sparkle.js')
    sparkle()
  }
})();
```

Why it matters: predictable scope, tree-shaking, lazy-loading.

Form Handling with FormData

```
<form id="todoForm">
  <input name="task" required>
  <button>Add</button>
</form>

<script type="module">
  todoForm.addEventListener('submit', e => {
    e.preventDefault()
    const data = new FormData(e.target)
    console.log(Object.fromEntries(data)) // { task: "Buy Akara" }
  })
</script>
```

- `preventDefault()` stops page reload
- `FormData` quickly serialises any form

7. Node + npm & Bundlers

```
npm init -y            # generates package.json
npm i -D vite          # ultra-fast dev server
npm run dev            # HMR at localhost:5173
npm run build          # output /dist with hashed assets
vite preview           # test production build
```

Why bundlers?	Benefits
Browsers can’t import SVG/PNG or npm libs directly	Bundlers translate everything
Code-splitting & optimisation	Smaller, faster production bundles
Dev server with HMR	Instant feedback while coding

8. Front-End Engineer – Duties In Practice

- Build **signup / login** flows (auth & form handling)
- **Validate** inputs and give clear feedback
- **Fetch** + sync data with APIs (CRUD)
- Wire UI interactions to real state (clicks, keys, drag)
- Ensure accessibility & responsive layout

.

> *Everything we learned this semester—arrays, async, DOM, modules—feeds directly into these day-to-day tasks of a Frontend Developer*

Confetti Demo

```
//Confetti.js
import confetti from 'canvas-confetti'

export function celebrate() {
  confetti({
    particleCount: 150,
    spread: 70,
    origin: { y: 0.6 }
  })
}
```

```
<form id="todoForm">
  <input name="task" required>
  <button onclick="celebrate()">Add</button>
</form>
<script>
  import celebrate from '/confetti.js'
</script>
<!-- click button to see confetti fx -->
```

Add to do

Could be used to celebrate. E.g call `celebrate()` after adding a new to-do.

Summary;

Skills learned	Usage/Real-world impact
Spread/Rest **+ handy array methods**	Immutable updates and clear list transformations
Conditional statements (if/switch/ternary)	Expressive, readable program flow control
Promises + `async/await` + `fetch`	Reliable API calls, loaders, and robust error handling
BOM / DOM / CSSOM & event system	Full control of page structure, style, and user interaction
Event delegation, bubbling, capturing	Performant listeners even on large, dynamic lists
ES Modules + dynamic `import()`	Predictable scope, tree-shaking, and on-demand code loading
Form handling with **FormData**	Clean serialization for POST/PUT requests
Node + npm **& Vite bundler**	Modern dev server, HMR, tiny production bundles
Front-End engineer daily duties	Shows how all the above skills map to real project tasks