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Software Consulting Services for Small Businesses
Java Migrations – Q&A Options
Q&A Tools and Utilities
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For examples of Q&A databases running in Java, see www.JohnTDow.com/JAVA.htm

MIGRATE TO JAVA – INNATE JAVA FEATURES

Q&A users are finding that they need to migrate to another application base. One option is to migrate to a Java-based application where the logic behind keystrokes can be duplicated making the transition much easier for users.

I can keep costs down by using utilities I have developed to specifically migrate from Q&A to Java. The utilities are used to migrate the bulk of the files and the programming into a Java application; clean-up is done after the initial migration. Unique and special requests and enhancements are then implemented.

Clients used to illustrate features
     These are some of my clients, used below to illustrate some of the features in actual use.
- Aviation insurance broker
- Appliance rental company
- Auto repair
- Bail Bondsman
- Hospital Clinic/Physician's Practice
- Job placement firm – employees all work off-site
- Law enforcement agency – databases interact with other public agencies
- Trading company
- Wholesaler

Standard Enhancements Available

- **Customized menu**
  Each Java program created by the migration from Q&A has a menu that includes all of the "frames" (as the screen layouts for Q&A databases are called). This is a standard Windows menu, across the top of the program's window. This menu can be customized to reflect the business operations.

- **Normalization of embedded tables**
  By "embedded table", I mean a matrix or array of fields in a Q&A database that allows multiple entry of the same thing. For example, an accounting system might have a table allowing for multiple payments.

Columns in the table might be: date of payment, amount of payment, payment method
There might be 10 rows to permit capturing data on up to 10 payments. If there are more than 10 payments, there is no way to capture those additional payments.

In addition to having a limit on the number of payments, adding all those fields makes a database larger. Furthermore, it is extremely difficult to search the rows of the matrix. For example, searching for all payments in excess of $1,000.00 is difficult in Q&A, but trivial once normalized.

After migration, embedded tables have unlimited rows (with scroll bars if there are too many rows to fit into the space allocated on the screen layout).

- **Pop-up dialog**
  Each table has a popup dialog that is used to add new rows and edit existing rows.
  Examples of pop-up dialogs:
  1. Appliance rental company - Address history going back several years is captured for customers because some are poor risks.
  2. Hospital clinic - patient diagnoses, medications, follow up visits, respiratory support, and more, all linked to the same patient.
  3. Hospital clinic - billing.
  4. Wholesaler - order detail.
  5. Law enforcement agency - arrest history, witnesses present at arrest or at incident.
  6. Auto repair company - does not use popup dialog to enter and edit data but edits the embedded table directly.

- **Complex programming**
  Q&A has severe programming limitations compared to Java. Java programming can simultaneously refer to data in more than one table. Updating multiple tables at once (what Q&A calls "posting") is simple. Adding a record to multiple tables is also easy, but impossible with Q&A.

- **Reports**
  Reports are developed using Jasper iReports, an application that has a much broader scope of possibilities than available in Q&A. Basic reports will be created replicating the Q&A reports as requested. In addition, users can develop their own reports when and as needed.

Restrict Specs – Java Cupboard

A table called the "Cupboard" replaces Q&A's restrict specs. A built-in user interface allows an authorized administrator to edit the data in the cupboard, thereby changing the values in the restrict specs.

Q&A requires making a change to the database itself, which cannot be done while the database is in use. The Cupboard can be edited whenever needed.

GLB – Generic List Boxes

In Java, I have built a facility for creating what I call "Generic List Boxes".

This are like simple reports with data derived from one or more tables. For example, with a client record open, a **GLB** can be used to pop up a list of orders that customer has placed previously. Like a report, it's a list of data pulled from one of the tables. Unlike a report, a **GLB** is very easy to define because much of it is automated. And unlike a report, the user can select one or more rows

in the list and open those order records. A report is just for looking at, but a **GLB** allows access to the data.

Many Q&A reports can be eliminated and replaced with corresponding **GLB**s.

Client Server

Workstations have more efficient access to the data than they do with Q&A using a remote file server. With Q&A, all of the work is done at each workstation, requiring much network traffic between the workstation and the file server holding the Q&A database files. If the workstation is remote (e.g. not within the office but perhaps in another office in another city), poor performance is the result.

Secure Remote Access

Access (e.g. from any hotel/motel) can be very secure, including encryption of the data being sent or received. This is not the same as "remote access" e.g. with PC Anywhere or Citrix.

Field and Record Locking

Field locking depends on the state of the record. If a financial transaction record has been posted, the fields can be locked to prevent inadvertent or malicious changes. Specific fields can be exempted: e.g. a comment field.

Actions such as deleting the record can also be prohibited.

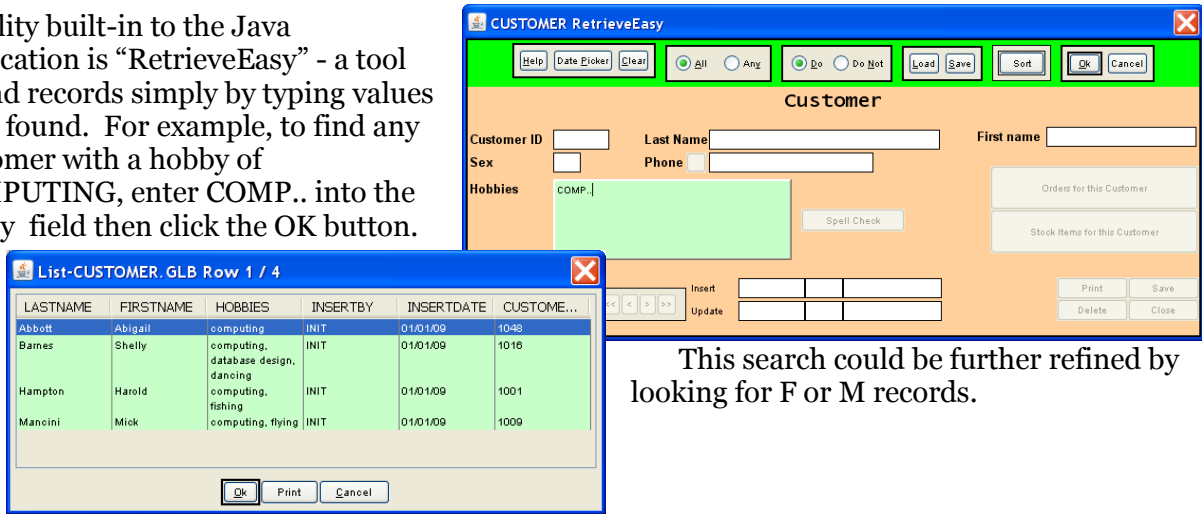Record locking. Users are told who locked a record and when.

Administrative Options

• The administrator can see who is logged in at the moment.

• The administrator can lock out some or all users from the application temporarily. This is done by listing those users who continue to have access (not by listing those who don't).

• The administrator can broadcast a message to all users, perhaps to alert them to a planned maintenance.

• Users can be automatically logged out if they are inactive for a specified interval, measured in minutes. There can be one interval for the entire day (e.g. 20 minutes), or several periods during the day can be defined, each with its own interval.
    Example of three intervals: 00:00-07:30=10;   07:30-18:00=300;   18:00-23:59=10

• To make changes to a table (aka database) in Q&A all users must be logged out as the changes are hard coded in the DTF file. In comparison Java stores that information with a tool that allows modifications even while others are using the application.

Q & A Type Searches

Search for records by entering partial or complete string, such as Q&A searches. For example, type text like "FRED.." and "SMITH" into the first and last name fields.
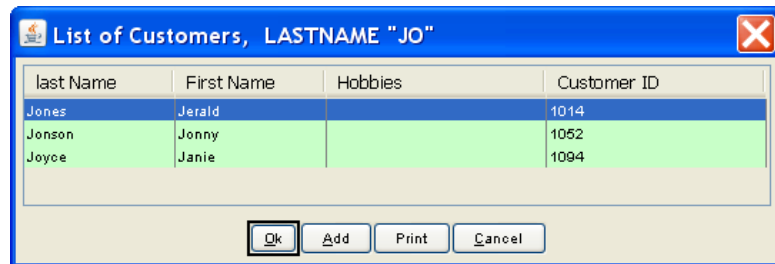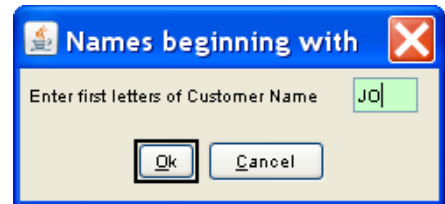
Because the underlying database is more powerful than Q&A, sophisticated searches are also possible. Example: retrieve customers who have placed more than 5 orders within the past year.

A utility built-in to the Java application is "RetrieveEasy" - a tool to find records simply by typing values to be found. For example, to find any customer with a hobby of COMPUTING, enter COMP.. into the hobby field then click the OK button.

This search could be further refined by looking for F or M records.

Another built-in feature are the application data entry windows.   Example of a search of the Customer table where only "JO" was entered resulting in all of the record starting with "JO." Note that an option to **Add** a record if the correct record is not found. The "Print" output is the table as shown below.

Additional Features

- **Generate PDF files**
  The standard report writer generates PDF files as well as many other file formats, including HTML. (The recommended report writer is JasperReports, a free program that is very flexible.)

- **User timeout**
  If desired, the program can monitor users for inactivity and forcibly log off those who have been inactive for a specified period of time.

- **Web Site Access to Database**
  When the data is in a relational database, the computer that hosts your Web site can easily access the data.

  Example: Job placement firm - Web site lists job positions the minute they are added to the database and approved for Web publication. It is not necessary to extract the data or even to do

anything to "publish" it on the Web, as the database is directly available. (Of course, the Web page's design prohibits unauthorized access within the database.)

- **Auto prompting for data when empty fields are entered**
  As a user fills in information in a new record, dialogs that are used to enter information (e.g. a calendar for date fields) can be set to open automatically if the field is empty.

- **Database Encryption**
  The underlying database can encrypt the data.

- **Required Fields**
  Similar to Q&A's mandatory fields, required fields can easily be specified for each frame. The record cannot be saved if they are empty. Unlike Q&A, their appearance changes if they are empty. They can be made very noticeable with either a thick border if empty, or a different background color if empty.

- **Cross platform capability**
  An application written in Java can be run on a wide variety of platforms, specifically Windows, UNIX (e.g. Linux), and Apple.

  Java is inherently platform independent. Tools used with it (such as the JasperReports report writer mentioned above) are usually written in Java so they too are platform independent. The database, PostgreSQL, is available for many platforms.

Customizations

Certain features of a migrated program lend themselves to easy enhancements. For example, the **cupboard** mentioned above can also be used to store parameter values; something not possible with Q&A's restrict specs. Custom programming can refer to the cupboard for parameters (e.g. what color to use if a field has a certain status or how many days to allow between certain events before flagging an error).

The following example shows simple colors for a window – the main color for the sample table is the light yellow and the color for the open window is the light green. Other windows for the table are displayed in different colors. These colors can be set to whatever the user prefers. Font sizes and types and colors can be customized.

The power of Java also lends itself to various customizations. For example, the **background colors** of fields and panels can be used to signal status to user. E.g. in a hospital clinic, if antibiotic is not discontinued on time, the clinician accessing the patient data can be alerted by a color change in a critical field, or even a change in the background color of an entire panel.

Sample Custom Enhancements Requested by Clients after Migration

- Send email from application to customer/client.
  - Job placement firm - Fill in subject and text, select attachments, click button to send.

- Generate PDF report and email with one click.
    Law enforcement agency generates report and automatically emails it to the volunteer fire department that responded to a call. (The law enforcement agency handles dispatching for the volunteer fire departments in its county.)
- Create records in table A from a record in table B, with automatic linking.
    Law enforcement agency - initial case report is automatically generated from data previously entered, saving work for the officer.
- Global search (across multiple tables).
    Law enforcement agency does not have single table to identify people, so name/address searches must search multiple tables simultaneously.
- Record locking and hiding based on the user.
    Wholesaler hides records from salesmen based on the account.
- Menu options can be enabled/disabled or even made invisible, depending on the user who is currently logged in.
    Hospital clinic - Doctors and nurses have different menu options than the billing office staff.
- Administrative override of read only fields.
    Hospital clinic - administrator can correct data entry errors made by other users.
- Email client (send and receive email messages).
    Trading company - sends automatically customized email to multiple recipients, attempting to find suppliers for a specific product requested by a client. The messages have embedded id numbers so that email received from any of the recipients is automatically filed under the correct client and project. The email is stored in the database and can easily be located by client, supplier, or project.
- Scrape information from Web pages.
    Trading company - program scans Web pages of potential suppliers, looking for key words indicating that they handle the appropriate products, and looking for email addresses.
- Historical records
    Hospital clinic - The ability to view previous versions of a record.
- Audit trail of who changed what and when.
    The migrated program automatically records who created a record and who last changed it. This could be enhanced to show who made any change to any field (or to specific fields).
- Publishing information on the Web.
    Job placement firm - When open positions are entered into the database, they are immediately available for Web queries. There are two categories: "Hot Jobs" and "Regular Jobs". Without further human intervention, hot jobs are demoted to regular jobs after two weeks. If a job is filled, it automatically disappears from the Web page, without human intervention.
    This feature requires proper Web page design to format and display the information, but the information is provided to the Web page directly from the database with no selection logic required in the Web page design.