EVENTS

JavaScript Events

Announcements

- Use relative addresses in your assignments.
- Use the specifications on the Web.
- First test will be on Wednesday
- New Scrum Masters as of today.
- If you use short tags (e.g. <?= $film ?>) you need to enable it in Apache on AWS
- Please email me (martin@cs.rochester.edu) your proposals tomorrow.

First Test

- All questions will be about Web Programming
  - Infrastructure: AWS, Unix, Apache, Git, …
  - HTML
  - CSS
  - PHP
  - JavaScript
- You may bring on 8.5x11 (or A4) sheet of paper with notes.
- There will be different versions of the test that will be assigned to seats.

New Scrum Masters

Backslash	SHUOPENG	DENG
C.O.D.E.	WENQIN	JIANG
Cellar	CHRISTOPHER	WONG
ContraWeb	LUISA MARIA	NEVES
Hacklemore	JONATHAN	KUBERKA
Lanister	MEHR	KASHYAP
Llama	JUSTIN	FRAUMENI
Scrum City	MERRILL	PRESKA-STEINBERG
Sk3m Team	KATARZYNA	RUSZOWSKA
SqlThePrql	AMELIA	KELLER
Synapps	ANIS	KALLEL
Tautology	REBECCA	EVERSON
Team RNG	OSCAR	ROJAS

Short Tags

1. Edit /etc/php.ini

```
$ cd /etc
$ sudo vi php.ini
```

2. Change short tags to “On”

short_open_tag = On <<<Change from “Off” to “On”

3. Restart httpd

$ sudo /sbin/service httpd restart

php.ini


```
;;;;;;;;;;;;;;;;;;;
; Language Options ;
;;;;;;;;;;;;;;;;;;;

>>>>>>> snip <<<<<<<<<<

; This directive determines whether or not PHP will recognize code between
; <? and ?> tags as PHP source which should be processed as such. It's been
; recommended for several years that you not use the short tag "short cut" and
; instead to use the full <?php and ?> tag combination. With the wide spread
; http://www.php.net/manual/en/ini.core.php#ini.short-open-tag

>>>>>>>> snip <<<<<<<<<<

short_open_tag = On
```

Quiz (Question 1)

What do you need to add to your web page to use the "$" function?

<script src="prototyp.js" type="text/javascript"></script>

- The "$" function is a shortcut for:
  - document.getElementByIT("foo")
  - i.e., $("foo")
- It is part of the prototype library
  - http://prototypejs.org
- The book uses this function in a lot of its examples. Hence the question. jQuery also has a $ function.

Quiz (Question 3)

What word appear in this alert box?

```
alert("the quick brown fox".split(" ").reverse()[0]);
```

- “the quick brown fox”.split(“ “) === [“the”, “quick”, “brown”, “fox”]
- “the quick brown fox”.split(“ “).reverse() === [“fox”, “brown”, “quick”, “the”]
- “the quick brown fox”.split(“ “).reverse()[0] === “fox”

Quiz (Question 4)

What query to <url> should call this code?

```
<?php
        $base = $_REQUEST["base"];
?>
```

- <url>?base=5
- Like exercises 3
  - Movie.php?film=princessbride

Standup

Discuss questions with your Scrum Team

Quiz

1. What object does all JavaScript run in by default?
2. Write the JS code to attach ok() to a button with id “ok” when the page is loaded.
3. Write a JS function that contains one line of code to handle

```
<fieldset>
  <label><input type="radio" name="cc" value=”v” /> V <label>
  <label><input type="radio" name="cc" value=”mc" /> MC</label>
</fieldset>
```

4. What is the difference between “onclick” and “mousedown”?

And the answer is …

Quiz (Answers)

1. The global window object. (Slide 15)
2. Slide 16

```
function pageLoad() {
	$("ok").onclick = ok;
}
```
JS

3. Slide 17

```
Function cc() {
	alert(this.value + " is checked!");
}
```
JS

4. Onclick: press and release; mousedown: press only

Events

The keyword this


```
this.fieldName // access field
this.fieldName = value; // modify field
this.methodName(parameters); // call method
```
JS

- all JavaScript code actually runs inside of an object
- by default, code runs inside the global window object
  - all global variables and functions you declare become part of window
- the this keyword refers to the current object

Event handler binding


```
function pageLoad() {
	$("ok").onclick = okayClick; // bound to okButton
here
}
function okayClick() { // okayClick knows what DOM object
	this.innerHTML = "booyah"; // it was called on
}
window.onload = pageLoad;
```
JS

- event handlers attached unobtrusively are bound to the element
- inside the handler, that element becomes this (rather than the window)

Fixing redundant code with this


```
<fieldset>
	<label><input type="radio" name="ducks"
value="Huey" /> Huey</label>
	<label><input type="radio" name="ducks"
value="Dewey" /> Dewey</label>
	<label><input type="radio" name="ducks"
value="Louie" /> Louie</label>
</fieldset>
```

HTML

```
function processDucks() {
	if ($("huey").checked) {
		alert("Huey is checked!");
	} else if ($("dewey").checked) {
		alert("Dewey is checked!");
	} else {
		alert("Louie is checked!");
	}
	alert(this.value + " is checked!");
}
```

JS

More about events

abort	blur	change	click	dblclick	error	focus
keydown	keypress	keyup	load	mousedown	mousemove	mouseout
mouseover	mouseup	reset	resize	select	submit	unload

- the click event (onclick) is just one of many events that can be handled
- **problem**: events are tricky and have incompatibilities across browsers
  - reasons: fuzzy W3C event specs; IE disobeying web standards; etc.
- **solution**: Prototype includes many event-related features and fixes

Attaching event handlers the Prototype way


```
element.onevent = function;
element.observe("event", "function");
```
JS

```
// call the playNewGame function when the Play button is clicked
$("play").observe("click", playNewGame);
```
JS

- to use Prototype's event features, you must attach the handler using the DOM element
- object's observe method (added by Prototype)
- pass the event of interest and the function to use as the handler
- handlers must be attached this way for Prototype's event features to work

Attaching multiple event handlers with $$


```
// listen to clicks on all buttons with class "control"
that
// are directly inside the section with ID "game"
window.onload = function() {
	var gameButtons = $$("#game > button.control");
	for (var i = 0; i < gameButtons.length; i++) {
		gameButtons[i].observe("click", gameButtonClick);
	}
};
function gameButtonClick() { ... }
```

JS

- you can use $$ and other DOM walking methods to unobtrusively attach event handlers to
- a group of related elements in your window.onload code

The Event object


```
function name(event) {
// an event handler function ...
}
```
JS

- Event handlers can accept an optional parameter to represent the event that is occurring. Event objects have the following properties / methods:

method / property name	description
type	what kind of event, such as "click" or "mousedown"
element() *	the element on which the event occurred
stop() **	cancels an event
stopObserving()	removes an event handler

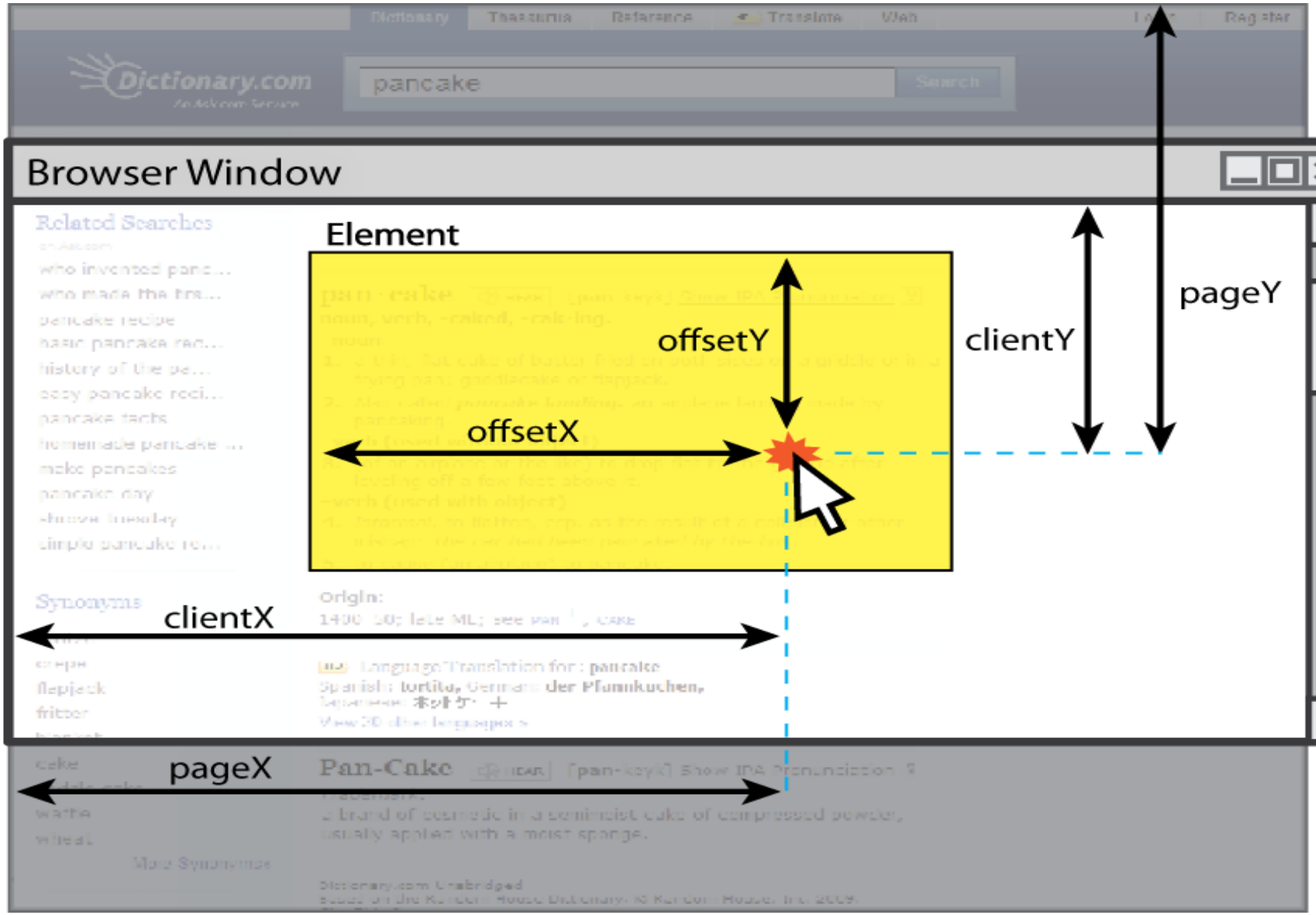
Mouse events

click	user presses/releases mouse button on this element
dblclick	user presses/releases mouse button twice on this element
mousedown	user presses down mouse button on this element
mouseup	user releases mouse button on this element

Mouse events

mouseover	mouse cursor enters this element's box
mouseout	mouse cursor exits this element's box
mousemove	mouse cursor moves around within this element's box

Mouse event objects



Mouse event objects

property/method	description
clientX, clientY	coordinates in browser window
screenX, screenY	coordinates in screen
offsetX, offsetY	coordinates in element
pointerX(), pointerY() *	coordinates in entire web page
isLeftClick() **	true if left button was pressed

* replaces non-standard properties pageX and pageY

** replaces non-standard properties button and which

The Event object


```
<pre id="target">Move the mouse over me!</pre>
```

HTML

```
window.onload = function() {
    $("target").observe("mousemove", showCoords);
};
function showCoords(event) {
       this.innerHTML =
       "pointer: (" + event.pointerX() + ", " +
event.pointerY() + ")\n"
       + "screen : (" + event.screenX + ", " +
       event.screenY + ")\n"
       + "client : (" + event.clientX + ", " +
event.clientY + ")";
```

JS