

Homework# 4 - Solutions

Exercise #1:

1. Using LIBNAME to the folder STAT46:

```
libname HW4 'J:\CLASSES\STAT46';
```

LOG:

```
libname HW4 'J:\CLASSES\STAT46';  
NOTE: Libref HW4 was successfully assigned as follows:  
Engine: V9  
Physical Name: J:\CLASSES\STAT46  
7
```

2. Using PROC CONTENTS to list all the SAS Data sets in STAT46:

- a. Prog/code:

```
* listing all the SAS data sets in the folder STAT46;  
proc contents data=HW4. _ALL_ nods;  
run;
```

Log:

```
8 * listing all the SAS data sets in the folder STAT46;  
9 proc contents data=HW4. _ALL_ nods;  
NOTE: Writing HTML Body file: sashtml.htm  
10 run;  
  
NOTE: PROCEDURE CONTENTS used (Total process time):  
real time 0.37 seconds  
cpu time 0.21 seconds
```

Output:

Directory	
Libref	HW4
Engine	V9
Physical Name	J:\CLASSES\STAT46
Filename	J:\CLASSES\STAT46
Owner Name	AMERICAN\ahenning-adm
File Size	8KB
File Size (bytes)	8192

#	Name	Member Type	File Size	Last Modified
1	BANKING	DATA	128KB	09/10/2018 16:06:56
2	EARTHQUAKES	DATA	128KB	04/12/2015 20:52:28
3	FORMATS	CATALOG	17KB	09/24/2018 18:01:42
4	GRADES	DATA	128KB	09/23/2018 16:25:19
5	L5_GRADES	DATA	128KB	09/25/2018 04:22:44
6	MYACCOUNT	DATA	128KB	09/18/2018 09:21:22
7	PIZZA	DATA	128KB	09/23/2018 12:38:02
8	QUAKES	DATA	128KB	09/25/2018 21:25:00
9	SET1	DATA	128KB	09/18/2018 12:23:56
10	STOCKS	DATA	128KB	09/24/2018 17:17:16
11	TEST_SCORES	DATA	128KB	09/13/2018 16:36:04

- b. The output shows the name of all the SAS data sets because of the keyword **ALL** used in place of a data set name. The ***NODS*** option gives the name of the SAS data sets only and omitting the detail listing of each data set.
3. Viewing the Descriptor portion :
- a. **Prog/code:**

```
❏ PROC CONTENTS DATA=HW4.Banking varnum;
run;
```

Log:

```
16
17 PROC CONTENTS DATA=HW4.Banking varnum;
NOTE: Writing HTML Body file: sashtml.htm
18 run;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.35 seconds
      cpu time           0.21 seconds
```

Output:

Engine/Host Dependent Information	
Data Set Page Size	65536
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	2039
Obs in First Data Page	542
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	J:\CLASSES\STAT46\banking.sas7bdat
Release Created	9.0401M0
Host Created	X64_7PRO
Owner Name	AMERICAN\zardi
File Size	128KB
File Size (bytes)	131072

The SAS System

The CONTENTS Procedure

Data Set Name	HW4.BANKING	Observations	542
Member Type	DATA	Variables	5
Engine	V9	Indexes	0
Created	09/10/2018 16:06:56	Observation Length	32
Last Modified	09/10/2018 16:06:56	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Variables in Creation Order

#	Variable	Type	Len	Format
1	Account	Char	6	
2	Gender	Char	1	
3	Date	Num	8	DATE9.
4	Deposit	Num	8	DOLLAR10.
5	Withdrawl	Num	8	DOLLAR10.

Sort Information

Sortedby	Date Account
Validated	YES
Character Set	ANSI

b) The PROC CONTENTS' output used here provided information on the:

- Data set name
- Dates of creation and modification of the data set
- The number of observations

- The number of variables
- The LABEL : in this case it's empty because we didn't specify any LABEL statement.
- The variables' type, length and format

The option VARNUM in the PROC CONTENTS step makes the variables list to be created in the data set order and not in alphabetical order (*Variables in Creation Order* table)

4. Viewing the Data Portion of Myaccount SAS data set:

a. Prog/code:

```
proc print data=HW4.Myaccount;
run;
```

Log:

```
28  proc print data=HW4.Myaccount;
NOTE: Writing HTML Body file: sashtml2.htm
29  run;

NOTE: There were 5 observations read from the data set HW4.MYACCOUNT.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.31 seconds
      cpu time            0.25 seconds
```

Output:

Obs	Account	Deposit	Withdrawl	Gender	Withdrawl_times_deposit
1	80858	855	548	M	468540
2	80858	849	548	M	465252
3	975886	759	100	F	75900
4	515706	860	518	M	445480
5	515706	1010	837	F	845370

- b. The output of the PROC PRINT procedure, provides all the default actions. No details were specified such as which variables to print or formats or informats have been provided , the data is in a default shape.

5. Creating a new data set Credit from the previous data set Myaccount, using the SET statement:
- a. Prog/code:

```
data Credit;
    set HW4.Myaccount;
    Balance=Deposit-Withdrawl;
run;

title 'Listing of the data set Credit';
proc print data=Credit;
    var Account Gender Balance;
run;
```

Log:

```
42 data Credit;
43     set HW4.Myaccount;
44     Balance=Deposit-Withdrawl;
45 run;

NOTE: There were 5 observations read from the data set HW4.MYACCOUNT.
NOTE: The data set WORK.CREDIT has 5 observations and 6 variables.
NOTE: DATA statement used (Total process time):
      real time           0.03 seconds
      cpu time            0.01 seconds

46
47 title 'Listing of the data set Credit';
48 proc print data=Credit;
49     var Account Gender Balance;
50 run;

NOTE: There were 5 observations read from the data set WORK.CREDIT.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds
```

Output:

Listing of the data set Credit

Obs	Account	Gender	Balance
1	80858	M	307
2	80858	M	301
3	975886	F	659
4	515706	M	342
5	515706	F	173

6. Using PROC CONTENTS to provide two descriptor portions of the data set Credit, one in alphabetical order and the other listing the variables in the order of the data set:

Prog/code:

```
title 'Data portion using POSITION option';
proc contents data=Credit position;
run;
```

Log:

```
126 title 'Data portion using POSITION option';
127 proc contents data=Credit position;
NOTE: Writing HTML Body file: sashtml4.htm
128 run;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time           0.30 seconds
      cpu time            0.24 seconds
```

Output:

Data portion using POSITION option			
The CONTENTS Procedure			
Data Set Name	WORK.CREDIT	Observations	5
Member Type	DATA	Variables	6
Engine	V9	Indexes	0
Created	09/27/2018 19:29:42	Observation Length	48
Last Modified	09/27/2018 19:29:42	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Alphabetic List of Variables and Attributes			
#	Variable	Type	Len
1	Account	Num	8
6	Balance	Num	8
2	Deposit	Num	8
4	Gender	Char	8
3	Withdrawl	Num	8
5	Withdrawl_times_deposit	Num	8

Variables in Creation Order			
#	Variable	Type	Len
1	Account	Num	8
2	Deposit	Num	8
3	Withdrawl	Num	8
4	Gender	Char	8
5	Withdrawl_times_deposit	Num	8
6	Balance	Num	8

Note: the part of the output related to the engine information has not been displayed.
Comments:

The PROC CONTENTS option POSITION produces both alphabetical and ordered listing of the variables.

Exercise #2:

Data Set #1:

```
libname HW4 'J:\CLASSES\STAT46';  
data HW4.dataset1;  
    infile datalines ;  
    input Last_Name $ First_Name $ @18 Amount dollar8.2;  
    format Amount dollar8.2;  
    datalines;  
    Avery John          $601.23  
    Davison Sherrill    $723.15  
    Holbrook Grace      $489.76  
    Jansen Mike         $638.42  
    ;  
  
proc contents data=HW4.dataset1 varnum;  
run;  
  
title'Viewing the Data Portion of a SAS data set with Mixed Input';  
proc print data=HW4.dataset1;  
run;
```

Log:

```
32  /* Dataset #1 */  
33  libname HW4 'J:\CLASSES\STAT46';  
NOTE: Libref HW4 was successfully assigned as follows:  
      Engine:          V9  
      Physical Name: J:\CLASSES\STAT46  
34  data HW4.dataset1;  
35      infile datalines ;  
36      input Last_Name $ First_Name $ @18 Amount dollar8.2;  
37      format Amount dollar8.2;  
38      datalines;  
  
NOTE: The data set HW4.DATASET1 has 4 observations and 3 variables.  
NOTE: DATA statement used (Total process time):  
      real time          0.81 seconds  
      cpu time           0.04 seconds  
  
43  ;  
44  
45  proc contents data=HW4.dataset1 varnum;  
NOTE: Writing HTML Body file: sashtml.htm  
46  run;  
  
NOTE: PROCEDURE CONTENTS used (Total process time):  
      real time          2.84 seconds  
      cpu time           0.23 seconds  
  
47  
48  title'Viewing the Data Portion of a SAS data set with Mixed Input';  
49  proc print data=HW4.dataset1;  
50  run;  
  
NOTE: There were 4 observations read from the data set HW4.DATASET1.  
NOTE: PROCEDURE PRINT used (Total process time):  
      real time          0.11 seconds  
      cpu time           0.00 seconds
```


Output:

The SAS System

The CONTENTS Procedure

Data Set Name	HW4.DATASET1	Observations	4
Member Type	DATA	Variables	3
Engine	V9	Indexes	0
Created	09/28/2018 20:05:17	Observation Length	24
Last Modified	09/28/2018 20:05:17	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	2715
Obs in First Data Page	4
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	J:\CLASSES\STAT46\dataset1.sas7bdat
Release Created	9.0401M4
Host Created	X64_SR12R2
Owner Name	AMERICAN\zardi
File Size	128KB
File Size (bytes)	131072

Variables in Creation Order

#	Variable	Type	Len	Format
1	Last_Name	Char	8	
2	First_Name	Char	8	
3	Amount	Num	8	DOLLAR8.2

Viewing the Data Portion of a SAS data set with Mixed Input

Obs	Last_Name	First_Name	Amount
1	Avery	John	\$601.23
2	Davison	Sherrill	\$723.15
3	Holbrook	Grace	\$489.76
4	Jansen	Mike	\$638.42

This dataset#1 required a mixed input, using LIST Input for Last_Name and First _Name then formatted Input for the variable “Amount” . The formatted input enabled a data portion showing the amounts with dollar signs and decimal points.

Data set #2:

Prog/code:

```
data HW4.dataset2;
  infile datalines ;
  input ID 1-4
        Last_Name $ 5-13
        First_Name $ 14-20
        Amount 21-27;
  format Amount 8.2;
  datalines;
2803 Deborah Campos 173.97
2912 Bill Marin 205.14
3015 Helen Stinson 194.08
3122 Nicole Terry 187.65
;

proc contents data=HW4.dataset2 varnum;
run;

title 'Viewing the data portion of a SAS Data set with Column Input';
proc print data=HW4.dataset2;
run;
```

Log:

```

;2  /* Dataset 2*/
;3
;4      data HW4.dataset2;
;5      infile datalines ;
;6      input ID 1-4
;7             Last_Name $ 5-13
;8             First_Name $ 14-20
;9             Amount 21-27;
;10     format Amount 8.2;
;11     datalines;

NOTE: The data set HW4.DATASET2 has 4 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time    0.09 seconds
      cpu time     0.00 seconds

;16 ;
;17
;18 proc contents data=HW4.dataset2 varnum;
;19 run;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time    0.04 seconds
      cpu time     0.01 seconds

;20
;21 title 'Viewing the data portion of a SAS Data set with Column Input';
;22 proc print data=HW4.dataset2;
;23 run;

NOTE: There were 4 observations read from the data set HW4.DATASET2.
NOTE: PROCEDURE PRINT used (Total process time):
      real time    0.01 seconds
      cpu time     0.01 seconds

```

Output:

Viewing the data portion of a SAS Data set with Column Input			
The CONTENTS Procedure			
Data Set Name	HW4.DATASET2	Observations	4
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	09/28/2018 20:28:49	Observation Length	32
Last Modified	09/28/2018 20:28:49	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information	
Data Set Page Size	65536
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	2039
Obs in First Data Page	4
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	J:\CLASSES\STAT46\dataset2.sas7bdat
Release Created	9.0401M4
Host Created	X64_SR12R2
Owner Name	AMERICAN\zardi
File Size	128KB
File Size (bytes)	131072

Variables in Creation Order				
#	Variable	Type	Len	Format
1	ID	Num	8	
2	Last_Name	Char	9	
3	First_Name	Char	7	
4	Amount	Num	8	8.2

Viewing the data portion of a SAS Data set with Column Input

Obs	ID	Last_Name	First_Name	Amount
1	2803	Deborah	Campos	173.97
2	2912	Bill	Marin	205.14
3	3015	Helen	Stinson	194.08
4	3122	Nicole	Terry	187.65

For Dataset#2, column Input was used for all variables.

Data Set #3:

```
data HW4.dataset3;
  infile datalines dlm=':' ;
  input  Name $CHAR10.
        State $
        Age
        Pos $ ;

  datalines;
Henderson :CA:26:ADM
Josephs   :SC:33:Sales
Williams  :MN:40:HRD
Rogan     :NY:35:RECTRN
;

proc contents data=HW4.dataset3 varnum;
run;
title 'Viewing the data portion of a SAS data set
      with Colon Delimiters and Mixed Input';

proc print data=HW4.dataset3;
run;
```

Log:

```
75  /*Dataset 3*/
76
77  data HW4.dataset3;
78    infile datalines dlm=':' ;
79    input  Name $CHAR10.
80          State $
81          Age
82          Pos $ ;
83
84  datalines;

NOTE: The data set HW4.DATASET3 has 4 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time           0.11 seconds
      cpu time            0.00 seconds

89  ;
90
91  proc contents data=HW4.dataset3 varnum;
92  run;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time           0.04 seconds
      cpu time            0.01 seconds

93  title 'Viewing the data portion of a SAS data set
94        with Colon Delimiters and Mixed Input';
95  proc print data=HW4.dataset3;
96  run;

NOTE: There were 4 observations read from the data set HW4.DATASET3.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds
```

Viewing the data portion of a SAS data set with Colon Delimiters and Mixed Input

The CONTENTS Procedure

Data Set Name	HW4.DATASET3	Observations	4
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	09/28/2018 20:28:49	Observation Length	40
Last Modified	09/28/2018 20:28:49	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	1632
Obs in First Data Page	4
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	J:\CLASSES\STAT46\dataset3.sas7bdat
Release Created	9.0401M4
Host Created	X64_SR12R2
Owner Name	AMERICAN\zardi
File Size	128KB
File Size (bytes)	131072

Variables in Creation Order

#	Variable	Type	Len
1	Name	Char	10
2	State	Char	8
3	Age	Num	8
4	Pos	Char	8

Viewing the data portion of a SAS data set with Colon Delimiters and Mixed Input

Obs	Name	State	Age	Pos
1	Henderson	CA	26	ADM
2	Josephs	SC	33	Sales
3	Williams	MN	40	HRD
4	Rogan	NY	35	RECTRN

In Dataset#3 a formatting with code delimiters, and then because the variable Name needed some adjustment because the name Henderson required a special informat because it has 9 letters and therefore doesn't has the default 8 characters.