




Basic SAS[®] PROCedures for Quick Results

A presentation by

Kirk Paul Lafler



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Presentation Objectives

- Explore the world of basic SAS PROCedures
- Understand the anatomy of a PROCedure
- Investigate the categories of PROCedures
- Describe the available report formats
- Illustrate specific PROCedures by example



Example Table

	Title	Length	Category	Year	Studio	Rating
1	Brave Heart	177	Action Adventure	1995	Paramount Pictures	R
2	Casablanca	103	Drama	1942	MGM / UA	PG
3	Christmas Vacation	97	Comedy	1989	Warner Brothers	PG-13
4	Coming to America	116	Comedy	1988	Paramount Pictures	R
5	Dracula	130	Horror	1993	Columbia TriStar	R
6	Dressed to Kill	105	Drama Mysteries	1980	Filmways Pictures	R
7	Forrest Gump	142	Drama	1994	Paramount Pictures	PG-13
8	Ghost	127	Drama Romance	1990	Paramount Pictures	PG-13
9	Jaws	125	Action Adventure	1975	Universal Studios	PG
10	Jurassic Park	127	Action	1993	Universal Pictures	PG-13
11	Lethal Weapon	110	Action Cops & Robber	1987	Warner Brothers	R
12	Michael	106	Drama	1997	Warner Brothers	PG-13
13	National Lampoon's Vacation	98	Comedy	1983	Warner Brothers	PG-13
14	Poltergeist	115	Horror	1982	MGM / UA	PG
15	Rocky	120	Action Adventure	1976	MGM / UA	PG
16	Scarface	170	Action Cops & Robber	1983	Universal Studios	R
17	Silence of the Lambs	118	Drama Suspense	1991	Orion	R
18	Star Wars	124	Action Sci-Fi	1977	Lucas Film Ltd	PG
19	The Hunt for Red October	135	Action Adventure	1989	Paramount Pictures	PG
20	The Terminator	108	Action Sci-Fi	1984	Live Entertainment	R
21	The Wizard of Oz	101	Adventure	1939	MGM / UA	G
22	Titanic	194	Drama Romance	1997	Paramount Pictures	PG-13

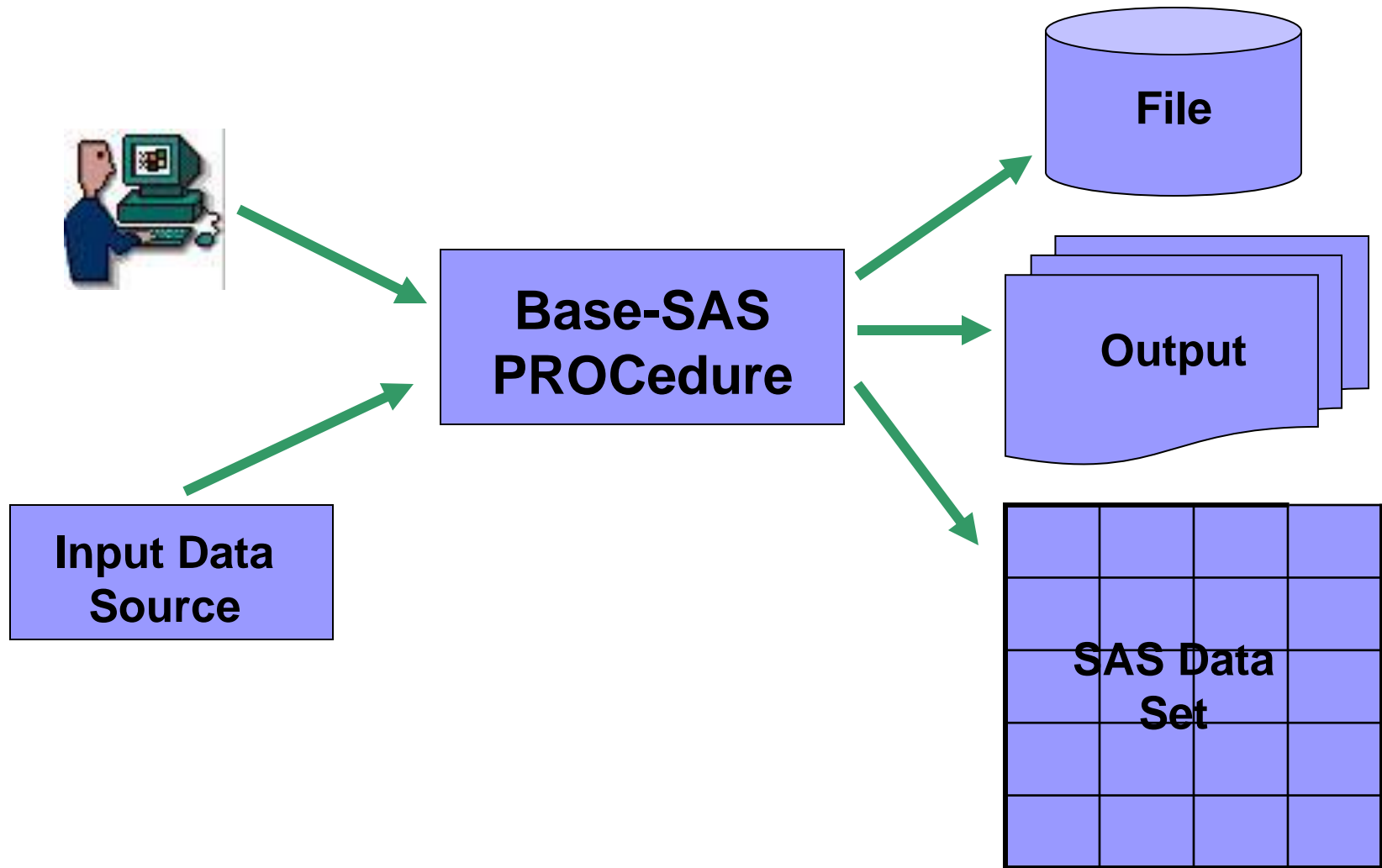


The Anatomy of a PROC

Base PROCedures in a Nutshell

- Built-in to the SAS system
- “Canned” programs supplied and supported by SAS Institute
- Easy to use
- Ability to generate results quickly
- Can be used in interactive or batch mode
- Results are written to:
 - ✓ Output window (SAS Display Manager)
 - ✓ Output SAS data set
 - ✓ Output file (in report format)

PROCs and Input-Output



PROC Statements and Options

Non-Interactive "Classic" PROC Syntax

```
PROC procname DATA= libref.dataset-name <option(s)>;  
  statement(s) ... .. ;  
RUN;
```

(OR)

Interactive "Robust" PROC Syntax

```
PROC SQL <option(s)>;  
  SELECT <column(s)>  
    FROM libref.table-name  
      <clause(s)>;  
QUIT;
```


PROC PRINT with No Options

```
PROC PRINT;
```

```
RUN;
```



PROC PRINT Output

```
PROC PRINT;
```

```
RUN;
```

The SAS System						
Obs	Title	Length	Category	Year	Studio	Rating
1	The Wizard of Oz	101	Adventure	1939	MGM / UA	G
2	Casablanca	103	Drama	1942	MGM / UA	PG
3	Jaws	125	Action Adventure	1975	Universal Studios	PG
4	Rocky	120	Action Adventure	1976	MGM / UA	PG
5	Star Wars	124	Action Sci-Fi	1977	Lucas Film Ltd	PG
6	Poltergeist	115	Horror	1982	MGM / UA	PG
7	The Hunt for Red October	135	Action Adventure	1989	Paramount Pictures	PG
8	National Lampoon's Vacation	98	Comedy	1983	Warner Brothers	PG-13
9	Christmas Vacation	97	Comedy	1989	Warner Brothers	PG-13
10	Ghost	127	Drama Romance	1990	Paramount Pictures	PG-13
11	Jurassic Park	127	Action	1993	Universal Pictures	PG-13
12	Forrest Gump	142	Drama	1994	Paramount Pictures	PG-13
13	Michael	106	Drama	1997	Warner Brothers	PG-13
14	Titanic	194	Drama Romance	1997	Paramount Pictures	PG-13
15	Dressed to Kill	105	Drama Mysteries	1980	Filmways Pictures	R
16	Scarface	170	Action Cops & Robber	1983	Universal Studios	R
17	The Terminator	108	Action Sci-Fi	1984	Live Entertainment	R
18	Lethal Weapon	110	Action Cops & Robber	1987	Warner Brothers	R
19	Coming to America	116	Comedy	1988	Paramount Pictures	R
20	Silence of the Lambs	118	Drama Suspense	1991	Orion	R
21	Dracula	130	Horror	1993	Columbia TriStar	R
22	Brave Heart	177	Action Adventure	1995	Paramount Pictures	R

PROC PRINT with DATA= Option

```
PROC PRINT DATA = SASUSER.MOVIES ;  
RUN ;
```



PROC PRINT Output

```
PROC PRINT DATA = SASUSER.MOVIES ;  
RUN ;
```

The SAS System						
Obs	Title	Length	Category	Year	Studio	Rating
1	The Wizard of Oz	101	Adventure	1939	MGM / UA	G
2	Casablanca	103	Drama	1942	MGM / UA	PG
3	Jaws	125	Action Adventure	1975	Universal Studios	PG
4	Rocky	120	Action Adventure	1976	MGM / UA	PG
5	Star Wars	124	Action Sci-Fi	1977	Lucas Film Ltd	PG
6	Poltergeist	115	Horror	1982	MGM / UA	PG
7	The Hunt for Red October	135	Action Adventure	1989	Paramount Pictures	PG
8	National Lampoon's Vacation	98	Comedy	1983	Warner Brothers	PG-13
9	Christmas Vacation	97	Comedy	1989	Warner Brothers	PG-13
10	Ghost	127	Drama Romance	1990	Paramount Pictures	PG-13
11	Jurassic Park	127	Action	1993	Universal Pictures	PG-13
12	Forrest Gump	142	Drama	1994	Paramount Pictures	PG-13
13	Michael	106	Drama	1997	Warner Brothers	PG-13
14	Titanic	194	Drama Romance	1997	Paramount Pictures	PG-13
15	Dressed to Kill	105	Drama Mysteries	1980	Filmways Pictures	R
16	Scarface	170	Action Cops & Robber	1983	Universal Studios	R
17	The Terminator	108	Action Sci-Fi	1984	Live Entertainment	R
18	Lethal Weapon	110	Action Cops & Robber	1987	Warner Brothers	R
19	Coming to America	116	Comedy	1988	Paramount Pictures	R
20	Silence of the Lambs	118	Drama Suspense	1991	Orion	R
21	Dracula	130	Horror	1993	Columbia TriStar	R
22	Brave Heart	177	Action Adventure	1995	Paramount Pictures	R

PROC SQL with FROM Clause

```
PROC SQL NUMBER;  
  SELECT *  
  FROM SASUSER.MOVIES;  
QUIT;
```



PROC SQL Output

```
PROC SQL NUMBER;  
  SELECT *  
  FROM SASUSER.MOVIES;  
QUIT;
```

The SAS System						
Obs	Title	Length	Category	Year	Studio	Rating
1	The Wizard of Oz	101	Adventure	1939	MGM / UA	G
2	Casablanca	103	Drama	1942	MGM / UA	PG
3	Jaws	125	Action Adventure	1975	Universal Studios	PG
4	Rocky	120	Action Adventure	1976	MGM / UA	PG
5	Star Wars	124	Action Sci-Fi	1977	Lucas Film Ltd	PG
6	Poltergeist	115	Horror	1982	MGM / UA	PG
7	The Hunt for Red October	135	Action Adventure	1989	Paramount Pictures	PG
8	National Lampoon's Vacation	98	Comedy	1983	Warner Brothers	PG-13
9	Christmas Vacation	97	Comedy	1989	Warner Brothers	PG-13
10	Ghost	127	Drama Romance	1990	Paramount Pictures	PG-13
11	Jurassic Park	127	Action	1993	Universal Pictures	PG-13
12	Forrest Gump	142	Drama	1994	Paramount Pictures	PG-13
13	Michael	106	Drama	1997	Warner Brothers	PG-13
14	Titanic	194	Drama Romance	1997	Paramount Pictures	PG-13
15	Dressed to Kill	105	Drama Mysteries	1980	Filmways Pictures	R
16	Scarface	170	Action Cops & Robber	1983	Universal Studios	R
17	The Terminator	108	Action Sci-Fi	1984	Live Entertainment	R
18	Lethal Weapon	110	Action Cops & Robber	1987	Warner Brothers	R
19	Coming to America	116	Comedy	1988	Paramount Pictures	R
20	Silence of the Lambs	118	Drama Suspense	1991	Orion	R
21	Dracula	130	Horror	1993	Columbia TriStar	R
22	Brave Heart	177	Action Adventure	1995	Paramount Pictures	R



Base-SAS PROCedures

Base-SAS PROCedures

Output Style	PROC
Detail Output	FORMS PRINT REPORT SQL
Summary Output	CHART FREQ MEANS PLOT SQL UNIVARIATE
Tabular Output	FREQ TABULATE
Statistical Output	MEANS SQL UNIVARIATE
Graphical Output	CHART PLOT
Utility Tools	DATASETS

Base-SAS PROCedures

- Detail – prints one or more observations without summarizing data
- Summary – aggregates or collapses observations before printing
- Tabular – aggregates observations and prints data with borders
- Statistical – computes and prints descriptive statistical data (e.g., Min, Max, Mean, etc.)
- Graphical – prints data as simple line-oriented bar and pie charts, and line plots
- Utility – handles data management tasks (e.g., contents, table rename and delete, table backup and repair, etc.)



SAS Reporting PROCedures


A World of Information

“Information is the lifeblood of today’s dynamic business and makes up a significant portion of an organization’s intellectual property.”

Terence Mullin

Quest Software, Irvine, California

Source: Enterprise Systems Journal (Feb. 2001)



“Data comes in two flavors: structured and unstructured. Structured data is typically stored in databases as rows and columns. This data is then extracted with report writers or packaged applications to generate output as unstructured, but more meaningful, information.”

Terence Mullin

Quest Software, Irvine, California

Source: Enterprise Systems Journal (Feb. 2001)



Detail Reports

PROC PRINT with VAR Statement

```
PROC PRINT DATA = SASUSER.MOVIES;  
  VAR TITLE LENGTH RATING;  
RUN;
```



PROC PRINT Output

```
PROC PRINT DATA = SASUSER.MOVIES;  
  VAR TITLE LENGTH RATING;  
RUN;
```

The SAS System			
Obs	Title	Length	Rating
1	The Wizard of Oz	101	G
2	Casablanca	103	PG
3	Jaws	125	PG
4	Rocky	120	PG
5	Star Wars	124	PG
6	Poltergeist	115	PG
7	The Hunt for Red October	135	PG
8	National Lampoon's Vacation	98	PG-13
9	Christmas Vacation	97	PG-13
10	Ghost	127	PG-13
11	Jurassic Park	127	PG-13
12	Forrest Gump	142	PG-13
13	Michael	106	PG-13
14	Titanic	194	PG-13
15	Dressed to Kill	105	R
16	Scarface	170	R
17	The Terminator	108	R
18	Lethal Weapon	110	R
19	Coming to America	116	R
20	Silence of the Lambs	118	R
21	Dracula	130	R
22	Brave Heart	177	R

PROC PRINT with TITLE Statement

```
PROC PRINT DATA = SASUSER.MOVIES NOOBS;  
  TITLE "Movie Classics";  
  VAR TITLE LENGTH RATING;  
RUN;
```



PROC PRINT Output

```
PROC PRINT DATA = SASUSER.MOVIES NOOBS;  
  TITLE "Movie Classics";  
  VAR TITLE LENGTH RATING;  
RUN;
```

Movie Classics		
Title	Length	Rating
The Wizard of Oz	101	G
Casablanca	103	PG
Jaws	125	PG
Rocky	120	PG
Star Wars	124	PG
Poltergeist	115	PG
The Hunt for Red October	135	PG
National Lampoon's Vacation	98	PG-13
Christmas Vacation	97	PG-13
Ghost	127	PG-13
Jurassic Park	127	PG-13
Forrest Gump	142	PG-13
Michael	106	PG-13
Titanic	194	PG-13
Dressed to Kill	105	R
Scarface	170	R
The Terminator	108	R
Lethal Weapon	110	R
Coming to America	116	R
Silence of the Lambs	118	R
Dracula	130	R
Brave Heart	177	R

PROC SQL with TITLE Statement

```
PROC SQL;  
  TITLE "Movie Classics";  
  SELECT TITLE, LENGTH, RATING  
    FROM SASUSER.MOVIES;  
QUIT;
```



PROC SQL Output

```
PROC SQL;  
  TITLE "Movie Classics";  
  SELECT TITLE, LENGTH, RATING  
  FROM SASUSER.MOVIES;  
QUIT;
```

Movie Classics		
Title	Length	Rating
The Wizard of Oz	101	G
Casablanca	103	PG
Jaws	125	PG
Rocky	120	PG
Star Wars	124	PG
Poltergeist	115	PG
The Hunt for Red October	135	PG
National Lampoon's Vacation	98	PG-13
Christmas Vacation	97	PG-13
Ghost	127	PG-13
Jurassic Park	127	PG-13
Forrest Gump	142	PG-13
Michael	106	PG-13
Titanic	194	PG-13
Dressed to Kill	105	R
Scarface	170	R
The Terminator	108	R
Lethal Weapon	110	R
Coming to America	116	R
Silence of the Lambs	118	R
Dracula	130	R
Brave Heart	177	R

PROC PRINT with WHERE Statement

```
PROC PRINT DATA = SASUSER.MOVIES NOOBS;  
  TITLE "Movie Classics";  
  VAR TITLE LENGTH RATING;  
  WHERE RATING IN ('PG', 'PG-13');  
RUN;
```



PROC PRINT Output

```
PROC PRINT DATA = SASUSER.MOVIES NOOBS;  
  TITLE "Movie Classics";  
  VAR TITLE LENGTH RATING;  
  WHERE RATING IN ('PG', 'PG-13');  
RUN;
```

Movie Classics		
Title	Length	Rating
Casablanca	103	PG
Jaws	125	PG
Rocky	120	PG
Star Wars	124	PG
Poltergeist	115	PG
The Hunt for Red October	135	PG
National Lampoon's Vacation	98	PG-13
Christmas Vacation	97	PG-13
Ghost	127	PG-13
Jurassic Park	127	PG-13
Forrest Gump	142	PG-13
Michael	106	PG-13
Titanic	194	PG-13

PROC PRINT with BY / SUM Statement

```
PROC SORT DATA=SASUSER.MOVIES OUT=SORTED_MOVIES;  
  BY RATING;  
PROC PRINT DATA = SORTED_MOVIES NOOBS;  
  TITLE "Movie Classics";  
  VAR TITLE LENGTH RATING;  
  BY RATING;  
  SUM LENGTH;  
RUN;
```



PROC PRINT Output

```
PROC SORT DATA=SASUSER.MOVIES OUT=SORTED_MOVIES;  
  BY RATING;  
PROC PRINT DATA = SORTED_MOVIES NOOBS;  
  TITLE "Movie Classics";  
  VAR TITLE LENGTH RATING;  
  BY RATING;  
  SUM LENGTH;  
RUN;
```

Movie Classics		
----- Rating=G -----		
Title	Length	Rating
The Wizard of Oz	101	G
----- Rating=PG -----		
Title	Length	Rating
Casablanca	103	PG
Jaws	125	PG
Rocky	120	PG
Star Wars	124	PG
Poltergeist	115	PG
The Hunt for Red October	135	PG

Rating	722	
----- Rating=PG-13 -----		
Title	Length	Rating
National Lampoon's Vacation	98	PG-13
Christmas Vacation	97	PG-13
Ghost	127	PG-13
Jurassic Park	127	PG-13
Forrest Gump	142	PG-13
Michael	106	PG-13
Titanic	194	PG-13

Rating	891	

PROC FORMS with LINE details

```
PROC FORMS DATA = SASUSER.MOVIES;  
  TITLE;  
  LINE 1 TITLE;  
  LINE 2 CATEGORY;  
  LINE 3 RATING;  
RUN;
```



PROC FORMS Output

```
PROC FORMS DATA = SASUSER.MOVIES;  
  TITLE;  
  LINE 1 TITLE;  
  LINE 2 CATEGORY;  
  LINE 3 RATING;  
RUN;
```

```
The Wizard of Oz  
Adventure  
G  
  
Casablanca  
Drama  
PG  
  
Jaws  
Action Adventure  
PG  
  
Rocky  
Action Adventure  
PG  
  
Star Wars  
Action Sci-Fi  
PG  
  
Poltergeist  
Horror  
PG  
  
The Hunt for Red October  
Action Adventure  
PG  
  
National Lampoon's Vacation  
Comedy  
PG-13  
  
Christmas Vacation  
Comedy  
PG-13  
  
Ghost  
Drama Romance  
PG-13
```

PROC FORMS with ACROSS Option

```
PROC FORMS DATA = SASUSER.MOVIES ACROSS=2 ;  
  TITLE ;  
  LINE 1 TITLE ;  
  LINE 2 CATEGORY ;  
  LINE 3 RATING ;  
RUN ;
```



PROC FORMS Output

```
PROC FORMS DATA = SASUSER.MOVIES ACROSS=2 ;  
  TITLE ;  
  LINE 1 TITLE ;  
  LINE 2 CATEGORY ;  
  LINE 3 RATING ;  
RUN ;
```

The Wizard of Oz Adventure G	Casablanca Drama PG
Jaws Action Adventure PG	Rocky Action Adventure PG
Star Wars Action Sci-Fi PG	Poltergeist Horror PG
The Hunt for Red October Action Adventure PG	National Lampoon's Vacation Comedy PG-13
Christmas Vacation Comedy PG-13	Ghost Drama Romance PG-13
Jurassic Park Action PG-13	Forrest Gump Drama PG-13
Michael Drama PG-13	Titanic Drama Romance PG-13
Dressed to Kill Drama Mysteries R	Scarface Action Cops & Robber R
The Terminator Action Sci-Fi R	Lethal Weapon Action Cops & Robber R
Coming to America Comedy R	Silence of the Lambs Drama Suspense R
Dracula Horror R	Brave Heart Action Adventure R



Summary Reports

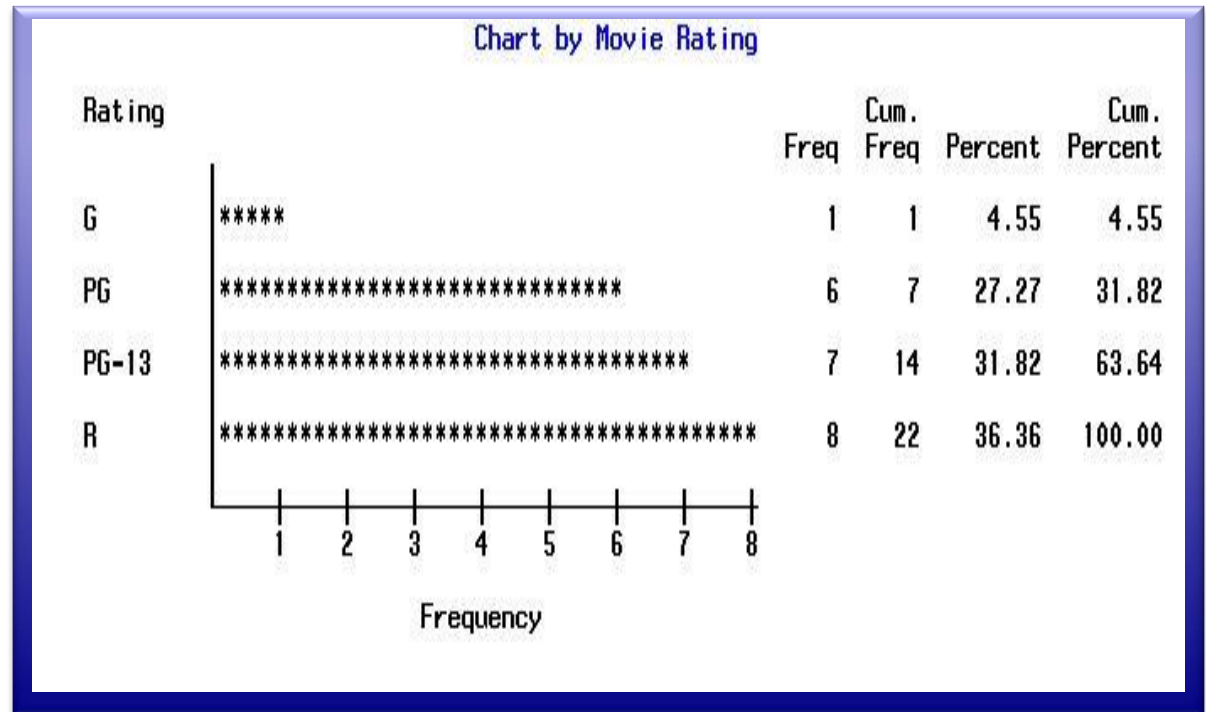
PROC CHART with HBAR Statement

```
PROC CHART DATA = SASUSER.MOVIES;  
  TITLE "Chart by Movie Rating";  
  HBAR RATING;  
RUN;
```



PROC CHART Output

```
PROC CHART DATA = SASUSER.MOVIES;  
  TITLE "Chart by Movie Rating";  
  HBAR RATING;  
RUN;
```



PROC FREQ with TABLES Statement

```
PROC FREQ DATA = SASUSER.MOVIES;  
  TITLE "Frequency by Movie Rating";  
  TABLES RATING;  
RUN;
```



PROC FREQ Output

```
PROC FREQ DATA = SASUSER.MOVIES;  
  TITLE "Frequency by Movie Rating";  
  TABLES RATING;  
RUN;
```

Frequency by Movie Rating				
The FREQ Procedure				
Rating	Frequency	Percent	Cumulative Frequency	Cumulative Percent
G	1	4.55	1	4.55
PG	6	27.27	7	31.82
PG-13	7	31.82	14	63.64
R	8	36.36	22	100.00

PROC FREQ with TABLES Statement

```
PROC FREQ DATA = SASUSER.MOVIES;  
  TITLE "2-Way Frequency Table";  
  TABLES RATING * CATEGORY;  
RUN;
```



PROC FREQ Output

```
PROC FREQ DATA = SASUSER.MOVIES;
  TITLE "2-Way Frequency Table";
  TABLES RATING * CATEGORY;
RUN;
```

2-Way Frequency Table
The FREQ Procedure
Table of Rating by Category

Rating	Category						Total
Frequency Percent Row Pct Col Pct	Action	Action A dventure	Action C ops & Ro bber	Action S ci-Fi	Adventur e	Comedy	
G	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 4.55 100.00 100.00	0 0.00 0.00 0.00	1 4.55
PG	0 0.00 0.00 0.00	3 13.64 50.00 75.00	0 0.00 0.00 0.00	1 4.55 16.67 50.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	6 27.27
PG-13	1 4.55 14.29 100.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 9.09 28.57 66.67	7 31.82
R	0 0.00 0.00 0.00	1 4.55 12.50 25.00	2 9.09 25.00 100.00	1 4.55 12.50 50.00	0 0.00 0.00 0.00	1 4.55 12.50 33.33	8 36.36
Total	1 4.55	4 18.18	2 9.09	2 9.09	1 4.55	3 13.64	22 100.00

(Continued)

PROC MEANS with DATA= Option

```
PROC MEANS DATA = SASUSER.MOVIES;  
  TITLE "Descriptive Statistics";  
RUN;
```



PROC MEANS Output

```
PROC MEANS DATA = SASUSER.MOVIES;  
  TITLE "Descriptive Statistics";  
RUN;
```

Descriptive Statistics					
The MEANS Procedure					
Variable	N	Mean	Std Dev	Minimum	Maximum
Length	22	124.9090909	25.8344714	97.0000000	194.0000000
Year	22	1982.91	15.2124920	1939.00	1997.00

PROC MEANS with CLASS Statement


```
PROC MEANS DATA = SASUSER.MOVIES;  
  TITLE "Descriptive Statistics";  
  CLASS RATING;  
RUN;
```



PROC MEANS Output

```
PROC MEANS DATA = SASUSER.MOVIES;  
  TITLE "Descriptive Statistics";  
  CLASS RATING;  
RUN;
```

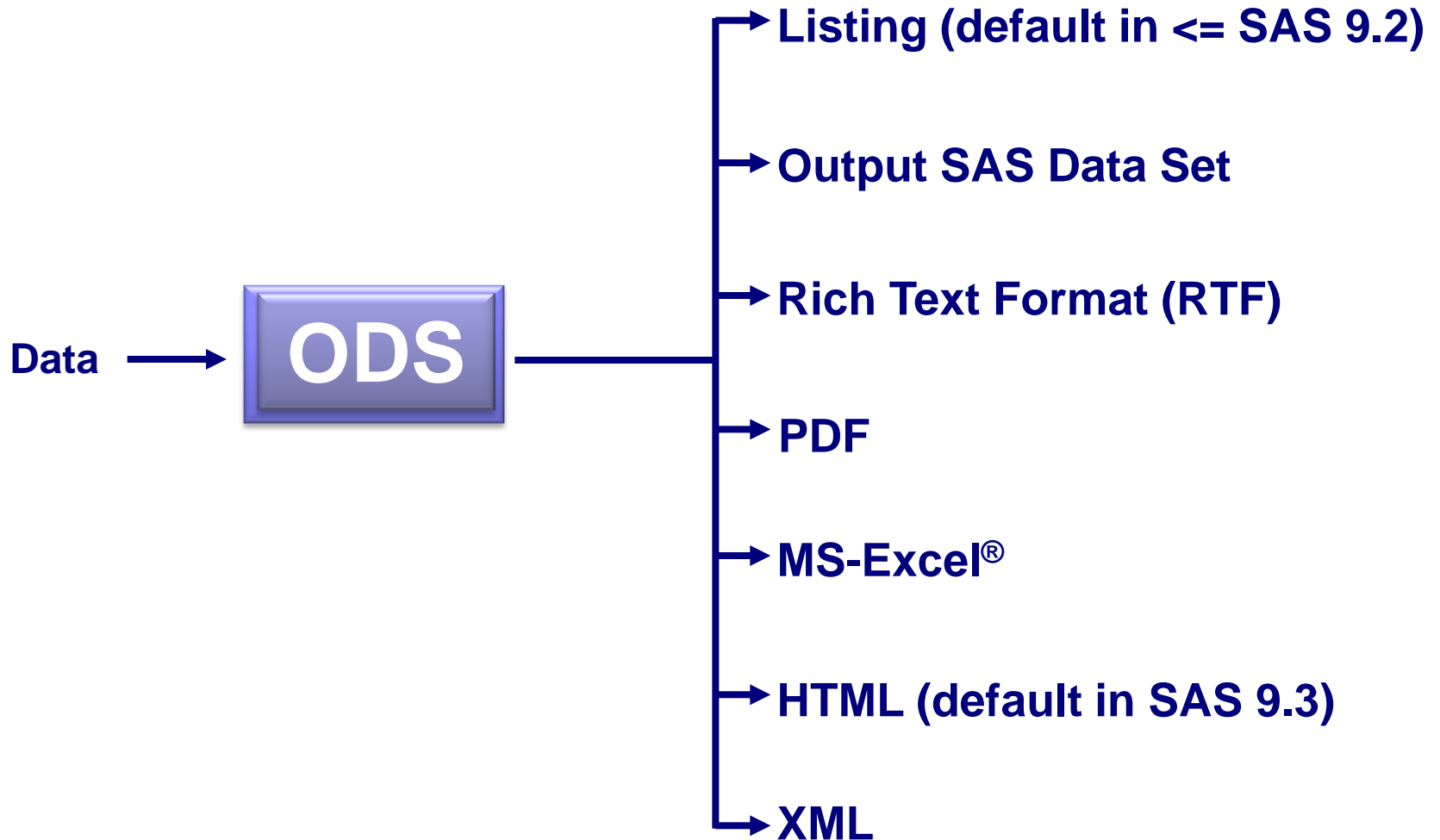
Descriptive Statistics							
The MEANS Procedure							
Rating	N Obs	Variable	N	Mean	Std Dev	Minimum	Maximum
G	1	Length	1	101.0000000	.	101.0000000	101.0000000
		Year	1	1939.00	.	1939.00	1939.00
PG	6	Length	6	120.3333333	10.7641380	103.0000000	135.0000000
		Year	6	1973.50	16.2818918	1942.00	1989.00
PG-13	7	Length	7	127.2857143	33.9004144	97.0000000	194.0000000
		Year	7	1991.86	4.9809160	1983.00	1997.00
R	8	Length	8	129.2500000	28.4190580	105.0000000	177.0000000
		Year	8	1987.63	5.1806646	1980.00	1995.00



SAS and its many “canned”, ready-to-go, PROCs can be used to turn data into structured and meaningful information simply and easily. From reports to electronic files, users can produce word processing files, PDF, graphics, Excel spreadsheets, HTML, and other forms in support of information needs.

**Kirk Paul Lafler
Software Intelligence Corporation
Spring Valley, California**

Turning Data into Information



ODS RTF with ESCAPECHAR='^'

```
ODS LISTING CLOSE;  
ODS ESCAPECHAR='^';  
ODS RTF FILE='univariate-output-pages.rtf';  
  
PROC UNIVARIATE DATA = SASUSER.MOVIES;  
  TITLE 'Page ^{thispage} of ^{lastpage}';  
  FOOTNOTE '^{pageof}';  
RUN;  
  
ODS RTF CLOSE;  
ODS LISTING;
```



ODS RTF Output

'Page ^{thispage} of ^{lastpage}'

```
ODS LISTING CLOSE;
ODS ESCAPECHAR='^';
ODS RTF FILE='univariate-output-pages.rtf';

PROC UNIVARIATE DATA = SASUSER.MOVIES;
  TITLE 'Page ^{thispage} of ^{lastpage}';
  FOOTNOTE '^{\pageof}';
RUN;

ODS RTF CLOSE;
ODS LISTING;
```

The UNIVARIATE Procedure
Variable: Length

Moments			
	22	Sum Weights	22
Mean	124.909091	Sum Observations	2748
Std Deviation	25.8344714	Variance	667.419913
Skewness	1.45414494	Kurtosis	1.71453814
Uncorrected SS	357266	Corrected SS	14015.8182
Coeff Variation	20.682619	Std Error Mean	5.50792781

Basic Statistical Measures			
Location		Variability	
Mean	124.9091	Std Deviation	25.83447
Median	119.0000	Variance	667.41991
Mode	127.0000	Range	97.00000
		Interquartile Range	24.00000

Tests for Location: Mu0=0			
Test	Statistic	p Value	
Student's t	t	22.67806	Pr > t <.0001
Sign	M	11	Pr >= M <.0001
Signed Rank	S	126.5	Pr >= S <.0001

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	194
99%	194
95%	177
90%	170
75% Q3	130
50% Median	119
25% Q1	106
10%	101
5%	98

1 of 4

ODS HTML to MS-Excel®

```
ODS LISTING CLOSE;  
ODS HTML FILE='print-to-excel.XLS' ;  
  
PROC PRINT DATA = SASUSER.MOVIES NOOBS;  
  TITLE;  
RUN;  
  
ODS HTML CLOSE;
```



ODS HTML Output

```
ODS LISTING CLOSE;  
ODS HTML FILE='print-to-excel.XLS' ;  
  
PROC PRINT DATA = SASUSER.MOVIES NOOBS ;  
    TITLE ;  
RUN ;  
  
ODS HTML CLOSE ;
```

Title	Length	Category	Year	Studio	Rating
Brave Heart	177	Action Adventure	1995	Paramount Pictures	R
Casablanca	103	Drama	1942	MGM / UA	PG
Christmas Vacation	97	Comedy	1989	Warner Brothers	PG-13
Coming to America	116	Comedy	1988	Paramount Pictures	R
Dracula	130	Horror	1993	Columbia TriStar	R
Dressed to Kill	105	Drama Mysteries	1980	Filmways Pictures	R
Forrest Gump	142	Drama	1994	Paramount Pictures	PG-13
Ghost	127	Drama Romance	1990	Paramount Pictures	PG-13
Jaws	125	Action Adventure	1975	Universal Studios	PG
Jurassic Park	127	Action	1993	Universal Pictures	PG-13
Lethal Weapon	110	Action Cops & Robber	1987	Warner Brothers	R
Michael	106	Drama	1997	Warner Brothers	PG-13
National Lampoon's Vacation	98	Comedy	1983	Warner Brothers	PG-13
Poltergeist	115	Horror	1982	MGM / UA	PG
Rocky	120	Action Adventure	1976	MGM / UA	PG
Scarface	170	Action Cops & Robber	1983	Universal Studios	R
Silence of the Lambs	118	Drama Suspense	1991	Orion	R
Star Wars	124	Action Sci-Fi	1977	Lucas Film Ltd	PG
The Hunt for Red October	135	Action Adventure	1989	Paramount Pictures	PG
The Terminator	108	Action Sci-Fi	1984	Live Entertainment	R
The Wizard of Oz	101	Adventure	1939	MGM / UA	G
Titanic	194	Drama Romance	1997	Paramount Pictures	PG-13



Data Management

PROC DATASETS with LIBRARY= Option

```
PROC DATASETS LIBRARY = SASUSER;  
QUIT;
```



PROC DATASETS Output

```
PROC DATASETS LIBRARY = SASUSER;  
QUIT;
```

```
PROC DATASETS LIBRARY = SASUSER;
```

Directory

```
Libref      SASUSER;  
Engine      V9  
Physical Name D:\SAS Version 9\_TD2664  
File Name   D:\SAS Version 9\_TD2664
```

#	Name	Member Type	File Size	Last Modified
1	MOVIES	DATA	17408	14NOV2003:01:06:22
	MOVIES	INDEX	17408	14NOV2003:01:06:22

```
QUIT;
```

PROC DATASETS with CONTENTS

```
PROC DATASETS LIBRARY = SASUSER;  
  CONTENTS DATA=MOVIES;  
QUIT;
```



PROC DATASETS Output

```
PROC DATASETS LIBRARY = SASUSER;  
  CONTENTS DATA=MOVIES;  
QUIT;
```

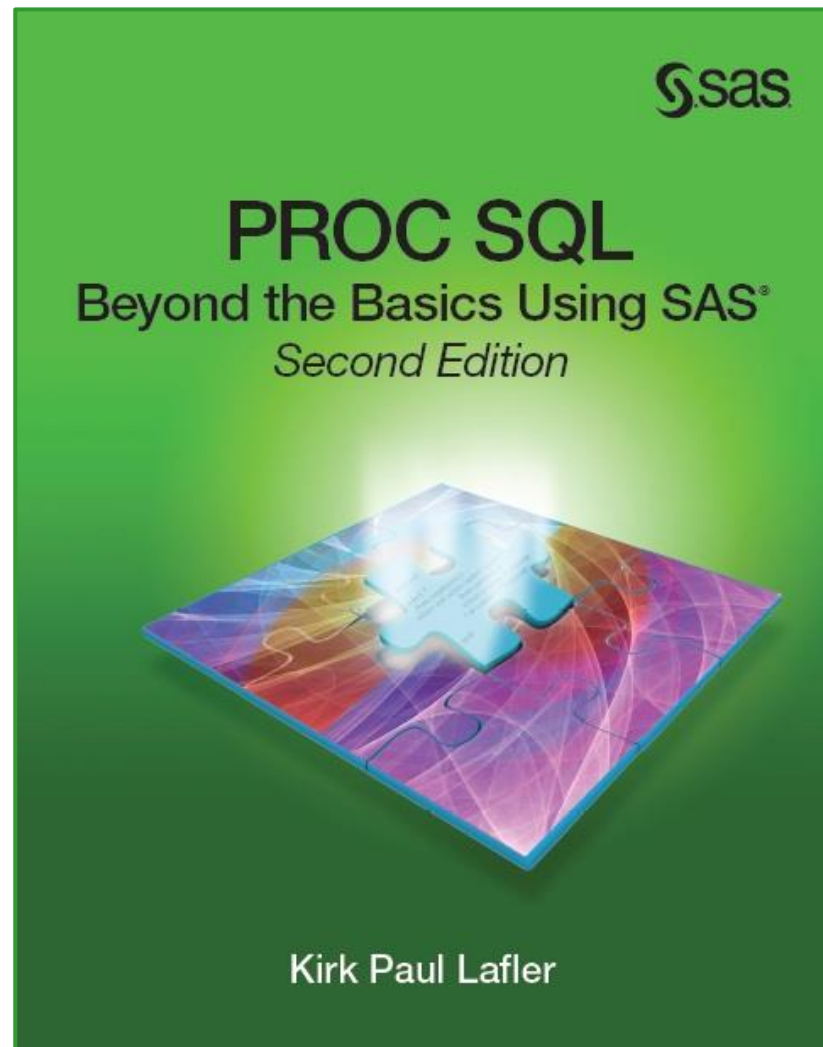
Data Set Name	SASUSER.MOVIES	Observations	22
Member Type	DATA	Variables	6
Engine	V9	Indexes	0
Created	Tuesday, March 28, 2006 01:02:48 AM	Observation Length	88
Last Modified	Tuesday, March 28, 2006 01:02:48 AM	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Max Generations			
Next Generation Num			
Label			



Concluding Remarks

In Conclusion

- PROCedures are designed to be easy to use
- Indispensable tools for users everywhere
- Generate quick results
- Little or no programming skills is required
- 6 categories of Base-SAS PROCedures
 - ✓ Detail
 - ✓ Summary
 - ✓ Statistical
 - ✓ Tabular
 - ✓ Graphical
 - ✓ Utility



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