```
/*************************************************************************************/
/* Program Name: DSmith_HW14_prog.sas                                                */
/* Date Created: 4/25/2023                                                           */
/* Author: Dustin Smith                                                              */
/* Purpose: To complete Homework 14 of stats 604.                                    */
/*                                                                                   */
/* Inputs: July21_edit.sas
           elevation.sas
           july22.sas  all of which are found here "/home/u63307645/STAT_604_Folder/mylib"
   Outputs:DSmith_HW14_output.pdf located at "/home/u63307645/STAT_604_Folder/STAT_604_Howework/DSmith_HW14_output.pdf"
/*            This will also create many temporary work sets: */
/*                      work.july21_edit, work.july22, work.elevation, work.noheight */
/*            There will be one permanent data set in mylib called hotheight.sas */
/*                                                                                   */
/*                                                                                   */
/*************************************************************************************/

title;
footnote;
ods noproctitle;

/*1-3) Creating file an library references*/
libname mylib "/home/u63307645/STAT_604_Folder/mylib";
filename output "/home/u63307645/STAT_604_Folder/STAT_604_Howework/DSmith_HW14_output.pdf";
ods pdf file=output;

/*4) Prepare the data sets for Merging.*/
    /*This creates temporary data sets to edit each set.*/
data work.july21_edit;
    set mylib.july21_edit;
    Day = day(DATE);
    drop DATE TChange;
run;

data work.july22;
    set mylib.july22(rename=(NAME=drop1));
    drop drop1 DATE AWND TAVG;
    length NAME $51;
    Day = day(DATE);
    NAME = propcase(substr(drop1,1,length(drop1)-7));
run;

data work.elevation(keep= STATION ELEVATION);
    set mylib.elevation;
run;

    /*This is to sort the data sets by STATION and Day*/
proc sort data=work.july21_edit;
    by STATION DAY;
run;

proc sort data=work.july22;
    by STATION DAY;
run;

proc sort data=work.elevation;
    by STATION;
run;

/*5 Begin the Merge*/
data work.julyheat;
    drop i;
    length Source $9;
    merge work.july21_edit(in=one rename=(PRCP=PRCP21 TMAX=TFMAX21 TMIN=TFMIN21))
          work.july22(in=two rename=(PRCP=PRCP22 TMAX=TFMAX22 TMIN=TFMIN22));
    by STATION day;
    if one=1 and two=1 then do;
        Source = 'Both';
        Tchange=TFMAX22 - TFMAX21;
        array Fer{*} TFMAX21 TFMIN21 TFMAX22 TFMIN22;
        array Cel{*} TCMAX21 TCMIN21 TCMAX22 TCMIN22;
        do i=1 to dim(Cel);
            Cel{i}=int((Fer{i}-32)*(5/9));
        end;
    end;
    if one=1 and two=0 then
```

```
78          Source = '2021 Only';
79      if two=1 and one=0 then
80          Source = '2022 Only';
81      label Tchange="Difference in Yearly Max Temp(F).";
82  run;
83
84  /*6 Merge the pervious with the elevations */
85  data work.noheight(drop= elevation) mylib.hotheight;
86      merge work.julyheat(IN=jh) work.elevation(In=el);
87      by STATION;
88      if el=0 then output work.noheight;
89      else if el=1 and Source='Both' then output mylib.hotheight;
90      label STATION="Station" NAME="Name" ELEVATION="Elevation";
91  run;
92
93  /*7 Display the descriptor portion of the work data steps*/
94  title "Work Library Descriptor Portion";
95  proc contents data=work._ALL_;
96  run;
97
98  /*8 Display the descriptor portion of the permanent data step*/
99  title "Temperature and Elevations of July21 and July22";
100 proc contents data=mylib.hotheight varnum;
101 run;
102
103 /*9 Print the July 2022 data that did not have an elevation */
104 title "July2022 data without Elevation";
105 proc print data=work.noheight noobs label;
106     where Source='2022 Only';
107     var STATION NAME DAY TFMAX22 TCMAX22 TFMIN22 TCMIN22;
108 run;
109
110 /*10 Print the data from Waco or College Station*/
111 title1 "Temperature and Elevations of July21 and July22";
112 title2 "In Waco and College Station";
113 proc print data=mylib.hotheight noobs label;
114     where name contains "Waco" or name contains "College";
115     var STATION NAME ELEVATION DAY TFMAX22 TCMAX22 TFMIN22 TCMIN22 Tchange;
116 run;
117
118 /*11 Close the pdf file*/
119 ods pdf close;
120
121
122 /*******Questions: ********/
123 /*A) I found 13612 observations that did not have a match with the elevation file. I thought this was a bit too much.
124
125 B) I found 1186 observations without a matching elevation came from the 2022 Only file.
126
127 C) The Waco Regional Airport has a height of 151.9 while the College Station Easterwood Field has a height of 96.
128
129 D) College Station Easterwood Field had a change of 25 in Fahrenheit from July 12 2021 to July 12 2022.
130
131 E) College Station Easterwood Field had a maximum temperature of 42 degrees Celsius. */
132
133
134
```