

# ***10: Web Design 1***

# ***Web Accessibility***

- Access for everyone
- Internet as a place of equal access

“The power of the web is in its universality. Access by everyone, regardless of disability, is an essential aspect.”

- Tim Berners-Lee

a c c e s s i b i l i t y

1 2 3 4 5 6 7 8 9 10 11

A diagram illustrating the extraction of 'a11y' from the word 'accessibility'. The word 'accessibility' is written in a monospace font, with the first 'a' in black and the remaining letters 'ccessibility' in pink. Below the letters, a horizontal line is drawn, with a downward-pointing arrow centered under the '11' (the 10th and 11th characters). The letters 'a11y' are shown below the arrow, with 'a' and 'y' in black and '11' in pink. The '11' is positioned directly under the '11' in the word above.

a11y

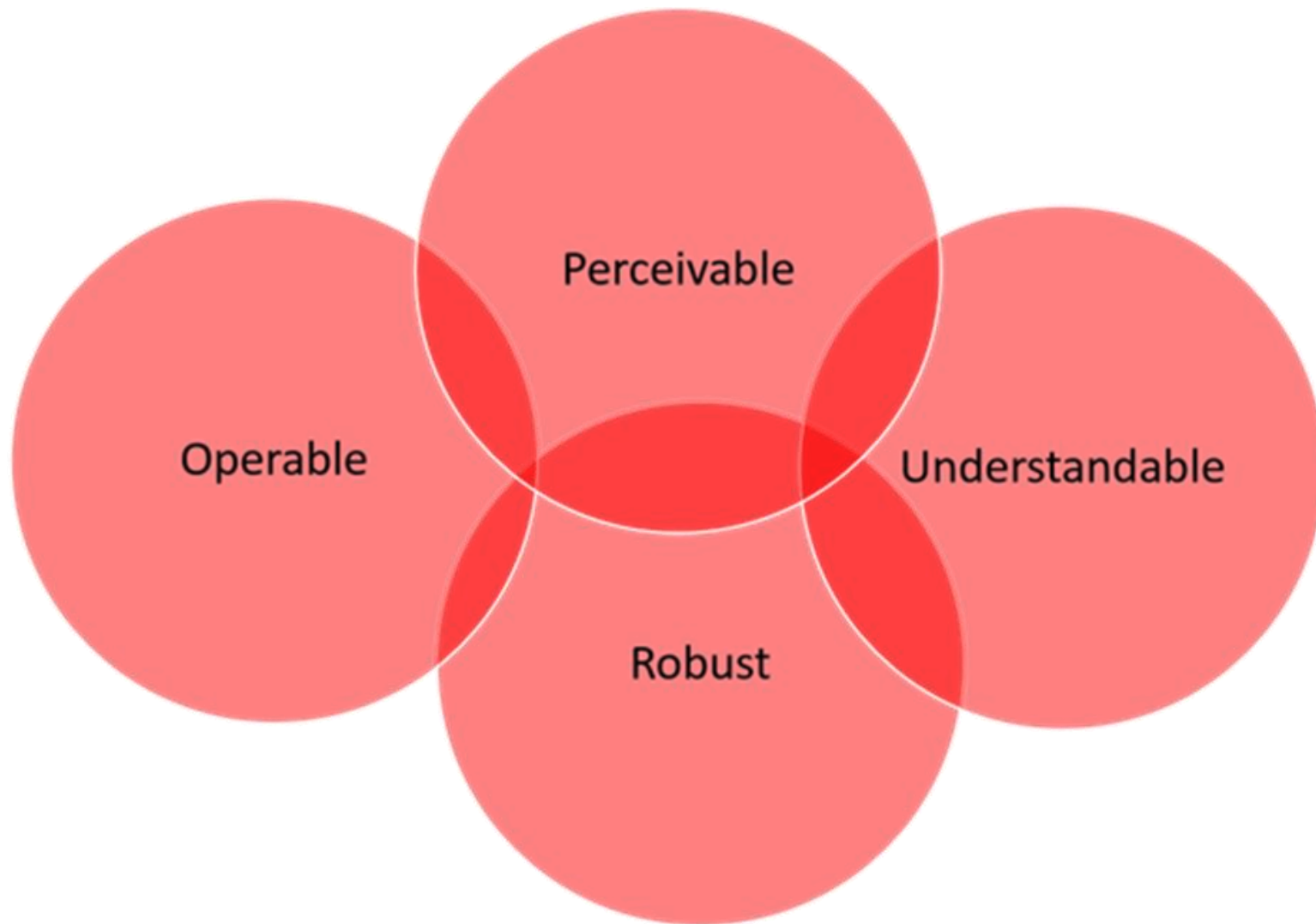
- **Accessibility is not...**

- Text-only pages
- Separate accessible versions (except in multimedia)
- Boring
- Difficult

- **Accessibility is...**

- Accessibility is about building web pages that can be navigated and read by **everyone**, regardless of disability, location, experience or technology.

# ***Principles of Accessible Design (POUR)***



# ***Principles of Accessible Design (POUR)***

- **Perceivable**: Content must be available to all senses (e.g., captions for videos).
- **Operable**: Navigation should be possible using various devices (e.g., keyboards, switches).
- **Understandable**: Interfaces must be intuitive and content clear.
- **Robust**: Content should work with different assistive technologies.

# ***Examples of Poor Accessibility***

- Low contrast text unreadable by those with low vision.
- Buttons that cannot be accessed via keyboard navigation.
- Missing alternative text for images, leaving screen readers with no context.
- Complex layouts causing cognitive overload.

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🕒 This article is more than **5 years old**

# Beyoncé's Parkwood Entertainment sued over website accessibility

A lawsuit claims beyonce.com violates the Americans With Disabilities Act by failing to accommodate visually impaired users



## Guidance

# **Meet the requirements of equality and accessibility regulations**

All digital or technology activity must be in full compliance with the Public Sector Bodies Accessibility Regulations 2018 and the Equality Act 2010

# ***WCAG (Web Content Accessibility Guidelines)***

## **WCAG Guidelines**

Overview of audio/video compliance levels

**A**

**Must have**

Pre-recorded video content to include captions.

**AA**

**Should have**

Captions provided for all live audio content and audio description for pre-recorded content.

**AAA**

**Good to have**

Sign language and extended audio description for pre-recorded content.

# ***Perceivable***

- **Provide Alternatives (Perceivable)**
- Example: text alternatives for media alt text images

Information and user interface components must be presentable to users in ways they can perceive.

# ***Operable***

- **Ensure Operable Navigation**
- Example: All functionality must be accessible via a keyboard.

User interface  
components  
and navigation  
must be  
operable.

# ***Understandable***

- **Create Readable and Predictable Content (Understandable)**
- Clear language, consistent navigation, and descriptive headings.

Information and the operation of the user interface must be understandable.

# ***Robust***

- **Support Assistive Technology (Robust)**
- Use semantic HTML and ARIA for non-standard elements.

Content must be robust enough that it can be interpreted by a wide variety of user agents, including assistive technologies.

# ***HTML & Accessibility***

- Semantic HTML - using tags for their intended purposes
  - <header>, <nav>, <article> etc.
- Assistive technologies understand structure

# ***Text Alternatives for Non-Text Content***

**WCAG Guideline:** Ensure that non-text content has a text alternative.

```

```





# ***Text Alternatives for Non-Text Content***

```
<figure>  
    
  <figcaption>Full data: Sales increased by 20% in Q1, 10% in Q2...</figcaption>  
</figure>
```



# ***Keyboard Accessibility***

**WCAG Guideline:** All functionality must be operable via a keyboard.

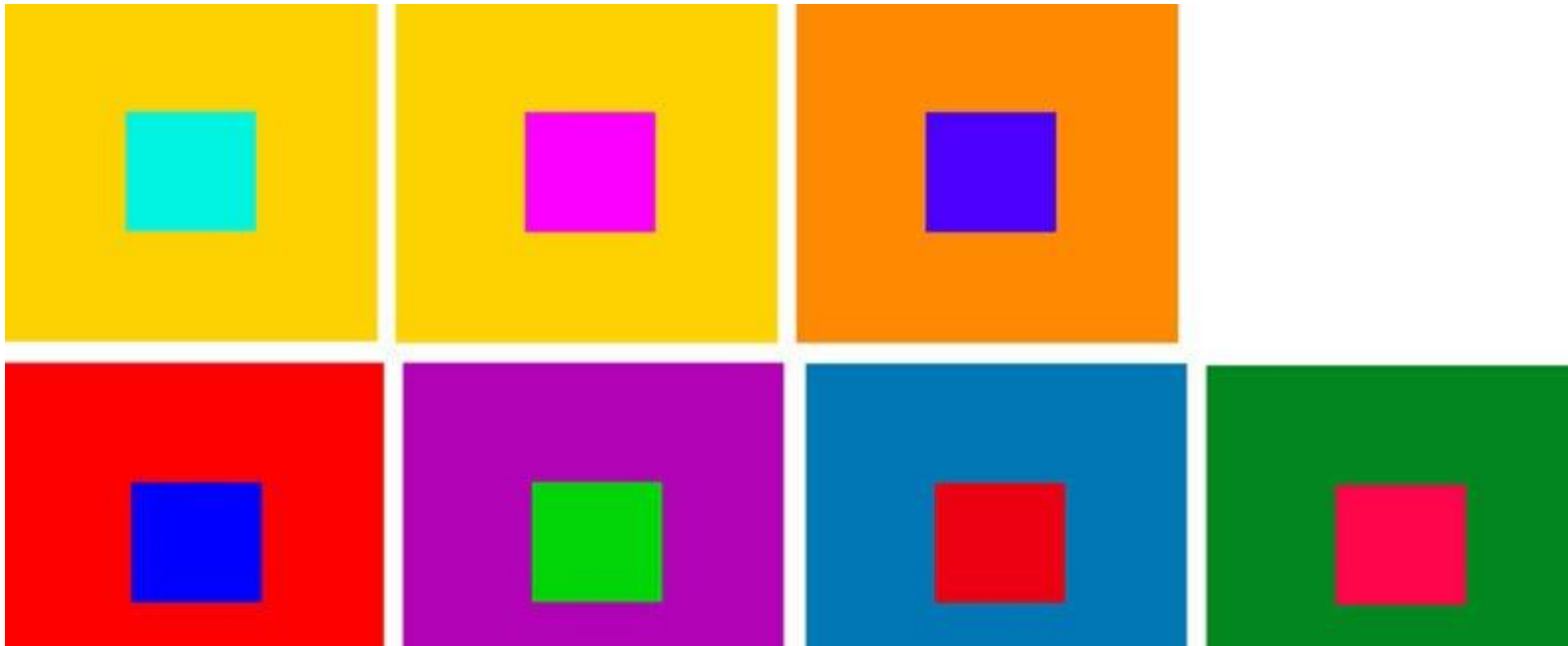
Skip links:

```
<a href="#main-content" class="skip-link">Skip to main content</a>
```

# ***Colour and Contrast***

**WCAG Guideline:** Ensure sufficient color contrast.

- Minimum contrast ratio of **4.5:1** for normal text and **3:1** for large text.
- Avoid relying solely on color to convey meaning.



# ***Descriptive Link Text***

**WCAG Guideline:** Link text should be descriptive of the target.

```
<a href="resume.pdf">Click here</a>
```



```
<a href="resume.pdf">Download my resume</a>
```

# ***Accessible Forms***

**WCAG Guideline:** Ensure forms are perceivable and operable.

## Labels

```
<label for="email">Email Address:</label>  
<input type="email" id="email" name="email">
```

# Accessible Forms

**WCAG Guideline:** Ensure forms are perceivable and operable.

Grouping Related Fields:

```
<fieldset>
  <legend>Personal Information</legend>
  <label for="name">Name:</label>
  <input type="text" id="name" name="name">
  <label for="age">Age:</label>
  <input type="number" id="age" name="age">
</fieldset>
```

# ***Accessible Forms***

**WCAG Guideline:** Ensure forms are perceivable and operable.

Clear error messages

```
<p id="error-email">Please enter a valid email address.</p>
```

# ***Responsive and Flexible Content***

**WCAG Guideline:** Content should adapt to different devices and screen sizes.

- Responsive text
- Scalable layouts

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```



# ***Responsive and Flexible Content***

**WCAG Guideline:** Content should adapt to different devices and screen sizes.

- Responsive text
- Scalable layouts

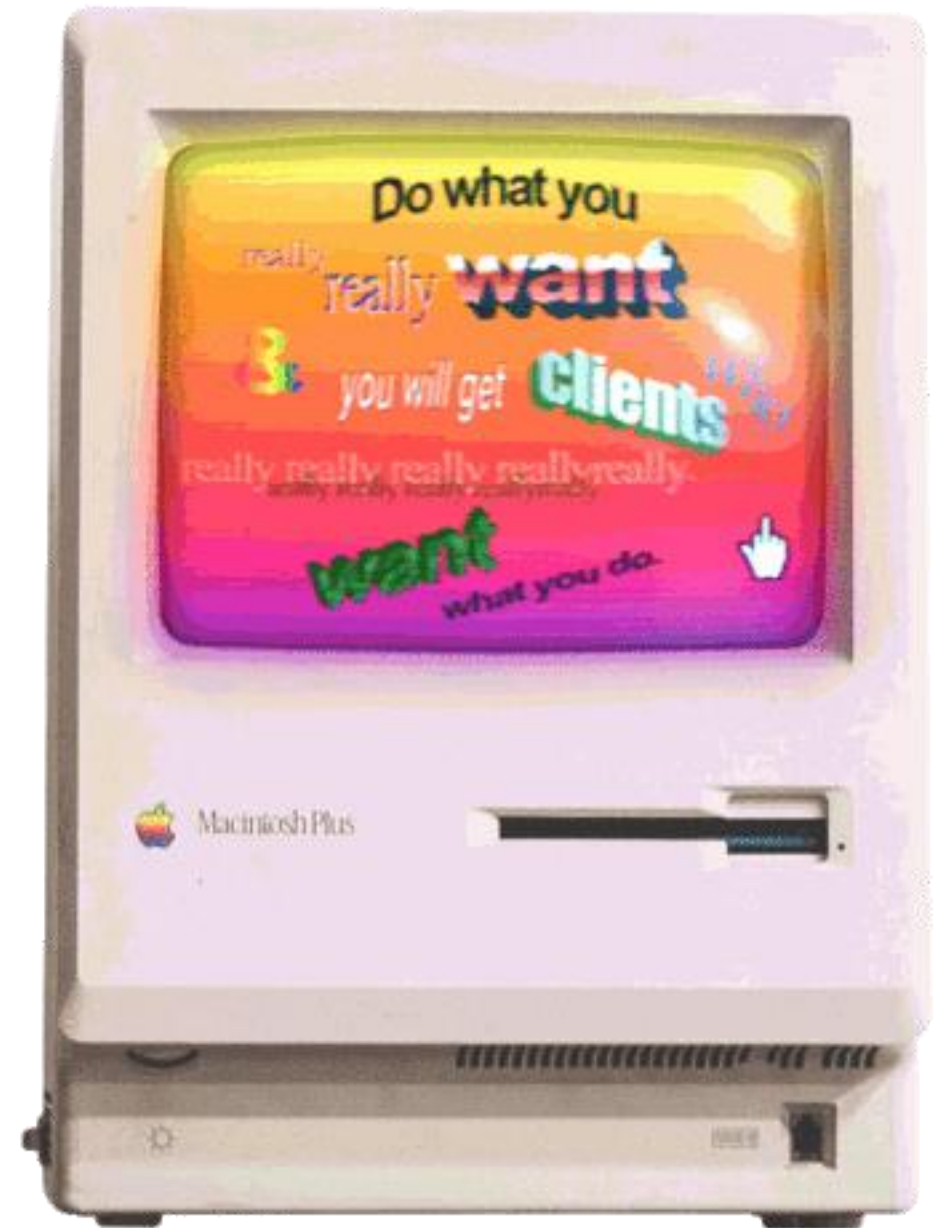
```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

# ***ARIA (Accessible Rich Internet Applications)***

**WCAG Guideline:** Use ARIA to enhance accessibility when necessary.

- ARIA is a set of attributes added to HTML to improve accessibility.
- It provides additional context about UI elements to assistive technologies like screen readers.

- Specifically designed for complex web interfaces (e.g., menus, sliders, tabs) where native HTML semantics may not suffice.
- Makes interactive elements accessible when semantic HTML alone isn't enough.

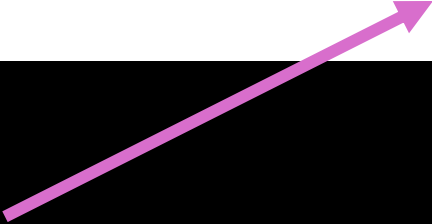


# ARIA Essentials

- **Roles**: Define what an element is (e.g., `role="menu"`, `role="tablist"`).
- **States**: Represent dynamic changes in element behavior (e.g., `aria-expanded`, `aria-hidden`).
- **Properties**: Provide additional information about elements (e.g., `aria-label`, `aria-describedby`).

# ARIA Roles

Defines the role of this element



```
<nav role="navigation" aria-label="Main Navigation">
  <ul role="menu">
    <li role="menuitem"><a href="#home">Home</a></li>
    <li role="menuitem"><a href="#about">About</a></li>
  </ul>
</nav>
```

# ARIA Roles

alert slider combobox article listitem  
alertdialog marquee spinbutton grid columnheader math application  
button menuitem status listbox definition note banner  
checkbox menuitemcheckbox tab menu directory presentation complementary  
dialog menuitemradio tabpanel menubar document region contentinfo  
gridcell option textbox radiogroup group row form  
link progressbar timer tablist heading rowgroup main  
log radio tooltip tree treegrid img rowheader navigation  
scrollbar treeitem separator search  
toolbar

# ***ARIA States***

```
<button aria-expanded="false" aria-controls="dropdown">Open Menu</button>
```

```
<div id="dropdown" hidden>Dropdown Content</div>
```

# ***ARIA Properties***

```
<button aria-label="Close the dialog">X</button>
```

```
<div aria-labelledby="section-title">  
  <h2 id="section-title">Accessible Content</h2>  
  <p>Content details...</p>  
</div>
```



```
<button id="menu-button" aria-expanded="false" aria-controls="menu">Menu</button>
```

```
<script>
```

```
  const button = document.getElementById("menu-button");
```

```
  button.addEventListener("click", () => {
```

```
    const isExpanded = button.getAttribute("aria-expanded") === "true";
```

```
    button.setAttribute("aria-expanded", !isExpanded);
```

```
  });
```

```
</script>
```

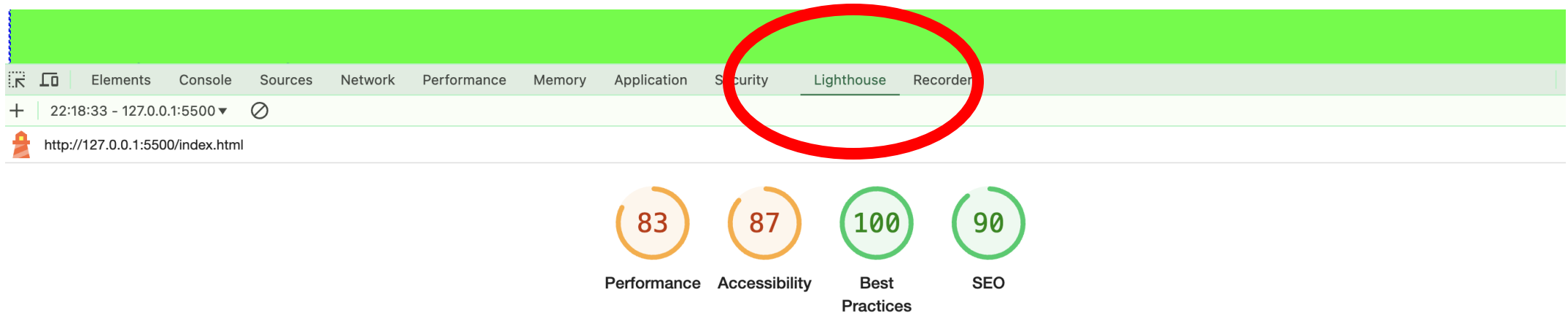
## Read Me First

### **No ARIA is better than Bad ARIA**

Functionally, ARIA roles, states, and properties are analogous to a CSS for assistive te

# Lighthouse

On Chrome browsers



Gives a detailed analysis of the web page, including Performance, Best Practices and SEO

# IBM Equal Access Accessibility Checkers

Available as a browser extension for Firefox and Chrome browsers

IBM Equal Access Accessibility Checker

Scan

<html> All

5 44 4 0 53 issues found

Element roles Filter Export XLS

Issues

Element Roles

^ 2 2 /document[1]

Verify color is not used as the only visual means of conveying information [Learn more](#)

Confirm Windows high contrast mode is supported when using CSS to include, position or alter non-decorative content [Learn more](#)

The HTML attribute(s) "http-equiv" is deprecated for the <meta> element in HTML 5 [Learn more](#)

Verify accessibility of the <canvas> element [Learn more](#)

^ 1 1 /document[1] /banner[1] /heading[1]

Scrolling content found that uses the obsolete <marquee> element [Learn more](#)

The <marquee> element is deprecated in HTML 5 [Learn more](#)

Scan summary

November 25, 2024 at 10:25 PM

Scanned page: [http://localhost:5500/](#)

0 hidden issues

Select or deselect checkboxes to filter issues in the Checker view

Current Status

89%

Percentage of elements with no detected violations or items to review

Violations

5

Accessibility failures that need to be corrected

Needs review

44

Issues that may not be a violation; manual review is needed

Recommendations

4

Opportunities to apply best practices to further improve accessibility

In-depth accessibility reports

# ***Lab Exercise***