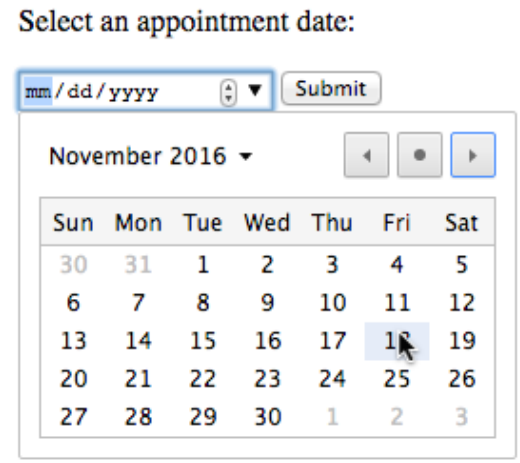
3.4 Additional form widgets

Date picker

An input ***picker*** is a widget that allows the user to interactively pick a choice using a popup or other guided selection method. The ***date picker*** is an input picker that allows the user to enter a date or choose a date from a calendar popup.

The basic syntax for the date picker is `<input type="date">`. Two common attributes for the date input are `min` (the earliest date permitted) and `max` (the latest date permitted).

Example 3.4.1: Date picker.



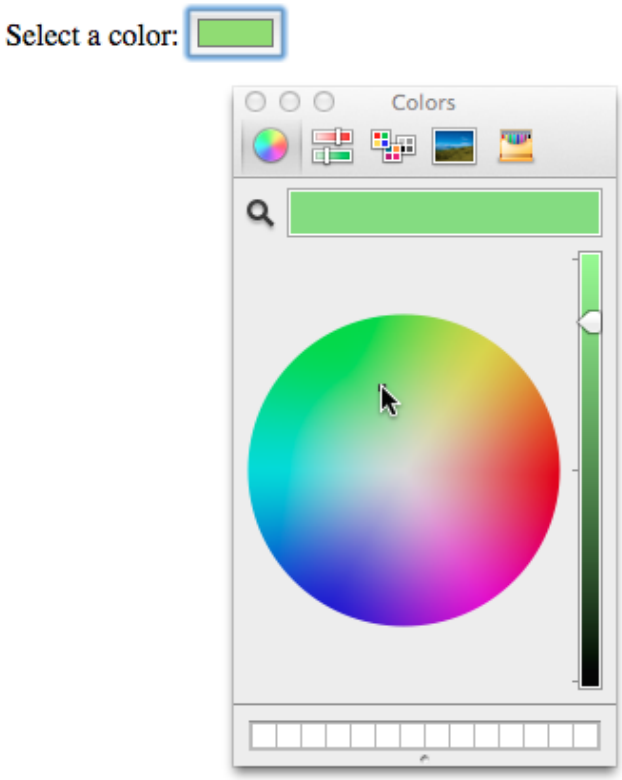
Feedback?

Color picker

Clicking on the ***color picker*** creates a color selector popup that helps the user explore and choose a color.

The basic syntax for the color picker is `<input type="color">`.

Example 3.4.2: Color picker.



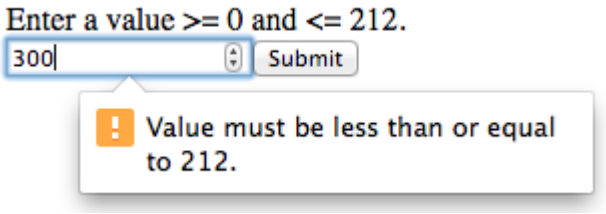
Feedback?

Number input

The ***number input*** ensures user input is a valid number.

The basic syntax for the number input is `<input type="number">`. The `min` and `max` attributes are commonly used with the number input.

Example 3.4.3: Number input.



The number widget attributes are used to automatically validate input.

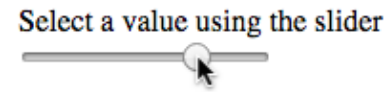
Feedback?

Range input

The ***range input*** widget allows the user to select a value by dragging a sliding control along the length of a line.

The basic syntax for the range input is `<input type="range">`. Three commonly used attributes for the range input are `min`, `max`, and `value`.

Example 3.4.4: HTML range input.



Feedback?

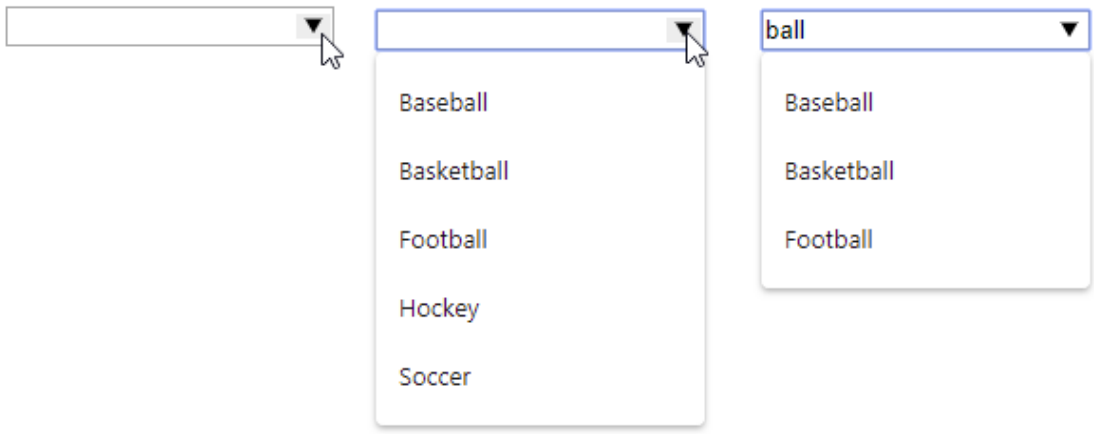
Combo box

A ***combo box*** is the combination of a text box and drop-down menu into a single widget. A combo box is created with an `<input>` element, which creates the text box, and a ***<datalist>*** element, which provides the drop-down list options.

Example 3.4.5: Combo box widget.

```
<input list="sport">

<datalist id="sport">
   <option value="Baseball">
   <option value="Basketball">
   <option value="Football">
   <option value="Hockey">
   <option value="Soccer">
</datalist>
```



Options match what the user types.

Feedback?

Specialized text input

Four input types exist for entering specific types of text:

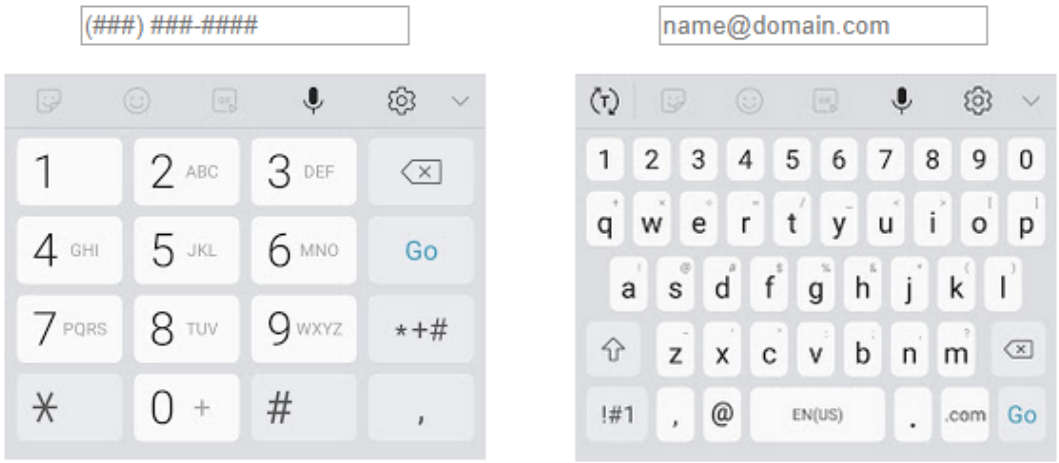
- **url** - For typing a URL
- **tel** - For typing a telephone number
- **email** - For typing an email address
- **search** - For typing search terms

Most mobile browsers display keyboards configured for entering the input type.

Example 3.4.6: Mobile browser keyboards for tel and email types.

```
<input type="tel" placeholder="(###) ###-####">

<input type="email" placeholder="name@domain.com">
```



Feedback?

PARTICIPATION ACTIVITY 3.4.1: Some additional widgets.

If unable to drag and drop, refresh the page.

datetime-local	Allows input of a date and time. The -local means that no time zone is associated with the time, so local time is assumed.	Correct
week	Allows selecting a week and year. The browser might show a date picker to select a specific week.	Correct
month	Allows selecting a month and year. Month is like the date input, except that no day can be selected.	Correct
time	Allows entering a time more easily. Besides simplifying time entry, the time input helps ensure that the time entered is valid.	Correct

Reset

Feedback?

PARTICIPATION ACTIVITY 3.4.2: Input types.

Enter the missing values.

1) Allow the user to enter a day, month, and year.

```
<input type="
date
">
```

Check Show answer

Correct

date

If a user types a date in a text field, the text is hard to process and might not represent a valid date. The date input picker speeds up entering the date and ensures validity.

2) Allow the user to enter a month and year.

```
<input type="
month
">
```

Check Show answer

Correct

month

The date input picker requires a day of month. When the developer wants the user to specify just the month and year, the month input picker is perfect.

3) Allow the user to select some combination of red, blue, and green.

```
<input type="
color
">
```

Check Show answer

Correct

color

The color picker is very helpful since the typical user has no idea how to specify a color using something like #B320FF. Even experienced web developers benefit from being able to explore and select colors using the color picker.

4) Allow the user to use a slider to select a number between 0 and 10.

```
<input type="
range
" min="0"
max="10">
```

Check Show answer

Correct

range

The range input is intuitive, fast, and prevents the user from entering invalid input.

5) Ensure the user types a valid number between 0 and 10.

Correct

number

```
<input type="number" min="0" max="10">
```

The number input is an alternative to the range input. Unlike the range input, the number input permits typing a number with arbitrary decimal precision.

Check Show answer

6) Create a combo box that uses the datalist with id "states".

```
<input list="states">
```

Correct

list

The datalist lists all the list options. The user can quickly choose an option by typing part of the option, then selecting the option from the list of matching options.

Check Show answer

7) Create a text box for entering the user's favorite website.

```
<input type="url">
```

Correct

url

The url type is likely to display a mobile keyboard that has a "www." key since many URLs start with "www.".

Check Show answer

Feedback?

Input attributes

Input attributes that restrict user input are listed in the table below.

Table 3.4.1: Input attributes.

Attribute	Description	Example
maxlength	Sets the maximum number of input characters.	`<!-- Only 4 chars max can be entered --> <input type="password" maxlength="4">`
minlength	Sets the minimum number of input characters.	`<!-- At least 5 chars must be entered --> <input type="password" minlength="5">`
max	Sets the maximum value that the input can have.	`<!-- Number may not exceed 212 --> <input type="number" max="212">`

min	Sets the minimum value that the input can have.	`<!-- May not be earlier than July 4, 1976 -->` `<input type="date" min="1976-07-04">`
pattern	Provides a pattern (called a regular expression) that the input must match.	`<!-- Value must be A, B, or C followed by single digit -->` `<input type="text" pattern="[ABC][0-9]">`
required	States that the input is required and must not be left empty.	`<!-- At least one character must be entered -->` `<input type="password" required>`
step	Sets the amount by which the value can change.	`<!-- Number is changed by multiples of 5 -->` `<input type="range" step="5">`

Feedback?

PARTICIPATION ACTIVITY 3.4.3: Input attributes.

Enter the missing attributes.

1) Ensure that the value will change by multiples of 100.

```
<input type="range"
step
="100">
```

Check Show answer

Correct

step

The default step size for the range input is 1. But, if the range is large or the new value must be an exact multiple of some number, the step attribute is useful.

2) Ensure that the user types only one letter in the range A through F.

```
<input type="text"
pattern
="[A-F]">
```

Check Show answer

Correct

pattern

Very complex patterns can be specified by the pattern attribute using the Regular Expression ("regex" for short) pattern description language.

3) Ensure that the temperature entered will not be less than

Correct

-273.16.

```
<input type="number"
min
="-273.16">
```

Check Show answer

min

The min attribute allows specifying the smallest number permitted, as well as the minimum permitted value for other types of inputs such as dates.

4) Ensure that the date entered will not be greater than the end of 2025.

```
<input type="date"
max
="2025-12-
31">
```

Check Show answer

Correct

max

The max attribute permits specifying the largest value permitted as input when entering a number or date.

5) Ensure the user enters a value in the input field.

```
<input type="number"
required
>
```

Check Show answer

Correct

required

The required attribute can be used to identify what fields are not optional and must not be left blank when filling in a form.

Feedback?

Fallbacks and polyfills

Not all widgets and attributes are fully supported by all browsers. Ex: Older browsers may not show a color input picker, so users must instead enter a hex string representing the red, green, and blue values of the color, like `#4268D3`, into a text input field.

A ***fallback*** is a mechanism that allows a webpage element to function correctly even if the browser does not support a particular element. *Good practice is to implement a fallback mechanism if a particular widget is not widely supported by browsers at the time.*

A ***polyfill*** is a fallback using JavaScript code that makes certain HTML features (Ex: the date picker) work on browsers that do not natively support those features. Developers often use a JavaScript library such as Modernizr to detect which features the browser does not support, and then load one or more polyfills to provide fallback mechanisms for the non-supported features.

Example 3.4.7: A date polyfill.

When the date input element is not supported by a particular browser, the browser treats the date input box like an ordinary text input field.

```
<form>
  <p>Select an appointment date:</p>
  <p><input type="date" name="appointmentDate"></p>
  <p><input type="submit"></p>
</form>
```

Unsupported date input

The date picker problem can be solved by detecting the problem using a library called Modernizr and adding a date picker from one of the widely-used JavaScript libraries such as jQuery.

The highlighted lines are responsible for loading the necessary Modernizr and jQuery files and for activating the polyfill if the browser does not support the date input. Notice that the original HTML form contents are not modified.

```
<link href="https://cdnjs.cloudflare.com/ajax/libs/jqueryui/1.12.0/jquery-
ui.min.css" rel="stylesheet">
<script
src="https://cdnjs.cloudflare.com/ajax/libs/modernizr/2.8.3/modernizr.min.
</script>
<script src="https://code.jquery.com/jquery-3.1.0.min.js"></script>
<script src="https://code.jquery.com/ui/1.12.0/jquery-ui.min.js"></script>

<script>
$(function() {
    if (!Modernizr.inputtypes['date']) {
        $('input[type=date]').datepicker({
            dateFormat: 'mm-dd-yy'
        });
    }
});
</script>

<form>
  <p>Select an appointment date:</p>
  <p><input type="date" name="appointmentDate"></p>
  <p><input type="submit"></p>
</form>
```

Polyfill for date input using Modernizr and the jQuery date picker

Feedback?

PARTICIPATION ACTIVITY 3.4.4: Fallbacks and polyfills.

1) A polyfill is code that creates a browser fallback for a feature if the web browser does not support that feature.

- (●) True
- ( ) False

Correct

Polyfills are usually implemented using a JavaScript library to make new features work on older browsers.

2) Browser fallbacks are only used to make new features work on old browsers.

- ( ) True
- (●) False

Correct

Fallbacks are used to test features for proposed standards that would otherwise not work on any current browsers.

3) Having users enter dates, colors, email, and numbers using the specialized widgets is preferable when an appropriate widget is available.

- (●) True
- ( ) False

Correct

The specialized widgets help ensure that input is valid and speed up the data entry process.

Feedback?

Exploring further:

- W3 Consortium official date input element description
- Modernizr on GitHub
- Polyfill on MDN
- Check browser feature support at caniuse.com

How was this section? Provide section feedback