A SAS® Output Delivery System Menu for All Appetites and Applications

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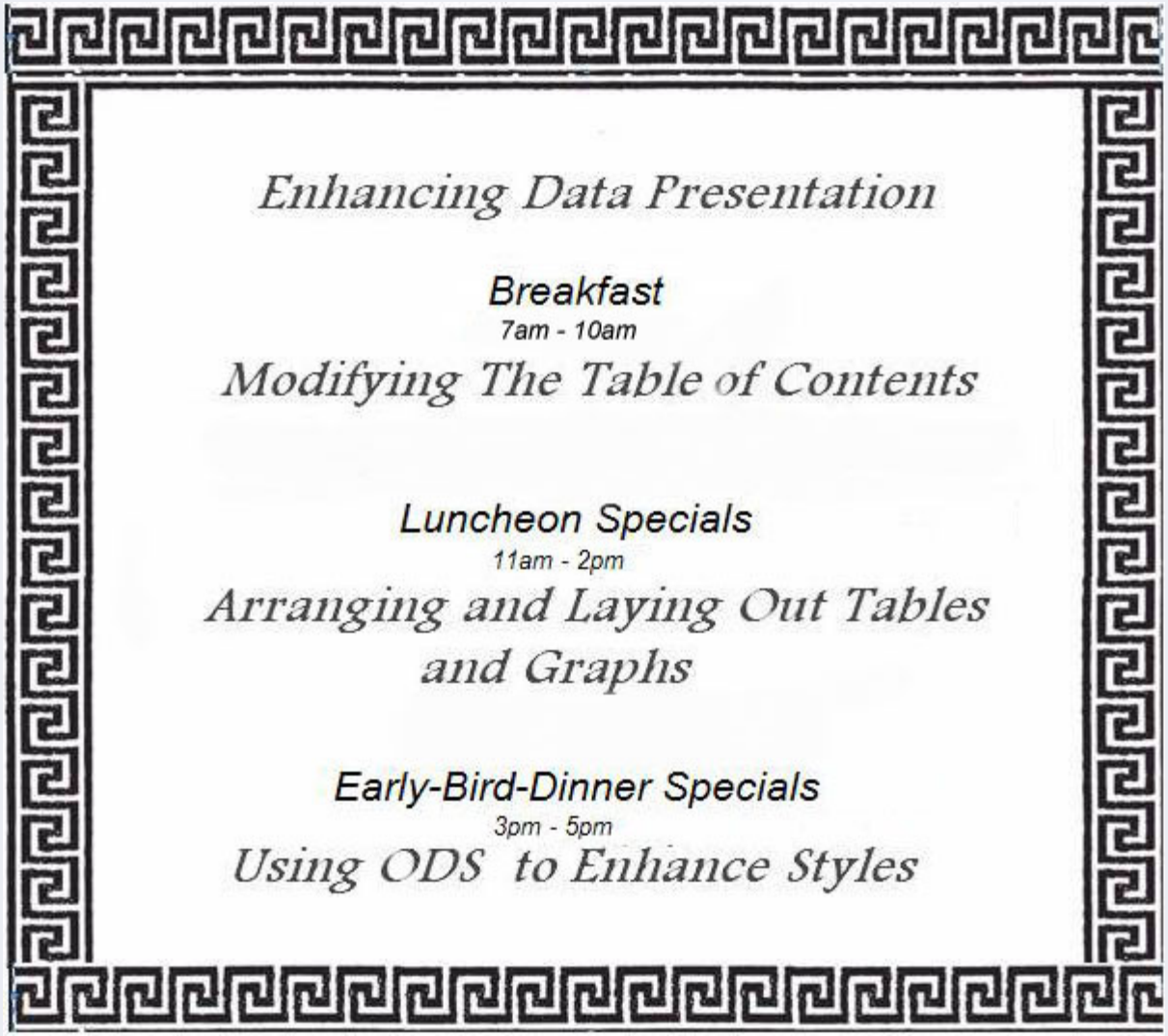

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Modifying the Table of Contents

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Table of contents and bookmark list

ODS PROCLABEL

CONTENTS=
CONTENTS_LABEL
DESCRIPTION=

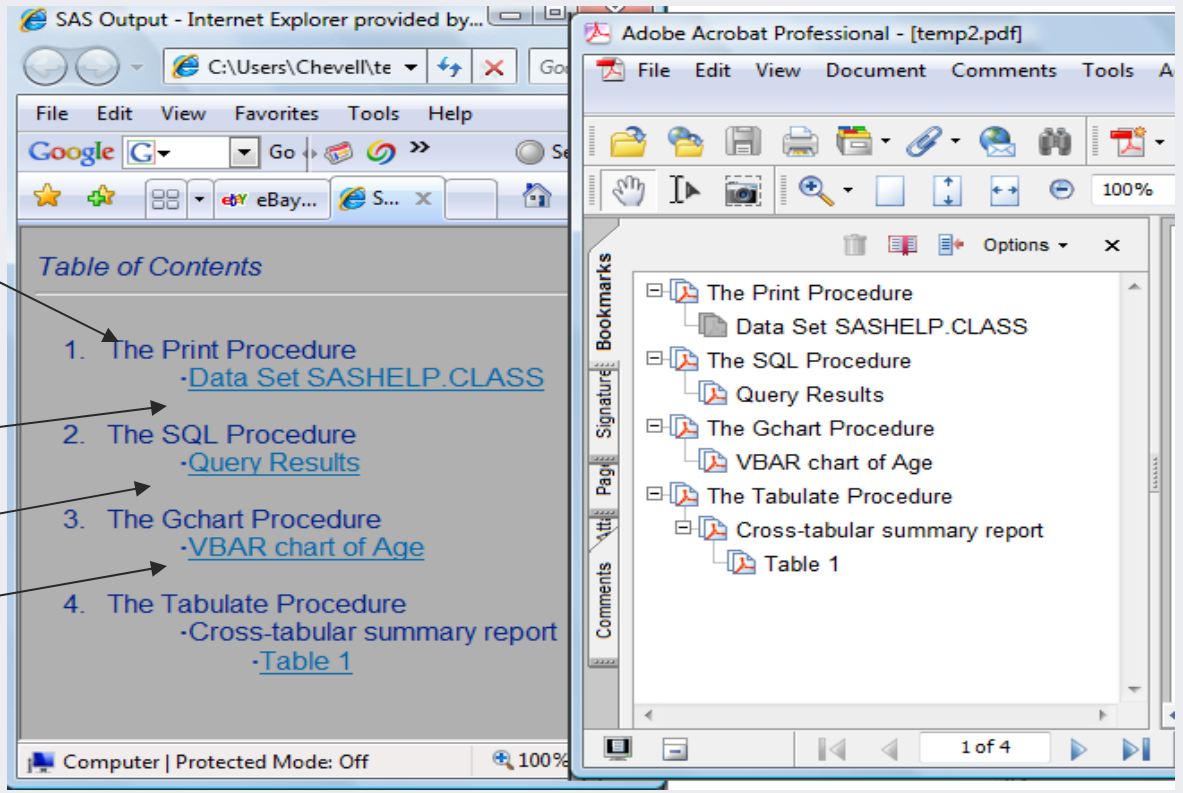

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Table of contents modifications: naming items

```
ods html file="b.html" contents="c.html";
ods proclabel  "Print Output";
proc print data=sashelp.class
contents="sub-node";
run;

ods proclabel "Gchart Output";
proc gchart data=sashelp.class;
vbar age / des="Graph sub-node";
run;
quit;

ods proclabel "Tabulate Output";
proc tabulate data=sashelp.class
contents="Tabulate sub-node";
class age;
var height;
table age, height / contents="sub-node2";
run;
ods html close;
```

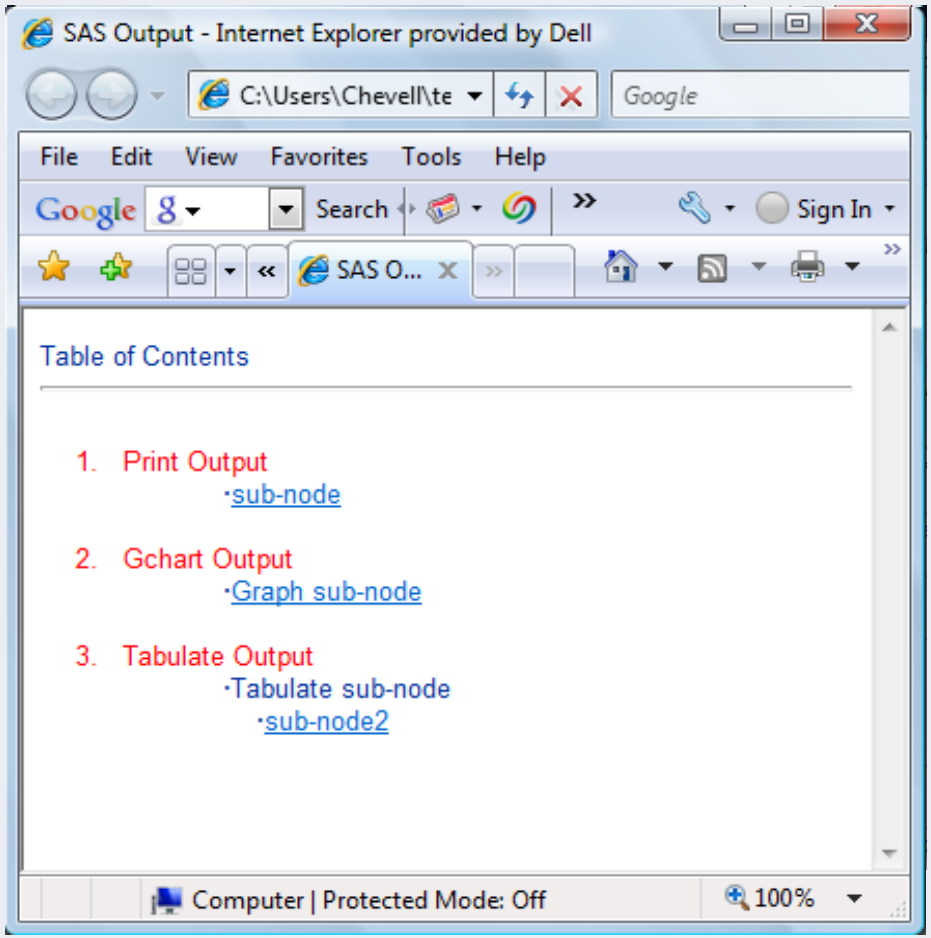

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Table of contents modifications: naming and removing items

```
ods html file="b.html " contents="c.html";
ods proclabel "Print  Output";
proc print data=sashelp.class contents=' ';
run;

ods proclabel "Graph Output";
proc gchart data=sashelp.class;
vbar age /  des='Graph sub-node';
run;
quit;

ods proclabel "Tabulate Output";
proc tabulate data=sashelp.class contents="";
class age;
var height;
table age, height / Contents=' ';
run;
ods html close;
```

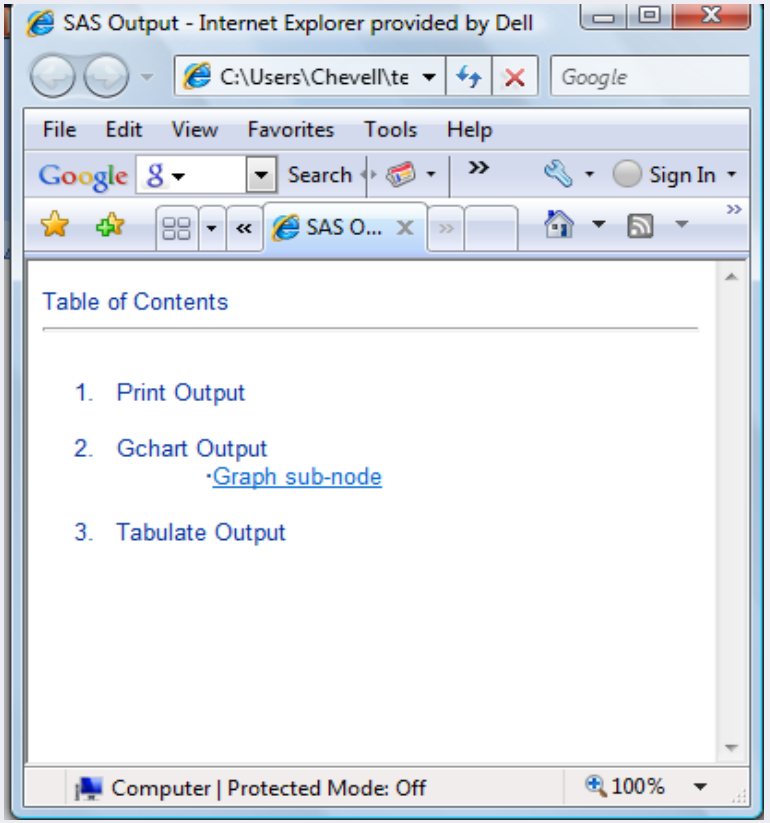

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Table of contents modifications: PDFTOC=

```
ods pdf file="temp2.pdf" pdftoc=1;
proc print data=sashelp.class;
run;

proc gchart data=sashelp.class;
vbar age;
run;
quit;

proc tabulate data=sashelp.class;
class age;
table age, height;
run;
ods pdf close
```

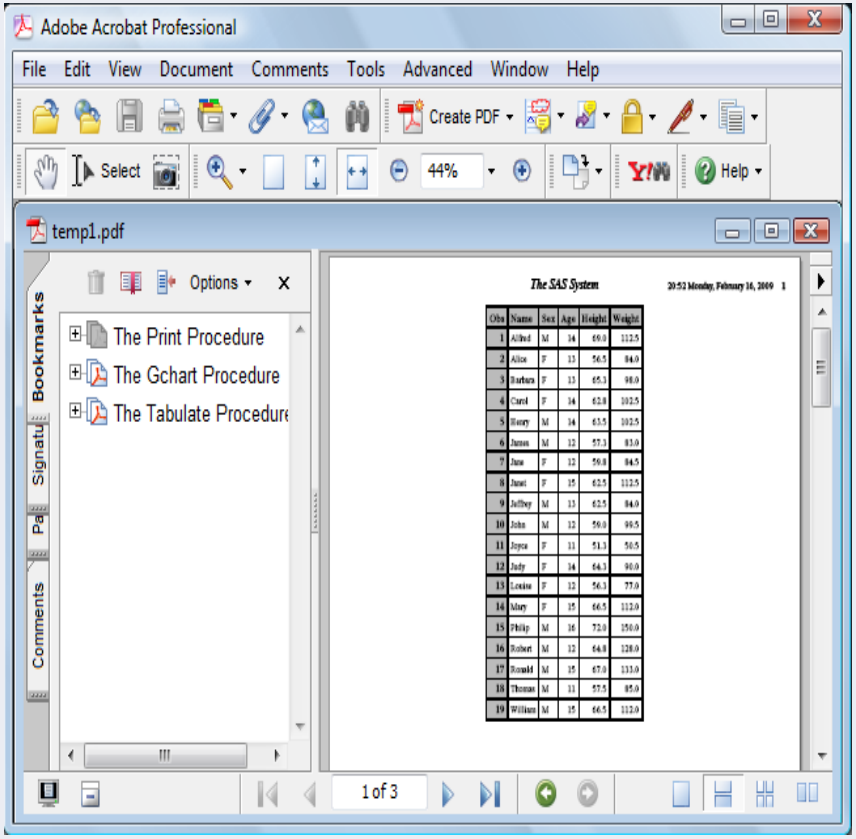

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Table of contents modifications: the Document Facility

- enables objects to be hidden, deleted, removed, or reordered
- includes ODS Document, Document window, SASEDOC libname engine, and PROC DOCUMENT
- adds support for PROC REPORT in SAS® 9.2
- provides complete modification of the table of contents

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The Document Facility

```
ods document name=test(write);
proc print data=sashelp.class;run;

proc gchart data=sashelp.class;
vbar age;
run;

proc tabulate data=sashelp.class;
class age;
table age;
run;
ods document close;

proc document name=test;
list/levels=all;
run;
quit;
```

Listing of: \Work.Test\
Order by: Insertion
Number of levels: All

Obs	Path	Type
1	~~\Print#1~~	~~Dir~~
2	\Print#1\Print#1	Report
3	~~\Gchart#1~~	~~Dir~~
4	\Gchart#1\Gchart1#1	Graph
5	~~\Tabulate#1~~	~~Dir~~
6	~~\Tabulate#1\Report#1~~	~~Dir~~
7	\Tabulate#1\Report#1\Table#1	Table

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PROC DOCUMENT

```
ods pdf file="temp.pdf";
proc document name=test;
make \test;
dir \test#1;
copy \Print#1\Print#1 to ^;
copy \Gchart#1\Gchart#1  to  ^;
copy \Tabulate#1\Report#1\Table#1  to  ^;
replay \test#1;
quit;
ods pdf close;
```

Obs	Path	Type
1	\Print#1	Dir
2	\Print#1\Print#1	Report
3	\Gchart#1	Dir
4	\Gchart#1\Gchart#1	Graph
5	\Tabulate#1	Dir
6	\Tabulate#1\Report#1	Dir
7	\Tabulate#1\Report#1\Table#1	Table

Obs	Path	Type

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Luncheon Specials

Includes: Paneling tables and graphics, spanning columns and rows within tables, placement of tables graphics and text anywhere on the page

Arranging and Laying Out Tables and Graphs

* **These dishes are considered to be very spicy and can be made to order**

*HTMLPanel and TableEditor Tagsets for HTML

*The ODS LAYOUT Feature

*The Report Writing Feature of the DATA Step

*GREPLAY and new SG procedures
(we are sold out of this item today)

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HTMLPANEL and TableEditor tagsets

- both tagsets generate HTML, panel tables, and graphs
- created with ODS Markup and have options
- HTMLPanel tagset enables complex paneling
- TableEditor tagset enables other options such as WEB_TABS=

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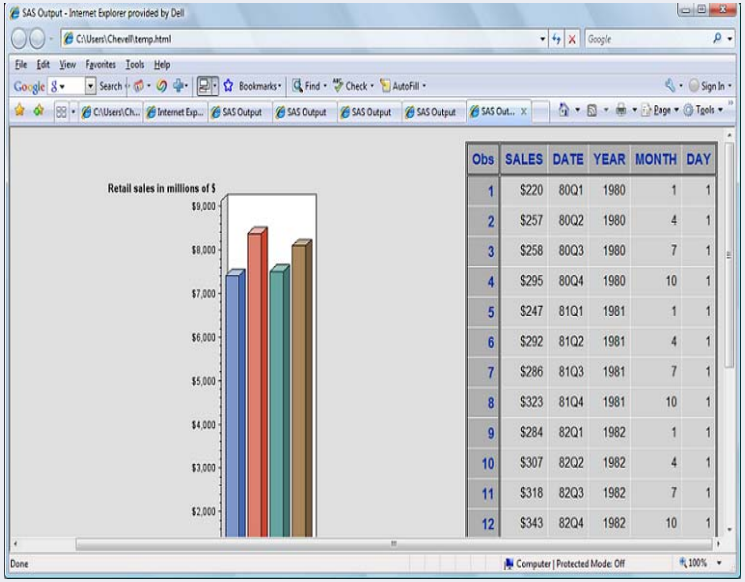
HTMLPANEL and TableEditor tagsets (cont'd)

```
ods tagsets.htmlpanel file="temp.html";
ods tagsets.htmlpanel event=panel(start);

proc gchart data=sashelp.retail;
vbar3d year / discrete sumvar=sales type=sum
patternid=midpoint;
run;
quit;

proc print data=sashelp.retail;
run;
ods tagsets.htmlpanel event=panel(finish);
ods tagsets.htmlpanel close;
```



Obs	SALES	DATE	YEAR	MONTH	DAY
1	$220	80Q1	1980	1	1
2	$257	80Q2	1980	4	1
3	$258	80Q3	1980	7	1
4	$295	80Q4	1980	10	1
5	$247	81Q1	1981	1	1
6	$292	81Q2	1981	4	1
7	$286	81Q3	1981	7	1
8	$323	81Q4	1981	10	1
9	$284	82Q1	1982	1	1
10	$307	82Q2	1982	4	1
11	$318	82Q3	1982	7	1
12	$343	82Q4	1982	10	1

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The ODS LAYOUT feature

- enables output to be placed specifically on a page
- is good for emulating specific type of reports
- creates both gridded and absolute layouts
- defined by one or more regions

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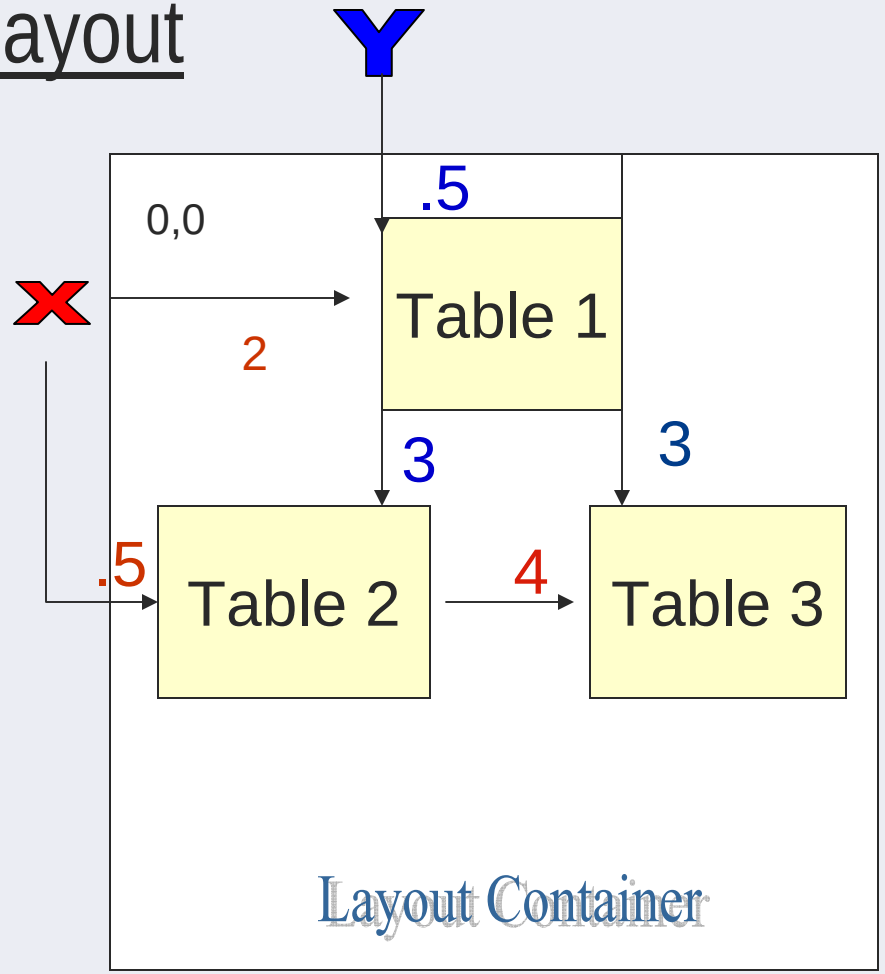
ODS LAYOUT – absolute layout

```
ods layout start width=8in height=10in;
ods region x=2in y=.5in width=6in…;
proc print …

ods region x=.5in y=3in width=4in…;
proc print….

ods region x=4in y=3in  width=4in…;
proc print…

ods layout end;
```



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ODS LAYOUT – gridded layout

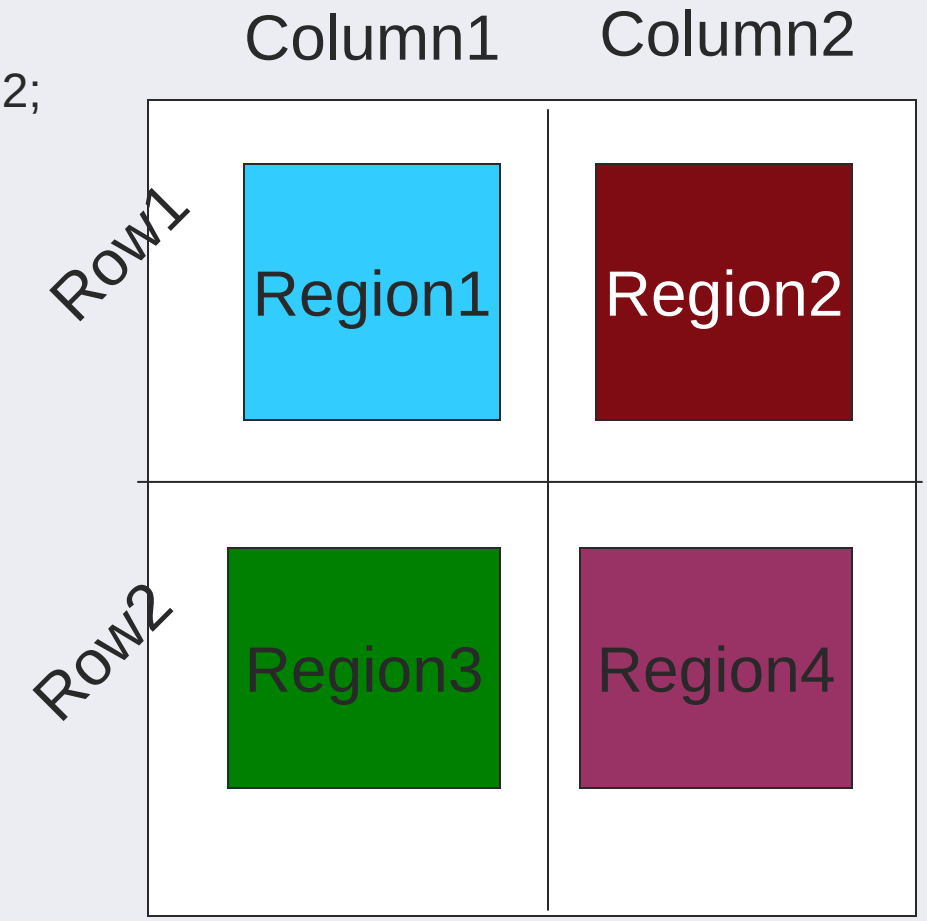
```
ods layout start columns=2 rows=2;

ods region;
proc print data=class;run;

ods region;
proc print data=fitness;run;

ods region;
proc print data=orsales;run;

ods region;
proc print data=prdsale;run;
ods layout end;
```



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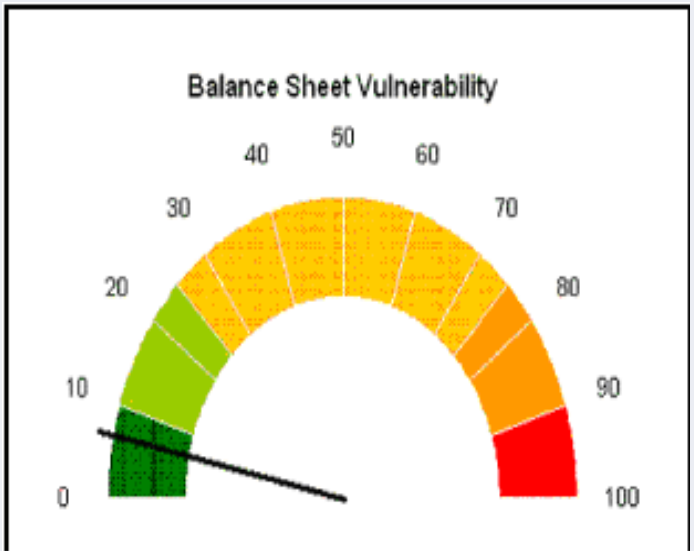
The Report Writing Interface of the DATA step

Trial Balance Sheet		
Item	Assets	Liabilities
Cash	$20000	$0
Inventory	$50000	
Account Receivables	$10000	
Returns	$0	$30000
Retained Earnings		$30000
Net Income	$20000	$0
	$80000	$80000
Company has been certified as viable for 2008		




```
obj.region();
  obj.table_start();
     obj.row_start();
        obj.format_cell(text:"",overrides:"preimage=""c:\balance_sheet5.gif""");
  obj.row_end();
 obj.table_end();
obj.layout_end();
```

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Using ODS to Enhance Styles

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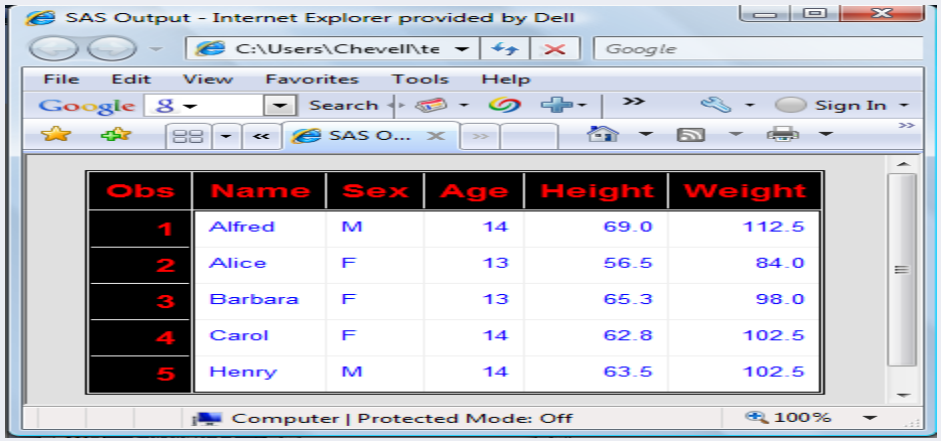
PROC TEMPLATE enhancements

```
proc template;
  define style styles.test;
     parent=styles.default;
       import "c:\temp\sgf.css";
          class header, rowheader /
             foreground=red
             background=black;
   end;
run;
ods html style=styles.test;
proc print data=sashelp.class;
run;
ods html close;
```

css file

```
.data {
      color:blue;
      font-size:10pt;
      background-color:white
}
```



Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5

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The new CSSSTYLE= option

- uses CSS files to provide formatting with PDF, HTML, and RTF destinations
- can provide media types such as Screen and Print
- can be used with SAS® Enterprise Guide® which uses CSS by default

```
ods pdf file="temp.pdf" cssstyle="temp.css";
proc print data=sashelp.class;
run;
ods pdf close;
```

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The new in-line formatting syntax

- adds new functions such as UNICODE, STYLE, and NBSPACE
- enables nesting of styles which is new for SAS® 9.2
- new syntax allows backward compatibility

```
ods pdf file="temp.pdf";
ods escapechar="^";
title "^{style[color=red] Red ^{sub nested} ^{style[color=green] now green output"}};
ods pdf text="^{style systemtitle[just=center] Text using the systemtitle style element}";

proc print data=sashelp.class;
run;
ods pdf close;
```

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HTML	
<a href="c:\temp.html">	Links to file
<a href="c:\temp.html#idx1">	Links to the second table of page
<a href="c:\temp.html#idx1" parent=_blank>	Links to the second table in a new window
PDF	
<a href="c:\temp.pdf#page=1">	Links to first page of the document
<a href="c:\temp.pdf#pagemode=bookmarks">	Links to file and displays bookmarks
<a href="c:\temp.pdf#nameddest=IDX2">	Links to third table of the document
<a href="c:\temp.pdf#zoom=80%">	Links to and opens file with a zoom of 80%
EXCEL	
<a href="c:\temp.xls">	Links to and displays Excel file
<a href="c:\temp.xls#Sheet1!A1">	Links to Excel file and displays Sheet1
EMAIL	
<a href="mailto:chevell.parker@sas.com">	Opens mail file to include email address

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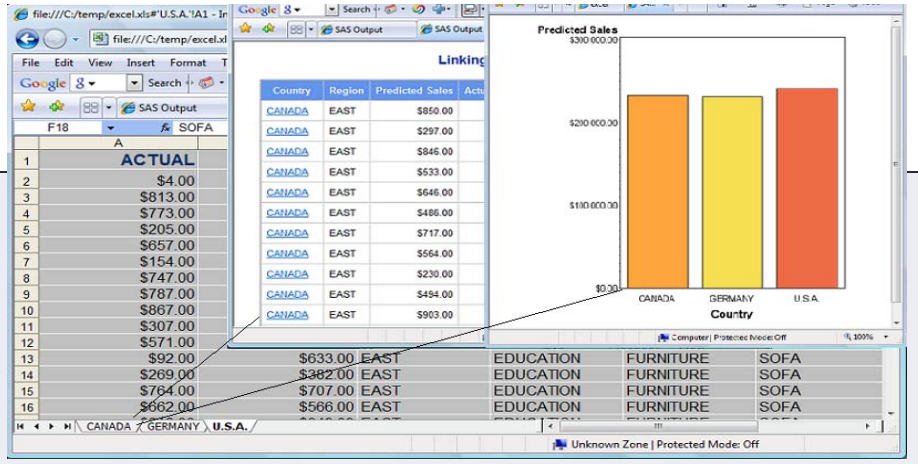
Creating Drill-Downs Using Tables and Graphs

```
data one;
set sashelp.prdsale;
linkvar="href=""c:\temp.xls#'"||trim(left(country))||"'!A1""";
run;

goptions hsize=5in vsize=5in;
ods html file="temp.html" style=sasweb;
proc gchart data=one;
   vbar country /  sumvar=predict patternid=midpoint type=sum html=linkvar;
run;
quit;
ods _all_ close;
```



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Enhancing Web Applications Using Tagsets

- provides the ability to add styles across procedures
- enables dynamic sorting, filtering, frozen columns, and rows, edit, drag and drop, tabs, and so on…..
- can create a Tree View of the TOC
- can export to other applications, such as Excel, and add graphics, pivot tables, and so on…
- downloadable from the Web

support.sas.com/rnd/base/ods/odsmarkup/tableeditor/index.html

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Creating Dynamic Applications Using SAS®

- SAS/IntrNet® applications
- stored process Web applications
- %STPBGIN and %STPEND macros

```
%let   _ODSDEST=tagsets.tableEditor;
%let   _ODSSTYLE=SASWEB;
%let   _ODSOPTIONS=RS=NONE;
%let   _GOPT_DEVICE=activex;
* processbody;
%stpbegin;
proc print data=sashelp.class;
run;
%stpend;
```

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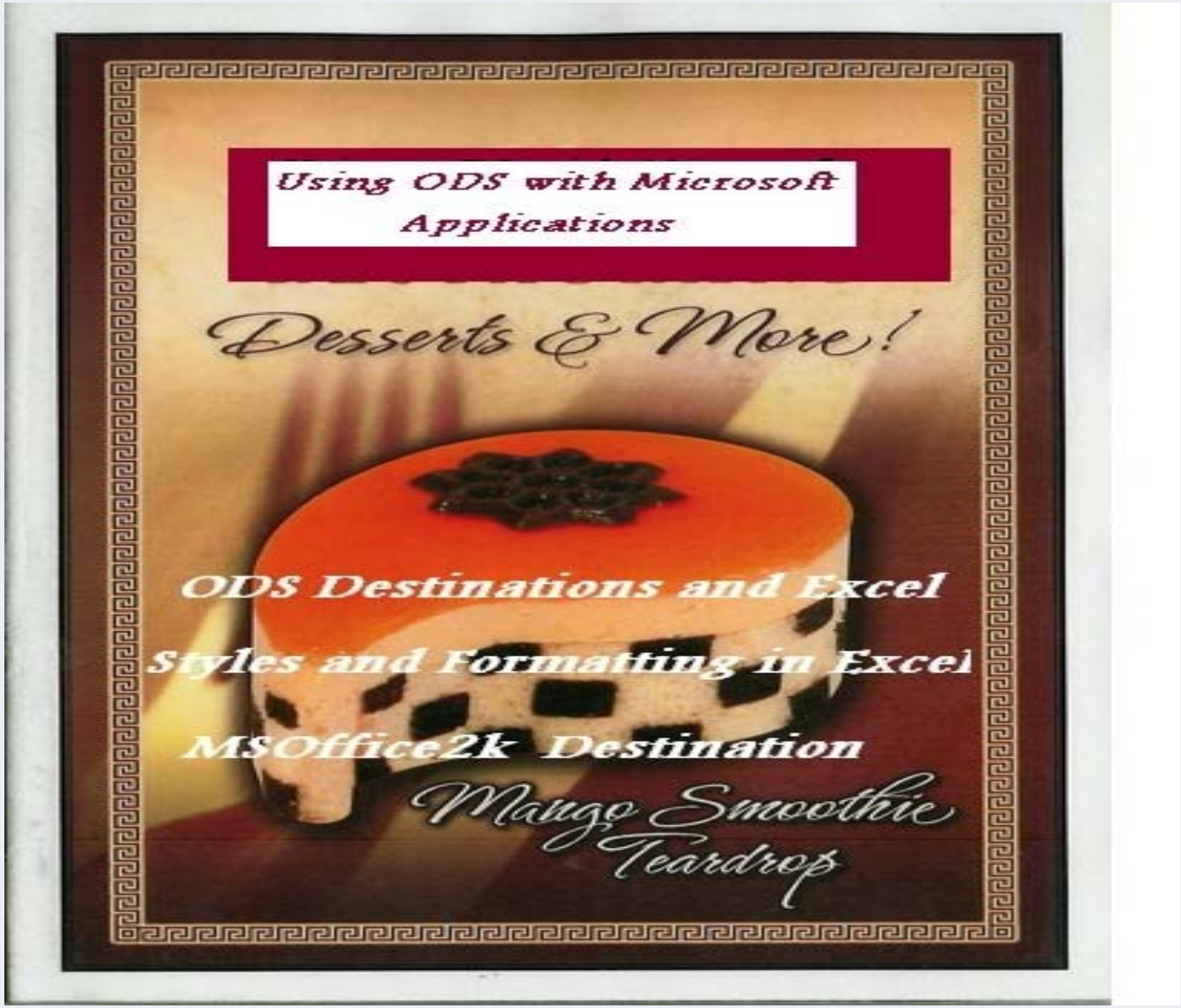

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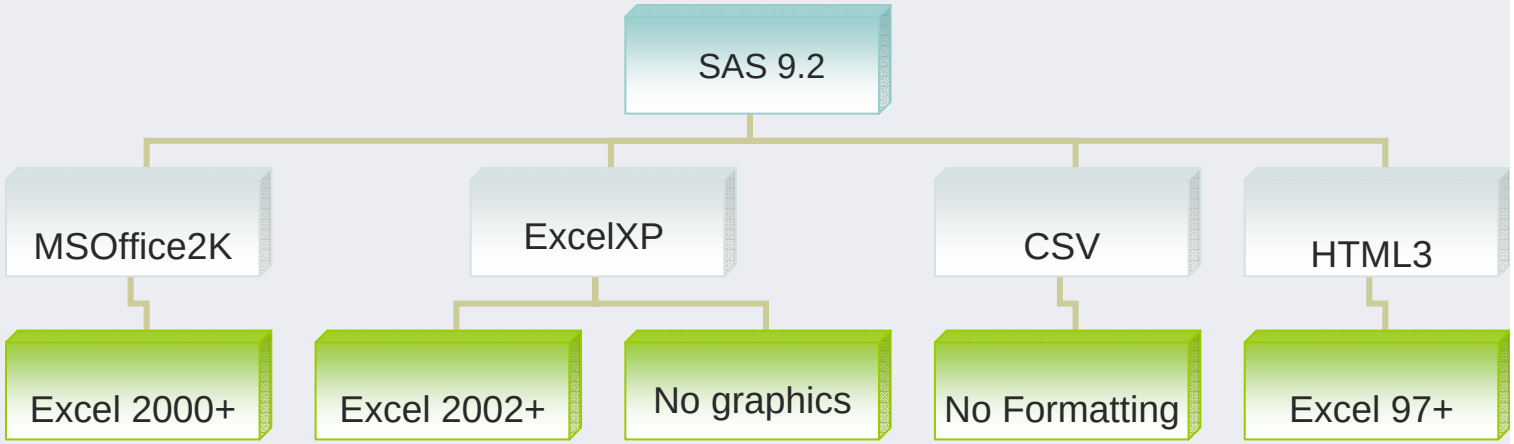
ODS Destinations and Excel



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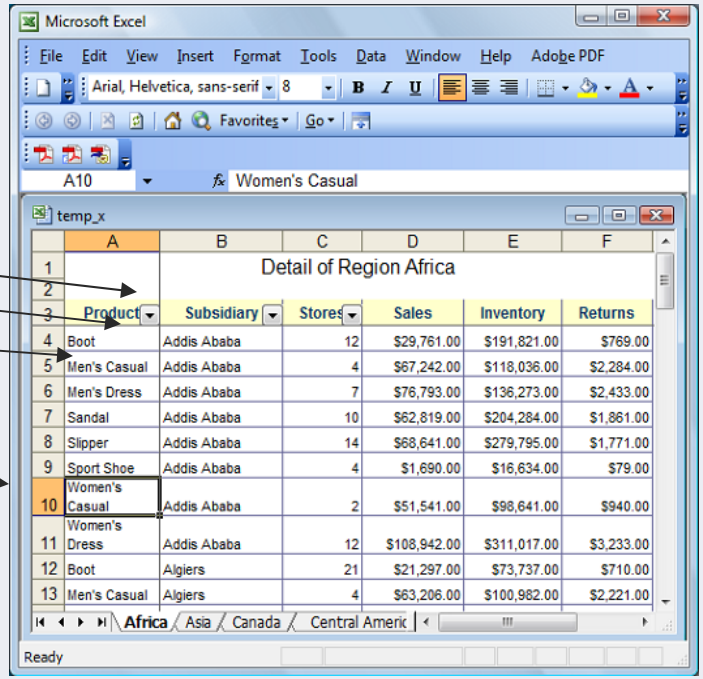
ExcelXp destination display options

```
ods tagsets.excelxp file="temp.xls"
  options(doc="help"
          embedded_titles="yes"
          autofilter="1-3"
          frozen_headers="3"
          frozen_rowheaders="1"
          absolute_column_width="8.5,11,7,9,8,8"
          autofit_height="yes"
          sheet_interval="bygroup"
          sheet_label=" "
          suppress_bylines="yes") style=normal;
```




```
proc print data=sashelp.shoes noobs;
title "Detail of Region #byval(region)";
by region;
run;
ods tagsets.excelxp close;
```

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Cell formatting in Excel

- E
W
- E
W

```
ods tagsets.excelxp file="temp.xls"   Style=normal;

proc print data=one;
title "Values after the Excel formats applied";
var leading_z  / style(data)={tagattr="format:@"};
var trailing_z / style(data)={tagattr="format:#####.#0"};
var long_n / style(data)={tagattr="format:@"};
var long_s  / style(data)={tagattr="format:#,###"};
var comma_f / style(data)={tagattr="format:#,###"};;
var dollar_f / style(data)={tagattr="format:$#,###;$-#,###"};
format dollar_f;
run;

ods tagsets.excelxp close;
```

Data values in Excel

Obs	leading_z	trailing_z	long_n	long_s	comma_f	dollar_f
1	1	1234.5	1.23457E+21	1.23457E+12	1234567	$-1234567

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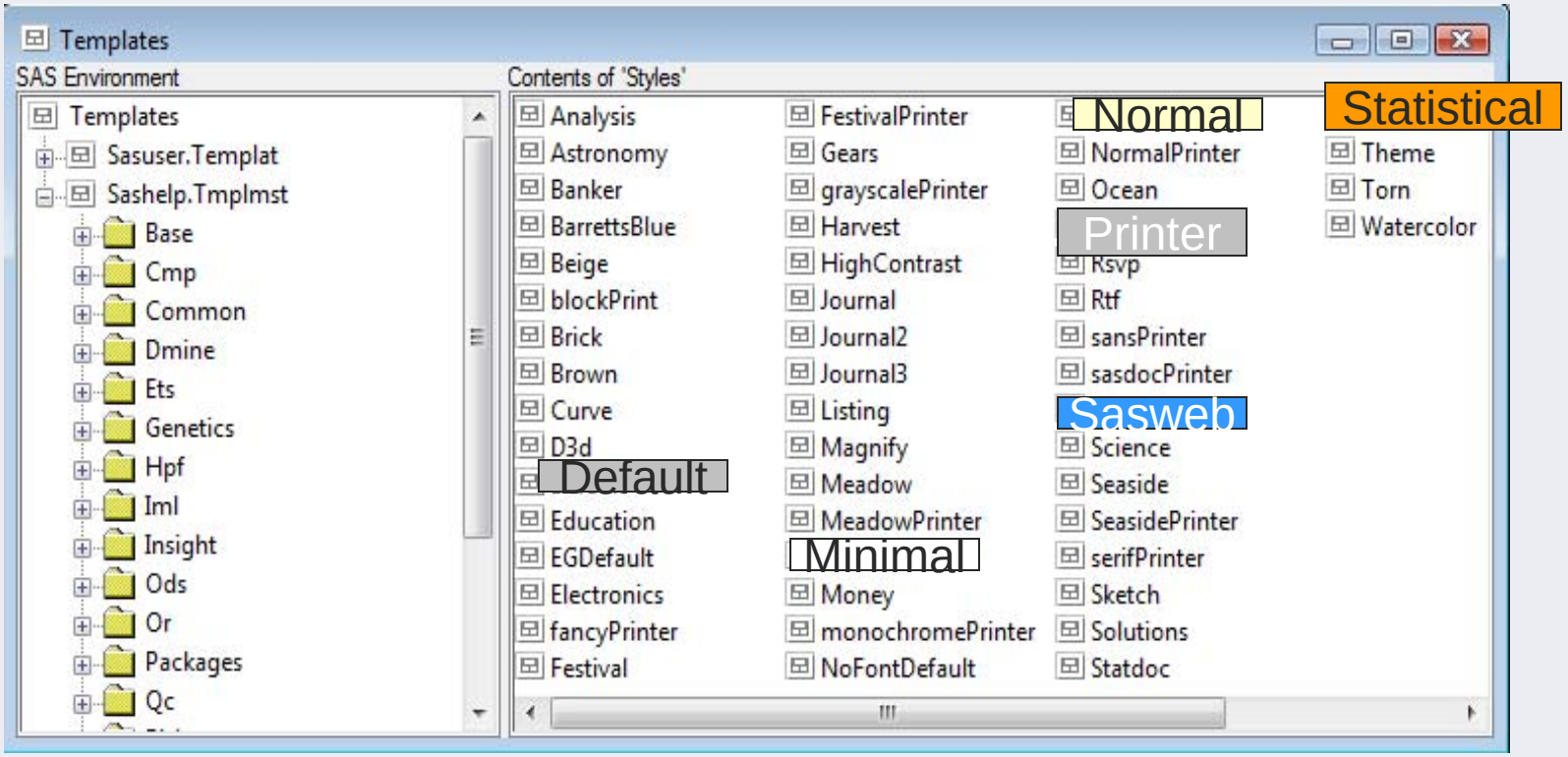
Styles and Formatting in Excel



Additional styles are available at: ftp.sas.com/techsup/download/public/base/sgf.zip.

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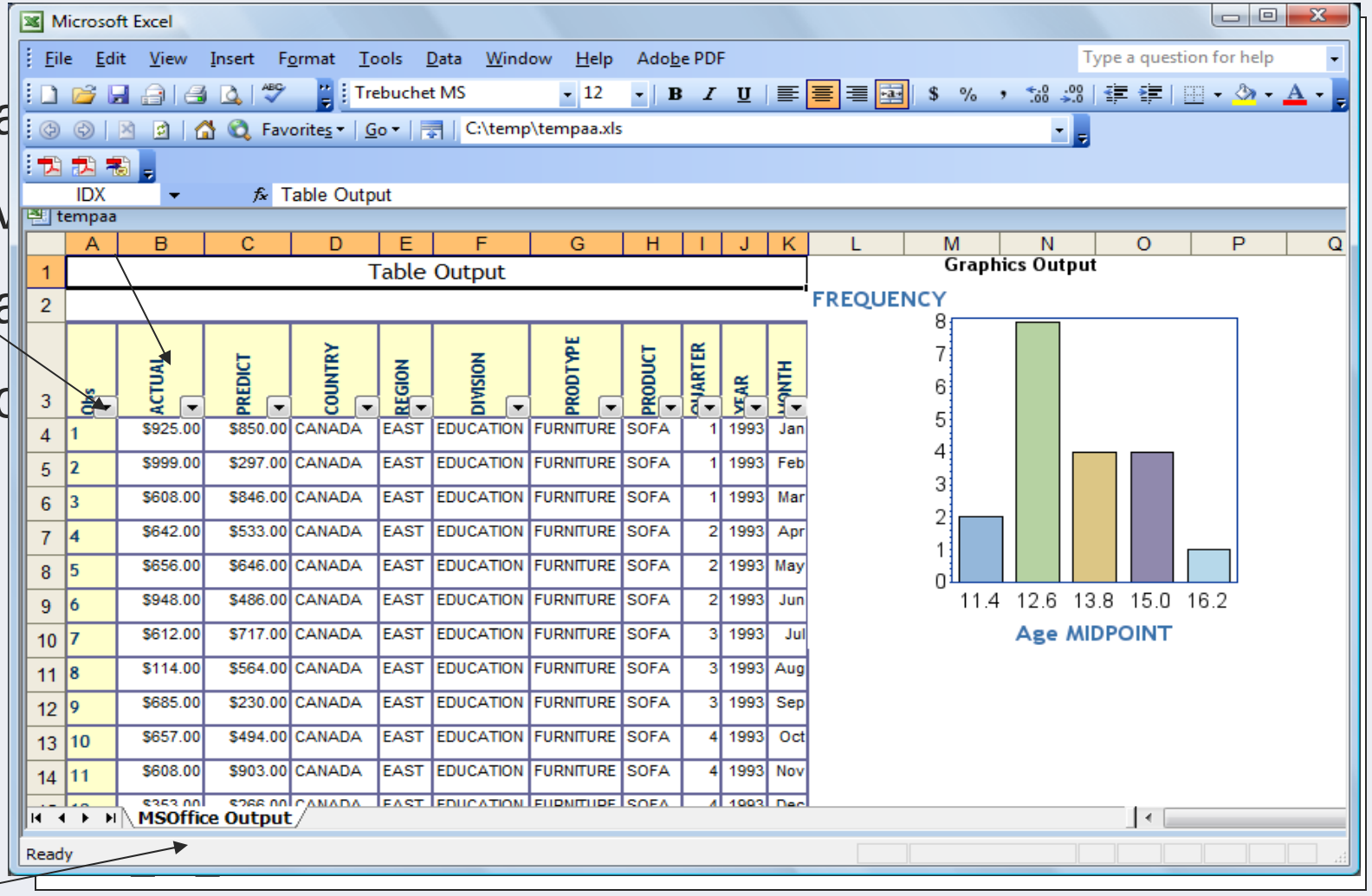
MSOffice2K Destination

- a
- V
- a
- C



	A	B	C	D	E	F	G	H	I	J	K
3	QRS	ACTUAL	PREDICT	COUNTRY	REGION	DIVISION	PRODTYPE	PRODUCT	QUARTER	YEAR	MONTH
4	1	$925.00	$850.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	1	1993	Jan
5	2	$999.00	$297.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	1	1993	Feb
6	3	$608.00	$846.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	1	1993	Mar
7	4	$642.00	$533.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	2	1993	Apr
8	5	$656.00	$646.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	2	1993	May
9	6	$948.00	$486.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	2	1993	Jun
10	7	$612.00	$717.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	3	1993	Jul
11	8	$114.00	$564.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	3	1993	Aug
12	9	$685.00	$230.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	3	1993	Sep
13	10	$657.00	$494.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	4	1993	Oct
14	11	$608.00	$903.00	CANADA	EAST	EDUCATION	FURNITURE	SOFA	4	1993	Nov

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Guest Comment Card

Do you see how output could be enhanced using ODS ? ☐ Yes ☐ No

Do you feel like you can develop great Web applications using ODS? ☐ Yes ☐ No

Do you see how ODS output can be integrated with Microsoft Office Applications? ☐ Yes ☐ No

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Resources

"Creating That Perfect Data Grid Using ODS"
http://www2.sas.com/proceedings/forum2008/258-2008.pdf

"A SAS Output Output Delivery System Menu For All Appetites and Applications"
http://support.sas.com/resources/papers/proceedings09/016-2009.pdf

"ODS Markup"
http://support.sas.com/rnd/base/ods/odsmarkup/index.html

"ODS Report Writting Interface"
http://support.sas.com/rnd/base/datastep/dsobject/index.html

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