

Homework # 5

Exercise 1:

This part answers questions 1, 2 & 5 :

Prog:

```
Libname HW5 'J:\CLASSES\STAT46';  
□ Data HW5.Voter;  
  
Input Age Party: $1. (Quest1-Quest4) ($1. +1);  
    LABEL Quest1 = 'The president is doing a good job'  
          Quest2 = 'Congress is doing a good job'  
          Quest3 = 'Taxes are too high'  
          Quest4 = 'Gouvernment should cut spending';  
  
    Format Quest1 - Quest4 $Likert.  
          Age Age.;  
  
Datalines;  
23 D 1 1 2 2  
45 R 5 5 4 1  
67 D 2 4 3 3  
39 R 4 4 4 4  
19 D 2 1 2 1  
75 D 3 3 2 3  
57 R 4 3 4 4  
;  
run;  
  
□ proc print data=HW5.Voter noobs;  
run;  
  
□ proc freq data=HW5.Voter;  
    tables Quest1 - Quest4;  
run;
```

Log:

```
--
126 Libname HW5 'J:\CLASSES\STAT46';
JTE: Libref HW5 refers to the same physical library as HWFMT.
JTE: Libref HW5 was successfully assigned as follows:
      Engine:      V9
      Physical Name: J:\CLASSES\STAT46
127
128 * Quest 6;
129
130
131
132 *Quest 1;
133
134 Data HW5.Voter;
135
136 Input Age Party: $1. (Quest1-Quest4)($1. +1);
137   LABEL Quest1 = 'The president is doing a good job'
138         Quest2 = 'Congress is doing a good job'
139         Quest3 = 'Taxes are too high'
140         Quest4 = 'Gouvernement should cut spending';
141
142   Format Quest1 - Quest4 $Likert.
143         Age Age.;
144
145 Datalines;

JTE: The data set HW5.VOTER has 7 observations and 6 variables.
JTE: DATA statement used (Total process time):
      real time      0.08 seconds
      cpu time       0.03 seconds
```

```
153 ;
154 run;
155
```

```
1157
1158 proc print data=HW5.Voter noobs;
NOTE: Writing HTML Body file: sashtml5.htm
1159 run;

NOTE: There were 7 observations read from the data set HW5.VOTER.
NOTE: PROCEDURE PRINT used (Total process time):
      real time      0.51 seconds
      cpu time       0.35 seconds

1160
1161 proc freq data=HW5.Voter;
1162   tables Quest1 - Quest4;
1163   run;

NOTE: There were 7 observations read from the data set HW5.VOTER.
NOTE: PROCEDURE FREQ used (Total process time):
      real time      0.03 seconds
      cpu time       0.03 seconds
```

```
1164
```

Output

Display HWfmt Library

Age	Party	Quest1	Quest2	Quest3	Quest4
0 - 25	D	Strongly Disagree	Strongly Disagree	Disagree	Disagree
26 - 50	R	Strongly Agree	Strongly Agree	Agree	Strongly Disagree
51 - 75	D	Disagree	Agree	No Opinion	No Opinion
26 - 50	R	Agree	Agree	Agree	Agree
0 - 25	D	Disagree	Strongly Disagree	Disagree	Strongly Disagree
51 - 75	D	No Opinion	No Opinion	Disagree	No Opinion
51 - 75	R	Agree	No Opinion	Agree	Agree

The FREQ Procedure

The president is doing a good job				
Quest1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Strongly Disagree	1	14.29	1	14.29
Disagree	2	28.57	3	42.86
No Opinion	1	14.29	4	57.14
Agree	2	28.57	6	85.71
Strongly Agree	1	14.29	7	100.00

Congress is doing a good job				
Quest2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Strongly Disagree	2	28.57	2	28.57
No Opinion	2	28.57	4	57.14
Agree	2	28.57	6	85.71
Strongly Agree	1	14.29	7	100.00

Taxes are too high				
Quest3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Disagree	3	42.86	3	42.86
No Opinion	1	14.29	4	57.14
Agree	3	42.86	7	100.00

Gouvernement should cut spending				
Quest4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Strongly Disagree	2	28.57	2	28.57
Disagree	1	14.29	3	42.86
No Opinion	2	28.57	5	71.43
Agree	2	28.57	7	100.00

This part answers questions 3, 4 & 6:

Prog:

```
Libname HWfmt 'J:\CLASSES\STAT46';
Options fmtsearch=(HWfmt);
≡ proc format Library=HWfmt;
    value Age low- 25 = '0 - 25'
              26 - 50 = '26 - 50'
              51 - 75 = '51 - 75'
              75 - high = '75 +';

    value $Likert '1' = 'Strongly Disagree'
                  '2' = 'Disagree'
                  '3' = 'No Opinion'
                  '4' = 'Agree'
                  '5' = 'Strongly Agree' ;

run;
≡ proc freq data=HW5.Voter;
    tables Quest1 - Quest4;
    format Quest1 - Quest4 $Likert.
           Age Age.;

run;
≡ proc format Library=HWfmt;

    value $Categories 1,2 = 'Generally Disagree'
                      3 = 'No Opinion'
                      4,5 = 'Generally Agree';

run;
≡ proc freq data=HW5.Voter;
    tables Age Quest1 - Quest4;

    format Quest1 - Quest4 $Categories.
           Age Age.;

run;
title 'Display HWfmt Library';
≡ proc format library = HWfmt;
    select Age $Likert $Categories;

run;
```

Log:

```
1166
1167 Libname HWfmt 'J:\CLASSES\STAT46';
NOTE: Libref HWFMT refers to the same physical library as HW5.
NOTE: Libref HWFMT was successfully assigned as follows:
      Engine:          V9
      Physical Name: J:\CLASSES\STAT46
1168 Options fmtsearch=(HWfmt);
1169 proc format Library=HWfmt;
1170     value Age low- 25 = '0 - 25'
1171             26 - 50 = '26 - 50'
1172             51 - 75 = '51 - 75'
1173             75 - high = '75 +';
NOTE: Format AGE has been written to HWFMT.FORMATS.
1174
1175     value $Likert '1' = 'Strongly Disagree'
1176                 '2' = 'Disagree'
1177                 '3' = 'No Opinion'
1178                 '4' = 'Agree'
1179                 '5' = 'Strongly Agree' ;
NOTE: Format $LIKERT has been written to HWFMT.FORMATS.
1180 run;

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

1181
1182 proc freq data=HW5.Voter;
1183     tables Quest1 - Quest4;
1184     format Quest1 - Quest4 $Likert.
1185           Age Age.;
1186 run;

NOTE: There were 7 observations read from the data set HW5.VOTER.
NOTE: PROCEDURE FREQ used (Total process time):
      real time          0.03 seconds
      cpu time           0.03 seconds



---



1189
1190 proc format Library=HWfmt;
1191
1192     value $Categories 1,2 = 'Generally Disagree'
1193                       3 = 'No Opinion'
1194                       4,5 = 'Generally Agree';
NOTE: Format $CATEGORIES is already on the library HWFMT.FORMATS.
NOTE: Format $CATEGORIES has been written to HWFMT.FORMATS.
1195
1196 run;

NOTE: PROCEDURE FORMAT used (Total process time):
      real time          0.02 seconds
      cpu time           0.00 seconds

1197
1198 proc freq data=HW5.Voter;
1199     tables Age Quest1 - Quest4;
1200
1201     format Quest1 - Quest4 $Categories.
1202           Age Age.;
1203 run;

NOTE: There were 7 observations read from the data set HW5.VOTER.
NOTE: PROCEDURE FREQ used (Total process time):
      real time          0.04 seconds
      cpu time           0.03 seconds

1204
1205 title 'Display HWfmt Library';
1206 proc format library = HWfmt;
1207     select Age $Likert $Categories;
1208 run;

NOTE: PROCEDURE FORMAT used (Total process time):
      real time          0.02 seconds
      cpu time           0.01 seconds
```

Output:

The FREQ Procedure

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0 - 25	2	28.57	2	28.57
26 - 50	2	28.57	4	57.14
51 - 75	3	42.86	7	100.00

The president is doing a good job

Quest1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Generally Disagree	3	42.86	3	42.86
No Opinion	1	14.29	4	57.14
Generally Agree	3	42.86	7	100.00

Congress is doing a good job

Quest2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Generally Disagree	2	28.57	2	28.57
No Opinion	2	28.57	4	57.14
Generally Agree	3	42.86	7	100.00

Taxes are too high				
Quest3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Generally Disagree	3	42.86	3	42.86
No Opinion	1	14.29	4	57.14
Generally Agree	3	42.86	7	100.00

Gouvernement should cut spending				
Quest4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Generally Disagree	3	42.86	3	42.86
No Opinion	2	28.57	5	71.43
Generally Agree	2	28.57	7	100.00

Display HWfmt Library

FORMAT NAME: AGE			LENGTH: 7	NUMBER OF VALUES: 4
MIN LENGTH: 1			MAX LENGTH: 40	DEFAULT LENGTH: 7 FUZZ: STD
START	END	LABEL (VER. V7 V8 11OCT2018:23:16:56)		
LOW	25	0 - 25		
26	50	26 - 50		
51	75	51 - 75		
75<HIGH	75 +	75 +		

FORMAT NAME: \$CATEGORIES			LENGTH: 18	NUMBER OF VALUES: 5
MIN LENGTH: 1			MAX LENGTH: 40	DEFAULT LENGTH: 18 FUZZ: 0
START	END	LABEL (VER. 9.4 11OCT2018:23:16:57)		
1	1	Generally Disagree		
2	2	Generally Disagree		
3	3	No Opinion		
4	4	Generally Agree		
5	5	Generally Agree		

FORMAT NAME: \$LIKERT			LENGTH: 17	NUMBER OF VALUES: 5
MIN LENGTH: 1			MAX LENGTH: 40	DEFAULT LENGTH: 17 FUZZ: 0
START	END	LABEL (VER. V7 V8 11OCT2018:23:16:56)		
1	1	Strongly Disagree		
2	2	Disagree		
3	3	No Opinion		
4	4	Agree		
5	5	Strongly Agree		

Exercise 2:

This part answers questions 1, 2 & 3

Prog:

```
*Exercie 2;
Libname HW5 'J:\CLASSES\STAT46';
Libname HWfmt 'J:\CLASSES\STAT46';
options fmtsearch=(HWfmt);

❏ Data HW5.Results;
  infile datalines ;
  Input E1 E2 E3 CS $ ID ;

  label      E1 = 'EXAM1 GRADE'
             E2 = 'EXAM2 GRADE'
             E3 = 'EXAM3 GRADE'
             CS = 'Class Section'
             ID = 'Student ID';

  Format E1 E2 E3 percent.;

  Datalines;
  0.844 0.76 0.913 STAT101 1
  0.889 0.73 0.93  STAT101 2
  0.90  0.77 0.84  STAT101 3
  0.74  0.69 0.61  STAT101 4
  0.94  0.76 0.31  STAT101 5
  0.87  0.73 0.85  STAT101 6
  0.26  0.74 0.90  STAT101 7
  ;
run;

title 'Display of the Descriptor portion';
❏ proc contents data=HW5.Results varnum;
run;

title 'Display of Data portion';
❏ proc print data=HW5.Results noobs;
run;
```

Log:

```
07 *Exercie 2;
08 Libname HW5 'J:\CLASSES\STAT46';
NOTE: Libref HW5 refers to the same physical library as HWFMT.
NOTE: Libref HW5 was successfully assigned as follows:
      Engine:          V9
      Physical Name: J:\CLASSES\STAT46
09 Libname HWfmt 'J:\CLASSES\STAT46';
NOTE: Libref HWFMT refers to the same physical library as HW5.
NOTE: Libref HWFMT was successfully assigned as follows:
      Engine:          V9
      Physical Name: J:\CLASSES\STAT46
10 options fmtsearch=(HWfmt);
11
12
13 Data HW5.Results;
14 infile datalines ;
15 Input E1 E2 E3 CS $ ID ;
16
17 label      E1 = 'EXAM1 GRADE'
18            E2 = 'EXAM2 GRADE'
19            E3 = 'EXAM3 GRADE'
20            CS = 'Class Section'
21            ID = 'Student ID';
22
23 Format E1 E2 E3 percent.;
24
25 Datalines;

NOTE: The data set HW5.RESULTS has 7 observations and 5 variables.
NOTE: DATA statement used (Total process time):
      real time          0.08 seconds
      cpu time           0.01 seconds

38
39 title 'Display of the Descriptor portion';
40 proc contents data=HW5.Results varnum;
41 run;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.04 seconds
      cpu time           0.03 seconds

42
43 title 'Display of Data portion';
44 proc print data=HW5.Results noobs;
45 run;

NOTE: There were 7 observations read from the data set HW5.RESULTS.
NOTE: PROCEDURE PRINT used (Total process time):
      real time          0.01 seconds
      cpu time           0.00 seconds
```

Output:

Display of the Descriptor portion

The CONTENTS Procedure

Data Set Name	HW5.RESULTS	Observations	7
Member Type	DATA	Variables	5
Engine	V9	Indexes	0
Created	10/30/2018 14:17:17	Observation Length	40
Last Modified	10/30/2018 14:17:17	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	1632
Obs in First Data Page	7
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	J:\CLASSES\STAT46\results.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	Label
1	E1	Num	8	PERCENT.	EXAM1 GRADE
2	E2	Num	8	PERCENT.	EXAM2 GRADE
3	E3	Num	8	PERCENT.	EXAM3 GRADE
4	CS	Char	8		Class Section
5	ID	Num	8		Student ID

Display of Data portion

E1	E2	E3	CS	ID
84%	76%	91%	STAT101	1
89%	73%	93%	STAT101	2
90%	77%	84%	STAT101	3
74%	69%	61%	STAT101	4
94%	76%	31%	STAT101	5
87%	73%	85%	STAT101	6
26%	74%	90%	STAT101	7

This part answers questions 4 to 7:

Prog:

```
proc format library=HWfmt;  
    value Scale    low -< 0.5 = 'F'  
                    0.5 -< 0.60 = 'D'  
                    0.6 -< .80 = 'C'  
                    0.8 -< 0.90 = 'B'  
                    0.9 - 1 = 'A';  
run;
```

```
title 'Frequency tables';
```

```
Proc freq data=HW5.Results ;  
    table E1 E2 E3;  
format  E1 E2 E3 Scale.;  
run;
```

```
Proc Format library=HWfmt;  
  
    value NPE low - 0.6 = 'Weak'  
                    0.6 -< 0.80 = 'Medium'  
                    0.8 - 1 = 'Good';  
run;
```

```
Proc freq data=HW5.Results ;  
    table E1 E2 E3;  
format  E1 - E3 NPE.;  
run;
```

```
title 'Display HWfmt Library';
```

```
proc format library=HWfmt ;  
    select  Scale NPE;  
run;
```

Log:

```
2305 title;
2306 proc format library=HWfmt;
2307     value Scale    low -< 0.5 = 'F'
2308                 0.5 -< 0.60 = 'D'
2309                 0.6 -< .80 = 'C'
2310                 0.8 -< 0.90 = 'B'
2311                 0.9 - 1 = 'A';
NOTE: Format SCALE is already on the library HWFMT.FORMATS.
NOTE: Format SCALE has been written to HWFMT.FORMATS.
2312 run;

NOTE: PROCEDURE FORMAT used (Total process time):
      real time           0.03 seconds
      cpu time            0.00 seconds

2313
2314 title 'Frequency tables';
2315
2316 Proc freq data=HW5.Results ;
2317     table E1 E2 E3;
2318     format  E1 E2 E3 Scale.;
2319 run;

NOTE: There were 7 observations read from the data set HW5.RESULTS.
NOTE: PROCEDURE FREQ used (Total process time):
      real time           0.03 seconds
      cpu time            0.03 seconds

2320
2321 Proc Format library=HWfmt;
2322
2323     value NPE low - 0.6 = 'Weak'
2324             0.6 -< 0.80 = 'Medium'
2325             0.8 - 1 = 'Good';
NOTE: Format NPE is already on the library HWFMT.FORMATS.
NOTE: Format NPE has been written to HWFMT.FORMATS.
2326 run;

NOTE: PROCEDURE FORMAT used (Total process time):
      real time           0.02 seconds
      cpu time            0.00 seconds
```

```

2327
2328 Proc freq data=HW5.Results ;
2329   table E1 E2 E3;
2330   format  E1 - E3 NPE.;
2331   run;

NOTE: There were 7 observations read from the data set HW5.RESULTS.
NOTE: PROCEDURE FREQ used (Total process time):
      real time           0.03 seconds
      cpu time            0.03 seconds

2332
2333   title 'Display HWfmt Library';
2334   proc format library=HWfmt ;
2335       select  Scale NPE;
2336   run;

NOTE: PROCEDURE FORMAT used (Total process time):
      real time           0.02 seconds
      cpu time            0.01 seconds

```

Output:

The FREQ Procedure				
EXAM1 GRADE				
E1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
F	1	14.29	1	14.29
C	1	14.29	2	28.57
B	3	42.86	5	71.43
A	2	28.57	7	100.00

EXAM2 GRADE				
E2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
C	7	100.00	7	100.00

EXAM3 GRADE				
E3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
F	1	14.29	1	14.29
C	1	14.29	2	28.57
B	2	28.57	4	57.14
A	3	42.86	7	100.00

Frequency tables

The FREQ Procedure

EXAM1 GRADE				
E1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Weak	1	14.29	1	14.29
Medium	1	14.29	2	28.57
Good	5	71.43	7	100.00

EXAM2 GRADE				
E2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Medium	7	100.00	7	100.00

EXAM3 GRADE				
E3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Weak	1	14.29	1	14.29
Medium	1	14.29	2	28.57
Good	5	71.43	7	100.00

Display HWfmt Library

FORMAT NAME: NPE			LENGTH: 6	NUMBER OF VALUES: 3
MIN LENGTH: 1			MAX LENGTH: 40	DEFAULT LENGTH: 6 FUZZ: STD
START	END	LABEL (VER. V7 V8 30OCT2018:18:12:22)		
LOW	0.6<	0.6	Weak	
	0.8	0.8<	Medium	
		1	Good	

FORMAT NAME: SCALE			LENGTH: 1	NUMBER OF VALUES: 5
MIN LENGTH: 1			MAX LENGTH: 40	DEFAULT LENGTH: 1 FUZZ: STD
START	END	LABEL (VER. V7 V8 30OCT2018:18:12:22)		
LOW	0.5	0.5<	F	
	0.6	0.6<	D	
	0.8	0.8<	C	
	0.9	0.9<	B	
		1	A	