

Creating SAS® Reports from Data Collected Via the Internet Using Microsoft FrontPage® 98 Hosted on a PC Running the Microsoft Personal Web Server®

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Abstract

The paper describes project designed to collect and analyze data on faculty research and scholarship. Forms created with Microsoft FrontPage® 98 are used to collect the data. The forms are hosted on a PC running the Microsoft Personal Web Server ®. Users access the web page containing the forms, enter data, and submit the form. The data submitted is stored on the host PC's hard drive in comma delimited format. SAS® is used to create summary reports. SAS procedures used include INFILE with the DSD option, which allows tab-delimited files with consecutive missing values to be read correctly and system calls to redirect output to the end user's e-mail account.

The Application

Organizations frequently require employees to report on business related activities. This project is based on a university request for data about faculty publications and research activities. The Internet data entry form in this demonstration is stored on a PC that is running the Microsoft Personal Web Server ® and has access to an Internet service provider. An abridged version of the form is shown in Figure 1. The form was created using the Microsoft FrontPage® 98 editor. The form includes text box, scrolling textbox, dropdown list, and checkbox input controls.

Data Files

Data entered by the user is stored on the hard drive of the Internet host PC when the Submit Button is clicked. The location and format of the data is selected using the FrontPage® dialog box shown in Figure 2. The default file name, format and location is _private/form_results.txt. The complete path to the data file on the host PC is c:\webshare\wwwroot\researchforms_private\form_results.txt. The *researchforms* is the only user-defined directory. *Webshare* and *wwwroot* are FrontPage® default directories. The file format selected is *Text database using tabs as a separator*. Other format options include space or comma delimited, and HTML. Tab separators were selected because commas were expected to be part of the data in "Books Published " field. A sample forms output file is shown in Figure 3.

Processing Data with SAS®

The SAS ® program that reads the form response file is shown in Figure 4. Of particular note is the Infile statement. The statement *delimiter = '09'x notab missover DSD* indicates how SAS® is to handle missing values. This is particularly important because check box only generate input values when they are checked. An unchecked box generates no value and the presence of the field is only indicated by consecutive

delimiters. Table 1 describes the options used in the Infile statement. The following IF statements convert missing values to "NO" on the assumption that an unchecked box indicates a negative response. Further information on working with missing values can be found in Charles Patridge's notes in the Hartford SAS User's Group Newsletter, <http://pages.prodigy.com/SASCONSIG/hacsug09.htm>, in the SAS Technical Report P-222, and in SAS Help under the topic "Missing Data".

Figure 5 shows sample data collected using the Internet the form. The information is displayed using the Notepad® text editor. Unchecked boxes are displayed as blank space between tabs, which are not printed. Figures 6 and Figure 7 show sample output from the SAS® program. Figure 6 shows output from Proc Print. Note that missing values are handled correctly and converted to the value "NO". Figure 7 shows the research activity by a particular department as summarized by Proc Tabulate.

Summary and Conclusion

The paper described a data collection and analysis project that combines SAS® and FrontPage 98 to collect and summarize information. By combining Microsoft FrontPage® 98, Personal Web Server®, and the SAS® we were able to quickly create a system that can not only meet immediate needs but also serves as a solid foundation for further development. Ideally we would like to expand the data collected to include abstracts and more specific grant information as well as to add security features such as user authentication. We will also be revising both the form and the SAS input routine to better handle updated information (i.e. enabling users to correct previous data entry errors). While this system requires further development, it has provided some compelling support for integrating FrontPage® 98 and SAS®.

Option	Purpose
Delimiter = '09'x	Specifies tab ('09'x in hexadecimal) as the delimiter character.
<i>notab</i>	Tells SAS not to convert tabs into blanks.
<i>missover</i>	Prevents SAS from going to a new line if variables in the current line do not have values.
<i>DSD</i>	Tells SAS to interpret two consecutive delimiters as a missing value.

Table 1. Infile statement options.

DEMONSTRATION ONLY

FACULTY RESEARCH AND SCHOLARSHIP INFORMATION

For the Academic Year June 1 1997 to May 31, 1998

NAME: DEPARTMENT:

Part I. Please check off the types of research and scholarship activities that you have participated in.

☐ Book published ☐ Journal articles published ☐ Received internal grants ☐ Received external grants

Total value of internal funding Total value external funding

Part II. Please enter the details of the research and scholarship activities that you have participated in.

BOOKS PUBLISHED June 1, 1997 to May 31, 1998

INTERNAL GRANTS RECEIVED June 1, 1997 to May 31, 1998

Figure 1. Abridged version of the Faculty Research Data Collection Form.

Figure 2. The FrontPage ® editor dialog box used to select data storage location and file format.

"Alton"	""	"Al"	""	"Computer Science"			"0"	"0"
"Brown"	""	"Ann"	""	"Computer Science"	"Yes"		"Yes"	"0" "6000"
"Dorn"	"Domna"			"Communications"		"Yes"	"Yes"	"Yes" "4000"
	"25000"			"Presidents Grant"				
"East"	"Ed"	"Computer Science"		"Yes"		"Yes"	"0"	"5000" ""
"Farmer"	"Frank"	"Computer Science"	"Yes"					"0"
	"0"	"The Best of COBOL, Williams Books, 1998"						
"Grand"	"Gary"	"Computer Science"	"Yes"		"Yes"		"3000"	"0"
	"The Way it Was, East Cost Publishing, 1998"			"History Study Grant"				

Figure 3. Sample data as displayed by the Notepad® text editor.

```
* FRONTPAGE Data Collection*/
/* June 26, 1998 Version a */
libname sasdata "c:\98SASUG\SCSUG8SAS\";
data sasdata.research;
infile 'c:\webshare\wwwroot\researchforms\_private\form_results.txt'
delimiter = '09'x notab missover DSD;
```

length

LName \$20 FName \$15 Dept \$20 Books \$5 Journals \$5 IGrants \$5 EGrants \$5
IGrantT 8 EGrantT 8 BooksPub \$50 IGrantN \$50;

input LName FName Dept Books Journals IGrants EGrants IGrantT EGrantT BooksPub
IGrantN;

if Books eq "" then Books = "No";
if Journals eq "" then Journals = "No";
if EGrants eq "" then EGrants = "No";
if IGrants eq "" then IGrants = "No";

proc print data=sasdata.research;
title 'Faculty Research Summary';
run;

proc contents data=sasdata.research;
run;

proc sort data=sasdata.research;
by dept;
proc tabulate data=sasdata.research format= 6.0 missing;
label igrants = "Internal Grants";
label egrants = "External Grants" books = "Books Published" journals = "Journal
Articles";
class dept books journals igrants egrants;
table books journals igrants egrants;
by dept;
run;

Figure 5. Sample SAS program.

Faculty Research Summary									
20:57 Saturday, August 29, 1998									83
OBS	LNAME	FNAME	DEPT	BOOKS	JOURNALS	IGRANTS	EGRANTS	IGRANTT	EGRANTT
1	Alton	Al	Computer Science	No	No	No	No	0	0
2	Brown	Ann	Computer Science	Yes	No	No	Yes	0	6000
3	Dorn	Donna	Communications	No	Yes	Yes	Yes	4000	25000
4	East	Ed	Computer Science	No	Yes	No	Yes	0	5000
5	Farmer	Frank	Computer Science	Yes	No	No	No	0	0
6	Grand	Gary	Computer Science	Yes	No	Yes	No	3000	0
OBS	BOOKSPUB					IGRANTN			
1									
2									
3									
4						Presidents Grant			
5	The Best of COBOL, Williams Books, 1998								
6	The Way it Was, East Coast Publishing, 1998					History Study Grant			

Figure 6. Output from Proc Print.

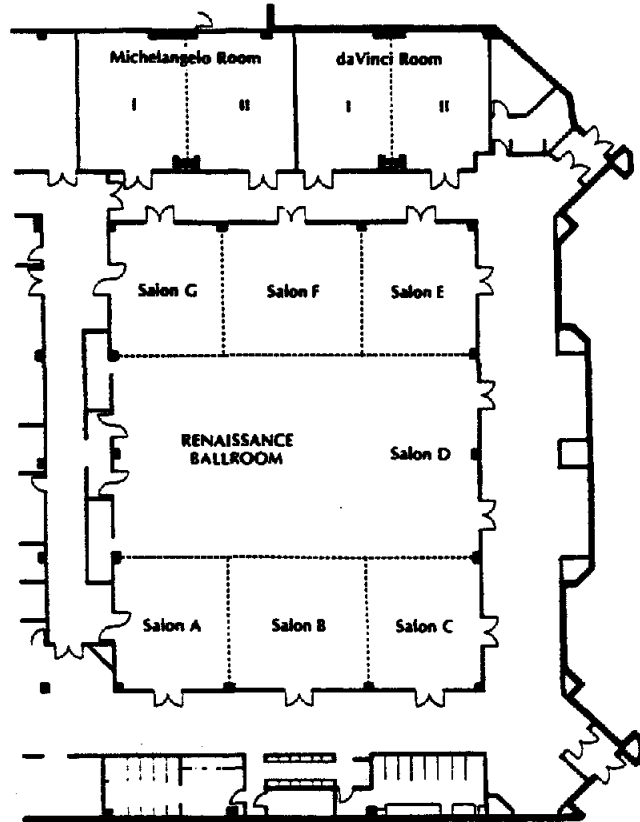
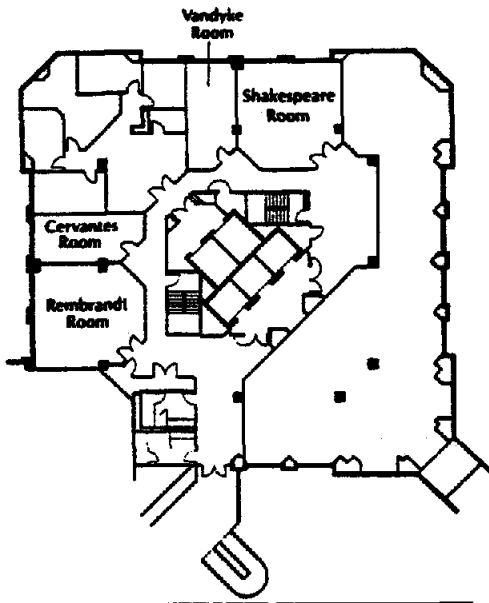
----- DEPT=Computer Science -----

Books Published		Journal Articles		Internal Grants		External Grants	
No	Yes	No	Yes	No	Yes	No	Yes
N	N	N	N	N	N	N	N
2	3	4	1	4	1	3	2

Figure 7. Output from Proc Tabulate.

OMNI RICHARDSON HOTEL

MEETING/BANQUET FACILITIES



SCSUG '98 Conference Facility Usage Plan

Monday, October 26

Renaissance Ballroom A/B - What's New, General Interest, Game Show
Renaissance Ballroom C - Beginning Tutorials
Renaissance Ballroom D - Opening Session, Luncheons, Mixer
Renaissance Ballroom E - Intermediate/Advanced Tutorials
Renaissance Ballroom F - PC Hands-On Workshops
Renaissance Ballroom G - Formal Online Demonstrations by SAS Institute
Michelangelo Room - SAS Institute Exhibit Area
daVinci Room - Vendor Exhibit Area, Help Desk

Tuesday, October 27

Renaissance Ballroom A/B - Applications Development, Closing Session
Renaissance Ballroom C - Applications Development, Consultants Workshop
Renaissance Ballroom D - Luncheons
Renaissance Ballroom E - Statistical Computing, User Demo
Renaissance Ballroom F - PC Hands-On Workshops
Renaissance Ballroom G - Formal Online Demonstrations by SAS Institute
Michelangelo Room - SAS Institute Exhibit Area
daVinci Room - Vendor Exhibit Area, Help Desk



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