Exercise 1
b

The FREQ Procedure

Number of Variable Levels		
Variable	**Label**	**Levels**
Product_ID	Product ID	10
Product_Category	Product Category	1
Product_Group	Product Group	1
Product_Name	Product Name	10
Supplier_Country	Supplier Country	2
Supplier_Name	Supplier Name	2
Supplier_ID	Supplier ID	2

Product ID				
Product_ID	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
220200300002	1	10.00	1	10.00
220200300005	1	10.00	2	20.00
220200300015	1	10.00	3	30.00
220200300079	1	10.00	4	40.00
220200300082	1	10.00	5	50.00
220200300096	1	10.00	6	60.00
220200300116	1	10.00	7	70.00
220200300129	1	10.00	8	80.00
220200300154	1	10.00	9	90.00
220200300157	1	10.00	10	100.00

Supplier Country				
Supplier_Country	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
GB	2	20.00	2	20.00
US	8	80.00	10	100.00

Exercise 1

b

The FREQ Procedure

Table of Supplier_Name by Supplier_ID			
Supplier_Name(Supplier Name)	Supplier_ID(Supplier ID)		
Frequency	2963	14682	Total
3Top Sports	8	0	8
Greenline Sports Ltd.	0	2	2
Total	8	2	10

According to the result above, there are no missing values in the variables. Supplier Country have a value of GB or US. A Supplier_ID of 2963 corresponds to 3Top Sports and 14682 corresponds to Greenline Sports Ltd., and Product_ID have only 12 digits.

Exercise 2

b

The CONTENTS Procedure

Data Set Name	WORK.RUSHING_ZOUYANG7	**Observations**	1578
Member Type	DATA	**Variables**	11
Engine	V9	**Indexes**	0
Created	03/03/2017 23:09:32	**Observation Length**	112
Last Modified	03/03/2017 23:09:32	**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	2
First Data Page	1
Max Obs per Page	1168
Obs in First Data Page	1140
Number of Data Set Repairs	0
Filename	/saswork/SAS_work6C540000DAB1_odaws02-prod-us/SAS_work22C30000DAB1_odaws02-prod-us/rushing_zouyang7.sas7bdat
Release Created	9.0401M3
Host Created	Linux
Inode Number	15204457
Access Permission	rw-r--r--
Owner Name	zouyang70
File Size	384KB
File Size (bytes)	393216

Exercise 2
b

The CONTENTS Procedure

	Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	Format	Label
5	Att	Num	8	COMMA5.	attempts
7	Avg	Num	8	5.2	yards/attempt
11	FD	Num	8		firstdowns
4	Games	Num	8		
9	Lg	Num	8		longest rush
2	Player	Char	32		
1	Season	Num	4		
10	TD	Num	8		touchdowns
3	Team	Char	10		
8	YPG	Num	8	5.1	yards/game
6	Yds	Num	8	COMMA5.	total yards

Exercise 2
c

NOTE: Invalid data for TD in line 654 50-50.
RULE: ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----0

 654 CHAR 2012.Daryl Richardson.Stl.16.98.475.4.85.29.7.53.o.19 53
    ZONE 33330467762566667676605760330330333032330332303306033
    NUMR 201294129C029381243FE934C916998947594E85929E79539F919
Season=2012 Player=Daryl Richardson Team=Stl Games=16 Att=98 Yds=475 Avg=4.85 YPG=29.7 Lg=53 TD=. FD=19 _ERROR_=1
_N_=654
NOTE: Invalid data for Yds in line 1229 25-25.
RULE: ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----0

1229CHAR 2011.Mike Kafka.Phi.4.3.o.0.0.2.0.0 35
    ZONE 3333046662466660566030306030303030303
    NUMR 20119D9B50B16B1908994939F9090929090
Season=2011 Player=Mike Kafka Team=Phi Games=4 Att=3 Yds=. Avg=0.00 YPG=0.0 Lg=2 TD=0 FD=0 _ERROR_=1 _N_=1229
NOTE: Invalid data for Avg in line 1545 29-29.

1545CHAR 2010.Moran Norris.SF.16.3.0.o.0.1.0.0 37
    ZONE 333304676624677670540330303060303030303
    NUMR 20109DF21E0EF229393691693909F90919090
Season=2010 Player=Moran Norris Team=SF Games=16 Att=3 Yds=0 Avg=. YPG=0.0 Lg=1 TD=0 FD=0 _ERROR_=1 _N_=1545
NOTE: 1578 records were read from the infile '~/my_files/440_Homework/badrush.txt'.
    The minimum record length was 34.
    The maximum record length was 61.
NOTE: The data set WORK.RUSHING_ZOUYANG7 has 1578 observations and 11 variables.

Exercise 2
d

The FREQ Procedure

Number of Variable Levels				
Variable	Label	Levels	Missing Levels	Nonmissing Levels
Season		8	0	8
Player		713	1	712
Team		35	0	35
Games		22	0	22
Att	attempts	243	0	243
Yds	total yards	509	1	508
Avg	yards/attempt	541	1	540
YPG	yards/game	490	1	489
Lg	longest rush	103	0	103
TD	touchdowns	24	1	23
FD	firstdowns	81	1	80

Player, Yds, Avg, YPG, TD and FdD all have missing values.
There should be 5 levels in the variable Season.
There should be 16 levels in the variable Game.

Season	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1912	1	0.06	1	0.06
2010	319	20.22	320	20.28
2011	322	20.41	642	40.68
2012	316	20.03	958	60.71
2013	308	19.52	1266	80.23
2014	310	19.65	1576	99.87
20010	1	0.06	1577	99.94
20111	1	0.06	1578	100.00

Three values of Season are wrong: 1912, 20010, and 20111.

The MEANS Procedure

Variable	Label	N	N Miss	Minimum	Maximum
Games		1578	0	0.1600000	289.0000000
Att	attempts	1578	0	0	1339.00
Yds	total yards	1577	1	-31.0000000	2097.00
Lg	longest rush	1578	0	-35.0000000	2800.00
TD	touchdowns	1577	1	0	74.0000000
FD	firstdowns	1573	5	0	89.0000000

The values of Games, Att, Yds , and Lg are out of range.

The UNIVARIATE Procedure
Variable: Games

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0.16	990	203	951
1.00	1567	237	1273
1.00	1548	248	630
1.00	1507	266	12
1.00	1482	289	312

The UNIVARIATE Procedure
Variable: Att (attempts)

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	504	997	951
1	1578	1038	12
1	1577	1069	1273
1	1575	1094	630
1	1574	1339	312

Exercise 2
d

The UNIVARIATE Procedure
Variable: Yds (total yards)

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-31	618	1607	311
-27	1578	1613	620
-24	310	1616	1259
-18	1577	1845	1
-18	1258	2097	619

Exercise 2
d

The UNIVARIATE Procedure
Variable: Lg (longest rush)

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-35	784	93	344
-27	1578	94	627
-18	1577	97	10
-18	1258	910	957
-12	617	2800	715

Obs	Season	Player	Team	Games	Att	Yds	Avg	YPG	Lg	TD	FD
504	2013	Riley Cooper	Phi	16	0	18	0.00	1.1	18	0	0

The player with 0 attempt actually have on attempt.

Obs	Season	Player	Yds	Att	Avg
12	2014	Matt Forte	4	1,038	64.90
105	2014	Dexter McCluster	131	40	3.27
138	2014	Colt McCoy	66	16	4.12
158	2014	Brian Hoyer	39	24	1.62
182	2014	Carson Palmer	25	8	3.12
312	2013	Matt Forte	5	1,339	83.70
322	2013	Knowshon Moreno	1,038	241	.
438	2013	Marvin Jones	65	8	8.12
454	2013	Thaddeus Lewis	52	24	2.07
504	2013	Riley Cooper	18	0	0.00
507	2013	Cedric Peerman	17	8	2.12
554	2013	Dexter McCluster	5	8	0.62
630	2012	Matt Forte	4	1,094	72.90
646	2012	Darren McFadden	707	216	.
672	2012	Robert Turbin	354	80	4.42
700	2012	Chris Ivory	217	40	5.42
713	2012	LeGarrette Blount	151	41	.
720	2012	Ryan Grant	132	32	4.12
745	2012	Keith Toston	74	17	4.53
932	2012	Ryan Mallett	-9	8	-1.12
934	2012	Brock Osweiler	-13	8	-1.62
951	2011	Matt Forte	5	997	83.10
1010	2011	Ryan Fitzpatrick	215	56	8.84
1171	2011	Anthony Allen	8	3	2.17
1229	2011	Mike Kafka	.	3	0.00
1273	2010	Matt Forte	5	1,069	66.80
1321	2010	Ryan Fitzpatrick	269	40	6.72
1337	2010	Ben Roethlisberger	176	34	.
1415	2010	Kevin Faulk	45	8	5.62
1416	2010	Ryan Grant	45	8	5.62
1438	2010	Brandon Gibson	28	3	8.33
1545	2010	Moran Norris	0	3	.

Exercise 2
d

Obs	Season	Player	Yds	Games	YPG
8	2014	Jeremy Hill	1,124	16.00	70.2
12	2014	Matt Forte	4	266.00	32.0
43	2014	Ronnie Hillman	434	8.00	54.2
135	2014	Drew Brees	68	16.00	4.2
160	2014	Danny Woodhead	38	3.00	10.7
164	2014	Devin Hester	36	16.00	2.2
167	2014	Michael Cox	33	4.00	8.2
230	2014	Jimmy Clausen	9	4.00	2.2
248	2014	Anquan Boldin	4	16.00	0.2
249	2014	Michael Crabtree	4	16.00	0.2
272	2014	Jason Campbell	1	4.00	0.2
302	2014	Jarvis Landry	-4	16.00	-0.2
304	2014	Tom Savage	-6	2.00	3.0
312	2013	Matt Forte	5	289.00	55.0
332	2013	LeGarrette Blount	772	16.00	48.2
334	2013	BenJarvus Green-Ellis	756	16.00	47.2
349	2013	Steven Jackson	543	12.00	45.2
358	2013	Bernard Pierce	436	16.00	27.2
389	2013	Ronnie Hillman	218	10.00	32.8
452	2013	Drew Brees	52	16.00	3.2
469	2013	Eli Manning	36	16.00	2.2
557	2013	Antonio Brown	4	16.00	0.2
558	2013	Sheldon Richardson	4	16.00	0.2
560	2013	Eric Weddle	4	16.00	0.2
561	2013	Terrance Williams	4	16.00	0.2
563	2013	Derrick Coleman	3	12.00	0.2
599	2013	Justin Blackmon	-1	4.00	-0.2
605	2013	Ricardo Lockette	-2	8.00	-0.2
608	2013	Luke McCown	-4	16.00	-0.2
609	2013	Aldrick Robinson	-4	16.00	-0.2
616	2013	Stephen Burton	-9	4.00	-2.2
630	2012	Matt Forte	4	248.00	46.0
645	2012	Ryan Mathews	707	12.00	59.9
646	2012	Darren McFadden	707	12.00	.

Exercise 2
d

Obs	Season	Player	Yds	Games	YPG
650	2012	Bryce Brown	564	16.00	35.2
651	2012	Bernard Pierce	532	16.00	33.2
695	2012	Chris Wells	234	8.00	29.2
712	2012	DuJuan Harris	157	4.00	39.2
723	2012	LaMichael James	125	4.00	31.2
734	2012	Jeremy Stewart	101	4.00	25.2
744	2012	Lance Dunbar	75	12.00	6.2
812	2012	Henry Hynoski	20	16.00	1.2
815	2012	Wes Welker	20	16.00	1.2
852	2012	Da'Rel Scott	9	4.00	2.2
887	2012	Emmanuel Sanders	4	16.00	0.2
912	2012	Tyler Thigpen	-1	4.00	-0.2
914	2012	T.J. Yates	-1	4.00	-0.2
932	2012	Ryan Mallett	-9	4.00	-2.2
937	2011	Ray Rice	1,364	16.00	85.2
951	2011	Matt Forte	5	203.00	46.0
958	2011	DeAngelo Williams	836	16.00	52.2
980	2011	Dexter McCluster	516	16.00	32.2
990	2011	Lance Ball	402	0.16	25.1
1054	2011	Matt Ryan	84	16.00	5.2
1088	2011	Matt Hasselbeck	52	16.00	3.2
1103	2011	Jerome Harrison	41	4.00	10.2
1111	2011	Philip Rivers	36	16.00	2.2
1196	2011	Jed Collins	4	16.00	0.2
1200	2011	Marc Mariani	4	16.00	0.2
1212	2011	Donald Jones	2	8.00	0.2
1229	2011	Mike Kafka	.	4.00	0.0
1248	2011	Dane Sanzenbacher	-4	16.00	-0.2
1262	2010	Chris Johnson	1,364	16.00	85.2
1268	2010	Ray Rice	1,220	16.00	76.2
1273	2010	Matt Forte	5	237.00	68.0
1302	2010	Mike Goodson	452	16.00	28.2
1343	2010	Donovan McNabb	151	13.00	.
1366	2010	Leon Washington	100	16.00	6.2

Exercise 2
d

Obs	Season	Player	Yds	Games	YPG
1368	2010	Earnest Graham	99	12.00	8.2
1376	2010	Joe Flacco	84	16.00	5.2
1388	2010	Reggie Hodges	68	16.00	4.2
1409	2010	Philip Rivers	52	16.00	3.2
1426	2010	Jeremy Maclin	36	16.00	2.2
1427	2010	Ovie Mughelli	36	16.00	2.2
1441	2010	Brian Hartline	27	12.00	2.2
1450	2010	Quinton Ganther	18	8.00	2.2
1504	2010	Dwayne Bowe	4	16.00	0.2
1505	2010	Braylon Edwards	4	16.00	0.2
1506	2010	Greg Jones	4	16.00	0.2
1565	2010	Sage Rosenfels	-3	12.00	-0.2

Obs	Season	Player	Team	Games	Att	Yds	Avg	YPG	Lg	TD	FD
12	2014	Matt Forte	16	266	1,038	4	64.90	32.0	6	63	.
312	2013	Matt Forte	16	289	1,339	5	83.70	55.0	9	74	.
322	2013	Knowshon Moreno	Den	16	241	1,038	.	64.9	31	10	53
630	2012	Matt Forte	15	248	1,094	4	72.90	46.0	5	45	.
646	2012	Darren McFadden	Oak	12	216	707	.	.	64	2	33
654	2012	Daryl Richardson	Stl	16	98	475	4.85	29.7	53	.	19
713	2012	LeGarrette Blount	TB	13	41	151	.	11.6	35	2	7
951	2011	Matt Forte	12	203	997	5	83.10	46.0	3	40	.
1229	2011	Mike Kafka	Phi	4	3	.	0.00	0.0	2	0	0
1273	2010	Matt Forte	16	237	1,069	5	66.80	68.0	6	42	.
1337	2010	Ben Roethlisberger	Pit	12	34	176	.	14.7	31	2	15
1343	2010	Donovan McNabb	Was	13	29	151	5.21	.	36	0	8
1545	2010	Moran Norris	SF	16	3	0	.	0.0	1	0	0

Obs	Season	Player	Team	Games	Att	Yds	Avg	YPG	Lg	TD	FD
784	2012	Raymond Ventrone	Cle	12	1	35	35.00	2.9	-35	0	1

Exercise 2

f

The FREQ Procedure

Number of Variable Levels		
Variable	**Label**	**Levels**
Season		5
Player		713
Team		32
Games		16
Att	attempts	241
Yds	total yards	511
Avg	yards/attempt	534
YPG	yards/game	489
Lg	longest rush	100
TD	touchdowns	18
FD	firstdowns	81

Season	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
2010	320	20.28	320	20.28
2011	323	20.47	643	40.75
2012	317	20.09	960	60.84
2013	308	19.52	1268	80.35
2014	310	19.65	1578	100.00

The MEANS Procedure

Variable	Label	N	N Miss	Minimum	Maximum
Games		1578	0	1.0000000	16.0000000
Att	attempts	1578	0	1.0000000	392.0000000
Yds	total yards	1578	0	-31.0000000	2097.00
Lg	longest rush	1578	0	-27.0000000	97.0000000
TD	touchdowns	1578	0	0	17.0000000
FD	firstdowns	1578	0	0	89.0000000