

# Contents

<b>Preface to the Second Edition</b> .....	<b>xi</b>
<b>A Note About Source Entry</b> .....	<b>xi</b>
<b>Chapter 1: Pre-Free-Format RPG IV</b> .....	<b>1</b>
RPG IV .....	1
Extended Factor 2 .....	2
Built-in Functions .....	2
Subprocedures.....	3
Other Changes .....	3
Some “Baggage” That Came Along.....	4
The Future .....	4
<b>Chapter 2: The Case for Free-Format RPG</b> .....	<b>7</b>
Easier to Read and Maintain .....	7
Good Field Naming .....	8
Indenting .....	10
Use of Comments.....	10
No Goto Operations .....	11
Conclusions.....	11
A “Modern” Programming Style.....	12
Free-Format RPG IV and C .....	12
Free-Format RPG IV and Java.....	13
Conclusions.....	14
Being “Current” .....	14
The Programmer’s Perspective.....	14
Management’s Perspective .....	15
Conclusions.....	15
Check It Out .....	15
<b>Chapter 3: Free-Format H, F, D, and P Specifications</b> .....	<b>17</b>
The H (Control) Specification .....	17
The F (File) Specifications .....	18

The D (Definition) Specifications .....	20
The P (Procedure) Specification .....	24
Conclusions .....	25
<b>Chapter 4: Introducing Free-Format RPG IV .....</b>	<b>27</b>
Coding Free-Format Calculations .....	28
Naming Variables .....	29
Programming Style .....	30
A Note About Case .....	30
Free-Format Operation Codes .....	31
Evaluate .....	34
If .....	35
Controlled Looping .....	37
Mathematics .....	38
Character Strings .....	38
Programming Style Issues .....	39
Mixing Formats .....	39
Keyed Access .....	42
Named Indicators .....	43
Naming File Indicators .....	43
Summing Up .....	44
<b>Chapter 5: Input/Output Using Free Format .....</b>	<b>47</b>
Database Input .....	47
%Eof .....	48
%Found .....	49
%Error .....	50
%Equal .....	51
Data Area Input .....	52
Database Output .....	52
Write .....	52
Update .....	53
Delete .....	53

Except.....	53
Workstation I/O.....	54
Write/Read.....	54
Write.....	55
Read.....	55
ICF I/O.....	55
Dsply.....	55
Printer Output.....	57
Overflow Indicator.....	57
Write.....	57
Except.....	57
<b>Chapter 6: Program Flow Using Free Format .....</b>	<b>59</b>
The If Group.....	59
If.....	59
Else.....	62
Elseif.....	62
Endif.....	62
The Do Operations.....	63
Do While.....	63
Do Until.....	64
Dow and Dou Differences.....	64
For.....	65
Loop Interrupt.....	66
Leave.....	66
Iter.....	67
The Select Group.....	68
Select.....	68
Operations Absent in Free Format.....	69
<b>Chapter 7: Embedded SQL Operations Using Free Format.....</b>	<b>71</b>
Database and Embedded SQL.....	71

Fixed-Format Method .....	71
Free-Format Method .....	73
<b>Chapter 8: Data-Manipulation Operations Using Free Format .....</b>	<b>75</b>
Assignment Statements .....	75
Eval Operation: Numeric .....	76
Eval Operation: Character .....	77
Evaluate Right (EvalR) Operation .....	78
Eval Operation: IS,OC .....	78
Evaluate vs. Move .....	79
Built-in Functions .....	79
Converting Decimal to Character .....	80
Converting Character to Packed Decimal .....	81
Substringing .....	82
Replace .....	83
Scan and Replace .....	84
Concatenation and Trim .....	85
Converting Character to Integer .....	86
Extracting Size, Length, and Decimal Positions .....	87
Number of Elements .....	88
Looking for Something? .....	89
String Translation .....	90
Combining Built-in Functions .....	91
Date and Time Operations .....	92
Converting Numbers to Date and Time .....	92
Converting Date and Time to Character or Decimal .....	93
Date and Time Arithmetic .....	94
<b>Chapter 9: Math Operations in Free Format .....</b>	<b>97</b>
Expressions in Assignment Statements and Elsewhere .....	97
Four-Function Math .....	98
Short-Form Math .....	98
Exponentiation .....	100

Precedence .....	101
Mathematical Expressions Elsewhere.....	102
Eval Differences in Fixed and Free Format.....	102
Naming Variables .....	103
Semicolon .....	104
Free-Format Math in RPG IV .....	104
Numeric Data Types .....	105
Changing Data Type .....	105
<b>Chapter 10: Call and Return in Free Format.....</b>	<b>107</b>
Call Prototyped (CallP) Operation .....	107
Dynamic Call .....	108
Bound Call .....	109
Parameter-Passing Options.....	110
Value.....	110
Const .....	111
Options(*NoPass).....	111
Options(*Omit) .....	111
Options(*Varsize).....	111
Options(*String).....	112
Options(*RightAdj).....	112
Options(*Trim).....	112
The Return Operation .....	114
Subprocedures.....	114
Accessing APIs.....	115
API Examples .....	116
<b>Chapter 11: Solutions for Problem Situations.....</b>	<b>119</b>
Solution for the Fixed-Format MoveA Operation .....	119
History .....	119
The Free-Format Solution.....	120
The %Subarr Built-in Function .....	122
Solution for the Fixed-Format Move Operation.....	123

Breaking It Down.....	123
When Both Fields Are Character .....	123
Data Type Differences .....	125
Solution for the Fixed-Format MoveL Operation .....	125
Breaking It Down.....	125
When Both Fields Are Character .....	125
Solution for the Case Operation .....	126
Solution for the Do Operation .....	128
The Do Syntax.....	128
The Free-Format Solution.....	128
Error-Handling Techniques .....	129
The Monitor Solution .....	130
ILE Exception Handler .....	131
<b>Chapter 12: Sample Programs .....</b>	<b>133</b>
An Investment and Loan Utility Program .....	133
A Customer Inquiry Program .....	138
A Customer Data Entry Program .....	140
A Sales Report Program .....	145
<b>Appendix A: Free-Format Operations .....</b>	<b>151</b>
Expression Operators .....	151
Operation Extenders .....	153
Free-Format Operations .....	153
<b>Appendix B: Example Screens, DDS, and Programs .....</b>	<b>185</b>
Investment and Loan Utility Program .....	185
Customer Inquiry Program.....	189
Customer Data Entry Program .....	192
Sales Report Program.....	199
<b>Appendix C: Free-Format Alternatives for Fixed-Format Operations.....</b>	<b>207</b>
<b>Index .....</b>	<b>213</b>