

# Rich Interfaces with jQuery UI: Part 1 – Setup and Basic Widgets

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For customized training related to JavaScript or Java, email [hall@coreservlets.com](mailto:hall@coreservlets.com)  
Marty is also available for consulting and development support

Taught by lead author of *Core Servlets & JSP*,  
co-author of *Core JSF* (4<sup>th</sup> Ed), and this tutorial.

Available at public venues, or  
custom versions can be held on-site at your organization.

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## Topics in This Section

- **Overview**
- **Installation and setup**
- **Widgets**
  - Buttons that adapt to current theme (skin)
  - Date pickers (popup calendars)
  - Number spinners
  - Sliders
  - Progress bars

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# Overview and Setup

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## Overview of jQuery UI

- **Set of rich GUI elements and effects**
  - Tabbed panels, sliders, popup calendars, etc.
  - Animation effects similar to Scriptaculous
  - Drag and drop API
- **Pros**
  - Official part of jQuery
  - Well tested
  - Very clean design
  - Many still show meaningful results if JavaScript disabled
  - Theming framework
- **Cons**
  - Not nearly as extensive as Ext/JS, Dojo, or YUI

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## Downloading

- **Download custom bundle**
  - <http://jqueryui.com/download>
  - Select widgets and effects you want (or all for learning)
  - Press “Download” to download ZIP file of result
- **Unzip**
  - Unzip result into location of your choice
- **Bookmark the documentation**
  - <http://api.jqueryui.com/>
  - <http://jqueryui.com/demos/>

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## Planning Ahead for Updates

- **General principle**

- It is easier to *replace* many files on a Web site than to *edit* many files on a Web site
  - So, avoid specific version numbers in names of JavaScript and CSS files
  - Rename CSS “theme” (skin) folders to generic name

- **Specific practice**

- Rename jquery-x.y.z.js (or ...-x.y.z.min.js) to **jquery.js**
- Rename jquery-ui-x.y.z.custom.min.js to **jquery-ui.js**
- Rename theme (skin) folder from ui-lightness (or sunny, or blitzer or whatever you chose) to **jquery-ui**
- Rename CSS file inside theme (skin) folder from jquery-ui-x.y.z.custom.css to **jquery-ui.css**

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## Files and Folders Needed

- **js/jquery-x.y.z.min.js**

- Copy this to WebContent/scripts in your Eclipse project. For ease of later updates, rename it to **jquery.js**.
  - If you already have jquery.js, be sure it is a compatible version. In some cases, old jquery versions fail with a new jquery-ui version.

- **js/jquery-ui-x.y.z.custom.min.js**

- Copy this to WebContent/scripts in your Eclipse project. For ease of later updates, rename it to **jquery-ui.js**.

- **css/ui-lightness/**

- Copy ui-lightness folder to WebContent/css in your Eclipse project. For ease of later updates, rename folder to **jquery-ui**.

- **css/ui-lightness/jquery-ui-x.y.z.custom.css**

- For ease of later updates, rename file to **jquery-ui.css**
  - So now it is WebContent/css/jquery-ui/jquery-ui.css

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## Setting Up Page: Overview

- **Load required jQuery UI files**

```
<link rel="stylesheet" href="../../../jquery-ui/jquery-ui.css"/>
```

- Folder renamed from ui-lightness or other theme (skin) name
- File renamed from jquery-ui-x.y.custom.css

```
<script src="../../../jquery.js"></script>
```

- File renamed from jquery-x.y.z.min.js

```
<script src="../../../jquery-ui.js"></script>
```

- File renamed from jquery-ui-x.y.z.custom.js

- **Load your files that use jQuery UI**

- Any custom CSS files your app uses
- Any custom JavaScript files your app uses
  - Load your files after loading the jQuery files

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## Setting Up Page: Example

```
<head><title>jQuery UI</title>
```

```
<link rel="stylesheet"
```

```
  href="css/jquery-ui/jquery-ui.css"/>
```

```
<link rel="stylesheet"
```

```
  href="css/styles.css"/>
```

```
<script src="scripts/jquery.js"></script>
```

```
<script src="scripts/jquery-ui.js"></script>
```

```
<script src="scripts/jquery-ui-examples.js"></script>
```

```
</head>
```

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# Styled Buttons

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## Overview

- **Idea**
  - A button whose look and feel will automatically adapt to current theme (skin).
- **HTML**
  - Make any type of button or anchor
    - `<input type="submit" class="some-class".../>`
    - `<input type="button" class="some-class".../>`
    - `<button class="some-class">...</button>`
    - `<a href class="some-class" href="#">...</a>`
      - Radio buttons and checkboxes can also be turned into buttons, but done less often
- **Basic JavaScript**
  - Call `button()` on each element.  
`$(".some-class").button();`
  - You usually do this on DOM load  
`$(function() { $(".some-class").button(); ...});`

## Example: Interactive Styling

- **Usual approach (real life)**

- Style the buttons when the DOM is loaded

```
$(function() { $(".some-class").button(); ... });
```

- Motivation

- So buttons match the look of the current theme, from first page view

- **Approach here (practice)**

- Style the buttons when another button is pressed

- ```
$(function() { $("#some-button").click(uiDemo.styleButtons); ... });
```

- ```
uiDemo.styleButtons = function() { $(".some-class").button() };
```

- Motivation

- So you can see the look before and after the styling is applied

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## Example: HTML

```
<div id="button-div">
  <input type="submit" class="style-test"
    value="&lt;input type='submit'...&gt;"/>
  <input type="button" class="style-test"
    value="&lt;input type='button'...&gt;"/>
  <button class="style-test">
    The &lt;button&gt; element
  </button>
  <a href="#" class="style-test">Hypertext link</a>
</div>
<hr/>
<input type="button" id="button-styler-button"
  value="Style the Buttons"/>
```

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## Example: JavaScript

```
$(function() {  
    $("#button-styler-button").click(uiDemo.styleButtons);  
    ...  
});
```

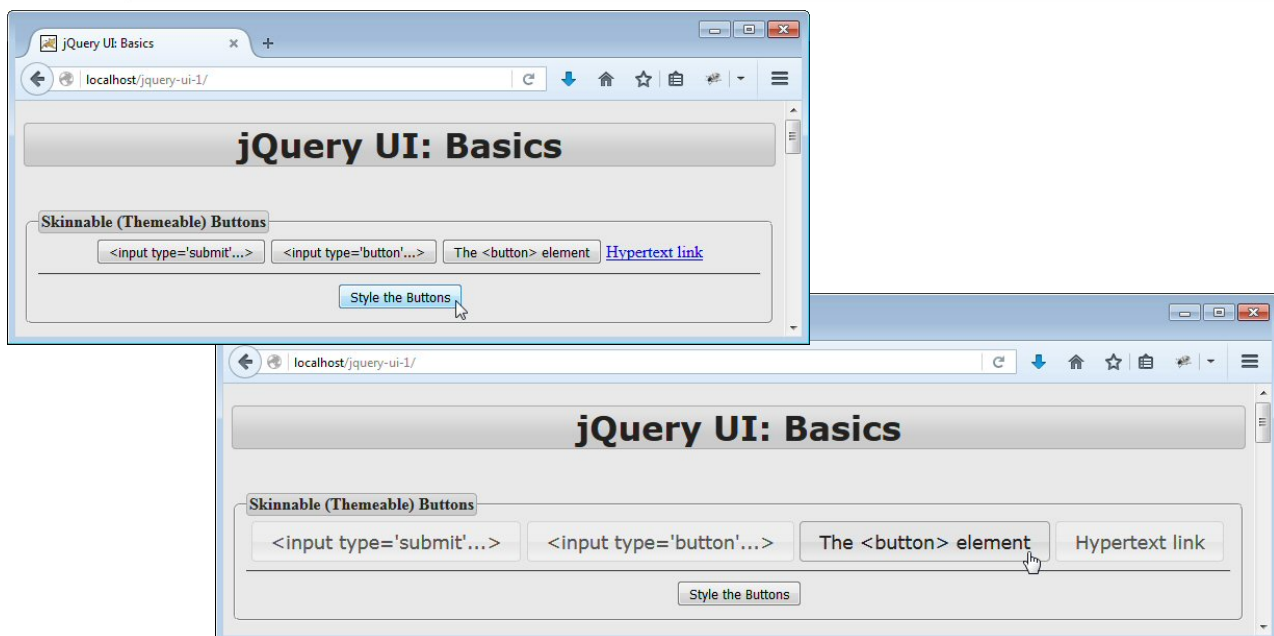
```
var uiDemo = {}; // To avoid name conflicts
```

```
uiDemo.styleButtons = function() {  
    $("#button-div .style-test").button()  
                                .click(uiDemo.showDialog);  
};
```

Also attached a click handler to the styled buttons so that, when any of them is pressed, a styled dialog box pops up. Code for the dialog boxes is explained in a later section.

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## Example: Results





## Options for jQuery UI Widgets

- **You can supply anonymous object to main method**

- Object has optional properties
- These properties specify configuration and operational options

- **General format**

```
$("#selector").uiwidget();  
$("#selector").uiwidget({ option1: value1,  
                           option2: value2,  
                           option3: value3 });
```

- **Button examples**

```
$("#selector").button();  
$("#selector").button({ text: false,  
                        icons: { primary: "ui-icon-gear" } });
```

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## Button Options

- **Options to button function**

- disabled
  - Is button initially grayed out?
- icons
  - Lets you set primary (on left of text) and/or secondary (on right of text) icons
  - Applies to `<button>...</button>` or hypertext links, not to `<input type="button".../>`, `<input type="submit".../>`, or `<input type="reset".../>`
  - A complete list of icons and more info on their use in jQuery UI can be found at <http://api.jqueryui.com/theming/icons/>
- text
  - Boolean property that says if you want text
  - Set this to false when you have icons only; otherwise button will have a small blank space where text should go
- label
  - Main text of button; usually set in HTML instead of here

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## Example: HTML

```
<fieldset>
<legend>Buttons with Options</legend>
<button id="refresh-button">Refresh</button>
<button id="home-button"></button>
</fieldset>
```

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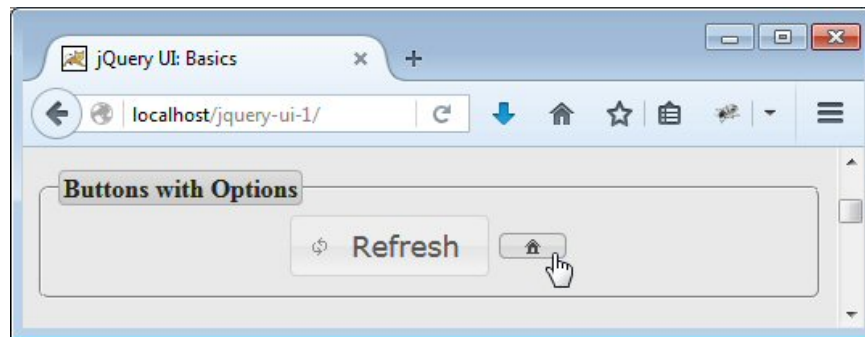
## Example: JavaScript

```
$(function() {
  ...
  $("#refresh-button").button({
    icons: { primary: "ui-icon-refresh" }
  });

  $("#home-button").button({
    text: false,
    icons: { primary: "ui-icon-home" }
  });
})
```

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## Example: Results



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# Date Picker (Popup Calendar)

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## Overview

- **Idea**
  - Click in textfield to pop up calendar
  - Choosing day from calendar puts date string into textfield
- **HTML**
  - Make an input field  
`<input id="date-field"/>`
- **Basic JavaScript**
  - Call `datepicker()` on the textfield  
`$("#date-field").datepicker();`
- **Value of integrated frameworks**
  - PrimeFaces (for JSF2) uses this jQuery UI date picker, but you access it with normal JSF tags, and most importantly, hook it to a server-side bean that has normal Date properties – no parsing of date string is required

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## Main Options for `datepicker({...})`

- **defaultDate (default: today)**
  - Initially selected date
- **changeMonth, changeYear (default: false)**
  - Should jQuery include a dropdown list to let you choose the month or year?
- **dayNames (default Sunday...Saturday)**  
**monthNames (default January...December)**
  - Names to use for the days and months, for other languages.
  - There are also various options for short versions of days
- **numberOfMonths (default: 1)**
  - How many months to show at a time
- **Many more options**
  - <http://api.jqueryui.com/datepicker/>

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## Example: HTML

```
<table class="formTable" id="flight-table">
  <tr><td>From:</td><td><input /></td></tr>
  <tr><td>Departure Date:</td>
    <td><input id="start-date" /></td></tr>
  <tr><td>To:</td><td><input /></td></tr>
  <tr><td>Return Date:</td>
    <td><input id="end-date" /></td></tr>
  <tr><th colspan="2">
    <button>Show Flights</button>
    <button>Show Hotels</button>
  </th></tr>
</table>
```

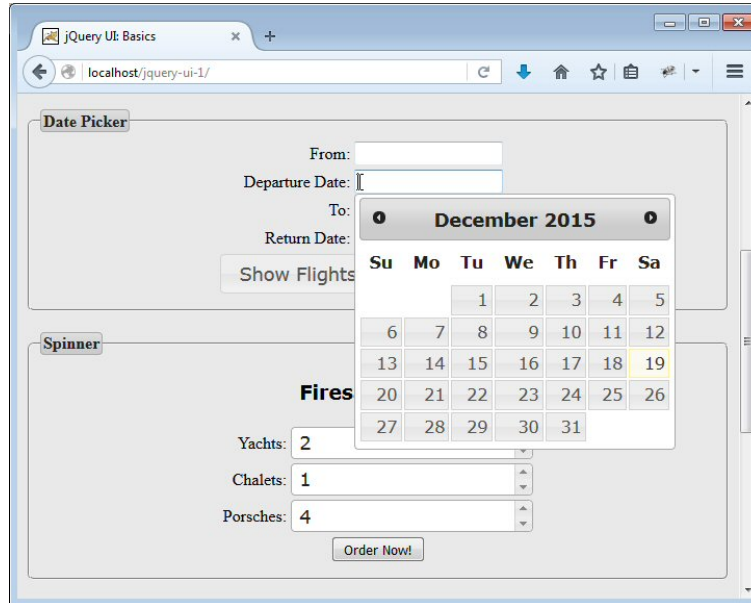
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## Example: JavaScript

```
$(function() {
  ...
  $("#start-date").datepicker();
  $("#end-date").datepicker({ changeMonth: true,
                              numberOfMonths: 2 });
  $("#flight-table button").button();
});
```

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## Example: Results



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# Spinner

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## Overview

- **Idea**

- Field to let user choose numeric values
  - User can enter number or press up/down arrows

- **HTML**

- Make a text field, usually with initial numeric value  
`<input id="spinner-id" value="n"/>`

- **Basic JavaScript**

- Call `spinner()` on the field to create the spinner  
`$("#spinner-id").spinner();`
- Later, use `.spinner("value")` or `val()` to read spinner value  
`$("#spinner-id").spinner("value");` or  
`$("#spinner-id").val();`
  - Using `val()` is simpler, but `spinner("value")` applies also to sliders, and `val()` does not

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## Main Options for `spinner({...})`

- **min (default: none)**

- Smallest value you can select with spin buttons
  - Negative numbers are allowed if you do not say otherwise

- **max (default none)**

- Largest value you can select with spin buttons

- **step (default: 1)**

- How much number changes when spin button pressed

- **page**

- Number of steps to take on page up and page down

- **Many more options**

- <http://api.jqueryui.com/spinner/>

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## Example: HTML

```
<h3>Firesale Items</h3>
<table class="formTable">
  <tr><td>Yachts:</td>
    <td><input id="boats" value="2"/></td></tr>
  <tr><td>Chalets:</td>
    <td><input id="huts" value="1"/></td></tr>
  <tr><td>Porsches:</td>
    <td><input id="cars" value="4"/></td></tr>
  <tr><th colspan="2"><button>Order Now!</button></th></tr>
</table>
```

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## Example: JavaScript

```
$(function() {
  ...
  $("#boats").spinner();
  $("#huts").spinner({ min: 0, max: 5 });
  $("#cars").spinner({ min: 2, step: 2 });
  $("#sale-table button").button();
});
```

Any number of yachts. This is wrong because it lets user select a negative number!

0-5 chalets.

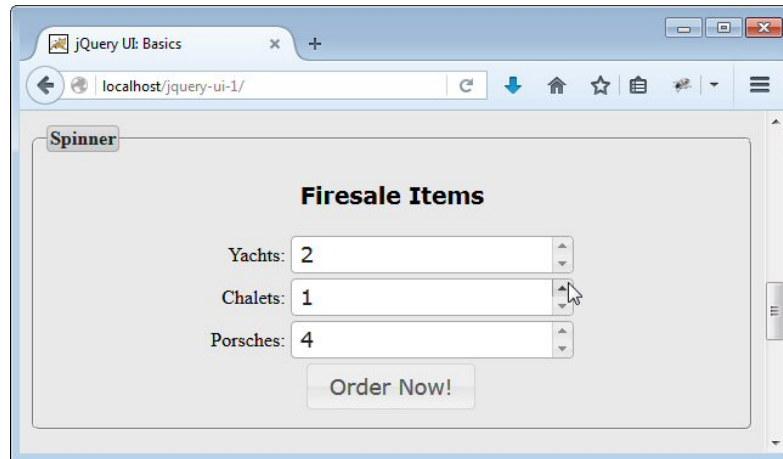
At least two Porsches.  
No upper limit.  
In increments of 2.

Later, you might have a push button that does some operation based on the number of yachts selected. The code for that button handler will call \$("#boats").val() to get the currently selected number of yachts.

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## Example: Results



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# Slider

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## Overview

- **Idea**
  - Interactive slider to let user choose numeric values
    - Also supports double-handled sliders for choosing ranges
- **HTML**
  - Make a placeholder div

```
<div id="div-for-slider"></div>
```
  - Slider will take up full width of div, so use HTML or CSS to control the final size
- **Basic JavaScript**
  - Call slider() on the div, optionally supply function to be called when slider moves

```
$("#div-for-slider").slider({ slide: sliderEventHandler });
```
  - Look up value during sliding
    - Event handler takes two arguments: event and ui; use ui.value to get current slider value
  - Look up value later

```
$("#div-for-slider").slider("value");
```

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## Main Options for slider({...})

- **min (default: 0)**
  - Value corresponding to left or top
- **max (default 100)**
  - Value corresponding to right or bottom
- **slide**
  - Function to call every time value changes. Function takes two arguments: event and ui object. Use ui.value to get currently selected value.
- **step (default: 1)**
  - Granularity of changes
- **value (default: min)**
  - The initial value
- **orientation (default: "horizontal")**
  - horizontal or vertical

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## Example: HTML

```
<table class="formTable" id="coffee-table">
  <tr><td>Type:</td>
    <td><input type="radio" value="Java"/>Java
      <input type="radio" value="JavaScript"/>JavaScript</td></tr>
  <tr><td>Cream?:</td>
    <td><input type="checkbox" value="cream"/></td></tr>
  <tr><td>Sugar?:</td>
    <td><input type="checkbox" value="sugar"/></td></tr>
  <tr><td>Temperature:</td>
    <td style="width: 200px">
      <div id="slider-div" style="margin-left: 10px"></div>
      <div id="temp-display" align="center">32</div>
    </td></tr>
  <tr><th colspan="2"><button>Order Coffee</button></th></tr>
</table>
```

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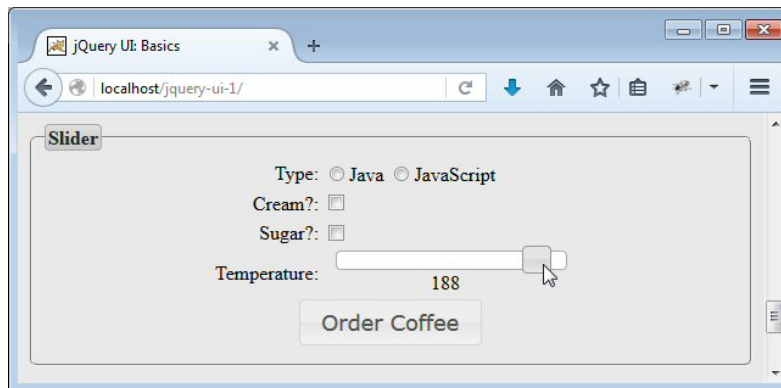
## Example: JavaScript

```
$(function() {
  ...
  $("#slider-div").slider({ min: 32, max: 212,
    slide: uiDemo.showTemp });
  $("#coffee-table button").button();
});

...
uiDemo.showTemp = function(event, ui) {
  $("#temp-display").html(ui.value);
};
```

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## Example: Results



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# Progress Bar

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## Overview

- **Idea**
  - Shows progress from 0% to 100%
- **HTML**
  - Make a placeholder div
    - `<div id="div-for-progress-bar"></div>`
- **Basic JavaScript**
  - Call `progressbar()` on the div
    - `$("#div-for-progress").progressbar();`
  - Have another event that changes values of bar
    - Look up value with `$("#div-for-progress").progressbar("option", "value");`
    - Change value with `$("#div-for-progress").progressbar("option", "value", num);`

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## Main Options for `progressbar({...})`

- **max (default 100)**
  - Value corresponding to the right side
  - You cannot change minimum value: it is always 0
- **value**
  - There is no builtin event for the progress bar
  - Instead, a totally separate function (possibly attached to a UI element or some Ajax results) will change the value
  - Typical code in the separate function

```
var currentVal = $("#bar-id").progressbar("option", "value");
if (currentVal < maxValue) {
    currentVal += someIncrement;
    $("#bar-id").progressbar("option", "value", currentVal);
}
```

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## Example: HTML

```
<fieldset>
<legend>Progress Bar</legend>
<div id="progressbar-div"></div>
<button id="progressbar-button">Click 10 Times</button>
</fieldset>
```

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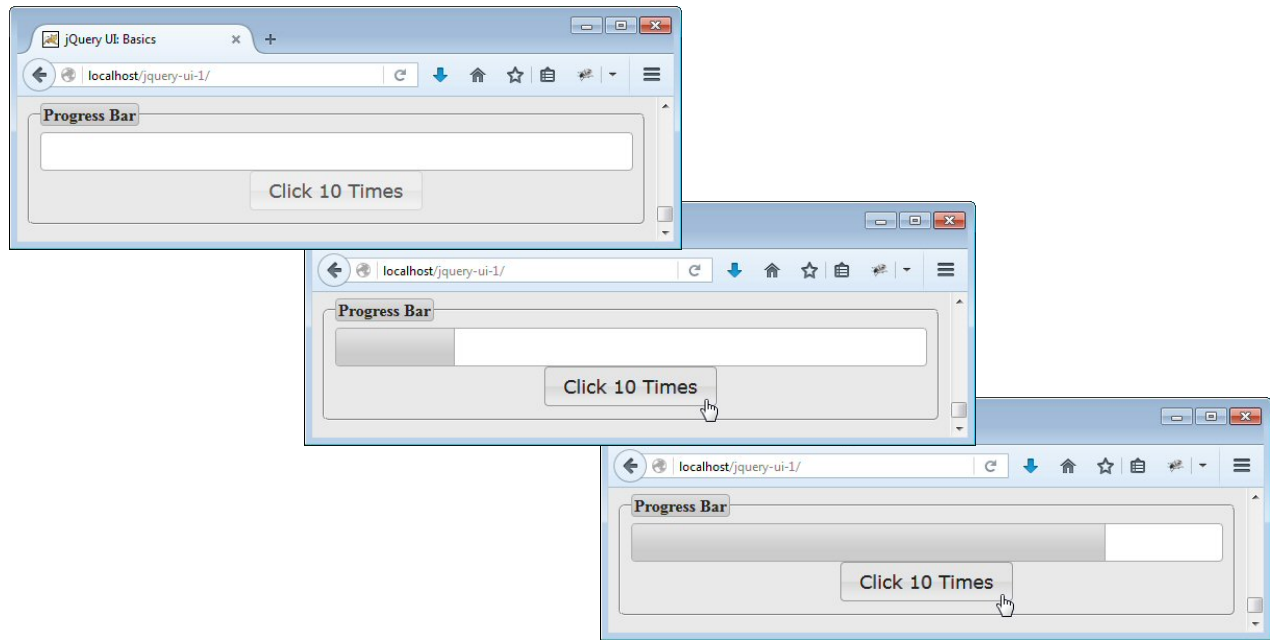
## Example: JavaScript

```
$(function() { ...
    $("#progressbar-div").progressbar();
    $("#progressbar-button").button()
        .click(uiDemo.updateProgressBar);
});

uiDemo.updateProgressBar = function() {
    var barId = "#progressbar-div";
    var currentVal = $(barId).progressbar("option", "value");
    if (currentVal < 100) {
        currentVal += 10;
        $(barId).progressbar("option", "value", currentVal);
    }
};
```

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## Example: Results



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# Wrap-up

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## Summary

- **Setup**

- Load jquery-ui/jquery-ui.css, jquery.js, and jquery-ui.js
  - Rename to omit specific version numbers

- **Styled buttons**

```
$("#selector").button({ options });
```

- **Popup calendars**

```
$("#id").datepicker({ options });
```

- **Number spinners**

```
$("#id").spinner({ options });
```

- **Sliders**

```
$("#id").slider({ slide: sliderEventHandler, ... });
```

- **Progress bars**

- `$("#id").progressbar();`
  - Need function to update the bar via `$("#bar-id").progressbar("option", "value", newVal);`

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# Questions?

More info:

<http://www.coreservlets.com/javascript-jquery-tutorial/> – Tutorial on JavaScript, jQuery, and jQuery UI

<http://courses.coreservlets.com/Course-Materials/java.html> – General Java programming tutorial

<http://www.coreservlets.com/java-8-tutorial/> – Java 8 tutorial

<http://courses.coreservlets.com/java-training.html> – Customized Java training courses, at public venues or onsite at your organization

<http://coreservlets.com/> – JSF 2, PrimeFaces, Java 8, JavaScript, jQuery, Ext JS, Hadoop, RESTful Web Services, Android, HTML5, Spring, Hibernate, Servlets, JSP, GWT, and other Java EE training

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