Advanced Ajax and JavaScript

Using the jQuery Library

What is jQuery?

“jQuery is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development. **jQuery is designed to change the way that you write JavaScript.”**

http://jquery.com

Get jQuery

http://jquery.com

Development version (for development)

“Minified” version (for deployment)

Get Help

http://docs.jquery.com

- API documentation
- Examples
- Tutorials

Using jQuery: in your web page

```
<head>
. . .
<script type="text/javascript"
  src="jquery.js"></script>
. . .
</head>
```

Using jQuery: in your JS

```
$(document).ready(function(){
  // Your code here . . .
});
```

- You can still declare functions elsewhere

Basic Syntax

- $: the jQuery function
- `$(selector).function();`

Selectors

- `tagname`
- `#id`
- `.class`
- `:button, :submit, :checked, :animated, etc.`
- `[name=value], etc.`
- …
- Combinations:
  - `form#myForm input:submit:enabled`
- http://docs.jquery.com/Selectors

Chainability/Traversing

- Most methods return the objects that they acted on, so you can chain functions together
  - `$(`*`selector`*`).fadeOut().slideUp();`
- Other methods modify your selection
  - `add(), find()`
  - `children(), parent()`
  - …
- Undo with `end()`
- http://docs.jquery.com/Traversing

More with $( )

- $(*html*);
  - Create a DOM element from a string *html*

  -
    ```
    $("<div />").addClass("dynamic")
         .text("hi world!")
         .appendTo("body");
    ```
- http://docs.jquery.com/Core

Effects

- `$(".hideus").hide();`
- `$("#showme").hide("slow");`
- `$("#hideme").fadeOut();`
- `$(".showus").slideDown();`
- `$(".class“).animate(…);`
- …
- http://docs.jquery.com/Effects

Events

- Old way:

```
<input id="myButton" type="button"
  onclick="doSomething();"
  value="Click me!" />
```

- With jQuery:

```
$("#myButton").click(doSomething);
```

Events

```
// disable buttons when clicked
$("input:button").click(function() {
    $(this).attr("disabled",
        true).val("Disabled!");
});
```

- http://docs.jquery.com/Events

http://cloud.cs50.net/~jbolduc/jquery/button.html

Ajax

```
$.get(url, [data], [callback], [type]);
$.post(url, [data], [callback], [type]);
```

- url: the URL to access
- data: data to send, as key/value pairs or as query string
- callback: function to call on success
  - Parameters: data, textStatus = success
  - `$.get()` and `$.post()` don't support error callbacks
- type: format of data

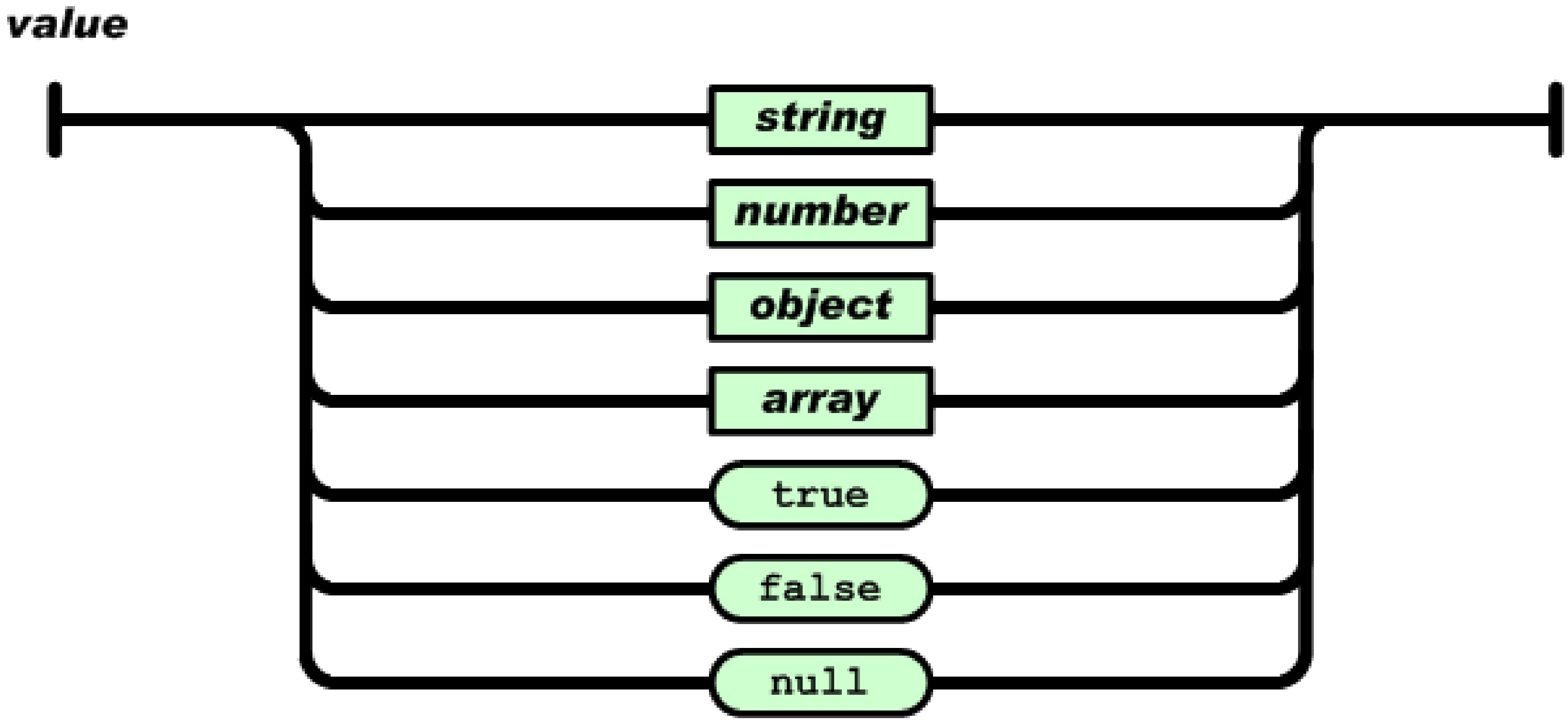
Ajax

- `$.ajax(options);`
  - Lower-level access (error callbacks, HTTP authentication, and more)
- …
- http://docs.jquery.com/Ajax

JSON

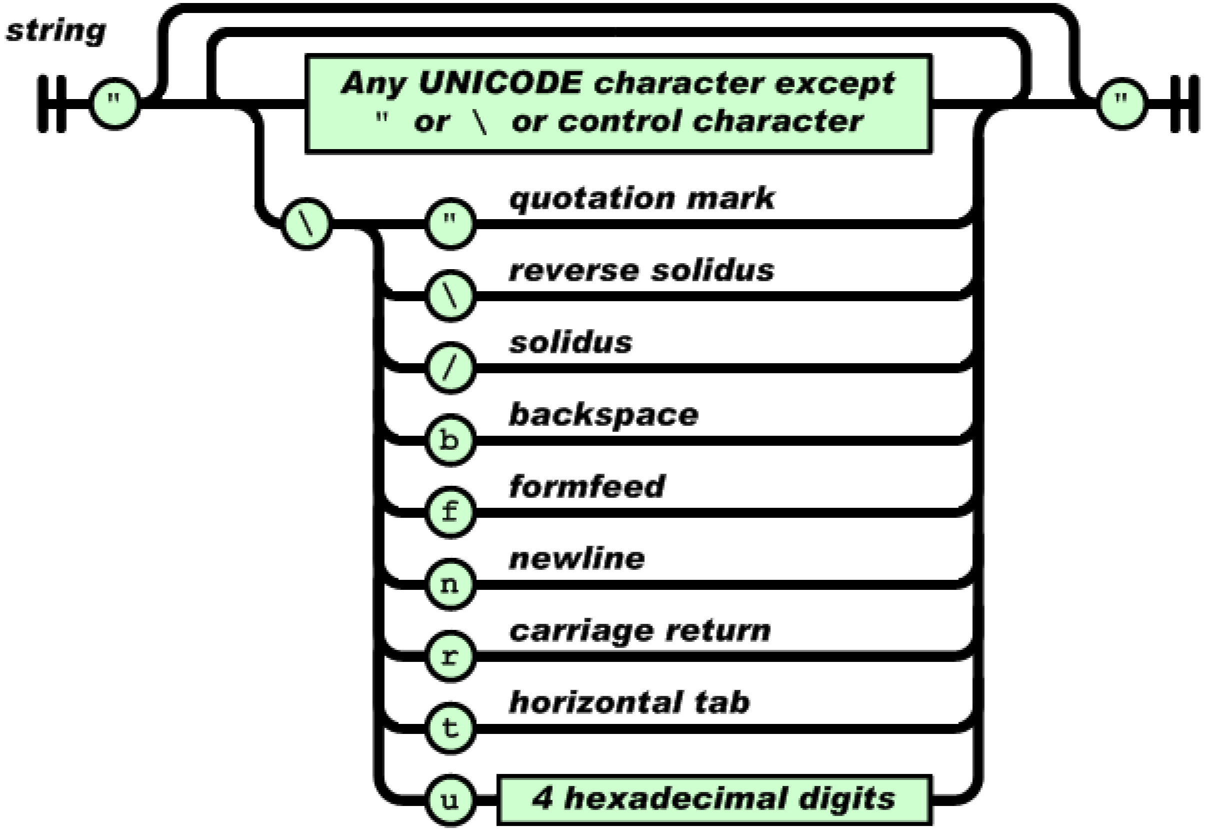
- **J**ava**S**cript **O**bject **N**otation
- Concise data-interchange format
- http://json.org

JSON



Images from http://json.org

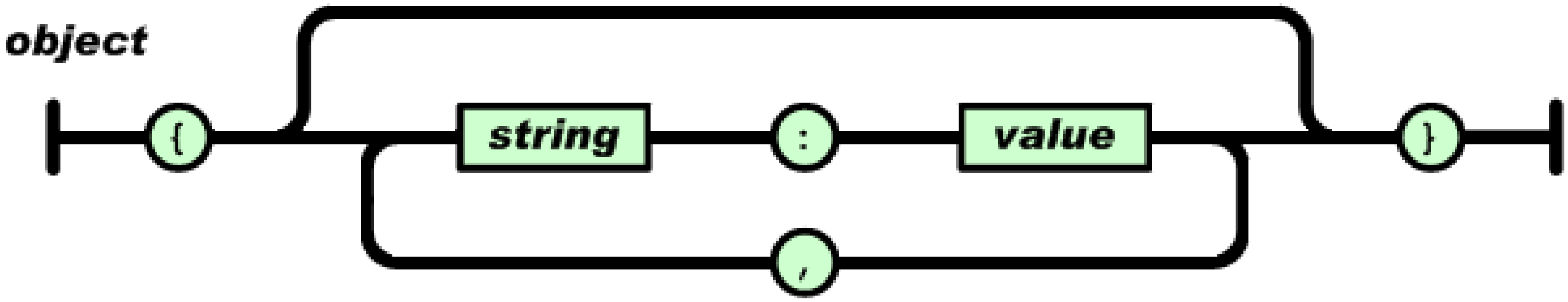
JSON



Images from http://json.org

JSON

```
{"key":"value","key2":"value2"}
```



Images from http://json.org

JSON and PHP

```
$data = array("key" => "value",
              "key2" => "value2");

echo json_encode($data);
```

Output:

```
   {"key":"value","key2":"value2"}
```

JSON and PHP

```
class Data
{
    public $key;
    public $key2;
}

$data = new Data();
$data->key = "value";
$data->key2 = "value2";

echo json_encode($data);
```

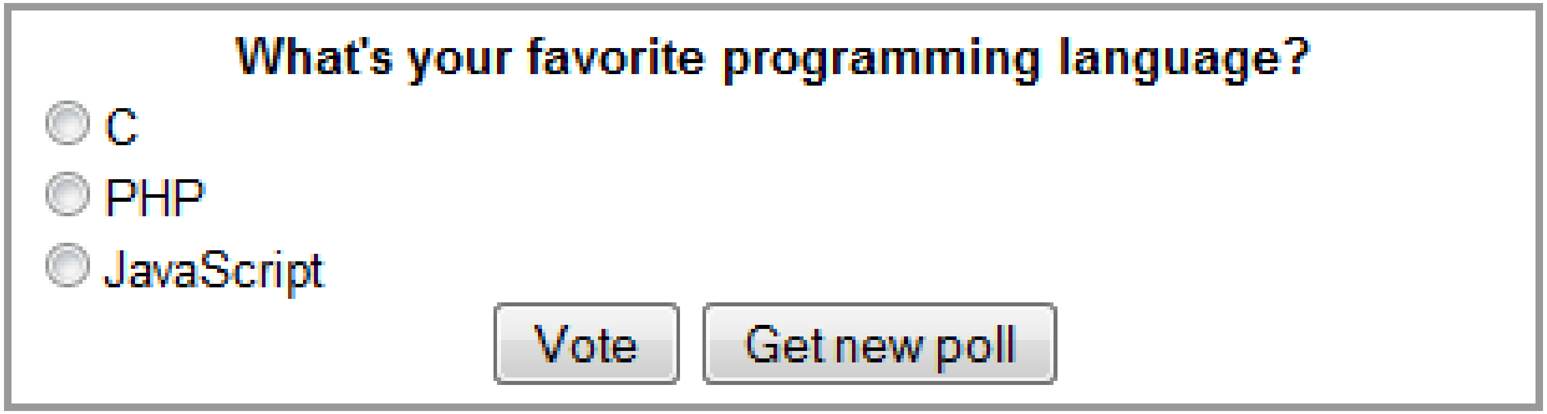
$.getJSON()

```
$.getJSON(url, [data], [callback]);
$.getJSON(url, {'poll_id': poll_id},
  poll_display);
```

- Equivalent to:

  ```
  $.get(url, data, callback, "json");
  ```

Putting it all Together



What's your favorite programming language?

○ C

○ PHP

○ JavaScript

http://cloud.cs50.net/~jbolduc/jquery/poll.{php,phps}
http://cloud.cs50.net/~jbolduc/jquery/poll.js
http://cloud.cs50.net/~jbolduc/jquery/pollhandler.{php,phps}

Compatibility

- What if the user has intentionally disabled JavaScript? Or if the browser doesn’t support it?
- We’d like to retain as much functionality as possible, as transparently as possible

```
lynx http://cloud.cs50.net/~jbolduc/jquery/poll.php
```

http://cloud.cs50.net/~jbolduc/jquery/poll.{php,phps}

jQuery UI

- http://ui.jquery.com
- Separate library, designed to be used with jQuery
- Download: http://ui.jquery.com/download
  - Build it with the features you want
- Docs: http://docs.jquery.com/UI
- Demos
  - http://ui.jquery.com/demos
  - http://dev.jquery.com/view/trunk/ui/demos/functional (some slightly buggy)

jQuery UI

- Interactions
- Widgets
- Effects

Interactions

- Draggable

  -
    ```
    $("#dragImage").draggable();
    ```

  -
    ```
    $("#dragImage").draggable({
          opacity: 0.40
    });
    ```

http://dev.jquery.com/view/trunk/ui/demos/functional/#ui.draggable

Interactions

- Droppable

  -
    ```
    $(".drop").droppable({
        accept: ".block",
        drop: function(ev, ui) {
            $(this).append("Dropped! ");
        }
    });
    ```

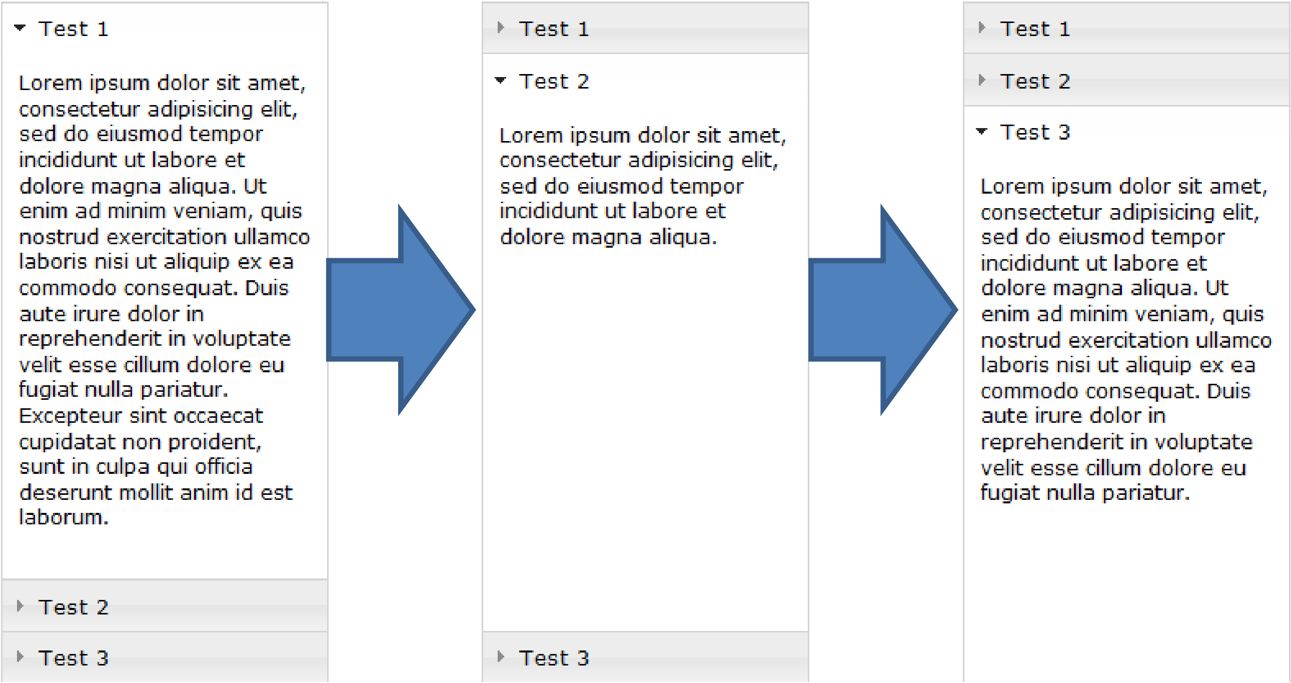
http://dev.jquery.com/view/trunk/ui/demos/functional/#ui.droppable

More Interactions

- Resizable
- Selectable
- Sortable

Widgets

- Accordion



Test 1

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Test 2

Test 3

Test 1

Test 2

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Test 3

Test 1

Test 2

Test 3

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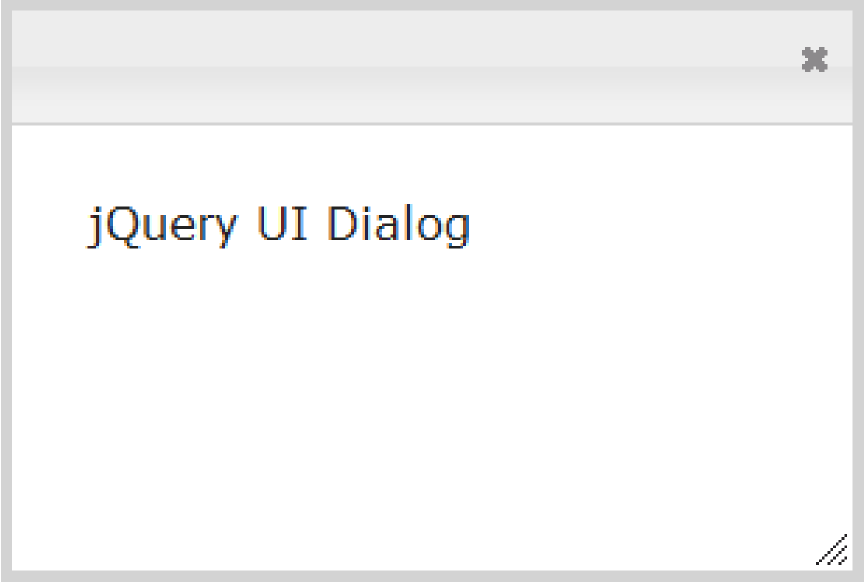
http://dev.jquery.com/view/trunk/ui/demos/functional/#ui.accordion

Widgets

- Dialog
- `$("#dialog").dialog();`



jQuery UI Dialog

http://dev.jquery.com/view/trunk/ui/demos/functional/#ui.dialog

More Widgets

- Datepicker
- Progressbar
- Slider
- Tabs

Effects

- `$("#id").effect(effect, options, [speed], [callback]);`
- Bounce
- Highlight
- Explode
- Fold
- Pulsate
- …
- http://docs.jquery.com/UI/Effects

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