

The Power of Pictures: Using Image Files with ODS, SAS[®], and SAS/GRAPH[®]

No. 1 Web Usability Concern: Download Wait Time

- Image files increase download time
- Limit image use if only for decoration

Image File Formats for the Web

- .GIF
 - .JPG (aka JPEG)
 - others infrequently used
- .PNG – best for hardcopy via MS Word
- but to get benefit,
- use xpixels & ypixels GE 300 dpi

When to Use GIF

- mainly areas and/or segments of solid color
- graphs, simple icons



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The Power To Show

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“Limitation” on GIF

- Maximum of 256 colors
- Usually not a real problem—
 - only 216 browser-safe / web-safe colors
 - SAS/GRAPH max. 255 colors per graph

Advantages of GIF

- smaller filesize—*faster download!!!*
- supports transparency*
- can do animated images

*permits background to show through

When to Use JPG

- full-color (“continuous tone”) images
e.g., photos



Disadvantages of JPG

- “lossy” compression—
but may be OK
- However, if you edit image,
and save result,
it’s compressed further,
with more loss of image quality

Worst Disadvantage of JPG

- Despite compression, filesize larger than GIF—**slower download**
- But a trick can reduce apparent wait

Image File Sources on the Web*

- Stock Photos (free, or for-fee)
- Clip Art (free, or for-fee)

*my favorite search engine: [google.com](https://www.google.com)

The Whole Web Is an Image File Source

- Use right mouse button
to save files off any web page
- Be sure it's OK to reuse

```
goptions reset=all;
goptions device=gif; /* Make a simple GIF */

goptions gsfname=anyname gsfmode=replace;
filename anyname
        "&IMGPATH.\ImageAtTopOfBody.gif";

goptions border cback=CX99FFFF;
goptions ftext=CENTX htext=30 PCT;
goptions xpixels=100 ypixels=50; /* size */

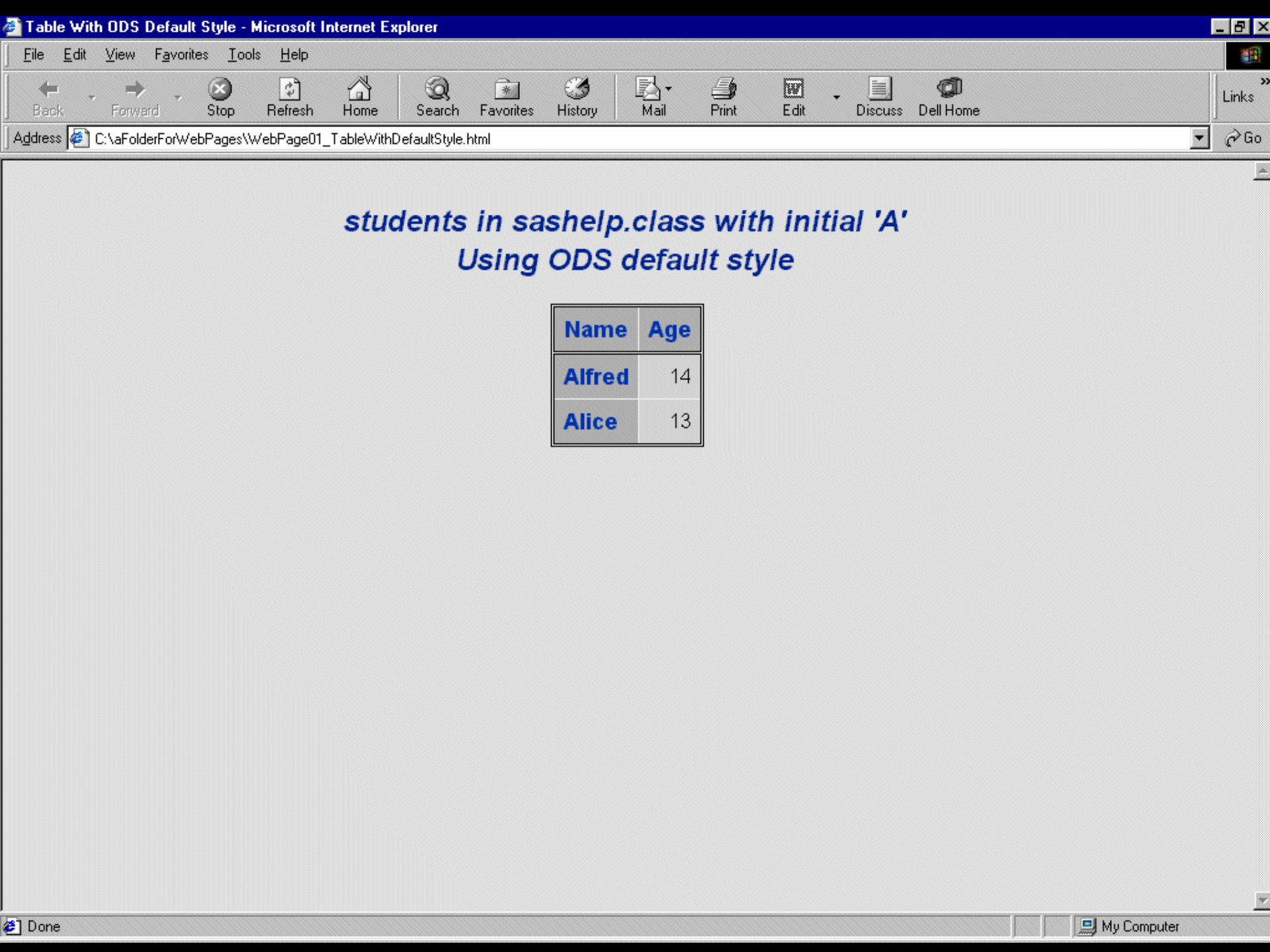
proc gslide;
title j=C move=(+0 PCT,-5 PCT)
        'Top of' j=C 'Body';
run; quit;
```

Simple Sample GIF for Tutorial



Top of
Body

```
        /* Make an invisible filler GIF */  
options reset=all;  
options device=gif;  
  
options gsfname=anyname gsfmode=replace;  
filename anyname  
        "&IMGPATH.\Space100X50.gif";  
  
options transparent; /* where no graphic  
        or text elements, let the background  
                                show through */  
options noborder;  
options xpixels=100 ypixels=50;  
proc gslide;  
title; /* make an empty "slide" */  
run; quit;
```



students in sashelp.class with initial 'A'
Using ODS default style

Name	Age
Alfred	14
Alice	13

```
%let PATH = c:\aFolderForWebPages;

ods listing close;
ods noresults;

ods html path = "&PATH" (url=none)
          body = "WebPage01.html";
    /* No style = ... gives same result as
       style = Styles.Default */

proc print data= . . . ;
id name; var age; run;

ods html close;
ods listing;
```

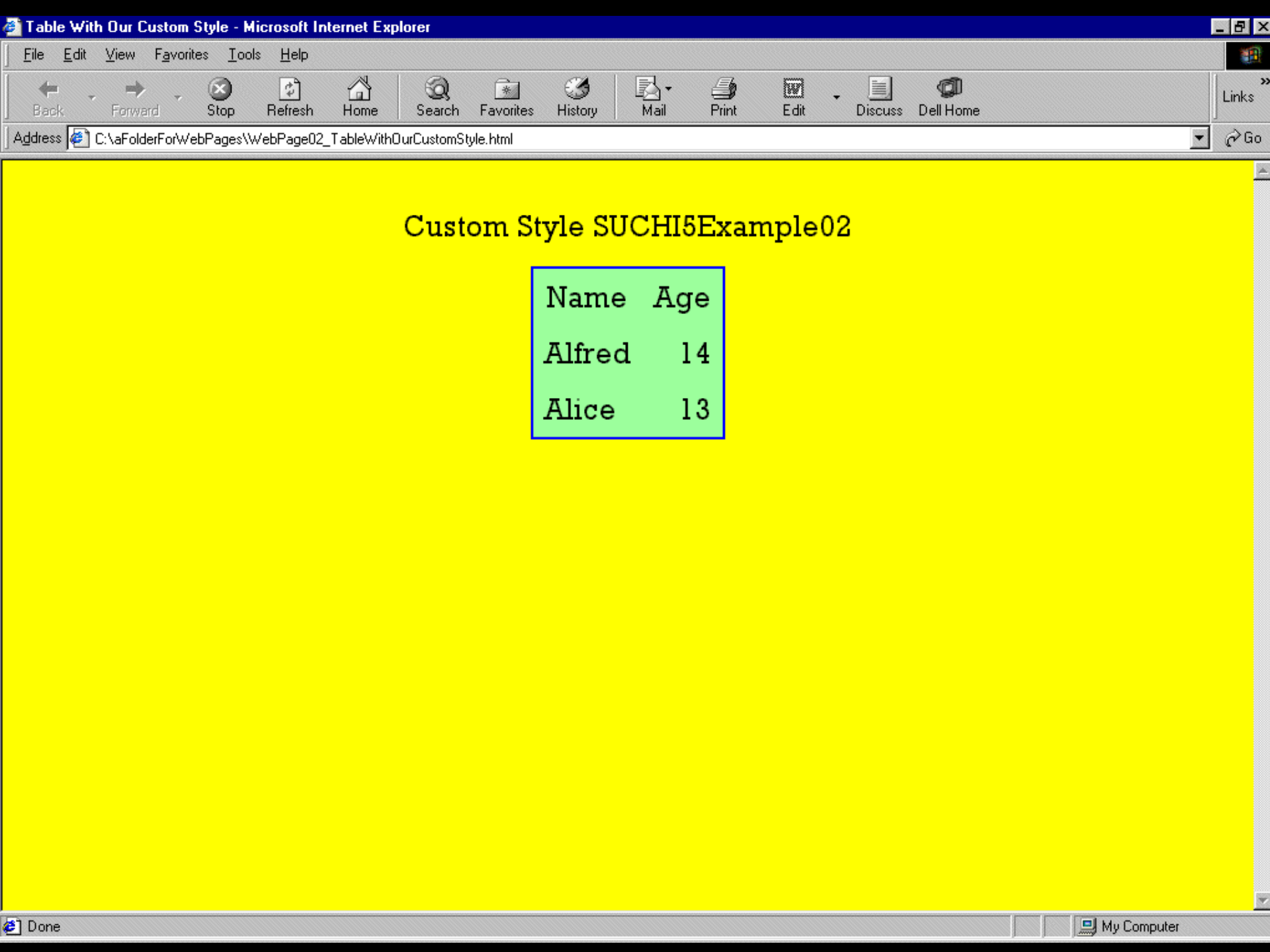
Base Style for Tutorial

Styles.SUCHI5Example02

- Developed for SAS Users Chicago Int'l. Conf.
- Code not in paper
- Other Base on which to apply images:
 - Styles.Default or Styles.YourStyle
 - appearance of result will differ

Create Other Custom Base Styles

- see VIEWS 2003 paper:
“Web Communication Effectiveness”
- %CustomBaseStyleBuild macro
 - flexible, powerful
 - comments explain how ODS works



Custom Style SUCHI5Example02

Name	Age
Alfred	14
Alice	13

```
ods html path = "&PATH" (url=none)
          body = "WebPage02.html"
          style=styles.SUCHI5Example02;
options reset=all;

proc print data= . . . ;
id name; var age; run;

ods html close;
```

ODS Image Options for Table in Web Page

- Behind titles, table, and footnotes
- Before titles
- In titles area
- After titles, but before table
- In table area
- After table, but before footnotes
- In footnotes area
- After footnotes

ODS Style Elements Involved

- style body / ...
- style systemtitles / ...
- style table / ...
- style systemfooters / ...

ODS Image Placement Options

- point to image file:
 - style ... / backgroundimage=
 - style ... / preimage=
 - style ... / postimage=
- if need html (and image file):
 - style ... / prehtml=
 - style ... / posthtml=

Extras via Pre/Post HTML Option

- alignment (left, center, right)
- insert space (hspace, vspace)
- control size (height, width)
- turn image border off
- supply alt text

All these controls in html IMG tag

Design of next slide
is NOT recommended


```
proc template;  
edit Styles.SUCHI5Example02  
    as Styles.SUCHI5Example04;  
  
style body / backgroundimage =  
    "&IMGPATH.\VerySmallImage.gif";  
  
style SysTitleAndFooterContainer /  
    outputwidth = 65%;  
/* if outputwidth omitted,  
   yellow swath across full page */  
  
end;  
run;
```

Background Sized to Full Web Page

SUCHI 2002



“Watermark” Background

- Image locked in position
while viewer scrolls web page
- For logos, or any info
to be continuously in view

"Watermark" Background Remains Stationary During Scrolling Custom Style SUCHI5Example07

SUCHI 2002

Name	Age
Alfred	14
Alice	13
Barbara	13
Carol	14
Henry	14
James	12
Jane	12
Janet	15
Jeffrey	13
John	12

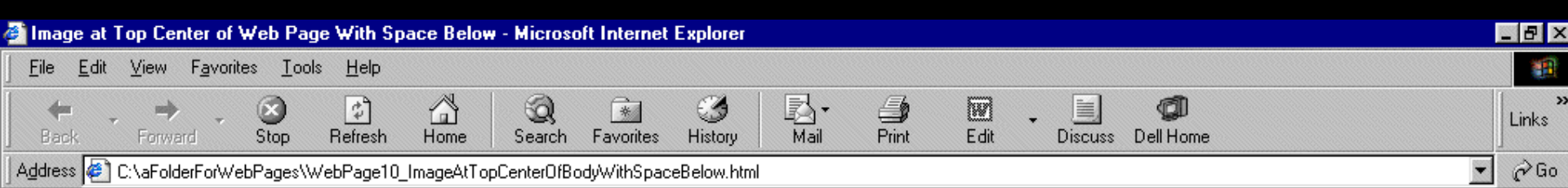




```
proc template;
edit Styles.SUCHI5Example02
  as Styles.SUCHI5Example07;
style body / backgroundimage =
  "&IMGPATH.\SimpleFullPageImage.gif"
  watermark = ON; /* "locks" the image */
style SysTitleAndFooterContainer /
  background = _undef_;
style systemtitle / background = _undef_;
style systemfooter / background = _undef_;

/* background=_undef_ required
in all 3 places to let image show through
titles and footnotes */
end; run;

/* table does NOT let image show through */
```



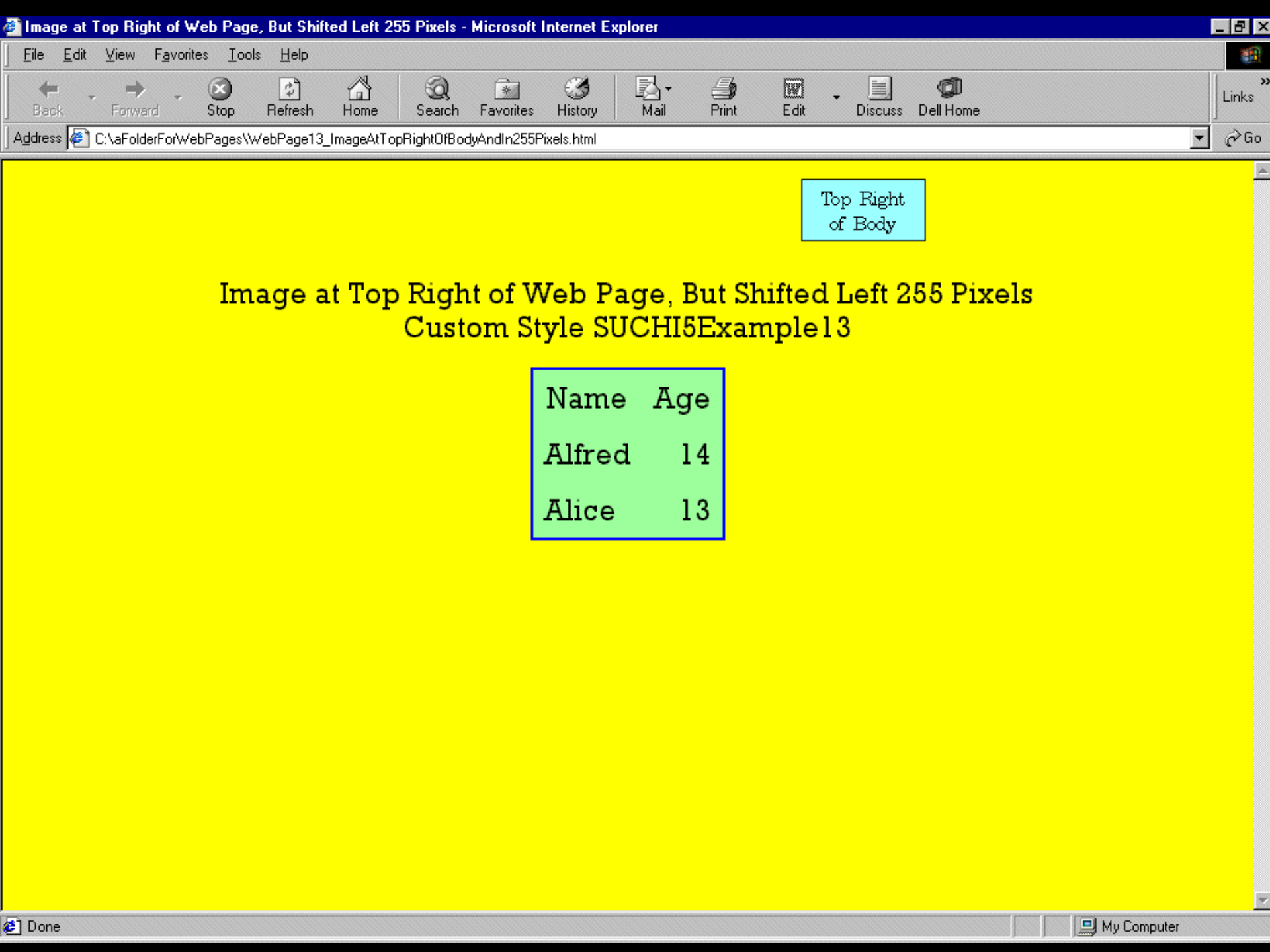
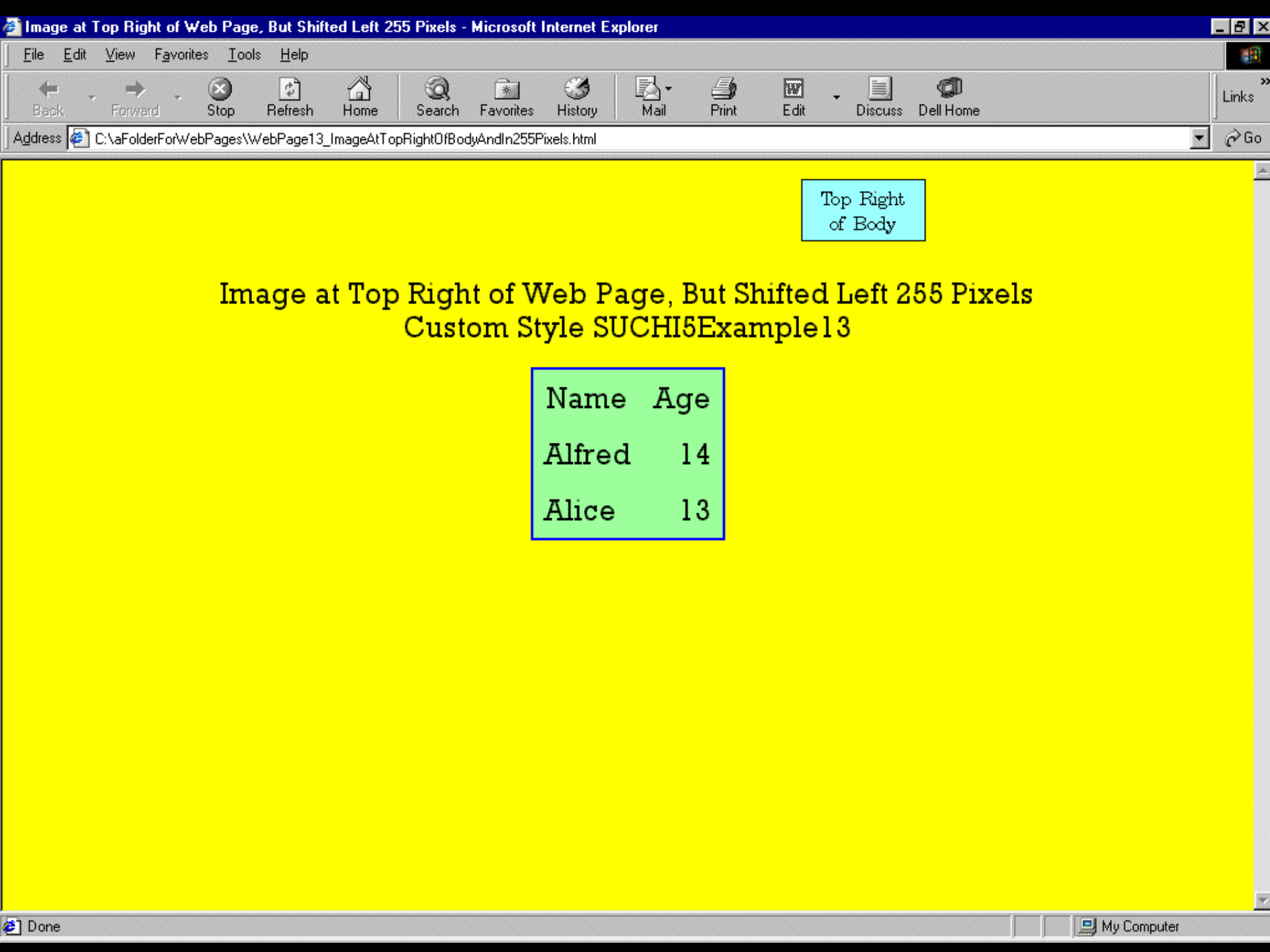
Top of
Body

Image at Top Center of Web Page, With Space Below
Custom Style SUCHI5Example10

Name	Age
Alfred	14
Alice	13

a blank TITLE1 is inserted for space

```
proc template;  
edit Styles.SUCHI5Example02  
  as Styles.SUCHI5Example10;  
style body /  
  preimage =  
"&IMGPATH.\ImageAtTopOfBody.gif"  
  prehtml = "<center>"; /* center the image  
                        default is upper left corner */  
end; run;  
ods html path = "&PATH" (url=none)  
        body = "WebPage10.html"  
        style=styles.SUCHI5Example10;  
title1 ' '; /* blank title as spacer */  
title2 "Real Title";  
  /* proc print here */  
ods html close;
```

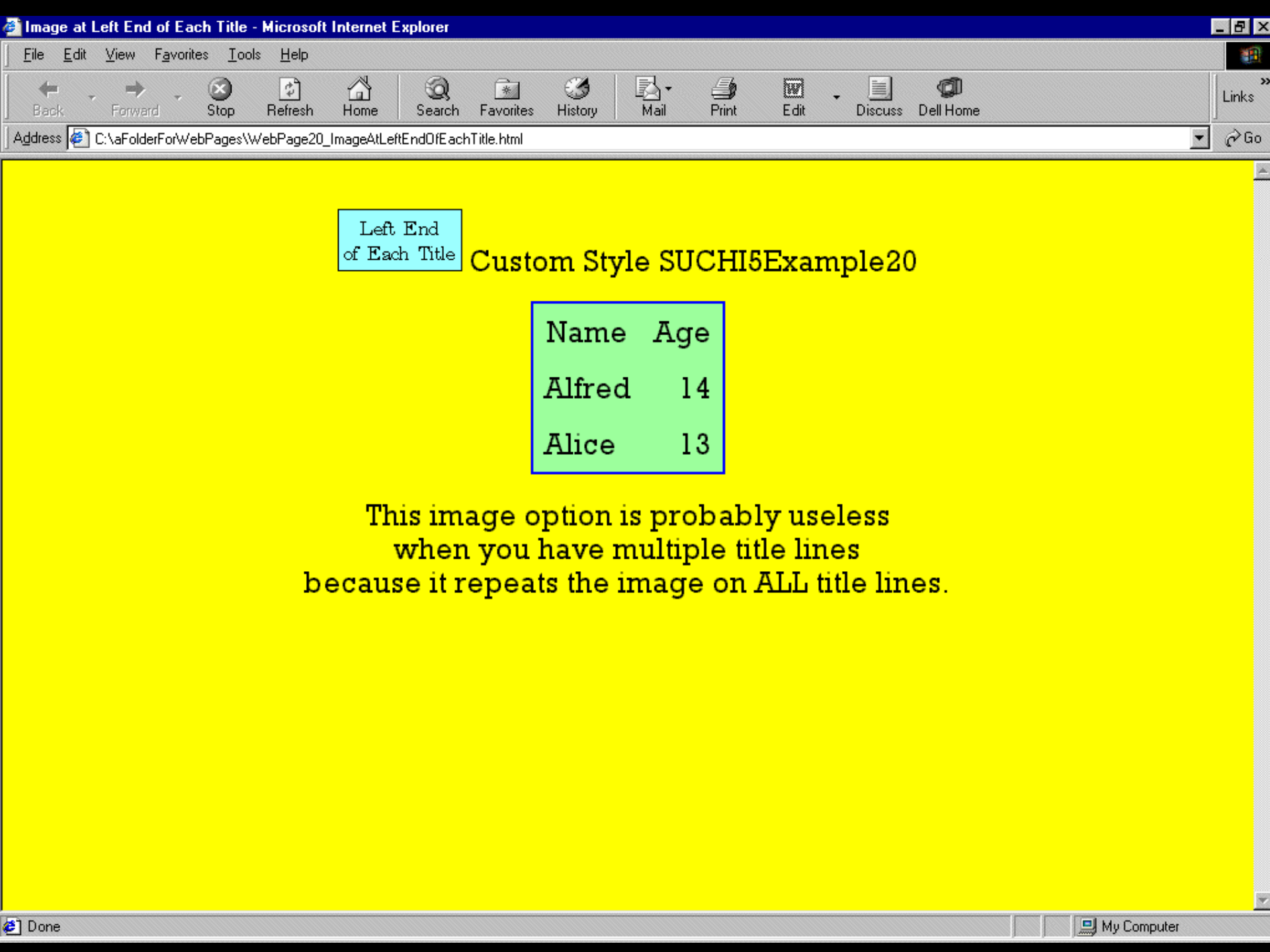
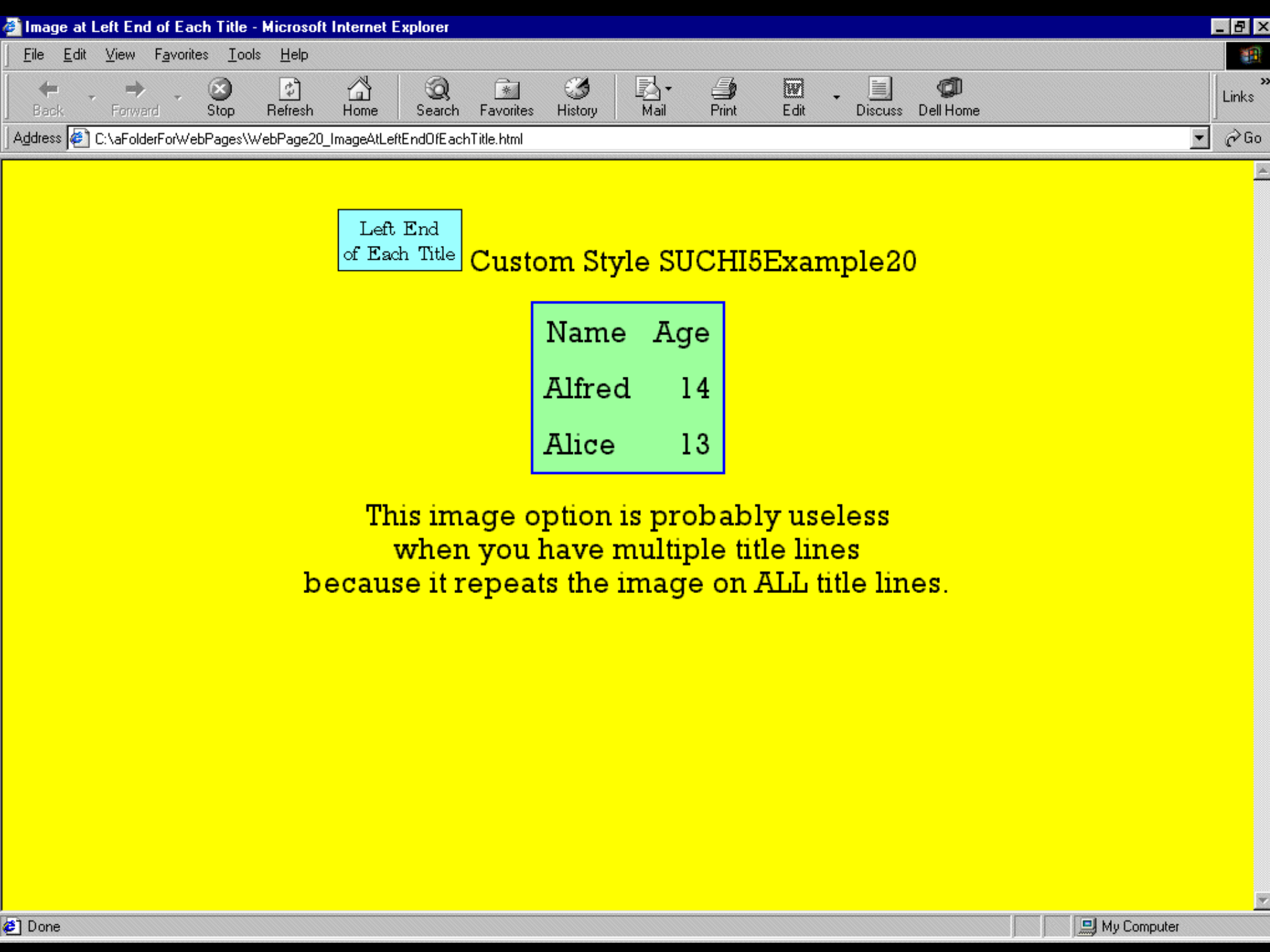


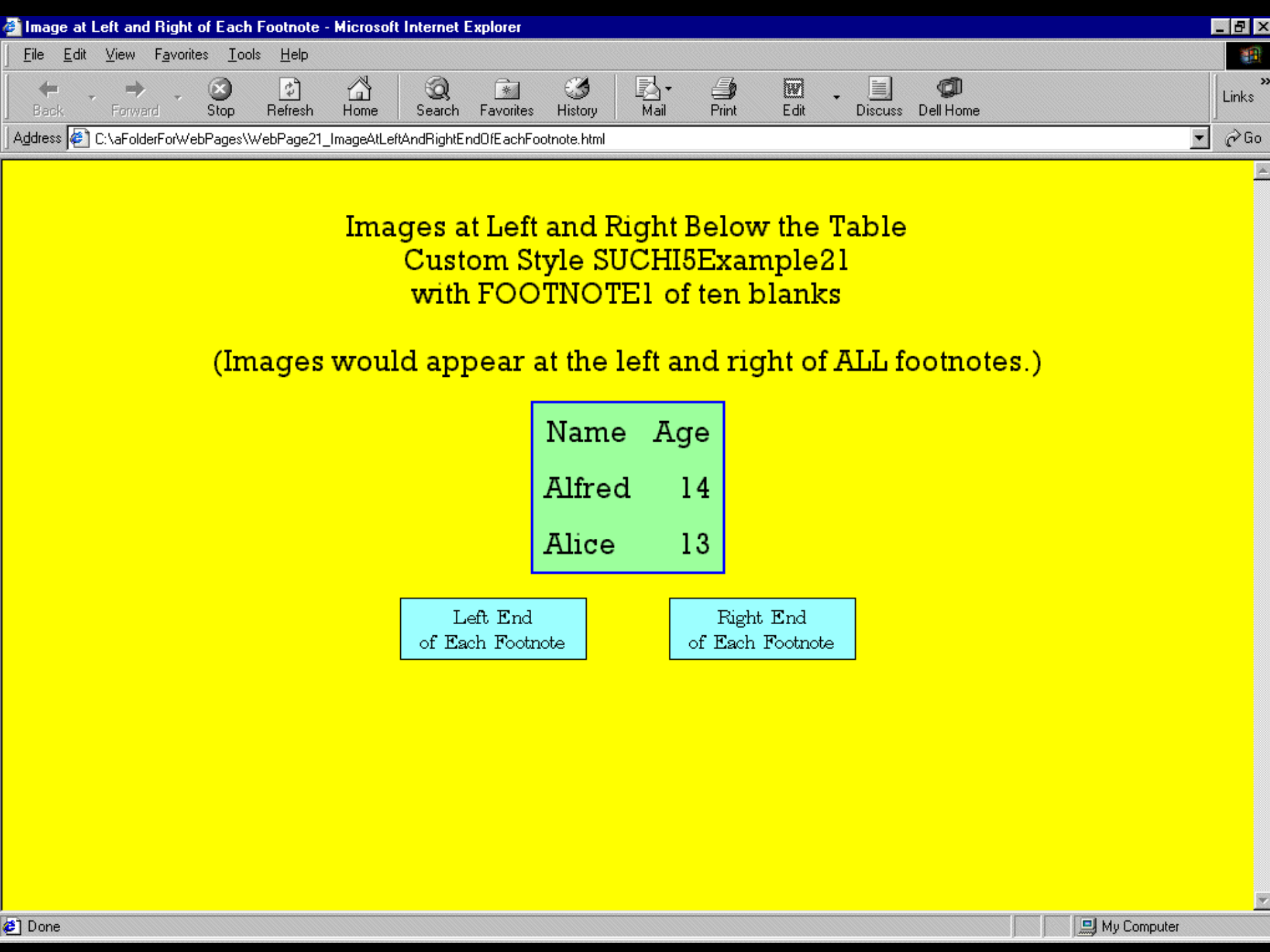
```

proc template;
edit Styles.SUCHI5Example02
  as Styles.SUCHI5Example13;
style body / prehtml =
"<IMG src =
&IMGPATH.\ImageAtTopRightOfBody.gif'
      align='right' /* at right margin */
      hspace=255    /* but insert space */
>";
end; run;

ods html . . . style=styles.SUCHI5Example13;
title1 h = 1 cm ' ' ; /* to force title below
...                      the image */
ods html close;

```





Images at Left and Right Below the Table
Custom Style SUCHI5Example21
with FOOTNOTE1 of ten blanks

(Images would appear at the left and right of ALL footnotes.)

Name	Age
Alfred	14
Alice	13

Left End
of Each Footnote

Right End
of Each Footnote

```
proc template;  
edit Styles.SUCHI5Example02  
  as Styles.SUCHI5Example21;  
style systemfooter /  
  preimage =  
"&IMGPATH.\ImageAtLeftEndOfEachFootnote.gif"  
  postimage =  
"&IMGPATH.\ImageAtRightEndOfEachFootnote.gif";  
end; run;  
  
ods html . . . style=styles.SUCHI5Example21;  
footnote6 '          '  
proc print . . . ; run;  
ods html close;
```

**UGLY complication: if multiple footnotes,
every footnote would get the images**

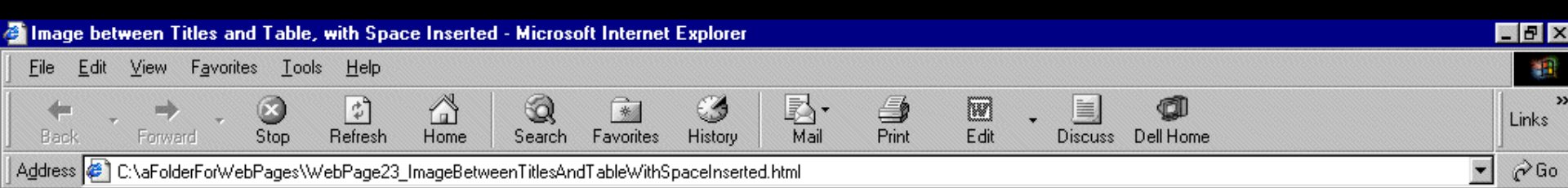


Image between Titles and Table, with Space Inserted using Custom Style SUCHI5Example23

After Titles
Above Table

Name	Age
Alfred	14
Alice	13

The space insertion method used also forces
extra space between the titles and image,
which may be unacceptable.

```
proc template;  
  
edit Styles.SUCHI5Example02  
    as Styles.SUCHI5Example23;  
  
style table /  
    prehtml = "<IMG  
        src='&IMGPATH.\ImageBetweenTitlesAndTable.gif'  
        align='bottom'  
        vspace=20 /* space between bottom of image  
                    and top of table */  
    >" ;  
  
end; run;
```

An Excess of Image Possibilities Inside the Table, for Demo Only Custom Style SUCHI5Example26

Before Cell Content	Behind Name	After Cell Content	Before Cell Content	Behind Age	After Cell Content
Before Cell Content	Behind Alfred	After Cell Content	Before Cell Content	Behind 14	After Cell Content
Before Cell Content	Behind Alice	After Cell Content	Before Cell Content	Behind 13	After Cell Content
Before Cell Content	Behind E	After Cell Content	Before Cell Content	Behind 27	After Cell Content

"Before Images" for character variables are all aligned,
but "After Images" are staggered, by length of label & data.
"After Images" for numeric variables are all aligned,
but "Before Images" are staggered, by length of label & data.
Also, notice what happens to the empty cell to left of the Sum.

Images in Tables Require Extra Work

- Adjust alignments, cell heights & widths
- Undo unwanted “propagation”
of images where unwanted

Here, show only data-dependent images

Also use method for icons as indicators

Style Control for Tables If Using PROC PRINT

- PROC TEMPLATE has no control for
 - specific variable
 - specific value
 - specific heading
 - totals row
- Use STYLE= in PROC PRINT

Data-Dependent Images After Data Values
Custom Style SUCHI5Example02
with added style specifications in PROC PRINT

Name	Age	
Alfred	14	All Other Ages
Alice	13	New TeenAger
	27	

Image selection for data values uses a custom SAS format.

```
/* customize Base style in PROC step,  
   not with PROC TEMPLATE */
```

```
ods html . . . style=styles.SUCHI5Example02;  
proc print . . .  
    style(total)    = . . . ;  
id name /  
    style(header)   = . . .  
    style(data)     = . . . ;  
var age /  
    style(header)   = . . .  
    style(data)     = . . . ;  
run;  
ods html close;
```

```
proc format;  
value ageimg  
    13 =  
        "<IMG src = '&IMGPATH.\NewTeenAger.gif'  
        hspace=15 >"  
  
    other =  
        "<IMG src = '&IMGPATH.\AllOtherAges.gif'  
        hspace=15 >" ;  
  
run;
```

```
/* Right Align "Age" heading with data */  
  
var age /  
  
    style(header) =  
        [just=right  
        posthtml =  
            "<IMG src = '&IMGPATH.\Space50BY50.gif'  
            hspace=15 >"]  
  
    style(data) =  
        [just=right posthtml=ageimg.];  
    /* format supplies the html dynamically */
```

Space50BY50 is transparent empty GIF
with same size as the data cell image

hspace inserts same offset as for data image

```
/* Right Align Total Age with its data */
```

```
proc print . . .  
  style(total) =  
    [just=right  
     posthtml =  
       "<IMG src='&IMGPATH.\Space50BY50.gif'  
        hspace=15 >"] ;
```

Space50BY50 is transparent empty GIF
with same size as the data cell image

hspace inserts same offset as for data image

/* Left Align "Name" heading with its data */

```
id name /  
  style(header) =  
    [just=left  
      postimage = _undef_  
      posthtml   =  
        "<IMG src='&IMGPATH.\Space8BY50.gif'>"]  
  style(data) =  
    [just=left  
      postimage = _undef_  
      posthtml   =  
        "<IMG src='&IMGPATH.\Space8BY50.gif'>"] ;
```

**Space8BY50 is transparent empty GIF
with same height as images for Age column**

To see need for postimage=_undef_, remove it

Accessibility for Impaired & All Users

ALT= 'flyover description

available even when

image turned off / not fully loaded'

ALT text can be translated to voice

Rest Your Mouse on the Image To See ALT Text Custom Style SUCHI5Example35

Name	Age
Alfred	14
Alice	13

You can provide ALT text for ANY images on the web page.
Software for vision-impaired users converts the text to audio.
Unsolved Problem: How can ALT text be made larger?

Bottom Center
of Body

This is any description of the image, concise or expansive.

```
proc template;  
edit Styles.SUCHI5Example02  
  as Styles.SUCHI5Example35;  
  
style body /  
  prehtml = "<center>"  
  posthtml =  
    "<IMG  
      src = '&IMGPATH.\ImageFileZ.gif'  
      alt =  
      'This is any description of the image'>";  
  
end; run;
```

Clickable Image in Pseudo-Table Custom Style SUCHI5Example37



Click for a full-size picture. The Leaning Tower of Pisa, Tuscany, Italy. Free from FreeFoto.com, but charge for commercial use.

The Leaning Tower of Pisa, Tuscany, Italy
Click to see the full-size picture.

ALT text repeats the above footnotes, and cites the image source.



The Leaning Tower of Pisa, Tuscany, Italy. Free from FreeFoto.com, but charge for commercial use.

Thumbnail Linked to Full Picture

- Details in paper
- Email me if any question

Ways to Get Thumbnail Images

- Create shrunken derivative of original, or “cropped” (trimmed) & shrunken
- Tell Browser to shrink* original at time of display

*Can use extreme of this
to reduce apparent download wait time

Reduce Perceived Download Wait

IF other things for viewer to read/do,

AND

IF links to images not encountered/used

UNTIL later web pages and/or

UNTIL viewer at bottom of long Page 1

Trick relies on delay in viewer need

```
proc template;  
edit Styles.YourBaseStyleForFirstWebPage  
    as Styles.HiddenTinyImagesOnFirstWebPage;  
  
style body /  
prehtml =  
"height=1 width=1 /* 1 pixel each direction */  
border=0 > /* hide image border */  
  
/* tags for more image files here */  
  
<img src='&IMGPATH.BigImageN.gif'  
height=1 width=1 border=0 >";  
end; run;
```

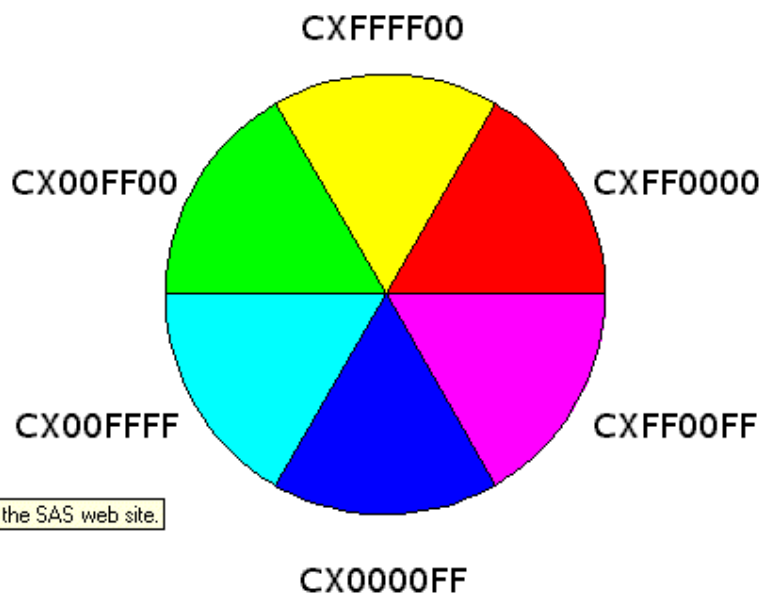
Images with Graphs

1. inside a graph,
code is in paper
2. outside a graph on web page,
insert graph PROC
inside ODS HTML code block
and use style= to get image
(same method as tabular PROCs)



Logo of SUGI 28. Here linked to the SAS web site.

Pie Chart of the Six Basic RGB Colors Browser-Safe Primaries and Secondaries



Click the SUGI logo for SAS info

The Power of Pictures and Paint - bessler@execpc.com

If you imbed
a JPG photo in a GIF graph,
result is horrible

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6 hours earlier than GMT)