**STA 504**

**HomeWork\_1**

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#1

ods rtf file="C:\Users\linal\Desktop\2018\STA502\HW11\problem1-1" bodytitle style=journal;

/\*header

Purpose: Write a MACRO program that will input four macro variables

The MACRO will then produce a scatterplot with overlayed regression line using PROC SGPLOT from dataset DS with corresponding X and

Y with a proper TITLE.

Input: study\_gpa..sas7bdat/

\*/

libname HW11 "C:\Users\linal\Desktop\2018\STA502";

**data** study\_gpa;

set HW11.study\_gpa;

**run**;

**%macro** plotreg(DS=,title=, xvar=,yvar=,xlabel=,ylabel=);

proc sgplot data=&DS;

title &title;

scatter y=&yvar x=&xvar;

reg y=&yvar x=&xvar; xaxis label=&xlabel;yaxis label=&ylabel;

keylegend/location=inside position=bottomright ;

run;

**%mend** plotreg;

%***plotreg***(DS=study\_gpa,title="Regression the term GPA on the average time studied", xvar=AveTime

,yvar=GPA,xlabel="the average time studied",ylabel="the term GPA")

%***plotreg***(DS=study\_gpa,title="Regression the term GPA on the number of units enrolled", xvar=Units

,yvar=GPA,xlabel="the number of units enrolled",ylabel="the term GPA")

ods rtf close;

output





**#2**

/\*header

purpose: debugging the following SAS program that creates

a times table for any dimension speci\_ed, in this case 12 by 12.\*/

ods rtf file="C:\Users\linal\Desktop\2018\STA502\HW11\problem1" bodytitle style=journal;

**%MACRO** tt(NumRows=,NumCols=);

DATA table (DROP = &NumRows &NumCols);

ARRAY col{&NumCols} col1 - col&NumCols;

DO i = **1** TO "&NumRows";

DO j = **1** TO "&NumCols";

col(j) = i \* j;

END;

OUTPUT;

END;

RUN;

PROC PRINT DATA = TABLE;

TITLE1 'Times Table Printed for';

TITLE2 '&NumRows by &NumCols';

TITLE3 "Printed on &sysdate";

RUN;

**%MEND** tt;

%***tt***(NumRows = **12**,NumCols = **12**)

option mprint symbolgen;

%***tt***(NumRows = **12**,NumCols = **12**)

**%MACRO** tt(NumRows=,NumCols=);

DATA table (DROP = i j);

ARRAY col{&NumCols} col1 - col&NumCols;

DO i = **1** TO &NumRows;

DO j = **1** TO &NumCols;

col(j) = i \* j;

END;

OUTPUT;

END;

RUN;

PROC PRINT DATA = TABLE label;

TITLE1 'Times Table Printed for';

TITLE2 '&NumRows by &NumCols';

TITLE3 "Printed on &sysdate";

%local i;

%do i = **1** %to &NumCols;

label col&i = "&i";

%end;

RUN;

**%MEND** tt;

%***tt***(NumRows = **12**,NumCols = **12**)

ods rtf close;Output

**Output**

(b) log file is below. There are two errors. Error variable name12 is not valid. Invalid value for the DROP option.

2 %MACRO tt(NumRows=,NumCols=);

3 DATA table (DROP = &NumRows &NumCols);

4 ARRAY col{&NumCols} col1 - col&NumCols;

5 DO i = 1 TO "&NumRows";

6 DO j = 1 TO "&NumCols";

7 col(j) = i \* j;

8 END;

9 OUTPUT;

10 END;

11 RUN;

12 PROC PRINT DATA = TABLE;

13 TITLE1 'Times Table Printed for';

14 TITLE2 '&NumRows by &NumCols';

15 TITLE3 "Printed on &sysdate";

16 RUN;

17 %MEND tt;

18 %tt(NumRows = 12,NumCols = 12)

NOTE: Line generated by the macro variable "NUMROWS".

1 12

--

214

23

NOTE: Line generated by the macro variable "NUMCOLS".

1 12

--

214

23

ERROR 214-322: Variable name 12 is not valid.

ERROR 23-7: Invalid value for the DROP option.

NOTE: Character values have been converted to numeric values at the places given by:

(Line):(Column).

1:2 1:2

NOTE: The SAS System stopped processing this step because of errors.

NOTE: DATA statement used (Total process time):

real time 0.07 seconds

cpu time 0.01 seconds

NOTE: Writing HTML Body file: sashtml.htm

ERROR: File WORK.TABLE.DATA does not exist.

NOTE: The SAS System stopped processing this step because of errors.

NOTE: PROCEDURE PRINT used (Total process time):

real time 1.04 seconds

cpu time 0.46 seconds

**(c)log file is below.**

77 %MACRO tt(NumRows=,NumCols=);

78 DATA table (DROP = &NumRows &NumCols);

79 ARRAY col{&NumCols} col1 - col&NumCols;

80 DO i = 1 TO "&NumRows";

81 DO j = 1 TO "&NumCols";

82 col(j) = i \* j;

83 END;

84 OUTPUT;

85 END;

86 RUN;

87 PROC PRINT DATA = TABLE;

88 TITLE1 'Times Table Printed for';

89 TITLE2 '&NumRows by &NumCols';

90 TITLE3 "Printed on &sysdate";

91 RUN;

92 %MEND tt;

93 %tt(NumRows = 12,NumCols = 12)

NOTE: Line generated by the macro variable "NUMROWS".

1 12

--

214

23

NOTE: Line generated by the macro variable "NUMCOLS".

1 12

--

214

23

ERROR 214-322: Variable name 12 is not valid.

ERROR 23-7: Invalid value for the DROP option.

NOTE: Character values have been converted to numeric values at the places given by:

(Line):(Column).

1:2 1:2

NOTE: The SAS System stopped processing this step because of errors.

NOTE: DATA statement used (Total process time):

real time 0.05 seconds

cpu time 0.01 seconds

NOTE: There were 12 observations read from the data set WORK.TABLE.

NOTE: PROCEDURE PRINT used (Total process time):

real time 0.04 seconds

cpu time 0.01 seconds

4

99 option mprint symbolgen;

100 %tt(NumRows = 12,NumCols = 12)

SYMBOLGEN: Macro variable NUMROWS resolves to 12

SYMBOLGEN: Macro variable NUMCOLS resolves to 12

MPRINT(TT): DATA table (DROP = 12 12);

SYMBOLGEN: Macro variable NUMCOLS resolves to 12

NOTE: Line generated by the macro variable "NUMROWS".

1 12

--

214

23

NOTE: Line generated by the macro variable "NUMCOLS".

1 12

--

214

23

SYMBOLGEN: Macro variable NUMCOLS resolves to 12

MPRINT(TT): ARRAY col{12} col1 - col12;

SYMBOLGEN: Macro variable NUMROWS resolves to 12

MPRINT(TT): DO i = 1 TO "12";

SYMBOLGEN: Macro variable NUMCOLS resolves to 12

MPRINT(TT): DO j = 1 TO "12";

MPRINT(TT): col(j) = i \* j;

MPRINT(TT): END;

MPRINT(TT): OUTPUT;

MPRINT(TT): END;

MPRINT(TT): RUN;

ERROR 214-322: Variable name 12 is not valid.

ERROR 23-7: Invalid value for the DROP option.

NOTE: Character values have been converted to numeric values at the places given by:

(Line):(Column).

1:2 1:2

NOTE: The SAS System stopped processing this step because of errors.

NOTE: DATA statement used (Total process time):

real time 0.05 seconds

cpu time 0.03 seconds

MPRINT(TT): PROC PRINT DATA = TABLE;

MPRINT(TT): TITLE1 'Times Table Printed for';

MPRINT(TT): TITLE2 '&NumRows by &NumCols';

SYMBOLGEN: Macro variable SYSDATE resolves to 25NOV18

MPRINT(TT): TITLE3 "Printed on 25NOV18";

MPRINT(TT): RUN;

NOTE: There were 12 observations read from the data set WORK.TABLE.

NOTE: PROCEDURE PRINT used (Total process time):

real time 0.04 seconds

cpu time 0.01 seconds

(d) Table is below.

***Times Table Printed for***

***12 by 12***

***Printed on 25NOV18***

| *Obs* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *1* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| *2* | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| *3* | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| *4* | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |
| *5* | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| *6* | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| *7* | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 77 | 84 |
| *8* | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 |
| *9* | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 99 | 108 |
| *10* | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| *11* | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 121 | 132 |
| *12* | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

#3

SAS code

ods rtf file="C:\Users\linal\Desktop\2018\STA502\HW11\problem3" bodytitle style=journal;

/\*header:

Purpose:Fit a no intercept model to the manatee death and mortorboat.

superimpose the fit of the no-intercept model and the fit of a model with both intercept and NBOATS on the scatter plot

input: manatee\_deaths (datalines)\*/

**data** manatee\_deaths;

input year nboats manatees @@;

datalines;

77 447 13 78 460 21 79 481 24 80 498 16

81 513 24 82 512 20 83 526 15 84 559 34

85 585 33 86 614 33 87 645 39 88 675 43

89 711 50 90 719 47

;

**run**;

ods graphics off;

**proc** **reg** data=manatee\_deaths;

model manatees=nboats/ p r ;

**run**;

**proc** **reg** data=manatee\_deaths;

model manatees=nboats/ noint p r;

output out=manatee2 p=yhat r=residt;

**run**;

**proc** **sgplot** data=manatee2;

reg y=manatees x=nboats /legendlabel="no intercept model";

series y=yhat x=nboats/ legendlabel="intercept model" ;

**run**;

ods rtf close;

**Output:**



Multiple choice Question.

4. (a) b , (b) c , (c)- b , (d)-c , (c)-d