```
1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
NOTE: ODS statements in the SAS Studio environment may disable some output features.
62
63
/*************************************************************************
********/
64         /* Program Name:     pulkit.jain_HW13.sas    */
65         /* Program Location: C:\Users\Pulkit
Jain\Documents\sasuniversityedition\myfolders\assign13 */
66         /* Date Created:     11/12/2017          */
67         /* Author:  Pulkit Jain                      */
68         /* Purpose:   Assignment 13, using arrays & variable lists    */
69
/*************************************************************************
********/
70
71         /* Create two libname statements;   */
72         /* Assign library to locaion of hw data with access only; */
73         /* Assign another library with read and write access;     */
74
75         libname hw_data '/folders/myfolders/hw_data' access=readonly;
NOTE: Libref HW_DATA was successfully assigned as follows:
      Engine:        V9
      Physical Name: /folders/myfolders/hw_data
76         libname pulkit13 '/folders/myfolders/assign13';
NOTE: Libref PULKIT13 was successfully assigned as follows:
      Engine:        V9
      Physical Name: /folders/myfolders/assign13
77
78         /* Specify a fileref to designate output of pdf */
79
80         filename HW13 '/folders/myfolders/assign13/pulkit.jain_HW13_output.pdf';
81
82         /* 2 Create narrow dataset for scholarship funds */
83
84         data work.student_funds (keep= student_id i fund_code);
85         * Read only required variables;
86            set hw_data.scholarships (drop = name amount: major);
NOTE: Data file HW_DATA.SCHOLARSHIPS.DATA is in a format that is native to another
host, or the file encoding does not match the
      session encoding. Cross Environment Data Access will be used, which might
require additional CPU resources and might reduce
      performance.
87            * create array reference for fund variable;
88            array fund{*} $4 fund:;
89            length i 4;
90            * soft code the loop for automation;
91            do i = 1 to dim(fund);
92              if fund{i} ne . then do;
93              i = i;
94              fund_code = fund{i};
95             output;
96              end;
97            end;
98         run;

NOTE: Character values have been converted to numeric values at the places given by:
(Line):(Column).
      92:10
```

```
NOTE: There were 424 observations read from the data set HW_DATA.SCHOLARSHIPS.
NOTE: The data set WORK.STUDENT_FUNDS has 2243 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.02 seconds


99
100        /* 3 Sort so as to merge with fund_data data set */
101
102        PROC SORT data = work.student_funds;
103        by fund_code;
104        run;

NOTE: There were 2243 observations read from the data set WORK.STUDENT_FUNDS.
NOTE: The data set WORK.STUDENT_FUNDS has 2243 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


105
106
107        /* 4 Sort fund_data and save in the temporary library*/
108
109        PROC SORT data = hw_data.fund_data out = work.fund_data_sorted;
NOTE: Data file HW_DATA.FUND_DATA.DATA is in a format that is native to another
host, or the file encoding does not match the
      session encoding. Cross Environment Data Access will be used, which might
require additional CPU resources and might reduce
      performance.
110        by fund_code;
111        run;

NOTE: There were 255 observations read from the data set HW_DATA.FUND_DATA.
NOTE: The data set WORK.FUND_DATA_SORTED has 255 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.01 seconds
      cpu time            0.00 seconds


112
113        /*  5 Merge the two datasets by fund code*/
114        data work.fund_types;
115            merge work.student_funds(in = a) work.fund_data_sorted (in = b);
116            by fund_code;
117            drop fund_name;
118            * only keep observations which are present in student_funds data set;
119            if a =1;
120        run;

NOTE: There were 2243 observations read from the data set WORK.STUDENT_FUNDS.
NOTE: There were 255 observations read from the data set WORK.FUND_DATA_SORTED.
NOTE: The data set WORK.FUND_TYPES has 2243 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


121
```

```
122         /* 6 Transform this data set back into a wide data set    */
123
124         * sort before the transpose;
125         PROC SORT data = fund_types out = fund_types_sorted;
126         by student_id;
127         run;

NOTE: There were 2243 observations read from the data set WORK.FUND_TYPES.
NOTE: The data set WORK.FUND_TYPES_SORTED has 2243 observations and 4 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


128
129         proc transpose
130           data = work.fund_types_sorted
131           out=rotate2 (drop = _name_ _label_)
132           prefix = Fund_Type;
133          * declare variable to categorise data in row, columns;
134          by student_id;
135          id i;
136         * declare variable to fill in the cells;
137          var category;
138         run;

NOTE: There were 2243 observations read from the data set WORK.FUND_TYPES_SORTED.
NOTE: The data set WORK.ROTATE2 has 424 observations and 11 variables.
NOTE: PROCEDURE TRANSPOSE used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


139
140         * arrange the variables in the data alphabetically;
141         data rotate2_arranged;
142         retain student_id Fund_Type1-Fund_Type10;
143         set rotate2;
144         run;

NOTE: There were 424 observations read from the data set WORK.ROTATE2.
NOTE: The data set WORK.ROTATE2_ARRANGED has 424 observations and 11 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


145
146         /* 7 Merge the Rotate2 data set with scholarships data by student id*/
147
148
149         data work.fund_types_extended (drop = i);
150             merge hw_data.scholarships work.rotate2_arranged;
NOTE: Data file HW_DATA.SCHOLARSHIPS.DATA is in a format that is native to another
host, or the file encoding does not match the
      session encoding. Cross Environment Data Access will be used, which might
require additional CPU resources and might reduce
      performance.
151             by student_id;
152             * create two array references and two variables for aid received;
```

```
153         array aid_amount{*} amount:;
154         array aid_name{*} Fund_Type:;
155         int_aid = 0;
156         ath_aid = 0;
157         * loop to add Internal & Athletic aid received;
158         do i = 1 to dim(aid_name);
159         if aid_name{i} = 'Internal' then int_aid = sum(int_aid, aid_amount{i});
160         if aid_name{i} = 'Athletic' then ath_aid = sum(ath_aid,aid_amount{i});
161         end;
162             tot_aid = sum(of amount:);
163             * create labels for variables;
164         label tot_aid = "Total Aid"
165           int_aid = "Internal Scholarships"
166           ath_aid = "Athletic Scholarships"
167           major = "Maj_Code";
168         run;

NOTE: There were 424 observations read from the data set HW_DATA.SCHOLARSHIPS.
NOTE: There were 424 observations read from the data set WORK.ROTATE2_ARRANGED.
NOTE: The data set WORK.FUND_TYPES_EXTENDED has 424 observations and 36 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.02 seconds


169
170         /* 8 Print the descriptor and data portion of final data set*/
171
172         ods pdf file = HW13;
NOTE: Writing ODS PDF output to DISK destination "HW13", printer "PDF".
173
174         PROC CONTENTS data = work.fund_types_extended order=varnum;
175         run;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time           0.14 seconds
      cpu time            0.14 seconds


176
177         PROC PRINT data = work.fund_types_extended label noobs;
178         var student_id name major int_aid ath_aid tot_aid;
179         run;

NOTE: There were 424 observations read from the data set WORK.FUND_TYPES_EXTENDED.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.79 seconds
      cpu time            0.78 seconds


180
181         ods pdf close;
NOTE: ODS PDF printed 14 pages to
/folders/myfolders/assign13/pulkit.jain_HW13_output.pdf.
182         ods listing;
183
184         OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
197
```