```
/* 1.) Add a header comment section to the beginning of a new program in your SAS session.  */
/* Be sure to include a comment line above each section of the program that identifies the  */
/* associated assignment step and a brief description of what the section is doing. Include  */
/* housekeeping statements to clear titles and footnotes and suppress the printing of procedure titles. */

/*************************************************************************************/
/* Program Name: STAT 604 HW#12                                                      */
/* Date Created: 11/10/2021                                                          */
/* Author: Jack Rodoni                                                               */
/* Purpose: STAT 604 HW#12                                                           */
/* Date Modified: 11/16/2021                                                         */
/* Location: /home/u59649056/Homeworks/JRodoni_Homework12.sas                        */
/*************************************************************************************/

TITLE;
FOOTNOTE;
ods noproctitle;


/* 2.) Assign a libref to the mylib folder containing your permanent data sets.  Create a fileref to the pdf file  */
/*     for output.  */

libname mylib "/home/u59649056/Homeworks/mylib";
filename HW12pdf "/home/u59649056/Homeworks/mylib/JRodoni_HW12_Output.pdf";


/* 3.) Open the PDF destination to receive your output. */

ods pdf file = HW12pdf;

/* 4.) Create a temporary custom format that can be applied to any of the columns containing the number of jobs.   */
/*     All values less than 10 will be displayed as 'Very Low'.  Values between 10 and 100 inclusive display 'Low'.   */
/*     Values above 100 through 200 are 'Medium'.  Values above 200 through 500 are 'Medium High'.   */
/*     Values above 500 through 1000 are'High' and all values above 1000 are 'Very High'. */

proc format;
value hrange low-<10 = 'Very Low'
             10-100 = 'Low'
             100<-200 = 'Medium'
             200<-500 = 'Medium High'
             500<-1000 = 'High'
             1000<-high = 'Very High';
run;

/* 5.) Write a single SAS step that will use the "Jobs" data set from the previous assignment as input  */
/*  and create a temporary data set with the following modifications: */

data Jobs2018;
    set mylib.jobs2018;

/* (a) Without creating a new variable, recalculate the value in the variable containing the  */
/*  2017 Jobs total by subtracting the Aug_2017 value from the existing value. Use one of  */
/*  the numeric functions to ensure that a missing August value does not cause the total to  */
/*  be missing. (Hint: You can cause "subtraction" to occur by making one of your  */
/*  arguments to the function negative.) */

TOTAL_2017 = sum(Total_2017,-Aug_2017);

/* (b) Without creating a new variable, change the Industry values to proper case. */

Industry = propcase(Industry);

/* (c) Since words like "And" should not be capitalized, replace them with "and" in the  */
/*  Industry variable. */

Industry = tranwrd(Industry, 'And ','and ');
run;

/* 6.) Without creating a new data set, reorder the rows in the new temporary data set by state and  */
/*     industry to accommodate the reports in the next two steps. */

proc sort data = work.Jobs2018;
```

```
    by State Industry;
run;


/* 7.) Produce a report listing the categories based on the “August Average” column by applying your  */
/*  custom format to that column. The first few rows of the report are shown below. Your output  */
/*  must match this sample. Use statements, proc options, temporary labels and temporary  */
/*  formats as needed to accomplish this purpose. Note: The state column is used in place of the  */
/*  default OBS column to identify records in the report. */

/* See Lecture Slides 10, pg 9 for ID and Var statements*/
/* See Lecture Slides 10 pg 57 for Label */
/* See Lecture Slides 10, pg 67 for format */
/* See Lecture Slides 10, pg 59 for split*/

title "Jobs Analysis by August Categories";
proc print data = work.Jobs2018 label split='*';
    format Avg_Aug hrange.;
    id State;
    var Industry Avg_Aug;
    label Avg_Aug = 'August*Average*Jobs'
          State = '**State'
          Industry = '**Industry';
run;


/* 8.) Produce a report of jobs summaries from the midwestern states of 'Texas', 'Oklahoma', 'Kansas', */
/*  'Nebraska', 'South Dakota', and 'North Dakota' based on the values in the Total 2017 and Total  */
/*  2018 columns. The first table of the report are shown below. Your output, including titles, must  */
/*  match this sample. Use statements, proc options, temporary labels and temporary formats as  */
/*  needed to accomplish this purpose. Note: The var statement can be used without any variables  */
/*  to exclude unwanted columns from appearing in the report. State and Industry are used to  */
/*  replace the OBS column for identifying rows. */

/* See Lecture Slides 7 pg 41 for format */
/* See Lecture Slides 10 and 11 for by, page by and Sum*/



title1 "Midwest States Jobs Summary";
title2 "Thousands of Jobs";

proc print data=work.Jobs2018 label split='*';
    where State in ('Texas','Oklahoma','Kansas','Nebraska','South Dakota','North Dakota');
    format Total_2017 Total_2018 comma7.;
    id State Industry;
    var Total_2017 Total_2018;
    by State;
    sum Total_2017 Total_2018;
    pageby State;
    label Total_2017 = 'Sep. - Dec.*2017'
          Total_2018 = 'Jan. - Aug.*2018'
          Industry = '*Industry'
          State = '*State';
run;



/* 9.) In a single PROC step, create a copy of the temporary data set created earlier in the assignment, */
/* reordered by the descending values of Aug_2018. The copy will also be a temporary data set. */

/* See lecture Slides 10, pg 44 */

proc sort data=work.Jobs2018
          out = work.Jobs2018Sort;
    by descending Aug_2018;
run;

/* 10.) Write a single PROC step that will list and report the descriptor portion of all data sets in the  */
/* WORK library. Supply an appropriate title.  */

proc contents DATA=work._All_ NODS;
title1 "Work Datasets Descriptor Portion";
```

```
RUN;


/* 11.) Use the last data set created to print a “Top 10” list of the industries and states with the highest  */
/* number of jobs in August 2018. Suppress the printing of observation numbers. Include only the  */
/* Aug_2018, Industry, and State columns in that order. Supply an appropriate first title and use  */
/* “Thousands of Jobs” as the second title line. Give Aug_2018 a label of “August 2018  */
/* Employment” and show the values with a comma separator. */

title1 "Top 10 August Job Numbers";
title2 "Thousands of Jobs";
proc print data = work.jobs2018Sort (obs = 10) noobs label;
    format Aug_2018 comma7.;
    var Aug_2018 Industry State;
    label Aug_2018 = 'August 2018 Employment';
run;


/* 12.) Close the PDF destination. */

ods pdf close;

/* 13.) Use the log and report information contained in your PDF output document to find the answers  */
/* to the questions below and include the answers in a comment section at the bottom of your  */
/* program file: */

/* (a) Which categories of jobs are represented by the August average in Texas and how many  */
/*  of each category? */
/* Construction-737.95 ,Manufacturing-866.8, Trade Transportation and Utilities-2492.5 */
/*    Financial Activities-767.2, Professional & Business Services-1715.5, Education and Health */
/*    Services-1689.35, Leisure & Hospitality-1347.6, Government-1939.9 */
/* (b) Which of the Midwest states had the fewest total jobs in the Sep. – Dec. 2017 time  */
/*  period? What was that total? */
/*                 North Dakota 1,548 thousand                                              */
/* (c) What other objects besides data sets are listed in the output from step 10? */
/* REGESTRY, SASGOPT, SASMAC1-9,SASMACR */
/* (d) Which state and industry have the most jobs in 2018? */
/* Trade Trasnportations and Utilities; State is Texas */
/* (e) How many different states are in the top 10 list? */
/*          4 States */
/* (f) Which state appears the most in the top 10 list? */
/*          California */
/* 14.) Save the final version of the program and convert it to a PDF file with a name like  */
/*      FKincheloe_HW12_prog.pdf. Convert the log to PDF. */

/* 15. Upload and submit the three documents to the assignment on Canvas */
```