

Copyright ©2015 Brian Leach. All rights reserved.

Any redistribution or reproduction of part or all of the contents in any form is prohibited.
You may not, except with our express written permission, copy, reproduce, download,
distribute or exploit the content.

ISBN: 978-1-326-26895-4

About this Book

This book contains a self paced learning guide to the UniVerse Enquiry Language, RetriVe. The book will take you through the RetriVe language step by step, explaining the database facilities in the UniVerse platform and providing workshops and examples through which you can test your understanding.

About the Author

Brian Leach has offered consultancy and training services in the use of the UniVerse platform for more than two decades. A seasoned developer, he has created some of the most powerful tools for the UniVerse platform and writes extensively about U2 (UniVerse and UniData) and allied technologies. He is a founder board member and past president of the International IBM U2 User Group and sits on board of the Rocket Software User Group.

For further details please visit: www.brianleach.co.uk

How to Use This Guide

This guide has been created for students wishing to learn about the UniVerse database enquiry language, RetrievE. You may be a developer new to UniVerse, a power user who needs to harness the enquiry facilities to extract business information from an existing system, or your interest may be purely academic. Whatever the case, the guide does not assume any prior knowledge of UniVerse or of any other database languages.

The guide will take you through the enquiry language step by step. Along the way you will learn about the structure of information held in a UniVerse database, will be introduced to a few of the other facilities offered by this platform, and will discover how the RetrievE language enables easy and intuitive reporting.

The guide is divided into a number of chapters, each of which contains a series of lessons that you can run through in your own time and at your own pace. To test your understanding, each lesson is accompanied by a number of examples and lab exercises. As far as possible, these exercises build upon each other in stages, so that you progress from simple listings of information to complex reports.

The Self Paced Guide to UniVerse Enquiry is the first in a series of self paced training guides to the UniVerse platform published by Brian Leach Consulting Limited. You can find these and other free materials on the website.

Acknowledgments

UniVerse, UniData, UniObjects, PICK and D3 are registered trademarks of Rocket Software, Inc. Other trademarks held by Rocket Software are listed at <http://www.rocketsoftware.com/company/legal/trademarks>.

UNIX is a registered trademark in the United States of America and other countries, licensed exclusively through X/Open Company Ltd.

Microsoft, Windows, Windows NT, Windows 2000 and MS-DOS are trademarks of Microsoft Corporation. ActiveX, JScript, Visual Studio, and Visual Basic are either registered trademarks or trademarks of Microsoft Corporation.

Adobe and Acrobat are trademarks of Adobe Systems Incorporated.

All other company or product names mentioned are trademarks or registered trademarks of their respective trademark holders.

The example companies, organizations, products and domain names depicted herein are fictitious. No association with any real company, organization, and product or domain name is intended or should be inferred.

Disclaimer

Brian Leach Consulting Limited makes no warranty of any kind with regard to the material contained in this guide, including but not limited to the implied warranties or merchantability and fitness for a particular purpose.

The information contained in this document is subject to change without notice.

Table of Contents

| | |
|---|----|
| How to Use This Guide | 4 |
| Acknowledgments..... | 5 |
| Disclaimer..... | 5 |
| Table of Contents | 6 |
| Chapter 1 Introduction and Background..... | 11 |
| Objectives..... | 11 |
| Notice | 11 |
| Lesson 1: Enquiry Languages and UniVerse..... | 12 |
| Databases and the Art of Finding Things | 13 |
| Enquiry Languages..... | 15 |
| The UniVerse Database | 17 |
| UniVerse, UniData and "U2" | 20 |
| The UniVerse Enquiry Languages | 21 |
| Lesson 2: Installing UniVerse Personal Edition..... | 23 |
| Downloading UniVerse Personal Edition | 24 |
| Important Notice for Administrators | 25 |
| Installing the Training Database..... | 26 |
| Lesson 3: Running UniVerse..... | 27 |
| Connecting to UniVerse | 28 |
| Logging into a UniVerse Environment..... | 30 |
| Connecting to an Account | 32 |
| Account Names and Paths | 32 |
| The UniVerse Command Shell..... | 35 |
| Disconnecting from UniVerse..... | 37 |
| Lesson 4: Using the Sentence Stack..... | 38 |
| The Sentence Stack | 39 |
| Running a Previous Command | 40 |
| Recalling and Changing Commands | 42 |
| Adding to a Statement | 43 |
| Saving Commands | 45 |
| Getting Additional Help..... | 47 |
| Chapter Summary | 48 |
| Sentence Stack Commands | 48 |
| Essential TCL Commands..... | 48 |
| Essential Things to Remember | 48 |
| Chapter 2 Exploring UniVerse..... | 49 |
| Objectives..... | 49 |
| Lesson 1: UniVerse Accounts and Files | 50 |

| | |
|--|-----|
| UniVerse Accounts | 51 |
| Accounts and Information | 52 |
| Account Flavors..... | 53 |
| Organizing Principles..... | 56 |
| UniVerse Files..... | 57 |
| Listing the Files in your Account | 58 |
| Identifying Files | 59 |
| Listing Remote Files | 60 |
| Navigating through Listings..... | 61 |
| Setting your Terminal Depth..... | 62 |
| Lesson 2: Discovering File Content | 63 |
| Listing the Content of Files..... | 64 |
| Files and Fields | 65 |
| The Default Listing | 66 |
| Files and Dictionaries | 67 |
| Dictionaries and Fields | 68 |
| Listing a File Dictionary | 69 |
| Dictionary Records | 71 |
| Conclusion..... | 73 |
| Chapter Summary | 74 |
| Commands to Learn | 74 |
| Things to Remember..... | 74 |
| Chapter 3 Displaying Information | 75 |
| Objectives..... | 75 |
| Lesson 1: Listing Fields..... | 76 |
| Listing Fields | 77 |
| Changing the Display Width..... | 79 |
| Field Alignment | 80 |
| Specifying the Display Format..... | 82 |
| Applying Display Masks..... | 83 |
| Changing the Column Header | 85 |
| Lesson 2: Conversion Codes | 87 |
| Conversion Codes..... | 88 |
| Conversion Codes for Character Data..... | 89 |
| Extracting Text | 91 |
| Extracting Words and Substrings | 93 |
| Conversion Codes for Numbers | 95 |
| Date Conversions | 100 |
| Time Conversions..... | 106 |
| Finding More Conversion Codes | 107 |
| Lesson 3: Finding Specific Records | 108 |

| | |
|--|-----|
| Records and Keys | 109 |
| Selecting Specific Record Keys | 110 |
| Searching for Specific Values..... | 111 |
| Searching to Exclude Specific Values | 112 |
| Comparisons with Numeric Data | 113 |
| Comparisons with Dates and Times | 114 |
| Comparisons with Character Data | 115 |
| Comparing Fields..... | 116 |
| Testing for Empty Fields..... | 117 |
| Partial String Searches..... | 117 |
| Using Search Metacharacters | 118 |
| Phonetic Searches | 120 |
| Lesson 4: MultiValued Data | 122 |
| Displaying Multiple Values | 123 |
| MultiValued Fields..... | 124 |
| Subvalued Fields..... | 125 |
| Selecting MultiValued Data..... | 126 |
| Vectored Selections..... | 126 |
| Exclusive MultiValue Selection..... | 129 |
| Handling False Positives | 130 |
| Filtered Selections | 131 |
| Associated Values..... | 133 |
| Combining Selections | 134 |
| Complex Selections | 136 |
| Understanding Precedence | 137 |
| Forcing Precedence | 139 |
| Chapter Summary | 142 |
| Essential Things to Remember..... | 142 |
| Chapter 4 Advanced Reporting | 143 |
| Objectives..... | 143 |
| Lesson 1: Sorting and Grouping | 144 |
| Sort Ordering..... | 145 |
| Reversing the Sort Order..... | 146 |
| The SORT Command..... | 147 |
| Grouping Reports | 148 |
| Adding Break Text | 149 |
| Embedding Break Text Values..... | 151 |
| Adding Totals and Sub-Totals..... | 153 |
| Other Summary Operators..... | 155 |
| Summarising a Report..... | 156 |
| Adding Headers and Footers | 158 |

| | |
|--|-----|
| Embedding Codes in the Headers | 159 |
| Lesson 2: Normalizing Data | 161 |
| Normalizing Data..... | 162 |
| Performing an Exploded Sort | 164 |
| Exploding and Grouping..... | 165 |
| Selecting Specific Values for Exploding..... | 166 |
| Lesson 3: Printing Reports and Labels | 169 |
| Printing Reports | 170 |
| Sending a Test Print | 172 |
| Sending Listings to the Printers..... | 173 |
| Some More RetrieVe Commands..... | 174 |
| Creating Labels..... | 176 |
| Lesson 4: Using Select Lists..... | 179 |
| Select Lists..... | 180 |
| Creating a Select List | 180 |
| Refining Selections | 183 |
| Sorting and Selecting..... | 184 |
| Cancelling a Select List | 185 |
| Saving Select Lists..... | 185 |
| Fetching a Saved List | 187 |
| Select Lists and Data Changes..... | 188 |
| Selecting Non-Key Fields | 188 |
| Chapter Summary | 191 |
| Things to Remember..... | 191 |
| New Terms | 191 |
| Chapter 5 Using Expressions | 192 |
| Chapter Objectives..... | 192 |
| Lesson 1: Expression Columns | 193 |
| Calculated Columns..... | 194 |
| Building Expressions..... | 195 |
| Simple Text Expressions | 197 |
| Performing Simple Arithmetic | 198 |
| Complex Arithmetic | 199 |
| Combining Fields | 200 |
| Lesson 2: Using Functions..... | 201 |
| MultiValued Arithmetic..... | 204 |
| Totalling Multivalues..... | 205 |
| Reusing Values | 206 |
| Conditional Expressions | 208 |
| Next Steps | 210 |
| Chapter Summary | 211 |

| | |
|---|-----|
| Things to Remember | 211 |
| Final Word | 212 |
| Answers to Labs..... | 213 |
| Chapter 3 Displaying Information | 213 |
| Lesson 1: Listing Fields | 213 |
| Lesson 2: Conversion Codes..... | 214 |
| Lesson 3: Finding Specific Records | 215 |
| Lesson 4: Multivalued Data..... | 216 |
| Chapter 4 Advanced Reporting..... | 217 |
| Lesson 1: Sorting and Grouping | 217 |
| Lesson 2: Normalizing Data..... | 219 |
| Lesson 3: Printing Reports and Labels | 220 |
| Lesson 4: Using Select Lists..... | 221 |
| Chapter 5 Expressions | 222 |
| Lesson 1: Expressions..... | 222 |