

Centura Pro

Formerly Gupta Pro

Hot Ideas for Centura® Developers

TAO Talk: Class Variables

Mark Hunter, with David Burke, Paul Franks, Bud Ingraham, Jeff Johnson, and Robert Montgomery of TeamAssist

Mark Hunter: I'm wondering about the behavior of class variables. As an example, I'll use a dialog box class with some class variables and some instance variables. When the first instance of the class is created at runtime, all the variables are zero or empty. Then I do some logic that places values in some of the class variables. Then I destroy the dialog box. Five minutes later I create a new instance of the dialog box class. When I create the second instance, the class variables are not null—they contain the values assigned during the lifetime of the first dialog box. In other words, it looks like class variables retain their values even when no instances of that class presently exist. I've used this feature to my advantage by creating combo box classes that load arrays of strings from the database into class variables the first time an instance is created, then load the combo from the array every time the class is instantiated after the first time. I just want to be sure that I can *count* on this persistence. I'm a little naive about how memory is used in an object-oriented application. I was thinking that variable values persist as long as the class is "alive," but disappear when the last instance of the class is destroyed, in the way that memory used by specific windows is released when the windows are destroyed.

Robert Montgomery to Hunter: Since the class variables and local variables occupy memory that is "off stack," this is expected behavior. I haven't checked, but I see no reason why such variables should not retain their values. The variables associated with a particular *instance* are on the stack and so the

Recently Editor Mark Hunter asked members of TeamAssist to discuss the behavior of class variables in SQLWindows and Centura Team Developer applications. Here's an edited version of the discussion. The obvious answers were soon supplied to your lowly editor, and then it was on to the more esoteric stuff...

January 1997

Volume 2, Number 1

- 1 TAO Talk: Class Variables
Team Assist
- 2 The Best Web Site Ever!
Mark Hunter
- 3 Tip: Text Files are OK!
R.J. David Burke
- 6 Making Certification Easier to Take
Mark Hunter
- 7 News: METEX Systems
- 8 Network the Web Way
Dian Schaffhauser
- 10 News: Building Blocks Updated
- 11 Making Progress (Bars)
Eugene Toperman
- 12 Tip: SAM_Validate Anomalies
Richard Head
- 13 Another Centura Pro
Dian Schaffhauser
- 15 News: Screen Capture Enhanced
- 16 Ace Centura, App Detective



Continues on page 4

The Best Web Site Ever!

Mark Hunter

Well, maybe not. But *Centura Pro's* shiny new site, www.propublishing.com, will attract your interest. It's a great way to download source code, especially for those without access to CompuServe. It has easy links to customer service, and to letters to the editor. Now you can tell us what you think on the spur of the moment (yikes!). In addition, there are summaries of every article in every back issue, plus the full text of every editorial (well, there had to be at least *one* problem with the site . . .). It has useful information for those who would like to write for *Centura Pro*, too—win those rubber chickens!

Please visit www.propublishing.com and say hello. As time goes by, we'll provide links to other good Centura-related sites and other goodies. We look forward to serving our readers on this new platform.

Centura Software has just made major revisions to their Web site, too. It's attractive and well-organized, with a few rough spots which will probably be gone by the time you read this. That's an outgrowth of their new

corporate image: a Web-centric company. The demonstration site "www.beerfinder.com", built with Centura's Web Developer, will serve as a working example of how that product is used. Expect an article in a future issue of *Centura Pro* telling the story of "beerfinder" and its development. The site contains white papers on Web development and on next-generation client/server, which make interesting reading and can help you get a handle on where the company's efforts are being spent.

Centura Software is rapidly moving its focus to Web-enabled tools. Is that the direction you would like to see the company going? Do you feel that other issues should be handled first? Are you waiting eagerly to deploy your own Centura applications over intranets and the Internet? Send some e-mail and let me know.

Filling the pipeline

Centura customers can't get enough qualified people to

Continues on page 3

Editor of the Year Mark Hunter, Publisher of the Year Dian Schaffhauser, Business Manager of the Year Shelley Doyle, Production Editor of the Year Paul Gould

Centura Pro is published monthly (12 times per year) by Pro Publishing, PO Box 18288, Seattle, WA 98118-0288.

POSTMASTER: Send address changes to *Centura Pro*, PO Box 18288, Seattle, WA 98118-0288.

Copyright © 1997 by Pro Publishing. All rights reserved. No part of this periodical may be used or reproduced in any fashion whatsoever (except in the case of brief quotations embodied in critical articles and reviews) without the prior written consent of Pro Publishing. Printed in the United States of America.

Centura Pro is a trademark of Pro Publishing. Other brand and product names are trademarks or registered trademarks of their respective holders.

This publication is intended as a general guide. It covers a highly technical and complex subject and should not be used for making decisions concerning specific products or applications. This publication is sold as is, without warranty of any kind, either express or implied, respecting the contents of this publication, including but not limited to implied

warranties for the publication, performance, quality, merchantability, or fitness for any particular purpose. Pro Publishing, shall not be liable to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by this publication. Articles published in *Centura Pro* reflect the views of their authors; they may or may not reflect the view of Pro Publishing. Opinions expressed by Centura Software employees are their own and do not necessarily reflect the views of the company.

Subscription information: To order, call Pro Publishing at 206-722-0406. Cost of domestic subscriptions: 12 issues, \$119; Canada: 12 issues, \$129. Other countries: 12 issues, \$139. Ask about source code disk pricing. Individual issues cost \$15 (\$20 outside the U.S.). All funds must be in U.S. currency.

Centura technical support: Call Centura Software Corp. at 415-321-4484.

If you have questions, ideas for bribing authors, or would just love to chat about what you're doing with Centura products, contact us via one of the means at right.

New Digs on the Web

Centura Pro on the Web
<http://www.ProPublishing.com>

Editorial Command Post
Phone: 818-249-1364
Fax: 818-246-0487
E-mail: 71460.3142@compuserve.com

Subscription Headquarters
Phone: 206-722-0406
Fax: 206-760-9026
E-mail: 71333.2142@compuserve.com

Mail
Pro Publishing
PO Box 18288
Seattle, WA 98118-0288

Source Code on CompuServe
GO CENTURA, Library 10

Best Web Site Ever . . .

Continued from page 2

staff their projects. That's a generality that has been true in many markets, many times, over the past several years. It's led to an abundance of consultants, charging rates higher than those charged for other client/server tools, and a relative shortage of employees.

The high proportion of consultants poses a problem. Companies are often willing to pay for training their own employees and, in cases where SQLWindows or Centura is replacing an older system, such training often occurs. But companies do not ordinarily train outside consultants, and those consultants often don't take the time and expense to train themselves or others. So there is no widespread source of new Centura developers. Most long-time Centura developers can tell at least one story of a customer who chose some other development tool because of this shortage of talent. Even highly-paid consultants don't think that's a healthy sign.

SQLWindows Solo was one way that more developers were supposed to become qualified, while gaining market presence for SQLWindows at the same time. That effort met with mixed success. Now Centura's Professional Services division has a possible answer to the talent shortage. The University Program offers free (or greatly discounted) software, teacher training, and training materials to qualified colleges and universities, provided they present at least one course per year in SQLWindows or Centura Team Developer. This represents a large potential pool of new talent which can fuel growth in existing and future Centura customers.

What is your role in all this? If you reflect for a moment, all kinds of opportunities come to mind. Are you a talented developer? Perhaps you should approach a college in your area with a proposal to teach a SQLWindows or Centura class. Think about the benefits:

- Free instructor training for you.
- An opportunity to spot promising talent as it goes through your classroom.
- Increased awareness and support for Centura products as your students become part of the I.S. community in your area.

- Greatly increased recognition of your abilities, with an ongoing stream of word-of-mouth referrals (note how I avoided using the word "network" as a verb?).
- The opportunity to wear tweed jackets, smoke a pipe, and be otherwise profound.

Are you an I.S. manager in a Centura shop? Consider contributing the modest support costs for a college class. The graduates of such a class could be a great find for your company; you can watch for the more talented students. And having additional qualified developers in your region can only help you—even if a graduate doesn't go to work for your company, they can occupy a job in another company that might otherwise have recruited one of *your* developers.

Colleges and universities have more important things to do than seek out partnerships like the University Program. They will not pursue it by themselves; they must be convinced to participate by someone — and it might as well be you. Contact Centura Professional Services to see how to go about it.

European support gets bigger and better

Last month I mentioned that Centura technical support in Europe has been centralized in the Netherlands. Frank van de Ridder, the head of the new organization, says that customer satisfaction has been improving, and informal reports by European customers confirm this. Drawing from the previous four separate regions, his team has seven front-line engineers, seven back-line engineers, and a centralized support lab. As might be expected, some synergy has developed between these groups which has increased the overall knowledge level among the staff and the quality of support delivered to customers. Of course, some of the residual issues from the four previous organizations are still affecting the new group, but overall the change has been a big success. Customers like the ability to deal with support by e-mail, as well as the existing phone and fax channels.

And what kind of support does Europe get from Centura headquarters when a problem needs to be escalated? van de Ridder says, "We have a close relationship with the support teams in Menlo Park and get very good support from them." **CP**

Text Files are OK!

SQLWindows has always required that APL files be stored in Normal format, while APP files could be stored as text. Text files often require considerably less disk space than Normal

files. But Centura Team Developer now allows APL files to be saved in either Normal format or as text. **CP**

R.J. David Burke

CenturaTip!

TAO Talk . . .

Continued from page 1

values only persist until the dialog is destroyed after which time the space on the stack gets reused.

Jeff Johnson to Hunter: Class variables, as defined in SAL, do not exist for each instance of a class, but exist once for all instances of a class. Therefore, all instances of a class will “see” the same value of a class variable, at any particular point in time. Once the value of a class variable changes, all instances will see the new value. In the “C/C++” sense, this is like an external static variable. One copy exists in memory for the entire application. And that space remains allocated for the entire duration of the program run.

Bud Ingraham to Hunter: Personally, I agree that this is correct behavior for “Class” variables. “Instance” variables, of course, are null upon each creation of the instance. Once a “Class” variable is set, even if by a previously destroyed instance, I would expect it to remain set until reset by another instance, or by something else in the class, or if the class is destroyed. (Ending the program would sure do that, I guess <vbg>.)

My personal opinion is that these “Class” variables should stay set to the last value set (no matter what set them—a function inside the class, or even a destroyed instance). Of course, instance variables are destroyed once the instance is destroyed.

Montgomery to Ingraham: Yes, indeed, the memory for class variables is allocated exactly like the memory for global variables. The only difference is the scope in which they are available for use is restricted as you say “to the defining class, derived classes, and objects of the class.”

Paul Franks to Ingraham: So, should class variables survive a close of application (i.e. back to OS-level and relaunch)?

This is not only a practical issue, but it has major implications for OOP theory. A class should be defined by the developer and should remain constant. If you are required to change something, you should subclass from it and derive your objects from the modified subclass. A modification to a property of a class during the definition of a subclass should be legal, but once it has been used, it must be locked. I see nothing wrong with modifying object (instance) properties on the fly, or maybe even adding new props, but classes are sacred once they are defined.

Answer this for me—should a change to a class variable ripple through to change instances, which have already been created when the variable is changed?

The implications for event-driven programming are

too awful to contemplate; there’s no way to be sure when the class definition will be altered. I could be faced with the prospect of creating a class for which I don’t know the definition, because I don’t know what sequence the user will follow in each run, and it may actually change from run to run.

Answer this for me—should a change to a class variable ripple through to change instances, which have already been created when the variable is changed?

Ingraham to Franks: I do *not* disagree with you. And I will admit that “Class” variables do not strictly follow OOP rules. If you wish to abide by OOP rules, the answer is simple—don’t use “Class” variables. However, there are times that “breaking” the rules sometimes solves a problem that may otherwise be too ugly to solve by strict adherence to the rules. (Example: If you were bleeding to death, and I were driving the car to the hospital, I don’t think that strictly obeying the speed limit rules would be to your best advantage, nor appreciated by you.)

To be honest, I think I may have used one class variable in the last three years of development. I think it had something to do with the [fact that] the instance created first would run a routine to figure something out (sorry to be so vague, but it was three years ago...), and then instead of each instance running the same costly routine to ultimately arrive at the same answer, the first instance set a class

variable that was read by all of the others when they were created—it saved a fair amount of processing time. It seemed to be the easiest, quickest, and most “readable” method of solving the problem at the time. Making code very readable—in my book—is of greater importance than strict adherence to the “rules”—I started out in the maintenance environment.

Montgomery to Ingraham: Personally, I find that class variables are extremely valuable and use them a fair bit in what some folks call “interface classes.” I frequently use a Functional Class containing class variables to synchronize the behavior of modeless windows and dialogs. All the modeless objects (dialogs and windows) call functions in the interface class in order to create/destroy instances of the various objects. Also, whenever one of the modeless objects changes something that might be of interest to other modeless dialogs, it calls a “transfer function” in the “interface class,” which in turn sends a “transfer

message” to all the appropriate instances.

I use a lot of modeless dialogs in my applications and this approach works extremely well and would be very awkward without class variables. Without class variables, I’d have to pass around a single instance of my “interface class.” But by using class variables I have a choice of either using an object instance of the “interface class” or deriving my dialogs from the “interface class.”

Ingraham to Montgomery: I can see where interface classes would be useful. What do you use a lot of modeless dialogs for? I have used some, but not many, and mostly for things like popup choices, etc.

Montgomery to Ingraham: I have a program that presents a hierarchy of objects in a Visual Toolchest Outline List Box. The user needs to be able to display various properties of this outline. Some of the properties apply to the outline as a whole, while other properties apply to individual items in the outline.

At first I used modal dialogs to implement the property editors, but users complained because they spent all their time opening/closing dialogs. They would have to click on a particular outline item, open the dialog, change a property, close the dialog, and then repeat the process with the next item they wished to view/modify.

In response to the complaints I made the property editing dialogs modeless and that fixed the problem. The dialogs can be left open and used as needed. An “interface class” does the instance management and provides for the necessary synchronization between the outline list box and the open dialogs.

After I move this application to CTD, I will probably utilize an Explorer type interface. The various dialogs, all of which use tabs, will go into the right-side frame with the outline list box on the left.

David Burke to Montgomery: Our [Centura Software’s—Ed.] class variables are, indeed, designed to be persistent throughout the execution of an application. They are initialized at the start of the application (strings get the empty string, numbers get 0, date/time gets DATETIME_Null) and take on new values as assigned at any point during the execution. The initialization is the only implicit assignment to these kinds of variables. All

At first, I used modal dialogs to implement the property editors, but users complained because they spent all their time opening/closing dialogs.

other assignments must be explicit (i.e. Set <class variable> = <expression>). They can be examined at any time for their current value (within, of course, scoping/visibility rules).

They are very useful in several situations. Bob has explained how he uses them as an interface mechanism. Other common uses for class variables include instance management (for example, a window handle array to maintain window handles of instances) and instance aggregations (for example, a sum or average of some data stored in each instance).

As to their object-orientedness, I don’t think they violate any formal object theory; at least I haven’t seen any “guru” blast them. Smalltalk, often considered a pure (as opposed to hybrid, like C++) object-oriented language, supports class variables as well.

Montgomery: Class variables are very useful as implemented, and as I pointed out to Bud in my message about “interface classes,” they are really needed. The only other way to make values persist for the duration of program execution is to use global or static variables. But class variables are nearly always preferable to global variables because I can limit their scope to just those objects that need access to them.

I find class variables especially useful when some number of modeless objects need to communicate. Any values of interest to all the instances logically belong in class variables. The values stored in class variables will persist until the program terminates but keep in mind that if for any reason you want to reset them to an initial value when the last dialog is closed, you can always maintain a “use count” and do it yourself.

In this scenario class functions like CreateDialog() and DestroyDialog() would be called to create/destroy the dialogs and increment/decrement the use count variable. Then, if you want to restore all the class variables to some initial value, you can do it by adding the necessary code to DestroyDialog(). If DestroyDialog() decrements the use count and it goes to zero, then it resets the values. Otherwise, the values are allowed to persist. So, I would argue that leaving it up to the programmer to decide how and when certain class variables get reset (if at all) is the way to go.

Franks: I still think the correct theoretical approach is to subclass, adding properties when the sub is defined. Then derive all your objects from the subclass. If the software won’t allow subclassing, say, of ground level Windows (OS) classes, which can’t reasonably be replicated, class variables represent an acceptable solution if they are used responsibly. **CP**

The TeamAssist Organization (TAO) is a group of dedicated developers who spend many hours answering technical questions on Centura’s CompuServe forum. May they grow and prosper!

Making Certification Easier to Take

Mark Hunter

Recently Centura Software overhauled the SQLWindows test which leads to the Certified Client/Server Developer designation. It's too late for me; I took and passed the test soon after it came out, in July, 1995. At that time, the test was administered by Drake Prometric through their hundreds of test centers in the U.S., and it contained 82 questions. Some who took the test complained that it had a heavy emphasis on memorization instead of real-world problem-solving.

The details

Now Drake Prometric has become Sylvan Prometric, with over a thousand testing centers in 70 countries. The test has gone on a diet, dropping to 42 questions. According to Nigel Chanter, head of Centura's Professional Services division, this was accomplished by working with Sylvan psychometricians to identify questions that didn't accurately measure the expertise of the developer taking the test. Some questions were frequently missed by very experienced developers; some were often answered correctly by developers who failed the overall test. Such questions were dropped from the new test, which requires about an hour to complete. Perhaps the most accurate test would be one where developers could write actual code or debug faulty applications, but the costs to administer such a test are prohibitive.

The cost of the new test remains at \$120 US, \$150 international. However, there are ways to reduce or recover that cost. Students in courses presented by Centura training partners can take the test for half price. And developers who pass the test can expect discounts on the cost of attending Centura User Conferences. According to Chanter, such discounts are likely to be about the same as the cost of the test itself—except that the discounts will be available year after year.

Prove your professionalism by becoming certified. The cost is minimal; the test fairly straightforward; and Centura wants to give you all the help it can in making sure you pass.

Centura exam in the works

A test for Centura Team Developer is scheduled to be released in early January. The full version of the test will mix questions from the SQLWindows test with questions specific to CTD. At the same time, a shorter migration test will be

released allowing developers who are already certified in SQLWindows to become certified in CTD.

These tests, plus the Centura Certified DBA (SQLBase) test, are available in English or in Kanji.

Visibility

Certified developers are listed in Centura's Web site (www.centurasoft.com). Developers may choose to list full contact information, or just their names. Speaking from experience, I can say that listing full contact information generates lots of interest from customers seeking consultants or employees. Yet there are still many customers and developers who remain unaware of, or uninvolved with, the certification program. Chanter intends to increase visibility of the program in the future through various means, including a Web-based application for querying the Certified Developer database.

What's it take to pass?

So what does it take to pass the Certified Developer test? You can get a good idea by visiting the Centura Web site, specifically www.gupta.com/training/certification/devsm.html. It lists questions from a sample test:

- While processing a message from the Message Actions section of a datafield contained within a Form Window, what variable contains the handle of the Form Window?
- How many letters does the naming convention of SQLWindows objects allow?

- In ReportWindows, what is the maximum number of detail blocks that can be included in a report?
- DELETE FROM Tablename - What would be the result of the Delete command given above?
- What is the primary use of an application library?
- While processing a message from Message Actions section of a datafield contained within a Form Window, what variable contains the handle of the datafield itself?
- Which child object includes a datafield and a listbox?
- Why might a late bound function call be slower than an early bound call?
- A picture class, clsPicBinExplode, contains a function called Explode(). How could an instance of the class call the class function? Assume the instance of class clsPicBinExplode is called PicDelete.
- What wParam and lParam information is sent along with the SAM_Click message when a user clicks on a picture object?

- When a top-level form is created, where is a SAM_Create message sent?
- What term most accurately describes that a class can be derived from more than one base class?

The test is multiple-choice. For possible answers and correct answers to these questions, see the Web site. This list is just a sample—don't limit your studying to these topics. The *previous* test was divided into these categories, with the number of questions in a particular category in parentheses:

- Basic SQLWindows knowledge (5 questions)
- SQL fundamentals (4 questions)
- Object-oriented programming (12 questions)
- MDI Windows (13 questions)
- Building a database application (15 questions)
- Table windows (17 questions)
- Generating reports (16 questions)

Certainly these will still be covered on the new test, although the ratios of questions may have changed. It was jokingly said of the old test that if you simply memorized the book, *Power Programming with SQLWindows*, by Rajesh Lalwani, that would serve you well for the test. That may be less true with the new test. **CP**

Mark Hunter, Editor of this esteemed publication, listens to CarTalk every Saturday, hoping that one day he'll be able to answer the weekly quiz question and win himself official CarTalk fuzzy dice.

More Information

Contact Sylvan Prometric at (800) 387-EXAM. To locate testing centers in other countries, visit the Web site (www.gupta.com/training/certification).

To prepare for the exam, start by reading the objectives for each as posted on the Web site. Although it's not a complete list, it'll get you through the majority of questions.



CenturaNews

METEX Links Rational and CTD

Rational Software Corp., Centura Corp., and METEX Systems, Inc. announced the release of Rose Centura Link, developed by METEX Systems, which integrates Rational Rose 4.0 with Centura Team Developer 1.0. With Rational Rose, developers create a logical model of a client/server system in which each component is defined independently of execution platform and implementation language. Rose Centura Link automatically translates this model into Centura source code, propagating design information into the application implementation. Rose Centura Link can reverse engineer existing Centura applications, allowing developers to

visualize and modify Centura workspaces, projects, classes, and their relationships. These forward- and reverse-engineering mechanisms can be used to continuously maintain consistency between an application's model and implementation, facilitating iterative development.

The initial release of Rose Centura Link will support applications developed with Centura Team Developer version 1.x. Rose Centura Link is scheduled for release this month. The software package comprising Rose Centura Link bundled with Rational Rose 4.0 will cost \$2,400. To learn more visit METEX at www.metex.com or Rational at www.rational.com. **CP**

Network the Web Way

Dian Schaffhauser

If you know the ins and outs of SQLWindows and Centura Team Developer, you'll never be without work. More companies have job openings than qualified developers exist to fill them. At any given moment, hundreds of companies all over the world are seeking people with your set of skills—and they're willing to pay a premium to you once they've found you. You can use the Internet to track them down. In this article, I tour some top sites on the Web intended to put potential employees in touch with prospective employers. And although the bulk of these sites are U.S.-based, I suspect with a bit of research you could find similar Web services in almost every continent and major language.

www.careermag.com

CareerMagazine, an online publication from NCS, consists of articles about switching careers, negotiating employment agreements, working at home, and other professional development subjects. But the heart of the site is actually its database of job postings, which get

Finding a new job has taken a twist with the onslaught of World Wide Web sites. The author tours resources that provide leads on jobs you probably won't see in your local classifieds—and shares which ones seem to have the best access to Centura- and SQLWindows-specific positions.

downloaded and indexed from major Internet job newsgroups daily all over the world. You can access the database for free.

You can seek positions by location, skills, and title. My search on "SQLWindows" as a skill keyword brought up 118 jobs. Each listing is linked to a page containing further details, such as this:

Subject:TORONTO: SQL WINDOWS DEVELOPER, CONTRACT, IMMEDIATE!!!!!!

From:Opensoft Consulting <info@osft.com> or contact: Riyaz Somani Senior Consultant Opensoft Inc. Tel. 416-502-2851 Fax. 416-502-9943

The keyword "SQLBase" brought up 11 listings; and "Centura" brought up 12 listings. You can sort by most relevant job (as defined by your keywords) or by most recent postings.

The site also includes the Resume Bank, a service that allows job seekers a way to publish their resumes on the Web. Pricing starts at \$19.50 for a six-month listing. The advantage of the service appears to be simply to make your resume available when a potential employer searches for a particular set of skills among candidates.

www.hotjobs.com

hotjobs.com, hosted by OTEC Inc., a New York City-based integration and consulting firm, like the other sites listed here, provides free access to job listings. The companies that list their jobs support the site by paying a quarterly membership fee.

You can search the database by location, salary range, and skill. The resulting list has links to more specific descriptions of the job. In this site, you can also use salary range menus to designate that criteria in your search. The default settings will search all jobs, but if you don't want to list jobs under, say, \$40K a year, you can specify it that way.

The site includes a Resume Workshop, which steps you through the process of entering your resume into a database. Your resume can be searchable and viewable by all member companies. Also, once it's stored online, you

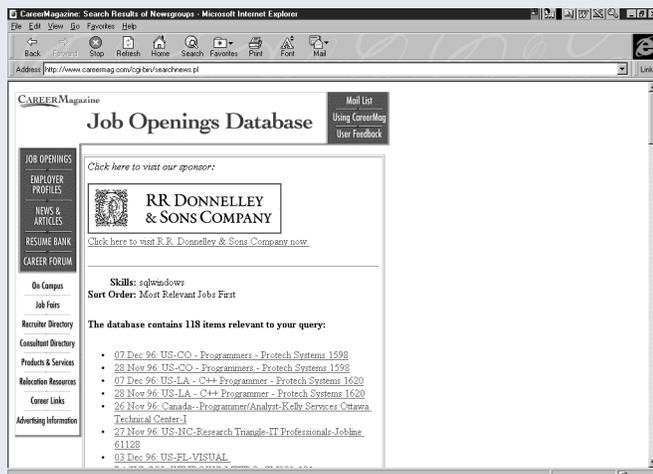


Figure 1. CareerMagazine provides quick access to positions mentioned in job newsgroups from around the world.

can submit it to specific jobs by entering your e-mail address at the bottom of a job description. The resume service is free.

A search on the keywords, “Centura,” “SQLWindows,” and “Gupta,” brought up only one listing; but broader searches on “dba” and “developer” resulted in 41 and 84 listings, respectively.

www.dice.com

The “dice” in this URL sort of stands for the Data Processing Independent Consulting Exchange. Job seekers get free access to listings, which are less than 30 days old and include contact name, phone, fax, and E-mail information.

The site is sponsored by the listing companies, and is a bit different from the others, in that it focuses on consulting jobs rather than permanent positions. You can designate contract, contract/hire, and full time in the search. Options on the contract listings include W2 only or independent. The listings include duration and in many cases hourly rate. You can also search postings by alphabetical company listing, location, and, interestingly, logo (which links you to the given company’s own Web site).

A search on “Gupta,” “SQLWindows,” and “Centura” brought up 31 job listings—though that’s a bit skewed, since “Gupta” also happened to be the name of a recruiter involved with several of the listings. To apply for a position, you simply contact the listing company directly. (In most cases, an email address is included in the contact information.)

www.intellimatch.com

One of the most visited job-search sites is IntelliMatch, Inc.’s IntelliMatch, which claims to get nine million hits a month. Like hotjobs, this site is sponsored by listing companies.

This site is a bit more demanding, in that it encourages you to fill in a “Power Resume” before obtaining full access to its job listing resources. The resume is divided into several sections: contact information; a summary or objectives statement; a skills profile; employment history; education; certification; languages; preferences on position, location, and type of employment; and background. Once it’s completed, the resume is made available automatically to employers searching the resume database for particular qualifications.

But even if you choose not to fill out the resume, you can browse the job database to see whether there’s anything of interest to you. (To apply to a job, you have to register with the site by creating the resume.)

The difference between this site and others is that its search capabilities are broader. You can’t specify “SQLWindows” or “Centura,” simply, job function,

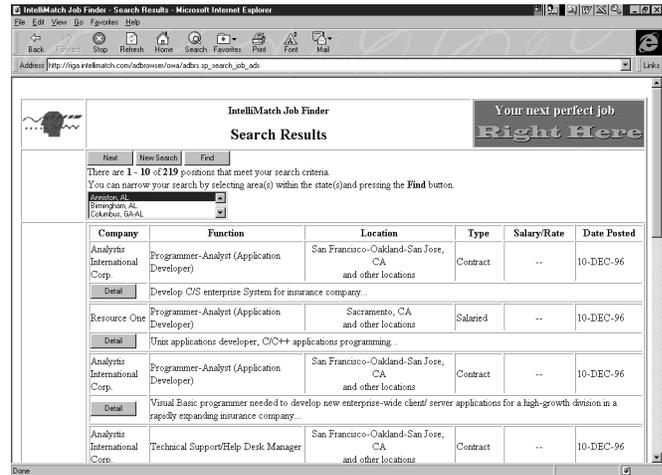


Figure 2. IntelliMatch's Job Finder provides limited detail about a given job; you must first create and submit a “Power Resume” to learn enough to apply for a position.

Will My Boss Find Out?

Have you ever had the sinking feeling that you’ve just read an ad for your own replacement? Even if you haven’t, the online sites I profile here have strong policies regarding confidentiality. The last thing a jobseeker needs to worry about is sending a resume off to a blind job listing that turns out to be your own company.

For example, CareerSite, which uses agent technology to inform employers and potential employees about promising skill matches, won’t release your resume until you give it permission to do so.

IntelliMatch provides two levels of security. In the standard level, you can block specific employers from seeing your resume. A “gold” level specifies that your contact information be withheld from your resume. When a match seems promising, an IntelliMatch representative contacts you for consent to release the information to the employer.

CareerMagazine allows you to designate whether you want confidentiality or not. Doing so enables you to post your resume without disclosing contact information. If an employer expresses interest in your resume, they contact NCS directly, which requests your permission to release the information.

hotjobs allows you to decide whether to make your resume viewable by all member companies or only those to which you submit it yourself.

And since you deal directly with the hiring party on dice’s site, you don’t have to worry any more about responding to one of their ads than you do with regular classifieds.—D.S.

location, and type of employment (salaried vs. contract/consulting). It's also U.S.-specific. A search on all locations and the function "computing" resulted in 219 listings. A "detail" link provides additional information about the employer, but not the name of the company or contact person.

Other Sites to Consider

Most major daily newspapers now offer free access to an online version of their publications—including those juicy Sunday job classifieds. Be forewarned: The duration of postings is usually only a few weeks. But if you intend to move to another part of the country (or the world), regularly perusing online classified advertisements may help you find employment before you've started packing.

Here are several high-tech hotbeds that might prove promising in your search for employment:

- The San Francisco Examiner as well as the Chronicle: www.sfgate.com/classifieds
- San Jose Mercury: spyglass.sjmercury.com/
- New York Times: www2.nytimes.com/index.html/
- Chicago Tribune: www.chicago.tribune.com/
- Seattle Times: www.seatimes.com/

Another set of sites to consider perusing are those for specific companies you want to work for. Since Centura does a fairly good job of publicizing its well-known clients on its own Web site (www.centurasoft.com), follow the link to a particular company's site, then check its job bank.—D.S.

www.careersite.com

Virtual Resources Corp. has set a mission: "To identify attractive, large, existing information-oriented markets that are inefficient and unorganized, and, using the Internet, bring order to those markets." One of those markets is employment recruitment and job searching. This site also wants you to register your qualifications (for free), and it encourages you to do so by employing agent technology. After you register, you can instruct a "Virtual Agent" to send your resume electronically to be considered for each job of interest on CareerSite. As a jobseeker, you fill in a brief form that asks for search "concepts," such as benefits, location, and industry. You can skip that part and go straight to a keyword search. CareerSite uses a proprietary search engine called "SmartMatch." A search on "SQLWindows," "Gupta," and "Centura" resulted in 22 matches; however, many of those resulted because the search engine insisted on parsing "SQLWindows" into "SQL" and "Windows."

Getting to yes

Finding the right job requires more than simply locating the company doing the hiring. But the process of visiting job search sites like those listed here may inspire you to dust off your resume, upgrade your technical education, and send out a few feelers. Even if you stay employed exactly where you are, the practice of online job-hunting may boost your morale and give you the armor you need to ask for that big raise next month.**CP**

Dian Schaffhauser likes her job as publisher of *Centura Pro*; it's just that these days some of her co-workers are encouraging her to consider another line of work. Contact her at 71333.2142@compuserve.com.



CenturaNews

Building Blocks Updated

FrontEnd Systems announced Power Tools 6.0, a new version of its class library-based tool suite for application development using Centura Developer and SQLWindows. The release contains a class library and application framework with 200 classes providing pre-built, SQL-smart graphical objects that support dynamic SQL and stored procedures for building back-end-independent client/server applications.

It features Ironworks, an application wizard that generates full source code for applications based on the Building Blocks library. Ironworks uses a development paradigm that allows programmers to work both graphically and directly with code. The product includes other wizards, such as

a stored procedure wizard to convert a dynamic SQL transaction to one that uses stored procedures, and function, library, and path wizards to streamline various lookup and configuration activities.

Applications that are built using Centura Developer can be backported to run under SQLWindows, as long as the common feature set is used.

Building Blocks applications will work with SQLBase, Oracle, Sybase, Microsoft, Ingres, Informix, DB2, and AS/400 databases. Pricing starts at \$2,400 per license and includes support for both Centura and SQLWindows editions. The Centura version provides both a compiled and source version of the library. To learn more, call (415) 459-6187 or fax (415) 459-0247.

Making Progress (Bars)

Eugene Ioperman

To implement the techniques I describe in this article, the main application must include a modeless dialog, dlgProgress (see Figure 1). This dialog can be stored in a library file (PROGRESS.APL, for example) and included in the main application. Before starting a time-consuming process, you must create a progress dialog window (with SalCreateWindow(), since it is modeless). Let's assume that the task is the population of a large table window. After populating each row in the table, your application must see if the interruption flag has been set by the user. If the flag is set, interrupt the process and destroy the progress window.

Listing 1. The dialog box for dlgProgress.

```
Dialog Box: dlgProgress
Description
Tool Bar
Contents
  Pushbutton: pbCancel
  Message Actions
    On SAM_Create
      Call SalCenterWindow( hWndForm )
    On SAM_Click
      Set hWndForm.bQuit = TRUE
  Data Field: dfPercent
  Data Field: dfPercentBar
  Frame
  Data Field: dfCurrentProcess
  ...
Window Variables
Boolean: bQuit
Number: nWidth
Number: nHeight
String: sPercent
String: sCurrentProcess
Message Actions
On SAM_Create
  Call SalWaitCursor( TRUE )
  Call SalHideWindow( hWndForm.dfPercentBar )
  Call SalGetWindowSize( hWndForm.dfPercentBar,
    hWndForm.nWidth,
    hWndForm.nHeight )
  Call SalSetWindowSize( hWndForm.dfPercentBar,
    0, 0 )
  Call SalYieldStartMessages( pbCancel )
  Set hWndForm.bQuit = FALSE
On PAM_Progress
  Call SalNumberToStr( wParam, 0,
    hWndForm.sPercent )
  If SalIsWindowVisible( hWndForm.dfPercentBar ) =
    FALSE
    Call SalShowWindow( hWndForm.dfPercentBar )
  Call SalSetWindowText( hWndForm.dfPercent,
    hWndForm.sPercent || '%' )
  Call SalSetWindowSize( hWndForm.dfPercentBar,
    hWndForm.nWidth / 100 * wParam,
    hWndForm.Height )
```

Often we need to show the progress of a long-running task and allow the user to interrupt or cancel the task. Here's a solution to these requirements that avoids the use of custom controls, making it more adaptable to different platforms.

```
On PAM_CurrentProcess
  Set hWndForm.dfCurrentProcess =
    hWndForm.sCurrentProcess
On SAM_Destroy
  Call SalYieldStopMessages()
```

The interruption flag is a Boolean variable (bQuit, in this case), local to the dialog and initialized to FALSE. When the user clicks the Cancel button, the progress dialog sets this

variable to TRUE, meaning that the user wants to stop the process.

The dialog's interface is simple. The dialog yields to the Cancel button at create time. When the user clicks the Cancel button, the bQuit variable is set to TRUE. Soon thereafter the main application checks this flag, stops the current process and destroys the progress dialog.

The background color of dfPercentBar in my example is red, and the background color of the Frame is white. As the progress proceeds, the dfPercentBar fills with red color. Note that this solution does *not* require the use of a custom control, as is usually seen when discussing progress bars. Instead, programmatically varying the width of dfPercentBar produces the same effect.

The main program fragment features the population of a table. The total number of rows will be collected, calculated, and stored in the variable nTotalNumberOfRows. PAM_Progress and PAM_CurrentProcess, the events controlling the progress dialog, are defined in PROGRESS.APL.

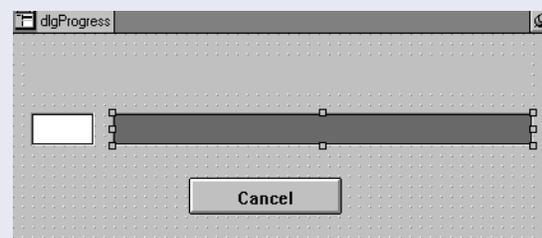


Figure 1. dlgProgress can be used in many different long-running tasks in an application.

Listing 2. The main fragment of PROGRESS.APL.

```
Application Description:
Design-Time Settings
Libraries
...
File Include: PROGRESS.APL
...
Global Declarations
...
Dialog Box: dlgDialogBoxWithTable
...
Contents
Child Table: tblTable
Contents
Column: col1
Column: col2
Functions
Window Variables
Number: i
Number: nTmp
Number: nTotalNumberOfRows
Number: nRet
Message Actions
On SAM_Create
! ... Table resetting ...
Call SalTblReset( hWndItem )
! ... Progress window creating ...
Call SalCreateWindow( dlgProgress, hWndNULL )
Call SalSendMsg( dlgProgress,
PAM_Progress, 0.0, 0 )
Set dlgProgress.sCurrentProcess =
'Reading data...'
Call SalSendMsg( dlgProgress,
PAM_CurrentProcess, 0, 0 )
! ... Total number of rows ? ...
Call SqlPrepareAndExecute( hSql,
'select
count( * )
from
TABLE
into
:nTotalNumberOfRows' )
Call SqlFetchNext( hSql, nRet )
! ... 'Select' statement preparing ...
```

```
Call SqlPrepareAndExecute( hSql,
'select
COL1,
COL2
from
TABLE
into
:hWndItem.col1,
:hWndItem.col2' )
! ... Populating ...
Set i = 0
While SalTblSetContext( hWndItem,
SalTblInsertRow( hWndItem,
TBL_MaxRow ) ) and
SqlFetchNext( hSql, nRet ) = TRUE
Set nTmp = ( i / nTotalNumberOfRows ) * 100.0
Call SalSendMsg( dlgProgress, PAM_Progress,
nTmp, 0 )
! ... if user presses Cancel, quit immediately
If dlgProgress.bQuit = TRUE
Call SalDestroyWindow( dlgProgress )
Call SalSendMsg( pbClose, SAM_Click, 0, 0 )
Return TRUE
Set i = i + 1
! ... Clearing new rows flags ...
Call SalTblSetFlagsAnyRows( hWndItem, ROW_New,
FALSE, 0, 0 )
! ... Destroying progress dialog ...
Call SalDestroyWindow( dlgProgress )
Call SalTblSetContext( hWndItem, 0 )

Pushbutton: pbClose
Message Actions
On SAM_Click
Call SalEndDialog( hWndForm, IDOK )
```

This approach provides you with the easiest control over time-consuming processes. **CP**

Eugene Toperman is a Senior Software Developer in the R&D division of BEZ Systems, Inc. His latest creation (in C) is a parsing program that splits SQL text to tokens for analyzing. Reach him at (847) 940-1010 or BEZPLUS@BEZ.COM.

SAM_Validate Anomalies

Centura Tip!

The SQLWindows manual and on-line help state that the Field Edit flag is set to FALSE if VALIDATE_Ok is returned by SAM_Validate.

This isn't correct. The Field Edit Flag is only reset when VALIDATE_OkClearFlag is returned. In fact, returning VALIDATE_Ok ensures that the FieldEdit flag is set to TRUE as illustrated by the following example:

```
On SAM_Validate
Call SalSetFieldEdit( hWndItem, FALSE )
! The FieldEdit Flag is now FALSE
Return VALIDATE_Ok
```

A call to SalQueryFieldEdit will show that the Field Edit Flag is now set to TRUE.

There is also an inconsistency in the way SAM_Validate works in columns vs. datafields. In a datafield, SAM_Validate is only sent when the user has edited the contents and tries to move focus away. If the focus returns to the datafield, SAM_Validate isn't sent again unless the user makes further amendments. This is true regardless of whether the Field Edit flag is set to TRUE or FALSE.

In a column, SAM_Validate is sent when the user has edited the contents and tries to move the focus away. This is as expected. However, if the Field Edit flag is not set to FALSE, SAM_Validate will also be sent when the user moves the focus

to and from the field without making any further amendments. If the Field Edit flag is set to FALSE then the spurious SAM_Validate is not sent.

SAM_RowValidate & SalTblSetFocusCell

Never call SalTblSetFocusCell within SAM_RowValidate if you intend to return VALIDATE_Ok (or VALIDATE_OkClearFlag). If you do call this function in this way following bizarre side-effects occur:

- The focus won't stay with the cell specified in SalTblSetFocusCell; it will move to the cell the user moved to.
- If the cell the user moved to is in the same column as the cell in SalTblSetFocusCell, the cell will adopt the same value as the previous one. This value will then disappear when the focus is moved again.
- If you try to set the focus back to the cell defined in SalTblSetFocusCell, the insertion point will move but the row focus won't. **CP**

Richard Head is a Senior Consultant for RCMS, the largest Centura partner in the UK. RCMS is both an authorized support center and training partner and can be contacted by phone at 01753 681077, fax 01753 685556, or e-mail 101602.1311@compuserve.com.

Another Centura Pro

Dian Schaffhauser

Can SQLWindows differentiate between Informix NULLs and empty strings?

I am having trouble with my SQLWindows code translating Informix nulls and empty strings (' ') as the same value (' '). When I select a null value from the backend into a local bind variable, then try to pass it back on an update (in a where clause), it can't find the row because it's looking for an empty string (' '), not a NULL value. I've heard rumors that SQLWindows is now able to somehow differentiate between the two, but how? I'm using 5.0.3 (no PTF) with Informix router 2.2.0.

In SQLWindows 5.0.2 we introduced a new SQL.INI keyword to support conversion of zero-length strings to NULL. This version of the SQL/ API lets you automatically convert zero-length strings (input bind variables only) to NULLs with the SetZeroLengthStringsToNull keyword.

This keyword is a temporary feature until the availability of the NULL_String constant in the next major release of SQLWindows. The keyword lets you mimic the behavior of an earlier version of the SQL/ API, which automatically converted zero-length strings (in bind variables only) to NULL. Note that this keyword applies only to bind variables, not to literals or SQLWindows INTO variables.

Another consideration is the correct behavior of NULL bind variables in WHERE clauses. Since a NULL variable is undefined, it won't match another NULL variable. Hence, a query that selects rows based on a column containing a null value can't use the following syntax:

```
where column_name = :bind_variable
```

(where bind_variable contains a null value). Such a query won't return rows. The only way to select rows based on a column containing a null value is to use the IS NULL clause. For any datatype except (long) string, there are constants

This might get confusing! There's an independent Web site that offers expert help and advice for a variety of client/server tools and languages, including Centura. The site is www.inquiry.com, and they have a section called "Ask the Pro." There are Pros for various topics, and one is the "Centura Pro." Staffed mostly by consultants in Centura's Professional Services division, the Centura Pro (inquiry.com version) offers a question-and-answer area full of useful technical advice, just like the *Centura Pro* newsletter. Read on for a small sample of the questions covered.

to specify null, i.e. NUMBER_Null. SQLWindows previously assumed that the empty string will work as a null, and it does against SQLBase and a few other DBMSs. However, the empty string is not acceptable to some DBMSs. Sybase, for example, treats the empty string the same as a single space, and that's what will get inserted into the database. DB2 gives an error when it receives the empty string. And as you have noticed, Informix also treats it as a space. For this reason, until SQLWindows provides a null constant for strings (STRING_Null), this switch can be set in sql.ini to control how empty strings should be treated when encountered in a bind variable. This requires at least SQLAPIW.DLL from

SQLBase 5.2.1PTF2 for proper operation. Note that this discussion does not apply to Centura Builder, which supports the STRING_Null constant.

Can 16- and 32-bit applications talk to the same local SQLBase server?

I run 16- and 32-bit applications on my Windows 95 laptop and they both need to access the same databases. Is there any way to allow the 16- and 32-bit applications to talk to the same local SQLBase server?

Before SQLBase for Windows 95 became available, the local 16-bit SQLBase engines (DBWSERVER.EXE and DBWINDOW.EXE) were straightforward and easy to get up and running. The database engines and the applications were both 16-bit and they were aware of each other in that the server would launch automatically when needed.

With SQLBase for Windows 95 (DBNT1SV.EXE), there are a few more considerations to take into account: SQLBase for Windows 95 is a 32-bit server, which means it can address more memory than was possible with the 16-bit engines. Sixteen-bit applications can only connect to SQLBase for Windows 95 via the 16-bit WinSock TCP/IP DLLs. SQLBase for Windows 95 does not launch

automatically upon database or server connection requests from 16-bit client applications. Configuring TCP/IP for Windows 95 on a machine that does not have any network adapters can be tricky and is not altogether straightforward. The steps that follow are designed to help you install and configure TCP/IP for Windows 95 so that the SQLBase Server for Windows 95 can be accessed by both 16- and 32-bit applications. There are several ways to do this operation, but the steps listed in this document are the most streamlined based on the information available at the time this document was published.

If you have already installed TCP/IP on your Windows 95 machine and it is working properly, use the steps in this section to configure SQLBase. The following steps assume you are familiar with SQLEdit; (if you aren't, please refer to the SQLBase *Starter Guide*):

1. Use SQLEdit to configure the Windows 95 Server ([dbnt1sv]) to support both Anonymous Pipes (SQLAPIPE.DLL) for 32-bit client applications and WinSock TCP/IP (SQLWSOCK.DLL) for 16-bit client applications. Additionally, set the server name to be "LOCAL32."
2. Use SQLEdit to configure the Windows 95 client ([win32client]) to connect with Anonymous Pipes.
3. Use SQLEdit to configure the Windows 3.X client ([winclient]) to connect with TCP/IP (WinSock). Additionally, you need to set the serverpath parameter value to "LOCAL32,localhost/*".
4. Launch SQLBase Server for Windows 95.
5. Now you are ready to connect to the server from either the 16- or 32-bit versions of SQLTalk for Windows.

If you have not installed TCP/IP, use the following steps to configure TCP/IP for Windows 95:

1. From the Network dialog (accessed via the Control Panel), press the Add button. The Select Network Component Type dialog displays.
2. Select Network Component Type; select Protocol and press the Add button. The Select Network Protocol dialog is displayed.
3. Select Network Protocol; select Microsoft as the Manufacturer and TCP/IP as the Network Protocol and press the OK button. The Select Device dialog is displayed.
4. Select Device; If you don't have a NIC in your PC, select Microsoft as the Manufacturer and Dial-Up

Adapter as the Model. Otherwise, select the Manufacturer and Model for the NIC that is installed and press the OK button. The Network dialog is displayed again with the currently installed network components.

5. Network; If you are performing this install so that you can communicate with a local 32-bit SQLBase engine, it is important to note that the only components that are required are Dial-Up Adapter and TCP/IP. To remove unnecessary network components, select any of the components you wish to exclude and press the Remove button.
6. Network; Once you are satisfied with the installed network components, press the OK button. At this point you may be prompted to insert the Windows 95 distribution media. Once the changes have been made, the System Settings Change dialog will be displayed.
7. In the System Settings Change dialog, pressing the Yes button will restart your computer with the new network settings.
8. After the computer resets, complete the SQLBase and SQLTalk configuration steps as listed earlier.

Should we build one huge application or several interlinked ones?

My department is about to begin developing a large on-line system for our phone reps, using Centura Team Developer connecting to a variety of data sources (SQLBase, Oracle, DB2, etc.). The question nagging us at the design phase of the project is whether we should build one huge application or split it up into a number of interlinked applications. Any suggestions?

That question often nags development teams at the outset of a project. Many applications deployed around the world that are large. A typical "large" Centura application would contain hundreds of top level windows (form windows, dialog boxes, etc.) and in excess of 100,000 lines of SAL code. Either of the two approaches (i.e. build everything into one application, vs. split them into multiple applications) has been adopted successfully.

The governing factor for making a choice is this: Does the system being built contain modules that can run independently? If so, then building separate apps for each module makes sense. And that's it—the only reason to build a set of applications that would be deployed as multiple EXEs at runtime. Other than that, Centura Team Developer has several built-in features that greatly aid building large applications:

- Team Object Manager takes care of version control, as well as concurrent check-in/ check-outs using its

Continues on page 16



Screen Capture Enhanced

TechSmith has released an update to SnagIt, its Windows screen capture utility. Version 3.2 adds a print preview feature, the ability to repeat the last capture, color substituting, and

changes to the interface. It runs on Windows 95 and Windows NT version 3.51 and 4.0 and sells for \$39.95. Download an evaluation version at www.techsmith.com or on the WUGNET forum of CompuServe.

Ace!Centura

App Detective

Got critical problems that require the services of an expert? Send them to Ace Centura, care of Centura Pro Editor, 71460.3142@compuserve.com. And now for this month's crisis...

Dear Ace,

I am trying to reference automatic table columns in a SQL statement with multiple instances of the table window created. Reference "mdiMain.tblEditTable#1" works fine if only one instance of the table window is created, but it generates a runtime error as soon as another instance of tblEditTable is present. I also tried the following references:

```
"hWndForm.(mdiMain.tblEditTable).tblEditTable#1"
"hWndHandle.(mdiMain.tblEditTable).tblEditTable#1"
"mdiMain(hWndForm.tblEditTable).tblEditTable#1"
```

Can you help me?

Best regards,
Mark @ NGS, Ltd.

Dear Mark,

Qualified references can, indeed, be confusing, so as a general rule, before you need to use them, it's worth reviewing the topic in the Developer's Reference manual. Based on the official docs, your third reference attempt:

```
mdiMain(hWndForm.tblEditTable).tblEditTable#1
```

is definitely out since a qualified reference always has to start with a window handle expression.

Your first two reference attempts are on the right track, since they start with a window handle expression. Whether or not to use hWndForm depends on the context in which you need to make the reference. The important thing to remember is that the window handle provided in the first

part of the reference should be a window handle for an instance of the type of window declared in the second part of the expression, in this case (mdiMain.tblEditTable). The final part of the reference in your problem is that you just need the column number, without repeating the table window name. The reference you're looking for is:

```
hWndSomeEditTable.(mdiMain.tblEditTable)#1
```

where hWndSomeEditTable is the window handle to an instance of tblEditTable.

For the benefit of the rest of the readership, here's an example of using such a reference. Assume an MDI window, mdiMain, with multiple instances of tblEditTable, where tblEditTable is the only table window template defined in the contents of mdiMain. A function defined in mdiMain to programmatically select the first column in every instance of tblEditTable could look like this:

```
Function: SelectFirstCol
Description:
Returns
Parameters
Static Variables
Local variables
Window Handle: hWnd
Actions
Set hWnd = SalGetFirstChild( hWndMDI,
TYPE_TableWindow )
While hWnd != hWndNULL
Call SalTblSetColumnFlags(
hWnd.(mdiMain.tblQuery)#1, COL_Selected, TRUE )
Set hWnd = SalGetNextChild( hWnd,
TYPE_TableWindow )
```

Hope this helps.

Sincerely,
Ace

CP

The editor is happy to report that this did, indeed, work, and Mark@NGS is still gainfully employed today.

Another Centura Pro ...

Continued from page 14

visual diff/merge features.

- Dynalibs, the pre-compiled chunks of SAL code that lend themselves to faster compile times.
- Centura Team Developer, being a 32-bit product, shatters all limits imposed by the 16-bit architecture that surfaced in SQLWindows: maximum size of a section of an outline, global symbol table space, etc. These limits prevented SQLWindows apps from growing beyond a certain size.

Once you build your system as a single application, you reap the following benefits:

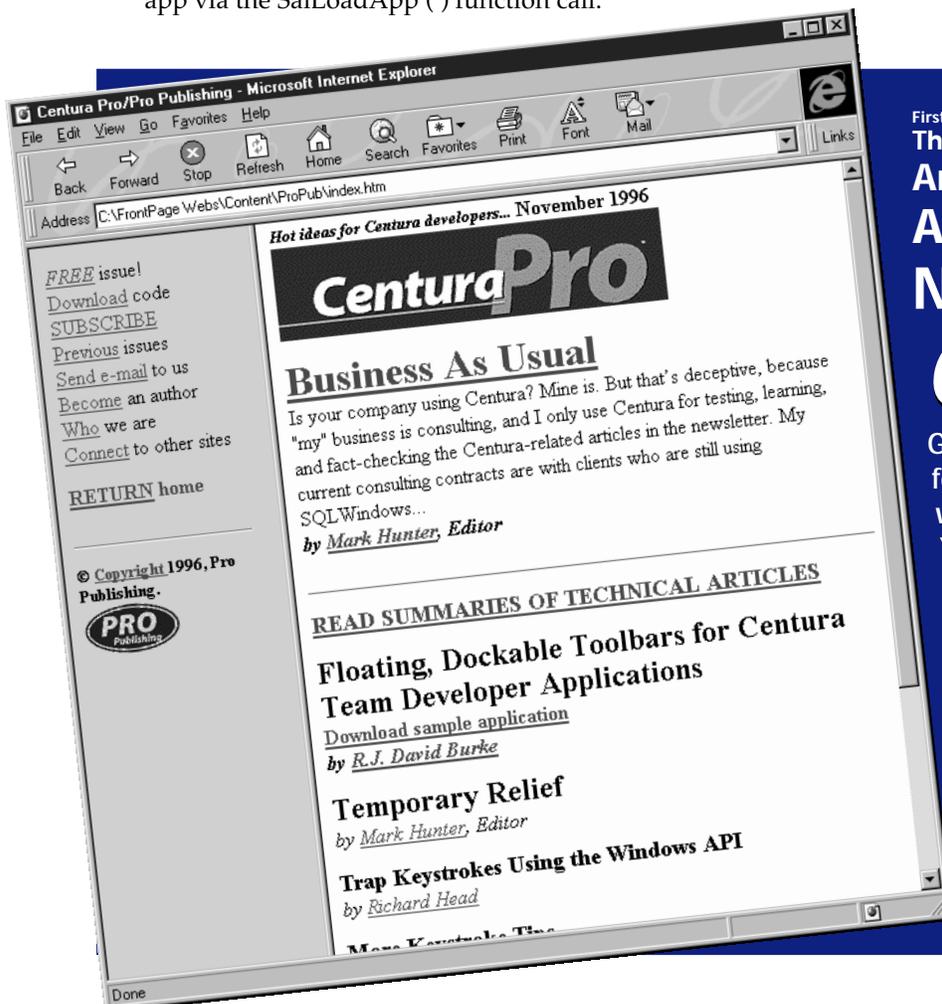
- You won't have to worry much about protocols like DDE for enabling communication between different windows in the system. Simple Windows messaging and function call interfaces would take care of that.
- Creating and launching another window within the system would be faster compared to starting another app via the SalLoadApp () function call.

- Windows resources consumed in creating a new window within the same app would be much less than having to start another application. This point is rather moot in Windows 95 and Windows NT systems. However, if you're planning on deploying your Centura-built applications onto a Win16 platform (using the upcoming Centura "Patriot" release), then the issue of free Windows resources becomes critical.

Oh, boy! Free technical support!—Not

The opportunity to ask detailed questions of knowledgeable Centura staff is very tempting. But keep in mind, Ask the Pro is not a substitute for a technical support contract. Not every question will be answered. If you ask an important question that has general interest for the developer community, chances are good that you will see the answer on www.inquiry.com. And for pre-emptive technical support (finding the fix before you find the problem), Ask the Pro is a great resource. **CP**

Dian Schaffhauser is the pen name of Cody Martineau, a 12-year-old serving a three-year sentence for phone phreakin' at a correctional institution somewhere in the American Midwest.



First, Time was there.
Then Outside.

And The National Enquirer.
And Playboy.

Now it's our turn ...

Centura Pro!

Get to the online forum
for Centura Pro at
www.ProPublishing.com.
You'll find:

- Source code
- Order forms
- Cool links
- And more!

Be among the first 50 people to
leave us feedback from the Web
site and you'll be entered in a
drawing for an official Centura Pro
rubber chicken! Don't miss out!