A	syntax errors, 126
Alignment argument, 189 Ampersand format modifier, 168 Array processing, 121–137 applications that use multidimensional arrays, 133–136 calculating average SBP for pre- and post-treatment, 133–134 data set transformation, 136 nested loop, 134 number of observations, 135 one-dimensional array, 134 post-treatment results, 134 pre-treatment measurements, 133 restructuring data sets by using multi-dimensional array, 135–136 subscript, 133 SUM statement, 135 syntax, 133 two-dimensional array, 134 array applications, 130–133 calculating products of multiple variables, 131–132 creating a group of variables by using arrays, 130–131 data set transformation, 132 DO loop, 133 list of variables, 130 long format, 132 pre-treatment measurements, 130 product of multiple variables, 131 restructuring data sets using one-dimensional arrays, 132–133	defining and referencing one-dimensional arrays, 123–125 array-elements, 123, 124 array-name, 123, 124, 125 asterisk, 123 character elements, 123 delimiters argument, 123 initial-value-list, 124 keywords, 124 RETAIN statement, 124 subscript, 125 enriched syntax, 121 exercises, 136–137 functions and operators, 126–130 array-elements, 126 bound-n, 126 DIM function, 127 DIM, HBOUND, and LBOUNE functions, 126 missing values, 129 multi-dimensional array, 126 OF operator, 130 similar syntax, 126 using IN and OF operator with array, 129–130 situations for utilizing, 121–122 DATA step variables, 122 example, 121 IF statements, 122 multi-dimensional arrays, 122 one-dimensional array, 122 referencing of data, 122
SUM function, 131	DV . DATE
temporary data elements, 131 compilation and execution phases, 125–126 array name, 125	BY-group processing in DATA step, 79–93 applications, 85–92 calculating mean score within
iterations, 127, 128 PDV creation, 125	each BY group, 87–88 counter variable, 87

creating data sets with duplicate	example, 143
or non-duplicate observations,	execution phase, 144, 146, 149
88–89	master data set, 151
cumulating variable, 85, 87	match-merging, 147–151
data set observations, 92	merge-type, 145
example, 89	merging syntax, 146
identical observations, 88	one-to-many matching, 147
long format, 91	one-to-one merging, 146
longitudinal data, 85	one-to-one reading, 143–145
obtaining the most recent	output data set, 145
non-missing data within	=
Č .	transaction data set, 151 unmatched observations, 150
each BY group, 89–91	
previously sorted variable, 87	updating data sets, 151–152 variables from different
restructuring data sets from long	
format to wide format, 91–92	sources, 143
RETAIN statement, 90	vertically combining data sets, 139–143
wide format, 91	common variables, 141
BY-group processing, 79–86	compilation phase, 141, 143
execution phase of BY-group	concatenating data sets, 139–142
processing, 81–85	execution phase, 141, 143
fifth iteration, 86	input data sets, sorting of, 142
first iteration, 82	interleaving data sets, 142–143
FIRST.VARIABLE and	new-name, 141
LAST.VARIABLE, 79–81	old-name, 141
fourth iteration, 85	program data vector, 141, 143
grouping variables, 79	sum of observations, 139
longitudinal data, 79	syntax, 139
multiple variables, 79	variables from different source, 139
second iteration, 83	COMPARE procedure, use of to
subsetting IF statement, 83	compare contents of two data
SUM statement, 81	sets, 208–215
third iteration, 84	base data set, 214
total score for each subject, 81	common variables, 210
exercises, 92–93	comparing observations with
	common ID values, 212–215
C	comparison data set, 214
C	first weight value, 209
Cartesian product, 147	information provided from PROC
Catalog-specification, 233	COMPARE, 209–212
Character variables, 2	matching variables, 209
Charlist argument, 195	observation differences, 210
Column pointer-control, 162	options, 209
Combining data sets, 139–153	VAR statement, 212
exercises, 152–153	Count argument, 194
horizontally combining data sets,	Count angumenty 17 1
143–152	_
Cartesian product, 147	D
compilation phase, 144	Data entry error, 56
descriptor information 146 140	Data input and output 155, 170

Data input and output, 155-179

descriptor information, 146, 149

creating	g text files, 175–177	data informat, 157–158
	nment parameters, 176	data values, 159
	mn output, 175–176	decimal scaling factor, 158
	-column, 175	embedded characters, 158
	natted output, 176	examples of date formats, 160
	column, 175	examples of date informats, 159
	output, 177	external-file, 155
	statement, 177	FILENAME statement, 155
	t-column, 175	file-specification, 155, 156, 157
	able, 175	INFILE statement, 156
	es, 177–179	named input method, 156, 157
	g text files, 160–174	observations and variables, 155
amp	persand format modifier, 168	SAS date and time values, 158–160
char	acter values, 161	standard numeric values, 157
colu	mn input, 161–162	steps for reading text files,
colu	mn pointer-control, 162	155–156
cons	secutive blanks, 168	steps for writing text files, 157
crea	ting observations by using	text files, 156
li	ine-hold specifiers, 172–174	Data sets, combining, see Combining
	ting observations by using	data sets
	ine pointer-controls, 171–172	Data step functions, 181–204
	execution, 165	character functions, 190–197
	in free format, 169	assignment statement, 191
	miter-Sensitive-Data	CATT function, 192
	ption, 167	changing character cases, 190–191
	ble trailing "at" signs, 172, 173	character-to-replace, 196
	pedded blanks, 168	character variable, 192
	nple, 163, 171	charlist argument, 195
	natted input, 162–164	concatenating character strings,
	ILE statement, 161, 172	191–194
	rmat in modified list input, 169	concatenation operator, 193
	it buffer, 174	count argument, 194
_	it pointer, 171, 173	default delimiter, 195
	UT statement, 164	delimiters argument, 190
	ut values, 161	excerpt argument, 194
	pointer-control, 162	functions for aligning character
	nput, 164–168	strings and trimming blanks,
	sing values, 167	192, 193
	ed input, 170–171	INDEX function, 195
	lified list input, 168–170	PROPCASE function, 190
nons	standard numeric value, 170	searching, exacting, and replacing
poir	nter-control, 162	character strings, 194–197
prog	gram data vector, 160	source argument, 197
	setting IF statement, 174	string argument, 194
synt	ax, modified list input, 168	syntax, 190
reading	g and writing text files, 155–160	target argument, 197
char	acter values, 157	TRANWARD function, 196
chec	cklist, 156	date and time functions, 185-190
data	format, 158	alignment argument, 189
		0 ,

creating date and time values, 185–186 date and time interval functions, 188–190 date value, 185 DHMS function, 186 extracting components from date and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument, 188 variable description of TENANT data, 187 exercises, 203–204 source argument, 200, 201 DATA step operation, 55–77 conditional processing in DATA step, 66–70 detecting the end of data set by using the END= option, 68 expression, 67 final data set, 70 initialized variable, 68 long format, 68 observations, 69 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,		. 000 001
date and time interval functions, 188–190 date value, 185 DHMS function, 186 extracting components from date and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument, 188 interval argument, 189 interval argument, 189 variable description of TENANT data, 187 conditional processing in DATA step, 66–70 detecting the end of data set by using the END= option, 68 expression, 67 final data set, 70 initialized variable, 68 long format, 68 observations, 69 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,	creating date and time values,	source argument, 200, 201
188–190 date value, 185 DHMS function, 186 extracting components from date and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument, 188 interval argument, 189 interval argument, 189 variable description of TENANT data, 187 date value, 185 detecting the end of data set by using the END= option, 68 expression, 67 final data set, 70 initialized variable, 68 long format, 68 observations, 69 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,		
date value, 185 DHMS function, 186 extracting components from date and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument	•	1 0 1
DHMS function, 186 extracting components from date and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument, 188 interval argument, 189 interval argument, 189 variable description of TENANT data, 187 using the END= option, 68 expression, 67 final data set, 70 initialized variable, 68 long format, 68 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,		
extracting components from date and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument, 188 interval argument, 189 interval argument, 189 interval argument, 189 variable description of TENANT data, 187 expression, 67 final data set, 70 initialized variable, 68 long format, 68 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,		•
and time values, 187–188 functions for creating date and time values, 186 increment argument, 188 interval argument, 188 interval argument, 189 interval argument, 188 interval argument, 69 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,		
functions for creating date and time values, 186 long format, 68 long format, 68 increment argument, 188 observations, 69 restructuring data sets from wide INTNX function, 189 format to long format, 68–70 numeric values, 185 subsetting IF statement, 66–67 start-from argument, 188, 189 variable description of TENANT data, 187 DATA step processing overview,		
time values, 186 long format, 68 increment argument, 188 observations, 69 interval argument, 188 restructuring data sets from wide INTNX function, 189 format to long format, 68–70 numeric values, 185 subsetting IF statement, 66–67 start-from argument, 188, 189 variable description of TENANT data, 187 DATA step processing overview,		
increment argument, 188 interval argument, 189 format to long format, 68–70 subsetting IF statement, 66–67 start-from argument, 188, 189 variable description of TENANT data, 187 observations, 69 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,	~	
interval argument, 188 INTNX function, 189 numeric values, 185 start-from argument, 188, 189 variable description of TENANT data, 187 restructuring data sets from wide format to long format, 68–70 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,	•	
INTNX function, 189 format to long format, 68–70 subsetting IF statement, 66–67 start-from argument, 188, 189 temporary variable, 68 wide format, 68 DATA step processing overview,		,
numeric values, 185 subsetting IF statement, 66–67 start-from argument, 188, 189 temporary variable, 68 variable description of TENANT data, 187 barrangement, 188 data, 187 subsetting IF statement, 66–67 temporary variable, 68 wide format, 68 DATA step processing overview,		
start-from argument, 188, 189 temporary variable, 68 variable description of TENANT data, 187 temporary variable, 68 wide format, 68 DATA step processing overview,	•	
variable description of TENANT wide format, 68 data, 187 DATA step processing overview,	•	
data, 187 DATA step processing overview,		
field description for ID variable, 203 compilation phase, 55		
functions and CALL routines, 181–185 data entry error, 56		
algebraic expression, 182 DATA step compilation phase,		
argument, 181, 183 57–58		
array-name, 181 DATA step execution phase, 58–61		DATA step execution phase, 58–61
assignment statement, 181 declarative statements, 55		
CALL routines, 182–184 difference between reading a raw		difference between reading a raw
categories, 184–185 data set and SAS data set,		ĕ
character variables, 183 61–62	_	61–62
descriptive statistics end-of-file marker, 59	descriptive statistics	end-of-file marker, 59
functions, 184 error, 55		
functions, 181–182 executable statements, 55	functions, 181–182	executable statements, 55
mathematical functions, 184 execution phase, 55	mathematical functions, 184	execution phase, 55
MEAN function, 182 first iteration, 59	MEAN function, 182	first iteration, 59
numeric variables, 183 importance of OUTPUT	numeric variables, 183	importance of OUTPUT
RANUNI function, 185 statement, 61	RANUNI function, 185	statement, 61
variable-list, 181 iteration, 55	variable-list, 181	iteration, 55
functions for converting variable program data vector, 57	functions for converting variable	
types, 198–203 raw data file, 61		
automatic conversion, 199 second iteration, 60	automatic conversion, 199	
automatic numeric-to-character syntax errors, 58	automatic numeric-to-character	
conversion, 201 third iteration, 60		
character informat, 200 debugging techniques, 70–76	character informat, 200	debugging techniques, 70-76
informat argument, 200 BREAK command, 75		
INPUT function, 198–201 format option, 74		
missing value, 199 highlighted statement, 74		
operator, 201 logic errors, 70, 74		
PUT function, 201–203 missing variable, 76		
returned values, 202 strategy, 70		
reversed direction of syntax errors, 70		•
conversion, 198 using DATA step debugger, 74–76	conversion, 198	using DATA step debugger, 74–76

using PUT statement to observe	nested loops, 102
contents of PDV, 70–73	number of iterations, 99
variable-list, 71	outer loop, 102
exercises, 76–77	programming error, 101
retaining the value of newly created	start value, 98
variables, 62–66	stop value, 98
declarative statement, 63	
execution phase, 63	F
expression, 65	Til 10 11 144 455 457 457
first iteration, 64	File-specification, 111, 155, 156, 157
initialized variable, 62	Formatted input method, 164
RETAIN statement, 62–64	
second iteration, 65	G
SUM statement, 64–66	Clabal statements 1
third iteration, 66	Global statements, 1
Date values, 159	Grouping variables, 79
Decimal scaling factor, 158	
Declarative statement, 55, 63	Н
Delimiters argument, 123, 190	Horizontally combining data sets,
Descriptive statistics functions, 184	143–152
,	Cartesian product, 147
T.	compilation phase, 144
E	descriptor information, 146, 149
End-of-file marker, 59	
Excerpt argument, 194	example, 143
Executable statements, 55	execution phase, 144, 146, 149
Exercises	master data set, 151
array processing, 136–137	match-merging, 147–151
BY-group processing in DATA step,	merge-type, 145
92–93	merging syntax, 146
combining data sets, 152–153	one-to-many matching, 147
conditional creation of variables, 54	one-to-one merging, 146
data input and output, 177–179	one-to-one reading, 143–145
data step functions, 203–204	output data set, 145
DATA step operation, 76–77	transaction data set, 151
introduction to SAS®, 33–34	unmatched observations, 150
	updating data sets, 151–152
SAS® procedures, 239	variables from different sources, 143
writing loops in DATA step, 117–119	
Explicit loops, 96–102	I
CENTER variable, 103	IE THEN /ELCE statement 25 45
combining loops, 103	IF-THEN/ELSE statement, 35–45
DO loop, first two iterations, 99	bytes of storage space, 42
expression, evaluated, 101	character variable, comparison of, 38
identical statements, 97	DO group, 43–45
ID variable, 101	evaluation of variables, 35
increment value, 98	FREQ procedure, 43
index-variable, 98, 102	handling missing values when
inner loop, 102	creating variables, 37–39
last two iterations, 100	indicator variable, 36

LENGTH attribute, 41-43 multiple, 45-48, 53 numeric variable, 40 PROC MEANS, 39 steps for creating a variable, 35–37 TRUE and FALSE (logical expressions), 39-41 variable attributes, 35 Implicit loops, 95–96 DATA step execution, 96 example, 95 implicit OUTPUT statement, 96 RANUNI function, 96 Increment argument, 188 Increment value, 98 Index-variable, 98, 102 Informat argument, 200 Input and output, see Data input and output Interval argument, 188

L

Line pointer-control, 162 List input method, 166 List output method, 177 Longitudinal data, 79, 85 Loops, see Writing loops in DATA step

M

Master data set, 151 Match-merging, 147 Mathematical functions, 184

N

Named input method, 156, 157 Nested loops, 102, 134 Numeric variables, 2

O

OPTIONS procedure, use of to modify SAS system options, 236–239 LINESIZE option, 238 listing output, 237 options, 237, 238 page breaks, 237 settings, 237

P

PDV, see Program data vector Pointer-control, 162 Procedures, see SAS® procedures Program data vector (PDV), 57, 141, 160

R

RACE variable, 30 Reading text files, 160–174 ampersand format modifier, 168 character values, 161 column input, 161-162 column pointer-control, 162 consecutive blanks, 168 creating observations by using line-hold specifiers, 172–174 creating observations by using line pointer-controls, 171–172 data execution, 165 data in free format, 169 Delimiter-Sensitive-Data option, 167 double trailing "at" signs, 172, 173 embedded blanks, 168 example, 163, 171 formatted input, 162-164 INFILE statement, 161, 172 informat in modified list input, 169 input buffer, 174 input pointer, 171, 173 INPUT statement, 164 input values, 161 line pointer-control, 162 list input, 164–168 missing values, 167 mixed input, 170–171 modified list input, 168–170 nonstandard numeric value, 170 pointer-control, 162 program data vector, 160 subsetting IF statement, 174 syntax, modified list input, 168

S

SAS®, introduction to, 1–34 base SAS procedures, 13–24 BY variable, 14

CLASS statement, 18	input data set, 4
common statements in SAS	input methods, 7
procedures (TITLE, BY, and	library, 2
WHERE statements), 13–14	message component, 4
CONTENTS procedure, 14–16	naming rules, 3
default title, 13	numeric variables, 2
descriptor, 14	output data set, 4
FREQ procedure, 20–24	reading data entered directly into
HEARING data set, 15	program, 8–9
MEANS procedure, 18–20	reading a raw data file with fixed
PRINT procedure, 16–18	fields, 6–8
RACE variable, 17	reading a SAS data set, 3–6
SMOKE variable, 19	rows, 2
SORT procedure, 16	SAS data set and SAS library, 2–3
TABLES statement, 20	SAS log, 5
VARNUM option, 15	terminologies, 2
VAR statement, 17	text file, 6
WORK library, 14	SAS program and language, 1
changing the appearance of data, 28–33	global statements, 1
	language elements, 1
category of ethnicity, 30	PROC steps, 1
character data, 31	subsetting data by selecting
dissociation of format from	variables, 24–28
variable, 32	DROP= data set option or DROP
formatting variable values using	statement, 27
SAS FORMATS, 31–33	KEEP= data set option or KEEP
labeling variables, 29–31	statement, 25–26
nonstandard numeric format, 32	name prefix lists, 24
preferred format, 28	numbered range lists, 24
RACE variable, 30	variable-list notation, 25
removal of labels from	variable-lists, types of, 24
variables, 29	where to specify DROP= and
creating and modifying variables,	KEEP= data set options and
9–13	DROP/KEEP statements, 27–28
assignment statement and SAS	SAS® procedures, 205–239
expression, 9–12	creating user-defined format using
creating variables conditionally,	FORMAT procedure, 227–236
12–13	catalog-specification, 233
expression categories, 11	continuous variables, 233
function, 11	creating user-defined formats,
IF-THEN/ELSE statements, 9, 12	228–233
INCOME variable, 13	creating variables by using
mnemonic-equivalent forms, 9	user-defined formats, 235–236
PRINT procedure, 12	examples of value-or-range
exercises, 33–34	sets, 230
reading data into SAS, 2–9	format catalog, 231
character variables, 2	formatted-value, 229
floating-point numbers, 2	HEARING data set, 233
INFILE statement, 7	indicator variable, 235
′	,

informats, 227	options, 209
keywords, 229	VAR statement, 212
retrieving user-defined formats,	using OPTIONS procedure to
233–235	modify SAS system options,
value-or-range, 229	236–239
value-range-set, 228	LINESIZE option, 238
VALUE statement, 228	listing output, 237
WORK library, 233	options, 237, 238
exercises, 239	page breaks, 237
restructuring data sets using	settings, 237
TRANSPOSE procedure,	using SORT procedure to eliminate
215–227	duplicate observations,
CONTENTS procedure, 218	205–208
COPY statement, 219	adjacent observations, 207
duplicated records, 223	data set, 205
handling duplicated observations	eliminating duplicate
using the LET option, 222–224	observations, 207–208
introduction to transposing BY	eliminating observations with
groups, 219–220	duplicate BY values, 205–207
observations, 216	input data set, 206
RENAME suboption, 220	NODUPKEY, 205, 206
situations requiring two or more	observations, 205
transpositions, 224–227	PROC SORT, 206
suffix, 217	SORT procedure, 205
syntax, 216	Select-expression, 48, 49
transposing entire data set,	SORT procedure, use of to eliminate
216–218	duplicate observations,
uninformative name, 220	205–208
user-defined PREFIX, 222 variables, 216	adjacent observations, 207
where ID statement does not work	data set, 205 eliminating duplicate observations,
for transposing BY groups,	207–208
220–221	eliminating observations with
where ID statement is essential	duplicate BY values, 205–207
for transposing BY groups,	input data set, 206
221–222	NODUPKEY, 205, 206
using COMPARE procedure to	observations, 205
compare contents of two data	PROC SORT, 206
sets, 208–215	SORT procedure, 205
base data set, 214	Source argument, 197, 200, 201
common variables, 210	Start-from argument, 188, 189
comparing observations with	String argument, 194
common ID values, 212–215	Syntax
comparison data set, 214	array processing, 121, 126
first weight value, 209	character functions, 190
information provided from PROC	combining data sets, 139, 146
COMPARE, 209–212	errors, DATA step operation, 58, 70
matching variables, 209	reading text files, 168
observation differences, 210	TRANSPOSE procedure, 216

T	retrieving user-defined formats, 233–235
Target argument, 197 Text files, see Data input and output Transaction data set, 151 TRANSPOSE procedure, restructuring data sets using, 215–227	value-or-range, 229 value-range-set, 228 VALUE statement, 228 WORK library, 233
CONTENTS procedure, 218 COPY statement, 219	v
duplicated records, 223 handling duplicated observations using the LET option, 222–224 introduction to transposing BY groups, 219–220 observations, 216 RENAME suboption, 220 situations requiring two or more transpositions, 224–227 suffix, 217 syntax, 216 transposing entire data set, 216–218 uninformative name, 220 user-defined PREFIX, 222 variables, 216 where ID statement does not work for transposing BY groups,	Variables character, 2 continuous, 233 counter, 87 creating and modifying, 9–13 assignment statement and SAS expression, 9–12 creating variables conditionally, 12–13 expression categories, 11 function, 11 IF-THEN/ELSE statements, 9, 12 INCOME variable, 13 mnemonic-equivalent forms, 9 PRINT procedure, 12 cumulating, 85, 87 dissociation of format from, 32
220–221 where ID statement is essential for transposing BY groups, 221–222	grouping, 79 indicator, 235 -lists, types of, 24 matching, 209 numeric, 2
U	product of, 131 removal of labels from, 29
User-defined format, creation of using FORMAT procedure, 227–236	temporary, 104 Variables, conditional creation of, 35–54
catalog-specification, 233 continuous variables, 233 creating user-defined formats, 228–233	executing one of several statements, 45–52 AGEGROUP variable, 45 executing statements using
creating variables by using user- defined formats, 235–236 examples of value-or-range sets, 230 format catalog, 231	SELECT group, 48–52 multiple IF-THEN/ELSE statements, 45–48 OTHERWISE statement, 49
formatted-value, 229 HEARING data set, 233 indicator variable, 235 informats, 227	select-expression, 48, 49 threshold value, 46 when-expression, 49 exercises, 54
keywords, 229	IF-THEN/ELSE statement, 35–45

bytes of storage space, 42 character variable, comparison of, 38 DO group, 43–45 evaluation of variables, 35 FREQ procedure, 43 handling missing values when creating variables, 37–39	DO loop, first two iterations, 99 example, 95 explicit loops, 96–102 expression, evaluated, 101 identical statements, 97 ID variable, 101 implicit loops, 95–96 implicit OUTPUT statement, 96
indicator variable, 36 LENGTH attribute, 41–43	increment value, 98 index-variable, 98, 102
numeric variable, 40	inner loop, 102
PROC MEANS, 39	last two iterations, 100
steps for creating a variable, 35–37 TRUE and FALSE (logical	nested loops, 102 number of iterations, 99
expressions), 39–41	outer loop, 102
variable attributes, 35	programming error, 101
modifying of IF-THEN/ELSE	RANUNI function, 96
statement with assignment	start value, 98
statement, 52–54	stop value, 98
AGEGROUP variable, 53, 54	using looping to read a list of
comparison evaluation, 53	external files, 110–117
indicator variable, 52	DO loop, first iteration, 114
multiple IF-THEN/ELSE	DO loop, second iteration, 115
statement, 53	DO loop, third iteration, 116
Vertically combining data sets, 139–143	DO UNTIL loop, 111
common variables, 141	dummy, 112
compilation phase, 141, 143	end-of-file marker, 110, 111
concatenating data sets, 139–142	explicit OUTPUT statement, 113
execution phase, 141, 143	external file, 110–111
input data sets, sorting of, 142	file-specification, 111
interleaving data sets, 142–143	INFILE statement, 111
new-name, 141	multiple external files, 111–117
old-name, 141	placeholder, 111
program data vector, 141, 143	reading multiple files, 112
sum of observations, 139	specifying a condition, 110
syntax, 139 variables from different source, 139	variable, 110
variables from different source, 139	utilizing loops to create samples, 103–109
W	algorithm, 108, 109
When-everession 49	components, 104
When-expression, 49 WORK library, 14	CONTENTS procedure, 105 creating random sample with
Writing loops in DATA step, 95–119	replacement, 106–108
exercises, 117–119	creating random sample without
implicit and explicit loops, 95–103	replacement, 108–109
CENTER variable, 103	creating systematic sample,
combining loops, 103	105–106
DATA step execution, 96	data set, 103
I	

direct-access mode, 104–105 DO loop, first iteration, 106 increment values, 105 input-data-set, 105 last two iterations, 107 observation to be selected, 108 Rannum, 108 sampling schemes, 103 STOP statement, 104 temporary variable, 104