Enhance the Interactivity of Hypertext Links in HTML

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Abstract

Hypertext link is the most basic and important function of HTML and enables a user to access particular web pages or documents in world wide webs. The basic linking idiom in HTML is tag `<a>` acts as hypertext links. Usually, the web designers can’t make the hypertext link flexible because there are no decision-making capabilities in HTML. With advanced web implementation skill, adding extra functions into hypertext links can raise the interactivity. The aim of the paper was discussed how to use web programming languages such as JavaScript and CSS into HTML to improve the interactivity of hypertext links and display various examples implemented by the combination of JavaScript, HTML and CSS. Such combination is also known as Dynamic HTML (DHTML).

Keywords: JavaScript, HTML, CSS, Interactivity

1. Introduction

According the WebAIM[1], Hypertext links whose idiom in HTML is tag `<a>`, are one of the most basic elements of HTML that allow the users to access specific locations in web page and could work with all technologies and platforms. That means users can access them whether directly or through the use of some sort of assistive technology. We can use JavaScript and CSS as assertive technology to increase the interactivity of hypertext. Luo[2] used JavaScript to Enhance the Learning Interactivity and mentioned that JavaScript is an object-oriented programming language with decision-making capabilities. That means web designers can use JavaScript to control the attributes of HTML and make the web page more flexible and smarter. In other words, we can use JavaScript to make the tag `<a>` more interactive to enhance the interactivity of hypertext links. Cheng[3] implemented many hypertext link interactivity in online shopping by dynamic HTML which include HTML, JavaScript, CSS and Document Object Model (DOM).

The SearchSOA Web[4] defined the interactivity in computer is the dialog that occurs between a human being and a computer program. And, the hypertext link provides the most common form of interactivity when using the web pages. Paul Kerry[5] surveyed the web page interactivity and mentioned interactive web pages allow users to interact with the pages in a way that causes the page to respond to the users’ input. He also showed some interactivity examples implemented by adding JavaScript into tag `<a>`. Jon[6] studied the interactive buttons and said the interactive buttons can provide users with results of their actions. He combined mouse over and out actions (one of the JavaScript’s functions) and hypertext links to create some interactive buttons. Al Fernandez[7] mentioned three kinds of online interactivity, they are Rollover text, Rollover buttons and Pop-windows. Based on the three kinds of interactivity, he also displayed various examples implemented by a combination of HTML, JavaScript and CSS. These examples were based on hypertext links and interactive.

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There are six categories of interactivities defined by Versteeg[8], they are:

1. Illustrate/demonstrate: Using animated interactive to shows a process such as flow diagram.
2. Simulate: Like case studies, help learners experience something closer to the real experience.
3. Quiz: Interactive quizzes are used to reinforce progressive learning.
4. Present a pre-topic challenge: Usually presented at the beginning of a topic to challenge the user’s assumptions about a topic.
5. Engage/Motivate: To engage the learners’ motivation by using Games or Flip Book or information display.
6. Utility: Perform a specific supporting function like movie or song player to increase the interactive.

Those examples mentioned above can be implemented by hypertext link combined with JavaScript and CSS to enhance the interactivity.

2. Examples

The following examples are some hypertext links combined with JavaScript and CSS to enhance the interactivity.

2.1. Rollover text effect

This interactivity effect is based on hypertext link and no images needed to be uploaded. Users just move the mouse on the text and other information or link will be engaged. (Fig1-1) Use CSS to achieve this effect by adding "A:hover{color:blue; font-size:28pt;}" to <head> and </head> tags and the text will change when mouse move over on the hypertext links. This effect could be done by JavaScript (Fig1-2) as the code shown on Table1. (Fig1-3) is another widely used rollover text effect, when mouse pointer hovers on the questions and the answer will be shown. The code could be seen in Table2.

HotNews ➔ HotNews

Fig1-1 Add CSS can change the hypertext link to Rollover text effect. Simply move the mouse pointer on the text and the text font will be larger and blue.

HotNews ➔ HotNews

Fig1-2 Apply JavaScript onMouseover and onMouseout functions to the hypertext link to do Rollover text effect. Move the mouse pointer on the text and the text font will be larger and blue

誰是美國國父? ➔ 誰是美國國父: 華盛頓

Fig1-3 Mouse pointer hovers on the questions and the answer will be shown instantly

2.2. Rollover buttons effect

Like rollover text effect, using images or icons to substitute for the text can provide some interactivity to the users. Fig2-1 uses 🎵 to replace text and couple with SoundPlay Function implemented by JavaScript. User clicks the 🎵 and a music will come out. That offers a quick interactivity for users to listen the music. The
Another example shown on Fig2-1 and Table4, Button1 will change to Button2 when mouse pointer hovers on it.

Fig2-1 Rollover buttons engage the SoundPlay function. Click on the buttons to listen the music.

Press icon to enjoy the music

Fig2-2 Button1 will change to Button2 when mouse pointer hovers on it.

2.3. Pop-windows

When more information or demonstration has to be presented and the parent web page should still remain on the screen, pop-windows will be the good solution for it. Usually, the contents in pop-windows provide extra data or topics of the parent page and shouldn’t be too long to cover half the parent page. The big advantage of pop-windows is users remain on the parent page when the pop-windows closed. And, the users won’t get lost easily. Fig3-1 shows click on ‘Confucius’, a window will pop out to show the details. Table5 is code for pop-windows.

Fig3. Pop-Windows shows more information of Confucius.

2.4. Animations

Adding JavaScript or CSS to hypertext link could do some simple animation effect and may bring enough interactivity to entice user to stay longer on the pages. The following blinking hypertext link on Table6 is using JavaScript to complete the simple animation effect. The hypertext link will change the font color to red, blue and yellow in turn every one second.
### Table 1. Codes to implement rollover text effect by JavaScript and hypertext link

```html
<script Language="JavaScript"><!--
function change(col,size)
{
    document.all["myText"].style.backgroundColor = col;
    document.all["myText"].style.fontSize = size;
}
//--></script>
<a href="#" id="myText"
onMouseover="change('orange', '24pt')"onMouseout="change('white','12pt')">HotNews</a>
```

### Table 2. Codes to implement rollover text effect on Fig1-3

```html
<script>
function Hide(thisthing)
{
    if ( document.all(thisthing).style.visibility == 'visible')
    
document.all(thisthing).style.visibility = 'hidden';
    else
    
    document.all(thisthing).style.visibility = 'visible';
}
</script>
<a href="#" onMouseover="Hide('span2')" onMouseout="Hide('span2')" >
<font color="#008000">誰是美國國父:</font></a>
<span id=span2  style="color:blue; visibility:hidden">華盛頓</span>
```

### Table 3. Codes for rollover buttons effect on Fig2-1

```html
<bgsound src="silent.aif" id="mySND">
<script language="JavaScript"><!--
function soundPlay(sndName)
{
    mySND.src = sndName;
}
//--></script>
<b>Press icon to enjoy the music</b>
<a href="javascript:soundPlay('p-00.WMA')">
<img border="0" src="play.gif" width="33" height="33"></a>
```
Table 4. Codes for rollover buttons effect on Fig 2-2

```html
<script language="JavaScript"> <!--
a = new Image();
a.src = "button2.jpg";
(new Image()).src = "button1.jpg";
// --></script>
<a href="#" onMouseover="document.BTN.src='button2.jpg'"
onMouseout="document.BTN.src='button1.jpg'">
<img src="button1.jpg" name="BTN">
</a>
```

Table 5. Codes for pop-windows on Fig 3-1

```html
<script Language="JavaScript"> <!--
function call()
{
subWin = window.open("confucius.htm","sub","width=320,height=280");
}
// --></script>
<a href="javascript:call()">Confucius</a>
```

Table 6. Codes for blinking effect on Fig 4-1

```html
<script language="JavaScript"> <!--
col = new Array("red","blue","yellow");
num = 0;
function flashLink()
{
    myLINK.style.color = col[num++];
    num %= col.length;
}
// --></script>
<body onLoad="setInterval('flashLink()',1000)">
<a href="http://www.yahoo.com/" id="myLINK">Blink the Hypertext Link</a>
```

3. Conclusions

Hypertext link provides the most fundamental and important interaction between visitor and web pages. Many cases indicated that users will get better understand the information of the web page through hypertext links. In e-learning web site, hypertext-enriched instructional material improves students’ acquisition of concept of the course. In E-commerce web site, usages of interactive features in links to demonstrate the advantage of the
products could reinforce the customers' awareness of the products and shopping motivation. With JavaScript and CSS by our side, we can create many special effects to enhance the hypertext links. Use JavaScript and CSS rollover text effect to create the instant feedback of a color or image change when the visitor points to a hypertext link will enhance the interactivity. And it only takes a few lines of code. JavaScript, CSS and other web programming languages have so many ready-to-use objects and functions that allow web designers to devise more enhanced hypertext link web pages to improve the interactivity. It goes without saying using those programming languages to enhance the interactivity of hypertext link is easy, flexible and creative.

Reference