ARIA ROLES

We are now going to look in more detail at the **different `role` attributes**.

We'll start by reviewing this chart showing how the categories of roles have **changed over time**:

https://russmaxdesign.github.io/aria-roles/

It’s not possible to cover all `role` attributes today, so I’m going to **highlight some attributes that are important to know about**.

Abstract Roles

ARIA Attributes

Roles (role)	States and Properties (aria-*)
Abstract	Widget
Widget	Live Region
Document Structure	Drag-and-Drop
Landmark	Relationship
Live Region	Global
Window	

Abstract roles are the foundation upon which all other WAI-ARIA roles are built. Content authors **must not use abstract roles** because they are not implemented in the API binding.

- command
- composite
- input
- landmark
- range
- roletype
- section
- sectionhead
- select
- structure
- widget
- window

Widget Roles

ARIA Attributes

Roles (role)	States and Properties (aria-*)
Abstract	Widget
Widget	Live Region
Document Structure	Drag-and-Drop
Landmark	Relationship
Live Region	Global
Window	

Widget roles act can be applied to **standalone user interface widgets** or to parts of larger, composite widgets.

- button
- checkbox
- gridcell
- link
- menuitem
- menuitemcheckbox
- menuitemradio
- option
- progressbar
- radio
- scrollbar
- searchbox
- separator
- slider
- spinbutton
- switch
- tab
- tabpanel
- textbox
- timer
- tooltip
- treeitem

Some developers mistakenly apply these roles to elements that **already have inbuilt semantics** such as:

```
<button role="button"></button>
<input type="checkbox" role="checkbox">
<a href="#" role="link"></a>
<option value="one" role="option">One</option>
<input type="radio" role="radio">
```

Exercise 3:
Tab, tabpanel tablist

Open **exercise03-in-page-tabs/start.html** in a browser and also in a text editor.

Review your work against **exercise03-in-page-tabs/finish.html**

```
<ul role="tablist">
  <li> ... </li>
  <li> ... </li>
  <li> ... </li>
</ul>
```

```
<ul role="tablist">
  <li>
     <a href="#panel1" id="tab1">Apple</a>
   </li>
  <li>
     <a href="#panel2" id="tab2">Pears</a>
   </li>
  <li">
     <a href="#panel3" id="tab3">Oranges</a>
   </li>
</ul>
```

```
<ul role="tablist">
  <li>
     <a href="#panel1" id="tab1" role="tab">Apple</a>
   </li>
  <li>
     <a href="#panel2" id="tab2" role="tab">Pears</a>
   </li>
  <li">
     <a href="#panel3" id="tab3" role="tab">Oranges</a>
   </li>
</ul>
```

```
<ul role="tablist">
  <li>
    <a href="#panel1" id="tab1" role="tab"
    aria-controls="panel1">Apple</a>
   </li>
  <li>
    <a href="#panel2" id="tab2" role="tab"
    aria-controls="panel2">Pears</a>
   </li>
  <li>
    <a href="#panel3" id="tab3" role="tab"
    aria-controls="panel3">Oranges</a>
   </li>
</ul>
```

```
<ul role="tablist">
  <li>
    <a href="#panel1" id="tab1" role="tab"
    aria-controls="panel1" aria-selected="true">Apple</a>
  </li>
  <li>
    <a href="#panel2" id="tab2" role="tab"
    aria-controls="panel2" aria-selected="false">Pears</a>
  </li>
  <li>
    <a href="#panel3" id="tab3" role="tab"
    aria-controls="panel3" aria-selected="false">Oranges</a>
  </li>
</ul>
```

```
<div id="panel1" role="tabpanel">
  Panel 1
</div>
<div id="panel1" role="tabpanel">
  Panel 2
</div>
<div id="panel1" role="tabpanel">
  Panel 3
</div>
```

```
<div id="panel1" role="tabpanel" aria-labelledby="tab1">
  Panel 1
</div>
<div id="panel1" role="tabpanel" aria-labelledby="tab2">
  Panel 2
</div>
<div id="panel1" role="tabpanel" aria-labelledby="tab3">
  Panel 3
</div>
```

Widget Container Roles

There are also composite user interface widgets. These roles typically **act as containers that manage other, contained widgets**.

- combobox
- grid
- listbox
- menu
- menubar
- radiogroup
- tablist
- tree
- treegrid

alert

Alerts are used to convey messages to alert the user. The `alert` role goes on the node containing the alert message.

```
<div role="alert">
  ...
</div>
```

Alerts are specialized forms of the status role, which will be processed as an atomic live region.

Authors are not required to set focus to alerts in order for them to be processed.

Elements with the role `alert` have an implicit `aria-live` value of `assertive`, and an implicit `aria-atomic` value of `true`.

Exercise 4:
The radiogroup attribute

Open **exercise04-radio-group/start.html** in a browser and also in a text editor.

Review your work against **exercise04-radio-group/finish.html**

Ideally, any set of radio buttons or checkboxes should have an **overall description associated with them** to provide context.

The **ideal solution** is to use the `<fieldset>` and `<legend>` elements.

The `<fieldset>` allows authors to **group thematically related controls** and labels. The `<legend>` element allows authors to **assign a caption** to a `<fieldset>`.

```
<fieldset>
  <legend>Do you like apples?</legend>
  <div>
    <input type="radio" id="apples-y" name="apples">
    <label for="apples-y">Yes</label>
  </div>
  <div>
    <input type="radio" id="apples-n" name="apples">
    <label for="apples-n">No</label>
  </div>
</fieldset>
```

However, there may be times when you are **not able to use** a `<fieldset>` element. Luckily, we can use ARIA to help solve the problem

The `radiogroup` role **defines a group of radio buttons** to Assistive Technolgies.

```
<div role="radiogroup" aria-labelledby="sub">
  <h3 id="sub">Pick a subscription</h3>
  <div>
    <input type="radio" id="daily" name="subscribe">
    <label for="daily">Daily</label>
  </div>
  <div>
    <input type="radio" id="weekly" name="subscribe">
    <label for="weekly">Weekly</label>
  </div>
</div>
```

The `aria-labelledby` attribute is used to **establish a relationship** between the group and it's label - in this case the `<h3>` element.

```
<div role="radiogroup" aria-labelledby="sub">
  <h3 id="sub">Pick a subscription</h3>
  <div>
    <input type="radio" id="daily" name="subscribe">
    <label for="daily">Daily</label>
  </div>
  <div>
    <input type="radio" id="weekly" name="subscribe">
    <label for="weekly">Weekly</label>
  </div>
</div>
```

The `<h3>` will **now act in a similar way** to the `<legend>` element when inside a `<fieldset>` element.

Document Structure Roles

ARIA Attributes

Roles (role)

- Abstract
- Widget
- Document Structure
- Landmark
- Live Region
- Window

States and Properties (aria-*)

- Widget
- Live Region
- Drag-and-Drop
- Relationship
- Global

Document structure roles **describe structures that organise content in a page**. Document structures are not usually interactive.

- application
- article
- cell (1.1)
- columnheader
- definition
- directory
- document
- feed (1.1)
- figure (1.1)
- group
- heading
- img
- list
- listitem
- math
- none (1.1)
- note
- presentation
- row
- rowgroup
- rowheader
- separator
- table (1.1)
- term (1.1)
- toolbar
- tooltip

Some developers mistakenly apply roles to elements that **already have inbuilt semantics** such as:

```
<h2 role="heading"></h2>
<img href="image2.png" role="img">
<ul role="list"></ul>
<table role="table"></table>
```

Issues with application and document

Screen readers interact with web pages in two main ways:

With Virtual buffer or **‘read’ mode**

Without Virtual buffer or **‘form’ mode**

When a page loads using Read mode, a 'snapshot' of the page is put in a virtual buffer. In this mode, users can read and navigate the page **but cannot enter data into a form**.

In Form mode users can **interact with form controls**. Keyboard access is restricted to elements that accept focus. Users generally remain in forms mode until the form is completed.

Some screen readers now **automatically switch modes** when the encounter a form control.

When the `role="application"` is applied, all content inside this element acts as if the screen reader is **locked in forms mode**. So users can interact with form controls but cannot read/ navigate in read mode.

For this reason, `application` **should be used sparingly**!

Exercise 5: Presentation and None

Open **exercise05-presentation-none/start.html** in a browser and also in a text editor.

Review your work against **exercise05-presentation-none/finish.html**

The `presentation` role is used to **remove semantic meaning** from an element and any of its related child elements.

For example, a `<table>` used for layout purposes could have the role of `presentation` applied to the table element **to remove any semantic meaning from the table element**.

```
<table role="presentation">
  ...
</table>
```

The role of `none` was added in ARIA 1.1 as the concept of “presentation” **was confusing the developers**. The current thought is that `role="none"` would make more sense.

```
<table role="none">
  ...
</table>
```

The values of `presentation` and `none` are **identical in purpose**.

The `presentation` value is **more backwards compatible** as it has been around for longer.

Add a `role` of `presentation` to the **first table**, and `role` of `none` to the **second table**.

Landmark Roles

ARIA Attributes

Roles (role)

- Abstract
- Widget
- Document Structure
- **Landmark**
- Live Region
- Window

States and Properties (aria-*)

- Widget
- Live Region
- Drag-and-Drop
- Relationship
- Global

Landmark roles, sometimes just referred to as "landmarks", help to **programmatically identify** sections of a web page.

- banner
- complementary
- contentinfo
- form
- main
- navigation
- region (1.1)
- search

```
<div role="banner"></div>
<div role="complementary"></div>
<div role="contentinfo"></div>
<div role="form"></div>
<div role="main"></div>
<div role="navigation"></div>
<div role="region"></div>
<div role="search"></div>
```

Landmarks help assistive technology users orient themselves to a page and **navigate easily to various sections** of a page.

Landmarks also provide an easy way for assistive technology users to **skip over blocks of content** that are repeated on multiple pages.

For example, if there is a common navigation menu found on every page, landmark roles **can be used to skip over it and navigate** from section to section.

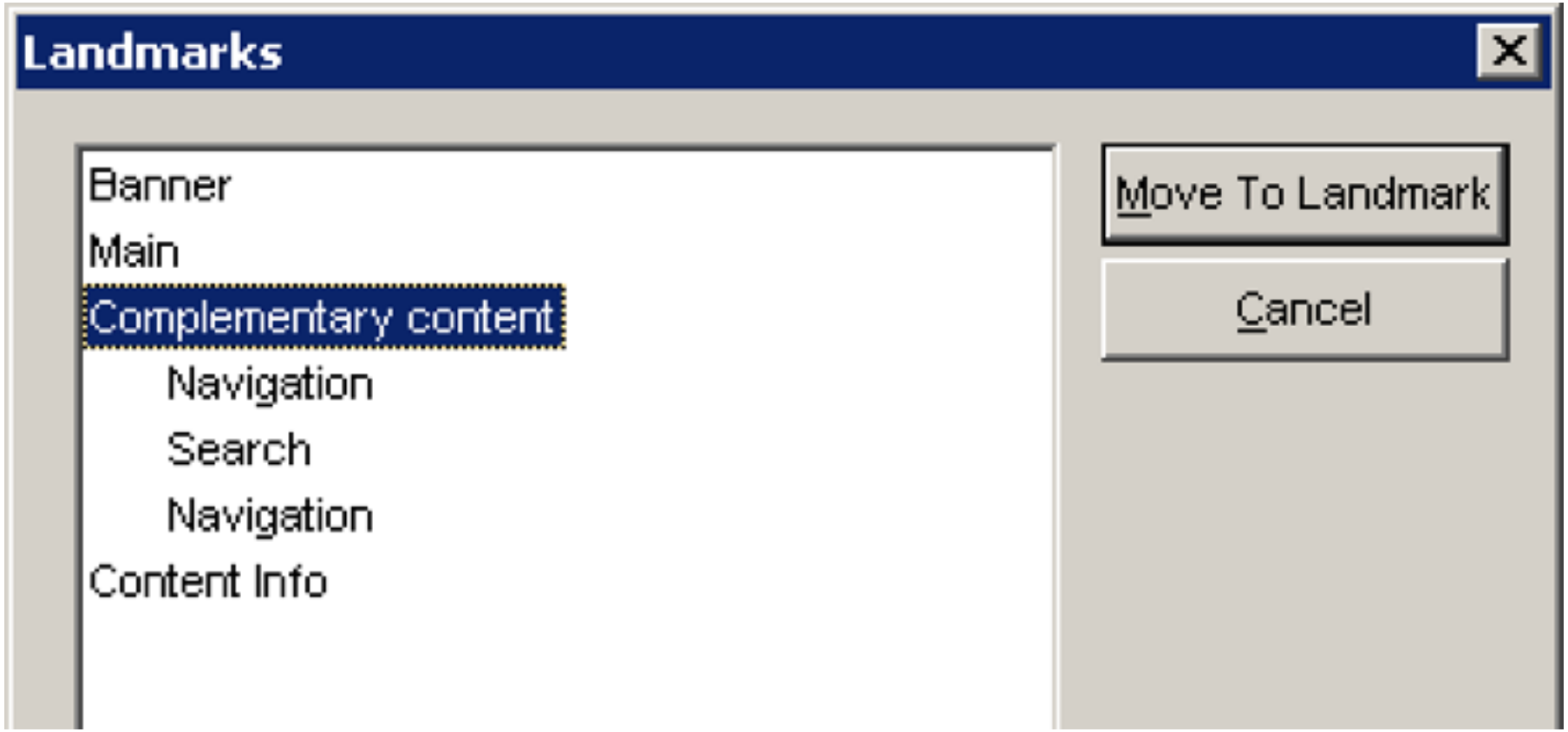
```
<nav role="navigation">
  <ul>
    <li><a href="#">About</a></li>
    <li><a href="#">Services</a></li>
    ...
  </ul>
</nav>
```

This saves assistive technology users and keyboard users from **having to tab through a large amount of content** to find what they are really after, much like a traditional "skip links" mechanism.

Landmark roles are generally **well supported** by JAWS, NVDA and Mac OSX Voiceover.

Roles are **announced to Assistive Technologies** as something like: “Navigation landmark”

Assistive technology users can use **keyboard shortcuts** or (in the case of JAWS and VoiceOver) a **dialog box** to navigate around web pages via Landmark roles.


Landmarks
Banner
Main
Complementary content
Navigation
Search
Navigation
Content Info
Move To Landmark
Cancel

For most modern browsers and Assistive Technologies, there is no need to include the **native HTML5 element as well as the role attribute** as the HTML element is announced as “navigation”.

```
<nav role="navigation">
  <ul>
    <li><a href="#">About</a></li>
    <li><a href="#">Services</a></li>
    ...
  </ul>
</nav>
```

However, to support IE11 and previous versions of IE, **the native element and the role attribute should be used**.

Exercise 6: Landmark roles

Open **exercise06-landmark-roles/start.html** in a browser and also in a text editor.

Review your work against **exercise06-landmark-roles/finish.html**

Open **exercise04/start.html** in a browser and also in a text editor.

banner

A `banner` landmark identifies **site-oriented content** at the beginning of each page within a website.

```
<header role="banner">
</header>
```

Site-oriented content **typically includes** things such as the logo or identity of the site sponsor, and site-specific search tool.

Each page **may have one** `banner` landmark.

The `banner` landmark **should be a top-level landmark** (e.g. not contained within any other landmarks).

The `banner` landmark **can be used in conjunction with the** `<header>` element.

```
<header role="banner">
</header>
```

complementary

The `complementary` role is used to describe a region of content that is **complementary to the main content** - such as an `<aside>`.

```
<aside role="complementary">
  <h2>Title of complementary area</h2>
</aside>
```

This content should still be **meaningful** when separated from the main content.

The `complementary` landmark **should be a top level landmark** (e.g. not contained within any other landmarks).

The `complementary` landmark **can be used in conjunction with the** `<aside>` element.

```
<aside role="complementary">
  <h2>Title of complementary area</h2>
</aside>
```

If a page includes more than one `complementary` landmark, **each should have a unique label**.

```
<aside role="complementary" aria-labelledby="one">
  <h2 id="one">Title of complementary area</h2>
</aside>
```

contentinfo

The `contentinfo` landmark can be used to **identify common information at the bottom of each page** within a website, typically called the “footer” of the page.

```
<div class="contentinfo">
  <h2>Footer heading</h2>
</div>
```

Footer information **could include** copyright information and links to privacy and accessibility statements.

Each page **may have one** `contentinfo` landmark.

The `contentinfo` landmark **should be a top-level landmark** (e.g. not contained within any other landmarks).

The `contentinfo` landmark **can be used in conjunction with the** `<footer>` element.

```
<footer role="contentinfo">
  <h2>Footer heading</h2>
</footer>
```

form

The `form` landmark is **used to describe a region that is a `<form>`**, but only when no other named landmark is appropriate (such as main or search).

```
<div role="form">
  <form action="#">
    ...
  </form>
</div>
```

If the `<form>` is used for search functionality, the `search` landmark **should be used instead**.

If the `form` landmark is present, the element should also have a **label to help users understand the purpose** of the `<form>`.

A label for the `form` landmark **should be identified using** `aria-labelledby` to a visible heading element.

```
<div role="form" aria-labelledby="contact">
  <form action="#">
    <h2 id="contact">Add contacts</h2>
  </form>
</div>
```

The `form` landmark **should not be used directly on the** `<form>` element, as it can override the native form semantics.

Instead, **the landmark can be placed on a `<div>`** element which is then wrapped around the outside of the `<form>` element.

```
<div role="form">
  <form action="#">
    ...
  </form>
</div>
```

If a page includes more than one `form` landmark, **each should have a unique label**.

```
<div role="form" aria-labelledby="one">
  <form action="#">
    <h2 id="one"></h2>
  </form>
</div>
<div role="form" aria-labelledby="two">
  <form action="#">
    <h2 id="two"></h2>
  </form>
</div>
```

main

The `main` landmark is used to **describe the primary content of the page**.

```
<div role="main">
  <h1>Title for main content</h1>
</div>
```

Each page **should have only one** `main` landmark.

The `main` landmark **can be used in conjunction with the** `<main>` element.

```
<main role="main">
  <h1>Title for main content</h1>
</main>
```

navigation

The `navigation` landmark provide a way to **identify groups of links** that are intended to be used for website or page content navigation.

```
<div role="navigation">
  <h2>Title for navigation</h2>
  <ul>
    <li><a href="#">Link1</a></li>
    <li><a href="#">Link2</a></li>
    <li><a href="#">Link3</a></li>
  </ul>
</div>
```

The `navigation` landmark **can be used in conjunction with the** `<nav>` element.

```
<nav role="navigation">
  <h2>Title for navigation</h2>
  <ul>
    <li><a href="#">Link1</a></li>
    <li><a href="#">Link2</a></li>
    <li><a href="#">Link3</a></li>
  </ul>
</nav>
```

Developers **may want to include more than one `navigation` landmark**, such as the primary and secondary navigation menus.

If a page includes more than one `navigation` landmark, **each should have a unique label**.

These labels are created using an `aria-labelledby` attribute on the container, and a matching ID value on the heading inside.

```
<nav role="navigation" aria-labelledy="one">
  <h2 id="one">Main navigation</h2>
</nav>

<nav role="navigation" aria-labelledy="two">
  <h2 id="two">Sub navigation</h2>
</nav>
```

region

The `region` landmark is **used to identify a section of content** that is important enough to stand on its own.

```
<div role="region">
  <h2>Region heading</h2>
</div>
```

The `region` landmark **can be used in conjunction with the** `<section>` element.

```
<section role="region">
  <h2>Region heading</h2>
</section>
```

A `region` landmark **must have a label**.

If a page includes more than one `region` landmark, each should have a unique label.

```
<section role="region" aria-labelledby="one">
  <h2 id="one">Region heading one</h2>
</section>

<section role="region" aria-labelledby="two">
  <h2 id="two">Region heading two</h2>
</section>
```

search

The `search` landmark is **used to describe a region that is a `<form>`**, but only that with search functionality for content on the website.

```
<div role="search">
  <form action="#">
    ...
  </form>
</div>
```

The `search` landmark **should not be used directly on the** `<form>` element, as it can override the native form semantics.

The landmark can be placed on a `<div>` element **which is then wrapped around the outside of the** `<form>` element.

```
<div role="search">
  <form action="#">
    ...
  </form>
</div>
```

If a page includes more than one `search` landmark, **each should have a unique label**.

```
<div role="search" aria-labelledby="one">
  <form action="#">
    <h2 id="two">Form heading one</h2>
  </form>
</div>

<div role="search" aria-labelledby="two">
  <form action="#">
    <h2 id="two">Form heading two</h2>
  </form>
</div>
```

Live Region Roles

ARIA Attributes

Roles (role)

- Abstract
- Widget
- Document Structure
- Landmark
- **Live Region**
- Window

States and Properties (aria-*)

- Widget
- Live Region
- Drag-and-Drop
- Relationship
- Global

Live Region roles define live regions of a document and may be modified by live region attributes.

- alert
- log
- marquee
- status
- timer

Exercise 7:
Alert and Status

Open **exercise07-alert-status/start.html** in a browser and also in a text editor.

Review your work against **exercise07-alert-status/finish.html**

role=alert

Alerts are used to **convey messages to alert the user** - usually time-sensitive, information.

The alert role goes on the **element containing the alert message**.

```
<div role="alert">
  ...
</div>
```

Alerts are a specialised type of the `status` **role**.

Authors are **not required to set focus on alerts** in order for them to be processed.

Elements with the `role` of `alert` have an **implicit** `aria-live` value of `assertive`, and an **implicit** `aria-atomic` value of `true`.

role=status

A type of live region whose content is **advisory information** for the user but is not important enough to justify an alert.

```
<div role="status">
  ...
</div>
```

Authors should **not set focus on status messages** as a result of change in status.

Elements with the role status have an **implicit** `aria-live` value of `polite` and an **implicit** `aria-atomic` value of `true`.

Add a `role` of `alert` to the **first message**, and `role` of `status` to the **second message**.

Window Roles

ARIA Attributes

Roles (role)	States and Properties (aria-*)
Abstract	Widget
Widget	Live Region
Document Structure	Drag-and-Drop
Landmark	Relationship
Live Region	Global
Window	

Window roles act as windows within the browser or application.

- alertdialog
- dialog

Exercise 8: Alertdialog

Open **exercise08-alertdialog/start.html** in a browser and also in a text editor.

Review your work against **exercise08-alertdialog/finish.html**

They are a type of dialog that contains a message to alert users, **where initial focus goes to an element within the dialog**.

The `alertdialog` role goes on the element **containing both the alert message and the rest of the dialog**.

When the `alert` dialog is displayed, authors **SHOULD set focus to an active element** within the alert dialog, such as a form edit field or an OK button.

Authors should make sure that while the `alertdialog` is shown, keyboard and mouse interactions o**nly operate within the dialog**.

Authors should use `aria-describedby` on an `alertdialog` to reference the alert message element in the dialog.

```
<div role="alertdialog">
  <p>Alert message</p>
</div>
```

```
<div role="alertdialog" aria-describedby="a1">
  <p id="a1">Alert message</p>
</div>
```