

Using Hyperlink to Organize SAS HTML Output

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ABSTRACT

Internet and intranet have quickly become important vehicles for information delivery. The versatile HTML's hyperlink is one of the reasons behind widespread popularity of web technology. In this paper, authors explain different ways to take advantage of hyperlink to organize SAS outputs. Some techniques can also be applied to organize outputs generated with new Output Delivery System.

INTRODUCTION

The web, including internet and intranet, is a hypertext information system. The idea behind using hypertext is that instead of reading text in a rigid, linear structure, you can easily skip from one point to another, get more information, go back, jump to other topics, and navigate through the text based on what interests you are at the time.

Inherited from its mainframe roots, SAS output has been prepared for traditional fan-folder green paper. It typically uses fixed font and presented in monochrome. With web technology, SAS can reach a large audiences. Furthermore, we can use HTML's hyperlink to gain better accessibility and derivability.

The first example covered demonstrates simple usage of hyperlink to organize outputs generated from the same multidimensional data. In the second example, we explain how to establish a simple navigation mechanism for related SAS outputs.

HTML FORMAT AND HYPERLINK

HTML is an acronym stands for HyperText Markup Language. It is based on SGML (the Standard Generalized Markup Language), which is used to describe the common structure of various kinds of documents. A HTML file describes the structure of documents, for example, titles, paragraphs, or lists. With SAS Institute's web publish tools, we can translate a SAS output into a HTML document.

In HTML, hyperlink is a user-selectable hypertext or hypermedia jump point. When selected, it will "jump" to another text or multimedia object. A simple hypertext link can guide user from one HTML document to another document. Or simply "jump" to different section within the same document.

The HTML tags behind the glorious hyperlink is the pair: `<A>` and ``. The syntax is shown below. The 'file' is the URL of linked HTML document. If the link intend associate to another HTML file, no need for '#anchor'. If want to navigate through one section to another section (could be belong to different documents), 'anchor' should be specified.

define a hyperlink

```
<A HREF="file#anchor">"highlight text" </A>
```

declare a target section, (point to jump)

```
<A NAME ="anchor"> </A>
```

Hyperlink enable us to setup a navigation mechanism within a HTML formatted SAS document. You can also establish a hierarchy menu system to organize related outputs.

Currently you can translate a regular SAS output into a HTML file in many ways. The new SAS version 7 even make the conversion trivial with its Output Delivery Systems (ODS). To take advantage of hyperlink, you still need some creative thinking in organize SAS reports.

MUTLIDIMENSIONAL DATA

As an example we use a fictitious stock performance data. It consists of seven variables. STOCK, represent the stock ticket symbol; QUATER, is a time point variable; PRICE, represent stock price; EPS, BETA, PE are other performance variables. Each stock has its

performance data collect at six time points. Next table shows the sample data for one stock 'MRK'.

STOCK	QUARTER	PRICE	EPS	BETA	PE
MRK	97Q2	98.2	1.50	1.1	34.2
MRK	97Q1	88.5	1.09	1.1	33.6
MRK	96Q4	72.5	0.98	1.0	33.4
MRK	96Q3	75	1.02	1.1	31.2
MRK	96Q2	83	1.33	1.0	29.7
MRK	96Q1	79	1.16	1.2	38.2
PFE
....					

Getting answers to business questions from such multidimensional data often requires viewing that data from various perspectives. Here are three tables created from different perspectives.

- Table of most recent stock performance comparison among stocks It actually is a front slice of the cubic (see figure 1). This table is a main table.
- Trend for one individual stock table. It can be represented by a piece of horizontal plate cut through one individual stock symbol.
- Trend comparison among all stock for each performance variable (such as PRICE, PE). The data list contains all the slices cut parallel to QUARTER axis

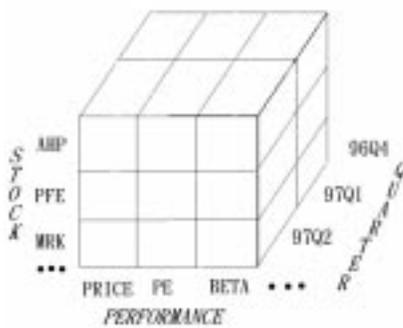


Figure 1 Data Cubic for the Example

Generating SAS outputs from those perspectives are trivial. The typical way in producing output yields one fundamental shortfall. There is no effective mechanism to reflect the hierarchy relationship existed among tables..

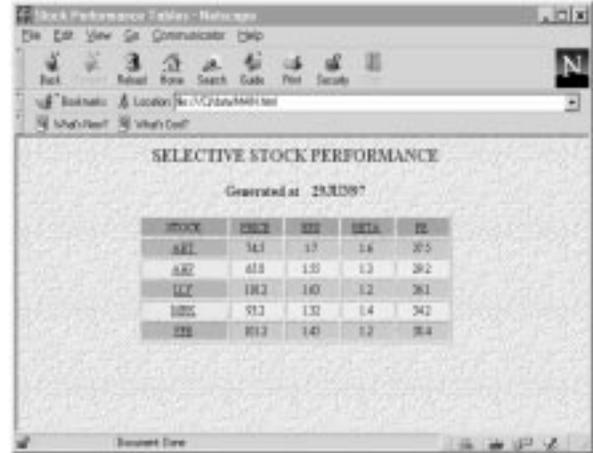


Figure 2 Main Table

Figure 2 is the HTML generated main table. The first column lists all stock symbols. Each stock symbol has its own hyperlink. For example, stock 'MRK' links to a HTML table named 'mrk.html'. To achieve this a translation is used.

```
MRK → <A HREF="mrk.html">MRK</A>
```

The 'mrk.html' is the one of tables presenting the trend for stock MRK.

The first row of the main table is for performance variables. They link to other tables. The hyperlinks for these variables are different from previous stock links. The translation is shown next:

```
PRICE→<A  
HREF="perform.html#price">PRICE</A>
```

It connects the section associated with individual performance variable. When 'PRICE' is clicked, the section of 'Performance Variable: PRICE' in the table (Figure 3) will be displayed.

Tables shown in Figure 3 are trend comparison for each performance variable. We should place the anchor in each performance variable section. It is accomplished within a title statement. While viewing the main table, users can quickly jump to this table to further study the trend within one performance variable.

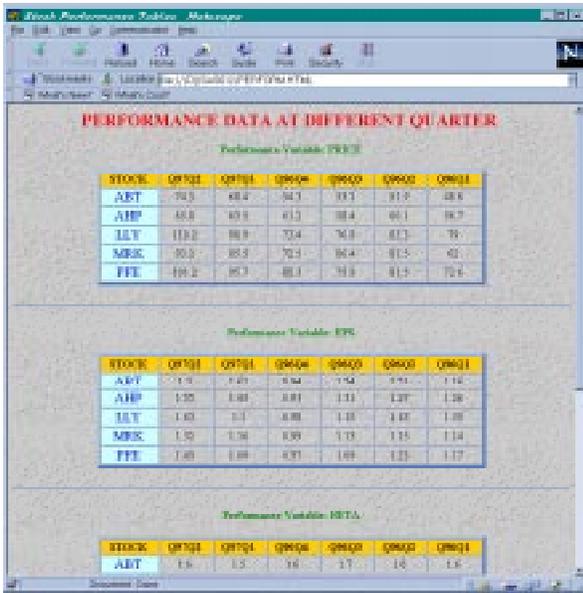


Figure 3 Trend Comparison for Individual Performance Variable

The SAS code for Figure 3 is shown next. The anchors are accomplished here with TITLE2.

```

%MACRO ADDTAB (PERFORM) ;
PROC TRANSPOSE DATA=ONE OUT=OUT1 PREFIX=Q;
  VAR &PERFORM;
  ID QUARTER;
  BY STOCK;
RUN;

TITLE1 "<CENTER><H4><FONT COLOR= GREEN> Performance
Variable:<A name=&PERFORM></A>";
TITLE2 "&PERFORM</FONT></H4></CENTER>";

%DS2HTM(DATA=OUT1,
  VAR= Q97Q2 Q97Q1 Q96Q4 Q96Q3 Q96Q2 Q96Q1,
  OPENMODE=APPEND,
  ID = STOCK,
  IBGCOLOR= #BBEEEE,
  SCOLOR= BLUE,
  HTMLFILE=PERFORM.HTML,
  clbgcolor=#ffcc00,
  TWIDTH=70,
  TTAG=NO FORMATTING);
%MEND ADDTAB;

FILENAME ADD 'D:\SAS612\PERFORM.html';
DATA _NULL_;
  FILE ADD NOTITLE;
  PUT '<HTML><TITLE>Stock Performance Tables </TITLE>'
  / '<BODY BGCOLOR="#FFFFFF" BACKGROUND
=BKMUSIC1.GIF >'
  / '<CENTER><H2><FONT COLOR=RED> PERFORMANCE DATA
AT DIFFERENT QUARTER </FONT></H2></CENTER>' ;
RUN;

```

```

%ADDTAB (DPTCE) ;
%ADDTAB (EPS) ;
%ADDTAB (BETA) ;
%ADDTAB (PE) ;

```

Although, the sample data has only three dimensions. The same method can be applied to the cases with more dimensions. We can build links in additional tables. It is an effective way to slice and dice the vast information.

ORGANIZE RELATED OUTPUTS

When working on a project, it helps a lot to get familiar with your data first. Together with meta data generated with PROC CONTENTS, print out some sample observations and retrieve facts about data formatting are essential.

Obviously, CONTENTS, PRINT and FORMAT could be generated with different procedures. The typical printouts provide the information in a flat fashion. When facing multiple datasets, the needs for a simple navigation mechanism are more demanding.

To present the information better, output from PROC CONTENTS, which provides most of meta data, serves as main page. Ordered by dataset, each section is belong to one dataset. This main page is organized by hyperlinks on the top which allow you to access different sections. Within each section, hyperlinks are included to connect to the associate output for PRINT and FORMAT. The following figure is the main page.

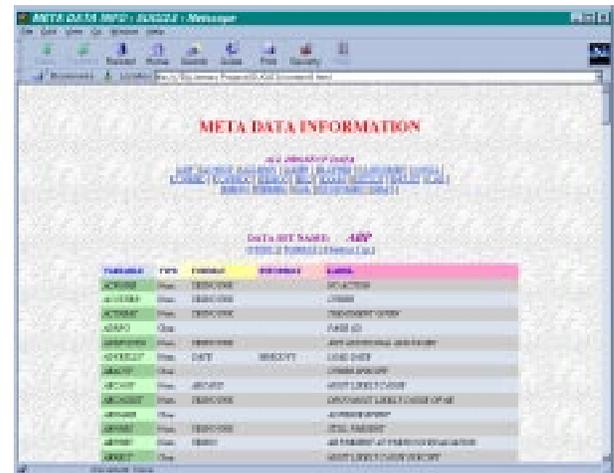


Figure 4 Meta Data Information Page

CONCLUSION

This paper briefly covers some techniques to enhance SAS HTML formatted outputs. As we have seen, a great deal can be accomplished in organizing SAS outputs with hyperlink. By utilizing resources already available in SAS, such as HTML format tools and ODS, we are able to translate previously disparate outputs into a simple information system.

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REFERENCES

Tom Savola and Mark Brown, *Using Html: Special Edition*, Que Corp., 1996

SAS Institute Staffs, *Web Tools Developed by SAS Institute*, <http://www.sas.com/rnd/web/intro.html>, SAS Institute, 1997

James Sun, Connie Li, *Using HTML Format to Add Depth of Information Presented by SAS Output*, The Ninth Northeast SAS User Group Annual Conference, Boston, 1996

SAS Institute Staffs, *The Version 7 Output Delivery System*, The Ninth Northeast SAS User Group Annual Conference, Boston, 1996