R:BASE X Enterprise
(Version 10)
Super Advanced Training

November 13-14, 2015 Baden, Switzerland

Course Outline

*Presenting the most productive development environment
in the history of R:BASE!*

Course Outline

by R:BASE Technologies, Inc.

R:BASE X is the sleek new relational database environment intended to offer next-generation development and connectivity to database administrators. Many added R:BASE X features bring forth powerful means to further streamline data management. R:BASE X also takes a big and very fundamental step of extended character support, geared towards even more versatile world-wide use.

The clean and sophisticated styling of R:BASE X, paired with the built-in database engine that has paved the foundation of stability and reliable convenience, provides a brand-new value on R:BASE's database and application adaptive content development.

2015 R:BASE X Enterprise SAT Course Outline

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First Edition

1   Course Outline

Understanding the R:BASE X and R:BASE X Enterprise for Windows Environment

- Installation and Configuration
  - ○ Typical vs. Server Installation
  - ○ Customizing Installation for Remote Access Users (Terminal Servers)
  - ○ Customizing R:BASE Configuration Settings

- Default Directories

- Understanding Configuration Files
  - ○ RBENGINEX.CFG
  - ○ RBENGINEXE.CFG

- Using R:BASE X and R:BASE X Enterprise in a Multi-User Environment

- Customizing Personal Settings
  - ○ Startup Options
  - ○ Database Explorer
    - **Database Path in Title Bar**
    - **Indicator For Compressed Forms/Reports/Labels**
    - **Show Rows Numbers**
    - Double Click Open Designer
    - Use Dialog to Open Table/View
    - Toolbar on Top/Bottom
    - **Explorer Appearance**
    - Explorer Style
    - Windows Icons
    - Open Group After Connecting
  - ○ R:BASE Editor
    - **Structure Toolbar > More Commands...**
  - ○ R> Prompt and Command History
  - ○ Data Browser
  - ○ Data Designer
    - Relational Verification
    - Warn When in Multi-User Environment
    - **Column Name Templates**
  - ○ Form Designer
    - Use Compression
    - Copy Form Designer -ERROR- Messages to the Clipboard
    - Save Form with Preview
    - Show Form Action Designer Hints
    - Autosave when Run
    - Add Default Component ID
    - **Show Designer Guidelines**
    - **Show Property Editor After Adding New Control**
    - **Enable Form EEP History**
    - Create Backup of External Forms
  - ○ Report/Label Designer
    - Row Count for Preview
    - Copy Report/Label -ERROR- Messages to the Clipboard
    - Add Default Component ID
    - Autosave When Preview
    - Compress Reports/Labels
    - **Enable Report/Label EEP History**
  - ○ Application Designer
  - ○ BLOB Editor
  - ○ Hint Settings
  - ○ Walkmenu Time Interval
  - ○ Default Printer Font
  - ○ ROSK Settings

- o Custom Colors
- o Warn When Closing R:BASE session
- o Show Check Box to Suppress Error Messages
- o Clean Scratch Files on Exit
- o Configuration Settings

- Managing Favorite Folders

- Using Built-in R:DCC Client

- Managing Updates

Upgrading to R:BASE X and R:BASE X Enterprise

- Upgrading R:BASE 7.x, 9.x (32) Database/Application to R:BASE X

- Upgrading R:BASE 7.x, 9.x (32) Database/Application to R:BASE X Enterprise

- Upgrading R:BASE Turbo V-8 Database/Application to R:BASE X Enterprise

- Upgrading R:BASE eXtreme 9.x (64) Database/Application to R:BASE X Enterprise

In-Depth Review of All New Features and Enhancements in R:BASE X

- Global Environment
  - o Unicode extended character support
    - ❏ Unicode character support for object comments (tables, fields, forms, etc…)
    - ❏ New data types for true Unicode support (R:BASE X Enterprise only)
    - ❏ Unicode character in the Data Browser
    - ❏ Unicode support in EEPs
    - ❏ Unicode support within PAUSE, DIALOG, and CHOOSE dialogs
    - ❏ Unicode controls in forms and reports
    - ❏ Unicode support in applications
    - ❏ Unicode file names and folders
    - ❏ Unicode file names and content in R:BASE Editor
    - ❏ Unicode support at the R> Prompt
    - ❏ Unicode support in stored procedures
    - ❏ Unicode support in views
    - ❏ Unicode files and contents in the File Gateway
    - ❏ R:Backup utility with Unicode support in data, file names, and folders
  - o New BIGINT data type, which is a 64-bit integer - R:BASE X Enterprise only
  - o Supported navigation of file system paths (and file names) with Unicode characters
  - o New SMALLINT data type, which is a 16-bit integer - R:BASE X Enterprise only
  - o New BOOLEAN data type - R:BASE X Enterprise only
  - o Includes 64-bit ODBC Driver for 64-bit application access - R:BASE X Enterprise only
  - o New "Segoe UI" font implemented system wide to blend well with recent Windows releases
  - o Support for fractional seconds (HH:MM:SS.SSS) in the database rebuilt process
  - o Added RBTI System Variables supporting the ability to set the default directory, file name, and output type for the "Print to File" print dialog, before the dialog is launched
  - o Integrated R:BASE database backup utility to backup one or more database, with options for automation
  - o Support for updatable cursors with BEFORE INSERT and BEFORE UPDATE triggers
  - o New CMPAUSE operating condition (Cascade Modal Pause) determines whether to allow multiple visible PAUSE dialogs
  - o New WIDETEXT data type - R:BASE X Enterprise only
  - o New WIDENOTE data type - R:BASE X Enterprise only
  - o Added internal constraints to prevent duplicate stored procedures when performing loading/ unloading procedures
  - o Opened R:BASE modules now displayed as "tabs" near the top of the R:BASE program
  - o Added Database Events for when disconnecting from the database and closing the R:BASE session - R:BASE X Enterprise only
  - o Built-in utility to convert R:BASE database and application projects that use extended ASCII characters
  - o New UTF8 operating condition to support Unicode characters for string function in applications

and environments
- o Consolidated "Design" and "Run/Print" buttons in the main toolbar
- o Enhanced main title bar to include the full path where the connected database is located
- o Enhanced "Open..." dialog box includes an "Open as read-only" option
- o New (separate) PAGELOCK operating condition
- o New environment setting to toggle between 16x16 and 24x24 icons within the Form/Report/ Label Designer areas
- o Added command line switches to control R:BASE modules, the splash screen, and R:Backup
- o New Database Versions utility to scan for databases, to list located files, paths, and version information
- o A new MODERN_LOOK parameter is available for the DIALOG command
- o A new system-wide application setting to specify if all DIALOGs use the modern look
- o New CHOOSE command "custom drawing options" allow the displayed window to appear as a list view control

- Database Explorer
  - o Unicode support for extended characters Database Explorer comments
  - o New Database Explorer Navigator
  - o New Database Explorer drop-down menu
  - o Added "Date/Time" column for Table and Views
  - o Added option to display row numbers for tables, views, forms, reports, etc.
  - o Added Database Properties reference in Databases
  - o Enhanced display of compressed forms, reports, and labels
  - o Enhanced warning display of listed database files
  - o Additional drag-and-drop unload capabilities for tables
  - o Enhanced stored procedures unload capabilities
  - o Added Connection History option to the Databases group bar menu

- R:BASE Editor
  - o Added Trace menu option [Shift+Ctrl+F9] to launch the Trace Debugger directly from the R:BASE Editor
  - o Added Unicode support
  - o Added Insert File Name option, to assist with file documentation
  - o Enhanced Structure Toolbar Settings allowing any R:BASE command to be added/removed from the toolbar
  - o Added Replace in All Files option within the "Replace Text" utility
  - o New Merge option to merge the custom schema from a previous R:BASE Editor environment, into a new R:BASE Editor installation

- R> Prompt, Command History
  - o Enhanced Input and Output Consoles supporting Unicode extended characters
  - o Added Command History filter to limit the displayed commands
  - o New Find in R> Prompt Output utility to allow searching the output console
  - o Enhanced "More output follows" dialog box
  - o Enhanced messaging when data changes are made for tables, providing the table name and number of rows effected

- File Gateway
  - o Added sub formats for the SQL Script export format; MSSQL, MySQL, InerBase/FireBird, Oracle, PostgreSQL, DB2, Informix, MS Access, SQLite
  - o New "No Unicode To ANSI Conversion" setting to export Unicode data as a UTF-8 string
  - o New "Add UTF-8 BOM When Applicable" setting to add a UTF-8 BOM to an exported UTF8 string

- Data Browser/Editor
  - o New Update Query menu option [Ctrl+Q] allowing users to modify the existing query
  - o Support for Fractional Seconds (HH:MM:SS.SSS) for TIME and DATETIME data
  - o Added display of column comment descriptions and expressions within the status bar
  - o Enhanced expansion of column widths for large CURRENCY data
  - o Added support to expand NOTE data type columns to its full size when double-clicking its right header border
  - o Enhanced WYSIWYG output when selecting Print Data, which uses the formatting in the browser grid in the printout

- o Enhanced confirmation when performing a "Replace All Column Values update on table records
- o Added Page Setup menu option to alter the "Print Data" output

- Data Designer
    - o New BIGINT data type, which is a 64-bit integer - R:BASE X Enterprise only
    - o New Column Name Template setting that provides a default value when adding new columns to tables
    - o New SMALLINT data type, which is a 16-bit integer - R:BASE X Enterprise only
    - o New BOOLEAN data type - R:BASE X Enterprise only
    - o New WIDETEXT data type - R:BASE X Enterprise only
    - o New WIDENOTE data type - R:BASE X Enterprise only
    - o Improved logic to prevent duplicate foreign key or unique key constraints on a table
    - o Improved logic to prevent duplicate index names for a table
    - o Increased Description and Expression fields for column definitions

- Query Builder
    - o Increased limitation for the SELECT command in building queries - R:BASE X Enterprise only
    - o New automatic linking options for common field names or primary key/foreign key relationships
    - o Added Table Order option to over-ride the automatic selection-order of tables drawn into the Query Builder and Query Wizard
    - o Added Reset Column Order option within the Query Wizard to adjust the specified columns after tables have been reordered

- Form Designer / External Form Designer
    - o New Code tab to easily review the command syntax for Custom EEPs
    - o Enhanced Object List toolbar offering increased organization and navigation of available form controls
    - o New Control List utility [Ctrl+Alt+P] to easily find and add available controls
    - o Added EEPs tab to the Object Inspector toolbar
    - o New Variable Link enhancement that provides multiple variable-based mapped links for control properties
    - o New Custom Table Relationships for multi-table forms
    - o Added Run Form (Live) option to runs the form from the designer using live table data
    - o New EEP Map utility [Shift+Ctrl+M] to display all form EEPs in a single location
    - o Enhanced Tab Order Settings providing a separate "containers" panel
    - o New Form Designer alignment Guidelines
    - o New EEP History tab to automatically save the form's EEP as a backup
    - o Enhanced Select Tables dialog which now contains the Table Relation "One to Many" and "Many to Many" setting
    - o Enhanced File Sort options for the File List Box control
    - o Added Character Case option for DB Memo and Variable Memo controls
    - o New Maximum Line Width setting is supported for all pop-up menus
    - o Pop-up menu support for DB Memo and Variable Memo controls
    - o Added output option for EEP documentation, where the EEP contents is loaded directly into the R:BASE Editor
    - o Enhanced EEP display status for the Table selection dialog
    - o Ability to modify the Default EEP assignment for form controls
    - o New Single Click To Select Item option within Pop-Up Menus
    - o New Variable Row Heights for Enhanced DB Grids
    - o Support to specify an image number when displaying multi-images file
    - o Added EEP events for nearly every form control

- Report/Label Designer
    - o New Code tab to easily review the command syntax for Report Actions and Custom EEPs in Report Bands
    - o Enhanced Object List toolbar offering increased organization and navigation of available report controls
    - o Added IntelligentMail bar code support for Barcode, DB Barcode, and Variable Barcode controls
    - o New Control List utility [Ctrl+Alt+P] to easily find and add available controls
    - o Added QR Code and DataMatrix bar code support for all 2D Barcodes

- New EEP History tab to automatically save the report/label EEPs as a backup
- Enhanced Advanced Rich Text Control to support superscript and subscript text
- New EEP Map utility [Shift+Ctrl+M] to display all report/label band EEPs and Actions
- New "Rotate from Center" property for the Rotated Label
- Enhanced Expression Builder supporting Page Style, Column Header and Column Footer "Calculate On" options
- Added output option for EEP documentation, where the EEP contents is loaded directly into the R:BASE Editor
- Support to specify an image number when displaying multi-images file

- Commands
  - New MIGRATE command to convert databases to R:BASE X Enterprise from R:BASE eXtreme 9.5 (64)
  - New PRINT output format (XLSX) to create MS Excel Workbooks
  - New FCONVERT command to perform file conversions between ANSI, UTF-8, Unicode, and Base64 files
  - New NEWDB command specifically convert legacy database formats, including .RBF file extensions
  - Enhanced EDIT and BROWSE commands to enable/disable new Update Query feature
  - Added GATEWAY EXPORT format parameters for several SQL compliant formats
  - Enhanced UNLOAD command to support unloading stored procedures
  - Enhanced TYPE command to properly display Unicode files
  - Enhanced COPY filespec command to support combining of files
  - Enhanced SHOW VAR command to allow sorting of variable output, with wild card support
  - Additional GATEWAY EXPORT parameters to control Unicode to ANSI conversions
  - New ON DISCONNECT/EXIT commands - R:BASE X Enterprise only
  - Added support for Database Events with the SHOW command
  - Added SELECT Functions PSTDEV and PVARIANCE to support "population" standard deviation and "population" variance
  - Enhanced CROSSTAB command to allow more than 20 characters for NOTE fields

- Functions
  - New RNDUP function to return a number value rounded up to a specified number of digits
  - New (CVAL('TABLELOCKS')) function to return a delimited text string for all tables with a lock
  - New LVARIANCE function to return the variance for a list of values
  - New LSTDEV function to return the standard deviation for a list of values
  - New LSUM function to return the sum for a list of values
  - New MAKEUTF8 function to converts upper ASCII characters text data into UTF-8 encoded characters
  - Enhanced INT, NINT, AINT, ANINT functions to accept INTEGER values for the argument

- Application Designer
  - Support to resize the Image List dimensions, supporting images larger than 16x16 pixels
  - New "Add Stock Images" right-click option to load and use icon images used throughout the R:BASE front-end

- Trace Debugger
  - Added Watch Variable Breaks, allowing the trace debugger to halt/break when:
    - ❑ the variable is created
    - ❑ the variable is deleted
    - ❑ the variable has a null value
    - ❑ the variable value changes
    - ❑ the variable value equals a specific value
  - Enhanced Trace window to scroll up and down using the mouse wheel when error breaks occur
  - Added popup menu to right click and add watch variables and toggle breakpoints

- Data Dictionary
  - Enhanced listing the Date/Time stamp for tables, views, forms, reports, and labels - R:BASE X Enterprise only
  - Enhanced listing the a table column name, data type and comment

- R:BASE BLOB Editor
  - Added support for superscript or a subscript text in the Rich Text data

o Support to switch between Browse and Edit mode within the BLOB Editor, when launched from the Data Browser
o Enhanced image format saving logic when saving images

- Built-In Plugins
  o New internal plugin SysDialog to create native dialog boxes with support for several buttons
  o New GetDBVersion internal PLUGIN to capture the database version for a specified file

- User Privileges
  o The Table Privileges interface has been enhanced providing the WITH GRANT OPTION allowing specified users to pass the granted table privileges to other users
  o The Table Privileges dialog has been enhanced to allow multiple users to be provided with CREATE TABLE permissions
  o With the User Privileges dialog, a Pack Passwords button has been added

Samples Applications - The entire source code for each application is provided.

1. Designing and Deploying Applications using External Form Files (R:SwitchBoard)

2. Defining and Managing User Defined Queries in a Multi-User Environment

3. Associated Forms:
   Adhoc_Report_Query
   Adhoc_Report_Query_Data
   Adhoc_Report_Query_Data_By_User *** Startup Application Form ***
   Adhoc_Report_Query_Data_Get_Name_And_Comments

4. Variable Lookup ListView to Capture Column Sort

   Associated Form: VariableLookupListViewToCaptureColumnSort

5. Variable Lookup ListView with Check Boxes

   Associated Form: VarLookupListViewWithCheckBoxes

6. Variable Lookup ListView with Row Numbers

   Associated Form: VarLookupListViewWithRowNumbers

7. Variable Lookup ListView with Check Boxes and Row Numbers

   Associated Form: VarLookupListViewWithCheckBoxesAndRowNumbers

8. Using the Enhanced DB Gird Footers and Bands

9. Using the Enhanced DB Grid Filter Bar

10. Using Custom Glyphs on Check Boxes

11. Using Custom Glyphs on Speed Buttons

12. Using the New Date/Time Picker Options

13. Using the New DB Slider in Forms

14. Using the Enhanced Scrolling Region

15. Using New Form System Variables

16. Using New Link Label Control

17. Using New Hint Capture Feature in Forms

18. Dynamic New Theme Selector (Choose from 86 Themes)

19. Using the New Advanced Rich Text Control

20. Sub-Reports And Nested Sub-Reports

21. Capturing DB Calc Results As Variables

22. Customizing CrossTab Reports

23. Management Tools
     Designing Ad hoc Reports using Query Forms
     Management Reports (Identifying Customers by Given Criteria)

24. Using New Report System Variables

25. Using New MaxiCode Barcode in Reports

26. Using New PDF417 Barcode in Reports

27. Conditional Formatting In Reports

28. Designing Zebra Style Reports

29. Conditional Odd/Even Display In Reports

30. Designing MDI (Multiple Document Interface) Applications

31. Designing Search Screens Using "On Key Press" Option

32. Implementing New Status Bar Options in Forms

33. Integrating ActiveX Controls in Forms

34. Managing List Box And List View Items

35. Using the Drag And Drop Feature In Forms

36. Using Form Timer Properties

37. Using Gateway Export To Create XLS/XLSX Spreadsheets
     Colorful XLS Spreadsheet
     Colorful Multi-Tab XLS Workbook

38. Using Multi-Select Variable Lookup List Boxes

39. Using Multi-Select Variable Lookup List Views

40. Using the TOPITEM Property

41. Defining Hot Spots In Reports

42. Dynamic R:Charts In Forms And Reports

43. Printing Reports Using Radio Group Menus

44. Printing Reports Using Radio Group Menus (Part 2)

45. Using Conditional Check Boxes in Reports

46. Designing Applications using Tab Set Control

47. Implementing DB Grid Popup Menus & Hint Expressions

48. Rotating Variable Images in Forms

49. Using Custom Form Actions

50.Using Radio Group Properties

51.Using GROUPINDEX Property for Speed Buttons

52.Using Images in ListView Controls

53.Taking Advantage of:
    CHKVAR
    CHKCUR
    CVAL
    GETVAL
    DLLCALL
    String Manipulation Functions
        SKEEP
        SKEEPI
        SSTRIP
        SSTRIPI
    New CVAL Functions
        GUID
        WINAUTH

54.Managing User Privileges

55.Integrating Plugins

56.Implementing DB Grid Zebra Stripes

57.Dynamic Search Forms Using a DB Grid

58.Customizing PRINT Preview Options

59.Custom DB Grid Row Font & Background Colors

60.Conditional MAKECLICK Property

61.Cascading List Views

62.Analyzing Data Using Enhanced DB Gird Filter Options

63.Advanced DB Backup Options

64.Understanding the BSTR (binary string) Data Type

65.Capturing Images with the DB Image Control

66.Roll Up and Roll Down MDI Forms

67.Understanding Image Annotations Using the R:BASE BLOB Editor

68.New PROPERTY and GETPROPERTY commands

69.Adding Contents in Forms and Reports

70.Integrating New FEEDBACK System Variables

71.Using PDF Viewer Control Properties

72.Using Speed Button "Groups"

73.Running R:BASE Your Way! (Part 19)

74.R:BASE for Everyone! - Integrating R:BASE X Enterprise with ODBC Compliant Databases

75.Using Advanced Rich Text for Mail Merge

76. Drop Downs and Dynamic Lookups

77. Using Brush Style and Pen Style Properties in Reports

78. R:BASE X Enterprise Report Print Manager

79. Searching in R:BASE

80. Using the DB Tree View Control

81. Using JUMP and JUMPTO

82. Using Enhanced DB Grid Filter Bar Properties

83. Using Enhanced DB Grid Band List Properties

84. Creating Fillable PDF Forms

85. Understanding The Toolbar Designer

86. Integrating External Themes

87. R:BASE On-Screen Keyboard

88. Time Picker Control

89. Balloon Tip Hints in Forms

90. LAUNCH Command Parameters

91. Enhanced Calendar Control

92. RNDDOWN Function

93. Cue Banner Feature in Forms

94. Managing Collapse Panel Properties

95. New Spinner Control

96. Implementing Code Security with 512-Bit File Encryption

97. Integrating R:Report Print Manager (an External Form File) in your Applications

98. Analyzing and Optimizing Database Performance:
    - Table/Column Relationship
    - Constraints and Indexes
    - Workstation Environment and Settings
    - Taking Advantage of TEMPORARY Tables and Views
    - Taking Advantage of Stored Procedures and Triggers

99. Implementing Database Maintenance Routines in Applications
    Table Analysis
    Pack Tables
    Pack Indexes
    Unattended Backup of Entire Database
    Transferring Backups to Remote Locations

100. Documenting the Entire Database

101. Understanding Debug Techniques

102. Compiling and Distributing R:Compiler Applications (Advanced Tips and Techniques)
    Embedding R:BASE Engine into Executable

Embedding Additional Resources into Executable
    External Form Files
    R:BASE Forms
    R:BASE Reports
    R:BASE Labels
    Themes
    Runtime Licenses
    Plugins
    Misc. Files

103. Customizing Executable File
104. Using R:BASE Add-On Products and Tools
- R:BASE Plugin Power Pack
- R:Web Suite
- R:Web Reports
- R:Web Gateway
- R:Charts

The entire source code for each application is provided!

External Forms

The following External Form Files (with source code) are included to manage and demonstrate all SAT applications using R:BASE X Enterprise:

- RBGXE_DOS_To_Windows_Conversion.rff
- RBGXE_RBASEForEveryone.rff
- RBGXE_ReportPrintManager.rff
- RBGXE_SAT_BLOB_Editor.rff
- RBGXE_SAT_DatabaseExplorer.rff
- RBGXE_SAT_DataDesigner.rff
- RBGXE_SAT_FormDesigner.rff
- RBGXE_SAT_InstallationAndConfiguration.rff
- RBGXE_SAT_Introduction.rff
- RBGXE_SAT_NewDataTypes.rff
- RBGXE_SAT_PersonalizedSettings.rff
- RBGXE_SAT_RBASE_Editor.rff
- RBGXE_SAT_ReportDesigner.rff
- RBGXE_SAT_Splash.rff
- RBGXE_SAT_SQLEngine.rff
- RBGXE_SAT_Switchboard.rff

Notes