

Using the Latest ODS Features in SAS 9.2

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ABSTRACT

Presenting multiple reports and graphs in one PDF file can be made very simple and efficient by using ODS DOCUMENT and PROC DOCUMENT. This poster explains how to create reports and graphs, storing them in documents and replaying to a PDF file. Also shown are examples to create custom bookmarks and a TOC with hyperlinks. The accompanying paper explains the process in greater depth. (The examples here are based on the sashelp.bweight and sashelp.class datasets.)

Step 1: Collect report ready dataset

First we prepare our dataset with the column and rows required in the report. Step 2 discusses page numbering but we select our page numbers here for convenience.

```
data bweight;
  set sashelp.bweight (obs=50);
  subjid=1000 + _n_;
  if _n_ <= 25 then pagenum=1;
  else pagenum=2;
run;
```

Step 2: Determine how many lines and columns will fit on an A4 page

Subject	Gender	Visit	Weight kg	Mean height cm
1001	1	3	4111	-6
1002	0	3	3887	2
1003	1	3	3872	-3
1004	1	3	3986	-5
1005	1	3	3815	-20
1006	0	3	3973	0
1007	1	3	3877	6
1008	0	3	3884	5
1009	0	3	3829	-6
1010	1	3	3902	6
1011	1	3	4026	22
1012	1	3	3842	-1
1013	1	3	2296	7
1014	1	3	2985	-6
1015	1	3	3648	10
1016	0	3	3467	12
1017	1	3	3432	-6
1018	0	3	4139	-2
1019	0	3	3627	10
1020	0	3	2722	12
1021	1	3	4026	0
1022	1	3	4238	0
1023	1	3	3459	-1
1024	1	3	3544	0
1025	1	3	4054	2

By carefully formatting the style template and measuring the page size and margins we can determine how many rows will fit on one page of our output file.

Using this information with our report dataset we can set a number of macro variables to dynamically control page and column breaks.

Subject	Gender	Visit	Weight kg	Mean height cm
1001	1	3	4111	-6
1002	0	3	3887	2
1003	1	3	3872	-3
1004	1	3	3986	-5
1005	1	3	3815	-20
1006	0	3	3973	0
1007	1	3	3877	6
1008	0	3	3884	5
1009	0	3	3829	-6
1010	1	3	3902	6
1011	1	3	4026	22
1012	1	3	3842	-1
1013	1	3	2296	7
1014	1	3	2985	-6
1015	1	3	3648	10
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1024	1	3	3544	0
1025	1	3	4054	2

Using array logic we can keep track of the number of columns at the top of the report and how much remaining page width is available for successive columns, thereby controlling where to break the report.

Step 3: Create reports by pages and store in an ODS document

Now create two documents for the columns and rows that fit on the first two pages:

```
ods document name=work.report1(write);
  proc report data=bweight (where=(pagenum=1));
    column subjid boy visit weight m_wtgain;
    -----;
ods document close;

ods document name=work.report2(write);
  proc report data=bweight (where=(pagenum=2));
    column subjid boy visit weight m_wtgain;
    -----;
ods document close;
```

Next we create documents for the remaining columns (but the same rows) that didn't all fit across one page:

```
ods document name=work.report3(write);
  proc report data=bweight (where=(pagenum=1));
    column subjid married smoke cigspcr;
    -----;
ods document close;

ods document name=work.report4(write);
  proc report data=bweight (where=(pagenum=2));
    column subjid married smoke cigspcr;
    -----;
ods document close;
```

Step 4: Create a simple plot and store in an ODS document

Similarly we can create a plot and store this in a document:

```
ods document name=work.plot1(write);
  proc gplot data=sashelp.class gout=procdoc.gseg uniform;
    plot age*height;
  run;
  quit;
ods document close;
```

Step 5: Create a front page table of contents with hyperlinks

Using ODS PDF TEXT statements we can write ad-hoc lines of text to a PDF file and define these as hyperlinks with URLs to an anchor in the file:

```
ods pdf text = '^({style [color=black just=1 font_face=Arial font_size=8pt font_weight=bold ] CONTENTS})';
ods pdf text = "({style [url='#rpta' linkcolor=white color=blue just=1 font_face=Arial font_size=8pt]Bodyweights});";
ods pdf text = "({style [url='#rptb' linkcolor=white color=blue just=1 font_face=Arial font_size=8pt]Age v Height});";
```

Step 6: Use PROC DOCUMENT to configure the PDF bookmarks

PROC DOCUMENT can be used to control the bookmarks associated with each report in our output file. First we wish to tidy up the bookmarks and create a relevant name which will be linked to the first page of the report:

```
proc document name=procdoc.rep1(write);
  make bkmrk;
  dir \bkmrk;
  setlabel \bkmrk "BODYWEIGHTS";
  copy \work.report1\Report#1\Report#1 to ^;
  dir ^^;
quit;
```

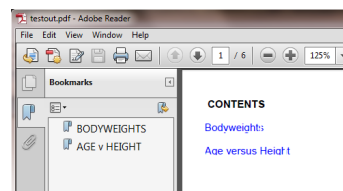
For subsequent pages in the report we wish to remove bookmarks entirely:

```
proc document name=procdoc.rep2(write);
  copy \work.report2\Report#1\Report#1\Report#1 to ^;
  dir ^^;
quit;
```

Step 7: Replay documents to one PDF file

Finally we open a PDF destination and use PROC DOCUMENT to replay our documents to the file. We also set the anchors to link to the TOC hyperlinks:

```
ods pdf file='C:\temp\testout.pdf';
%do rpt=1 %to 4;
  %if &rpt=1 %then ods pdf anchor='rpta';;
  ods pdf startpage=now;
  proc document name=procdoc.rep&rpt.;
    replay;
  quit;
  ods pdf anchor='rptb' startpage=now;
  proc document name=procdoc.plot1;
    replay;
  quit;
%end;
ods pdf close;
```



CONCLUSION

SAS ODS and the compatibility of PROC REPORT with ODS DOCUMENT can be a very creative method of processing a large number of reports and graphs and to smartly control the breaking of columns and pages within these reports. By building up a library of documents the user also has great control over bookmarks and the order of processing the reports to a PDF output file.

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