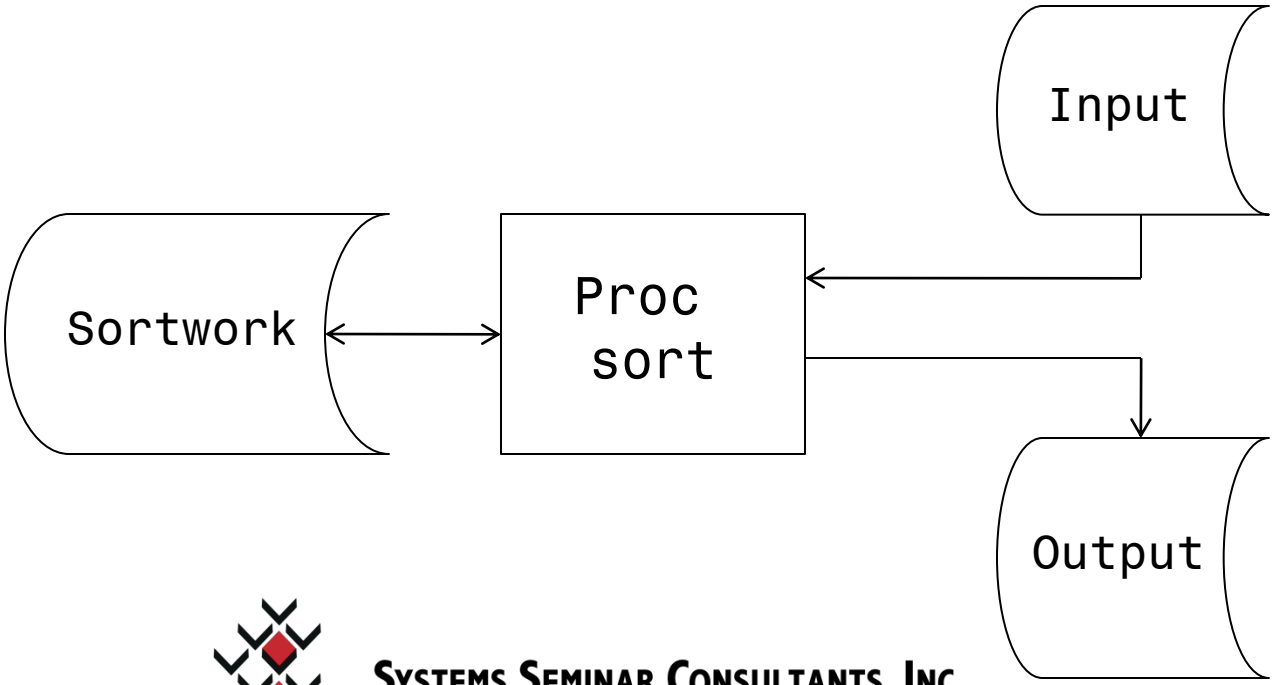
A Different View of PROC SORT



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A Different View of PROC SORT

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Sorting Your Data

PROC SORT rearranges the order of the observations in a SAS dataset and replaces the dataset, or creates a new dataset.

Features:

- single or multiple sort variables
- ascending or descending sequence
- does not print any output
- missing values are lowest value to PROC SORT
- records that are exact duplicates or have duplicate keys can be ignored
- After sorting, BY value breaks can occur with formatted groups
- Original order can be preserved if not affected by sort sequence
- A alternate sort sequencing technique can be specified.

Using PROC SORT

Several options and statements can be used with PROC SORT.

Syntax:

PROC SORT *options*;

Options: (partial list)

DATA=	SAS dataset input to the sort
OVERWRITE	SAS deletes the original dataset before output
NODUPKEY	Eliminate rows with duplicate BY values
NODUPRECS	Eliminate consecutive duplicate records
OUT=	Create a new SAS dataset out of the sort

Using PROC SORT (continued)

Statements used with PROC SORT:

BY *<descending> variable-1 <descending> variable-n ;*

Or

Key *variable-1/option*;
Key *variable-2/option*;

Notes:

- KEY statements allow addition of individual options for each variable.

How Does PROC SORT Work?

Start → *End*

```
proc sort data=softsale;
   by name;
run;
```

Partial softsale

Name	Division	Years	Sales	Expense	State
CHRIS	H	2	233.11	94.12	WI
TOM	S	5	5669.12	798.15	MN
BETH	H	12	4822.12	982.10	WI

Sortwork areas

A PROC SORT Example

Sort the SOFTSALE dataset into alphabetic order.

```
proc sort data=softsale;
   by name;
run;

proc print data=softsale;
  title 'Softco Sales Summary';
  footnote 'Sorted Alphabetically';
run;
```

Notes:

- The original SAS dataset is replaced with the sorted dataset.

The Resulting Output

Softco Sales Summary

Obs	Name	Division	Years	Sales	Expense	State
1	ANDREW	S	24	1762.11	476.13	MN
2	BENJAMIN	S	3	201.11	25.21	IL
3	BETH	H	12	4822.12	982.10	WI
4	CHRIS	H	2	233.11	94.12	WI
5	JANET	S	1	98.11	125.32	WI
6	JENNIFER	S	1	542.11	134.24	IL
7	JOHN	H	7	678.43	150.11	WI
8	JOY	S	12	2442.22	761.98	WI
9	MARK	H	5	298.12	52.65	WI
10	MARY	S	14	5691.78	2452.11	WI
11	PAT	H	4	4009.21	322.12	IL
12	SARAH	S	6	301.21	65.17	MN
13	STEVE	H	21	6153.32	1507.12	WI
14	TOM	S	5	5669.12	798.15	MN
15	WILLIAM	H	11	3231.75	644.55	MN

Sorted Alphabetically

Making a Copy of the Input SAS Dataset

OUT= names a new output dataset and does not alter the input dataset.

```
proc sort data=softsale out=sortsoft;
   by name;
run;

proc print data=sortsoft;
   title 'Softco Sales Summary';
   footnote 'Sorted Alphabetically';
run;
```

The Resulting Output

Softco Sales Summary

Obs	Name	Division	Years	Sales	Expense	State
1	ANDREW	S	24	1762.11	476.13	MN
2	BENJAMIN	S	3	201.11	25.21	IL
3	BETH	H	12	4822.12	982.10	WI
4	CHRIS	H	2	233.11	94.12	WI
5	JANET	S	1	98.11	125.32	WI
6	JENNIFER	S	1	542.11	134.24	IL
7	JOHN	H	7	678.43	150.11	WI
8	JOY	S	12	2442.22	761.98	WI
9	MARK	H	5	298.12	52.65	WI
10	MARY	S	14	5691.78	2452.11	WI
11	PAT	H	4	4009.21	322.12	IL
12	SARAH	S	6	301.21	65.17	MN
13	STEVE	H	21	6153.32	1507.12	WI
14	TOM	S	5	5669.12	798.15	MN
15	WILLIAM	H	11	3231.75	644.55	MN

Sorted Alphabetically

Notes:

- The SOFTSALE dataset is unchanged.

Another PROC SORT Example

Sort into DIVISION order.

```
proc sort data=softsale;
   by division;
run;

proc print data=softsale;
   title 'Softco Sales Summary';
   footnote 'Sorted by Division Alone';
run;
```

The Resulting Output

Softco Sales Summary

Obs	Name	Division	Years	Sales	Expense	State
1	CHRIS	H	2	233.11	94.12	WI
2	MARK	H	5	298.12	52.65	WI
3	PAT	H	4	4009.21	322.12	IL
4	JOHN	H	7	678.43	150.11	WI
5	WILLIAM	H	11	3231.75	644.55	MN
6	STEVE	H	21	6153.32	1507.12	WI
7	BETH	H	12	4822.12	982.10	WI
8	SARAH	S	6	301.21	65.17	MN
9	ANDREW	S	24	1762.11	476.13	MN
10	BENJAMIN	S	3	201.11	25.21	IL
11	JANET	S	1	98.11	125.32	WI
12	JENNIFER	S	1	542.11	134.24	IL
13	JOY	S	12	2442.22	761.98	WI
14	MARY	S	14	5691.78	2452.11	WI
15	TOM	S	5	5669.12	798.15	MN

Sorted by Division Alone

Using OVERWRITE to Save Space

Delete the original dataset before copying the data to the output dataset.

Example:

```
proc sort data=softsale overwrite;
   by name;
run;
```

Notes:

- The resulting saving in workspace can be significant.
- Caution: Because the dataset is deleted before the new dataset is written out, data should be temporary, or backed up first.

How Does OVERWRITE Work?

Start → *End*

```
proc sort data=softsale
          overwrite;
   by name;
run;
```

Partial softsale

Name	Division	Years	Sales	Expense	State
CHRIS	H	2	233.11	94.12	WI
TOM	S	5	5669.12	798.15	MN
BETH	H	12	4822.12	982.10	WI

Sortwork areas

Multiple Keys and DESCENDING Option

Within each Division, sort highest to lowest Sales.

Example:

```
proc sort data=softsale;
   by division descending sales;
run;

proc print data=softsale;
   title 'Softco Sales Summary';
   footnote 'Sorted by Division and Descending Sales';
run;
```

The Resulting Output

Softco Sales Summary

Obs	Name	Division	Years	Sales	Expense	State
1	STEVE	H	21	6153.32	1507.12	WI
2	BETH	H	12	4822.12	982.10	WI
3	PAT	H	4	4009.21	322.12	IL
4	WILLIAM	H	11	3231.75	644.55	MN
5	JOHN	H	7	678.43	150.11	WI
6	MARK	H	5	298.12	52.65	WI
7	CHRIS	H	2	233.11	94.12	WI
8	MARY	S	14	5691.78	2452.11	WI
9	TOM	S	5	5669.12	798.15	MN
10	JOY	S	12	2442.22	761.98	WI
11	ANDREW	S	24	1762.11	476.13	MN
12	JENNIFER	S	1	542.11	134.24	IL
13	SARAH	S	6	301.21	65.17	MN
14	BENJAMIN	S	3	201.11	25.21	IL
15	JANET	S	1	98.11	125.32	WI

Sorted by Division and Descending Sales

Duplicate Records

Sarah's data was accidentally entered twice.

Softdup Dataset

Obs	Name	Division	Years	Sales	Expense	State
1	CHRIS	H	2	233.11	94.12	WI
2	MARK	H	5	298.12	52.65	WI
3	SARAH	S	6	301.21	65.17	MN
4	MARY	S	14	5691.78	2452.11	WI
5	PAT	H	4	4009.21	322.12	IL
6	JOHN	H	7	678.43	150.11	WI
7	WILLIAM	H	11	3231.75	644.55	MN
8	ANDREW	S	24	1762.11	476.13	MN
9	BENJAMIN	S	3	201.11	25.21	IL
10	JANET	S	1	98.11	125.32	WI
11	STEVE	H	21	6153.32	1507.12	WI
12	JENNIFER	S	1	542.11	134.24	IL
13	JOY	S	12	2442.22	761.98	WI
14	SARAH	S	6	301.21	65.17	MN
15	TOM	S	5	5669.12	798.15	MN
16	BETH	H	12	4822.12	982.10	WI

Deleting Duplicate Records

Specifying NODUPS deletes exact consecutive duplicate records after sorting.

```
proc sort data=softsale nodups;
  by name;
run;
```

Partial Log:

```
NOTE: 1 duplicate observations were deleted.
NOTE: There were 16 observations read from the data set WORK.SOFTDUP.
NOTE: The data set WORK.SOFTDUP has 15 observations and 6 variables.
```

The Resulting Output

Softdup Dataset after Nodups

Obs	Name	Division	Years	Sales	Expense	State
1	ANDREW	S	24	1762.11	476.13	MN
2	BENJAMIN	S	3	201.11	25.21	IL
3	BETH	H	12	4822.12	982.10	WI
4	CHRIS	H	2	233.11	94.12	WI
5	JANET	S	1	98.11	125.32	WI
6	JENNIFER	S	1	542.11	134.24	IL
7	JOHN	H	7	678.43	150.11	WI
8	JOY	S	12	2442.22	761.98	WI
9	MARK	H	5	298.12	52.65	WI
10	MARY	S	14	5691.78	2452.11	WI
11	PAT	H	4	4009.21	322.12	IL
12	SARAH	S	6	301.21	65.17	MN
13	STEVE	H	21	6153.32	1507.12	WI
14	TOM	S	5	5669.12	798.15	MN
15	WILLIAM	H	11	3231.75	644.55	MN

Deleting Records With Duplicate Keys

NODUPKEY will output only one record per value of BY variable.

Example: Select a single observation for each state.

```
proc sort data=softsale nodupkey;
   by state;
run;

proc print data=softsale;
   title 'A Single Record Per State';
run;
```

Partial Log:

```
NOTE: 12 observations with duplicate key values were deleted.
NOTE: There were 15 observations read from the data set WORK.SOFTSALE.
NOTE: The data set WORK.SOFTSALE has 3 observations and 6 variables.
```

The Resulting Output

A Single Record Per State

Obs	Name	Division	Years	Sales	Expense	State
1	PAT	H	4	4009.21	322.12	IL
2	SARAH	S	6	301.21	65.17	MN
3	CHRIS	H	2	233.11	94.12	WI

Notes:

- Under some operating systems you may not always get the first record input per key.

Additional PROC SORT Options

DATECOPY	Preserves dataset create date and time
DUPOUT=	specifies output data set for duplicate observations
EQUALS	for obs with identical BY values, EQUALS maintains relative order of the obs
NOEQUALS	do not maintain this order for identical BY values
PRESORTED	checks before sorting for being already sorted
REVERSE	sorts character variables in reverse order
SORTSEQ=	specifies the collating sequence as an option, a translation table, an encoding, or LINGUISTIC.
TAGSORT	store only BY variables and obs no while sorting, After sorting, use tags to retrieve records directly.
THREADS | NOTHREADS	enable/prevents multi-threaded sorting.

Syncsort Products

- Syncsort is a very fast and popular mainframe sort program.
- Your SAS installer may choose Syncsort to be the program to be used by SAS for sorts, but SAS still does the I/O. You code PROC SORT.
- PROC SYNCSORT is an additional product from Syncsort Inc. that replaces the SAS sort, and SYNCSORT does the I/O (fast). You cold PROC SYNCSORT or sometimes PROC SORT will also work.

Contact Us

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