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1  /*****
2  /* Program Name: DSmith_HW13_prog.sas
3  /* Date Created: 4/16/2023
4  /* Author: Dustin Smith
5  /* Purpose: To complete Homework 13 of stats 604.
6  /*
7  /* Inputs: July22_edit found at "/home/u63307645/STAT_604_Folder/mylib"
8  /* Outputs: DSmith_HW13_output.pdf found at "/home/u63307645/STAT_604_Folder/STAT_604_Howework/DSmith_HW13_output.pdf"
9  /*
10 /*
11 /*****
12
13 /*Housekeeping*/
14 title;
15 footnote;
16 ods noproctitle;
17
18 /*2 Opening File and librefs*/
19 libname mylib "/home/u63307645/STAT_604_Folder/mylib";
20 filename output "/home/u63307645/STAT_604_Folder/STAT_604_Howework/DSmith_HW13_output.pdf";
21 ods pdf file=output;
22
23 /*4 Print the created formate*/
24 proc format library=mylib FMTLIB;
25 run;
26
27 /*5 Create a copy of the july21_edit sorted by Station and Date*/
28 proc sort data=mylib.july21_edit
29 out=mylib.july21_edit2;
30 by STATION DATE;
31 run;
32
33 /*6 Create two new files to study the rain fall*/
34 data mylib.Rain(keep=STATION NAME Reporting TotDays Tot Mean) mylib.MostRain(keep=MNAME MDATE MOST);
35 set mylib.july21_edit2(drop=TMAX TMIN TChange) END = last;
36 by STATION DATE;
37 length Reporting $3;
38 retain MOST; retain MName; retain MDate; retain Reporting;
39 if first.STATION then do;
40 Tot = 0;
41 TotDays = 0;
42 Reporting = 'No';
43 end;
44 if missing(PRCP)=0 and PRCP~= 0 then do;
45 TotDays + 1;
46 Tot + PRCP;
47 Reporting = 'Yes';
48 end;
49 if last.STATION then do;
50 if TotDays = 0 or "." then Mean = 0;
51 else Mean = Tot/TotDays;
52 output mylib.Rain;
53 end;
54 if missing(PRCP)=0 then do;
55 if MOST<=PRCP then do;
56 MName = Name;
57 MDate = Date;
58 MOST = PRCP;
59 if last=1 then output mylib.MostRain;
60 end;
61 else do; /*Note: This is to maintain a consistent number of observations with SET END = LAST.*/
62 MName = MName;
63 MDate = MDate;
64 MOST = MOST;
65 if last=1 then output mylib.MostRain;
66 end;
67 end;
68 label STATION='Station' NAME='Name' Reporting='Rain?' TotDays='Total Rainy Days' Tot='Total Rainfall (inches)'
69 Mean='Average Rainfall (inches)' MNAME='Name' MDATE='Date' MOST='Rainfall (inches)';
70 format MDATE weekdate32. MEAN 4.2;
71 run;
72
73 /*7 Print Contents for the created data above.*/
74 title1 'Rainfall for each Station';
75 title2 'July 2021';
76 proc contents data=mylib.Rain;

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78 run;
79
80 title1 'Station with the most Rainfall';
81 title2 'July 2021';
82 proc contents data=mylib.MostRain;
83 run;
84
85 /*8 Print Waco and College Station data*/
86 title1 "College Station and Waco Rainfall";
87 title2 "July 2021";
88 proc print data=mylib.Rain noobs label;
89     where Name='College Station Easterwood Field' or NAME='Waco Regional Airport';
90     ID STATION;
91     var NAME TotDays Tot Mean;
92 run;
93
94 /*9 Print the stations that did not report Rainfall*/
95 title1 "Stations that did not report Rainfall";
96 title2 "July 2021";
97 proc print data=mylib.Rain noobs label;
98     where Reporting="No";
99     var STATION NAME;
100 run;
101
102 /*10 Print the stations that reported having 0 Rainfall*/
103 title1 "Stations that reported no Rainfall";
104 title2 "July 2021";
105 proc print data=mylib.Rain noobs label;
106     where Tot = 0;
107     var STATION NAME;
108 run;
109
110 /*11 Print the maximum*/
111 title1 "Station with the most Rainfall";
112 title2 "July 2021";
113 proc print data=mylib.MostRain noobs label;
114 run;
115
116 /*Close the ods*/
117 ods pdf close;
118
119 /*Questions*/
120 /* A) The default reported length is 7, the Max is 40, and the Min length is 1.
121
122     B) The number of days at the Waco and College Station airports is off by only 1.
123         With 10 for College Station and 11 for Waco.
124
125     C) It seems that 76 stations reported no rainfall.
126
127     D) The most rainfall occurred at Rockport 3.0 Nnw on Thursday, July 8, 2021 with 10.52 inches of rain.*/
128
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