```
180  *STEP 0 ;
181  /*1. Program Name:Vivek235_HW12_Program.sas.
181!                                        */
182  /* Program Location: C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
182! University\657\Homework\Assignment12\Vivek235_HW12_Program.sas     */
183  /* Date Created: 4/17/17
183!                                */
184  /* Author: Vivek Kumar Gupta
184!                                */
185  /* Purpose:This assignment covers concepts presented in all lectures through Lecture 20;
185!        */
186  /*************************************************************************************
186! ********************************/
187
188  libname orion 'C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
188! University\657\SQL Files' access=readonly;
NOTE: Libref ORION was successfully assigned as follows:
      Engine:        V9
      Physical Name: C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
      University\657\SQL Files
189  libname srcdata 'C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
189! University\657\Homework\Assignment04\SourceData' access=readonly;
NOTE: Libref SRCDATA was successfully assigned as follows:
      Engine:        V9
      Physical Name: C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
      University\657\Homework\Assignment04\SourceData
190  filename pdfdev 'C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
190! University\657\Homework\Assignment12\Vivek235_HW12_Output.pdf';
191
192  /*STEP 1. Use PROC SQL to create a table with columns seed, school, region, player, ppg, and
192! rpg from ncaam06 with
193  only schools that have 5 or more players listed in the dataset.*/
194  option mprint symbolgen mlogic mcompilenote=all date nonumber;
195
196
197  ods pdf file=pdfdev  bookmarkgen=no;
NOTE: Writing ODS PDF output to DISK destination "PDFDEV", printer "PDF".
198
199  proc sql;
200
201  create table ncaam06temp
```

```
202  as
203  select seed, school,
204  region, player, ppg,rpg from
205  srcdata.ncaam06
206  where school in (select school from srcdata.ncaam06
207  group by school
208  having count(*) >=5 )
209  ;
NOTE: Table WORK.NCAAM06TEMP created, with 154 rows and 6 columns.

210  quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time           0.09 seconds
      cpu time            0.03 seconds


211
212  /* STEP 2. Create a data driven macro to print the report */
213
214  %macro printrep(dsname);
215
216  /*STEP 2a. Create a table containing an unduplicated list of the regions..*/
217
218  proc sql noprint ;
219
220  create table dregions
221  as
222  select distinct region
223  from work.ncaam06temp;
224
225  /*STEP 2b. Assign a macro variable containing the number of regions from the sqlobs macro
225! value.*/
226  %let tregions=&sqlobs;
227
228  /*STEP 2c. Create macro variables for each region.*/
229  select region into :region1-:region&tregions
230  from dregions;
231
232  reset print number;
233  /*STEP 2d. Replace the report procedure from the last assignment with an SQL statement that
234  outputs the data exactly as shown in the PDF posted on eCampus.*/
```

```
235
236  /*STEP 2e. Use a loop to iteratively process the SQL statement once for each of the regions
236! in the
237  data. */
238
239  %do i=1 %to &tregions;
240  title "Team Statistics for the &&Region&i Region";
241  select school as Team,
242  avg(ppg) as avgppg label 'Average Points' format 8.1,
243  avg(rpg) as avgrpg  label 'Average Rebounds' format 8.1
244  from &dsname
245  where region="&&Region&i"
246  group by school,seed
247  order by seed;
248
249  %end;
250
251  quit;
252
253  title;
254  footnote;
255
256  %mend printrep;
NOTE: The macro PRINTREP completed compilation without errors.
      30 instructions 968 bytes.
257
258  /*STEP 2f. Call the macro supplying the name of the dataset created in step 1.*/
259  %printrep(ncaam06temp);
MLOGIC(PRINTREP):  Beginning execution.
MLOGIC(PRINTREP):  Parameter DSNAME has value ncaam06temp
MPRINT(PRINTREP):   proc sql noprint ;
MPRINT(PRINTREP):   create table dregions as select distinct region from work.ncaam06temp;
NOTE: Table WORK.DREGIONS created, with 4 rows and 1 columns.

MLOGIC(PRINTREP):  %LET (variable name is TREGIONS)
SYMBOLGEN:  Macro variable SQLOBS resolves to 4
SYMBOLGEN:  Macro variable TREGIONS resolves to 4
MPRINT(PRINTREP):   select region into :region1-:region4 from dregions;
MPRINT(PRINTREP):   reset print number;
SYMBOLGEN:  Macro variable TREGIONS resolves to 4
MLOGIC(PRINTREP):  %DO loop beginning; index variable I; start value is 1; stop value is 4; by
```

```
      value is 1.
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 1
SYMBOLGEN:  Macro variable REGION1 resolves to ATL
MPRINT(PRINTREP):   title "Team Statistics for the ATL Region";
SYMBOLGEN:  Macro variable DSNAME resolves to ncaam06temp
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 1
SYMBOLGEN:  Macro variable REGION1 resolves to ATL
MPRINT(PRINTREP):   select school as Team, avg(ppg) as avgppg label 'Average Points' format 8.1,
avg(rpg) as avgrpg label 'Average Rebounds' format 8.1 from ncaam06temp where region="ATL" group
by school,seed order by seed;
NOTE: The query as specified involves ordering by an item that doesn't appear in its SELECT
      clause.
MLOGIC(PRINTREP):  %DO loop index variable I is now 2; loop will iterate again.
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 2
SYMBOLGEN:  Macro variable REGION2 resolves to MIN
MPRINT(PRINTREP):   title "Team Statistics for the MIN Region";
SYMBOLGEN:  Macro variable DSNAME resolves to ncaam06temp
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 2
SYMBOLGEN:  Macro variable REGION2 resolves to MIN
MPRINT(PRINTREP):   select school as Team, avg(ppg) as avgppg label 'Average Points' format 8.1,
avg(rpg) as avgrpg label 'Average Rebounds' format 8.1 from ncaam06temp where region="MIN" group
by school,seed order by seed;
NOTE: The query as specified involves ordering by an item that doesn't appear in its SELECT
      clause.
MLOGIC(PRINTREP):  %DO loop index variable I is now 3; loop will iterate again.
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 3
SYMBOLGEN:  Macro variable REGION3 resolves to OAK
MPRINT(PRINTREP):   title "Team Statistics for the OAK Region";
SYMBOLGEN:  Macro variable DSNAME resolves to ncaam06temp
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 3
SYMBOLGEN:  Macro variable REGION3 resolves to OAK
MPRINT(PRINTREP):   select school as Team, avg(ppg) as avgppg label 'Average Points' format 8.1,
avg(rpg) as avgrpg label 'Average Rebounds' format 8.1 from ncaam06temp where region="OAK" group
by school,seed order by seed;
NOTE: The query as specified involves ordering by an item that doesn't appear in its SELECT
```

```
      clause.
MLOGIC(PRINTREP):  %DO loop index variable I is now 4; loop will iterate again.
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 4
SYMBOLGEN:  Macro variable REGION4 resolves to WDC
MPRINT(PRINTREP):   title "Team Statistics for the WDC Region";
SYMBOLGEN:  Macro variable DSNAME resolves to ncaam06temp
SYMBOLGEN:  && resolves to &.
SYMBOLGEN:  Macro variable I resolves to 4
SYMBOLGEN:  Macro variable REGION4 resolves to WDC
MPRINT(PRINTREP):   select school as Team, avg(ppg) as avgppg label 'Average Points' format 8.1,
avg(rpg) as avgrpg label 'Average Rebounds' format 8.1 from ncaam06temp where region="WDC" group
by school,seed order by seed;
NOTE: The query as specified involves ordering by an item that doesn't appear in its SELECT
      clause.
MLOGIC(PRINTREP):  %DO loop index variable I is now 5; loop will not iterate again.
MPRINT(PRINTREP):   quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time           0.25 seconds
      cpu time            0.17 seconds


MPRINT(PRINTREP):   title;
MPRINT(PRINTREP):   footnote;
MLOGIC(PRINTREP):  Ending execution.
260
261
262  /*STEP 3. Use an SQL procedure to create a report of the top 20 players with the highest
262! number of points
263  from the ncaam06 dataset as shown on page 5 of the posted output.*/
264
265  title "Top 20 Scorers";
266  proc sql outobs=20;
267
268  select player as Name,
269      ppg label "Points",
270      school as Team,
271      Region,
272      seed as Seed
273  from srcdata.ncaam06
274  order by ppg desc;
```

```
WARNING: Statement terminated early due to OUTOBS=20 option.
275  quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time           0.04 seconds
      cpu time            0.01 seconds


276
277
278  /*STEP 4. Create a macro to report on the rebounders from the ncaam06 dataset, subset by a
278! selected
279  region and greater than or equal to a selected minimum number of rebounds per game (rpg).
280  This macro will have a positional parameter for the region and a keyword parameter for number
281  of rebounds with a default value of 7.*/
282
283  %macro rebounders(region, nrebounds=7);
284
285  /*STEP 4a. Use a macro function to transform the region parameter so that you can enter it in
286  upper, lower, or mixed case and still get the appropriate results.*/
287  %let region=%upcase(&region);
288
289  /*STEP 4b. Use a data step to create in the work library a table that is a subset of ncaam06
289! based
290  on the two macro parameters.*/
291  data rebounders ;
292  set srcdata.ncaam06;
293  where upcase(region)="&region" and rpg >=&nrebounds;
294
295
296  /*STEP 4c. Use an SQL statement to read the number of observations in your new table from the
297  appropriate SASHELP view and place this number in a macro variable.*/
298  proc sql noprint;
299
300  select nobs into :rebobs
301  from sashelp.vtable
302  where libname='WORK'
303  and memname='REBOUNDERS'
304  and memtype='DATA' ;
305
306  /*STEP 4d. Use macro logic to print a line of text on a new page if there are no records
306! found using
```

```
307  the parameters you supplied to the macro.*/
308
309  ods pdf startpage=now;
310  title "Players from the &region Region Averaging &nrebounds or More Rebounds Per Game";
311
312  %if &rebobs=0 %then %do;
313  ods pdf text="No players from &region average &nrebounds or more rebounds per game.";
314  %end;
315
316  /*STEP 4e. If records are found use an SQL statement to produce the output as shown on page 7
316!  of
317  the posted output. Make sure all rebounds per game values display one decimal place.*/
318
319  %else %do;
320  reset print number;
321
322  select player label "Name",
323      avg(rpg)as avgrpg format 5.1 label "Rebounds",
324      school label "Team",
325      seed label "Seed"
326  from rebounders
327  group by player, school, seed
328  order by avgrpg desc;
329
330  %end;
331  quit;
332
333  title;
334  footnote;
335
336  %mend rebounders;
NOTE: The macro REBOUNDERS completed compilation without errors.
      36 instructions 1308 bytes.
337
338  /*STEP 4f. Call the macro using wdc as the region and 10 as the rebounding threshold.*/
339  %rebounders(wdc,nrebounds=10);
MLOGIC(REBOUNDERS):  Beginning execution.
MLOGIC(REBOUNDERS):  Parameter REGION has value wdc
MLOGIC(REBOUNDERS):  Parameter NREBOUNDS has value 10
MLOGIC(REBOUNDERS):  %LET (variable name is REGION)
SYMBOLGEN:  Macro variable REGION resolves to wdc
```

```
MPRINT(REBOUNDERS):   data rebounders ;
MPRINT(REBOUNDERS):   set srcdata.ncaam06;
SYMBOLGEN:  Macro variable REGION resolves to WDC
SYMBOLGEN:  Macro variable NREBOUNDS resolves to 10
MPRINT(REBOUNDERS):   where upcase(region)="WDC" and rpg >=10;

NOTE: There were 0 observations read from the data set SRCDATA.NCAAM06.
      WHERE (UPCASE(region)='WDC') and (rpg>=10);
NOTE: The data set WORK.REBOUNDERS has 0 observations and 13 variables.
NOTE: DATA statement used (Total process time):
      real time           0.11 seconds
      cpu time            0.03 seconds


MPRINT(REBOUNDERS):   proc sql noprint;
MPRINT(REBOUNDERS):   select nobs into :rebobs from sashelp.vtable where libname='WORK' and
memname='REBOUNDERS' and memtype='DATA' ;
MPRINT(REBOUNDERS):   ods pdf startpage=now;
SYMBOLGEN:  Macro variable REGION resolves to WDC
SYMBOLGEN:  Macro variable NREBOUNDS resolves to 10
MPRINT(REBOUNDERS):   title "Players from the WDC Region Averaging 10 or More Rebounds Per Game";
SYMBOLGEN:  Macro variable REBOBS resolves to        0
MLOGIC(REBOUNDERS):  %IF condition &rebobs=0 is TRUE
SYMBOLGEN:  Macro variable REGION resolves to WDC
SYMBOLGEN:  Macro variable NREBOUNDS resolves to 10
MPRINT(REBOUNDERS):   ods pdf text="No players from WDC average 10 or more rebounds per game.";
MPRINT(REBOUNDERS):   quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time           0.04 seconds
      cpu time            0.03 seconds


MPRINT(REBOUNDERS):   title;
MPRINT(REBOUNDERS):   footnote;
MLOGIC(REBOUNDERS):  Ending execution.
340
341  /*STEP 4g. Call the macro again specifying only ATL as the region.*/
342  %rebounders(ATL);
MLOGIC(REBOUNDERS):  Beginning execution.
MLOGIC(REBOUNDERS):  Parameter REGION has value ATL
MLOGIC(REBOUNDERS):  Parameter NREBOUNDS has value 7
```

```
MLOGIC(REBOUNDERS):  %LET (variable name is REGION)
SYMBOLGEN:  Macro variable REGION resolves to ATL
MPRINT(REBOUNDERS):   data rebounders ;
MPRINT(REBOUNDERS):   set srcdata.ncaam06;
SYMBOLGEN:  Macro variable REGION resolves to ATL
SYMBOLGEN:  Macro variable NREBOUNDS resolves to 7
MPRINT(REBOUNDERS):   where upcase(region)="ATL" and rpg >=7;

NOTE: There were 10 observations read from the data set SRCDATA.NCAAM06.
      WHERE (UPCASE(region)='ATL') and (rpg>=7);
NOTE: The data set WORK.REBOUNDERS has 10 observations and 13 variables.
NOTE: DATA statement used (Total process time):
      real time           0.03 seconds
      cpu time            0.01 seconds


MPRINT(REBOUNDERS):   proc sql noprint;
MPRINT(REBOUNDERS):   select nobs into :rebobs from sashelp.vtable where libname='WORK' and
memname='REBOUNDERS' and memtype='DATA' ;
MPRINT(REBOUNDERS):   ods pdf startpage=now;
SYMBOLGEN:  Macro variable REGION resolves to ATL
SYMBOLGEN:  Macro variable NREBOUNDS resolves to 7
MPRINT(REBOUNDERS):   title "Players from the ATL Region Averaging 7 or More Rebounds Per Game";
SYMBOLGEN:  Macro variable REBOBS resolves to       10
MLOGIC(REBOUNDERS):  %IF condition &rebobs=0 is FALSE
MPRINT(REBOUNDERS):   reset print number;
MPRINT(REBOUNDERS):   select player label "Name", avg(rpg)as avgrpg format 5.1 label "Rebounds",
school label "Team", seed label "Seed" from rebounders group by player, school, seed order by
avgrpg desc;
MPRINT(REBOUNDERS):   quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time           0.12 seconds
      cpu time            0.06 seconds


MPRINT(REBOUNDERS):   title;
MPRINT(REBOUNDERS):   footnote;
MLOGIC(REBOUNDERS):  Ending execution.
343
344  /*House keeping. Resetting defaults*/
345  title;
```

```
346  footnote;
347  option nomprint nosymbolgen nomlogic mcompilenote=none nodate number;
348
349  /**Close the device*/
350  ods pdf close;
NOTE: ODS PDF printed 7 pages to C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas
      A&M University\657\Homework\Assignment12\Vivek235_HW12_Output.pdf.
```