Problem 4, Chapter 14, Ex. 2. Using the SAS sales data set, create the report shown in the text.

Note: The report shown in the text for this question, contains only East & West region data. However, the total sums shown in the book match the grand totals for all regions (North, East, South, & West), making the question ambiguous since section 14.5 demonstrates the use of a “where statement” to control which observations appear (see page 266). Thus I have included solutions to both. The report with just the East & West using the where statement, is shown on the left. The report with all 4 regions is shown on the right.

Key portion of SAS code:

* Ex 14.2 Use Proc Report to duplicate the Sale report shown in the text.;
Data Sales; Set ST6250.sales (keep= region quantity totalsales);
run; * Create a private copy of the sales data set to sort.;

PROC SORT Data=sales;
By region; * Sort the data by region.;
run;
Title3 'Chapter 14 Ex. 2';
Title5 'Sales Figures from the SALES Data Set';
PROC PRINT Data=sales (where=( region in ('East' 'West')));
sum Quantity TotalSales;
By Region;
Id Region;
run;

SAS output:

Sales Figures from the SALES Data Set

<table>
<thead>
<tr>
<th>Region</th>
<th>Quantity</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>100</td>
<td>699.0</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>899.0</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>19995.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20000.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>702</td>
<td>41593.0</td>
</tr>
<tr>
<td>North</td>
<td>50</td>
<td>449.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15597.0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5129.0</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15597.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>62</td>
<td>36825.0</td>
</tr>
<tr>
<td>South</td>
<td>100</td>
<td>599.0</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>299.5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9109.0</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>1995.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>211</td>
<td>12002.5</td>
</tr>
<tr>
<td>West</td>
<td>50</td>
<td>299.5</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>1990.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>1050</td>
<td>2289.5</td>
</tr>
<tr>
<td></td>
<td>1752</td>
<td>43882.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>1050</td>
<td>2289.5</td>
</tr>
<tr>
<td></td>
<td>2025</td>
<td>92710.0</td>
</tr>
</tbody>
</table>
Problem 5, Chapter 14, Ex. 3. Use Proc Print (without any Data steps) to create the listing shown in the text.

Key portion of SAS code:

```
*Ex. 14.3  Produce the example report using the hosp data set.;
Title3 'Chapter 14 Ex. 3';
Title5 'Selected Patients from HOSP Data Set';
Title7 'Admitted in September of 2004';
Title8 'Older than 83 years of age';
Title9 '--------------------------------------';
PROC PRINT data=ST6250.hosp
   (where=(year(AdmitDate) EQ 2004 AND month(AdmitDate) EQ 9
   AND yrdif(DOB, AdmitDate,'actual') GE 83))
   n='Number of Patients = ' label double;
Var   DOB   AdmitDate   DischrDate;
Id    Subject;
Label AdmitDate = 'Admission Date';
Label DischrDate = 'Discharge Date';
Label DOB = 'Date of Birth';
run;
```

SAS output:

```
Chapter 14 Ex. 3
Selected Patients from HOSP Data Set
Admitted in September of 2004
Older than 83 years of age
--------------------------------------
         Date of     Admission     Discharge
         Subject         Birth          Date          Date
    401     03/21/1921    09/13/2004    09/22/2004
    407     08/26/1920    09/13/2004    09/18/2004
    409     01/01/1921    09/13/2004    10/02/2004
   2577     04/30/1920    09/27/2004    09/27/2004
   6889     10/26/1920    09/17/2004    09/22/2004
   7495     02/11/1921    09/21/2004    09/22/2004
Number of Patients = 6
```
Problem 6, Chapter 15, Ex. 2. Using the SAS Blood data set, produce a summary report like that shown in the text containing the average WBC and RBC value for each gender as well as an overall average.

Key portion of SAS code:

```sas
* Ex. 15.2 Produce the example report of means using the blood data set;
Title3 'Chapter 15 Ex. 2';
Title5 'Statistics from BLOOD by Gender';
Title7; Title8; Title9; * Clear titles from previous problem.;
PROC REPORT Data=ST6250.blood nowd headline;
  column gender wbc rbc;
  define gender / group;
  define wbc   / analysis "Average WBC" mean format=comma8. width=8 right;
  define rbc   / analysis "Average RBC" mean format=comma5.2 width=8 right;
  rbreak after / summarize dol;
run; quit;
```

SAS output:

```
STAT 6250 Homework #5.  D.C. Slaughter              12:00 Saturday, May 23, 2009

Chapter 15 Ex. 2

Statistics from BLOOD by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Average WBC</th>
<th>Average RBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>7,112</td>
<td>5.50</td>
</tr>
<tr>
<td>Male</td>
<td>6,988</td>
<td>5.47</td>
</tr>
</tbody>
</table>

7,043  5.48
```
Problem 7, Chapter 15, Ex. 3. Using the SAS Hosp data set, create the report shown in the text. Age should be computed using the YRDIF function and rounded to the nearest integer.

Key portion of SAS code:

* Ex. 15.3 Produce the age report using the Hosp data set and YRDIF.;
Title3 'Chapter 15 Ex. 3';
Title5 'Demonstrating a COMPUTE Block'; run;
PROC REPORT Data=ST6250.hosp(obs=5) nowd headline;
column subject admitdate dob age;
define subject / display width=7;
define admitdate / display "Admission Date" width=10;
define dob / display width=10;
define age / computed "Age at Admission";
compute age;
   Age = round(yrdif(dob,admitdate,'Actual'),1);
endcomp;
run; quit;

SAS output:

STAT 6250 Homework #5. D.C. Slaughter 12:00 Saturday, May 23, 2009

Chapter 15 Ex. 3

Demonstrating a COMPUTE Block

<table>
<thead>
<tr>
<th>Subject</th>
<th>Admission Date</th>
<th>DOB</th>
<th>Age at Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>03/28/2003</td>
<td>09/15/1926</td>
<td>77</td>
</tr>
<tr>
<td>2</td>
<td>03/28/2003</td>
<td>07/08/1950</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>03/28/2003</td>
<td>12/30/1981</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>03/28/2003</td>
<td>06/11/1942</td>
<td>61</td>
</tr>
<tr>
<td>5</td>
<td>08/03/2003</td>
<td>06/28/1928</td>
<td>75</td>
</tr>
</tbody>
</table>
Problem 8, Chapter 15, Ex. 4. Using the SAS BloodPressure data set, compute a new variable (Hypertensive) and produce the report shown in the text. Hypertensive is ‘Yes’ if SBP > 138 or DBP > 88 for females and if SBP > 140 or DBP > 90 for males.

Key portion of SAS code:

* Ex. 15.4 Produce the Hypertensive report using the Bloodpressure data set.;
Title3 'Chapter 15 Ex. 4';
Title5 'Hypertensive Patients';
PROC REPORT Data=ST6250.bloodpressure nowd headline;
   column gender SBP DBP Hypertensive;
   define gender       / display width=7;
   define SBP          / display width=4;
   define DBP          / display width=4;
   define Hypertensive / computed 'Hypertensive?' width=13;
   compute Hypertensive / character length = 3;
      if gender='F' AND (SBP GT 138 OR DBP GT 88) Then Hypertensive = 'Yes';
      else if gender= 'M' AND (SBP GT 140 OR DBP GT 90) Then Hypertensive = 'Yes';
      else Hypertensive = 'No';
   endcomp;
run; quit;

SAS output:

STAT 6250 Homework #5. D.C. Slaughter 12:00 Saturday, May 23, 2009

Chapter 15 Ex. 4

Hypertensive Patients

<table>
<thead>
<tr>
<th>Gender</th>
<th>SBP</th>
<th>DBP</th>
<th>Hypertensive?</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>144</td>
<td>90</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>110</td>
<td>62</td>
<td>No</td>
</tr>
<tr>
<td>M</td>
<td>130</td>
<td>80</td>
<td>No</td>
</tr>
<tr>
<td>F</td>
<td>120</td>
<td>70</td>
<td>No</td>
</tr>
<tr>
<td>M</td>
<td>142</td>
<td>82</td>
<td>Yes</td>
</tr>
<tr>
<td>M</td>
<td>150</td>
<td>96</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>138</td>
<td>88</td>
<td>No</td>
</tr>
<tr>
<td>F</td>
<td>132</td>
<td>76</td>
<td>No</td>
</tr>
</tbody>
</table>
Problem 9, Chapter 15, Ex. 6. Using the SAS BloodPressure data set, produce the report shown in the text.

Key portion of SAS code:

* Ex. 15.6 Produce the Blood pressure report by gender.;
Title3 'Chapter 15 Ex. 6';
Title5 "Subject's in Gender and Age Order";
PROC REPORT Data=ST6250.bloodpressure nowd headline;
   column gender Age SBP DBP;
   define gender / group width=7;
   define age    / order width=4;
   define SBP    / display 'Systolic Blood Pressure' width=9;
   define DBP    / display 'Diastolic Blood Pressure' width=10;
run; quit;

SAS output:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>28</td>
<td>120</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>138</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>68</td>
<td>110</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>132</td>
<td>76</td>
</tr>
<tr>
<td>M</td>
<td>23</td>
<td>144</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>142</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>150</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>130</td>
<td>80</td>
</tr>
</tbody>
</table>
Problem 10, Chapter 15, Ex. 8. Using the SAS Blood data set, produce the report shown in the text. The values in the table are the average WBC and RBC for each combination of blood type and gender.

Key portion of SAS code:

```sas
* Ex. 15.8 Produce the Blood pressure report with gender across report.;
Title3 'Chapter 15 Ex. 8';
Title5 'Average Blood Counts by Gender';
PROC REPORT Data=ST6250.blood nowd headline;
    column bloodtype gender, wbc gender, rbc;
    define bloodtype / group width=6 "Blood Type";
    define gender / across "-Gender-" center;
    define wbc / analysis mean format=comma8. width=7;
    define rbc / analysis mean format=comma5.2 width=7;
  run;
```

SAS output:

```
Chapter 15 Ex. 8

Average Blood Counts by Gender

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Gender</th>
<th>WBC</th>
<th>WBC</th>
<th>RBC</th>
<th>RBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Female</td>
<td>7,218</td>
<td>7,051</td>
<td>5.47</td>
<td>5.46</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>7,051</td>
<td>6,930</td>
<td>5.53</td>
<td>5.48</td>
</tr>
<tr>
<td>AB</td>
<td></td>
<td>7,421</td>
<td>6,893</td>
<td>5.43</td>
<td>5.69</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>6,716</td>
<td>6,991</td>
<td>5.52</td>
<td>5.42</td>
</tr>
<tr>
<td>O</td>
<td></td>
<td>7,050</td>
<td>6,930</td>
<td>5.53</td>
<td>5.48</td>
</tr>
</tbody>
</table>
```
* SAS Code for STAT 6250 Homework #4. David Slaughter;

Title 'STAT 6250 Homework #5. D.C. Slaughter';
options ls=72 nocenter nonumber;
   run;

libname ST6250 'D:\users\dcs\Cody';
run;

Title3 'Chapter 13 Ex. 2. Original values of Q1 to Q5.';
PROC PRINT Data= ST6250.survey2;
run;

* Ex. 13.2 Reverse the values (1 to 5, 2 to 4, etc.) in the survey2 data set.;
Data Survey2; set ST6250.survey2;
array num_array{*} Q1-Q5;
do i = 1 to Dim(num_array);
   num_array{i} = 6 - num_array{i}; * Formula to reverse the values of Q1 to Q5;
   end;
drop i;
run;

Title3 'Chapter 13 Ex. 2. Revised Q1 to Q5 with reversed values.';
PROC PRINT Data= Survey2;
run;

* Ex. 13.4 Determine if each subject responded with a '5' to any question.;
Data Survey2; set ST6250.survey2;
Length ANY5 $3;
array num_array{*} Q1-Q5;
do i = 1 to Dim(num_array);
   ANY5 = 'No';
   if num_array{i} EQ 5 Then /* If any answer is a '5' then */
      Do; ANY5 = 'Yes'; Leave; End; /* set ANY5 to Yes and go on to */
   end; /* the next subject. */
drop i;
run;

Title3 'Chapter 13 Ex. 4 Values of ANY5 and Q1 to Q5.';
PROC PRINT Data= Survey2;
run;
* Ex. 13.5 Determine the number of tests passed by each student using a key.;

```
Data Student;
array pass_score{5} _temporary_ (65,70,60,62,68);
array student_score{5} Test1 - Test5;
input ID Test1 - Test5;
do k = 1 to Dim(pass_score);
   If k = 1 then Total_Passed = 0;
   If student_score{k} GE pass_score{k} Then Total_Passed + 1;
end;
drop k;
label Total_Passed = 'Tests Passed';
datalines;
001 90 88 92 95 90
002 64 64 77 72 71
003 68 69 80 75 70
004 88 77 66 77 67
;run;
```

Title3 'Chapter 13 Ex. 5 Count of number of tests passed by each student. ';
```
proc print data=student Label;
id ID; var Total_Passed Test1-Test5;
run;
```

* Ex 14.2 Use Proc Report to duplicate the Sale report shown in the text.;

```
Data Sales; Set ST6250.sales (keep= region quantity totalsales);
run; * Create a private copy of the sales data set to sort.;
```
```
PROC SORT Data=sales;
   By region; * Sort the data by region.;
run;
```

Title3 'Chapter 14 Ex. 2';
Title5 'Sales Figures from the SALES Data Set';
```
PROC PRINT Data=sales (where=( region in ('East' 'West'))) ;
   sum Quantity TotalSales;
   By Region;
   Id Region;
run;
```

*Ex. 14.3 Produce the example report using the hosp data set.;

```
Title3 'Chapter 14 Ex. 3';
Title5 'Selected Patients from HOSP Data Set';
Title7 'Admitted in September of 2004';
Title8 'Older than 83 years of age';
Title9 '--------------------------------------';
PROC PRINT data=ST6250.hosp(where=(year(AdmitDate) EQ 2004 AND month(AdmitDate) EQ 9
   AND yrdif(DOB, AdmitDate,'actual') GE 83))
   n='Number of Patients = ' label double;
   Var DOB AdmitDate DischrDate;
   Id Subject;
   Label AdmitDate = 'Admission Date';
   Label DischrDate = 'Discharge Date';
   Label DOB = 'Date of Birth';
run;
```
* Ex. 15.2 Produce the example report of means using the blood data set;
Title3 'Chapter 15 Ex. 2';
Title5 'Statistics from BLOOD by Gender';
Title7; Title8; Title9; * Clear titles from previous problem.;
PROC REPORT Data=ST6250.blood nowd headline;
column gender wbc rbc;
define gender / group;
define wbc / analysis "Average WBC" mean format=comma8. width=8 right;
define rbc / analysis "Average RBC" mean format=comma5.2 width=8 right;
rbreak after / summarize dol;
run; quit;

* Ex. 15.3 Produce the age report using the Hosp data set and YRDIF.;
Title3 'Chapter 15 Ex. 3';
Title5 'Demonstrating a COMPUTE Block'; run;
PROC REPORT Data=ST6250.hosp(obs=5) nowd headline;
column subject admitdate dob age;
define subject / display width=7;
define admitdate / display "Admission Date" width=10;
define dob / display width=10;
define age / computed "Age at Admission";
compute age;
   Age = round(yrdif(dob,admitdate,'Actual'),1);
endcomp;
run; quit;

* Ex. 15.4 Produce the Hypertensive report using the Bloodpressure data set.;
Title3 'Chapter 15 Ex. 4';
Title5 'Hypertensive Patients';
PROC REPORT Data=ST6250.bloodpressure nowd headline;
column gender SBP DBP Hypertensive;
define gender / display width=7;
define SBP / display 'Systolic Blood Pressure' width=9;
define DBP / display 'Diastolic Blood Pressure' width=10;
define Hypertensive / computed 'Hypertensive?' width=13;
compute Hypertensive / character length = 3;
   if gender='F' AND (SBP GT 138 OR DBP GT 88) Then Hypertensive = 'Yes';
   else if gender='M' AND (SBP GT 140 OR DBP GT 90) Then Hypertensive = 'Yes';
   else Hypertensive = 'No';
endcomp;
run; quit;

* Ex. 15.6 Produce the Blood pressure report by gender.;
Title3 'Chapter 15 Ex. 6';
Title5 "Subject's in Gender and Age Order";
PROC REPORT Data=ST6250.bloodpressure nowd headline;
column gender Age SBP DBP;
define gender / group width=7;
define age / order width=4;
define SBP / display 'Systolic Blood Pressure' width=9;
define DBP / display 'Diastolic Blood Pressure' width=10;
run; quit;
* Ex. 15.8 Produce the Blood pressure report with gender across report.;
Title3 'Chapter 15 Ex. 8';
Title5 'Average Blood Counts by Gender';
PROC REPORT Data=ST6250.blood nowd headline;
  column bloodtype gender,wbc gender,rbc;
  define bloodtype / group width=6 "Blood Type";
  define gender / across "-Gender-" center;
  define wbc / analysis mean format=comma8. width=7;
  define rbc / analysis mean format=comma5.2 width=7;
run;