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145 *STEP 0 ;
146 /*1. Program Name:Vivek235_HW11_Program.sas.
146! */
147 /* Program Location: C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
147! University\657\Homework\Assignment11\Vivek235_HW11_Program.sas */
148 /* Date Created: 4/10/17
148! */
149 /* Author: Vivek Kumar Gupta
149! */
150 /* Purpose:This assignment uses macro and SQL techniques covered through Lecture 18.;
150! */
151 /*****
151! *****/
152
153 libname orion 'C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
153! 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
154 libname srcdata 'C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
154! 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
155 filename pdfdev 'C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
155! University\657\Homework\Assignment11\Vivek235_HW11_Output.pdf';
156
157 /*STEP 1. Use all three system options that will cause macro resolution, macro code and macro
157! execution
158 information to be written to the log.*/
159 option mprint symbolgen mlogic mcompilenote=all date;
160
161 /*STEP 2. Copy the donations macro code created in step 4 of Assignment 9 and paste it into your
161! new
162 SAS program for this assignment*/
163 /*STEP 3. Change the macro definition so that the start date and end date are positional
163! parameters and
164 the library and gender are keyword parameters. Specify Female as the default gender and
165 WORK as the default output library.*/

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166
167 %macro donate(startdate,enddate,library=WORK,gender=Female);
168 proc sql;
169 create table &library..%sysfunc(propcase(&gender))%substr(&startdate,6)
170 as
171 select ep.employee_id label = 'ID'
172        ,edd.employee_name label = 'Name'
173        , ep.salary format dollar8.
174        ,ed.Qtr1
175        ,ed.Qtr2
176        ,ed.Qtr3
177        ,ed.Qtr4
178        ,sum(ed.Qtr1,ed.Qtr2,ed.Qtr3,ed.Qtr4) as tot_donation label = 'Ann. Donation'
179 from orion.employee_payroll as ep
180 join orion.employee_addresses as edd
181     on ep.employee_id=edd.employee_id
182 left join orion.employee_donations as ed
183     on ep.employee_id=ed.employee_id
184 /*STEP 4. Add macro logic to your macro so that if the end date parameter is null, the macro will
184! ignore
185 the end date and return employees hired on or after the start date.*/
186
187 %if &enddate = %then %do;
188 where ep.employee_gender="%upcase(%substr(&gender,1,1))"
189        and not ep.employee_term_date and ep.employee_hire_date >= "&startdate"d
190        order by employee_id;
191 /*STEP 5. Use macro logic to display the appropriate title depending on whether there is an end
191! date*/
192 title "Donations of %sysfunc(propcase(&gender)) Employees Hired on or after &startdate ";
193 %end;
194 %else %do ;
195 where ep.employee_gender="%upcase(%substr(&gender,1,1))"
196        and not ep.employee_term_date and ep.employee_hire_date between "&startdate"d and
196! "&enddate"d
197        order by employee_id;
198 /*STEP 5. Use macro logic to display the appropriate title depending on whether there is an end
198! date*/
199
200 title "Donations of %sysfunc(propcase(&gender)) Employees Hired between &startdate and &enddate";
201 %end ;
202

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203 footnote %upcase(&syslast);
204 select * from &library..%sysfunc(propcase(&gender))%substr(&startdate,6);
205
206
207 quit;
208 title;
209 footnote;
210 %mend donate;
NOTE: The macro DONATE completed compilation without errors.
      38 instructions 1932 bytes.
211
212
213 /*Open destination device, set no bookmarks to be generated per the output*/
214 ods pdf file=pdfdev bookmarkgen=no ;
NOTE: Writing ODS PDF output to DISK destination "PDFDEV", printer "PDF".
215
216 /*STEP 6. Call your new donations macro specifying only January 1, 2004 as the start date.*/
217 %donate(01Jan2004);
MLOGIC(DONATE): Beginning execution.
MLOGIC(DONATE): Parameter STARTDATE has value 01Jan2004
MLOGIC(DONATE): Parameter ENDDATE has value
MLOGIC(DONATE): Parameter LIBRARY has value WORK
MLOGIC(DONATE): Parameter GENDER has value Female
MPRINT(DONATE):  proc sql;
SYMBOLGEN: Macro variable LIBRARY resolves to WORK
SYMBOLGEN: Macro variable GENDER resolves to Female
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2004
SYMBOLGEN: Macro variable ENDDATE resolves to
MLOGIC(DONATE): %IF condition &enddate = is TRUE
SYMBOLGEN: Macro variable GENDER resolves to Female
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2004
MPRINT(DONATE):  create table WORK.Female2004 as select ep.employee_id label = 'ID'
,edd.employee_name label = 'Name' , ep.salary format dollar8. ,ed.Qtr1 ,ed.Qtr2 ,ed.Qtr3 ,ed.Qtr4
,sum(ed.Qtr1,ed.Qtr2,ed.Qtr3,ed.Qtr4) as tot_donation label = 'Ann. Donation' from
orion.employee_payroll as ep join orion.employee_addresses as edd on ep.employee_id=edd.employee_id
left join orion.employee_donations as ed on ep.employee_id=ed.employee_id where
ep.employee_gender="F" and not ep.employee_term_date and ep.employee_hire_date >= "01Jan2004"d order
by employee_id;
NOTE: Invalid (or missing) arguments to the SUM function have caused the function to return a missing
value.
NOTE: Table WORK.FEMALE2004 created, with 41 rows and 8 columns.

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SYMBOLGEN: Macro variable GENDER resolves to Female
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2004
MPRINT(DONATE): title "Donations of Female Employees Hired on or after 01Jan2004 ";
SYMBOLGEN: Macro variable SYSLAST resolves to WORK.FEMALE2004
MPRINT(DONATE): footnote WORK.FEMALE2004;
SYMBOLGEN: Macro variable LIBRARY resolves to WORK
SYMBOLGEN: Macro variable GENDER resolves to Female
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2004
MPRINT(DONATE): select * from WORK.Female2004;
MPRINT(DONATE): quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time          0.46 seconds
      cpu time           0.07 seconds

MPRINT(DONATE): title;
MPRINT(DONATE): footnote;
MLOGIC(DONATE): Ending execution.
218
219 /*STEP 7. Call the macro again specifying parameters to produce a report for Male employees hired
220 between January 1, 2000 and December 31, 2006.*/
221 %donate(01Jan2000, 31Dec2006,gender=Male);
MLOGIC(DONATE): Beginning execution.
MLOGIC(DONATE): Parameter STARTDATE has value 01Jan2000
MLOGIC(DONATE): Parameter ENDDATE has value 31Dec2006
MLOGIC(DONATE): Parameter GENDER has value Male
MLOGIC(DONATE): Parameter LIBRARY has value WORK
MPRINT(DONATE): proc sql;
SYMBOLGEN: Macro variable LIBRARY resolves to WORK
SYMBOLGEN: Macro variable GENDER resolves to Male
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2000
SYMBOLGEN: Macro variable ENDDATE resolves to 31Dec2006
MLOGIC(DONATE): %IF condition &enddate = is FALSE
SYMBOLGEN: Macro variable GENDER resolves to Male
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2000
SYMBOLGEN: Macro variable ENDDATE resolves to 31Dec2006
MPRINT(DONATE): create table WORK.Male2000 as select ep.employee_id label ='ID' ,edd.employee_name
label ='Name' , ep.salary format dollar8. ,ed.Qtr1 ,ed.Qtr2 ,ed.Qtr3 ,ed.Qtr4
,sum(ed.Qtr1,ed.Qtr2,ed.Qtr3,ed.Qtr4) as tot_donation label ='Ann. Donation' from
orion.employee_payroll as ep join orion.employee_addresses as edd on ep.employee_id=edd.employee_id

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left join orion.employee_donations as ed on ep.employee_id=ed.employee_id where
ep.employee_gender="M" and not ep.employee_term_date and ep.employee_hire_date between "01Jan2000"d
and "31Dec2006"d order by employee_id;
NOTE: Invalid (or missing) arguments to the SUM function have caused the function to return a missing
value.
NOTE: Table WORK.MALE2000 created, with 54 rows and 8 columns.
```

```
SYMBOLGEN: Macro variable GENDER resolves to Male
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2000
SYMBOLGEN: Macro variable ENDDATE resolves to 31Dec2006
MPRINT(DONATE): title "Donations of Male Employees Hired between 01Jan2000 and 31Dec2006";
SYMBOLGEN: Macro variable SYSLAST resolves to WORK.MALE2000
MPRINT(DONATE): footnote WORK.MALE2000;
SYMBOLGEN: Macro variable LIBRARY resolves to WORK
SYMBOLGEN: Macro variable GENDER resolves to Male
SYMBOLGEN: Macro variable STARTDATE resolves to 01Jan2000
MPRINT(DONATE): select * from WORK.Male2000;
MPRINT(DONATE): quit;
NOTE: PROCEDURE SQL used (Total process time):
      real time          0.08 seconds
      cpu time           0.07 seconds
```

```
MPRINT(DONATE): title;
MPRINT(DONATE): footnote;
MLOGIC(DONATE): Ending execution.
222
223 /*STEP 8. Use PROC SQL to create a table with columns seed, school,
224 region, player, ppg, and rpg from ncaam06 with only schools that have 5 or more players listed
225 in the dataset.*/
226
227 proc sql;
228
229 create table ncaam06temp
230 as
231 select seed, school,
232 region, player, ppg,rpg from
233 srcdata.ncaam06
234 where school in (select school from srcdata.ncaam06
235 group by school
236 having count(*) >=5 )
```

237 ;

NOTE: Table WORK.NCAAM06TEMP created, with 154 rows and 6 columns.

238 quit;

NOTE: PROCEDURE SQL used (Total process time):

real time 0.04 seconds

cpu time 0.01 seconds

239

240 /* STEP 9. Create a data driven macro to print the report */

241

242 %macro printrep(dsname);

243

244 /*STEP 9a. Create a data set containing an unduplicated list of the regions.*/

245

246 proc sort data= &dsname

247 out=work.dregions nodupkey;

248 by region;

249 run;

250

251 /*STEP 9b Use a data step to create macro variables for each region and the total number of
252 regions.*/

253 data _null_ ;

254 set work.dregions end=eof;

255 call symputx(cats('region',_n_),region);

256 if eof then do;

257 call symputx(cats('tregion',_n_));

258 end;

259 run;

260

261 /*STEP 9c. use a loop to iteratively process the report procedure once for each of
262 the regions in the data.*/

263

264 %do i=1 %to &tregion;

265

266 proc report data=&dsname nowd;

267 where region="&&Region&i";

268 columns ("Region = %upcase(&&Region&i)" seed school ppg rpg);

269 define seed /group 'Seed';

270 define school /group 'Team';

```

271 define ppg /mean format=8.1 'Average Points';
272 define rpg /mean format=8.1 'Average Rebounds';
273 run;
274
275 %end;
276
277 %mend printrep;
NOTE: The macro PRINTREP completed compilation without errors.
      20 instructions 828 bytes.
278
279 /*Invoke the macro*/
280 %printrep(ncaam06temp);
MLOGIC(PRINTREP): Beginning execution.
MLOGIC(PRINTREP): Parameter DSNAME has value ncaam06temp
SYMBOLGEN: Macro variable DSNAME resolves to ncaam06temp
MPRINT(PRINTREP): proc sort data= ncaam06temp out=work.dregions nodupkey;
MPRINT(PRINTREP): by region;
MPRINT(PRINTREP): run;

```

```

NOTE: There were 154 observations read from the data set WORK.NCAAM06TEMP.
NOTE: 150 observations with duplicate key values were deleted.
NOTE: The data set WORK.DREGIONS has 4 observations and 6 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.05 seconds
      cpu time           0.01 seconds

```

```

MPRINT(PRINTREP): data _null_ ;
MPRINT(PRINTREP): set work.dregions end=eof;
MPRINT(PRINTREP): call symputx(cats('region',_n_),region);
MPRINT(PRINTREP): if eof then do;
MPRINT(PRINTREP): call symputx(cats('tregion'),_n_);
MPRINT(PRINTREP): end;
MPRINT(PRINTREP): run;
NOTE: There were 4 observations read from the data set WORK.DREGIONS.
NOTE: DATA statement used (Total process time):
      real time          0.17 seconds
      cpu time           0.01 seconds

```

```

SYMBOLGEN: Macro variable TREGION resolves to 4

```

MLOGIC(PRINTREP): %DO loop beginning; index variable I; start value is 1; stop value is 4; by value is 1.

SYMBOLGEN: Macro variable DSNAME resolves to ncaam06temp

MPRINT(PRINTREP): proc report data=ncaam06temp nowd;

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 1

SYMBOLGEN: Macro variable REGION1 resolves to ATL

MPRINT(PRINTREP): where region="ATL";

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 1

SYMBOLGEN: Macro variable REGION1 resolves to ATL

MPRINT(PRINTREP): columns ("Region = ATL" seed school ppg rpg);

MPRINT(PRINTREP): define seed /group 'Seed';

MPRINT(PRINTREP): define school /group 'Team';

MPRINT(PRINTREP): define ppg /mean format=8.1 'Average Points';

MPRINT(PRINTREP): define rpg /mean format=8.1 'Average Rebounds';

MPRINT(PRINTREP): run;

NOTE: There were 37 observations read from the data set WORK.NCAAM06TEMP.

WHERE region='ATL';

NOTE: PROCEDURE REPORT used (Total process time):

real time 0.61 seconds

cpu time 0.03 seconds

MLOGIC(PRINTREP): %DO loop index variable I is now 2; loop will iterate again.

SYMBOLGEN: Macro variable DSNAME resolves to ncaam06temp

MPRINT(PRINTREP): proc report data=ncaam06temp nowd;

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 2

SYMBOLGEN: Macro variable REGION2 resolves to MIN

MPRINT(PRINTREP): where region="MIN";

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 2

SYMBOLGEN: Macro variable REGION2 resolves to MIN

MPRINT(PRINTREP): columns ("Region = MIN" seed school ppg rpg);

MPRINT(PRINTREP): define seed /group 'Seed';

MPRINT(PRINTREP): define school /group 'Team';

MPRINT(PRINTREP): define ppg /mean format=8.1 'Average Points';

MPRINT(PRINTREP): define rpg /mean format=8.1 'Average Rebounds';

MPRINT(PRINTREP): run;

NOTE: There were 37 observations read from the data set WORK.NCAAM06TEMP.

WHERE region='MIN';

NOTE: PROCEDURE REPORT used (Total process time):

real time 0.05 seconds

cpu time 0.06 seconds

MLOGIC(PRINTREP): %DO loop index variable I is now 3; loop will iterate again.

SYMBOLGEN: Macro variable DSNNAME resolves to ncaam06temp

MPRINT(PRINTREP): proc report data=ncaam06temp nowd;

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 3

SYMBOLGEN: Macro variable REGION3 resolves to OAK

MPRINT(PRINTREP): where region="OAK";

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 3

SYMBOLGEN: Macro variable REGION3 resolves to OAK

MPRINT(PRINTREP): columns ("Region = OAK" seed school ppg rpg);

MPRINT(PRINTREP): define seed /group 'Seed';

MPRINT(PRINTREP): define school /group 'Team';

MPRINT(PRINTREP): define ppg /mean format=8.1 'Average Points';

MPRINT(PRINTREP): define rpg /mean format=8.1 'Average Rebounds';

MPRINT(PRINTREP): run;

NOTE: There were 40 observations read from the data set WORK.NCAAM06TEMP.

WHERE region='OAK';

NOTE: PROCEDURE REPORT used (Total process time):

real time 0.04 seconds

cpu time 0.03 seconds

MLOGIC(PRINTREP): %DO loop index variable I is now 4; loop will iterate again.

SYMBOLGEN: Macro variable DSNNAME resolves to ncaam06temp

MPRINT(PRINTREP): proc report data=ncaam06temp nowd;

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 4

SYMBOLGEN: Macro variable REGION4 resolves to WDC

MPRINT(PRINTREP): where region="WDC";

SYMBOLGEN: && resolves to &.

SYMBOLGEN: Macro variable I resolves to 4

```
SYMBOLGEN: Macro variable REGION4 resolves to WDC
MPRINT(PRINTREP): columns ("Region = WDC" seed school ppg rpg);
MPRINT(PRINTREP): define seed /group 'Seed';
MPRINT(PRINTREP): define school /group 'Team';
MPRINT(PRINTREP): define ppg /mean format=8.1 'Average Points';
MPRINT(PRINTREP): define rpg /mean format=8.1 'Average Rebounds';
MPRINT(PRINTREP): run;
```

NOTE: There were 40 observations read from the data set WORK.NCAAM06TEMP.

WHERE region='WDC';

NOTE: PROCEDURE REPORT used (Total process time):

real time 0.05 seconds

cpu time 0.06 seconds

MLOGIC(PRINTREP): %DO loop index variable I is now 5; loop will not iterate again.

MLOGIC(PRINTREP): Ending execution.

281

282 /*House keeping. Resetting defaults*/

283 title;

284 footnote;

285 option nomprint nosymbolgen nomlogic mcompilenote=none nodate;

286

287 /**Close the device*/

288 ods pdf close;

NOTE: ODS PDF printed 8 pages to C:\Users\vigupta\OneDrive\Learning\DataScience\Statistics Texas A&M
University\657\Homework\Assignment11\Vivek235_HW11_Output.pdf.