Avoiding CGI

By George Kraft IV

Many Internet Service Providers do not allow their customers to publish their own interactive graphic image maps on the Web, query the reader, or keep track of reader statistics. The average Web author must work around the lack of Webmaster privileges on the server.

The Internet and the World Wide Web have become an important tool for both large and small businesses. They have also become increasingly entertaining for individuals. Both commercial enterprises and individuals write and publish a vast amount of information on the Web. Large corporations publish information about their products and services on the Web; they also can receive consumer orders and information from around the globe. Individuals publish information about their hobbies, interests, and academic endeavors; however, they are rarely able to create interactive graphic image maps, query the reader, or track the number of readers who have visited their Web site.

The Common Gateway Interface (CGI) controls much of the World Wide Web's interactive capabilities. The CGI suite of programs reside on a Web server, such as an RS/6000™, that takes input from HyperText Markup Language (HTML) document browsers and returns new dynamically created HTML information.

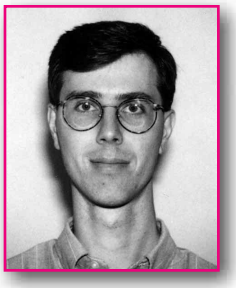
A problem exists, however, because there is no standard set of CGI scripts for all of the different Web server software suites available. Publishers must use what is available on the server or write new scripts; this is not possible for most domestic Web publishers. Most individuals rent Web space for their pages from Internet Service Providers (ISPs). Generally, ISPs are unable and/or unwilling to give access to their subscribers to create interactive CGI scripts. They are concerned about the security implications of these CGI scripts and also the impact of these scripts on the system because of the pervasive global access.

To write interactive graphic image maps, query the reader, or track the number of readers who have visited your site, you can use what the ISP might be providing or you can write HTML pages that do not require the use of CGI.

Image Maps

HTML image maps enable graphical images to have hyperlink capabilities. Users can move the pointer over an image and select certain areas that result in loading a new HTML page. Originally, CGI scripts processed image maps, which meant that images and their maps were sometimes required to be installed within the Web server and could not be maintained by an HTML author. This process allowed only the Webmaster to maintain image maps.

Today, most state-of-the-art Web browsers allow client-processed (that is, browser-processed) image maps by using the new HTML directive called *MAP*. MAP



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allows HTML authors to define the image's hyper-reference regions within a normal HTML file. Now it is not necessary for a separate graphics image, image map, and CGI program to dynamically process the information. Today, the browser processes all image map information.

Figure 1 shows an example of a client-side (browser) image map. The IMG image is defined to use the source GIF file `rgb.gif`, and it is extended to use the image map labeled `RGB_MAP` in Figure 2. The image map defines various regions and coordinates that are hyper-reference links to other Web pages. The user only needs to point and click on the image-mapped graphics in order to follow the hyperlink. Since the browser processes everything locally, there is no dependency on the remote Web server.

When the user moves the pointer around the graphics image, the browser's status bar changes to the alternative text (`ALT`) of the defined region. If the user clicks in that region, then the hyper-referenced page linked to that area is loaded in the browser. All of the image map processing is done locally in the browser.

Image Map Example

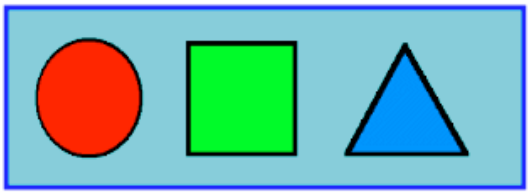

Figure 1. Example of an image map

Forms

HTML forms can prompt the user for useful textual input. Usually an HTML form prompts the user for text, a selection from multiple choices, or a series of true or false questions. Then, the user selects the "submit" button and the browser sends the HTML-prompted information to a CGI-hosted program as input. The information is processed and a resulting HTML output is sent back to the browser to be dynamically loaded as a response. Figure 3 shows an example of an e-mail form.

Normally, Webmasters set up forms and a local depository for information taken from the Web; however, most domestic Web publishers hosted by ISPs do not have access to save the data taken from readers on the Web. Instead, Web authors have the option to e-mail the user's response via the

E-mail Form Example

Figure 3. Example of an e-mail form

```
<CENTER>
<IMG SRC="images/RGB.gif" ALT="Red Green Blue" USEMAP="#RGB_MAP">
<MAP NAME="RGB_MAP">
<AREA shape=circle coords="55,55,50"  ALT="Red"   HREF="red.html">
<AREA shape=circle coords="145,55,50" ALT="Green" HREF="green.html">
<AREA shape=circle coords="240,60,50" ALT="Blue"  HREF="blue.html">
</MAP>
</CENTER>
```

Figure 2. Image map HTML code

form's ACTION. E-mailed information that is prompted from HTML forms can be batch or dynamically processed, but the e-mailed forms processed by e-mail cannot give a browser any kind of dynamic response. After the browser e-mails the information, it is processed by an entirely different method of filtering. Figure 4 shows HTML code for an e-mail form.

On UNIX®, users can set up filters to process batch information sent by e-mail. The `sendmail` service on UNIX systems processes all e-mail through the users `$HOME/.forward` file. The `.forward` file can either redirect the e-mail to another location or it can pipe the information through programs to be processed. The Mail Handler (MH) and Elm/Pine e-mail readers allow information to be processed before the messages are delivered into the user's inbox. E-mail filtering is an opportunity to process HTML forms without relying on the ISP's CGI scripts.

Counters

After authors publish their Web pages, they sometimes find it useful to know if and how many readers have visited selected materials from their Web site. ISPs may or may not provide a Web page counting service. This is unfortunate because individual browsers cannot keep track of global access of a Web page. The counting of Web pages must be stored somewhere on the Internet, but not necessarily on the server where the Web site resides. The Internet has many free Web-page counting services available. But the author's HTML page normally must include a small advertisement banner to pay for the service, as shown in Figure 5.

```
<FORM METHOD=post ACTION="mailto:gk4@ibm.com">
<TEXTAREA name=inquiry rows=8 cols=40 wrap=physical>
This area could be prefilled with text.
</TEXTAREA>
<BR>
<INPUT type=submit value="EMail">
<INPUT type=reset value="Reset">
</FORM>
```

Figure 4. E-mail form HTML code

Figure 6 shows the HTML encoding for a counter, which includes a CGI counter with the author's account and a hyper-referenced GIF advertisement. When the browser loads the Web page, the CGI counter accesses the authors account, the index is incremented, and a returning image is returned with the page's current access count. If the user clicks on the banner, then the advertiser's page is loaded, thereby paying for the service of the counter.

Figure 5. An example of a Web page counter

```
<!——-Begin code for Free counter——————————————>
<TABLE border="0" cellpadding="0" cellspacing="0" width="300">
<TR><TD><CENTER>
      <IMG SRC="http://www.free.com/cgi-bin/pagecount?account=kraft">
</CENTER></TD></TR>
<TR><TD>
      <A HREF="http://www.marketing.com/advertisement.html">
            <IMG SRC=”advertisement.gif">
      </A>
</TD></TR>
</TABLE>
<!——-End of free counter code————————————————>
```

Figure 6. Web page counter HTML code

Conclusion

As more HyperText Markup Language editors become available and Internet Service Providers provide less expensive Web space, it is easy to establish a presence on the World Wide Web. You can author Web pages using editors like Microsoft's FrontPage98 or NetObjects' Fusion™, but be aware that you may not have complete access to all of the features that HTML authoring has to offer. Be careful when using CGI scripts that are ISP dependent, so make a conscious decision when coding special features.

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