

Chapter 1: Creating Samples and Indexes

- Q1. a variable
- Q2. automatically during compilation of the SET statement
- Q3. `ranuni(0)*10`
- Q4. `ceil(ranuni(0)*10)`
- Q5. `(index=(Fromto=(origin dest)));`
- Q6. `index create date;`
- Q7. `create index date`
- Q8. `contents data=sasuser.revenue;`
- Q9. `copy out=work;`
- Q10. `change expenses=cost;`

Chapter Quiz

- 1. **d**
The POINT= option in the SET statement names a variable. You must use program statements to assign a value to this variable during execution of the DATA step, before execution of the SET statement. Also, the value of the POINT= variable should be a number that corresponds to an observation number in the input data set, and it should be different each time the SET statement executes.
- 2. **b**
To create a systematic sample from a data set that has an unknown number of observations, you use the NOBS= option in conjunction with the POINT= option in the SET statement. The NOBS= variable is automatically assigned a value of the total number of observations in the input data set, and you must assign a value to the POINT= variable before the SET statement executes.
- 3. **c**
In order to create a random sample of a data set, you need to generate a random integer. You can use the RANUNI function in conjunction with the CEIL function to create a random integer. You can use a multiplier with the RANUNI function to increase the range from which the random number is chosen to include as many numbers as you need.
- 4. **d**
An index is a separate file from a data set that contains information about observations within the data set. Specifically, an index contains value/identifier pairs that indicate the location of observations within the data set and the value of one or more key variables in that observation.
- 5. **c**
To create an index at the same time that you create a data set, you use the INDEX= option in the DATA statement. You must assign a unique name to a composite index, while a simple index is automatically assigned the name of the key variable as its name. You can set the value of the MSGLEVEL= system option to I in order to see messages about indexes in the SAS log.
- 6. **a**
For many maintenance tasks that you perform on a data set, SAS automatically performs corresponding tasks to the index file. For example, if you delete a data set, the index file is deleted as well. If you rename a data set with the CHANGE statement in the DATASETS procedure, SAS automatically renames the index file. If you copy a data set

to a new location with the COPY statement in the DATASETS procedure, SAS automatically reconstructs the index file in the new location.

7. **d**
You can use the DATASETS procedure or the SQL procedure to create an index on or delete an index from an existing data set. You can also rebuild the index with a DATA step and use the INDEX= option to create an index on the rebuilt data set. However, rebuilding a data set uses more system resources than adding an index to an existing data set with either the DATASETS or the SQL procedure.
8. **a**
You use the CREATE INDEX statement of the SQL procedure to create an index on an existing data set. In the SQL procedure, you must name the index in the CREATE INDEX statement; for a simple index, the index name must match the name of the key variable.
9. **b**
You can use either the CONTENTS procedure or the CONTENTS statement in the DATASETS procedure to generate a list of information about a data set, including a list of existing indexes. All indexes for a data set are stored in a single file that is separate from but has the same name as the data set.
10. **b**
An index can improve the efficiency with which SAS is able to access certain observations in a data set. However, an index is not always useful. SAS will not use an index to process subsetting IF statements, or other statements that SAS determines might be more efficiently processed without an index.

Chapter 2: Combining Data Vertically

- Q1.** `filename revenue ('c:\data\qtr3.dat' 'c:\data\qtr4.dat');`
Q2. The DO UNTIL loop is exited.
Q3. `nextfile="c:\flights\movies_" || compress(put(i,$5.) || ".dat", ' ');`
Q4. `Var=compress(menu,'Special');`
Q5. `ThisYear=year(today());`
Q6. 1
Q7. `proc append base=flights.y2002 data=flights.december;`
Q8. yes

Chapter Quiz

1. **c**
When a FILENAME statement is used to assign a fileref to multiple raw data files, the list of files must be enclosed in a single set of parentheses. Each filename specified must be enclosed in quotation marks.
2. **d**
The FILEVAR= option enables you to dynamically change the currently opened input file to a new input file. The FILEVAR= variable must contain a character string that is a physical filename. Like automatic variables, the FILEVAR= variable is not written to the data set.
3. **b**
The DO statement creates the index variable x and assigns it the values of 8, 9, and 10. The assignment statement assigns the name of a raw data file to readfile using the current value of x and the PUT function, which concatenates the values of x with the text strings `c:\data\month` and `.dat`. The COMPRESS function removes blank spaces from the values of readfile.
4. **a**
The TODAY function returns the current date from the system clock as a SAS date value. The year number is then extracted from the current date using the YEAR function. The value of the current year, 2003, is assigned to y3. The year values 2002 and 2001 are assigned to y2 and y1, respectively. The PUT function concatenates the text string `c:\data\Y` with the year values and the text string `.dat`.
5. **a**
The END= option enables you to name a variable whose value is controlled by SAS. The value of the variable is 0 when you are not reading the last record in an input file and 1 when you are reading the last record in an input file. You can test the value of the END= variable to determine if the DATA step should continue processing. Like automatic variables, the END= variable is not written to the SAS data set.
6. **b**
PROC APPEND uses the BASE= and DATA= arguments. BASE=SAS-*data-set* names the data set to which you want to add observations. DATA=SAS-*data-set* names the SAS data set containing observations that you want to append to the end of the SAS data set specified in the BASE= argument.
7. **d**

If a DATA= data set contains variables that are longer than the corresponding variables in the BASE= data set, the FORCE option must be used with PROC APPEND. Using the FORCE option enables you to append the data sets. However, some of the variable values may be truncated in the observations that are read in from the DATA= data set.

8. **c**
You must use the FORCE option with PROC APPEND when the DATA= data set contains a variable that does not have the same type as the corresponding variable in the BASE= data set.
9. **a**
PROC APPEND only reads the data in the DATA= SAS data set, not the BASE= SAS data set. When the BASE= data set contains more variables than the DATA= data set, missing values for the additional variables are assigned to the observations that are read in from the DATA= data set.
10. **b**
The FORCE option does **not** need to be used if the BASE= data set contains variables that are not in the DATA= data set. The FORCE option must be used if
- the DATA= data set contains variables that are not in the BASE= data set
 - the variables in the DATA= data set are longer than the corresponding variables in the BASE= data set
 - the variables in the DATA= data set have a different type than the corresponding variables in the BASE= data set.

Chapter 3: Combining Data Horizontally

- Q1.** one-to-many match
- Q2.** A user-defined format can provide easier maintenance than the IF-THEN/ELSE statement for lookup values that change often or that are used in many programs.
- Q3.** `merge sasuser.allempts sasuser.contrib sasuser.newsals;`
- Q4.** `merge sasuser.allempts sasuser.contrib
sasuser.newsals(rename=(empcode=empid));`
- Q5.** when there is either a one-to-one match or a one-to-many match between input data sets on the values of the BY variables
- Q6.** Data sets do not have to be sorted or indexed.
- Q7.** `if _n_=1 then set sasuser.summary;`
- Q8.** `TotalExp+expenses;`
- Q9.** `set sasuser.empdata key=empid;`
- Q10.** The most recent SET statement with the KEY= option did successfully find a matching observation.
- Q11.** The master data set and transactional data set must contain at least one common variable.

Chapter Quiz

1. c

Remember that common variables might not have the same names. Manager and IDnum are the only two variables listed that match according to type and description. You can use the RENAME= option to rename one of these variables so that they can be used as BY variables in the MERGE statement of the DATA step.

2. b

In order to merge multiple data sets in a DATA step, the data sets must have a common variable. However, if there are variables that are common to at least two of the input data sets, and if each input data set contains at least one of these variables, then you can use subsequent DATA steps to merge the data sets. You can also use a PROC SQL step to merge data sets that do not have common variables.

3. d

You can use PROC SQL to join data from data sets that do not have a single common variable among them. If you create a new table with the result of an inner join in a PROC SQL step, the resulting data set can be similar or identical to the result of a DATA step match-merge.

4. a

In a DATA step match-merge, SAS reads observations from the input data sets sequentially and match-merges them with observations from other input data sets. Combined observations are created when SAS writes values from all input data sets to the variables in the PDV. These observations, as well as any observations that contain missing or non-matched values, are then written to the new data set. A PROC SQL join creates a Cartesian product of matches and then eliminates non-matching data.

5. c

You can use multiple SET statements in one DATA step to combine observations from several data sets, and the data sets do not need to have a common variable. When you use multiple SET statements, you need to keep in mind the process that SAS uses to combine data from the input data sets. Otherwise, you might achieve unexpected results.

6. b

You can use the MEANS procedure to create a new data set that contains a summary statistic. You use the NOPRINT option to suppress the default report and the OUTPUT statement to route the results from the MEANS procedure to a new data set. You use the VAR statement to focus the procedure on one or more specific variables from the input data set.

7. a

The `_N_` variable records how many times the DATA step has iterated. In the example shown above, `_N_` is used to ensure that only the first observation is read from **Sasuser.Summary**. Since the values in the PDV are not reinitialized after each DATA step iteration, this value will be retained as long as the DATA step continues to iterate. Therefore, if the value of `Cargosum` is \$1000 in the first iteration, it will be \$1000 in each subsequent iteration as well.

8. d

`Totalrev` is the accumulator variable of the sum statement, which is automatically initialized with a value of 0. If the expression in a sum statement produces a missing value, SAS replaces the missing value with a value of 0. As the DATA step iterates, the sum statement retains the accumulator variable so that it will accumulate a total.

9. d

You use the `KEY=` option in a SET statement to cause SAS to use an index to combine data from multiple data sets. When the SET statement with the `KEY=` option executes, the program data vector must already contain a value for the indexed variable. You cannot use WHERE processing on a data set that has been read with the `KEY=` option within the same DATA step.

10. b

When you use the `KEY=` option, SAS creates an automatic variable named `_IORC_`, which stands for INPUT/OUTPUT Return Code. If the value of `_IORC_` is zero, the index search was successful. The `_IORC_` variable is also created automatically when you use a MODIFY statement in a DATA step.

Chapter 4: Using Lookup Tables to Match Data

- Q1. array sales {2,2} _temporary_ (1621,1243,1740,1425);
Q2. 81
Q3. store the array values in a SAS data set.
Q4. proc transpose data=work.sales out=work.sales2;
Q5. name=Meal
Q6. by date;
Q7. declare hash discount;
 discount= _new_ hash();
Q8. 80
Q9. 0

Chapter Quiz

1. **a**
An array is specified using the keyword ARRAY followed by the name of the array and the dimensions of the array. In a two-dimensional array, the two dimensions can be thought of as a table of rows and columns. The first dimension in the ARRAY statement specifies the number of rows. The second dimension specifies the number of columns.
2. **b**
To create temporary array elements, specify the keyword _TEMPORARY_ after the array name and dimension. Remember that if you use an asterisk to count the array elements, you must list the array elements. You cannot use the asterisk and the _TEMPORARY_ keyword together in an ARRAY statement.
3. **d**
To process all of the elements in an array, you can use either the DIM function with the array name as the argument or specify the array dimension.
4. **a**
The ARRAY statement creates the two-dimensional array score and specifies the dimensions of the array: two rows and four columns. The value of Points for each observation is determined by referencing the array based on the values of Week and Finish in the **Work.Contest** data set. The row number for the array reference is determined by the value of Week. The column number for the array reference is determined by the value of Finish.
5. **d**
Array values should be stored in a SAS data set when there are too many values to initialize easily in an array, the values change frequently, or the same values are used in many programs.
6. **c**
The IF-THEN statement specifies that the Targets array is loaded only once, during the first iteration of the DATA step. During the first iteration of the DATA step, the condition _N_=1 is true, so the outer DO loop executes three times; once for each observation in **Sasuser.Ctargets**. After the **third** iteration of the DO loop, the pointer drops down to the second SET statement and the values from the first observation in **Sasuser.Monthum** are read into the program data vector. During the second iteration of the DATA step, the condition _N_=1 is false. So, the DO loop doesn't execute.

7. **c**
The TRANSPOSE procedure creates an output data set by restructuring the values in a SAS data set. When the data set is restructured, selected variables are transposed into observations. The procedure creates several variable names by default. `_NAME_` is the default name of the variable that PROC TRANSPOSE creates to identify the source of the values in each observation in the output data set. The remaining transposed variables are named COL1...COLn by default.
8. **b**
You can use several options with PROC TRANSPOSE to give the variables in the output data set descriptive names. The `NAME=` option specifies a name for `_NAME_` variable. The `PREFIX=` option specifies a prefix to use in constructing names for the other variables in the output data set.
9. **b**
A BY statement can be used with PROC TRANSPOSE. For each BY group, PROC TRANSPOSE creates one observation for each variable that it transposes. The BY variable itself is not transposed. The original data set must be sorted or indexed prior to using a BY statement with PROC TRANSPOSE.
10. **d**
The observations in **Work.Fishsize** are grouped by Location and Date. For each BY group, PROC TRANSPOSE creates four observations, one for each variable (Length1, Weight1, Length2, and Weight2) that it is transposing.

Chapter 5: Formatting Data

- Q1.** value \$itemfmt
 '105AR'='twill shorts'
 '931BT'='denim skirt'
 '034QE'='knit dress'
 ''='no label'
 other='mislabeled';
- Q2.** 10
- Q3.** 09 High School
- Q4.** exclude \$geoarea geopop;
- Q5.** copies the NEWDATE. format from the **Work.Formats** catalog to the **Sasuser.Formats** catalog
- Q6.** proc datasets lib=sasuser nolist;
 modify quarter1;
 format score \$grade.;
quit;
- Q7.** options fmtsearch=(abc def.newfmt work);
- Q8.** options fmtsearch=(sasuser);
- Q9.** proc format lib=sasuser cntlin=citycode;
run;
- Q10.** FmtName, Start, Label
- Q11.** proc format lib=library.formats cntlout=sasuser.runs;

Chapter Quiz

1. **d**

By default, SAS searches for custom formats in the **Work** and **Library** libraries. The FMTSEARCH= system option specifies other catalogs to search when a format is referenced.

2. **c**

A non-inclusive range is used such that the age at the high end of the range is not included. To create the picture format, three zeros are used to create a position for a three-digit numeric value. Because zero is used as a digit selector rather than a nonzero value, leading zeros are not included in the formatted value.

3. **b**

By default, FMterr is in effect and SAS stops processing if it cannot find a format that is referenced. When NOFMterr is in effect, SAS substitutes the \$w. or w. format and continues processing.

4. **b**

A data set that is used to create a format with the CNTLIN= option must have the variables FmtName, Start, and Label. If a range is specified, it must also include the variable End.

5. **a**

The format created by this value statement has overlapping ranges, so the MULTILABEL option must be used. A multilabel format can be used by any procedure that supports the MLF option.

6. c

The CNTLOUT= option is used to create a SAS data set from a format.

7. b

SAS will search in the order specified on the FMTSEARCH= option. By default, SAS searches in the **Work** and **Library** libraries first unless they are specified on the option. Because **Library** is not specified here, it is searched after **Work**.

8. d

The FMTLIB keyword is used to document the formats in a catalog. You can use the SELECT and EXCLUDE statements to process specific formats rather than the entire catalog.

9. c

In the COPY statement, OUT= specifies the catalog to which you want to copy the format catalog entry. In the SELECT statement you specify the catalog entries by their entire name. Remember that numeric formats are stored with the extension **.FORMAT** and character formats are stored with the extension **.FORMATC**.

10. c

The value 6.1 falls in the range 6<-9, which is labeled 'Good.' The non-inclusive range does not include the value 6, but it does include everything above 6.

Chapter 6: Modifying SAS Data Sets and Tracking Changes

- Q1.** When you use the MODIFY statement, you must specify the same data set that is specified on the DATA statement.
- Q2.**

```
data hr.salary;  
    modify hr.salary hr.newsalary;  
    by employeeid;  
run;
```
- Q3.** Missing values in B and C **will not** replace the corresponding values in the data set **Master**.
- Q4.** If the index specified on the KEY= option does not exist, SAS creates a simple index using the Obs variable.
- Q5.** You can use the UNIQUE option when you want to apply multiple transactions to one master observation.
- Q6.** OUTPUT
- Q7.** `_iorc_=%sysrc(_sok)`
- Q8.** CHECK
- Q9.** `ic create val_gender=check(where=(gender in ('M','F')));`
- Q10.**

```
proc datasets lib=sasuser nolist;  
    audit financial;  
    initiate;  
quit;
```
- Q11.** All _ATOPCODES_ codes are logged.
- Q12.** For each modification, the audit trail file contains only a record of each observation before the data set was updated.
- Q13.** `user_var admin $20 label='Reason for update';`
- Q14.** `modify snowfall(genmax=8);`
- Q15.** GENNUM=-3

Chapter Quiz

1. **c**

The PRIMARY KEY integrity constraint includes both the NOT NULL and UNIQUE constraints.
2. **d**

To initiate an audit on an existing SAS data set with the DATASETS procedure, you specify the data set in the AUDIT statement, and then you specify the INITIATE statement. You specify the library with the LIB= option.
3. **c**

In the MODIFY statement, you specify the master data set followed by the transaction data set. Then you specify the variable in the BY statement.
4. **c**

The value of _IORC_ is a numeric return code that indicates the status of the most recently executed I/O operation. Checking the value of this variable allows you to detect abnormal I/O conditions and direct execution in particular ways.

5. d

In the MODIFY statement, you list the SAS data set that you want to modify. Then you use the IC CREATE statement to create the integrity constraint. This integrity constraint is a CHECK constraint and you use a WHERE clause to specify the condition that the variable values must meet.

6. b

The MODIFY statement in a DATA step can only be used to modify the values in a data set. It cannot be used to modify the descriptor portion of the data set.

7. c

Audit trails are used to track changes that are made to a data set in place.

8. a

You use the DATASETS procedure and the MODIFY statement to specify a number of generation data sets for a data set. The GENMAX= option is used to specify the number of versions to save. The number you specify includes the base version.

9. b

When you use the KEY= option, you must specify the update that you want to make to the data set.

10. a

The keyword ALL is used to indicate that you want to delete all generations of the specified data set including the base version. The keyword HIST deletes the generation data sets, but saves the base version.

Chapter 7: Introduction to Efficient SAS Programming

- Q1.** CPU time
- Q2.** FULLSTIMER
- Q3.** When you run your tests, make sure that the system is doing no other work.

Chapter 8: Controlling Memory Usage

- Q1.** A page is the unit of data transfer between the storage device and memory.
- Q2.** A and C
- Q3.** BUFSIZE=
- Q4.** The product of the BUFNO= option and the BUFSIZE= option.
- Q5.** opens a SAS data file and allocates the buffers, but defers reading the data into memory until a procedure or statement is executed.
- Q6.** It reduces I/O processing only if there is sufficient real memory.

Chapter Quiz

1. **b**

You can use the BUFNO= system option or data set option to control how many buffers are available for reading or writing a SAS data set. Using BUFNO= can improve execution time by limiting the number of input/output operations that are required for a particular SAS data set. However, the improvement in I/O comes at the cost of increased memory consumption. The buffer number is not a permanent attribute of the data set and is valid only for the current step or SAS session.

2. **d**

A page is fixed in size when the data set is created, either to a default value or a specified value. You can use the BUFSIZE= option to control the page size of an output SAS data set. BUFSIZE= specifies not only the page size (in bytes), but also the size of each buffer that is used for reading or writing the SAS data set. The new buffer size is permanent; after it is specified, it is used whenever the data set is processed.

3. **a**

The total number of bytes occupied by a data set equals the page size multiplied by the number of pages. You can use the CONTENTS procedure to report the page size and the number of pages.

4. **b**

The SASFILE LOAD statement opens the file, allocates the buffers, and reads the data into memory

5. **a**

When a SAS data file is opened using the SASFILE statement, the data is held in memory, and is available to subsequent DATA and PROC steps or applications, until either a SASFILE CLOSE statement is executed or the program ends. Though a file that is opened with the SASFILE statement can be used for subsequent input or update processing, it cannot be used for subsequent utility or output processing. If the file in memory increases in size during processing, the number of buffers also increases.

Chapter 9: Controlling Data Storage Space

- Q1.** Reduced-length numeric variables are truncated when they are read.
- Q2.** Reducing the length of the numeric variables in a data set reduces the overall size of the data set.
- Q3.** A data set that has 3 character variables, 57 numeric variables, and 1,000,000 observations.
- Q4.** The variables in the data file are mostly numeric.
- Q5.** A SAS DATA step view always accesses the most recent data values when it is referenced.
- Q6.** A data view saves storage space on disk.

Chapter Quiz

1. **d**

The descriptor portion of an uncompressed data file is always stored at the end of the first data set page. New observations are always added to the end of the data set, and deleted observation space is neither tracked nor reused.

2. **b**

The descriptor portion of a compressed data file is always stored at the end of the first data set page. If you specify REUSE=YES, SAS tracks and reuses deleted observation space within a compressed data file. Therefore, every observation in a compressed data file can be a different size. Compressed data files do have a larger overhead than uncompressed data files.

3. **c**

You use the LENGTH statement to assign a reduced length to a numeric variable. If you do not use the LENGTH statement to define a reduced length for numeric variables, their default length is 8 bytes. The FORMAT statement associates a format with a variable, and the INFORMAT statement associates an informat with a variable.

4. **a**

SAS data views use significantly less disk space than SAS data files. However, SAS data views typically need more CPU resources than SAS data files. You can create a SAS data view in either the temporary SAS data library or in a permanent SAS data library.

5. **b**

You use the COMPARE procedure to detect any differences in the values of two data sets. The COMPARE statement is not valid syntax in either the CONTENTS procedure or the DATASETS procedure. Printing both data sets might not reveal differences in the precise values of the shortened variables, depending on the formats that are used.

Chapter 10: Utilizing Best Practices

- Q1.** CPU usage decreases because SAS does not execute statements that are placed below the IF statement for the data that will not be kept.
- Q2.** The placement of the subsetting IF statement does not affect the data that is read and written between the storage device and memory.
- Q3.** use SELECT/WHEN statements that check for conditions in descending order of frequency.
- Q4.** To improve efficiency, minimize the function references in statements that execute conditionally.
- Q5.** if z=5 then
do;
 x=2;
 y=7;
end;
- Q6.** SAS reads the data only once when you create multiple subsets with one DATA step.
- Q7.** This program copies a SAS data file from a permanent library to the temporary WORK library, which incurs unnecessary CPU and I/O costs.
- Q8.** Omit the DATA step and use a WHERE statement to subset data in a PROC MEANS step.
- Q9.** PROC DATASETS does not process the data portion of the data set.
- Q10.** You cannot use the WHERE statement to refer to new variables, because SAS evaluates the WHERE statement in the page buffer.
- Q11.** You can use only the subsetting IF statement.
- Q12.** You can reduce CPU processing by using a subsetting IF statement to limit what is read into the program data vector.
- Q13.** As the subset becomes larger, a program uses more CPU resources.
- Q14.** Using these data set options in the DATA statement controls which variables are written to the SAS data set from the program data vector. Using these data set options in the SET statement controls which variables are included in the program data vector and are made available for processing.
- Q15.** Both I/O and CPU usage increase.
- Q16.** The SAS data set can be larger than an external file because the SAS data set includes a descriptor portion.
- Q17.** a single DATASETS procedure.

Chapter Quiz

1. **b**

As SAS processes a larger subset of the data, more CPU resources are required. However, positioning of the subsetting IF statement in a DATA step does affect performance and efficiency.

2. **c**

The DATA step is the only technique that can be used to modify both data values and variable attributes. The DATASETS procedure enables you to modify only variable attributes.

3. **d**

For selecting observations, a WHERE statement is more efficient than a subsetting IF statement because it examines what is in the input buffer and selects observations before they are loaded into the program data vector, which results in a savings in CPU operations.

4. a

It is more advantageous to create a temporary SAS data set rather than a permanent SAS data set when the external file on which the data set is based is frequently updated between SAS sessions.

5. c

A one-step DATASETS procedure results in a savings of CPU usage and I/O operations. PROC DATASETS supports RUN-group processing, which enables you to process multiple SAS data sets from the same library with one invocation of the procedure.

Chapter 11: Selecting Efficient Sorting Strategies

- Q1. The data is indexed but not sorted.
- Q2. NOTSORTED
- Q3. uses the formatted values of the BY variable to determine where BY groups begin and end.
- Q4. does not require the data to be presorted using the BY-variable values.
- Q5. does not sort the input data but sets the Sorted flag on the data set.
- Q6. generally increases.
- Q7. Processing time is increased.
- Q8. concatenating the smaller data sets with a SET statement
- Q9. reduces temporary disk usage.
- Q10. compares all BY-variable values for each observation to those for the previous observation that was written to the output data set.
- Q11. can save CPU time and memory resources.

Chapter Quiz

1. a

First. is a temporary automatic variable that identifies the first observation in each BY group. When an observation is the first in a BY group, SAS sets the value of the FIRST.*variable* to 1. For all other observations in the BY group, the value of the FIRST.*variable* is 0.

2. c

The TAGSORT option stores only the BY variables and the observation numbers in temporary files. The BY variables and the observation numbers are called tags. At the completion of the sorting process, PROC SORT uses the tags to retrieve records from the input data set in sorted order.

3. c

When BY-group processing is used with an index that is based on the BY variables, the data can be sequenced without using the SORT procedure. The data can be sequenced by different variables if multiple indexes are used. Because indexes are updated automatically, there is no need to re-sort a data set when observations are modified or added. However, BY-group processing with an index is generally less efficient than reading a sorted data set sequentially.

4. b

The NODUPRECS option compares all of the variable values for each observation to those for the previous observation that was written to the output data set. If an exact match is found, then the observation is not written to the output data set.

5. c

The SORTSIZE= system option or procedure option specifies how much memory is available to the SORT procedure. If the required workspace is less than or equal to the value specified in the SORTSIZE= system option or procedure option, then the entire sort can take place in memory, which reduces processing time.

Chapter 12: Querying Data Efficiently

- Q1. SAS might load fewer pages from the data set on disk into the input buffer.
- Q2. where job_title eq 'Security Manager' and employee_hire_date eq '01may2002'd;
- Q3. where quantity ne '1';
- Q4. where product_id in (210100100030,210100100027) or delivery_date < '31dec2000'd;
- Q5. SAS will **probably** use an index.
- Q6. the estimated number of I/O operations that are needed to use an index, and the cost of accessing the data sequentially.
- Q7. The WHERE expression references the variable Gender, which has two possible values.
- Q8. PROC PRINT
- Q9. DATA step
- Q10. You could generate similar results less efficiently by using the NWAY option in three PROC MEANS steps.

Chapter Quiz

1. d

When using an index to select a subset, SAS loads only the pages that contain a qualified observation into input buffers. When accessing observations sequentially, SAS must load all observations into input buffers. Loading more pages requires more I/O operations.

2. b

SAS considers using an index to process a WHERE condition that contains one of a specific group of operators and functions. However, SAS will **not** consider using an index for a WHERE condition that contains other elements, such as a function other than TRIM or SUBSTR.

3. a

The size of the subset relative to the size of the data set is an important factor in determining which access method is most efficient. If a subset is large (more than 33% of the data set), it is likely to be more efficient to use sequential access than direct access. Direct access is usually more efficient when you are selecting a small subset (less than 33% of the data set), especially if the data set is large (has a high page count). However, if the data set is very small (less than three pages), using an index is not efficient. The number of key variables specified in a WHERE expression does not determine which access method is most efficient. If the two key variables that are specified are the first two variables in the same index, the WHERE expression is a candidate for compound optimization. Sorting the data also does not determine which access method is most efficient. However, sorting the data before subsetting improves the efficiency of WHERE processing regardless of the access method.

4. c

When you are summarizing data for one or more class variables, the tools in each of the following groups are similar in resource usage:

- PROC MEANS (or PROC SUMMARY), PROC REPORT, and PROC TABULATE

- PROC SQL and the DATA step with PROC SORT.

However, the relative efficiency of the two groups of tools varies according to the shape of the data.

5. b

The TYPES statement in a PROC MEANS step is the most efficient technique for summarizing data for one or more specific combinations of class variables. A program that contains the NWAY option in multiple PROC MEANS steps is usually least efficient because SAS must read the entire data set in each step. A PROC MEANS step that contains the WHERE= option in the OUTPUT statement is also less efficient than the TYPES statement in PROC MEANS because SAS must calculate all possible combinations of class variables, and subsetting does not occur until the results are written to output. A basic PROC MEANS step summarizes data for all possible combinations of class variables instead of for specific combinations.

SAS Data Set Work.Flightemps

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
1	01MAR2000	YYZ	132	1130	Deborah	Wood
2	01MAR2000	YYZ	132	1390	Jonathan	Smart
3	01MAR2000	YYZ	132	1983	Sharon	Dean
4	01MAR2000	YYZ	182	1094	Alan	Gomez
5	01MAR2000	YYZ	182	1122	Joann	Young
6	01MAR2000	YYZ	182	1115	Alice	Murphy
7	01MAR2000	LHR	219	1103	Ronda	McDaniel
8	01MAR2000	LHR	219	1125	Donna	Dunlap
9	01MAR2000	LHR	219	1350	Barbara	Arthur
10	01MAR2000	CDG	271	1132	Carol	Pearce
11	01MAR2000	CDG	271	1411	Jackson	Johnson
12	01MAR2000	CDG	271	1988	Anthony	Cooper
13	01MAR2000	CPH	387	1113	Leslie	Jones
14	01MAR2000	CPH	387	1135	Anna	Vega
15	01MAR2000	CPH	387	1431	Deborah	Young
16	01MAR2000	FRA	622	1116	Casey	Richards
17	01MAR2000	FRA	622	1221	Diane	Walters
18	01MAR2000	FRA	622	1433	Robin	Yancey
19	01MAR2000	LHR	821	1124	Diana	Fields
20	01MAR2000	LHR	821	1368	Ronald	Jepsen
21	01MAR2000	LHR	821	1437	Dorothy	Carter
22	02MAR2000	YYZ	132	1113	Leslie	Jones
23	02MAR2000	YYZ	132	1411	Jackson	Johnson
24	02MAR2000	YYZ	132	1574	Marshall	Cahill
25	02MAR2000	YYZ	182	1414	Nathan	Sanderson
26	02MAR2000	YYZ	182	1125	Donna	Dunlap
27	02MAR2000	YYZ	182	1434	Edith	Sanderson
28	02MAR2000	LHR	219	1132	Carol	Pearce
29	02MAR2000	LHR	219	1135	Anna	Vega
30	02MAR2000	LHR	219	1441	Kathy	Lawrence
31	02MAR2000	CDG	271	1103	Ronda	McDaniel
32	02MAR2000	CDG	271	1413	Randall	Peters
33	02MAR2000	CPH	271	1115	Alice	Murphy
34	02MAR2000	CPH	387	1130	Deborah	Wood
35	02MAR2000	CPH	387	1221	Diane	Walters
36	02MAR2000	FRA	387	1475	Alicia	Eaton
37	02MAR2000	FRA	622	1124	Diana	Fields
38	02MAR2000	FRA	622	1368	Ronald	Jepsen

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
39	02MAR2000	LHR	622	1477	Preston	Meyers
40	02MAR2000	LHR	821	1116	Casey	Richards
41	02MAR2000	LHR	821	1390	Jonathan	Smart
42	02MAR2000	YYZ	821	1555	Julia	Rodriguez
43	03MAR2000	YYZ	132	1425	Jenny	Underwood
44	03MAR2000	YYZ	132	1135	Anna	Vega
45	03MAR2000	YYZ	132	1437	Dorothy	Carter
46	03MAR2000	YYZ	182	1094	Alan	Gomez
47	03MAR2000	YYZ	182	1413	Randall	Peters
48	03MAR2000	YYZ	182	1574	Marshall	Cahill
49	03MAR2000	LHR	219	1130	Deborah	Wood
50	03MAR2000	LHR	219	1411	Jackson	Johnson
51	03MAR2000	LHR	219	1115	Alice	Murphy
52	03MAR2000	CDG	271	1970	Anne	Parker
53	03MAR2000	CDG	271	1125	Donna	Dunlap
54	03MAR2000	CDG	271	1983	Sharon	Dean
55	03MAR2000	CPH	387	1132	Carol	Pearce
56	03MAR2000	CPH	387	1390	Jonathan	Smart
57	03MAR2000	CPH	387	1350	Barbara	Arthur
58	03MAR2000	FRA	622	1414	Nathan	Sanderson
59	03MAR2000	FRA	622	1368	Ronald	Jepsen
60	03MAR2000	FRA	622	1431	Deborah	Young
61	03MAR2000	LHR	821	1422	Marie	Fletcher
62	03MAR2000	LHR	821	1221	Diane	Walters
63	03MAR2000	LHR	821	1433	Robin	Yancey
64	04MAR2000	YYZ	132	1103	Ronda	McDaniel
65	04MAR2000	YYZ	132	1390	Jonathan	Smart
66	04MAR2000	YYZ	132	1350	Barbara	Arthur
67	04MAR2000	YYZ	182	1132	Carol	Pearce
68	04MAR2000	YYZ	182	1122	Joann	Young
69	04MAR2000	YYZ	182	1988	Anthony	Cooper
70	04MAR2000	LHR	219	1130	Deborah	Wood
71	04MAR2000	LHR	219	1125	Donna	Dunlap
72	04MAR2000	LHR	219	1983	Sharon	Dean
73	04MAR2000	CDG	271	1094	Alan	Gomez
74	04MAR2000	CDG	271	1411	Jackson	Johnson
75	04MAR2000	CDG	271	1115	Alice	Murphy
76	04MAR2000	CPH	387	1124	Diana	Fields
77	04MAR2000	CPH	387	1135	Anna	Vega

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
78	04MAR2000	CPH	387	1437	Dorothy	Carter
79	04MAR2000	FRA	622	1116	Casey	Richards
80	04MAR2000	FRA	622	1221	Diane	Walters
81	04MAR2000	FRA	622	1433	Robin	Yancey
82	04MAR2000	LHR	821	1113	Leslie	Jones
83	04MAR2000	LHR	821	1368	Ronald	Jepsen
84	04MAR2000	LHR	821	1431	Deborah	Young
85	05MAR2000	YYZ	132	1113	Leslie	Jones
86	05MAR2000	YYZ	132	1475	Alicia	Eaton
87	05MAR2000	YYZ	132	1431	Deborah	Young
88	05MAR2000	YYZ	182	1414	Nathan	Sanderson
89	05MAR2000	YYZ	182	1122	Joann	Young
90	05MAR2000	YYZ	182	1555	Julia	Rodriguez
91	05MAR2000	LHR	219	1422	Marie	Fletcher
92	05MAR2000	LHR	219	1413	Randall	Peters
93	05MAR2000	LHR	219	1574	Marshall	Cahill
94	05MAR2000	CDG	271	1103	Ronda	McDaniel
95	05MAR2000	CDG	271	1477	Preston	Meyers
96	05MAR2000	CDG	271	1433	Robin	Yancey
97	05MAR2000	CPH	387	1425	Jenny	Underwood
98	05MAR2000	CPH	387	1434	Edith	Sanderson
99	05MAR2000	CPH	387	1988	Anthony	Cooper
100	05MAR2000	FRA	622	1970	Anne	Parker
101	05MAR2000	FRA	622	1441	Kathy	Lawrence
102	05MAR2000	FRA	622	1350	Barbara	Arthur
103	06MAR2000	YYZ	132	1414	Nathan	Sanderson
104	06MAR2000	YYZ	132	1475	Alicia	Eaton
105	06MAR2000	YYZ	132	1437	Dorothy	Carter
106	06MAR2000	YYZ	182	1422	Marie	Fletcher
107	06MAR2000	YYZ	182	1413	Randall	Peters
108	06MAR2000	YYZ	182	1574	Marshall	Cahill
109	06MAR2000	LHR	219	1425	Jenny	Underwood
110	06MAR2000	LHR	219	1434	Edith	Sanderson
111	06MAR2000	LHR	219	1555	Julia	Rodriguez
112	06MAR2000	LHR	821	1970	Anne	Parker
113	06MAR2000	LHR	821	1441	Kathy	Lawrence
114	06MAR2000	LHR	821	1477	Preston	Meyers
115	07MAR2000	YYZ	132	1094	Alan	Gomez
116	07MAR2000	YYZ	132	1555	Julia	Rodriguez

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
117	07MAR2000	YYZ	132	1350	Barbara	Arthur
118	07MAR2000	YYZ	182	1116	Casey	Richards
119	07MAR2000	YYZ	182	1122	Joann	Young
120	07MAR2000	YYZ	182	1988	Anthony	Cooper
121	07MAR2000	LHR	219	1124	Diana	Fields
122	07MAR2000	LHR	219	1434	Edith	Sanderson
123	07MAR2000	LHR	219	1983	Sharon	Dean
124	07MAR2000	CDG	271	1103	Ronda	McDaniel
125	07MAR2000	CDG	271	1574	Marshall	Cahill
126	07MAR2000	CDG	271	1115	Alice	Murphy
127	07MAR2000	CPH	387	1422	Marie	Fletcher
128	07MAR2000	CPH	387	1441	Kathy	Lawrence
129	07MAR2000	CPH	387	1437	Dorothy	Carter
130	07MAR2000	FRA	622	1425	Jenny	Underwood
131	07MAR2000	FRA	622	1475	Alicia	Eaton
132	07MAR2000	FRA	622	1433	Robin	Yancey
133	07MAR2000	LHR	821	1970	Anne	Parker
134	07MAR2000	LHR	821	1477	Preston	Meyers
135	07MAR2000	LHR	821	1431	Deborah	Young

SAS Data Set Work.Flightemps2

Obs	EmpID	JobCode	LastName	FirstName	Date	Destination	FlightNumber
1	1076				01MAR2000	YYZ	182
2	1076				02MAR2000	YYZ	182
3	1076				07MAR2000	YYZ	182
4	1094	FA1	Gomez	Alan	01MAR2000	YYZ	182
5	1094	FA1	Gomez	Alan	03MAR2000	YYZ	182
6	1094	FA1	Gomez	Alan	04MAR2000	CDG	271
7	1094	FA1	Gomez	Alan	07MAR2000	YYZ	132
8	1103	FA1	McDaniel	Ronda	01MAR2000	LHR	219
9	1103	FA1	McDaniel	Ronda	02MAR2000	CDG	271
10	1103	FA1	McDaniel	Ronda	04MAR2000	YYZ	132
11	1103	FA1	McDaniel	Ronda	05MAR2000	CDG	271
12	1103	FA1	McDaniel	Ronda	07MAR2000	CDG	271
13	1106				06MAR2000	LHR	219
14	1106				07MAR2000	CPH	387
15	1107				06MAR2000	LHR	821
16	1107				07MAR2000	FRA	622
17	1111				01MAR2000	YYZ	132

18	1111				02MAR2000	YYZ	132
19	1111				03MAR2000	YYZ	132
20	1111				04MAR2000	YYZ	132
21	1111				05MAR2000	YYZ	132
22	1111				06MAR2000	YYZ	132
23	1111				07MAR2000	YYZ	132
24	1113	FA1	Jones	Leslie	01MAR2000	CPH	387
25	1113	FA1	Jones	Leslie	02MAR2000	YYZ	132
26	1113	FA1	Jones	Leslie	04MAR2000	LHR	821
27	1113	FA1	Jones	Leslie	05MAR2000	YYZ	132
28	1115	FA3	Murphy	Alice	01MAR2000	YYZ	182
29	1115	FA3	Murphy	Alice	02MAR2000	CDG	271
30	1115	FA3	Murphy	Alice	03MAR2000	LHR	219
31	1115	FA3	Murphy	Alice	04MAR2000	CDG	271
32	1115	FA3	Murphy	Alice	07MAR2000	CDG	271
33	1116	FA1	Richards	Casey	01MAR2000	FRA	622
34	1116	FA1	Richards	Casey	02MAR2000	LHR	821
35	1116	FA1	Richards	Casey	04MAR2000	FRA	622
36	1116	FA1	Richards	Casey	07MAR2000	YYZ	182
37	1118				01MAR2000	YYZ	182
38	1118				02MAR2000	LHR	219
39	1118				03MAR2000	CDG	271
40	1118				04MAR2000	YYZ	132
41	1118				06MAR2000	LHR	219
42	1118				07MAR2000	YYZ	132
43	1122	FA2	Young	Joann	01MAR2000	YYZ	182
44	1122	FA2	Young	Joann	04MAR2000	YYZ	182
45	1122	FA2	Young	Joann	05MAR2000	YYZ	182
46	1122	FA2	Young	Joann	07MAR2000	YYZ	182
47	1124	FA1	Fields	Diana	01MAR2000	LHR	821
48	1124	FA1	Fields	Diana	02MAR2000	FRA	622
49	1124	FA1	Fields	Diana	04MAR2000	CPH	387
50	1124	FA1	Fields	Diana	07MAR2000	LHR	219
51	1125	FA2	Dunlap	Donna	01MAR2000	LHR	219
52	1125	FA2	Dunlap	Donna	02MAR2000	YYZ	182
53	1125	FA2	Dunlap	Donna	03MAR2000	CDG	271
54	1125	FA2	Dunlap	Donna	04MAR2000	LHR	219
55	1130	FA1	Wood	Deborah	01MAR2000	YYZ	132
56	1130	FA1	Wood	Deborah	02MAR2000	CPH	387
57	1130	FA1	Wood	Deborah	03MAR2000	LHR	219

58	1130	FA1	Wood	Deborah	04MAR2000	LHR	219
59	1132	FA1	Pearce	Carol	01MAR2000	CDG	271
60	1132	FA1	Pearce	Carol	02MAR2000	LHR	219
61	1132	FA1	Pearce	Carol	03MAR2000	CPH	387
62	1132	FA1	Pearce	Carol	04MAR2000	YYZ	182
63	1135	FA2	Vega	Anna	01MAR2000	CPH	387
64	1135	FA2	Vega	Anna	02MAR2000	LHR	219
65	1135	FA2	Vega	Anna	03MAR2000	YYZ	132
66	1135	FA2	Vega	Anna	04MAR2000	CPH	387
67	1221	FA2	Walters	Diane	01MAR2000	FRA	622
68	1221	FA2	Walters	Diane	02MAR2000	CPH	387
69	1221	FA2	Walters	Diane	03MAR2000	LHR	821
70	1221	FA2	Walters	Diane	04MAR2000	FRA	622
71	1269				01MAR2000	YYZ	182
72	1269				02MAR2000	YYZ	182
73	1269				03MAR2000	YYZ	182
74	1269				04MAR2000	YYZ	182
75	1269				05MAR2000	YYZ	182
76	1269				06MAR2000	YYZ	182
77	1269				07MAR2000	YYZ	182
78	1332				01MAR2000	LHR	219
79	1332				02MAR2000	LHR	219
80	1332				03MAR2000	LHR	219
81	1332				04MAR2000	LHR	219
82	1332				05MAR2000	LHR	219
83	1332				06MAR2000	LHR	219
84	1332				07MAR2000	LHR	219
85	1333				06MAR2000	YYZ	132
86	1333				07MAR2000	LHR	821
87	1350	FA3	Arthur	Barbara	01MAR2000	LHR	219
88	1350	FA3	Arthur	Barbara	03MAR2000	CPH	387
89	1350	FA3	Arthur	Barbara	04MAR2000	YYZ	132
90	1350	FA3	Arthur	Barbara	05MAR2000	FRA	622
91	1350	FA3	Arthur	Barbara	07MAR2000	YYZ	132
92	1352				01MAR2000	FRA	622
93	1352				02MAR2000	FRA	622
94	1352				03MAR2000	FRA	622
95	1352				04MAR2000	FRA	622
96	1352				05MAR2000	FRA	622
97	1352				07MAR2000	FRA	622

98	1368	FA2	Jepsen	Ronald	01MAR2000	LHR	821
99	1368	FA2	Jepsen	Ronald	02MAR2000	FRA	622
100	1368	FA2	Jepsen	Ronald	03MAR2000	FRA	622
101	1368	FA2	Jepsen	Ronald	04MAR2000	LHR	821
102	1390	FA2	Smart	Jonathan	01MAR2000	YYZ	132
103	1390	FA2	Smart	Jonathan	02MAR2000	LHR	821
104	1390	FA2	Smart	Jonathan	03MAR2000	CPH	387
105	1390	FA2	Smart	Jonathan	04MAR2000	YYZ	132
106	1407				01MAR2000	LHR	219
107	1407				02MAR2000	LHR	219
108	1407				03MAR2000	YYZ	182
109	1407				04MAR2000	CDG	271
110	1407				05MAR2000	YYZ	182
111	1407				07MAR2000	YYZ	132
112	1410				03MAR2000	YYZ	182
113	1410				04MAR2000	CDG	271
114	1410				05MAR2000	YYZ	182
115	1410				07MAR2000	CDG	271
116	1411	FA2	Johnson	Jackson	01MAR2000	CDG	271
117	1411	FA2	Johnson	Jackson	02MAR2000	YYZ	132
118	1411	FA2	Johnson	Jackson	03MAR2000	LHR	219
119	1411	FA2	Johnson	Jackson	04MAR2000	CDG	271
120	1413	FA2	Peters	Randall	02MAR2000	CDG	271
121	1413	FA2	Peters	Randall	03MAR2000	YYZ	182
122	1413	FA2	Peters	Randall	05MAR2000	LHR	219
123	1413	FA2	Peters	Randall	06MAR2000	YYZ	182
124	1414	FA1	Sanderson	Nathan	02MAR2000	YYZ	182
125	1414	FA1	Sanderson	Nathan	03MAR2000	FRA	622
126	1414	FA1	Sanderson	Nathan	05MAR2000	YYZ	182
127	1414	FA1	Sanderson	Nathan	06MAR2000	YYZ	132
128	1415	FA2	Vega	Franklin			
129	1417				01MAR2000	LHR	821
130	1417				02MAR2000	LHR	821
131	1417				03MAR2000	LHR	821
132	1417				04MAR2000	LHR	821
133	1417				06MAR2000	LHR	821
134	1417				07MAR2000	LHR	821
135	1422	FA1	Fletcher	Marie	03MAR2000	LHR	821
136	1422	FA1	Fletcher	Marie	05MAR2000	LHR	219
137	1422	FA1	Fletcher	Marie	06MAR2000	YYZ	182

138	1422	FA1	Fletcher	Marie	07MAR2000	CPH	387
139	1424	FA2	Patterson	Renee			
140	1425	FA1	Underwood	Jenny	03MAR2000	YYZ	132
141	1425	FA1	Underwood	Jenny	05MAR2000	CPH	387
142	1425	FA1	Underwood	Jenny	06MAR2000	LHR	219
143	1425	FA1	Underwood	Jenny	07MAR2000	FRA	622
144	1428				01MAR2000	CPH	387
145	1428				02MAR2000	CPH	387
146	1428				03MAR2000	LHR	219
147	1428				04MAR2000	YYZ	132
148	1428				05MAR2000	LHR	219
149	1431	FA3	Young	Deborah	01MAR2000	CPH	387
150	1431	FA3	Young	Deborah	03MAR2000	FRA	622
151	1431	FA3	Young	Deborah	04MAR2000	LHR	821
152	1431	FA3	Young	Deborah	05MAR2000	YYZ	132
153	1431	FA3	Young	Deborah	07MAR2000	LHR	821
154	1433	FA3	Yancey	Robin	01MAR2000	FRA	622
155	1433	FA3	Yancey	Robin	03MAR2000	LHR	821
156	1433	FA3	Yancey	Robin	04MAR2000	FRA	622
157	1433	FA3	Yancey	Robin	05MAR2000	CDG	271
158	1433	FA3	Yancey	Robin	07MAR2000	FRA	622
159	1434	FA2	Sanderson	Edith	02MAR2000	YYZ	182
160	1434	FA2	Sanderson	Edith	05MAR2000	CPH	387
161	1434	FA2	Sanderson	Edith	06MAR2000	LHR	219
162	1434	FA2	Sanderson	Edith	07MAR2000	LHR	219
163	1437	FA3	Carter	Dorothy	01MAR2000	LHR	821
164	1437	FA3	Carter	Dorothy	03MAR2000	YYZ	132
165	1437	FA3	Carter	Dorothy	04MAR2000	CPH	387
166	1437	FA3	Carter	Dorothy	06MAR2000	YYZ	132
167	1437	FA3	Carter	Dorothy	07MAR2000	CPH	387
168	1439				01MAR2000	CDG	271
169	1439				02MAR2000	FRA	622
170	1439				03MAR2000	CPH	387
171	1439				04MAR2000	LHR	821
172	1439				05MAR2000	CPH	387
173	1441	FA2	Lawrence	Kathy	02MAR2000	LHR	219
174	1441	FA2	Lawrence	Kathy	05MAR2000	FRA	622
175	1441	FA2	Lawrence	Kathy	06MAR2000	LHR	821
176	1441	FA2	Lawrence	Kathy	07MAR2000	CPH	387
177	1442				01MAR2000	CDG	271

178	1442				02MAR2000	CDG	271
179	1442				03MAR2000	LHR	219
180	1442				04MAR2000	YYZ	182
181	1442				05MAR2000	LHR	219
182	1442				07MAR2000	YYZ	182
183	1443				01MAR2000	CDG	271
184	1443				02MAR2000	CDG	271
185	1443				03MAR2000	CDG	271
186	1443				04MAR2000	CDG	271
187	1443				05MAR2000	CDG	271
188	1443				07MAR2000	CDG	271
189	1475	FA2	Eaton	Alicia	02MAR2000	CPH	387
190	1475	FA2	Eaton	Alicia	05MAR2000	YYZ	132
191	1475	FA2	Eaton	Alicia	06MAR2000	YYZ	132
192	1475	FA2	Eaton	Alicia	07MAR2000	FRA	622
193	1477	FA2	Meyers	Preston	02MAR2000	FRA	622
194	1477	FA2	Meyers	Preston	05MAR2000	CDG	271
195	1477	FA2	Meyers	Preston	06MAR2000	LHR	821
196	1477	FA2	Meyers	Preston	07MAR2000	LHR	821
197	1478				01MAR2000	YYZ	132
198	1478				02MAR2000	YYZ	132
199	1478				03MAR2000	CPH	387
200	1478				04MAR2000	LHR	219
201	1478				05MAR2000	CPH	387
202	1478				07MAR2000	LHR	219
203	1545				01MAR2000	FRA	622
204	1545				02MAR2000	LHR	821
205	1545				03MAR2000	FRA	622
206	1545				04MAR2000	FRA	622
207	1545				05MAR2000	FRA	622
208	1555	FA2	Rodriguez	Julia	02MAR2000	LHR	821
209	1555	FA2	Rodriguez	Julia	05MAR2000	YYZ	182
210	1555	FA2	Rodriguez	Julia	06MAR2000	LHR	219
211	1555	FA2	Rodriguez	Julia	07MAR2000	YYZ	132
212	1556				01MAR2000	LHR	821
213	1556				02MAR2000	YYZ	132
214	1556				03MAR2000	LHR	821
215	1556				04MAR2000	CPH	387
216	1556				05MAR2000	YYZ	132
217	1574	FA2	Cahill	Marshall	02MAR2000	YYZ	132

218	1574	FA2	Cahill	Marshall	03MAR2000	YYZ	182
219	1574	FA2	Cahill	Marshall	05MAR2000	LHR	219
220	1574	FA2	Cahill	Marshall	06MAR2000	YYZ	182
221	1574	FA2	Cahill	Marshall	07MAR2000	CDG	271
222	1739				01MAR2000	YYZ	132
223	1739				02MAR2000	CDG	271
224	1739				03MAR2000	YYZ	132
225	1739				04MAR2000	LHR	219
226	1739				05MAR2000	CDG	271
227	1777				01MAR2000	LHR	219
228	1777				02MAR2000	YYZ	182
229	1777				06MAR2000	YYZ	182
230	1777				07MAR2000	CDG	271
231	1830				01MAR2000	LHR	821
232	1830				02MAR2000	LHR	821
233	1830				03MAR2000	FRA	622
234	1830				04MAR2000	CPH	387
235	1830				05MAR2000	FRA	622
236	1830				07MAR2000	CPH	387
237	1839				01MAR2000	CPH	387
238	1839				02MAR2000	CPH	387
239	1839				03MAR2000	CPH	387
240	1839				04MAR2000	CPH	387
241	1839				05MAR2000	CPH	387
242	1839				07MAR2000	CPH	387
243	1890				01MAR2000	FRA	622
244	1890				02MAR2000	FRA	622
245	1890				03MAR2000	LHR	821
246	1890				04MAR2000	FRA	622
247	1890				05MAR2000	YYZ	132
248	1890				06MAR2000	YYZ	132
249	1890				07MAR2000	FRA	622
250	1905				03MAR2000	CDG	271
251	1905				04MAR2000	YYZ	182
252	1905				06MAR2000	YYZ	182
253	1905				07MAR2000	LHR	219
254	1928				01MAR2000	CPH	387
255	1928				02MAR2000	CPH	387
256	1928				03MAR2000	YYZ	132
257	1928				04MAR2000	LHR	821

258	1928				05MAR2000	CDG	271
259	1928				06MAR2000	LHR	821
260	1928				07MAR2000	LHR	821
261	1970	FA1	Parker	Anne	03MAR2000	CDG	271
262	1970	FA1	Parker	Anne	05MAR2000	FRA	622
263	1970	FA1	Parker	Anne	06MAR2000	LHR	821
264	1970	FA1	Parker	Anne	07MAR2000	LHR	821
265	1983	FA3	Dean	Sharon	01MAR2000	YYZ	132
266	1983	FA3	Dean	Sharon	03MAR2000	CDG	271
267	1983	FA3	Dean	Sharon	04MAR2000	LHR	219
268	1983	FA3	Dean	Sharon	07MAR2000	LHR	219
269	1988	FA3	Cooper	Anthony	01MAR2000	CDG	271
270	1988	FA3	Cooper	Anthony	04MAR2000	YYZ	182
271	1988	FA3	Cooper	Anthony	05MAR2000	CPH	387
272	1988	FA3	Cooper	Anthony	07MAR2000	YYZ	182

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Obs	Date	Destination	FlightNumber	EmplID	FirstName	LastName
1	01MAR2000	YYZ	132	1130	Deborah	Wood
2	01MAR2000	YYZ	132	1390	Jonathan	Smart
3	01MAR2000	YYZ	132	1983	Sharon	Dean
4	01MAR2000	YYZ	182	1094	Alan	Gomez
5	01MAR2000	YYZ	182	1122	Joann	Young
6	01MAR2000	YYZ	182	1115	Alice	Murphy
7	01MAR2000	LHR	219	1103	Ronda	McDaniel
8	01MAR2000	LHR	219	1125	Donna	Dunlap
9	01MAR2000	LHR	219	1350	Barbara	Arthur
10	01MAR2000	CDG	271	1132	Carol	Pearce
11	01MAR2000	CDG	271	1411	Jackson	Johnson
12	01MAR2000	CDG	271	1988	Anthony	Cooper
13	01MAR2000	CPH	387	1113	Leslie	Jones
14	01MAR2000	CPH	387	1135	Anna	Vega
15	01MAR2000	CPH	387	1431	Deborah	Young
16	01MAR2000	FRA	622	1116	Casey	Richards
17	01MAR2000	FRA	622	1221	Diane	Walters
18	01MAR2000	FRA	622	1433	Robin	Yancey
19	01MAR2000	LHR	821	1124	Diana	Fields
20	01MAR2000	LHR	821	1368	Ronald	Jepsen
21	01MAR2000	LHR	821	1437	Dorothy	Carter
22	02MAR2000	YYZ	132	1113	Leslie	Jones

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
23	02MAR2000	YYZ	132	1411	Jackson	Johnson
24	02MAR2000	YYZ	132	1574	Marshall	Cahill
25	02MAR2000	YYZ	182	1414	Nathan	Sanderson
26	02MAR2000	YYZ	182	1125	Donna	Dunlap
27	02MAR2000	YYZ	182	1434	Edith	Sanderson
28	02MAR2000	LHR	219	1132	Carol	Pearce
29	02MAR2000	LHR	219	1135	Anna	Vega
30	02MAR2000	LHR	219	1441	Kathy	Lawrence
31	02MAR2000	CDG	271	1103	Ronda	McDaniel
32	02MAR2000	CDG	271	1413	Randall	Peters
33	02MAR2000	CPH	271	1115	Alice	Murphy
34	02MAR2000	CPH	387	1130	Deborah	Wood
35	02MAR2000	CPH	387	1221	Diane	Walters
36	02MAR2000	FRA	387	1475	Alicia	Eaton
37	02MAR2000	FRA	622	1124	Diana	Fields
38	02MAR2000	FRA	622	1368	Ronald	Jepsen
39	02MAR2000	LHR	622	1477	Preston	Meyers
40	02MAR2000	LHR	821	1116	Casey	Richards
41	02MAR2000	LHR	821	1390	Jonathan	Smart
42	02MAR2000	YYZ	821	1555	Julia	Rodriguez
43	03MAR2000	YYZ	132	1425	Jenny	Underwood
44	03MAR2000	YYZ	132	1135	Anna	Vega
45	03MAR2000	YYZ	132	1437	Dorothy	Carter
46	03MAR2000	YYZ	182	1094	Alan	Gomez
47	03MAR2000	YYZ	182	1413	Randall	Peters
48	03MAR2000	YYZ	182	1574	Marshall	Cahill
49	03MAR2000	LHR	219	1130	Deborah	Wood
50	03MAR2000	LHR	219	1411	Jackson	Johnson
51	03MAR2000	LHR	219	1115	Alice	Murphy
52	03MAR2000	CDG	271	1970	Anne	Parker
53	03MAR2000	CDG	271	1125	Donna	Dunlap
54	03MAR2000	CDG	271	1983	Sharon	Dean
55	03MAR2000	CPH	387	1132	Carol	Pearce
56	03MAR2000	CPH	387	1390	Jonathan	Smart
57	03MAR2000	CPH	387	1350	Barbara	Arthur
58	03MAR2000	FRA	622	1414	Nathan	Sanderson
59	03MAR2000	FRA	622	1368	Ronald	Jepsen
60	03MAR2000	FRA	622	1431	Deborah	Young
61	03MAR2000	LHR	821	1422	Marie	Fletcher

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
62	03MAR2000	LHR	821	1221	Diane	Walters
63	03MAR2000	LHR	821	1433	Robin	Yancey
64	04MAR2000	YYZ	132	1103	Ronda	McDaniel
65	04MAR2000	YYZ	132	1390	Jonathan	Smart
66	04MAR2000	YYZ	132	1350	Barbara	Arthur
67	04MAR2000	YYZ	182	1132	Carol	Pearce
68	04MAR2000	YYZ	182	1122	Joann	Young
69	04MAR2000	YYZ	182	1988	Anthony	Cooper
70	04MAR2000	LHR	219	1130	Deborah	Wood
71	04MAR2000	LHR	219	1125	Donna	Dunlap
72	04MAR2000	LHR	219	1983	Sharon	Dean
73	04MAR2000	CDG	271	1094	Alan	Gomez
74	04MAR2000	CDG	271	1411	Jackson	Johnson
75	04MAR2000	CDG	271	1115	Alice	Murphy
76	04MAR2000	CPH	387	1124	Diana	Fields
77	04MAR2000	CPH	387	1135	Anna	Vega
78	04MAR2000	CPH	387	1437	Dorothy	Carter
79	04MAR2000	FRA	622	1116	Casey	Richards
80	04MAR2000	FRA	622	1221	Diane	Walters
81	04MAR2000	FRA	622	1433	Robin	Yancey
82	04MAR2000	LHR	821	1113	Leslie	Jones
83	04MAR2000	LHR	821	1368	Ronald	Jepsen
84	04MAR2000	LHR	821	1431	Deborah	Young
85	05MAR2000	YYZ	132	1113	Leslie	Jones
86	05MAR2000	YYZ	132	1475	Alicia	Eaton
87	05MAR2000	YYZ	132	1431	Deborah	Young
88	05MAR2000	YYZ	182	1414	Nathan	Sanderson
89	05MAR2000	YYZ	182	1122	Joann	Young
90	05MAR2000	YYZ	182	1555	Julia	Rodriguez
91	05MAR2000	LHR	219	1422	Marie	Fletcher
92	05MAR2000	LHR	219	1413	Randall	Peters
93	05MAR2000	LHR	219	1574	Marshall	Cahill
94	05MAR2000	CDG	271	1103	Ronda	McDaniel
95	05MAR2000	CDG	271	1477	Preston	Meyers
96	05MAR2000	CDG	271	1433	Robin	Yancey
97	05MAR2000	CPH	387	1425	Jenny	Underwood
98	05MAR2000	CPH	387	1434	Edith	Sanderson
99	05MAR2000	CPH	387	1988	Anthony	Cooper
100	05MAR2000	FRA	622	1970	Anne	Parker

Obs	Date	Destination	FlightNumber	EmpID	FirstName	LastName
101	05MAR2000	FRA	622	1441	Kathy	Lawrence
102	05MAR2000	FRA	622	1350	Barbara	Arthur
103	06MAR2000	YYZ	132	1414	Nathan	Sanderson
104	06MAR2000	YYZ	132	1475	Alicia	Eaton
105	06MAR2000	YYZ	132	1437	Dorothy	Carter
106	06MAR2000	YYZ	182	1422	Marie	Fletcher
107	06MAR2000	YYZ	182	1413	Randall	Peters
108	06MAR2000	YYZ	182	1574	Marshall	Cahill
109	06MAR2000	LHR	219	1425	Jenny	Underwood
110	06MAR2000	LHR	219	1434	Edith	Sanderson
111	06MAR2000	LHR	219	1555	Julia	Rodriguez
112	06MAR2000	LHR	821	1970	Anne	Parker
113	06MAR2000	LHR	821	1441	Kathy	Lawrence
114	06MAR2000	LHR	821	1477	Preston	Meyers
115	07MAR2000	YYZ	132	1094	Alan	Gomez
116	07MAR2000	YYZ	132	1555	Julia	Rodriguez
117	07MAR2000	YYZ	132	1350	Barbara	Arthur
118	07MAR2000	YYZ	182	1116	Casey	Richards
119	07MAR2000	YYZ	182	1122	Joann	Young
120	07MAR2000	YYZ	182	1988	Anthony	Cooper
121	07MAR2000	LHR	219	1124	Diana	Fields
122	07MAR2000	LHR	219	1434	Edith	Sanderson
123	07MAR2000	LHR	219	1983	Sharon	Dean
124	07MAR2000	CDG	271	1103	Ronda	McDaniel
125	07MAR2000	CDG	271	1574	Marshall	Cahill
126	07MAR2000	CDG	271	1115	Alice	Murphy
127	07MAR2000	CPH	387	1422	Marie	Fletcher
128	07MAR2000	CPH	387	1441	Kathy	Lawrence
129	07MAR2000	CPH	387	1437	Dorothy	Carter
130	07MAR2000	FRA	622	1425	Jenny	Underwood
131	07MAR2000	FRA	622	1475	Alicia	Eaton
132	07MAR2000	FRA	622	1433	Robin	Yancey
133	07MAR2000	LHR	821	1970	Anne	Parker
134	07MAR2000	LHR	821	1477	Preston	Meyers
135	07MAR2000	LHR	821	1431	Deborah	Young

SAS Data Set Work.Profit

Obs	FlightID	RouteID	Date	Expenses	Rev1st	RevBusiness	RevEcon	RevCargo	Profit
1	IA10200	0000102	01DEC2000	154269	35967	37410	98124	188277	205509

Obs	FlightID	RouteID	Date	Expenses	Rev1st	RevBusiness	RevEcon	RevCargo	Profit
2	IA10200	0000102	09DEC2000	175079	32181	38700	105672	181875	183349
3	IA10200	0000102	17DEC2000	20041	34074	42570	124542	162087	343232
4	IA10200	0000102	25DEC2000	124618	32181	39990	125171	163251	235975
5	IA10304	0000103	01DEC2000	1167	768	.	2499	1070	3170
6	IA10302	0000103	04DEC2000	836	704	.	2499	1090	3457
7	IA10300	0000103	07DEC2000	2900	768	.	2226	1330	1424
8	IA10304	0000103	09DEC2000	2259	640	.	2415	1190	1986
9	IA10302	0000103	12DEC2000	1596	768	.	2625	950	2747
10	IA10300	0000103	15DEC2000	1831	704	.	2268	1310	2451
11	IA10304	0000103	17DEC2000	2865	704	.	2226	1350	1415
12	IA10302	0000103	20DEC2000	1259	768	.	2394	1170	3073
13	IA10300	0000103	23DEC2000	622	768	.	2646	930	3722
14	IA10304	0000103	25DEC2000	1078	640	.	2310	1290	3162
15	IA10302	0000103	28DEC2000	2413	640	.	2373	1230	1830
16	IA10400	0000104	01DEC2000	495	768	.	2814	770	3857
17	IA10404	0000104	03DEC2000	1183	768	.	2415	1150	3150
18	IA10402	0000104	06DEC2000	557	768	.	2814	770	3795
19	IA10400	0000104	09DEC2000	538	768	.	2835	750	3815
20	IA10404	0000104	11DEC2000	2199	640	.	2751	870	2062
21	IA10402	0000104	14DEC2000	292	704	.	2436	1150	3998
22	IA10400	0000104	17DEC2000	1097	768	.	2541	1030	3242
23	IA10404	0000104	19DEC2000	675	704	.	2478	1110	3617
24	IA10402	0000104	22DEC2000	1533	768	.	2415	1150	2800
25	IA10400	0000104	25DEC2000	2375	640	.	2604	1010	1879
26	IA10404	0000104	27DEC2000	1870	704	.	2856	750	2440
27	IA10402	0000104	30DEC2000	599	640	.	2520	1090	3651
28	IA10500	0000105	07DEC2000	24752	13112	17501	28512	40572	74945
29	IA10500	0000105	15DEC2000	6599	13112	18722	27522	40940	93697
30	IA10500	0000105	23DEC2000	14758	16688	17501	27126	40756	87313
31	IA10600	0000106	01DEC2000	14986	16092	19129	30294	37260	87789
32	IA10600	0000106	09DEC2000	5631	13112	19129	25542	42596	94748
33	IA10600	0000106	17DEC2000	28187	15496	17501	26532	41676	73018
34	IA10600	0000106	25DEC2000	59152	14304	21164	27324	39652	43292
35	IA10704	0000107	01DEC2000	4846	1270	.	4872	2340	3636
36	IA10702	0000107	04DEC2000	4160	1397	.	4872	2300	4409
37	IA10700	0000107	07DEC2000	4036	1524	.	5082	2060	4630
38	IA10704	0000107	09DEC2000	6197	1270	.	5502	1740	2315
39	IA10702	0000107	12DEC2000	1265	1397	.	5628	1580	7340
40	IA10700	0000107	15DEC2000	5365	1270	.	5250	1980	3135

Obs	FlightID	RouteID	Date	Expenses	Rev1st	RevBusiness	RevEcon	RevCargo	Profit
41	IA10704	0000107	17DEC2000	2278	1524	.	5712	1460	6418
42	IA10702	0000107	20DEC2000	3653	1524	.	4452	2660	4983
43	IA10700	0000107	23DEC2000	4706	1397	.	4494	2660	3845
44	IA10704	0000107	25DEC2000	6168	1397	.	5754	1460	2443
45	IA10702	0000107	28DEC2000	1656	1524	.	5418	1740	7026
46	IA10800	0000108	01DEC2000	667	1397	.	5166	2020	7916
47	IA10804	0000108	03DEC2000	5533	1270	.	5754	1500	2991
48	IA10802	0000108	06DEC2000	2030	1397	.	4830	2340	6537
49	IA10800	0000108	09DEC2000	451	1524	.	5376	1780	8229
50	IA10804	0000108	11DEC2000	5221	1524	.	4704	2420	3427
51	IA10802	0000108	14DEC2000	6019	1524	.	5796	1380	2681
52	IA10800	0000108	17DEC2000	4675	1397	.	5334	1860	3916
53	IA10804	0000108	19DEC2000	1190	1524	.	5712	1460	7506
54	IA10802	0000108	22DEC2000	1501	1524	.	5586	1580	7189
55	IA10800	0000108	25DEC2000	4869	1524	.	4830	2300	3785
56	IA10804	0000108	27DEC2000	1315	1524	.	5124	2020	7353
57	IA11802	0000108	30DEC2000	3720	1524	.	5124	2020	4948

SAS Data Set Work.Profit2

Obs	FlightID	RouteID	Date	Rev1st	RevBusiness	RevEcon	RevCargo	Expenses	Profit
1	IA10200	0000102	01DEC2000	154269	-154269
2	IA10200	0000102	09DEC2000	35967	37410	98124	188277	175079	184699
3	IA10200	0000102	17DEC2000	32181	38700	105672	181875	20041	338387
4	IA10200	0000102	25DEC2000	34074	42570	124542	162087	124618	238655
5	IA10304	0000103	01DEC2000	32181	39990	125171	163251	1167	359426
6	IA10302	0000103	04DEC2000	768	.	2499	1070	836	3501
7	IA10300	0000103	07DEC2000	704	.	2499	1090	2900	1393
8	IA10304	0000103	09DEC2000	768	.	2226	1330	2259	2065
9	IA10302	0000103	12DEC2000	640	.	2415	1190	1596	2649
10	IA10300	0000103	15DEC2000	768	.	2625	950	1831	2512
11	IA10304	0000103	17DEC2000	704	.	2268	1310	2865	1417
12	IA10302	0000103	20DEC2000	704	.	2226	1350	1259	3021
13	IA10300	0000103	23DEC2000	768	.	2394	1170	622	3710
14	IA10304	0000103	25DEC2000	768	.	2646	930	1078	3266
15	IA10302	0000103	28DEC2000	640	.	2310	1290	2413	1827
16	IA10400	0000104	01DEC2000	640	.	2373	1230	495	3748
17	IA10404	0000104	03DEC2000	768	.	2814	770	1183	3169
18	IA10402	0000104	06DEC2000	768	.	2415	1150	557	3776

Obs	FlightID	RouteID	Date	Rev1st	RevBusiness	RevEcon	RevCargo	Expenses	Profit
19	IA10400	0000104	09DEC2000	768	.	2814	770	538	3814
20	IA10404	0000104	11DEC2000	768	.	2835	750	2199	2154
21	IA10402	0000104	14DEC2000	640	.	2751	870	292	3969
22	IA10400	0000104	17DEC2000	704	.	2436	1150	1097	3193
23	IA10404	0000104	19DEC2000	768	.	2541	1030	675	3664
24	IA10402	0000104	22DEC2000	704	.	2478	1110	1533	2759
25	IA10400	0000104	25DEC2000	768	.	2415	1150	2375	1958
26	IA10404	0000104	27DEC2000	640	.	2604	1010	1870	2384
27	IA10402	0000104	30DEC2000	704	.	2856	750	599	3711
28	IA10500	0000105	07DEC2000	640	.	2520	1090	24752	-20502
29	IA10500	0000105	15DEC2000	13112	17501	28512	40572	6599	93098
30	IA10500	0000105	23DEC2000	13112	18722	27522	40940	14758	85538
31	IA10600	0000106	01DEC2000	16688	17501	27126	40756	14986	87085
32	IA10600	0000106	09DEC2000	16092	19129	30294	37260	5631	97144
33	IA10600	0000106	17DEC2000	13112	19129	25542	42596	28187	72192
34	IA10600	0000106	25DEC2000	15496	17501	26532	41676	59152	42053
35	IA10704	0000107	01DEC2000	14304	21164	27324	39652	4846	97598
36	IA10702	0000107	04DEC2000	1270	.	4872	2340	4160	4322
37	IA10700	0000107	07DEC2000	1397	.	4872	2300	4036	4533
38	IA10704	0000107	09DEC2000	1524	.	5082	2060	6197	2469
39	IA10702	0000107	12DEC2000	1270	.	5502	1740	1265	7247
40	IA10700	0000107	15DEC2000	1397	.	5628	1580	5365	3240
41	IA10704	0000107	17DEC2000	1270	.	5250	1980	2278	6222
42	IA10702	0000107	20DEC2000	1524	.	5712	1460	3653	5043
43	IA10700	0000107	23DEC2000	1524	.	4452	2660	4706	3930
44	IA10704	0000107	25DEC2000	1397	.	4494	2660	6168	2383
45	IA10702	0000107	28DEC2000	1397	.	5754	1460	1656	6955
46	IA10800	0000108	01DEC2000	1524	.	5418	1740	667	8015
47	IA10804	0000108	03DEC2000	1397	.	5166	2020	5533	3050
48	IA10802	0000108	06DEC2000	1270	.	5754	1500	2030	6494
49	IA10800	0000108	09DEC2000	1397	.	4830	2340	451	8116
50	IA10804	0000108	11DEC2000	1524	.	5376	1780	5221	3459
51	IA10802	0000108	14DEC2000	1524	.	4704	2420	6019	2629
52	IA10800	0000108	17DEC2000	1524	.	5796	1380	4675	4025
53	IA10804	0000108	19DEC2000	1397	.	5334	1860	1190	7401
54	IA10802	0000108	22DEC2000	1524	.	5712	1460	1501	7195
55	IA10800	0000108	25DEC2000	1524	.	5586	1580	4869	3821
56	IA10804	0000108	27DEC2000	1524	.	4830	2300	1315	7339
57	IA11802	0000108	30DEC2000	1524	.	5124	2020	3720	4948

SAS Data Set Work.Profit3

Obs	FlightID	RouteID	Date	Expenses	Rev1st	RevBusiness	RevEcon	RevCargo	Profit
1	IA10200	0000102	01DEC2000	154269	35967	37410	98124	188277	205509
2	IA10200	0000102	09DEC2000	175079	32181	38700	105672	181875	183349
3	IA10200	0000102	17DEC2000	20041	34074	42570	124542	162087	343232
4	IA10200	0000102	25DEC2000	124618	32181	39990	125171	163251	235975
5	IA10304	0000103	01DEC2000	1167	768	.	2499	1070	3170
6	IA10302	0000103	04DEC2000	836	704	.	2499	1090	3457
7	IA10300	0000103	07DEC2000	2900	768	.	2226	1330	1424
8	IA10304	0000103	09DEC2000	2259	640	.	2415	1190	1986
9	IA10302	0000103	12DEC2000	1596	768	.	2625	950	2747
10	IA10300	0000103	15DEC2000	1831	704	.	2268	1310	2451
11	IA10304	0000103	17DEC2000	2865	704	.	2226	1350	1415
12	IA10302	0000103	20DEC2000	1259	768	.	2394	1170	3073
13	IA10300	0000103	23DEC2000	622	768	.	2646	930	3722
14	IA10304	0000103	25DEC2000	1078	640	.	2310	1290	3162
15	IA10302	0000103	28DEC2000	2413	640	.	2373	1230	1830
16	IA10400	0000104	01DEC2000	495	768	.	2814	770	3857
17	IA10404	0000104	03DEC2000	1183	768	.	2415	1150	3150
18	IA10402	0000104	06DEC2000	557	768	.	2814	770	3795
19	IA10400	0000104	09DEC2000	538	768	.	2835	750	3815
20	IA10404	0000104	11DEC2000	2199	640	.	2751	870	2062
21	IA10402	0000104	14DEC2000	292	704	.	2436	1150	3998
22	IA10400	0000104	17DEC2000	1097	768	.	2541	1030	3242
23	IA10404	0000104	19DEC2000	675	704	.	2478	1110	3617
24	IA10402	0000104	22DEC2000	1533	768	.	2415	1150	2800
25	IA10400	0000104	25DEC2000	2375	640	.	2604	1010	1879
26	IA10404	0000104	27DEC2000	1870	704	.	2856	750	2440
27	IA10402	0000104	30DEC2000	599	640	.	2520	1090	3651
28	IA10500	0000105	07DEC2000	24752	13112	17501	28512	40572	74945
29	IA10500	0000105	15DEC2000	6599	13112	18722	27522	40940	93697
30	IA10500	0000105	23DEC2000	14758	16688	17501	27126	40756	87313
31	IA10600	0000106	01DEC2000	14986	16092	19129	30294	37260	87789
32	IA10600	0000106	09DEC2000	5631	13112	19129	25542	42596	94748
33	IA10600	0000106	17DEC2000	28187	15496	17501	26532	41676	73018
34	IA10600	0000106	25DEC2000	59152	14304	21164	27324	39652	43292
35	IA10704	0000107	01DEC2000	4846	1270	.	4872	2340	3636
36	IA10702	0000107	04DEC2000	4160	1397	.	4872	2300	4409
37	IA10700	0000107	07DEC2000	4036	1524	.	5082	2060	4630
38	IA10704	0000107	09DEC2000	6197	1270	.	5502	1740	2315

Obs	FlightID	RouteID	Date	Expenses	Rev1st	RevBusiness	RevEcon	RevCargo	Profit
39	IA10702	0000107	12DEC2000	1265	1397	.	5628	1580	7340
40	IA10700	0000107	15DEC2000	5365	1270	.	5250	1980	3135
41	IA10704	0000107	17DEC2000	2278	1524	.	5712	1460	6418
42	IA10702	0000107	20DEC2000	3653	1524	.	4452	2660	4983
43	IA10700	0000107	23DEC2000	4706	1397	.	4494	2660	3845
44	IA10704	0000107	25DEC2000	6168	1397	.	5754	1460	2443
45	IA10702	0000107	28DEC2000	1656	1524	.	5418	1740	7026
46	IA10800	0000108	01DEC2000	667	1397	.	5166	2020	7916
47	IA10804	0000108	03DEC2000	5533	1270	.	5754	1500	2991
48	IA10802	0000108	06DEC2000	2030	1397	.	4830	2340	6537
49	IA10800	0000108	09DEC2000	451	1524	.	5376	1780	8229
50	IA10804	0000108	11DEC2000	5221	1524	.	4704	2420	3427
51	IA10802	0000108	14DEC2000	6019	1524	.	5796	1380	2681
52	IA10800	0000108	17DEC2000	4675	1397	.	5334	1860	3916
53	IA10804	0000108	19DEC2000	1190	1524	.	5712	1460	7506
54	IA10802	0000108	22DEC2000	1501	1524	.	5586	1580	7189
55	IA10800	0000108	25DEC2000	4869	1524	.	4830	2300	3785
56	IA10804	0000108	27DEC2000	1315	1524	.	5124	2020	7353

PROC MEANS Output Report

Analysis Variable : Salary Annual Salary				
Employee Country	Department	Employee Gender	N Obs	Mean
AU	Administration	F	8	30334.38
		M	5	27644.00
	Engineering	F	1	27645.00
		M	3	30005.00
	Sales	F	36	27191.53
		M	42	27607.98
	Sales Management	M	3	119756.67
	Stock & Shipping	F	3	30975.00
		M	7	35755.00
BE	Administration	F	6	28007.50
		M	5	31235.00
	Engineering	F	1	29805.00
		M	1	27260.00
	Sales	F	19	27323.42
		M	26	27505.96
	Sales Management	F	1	156245.00
		M	1	83305.00

Analysis Variable : Salary Annual Salary				
Employee Country	Department	Employee Gender	N Obs	Mean
DE	Administration	F	6	35225.83
		M	7	26837.14
	Engineering	F	1	29430.00
		M	4	29651.25
	Sales	F	34	27391.32
		M	42	27231.07
	Sales Management	F	4	90152.50
DK	Administration	F	2	28112.50
		M	7	30368.57
	Engineering	F	2	28682.50
	Sales	F	19	27742.63
		M	19	27358.42
	Sales Management	M	2	119517.50
ES	Administration	F	2	38012.50
		M	6	29825.83
	Engineering	M	2	27650.00
	Sales	F	26	27996.15
		M	27	27342.04
	Sales Management	F	1	163315.00
		M	2	56232.50
FR	Administration	F	6	30295.83
		M	7	30213.57
	Engineering	F	2	30750.00
		M	1	26960.00
	Sales	F	30	27224.17
		M	34	28131.18
	Sales Management	M	4	100090.00
GB	Administration	F	5	27710.00
		M	9	31806.11
	Engineering	F	4	31065.00
	Sales	F	41	28028.66
		M	46	27563.37
	Sales Management	M	4	90948.75
IT	Administration	F	5	31669.00
		M	5	30058.00
	Engineering	F	1	32800.00
		M	1	28725.00

Analysis Variable : Salary Annual Salary				
Employee Country	Department	Employee Gender	N Obs	Mean
NL	Sales	F	26	27230.58
		M	36	27500.28
	Sales Management	F	2	54222.50
		M	1	163125.00
	Administration	F	6	34314.17
		M	3	28250.00
	Engineering	F	1	27060.00
		M	1	28925.00
	Sales	F	22	27782.27
		M	29	27520.52
US	Sales Management	F	1	80890.00
		M	2	89415.00
	Accounts	F	7	42545.00
		M	10	38262.50
	Accounts Management	F	4	46428.75
		M	5	42292.00
	Administration	F	8	28413.75
		M	13	30895.77
	Concession Management	F	7	33375.00
		M	4	34650.00
	Engineering	F	2	38292.50
		M	3	27346.67
	Executives	F	1	207885.00
		M	3	315148.33
	Group Financials	F	2	44730.00
		M	1	42605.00
	Group HR Management	F	11	43425.00
		M	7	35819.29
	IS	F	10	52683.50
		M	15	51589.67
	Logistics Management	F	5	60126.00
		M	9	57582.22
	Marketing	F	8	45051.25
		M	12	41723.75
	Purchasing	F	11	41555.91
		M	7	33462.14
	Sales	F	48	27776.98
		M	75	27418.53
	Sales Management	F	3	47323.33

Analysis Variable : Salary Annual Salary				
Employee Country	Department	Employee Gender	N Obs	Mean
		M	5	116646.00
	Secretary of the Board	F	2	30167.50
	Stock & Shipping	F	13	32815.38
		M	3	45483.33
	Strategy	F	1	52540.00
		M	1	76105.00

PROC MEANS Output Report
SAS Data Set Work.Summary

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
1				0	1048	\$33,807
2			Female	1	473	\$32,611
3			Male	1	575	\$34,791
4		Accounts		2	17	\$40,026
5		Accounts Management		2	9	\$44,131
6		Administration		2	121	\$30,367
7		Concession Management		2	11	\$33,839
8		Engineering		2	31	\$29,815
9		Executives		2	4	\$288,333
10		Group Financials		2	3	\$44,022
11		Group HR Management		2	18	\$40,467
12		IS		2	25	\$52,027
13		Logistics Management		2	14	\$58,491
14		Marketing		2	20	\$43,055
15		Purchasing		2	18	\$38,408
16		Sales		2	677	\$27,545
17		Sales Management		2	36	\$97,080
18		Secretary of the Board		2	2	\$30,168
19		Stock & Shipping		2	40	\$34,083
20		Strategy		2	2	\$64,323
21		Accounts	Female	3	7	\$42,545

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
22		Accounts	Male	3	10	\$38,263
23		Accounts Management	Female	3	4	\$46,429
24		Accounts Management	Male	3	5	\$42,292
25		Administration	Female	3	54	\$30,855
26		Administration	Male	3	67	\$29,974
27		Concession Management	Female	3	7	\$33,375
28		Concession Management	Male	3	4	\$34,650
29		Engineering	Female	3	15	\$31,097
30		Engineering	Male	3	16	\$28,614
31		Executives	Female	3	1	\$207,885
32		Executives	Male	3	3	\$315,148
33		Group Financials	Female	3	2	\$44,730
34		Group Financials	Male	3	1	\$42,605
35		Group HR Management	Female	3	11	\$43,425
36		Group HR Management	Male	3	7	\$35,819
37		IS	Female	3	10	\$52,684
38		IS	Male	3	15	\$51,590
39		Logistics Management	Female	3	5	\$60,126
40		Logistics Management	Male	3	9	\$57,582
41		Marketing	Female	3	8	\$45,051
42		Marketing	Male	3	12	\$41,724
43		Purchasing	Female	3	11	\$41,556
44		Purchasing	Male	3	7	\$33,462
45		Sales	Female	3	301	\$27,584
46		Sales	Male	3	376	\$27,514
47		Sales Management	Female	3	12	\$84,290
48		Sales Management	Male	3	24	\$103,476
49		Secretary of the Board	Female	3	2	\$30,168
50		Stock &	Female	3	22	\$33,096

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
		Shipping				
51		Stock & Shipping	Male	3	18	\$35,289
52		Strategy	Female	3	1	\$52,540
53		Strategy	Male	3	1	\$76,105
54	Australia			4	108	\$30,921
55	Belgium			4	60	\$30,919
56	Germany			4	98	\$30,437
57	Denmark			4	51	\$31,610
58	Spain			4	66	\$31,094
59	France			4	98	\$31,758
60	United Kingdom			4	109	\$30,550
61	Italy			4	77	\$30,386
62	Netherlands			4	65	\$31,010
63	United States			4	316	\$40,475
64	Australia		Female	5	48	\$27,961
65	Australia		Male	5	60	\$33,289
66	Belgium		Female	5	27	\$32,342
67	Belgium		Male	5	33	\$29,754
68	Germany		Female	5	45	\$34,060
69	Germany		Male	5	53	\$27,362
70	Denmark		Female	5	23	\$27,857
71	Denmark		Male	5	28	\$34,694
72	Spain		Female	5	29	\$33,353
73	Spain		Male	5	37	\$29,323
74	France		Female	5	44	\$28,832
75	France		Male	5	54	\$34,143
76	United Kingdom		Female	5	50	\$28,240
77	United Kingdom		Male	5	59	\$32,508
78	Italy		Female	5	34	\$29,635
79	Italy		Male	5	43	\$30,980
80	Netherlands		Female	5	30	\$30,835
81	Netherlands		Male	5	35	\$31,160
82	United States		Female	5	143	\$38,152
83	United States		Male	5	173	\$42,395
84	Australia	Administration		6	13	\$29,300
85	Australia	Engineering		6	4	\$29,415
86	Australia	Sales		6	78	\$27,416
87	Australia	Sales		6	3	\$119,757

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
		Management				
88	Australia	Stock & Shipping		6	10	\$34,321
89	Belgium	Administration		6	11	\$29,475
90	Belgium	Engineering		6	2	\$28,533
91	Belgium	Sales		6	45	\$27,429
92	Belgium	Sales Management		6	2	\$119,775
93	Germany	Administration		6	13	\$30,709
94	Germany	Engineering		6	5	\$29,607
95	Germany	Sales		6	76	\$27,303
96	Germany	Sales Management		6	4	\$90,153
97	Denmark	Administration		6	9	\$29,867
98	Denmark	Engineering		6	2	\$28,683
99	Denmark	Sales		6	38	\$27,551
100	Denmark	Sales Management		6	2	\$119,518
101	Spain	Administration		6	8	\$31,873
102	Spain	Engineering		6	2	\$27,650
103	Spain	Sales		6	53	\$27,663
104	Spain	Sales Management		6	3	\$91,927
105	France	Administration		6	13	\$30,252
106	France	Engineering		6	3	\$29,487
107	France	Sales		6	64	\$27,706
108	France	Sales Management		6	4	\$100,090
109	France	Stock & Shipping		6	14	\$32,647
110	United Kingdom	Administration		6	14	\$30,343
111	United Kingdom	Engineering		6	4	\$31,065
112	United Kingdom	Sales		6	87	\$27,783
113	United Kingdom	Sales Management		6	4	\$90,949
114	Italy	Administration		6	10	\$30,864
115	Italy	Engineering		6	2	\$30,763
116	Italy	Sales		6	62	\$27,387
117	Italy	Sales Management		6	3	\$90,523
118	Netherlands	Administration		6	9	\$32,293

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
119	Netherlands	Engineering		6	2	\$27,993
120	Netherlands	Sales		6	51	\$27,633
121	Netherlands	Sales Management		6	3	\$86,573
122	United States	Accounts		6	17	\$40,026
123	United States	Accounts Management		6	9	\$44,131
124	United States	Administration		6	21	\$29,950
125	United States	Concession Management		6	11	\$33,839
126	United States	Engineering		6	5	\$31,725
127	United States	Executives		6	4	\$288,333
128	United States	Group Financials		6	3	\$44,022
129	United States	Group HR Management		6	18	\$40,467
130	United States	IS		6	25	\$52,027
131	United States	Logistics Management		6	14	\$58,491
132	United States	Marketing		6	20	\$43,055
133	United States	Purchasing		6	18	\$38,408
134	United States	Sales		6	123	\$27,558
135	United States	Sales Management		6	8	\$90,650
136	United States	Secretary of the Board		6	2	\$30,168
137	United States	Stock & Shipping		6	16	\$35,191
138	United States	Strategy		6	2	\$64,323
139	Australia	Administration	Female	7	8	\$30,334
140	Australia	Administration	Male	7	5	\$27,644
141	Australia	Engineering	Female	7	1	\$27,645
142	Australia	Engineering	Male	7	3	\$30,005
143	Australia	Sales	Female	7	36	\$27,192
144	Australia	Sales	Male	7	42	\$27,608
145	Australia	Sales Management	Male	7	3	\$119,757
146	Australia	Stock & Shipping	Female	7	3	\$30,975
147	Australia	Stock & Shipping	Male	7	7	\$35,755

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
148	Belgium	Administration	Female	7	6	\$28,008
149	Belgium	Administration	Male	7	5	\$31,235
150	Belgium	Engineering	Female	7	1	\$29,805
151	Belgium	Engineering	Male	7	1	\$27,260
152	Belgium	Sales	Female	7	19	\$27,323
153	Belgium	Sales	Male	7	26	\$27,506
154	Belgium	Sales Management	Female	7	1	\$156,245
155	Belgium	Sales Management	Male	7	1	\$83,305
156	Germany	Administration	Female	7	6	\$35,226
157	Germany	Administration	Male	7	7	\$26,837
158	Germany	Engineering	Female	7	1	\$29,430
159	Germany	Engineering	Male	7	4	\$29,651
160	Germany	Sales	Female	7	34	\$27,391
161	Germany	Sales	Male	7	42	\$27,231
162	Germany	Sales Management	Female	7	4	\$90,153
163	Denmark	Administration	Female	7	2	\$28,113
164	Denmark	Administration	Male	7	7	\$30,369
165	Denmark	Engineering	Female	7	2	\$28,683
166	Denmark	Sales	Female	7	19	\$27,743
167	Denmark	Sales	Male	7	19	\$27,358
168	Denmark	Sales Management	Male	7	2	\$119,518
169	Spain	Administration	Female	7	2	\$38,013
170	Spain	Administration	Male	7	6	\$29,826
171	Spain	Engineering	Male	7	2	\$27,650
172	Spain	Sales	Female	7	26	\$27,996
173	Spain	Sales	Male	7	27	\$27,342
174	Spain	Sales Management	Female	7	1	\$163,315
175	Spain	Sales Management	Male	7	2	\$56,233
176	France	Administration	Female	7	6	\$30,296
177	France	Administration	Male	7	7	\$30,214
178	France	Engineering	Female	7	2	\$30,750
179	France	Engineering	Male	7	1	\$26,960
180	France	Sales	Female	7	30	\$27,224
181	France	Sales	Male	7	34	\$28,131

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
182	France	Sales Management	Male	7	4	\$100,090
183	France	Stock & Shipping	Female	7	6	\$34,766
184	France	Stock & Shipping	Male	7	8	\$31,058
185	United Kingdom	Administration	Female	7	5	\$27,710
186	United Kingdom	Administration	Male	7	9	\$31,806
187	United Kingdom	Engineering	Female	7	4	\$31,065
188	United Kingdom	Sales	Female	7	41	\$28,029
189	United Kingdom	Sales	Male	7	46	\$27,563
190	United Kingdom	Sales Management	Male	7	4	\$90,949
191	Italy	Administration	Female	7	5	\$31,669
192	Italy	Administration	Male	7	5	\$30,058
193	Italy	Engineering	Female	7	1	\$32,800
194	Italy	Engineering	Male	7	1	\$28,725
195	Italy	Sales	Female	7	26	\$27,231
196	Italy	Sales	Male	7	36	\$27,500
197	Italy	Sales Management	Female	7	2	\$54,223
198	Italy	Sales Management	Male	7	1	\$163,125
199	Netherlands	Administration	Female	7	6	\$34,314
200	Netherlands	Administration	Male	7	3	\$28,250
201	Netherlands	Engineering	Female	7	1	\$27,060
202	Netherlands	Engineering	Male	7	1	\$28,925
203	Netherlands	Sales	Female	7	22	\$27,782
204	Netherlands	Sales	Male	7	29	\$27,521
205	Netherlands	Sales Management	Female	7	1	\$80,890
206	Netherlands	Sales Management	Male	7	2	\$89,415
207	United States	Accounts	Female	7	7	\$42,545
208	United States	Accounts	Male	7	10	\$38,263
209	United States	Accounts Management	Female	7	4	\$46,429
210	United States	Accounts Management	Male	7	5	\$42,292
211	United States	Administration	Female	7	8	\$28,414
212	United States	Administration	Male	7	13	\$30,896

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
213	United States	Concession Management	Female	7	7	\$33,375
214	United States	Concession Management	Male	7	4	\$34,650
215	United States	Engineering	Female	7	2	\$38,293
216	United States	Engineering	Male	7	3	\$27,347
217	United States	Executives	Female	7	1	\$207,885
218	United States	Executives	Male	7	3	\$315,148
219	United States	Group Financials	Female	7	2	\$44,730
220	United States	Group Financials	Male	7	1	\$42,605
221	United States	Group HR Management	Female	7	11	\$43,425
222	United States	Group HR Management	Male	7	7	\$35,819
223	United States	IS	Female	7	10	\$52,684
224	United States	IS	Male	7	15	\$51,590
225	United States	Logistics Management	Female	7	5	\$60,126
226	United States	Logistics Management	Male	7	9	\$57,582
227	United States	Marketing	Female	7	8	\$45,051
228	United States	Marketing	Male	7	12	\$41,724
229	United States	Purchasing	Female	7	11	\$41,556
230	United States	Purchasing	Male	7	7	\$33,462
231	United States	Sales	Female	7	48	\$27,777
232	United States	Sales	Male	7	75	\$27,419
233	United States	Sales Management	Female	7	3	\$47,323
234	United States	Sales Management	Male	7	5	\$116,646
235	United States	Secretary of the Board	Female	7	2	\$30,168
236	United States	Stock & Shipping	Female	7	13	\$32,815
237	United States	Stock & Shipping	Male	7	3	\$45,483
238	United States	Strategy	Female	7	1	\$52,540
239	United States	Strategy	Male	7	1	\$76,105

PROC MEANS Output Data Set

SAS Data Set Work.Summary

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
1				0	1048	\$33,807
2			Female	1	473	\$32,611
3			Male	1	575	\$34,791
4		Accounts		2	17	\$40,026
5		Accounts Management		2	9	\$44,131
6		Administration		2	121	\$30,367
7		Concession Management		2	11	\$33,839
8		Engineering		2	31	\$29,815
9		Executives		2	4	\$288,333
10		Group Financials		2	3	\$44,022
11		Group HR Management		2	18	\$40,467
12		IS		2	25	\$52,027
13		Logistics Management		2	14	\$58,491
14		Marketing		2	20	\$43,055
15		Purchasing		2	18	\$38,408
16		Sales		2	677	\$27,545
17		Sales Management		2	36	\$97,080
18		Secretary of the Board		2	2	\$30,168
19		Stock & Shipping		2	40	\$34,083
20		Strategy		2	2	\$64,323
21		Accounts	Female	3	7	\$42,545
22		Accounts	Male	3	10	\$38,263
23		Accounts Management	Female	3	4	\$46,429
24		Accounts Management	Male	3	5	\$42,292
25		Administration	Female	3	54	\$30,855
26		Administration	Male	3	67	\$29,974
27		Concession Management	Female	3	7	\$33,375
28		Concession Management	Male	3	4	\$34,650
29		Engineering	Female	3	15	\$31,097

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
30		Engineering	Male	3	16	\$28,614
31		Executives	Female	3	1	\$207,885
32		Executives	Male	3	3	\$315,148
33		Group Financials	Female	3	2	\$44,730
34		Group Financials	Male	3	1	\$42,605
35		Group HR Management	Female	3	11	\$43,425
36		Group HR Management	Male	3	7	\$35,819
37		IS	Female	3	10	\$52,684
38		IS	Male	3	15	\$51,590
39		Logistics Management	Female	3	5	\$60,126
40		Logistics Management	Male	3	9	\$57,582
41		Marketing	Female	3	8	\$45,051
42		Marketing	Male	3	12	\$41,724
43		Purchasing	Female	3	11	\$41,556
44		Purchasing	Male	3	7	\$33,462
45		Sales	Female	3	301	\$27,584
46		Sales	Male	3	376	\$27,514
47		Sales Management	Female	3	12	\$84,290
48		Sales Management	Male	3	24	\$103,476
49		Secretary of the Board	Female	3	2	\$30,168
50		Stock & Shipping	Female	3	22	\$33,096
51		Stock & Shipping	Male	3	18	\$35,289
52		Strategy	Female	3	1	\$52,540
53		Strategy	Male	3	1	\$76,105
54	Australia			4	108	\$30,921
55	Belgium			4	60	\$30,919
56	Germany			4	98	\$30,437
57	Denmark			4	51	\$31,610
58	Spain			4	66	\$31,094
59	France			4	98	\$31,758

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
60	United Kingdom			4	109	\$30,550
61	Italy			4	77	\$30,386
62	Netherlands			4	65	\$31,010
63	United States			4	316	\$40,475
64	Australia		Female	5	48	\$27,961
65	Australia		Male	5	60	\$33,289
66	Belgium		Female	5	27	\$32,342
67	Belgium		Male	5	33	\$29,754
68	Germany		Female	5	45	\$34,060
69	Germany		Male	5	53	\$27,362
70	Denmark		Female	5	23	\$27,857
71	Denmark		Male	5	28	\$34,694
72	Spain		Female	5	29	\$33,353
73	Spain		Male	5	37	\$29,323
74	France		Female	5	44	\$28,832
75	France		Male	5	54	\$34,143
76	United Kingdom		Female	5	50	\$28,240
77	United Kingdom		Male	5	59	\$32,508
78	Italy		Female	5	34	\$29,635
79	Italy		Male	5	43	\$30,980
80	Netherlands		Female	5	30	\$30,835
81	Netherlands		Male	5	35	\$31,160
82	United States		Female	5	143	\$38,152
83	United States		Male	5	173	\$42,395
84	Australia	Administration		6	13	\$29,300
85	Australia	Engineering		6	4	\$29,415
86	Australia	Sales		6	78	\$27,416
87	Australia	Sales Management		6	3	\$119,757
88	Australia	Stock & Shipping		6	10	\$34,321
89	Belgium	Administration		6	11	\$29,475
90	Belgium	Engineering		6	2	\$28,533
91	Belgium	Sales		6	45	\$27,429
92	Belgium	Sales Management		6	2	\$119,775
93	Germany	Administration		6	13	\$30,709
94	Germany	Engineering		6	5	\$29,607
95	Germany	Sales		6	76	\$27,303

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
96	Germany	Sales Management		6	4	\$90,153
97	Denmark	Administration		6	9	\$29,867
98	Denmark	Engineering		6	2	\$28,683
99	Denmark	Sales		6	38	\$27,551
100	Denmark	Sales Management		6	2	\$119,518
101	Spain	Administration		6	8	\$31,873
102	Spain	Engineering		6	2	\$27,650
103	Spain	Sales		6	53	\$27,663
104	Spain	Sales Management		6	3	\$91,927
105	France	Administration		6	13	\$30,252
106	France	Engineering		6	3	\$29,487
107	France	Sales		6	64	\$27,706
108	France	Sales Management		6	4	\$100,090
109	France	Stock & Shipping		6	14	\$32,647
110	United Kingdom	Administration		6	14	\$30,343
111	United Kingdom	Engineering		6	4	\$31,065
112	United Kingdom	Sales		6	87	\$27,783
113	United Kingdom	Sales Management		6	4	\$90,949
114	Italy	Administration		6	10	\$30,864
115	Italy	Engineering		6	2	\$30,763
116	Italy	Sales		6	62	\$27,387
117	Italy	Sales Management		6	3	\$90,523
118	Netherlands	Administration		6	9	\$32,293
119	Netherlands	Engineering		6	2	\$27,993
120	Netherlands	Sales		6	51	\$27,633
121	Netherlands	Sales Management		6	3	\$86,573
122	United States	Accounts		6	17	\$40,026
123	United States	Accounts Management		6	9	\$44,131
124	United States	Administration		6	21	\$29,950
125	United States	Concession Management		6	11	\$33,839
126	United States	Engineering		6	5	\$31,725

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
127	United States	Executives		6	4	\$288,333
128	United States	Group Financials		6	3	\$44,022
129	United States	Group HR Management		6	18	\$40,467
130	United States	IS		6	25	\$52,027
131	United States	Logistics Management		6	14	\$58,491
132	United States	Marketing		6	20	\$43,055
133	United States	Purchasing		6	18	\$38,408
134	United States	Sales		6	123	\$27,558
135	United States	Sales Management		6	8	\$90,650
136	United States	Secretary of the Board		6	2	\$30,168
137	United States	Stock & Shipping		6	16	\$35,191
138	United States	Strategy		6	2	\$64,323
139	Australia	Administration	Female	7	8	\$30,334
140	Australia	Administration	Male	7	5	\$27,644
141	Australia	Engineering	Female	7	1	\$27,645
142	Australia	Engineering	Male	7	3	\$30,005
143	Australia	Sales	Female	7	36	\$27,192
144	Australia	Sales	Male	7	42	\$27,608
145	Australia	Sales Management	Male	7	3	\$119,757
146	Australia	Stock & Shipping	Female	7	3	\$30,975
147	Australia	Stock & Shipping	Male	7	7	\$35,755
148	Belgium	Administration	Female	7	6	\$28,008
149	Belgium	Administration	Male	7	5	\$31,235
150	Belgium	Engineering	Female	7	1	\$29,805
151	Belgium	Engineering	Male	7	1	\$27,260
152	Belgium	Sales	Female	7	19	\$27,323
153	Belgium	Sales	Male	7	26	\$27,506
154	Belgium	Sales Management	Female	7	1	\$156,245
155	Belgium	Sales Management	Male	7	1	\$83,305
156	Germany	Administration	Female	7	6	\$35,226

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
157	Germany	Administration	Male	7	7	\$26,837
158	Germany	Engineering	Female	7	1	\$29,430
159	Germany	Engineering	Male	7	4	\$29,651
160	Germany	Sales	Female	7	34	\$27,391
161	Germany	Sales	Male	7	42	\$27,231
162	Germany	Sales Management	Female	7	4	\$90,153
163	Denmark	Administration	Female	7	2	\$28,113
164	Denmark	Administration	Male	7	7	\$30,369
165	Denmark	Engineering	Female	7	2	\$28,683
166	Denmark	Sales	Female	7	19	\$27,743
167	Denmark	Sales	Male	7	19	\$27,358
168	Denmark	Sales Management	Male	7	2	\$119,518
169	Spain	Administration	Female	7	2	\$38,013
170	Spain	Administration	Male	7	6	\$29,826
171	Spain	Engineering	Male	7	2	\$27,650
172	Spain	Sales	Female	7	26	\$27,996
173	Spain	Sales	Male	7	27	\$27,342
174	Spain	Sales Management	Female	7	1	\$163,315
175	Spain	Sales Management	Male	7	2	\$56,233
176	France	Administration	Female	7	6	\$30,296
177	France	Administration	Male	7	7	\$30,214
178	France	Engineering	Female	7	2	\$30,750
179	France	Engineering	Male	7	1	\$26,960
180	France	Sales	Female	7	30	\$27,224
181	France	Sales	Male	7	34	\$28,131
182	France	Sales Management	Male	7	4	\$100,090
183	France	Stock & Shipping	Female	7	6	\$34,766
184	France	Stock & Shipping	Male	7	8	\$31,058
185	United Kingdom	Administration	Female	7	5	\$27,710
186	United Kingdom	Administration	Male	7	9	\$31,806
187	United Kingdom	Engineering	Female	7	4	\$31,065
188	United Kingdom	Sales	Female	7	41	\$28,029
189	United Kingdom	Sales	Male	7	46	\$27,563

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
190	United Kingdom	Sales Management	Male	7	4	\$90,949
191	Italy	Administration	Female	7	5	\$31,669
192	Italy	Administration	Male	7	5	\$30,058
193	Italy	Engineering	Female	7	1	\$32,800
194	Italy	Engineering	Male	7	1	\$28,725
195	Italy	Sales	Female	7	26	\$27,231
196	Italy	Sales	Male	7	36	\$27,500
197	Italy	Sales Management	Female	7	2	\$54,223
198	Italy	Sales Management	Male	7	1	\$163,125
199	Netherlands	Administration	Female	7	6	\$34,314
200	Netherlands	Administration	Male	7	3	\$28,250
201	Netherlands	Engineering	Female	7	1	\$27,060
202	Netherlands	Engineering	Male	7	1	\$28,925
203	Netherlands	Sales	Female	7	22	\$27,782
204	Netherlands	Sales	Male	7	29	\$27,521
205	Netherlands	Sales Management	Female	7	1	\$80,890
206	Netherlands	Sales Management	Male	7	2	\$89,415
207	United States	Accounts	Female	7	7	\$42,545
208	United States	Accounts	Male	7	10	\$38,263
209	United States	Accounts Management	Female	7	4	\$46,429
210	United States	Accounts Management	Male	7	5	\$42,292
211	United States	Administration	Female	7	8	\$28,414
212	United States	Administration	Male	7	13	\$30,896
213	United States	Concession Management	Female	7	7	\$33,375
214	United States	Concession Management	Male	7	4	\$34,650
215	United States	Engineering	Female	7	2	\$38,293
216	United States	Engineering	Male	7	3	\$27,347
217	United States	Executives	Female	7	1	\$207,885
218	United States	Executives	Male	7	3	\$315,148
219	United States	Group Financials	Female	7	2	\$44,730
220	United States	Group	Male	7	1	\$42,605

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	average
		Financials				
221	United States	Group HR Management	Female	7	11	\$43,425
222	United States	Group HR Management	Male	7	7	\$35,819
223	United States	IS	Female	7	10	\$52,684
224	United States	IS	Male	7	15	\$51,590
225	United States	Logistics Management	Female	7	5	\$60,126
226	United States	Logistics Management	Male	7	9	\$57,582
227	United States	Marketing	Female	7	8	\$45,051
228	United States	Marketing	Male	7	12	\$41,724
229	United States	Purchasing	Female	7	11	\$41,556
230	United States	Purchasing	Male	7	7	\$33,462
231	United States	Sales	Female	7	48	\$27,777
232	United States	Sales	Male	7	75	\$27,419
233	United States	Sales Management	Female	7	3	\$47,323
234	United States	Sales Management	Male	7	5	\$116,646
235	United States	Secretary of the Board	Female	7	2	\$30,168
236	United States	Stock & Shipping	Female	7	13	\$32,815
237	United States	Stock & Shipping	Male	7	3	\$45,483
238	United States	Strategy	Female	7	1	\$52,540
239	United States	Strategy	Male	7	1	\$76,105

PROC MEANS Output Report

Analysis Variable : Salary Annual Salary			
Employee Country	Employee Gender	N Obs	Mean
AU	F	48	27961.25
	M	60	33288.75
BE	F	27	32342.22
	M	33	29754.39
DE	F	45	34060.00
	M	53	27361.70
DK	F	23	27856.52
	M	28	34693.75

Analysis Variable : Salary Annual Salary			
Employee Country	Employee Gender	N Obs	Mean
ES	F	29	33353.10
	M	37	29323.11
FR	F	44	28831.70
	M	54	34143.24
GB	F	50	28239.70
	M	59	32507.88
IT	F	34	29634.85
	M	43	30980.23
NL	F	30	30834.83
	M	35	31160.00
US	F	143	38152.45
	M	173	42395.00

Analysis Variable : Salary Annual Salary			
Employee Country	Department	N Obs	Mean
AU	Administration	13	29299.62
	Engineering	4	29415.00
	Sales	78	27415.77
	Sales Management	3	119756.67
	Stock & Shipping	10	34321.00
BE	Administration	11	29474.55
	Engineering	2	28532.50
	Sales	45	27428.89
	Sales Management	2	119775.00
DE	Administration	13	30708.85
	Engineering	5	29607.00
	Sales	76	27302.76
	Sales Management	4	90152.50
DK	Administration	9	29867.22
	Engineering	2	28682.50
	Sales	38	27550.53
	Sales Management	2	119517.50
ES	Administration	8	31872.50
	Engineering	2	27650.00
	Sales	53	27662.92
	Sales Management	3	91926.67
FR	Administration	13	30251.54
	Engineering	3	29486.67

Analysis Variable : Salary Annual Salary			
Employee Country	Department	N Obs	Mean
GB	Sales	64	27706.02
	Sales Management	4	100090.00
	Stock & Shipping	14	32646.79
	Administration	14	30343.21
	Engineering	4	31065.00
IT	Sales	87	27782.64
	Sales Management	4	90948.75
	Administration	10	30863.50
	Engineering	2	30762.50
NL	Sales	62	27387.18
	Sales Management	3	90523.33
	Administration	9	32292.78
	Engineering	2	27992.50
	Sales	51	27633.43
US	Sales Management	3	86573.33
	Accounts	17	40025.88
	Accounts Management	9	44130.56
	Administration	21	29950.24
	Concession Management	11	33838.64
	Engineering	5	31725.00
	Executives	4	288332.50
	Group Financials	3	44021.67
	Group HR Management	18	40467.22
	IS	25	52027.20
	Logistics Management	14	58490.71
	Marketing	20	43054.75
	Purchasing	18	38408.33
	Sales	123	27558.41
	Sales Management	8	90650.00
	Secretary of the Board	2	30167.50
	Stock & Shipping	16	35190.63
	Strategy	2	64322.50

PROC MEANS Output Report

Analysis Variable : Salary Annual Salary							
Employee Country	Department	N Obs	N	Mean	Std Dev	Minimum	Maximum
Australia	Administration	13	13	29299.62	5325.55	26495.00	46230.00
	Engineering	4	4	29415.00	1886.72	27645.00	31670.00
	Sales	78	78	27415.77	2120.26	24015.00	36605.00

Analysis Variable : Salary Annual Salary							
Employee Country	Department	N Obs	N	Mean	Std Dev	Minimum	Maximum
	Sales Management	3	3	119756.67	38831.75	87975.00	163040.00
	Stock & Shipping	10	10	34321.00	11702.89	26160.00	60980.00
Belgium	Administration	11	11	29474.55	5054.34	25045.00	43280.00
	Engineering	2	2	28532.50	1799.59	27260.00	29805.00
	Sales	45	45	27428.89	1489.26	25240.00	32470.00
	Sales Management	2	2	119775.00	51576.37	83305.00	156245.00
Germany	Administration	13	13	30708.85	7043.84	25705.00	48100.00
	Engineering	5	5	29607.00	3809.44	27250.00	36240.00
	Sales	76	76	27302.76	2141.83	24030.00	39185.00
	Sales Management	4	4	90152.50	47868.97	35080.00	151940.00
Denmark	Administration	9	9	29867.22	5084.02	25780.00	42095.00
	Engineering	2	2	28682.50	477.2970773	28345.00	29020.00
	Sales	38	38	27550.53	1634.75	25165.00	31495.00
	Sales Management	2	2	119517.50	44926.03	87750.00	151285.00
Spain	Administration	8	8	31872.50	8478.13	26310.00	47200.00
	Engineering	2	2	27650.00	1626.35	26500.00	28800.00
	Sales	53	53	27662.92	2947.58	21580.00	40755.00
	Sales Management	3	3	91926.67	67322.43	29585.00	163315.00
France	Administration	13	13	30251.54	7200.18	23585.00	47230.00
	Engineering	3	3	29486.67	2839.74	26960.00	32560.00
	Sales	64	64	27706.02	2078.24	25050.00	32770.00
	Sales Management	4	4	100090.00	67429.93	31555.00	192940.00
	Stock & Shipping	14	14	32646.79	10620.87	25295.00	62685.00
United Kingdom	Administration	14	14	30343.21	6434.21	25765.00	45500.00
	Engineering	4	4	31065.00	7683.03	26645.00	42530.00
	Sales	87	87	27782.64	1928.55	24375.00	32775.00
	Sales Management	4	4	90948.75	54439.36	28885.00	161295.00
Italy	Administration	10	10	30863.50	6835.36	25120.00	43720.00
	Engineering	2	2	30762.50	2881.46	28725.00	32800.00
	Sales	62	62	27387.18	2052.94	21615.00	32355.00
	Sales Management	3	3	90523.33	68133.57	27975.00	163125.00
Netherlands	Administration	9	9	32292.78	6614.49	25820.00	43620.00
	Engineering	2	2	27992.50	1318.75	27060.00	28925.00

Analysis Variable : Salary Annual Salary							
Employee Country	Department	N Obs	N	Mean	Std Dev	Minimum	Maximum
United States	Sales	51	51	27633.43	2505.01	20835.00	37320.00
	Sales Management	3	3	86573.33	61970.77	27640.00	151190.00
	Accounts	17	17	40025.88	9414.11	26545.00	58200.00
	Accounts Management	9	9	44130.56	6718.06	32965.00	53400.00
	Administration	21	21	29950.24	6107.41	25020.00	48600.00
	Concession Management	11	11	33838.64	6875.48	26840.00	48435.00
	Engineering	5	5	31725.00	9227.72	26140.00	48075.00
	Executives	4	4	288332.50	100109.20	207885.00	433800.00
	Group Financials	3	3	44021.67	7323.50	37510.00	51950.00
	Group HR Management	18	18	40467.22	10322.41	27365.00	63915.00
	IS	25	25	52027.20	11523.23	29070.00	80755.00
	Logistics Management	14	14	58490.71	34357.19	27045.00	161290.00
	Marketing	20	20	43054.75	17093.86	27380.00	87420.00
	Purchasing	18	18	38408.33	11599.54	30025.00	63985.00
	Sales	123	123	27558.41	2106.53	22710.00	35990.00
	Sales Management	8	8	90650.00	58825.03	29145.00	194885.00
	Secretary of the Board	2	2	30167.50	2237.99	28585.00	31750.00
	Stock & Shipping	16	16	35190.63	13440.51	25130.00	65555.00
	Strategy	2	2	64322.50	16662.97	52540.00	76105.00

Analysis Variable : Salary Annual Salary							
Employee Country	Employee Gender	N Obs	N	Mean	Std Dev	Minimum	Maximum
Australia	Female	48	48	27961.25	3460.40	24015.00	46230.00
	Male	60	60	33288.75	21946.96	24100.00	163040.00
Belgium	Female	27	27	32342.22	24827.44	25240.00	156245.00
	Male	33	33	29754.39	10099.16	25045.00	83305.00
Germany	Female	45	45	34060.00	22157.71	24030.00	151940.00
	Male	53	53	27361.70	1922.61	24050.00	36240.00
Denmark	Female	23	23	27856.52	1625.54	25495.00	31495.00
	Male	28	28	34693.75	25677.45	25165.00	151285.00
Spain	Female	29	29	33353.10	25481.59	22705.00	163315.00
	Male	37	37	29323.11	9620.27	21580.00	82880.00
France	Female	44	44	28831.70	6195.66	23585.00	62685.00

Analysis Variable : Salary Annual Salary							
Employee Country	Employee Gender	N Obs	N	Mean	Std Dev	Minimum	Maximum
United Kingdom	Male	54	54	34143.24	25128.51	25070.00	192940.00
	Female	50	50	28239.70	2879.93	25405.00	42530.00
Italy	Male	59	59	32507.88	20463.00	24375.00	161295.00
	Female	34	34	29634.85	9702.94	21615.00	80470.00
Netherlands	Male	43	43	30980.23	20838.76	25120.00	163125.00
	Female	30	30	30834.83	10524.71	25050.00	80890.00
United States	Male	35	35	31160.00	21010.20	20835.00	151190.00
	Female	143	143	38152.45	20015.12	25020.00	207885.00
	Male	173	173	42395.00	43854.40	22710.00	433800.00

PROC MEANS Output Data Set

SAS Data Set Work.Summary1

Obs	Employee_Country	Department	_TYPE_	_FREQ_	employees	average
1	Australia	Administration	3	13	13	\$29,300
2	Australia	Engineering	3	4	4	\$29,415
3	Australia	Sales	3	78	78	\$27,416
4	Australia	Sales Management	3	3	3	\$119,757
5	Australia	Stock & Shipping	3	10	10	\$34,321
6	Belgium	Administration	3	11	11	\$29,475
7	Belgium	Engineering	3	2	2	\$28,533
8	Belgium	Sales	3	45	45	\$27,429
9	Belgium	Sales Management	3	2	2	\$119,775
10	Germany	Administration	3	13	13	\$30,709
11	Germany	Engineering	3	5	5	\$29,607
12	Germany	Sales	3	76	76	\$27,303
13	Germany	Sales Management	3	4	4	\$90,153
14	Denmark	Administration	3	9	9	\$29,867
15	Denmark	Engineering	3	2	2	\$28,683
16	Denmark	Sales	3	38	38	\$27,551
17	Denmark	Sales Management	3	2	2	\$119,518
18	Spain	Administration	3	8	8	\$31,873
19	Spain	Engineering	3	2	2	\$27,650
20	Spain	Sales	3	53	53	\$27,663

Obs	Employee_Country	Department	_TYPE_	_FREQ_	employees	average
21	Spain	Sales Management	3	3	3	\$91,927
22	France	Administration	3	13	13	\$30,252
23	France	Engineering	3	3	3	\$29,487
24	France	Sales	3	64	64	\$27,706
25	France	Sales Management	3	4	4	\$100,090
26	France	Stock & Shipping	3	14	14	\$32,647
27	United Kingdom	Administration	3	14	14	\$30,343
28	United Kingdom	Engineering	3	4	4	\$31,065
29	United Kingdom	Sales	3	87	87	\$27,783
30	United Kingdom	Sales Management	3	4	4	\$90,949
31	Italy	Administration	3	10	10	\$30,864
32	Italy	Engineering	3	2	2	\$30,763
33	Italy	Sales	3	62	62	\$27,387
34	Italy	Sales Management	3	3	3	\$90,523
35	Netherlands	Administration	3	9	9	\$32,293
36	Netherlands	Engineering	3	2	2	\$27,993
37	Netherlands	Sales	3	51	51	\$27,633
38	Netherlands	Sales Management	3	3	3	\$86,573
39	United States	Accounts	3	17	17	\$40,026
40	United States	Accounts Management	3	9	9	\$44,131
41	United States	Administration	3	21	21	\$29,950
42	United States	Concession Management	3	11	11	\$33,839
43	United States	Engineering	3	5	5	\$31,725
44	United States	Executives	3	4	4	\$288,333
45	United States	Group Financials	3	3	3	\$44,022
46	United States	Group HR Management	3	18	18	\$40,467
47	United States	IS	3	25	25	\$52,027
48	United States	Logistics Management	3	14	14	\$58,491
49	United States	Marketing	3	20	20	\$43,055
50	United States	Purchasing	3	18	18	\$38,408

Obs	Employee_Country	Department	_TYPE_	_FREQ_	employees	average
51	United States	Sales	3	123	123	\$27,558
52	United States	Sales Management	3	8	8	\$90,650
53	United States	Secretary of the Board	3	2	2	\$30,168
54	United States	Stock & Shipping	3	16	16	\$35,191
55	United States	Strategy	3	2	2	\$64,323

PROC MEANS Output Data Set

SAS Data Set Work.Summary2

Obs	Employee_Country	Employee_Gender	_TYPE_	_FREQ_	employees	average
1	Australia	Female	3	48	48	\$27,961
2	Australia	Male	3	60	60	\$33,289
3	Belgium	Female	3	27	27	\$32,342
4	Belgium	Male	3	33	33	\$29,754
5	Germany	Female	3	45	45	\$34,060
6	Germany	Male	3	53	53	\$27,362
7	Denmark	Female	3	23	23	\$27,857
8	Denmark	Male	3	28	28	\$34,694
9	Spain	Female	3	29	29	\$33,353
10	Spain	Male	3	37	37	\$29,323
11	France	Female	3	44	44	\$28,832
12	France	Male	3	54	54	\$34,143
13	United Kingdom	Female	3	50	50	\$28,240
14	United Kingdom	Male	3	59	59	\$32,508
15	Italy	Female	3	34	34	\$29,635
16	Italy	Male	3	43	43	\$30,980
17	Netherlands	Female	3	30	30	\$30,835
18	Netherlands	Male	3	35	35	\$31,160
19	United States	Female	3	143	143	\$38,152
20	United States	Male	3	173	173	\$42,395

PROC MEANS Output Report

Analysis Variable : Salary Annual Salary								
Employee Country	Department	Employee Gender	N	Obs	Mean	Std Dev	Minimum	Maximum
Australia	Administration	Female	8	8	30334.38	6678.40	26495.00	46230.00
		Male	5	5	27644.00	1210.34	26500.00	29250.00
	Engineering	Female	1	1	27645.00	.	27645.00	27645.00

Analysis Variable : Salary Annual Salary								
Employee Country	Department	Employee Gender	N Obs	N	Mean	Std Dev	Minimum	Maximum
Belgium	Sales	Male	3	3	30005.00	1803.05	28090.00	31670.00
		Female	36	36	27191.53	1831.47	24015.00	30890.00
	Sales Management	Male	42	42	27607.98	2344.65	24100.00	36605.00
		Male	3	3	119756.67	38831.75	87975.00	163040.00
	Stock & Shipping	Female	3	3	30975.00	4441.63	27365.00	35935.00
		Male	7	7	35755.00	13815.33	26160.00	60980.00
	Administration	Female	6	6	28007.50	1797.21	26155.00	30665.00
		Male	5	5	31235.00	7261.27	25045.00	43280.00
	Engineering	Female	1	1	29805.00	.	29805.00	29805.00
		Male	1	1	27260.00	.	27260.00	27260.00
Germany	Sales	Female	19	19	27323.42	1835.43	25240.00	32470.00
		Male	26	26	27505.96	1209.69	25545.00	31645.00
	Sales Management	Female	1	1	156245.00	.	156245.00	156245.00
		Male	1	1	83305.00	.	83305.00	83305.00
	Administration	Female	6	6	35225.83	8501.11	26380.00	48100.00
		Male	7	7	26837.14	1056.23	25705.00	28540.00
	Engineering	Female	1	1	29430.00	.	29430.00	29430.00
		Male	4	4	29651.25	4397.28	27250.00	36240.00
	Sales	Female	34	34	27391.32	2694.97	24030.00	39185.00
		Male	42	42	27231.07	1591.91	24050.00	31745.00
Denmark	Sales Management	Female	4	4	90152.50	47868.97	35080.00	151940.00
		Female	2	2	28112.50	2131.93	26605.00	29620.00
	Administration	Male	7	7	30368.57	5690.86	25780.00	42095.00
		Female	2	2	28682.50	477.2970773	28345.00	29020.00
	Sales	Female	19	19	27742.63	1693.41	25495.00	31495.00
		Male	19	19	27358.42	1596.17	25165.00	30610.00
	Sales Management	Male	2	2	119517.50	44926.03	87750.00	151285.00
		Female	2	2	38012.50	12993.09	28825.00	47200.00
	Administration	Male	6	6	29825.83	6838.10	26310.00	43740.00
		Male	2	2	27650.00	1626.35	26500.00	28800.00
Spain	Sales	Female	26	26	27996.15	3645.65	22705.00	40755.00
		Male	27	27	27342.04	2092.59	21580.00	31765.00
	Sales Management	Female	1	1	163315.00	.	163315.00	163315.00
		Male	2	2	56232.50	37685.26	29585.00	82880.00
	Administration	Male	2	2	38012.50	12993.09	28825.00	47200.00
		Female	2	2	38012.50	12993.09	28825.00	47200.00
	Engineering	Male	2	2	27650.00	1626.35	26500.00	28800.00

Analysis Variable : Salary Annual Salary								
Employee Country	Department	Employee Gender	N Obs	N	Mean	Std Dev	Minimum	Maximum
France	Administration	Female	6	6	30295.83	7157.27	23585.00	43950.00
		Male	7	7	30213.57	7809.78	25070.00	47230.00
	Engineering	Female	2	2	30750.00	2559.73	28940.00	32560.00
		Male	1	1	26960.00	.	26960.00	26960.00
	Sales	Female	30	30	27224.17	1968.33	25050.00	32680.00
		Male	34	34	28131.18	2107.97	25100.00	32770.00
	Sales Management	Male	4	4	100090.00	67429.93	31555.00	192940.00
	Stock & Shipping	Female	6	6	34765.83	13903.51	25825.00	62685.00
		Male	8	8	31057.50	8042.31	25295.00	48565.00
United Kingdom	Administration	Female	5	5	27710.00	1915.60	26335.00	31060.00
		Male	9	9	31806.11	7661.43	25765.00	45500.00
	Engineering	Female	4	4	31065.00	7683.03	26645.00	42530.00
		Male	41	41	28028.66	2118.28	25405.00	32745.00
	Sales	Female	46	46	27563.37	1736.43	24375.00	32775.00
		Male	4	4	90948.75	54439.36	28885.00	161295.00
Italy	Administration	Female	5	5	31669.00	7077.13	27055.00	43720.00
		Male	5	5	30058.00	7308.69	25120.00	42875.00
	Engineering	Female	1	1	32800.00	.	32800.00	32800.00
		Male	1	1	28725.00	.	28725.00	28725.00
	Sales	Female	26	26	27230.58	2354.06	21615.00	32015.00
		Male	36	36	27500.28	1831.87	25275.00	32355.00
	Sales Management	Female	2	2	54222.50	37119.57	27975.00	80470.00
		Male	1	1	163125.00	.	163125.00	163125.00
Netherlands	Administration	Female	6	6	34314.17	7343.14	25820.00	43620.00
		Male	3	3	28250.00	1851.30	26440.00	30140.00
	Engineering	Female	1	1	27060.00	.	27060.00	27060.00
		Male	1	1	28925.00	.	28925.00	28925.00
	Sales	Female	22	22	27782.27	2630.45	25050.00	37320.00
		Male	29	29	27520.52	2446.52	20835.00	33925.00
	Sales Management	Female	1	1	80890.00	.	80890.00	80890.00
		Male	2	2	89415.00	87363.04	27640.00	151190.00
United States	Accounts	Female	7	7	42545.00	9296.66	30960.00	53475.00
		Male	10	10	38262.50	9568.02	26545.00	58200.00
	Accounts	Female	4	4	46428.75	7857.08	36435.00	53400.00

Analysis Variable : Salary Annual Salary								
Employee Country	Department	Employee Gender	N Obs	N	Mean	Std Dev	Minimum	Maximum
	Management							
		Male	5	5	42292.00	5870.04	32965.00	47990.00
	Administration	Female	8	8	28413.75	3129.45	26260.00	34850.00
		Male	13	13	30895.77	7342.49	25020.00	48600.00
	Concession Management	Female	7	7	33375.00	5581.91	26840.00	43635.00
		Male	4	4	34650.00	9689.15	27685.00	48435.00
	Engineering	Female	2	2	38292.50	13834.54	28510.00	48075.00
		Male	3	3	27346.67	1648.53	26140.00	29225.00
	Executives	Female	1	1	207885.00	.	207885.00	207885.00
		Male	3	3	315148.33	103528.95	243190.00	433800.00
	Group Financials	Female	2	2	44730.00	10210.62	37510.00	51950.00
		Male	1	1	42605.00	.	42605.00	42605.00
	Group HR Management	Female	11	11	43425.00	11762.26	27370.00	63915.00
		Male	7	7	35819.29	5483.66	27365.00	42975.00
	IS	Female	10	10	52683.50	12219.52	40040.00	80755.00
		Male	15	15	51589.67	11451.16	29070.00	80210.00
	Logistics Management	Female	5	5	60126.00	22024.56	36110.00	85495.00
		Male	9	9	57582.22	40902.77	27045.00	161290.00
	Marketing	Female	8	8	45051.25	22328.10	27380.00	87420.00
		Male	12	12	41723.75	13513.79	29190.00	63705.00
	Purchasing	Female	11	11	41555.91	14029.76	30025.00	63985.00
		Male	7	7	33462.14	2541.79	30195.00	36970.00
	Sales	Female	48	48	27776.98	1893.63	25020.00	32985.00
		Male	75	75	27418.53	2233.27	22710.00	35990.00
	Sales Management	Female	3	3	47323.33	31334.36	29145.00	83505.00
		Male	5	5	116646.00	57550.94	52930.00	194885.00
	Secretary of the Board	Female	2	2	30167.50	2237.99	28585.00	31750.00
	Stock & Shipping	Female	13	13	32815.38	11834.49	25130.00	65555.00
		Male	3	3	45483.33	17858.95	30950.00	65420.00
	Strategy	Female	1	1	52540.00	.	52540.00	52540.00
		Male	1	1	76105.00	.	76105.00	76105.00

PROC MEANS Output Data Set

SAS Data Set Work.Summary

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	employees	average
1	Australia		Female	5	48	48	\$27,961
2	Australia		Male	5	60	60	\$33,289
3	Belgium		Female	5	27	27	\$32,342
4	Belgium		Male	5	33	33	\$29,754
5	Germany		Female	5	45	45	\$34,060
6	Germany		Male	5	53	53	\$27,362
7	Denmark		Female	5	23	23	\$27,857
8	Denmark		Male	5	28	28	\$34,694
9	Spain		Female	5	29	29	\$33,353
10	Spain		Male	5	37	37	\$29,323
11	France		Female	5	44	44	\$28,832
12	France		Male	5	54	54	\$34,143
13	United Kingdom		Female	5	50	50	\$28,240
14	United Kingdom		Male	5	59	59	\$32,508
15	Italy		Female	5	34	34	\$29,635
16	Italy		Male	5	43	43	\$30,980
17	Netherlands		Female	5	30	30	\$30,835
18	Netherlands		Male	5	35	35	\$31,160
19	United States		Female	5	143	143	\$38,152
20	United States		Male	5	173	173	\$42,395
21	Australia	Administration		6	13	13	\$29,300
22	Australia	Engineering		6	4	4	\$29,415
23	Australia	Sales		6	78	78	\$27,416
24	Australia	Sales Management		6	3	3	\$119,757
25	Australia	Stock & Shipping		6	10	10	\$34,321
26	Belgium	Administration		6	11	11	\$29,475
27	Belgium	Engineering		6	2	2	\$28,533
28	Belgium	Sales		6	45	45	\$27,429
29	Belgium	Sales Management		6	2	2	\$119,775
30	Germany	Administration		6	13	13	\$30,709
31	Germany	Engineering		6	5	5	\$29,607
32	Germany	Sales		6	76	76	\$27,303
33	Germany	Sales Management		6	4	4	\$90,153
34	Denmark	Administration		6	9	9	\$29,867
35	Denmark	Engineering		6	2	2	\$28,683

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	employees	average
36	Denmark	Sales		6	38	38	\$27,551
37	Denmark	Sales Management		6	2	2	\$119,518
38	Spain	Administration		6	8	8	\$31,873
39	Spain	Engineering		6	2	2	\$27,650
40	Spain	Sales		6	53	53	\$27,663
41	Spain	Sales Management		6	3	3	\$91,927
42	France	Administration		6	13	13	\$30,252
43	France	Engineering		6	3	3	\$29,487
44	France	Sales		6	64	64	\$27,706
45	France	Sales Management		6	4	4	\$100,090
46	France	Stock & Shipping		6	14	14	\$32,647
47	United Kingdom	Administration		6	14	14	\$30,343
48	United Kingdom	Engineering		6	4	4	\$31,065
49	United Kingdom	Sales		6	87	87	\$27,783
50	United Kingdom	Sales Management		6	4	4	\$90,949
51	Italy	Administration		6	10	10	\$30,864
52	Italy	Engineering		6	2	2	\$30,763
53	Italy	Sales		6	62	62	\$27,387
54	Italy	Sales Management		6	3	3	\$90,523
55	Netherlands	Administration		6	9	9	\$32,293
56	Netherlands	Engineering		6	2	2	\$27,993
57	Netherlands	Sales		6	51	51	\$27,633
58	Netherlands	Sales Management		6	3	3	\$86,573
59	United States	Accounts		6	17	17	\$40,026
60	United States	Accounts Management		6	9	9	\$44,131
61	United States	Administration		6	21	21	\$29,950
62	United States	Concession Management		6	11	11	\$33,839
63	United States	Engineering		6	5	5	\$31,725
64	United States	Executives		6	4	4	\$288,333
65	United States	Group Financials		6	3	3	\$44,022
66	United States	Group HR		6	18	18	\$40,467

Obs	Employee_Country	Department	Employee_Gender	_TYPE_	_FREQ_	employees	average
		Management					
67	United States	IS		6	25	25	\$52,027
68	United States	Logistics Management		6	14	14	\$58,491
69	United States	Marketing		6	20	20	\$43,055
70	United States	Purchasing		6	18	18	\$38,408
71	United States	Sales		6	123	123	\$27,558
72	United States	Sales Management		6	8	8	\$90,650
73	United States	Secretary of the Board		6	2	2	\$30,168
74	United States	Stock & Shipping		6	16	16	\$35,191
75	United States	Strategy		6	2	2	\$64,323