

Portable Shell Programming

An Extensive Collection of Bourne Shell Examples

Contents

Introduction	7
How This Book Is Organized	9
Conventions Used in this Book	10
Software Included with this Book	11
Acknowledgments	12
Chapter 1: Shell Syntax	13
Creating a Shell Script	13
Comments	14
Line Continuation	14
File Name Expansion	15
Using Quotes	16
Command Substitution with Back Quotes.....	20
Command Exit Status	21
Command Separators	21
Command Grouping	23
Control Flow Statements.....	25
The test Command.....	28
Statements without Newlines.....	29
Chapter 2: Shell Variables	31
Using Variables	31
Undefined Variables	32
Uninitialized Variables.....	33
Positional Parameters	35
Special Variables	36
Assignment Statement on the Command Line	37
Chapter 3: Shell Functions and Built in Commands	39
Shell Functions.....	39
Built-in Commands	41
Chapter 4: Using Files	51
Standard File Descriptors	51
Redirection Syntax	51
Redirecting Output	53
Redirecting Input	53
Redirecting Shell Statements.....	54
Opening Files	55
Writing Files	55
Reading Files	56
Closing Files.....	57
Truncating a File	58
Here Documents	58
Examples of File Redirection	60
Chapter 5: The Environment	63
Identifying Shell Scripts.....	63

Environment Variables	64
User and System Information	66
Using Signals	68
Remote Command Execution	71
Chapter 6: Parsing Command Line Parameters	77
The Command Line	77
Command Line Conventions	78
Parsing Options	79
Parsing Parameters	83
Chapter 7: Using Filters	85
Using sed as a Filter	86
Filters for Text Files	87
Chapter 8: Shell Utilities	95
Arithmetic Operations	95
Manipulating Strings	97
Parsing Data	101
Interacting with Users	104
Process Manipulation	111
Processing Mail	111
Files and Directories	114
Chapter 9: Examples of Shell Functions	121
CheckHostname Function	121
Clear Function	123
DownShift Function	124
FullName Function	124
GetYesNo Function	126
IsNewer Function	127
IsNumeric Function	128
IsSystemType Function	129
Prompt Function	130
Question Function	131
StrCmp Function	135
SystemType Function	136
Chapter 10: Examples of Shell Scripts	139
Cat Command	140
DirCmp Command	141
Kill Command	145
MkDir Command	150
Shar Command	151
Wc Command	153
addcolumn Command	157
dircopy Command	158
findcmd Command	160
findfile Command	162
findstr Command	163
hostaddr Command	165
ptree Command	167
Chapter 11: Debugging	175
Debugging Options	175
Checking Syntax	176
Tracing Execution	177

Conditional Output	177
Common Coding Problems	178
Style	183
Chapter 12: Portability	189
Distinguishing Versions of UNIX	189
Portability Techniques	192
Locating Commands and Files	196
Shell Features	197
Issues with Specific Commands	201
Other Portability Problems	208
Chapter 13: Common Questions and Problems	209
I copied one of the examples from this book but it does not work. What is wrong?	209
Why do I always see the following line at the front of shell scripts?	210
What does the following line mean in a shell script?	210
How do you do a goto in the shell?	210
How do you include a file in a shell script?	210
Why am I having trouble continuing a command on the next line?	210
How can I use parentheses in an expression with the test command?	211
Why do changes to the value of a variable disappear?	211
Why do the command line parameters disappear or change?	211
Why does my shell script print a list of variables?	212
How can I pass a variable to sed?	212
How can I pass a variable to awk?	212
How can I substitute a pattern that contains a / using sed?	213
How can I write messages to the standard error file?	213
How do I read from the terminal?	213
Why does my file appear empty after reading only one line?	214
How can I read a file one line at a time?	214
Why does a for loop read a file one word at a time?	214
How can I read a file one word at a time?	215
How can I strip the carriage returns (^M) from a DOS file?	215
How can I copy a directory?	215
How can I search a directory for a file?	216
How can I search a directory for a file that contains a string?	216
How can I downshift all the file names in a directory?	216
How can I rename all of the files named xxx* to yyy*?	216
How can you tell if one file is newer than another?	217
How can I set an environment variable in a shell script and have that change affect my current environment?	217
How can I pass the entire command line to another command?	217
When executing a command I get the message "command: arg list too long". What should I do?	218
Appendix A: Comparison of UNIX Shells	219
Overview	219
The Bourne Shell	220
The C Shell	221
The Korn Shell	221
Other Shells	222
Selecting a Shell	223
Summary	225
Appendix B: Syntax Summary	227
Variables	227

Patterns	228
Quotes.....	228
Input-Output	228
Other Special Characters.....	228
Built-in Commands.....	229
Control Flow	229