CMPSCI 120 Fall 2016
Extra Credit #1
Professor William T. Verts

Setting Up

In this assignment you are to create a Web page that contains a client-side image map. This assignment does not build on any earlier assignment. For this assignment you will need the tools you used in earlier assignments (PuTTY or ssh, WinSCP or Fugu, Windows Notepad or Text Edit, and Windows Paint or Mac Paint) or equivalent. In addition, you will need a tool to change a `.GIF` image into a *transparent* `.GIF` image. My own Bézier Madness program for a Windows PC will work well in this assignment, both for image design and for setting transparency:

`http://www-unix.oit.umass.edu/~verts/bezier/index.html`

You may use other graphics packages if you feel more comfortable with them, as long as they can create transparent `.GIF` images. There are Web tools to do this as well.

ADDITIONAL EXTRA CREDIT: In this part you will need a tool to create “FavIcons” (16×16, 16-color icons). I also have a package of icon editors available for Windows:

`http://www-unix.oit.umass.edu/~verts/software/software.html#EDITICONS`

First Image: Drawing the Links

What I want you to create first is an image to be called **`MyLinks.gif`** which will be used as a client-side image map, where five distinct regions of the image are hot-spots that link to external Web sites. Pick five of your favorite sites to use as links. The image must be **exactly 600×600 pixels** in size, and because it must be saved as a `.GIF` image it is limited to no more than 256 distinct colors (one of which will be used as the “transparent” background color).

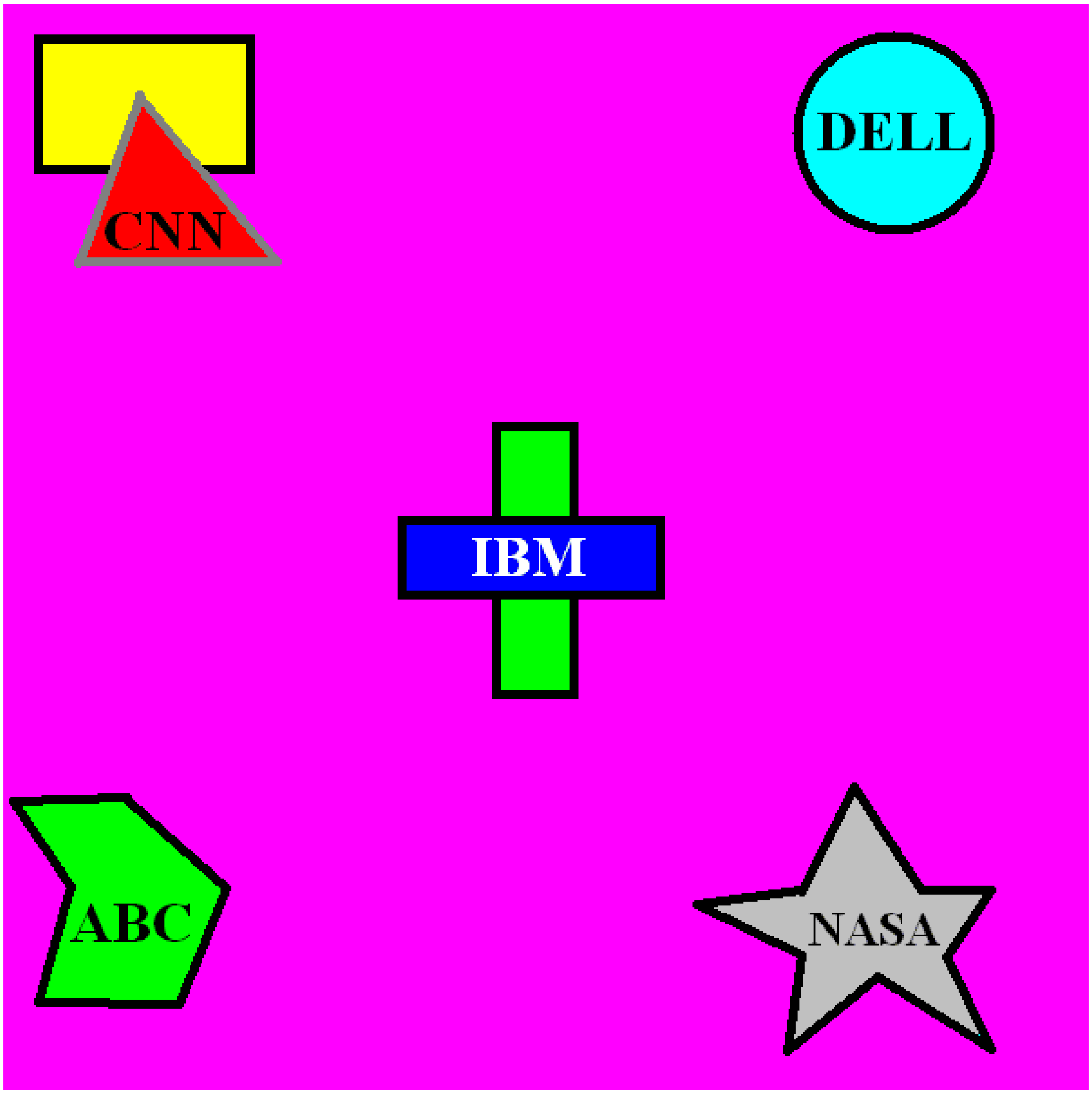
Start up Windows Paint, Bézier Madness, or other bitmap editor, and set the image size to exactly 600×600 pixels (points will be removed if the image is any other size). **Note:** Windows Paint is a little brain-dead about color palettes; save the blank image as **`MyLinks.gif`** before you draw anything in order to avoid any surprises later on. Also, if you use my Bézier Madness, save the *design* as `MyLinks.bez` but save the *image* as `MyLinks.gif` (by saving the design as a `.bez` file you can go back and edit it later).

Make the entire background of the image a color that you will not use in any other part of the drawing (this is the color you will set to “transparent”). For example, if you do not expect to use magenta in your drawings then magenta would be a good background color.

Next, draw a small picture in each corner and in the middle to form five link-regions in the shape of a ***quincunx*** (look it up!). Each link-region must be no larger than 200×200 pixels, and must not overlap any of the other regions. The pictures you draw may be circular, rectangular, or have a non-rectangular outer boundary (with concavities) that can only be described by irregular polygons. Each link-region may be composed of more than one primitive object. **Only one of the five may be composed of *just* rectangles.** Include in each of the five pictures **a descriptive name** of the site used in the link.

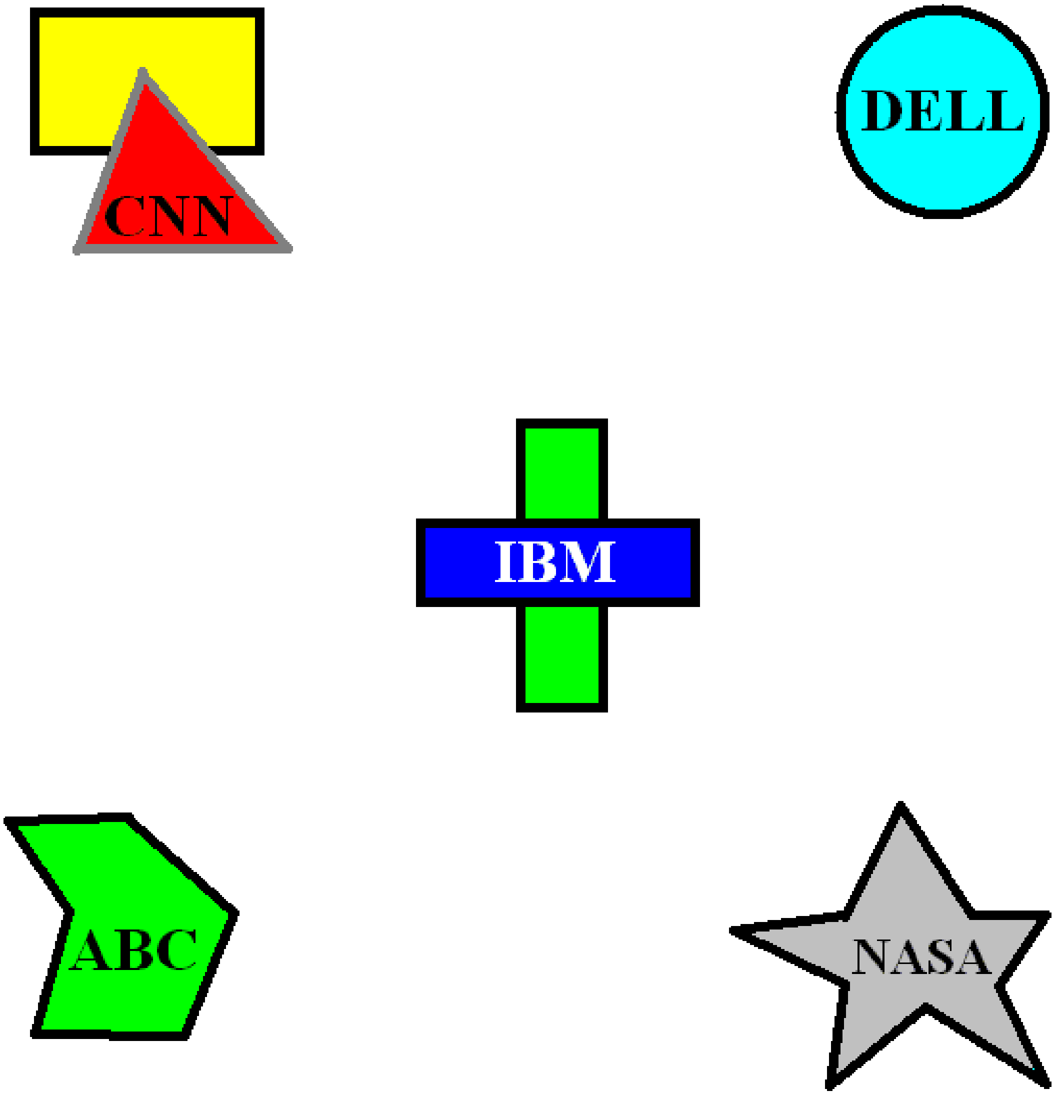
You may draw anything you like for the five pictures (real objects, abstract geometric shapes, etc.). I am not grading on the quality of your artwork, but if possible try to make each picture appropriate to the site to which it links.

Save the image with the name `MyLinks.gif` on your disk (the file name must be as specified here or you'll lose points – we will use that name to check the contents of the file for grading). Here is an example of what `MyLinks.gif` might look like (your picture ***must not*** use the same diagrams or the links shown here – make up your own design). This first version shows the image with the background color visible:



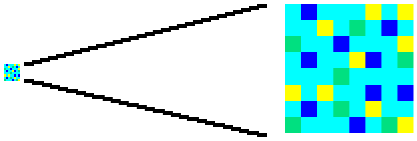
Using Bézier Madness, or another graphics tool that can do the same job, set the background color of `MyLinks.gif` to “transparent”.

The next version shows the `MyLinks.gif` image as before, but with the background color set to transparent. Notice that the magenta background color has vanished, leaving only the five link-regions behind:



Second Image: Background Pattern

Create a new image in Windows Paint or in your favorite bitmap graphics package. This image must be ***exactly 8×8 pixels*** in size. In this image create a random "speckle" pattern of your favorite colors. Here is an example. The full-sized image that you create is the tiny view on the left, but a "zoomed" version is shown on the right, where each colored square represents a single pixel. ***Do not use*** my pattern; create your own.



Save the image as **`MyPattern.gif`** in the same folder as the `MyLinks.gif` image (the file name must be as specified here or you'll lose points – we will use that name to check the contents of the file for grading).

Note: you are allowed to save this particular image as **`MyPattern.png`** if you so choose, but throughout this document it will be referenced as a `.gif` file – you'll have to make the appropriate substitutions in the code to make a `.png` file work correctly.

The Basic Web Page

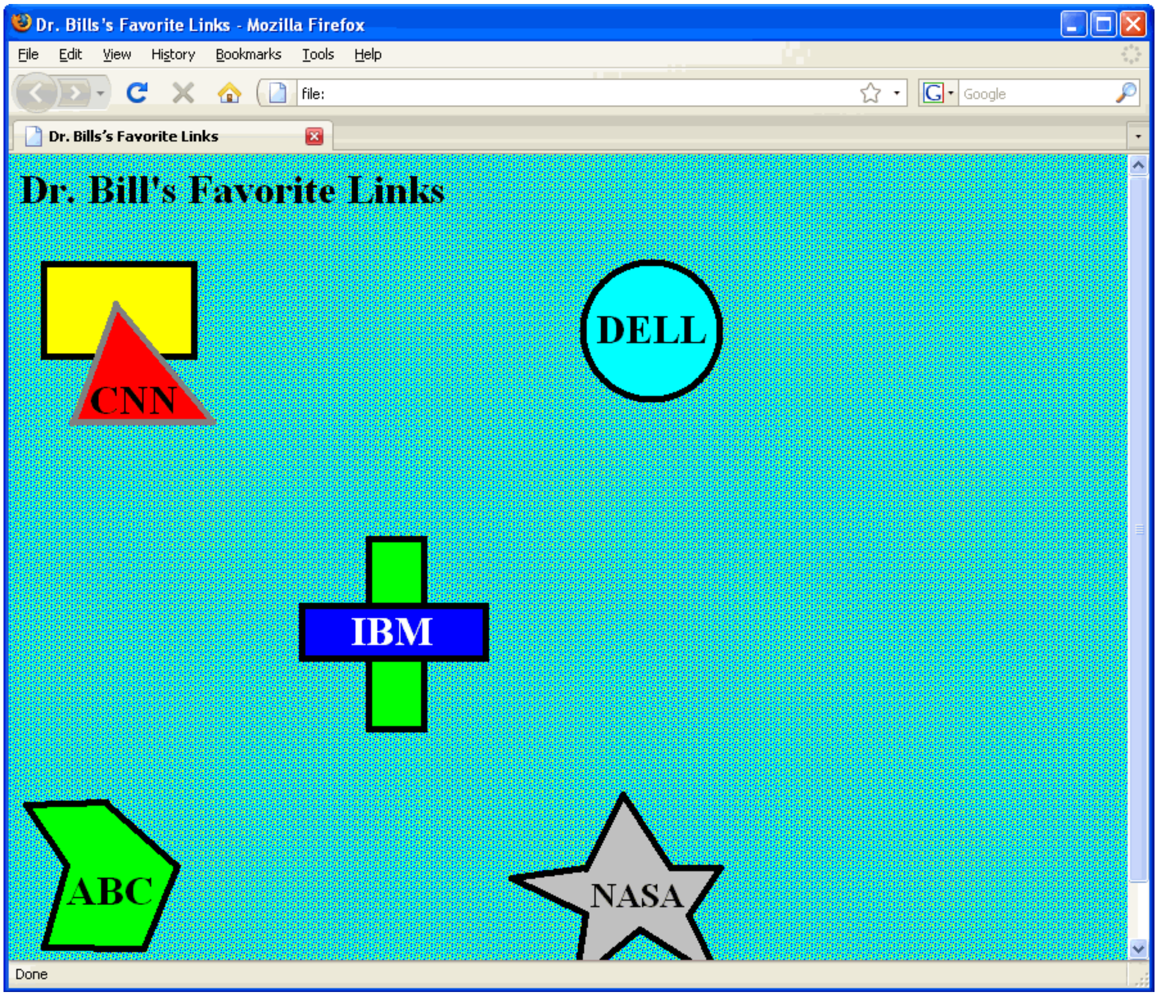
In Notepad or in your favorite text editor, create the following Web page framework, replacing the blanks with ***your first name***, and then save it as **`MyLinks.html`** in the same folder as `MyLinks.gif` and `MyPattern.gif` (the file name must be as specified here or you'll lose points – we will use that name to check the contents of the file for grading). This is an intermediate step. We will be making modifications to this file later, but for now you should be able to tell if everything done so far is correct.

```
<HTML>
    <HEAD>
        <TITLE>_______'s Favorite Links</TITLE>

        <STYLE TYPE="text/css">
            BODY {background-color:#0FF ;
                  background-image:url('MyPattern.gif');}
        </STYLE>
    </HEAD>

    <BODY>
        <H1>_______'s Favorite Links</H1>
        <IMG SRC="MyLinks.gif" BORDER="0">
    </BODY>
</HTML>
```

Load up your favorite browser and point it at the `MyLinks.html` file. The example files shown in this document will appear in the browser as seen below. Notice that the `MyPattern.gif` pattern file has been replicated across the width and height of the browser window, and that background pattern shows through the transparent color of the `MyLinks.gif` image.


Dr. Bills's Favorite Links - Mozilla Firefox
File Edit View History Bookmarks Tools Help
file:
Google
Dr. Bills's Favorite Links
Dr. Bill's Favorite Links
CNN
DELL
IBM
ABC
NASA
Done

Do not proceed until your basic page works correctly as shown here. At this point, none of the pictures in the `MyLinks.gif` image does anything (the link-regions are not yet active).

Building the Client Side Image Map

The images are now complete, and the basic page looks OK.

Modify the `MyLinks.html` file to turn the image into a client side image map called `MyMap`, where each of the five pictures in the `MyLinks.gif` image links to the appropriate Web site. The background of the `MyLinks.gif` image does nothing (i.e., there is no default link for the image map).

As a reminder, here is what the basic code for a client side image map looks like, one that uses just circles, rectangles, and polygons (no defaults). Note that the `SHAPE="CIRCLE"` has for its three coordinates the *x* and *y* offsets of the center of the circle and the radius of the circle. The `SHAPE="RECT"` has two <*x,y*> coordinates identifying opposing corners of the rectangle. The `SHAPE="POLY"` has coordinate pairs representing the *x* and *y* values of each point around the polygon, and the last pair must be a duplicate of the first pair. The `BORDER="0"` attribute prevents a blue link-border from appearing around the graphic.

```
<IMG SRC="MyLinks.gif" USEMAP="#MyMap" BORDER="0">

<MAP NAME="MyMap">
    <AREA SHAPE="CIRCLE" COORDS="x,y,r" HREF="http://…">

    <AREA SHAPE="RECT" COORDS="x1,y1,x2,y2" HREF="http://…">

    <AREA SHAPE="POLY" COORDS="x1,y1,x2,y2,…,xn,yn,x1,y1"
          HREF="http://…">
</MAP>
```

Your goal in creating the image map is to ***exactly capture*** the shape of each link-region in the `MyLinks.gif` image. That means that for each of the five pictures you are to capture just the outline of the link-regions, without allowing any of the background pattern to be used as part of the link. (Hint: you can use Windows Paint to find the <*x,y*> coordinates of any point in the image, or if you used Bézier Madness you can load up the original `.bez` file in that program and use it to examine the coordinates of each object.)

If any one of the five pictures in `MyLinks.gif` contains more than one distinct polygon, or contains one or more circles in addition to one or more polygons, you are allowed to use multiple `<AREA` ...> tags to describe the complex link-regions in those pictures.

When your `MyLinks.html` page is complete, test it in the browser on your computer. As you float the mouse over the `MyLinks.gif` image, there should be no active link in any portion of the page except in the link-regions of the five pictures, and clicking in any link-region should jump to the appropriate Web site. No portion of the background pattern should link to anything.

Installing the Page

When your `MyLinks.html` page is complete, and all the pictures sections link to the appropriate sites, use WinSCP or Fugu to copy the three files `MyLinks.html`, `MyLinks.gif`, and `MyPattern.gif` (or `MyPattern.png`, as appropriate) into the `public_html/cmpsci120` folder of the `elsrv3` server. Remember to ftp the Web page in Text/ASCII mode, and the two image files in binary mode.

Set the permissions to **rw-r--r--** on all three files. When everything is complete, the URL **http://elsrv3.cs.umass.edu/~____/cmpsci120/MyLinks.html** should be visible and testable on the Web (with your username in the slot).

Additional Extra Credit - FavIcon

Build a "FavIcon" for your page. If you use my PC software, download the **.zip** archive listed earlier and unpack it into a new folder. The archive contains 12 related programs, each one for a different size and color depth of icon. The one you will need for this task is called **EditIcon16x16 (4 Bit).exe**, which is the correct configuration for "favorite" icons.

Run the program and create an icon which is unique to you. No credit for random blobs of color or for solid colored squares. Do *something* interesting! Save the file with the name **favicon.ico** into your folder with the other files for this assignment. If you use a Mac, look on the Web for a tool that will do the same job.

Using WinSCP or Fugu, copy the **favicon.ico** file in binary mode into the main **public_html** folder of your UNIX account, but do *not* put it into the public_html/cmpsci120 folder. Set its permissions to **rw-r--r--** as usual.

Add the following lines in the **<HEAD>**...**</HEAD>** section of MyLinks.html, right after the **<TITLE>**...**</TITLE>** tags, and put your username in the blank:

```
<LINK REL="shortcut icon" HREF="http://elsrv3.cs.umass.edu/~_____/favicon.ico" />
<LINK REL="apple-touch-icon" HREF="http://elsrv3.cs.umass.edu/~_____/favicon.ico" />
```

Note that a lot of browsers do not automatically refresh the favicon when you reload the page. If you do not see the icon in the appropriate place, clear the cache in your browser, exit and restart the browser, and then reload your page.

What To Turn In

When your page is correct and visible on the Web, send an email to the **literacy@cs.umass.edu** account. The subject line must be set to the exact phrase **CMPSCI 120 EXTRA CREDIT ASSIGNMENT #1**, and the body of the message must contain your name, your username, and your fully specified URL. If you also do the favicon portion, use the exact phrase **CMPSCI 120 EXTRA EXTRA CREDIT ASSIGNMENT #1** for the subject line instead.

We will be grading the assignment based on whether or not it works, and on how closely you follow the directions. You will lose points for any or all of the following infractions: if any of the files have the wrong name, if the background pattern does not show up, if the background of the main image does not show up or is not transparent, if clicking outside of the five link-regions (i.e., on any portion of the background pattern) jumps to any site, or if either of the images are the wrong sizes.