

```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
2
3      *****
4      *   TITLE :           SAS GRAIN PRICE PROJECT
5      *
6      *   DESCRIPTION: Final project for BIOS 7400 with Xiao Song, UGA, Spring 2022.
7      *                   Cleaning data for grain price analysis.
8      *
9      *-----
10     *   JOB NAME:      cleaning.SAS
11     *   LANGUAGE:     SAS v9.4 (on demand for academics)
12     *
13     *   NAME:         Zane Billings
14     *   DATE:         2022-04-20
15     *
16     *****;
17
18     FOOTNOTE "Job run by Zane Billings on &SYSDATE at &SYSTIME";
19
20     TITLE 'Grain Price Analysis';
21
22     OPTIONS NODATE LS=95 PS=42;
23
24     LIBNAME HOME '/home/u59465388/SAS-Grain-Prices';
NOTE: Libref HOME was successfully assigned as follows:
      Engine:          V9
      Physical Name: /home/u59465388/SAS-Grain-Prices
25
26     *****;
27     *   Macros;
28     *****;
29
30     * Variables for filtering the years to export in the cleaned dataset. I have
31     them set to the min/max values in the dataset, but this allows for easier
32     changing than specifying the years manually.;
33     %LET MINYEAR = 1866;
34     %LET MAXYEAR = 2021;
35
36     * Variable for controlling whether the following macro prints to the report.
37     It is easier to toggle this in one place than to add or remove the macro
38     calls later in the script.
39     1: Prints first &PRINTN observations of the dataset and the descriptor
40     portion as well.
41     Any other value (preferably 0): does not print (indeed, the macro will
42     not execute anything after the logical step).;
43     %LET VERBOSE = 1;
44     %LET PRINTN = 10;
45
46     * Macro for printing values and descriptor portion of data;
47     %MACRO DESCRIBE (DAT =, N = &PRINTN);
48     %IF %EVAL(&VERBOSE = 1) %THEN %DO;
49     PROC PRINT DATA = &DAT (OBS = &N) LABEL;
50     RUN;
51
52     PROC CONTENTS DATA = &DAT;
53     RUN;
54     %END;
55     %MEND;
56
57     *****;
58     *   Data importing;
59     *****;
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```

131      * Import the temperature anomaly data;
132      FILENAME NASATEMP "/home/u59465388/SAS-Grain-Prices/nasatemp.txt";
133      DATA TEMP;
134      * Read in the NASA temperature data. The data starts at line 9.;
135      INFILE NASATEMP FIRSTOBS = 9;
136
137      * Bring the next line of the INFILE into the input buffer;
138      INPUT @;
139
140      * If the first detectable word (which should be the YEAR) is not a numeric
141      digit, delete the row from the buffer, and thus do not import it.
142      This skips the blank rows and repeated header rows.
143      After DELETE is executed, return to the beginning of the data step.;
144      IF NOTDIGIT(SCAN(_INFILE_, 1)) THEN DELETE;
145
146      * If the YEAR is a number, import the current infile into the dataset;
147      ELSE DO;
148      * The data has missing values coded as '****', replace these with . so that
149      SAS interprets them as missing correctly.;
150      _INFILE_ = TRANSTRN(_INFILE_, "****", ".");
151      * Read in only the first 13 columns.;
152      INPUT YEAR JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC;
153      END;
154
155      * Get the yearly average, and then divide by 100 to make the units degrees C.
156      Round to two decimal places.;
157      TEMP = ROUND(MEAN(OF JAN -- DEC) / 100, 0.01);
158      DROP JAN -- DEC;
159
160      * Give information labels to the variables;
161      LABEL
162      YEAR = "Calendar year"
163      TEMP = "Temperature diff. (deg. C)"
164      ;
165      RUN;

```

NOTE: The infile NASATEMP is:

```

Filename=/home/u59465388/SAS-Grain-Prices/nasatemp.txt,
Owner Name=u59465388,Group Name=oda,
Access Permission=-rw-r--r--,
Last Modified=21Apr2022:19:12:22,
File Size (bytes)=16794

```

NOTE: 164 records were read from the infile NASATEMP.

```

The minimum record length was 0.
The maximum record length was 104.

```

NOTE: The data set WORK.TEMP has 143 observations and 2 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.00 seconds
user cpu time      0.01 seconds
system cpu time    0.00 seconds
memory             877.00k
OS Memory          29608.00k
Timestamp          04/25/2022 10:08:46 PM
Step Count                     24  Switch Count  2
Page Faults                    0
Page Reclaims                 312
Page Swaps                     0
Voluntary Context Switches     13
Involuntary Context Switches   0
Block Input Operations         0
Block Output Operations       264

```

```
167      %DESCRIBE(DAT = WORK.TEMP);
```

NOTE: There were 10 observations read from the data set WORK.TEMP.

NOTE: PROCEDURE PRINT used (Total process time):

real time	0.04 seconds
user cpu time	0.04 seconds
system cpu time	0.00 seconds
memory	2423.65k
OS Memory	31400.00k
Timestamp	04/25/2022 10:08:46 PM
Step Count	25
Page Faults	0
Page Reclaims	818
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	0

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.05 seconds
user cpu time	0.05 seconds
system cpu time	0.00 seconds
memory	1848.68k
OS Memory	32684.00k
Timestamp	04/25/2022 10:08:46 PM
Step Count	26
Page Faults	0
Page Reclaims	671
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	8

```
168
169      * Import the presidential party data;
170      FILENAME PRESI '/home/u59465388/SAS-Grain-Prices/presidential.csv';
171      DATA PRES;
172      * Set length of variables to ensure character vars don't get cut off;
173      LENGTH YEAR 4 PRES $ 20 PARTY $ 25;
174
175      * Import CSV file, nothing complicated like the last file;
176      INFILE PRESI DLM = ',' FIRSTOBS = 2;
177      INPUT YEAR PRES $ PARTY $;
178
179      * Abraham Lincoln and Andrew Johnson are listed as 'National Union' party
180      members, but this isn't terribly useful. Historically, Abraham Lincoln
181      was a Republican and Andrew Johnson was a Democrat, and the National Union
182      coalition was a transitional step. So I'll recode these two for simplicity.;
183      IF PRES = "Abraham Lincoln" THEN PARTY = "Republican";
184      ELSE IF PRES = "Andrew Johnson" THEN PARTY = "Democrat";
185
186      * Add descriptive labels;
187      LABEL
188      YEAR = "Calendar year"
189      PRES = "President name"
190      PARTY = "President party"
191      ;
192      RUN;
```

NOTE: The infile PRESI is:

```

Filename=/home/u59465388/SAS-Grain-Prices/presidential.csv,
Owner Name=u59465388,Group Name=oda,
Access Permission=-rw-r--r--,
Last Modified=21Apr2022:20:19:26,
File Size (bytes)=7602

```

NOTE: 227 records were read from the infile PRESI.

The minimum record length was 20.

The maximum record length was 44.

NOTE: The data set WORK.PRES has 227 observations and 3 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            769.28k
OS Memory          32936.00k
Timestamp          04/25/2022 10:08:46 PM
Step Count                27  Switch Count  2
Page Faults                0
Page Reclaims            160
Page Swaps                0
Voluntary Context Switches 14
Involuntary Context Switches 0
Block Input Operations     0
Block Output Operations    264

```

```

193
194      * The presidential data only goes through 2013, so we will have to manually
195      input the 2013 - 2022 data and append that to the end.;
196      DATA PRES_END;
197      LENGTH YEAR 4 PRES $ 20 PARTY $ 25;
198      INPUT YEAR PRES $ PARTY $;
199      LABEL
200      YEAR = "Calendar year"
201      PRES = "President name"
202      PARTY = "President party"
203      ;
204      INFILE DATALINES DSD DLM = " ";
205      DATALINES;

```

NOTE: The data set WORK.PRES_END has 9 observations and 3 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            670.40k
OS Memory          32936.00k
Timestamp          04/25/2022 10:08:46 PM
Step Count                28  Switch Count  2
Page Faults                0
Page Reclaims            93
Page Swaps                0
Voluntary Context Switches 18
Involuntary Context Switches 0
Block Input Operations     0
Block Output Operations    264

```

```

215      ;
216      RUN;
217
218      * Now append the second dataset to the end of the first;
219      PROC APPEND BASE = WORK.PRES DATA = WORK.PRES_END;
220      RUN;

```

NOTE: Appending WORK.PRES_END to WORK.PRES.
 NOTE: There were 9 observations read from the data set WORK.PRES_END.
 NOTE: 9 observations added.
 NOTE: The data set WORK.PRES has 236 observations and 3 variables.
 NOTE: PROCEDURE APPEND used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.00 seconds
memory	1005.03k
OS Memory	33456.00k
Timestamp	04/25/2022 10:08:46 PM
Step Count	29
Page Faults	0
Page Reclaims	126
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	16

221
 222 %DESCRIBE(DAT = WORK.PRES);

NOTE: There were 10 observations read from the data set WORK.PRES.
 NOTE: PROCEDURE PRINT used (Total process time):

real time	0.02 seconds
user cpu time	0.03 seconds
system cpu time	0.00 seconds
memory	760.46k
OS Memory	32936.00k
Timestamp	04/25/2022 10:08:47 PM
Step Count	30
Page Faults	0
Page Reclaims	85
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	24

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.04 seconds
user cpu time	0.04 seconds
system cpu time	0.01 seconds
memory	964.31k
OS Memory	33196.00k
Timestamp	04/25/2022 10:08:47 PM
Step Count	31
Page Faults	0
Page Reclaims	108
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	8

223
 224 * Import the inflation data;
 225 FILENAME INFL '/home/u59465388/SAS-Grain-Prices/inflation_data.csv';
 226 DATA INFLATION;

```

227      * Import CSV file, easy like the presidential data;
228      INFILE INFL DLM = ',' FIRSTOBS = 2;
229      INPUT YEAR VALUE INFL;
230
231      * Create a new column for relative 'worth': 1 / value in 1886 dollars
232      is the 'buying power' of $1 relative to an 1866 dollar.;
233      PWR = ROUND(1 / VALUE, 0.01);
234
235      * Assign descriptive lables;
236      LABEL
237      YEAR = 'Calendar year'
238      VALUE = 'Adjusted value'
239      INFL = 'Rate of inflation'
240      PWR = 'Buying power'
241      ;
242      RUN;

```

NOTE: The infile INFL is:

```

Filename=/home/u59465388/SAS-Grain-Prices/inflation_data.csv,
Owner Name=u59465388,Group Name=oda,
Access Permission=-rw-r--r--,
Last Modified=22Apr2022:09:42:44,
File Size (bytes)=2604

```

NOTE: 157 records were read from the infile INFL.

The minimum record length was 14.

The maximum record length was 16.

NOTE: The data set WORK.INFLATION has 157 observations and 4 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.00 seconds
user cpu time      0.01 seconds
system cpu time    0.00 seconds
memory             764.53k
OS Memory          32936.00k
Timestamp          04/25/2022 10:08:47 PM
Step Count         32  Switch Count  2
Page Faults        0
Page Reclaims      97
Page Swaps         0
Voluntary Context Switches 15
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 264

```

243

```

244      %DESCRIBE(DAT = WORK.INFLATION);

```

NOTE: There were 10 observations read from the data set WORK.INFLATION.

NOTE: PROCEDURE PRINT used (Total process time):

```

real time          0.02 seconds
user cpu time      0.02 seconds
system cpu time    0.00 seconds
memory             660.00k
OS Memory          33192.00k
Timestamp          04/25/2022 10:08:47 PM
Step Count         33  Switch Count  0
Page Faults        0
Page Reclaims      73
Page Swaps         0
Voluntary Context Switches 0
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 24

```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.04 seconds	
user cpu time	0.04 seconds	
system cpu time	0.00 seconds	
memory	963.25k	
OS Memory	33452.00k	
Timestamp	04/25/2022 10:08:47 PM	
Step Count	34	Switch Count 0
Page Faults	0	
Page Reclaims	103	
Page Swaps	0	
Voluntary Context Switches	0	
Involuntary Context Switches	0	
Block Input Operations	0	
Block Output Operations	24	

```

245
246 * Import the feed grains data. This is a complex and messy excel spreadsheet
247 that is easy to manually view but difficult to use as actual data. For
248 this project, I will only clean the first sheet.;
249 * In the current form, importing the data will be quite complicated and I think
250 impossible using PROC IMPORT. So I opened the dataset in Excel and exported
251 the sheet that I needed as a CSV file, which is what I'll import here.;
252 FILENAME FDGRN '/home/u59465388/SAS-Grain-Prices/fg-sheet1.csv';
253
254 DATA ALLGRNS;
255 * Import the CSV file. The option DSD is necessary to read in consecutive
256 delimiters as missing data, and the MISSOVER option is necessary as
257 there are missing values at the end of lines, so the INPUT specification
258 should be interpreted strictly.;
259 INFILE FDGRN DLM = ',' FIRSTOBS = 9 DSD MISSOVER;
260
261 * SAS doesn't like the missing values being denoted by ,, even with the DSD
262 option, and has a hard time parsing the numeric values. So, I'll import
263 all of the variables as character variables with silly names. The
264 names are uninformative, but easy to use all together in SAS statements.
265 Note that I have also included the trailing @ so I can check the next line
266 for all blanks, and delete the line before being read if that is the case.;
267 INPUT GRN $ YR $ V1 $ V2 $ V3 $ V4 $ V5 $ V6 $ @;
268
269 * If the next line (@) is all missing, do not read it in;
270 IF MISSING(YR) THEN DELETE;
271
272 * The grain variable is only denoted once, and is missing for all other
273 records in the time series. This part of the code saves the most recent
274 non-missing value of GRN, and then uses it to fill in the value of
275 all missing GRN values until it finds a new non-missing value.;
276 IF NOT MISSING(GRN) THEN DO;
277 TMP = GRN;
278 RETAIN TMP;
279 END;
280 ELSE GRN = TMP;
281
282 * Create a YEAR variable as the first four digits of the YR variable, which
283 looks like ####/##. Use INPUT() to make this new variable numeric.;
284 YEAR = INPUT(SUBSTR(YR, 1, 4), 4.);
285
286 * Convert the imported character variables to numeric variables. Since SAS
287 cannot modify variable types in place, we have to create two arrays. One
288 array (_CHA) holds the placeholder character variables, and the second array
289 (_NUM) holds the newly declared numeric variables with somewhat better
290 names. Then we handle the missing character values explicitly to prevent SAS

```

```

291   from complaining about the blanks, and use INPUT to parse the remaining
292   values to numbers. We use the comma informat here since some of the
293   numeric values have commas as place value separators.;
294   ARRAY _CHA{6} $ V1 - V6;
295   ARRAY _NUM{6} ACR HVT PRD YLD PCE LNR;
296   DO I = 1 TO 6;
297   IF MISSING(_CHA{I}) THEN _NUM{I} = .;
298   ELSE _NUM{I} = INPUT(_CHA{I}, COMMA8.);
299   END;
300
301   * Compute the percent change from the previous year;
302   PCT = ROUND(DIF(PCE) / LAG(PCE) * 100, 0.01);
303
304   * Compute the log of the price;
305   LPE = LOG10(PCE);
306
307   * Drop all of the temporary and placeholder variables that we don't need in
308   the cleaned dataset;
309   DROP TMP YR V1 - V6 I;
310
311   * Assign descriptive labels to the remaining useful variables.;
312   LABEL
313   GRN = "Grain commodity"
314   YEAR = "Calendar year"
315   ACR = "Acerage (M)"
316   HVT = "Acres harvested (M)"
317   PRD = "Bushels produced (M)"
318   YLD = "Yield (bushels per acre)"
319   PCE = "Price per bushel"
320   LPE = "log10 price per bushel"
321   LNR = "Loan rate per bushel"
322   PCT = "Pct change in price"
323   ;
324   RUN;

```

NOTE: The infile FDGRN is:

```

Filename=/home/u59465388/SAS-Grain-Prices/fg-sheet1.csv,
Owner Name=u59465388,Group Name=oda,
Access Permission=-rw-r--r--,
Last Modified=21Apr2022:20:52:21,
File Size (bytes)=25338

```

NOTE: 582 records were read from the infile FDGRN.

```

The minimum record length was 8.
The maximum record length was 124.

```

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).
1 at 302:8      1 at 302:23    1 at 302:34

```

NOTE: The data set WORK.ALLGRNS has 571 observations and 10 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             929.71k
OS Memory          33452.00k
Timestamp           04/25/2022 10:08:47 PM
Step Count                  35  Switch Count   2
Page Faults                  0
Page Reclaims              142
Page Swaps                  0
Voluntary Context Switches  15
Involuntary Context Switches 0
Block Input Operations      0
Block Output Operations    272

```



```

325
326      %DESCRIBE(DAT = WORK.ALLGRNS);

```

NOTE: There were 10 observations read from the data set WORK.ALLGRNS.

NOTE: PROCEDURE PRINT used (Total process time):

```

real time          0.04 seconds
user cpu time      0.04 seconds
system cpu time    0.00 seconds
memory            840.03k
OS Memory          33192.00k
Timestamp          04/25/2022 10:08:47 PM
Step Count         36   Switch Count   0
Page Faults        0
Page Reclaims      106
Page Swaps         0
Voluntary Context Switches 0
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 8

```

NOTE: PROCEDURE CONTENTS used (Total process time):

```

real time          0.05 seconds
user cpu time      0.05 seconds
system cpu time    0.00 seconds
memory            1001.25k
OS Memory          33452.00k
Timestamp          04/25/2022 10:08:47 PM
Step Count         37   Switch Count   0
Page Faults        0
Page Reclaims      97
Page Swaps         0
Voluntary Context Switches 0
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 40

```

```

327
328      *****;
329      * Data merging;
330      *****;
331
332      * Next, we need to do a one-to-many merge of the four datasets by year. The
333      grains dataset has up to four records for each year, so the other three
334      datasets will need to be replicated.;
335
336      * First, we must sort all data sets by year. This macro will sort an arbitrary
337      number of datasets. Note that it mutates currently existing datasets rather
338      than assigning new names to the sorted datasets.;
339
340      %MACRO SORTALL (DAT = , BYVAR = );
341      %LET N = %SYSFUNC(COUNTW(&DAT));
342      %DO I = 1 %TO &N;
343      PROC SORT DATA = %SCAN(&DAT, &I);
344      BY &BYVAR;
345      RUN;
346      %END;
347      %MEND;
348
349      %SORTALL(
350      DAT = ALLGRNS INFLATION PRES TEMP,
351      BYVAR = YEAR

```

352);

NOTE: There were 571 observations read from the data set WORK.ALLGRNS.

NOTE: The data set WORK.ALLGRNS has 571 observations and 10 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.01 seconds
memory	920.46k
OS Memory	33452.00k
Timestamp	04/25/2022 10:08:47 PM
Step Count	38 Switch Count 2
Page Faults	0
Page Reclaims	188
Page Swaps	0
Voluntary Context Switches	15
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	264

NOTE: There were 157 observations read from the data set WORK.INFLATION.

NOTE: The data set WORK.INFLATION has 157 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.00 seconds
memory	936.21k
OS Memory	33708.00k
Timestamp	04/25/2022 10:08:47 PM
Step Count	39 Switch Count 2
Page Faults	0
Page Reclaims	123
Page Swaps	0
Voluntary Context Switches	17
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	264

NOTE: There were 236 observations read from the data set WORK.PRES.

NOTE: The data set WORK.PRES has 236 observations and 3 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.00 seconds
memory	929.21k
OS Memory	33708.00k
Timestamp	04/25/2022 10:08:47 PM
Step Count	40 Switch Count 2
Page Faults	0
Page Reclaims	111
Page Swaps	0
Voluntary Context Switches	13
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	264

NOTE: There were 143 observations read from the data set WORK.TEMP.

NOTE: The data set WORK.TEMP has 143 observations and 2 variables.

NOTE: PROCEDURE SORT used (Total process time):

```

real time          0.00 seconds
user cpu time      0.01 seconds
system cpu time    0.00 seconds
memory            944.21k
OS Memory          33708.00k
Timestamp          04/25/2022 10:08:47 PM
Step Count         41  Switch Count  2
Page Faults        0
Page Reclaims      114
Page Swaps         0
Voluntary Context Switches 17
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 264

```

```

353
354      * Now we can do the actual merge. Only the records with admissible years
355      (specified by the macro variables &MINYEAR and &MAXYEAR respectively)
356      will be read in and included in the merge.;
357
358      DATA HOME.GRAINS;
359      MERGE ALLGRNS INFLATION PRES TEMP;
360      WHERE &MINYEAR <= YEAR <= &MAXYEAR;
361      BY YEAR;
362      RUN;

```

NOTE: MERGE statement has more than one data set with repeats of BY values.

NOTE: There were 571 observations read from the data set WORK.ALLGRNS.

WHERE (YEAR>=1866 and YEAR<=2021);

NOTE: There were 156 observations read from the data set WORK.INFLATION.

WHERE (YEAR>=1866 and YEAR<=2021);

NOTE: There were 157 observations read from the data set WORK.PRES.

WHERE (YEAR>=1866 and YEAR<=2021);

NOTE: There were 142 observations read from the data set WORK.TEMP.

WHERE (YEAR>=1866 and YEAR<=2021);

NOTE: The data set HOME.GRAINS has 571 observations and 16 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.02 seconds
user cpu time      0.01 seconds
system cpu time    0.00 seconds
memory            2204.18k
OS Memory          35256.00k
Timestamp          04/25/2022 10:08:47 PM
Step Count         42  Switch Count  8
Page Faults        0
Page Reclaims      399
Page Swaps         0
Voluntary Context Switches 58
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 264

```

```

363
364      PROC SORT DATA = HOME.GRAINS;
365      BY GRN YEAR;
366      RUN;

```

NOTE: There were 571 observations read from the data set HOME.GRAINS.

NOTE: The data set HOME.GRAINS has 571 observations and 16 variables.

NOTE: PROCEDURE SORT used (Total process time):

```

real time          0.02 seconds
user cpu time      0.00 seconds
system cpu time    0.01 seconds

```

```

memory          928.59k
OS Memory       34476.00k
Timestamp       04/25/2022 10:08:47 PM
Step Count      43  Switch Count  1
Page Faults     0
Page Reclaims   136
Page Swaps      0
Voluntary Context Switches  47
Involuntary Context Switches 0
Block Input Operations  288
Block Output Operations  264

```

367

368 %DESCRIBE(DAT = HOME.GRAINS);

NOTE: There were 10 observations read from the data set HOME.GRAINS.

NOTE: PROCEDURE PRINT used (Total process time):

```

real time       0.06 seconds
user cpu time    0.07 seconds
system cpu time  0.00 seconds
memory          927.90k
OS Memory       34216.00k
Timestamp       04/25/2022 10:08:47 PM
Step Count      44  Switch Count  0
Page Faults     0
Page Reclaims   109
Page Swaps      0
Voluntary Context Switches  10
Involuntary Context Switches 1
Block Input Operations  288
Block Output Operations  40

```

NOTE: PROCEDURE CONTENTS used (Total process time):

```

real time       0.06 seconds
user cpu time    0.06 seconds
system cpu time  0.00 seconds
memory          1047.21k
OS Memory       34476.00k
Timestamp       04/25/2022 10:08:47 PM
Step Count      45  Switch Count  0
Page Faults     0
Page Reclaims   100
Page Swaps      0
Voluntary Context Switches  4
Involuntary Context Switches 2
Block Input Operations  0
Block Output Operations  48

```

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370 *****;

371 * END OF FILE;

372 *****;

373

374

375 OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;

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