



PRE201

Introduction to Visual FoxPro

Ted Roche
Ted Roche & Associates, LLC

Visual FoxPro DevCon 2001

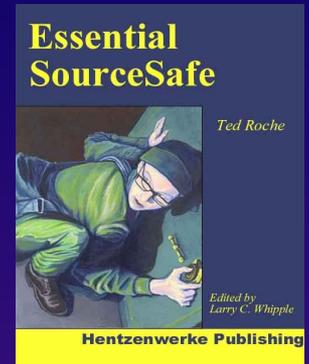
Ground Rules

- ◆ Pagers and cell phones silent, please.
- ◆ Rest breaks as appropriate
- ◆ How to ask questions
- ◆ Administrivia
 - Conference Binder
 - Schedule – Some sessions only given once
 - Trade Show – T-shirt Tuesday, Drawing Wed.
 - Evaluations - help the community
 - Closing session questions – Wednesday noon
 - Drink Tickets!

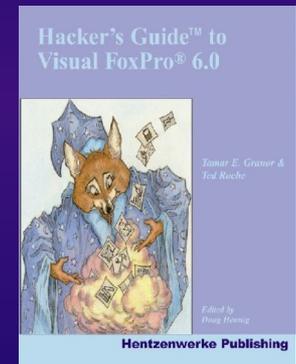
Goals for this morning

- ◆ Learn the terminology used in VFP
- ◆ Understand the tools of VFP has
- ◆ Understand how VFP stores and retrieves data
- ◆ Know what applications VFP can create
- ◆ Know resources to learn more

Who is Ted Roche?



- ◆ President of TR&A, LLC Consulting
- ◆ Microsoft Certified Solution Developer, Microsoft Certified Systems Engineer
- ◆ Co-Author of Hacker's Guide to VFP 6
- ◆ Author of Essential SourceSafe
- ◆ Microsoft Support MVP



Visual FoxPro DevCon 2001

Outline

- ◆ **Ground Rules & Pop Quiz**
- ◆ **Episode I: It's the Data**
- ◆ **Part B: It's the Coding**
- ◆ **Act III: Advanced Topics**
- ◆ **Part 4: Putting it all together**
- ◆ **Epilogue: So, Now What?**

What is Visual FoxPro?

Visual FoxPro is...

- ... a standalone tool for data manipulation.
- ... a development tool for standalone, LAN, client-server, COM and Web applications.
- ... a database engine.
- ... a programming language.
- ... part of Visual Studio.
- ... an integral part of Microsoft Windows.
- ... a religion.

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Episode I: It's the Data

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- ◆ Terminology
- ◆ Data Design
- ◆ Normalization
- ◆ Reading and Writing Data
- ◆ Transactions and Buffering
- ◆ Client-Server Data

Terminology

- ◆ Field: single piece of data
- ◆ Datatype: describes contents and limits
- ◆ Record: single piece of *information*
- ◆ Table: set of records
- ◆ Cursor: **CUR**rent **S**et **O**f **R**ecords

Data Design

- ◆ What goes where?
- ◆ Typically, data is assigned to table that represent *entities*
 - For example, customer, item, video, dancer
 - Caution: table entities may not be objects!
- ◆ Field datatypes are chosen to represent data
- ◆ Data are assigned to the entities owning them

Normalization

- ◆ **Why Be Normal?**
 - Easy applications from well-designed data, poorly designed data makes for tough apps
- ◆ **Primary Key (PK) uniquely defines record (1st)**
- ◆ **All parts of PK required to identify record (2nd)**
- ◆ **No other fields needed for uniqueness (3rd)**
- ◆ **When a record wants to refer to another, it stores the PK of that record. That field is a *foreign key* (FK)**

Relational Data

- ◆ Different tables are *related* to one another with primary and foreign key matches.
 - Ex. Sales order table holds customer FK
- ◆ Relationships may be:
 - (Zero or) One-to-one
 - (Zero or) One-to-Many
 - Self-join
- ◆ Relational Integrity (RI) can be enforced with triggers, RI Builder, or code
 - Ex. Cannot delete invoice with detail items

Reading and Writing Data

- ◆ **Interactive or Programmatic VFP Commands**
 - **REPLACE**
 - **APPEND (BLANK)**
 - **BROWSE / EDIT**
 - **DELETE**
 - **COPY**
- ◆ **SQL Commands**
 - **INSERT**
 - **UPDATE**
 - **DELETE**

Transactions and Buffering

- ◆ Data on disk should always be complete and consistent.
- ◆ Buffering allows you to make a series of changes, and have the data in local cursors until you are ready to commit it.
- ◆ Transactions allow you to lock the affected records from the time you start and update until you complete it.

Client-Server Data

- ◆ Use Client-Server for low-bandwidth, high security, large amounts of data, or high availability situations
- ◆ Remote Views
- ◆ Direct ODBC Functions
 - SQLConnect(), SQLExecute()
- ◆ Data appears in VFP as a cursor

Questions on Data?

- ◆ Terminology
- ◆ Data Design
- ◆ Normalization
- ◆ Reading and Writing Data
- ◆ Transaction and Buffering
- ◆ Client-Server Data

Part B: It's the Coding

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- ◆ VFP Commands & Functions
- ◆ Controls, Forms, Classes & Objects
- ◆ Event Model
- ◆ The VFP Toolset:
 - Project Manager
 - Form and Class Designer
 - Code Editor
 - ... and many more

VFP Commands

- ◆ **Commands stand alone, functions return values**
- ◆ **Structural: DO WHILE, IF, DO CASE**
- ◆ **Data: REPLACE, APPEND, DELETE**
- ◆ **I/O: @...SAY, LIST, REPORT**
- ◆ **Functions:**

Controls, Forms, Classes & Objects

- ◆ Controls are the widgets that display stuff, present actions for the operator to take
- ◆ Forms are where you place your controls
- ◆ Classes are the templates for your objects
- ◆ Objects are the *instantiated* (running) entities based on classes.

Event Model

- ◆ **Init()** initializes, **Destroy()** at end
 - Exception: Form's DE before form
- ◆ **Error()** traps all errors in an object's code
- ◆ **Activate()** and **Deactivate()** events on focus
- ◆ **Mouse*** on mouse events – up, down, move
- ◆ **OLE Drag and Drop** supported with a series of events
- ◆ **Events fire automatically, or when the user chooses** – use events to fire code in methods, never methods to call events.

VFP Toolset

- ◆ Project Manager
- ◆ Form and Class Designer
- ◆ Code Editor

Questions on Part B: Coding?

- ◆ VFP Commands
- ◆ Controls, Forms, Classes & Objects
- ◆ Event Model
- ◆ The VFP Toolset:
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Act III: Advanced Topics

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- ◆ Object-oriented analysis and design
- ◆ *N*-tier Design
- ◆ COM, DCOM, COM+
- ◆ ADO and ODBC
- ◆ User Interface Design
- ◆ Project Management

Object Oriented Analysis & Design

- ◆ RTFM!
- ◆ Objects are containers of consistent behavior and the data needed for those behaviors
- ◆ Encapsulation – behavior & data
- ◆ Polymorphism – same name, different behavior
- ◆ Inheritance – overwrite the exceptions only
- ◆ Composition – use groups of objects to form complex behaviors – basis for GOF Patterns

N-Tier Design

- ◆ An n-tier design is any set of components communicating via well-defined interfaces
- ◆ Classic monolithic coding is single (really zero) tier
- ◆ Client-server is two-tier
- ◆ Web apps are often three (interface management ↔ business logic ↔ data mgmt)
- ◆ Programming to interface is difficult but more flexible, scalable and powerful

COM, DCOM, COM+

- ◆ Microsoft's means of managing components
- ◆ Publish interfaces for others to consume
- ◆ Pool object in transaction services
- ◆ Heavyweight framework with runtime expenses

ADO and ODBC

- ◆ ADO – Active Data Objects – high-level COM layers on OLE DB interface to data
- ◆ ODBC – more primitive, less scalable and manageable interface to data
- ◆ ODBC supported natively in VFP's Remote Views and Connections, SQL* functions
- ◆ ADO can be interfaced to VFP
- ◆ VFP 7 first with OLE-DB provider for VFP data

User Interface Design

- ◆ **Simpler is better**
- ◆ **Programmers typically do not have the proper mindset for good user interface design**
- ◆ **When in doubt, borrow from the work of others**
- ◆ **Study the resources available ACM-HCI**
- ◆ **Least expensive tool: watch an operator run your application.**

Project Management

There are no silver bullets – Fredrick P. Brooks

- ◆ There are, however, engineering principles:
- ◆ Estimate it
- ◆ Measure it
- ◆ Plan it
- ◆ Manage it
- ◆ There are methodologies out there (RUP, Agile, Crystal, Extreme) learn and use them

Questions on Act III: Advanced Topics

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Part 4: Putting It All Together

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- ◆ Read The Fine Manuals
- ◆ Be One With The Fox
- ◆ Use A Framework
- ◆ Get A Support Group
- ◆ Sharpen The Saw
- ◆ Top Ten Mistakes

Read The Fine Manuals

- ◆ VFP Manuals are among the best in Microsoft!
- ◆ The Help file is huge!
- ◆ There are many fine 3rd party books
- ◆ Check out the magazines – Foxtalk, FPA, Code
- ◆ 99% of the questions answered on the forums come right out of one of these sources

Be One With The Fox

*When you choose to ride the tiger,
you must go where the tiger goes*

- ◆ Learn the FoxPro Way of coding

Use A Framework

- ◆ Frameworks have 3 – 10 man-years of effort, large customer base, varied applications
- ◆ Unlike your own framework, or sample code, these have been tested in the real world
- ◆ Customer support available
- ◆ Manuals and tutorials

Get A Support Group

- ◆ How many have solved a problem by explaining it to someone else?
- ◆ On-line forums: UT, CompuServe, FoxForum.com
- ◆ Newsgroups: Microsoft and uunet
- ◆ User Groups: monthly, free (or cheap), networking opportunity

Sharpen The Saw

- ◆ None of us know it all (except maybe Calvin)
- ◆ Improve your development and consulting techniques by:
 - Attending conferences
 - Reading journals
 - Participating online
 - Reading books (in and out of the industry)

Top Ten Mistakes

1. **It ran fine on my system!**
2. **It worked great with ten records!**
3. **I could write that in a week!**
4. **We're just converting an existing system – two weeks, maybe four weeks, max!**
5. **Our situation is unique...**

Top Ten Mistakes

1. We don't have time to document it now...
2. I know how the system should work...
3. Upper management has no idea what we do.
4. But, what if....
5. Those who fail to learn from the past...
... are bound to be past by those of us who
have!

Questions on Part 4: Putting It All Together

- ◆ Read The Fine Manuals
- ◆ Be One With The Fox
- ◆ Use A Framework
- ◆ Get A Support Group
- ◆ Sharpen The Saw
- ◆ Top Ten Mistakes

Epilogue: So, Now What?

- ◆ DevCon is a great opportunity to:
 - Learn an awful lot about FoxPro
 - Learn about emerging technologies
 - Network for business opportunities
 - Have some fun!
- ◆ Go for it!
- ◆ When you get back home, review your notes, check the web site for updates, and dig up some of the resources provided here.

ADVISOR DEVCON Web Update Page

<http://www.Advisor.com/CMF0109p.nsf/w/vfppre>

This session **WILL** / ~~WILL NOT~~
have updates.

VFP: The Best Is Yet to Come

Thank you!

**Please remember to fill out your
evaluation.**