

# Intro to SAS HW Chapter 4

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## HW Chapter 4 Q1

$$115 - 5 - 1 - 2 - 2 + 5 = 110 \\ \cancel{115}$$

1. Which PROC requires a BY statement?

- a. PRINT
- b. SORT
- c. FREQ
- d. All of the above

B. SORT

$$\approx 16$$

## HW Chapter 4 Q3

3. Suppose that you have a data set that includes the gender, age, and height of students in a class. Which BY statement will tell SAS to sort the data so that within each age (youngest to oldest), the data will be organized by males (tallest to shortest), followed by females (tallest to shortest)?

- a. BY DESCENDING Gender Age DESCENDING Height;
- b. BY DESCENDING Gender DESCENDING Height Age;
- c. BY Age DESCENDING Height DESCENDING Gender;
- d. BY Age DESCENDING Gender DESCENDING Height;

D. By Age DESCENDING Gender DESCENDING Height;

## HW Chapter 4 Q5

5. Which of the following is a valid option for the PROC PRINT statement to suppress the Obs column from the output?

- a. NOOBSERVATION
- b. NOOBS
- c. NOOBSCOL
- d. NOOBSCOLUMN

B. NOOBS

## HW Chapter 4 Q8

8. Which of the following is a valid name for a user-defined format?

- a. Body\_Mass\_Index\_Categories
- b. Description2
- c. Age(yrs)
- d. Varchar\$

X Description2

Format names cannot end in a number.

-5

## HW Chapter 4 Q11

11. What is the purpose of using the MAXDEC =  $n$  option in a PROC MEANS statement?

- a. To maximize the computing power by a factor of  $n$
  - b. To limit the numeric output to  $n$  decimal places
  - c. To use a maximum of  $n$  observations in the calculation
  - d. None of the above
- B. To limit the numeric output to  $n$  decimal places

## HW Chapter 4 Q14

14. Which PROC uses a VALUE statement?

- a. PRINT
- b. FORMAT
- c. FREQ
- d. All of the above

B. FORMAT

## HW Chapter 4 Q16

16. Which of the following procedures does not produce a report?

- a. PROC SORT
  - b. PROC MEANS
  - c. PROC TABULATE
  - d. None of the above
- a. PROC SORT

## HW Chapter 4 Q23

“Explain the differences between a title and a label when used in PROC PRINT.”

The label statement is used to describe variables in case more context is necessary. The title is printed at the top of the procedure output. The title is a global statement for the print procedure, while a label is not a global statement and is specific for each variable. Also, labels can be stored with a dataset but titles are only stored for printing.

## HW Chapter 4 Q27

“Explain the difference between a format and an informat.”

A format is used for controlling the printing format of the data while an informat is used to specify the data format when reading/loading it. The purpose of FORMAT is to make the

presentation easier to understand while the purpose of INFORMAT is to allow SAS to correctly read in the data.

## HW Chapter 4 Q34

“Name two other procedures that can produce some of the same results as PROC TABULATE. Explain your choices.”

PROC MEANS can produce statistics like PROC TABULATE and PROC FREQ can produce frequencies like PROC TABULATE. Both of these procedures support groupings like PROC TABULATE.

## HW Chapter 4 Q37

37. The SAS data set named CRAYONS contains information on standard Crayola crayon colors. The variables in this file are crayon number, color name, hexadecimal code, RGB triplet, pack added, year issued, and year retired.
- In a comment in your code, describe how you could view the variable attributes in this SAS data set.
  - Using the method described in part a), review the names, labels, and attributes of the variables in the SAS data set CRAYONS. Record the label and length for the variable Color as a comment in your program.
  - Calculate the number of colors issued per year. Add a comment to your code stating in which year the largest number of colors were issued.
  - Sorting the crayons by color using their names would be ineffective due to the uniqueness of the names, but the information found in the RGB triplets can be used instead. Sort the crayon data by RGB triplet.
  - Print the sorted data showing only columns for the variables color name and RGB triplet.

# A

```
/* 37 */

DATA CRAYONS;

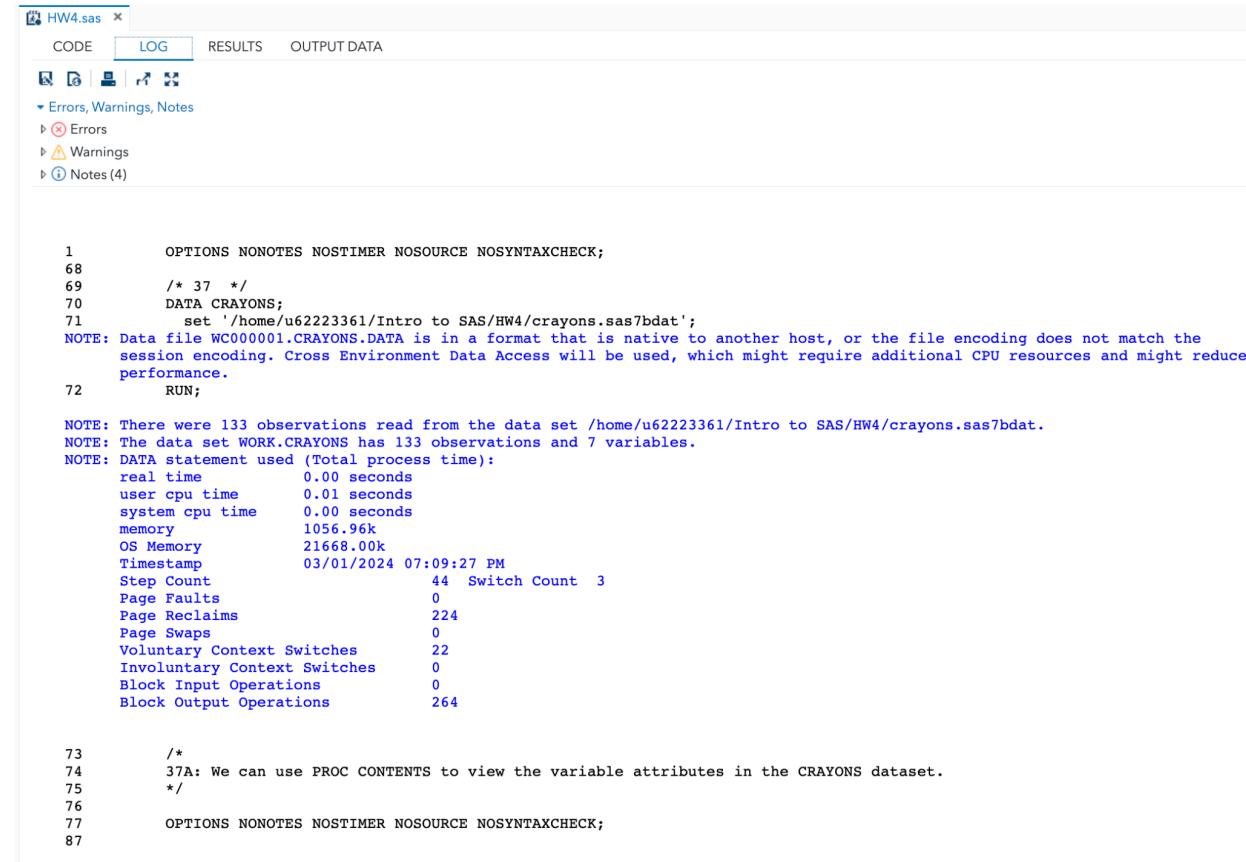
set '/home/u62223361/Intro to SAS/HW4/crayons.sas7bdat';

RUN;

/*

```

37A: We can use PROC CONTENTS to view the variable attributes in the CRAYONS dataset.



The screenshot shows the SAS Log window for a session named "HW4.sas". The log displays the following content:

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 37 */
70      DATA CRAYONS;
71      set '/home/u62223361/Intro to SAS/HW4/crayons.sas7bdat';
NOTE: Data file WC000001.CRAYONS.DATA is in a format that is native to another host, or the file encoding does not match the session encoding. Cross Environment Data Access will be used, which might require additional CPU resources and might reduce performance.
72      RUN;

NOTE: There were 133 observations read from the data set /home/u62223361/Intro to SAS/HW4/crayons.sas7bdat.
NOTE: The data set WORK.CRAYONS has 133 observations and 7 variables.
NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time     0.01 seconds
      system cpu time   0.00 seconds
      memory           1056.96k
      OS Memory        21668.00k
      Timestamp         03/01/2024 07:09:27 PM
      Step Count        44  Switch Count  3
      Page Faults       0
      Page Reclaims    224
      Page Swaps        0
      Voluntary Context Switches 22
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 264

73      /*
74      37A: We can use PROC CONTENTS to view the variable attributes in the CRAYONS dataset.
75      */
76
77      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
```

HW4.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.CRAYONS | View: Column names | Filter: (none)

Columns Total rows: 133 Total columns: 7

Number Color Hex RGB Pack Issued

	Number	Color	Hex	RGB	Pack	Issued
1	1	Almond	#EFDECD	(239, 222, 205)	120	1998
2	2	Antique Brass	#CDD975	(205, 149, 117)	120	1998
3	3	Apricot	#FDD9B1	(253, 217, 181)	24	1949
4	4	Aquamarine	#78DBE2	(120, 219, 226)	64	1958
5	5	Asparagus	#87A968	(135, 169, 107)	96	1993
6	6	Atomic Tangerine	#FFA474	(255, 164, 116)	72	1972
7	7	Banana Mania	#FAE7B5	(250, 231, 181)	120	1998
8	8	Beaver	#9FB170	(159, 129, 112)	120	1998
9	9	Bittersweet	#FD7C6E	(253, 124, 110)	48	1949
10	10	Black	#000000	(0,0,0)	8	1903
11	11	Blizzard Blue	#ACE5EE	(172, 229, 238)	72	1972
12	12	Blue	#1F75FE	(31, 117, 254)	8	1903
13	13	Blue Bell	#A2A2D0	(162, 162, 208)	120	1998
14	14	Blue Gray	#6699CC	(102, 153, 204)	64	1958
15	15	Blue Green	#0D98BA	(13, 152, 186)	16	1949
16	16	Blue Violet	#7366BD	(115, 102, 189)	16	1949
17	17	Blush	#D5E8D3	(222, 93, 131)	120	1998
18	18	Brick Red	#CB4154	(203, 65, 84)	48	1949
19	19	Brown	#B467AD	(180, 103, 77)	8	1903
20	20	Burnt Orange	#FF7749	(255, 127, 73)	64	1958
21	21	Burnt Sienna	#EA7E5D	(234, 126, 93)	48	1949
22	22	Cadet Blue	#B0B7C6	(176, 183, 198)	64	1958
23	23	Canary	#FFFF99	(255, 255, 153)	120	1998
24	24	Caribbean Green	#1CD3A2	(28, 211, 162)	120	1998
25	25	Carnation Pink	#FFAAEC	(255, 170, 204)	16	1949
26	26	Cerise	#DD4492	(221, 68, 146)	96	1993
27	27	Cerulean	#1DAD6	(29, 172, 214)	24	1990
28	28	Chestnut	#BC5D58	(188, 93, 88)	64	1958

Messages: 4 User: u62223361

B

/\*

37B:

Label for Color variable: Crayon name

Length for Color variable: 26

\*/

PROC CONTENTS DATA = CRAYONS;

TITLE "PROC CONTENT OF CRAYONS";

RUN;





## ▼ Errors, Warnings, Notes

▷ ✗ Errors

▷ ⚠ Warnings

▷ ⓘ Notes (1)

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      37B:
71      Label for Color variable: Crayon name
72      Length for Color variable: 26
73      */
74      PROC CONTENTS DATA = CRAYONS;
75      TITLE "PROC CONTENT OF CRAYONS";
76      RUN;
```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.02 seconds		
user cpu time	0.03 seconds		
system cpu time	0.00 seconds		
memory	1860.59k		
OS Memory	21928.00k		
Timestamp	03/01/2024 07:12:47 PM		
Step Count	62	Switch Count	1
Page Faults	0		
Page Reclaims	204		
Page Swaps	0		
Voluntary Context Switches	6		
Involuntary Context Switches	0		
Block Input Operations	0		
Block Output Operations	16		

```
77
78      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
88
```

HW4.sas

CODE LOG RESULTS

Table of Contents

PROC CONTENT OF CRAYONS  
The CONTENTS Procedure

Data Set Name	WORK.CRAYONS	Observations	133
Member Type	DATA	Variables	7
Engine	V9	Indexes	0
Created	03/01/2024 14:09:27	Observation Length	88
Last Modified	03/01/2024 14:09:27	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information

Data Set Page Size	131072
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	1486
Obs in First Data Page	133
Number of Data Set Repairs	0
Filename	/nsswork/SAS_workF6FC00017812_odaws01-usw2-2.oda.sas.com/SAS_work194200017812_odaws01-usw2-2.oda.sas.com/crayons.sas7bdat
Release Created	9.0401M7
Host Created	Linux
Inode Number	2013266540
Access Permission	rw-r--r--
Owner Name	u62223361
File Size	256KB
File Size (bytes)	262144

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Label
2	Color	Char	26	Crayon name
3	Hex	Char	8	HEX triplet
6	Issued	Num	8	Year issued
1	Number	Num	8	Crayon number
5	Pack	Num	8	Pack added
4	RGB	Char	15	RGB codes
7	Retired	Num	8	Year retired

Messages: 7 User: u62223361

C

/\*

37C

In 1949 the largest number of colors were issued.

\*/

PROC FREQ DATA=CRAYONS;

TABLES Issued;

RUN;

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      37C
71      In 1949 the largest number of colors were issued.
72      */
73      PROC FREQ DATA=CRAYONS;
74      TABLES Issued;
75      RUN;

NOTE: There were 133 observations read from the data set WORK.CRAYONS.
NOTE: PROCEDURE FREQ used (Total process time):
      real time          0.01 seconds
      user cpu time     0.01 seconds
      system cpu time   0.00 seconds
      memory            1544.75k
      OS Memory         21928.00k
      Timestamp          03/01/2024 07:39:14 PM
      Step Count          148  Switch Count   2
      Page Faults        0
      Page Reclaims      269
      Page Swaps          0
      Voluntary Context Switches  9
      Involuntary Context Switches  0
      Block Input Operations  0
      Block Output Operations  272

76
77      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
87
```

HW4.sas

CODE LOG RESULTS

Table of Contents

The FREQ Procedure

Year issued					
Issued	Frequency	Percent	Cumulative Frequency	Cumulative Percent	
1903	8	6.02	8	6.02	
1949	40	30.08	48	36.09	
1958	16	12.03	64	48.12	
1972	8	6.02	72	54.14	
1990	16	12.03	88	66.17	
1993	16	12.03	104	78.20	
1998	24	18.05	128	96.24	
2000	1	0.75	129	96.99	
2003	4	3.01	133	100.00	



D

```
/*  
37D  
*/
```

```
PROC SORT DATA=CRAYONS OUT=CRAYONS_RGB_SORT;  
    BY RGB;  
RUN;
```

```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      37D
71      */
72      PROC SORT DATA=CRAYONS OUT=CRAYONS_RGB_SORT;
73      BY RGB;
74      RUN;

```

NOTE: Input data set is already sorted; it has been copied to the output data set.

NOTE: There were 133 observations read from the data set WORK.CRAYONS.

NOTE: The data set WORK.CRAYONS\_RGB\_SORT has 133 observations and 7 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.00 seconds
user cpu time	0.01 seconds
system cpu time	0.00 seconds
memory	824.15k
OS Memory	21672.00k
Timestamp	03/01/2024 07:45:02 PM
Step Count	179 Switch Count 2
Page Faults	0
Page Reclaims	131
Page Swaps	0
Voluntary Context Switches	11
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	264

75

76

77 OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;

87

HW4.sas						
CODE	LOG	RESULTS	OUTPUT DATA			
		Table: WORK.CRAYONS_RGB_SORT	View: Column names	Filter: (none)		
Columns		Total rows: 133 Total columns: 7	Number	Color	Hex	RGB
<input checked="" type="checkbox"/> Select all			1	10 Black	#000000	(0,0,0)
<input checked="" type="checkbox"/> Number			2	14 Blue Gray	#6699CC	(102, 153, 204)
<input checked="" type="checkbox"/> Color			3	38 Forest Green	#6DAE81	(109, 174, 129)
<input checked="" type="checkbox"/> Hex			4	35 Eggplant	#6E5160	(110, 81, 96)
<input checked="" type="checkbox"/> RGB			5	37 Fern	#71BC78	(113, 188, 120)
<input checked="" type="checkbox"/> Pack			6	91 Raw Umber	#714B23	(113, 75, 35)
<input checked="" type="checkbox"/> Issued			7	16 Blue Violet	#7366BD	(115, 102, 189)
<input checked="" type="checkbox"/> Retired			8	86 Purple Heart	#7442C8	(116, 66, 200)
			9	101 Screamin' Green	#76FF7A	(118, 255, 122)
			10	119 Turquoise Blue	#77DDE7	(119, 221, 231)
			11	4 Aquamarine	#78DBE2	(120, 219, 226)
			12	98 Royal Purple	#7851A9	(120, 81, 169)
			13	108 Sky Blue	#80DAEB	(128, 218, 235)
			14	15 Blue Green	#0D98BA	(13, 152, 186)
			15	5 Asparagus	#87A96B	(135, 169, 107)
			16	104 Shadow	#8A795D	(138, 121, 93)
			17	85 Plum	#8E4585	(142, 69, 133)
Property	Value		18	125 Vivid Violet	#8F509D	(143, 80, 157)
Label			19	121 Violet (Purple)	#926EAE	(146, 110, 174)
Name			20	44 Gray	#95918C	(149, 145, 140)
Length			21	61 Manatee	#979AAA	(151, 154, 170)
Type			22	30 Cornflower	#9ACEEB	(154, 206, 235)
Format			23	87 Purple Mountain's Majesty	#9D81BA	(157, 129, 186)
Informat			24	8 Beaver	#9F8170	(159, 129, 112)

E

```
/*
37E
*/
PROC PRINT DATA=CRAYONS_RGB_SORT;
  VAR Color RGB;
  TITLE "CRAYONS SORTED BY RGB";
RUN;
```

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      37E
71      */
72      PROC PRINT DATA=CRAYONS_RGB_SORT;
73      VAR Color RGB;
74      TITLE "CRAYONS SORTED BY RGB";
75      RUN;
```

NOTE: There were 133 observations read from the data set WORK.CRAYONS\_RGB\_SORT.  
NOTE: PROCEDURE PRINT used (Total process time):

real time	0.05 seconds
user cpu time	0.05 seconds
system cpu time	0.01 seconds
memory	1270.18k
OS Memory	21668.00k
Timestamp	03/01/2024 07:47:07 PM
Step Count	185 Switch Count 1
Page Faults	0
Page Reclaims	101
Page Swaps	0
Voluntary Context Switches	6
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	40

```
76
77
78      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
88
```

HW4.sas

CODE LOG RESULTS

Table of Contents

**CRAYONS SORTED BY RGB**

Obs	Color	RGB
1	Black	(0,0,0)
2	Blue Gray	(102, 153, 204)
3	Forest Green	(109, 174, 129)
4	Eggplant	(110, 81, 96)
5	Fern	(113, 188, 120)
6	Raw Umber	(113, 75, 35)
7	Blue Violet	(115, 102, 189)
8	Purple Heart	(116, 66, 200)
9	Screamin' Green	(118, 255, 122)
10	Turquoise Blue	(119, 221, 231)
11	Aquamarine	(120, 219, 226)
12	Royal Purple	(120, 81, 169)
13	Sky Blue	(128, 218, 235)
14	Blue Green	(13, 152, 186)
15	Asparagus	(135, 169, 107)
16	Shadow	(138, 121, 93)
17	Plum	(142, 69, 133)
18	Vivid Violet	(143, 80, 157)
19	Violet (Purple)	(146, 110, 174)
20	Gray	(149, 145, 140)
21	Manatee	(151, 154, 170)
22	Cornflower	(154, 206, 235)
23	Purple Mountain's Majesty	(157, 129, 186)
24	Beaver	(159, 129, 112)
25	Sea Green	(159, 226, 191)
26	Blue Bell	(162, 162, 208)
27	Wild Blue Yonder	(162, 173, 208)
28	Sepia	(165, 105, 79)
29	Granny Smith Apple	(168, 228, 160)
30	Green Blue	(17, 100, 180)
31	Magic Mint	(170, 240, 209)
32	Blizzard Blue	(172, 229, 238)
33	Cadet Blue	(176, 183, 198)
34	Inchworm	(178, 236, 93)
35	Brown	(180, 103, 77)
36	Olive Green	(186, 184, 108)

The question asks to print out columns without observation numbers.

✓

-

## HW Chapter 4 Q40

40. The World Health Organization (WHO) collected data in countries across the world regarding the outbreak of swine flu cases and deaths in 2009. The data in the SAS data set called SFF includes information on cases and deaths per country by month during the epidemic.
- a. Review the names, labels, and attributes of the variables in the SAS data set SFF. Record the name and length of the character variables as a comment in your program.
  - b. Count the number of countries within each continent.
  - c. Count the number of countries per continent that reported no cases during the first month of the outbreak (April) versus the number of countries per continent that had at least one case. Do the same for the last month of the outbreak (August).
  - d. To find potential errors in the data, create a report for countries that reported a first death date, but reported no first case date. This output should include only the variables continent, country, first case date, last reported number of cases, and first death date.
  - e. Add code that will organize the report from part d) so that the countries on the same continent are grouped together, and make sure that dates are presentable.

A

```
/* 40 */  
DATA SFF;  
set '/home/u62223361/Intro to SAS/HW4/sff.sas7bdat';  
RUN;
```

```
/*  
40A: Length & Name of Character Variables  
Continent: 13  
Country: 30
```

```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 40 */
70      DATA SFF;
71      set '/home/u62223361/Intro to SAS/HW4/sff.sas7bdat';
NOTE: Data file WC000001.SFF.DATA is in a format that is native to another host, or the file encoding does not match the session
encoding. Cross Environment Data Access will be used, which might require additional CPU resources and might reduce
performance.
72      RUN;

NOTE: There were 179 observations read from the data set /home/u62223361/Intro to SAS/HW4/sff.sas7bdat.
NOTE: The data set WORK.SFF has 179 observations and 22 variables.
NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time     0.01 seconds
      system cpu time   0.00 seconds
      memory            1105.28k
      OS Memory         21924.00k
      Timestamp         03/01/2024 07:51:57 PM
      Step Count        221  Switch Count  3
      Page Faults       0
      Page Reclaims     209
      Page Swaps        0
      Voluntary Context Switches 22
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 264

73
74      /*
75      40A: Length & Name of Character Variables
76      Continent: 13
77      Country: 30
78
79      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
80      ODS HTML CLOSE;
81      &GRAPHTERM; ;*';*';*/;RUN;QUIT;
82      QUIT;RUN;
83      ODS HTML5 (ID=WEB) CLOSE;
84
85      FILENAME _GSFNAME;
NOTE: Fileref _GSFNAME has been deassigned.
86      DATA _NULL_;
87      RUN;

NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.00 seconds
      memory            460.84k
      OS Memory         18856.00k
      Timestamp         03/01/2024 07:51:57 PM
      Step Count        222  Switch Count  0
      Page Faults       0
      Page Reclaims     26
      Page Swaps        0
      Voluntary Context Switches 0
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 0

88      OPTIONS NOTES STIMER SOURCE SYNTAXCHECK;
89

```

HW4.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.SFF View: Column names Filter: (none)

Total rows: 179 Total columns: 22

ByDate ByCont Country FirstCase Apr Me

	ByDate	ByCont	Country	FirstCase	Apr	Me
1	137	3.35	Afghanistan	18086	.	
2	154	2.43	Albania	18100	.	
3	99	6.04	Algeria	18070	.	
4	161	2.44	Andorra	18077	.	
5	170	1.35	Anguilla	18114	.	
6	101	1.22	Antigua and Barbuda	18072	.	
7	28	5.03	Argentina	18026	.	
8	122	1.24	Aruba	18051	.	
9	29	4.02	Australia	18026	.	
10	9	2.03	Austria	18016	.	
11	163	2.46	Azerbaijan	18109	.	
12	59	1.11	Bahamas	18049	.	
13	48	3.12	Bahrain	18044	.	
14	96	3.26	Bangladesh	18070	.	
15	68	1.14	Barbados	18053	.	
16	.	. Belarus		.	.	
17	34	2.16	Belgium	18032	.	
18	147	1.3	Belize	18094	.	
19	80	1.18	Bermuda	18065	.	
20	156	3.36	Bhutan	18075	.	
21	56	5.09	Bolivia	18049	.	
22	124	2.39	Bosnia and Herzegovina	18051	.	
23	145	6.16	Botswana	18091	.	
24	25	5.02	Brazil	18025	.	

Messages: 32 User: u62223361

B

```
/*
40B
*/
PROC FREQ DATA=SFF;
  TABLES Continent;
RUN;
```



```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      40B
71      */
72      PROC FREQ DATA=SFF;
73      TABLES Continent;
74      RUN;

NOTE: There were 179 observations read from the data set WORK.SFF.
NOTE: PROCEDURE FREQ used (Total process time):
      real time          0.01 seconds
      user cpu time      0.01 seconds
      system cpu time    0.00 seconds
      memory             1605.50k
      OS Memory          22184.00k
      Timestamp           03/01/2024 07:51:21 PM
      Step Count          215   Switch Count  2
      Page Faults         0
      Page Reclaims       243
      Page Swaps          0
      Voluntary Context Switches 10
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 272

75
76
77      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
87

```

HW4.sas

CODE LOG RESULTS

Table of Contents

The FREQ Procedure

Continent				
Continent	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Africa	24	13.41	24	13.41
Asia	40	22.35	64	35.75
Australia	16	8.94	80	44.69
Europe	50	27.93	130	72.63
North America	35	19.55	165	92.18
South America	14	7.82	179	100.00

# C

According to the label of the variables, Apr is “Number of cumulative cases reported on the first day of the month for April”. At first, I thought Apr was the number of cases that occurred in April, but I realized that since the data was recorded on the 1st day of April, I should use the May (“Number of cumulative cases reported on the first day of the month for May”) to subtract April to obtain the true value of the number of cases in April. I did the same thing for August except I used Latest to subtract Aug (because there was no data until August 9th, 2009).

```
/*
40C
*/
DATA SFF_Apr;
    SET SFF;
    Apr_cases = May_Apr; +5
    IF Apr_cases THEN Apr_no_cases = "YES";
    ELSE Apr_no_cases = "NO";
RUN; -2
PROC TABULATE DATA=SFF_Apr;
    CLASS Continent Apr_no_cases;
    TABLE Apr_no_cases, Continent;
RUN;

DATA SFF_Aug;
    SET SFF;
    Aug_cases = Latest -Aug;
    IF Aug_cases THEN Aug_no_cases = "YES";
    ELSE Aug_no_cases = "NO";
RUN; -2
PROC TABULATE DATA=SFF_Aug;
    CLASS Continent Aug_no_cases;
    TABLE Aug_no_cases, Continent;
RUN;
```

I realized that although text the HW said no cases by month but the PROC contents had label as cumulative counts unto a contain month. I will give you extra credit to point this things out.

when you do direct subtraction, APR\_cases will become missing if one of variable has a missing value. you need to deal with missing values first.

This may not be validated statement, If statement should have a condition e.g., APR\_cases ne . then ... this statement also covert an number into a yes or no variable which is not proper for the question.

```

1           OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69         /*
70          40C
71         */
72         DATA SFF_Apr;
73         SET SFF;
74         Apr_cases = May -Apr;
75         IF Apr_cases THEN Apr_no_cases = "YES";
76         ELSE Apr_no_cases = "NO";
77         RUN;

NOTE: Missing values were generated as a result of performing an operation on missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      177 at 74:18
NOTE: There were 179 observations read from the data set WORK.SFF.
NOTE: The data set WORK.SFF_APR has 179 observations and 24 variables.
NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.01 seconds
      memory            997.46k
      OS Memory         22696.00k
      Timestamp          03/02/2024 09:47:25 PM
      Step Count          250   Switch Count  2
      Page Faults        0
      Page Reclaims      180
      Page Swaps         0
      Voluntary Context Switches 10
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 264

78         PROC TABULATE DATA=SFF_Apr;
79         CLASS Continent Apr_no_cases;
80         TABLE Apr_no_cases, Continent;
81         RUN;

NOTE: There were 179 observations read from the data set WORK.SFF_APR.
NOTE: PROCEDURE TABULATE used (Total process time):
      real time          0.01 seconds
      user cpu time     0.01 seconds
      system cpu time   0.00 seconds
      memory            10303.43k
      OS Memory         32448.00k
      Timestamp          03/02/2024 09:47:25 PM
      Step Count          251   Switch Count  5
      Page Faults        0
      Page Reclaims      2387
      Page Swaps         0
      Voluntary Context Switches 54
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 552

82
83         DATA SFF_Aug;
84         SET SFF;
85         Aug_cases = Latest -Aug;
86         IF Aug_cases THEN Aug_no_cases = "YES";
87         ELSE Aug_no_cases = "NO";
88         RUN;

```

NOTE: Missing values were generated as a result of performing an operation on missing values.  
 Each place is given by: (Number of times) at (Line):(Column).  
 12 at 85:21  
 NOTE: There were 179 observations read from the data set WORK.SFF.  
 NOTE: The data set WORK.SFF\_AUG has 179 observations and 24 variables.  
 NOTE: DATA statement used (Total process time):  

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.01 seconds
memory	1004.43k
OS Memory	24232.00k
Timestamp	03/02/2024 09:47:25 PM
Step Count	252 Switch Count 2
Page Faults	0
Page Reclaims	118
Page Swaps	0
Voluntary Context Switches	12
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	272

  
 89 PROC TABULATE DATA=SFF\_Aug;  
 90 CLASS Continent Aug\_no\_cases;  
 91 TABLE Aug\_no\_cases, Continent;  
 92 RUN;

NOTE: There were 179 observations read from the data set WORK.SFF\_AUG.  
 NOTE: PROCEDURE TABULATE used (Total process time):  

real time	0.01 seconds
user cpu time	0.01 seconds
system cpu time	0.00 seconds
memory	9782.31k
OS Memory	32448.00k
Timestamp	03/02/2024 09:47:25 PM
Step Count	253 Switch Count 5
Page Faults	0
Page Reclaims	2067
Page Swaps	0
Voluntary Context Switches	48
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	544

  
 93 OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;  
 94  
 104

HW4.sas

CODE LOG RESULTS OUTPUT DATA

Table of Contents

---

Apr_no_cases	Continent					
	Africa	Asia	Australia	Europe	North America	South America
	N	N	N	N	N	N
NO	24	40	16	50	33	14
YES	.	.	.	.	2	.

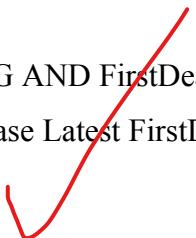
---

Aug_no_cases	Continent					
	Africa	Asia	Australia	Europe	North America	South America
	N	N	N	N	N	N
NO	15	13	10	15	15	3
YES	9	27	6	35	20	11

D

```
/*
40D
*/
```

```
PROC PRINT DATA=SFF;
  WHERE FirstCase IS MISSING AND FirstDeath IS NOT MISSING;
  VAR Continent Country FirstCase Latest FirstDeath;
RUN;
```



```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      40D
71      */
72      PROC PRINT DATA=SFF;
73      WHERE FirstCase IS MISSING AND FirstDeath IS NOT MISSING;
74      VAR Continent Country FirstCase Latest FirstDeath;
75      RUN;

```

NOTE: There were 5 observations read from the data set WORK.SFF.  
 WHERE (FirstCase is null) and (FirstDeath is not null);

NOTE: PROCEDURE PRINT used (Total process time):

real time	0.01 seconds
user cpu time	0.01 seconds
system cpu time	0.00 seconds
memory	1517.37k
OS Memory	21928.00k
Timestamp	03/02/2024 10:16:37 PM
Step Count	380 Switch Count 0
Page Faults	0
Page Reclaims	128
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	16

```

76
77      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
87

```

\*HW4.sas

CODE LOG RESULTS

Table of Contents

- The Print Procedure
- Data Set WORK.SFF

Obs	Continent	Country	FirstCase	Latest	FirstDeath
16	Europe	Belarus	.	.	18207
98	Africa	Madagascar	.	.	18151
108	Asia	Mongolia	.	.	18196
111	Africa	Mozambique	.	.	18156
159	Africa	São Tomé and Príncipe	.	.	18196

E

/\*

40E

\*/

PROC SORT DATA = SFF OUT = SFF\_cont\_sort;

BY Continent;

RUN;

PROC PRINT DATA=SFF\_cont\_sort;

WHERE FirstCase IS MISSING AND FirstDeath IS NOT MISSING;

BY Continent;

VAR Continent Country FirstCase Latest FirstDeath;

FORMAT FirstCase FirstDeath Latest WEEKDATE15.;

RUN;

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*
70      40E
71      */
72      PROC SORT DATA = SFF OUT = SFF_cont_sort;
73      BY Continent;
74      RUN;
```

NOTE: There were 179 observations read from the data set WORK.SFF.

NOTE: The data set WORK.SFF\_CONT\_SORT has 179 observations and 22 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.00 seconds
memory	1254.25k
OS Memory	22700.00k
Timestamp	03/02/2024 10:25:44 PM
Step Count	462 Switch Count 2
Page Faults	0
Page Reclaims	160
Page Swaps	0
Voluntary Context Switches	10
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	272

```

75      PROC PRINT DATA=SFF_cont_sort;
76      WHERE FirstCase IS MISSING AND FirstDeath IS NOT MISSING;
77      BY Continent;
78      VAR Continent Country FirstCase Latest FirstDeath;
79      FORMAT FirstCase FirstDeath Latest WEEKDATE15. ;
80      RUN;

NOTE: There were 5 observations read from the data set WORK.SFF_CONT_SORT.
      WHERE (FirstCase is null) and (FirstDeath is not null);
NOTE: PROCEDURE PRINT used (Total process time):
      real time          0.01 seconds
      user cpu time     0.02 seconds
      system cpu time   0.00 seconds
      memory            1564.65k
      OS Memory         22436.00k
      Timestamp         03/02/2024 10:25:44 PM
      Step Count        463   Switch Count  0
      Page Faults       0
      Page Reclaims    112
      Page Swaps        0
      Voluntary Context Switches 0
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 0

81
82      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
92

```

HW4.sas

CODE LOG RESULTS OUTPUT DATA

Table of Contents

- The Print Procedure
  - Continent=Africa
    - Data Set WORK.SFF\_CONT\_SORT
  - Continent=Asia
    - Data Set WORK.SFF\_CONT\_SORT
  - Continent=Europe
    - Data Set WORK.SFF\_CONT\_SORT

**Continent=Africa**

Obs	Continent	Country	FirstCase	Latest	FirstDeath
11	Africa	Madagascar	.	.	Fri, Sep 11, 09
14	Africa	Mozambique	.	.	Wed, Sep 16, 09
21	Africa	São Tomé and Príncipe	.	.	Mon, Oct 26, 09

**Continent=Asia**

Obs	Continent	Country	FirstCase	Latest	FirstDeath
45	Asia	Mongolia	.	.	Mon, Oct 26, 09

**Continent=Europe**

Obs	Continent	Country	FirstCase	Latest	FirstDeath
85	Europe	Belarus	.	.	Fri, Nov 6, 09