

# Building Accessible Components

Julie Grundy  
@stringy

# Form v

Today is

Choose a

20/06/20

Submit

## Available dates in June



Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					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

The Accessibility Stack: making a better layer cake  
Devon Persing



# An Accessible Process

1. Build your base HTML layer
2. Make it work with JavaScript
3. Style it with CSS
4. Enhance with ARIA and goodies

# Build your base HTML layer

Step 1

# Original Form

Today is Tuesday, October 16th 2018

Choose a date:

Submit

# Original Form

Today is Tuesday, October 16th 2018

Choose a date:

Submit

You have chosen Tuesday, July 17th 2018

# Original Form

Today is Tuesday, October 16th 2018

Choose a date:

▲ You have not chosen a valid date

Submit



# Form with Datepicker HTML

Today is Wednesday, October 17th 2018

Choose a date:

Open date picker

Submit

# Datepicker navigation

```
<div class="dp-nav">  
  <h2 id="dp1-heading" tabindex="-1">Available dates in July</h2>  
  <button id="dp1-close">Close</button>  
  <button id="dp1-previous">Previous month</button>  
  <button id="dp1-next">Next month</button>  
</div>
```

# Datepicker navigation

```
<div class="dp-nav">  
  <h2 id="dp1-heading" tabindex="-1">Available dates in July</h2>  
  <button id="dp1-close">Close</button>  
  <button id="dp1-previous">Previous month</button>  
  <button id="dp1-next">Next month</button>  
</div>
```

# Add a table for the dates

```
<div class="dp-body">
  <table>
    <tr>
      <th scope="col">Sunday</th>
      <th scope="col">Monday</th>
      <th scope="col">Tuesday</th>
      <th scope="col">Wednesday</th>
      <th scope="col">Thursday</th>
      <th scope="col">Friday</th>
      <th scope="col">Saturday</th>
    </tr>
    <tr>.. rows with dates .. </tr>
  </table>
</div>
```

# Add a table for the dates

```
<div class="dp-body">
  <table>
    <tr>
      <th scope="col">Sunday</th>
      <th scope="col">Monday</th>
      <th scope="col">Tuesday</th>
      <th scope="col">Wednesday</th>
      <th scope="col">Thursday</th>
      <th scope="col">Friday</th>
      <th scope="col">Saturday</th>
    </tr>
    <tr>... rows with dates ... </tr>
  </table>
</div>
```

# Avoid click handlers on table cells

```
<td data-handler="selectDay" data-event="click" data-month="9" data-  
year="2018">  
  <a class="ui-state-default" href="#">17</a>  
</td>
```

```
function() {  
  datepicker._selectDay(id, +this.getAttribute("data-month"),  
+this.getAttribute("data-year"), this)  
  return false  
}
```

# Avoid click handlers on table cells

```
<td data-handler="selectDay" data-event="click" data-month="9" data-  
year="2018">  
  <a class="ui-state-default" href="#">17</a>  
</td>
```

```
function() {  
  datepicker._selectDay(id, +this.getAttribute("data-month"),  
  +this.getAttribute("data-year"), this)  
  return false  
}
```

```
document.addEventListener('keyup', findWhichKey, false)
```

# Avoid click handlers on table cells

```
<td data-handler="selectDay" data-event="click" data-month="9" data-  
year="2018">  
  <a class="ui-state-default" href="#">17</a>  
</td>
```

```
function() {  
  datepicker._selectDay(id, +this.getAttribute("data-month"),  
  +this.getAttribute("data-year"), this)  
  return false  
}
```

```
document.addEventListener('keyup', findWhichKey, false)  
document.addEventListener('touchstart', handleStart, false)  
document.addEventListener('touchend', handleEnd, false)  
document.addEventListener('touchcancel', handleCancel, false)
```



# Input elements support all click types

```
btnDatepicker.addEventListener('click', function (e) {  
  const whichBtn = e.target  
  submitDate(whichBtn)  
})
```

# Form with Datepicker HTML

Today is Tuesday, October 16th 2018

Choose a date:

Open date picker

## Available dates

Close

Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7
<input type="radio"/> 8	<input type="radio"/> 9	<input type="radio"/> 10	<input type="radio"/> 11	<input type="radio"/> 12	<input type="radio"/> 13	<input type="radio"/> 14
<input type="radio"/> 15	<input type="radio"/> 16	<input type="radio"/> 17	<input type="radio"/> 18	<input type="radio"/> 19	<input type="radio"/> 20	<input type="radio"/> 21
<input type="radio"/> 22	<input type="radio"/> 23	<input type="radio"/> 24	<input type="radio"/> 25	<input type="radio"/> 26	<input type="radio"/> 27	<input type="radio"/> 28
<input type="radio"/> 29	<input type="radio"/> 30	<input type="radio"/> 31				

Submit

# Form with Datepicker HTML

Today is Tuesday, October 16th 2018

Choose a date:

Open date picker

## Available dates

Close

Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 12	<input type="checkbox"/> 13	<input type="checkbox"/> 14
<input type="checkbox"/> 15	<input type="checkbox"/> 16	<input type="checkbox"/> 17	<input type="checkbox"/> 18	<input type="checkbox"/> 19	<input type="checkbox"/> 20	<input type="checkbox"/> 21
<input type="checkbox"/> 22	<input type="checkbox"/> 23	<input type="checkbox"/> 24	<input type="checkbox"/> 25	<input type="checkbox"/> 26	<input type="checkbox"/> 27	<input type="checkbox"/> 28
<input type="checkbox"/> 29	<input type="checkbox"/> 30	<input type="checkbox"/> 31				

Submit

# Form with Datepicker HTML

Today is Tuesday, October 16th 2018

Choose a date:

Open date picker

## Available dates

Close

Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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				

Submit

# Make it interactive with JavaScript

Step 2

# Hide until JavaScript is available

```
<button type="button" id="dp1-toggler">  
  Open date picker  
</button>  
  
<div class="datepicker" id="dp1">.. </div>
```

# Hide until JavaScript is available

```
<button type="button" id="dp1-toggle" class="hidden">  
  Open date picker  
</button>
```

```
<div class="datepicker hidden" id="dp1">... </div>
```

```
.hidden {display: none;}
```

# Use JavaScript to show the toggler

```
// on load  
btnToggle.classList.remove('hidden')
```



# Form with Datepicker JavaScript

Today is Tuesday, October 16th 2018

Choose a date:

Open date picker

Submit

# Make the toggle control the datepicker

```
btnToggle.addEventListener('click', function (e) {
  const body = document.querySelector('body')
  if (body.classList.contains('has-dialog')) {
    closeDialog('dp1', e.target)
  } else {
    openDialog('dp1', e.target, 'dp1-heading')
  }
})
```

# Make the toggle control the datepicker

```
btnToggle.addEventListener('click', function (e) {  
  const body = document.querySelector('body')  
  if (body.classList.contains('has-dialog')) {  
    closeDialog('dp1', e.target)  
  } else {  
    openDialog('dp1', e.target, 'dp1-heading')  
  }  
})
```

Form v

## Available dates in July

Close

Previous month

Next month

Today is

Choose a

Submit

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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				

# Add Escape key to close the modal

```
document.addEventListener('keyup', function (e) {
  e.preventDefault()
  findWhichKey(e)
})

function findWhichKey (pressedKey) {
  if (pressedKey.key === 'Escape') {
    closeDialog()
  }
}
```

# Replace the HTML table with script

```
function createCalendarTable (currentDate) {  
    const tableLocation = datePicker.querySelector('.dp-body')  
    const tableCalendar = document.createElement('table')  
  
    setMonthIndicator(currentDate)  
  
    createTableHeaders()  
  
    getCurrentDateDetails()  
    createTableCells(weeksInCurrentMonth)  
    addButtonstoCells(daysInCurrentMonth)  
  
    addButtonListeners()  
  
}
```

# Add functions for navigation controls

```
btnPrevious.addEventListener('click', function () {  
    goToPreviousMonth()  
    setMonthIndicator()  
    datePickerHeading.focus()  
})
```

```
btnNext.addEventListener('click', function () {  
    goToNextMonth()  
    setMonthIndicator()  
    datePickerHeading.focus()  
})
```

# Add functions for navigation controls

```
btnPrevious.addEventListener('click', function () {  
    goToPreviousMonth()  
    setMonthIndicator()  
    datePickerHeading.focus()  
})
```

```
btnNext.addEventListener('click', function () {  
    goToNextMonth()  
    setMonthIndicator()  
    datePickerHeading.focus()  
})
```



# Disable any out-of-scope dates

```
btnPrevious.addEventListener('click', function () {
  goToPreviousMonth()
  setMonthIndicator()
  datePickerHeading.focus()
  disableInvalidControls()
})

btnNext.addEventListener('click', function () {
  goToNextMonth()
  setMonthIndicator()
  datePickerHeading.focus()
  disableInvalidControls()
})
```

# Form v

Today is

Choose a

Submit

## Available dates in June

Close

Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					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

# Create date selection function

```
btnPickers.addEventListener('click', function (e) {
  sendSelectedDate(e.target)
})

function sendSelectedDate (whichOne) {
  const whichDay = whichOne.innerHTML
  const whichDate = currentDate.date(whichDay).format('DD/MM/YYYY')
  inputDate.value = '' // clear any previous attempts
  inputDate.value = whichDate
  closeDialog()
}
```

# Form with Datepicker JavaScript

Today is Tuesday, October 16th 2018

Choose a date:

Open date picker

Submit

# Style it with CSS

Step 3

# Form v

Today is

Choose a

20/06/20

Submit

## Available dates in June



Previous month

Next month

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					1	2
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Form v

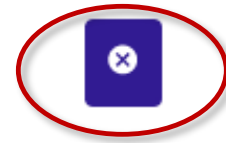
Today is

Choose a

20/06/20

Submit

## Available dates in June



Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					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

# Form v

Today is

Choose a

20/06/20

Submit

## Available dates in June



Previous month

Next month

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					1	2
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17	18	19	20	21	22	23
24	25	26	27	28	29	30



# Form v

Today is

Choose a

20/06/20

Submit

## Available dates in June



Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
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17	18	19	20	21	22	23
24	25	26	27	28	29	30

Form v

Today is

Choose a

20/06/20

Submit

## Available dates in June



Previous month

Next month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					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

# Available dates in July



Previous month

Next month

**Sunday**   **Monday**   **Tuesday**   **Wednesday**   **Thursday**   **Friday**   **Saturday**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**11**

**12**

**13**

**14**

**15**

**16**

**17**

**18**

**19**

**20**

**21**

# Available dates in July



Previous month

Next month

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

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

## Available dates in June



Previous month

Next month

**Sunday** **Monday** **Tuesday** **Wednesday** **Thursday** **Friday** **Saturday**

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

# Enhance with ARIA and animation

Step 4

# Replace 'selected' class with ARIA

```
whichBtn.classList.add('selected')
```

```
<button type="button" class="selected">20</button>
```

```
button.selected {  
  background: #311b92;  
  color: #CDC7E5;  
  border-color: #311b92;  
}
```

# Replace 'selected' class with ARIA

```
whichBtn.setAttribute('aria-current', 'selected')
```

```
<button type="button" aria-current="selected">20</button>
```

```
button.selected,  
button[aria-current] {  
  background: #311b92;  
  color: #CDC7E5;  
  border-color: #311b92;  
}
```



# ARIA live for month notification

```
<h2 id="dp1-heading" tabindex="-1">  
  Available dates in  
  <span id="dp1-currentmonth">July</span>  
</h2>
```

```
btnPrevious.addEventListener('click', function () {  
  goToPreviousMonth()  
  setMonthIndicator()  
  datePickerHeading.focus()  
})
```

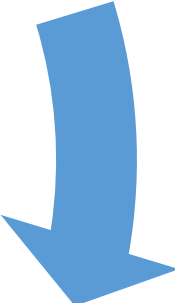
# ARIA live for month notification

```
<h2 id="dp1-heading">
  Available dates in
  <span id="dp1-currentmonth" aria-live="polite">July</span>
</h2>
```

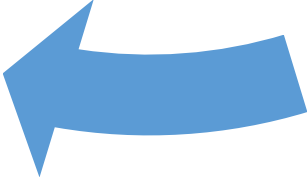
```
btnPrevious.addEventListener('click', function () {
  goToPreviousMonth()
  setMonthIndicator()
  // datepickerHeading.focus()
})
```

HTML

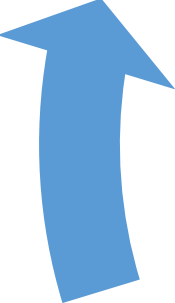
JavaScript



CSS



ARIA




# Final process

1. Build a semantic base
2. Make it interactive
3. Style it
4. Enhance it

Enhance! at An Event Apart (Vimeo)  
Jeremy Keith

do websites need to  
look exactly the  
same in every  
browser . com

*NO!*  




# Resources

[www.juliegrundy.id.au/links/components.html](http://www.juliegrundy.id.au/links/components.html)

Thankyou!