Exercise 1
b

Model	Price	CustNumber	Quantity	TotalCost
L776	$159.98	101	1	159.98
M123	$4.59	102	10	45.90
M567	$23.50	103	1	23.50
X999	$29.95	103	2	59.90

Exercise 1
d

Model	Price
S776	$1.99
S888	$12.99

Exercise 1

e

```
1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
55
56         data purchase_price_zouyang7 not_purchased_zouyang7(keep=Model Price);
57           merge sorted_inventory(in=inv)
58                 sorted_purchase(in=pur);
59           by Model;
60           TotalCost=Price*Quantity;
61           if inv=1 and pur=1 then do;
62                output purchase_price_zouyang7;
63                end;
64           else if inv=1 and pur=0 then do;
65                output not_purchased_zouyang7;
66                end;
67         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).
       2 at 60:18
 NOTE: There were 6 observations read from the data set WORK.SORTED_INVENTORY.
 NOTE: There were 4 observations read from the data set WORK.SORTED_PURCHASE.
 NOTE: The data set WORK.PURCHASE_PRICE_ZOUYANG7 has 4 observations and 5 variables.
 NOTE: The data set WORK.NOT_PURCHASED_ZOUYANG7 has 2 observations and 2 variables.
 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              1506.68k
       OS Memory           33200.00k
       Timestamp           03/16/2017 04:41:34 AM
       Step Count                        513  Switch Count  80
       Page Faults                       0
       Page Reclaims                     537
       Page Swaps                        0
       Voluntary Context Switches        267
       Involuntary Context Switches      0
       Block Input Operations            0
       Block Output Operations           528


68
69         OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
81
```

Exercise 2

a

Table	observations	variables
fmli071	5201	12
fmli072	3347	12
fmli073	1640	12
fmli074	246	12
memi071	17745	20
memi072	17331	20
memi073	14525	20
memi074	9611	20

Exercise 2
c

Data Set Name	WORK.FMLI2007_ZOUYANG7	**Observations**	10434
Member Type	DATA	**Variables**	13
Engine	V9	**Indexes**	0
Created	03/15/2017 23:39:36	**Observation Length**	64
Last Modified	03/15/2017 23:39:36	**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	6
First Data Page	1
Max Obs per Page	2043
Obs in First Data Page	1990
Number of Data Set Repairs	0
Filename	/saswork/SAS_work87520000D348_odaws03-prod-us/SAS_work3F950000D348_odaws03-prod-us/fmli2007_zouyang7.sas7bdat
Release Created	9.0401M3
Host Created	Linux
Inode Number	22020183
Access Permission	rw-r--r--
Owner Name	zouyang70
File Size	896KB
File Size (bytes)	917504

Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	Format
1	BLS_URBN	Char	1	$1.
10	CHILDAGE	Char	1	$1.
2	CUTENURE	Char	1	$1.
11	CU_ID	Num	8	
7	HHID	Num	8	3.
6	HH_CU_Q	Num	8	2.
12	INT_NUM	Num	8	
3	NUM_AUTO	Num	8	2.
4	PERSLT18	Num	8	2.
8	POV_CY	Char	1	$1.
9	POV_PY	Char	1	$1.
13	QTR	Num	8	
5	REGION	Char	1	$1.

Total observations in fmli071, fmli072, fmli073, fmli074 are 5201+3347+1640+246=10434, which is equal to the number of observations in fmli2007_zouyang7. The number of variables in fmli071, fmli072, fmli073, fmli074 is 12. After adding QTR when we merge four data sets, the number of variables in fmli2007_zouyang7 is 13. So, the result is what I expect.

Exercise 2
e

Data Set Name	WORK.MEMI2007_ZOUYANG7	**Observations**	59212
Member Type	DATA	**Variables**	21
Engine	V9	**Indexes**	0
Created	03/15/2017 23:39:36	**Observation Length**	88
Last Modified	03/15/2017 23:39:36	**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	40
First Data Page	1
Max Obs per Page	1486
Obs in First Data Page	1436
Number of Data Set Repairs	0
Filename	/saswork/SAS_work87520000D348_odaws03-prod-us/SAS_work3F950000D348_odaws03-prod-us/memi2007_zouyang7.sas7bdat
Release Created	9.0401M3
Host Created	Linux
Inode Number	22020186
Access Permission	rw-r--r--
Owner Name	zouyang70
File Size	5MB
File Size (bytes)	5373952

Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	Format
1	AGE	Num	8	2.
2	ARM_FORC	Char	1	$1.
3	CU_CODE	Char	1	$1.
19	CU_ID	Num	8	
4	EARNER	Char	1	$1.
5	EARNTYPE	Char	1	$1.
6	EDUCA	Char	2	$2.
7	GROSPAYX	Num	8	10.
17	HORIGIN	Char	1	$1.
9	INDRETX	Num	8	10.
20	INT_NUM	Num	8	
8	IN_COLL	Char	1	$1.
10	MARITAL	Char	1	$1.
11	MEMBNO	Num	8	2.
18	MEMBRACE	Char	1	$1.
12	OCCUCODE	Char	2	$2.
13	PAYPERD	Char	1	$1.
14	PRIVPENX	Num	8	8.
21	QTR	Num	8	
15	SALARYX	Num	8	10.
16	SEX	Char	1	$1.

Total observations in memi071, memi072, memi073, memi074 are 17745+17331+14525+9611= 59212, which is equal to the number of observations in memi2007_zouyang7. The number of variables in memi071, memi072, memi073, memi074 is 20. After adding QTR when we merge four data sets, the number of variables in memi2007_zouyang7 is 21. So, the result is what I expect.

Exercise 2
g

The CONTENTS Procedure

Data Set Name	WORK.CE2007_ZOUYANG7	**Observations**	59212
Member Type	DATA	**Variables**	31
Engine	V9	**Indexes**	0
Created	03/15/2017 23:39:36	**Observation Length**	128
Last Modified	03/15/2017 23:39:36	**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	58
First Data Page	1
Max Obs per Page	1022
Obs in First Data Page	978
Number of Data Set Repairs	0
Filename	/saswork/SAS_work87520000D348_odaws03-prod-us/SAS_work3F950000D348_odaws03-prod-us/ce2007_zouyang7.sas7bdat
Release Created	9.0401M3
Host Created	Linux
Inode Number	22020186
Access Permission	rw-r--r--
Owner Name	zouyang70
File Size	7MB
File Size (bytes)	7733248

There are 59212 observations and 31 variables in the new data set ce2007_zouyang7, which are equal to those in memi2007_zouyang7. Therefore, the result is what I expect.

Exercise 2
g

The CONTENTS Procedure

Alphabetic List of Variables and Attributes				
#	**Variable**	**Type**	**Len**	**Format**
14	AGE	Num	8	2.
15	ARM_FORC	Char	1	$1.
1	BLS_URBN	Char	1	$1.
10	CHILDAGE	Char	1	$1.
2	CUTENURE	Char	1	$1.
16	CU_CODE	Char	1	$1.
11	CU_ID	Num	8	
17	EARNER	Char	1	$1.
18	EARNTYPE	Char	1	$1.
19	EDUCA	Char	2	$2.
20	GROSPAYX	Num	8	10.
7	HHID	Num	8	3.
6	HH_CU_Q	Num	8	2.
30	HORIGIN	Char	1	$1.
22	INDRETX	Num	8	10.
12	INT_NUM	Num	8	
21	IN_COLL	Char	1	$1.
23	MARITAL	Char	1	$1.
24	MEMBNO	Num	8	2.
31	MEMBRACE	Char	1	$1.
3	NUM_AUTO	Num	8	2.
25	OCCUCODE	Char	2	$2.
26	PAYPERD	Char	1	$1.
4	PERSLT18	Num	8	2.
8	POV_CY	Char	1	$1.
9	POV_PY	Char	1	$1.
27	PRIVPENX	Num	8	8.
13	QTR	Num	8	
5	REGION	Char	1	$1.
28	SALARYX	Num	8	10.
29	SEX	Char	1	$1.

Exercise 2
i

The CONTENTS Procedure

Data Set Name	WORK.ATLEAST_THREE_ZOUYANG7	**Observations**	1547
Member Type	DATA	**Variables**	2
Engine	V9	**Indexes**	0
Created	03/15/2017 23:39:36	**Observation Length**	16
Last Modified	03/15/2017 23:39:36	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	NO
Label	Frequency Counts and Percentages		
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Data Set Name	WORK.ALL_FOUR_ZOUYANG7	**Observations**	229
Member Type	DATA	**Variables**	2
Engine	V9	**Indexes**	0
Created	03/15/2017 23:39:36	**Observation Length**	16
Last Modified	03/15/2017 23:39:36	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	NO
Label	Frequency Counts and Percentages		
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		