EVENT HANDLING:
SPONTANEOUS RIGHT ACTION

Maharishi University of Management -Fairfield, Iowa © 2023

Main Point Preview

Event handlers take callback functions that are executed later when the event occurs.

Science of Consciousness: Callbacks are a form of memory for an action that is automatically executed when an event happens. When we act from deep levels of awareness we are more likely to activate appropriate memories and reactions (event handlers).

Reacting to Events

- Examples of HTML events:
- When a user clicks the mouse
- When a web page has loaded
- When an image has been loaded
- When the mouse moves over an element
- When an input field is changed
- When an HTML form is submitted
- When a user strokes a key

Assign Events Using the HTML DOM

```
<h2>JavaScript HTML Events</h2>
    <p>Click "Try it" to execute the displayDate() function.</p>

    <button id="myBtn">Try it</button>

    <p id="demo"></p>

    <script>
        document.getElementById("myBtn").onclick = displayDate;

        function displayDate() {
            document.getElementById("demo").innerHTML = Date();
        }
    </script>

</body>
```

JavaScript HTML DOM EventListener

Syntax:

```
element.addEventListener(event, function, useCapture);
```

The addEventListener() method attaches an event handler to the specified element.

The addEventListener() method attaches an event handler to an element without overwriting existing event handlers.

You can add many event handlers to one element.

```
element.addEventListener("click", myFunction);
element.addEventListener("click", mySecondFunction);
```

Mouse Events

`click`	user presses/releases mouse button on the element
`dblclick`	user presses/releases mouse button twice on the element
`mousedown`	user presses down mouse button on the element
`mouseup`	user releases mouse button on the element movement
`mouseover`	mouse cursor enters the element's box
`mouseout`	mouse cursor exits the element's box*
`mousemove`	mouse cursor moves around within the element's box

* or exits any descendent. jQuery has mouseleave which only fires for the element, not descendants

Page/window events

`load`, **`unload`**	the browser loads/exits the page
`resize`	the browser window is resized
`error`	an error occurs when loading a document or an image
`contextmenu`	the user right-clicks to pop up a context menu

The above can be handled on the `window` object.

Form events

`submit`	form is being submitted
`Reset`	form is being reset
`change`	the text or state of a form control has changed

Keyboard/text events

`Keydown`	user presses a key while this element has keyboard focus
`keyup`	user releases a key while this element has keyboard focus
`keypress`	user presses and releases a key while this element has keyboard focus
`focus`	this element gains keyboard focus
`blur`	this element loses keyboard focus
`select`	this element's text is selected or deselected)

Keyboard events object properties

`key`	key that was pressed
`altKey`, **`ctrlKey`**, **`shiftKey`**	true if Alt/Ctrl/Shift key is being held

Recall `window.onload` event

- We want to attach our event handlers right after the page is done loading (Why?)
  - There is a global **event** called `window.onload` event that occurs at that moment

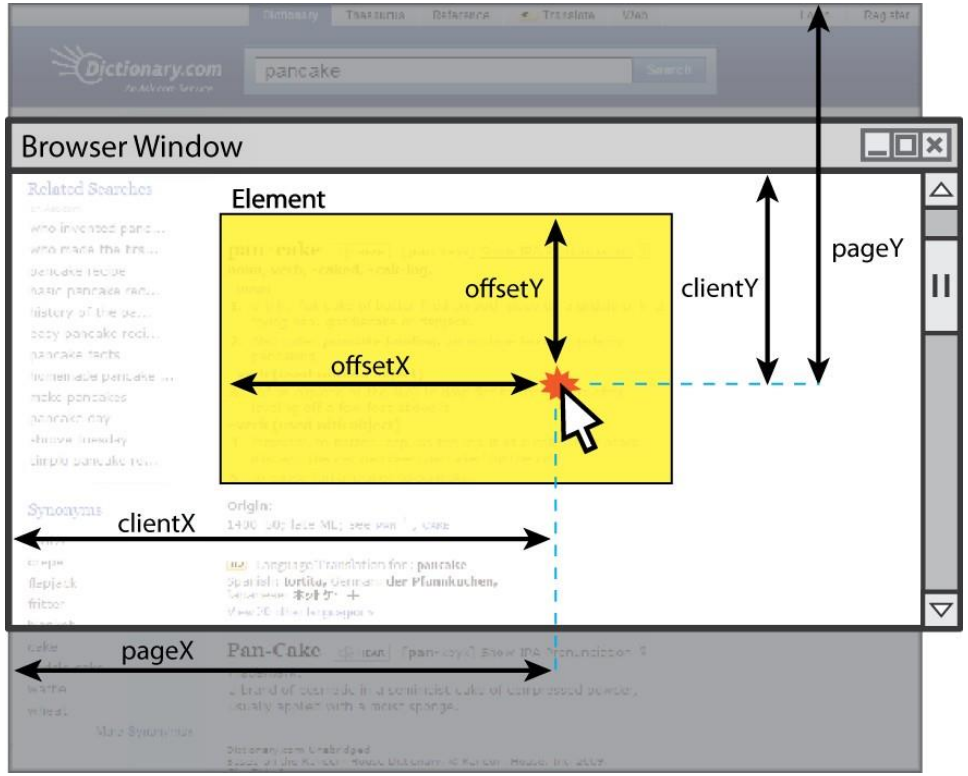
```
// this will run once the page has finished loading
function functionName() {
        element.event = functionName;
        element.event = functionName;
        ...
}

window.onload = functionName; // DOM version
```

Mouse Event Object

The event object is passed to a mouse handler has these properties:

`clientX`, `clientY`	coordinates in browser window
`screenX`, `screenY`	coordinates in screen
`offsetX`, `offsetY`	coordinates in element (non-standard)
`pageX`, `pageY`	coordinates in entire web page in which mouse button was clicked



Main Point

Event handlers take callback functions that are executed later when the event occurs.

Science of Consciousness: Callbacks are a form of memory for an action that is automatically executed when an event happens. When we act from deep levels of awareness we are more likely to activate appropriate memories and reactions (event handlers).

Main Point Preview

JavaScript code runs inside of an object and the ‘this’ keyword refers to that object. Event handlers that are attached unobtrusively are bound to that element and inside the handler ‘this’ references the bound DOM element. Usage of ‘this’ in event handlers is a common JavaScript programming idiom that enables handlers to be reused across different kinds of elements.

Science of Consciousness: We can think of the TM Technique as an event handler that gives the result of transcending and can be used by any person (element).

Event handler binding

Event handlers attached unobtrusively are bound to the element. Inside the handler, that element becomes `this` (rather than the window)

```
function sayHi() {
 // sayHi knows what object it was called on
 this.value = "sayHi“ + this.id;
}
document.getElementById(“submitBn").addEventListener("click", sayHi);
```

```
<div class="exampleoutput">
 <input id="textbox" />
 <input type="submit" id="submitBtn" value="Save">
</div>
```

Main Point

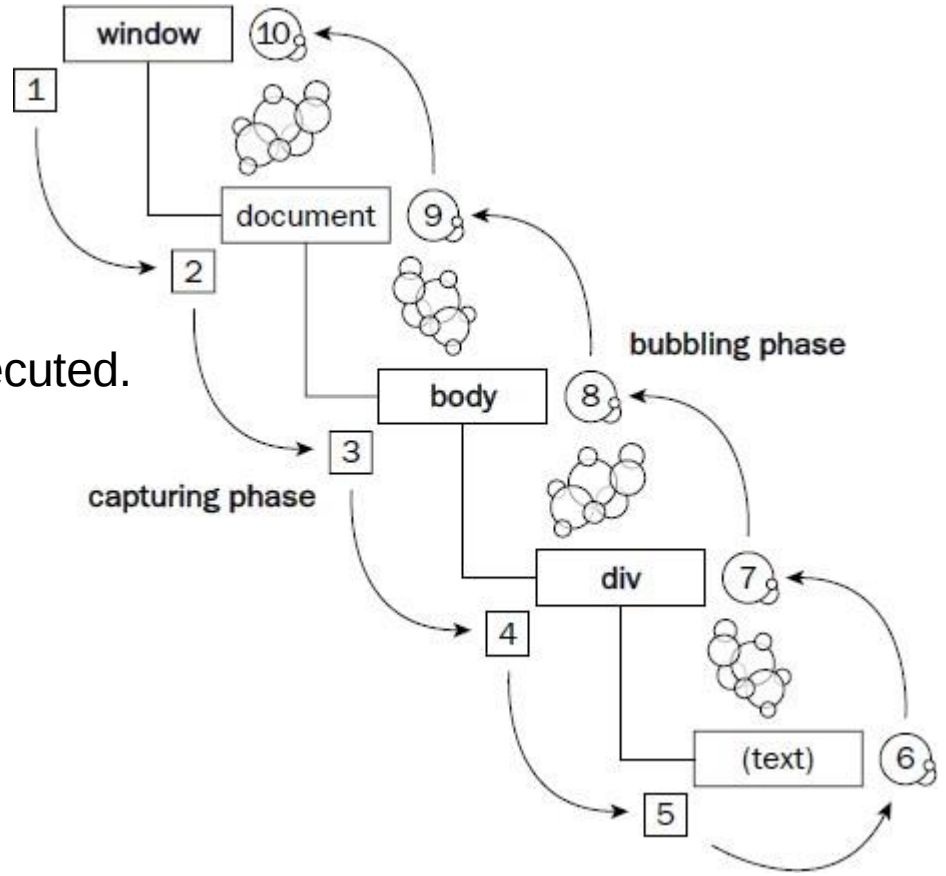
JavaScript code runs inside of an object and the ‘this’ keyword refers to that object. Event handlers that are attached unobtrusively are bound to that element and inside the handler ‘this’ references the bound DOM element. Usage of ‘this’ in event handlers is a common JavaScript programming idiom that enables handlers to be reused across different kinds of elements.

Science of Consciousness: We can think of the TM Technique as an event handler that gives the result of transcending and can be used by any person (element).

Event Bubbling

```
<div><p> Events are <em>crazy</em></p></div>
```

- Clicking the `em` is actually a click on every element in this page.
- Therefore it was decided that all of the handlers should be executed.
- The events **bubble from the bottom of the DOM tree to the top.**
- The opposite model (top to bottom) is called **capturing and is not widely used.**



addEventListener(*event*, *function*, *useCapture*);

In ***bubbling*** the inner most element's event is handled first and then the outer: the <p> element's click event is handled first, then the element's click event.

In ***capturing*** the outer most element's event is handled first and then the inner: the element's click event will be handled first, then the <p> element's click event.

stopPropagation

The stopPropagation() method prevents further propagation of the current event in the capturing and bubbling phases.

It does not, however, prevent any default behaviors from occurring; for instance, clicks on links are still processed.

It also does not prevent propagation to other event-handlers of the current element.

```
function setSpan(evt) {
    evt.stopPropagation();
    console.log("span");
}
```

stopImmediatePropagation

- stopImmediatePropagation will prevent any parent handlers **and also** any **other** handlers of the current element.

```
function setSpan(evt) {
    evt.stopImmediatePropagation();
    console.log("span");
}
```

preventDefault() Event Method

The preventDefault() method cancels the event if it is cancelable, meaning that the default action that belongs to the event will not occur.

For example, this can be useful when:

- Clicking on a "Submit" button, prevent it from submitting a form
- Clicking on a link, prevent the link from following the URL

Note: Not all events are cancelable. Use the cancelable property to find out if an event is cancelable.

Note: The preventDefault() method does not prevent further propagation of an event through the DOM.

CONNECTING THE PARTS OF KNOWLEDGE WITH THE WHOLENESS OF KNOWLEDGE

Spontaneous Right Action

1. Event handling is a fundamental aspect of JavaScript programming. jQuery makes it easy to attach event handlers to DOM elements.

2. Some subtle aspects of JavaScript event handlers include the use of event arguments passed to event handlers depending on the type of element, the use of the keyword 'this' that can refer to different objects since functions are first class in JavaScript, and the need to sometimes control event propagation.

---

3. Transcendental consciousness. The home of all the laws of nature

4. Impulses within the transcendental field: Thoughts arising from this level will be able to spontaneously respond with right actions to events because they are supported by all the laws of nature.

5. Wholeness moving within itself: In unity consciousness one appreciates the interconnectedness of everything at the underlying basis of the unified field.