

# ARIA

STATES & PROPERTIES

We are now going to look in more detail at the **different state and property attributes**.

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

<https://russmaxdesign.github.io/aria-states-properties/>

As with **role** attributes, it's not possible to cover all of these attributes today, so I'm going to **highlight some attributes that are important to know about.**

# Widget attributes

## ARIA Attributes

### Roles (role)

Abstract

Widget

Document Structure

Landmark

Live Region

Window

### States and Properties (aria-\*)

Widget

Live Region

Drag-and-Drop

Relationship

Global

Widget attributes are specific to common user interface elements **which receive user input and process user actions.**

- aria-autocomplete
- aria-checked (state)
- aria-disabled (state)
- aria-errormessage (1.1)
- aria-expanded (state)
- aria-haspopup
- aria-hidden (state)
- aria-invalid (state)
- aria-label
- aria-level
- aria-modal (1.1)
- aria-multiline
- aria-multiselectable
- aria-orientation
- aria-placeholder (1.1)
- aria-pressed (state)
- aria-readonly
- aria-required
- aria-selected (state)
- aria-sort
- aria-valuemax
- aria-valuemin
- aria-valuenow
- aria-valuetext



# Exercise 9:

## Disabled, Invalid, Hidden

Open **exercise09-disabled-invalid/start.html** in a browser and also in a text editor.

Review your work against **exercise09-disabled-invalid/finish.html**

To make a disabled form control be **announced as “disabled” or “dimmed”** we can add the **aria-disabled** attribute.

```
<input  
  class="input input__disabled"  
  id="email"  
  type="text"  
  disabled  
  aria-disabled="true"  
>
```

Keep in mind that the boolean `disabled` attribute **defines the input as disabled**, the `aria-disabled` attribute is only used to **tell screen reader users of it's state**.

To make an invalid form control be **announced as “invalid”** we can add the `aria-invalid` attribute.

```
<input  
  class="input input__invalid"  
  id="address"  
  type="text"  
  invalid  
  aria-invalid="true"  
>
```

Keep in mind that the boolean `invalid` attribute **defines the input as invalid**, the `aria-invalid` attribute is only used to **tell screen reader users of it's state**.



To **hide an element and all of its child elements** from screen readers, you can apply the `aria-hidden` attribute.

```
<p aria-hidden="true">This content is hidden from  
Screen Readers.</p>
```

```
<p hidden>This content is hidden.</p>
```

```
<p aria-hidden="false">This content is not hidden  
from Screen Readers.</p>
```

Keep in mind that the boolean `hidden` attribute **means that the element is not displayed to anyone**, the `aria-hidden` attribute is only used to **hide the element from screen readers**.

Live region attributes

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These attributes indicate to Assistive Technologies **that content changes may occur** without the element having focus, and to provide assistive technologies with information on how to process those content updates.

- `aria-atomic`
- `aria-busy (state)`
- `aria-live`
- `aria-relevant`

aria-live



We can apply the `aria-live` attribute  
to **any HTML element**.

```
<div aria-live="polite">
```

```
...
```

```
</div>
```

If anything dynamically changes inside that element after the initial page load, screen readers will be **made aware of these changes**.

The aria-live attribute can be used for any page regions that are **likely to get updates** after the initial page is loaded.

**Info alerts!** Some info to be aware of


















**Success alerts!** Your changes are saved

**Warning alerts!** Something has changed

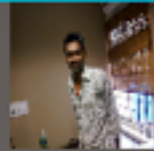
**Error alerts!** Fix the error and try again

**Alert messages**

**Dynamic stock info**

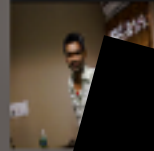
World Market Watch			
Exchange	Last	Prev close	Change
 DJIA®	16958.61	16906.62	41.78
 <a href="#">SP500 ETF</a>	196.44		0.20
 TSX			43.09
			0.61
	25.5	25.49	0.01
 CAC 40	4359.84	4342.53	6.31
 DAX	9808.2	9772.67	19.15
 AEX	410.49	409.76	-0.05
 WIG20	2343.39	2360.91	-21.53
 IPC	43534.07	43403.43	139.66
 Bovespa	53634.69	53801.83	-179.17
 Nikkei	15302.65	15314.41	108.33
 Hang Seng	23176.07	23541.38	-231.98
 Shanghai	2038.61	2064.02	-23.02
 NZX 50	5122.74	5166.08	-43.34
 TSEC	9510.05	9526.23	-15.88
 Sensex	25444.81	25582.11	-170.47
 Nifty	7585	7623.2	-52.95
 <a href="#">Russel ETF</a>	116.16	116.34	-0.18
Powered by: HowTheMarketWorks			
		<input type="button" value="GET QUOTE.."/>	<input type="button" value="Go"/>

## mR aNdRoID MaD TuToRiAL

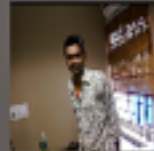


Android RSS Feed Reader Example

Fri, 08 Jun 2012 13:55:00 +0000

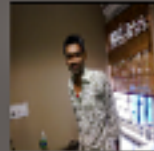


Android Turn ON wifi  
programmatically



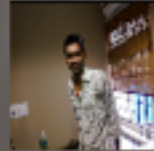
Android Widge

Tue, 29 May 2012 06:13:00 +0000



Pull to Refresh ListView in  
Android.

Mon, 21 May 2012 07:25:00 +0000



Always show zoom controls on a  
MapView in Android

Wed, 14 Mar 2012 06:38:00 +0000

Change Sorting Mode

**Dynamic RSS feeds**

Date:





































January 2011

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

**Date pickers**



## The Person List

		Name	City	Birth date	Status	Record date		
		Andy More	Trabzon	1971-03-10	Passive	2013-01-16		
		Andy Puggy	Volos	1973-06-25	Active	2013-01-16		
		Andy Yates	Adana	1948-10-05	Active	2013-01-16		
				1957-08-10	Active	2013-01-16		
		Arda Maalouf		1972-02-13	Active	2013-01-16		
		Arda More	London	1972-02-15	Active	2013-01-16		
		Audrey Brown	Berlin	1975-05-21	Active	2013-01-16		
		Audrey Brown	Istanbul	1960-11-21	Active	2013-01-16		
		Audrey Kalkan	London	1994-06-14	Active	2013-01-16		
		Austin Anar	Paris	1969-11-27	Active	2013-01-16		

**Sortable tables**

|< < 1 2 3 ... 11 12 13 > >| Showing 11 to 20 of 128 records + Add new record

There are **three possible values** for  
aria-live:

```
aria-live="off"
```

Assistive technologies **should not announce updates** unless the assistive technology is currently focused on that region.

The **off** value can be used for information that is **not critical** for users to know about immediately.

```
<div aria-live="off">
```

```
...
```

```
</div>
```

`aria-live="polite"`

Assistive technologies should announce updates at the **next graceful opportunity** (eg end of current sentence).

The `polite` value can be used for **warning notifications** that users may need to know.

```
<div aria-live="polite">
```

```
...
```

```
</div>
```



`aria-live="assertive"`

Assistive technologies should  
**announce updates immediately.**

The **assertive** value should only be used if the interruption is **imperative for users to know immediately** such as error alerts.

```
<div aria-live="assertive">
```

```
...
```

```
</div>
```

aria-atomic

The `aria-atomic` attribute indicates whether assistive technologies will present **all, or only parts of**, the changed region based on the change notifications defined by the `aria-relevant` attribute.

```
<!-- The true attribute will present the region as a  
whole when changes are detected. -->
```

```
<div aria-live="off" aria-atomic="true">  
</div>
```

```
<!-- The false attribute will present only the  
changed regions. This is the default. -->
```

```
<div aria-live="off" aria-atomic="false">  
</div>
```

aria-relevant



The **aria-relevant** attribute describes **semantically meaningful changes**, as opposed to merely presentational ones.

**additions** are **insertion of nodes**  
within the live region. These should be  
considered relevant and announced to  
screen readers.

```
<!-- additions attribute -->
```

```
<div aria-live="off" aria-relevant="additions">  
</div>
```

**removals** are **deletion of nodes** within the live region. These should be considered relevant and announced to screen readers.

```
<!-- removals attribute -->
```

```
<div aria-live="off" aria-relevant="removals">  
</div>
```

**text** are **changes to the textual content of existing nodes** within the live region. These should be considered relevant and announced to screen readers.

```
<!-- text attribute -->
```

```
<div aria-live="off" aria-relevant="text">  
</div>
```

**all** are **insertion of deletion of nodes** within the live region. These should be considered relevant and announced to screen readers.



```
<!-- all attribute -->
```

```
<div aria-live="off" aria-relevant="all">  
</div>
```

Multiple, **comma-separated values**  
can be used with the **aria-relevant**  
attribute.

```
<!-- multiple attributes -->
```

```
<div aria-live="off" aria-relevant="text, removals">  
</div>
```

The **removals** and **all** values **should be used sparingly**. Assistive technologies only need to be informed of important change.

aria-busy

The `aria-busy` state indicates whether an element, and its subtree, are **currently being updated**.

If multiple parts of the same element need to be loaded or modified, the live region can be set to **true while the loading is in progress.**

```
<!-- true attribute -->
```

```
<div aria-live="off" aria-busy="true">  
</div>
```



When **the last part has been loaded**,  
the live region can be set to **false**.

```
<!-- false attribute -->
```

```
<div aria-live="off" aria-busy="false">  
</div>
```

role=alert

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

For this reason there is **no need to use** the `aria-live` attribute as well as `role="alert"` on the same element.

```
<!-- Not needed -->
```

```
<div aria-live="assertive" role="alert">  
</div>
```

# Exercise 10:

## Live regions

Open **exercise10-live-regions/start/** files in a browser and also in a text editor.

Review your work against **exercise10-live-regions/finished/**



```
<div id="message" class="error" aria-  
live="assertive"></div>
```

```
<div id="message" class="error" aria-live="off"></div>
```

```
<div id="message" class="error" aria-live="polite"></div>
```

Drag-and-drop  
attributes

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These attributes indicate **information about drag-and-drop interface elements**, such as draggable elements and their drop targets.

- `aria-dropeffect`
- `aria-grabbed (state)`

Relationship  
attributes



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Relationship attributes **indicate relationships or associations between elements** which cannot be readily determined from the document structure.

- aria-activedescendant
- aria-colcount (1.1)
- aria-colindex (1.1)
- aria-colspan (1.1)
- aria-controls
- aria-describedby
- aria-details (1.1)
- aria-errormessage (1.1)
- aria-flowto
- aria-labelledby
- aria-owns
- aria-posinset
- aria-rowcount (1.1)
- aria-rowindex (1.1)
- aria-rowspan (1.1)
- aria-setsize

# Exercise 11:

## Menubar

Open **exercise11-menubar/start.html**  
in a browser and also in a text editor.

Review your work against **exercise11-  
menubar/finish.html**

```
<nav role="navigation" aria-label="Main menu">
```

```
<ul id="menubar1" role="menubar">
```

```
<li>
```

```
  <a role="menuitem" aria-haspopup="true" aria-expanded="false"  
href="#">About</a>
```

```
</li>
```

```
<li>
```

```
  <a role="menuitem" aria-haspopup="true" aria-expanded="false"  
href="#">Admissions</a>
```

```
</li>
```

```
<li>
```

```
  <a role="menuitem" aria-haspopup="true" aria-expanded="false"  
href="#">Academics</a>
```

```
</li>
```



```
<ul role="menu" aria-label="About">  
<ul role="menu" aria-label="Admissions">  
<ul role="menu" aria-label="Academics">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<li role="none">
```

```
<a role="menuitem" href="#">Overview</a>
```