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# Updating and Integrating UDB/400 the iSeries Database

MI – iSeries User Groups

February 2004

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# Agenda

- What is a good database
- iSeries database features
- Building and updating files with SQL and iSeries Navigator
- Database Integration with Microsoft Office
- iSeries Access for the Web Database Tools
- WebSphere Studio Client Database Tools
- Securing your database

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What is a good database?

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# A Good Database has…

- A good database is normailized
- A good database is correct
- A good database is extensible
- A good database is auditable
- A good database is recoverable
- A good database is secured
- A good database is planned.

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# 1st Normal - Eliminate Repeating Groups

Make a separate file for each set of repeating fields, and give each table a primary key.

Unnormalized Data Items

Puppy Number
Puppy Name
Kennel Code
Kennel Name
Kennel Location
Trick Id 1...n
Trick Name 1...n
Trick Where Learned 1...n
Skill Level n 1...n

First Normal Form

*Puppy Table*
**Puppy Number
Puppy Name
Kennel Code
Kennel Name
Kennel Location

*Trick Table*
**Puppy Number
**Trick Id
Trick Name
Trick Where Learned
Skill Level

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# 2nd Normal – Eliminate Redundant Data

If an field depends on only part of a multi-valued key, remove it to a separate table.

First Normal Form

***Trick Table***
- **Puppy Number
- **Trick ID
- Puppy Name
- Trick Name
- Trick Where Learned
- Skill Level
- Kennel Code
- Kennel Name
- Kennel Location

Second Normal Form

*Tricks*
- **Trick ID
- Trick Name

*Puppy Tricks*
- **Puppy Number
- **Trick ID
- Trick Where Learned
- Skill Level

*Puppy Table*
- **Puppy Number
- Puppy Name
- Kennel Code
- Kennel Name
- Kennel Location

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# 3rd Normal - Eliminate Columns Not Dependent on Key

If fields do not contribute to a description of the key, remove them to a separate table.

Second Normal Form

*Puppy Table*
- **Puppy Number
- Puppy Name
- Kennel Code
- Kennel Name
- Kennel Location

Third Normal Form

*Puppies*
- **Puppy Number
- Puppy Name
- Kennel Code

*Tricks*
- **Trick ID
- Trick Name

*Kennels*
- **Kennel Code
- Kennel Name
- Kennel Location

*Puppy Tricks*
- **Puppy Number
- **Trick ID
- Trick Where Learned
- Skill Level

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## Normalization Simplified

*"The rules leading to and including the third normal form can be summed up in a single statement: Each **field** must be a fact about the key, the whole key, and nothing but the key."*

*Wiorkowski and Kull*
*DB2 Design & Development Guide*

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## Make sure the Data is correct

- GIGO - The enemy of correctness
- Data is correct if…
  - It is edited
  - Someone's job depends on it being correct

**EDIT EVERYTHING!**

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## Have a Plan to Add New Fields

- Do not redefine the meaning of an existing field.
- Add a new Field
  - Define a methodology for adding fields
  - Make sure new fields are edited

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## Track and validate the data

- Transactions should be journaled or timestamped and identified.
- Build a policy for statistically verifiable transaction auditing.
- Verify algorithms that produce accumulated values (ie Physical Inventory)
- Adjust processing according
- The object is to find errors and fix them not rubber stamp.

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## Back it up

- A perfect database without a recovery strategy is useless.
- Don't just back it up test the recovery process (regularly)
- How are the lost transactions recovered (the time from the last backup till the point of failure)
  - This is critical even in high availability situations.

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## Keep data in the right hands

- Who can maintain it? (with in the application)
- Who can move it out of the application?
- Who can change it outside of the application?
- Networks and the Internet
- Unhappy employees
- Hackers, Crackers and Uber-Crackers

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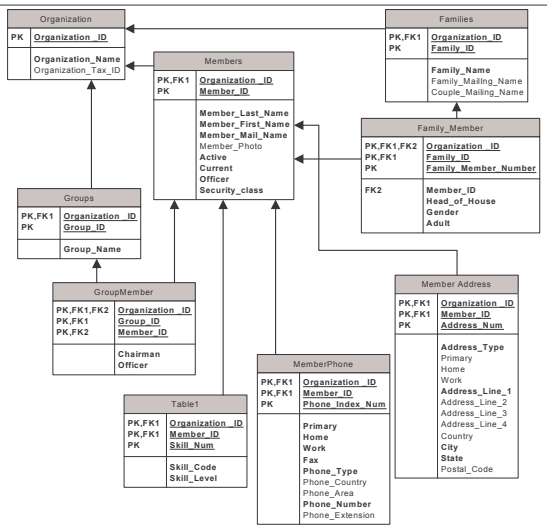
# Database Design

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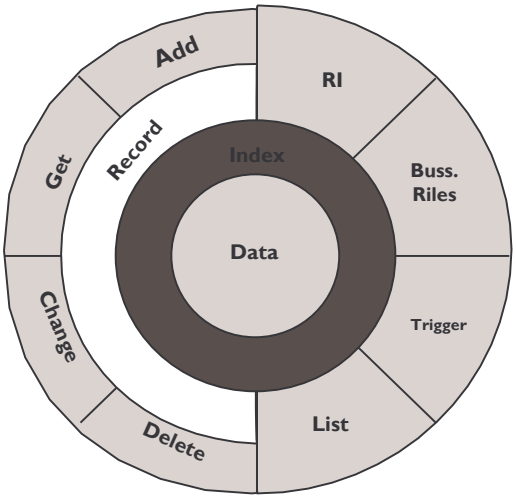
# OO model of file

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# Fully Implement DB UI Interface

User Interface (browser)

Message Passing

Database with integrated Business Rules

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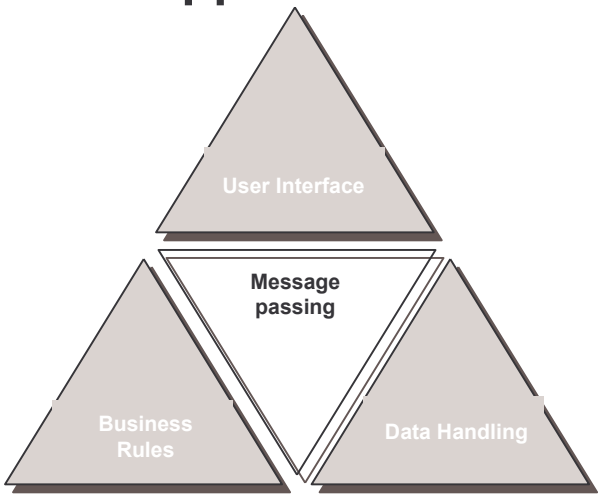
# Three Tier Application Development

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iSeries database features

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## iSeries Database Features

- Referential Integrity
- Triggers
- New Field Types
- Column Constraints

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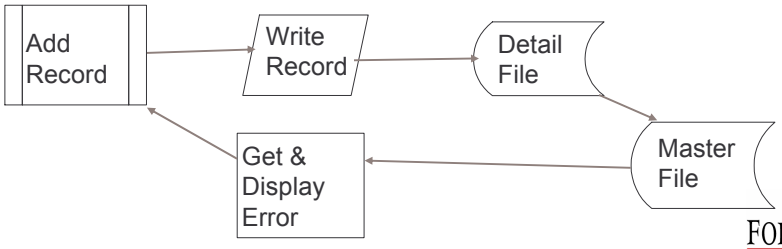
# Referential Integrity Definition

- The database ensures that:
  - Data is consistent between files
  - Data is valid
  - No orphans

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# Referential Integrity Continued

- RI implemented at the Database Level not at the Application Level
- RI cannot be validated by anyone, not even a programmer.
  - The data is safe from the program.
- Easier application coding
- Better performance

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## Referential Integrity Continued

- **Delete rule**
  - Can restrict delete on Parent file or propagate delete from Parent to Dependent file
  - Rules:
    - RESTRICT
    - CASCADE
    - SET NULL
    - SET DEFAULT
    - NO ACTION

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## Referential Integrity Continued

- Update rule
  - Restricts inconsistent update to a Parent file
  - Rules:
    - RESTRICT
    - NO ACTION
    - *Cascade (Not There)*
- Insert rule
  - No explicit rules, but insert into Dependent files are checked
    - Most important constraint

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## Referential Integrity Continued

- Parent Vs Dependent Files
- Parent Key and Foreign Key
- Primary Key constraint
- Unique Key constraint
- Referential constraint
- Referential constraint rules

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## Triggers Definition

- A trigger is a program which is executed when an event occurs on a file
  - It is called by the database not a program
- Triggers can be activated either before or after:
  - Insert
  - Update *Always or *Change
  - Delete
- There are 2 types of trigger programs on the iSeries
  - SQL
  - External

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# SQL Triggers

- Allow Read, or Specific Field change, Triggers
- Can modify values prior to actually writing a record
- Can call other programs
  - When a program is called by an SQL Trigger a procedure must be created.

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# External Triggers

- Pass a buffer equivalent to the journal info when a program is called.
- Good for updating summary files.
- Good for moving data to other databases.

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## Triggers Benefits

- Convenient way to make sure related operations occur
  - Independence from the programs
- Easier application coding
- Better performance

## Triggers Examples

- Use triggers to update related data in other files
  - Update on hand balance in inventory file when order detail record is inserted
  - Update G/L summary file when detail record is inserted
  - Update Sales Analysis files when an order is invoiced
- Cause other processes to run
  - Print an order acknowledgement when an order is adde

# Field types

- Numeric
  - INTEGER - 2147483648 to + 2147483647
  - SMALLINT - 32768 to + 32767
  - BIGINT - 922337203684775808 to + 922337203684775807
  - DECIMAL (packed)
  - NUMERIC (zoned)
  - FLOAT (single or double precision)
- Character
  - Character
  - Variable Character
  - Graphic
  - Variable Graphic

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# Field types

- Time and date
  - Date
  - Time
  - Time Stamp
- Datalinks allow you to attach PC files via a URL and have those links managed by the DataLink Manager.
- xLOB
  - CLOB
  - DBCLOB
  - BLOB

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# Field types

- Row Id
- Identity Columns
- Missing  (Binary-Flag, Logical-Field)

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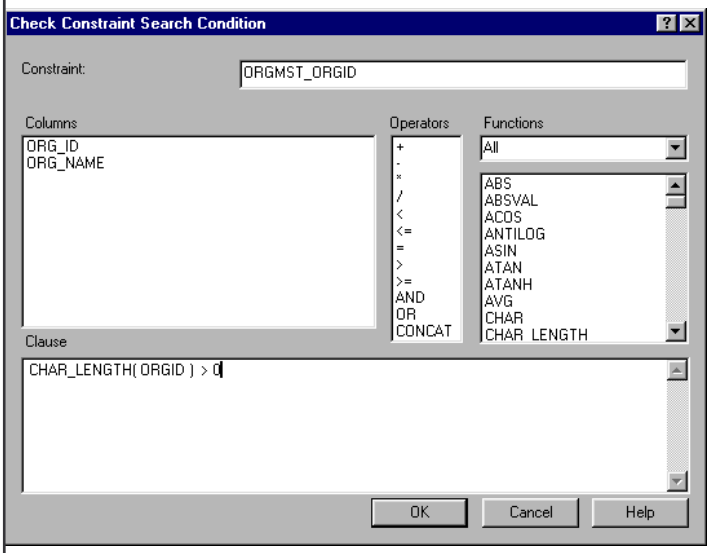
# Column Constraints




- You can have the database enforce even more of your business rules.

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# Legacy

- Code that works!
- Systems that are key to an organization, but are not fully supporting the current systems paradigm.

*"The best that today's hottest application can become is tomorrow's legacy."*

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# Legacy Integration

- Definition:
  - Presenting existing AS/400 data and/or applications to a user connected with a browser.

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## Building and updating files with SQL and iSeries Navigator

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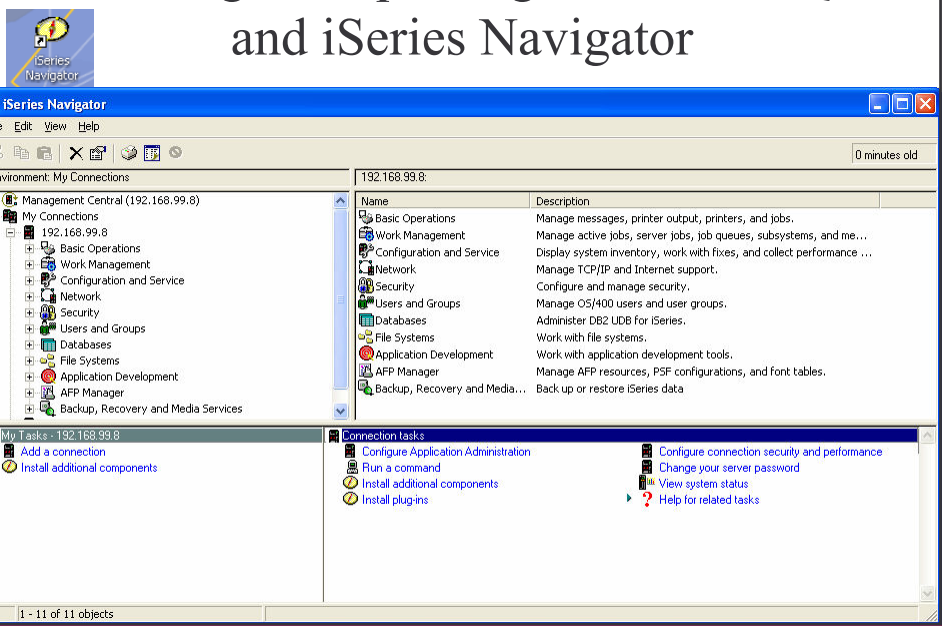
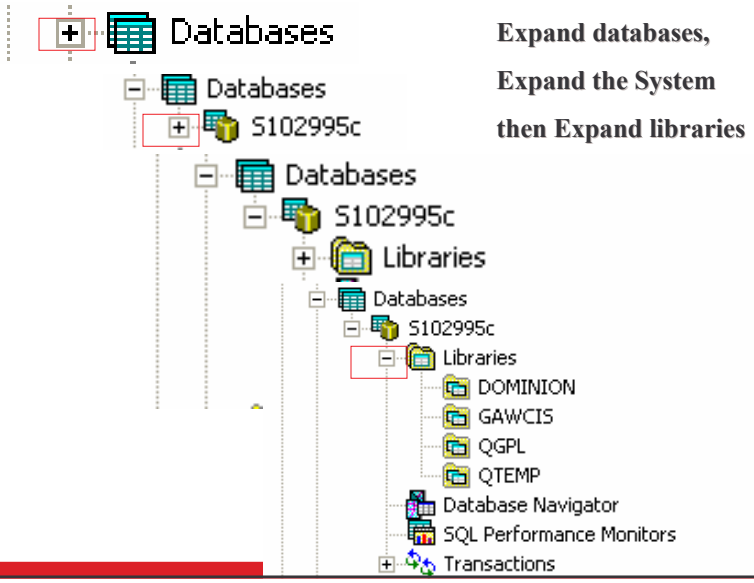
## Building and updating files with SQL and iSeries Navigator



# Open Database




**Expand databases,**

**Expand the System**

**then Expand libraries**

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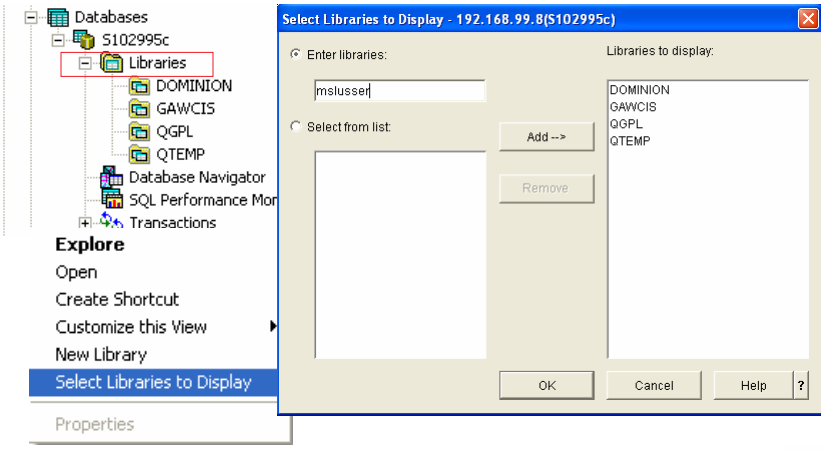
# Select the libraries to work with




**Right Click on "libraries" Click on "Select Libraries to Display" type in the library to add to the list click "Add" click "OK"**

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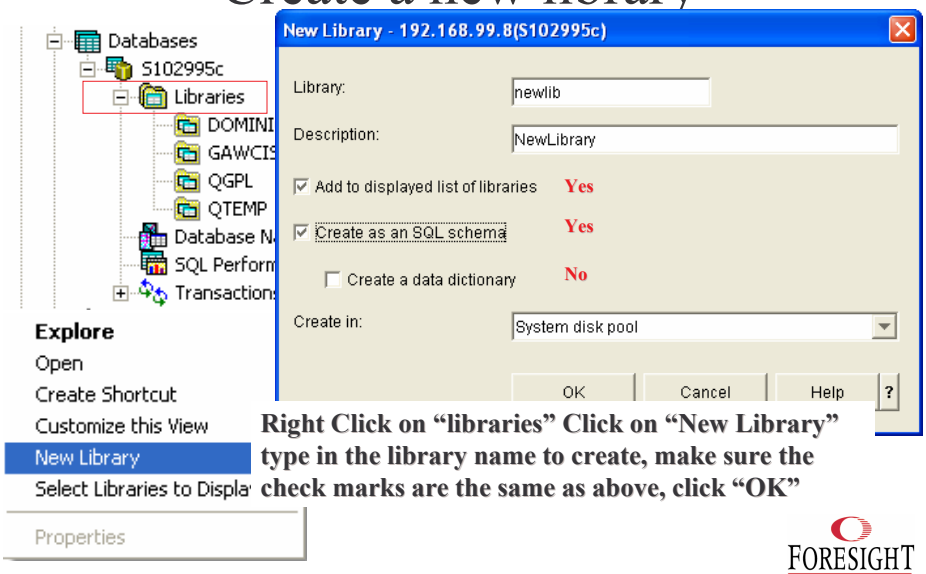
# Create a new library




**Right Click on "libraries" Click on "New Library" type in the library name to create, make sure the check marks are the same as above, click "OK"**

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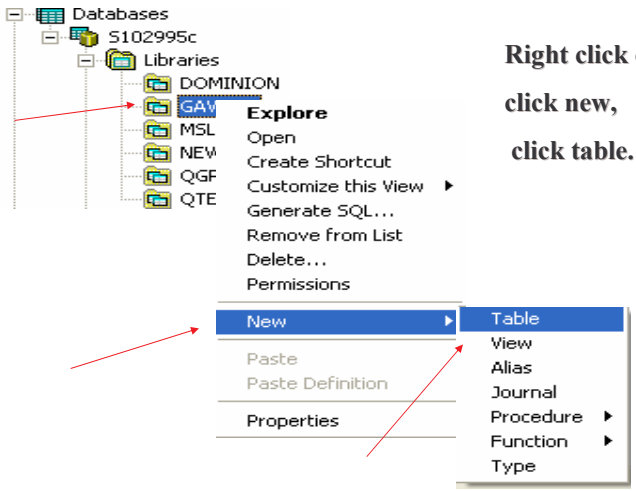
# Add a Table




**Right click on the library name,**

**click new,**

**click table.**

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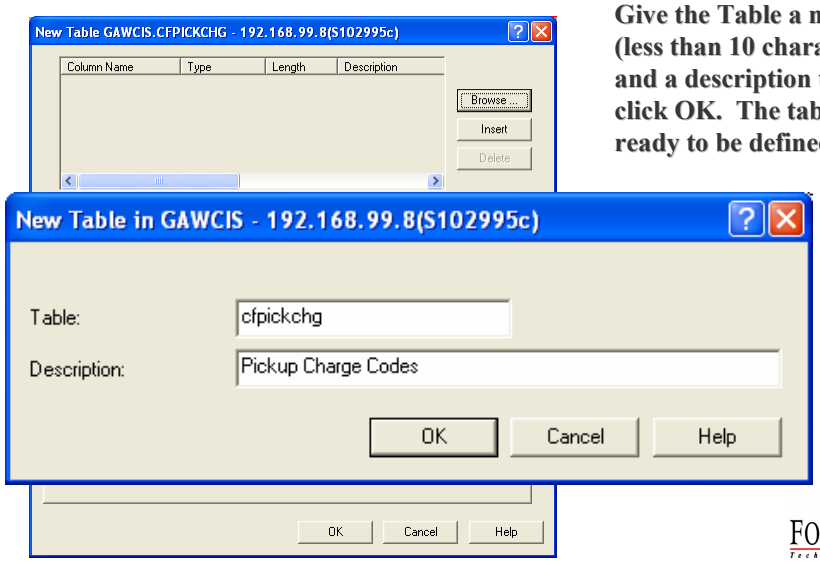
# Add a Table




**Give the Table a name (less than 10 characters) and a description then click OK. The table is ready to be defined.**

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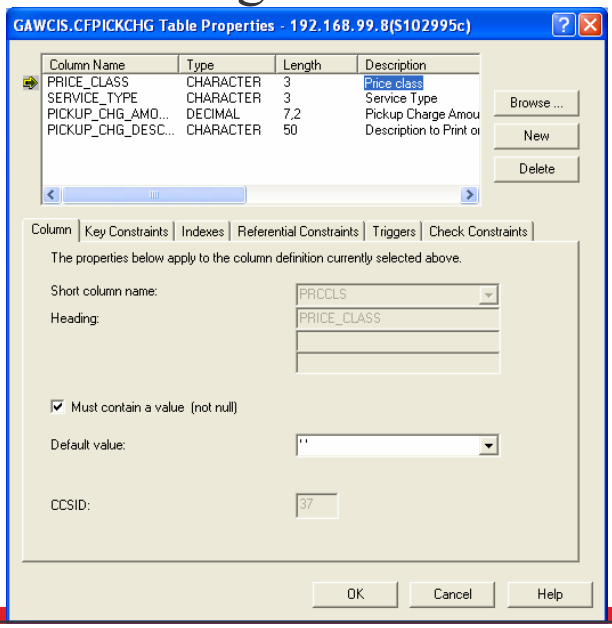
# Adding Fields to a Table

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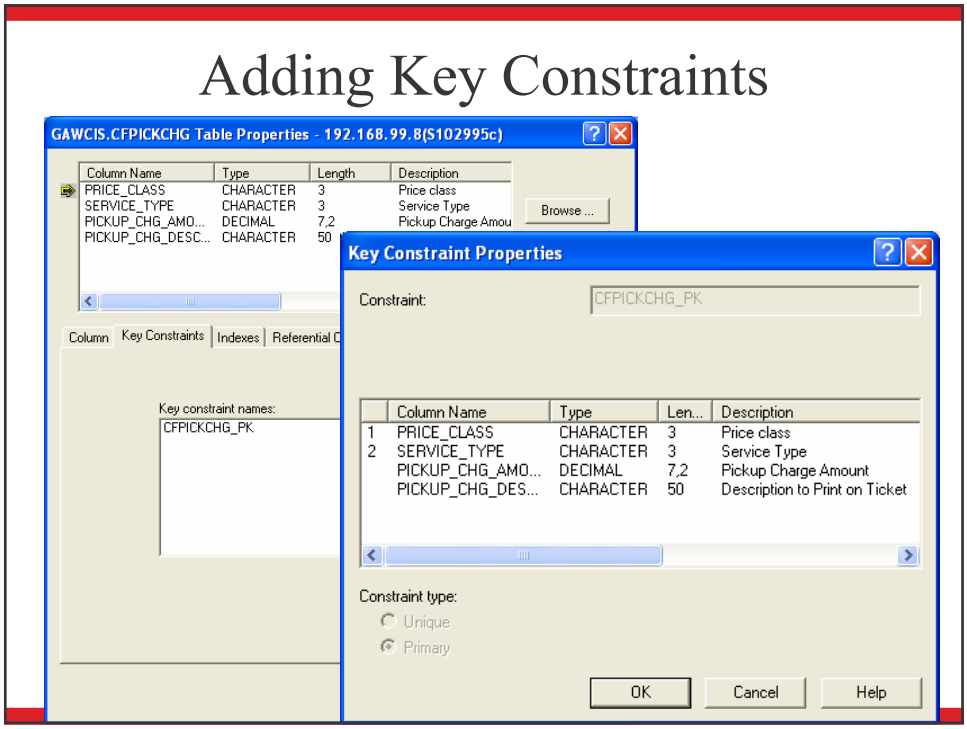
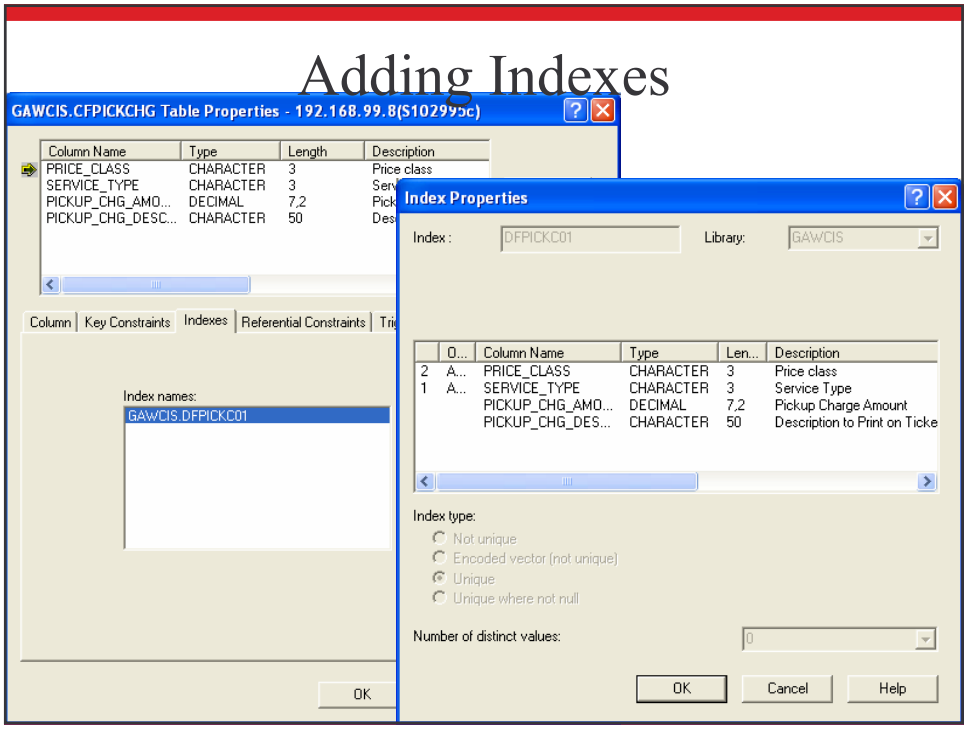
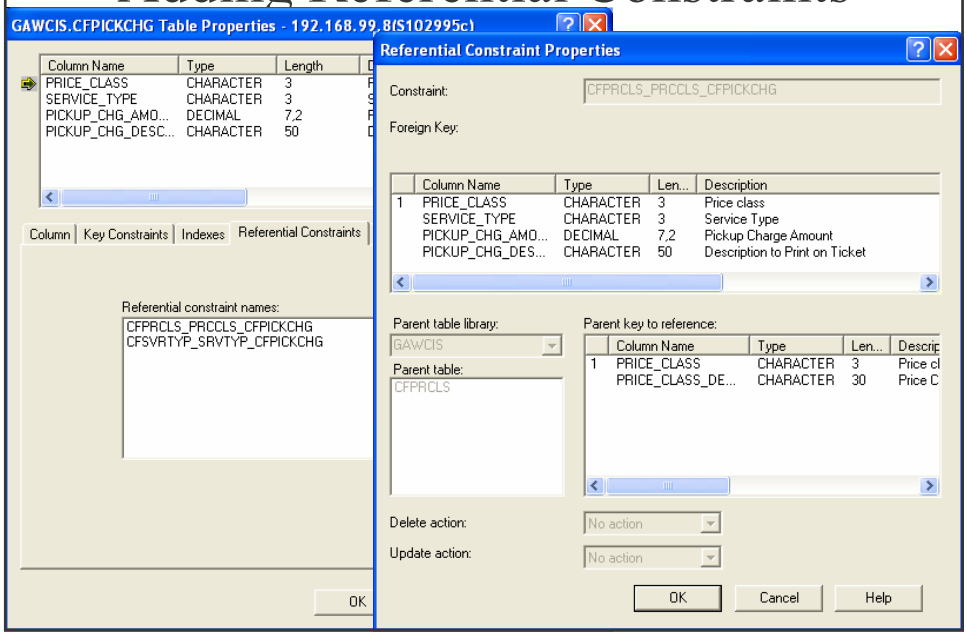
# Adding Key Constraints



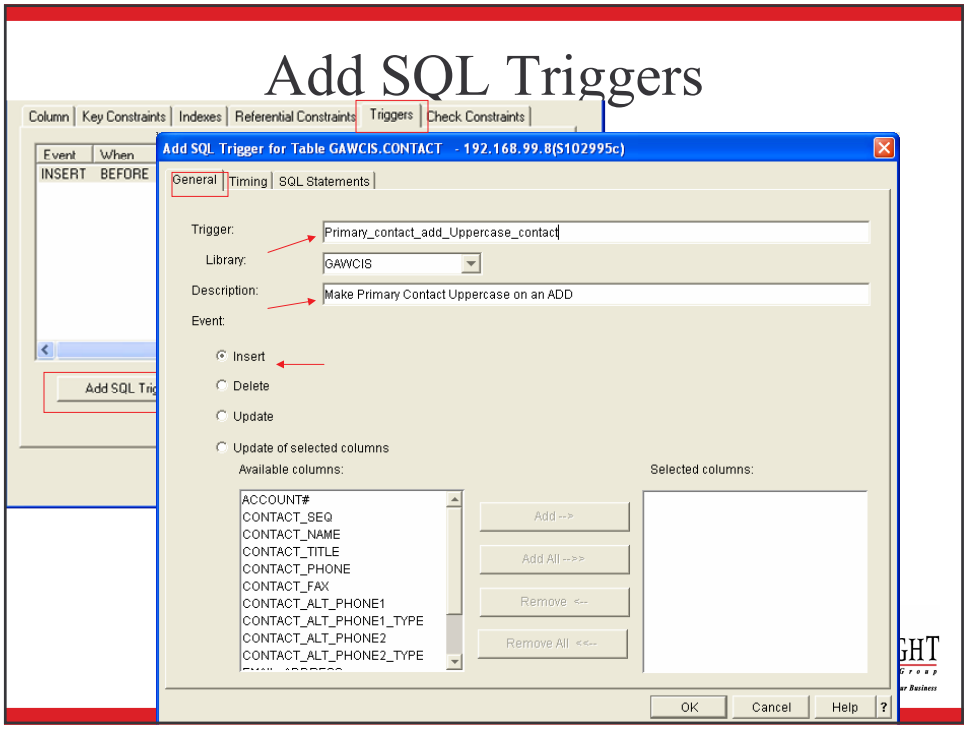

# Adding Indexes



# Adding Referential Constraints




# Add SQL Triggers



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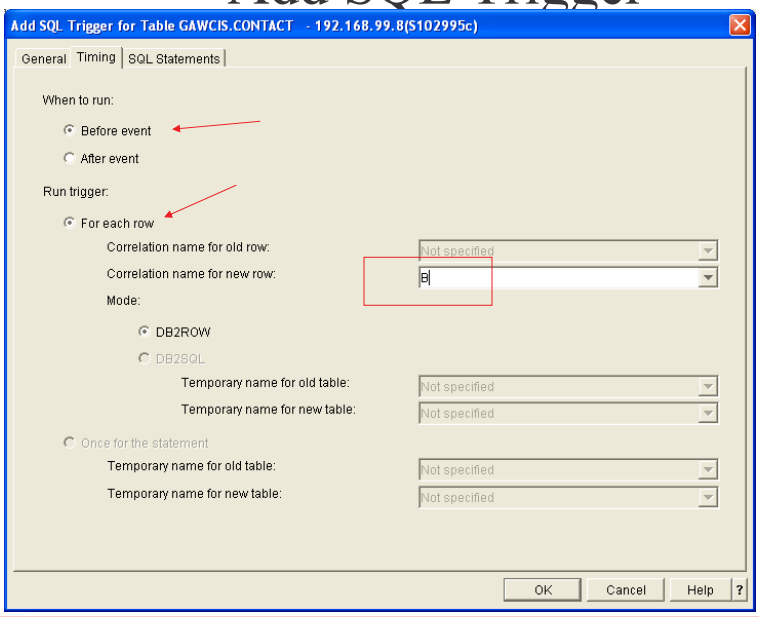


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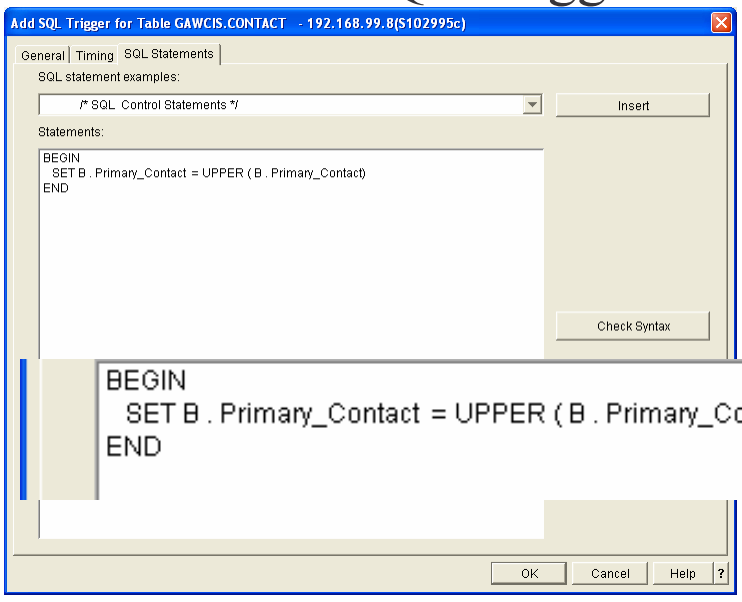
# Add SQL Trigger

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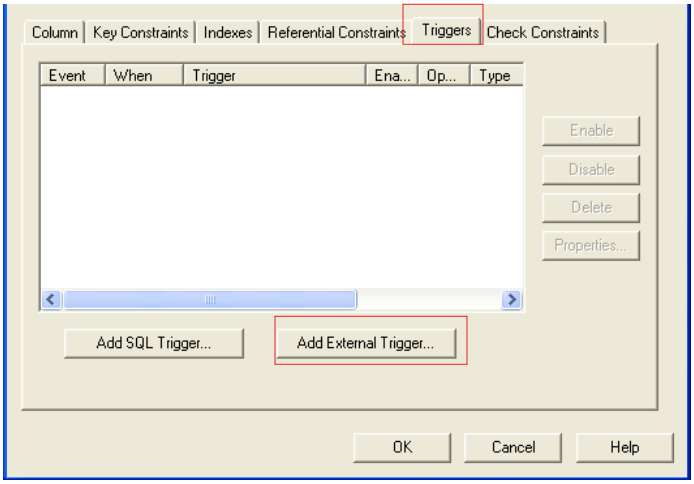
# Add External Trigger

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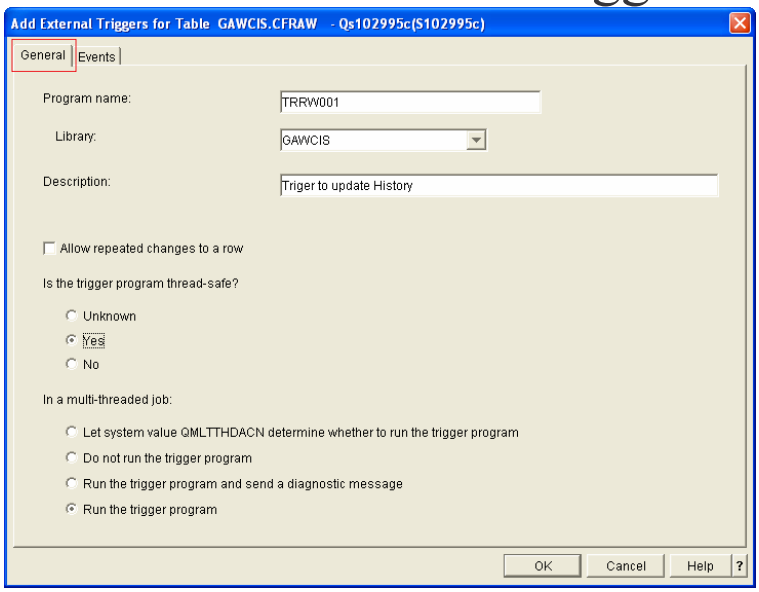


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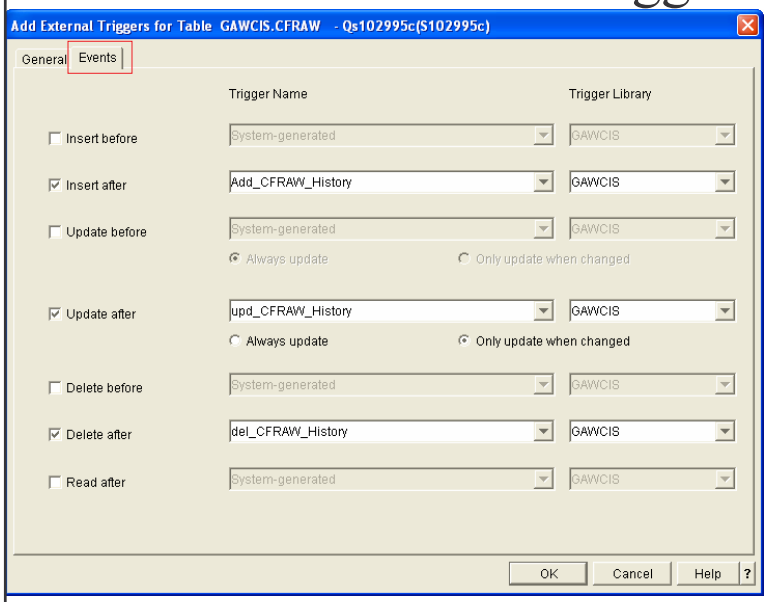


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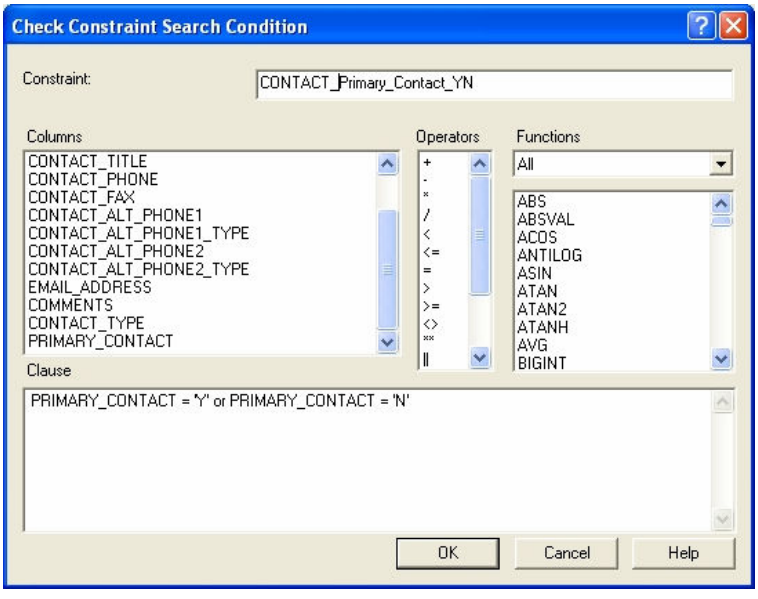
# Add Column Constraints

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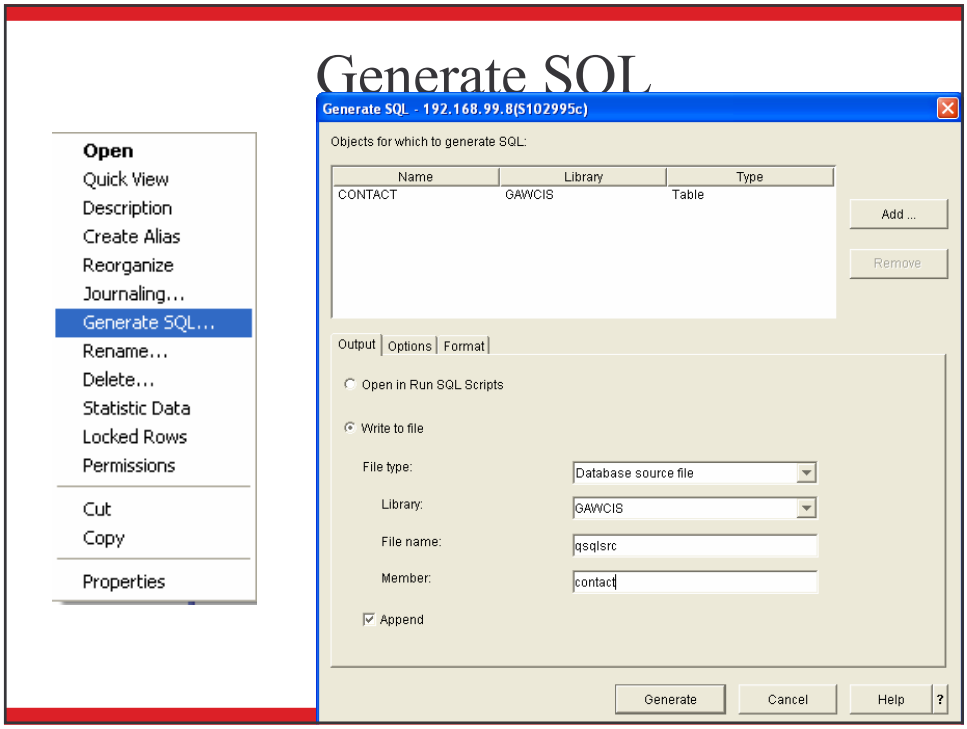
# Generate SQL

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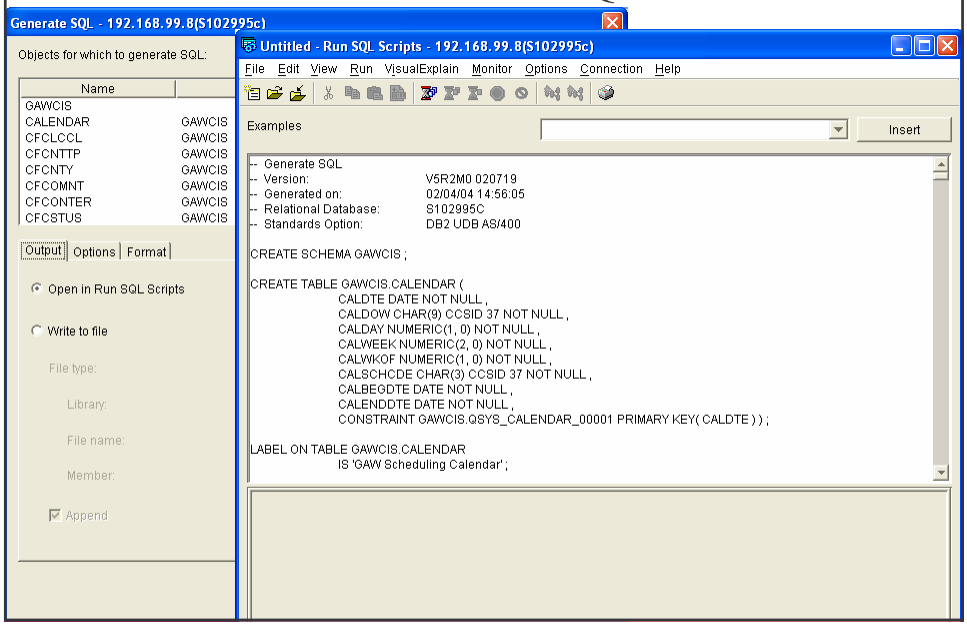
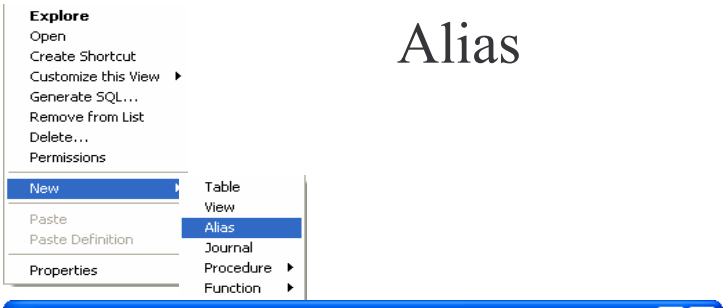
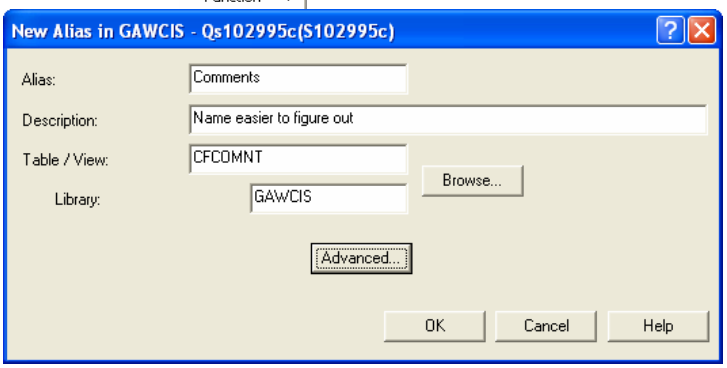


# Alias

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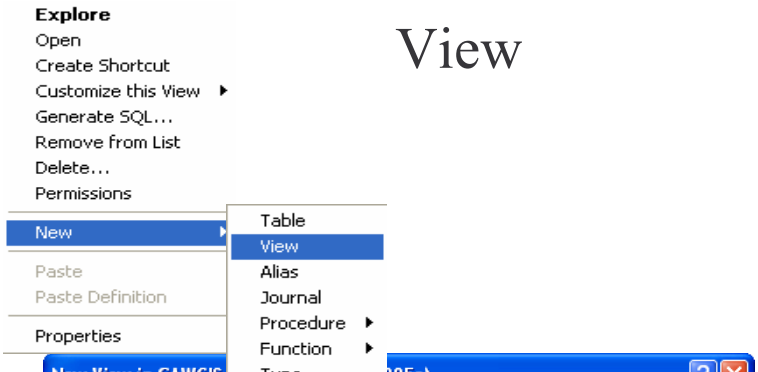
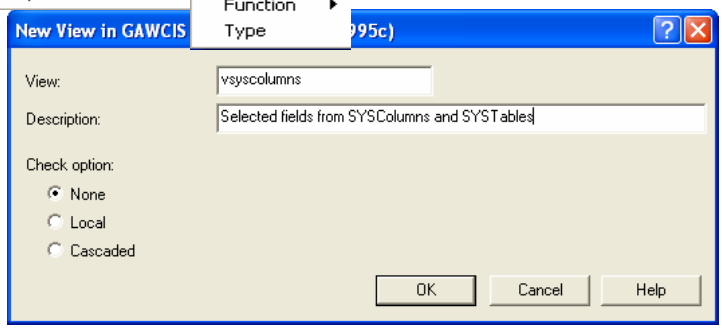
# View

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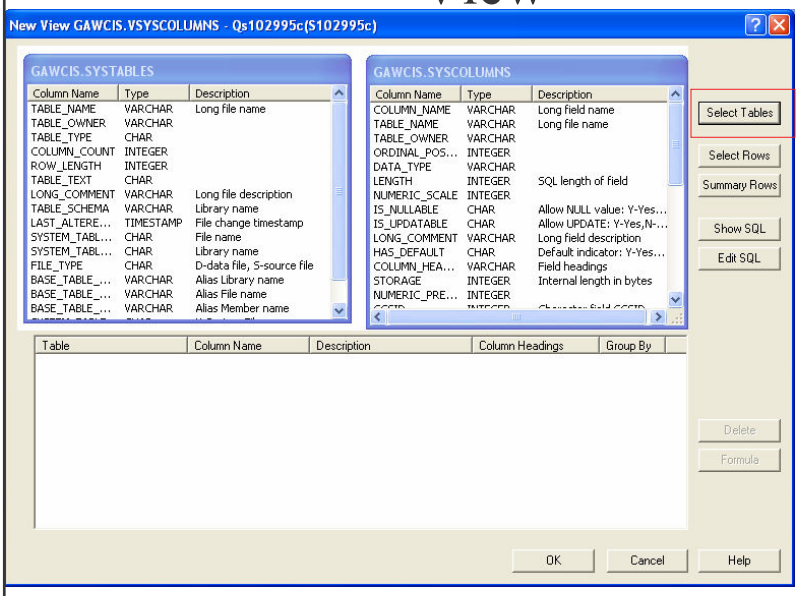


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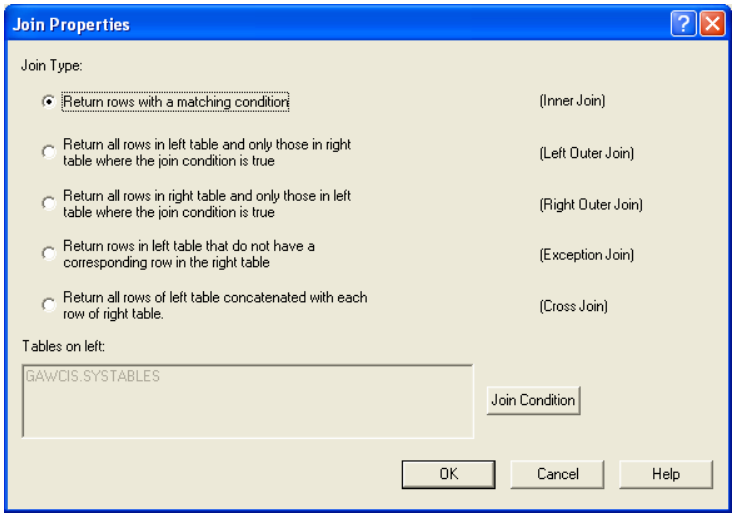


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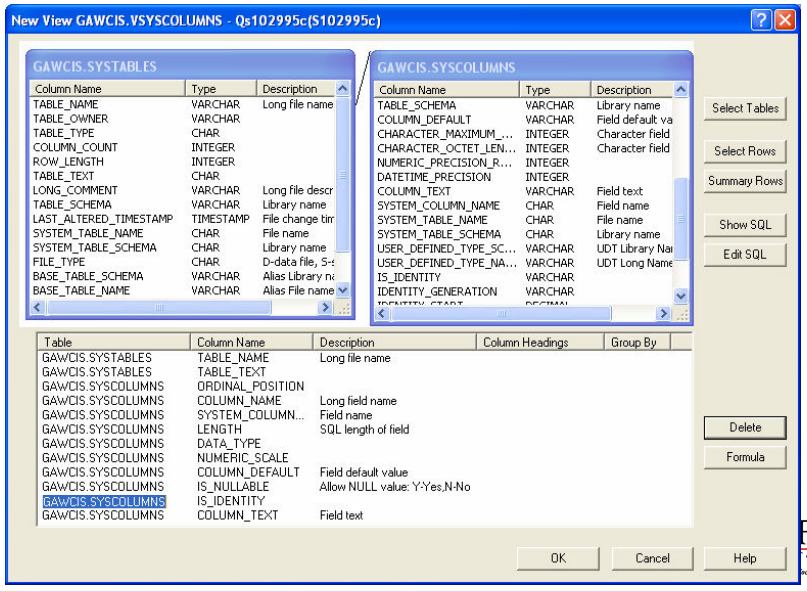
# View

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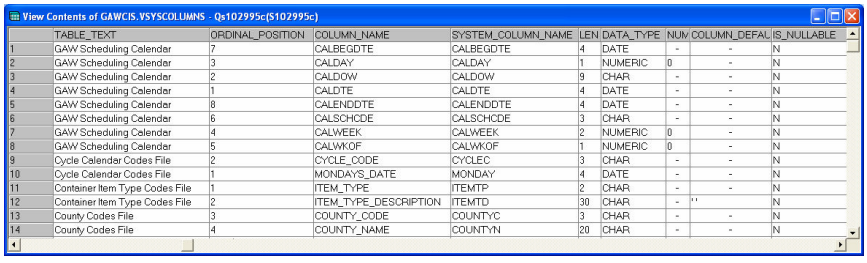


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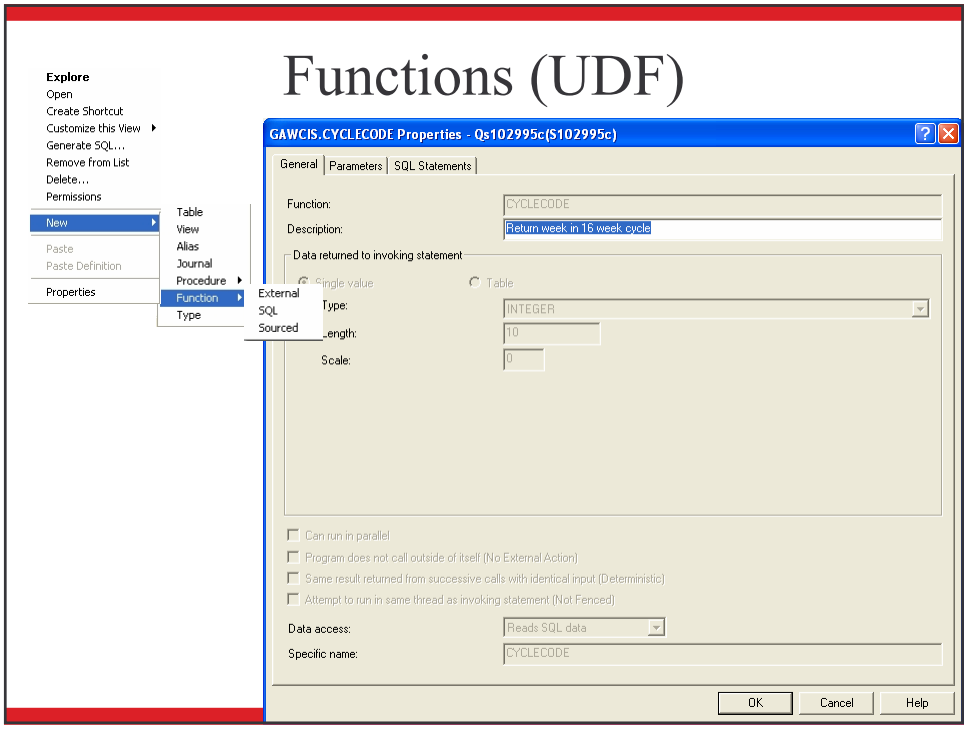
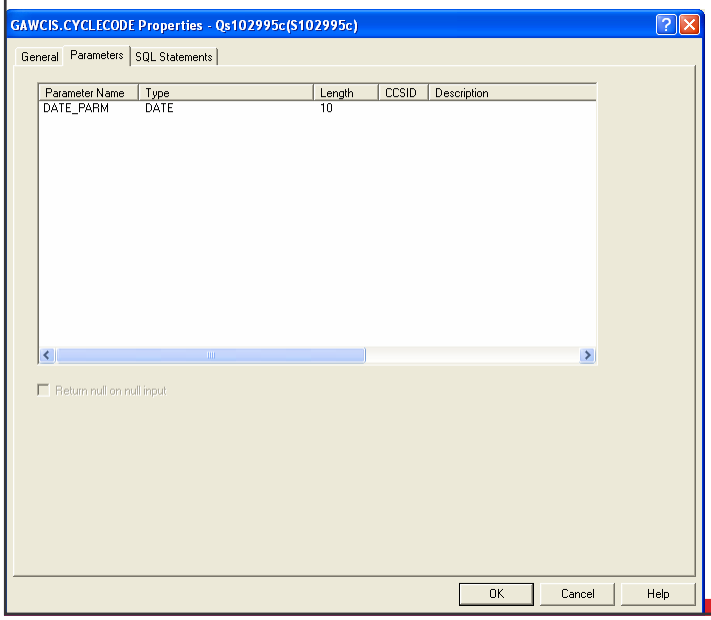
# Functions (UDF)




# Functions (UDF)

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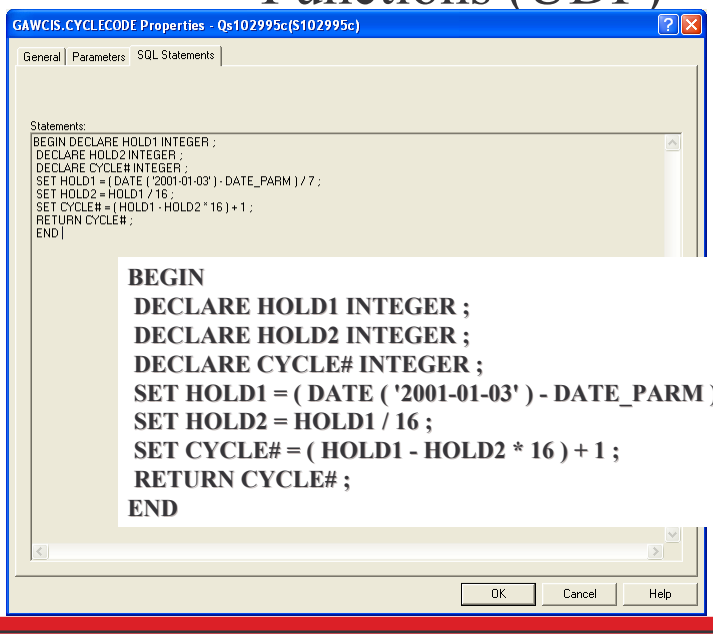
# Functions (UDF)




```
BEGIN
 DECLARE HOLD1 INTEGER ;
 DECLARE HOLD2 INTEGER ;
 DECLARE CYCLE# INTEGER ;
 SET HOLD1 = ( DATE ( '2001-01-03' ) - DATE_PARM ) / 7 ;
 SET HOLD2 = HOLD1 / 16 ;
 SET CYCLE# = ( HOLD1 - HOLD2 * 16 ) + 1 ;
 RETURN CYCLE# ;
END
```

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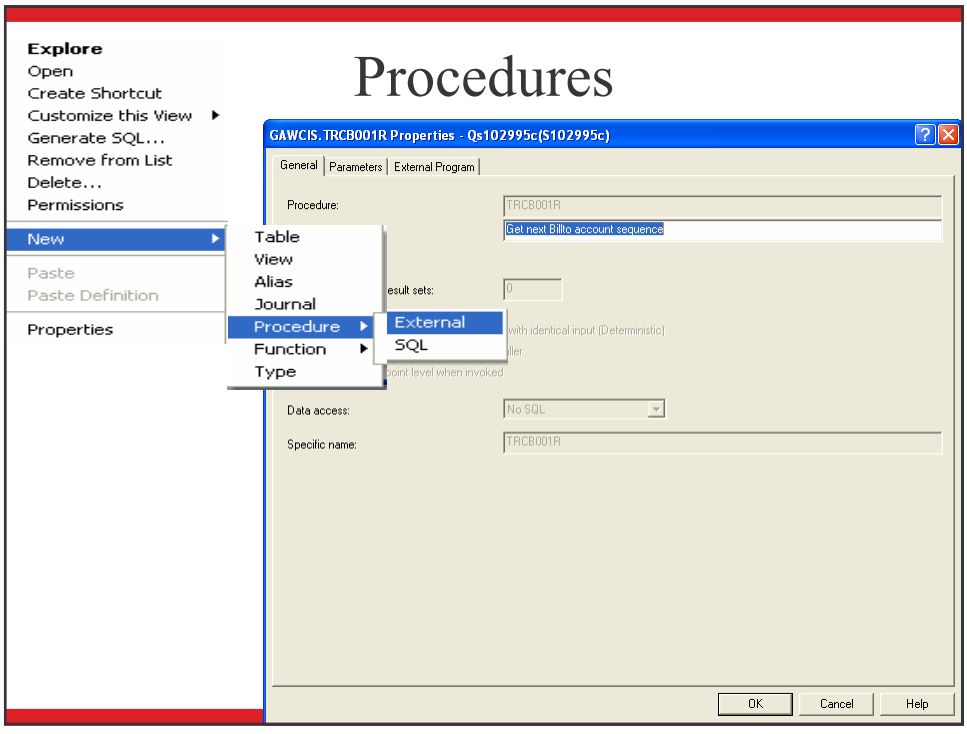
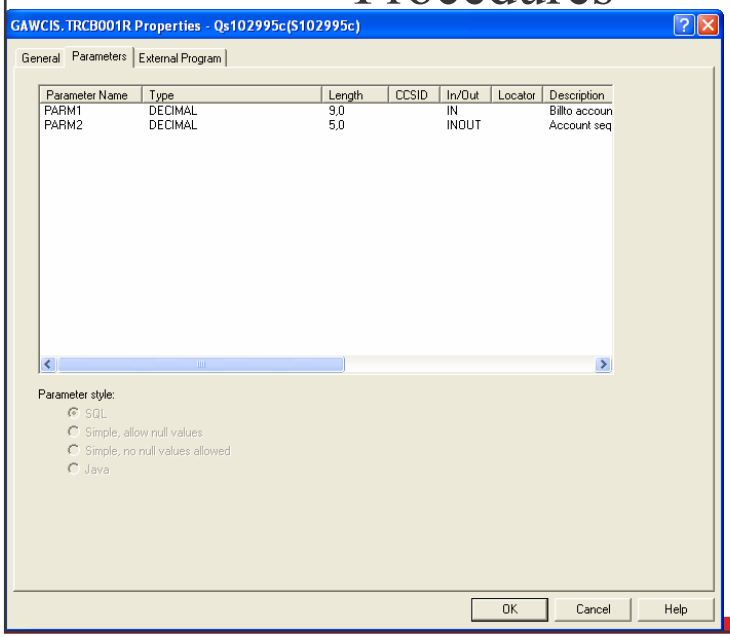
# Procedures



# Procedures

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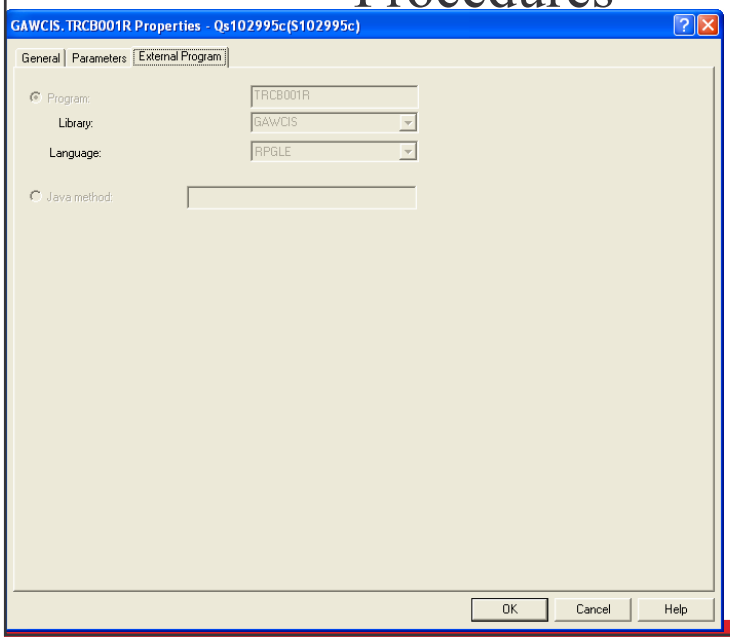
# Procedures

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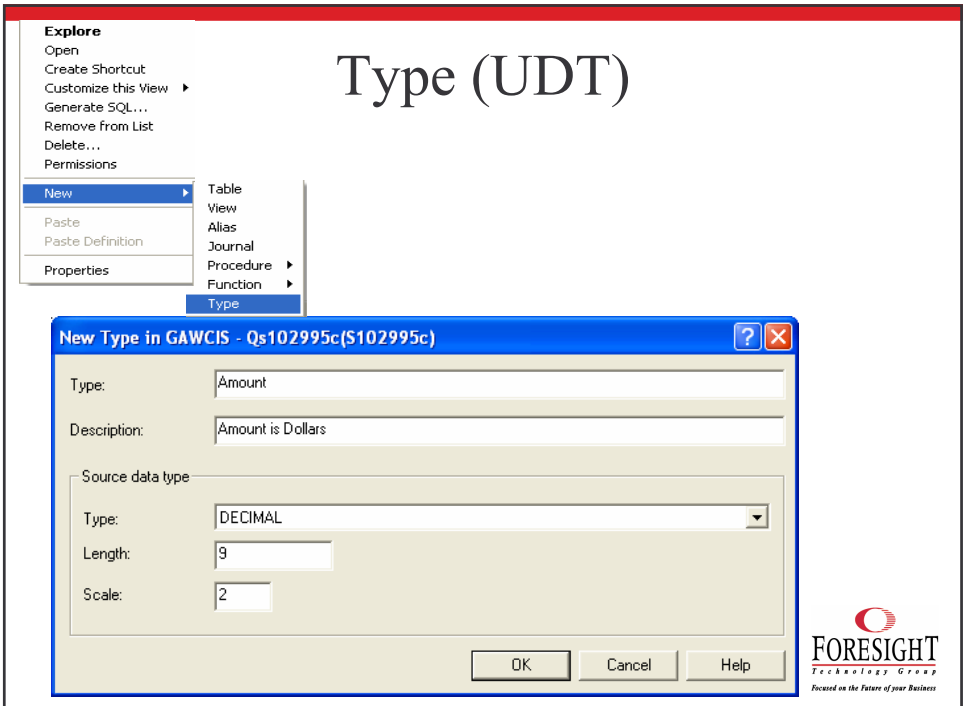
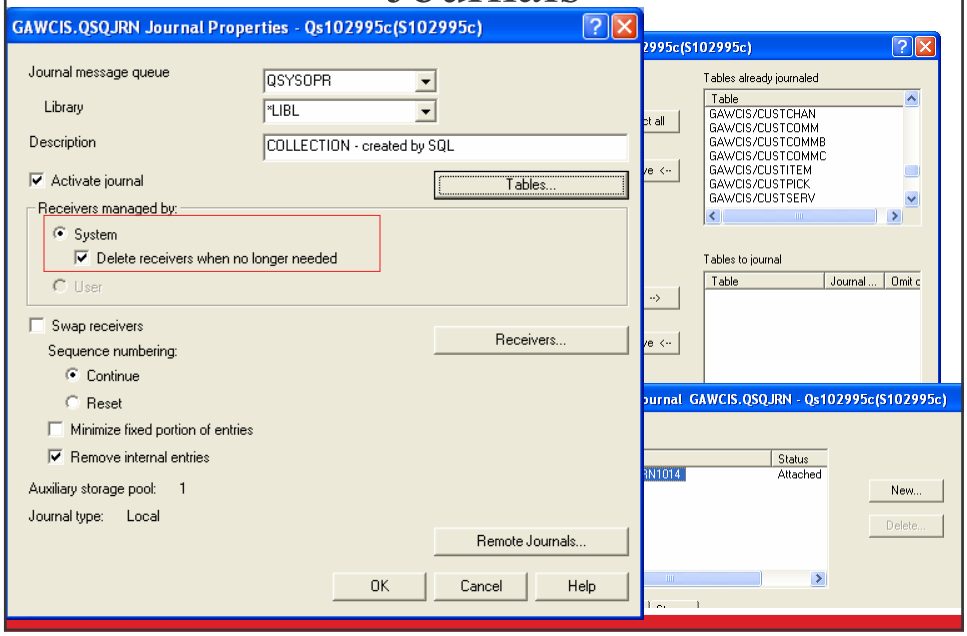
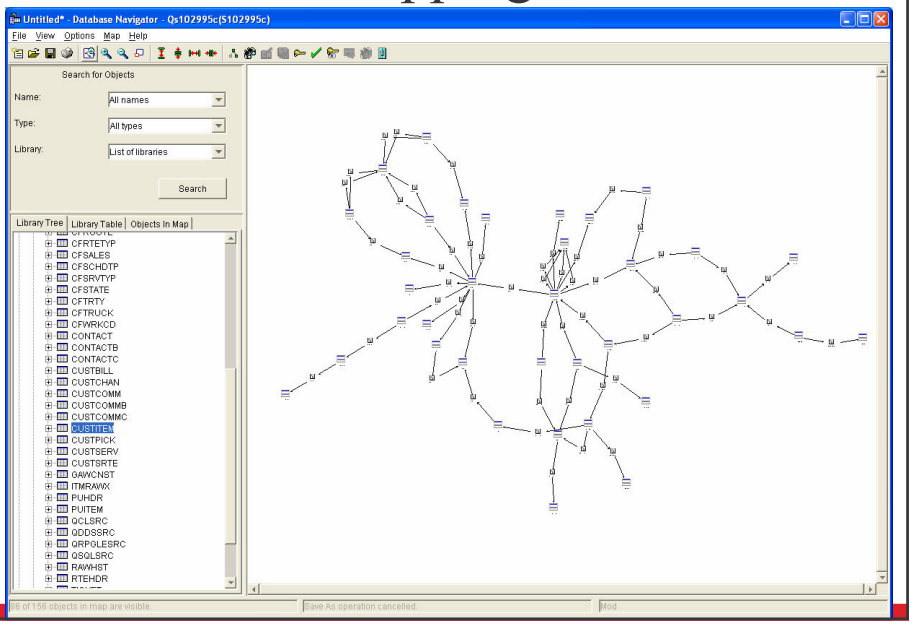
# Type (UDT)



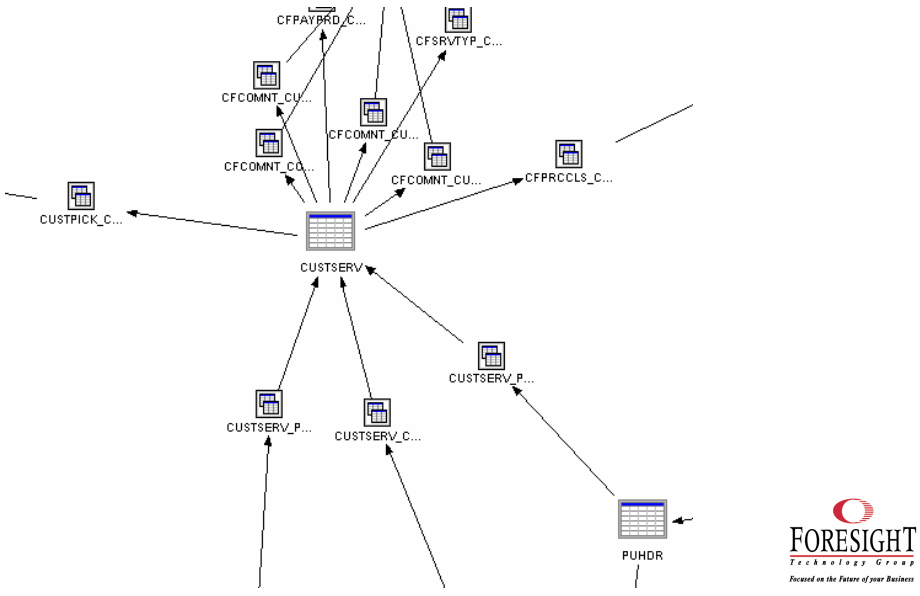

# Journals



# Mapping




# Mapping

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# Foresight Technology Group

## Database Integration with Microsoft Office

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## Comparing File Transfer to ODBC

### File Transfer

Extracts AS/400 data into a PC File that is then imported into the Office application.

Transfer must be rerun each time the data changes on the AS/400.

### ODBC

Imports AS/400 data directly into the calling Office application.

Data can be refreshed in the Office application with the click of the refresh button.

Allows links to data in other applications.

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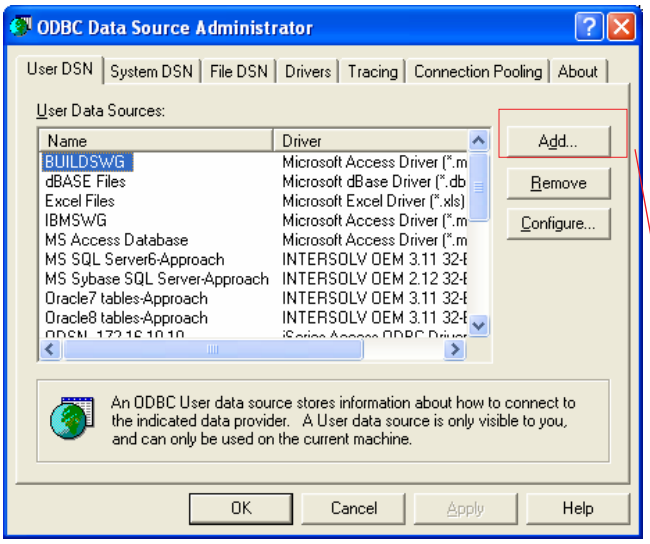
# Creating a Data Source




**User DSN**

These data sources are local to a computer and accessible only by the current user.

**System DSN**

These data sources are local to a computer but not user-dedicated; any user with privileges can access a system DSN.

**File DSN**

File-based data sources that can be shared among all users who have the same drivers installed. These data sources need not be user-dedicated or local to a computer.

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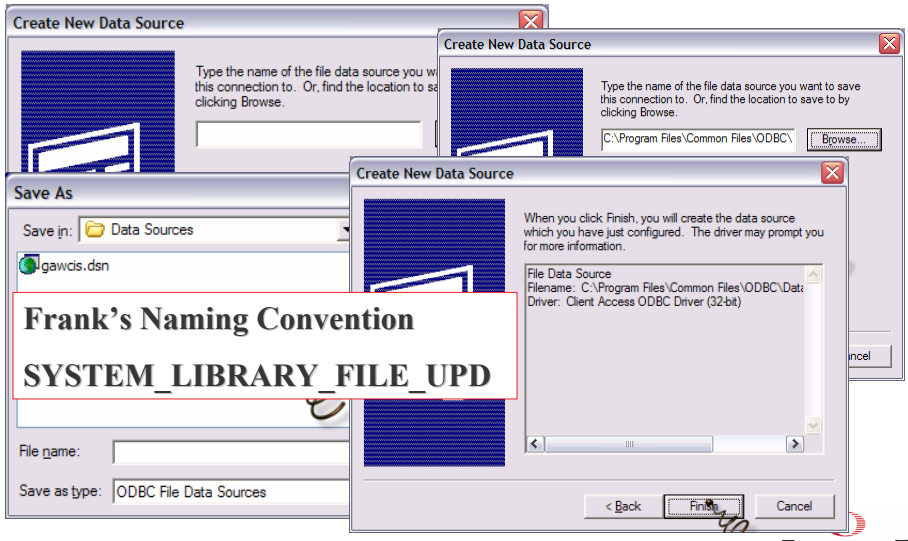
# Name the DSN

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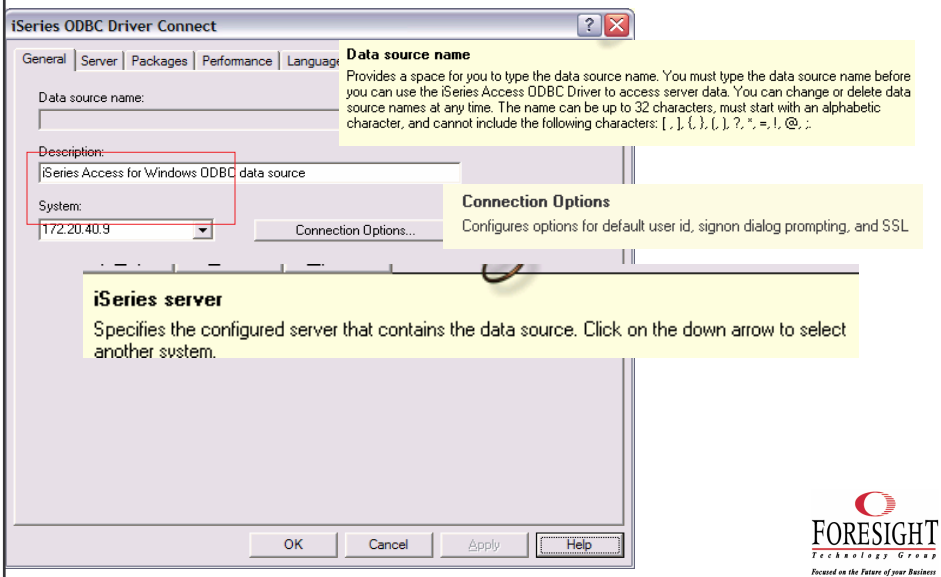
# General Tab

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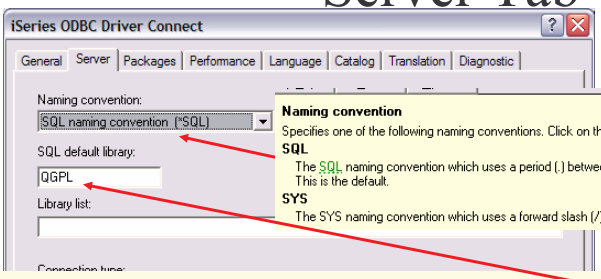
# Server Tab

Server tab now has everything you need 98% of the time.




**Leave SQL**

**Put the File's Library Name in SQL default Library**

**SQL default library**

Provides a space for you to type the OS/400 library that will be used as the default SQL collection.

SQL statements can be created without specifying the library that an object is located in. The objects in the SQL statement are said to be unqualified. For example, in the SQL statement SELECT* FROM QCUSTCDT, QCUSTCDT is an unqualified object. The library that is used to locate the table name QCUSTCDT is called the implicit qualifier.

**Notes:**

- If a SQL default library is specified, it will be used as the implicit qualifier. The SQL default library will also be the first item in the library list.
- If a SQL default library is not explicitly specified one of the following will apply:
  1. For SQL naming, the implicit qualifier is the run-time authorization. This is a library with the same name as the user profile specified on the ODBC connection.
  2. For system naming, the implicit qualifier is the job library list.

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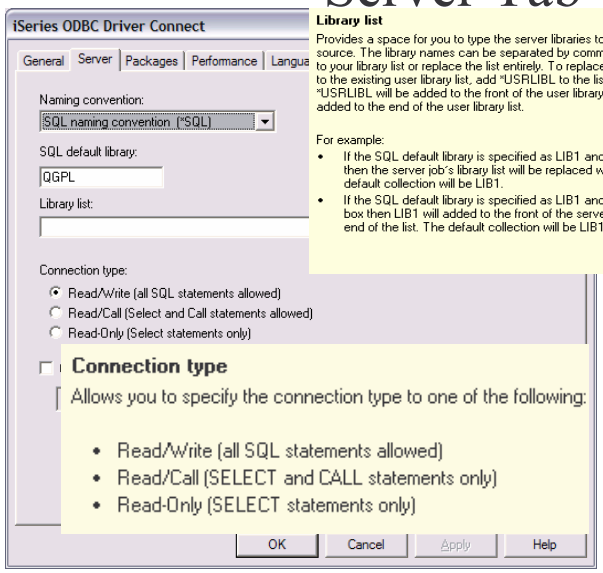
# Server Tab




**Library list**

Provides a space for you to type the server libraries to be used during connections to this data source. The library names can be separated by commas or spaces. You can either add the libraries to your library list or replace the list entirely. To replace the list, specify a list of library names. To add to the existing user library list, add *USRLIBL to the list of libraries. All libraries that are listed before *USRLIBL will be added to the front of the user library list. All libraries listed after *USRLIBL will be added to the end of the user library list.

For example:

- If the SQL default library is specified as LIB1 and LIB2, LIB3 is specified in the library list box then the server job's library list will be replaced with the three libraries that are specified. The default collection will be LIB1.
- If the SQL default library is specified as LIB1 and *USRLIBL, LIB2 is specified in the library list box then LIB1 will added to the front of the server job's library list and LIB2 will be added at the end of the list. The default collection will be LIB1.

**Connection type**

Allows you to specify the connection type to one of the following:

- Read/Write (all SQL statements allowed)
- Read/Call (SELECT and CALL statements only)
- Read-Only (SELECT statements only)

Use Library List if you need more than one library

Use Read-Only for MS OFFICE, unless there is a specific update required

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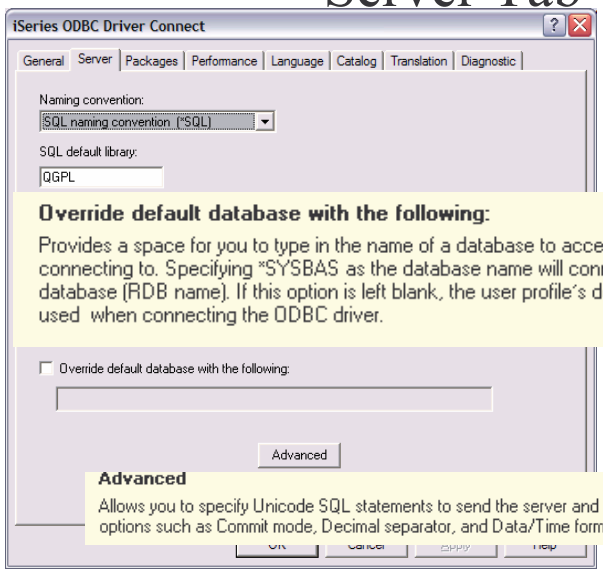
# Server Tab




**Override default database with the following:**

Provides a space for you to type in the name of a database to access on the system you are connecting to. Specifying *SYSBAS as the database name will connect a user to the SYSBAS database (RDB name). If this option is left blank, the user profile's default setting for database will be used when connecting the ODBC driver.

**Advanced**

Allows you to specify Unicode SQL statements to send the server and configure advanced server options such as Commit mode, Decimal separator, and Data/Time format.

Only if Multiple Databases are created on a machine

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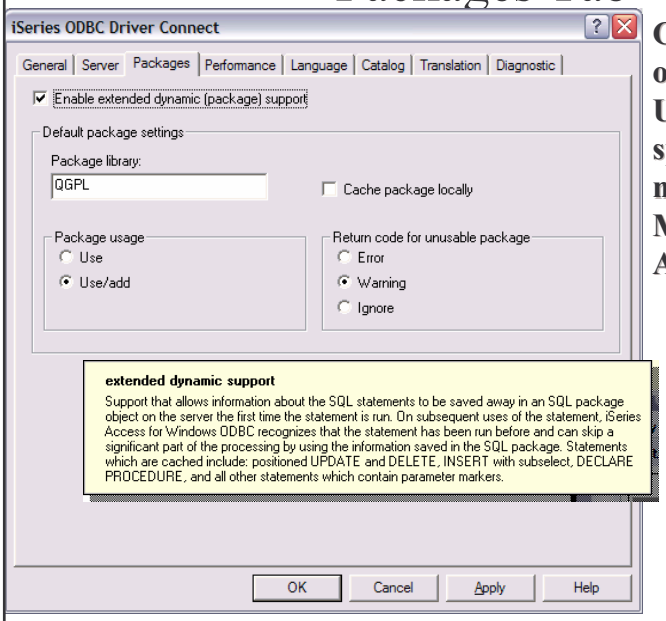
# Packages Tab




**Generally turn this option off (unclick) Unless there is a specific use. I have never used it with a MS Office Application**

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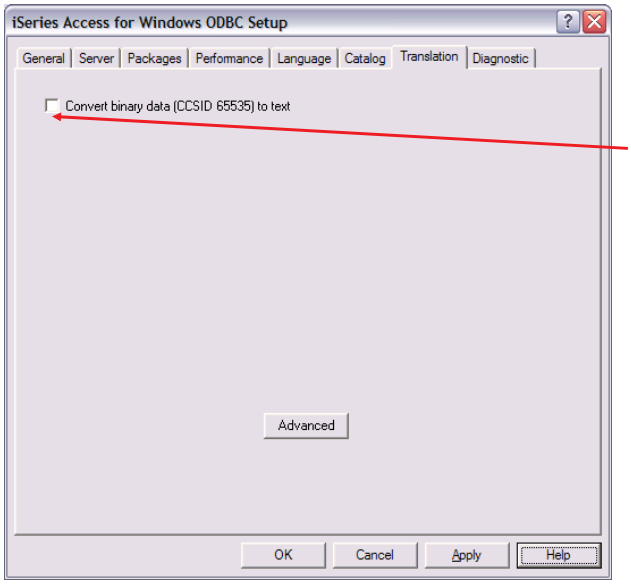
# Translation Tab




**If you are getting Hex, then check this box.**

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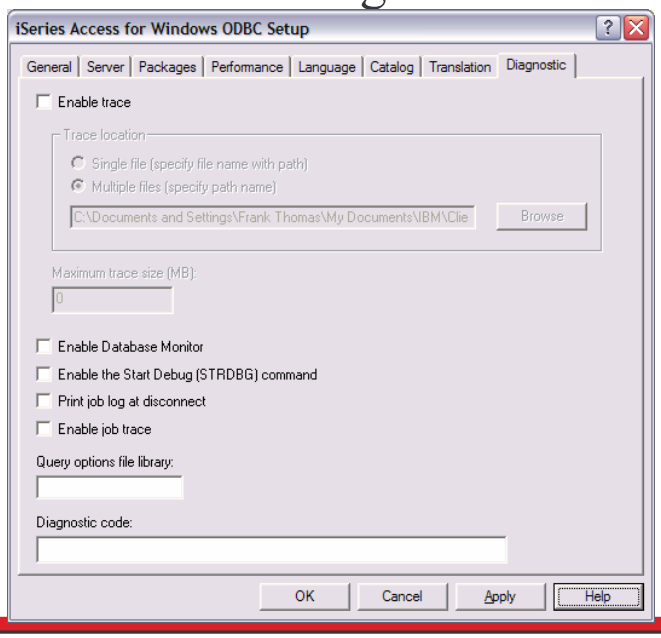
# Diagnostic Tab




**If your stuck these options may allow IBM to Help.**

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Foresight Technology Group

# Mail Merge Labels (Office 97/2000)

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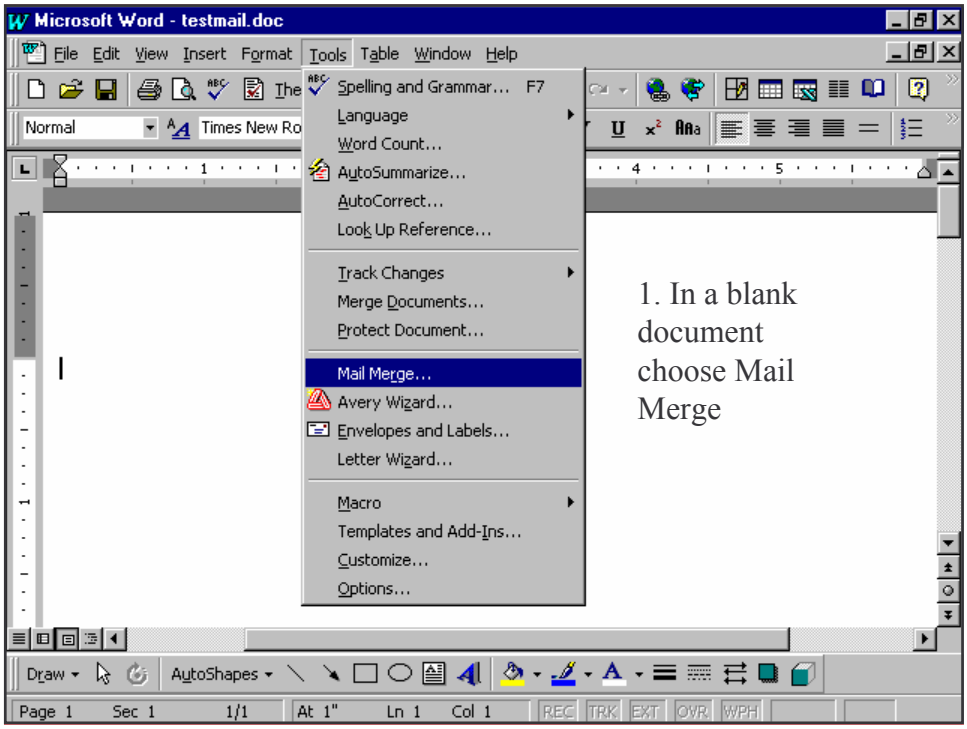
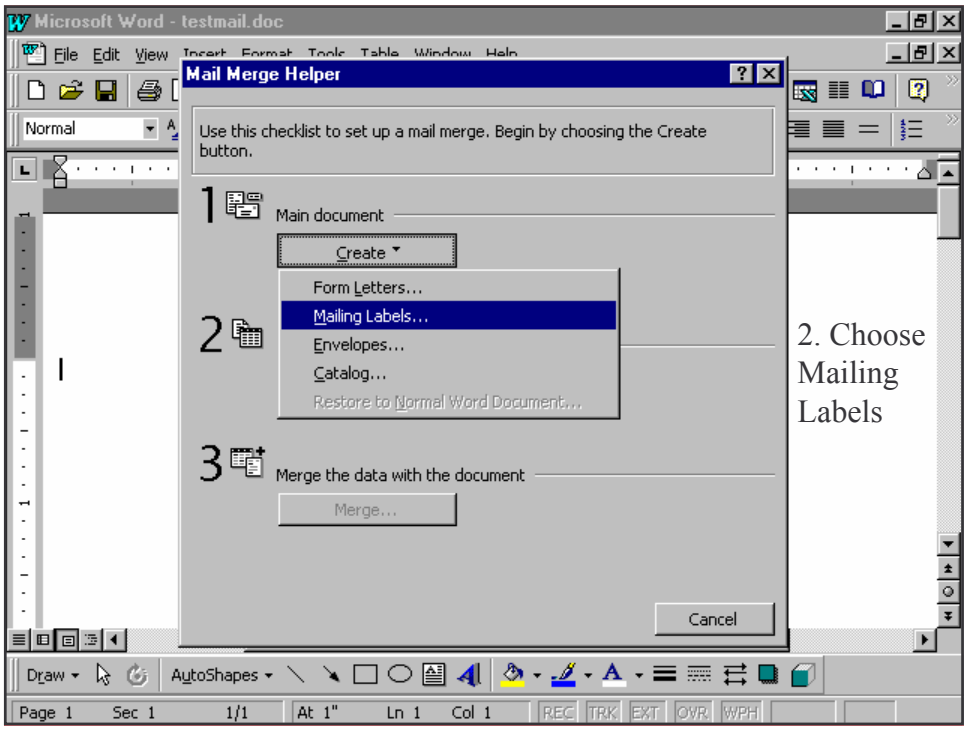
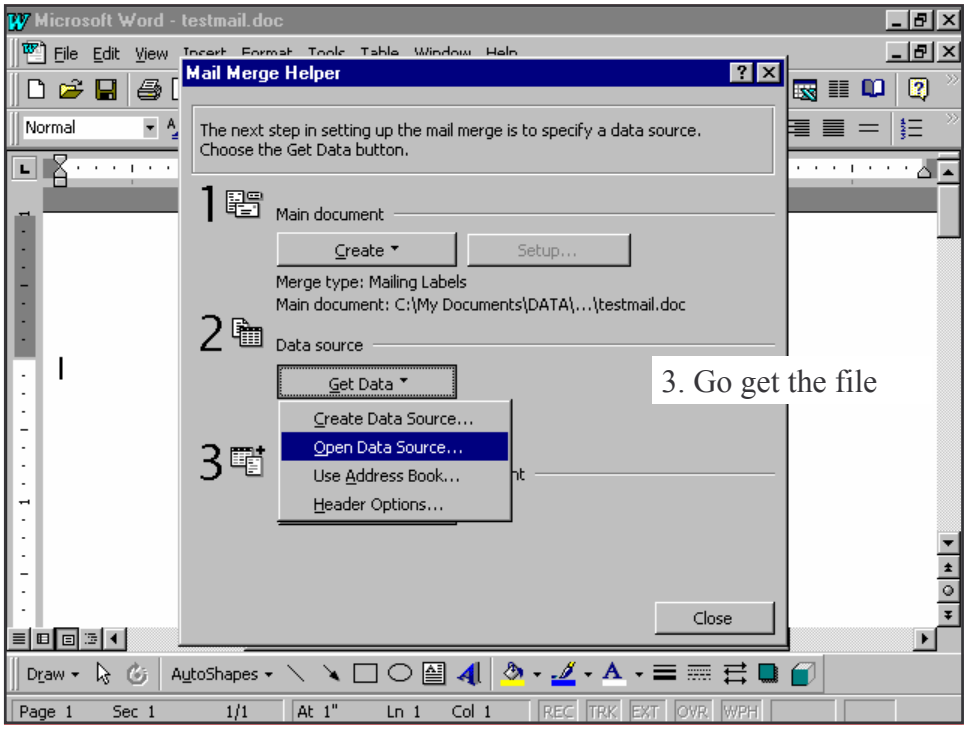
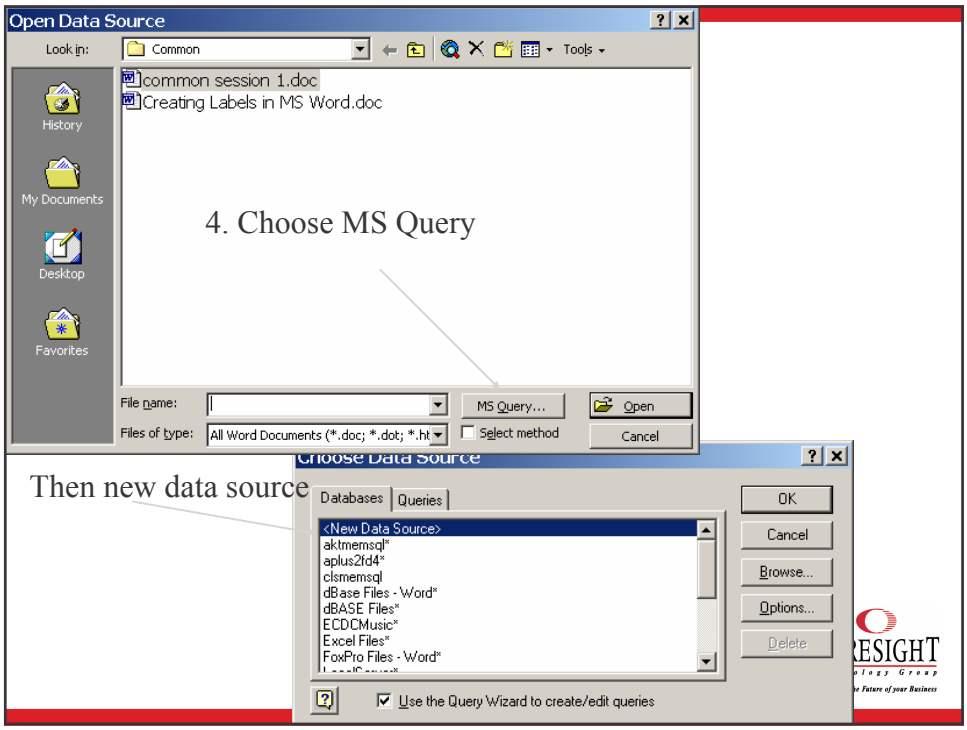


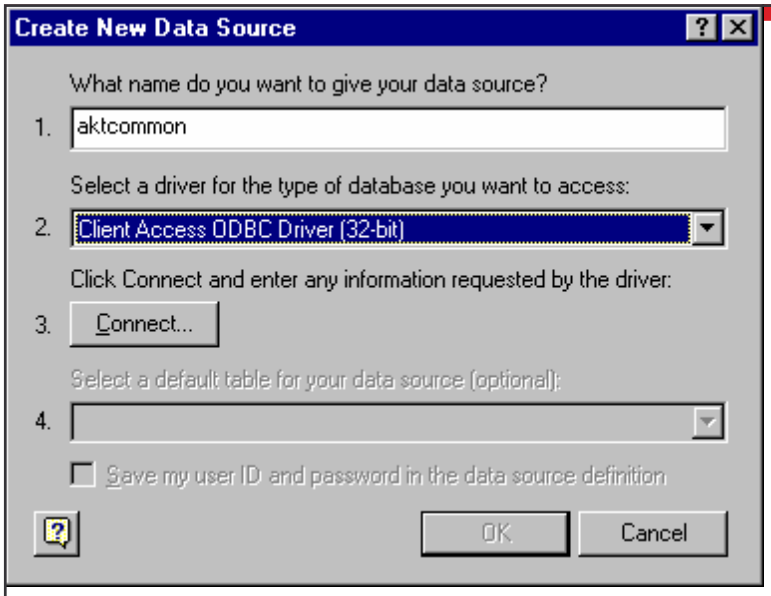

1. In a blank document choose Mail Merge




2. Choose Mailing Labels


Microsoft Word - testmail.doc
File Edit View Insert Format Tools Table Window Help
Normal
Mail Merge Helper
The next step in setting up the mail merge is to specify a data source.
Choose the Get Data button.
1
Main document
Create
Setup...
Merge type: Mailing Labels
Main document: C:\My Documents\DATA\...\testmail.doc
2
Data source
Get Data
3. Go get the file
Create Data Source...
Open Data Source...
Use Address Book...
Header Options...
3
Close
Draw AutoShapes
Page 1 Sec 1 1/1 At 1" Ln 1 Col 1 REC TRK EXT OVR WPH


Open Data Source
Look in: Common
Tools
common session 1.doc
Creating Labels in MS Word.doc
History
My Documents
Desktop
Favorites
4. Choose MS Query
File name:
MS Query...
Open
Files of type: All Word Documents (*.doc; *.dot; *.ht
Select method
Cancel
Then new data source
Choose Data Source
Databases
Queries
<New Data Source>
aktmemsql*
aplus2fd4*
clsmemsql
dBase Files - Word*
dBASE Files*
ECDCMusic*
Excel Files*
FoxPro Files - Word*
OK
Cancel
Browse...
Options...
Delete
Use the Query Wizard to create/edit queries




- Name the DSN, (I usually use the Library Name)
- Choose the Client Access ODBC Driver
- Press Connect

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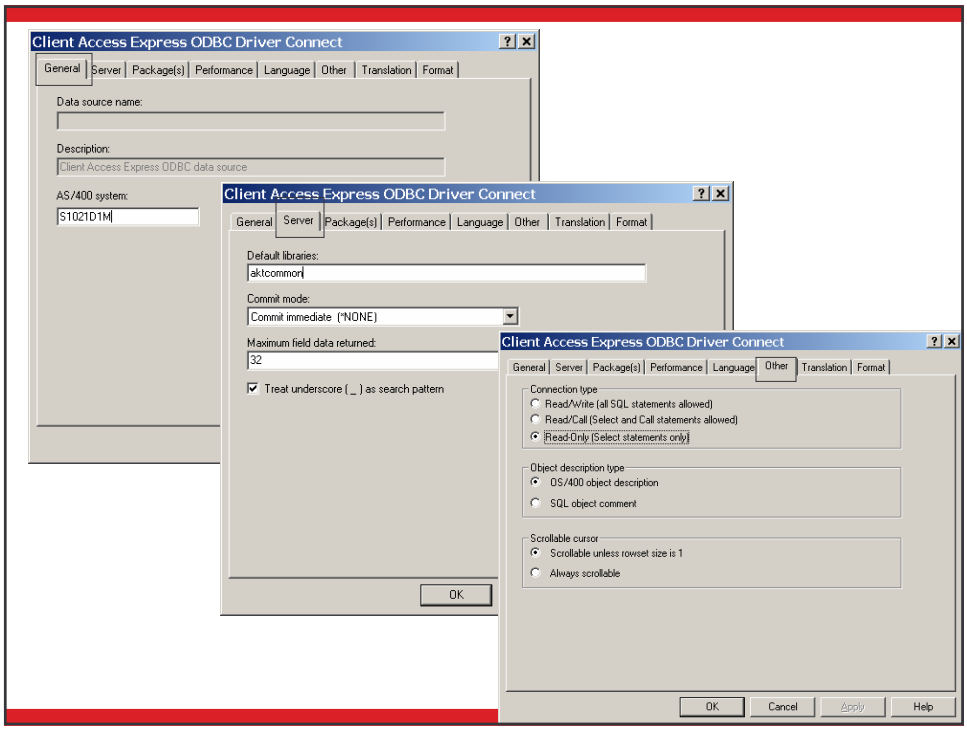
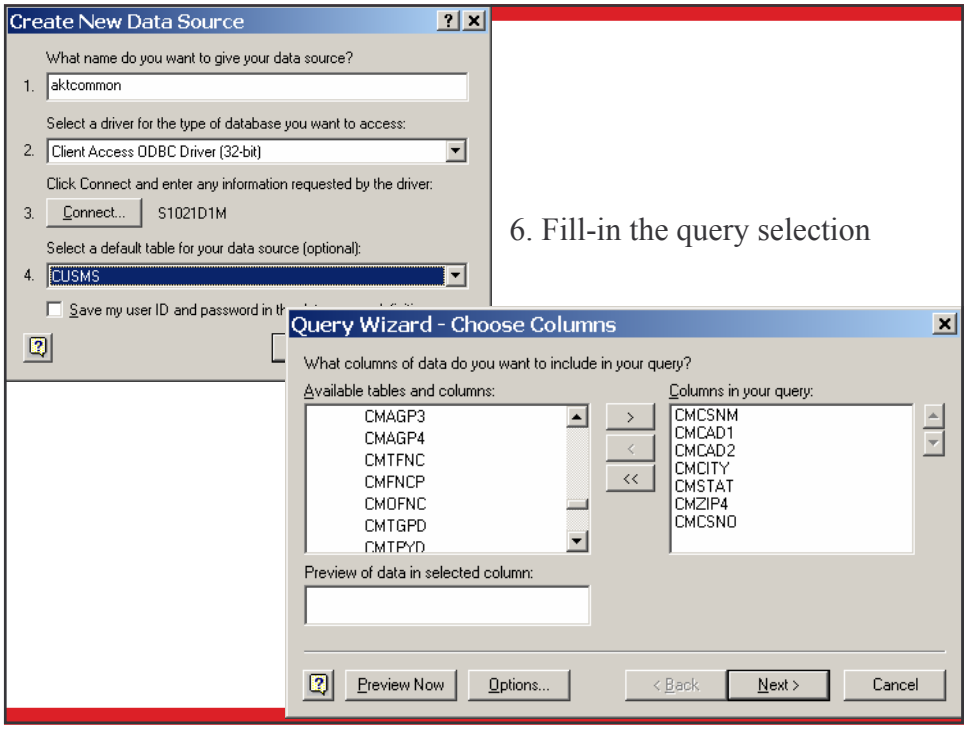
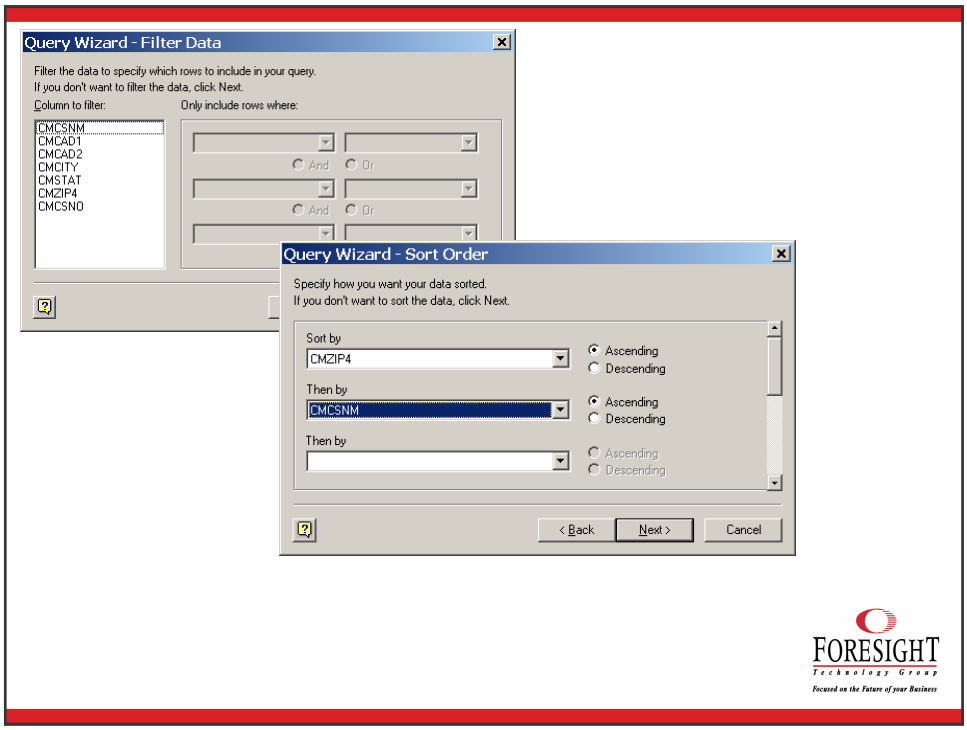
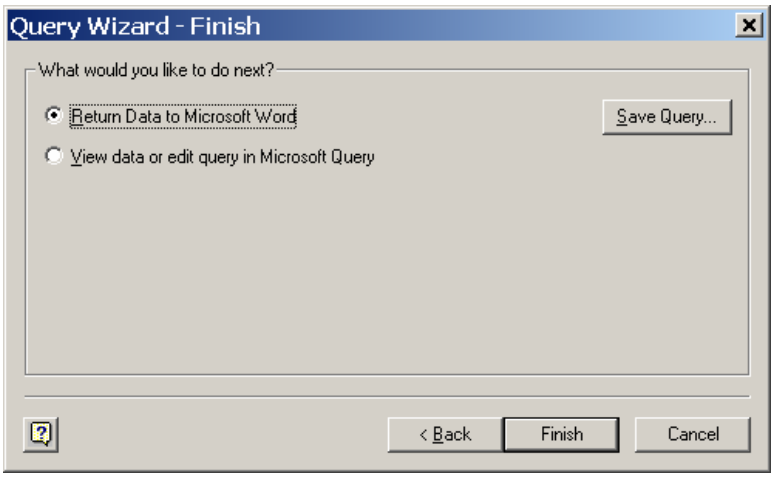





6. Fill-in the query selection



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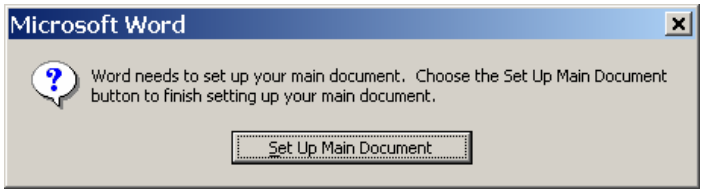


7. Setup the Main Document

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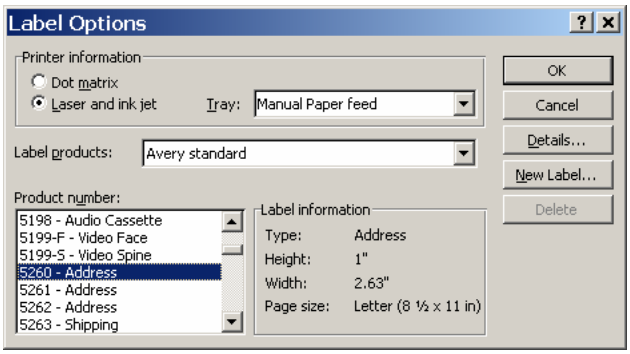


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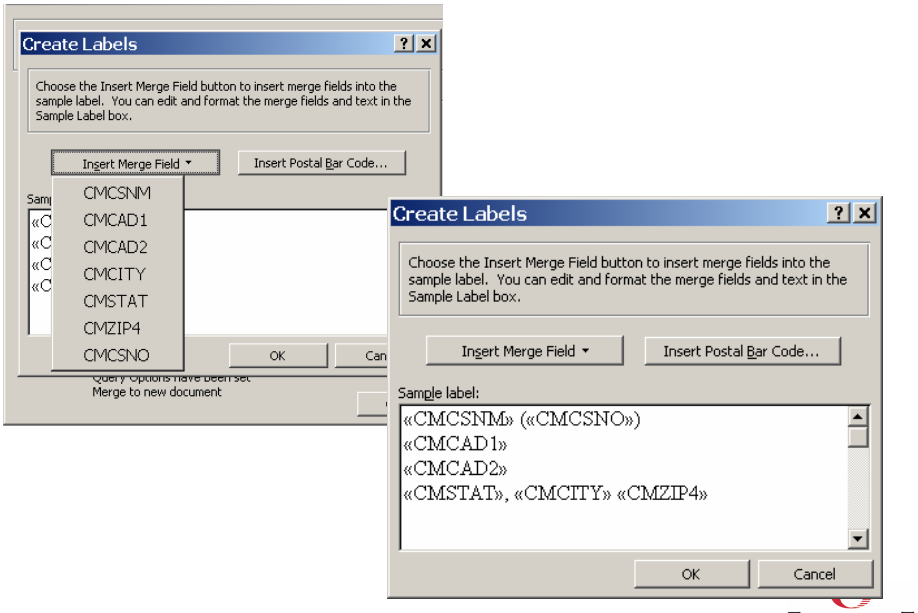


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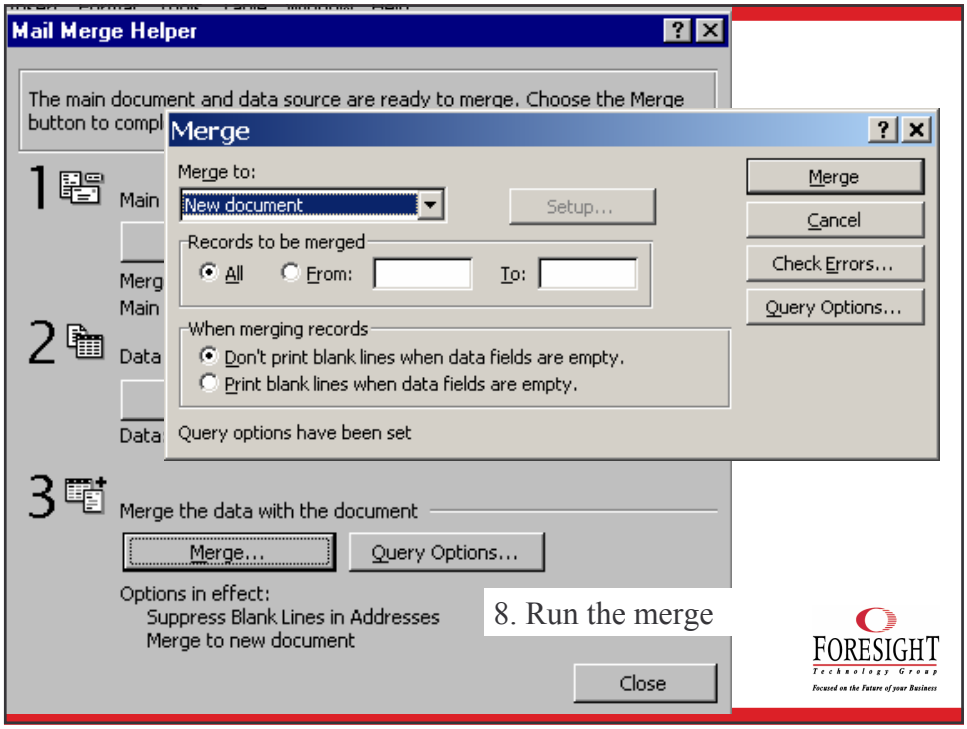
Mail Merge Helper
The main document and data source are ready to merge. Choose the Merge button to compl
Merge
Merge to:
New document
Setup...
Records to be merged
All
From:
To:
When merging records
Don't print blank lines when data fields are empty.
Print blank lines when data fields are empty.
Query options have been set
Merge
Cancel
Check Errors...
Query Options...
1
Main
Merg
Main
2
Data
Data
3
Merge the data with the document
Merge...
Query Options...
Options in effect:
Suppress Blank Lines in Addresses
Merge to new document
Close
8. Run the merge
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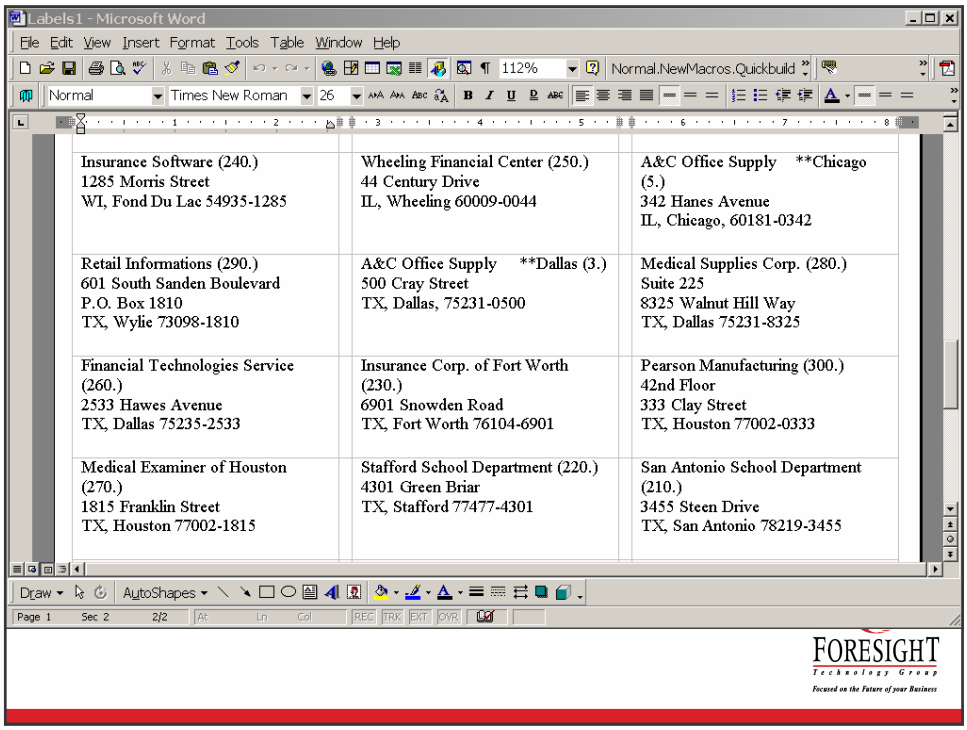
Labels1 - Microsoft Word
File Edit View Insert Format Tools Table Window Help
Normal
Times New Roman
26
112%
Normal.NewMacros.Quickbuild
Insurance Software (240.)
1285 Morris Street
WI, Fond Du Lac 54935-1285
Wheeling Financial Center (250.)
44 Century Drive
IL, Wheeling 60009-0044
A&C Office Supply **Chicago (5.)
342 Hanes Avenue
IL, Chicago, 60181-0342
Retail Informations (290.)
601 South Sanden Boulevard
P.O. Box 1810
TX, Wylie 73098-1810
A&C Office Supply **Dallas (3.)
500 Cray Street
TX, Dallas, 75231-0500
Medical Supplies Corp. (280.)
Suite 225
8325 Walnut Hill Way
TX, Dallas 75231-8325
Financial Technologies Service (260.)
2533 Hawes Avenue
TX, Dallas 75235-2533
Insurance Corp. of Fort Worth (230.)
6901 Snowden Road
TX, Fort Worth 76104-6901
Pearson Manufacturing (300.)
42nd Floor
333 Clay Street
TX, Houston 77002-0333
Medical Examiner of Houston (270.)
1815 Franklin Street
TX, Houston 77002-1815
Stafford School Department (220.)
4301 Green Briar
TX, Stafford 77477-4301
San Antonio School Department (210.)
3455 Steen Drive
TX, San Antonio 78219-3455
Draw
AutoShapes
Page 1 Sec 2 2/2
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Foresight Technology Group

# Mail Merge Labels (Office XP)

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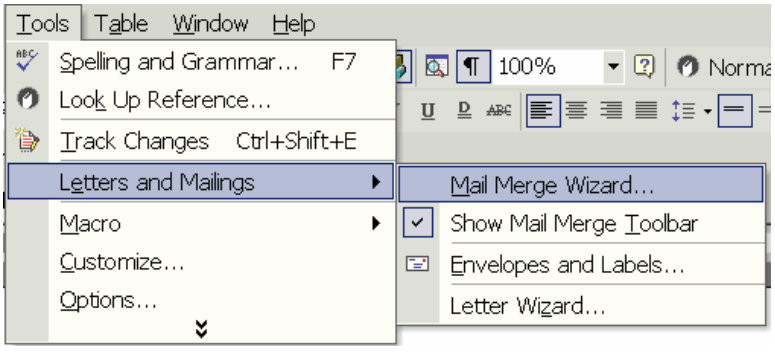


1. Click Tools,
2. Letters and Mailings,
3. Mail Merge Wizard

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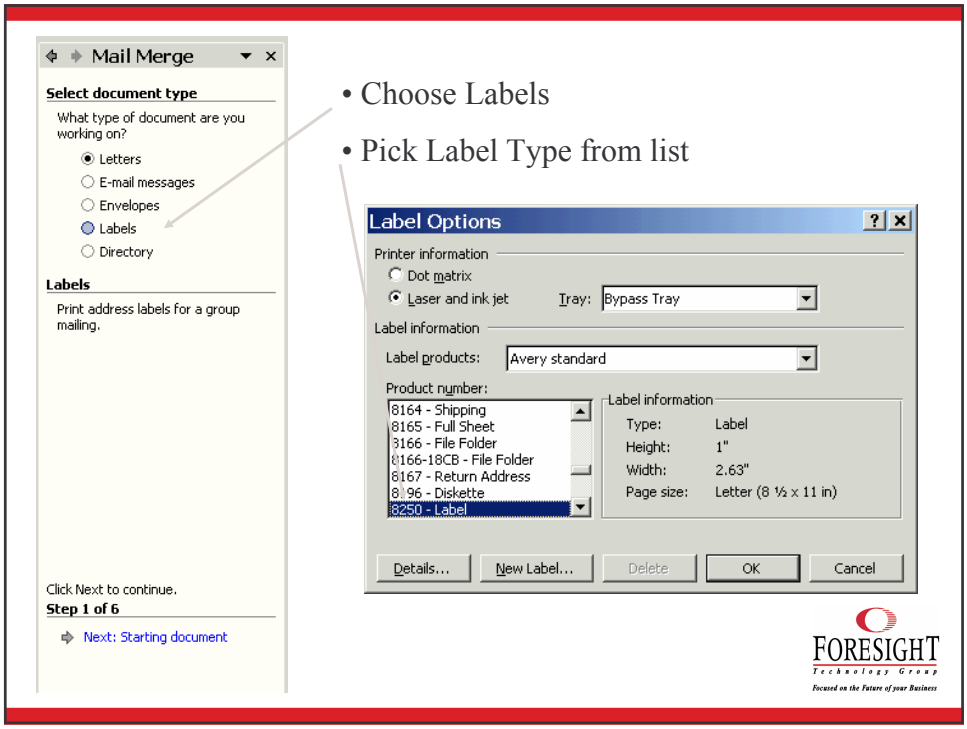
Mail Merge
Select document type
What type of document are you working on?
Letters
E-mail messages
Envelopes
Labels
Directory
Labels
Print address labels for a group mailing.
Click Next to continue.
Step 1 of 6
Next: Starting document
• Choose Labels
• Pick Label Type from list
Label Options
Printer information
Dot matrix
Laser and ink jet
Tray: Bypass Tray
Label information
Label products: Avery standard
Product number:
8164 - Shipping
8165 - Full Sheet
3166 - File Folder
8166-18CB - File Folder
8167 - Return Address
8196 - Diskette
8250 - Label
Label information
Type: Label
Height: 1"
Width: 2.63"
Page size: Letter (8 ½ x 11 in)
Details...
New Label...
Delete
OK
Cancel
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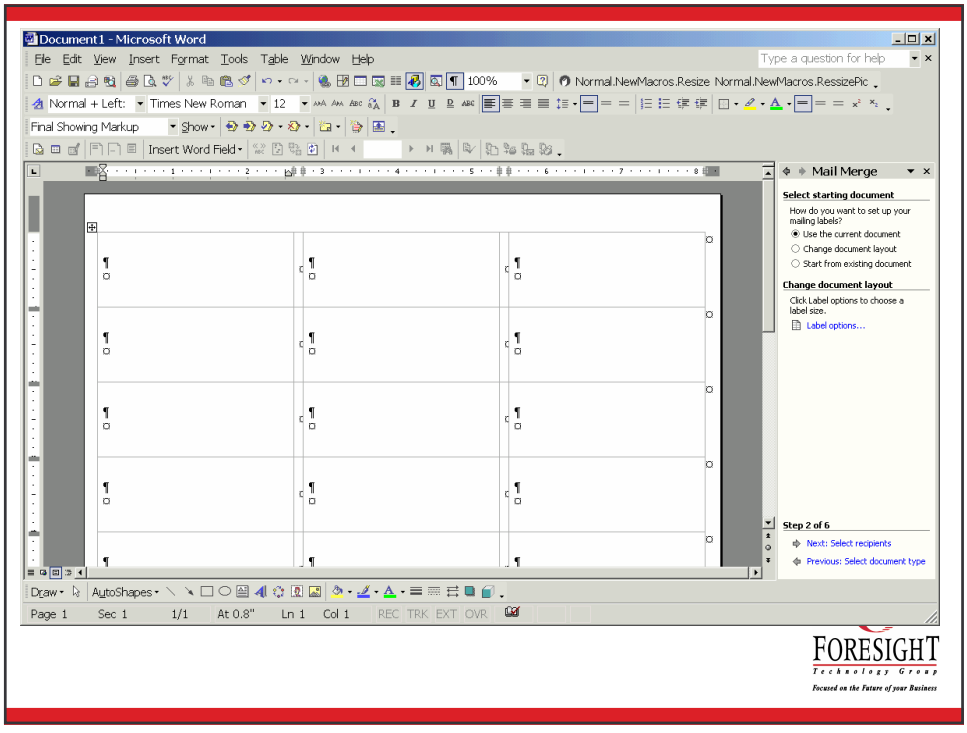
Document1 - Microsoft Word
File Edit View Insert Format Tools Table Window Help
Mail Merge
Select starting document
How do you want to set up your mailing labels?
Use the current document
Change document layout
Start from existing document
Change document layout
Click Label options to choose a label size.
Label options...
Step 2 of 6
Next: Select recipients
Previous: Select document type
Page 1 Sec 1 1/1 At 0.8" Ln 1 Col 1
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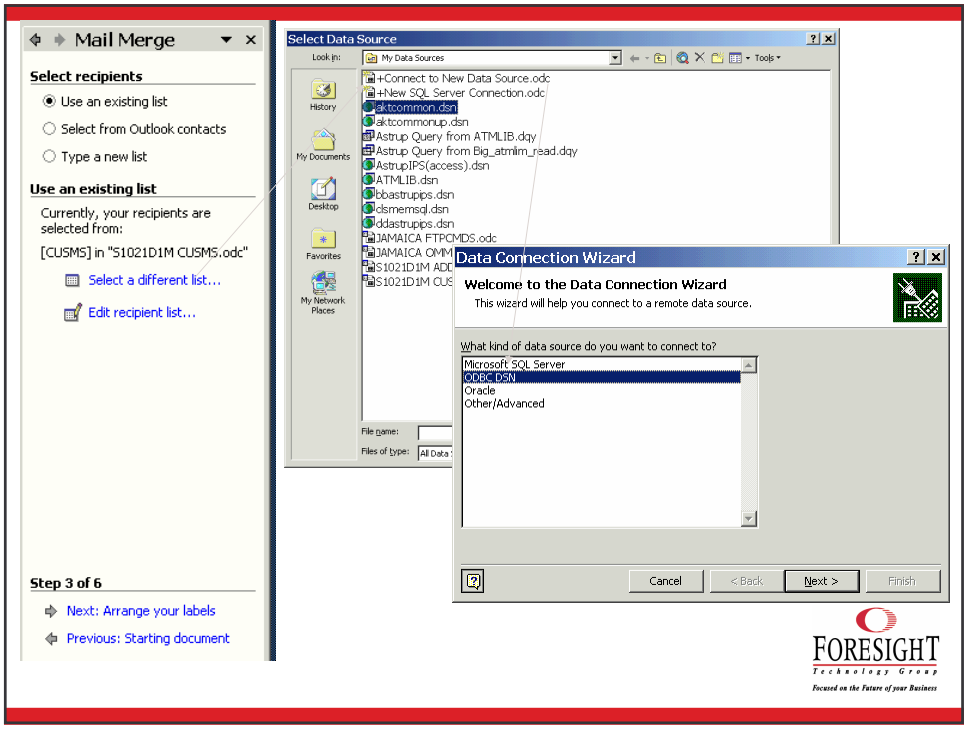
Mail Merge
Select recipients
Use an existing list
Select from Outlook contacts
Type a new list
Use an existing list
Currently, your recipients are selected from:
[CUSMS] in "S1021D1M CUSMS.odc"
Select a different list...
Edit recipient list...
Step 3 of 6
Next: Arrange your labels
Previous: Starting document
Select Data Source
Look in:
My Data Sources
+Connect to New Data Source.odc
+New SQL Server Connection.odc
aktcommon.dsn
aktcommonup.dsn
Astrup Query from ATMLIB.dqy
Astrup Query from Big_atmlim_read.dqy
AstrupIPS(access).dsn
ATMLIB.dsn
bbastrupips.dsn
clsmemsql.dsn
ddastrupips.dsn
JAMAICA FTPCMDS.odc
JAMAICA OMM
S1021D1M ADD
S1021D1M CUS
Data Connection Wizard
Welcome to the Data Connection Wizard
This wizard will help you connect to a remote data source.
What kind of data source do you want to connect to?
Microsoft SQL Server
ODBC DSN
Oracle
Other/Advanced
Cancel
< Back
Next >
Finish
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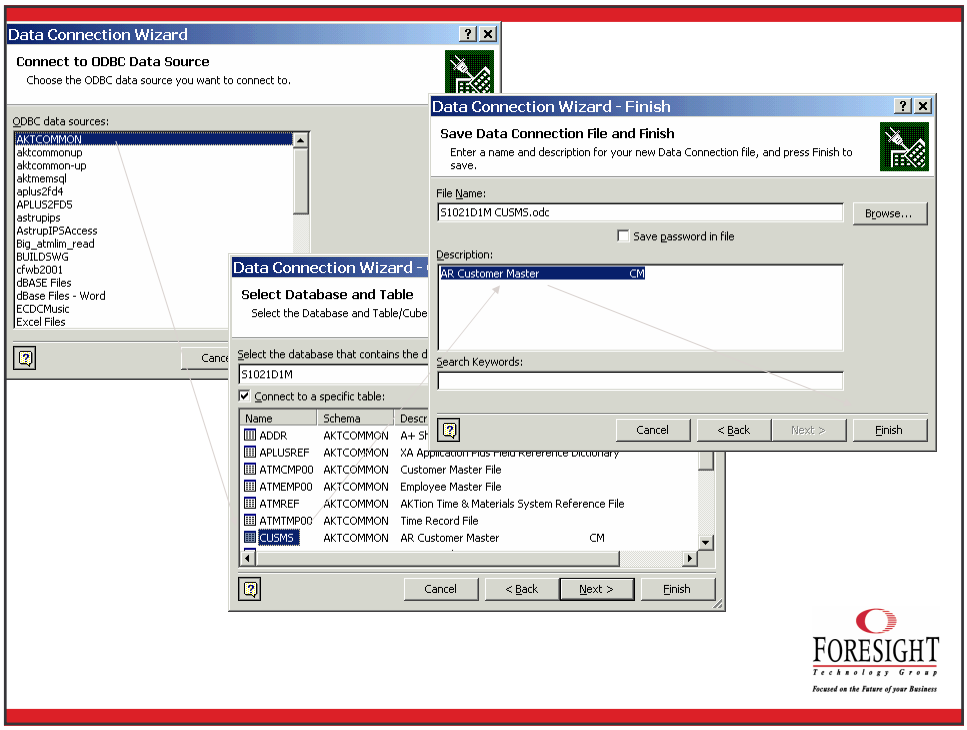
Data Connection Wizard
Connect to ODBC Data Source
Choose the ODBC data source you want to connect to.
ODBC data sources:
AKTCOMMON
aktcommonup
aktcommon-up
aktmemsql
aplus2fd4
APLUS2FD5
astrupips
AstrupIPSAccess
Big_atmlim_read
BUILDSWG
cfwb2001
dBASE Files
dBase Files - Word
ECDCMusic
Excel Files
Data Connection Wizard - Finish
Save Data Connection File and Finish
Enter a name and description for your new Data Connection file, and press Finish to save.
File Name:
S1021D1M CUSMS.odc
Browse...
Save password in file
Description:
AR Customer Master CM
Search Keywords:
Cancel
< Back
Next >
Finish
Data Connection Wizard -
Select Database and Table
Select the Database and Table/Cube
Select the database that contains the d
S1021D1M
Connect to a specific table:
Name
Schema
Descr
ADDR AKTCOMMON A+ Sh
APLUSREF AKTCOMMON XA Application Plus Field Reference Dictionary
ATMCMP00 AKTCOMMON Customer Master File
ATMEMP00 AKTCOMMON Employee Master File
ATMREF AKTCOMMON AKTion Time & Materials System Reference File
ATMTMP00 AKTCOMMON Time Record File
CUSMS AKTCOMMON AR Customer Master CM
Cancel
< Back
Next >
Finish
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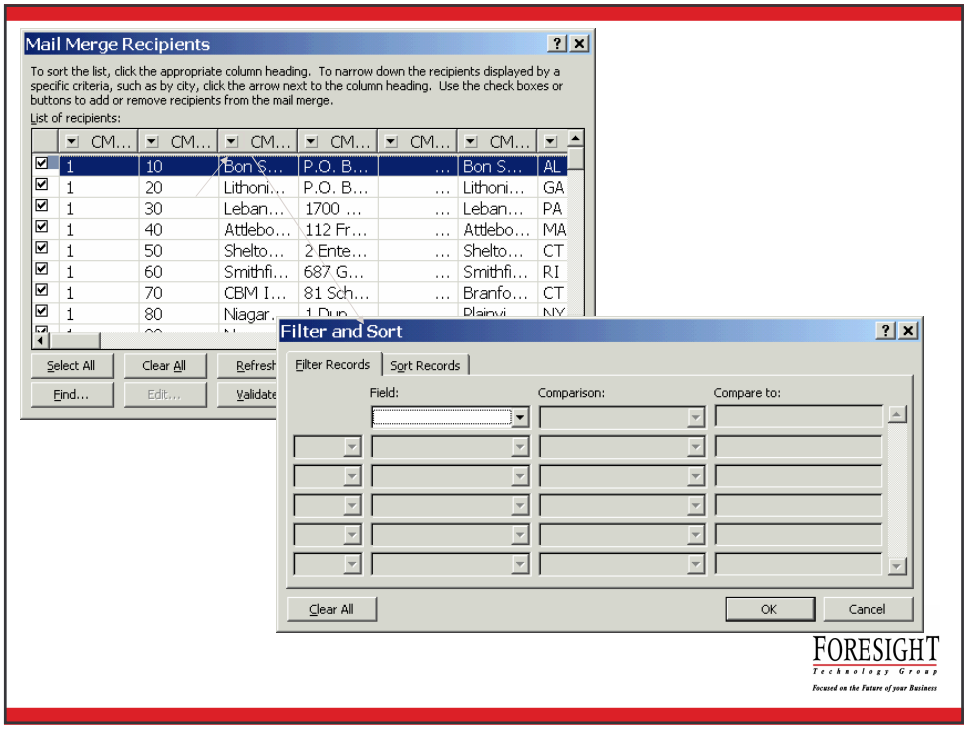
Mail Merge Recipients
To sort the list, click the appropriate column heading. To narrow down the recipients displayed by a specific criteria, such as by city, click the arrow next to the column heading. Use the check boxes or buttons to add or remove recipients from the mail merge.
List of recipients:
Select All
Clear All
Refresh
Find...
Edit...
Validate
Filter and Sort
Filter Records
Sort Records
Field:
Comparison:
Compare to:
Clear All
OK
Cancel
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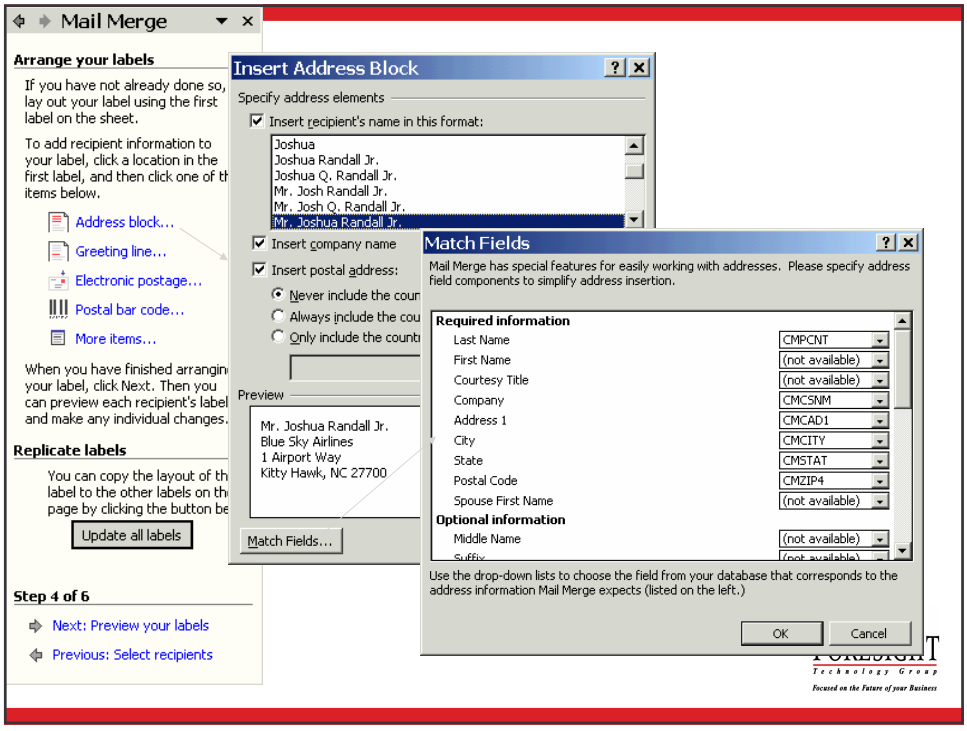
Mail Merge
Arrange your labels
If you have not already done so, lay out your label using the first label on the sheet.
To add recipient information to your label, click a location in the first label, and then click one of th items below.
Address block...
Greeting line...
Electronic postage...
Postal bar code...
More items...
When you have finished arrangin your label, click Next. Then you can preview each recipient's label and make any individual changes.
Replicate labels
You can copy the layout of th label to the other labels on th page by clicking the button be
Update all labels
Step 4 of 6
Next: Preview your labels
Previous: Select recipients
Insert Address Block
Specify address elements
Insert recipient's name in this format:
Joshua
Joshua Randall Jr.
Joshua Q. Randall Jr.
Mr. Josh Randall Jr.
Mr. Josh Q. Randall Jr.
Mr. Joshua Randall Jr.
Insert company name
Insert postal address:
Never include the cou
Always include the cou
Only include the countr
Preview
Mr. Joshua Randall Jr.
Blue Sky Airlines
1 Airport Way
Kitty Hawk, NC 27700
Match Fields...
Match Fields
Mail Merge has special features for easily working with addresses. Please specify address field components to simplify address insertion.
Required information
Last Name
First Name
Courtesy Title
Company
Address 1
City
State
Postal Code
Spouse First Name
Optional information
Middle Name
CMPCNT
(not available)
(not available)
CMCSNM
CMCAD1
CMCITY
CMSTAT
CMZIP4
(not available)
(not available)
Use the drop-down lists to choose the field from your database that corresponds to the address information Mail Merge expects (listed on the left.)
OK
Cancel
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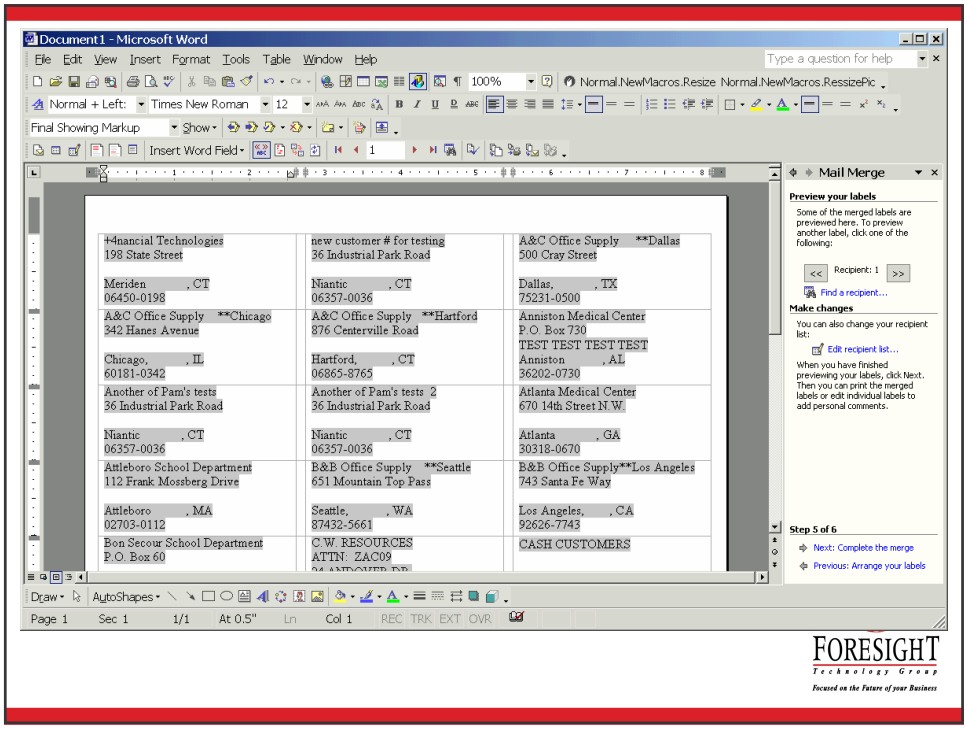


# Foresight Technology Group

## E-Mail Merge with Word XP

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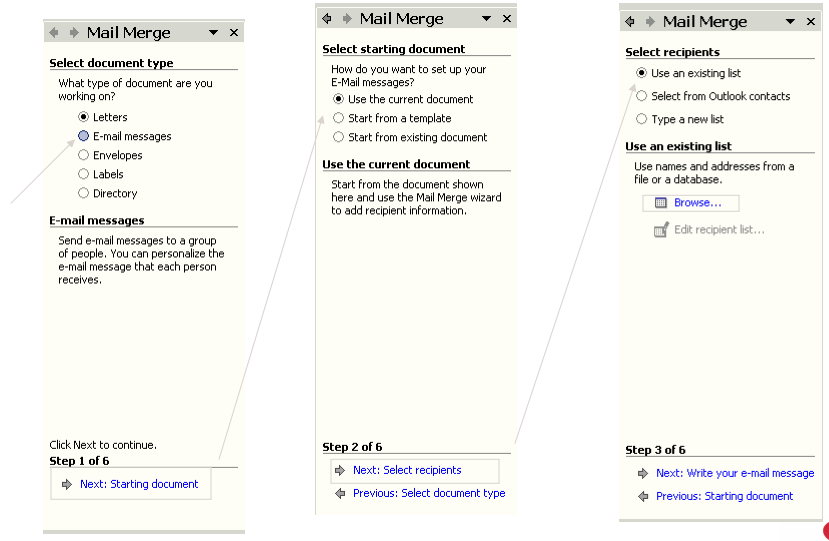
# Start Mail Merge

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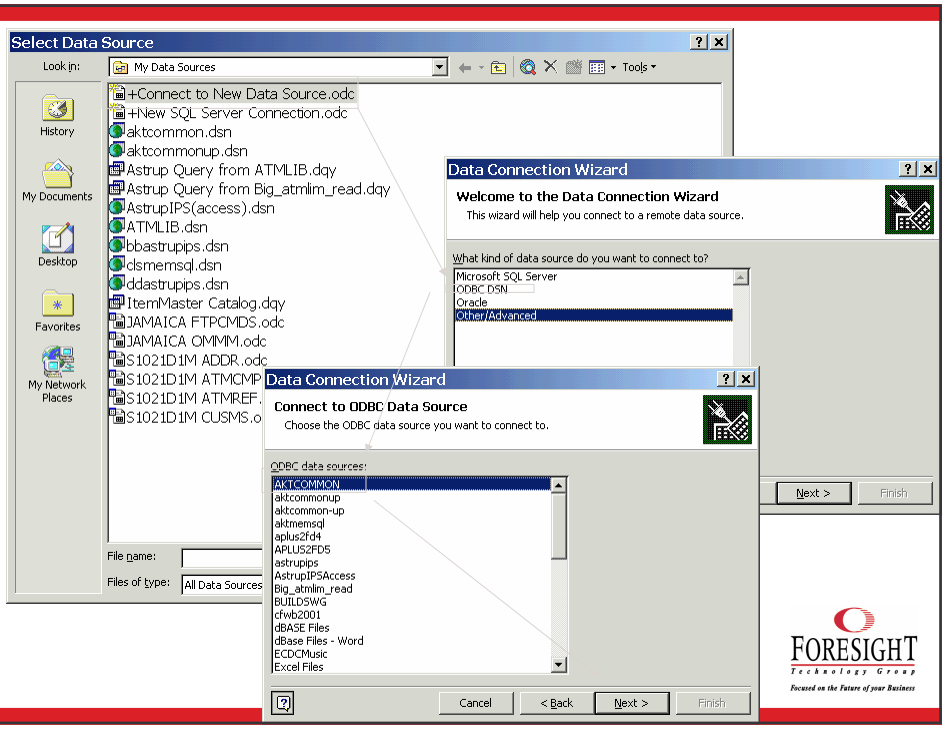


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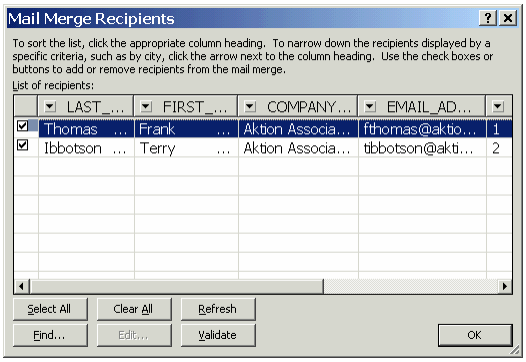


Now that you have your records finish editing your document

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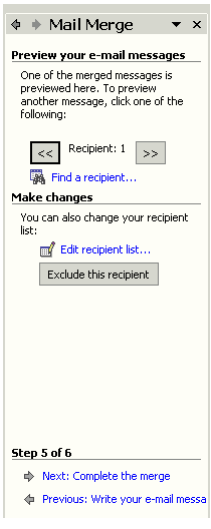


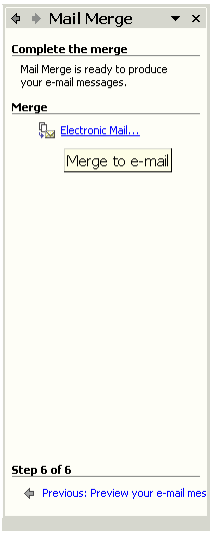


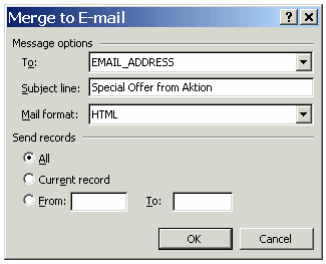


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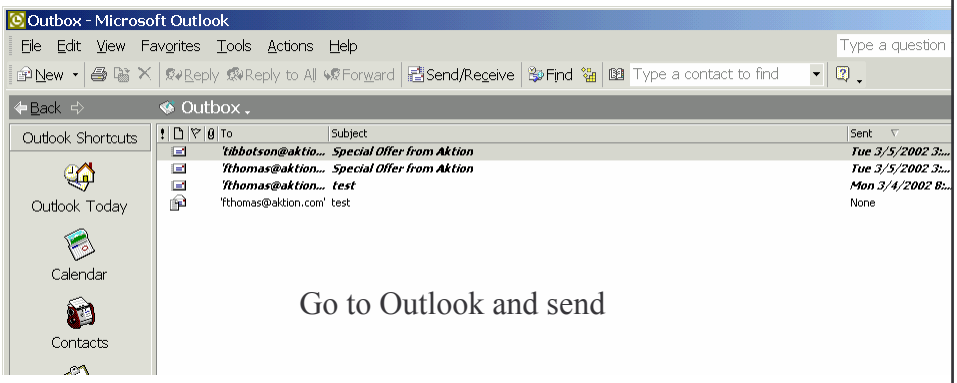


Go to Outlook and send

Frank Thomas

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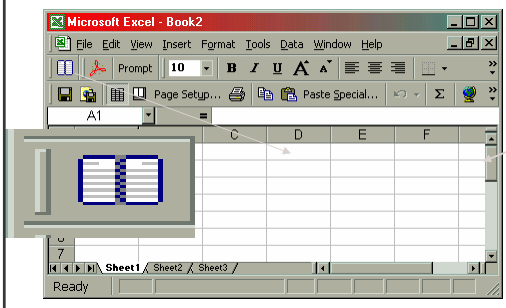
# Building a monthly GL Report using the "Magic" Button from Client Access




Step 1. Open a new worksheet then click the button.

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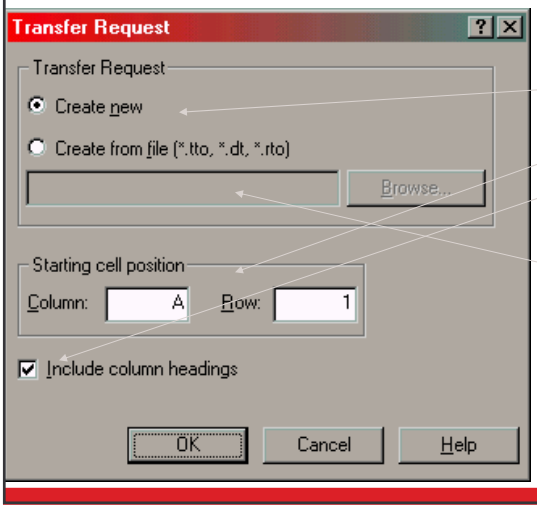
# Transfer Request Screen




Step 2. Click – Create New. Make sure that it is pointing to cell A1. And that Include column headings is checked.

Leave blank for now

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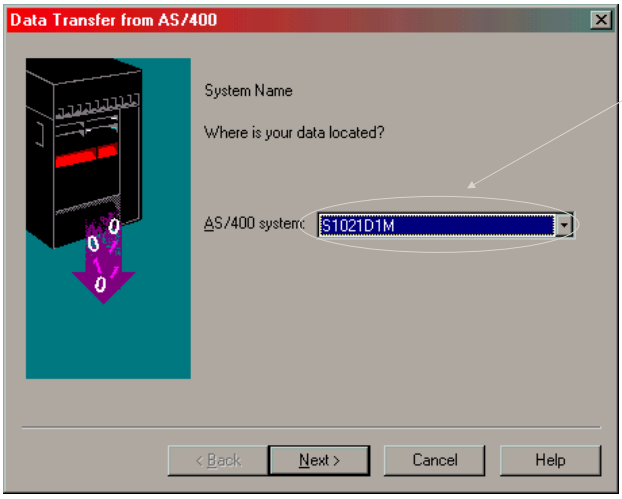
# Select the System




Step 3 – Just select from the list the default is what you usually want.

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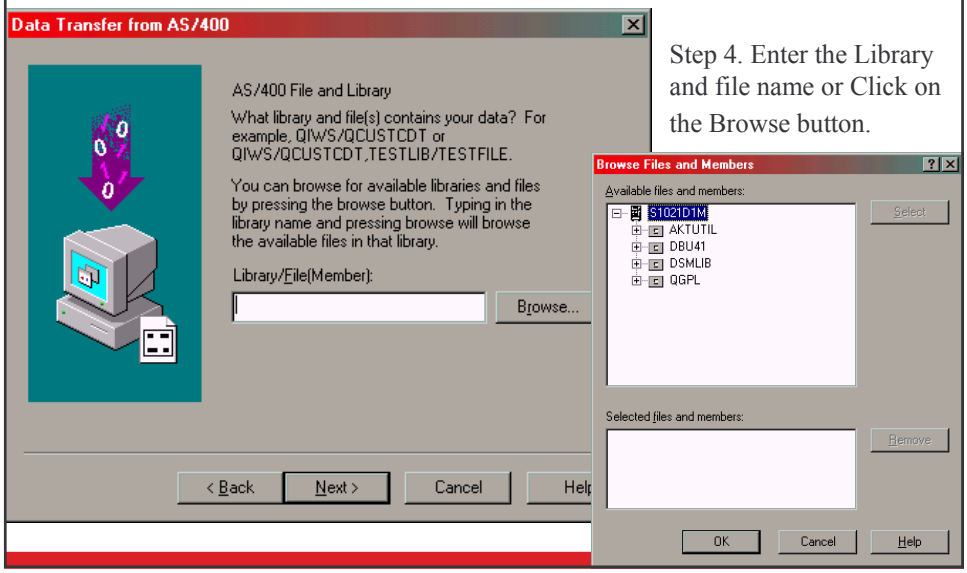
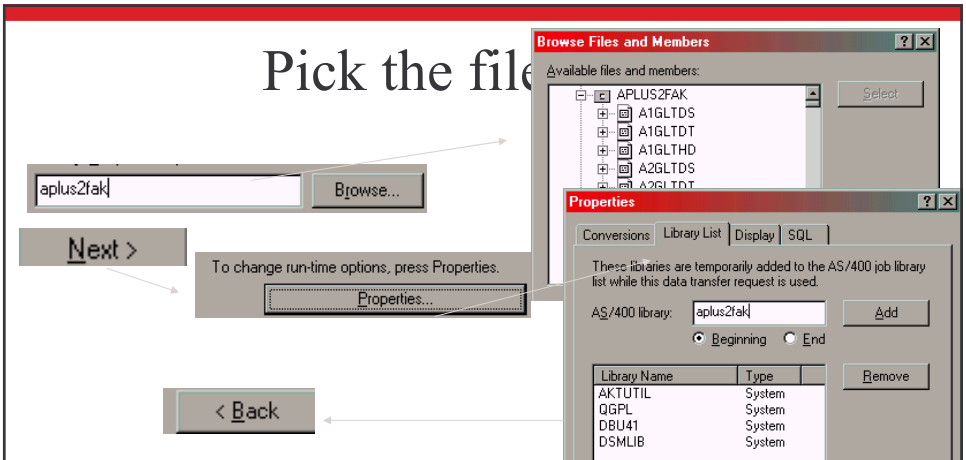
# Pick the file(s)




Step 4. Enter the Library and file name or Click on the Browse button.

# Pick the file




If your library is not in the list then just type it in before selecting browse **or** click next, click Properties, add your libraries to the Library List, click back and select your files.

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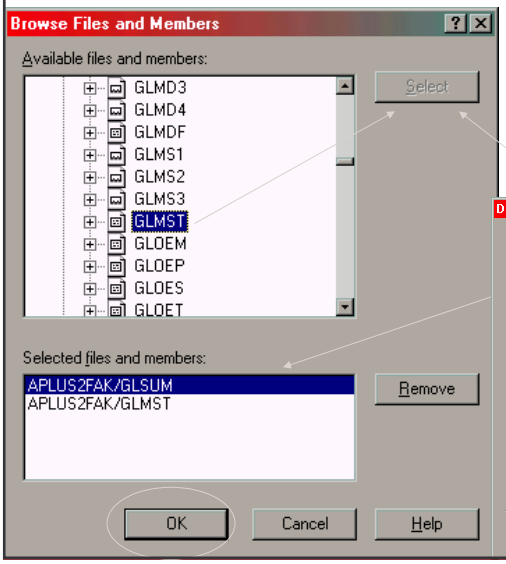
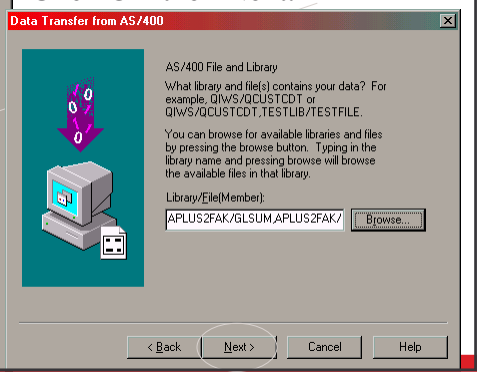
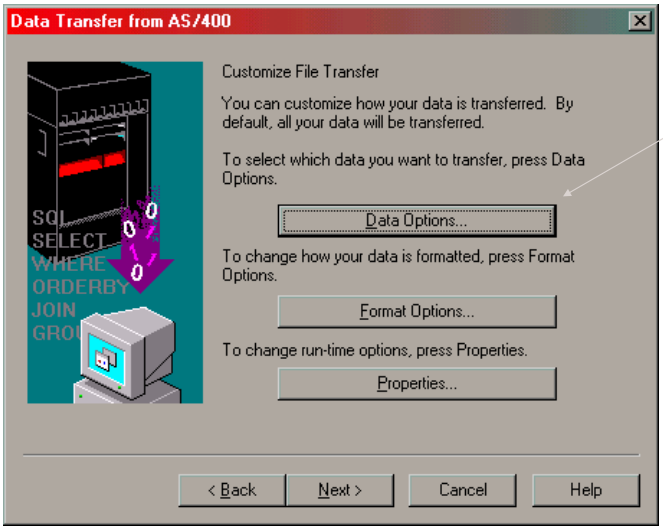
# Pick the File(s)




When selecting more than one file, just press select on each high lighted file. The files will be added to the bottom. Click OK then Next.




# Building the Transfer Request




Step 5. Click on Data Options to setup the fields to transfer.

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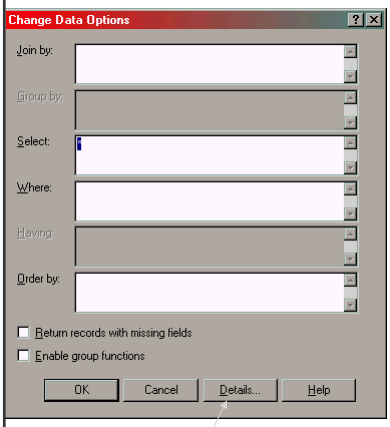
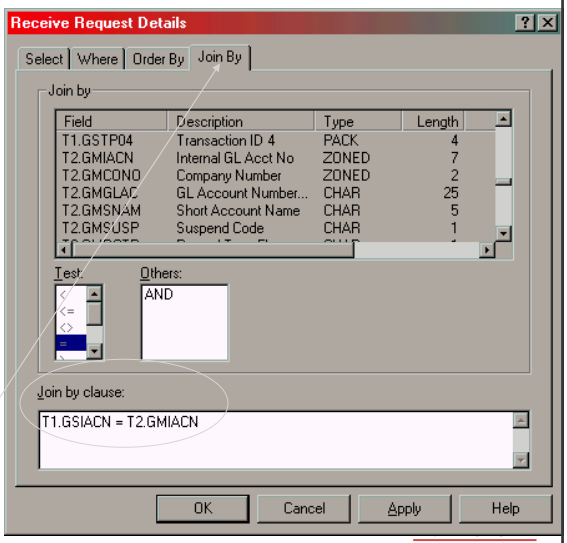
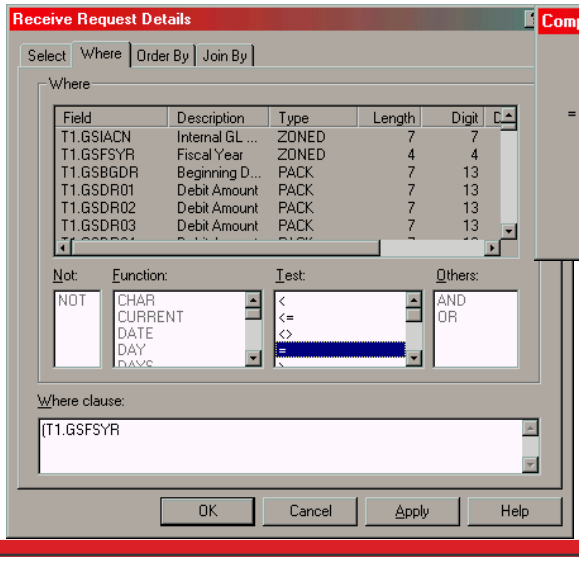
# Transfer Request (Join By)

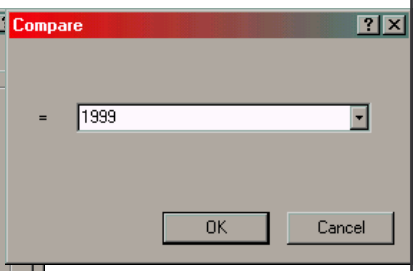



Click on details then the Join By Tab (does not appear if only 1 file is selected)



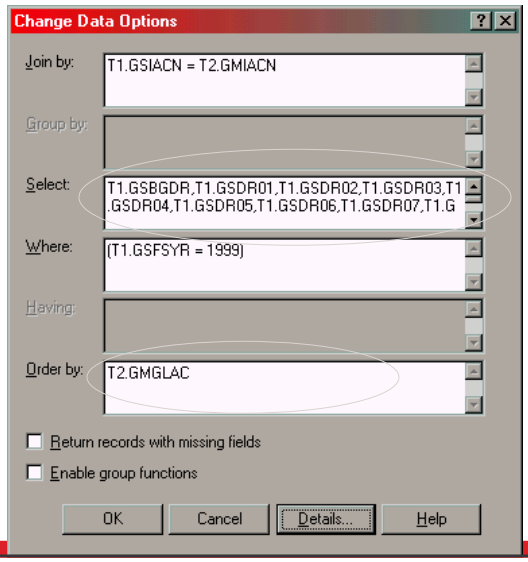

# Transfer Request (Where)




The where clause controls what records are selected.

# Transfer Request (Select and Order by)




The Select clause, picks the fields that you want to transfer.

The Order by clause sorts the records.

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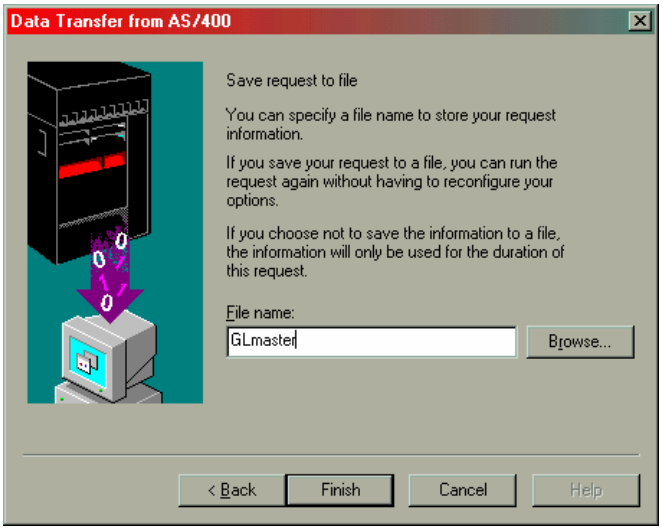
# Save your request




Step 6. Save the data transfer request so that you can use it again.

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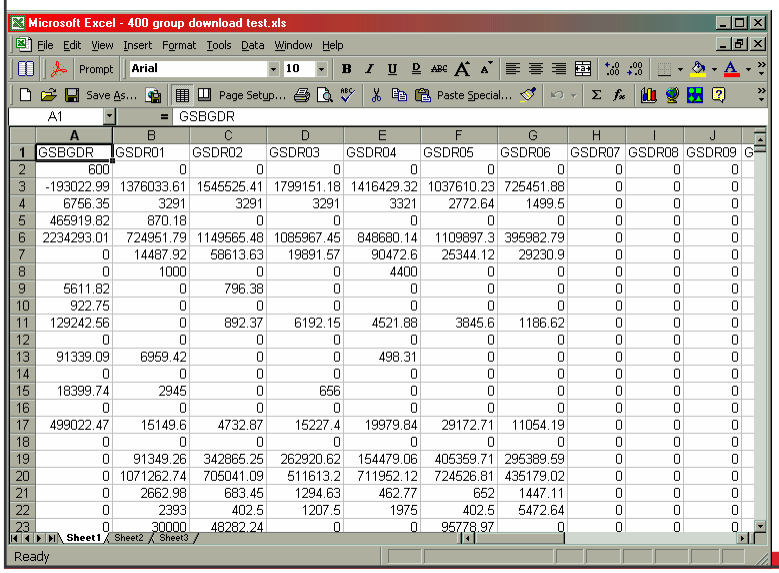
# The Transferred File




| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GSBGDR | GSDR01 | GSDR02 | GSDR03 | GSDR04 | GSDR05 | GSDR06 | GSDR07 | GSDR08 | GSDR09 |
| 2 | 600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | -193022.99 | 1376033.61 | 1545525.41 | 1799151.18 | 1416429.32 | 1037610.23 | 725451.88 | 0 | 0 | 0 |
| 4 | 6756.35 | 3291 | 3291 | 3291 | 3321 | 2772.64 | 1499.5 | 0 | 0 | 0 |
| 5 | 465919.82 | 870.18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 2234293.01 | 724951.79 | 1149565.48 | 1085967.45 | 848680.14 | 1109897.3 | 395982.79 | 0 | 0 | 0 |
| 7 | 0 | 14487.92 | 58613.63 | 19891.57 | 90472.6 | 25344.12 | 29230.9 | 0 | 0 | 0 |
| 8 | 0 | 1000 | 0 | 0 | 4400 | 0 | 0 | 0 | 0 | 0 |
| 9 | 5611.82 | 0 | 796.38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 922.75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 129242.56 | 0 | 892.37 | 6192.15 | 4521.88 | 3845.6 | 1186.62 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 91339.09 | 6959.42 | 0 | 0 | 498.31 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 18399.74 | 2945 | 0 | 656 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 499022.47 | 15149.6 | 4732.87 | 15227.4 | 19979.84 | 29172.71 | 11054.19 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 91349.26 | 342865.25 | 262920.62 | 154479.06 | 405359.71 | 295389.59 | 0 | 0 | 0 |
| 20 | 0 | 1071262.74 | 705041.09 | 511613.2 | 711952.12 | 724526.81 | 435179.02 | 0 | 0 | 0 |
| 21 | 0 | 2662.98 | 683.45 | 1294.63 | 462.77 | 652 | 1447.11 | 0 | 0 | 0 |
| 22 | 0 | 2393 | 402.5 | 1207.5 | 1975 | 402.5 | 5472.64 | 0 | 0 | 0 |
| 23 | 0 | 30000 | 48282.24 | 0 | 0 | 95778.97 | 0 | 0 | 0 | 0 |

Here is the "raw" data

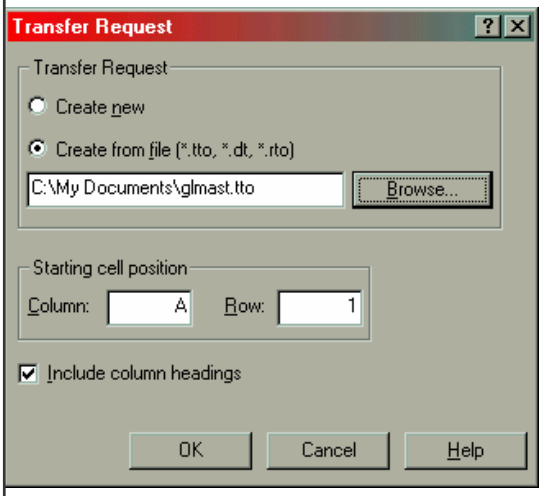
# The formatted sheet

**General Ledger Detail Review**

| Account Number | Account Description | Debit | Credit | Balance |
|---|---|---|---|---|
| 001-00-1009-09 | Petty Cash: Maumee | $ 2,234 | $ - | $ (2,234) |
| 001-00-2109-09 | Checking: Capital Bank | $ 28,693,826 | $ 29,283,898 | $ 590,072 |
| 001-00-2409-09 | Ck: CAP Sec 125 Restrict | $ 90,180 | $ 70,946 | $ (19,235) |
| 001-00-3109-09 | Capital Bank MM | $ 1,737,859 | $ 1,737,524 | $ (335) |
| 001-01-0009-09 | Account Receivable CONTRL | $ 28,106,185 | $ 23,893,665 | $ (4,212,520) |
| 001-01-1009-09 | Reserve: Sls Adj/Bad Debt | $ 886,226 | $ 1,662,890 | $ 776,664 |
| 001-01-5009-09 | Employee Advances | $ 20,104 | $ 20,104 | $ - |
| 001-03-0009-09 | Prepaid: Rent Maumee | $ 23,858 | $ - | $ (23,858) |
| 001-03-3009-09 | Prepaid Insurance: Maumee | $ 3,435 | $ - | $ (3,435) |
| 001-04-1009-09 | Furniture & Fixtures: Mau | $ 543,116 | $ 5,196 | $ (537,920) |
| 001-04-1209-09 | Furn & Fix Deprec: Mau | $ - | $ 348,656 | $ 348,656 |
| 001-04-2009-09 | Office Equipment: Maumee | $ 367,821 | $ - | $ (367,821) |
| 001-04-2209-09 | Office Equip Deprec: Mau | $ - | $ 198,216 | $ 198,216 |
| 001-04-5009-09 | Leasehold Improve: Mau | $ 81,909 | $ - | $ (81,909) |
| 001-04-5209-09 | Leasehold Amortiz: Mau | $ - | $ 13,761 | $ 13,761 |
| 001-05-0009-09 | Computer Equipment: Mau | $ 2,212,724 | $ 19,558 | $ (2,193,167) |

Sheet 2 contains the formatting pointing at the data from Sheet 1

## Redoing the report every month




Next month:

- Open the spreadsheet
- Redo the transfer on Sheet 1 by clicking on the transfer button browsing and selecting the saved transfer request.
- Presto – your Formatted Sheet 2 is updated with new numbers for the month.

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## Gottcha for "Magic" Button Transfers

- Get it right or else… if you mess up in defining the data options and then attempt to run the request it appears that you have lost all your work. If you save the request you can recover by using the data transfer screen outside of Excel.

**Testing a request**

Use the file transfer option from your 5250 Screen with the display value to test and document difficult data options then save it before using the magic button.

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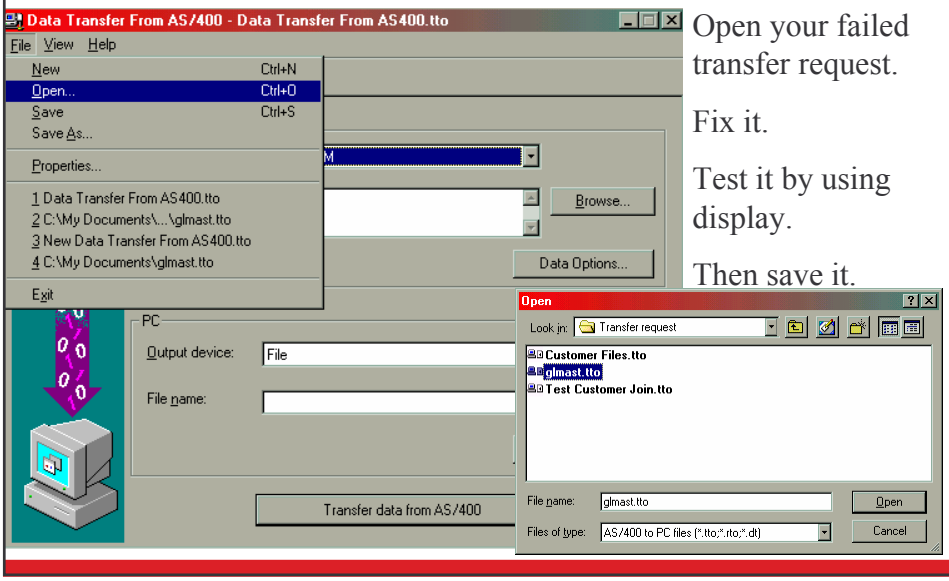
# Editing a Transfer Request



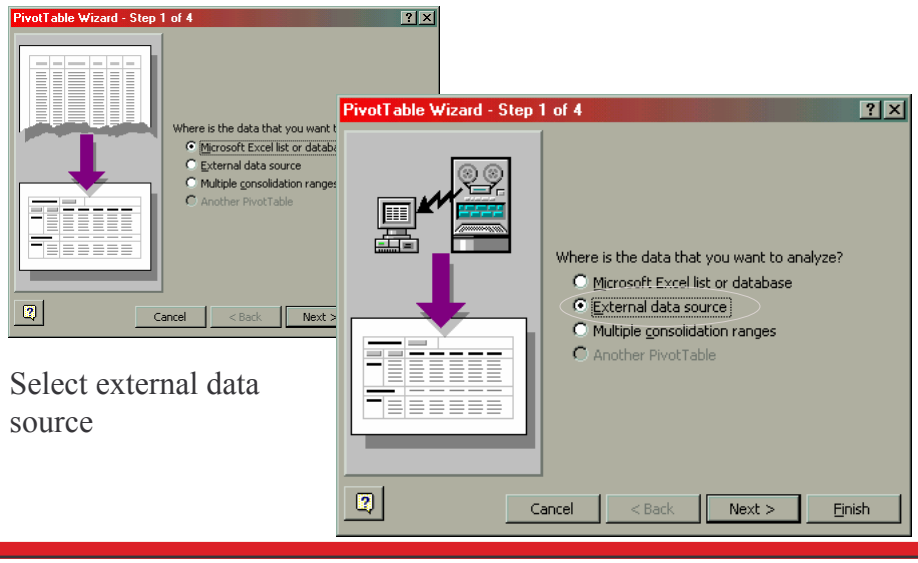

Open your failed transfer request.

Fix it.

Test it by using display.

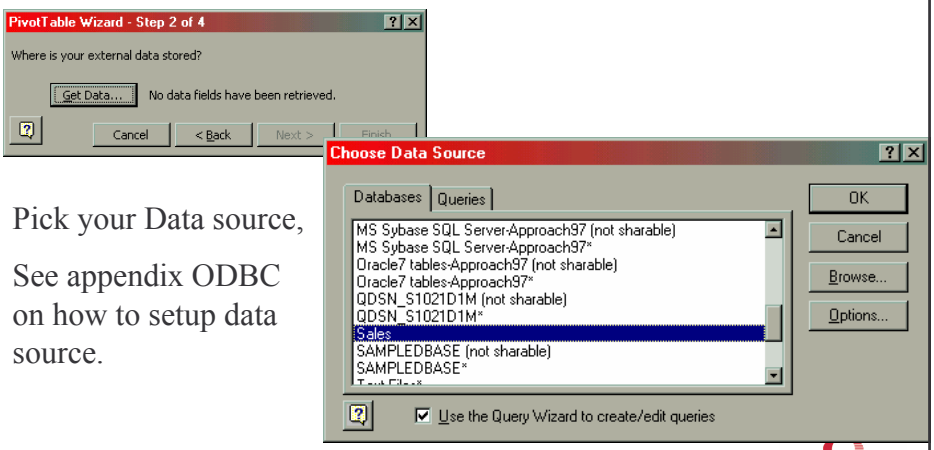
Then save it.

# Wizard Step 1




Select external data source

# Wizard Step 2




Pick your Data source,

See appendix ODBC on how to setup data source.

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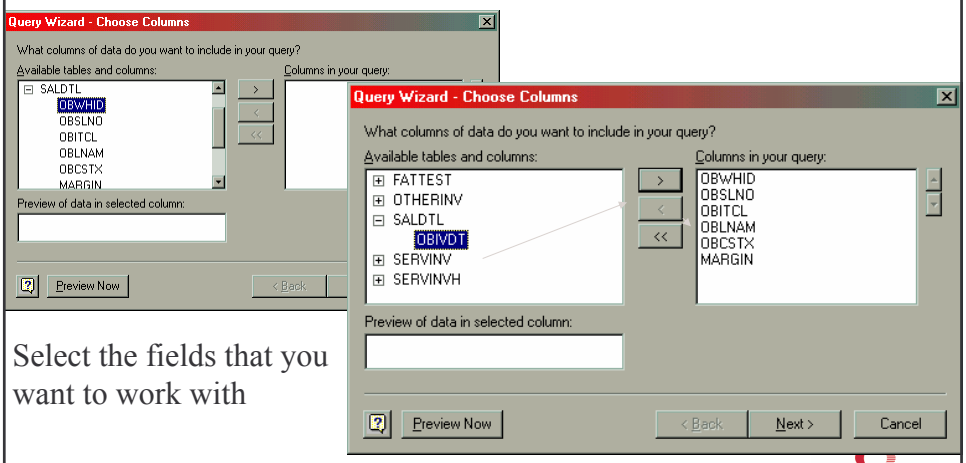
# Run MS-Query Wizard




Select the fields that you want to work with

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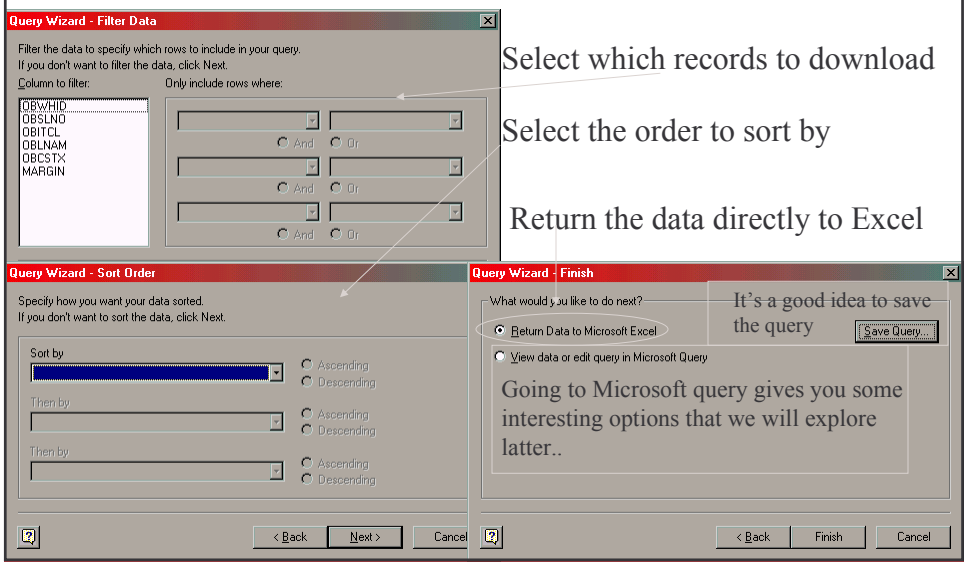
# MS-Query Wizard (cont)




Select which records to download

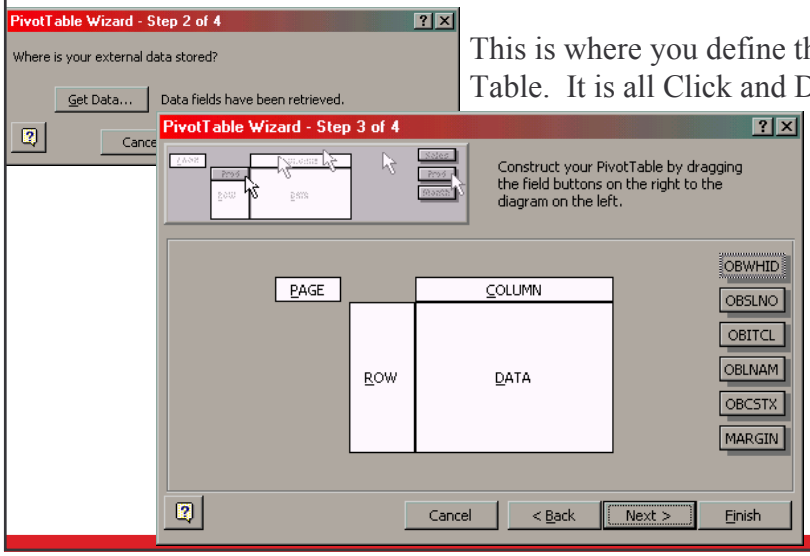
Select the order to sort by

Return the data directly to Excel

It's a good idea to save the query

Going to Microsoft query gives you some interesting options that we will explore latter..

# Wizard Step 3




This is where you define the Pivot Table. It is all Click and Drag

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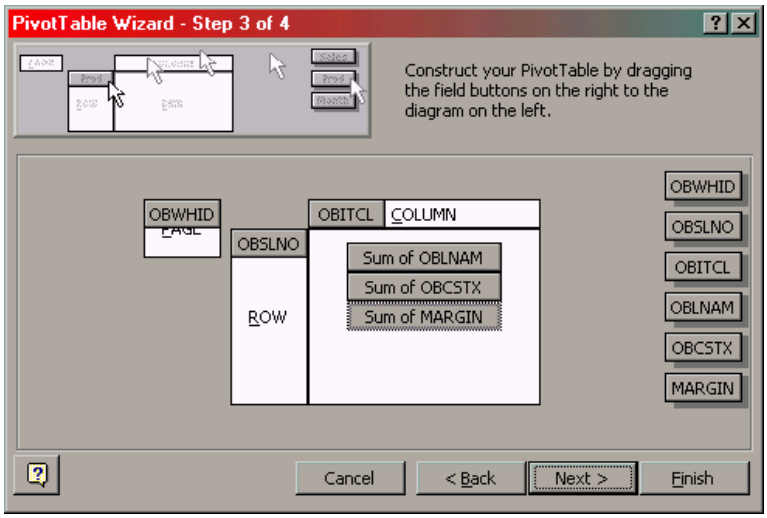
# A Defined Pivot Table

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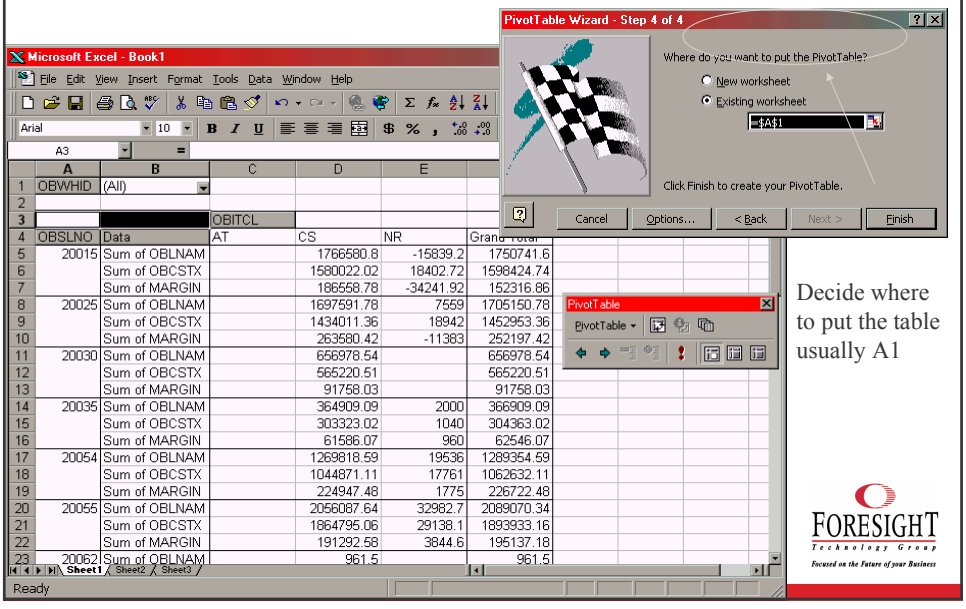
# The Pivot Table




| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | OBWHID | (All) | | | |
| 2 | | | | | |
| 3 | | | OBITCL | | |
| 4 | OBSLNO | Data | AT | CS | NR |
| 5 | 20015 | Sum of OBLNAM | | 1766580.8 | -15839.2 |
| 6 | | Sum of OBCSTX | | 1580022.02 | 18402.72 |
| 7 | | Sum of MARGIN | | 186558.78 | -34241.92 |
| 8 | 20025 | Sum of OBLNAM | | 1697591.78 | 7559 |
| 9 | | Sum of OBCSTX | | 1434011.36 | 18942 |
| 10 | | Sum of MARGIN | | 263580.42 | -11383 |
| 11 | 20030 | Sum of OBLNAM | | 656978.54 | |
| 12 | | Sum of OBCSTX | | 565220.51 | |
| 13 | | Sum of MARGIN | | 91758.03 | |
| 14 | 20035 | Sum of OBLNAM | | 364909.09 | 2000 |
| 15 | | Sum of OBCSTX | | 303323.02 | 1040 |
| 16 | | Sum of MARGIN | | 61586.07 | 960 |
| 17 | 20054 | Sum of OBLNAM | | 1269818.59 | 19536 |
| 18 | | Sum of OBCSTX | | 1044871.11 | 17761 |
| 19 | | Sum of MARGIN | | 224947.48 | 1775 |
| 20 | 20055 | Sum of OBLNAM | | 2056087.64 | 32982.7 |
| 21 | | Sum of OBCSTX | | 1864795.06 | 29138.1 |
| 22 | | Sum of MARGIN | | 191292.58 | 3844.6 |
| 23 | 20062 | Sum of OBLNAM | | 961.5 | |

| | Grand Total |
|---|---|
| 4 | |
| 5 | 1750741.6 |
| 6 | 1598424.74 |
| 7 | 152316.86 |
| 8 | 1705150.78 |
| 9 | 1452953.36 |
| 10 | 252197.42 |
| 11 | 656978.54 |
| 12 | 565220.51 |
| 13 | 91758.03 |
| 14 | 366909.09 |
| 15 | 304363.02 |
| 16 | 62546.07 |
| 17 | 1289354.59 |
| 18 | 1062632.11 |
| 19 | 226722.48 |
| 20 | 2089070.34 |
| 21 | 1893933.16 |
| 22 | 195137.18 |
| 23 | 961.5 |

Decide where to put the table usually A1

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# Pivot Table Live

| CUSTOMER_CODE | AUCH | | | |
|---|---|---|---|---|
| | | | | |
| Billing | WORK_DATE | | | |
| Employee | Qtr1 | Qtr2 | Qtr3 | Grand Total |
| BSTEWART | $13,257.50 | $13,442.50 | $13,533.75 | $40,233.75 |
| CBARDY | $1,990.00 | $621.25 | $652.50 | $3,263.75 |
| GKNIAZ | | | $3,851.25 | $3,851.25 |
| JGOJCAJ | | | $6,337.50 | $6,337.50 |
| PCAMERON | $5,645.00 | $7,355.00 | $1,590.00 | $14,590.00 |
| Grand Total | $20,892.50 | $21,418.75 | $25,965.00 | $68,276.25 |

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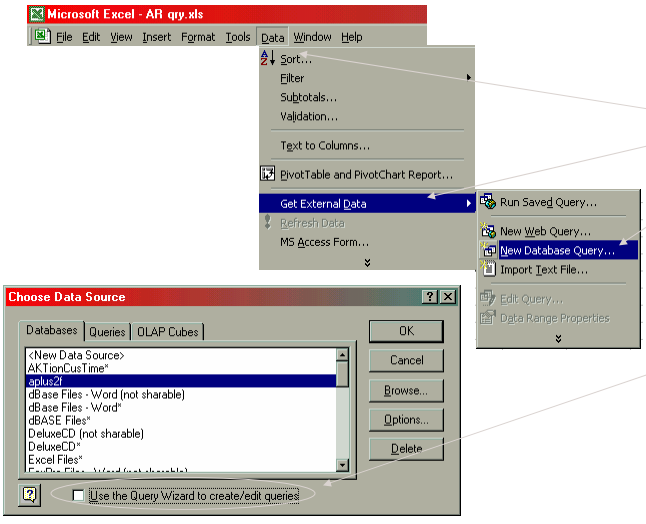
# Advanced MS-Query




To create an advanced query Choose from the "Data" menu "Get External Data" and then "New Database Query…"

Choose your Data Source Remove the check box from "Use the Query Wizard"

Press OK

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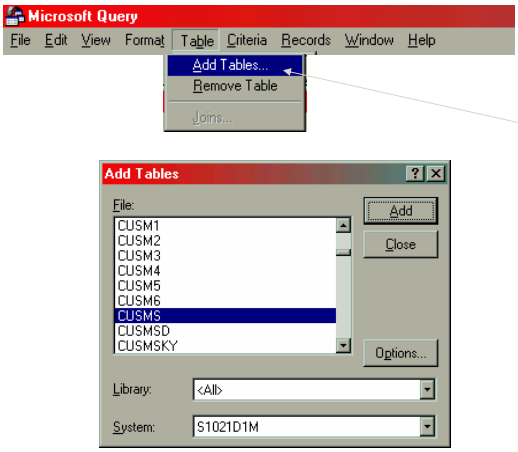
# MS-Query Add Tables




Select the tables you wish to add by clicking on “Add Tables” from the “Table” menu the choose the table(s) you want by selecting from the list.

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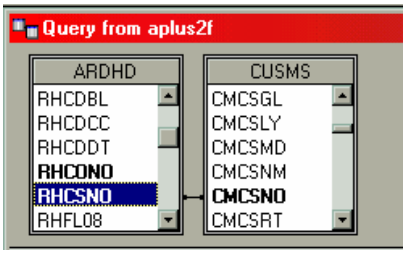
# MS-Query Link Tables

After you have selected your files you link them by click&hold on the key field in the first file and dragging it to the key field in the 2nd file.

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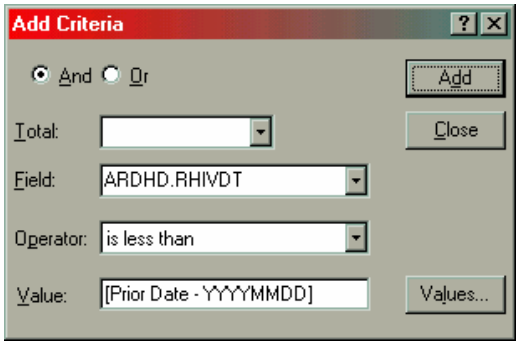
# MS-Query Prompted Criteria

Prompted criteria is enter by putting a description of what you want inside of [] square brackets.

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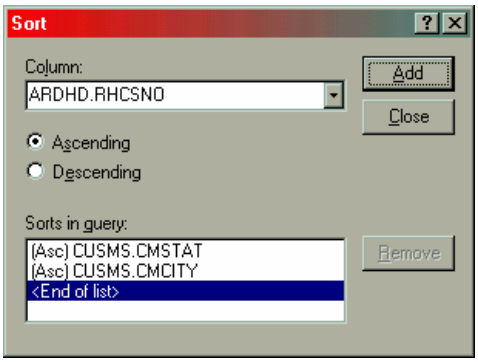
# MS-Query Sort

After you have dragged columns down to the display area. You can select the columns you want to sort by.

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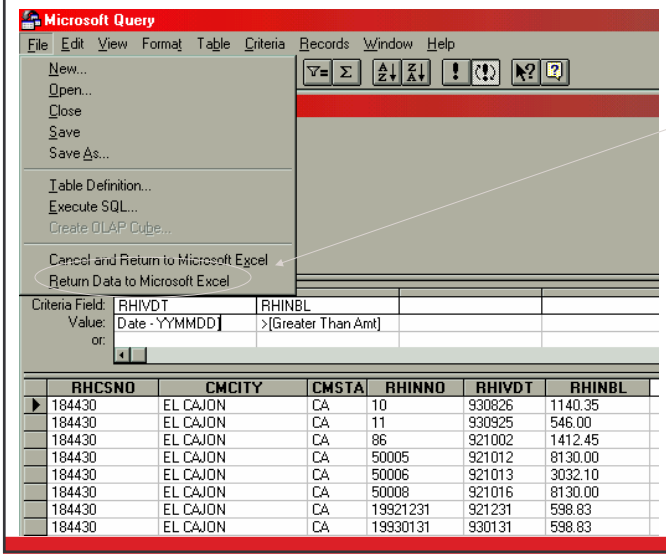
# MS-Query – return to Excel




Click on Return Data to Microsoft Excel when you have finished creating your query.

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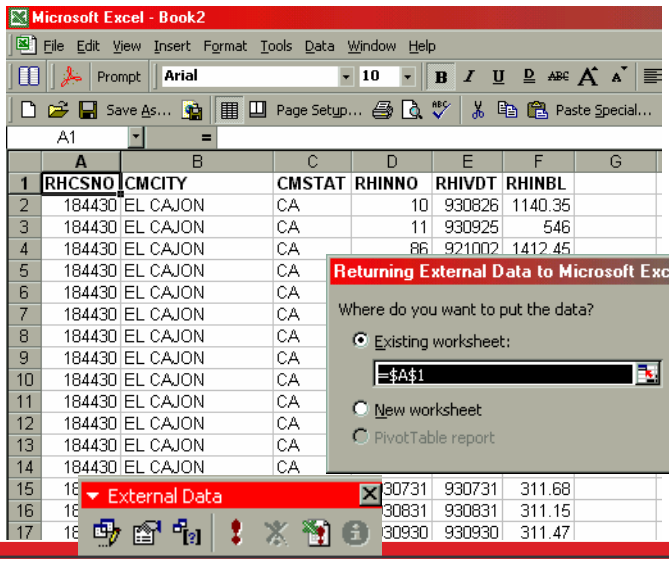
# MS-Query Data is returned




A few clicks and your data is in your spreadsheet

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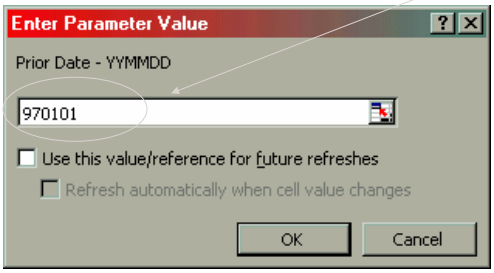
# MS-Query Refreshing Data




Now when you Press you will get the Prompt(s) before you get the data.

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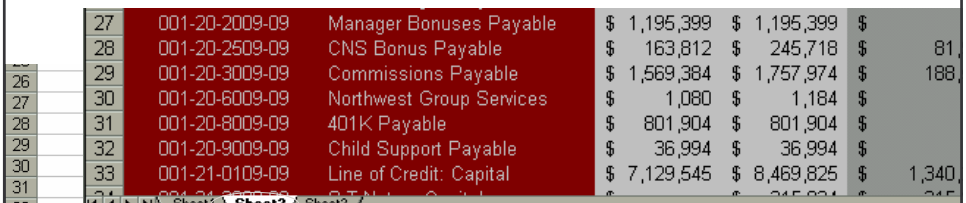
# Excel Formatting Tips



Use the Multiple sheets – at least 1 for raw down loaded data and 1 for formatted data which is copied from the raw data.

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# Foresight Technology Group

## Calling a PC Program from the iSeries

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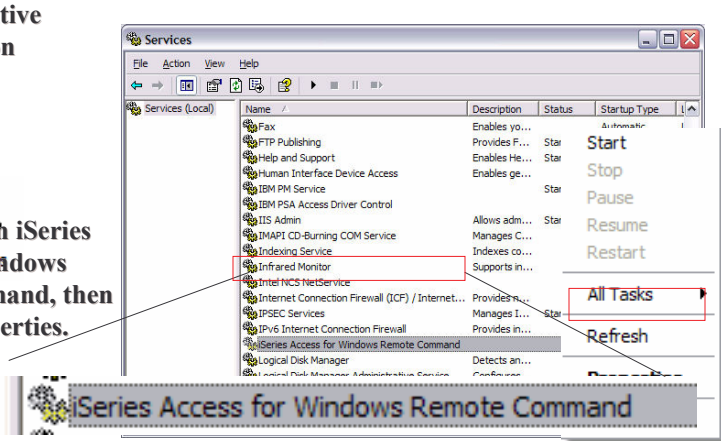
## Set the PC to be able to receive a call

**Go to the control panel, then administrative tools, the click on services**

**Right click on iSeries access for windows remote command, then click on properties.**

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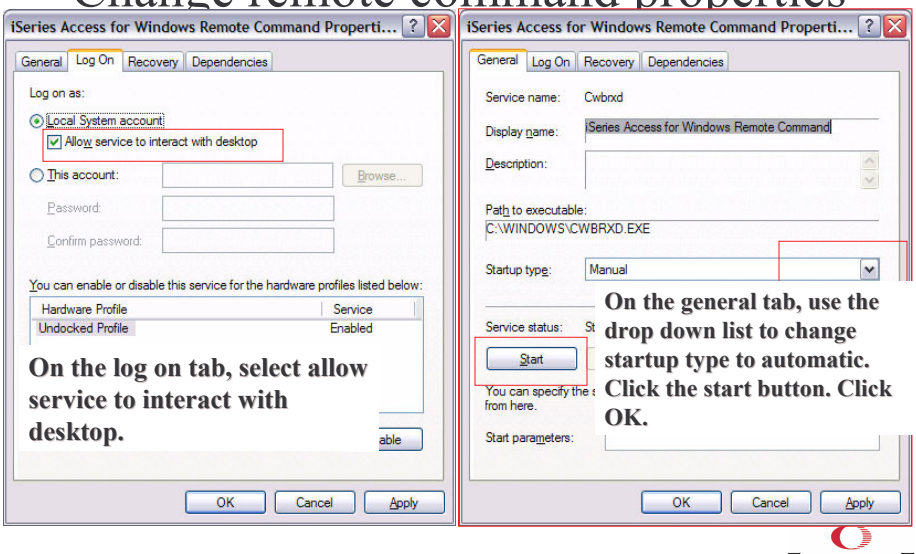
# Change remote command properties

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# Running a Pc Command from iSeries

1. Using the Windows "Start" menu, select **Start->Run...**
2. In the "Open" field type **cmd** (the Windows 2000 command prompt) and click **OK**.
3. You should see a command prompt window open on your desktop with a flashing cursor after C:\>.
4. Type **ipconfig** to get your network configuration information.
5. Locate the line **IP Address** and write the "dotted decimal" address here: _____ . _____ . _____ . _____
6. Start an emulation session.
7. Sign on to the iSeries with the user name and password from your worksheet.
8. From the OS/400 Main Menu, type **runrmtcmd** and hit **F4** to prompt the command.

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# Running the runrmtcmd

9. In the command field, enter (retaining the single quotes) **'C:\winnt\system32\write.exe'**. or 'C:\myexcel\cool.xlt'
10. In the remote location field, enter the IP Address you wrote down in step 5. Include the decimal points between the digits. Your IP Address should look something like 10.10.10.50, although the numbers will be different.
11. In the "Type" field, enter ***IP** to use TCP/IP.
12. In the "Remote user ID" field, enter the PC user name.
13. Hit the **Page Down** key to see more options.
14. In the "Remote password" field, enter the PC password. The password is case sensitive!
15. Hit the **Enter** key to run the remote command. The WordPad application should have started on your PC.

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# Using office to document iSeries DB

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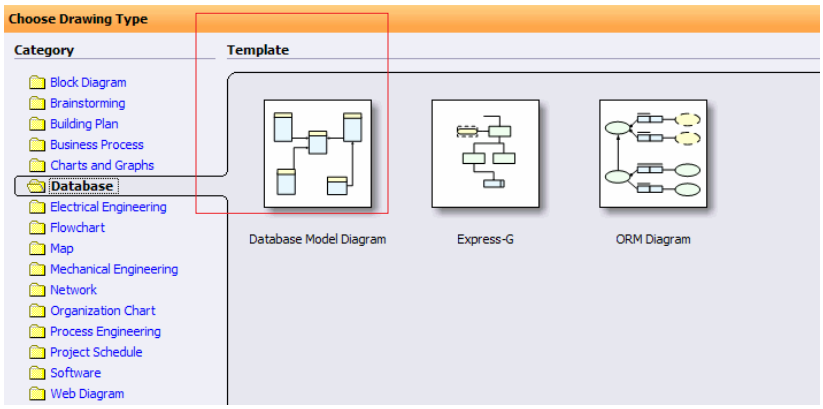
# Visio DB Models

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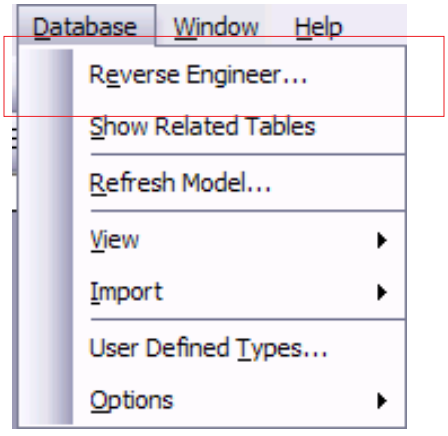
# Reverse Engineer

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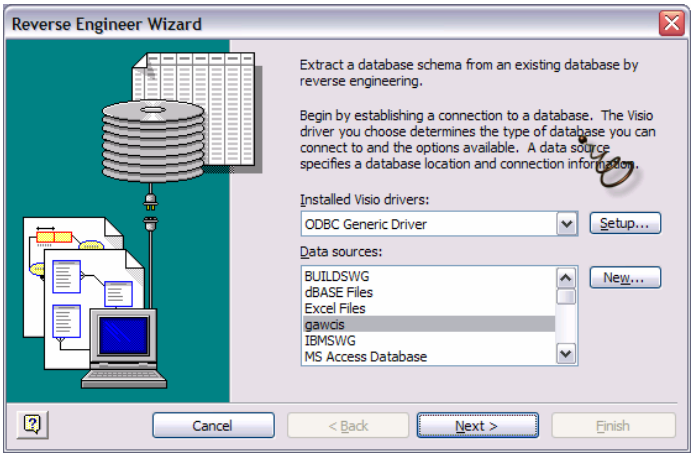
# Connect to 400

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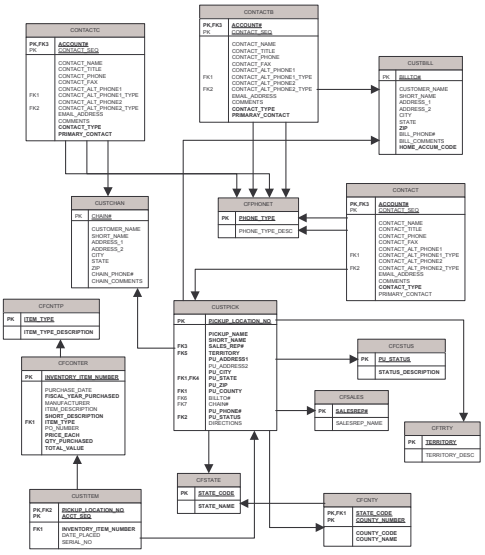
# Build chart



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# Using Excel with "SYSCOLUMNS"

| Table | | Column | Short | Type | Ln | Num | Dec | Null | Default | Text |
|---|---|---|---|---|---|---|---|---|---|---|
| **TABLE_NAME Total** | | | | | **0** | | | | | **0** |
| CFCNTTP | 1 | ITEM_TYPE | ITEMTP | CHAR | 2 | | | N | | Item Type Code (CF) |
| CFCNTTP | 2 | ITEM_TYPE_DESCRIPTION | ITEMTD | CHAR | 30 | | | N | ' ' | Item type Description |
| **CFCNTTP Total** | | | | | 32 | | | | | 0 |
| CFCNTY | 1 | STATE_CODE | STATE | CHAR | 2 | | | N | | State |
| CFCNTY | 2 | COUNTY_NUMBER | COUNTY# | NUMERIC | 3 | 3 | 0 | N | | County_Number |
| CFCNTY | 3 | COUNTY_CODE | COUNTYC | CHAR | 3 | | | N | | County_Code |
| CFCNTY | 4 | COUNTY_NAME | COUNTYN | CHAR | 20 | | | N | | County_Name |
| **CFCNTY Total** | | | | | 28 | | | | | 0 |
| CFCOMNT | 1 | COMMENT_CODE | COMCDE | CHAR | 2 | | | N | ' ' | Comment Code1 |
| CFCOMNT | 2 | COMMENT | COMENT | CHAR | 37 | | | N | ' ' | Comment |
| **CFCOMNT Total** | | | | | 39 | | | | | 0 |
| CFCONTER | 1 | INVENTORY_ITEM_NUMBER | ITEM# | SMALLINT | 2 | 4 | 0 | N | 0 | Item Number |
| CFCONTER | 2 | PURCHASE_DATE | PDATE | DATE | 4 | | | Y | NULL | Date Purchased |
| CFCONTER | 3 | FISCAL_YEAR_PURCHASED | FYEAR | DECIMAL | 4 | 4 | 0 | N | 0 | Fiscal_Year Purchased |
| CFCONTER | 4 | MANUFACTURER | MFG | CHAR | 20 | | | Y | NULL | Manufacturier |
| CFCONTER | 5 | ITEM_DESCRIPTION | ITEMD | CHAR | 50 | | | Y | NULL | Item Description |
| CFCONTER | 6 | SHORT_DESCRIPTION | ITEMS | CHAR | 10 | | | N | ' ' | Item Description |
| CFCONTER | 7 | ITEM_TYPE | ITMTYP | CHAR | 2 | | | N | ' ' | Item Type Code (CF) |
| CFCONTER | 8 | PO_NUMBER | PONUM | CHAR | 20 | | | Y | NULL | Purchase Order Number |
| CFCONTER | 9 | PRICE_EACH | PRICE | DECIMAL | 9 | 9 | 2 | N | | Price |
| CFCONTER | 10 | QTY_PURCHASED | QTY | SMALLINT | 2 | 4 | 0 | N | 0 | Quantity |
| CFCONTER | 11 | TOTAL_VALUE | TPRICE | DECIMAL | 11 | 11 | 2 | N | 0 | Total Price |
| **CFCONTER Total** | | | | | 134 | | | | | 0 |
| CFCSTUS | 1 | PU_STATUS | PUSTS | CHAR | 2 | | | N | | PU Status |
| CFCSTUS | 2 | STATUS_DESCRIPTION | PUSTSD | CHAR | 20 | | | N | | PU Status Description |
| **CFCSTUS Total** | | | | | 22 | | | | | 0 |
| CFDRIVER | 1 | DRIVER_CODE | DRVCOD | CHAR | 3 | | | N | | Driver |
| CFDRIVER | 2 | DRIVER_NAME | DRVNAM | CHAR | 30 | | | N | ' ' | Driver's Name |
| CFDRIVER | 3 | DRIVER_STATUS | DSTATS | CHAR | 1 | | | N | 'A' | Driver Status |
| CFDRIVER | 4 | REPORT_SECTION | RPTSEC | CHAR | 2 | | | N | '01' | Report Section |
| CFDRIVER | 5 | DRIVER_INITIALS | DRVINT | CHAR | 3 | | | N | | Drivers Initials |
| CFDRIVER | 6 | DRIVERS_SORT_NAME | DRVSORT | CHAR | 5 | | | N | | Drivers Sort |
| CFDRIVER | 7 | LEADMAN | LEADM | CHAR | 1 | | | N | 'N' | Leadman |
| CFDRIVER | 8 | DRIVERS_LIC_NUM | DRVLIC | CHAR | 15 | | | Y | NULL | Drivers_Lic_Num |
| CFDRIVER | 9 | CELL_PHONE_NUMBER | DCELL | CHAR | 10 | | | Y | NULL | Drivers_Cell_Phone |
| **CFDRIVER Total** | | | | | 70 | | | | | 0 |
| CFITEM | 1 | ITEM_NUMBER | ITEMNO | DECIMAL | 5 | 5 | 0 | N | | Item Number |
| CFITEM | 2 | ITEM_NUMBER_DESCR | ITMDSC | CHAR | 30 | | | N | ' ' | Item Number Description |
| CFITEM | 3 | ITEM_UOFM | IUOFM | CHAR | 2 | | | N | 'CW' | Unit of Measure |
| **CFITEM Total** | | | | | 37 | | | | | 0 |
| CFIUOFM | 1 | UNIT_OF_MEASURE | UOFM | CHAR | 2 | | | N | | Unit of Measure |
| CFIUOFM | 2 | UOFM_DESCRIPTION | UOFMDS | CHAR | 30 | | | N | ' ' | Unit Of Measure Description |

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# iSeries Access for the Web Database Tools

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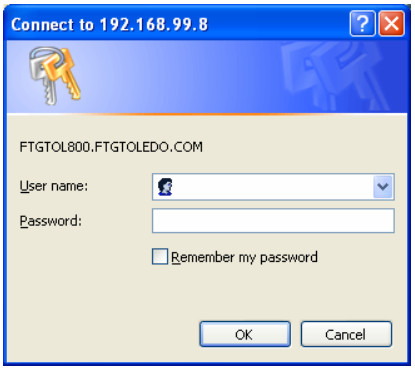
# Starting iSeries Access for the Web

**http://192.168.99.8:9999/webaccess/iWAMain**

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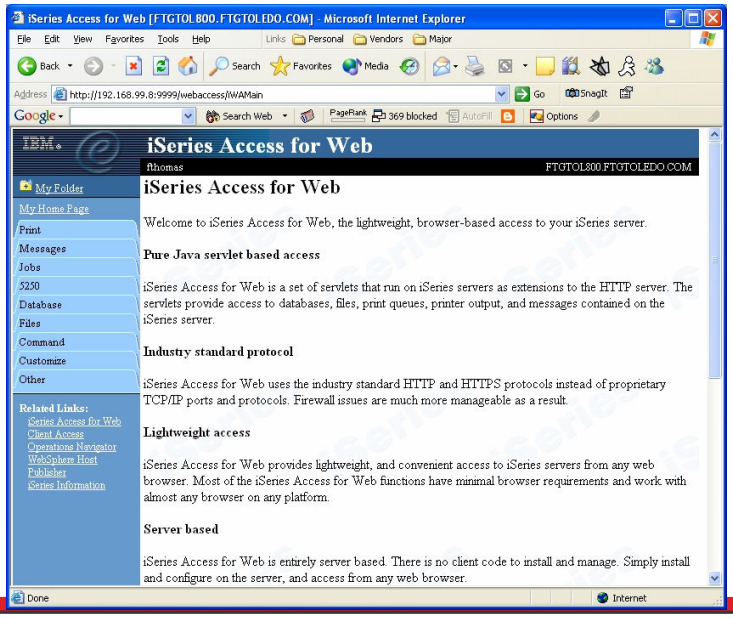
# IAW Main Page

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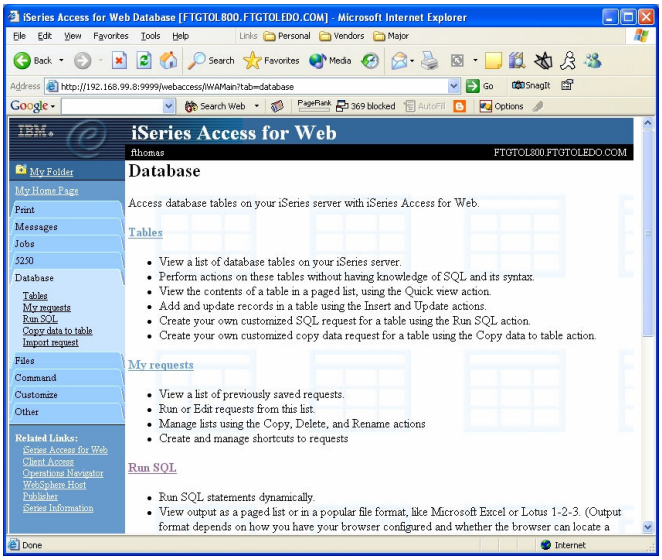
# IAW database page

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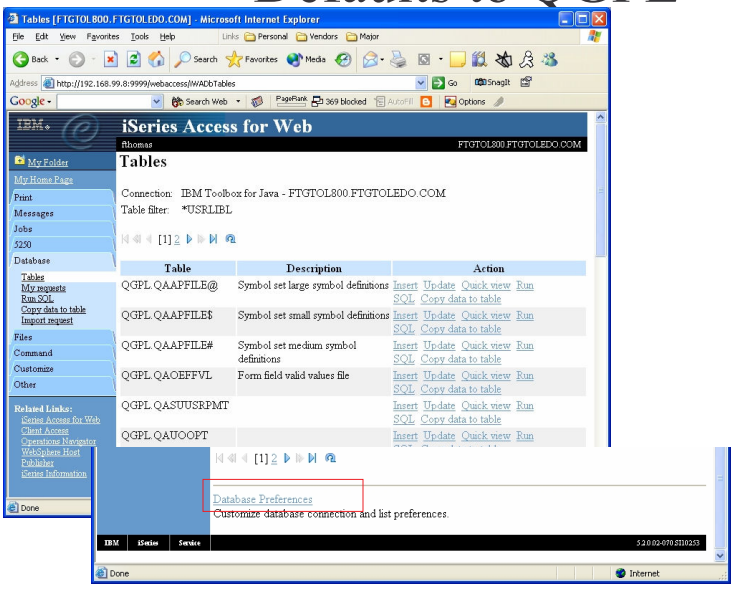
# Defaults to QGPL

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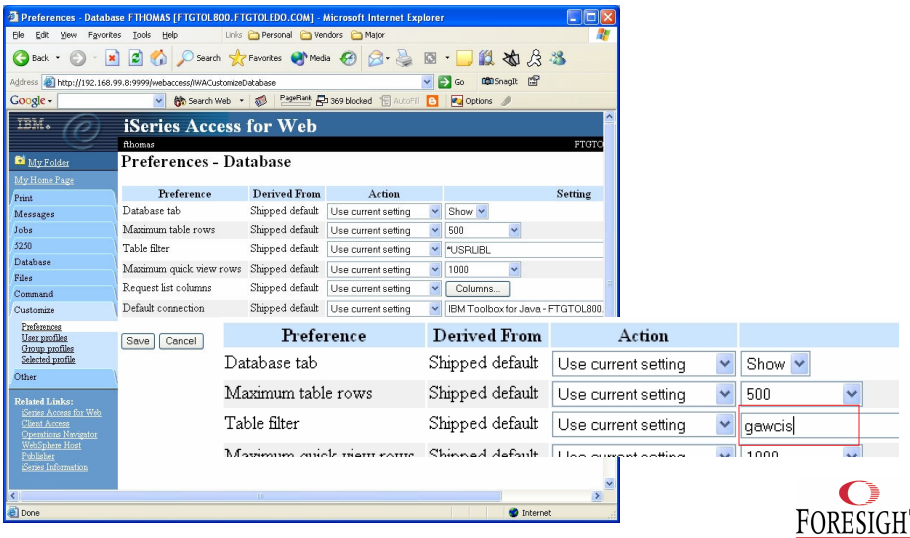
# Change Preferences

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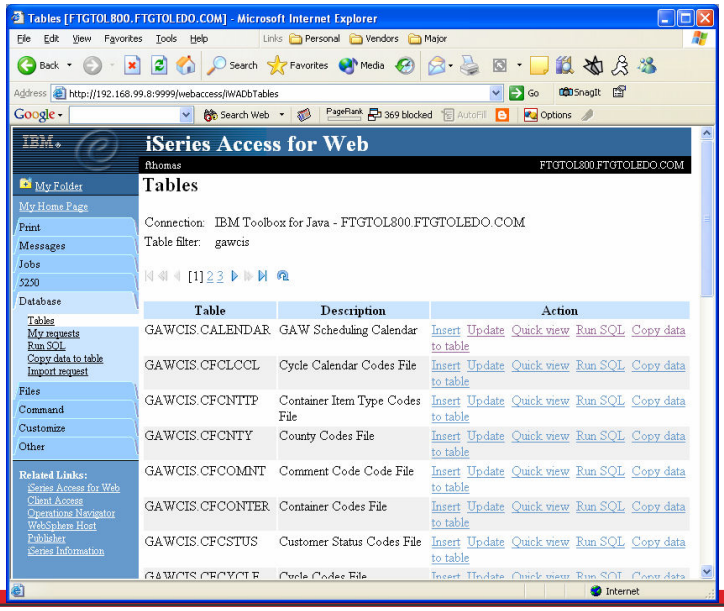
# List of Tables in Desired Library(s)

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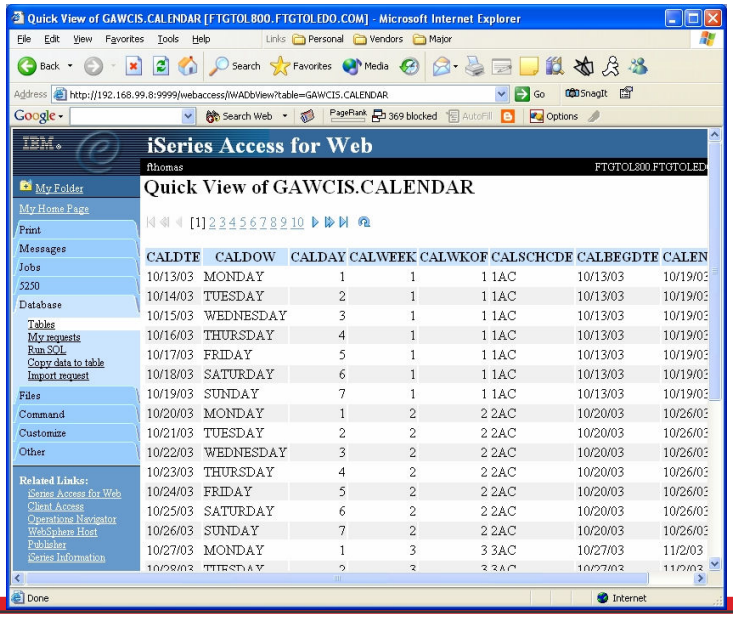
# View data in file

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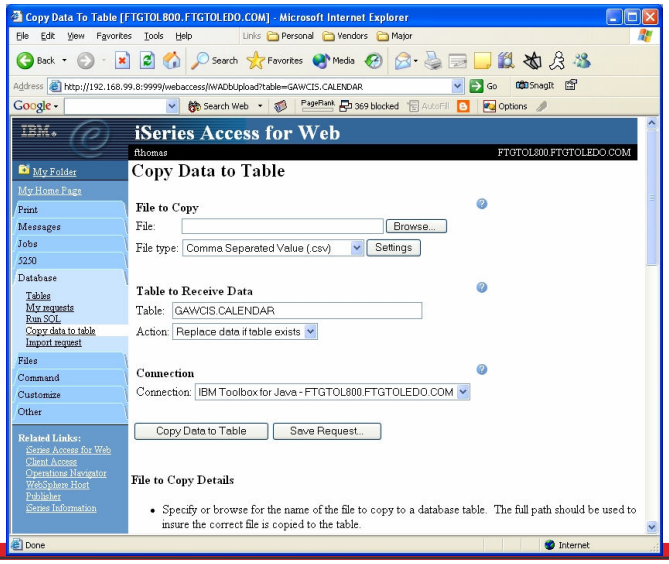
# Copy data to pc file

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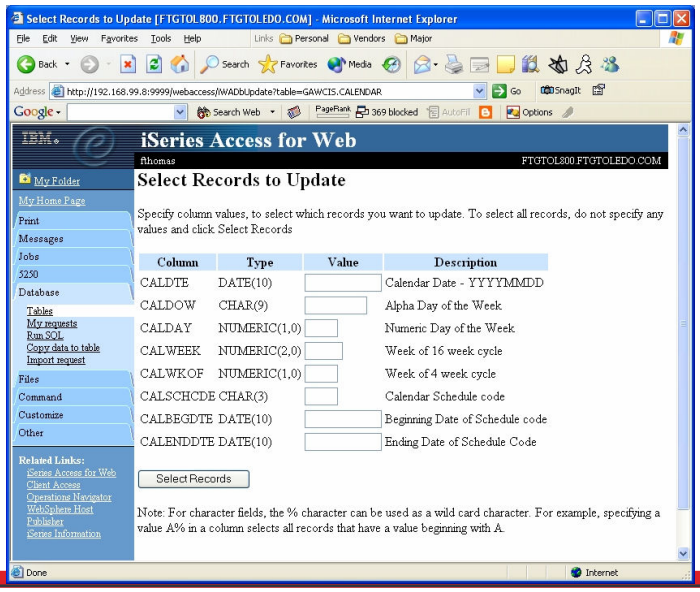
# SQL Based Update

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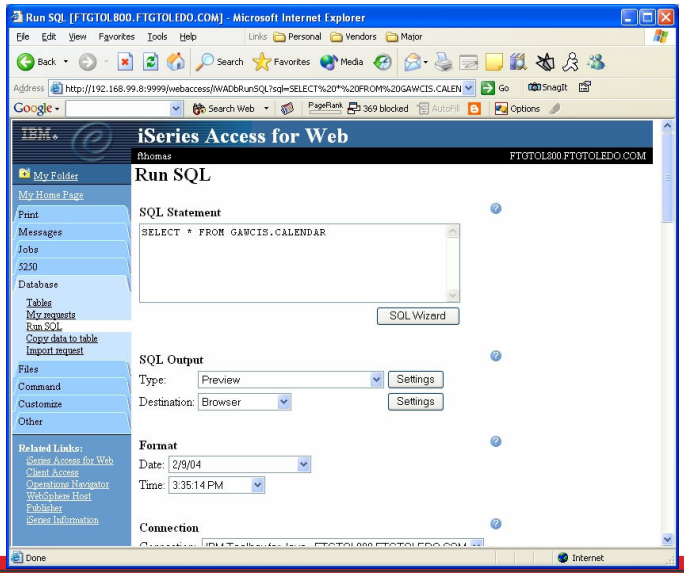
# Type SQL Statement

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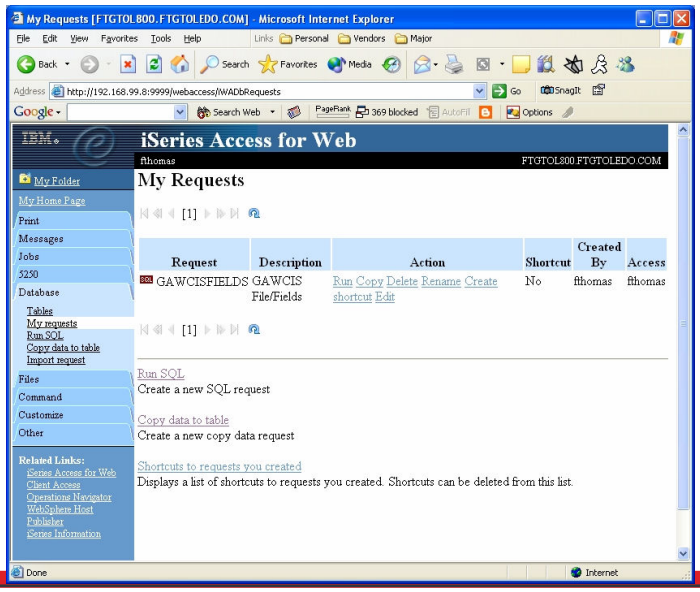
# Work with Request

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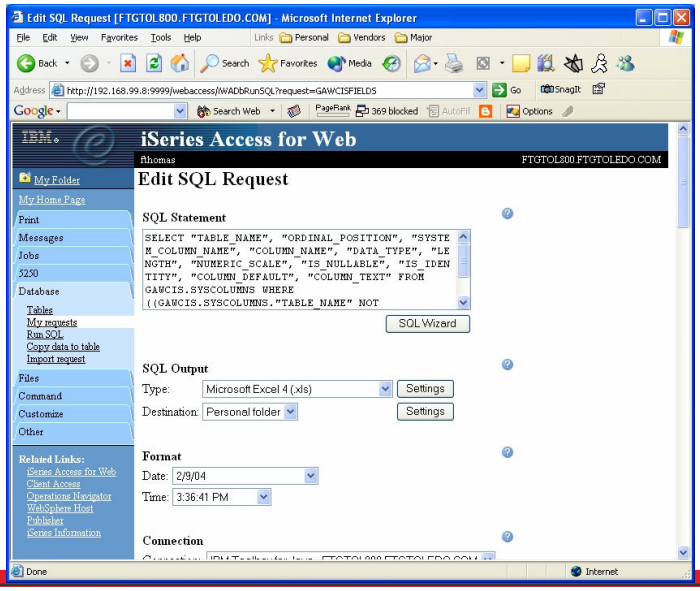
# Create a Request

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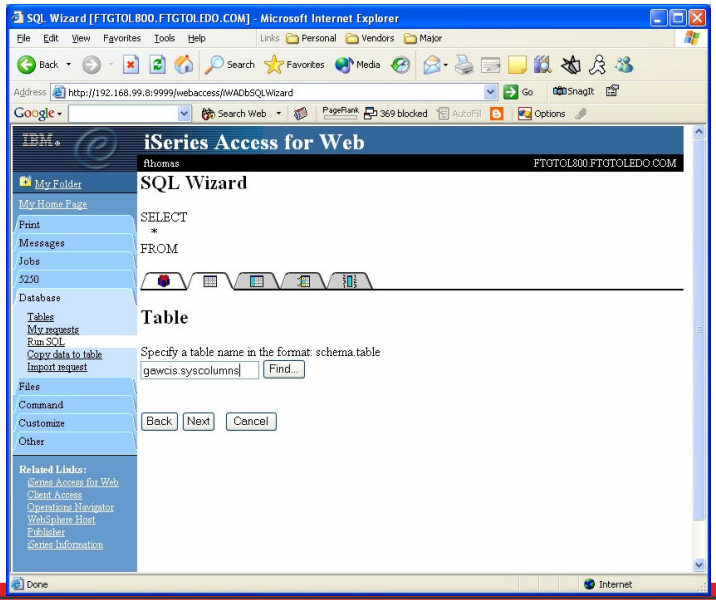
# SQL Wizard

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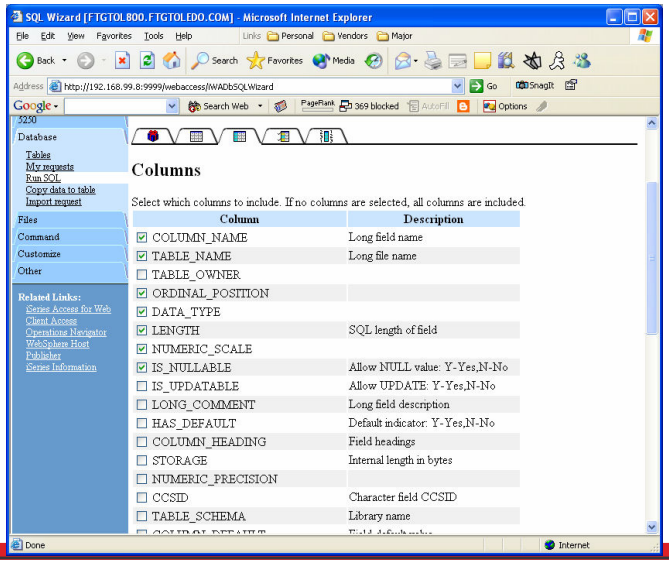
# Columns

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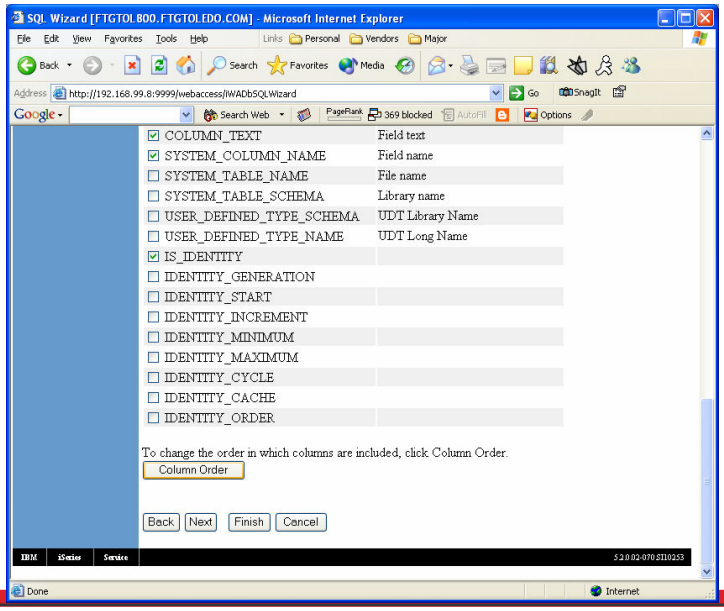
# Arrange Columns

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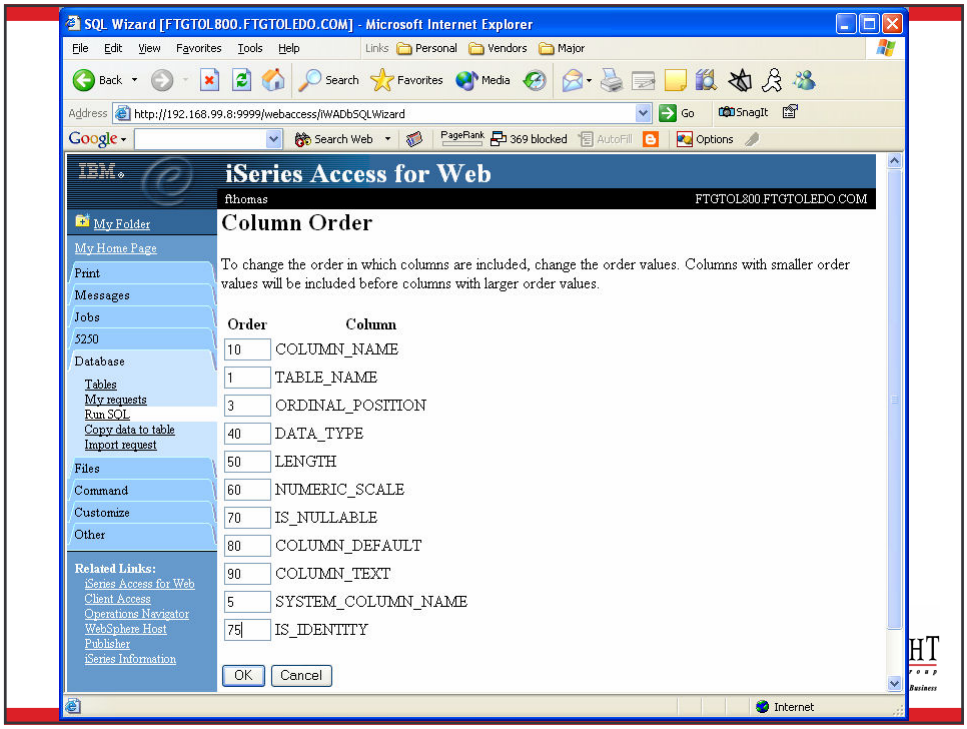
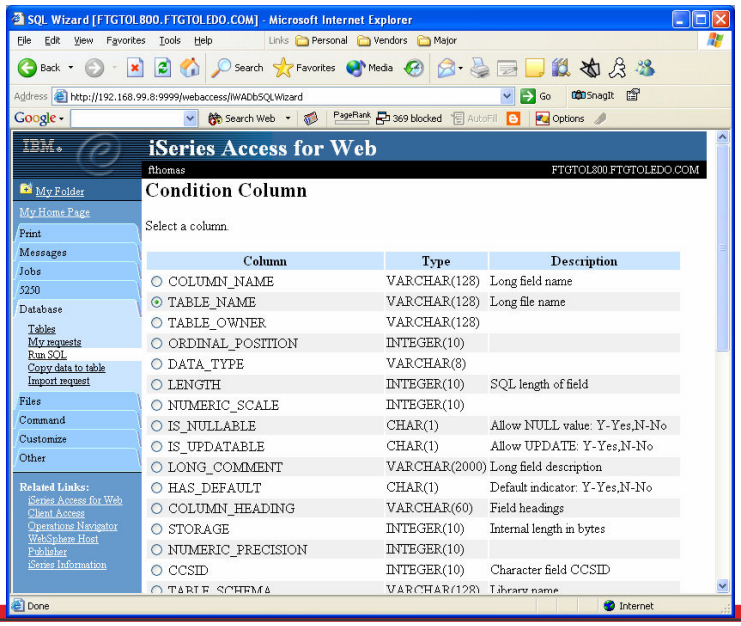


# Select Rows

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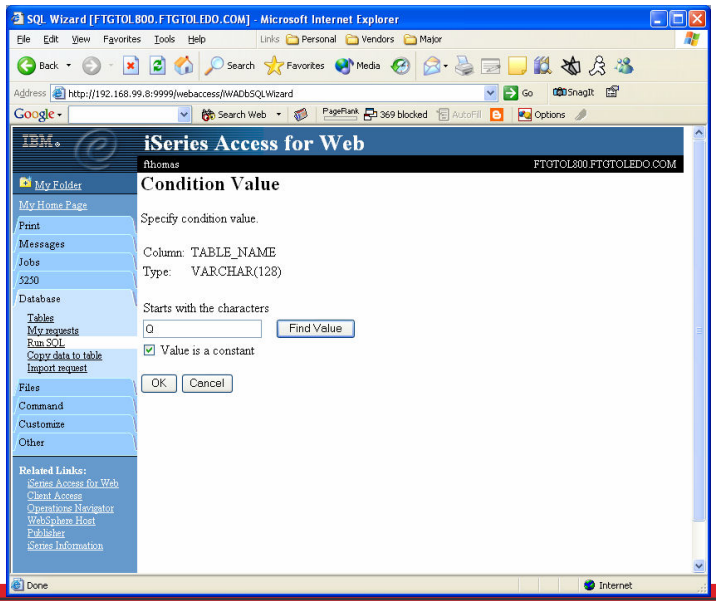
# Select Rows

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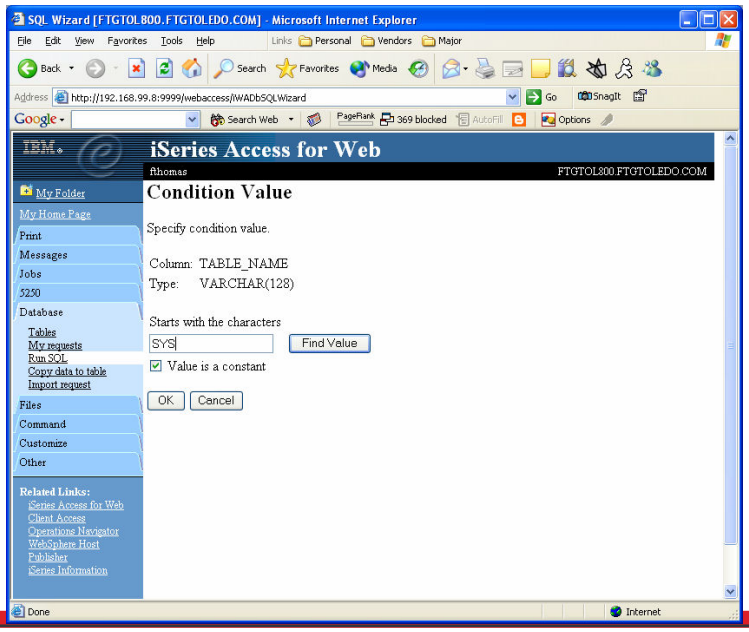
# Select Rows

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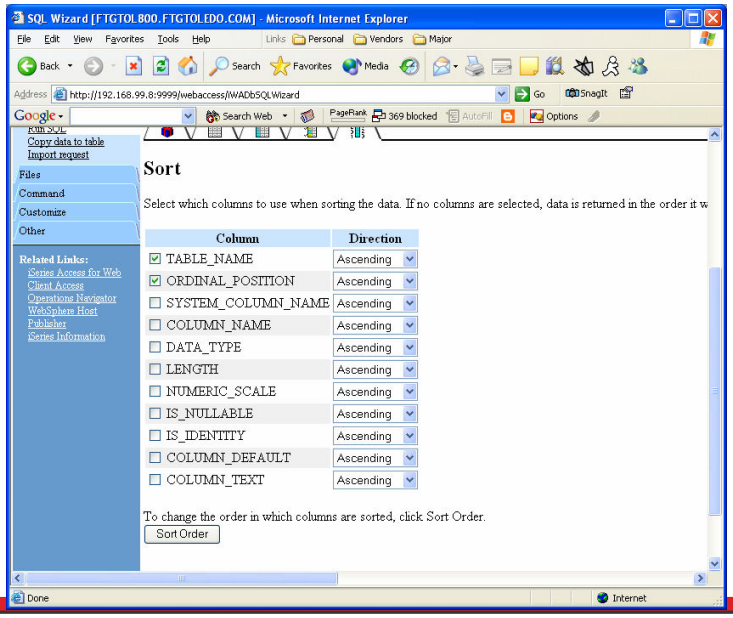
# Sort

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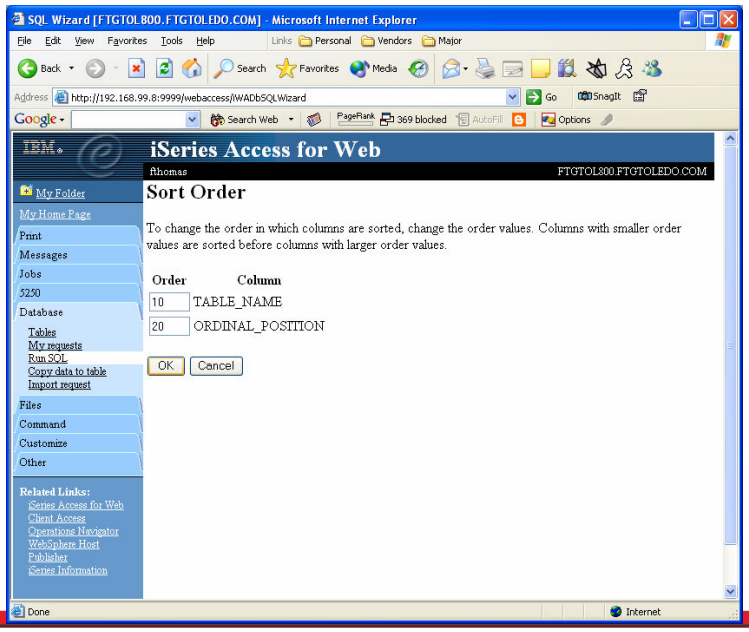
# Sort

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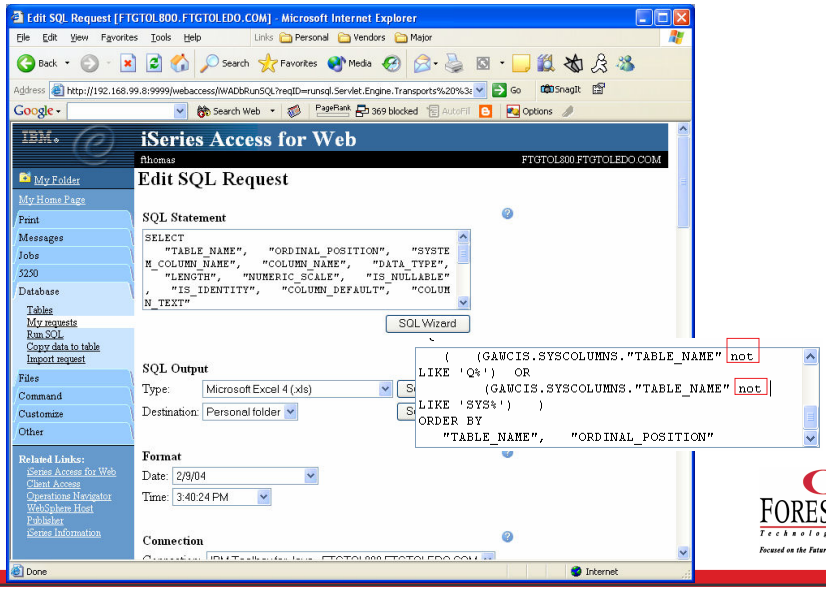
# Edit SQL

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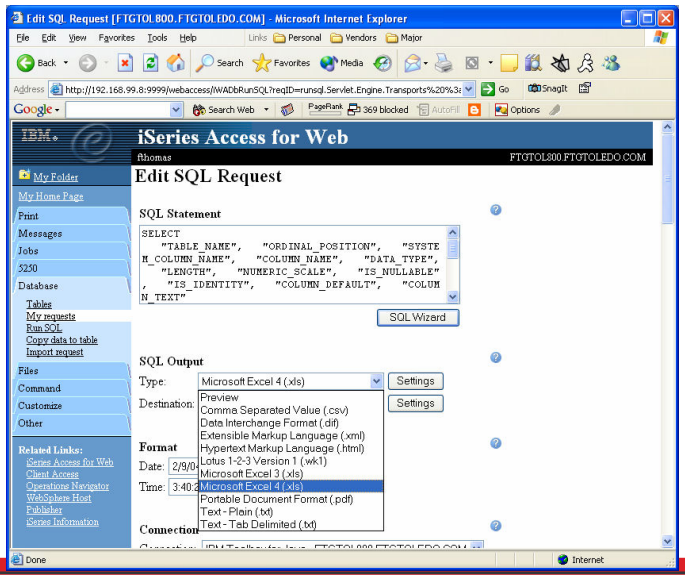
# Type of output

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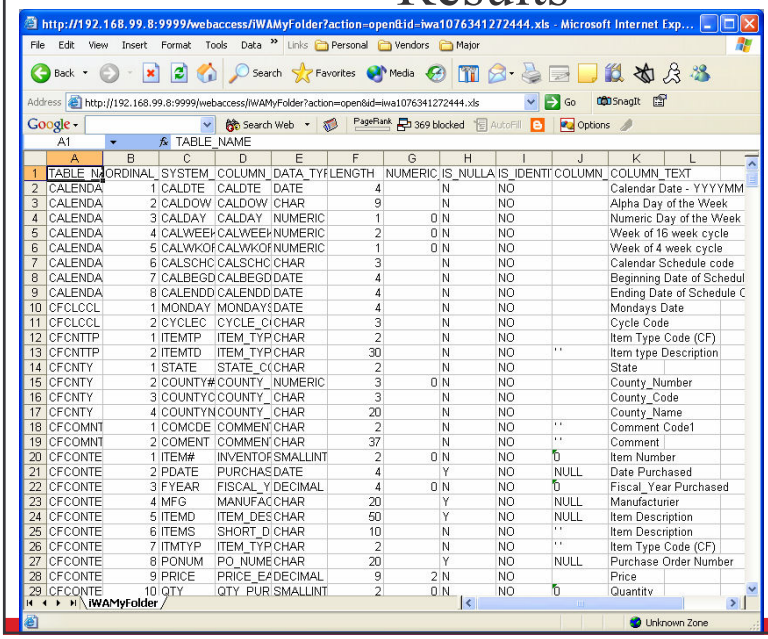
# Results




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TABLE_NA | ORDINAL_ | SYSTEM_ | COLUMN_ | DATA_TYP | LENGTH | NUMERIC_ | IS_NULLA | IS_IDENTI | COLUMN_ | COLUMN_TEXT | |
| 2 | CALENDA | 1 | CALDTE | CALDTE | DATE | 4 | | N | NO | | Calendar Date - YYYYMM | |
| 3 | CALENDA | 2 | CALDOW | CALDOW | CHAR | 9 | | N | NO | | Alpha Day of the Week | |
| 4 | CALENDA | 3 | CALDAY | CALDAY | NUMERIC | 1 | 0 | N | NO | | Numeric Day of the Week | |
| 5 | CALENDA | 4 | CALWEEK | CALWEEK | NUMERIC | 2 | 0 | N | NO | | Week of 16 week cycle | |
| 6 | CALENDA | 5 | CALWKOF | CALWKOF | NUMERIC | 1 | 0 | N | NO | | Week of 4 week cycle | |
| 7 | CALENDA | 6 | CALSCHC | CALSCHC | CHAR | 3 | | N | NO | | Calendar Schedule code | |
| 8 | CALENDA | 7 | CALBEGD | CALBEGD | DATE | 4 | | N | NO | | Beginning Date of Schedul | |
| 9 | CALENDA | 8 | CALENDD | CALENDD | DATE | 4 | | N | NO | | Ending Date of Schedule C | |
| 10 | CFCLCCL | 1 | MONDAY | MONDAYS | DATE | 4 | | N | NO | | Mondays Date | |
| 11 | CFCLCCL | 2 | CYCLEC | CYCLE_CI | CHAR | 3 | | N | NO | | Cycle Code | |
| 12 | CFCNTTP | 1 | ITEMTP | ITEM_TYP | CHAR | 2 | | N | NO | | Item Type Code (CF) | |
| 13 | CFCNTTP | 2 | ITEMTD | ITEM_TYP | CHAR | 30 | | N | NO | '' | Item type Description | |
| 14 | CFCNTY | 1 | STATE | STATE_C( | CHAR | 2 | | N | NO | | State | |
| 15 | CFCNTY | 2 | COUNTY# | COUNTY_ | NUMERIC | 3 | 0 | N | NO | | County_Number | |
| 16 | CFCNTY | 3 | COUNTYC | COUNTY_ | CHAR | 3 | | N | NO | | County_Code | |
| 17 | CFCNTY | 4 | COUNTYN | COUNTY_ | CHAR | 20 | | N | NO | | County_Name | |
| 18 | CFCOMNT | 1 | COMCDE | COMMENT | CHAR | 2 | | N | NO | '' | Comment Code1 | |
| 19 | CFCOMNT | 2 | COMENT | COMMENT | CHAR | 37 | | N | NO | '' | Comment | |
| 20 | CFCONTE | 1 | ITEM# | INVENTOF | SMALLINT | 2 | 0 | N | NO | 0 | Item Number | |
| 21 | CFCONTE | 2 | PDATE | PURCHAS | DATE | 4 | | Y | NO | NULL | Date Purchased | |
| 22 | CFCONTE | 3 | FYEAR | FISCAL_Y | DECIMAL | 4 | 0 | N | NO | 0 | Fiscal_Year Purchased | |
| 23 | CFCONTE | 4 | MFG | MANUFAC | CHAR | 20 | | Y | NO | NULL | Manufacturer | |
| 24 | CFCONTE | 5 | ITEMD | ITEM_DES | CHAR | 50 | | Y | NO | NULL | Item Description | |
| 25 | CFCONTE | 6 | ITEMS | SHORT_D | CHAR | 10 | | N | NO | '' | Item Description | |
| 26 | CFCONTE | 7 | ITMTYP | ITEM_TYP | CHAR | 2 | | N | NO | '' | Item Type Code (CF) | |
| 27 | CFCONTE | 8 | PONUM | PO_NUME | CHAR | 20 | | Y | NO | NULL | Purchase Order Number | |
| 28 | CFCONTE | 9 | PRICE | PRICE_EA | DECIMAL | 9 | 2 | N | NO | | Price | |
| 29 | CFCONTE | 10 | QTY | QTY_PUR | SMALLINT | 2 | 0 | N | NO | 0 | Quantity | |

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# Foresight Technology Group

## WebSphere Studio Client Database Tools

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## WebSphere is…

- "A universal internet software platform that can support any kind of e-business, large or small. Offering advanced, end-to-end, integrated e-commerce features that seamlessly link to your existing systems, it can adapt as your goals, strategies, and target markets change - providing the ideal base for building or expanding your business on the web."
- **The marketing term used for IBM's portfolio of software for e-business.**

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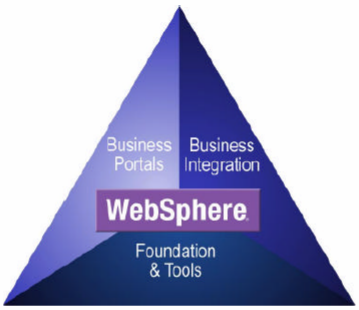
# WebSphere: Foundation for e-business

***WebSphere Portal***
Access widespread and diverse data sources from anywhere, anytime, by anyone you allow

***WebSphere Commerce***
Powerful sell-side solutions to handle the broad range of challenges encountered in B2B and B2C environments




***WebSphere MQ***
Exchange information among more than 35 platforms with assured delivery

***WebSphere Business Integration***
Realize the benefits of end-to-end integration through five core capabilities: model, integrate, connect, monitor and manage

***WebSphere Studio***
Professional development tools based on a common workbench technology

***WebSphere Application Server***
High performance and extremely scalable transaction engine for dynamic e-business applications

***WebSphere Host Publisher & HATS***
Quick and easy tools to implement e-business by extending mission critical 5250 applications to Web

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# WebSphere Application Server

- IBM WebSphere Application Server is IBM's Java™ based Web application server that helps you deploy and manage Web applications, ranging from simple Web sites to powerful e-business solutions. WebSphere Application Server allows you to take advantage of the productivity, performance advantages, and portability that Java™ provides for dynamic Web sites.
- Version 5.0:
  - Base Edition
  - Network Deployment Edition
  - Express
- Version 4.0:
  - Advanced Edition
  - Advanced Single Server Edition
- Version 3.5:
  - Advanced Edition
  - Standard Edition

**Really cool!**

**Cost too much.**

**Can't get it anymore, did not work all that well.**

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# WebSphere Studio Client for iSeries

- IBM WebSphere® Development Studio Client for iSeries™ (Development Studio Client) V5.1 inherits and extends WebSphere Studio Site Developer (Site Developer) V5.1 to deliver an integrated development environment (IDE) and tools for developing Java, Web, Web services, client/server, and iSeries server applications. The iSeries enhancements to Site Developer V5.1 make it easy to create, test, deploy, and maintain sophisticated e-business applications with little Java, Web, or Web-service programming.
- IBM WebSphere Development Studio Client Advanced Edition for iSeries (Development Studio Client Advanced Edition) V5.1 inherits the improved Web, Enterprise Java Bean (EJB), and J2EE development capabilities from WebSphere Studio Application Developer (Application Developer) V5.1. It also provides support that makes it easy to integrate Web and Web-enabled applications using the WebFacing Tool into the IBM WebSphere Portal server.

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# iSeries Access for Web

- offers browser-based access to iSeries servers. iSeries Access for Web enables end users to leverage business information, applications, and resources across an enterprise by extending the iSeries resources to the client desktop through a web browser.
- iSeries Access for Web...
  - is server based.
  - is implemented using Java Servlet technology.
  - uses industry standard protocols - HTTP, HTTPS and HTML.
  - is lightweight, requiring only a browser on the client.
  - runs batch commands, provides access to database, integrated file system, printers, printer output, and messages, and a 5250 interface.
- iSeries Access for Web (licensed program number 5722-XH2) is delivered with the V5R2 iSeries Access Family (5722-XW1). V5R2 iSeries Access for Web runs on:
  - WebSphere Application Server (WAS) - Express for iSeries
  - WAS V5.0 for iSeries ("Base Edition")
  - WAS V4 Advanced Edition (AE) for iSeries, with latest PTFs
  - WAS V4 Advanced Edition Single Server (AEs) for iSeries
  - Apache Software Foundation's Jakarta Tomcat (included with the IBM HTTP Server)

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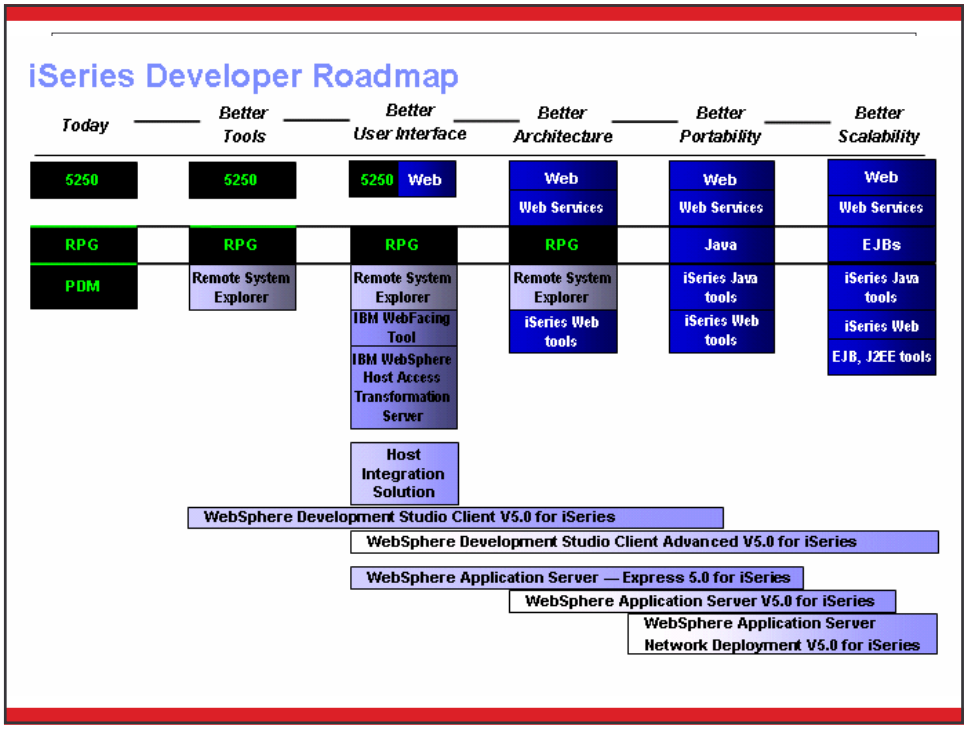


# Install WebSphere Studio Client for iSeries

- IBM Requirements for PC
- **Software**
  - **Windows 2000**(Service Pack 2 or higher)**, Windows XP**(Service Pack 1, or higher)
  - Microsoft Internet Explorer 5.5 Service Pack 1 or higher
  - JRE 1.3.0 or higher.
- **Memory**
  - Server Development: Intel Pentium II processor, 256 MB RAM minimum
  - Java/Web/WebFacing Development: Intel Pentium II processor minimum (Pentium III 500 Mhz, or higher, recommended), 512 MB RAM minimum (768 MB RAM recommended for running or debugging in Unit Test Environment).
- **Disk**
  - 1650 MB hard drive space
  - Additional disk space is required for your development resources.
  - Additional 700 MB of temporary hard drive space needed during product installation.
- **Other**
  - VGA graphics card (800 x 600, or higher, recommended, 256 colors)
  - CD-ROM or DVD drive
  - Mouse or other pointing device
- Franks Suggestions
  - Use Version 5.1 of WSCi
  - PC – 1GB of Memory
  - Monitor – resolution of 1400 X1050 or higher

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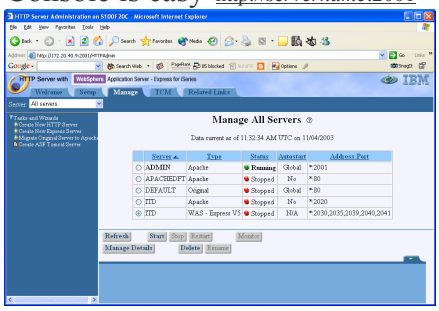
## Install WebSphere Application Server -Express

- Order Group PTFs first http://www-1.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/express/services/serviceexp50_v5r2.html
- Order Other PTFs (WDSCi) http://www-1.ibm.com/support/docview.wss?rs=715&context=SSZND2&q=&uid=swg21044473
- Use http://publib.boulder.ibm.com/iseries/v5r2/ic2924/index.htm?info/rzamy/50/express.htm to help with install(easy) and Configuration (much better than it used to be) Console is easy http://*servername*:2001

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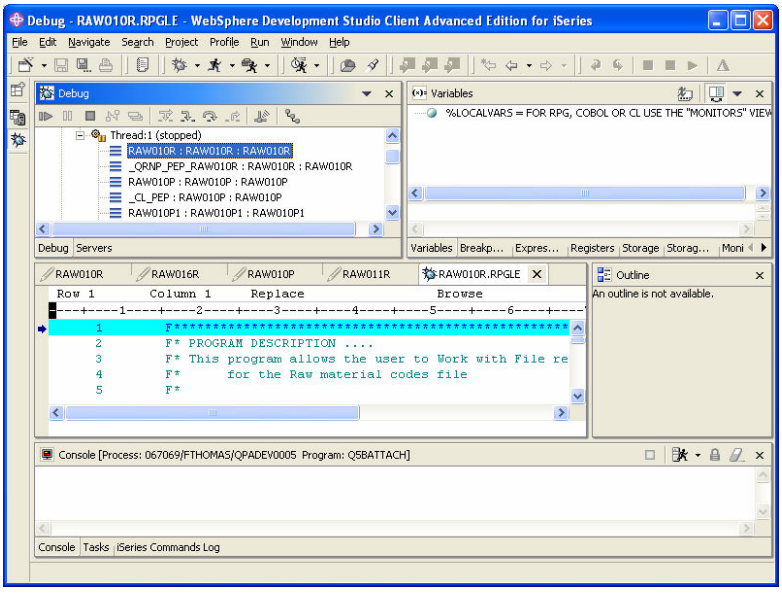
## Start Using RSE

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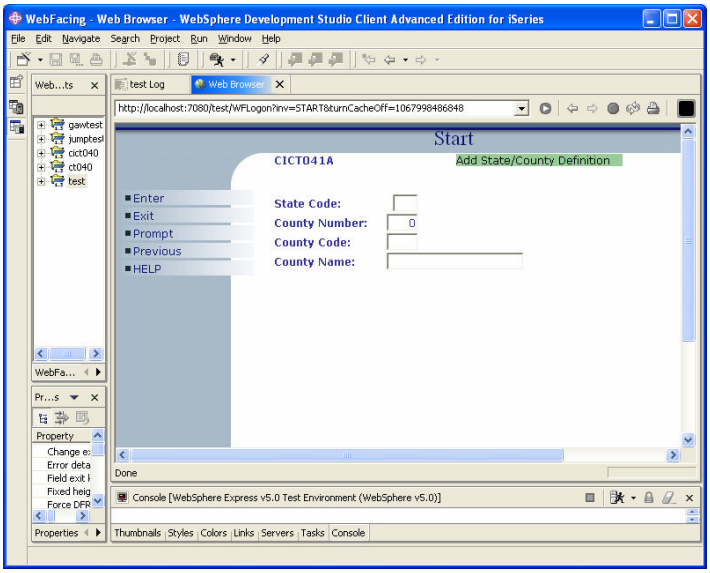
# Create a WebFaced Application

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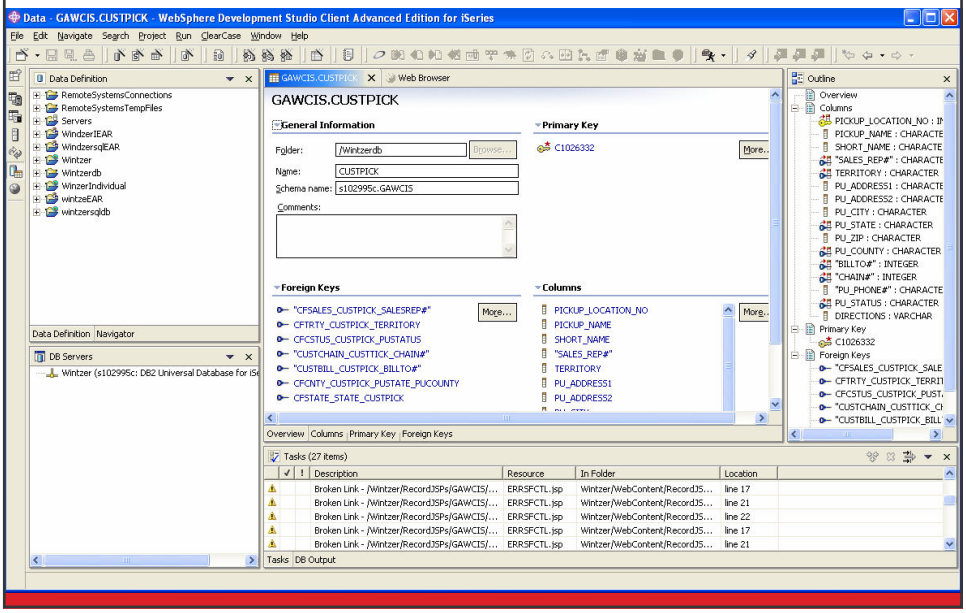
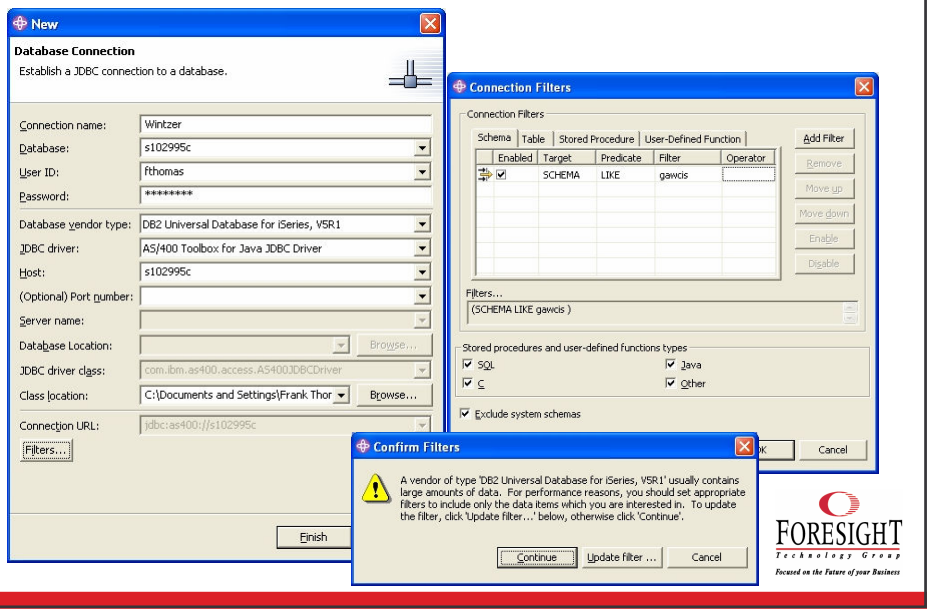
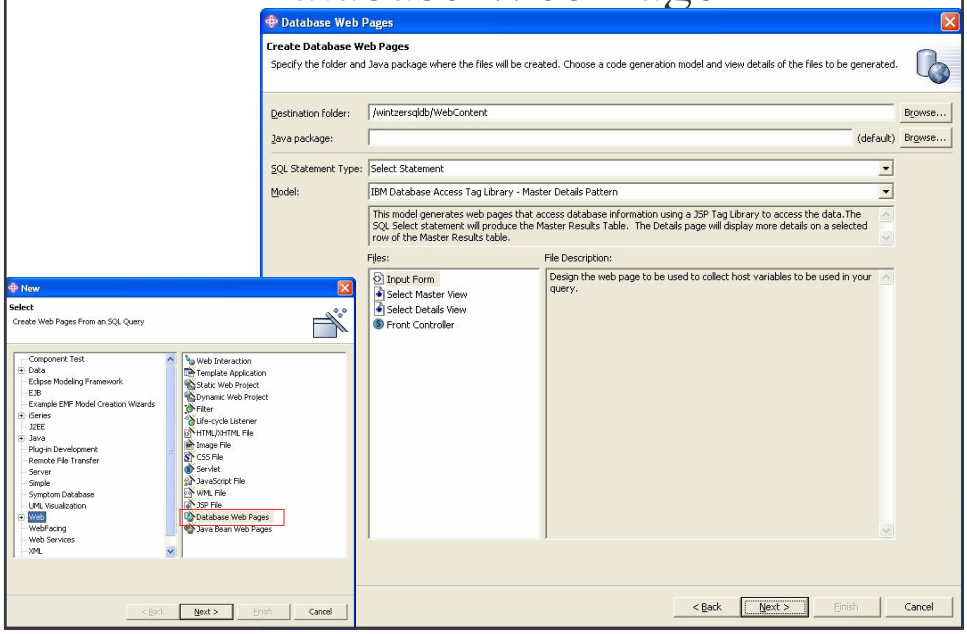
# WebSphere Studio Data Perspective



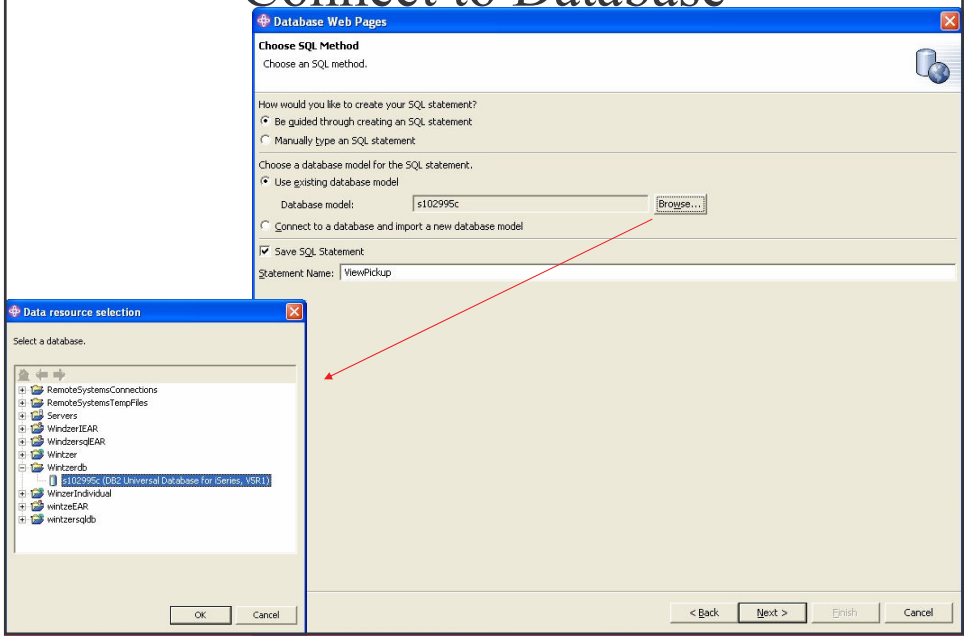
# Create Connection



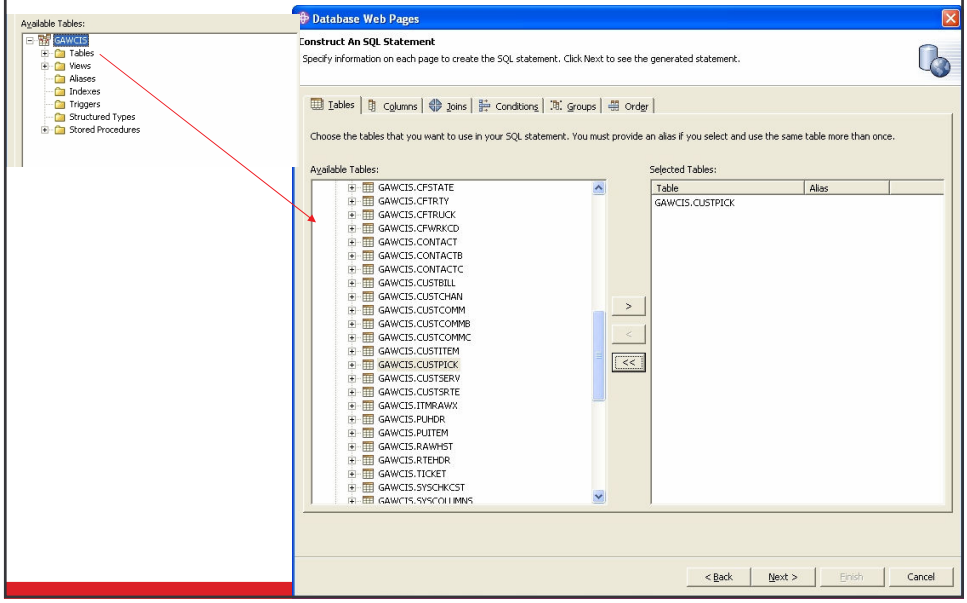

# Database Web Page



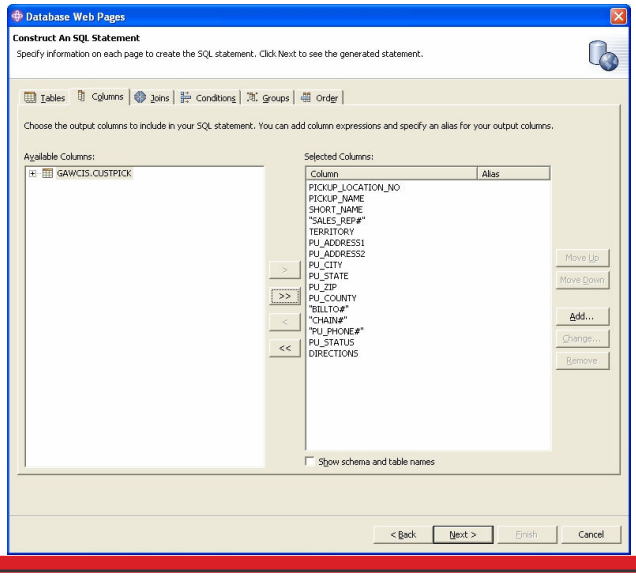
# Connect to Database




# Build SQL -Select Table



# Build SQL - Pick Columns

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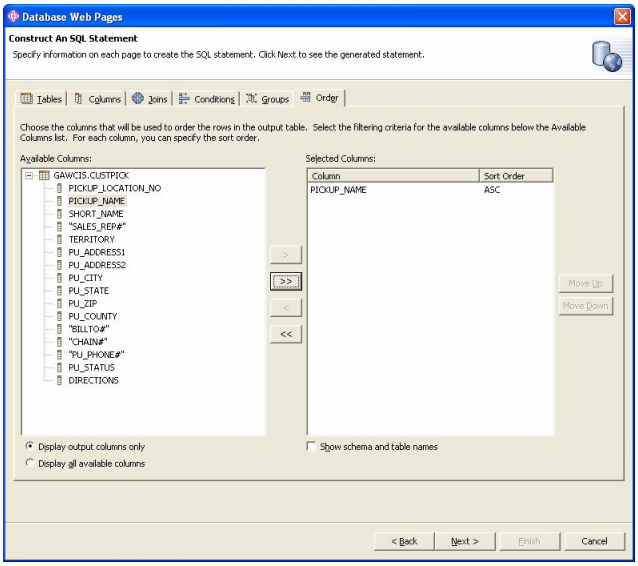
# Build SQL - Order

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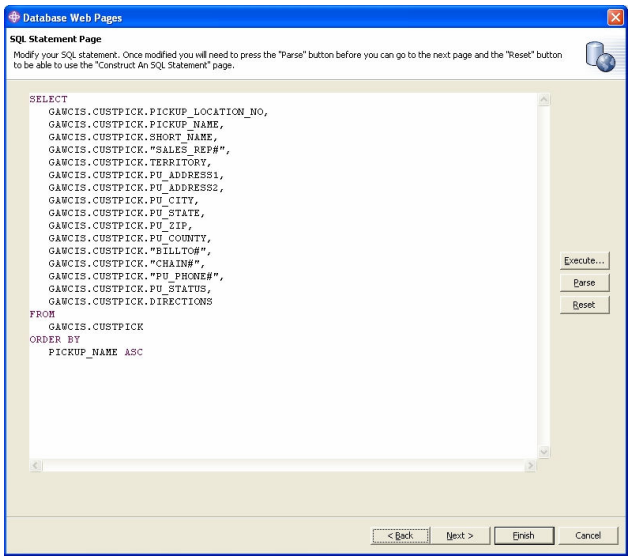
# Review SQL Statement

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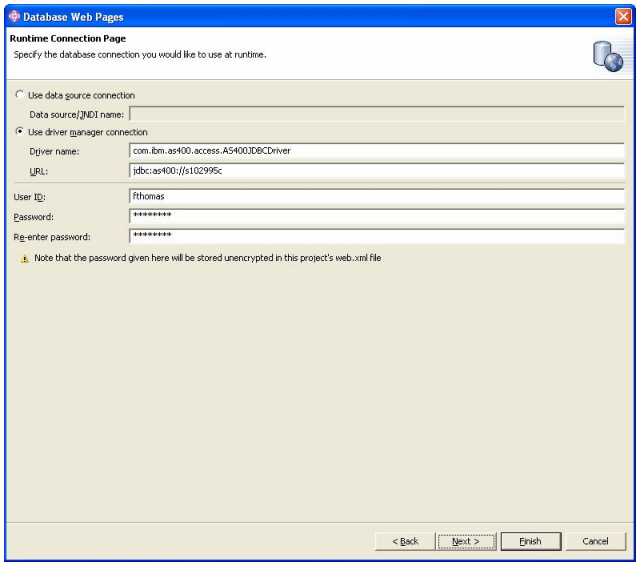
# Define connection

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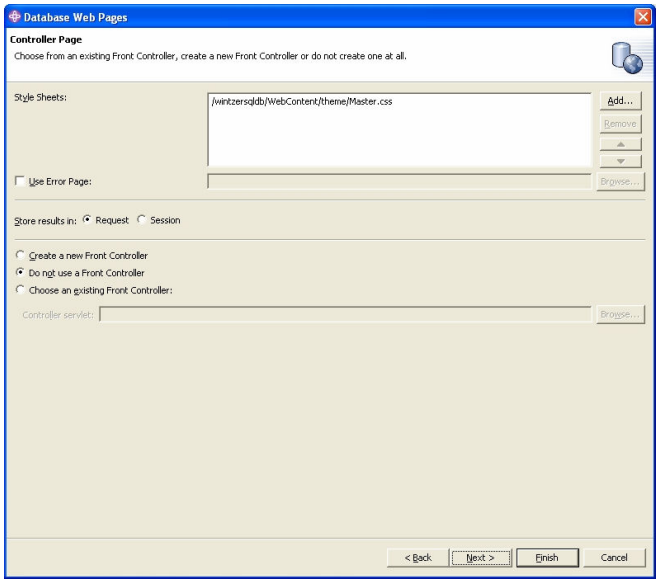
# More Options

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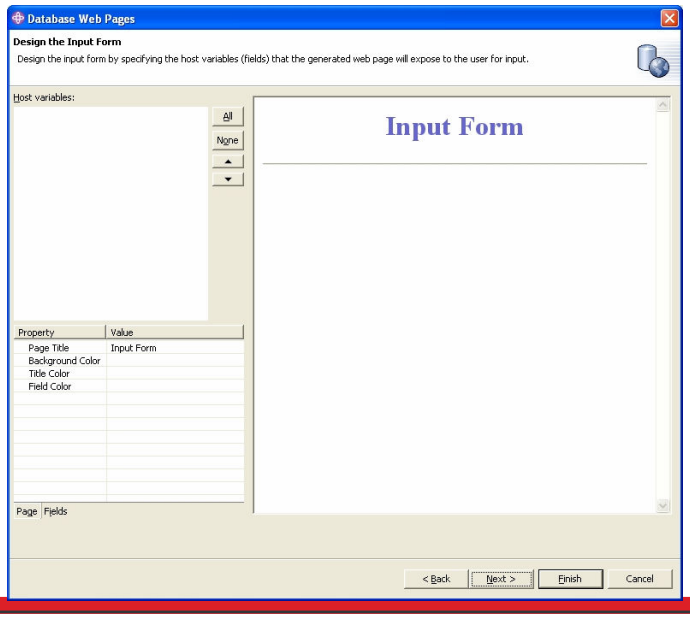
# Input Form

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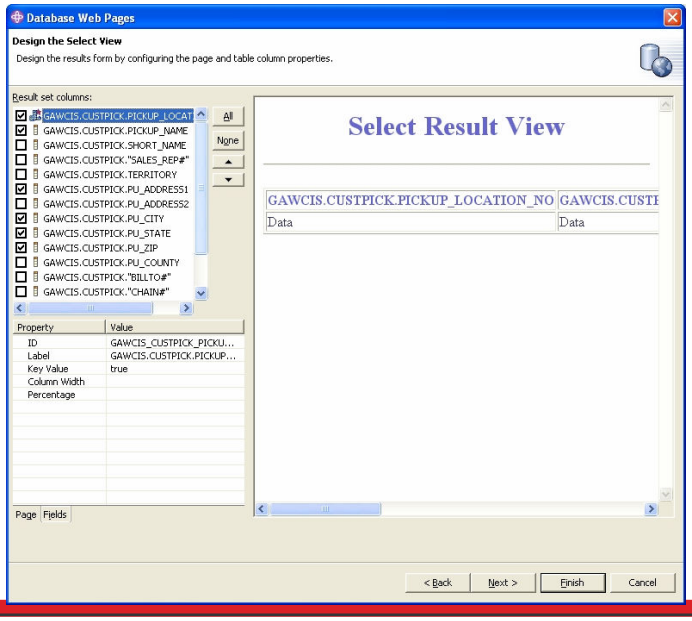
# Define result table

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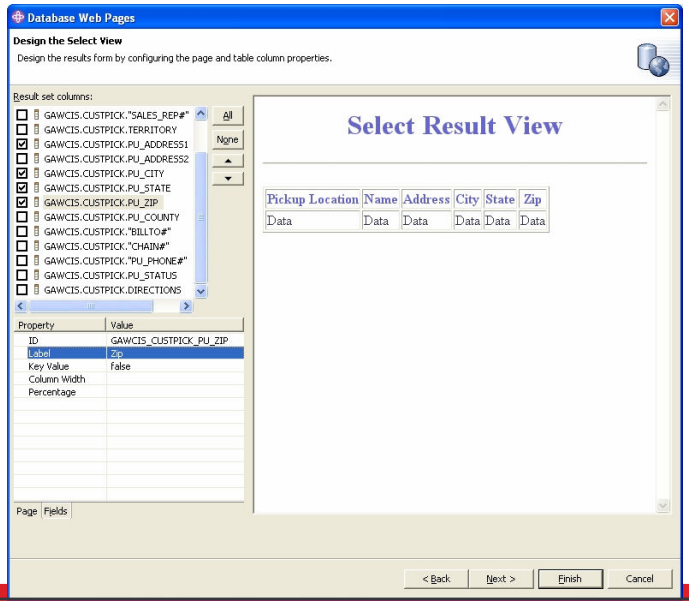
# Change names

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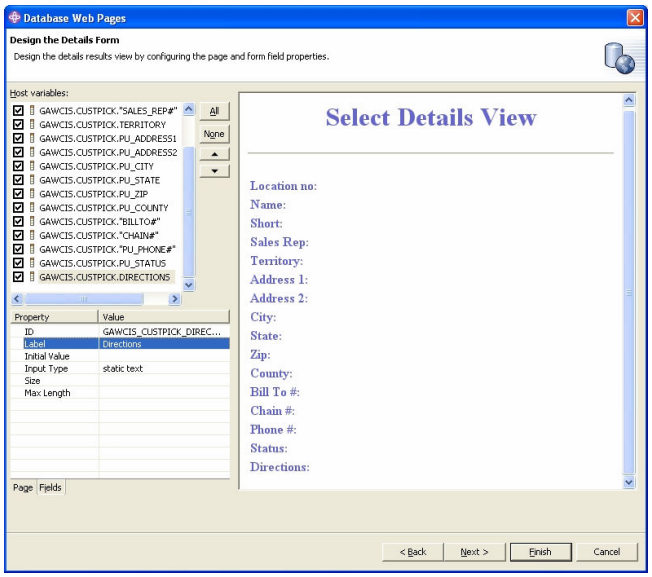
# Redefine Names on Detail

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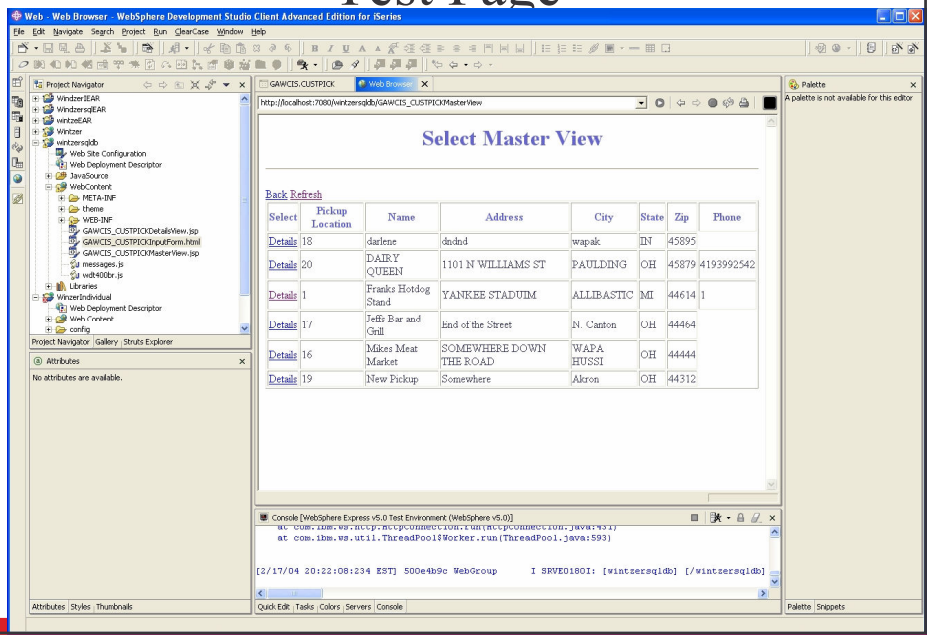
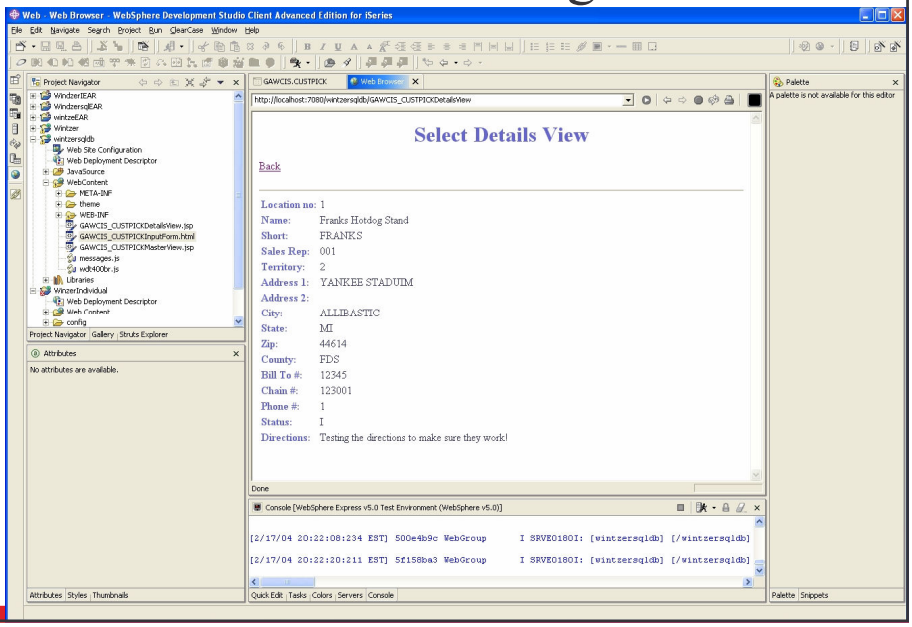
# Test Page



# Test Detail Page

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# Securing Your Database

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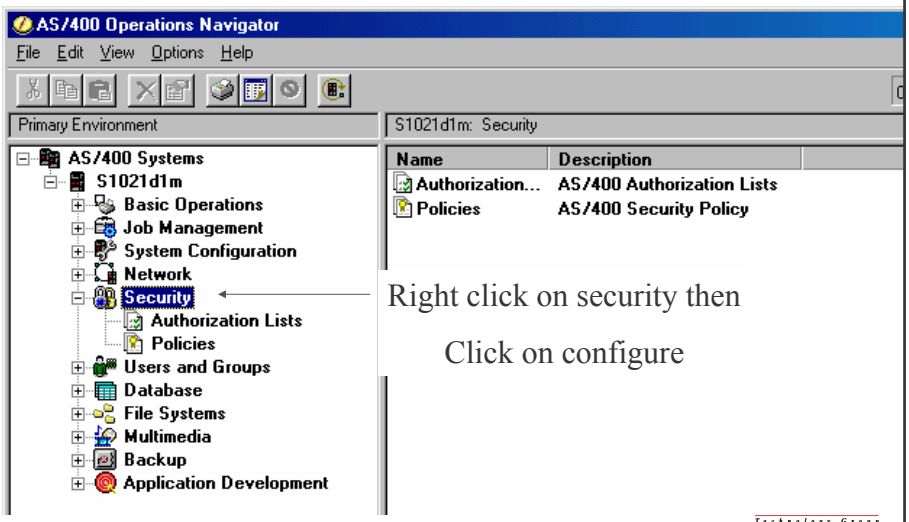
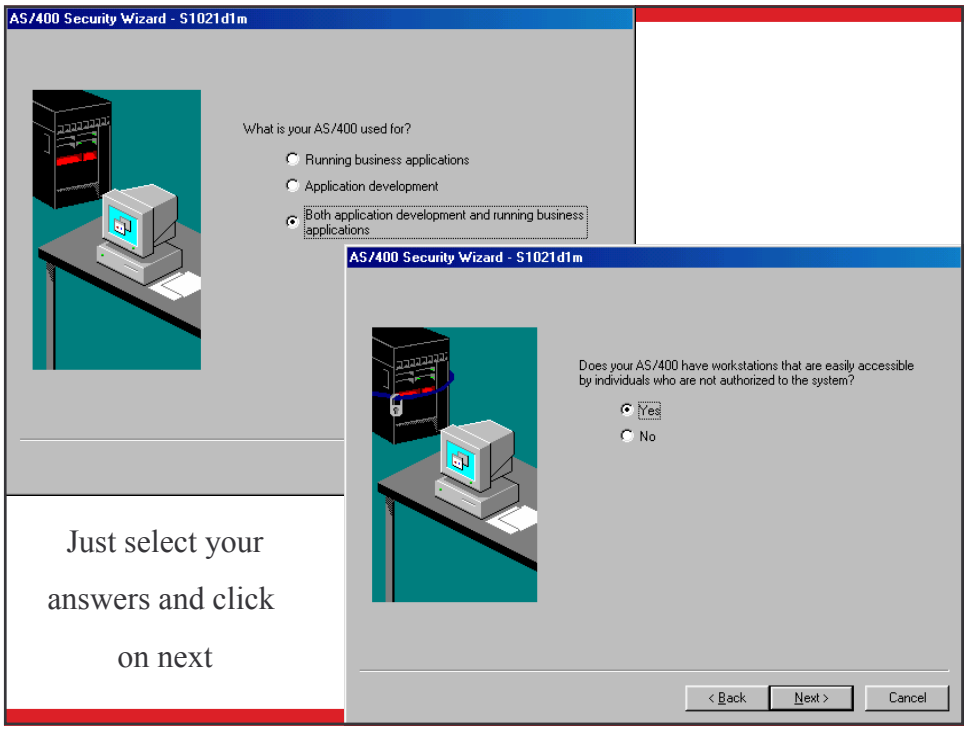
# Security Wizard

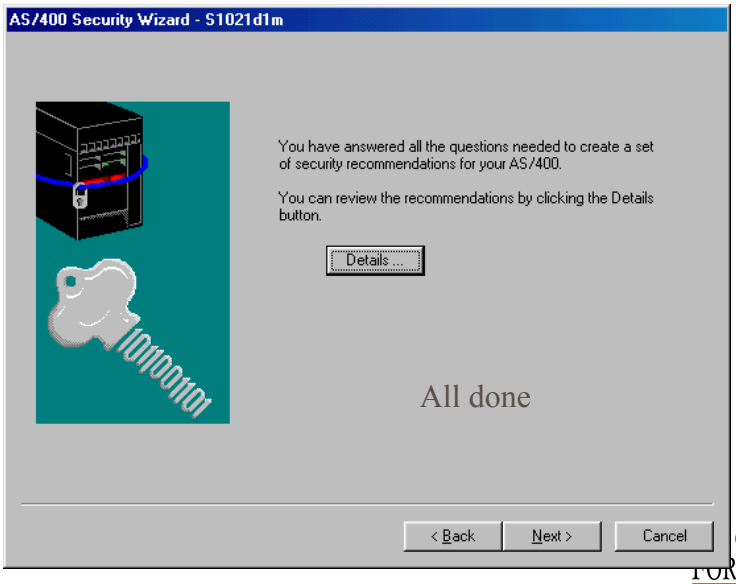


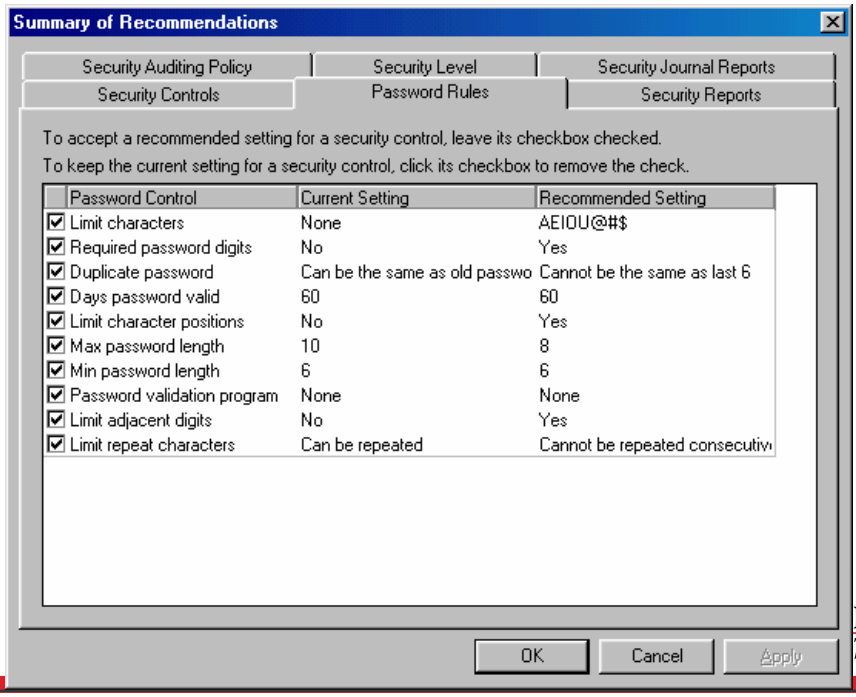

Right click on security then

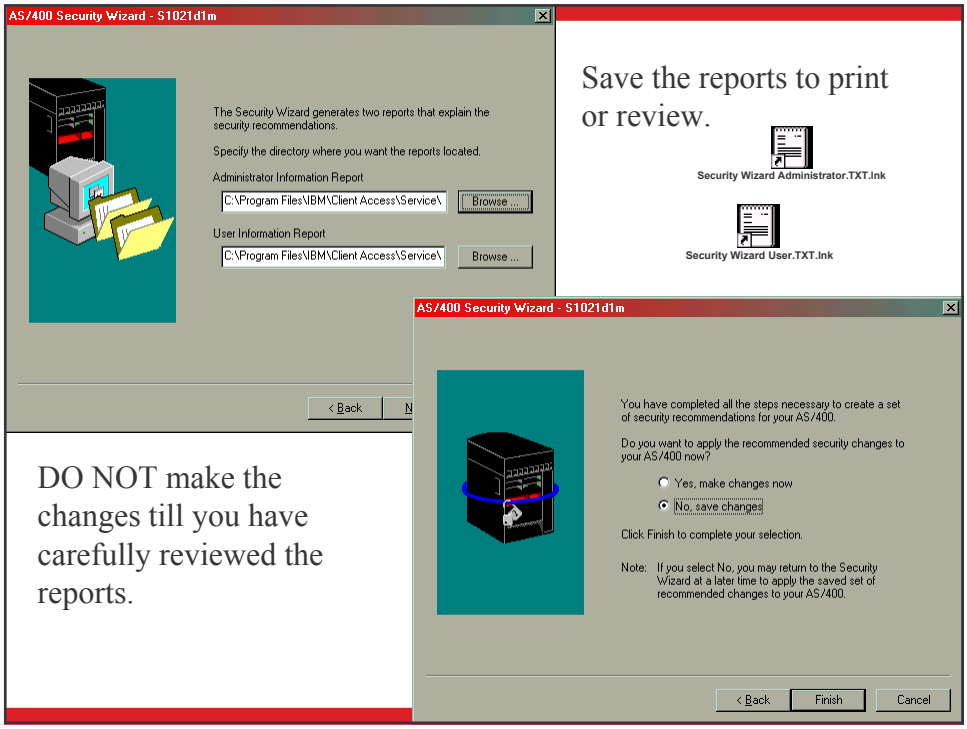
Click on configure

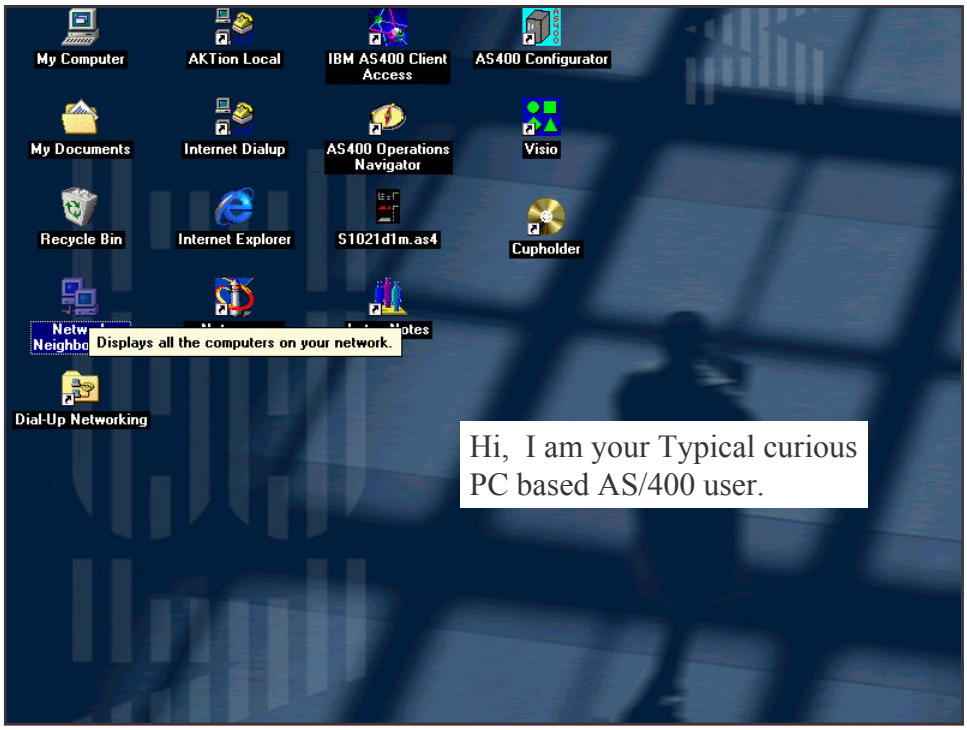


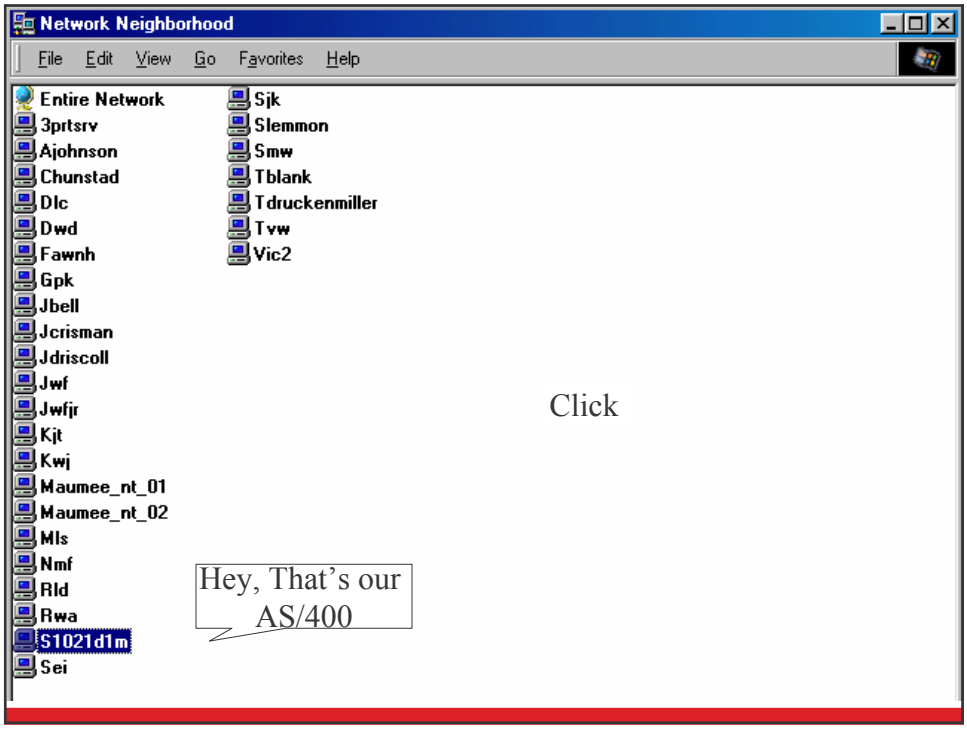

Just select your answers and click on next

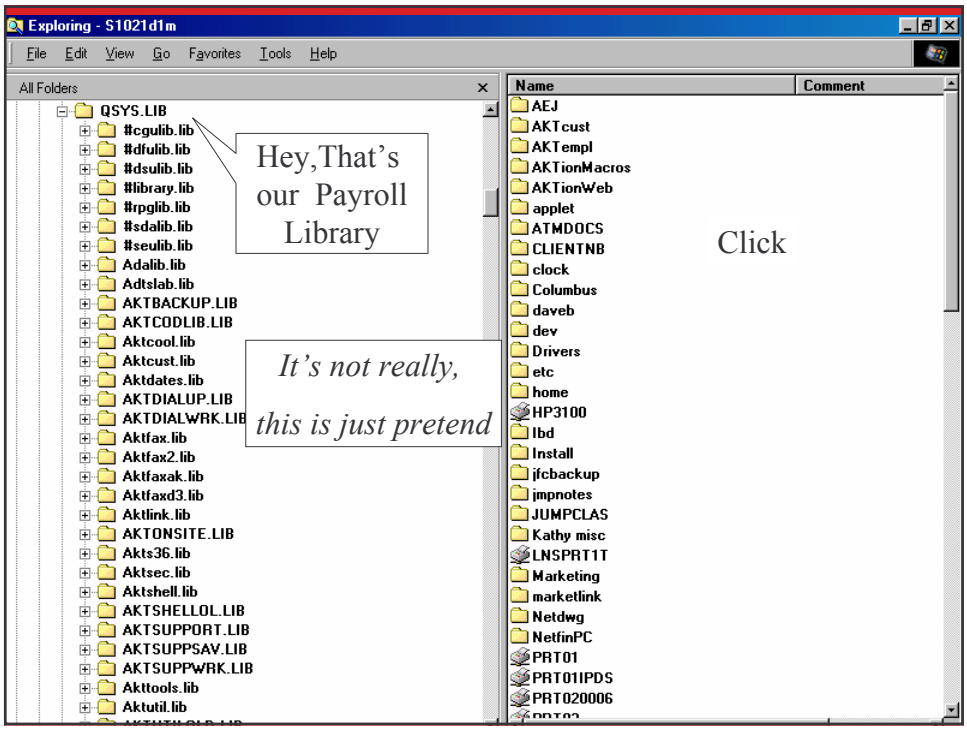

AS/400 Security Wizard - S1021d1m
You have answered all the questions needed to create a set of security recommendations for your AS/400.
You can review the recommendations by clicking the Details button.
Details ...
All done
< Back
Next >
Cancel

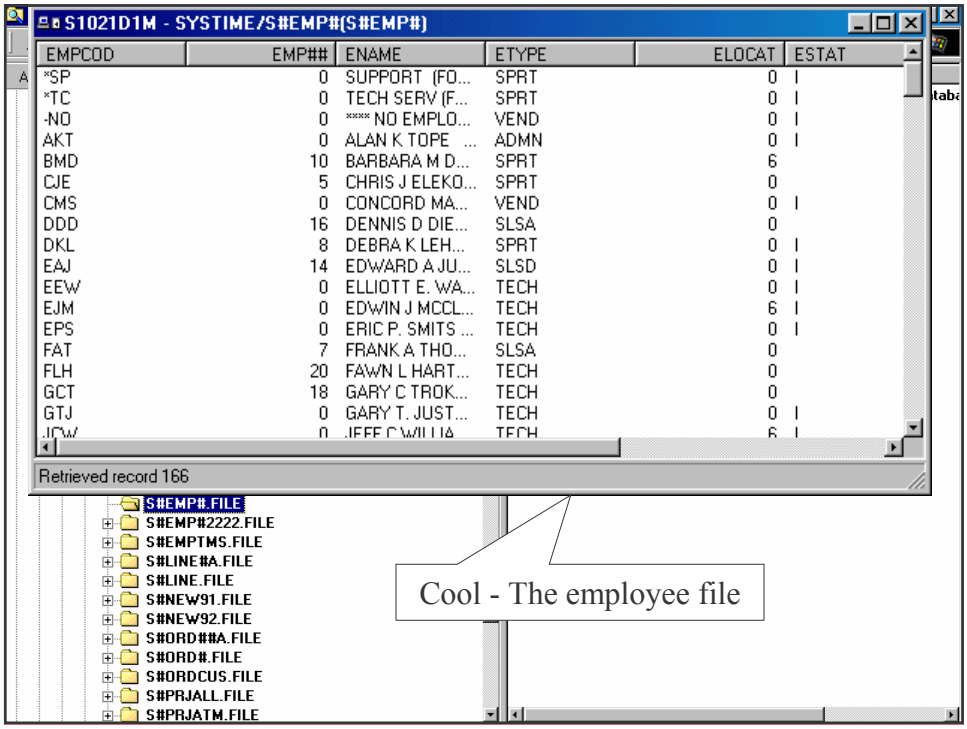

Summary of Recommendations
Security Auditing Policy
Security Level
Security Journal Reports
Security Controls
Password Rules
Security Reports
To accept a recommended setting for a security control, leave its checkbox checked.
To keep the current setting for a security control, click its checkbox to remove the check.
Password Control
Current Setting
Recommended Setting
Limit characters
None
AEIOU@#$
Required password digits
No
Yes
Duplicate password
Can be the same as old passwo
Cannot be the same as last 6
Days password valid
60
60
Limit character positions
No
Yes
Max password length
10
8
Min password length
6
6
Password validation program
None
None
Limit adjacent digits
No
Yes
Limit repeat characters
Can be repeated
Cannot be repeated consecutiv
OK
Cancel
Apply

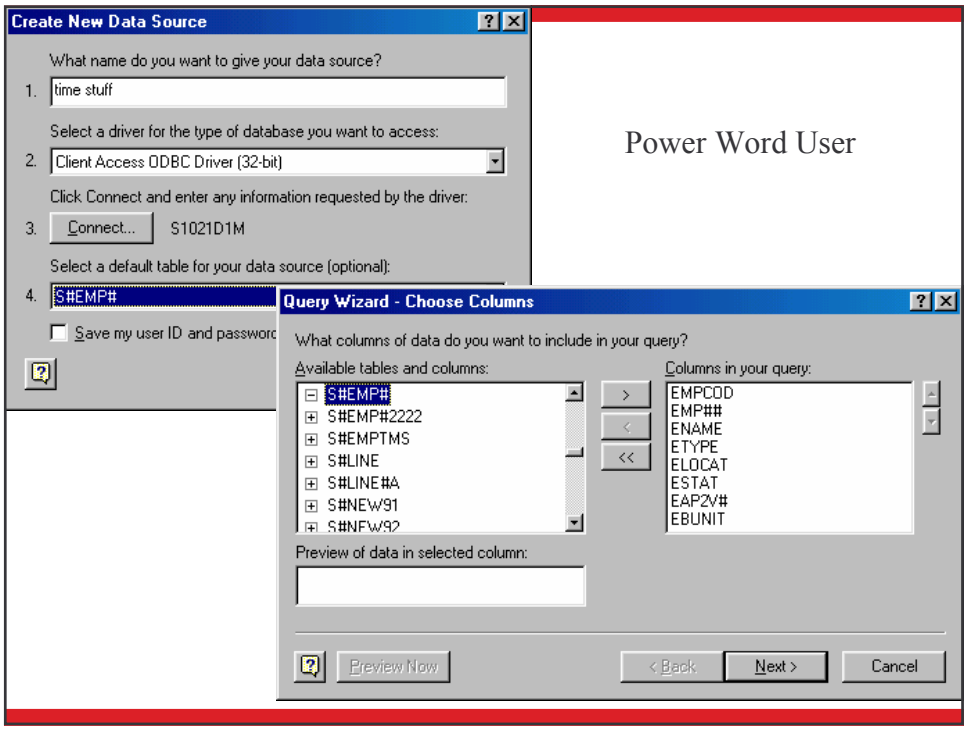

AS/400 Security Wizard - S1021d1m
The Security Wizard generates two reports that explain the security recommendations.
Specify the directory where you want the reports located.
Administrator Information Report
C:\Program Files\IBM\Client Access\Service\
Browse ...
User Information Report
C:\Program Files\IBM\Client Access\Service\
Browse ...
< Back
Save the reports to print or review.
Security Wizard Administrator.TXT.lnk
Security Wizard User.TXT.lnk
DO NOT make the changes till you have carefully reviewed the reports.
AS/400 Security Wizard - S1021d1m
You have completed all the steps necessary to create a set of security recommendations for your AS/400.
Do you want to apply the recommended security changes to your AS/400 now?
Yes, make changes now
No, save changes
Click Finish to complete your selection.
Note: If you select No, you may return to the Security Wizard at a later time to apply the saved set of recommended changes to your AS/400.
< Back
Finish
Cancel

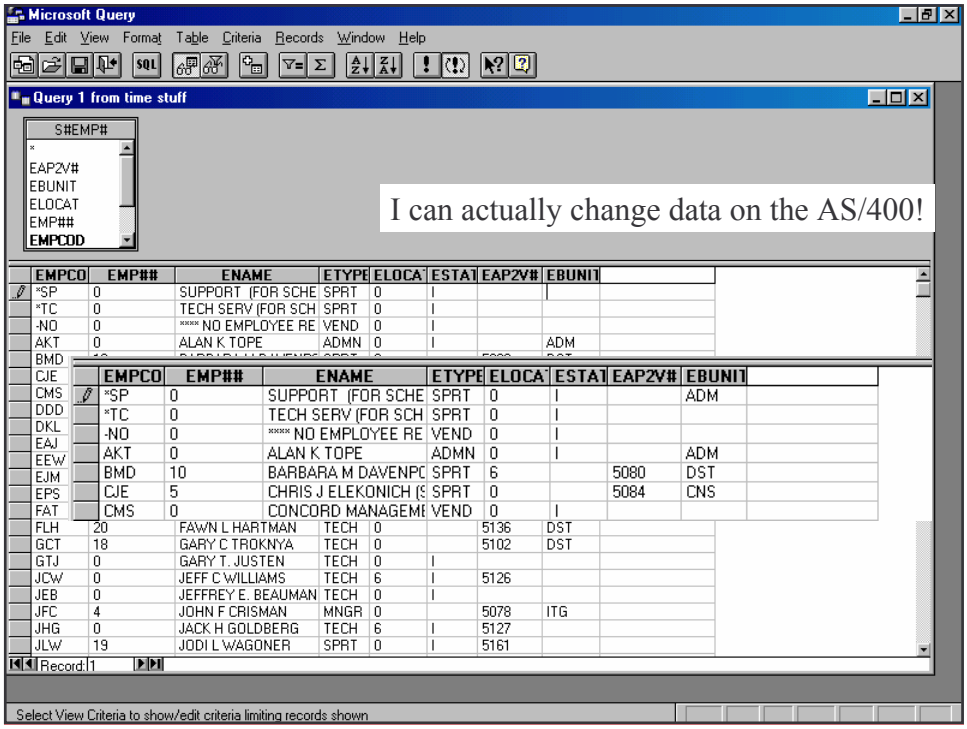

My Computer
AKTion Local
IBM AS400 Client Access
AS400 Configurator
My Documents
Internet Dialup
AS400 Operations Navigator
Visio
Recycle Bin
Internet Explorer
S1021d1m.as4
Cupholder
Displays all the computers on your network.
Dial-Up Networking
Hi, I am your Typical curious PC based AS/400 user.

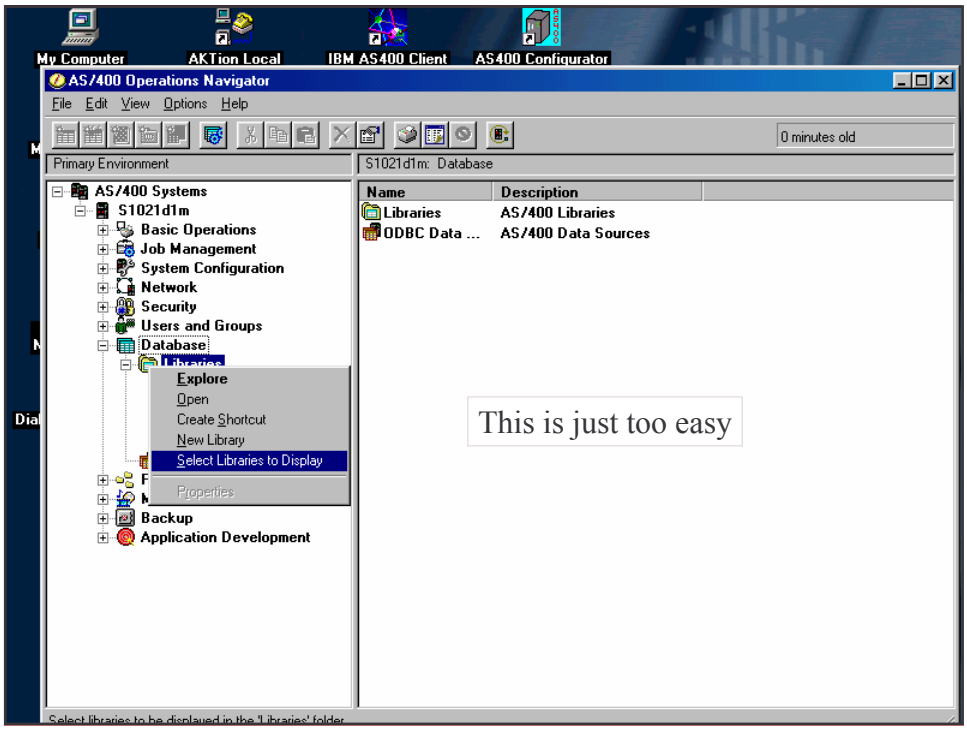

Network Neighborhood
File Edit View Go Favorites Help
Entire Network
3prtsrv
Ajohnson
Chunstad
Dlc
Dwd
Fawnh
Gpk
Jbell
Jcrisman
Jdriscoll
Jwf
Jwfjr
Kjt
Kwj
Maumee_nt_01
Maumee_nt_02
Mls
Nmf
Rld
Rwa
S1021d1m
Sei
Sjk
Slemmon
Smw
Tblank
Tdruckenmiller
Tvw
Vic2
Click
Hey, That's our AS/400

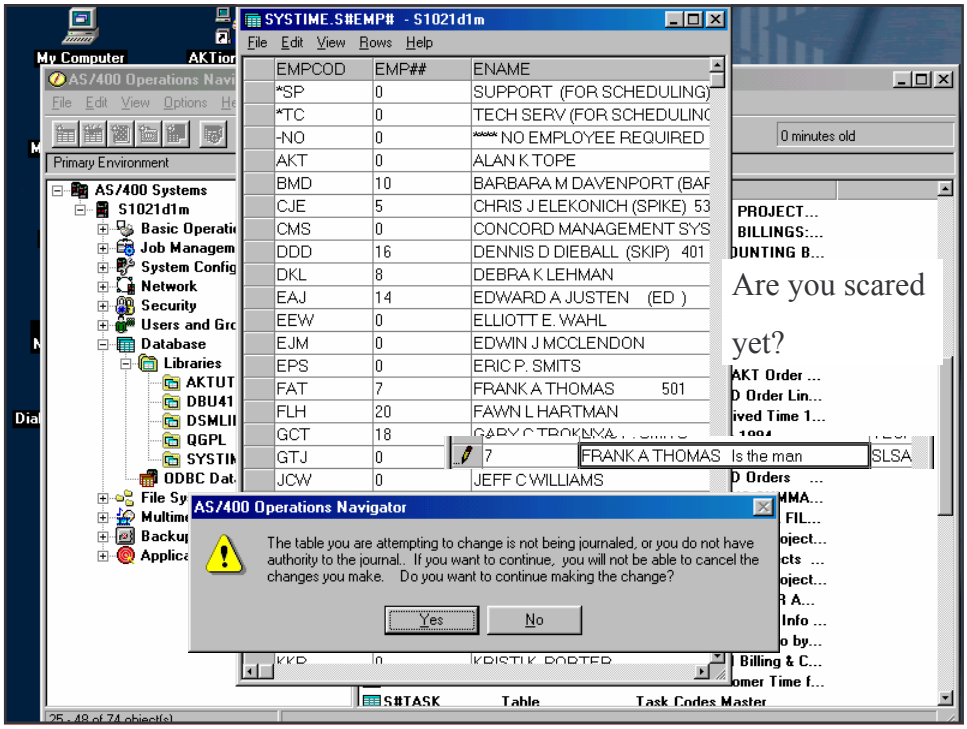

Exploring - S1021d1m
File Edit View Go Favorites Tools Help
All Folders
QSYS.LIB
#cgulib.lib
#dfulib.lib
#dsulib.lib
#library.lib
#rpglib.lib
#sdalib.lib
#seulib.lib
Adalib.lib
Adtslab.lib
AKTBACKUP.LIB
AKTCODLIB.LIB
Aktcool.lib
Aktcust.lib
Aktdates.lib
AKTDIALUP.LIB
AKTDIALWRK.LIB
Aktfax.lib
Aktfax2.lib
Aktfaxak.lib
Aktfaxd3.lib
Aktlink.lib
AKTONSITE.LIB
Akts36.lib
Aktsec.lib
Aktshell.lib
AKTSHELLOL.LIB
AKTSUPPORT.LIB
AKTSUPPSAV.LIB
AKTSUPPWRK.LIB
Akttools.lib
Aktutil.lib
Hey,That's our Payroll Library
It's not really,
this is just pretend
Name
Comment
AEJ
AKTcust
AKTempl
AKTionMacros
AKTionWeb
applet
ATMDOCS
CLIENTNB
clock
Columbus
daveb
dev
Drivers
etc
home
HP3100
Ibd
Install
jfcbackup
jmpnotes
JUMPCLAS
Kathy misc
LNSPRT1T
Marketing
marketlink
Netdwg
NetfinPC
PRT01
PRT01IPDS
PRT020006
Click


S1021D1M - SYSTIME/S#EMP#(S#EMP#)
EMPCOD EMP## ENAME ETYPE ELOCAT ESTAT
*SP 0 SUPPORT (FO... SPRT 0 I
*TC 0 TECH SERV (F... SPRT 0 I
-NO 0 ***** NO EMPLO... VEND 0 I
AKT 0 ALAN K TOPE ... ADMN 0 I
BMD 10 BARBARA M D... SPRT 6
CJE 5 CHRIS J ELEKO... SPRT 0
CMS 0 CONCORD MA... VEND 0 I
DDD 16 DENNIS D DIE... SLSA 0
DKL 8 DEBRA K LEH... SPRT 0 I
EAJ 14 EDWARD A JU... SLSD 0 I
EEW 0 ELLIOTT E. WA... TECH 0 I
EJM 0 EDWIN J MCCL... TECH 6 I
EPS 0 ERIC P. SMITS ... TECH 0 I
FAT 7 FRANK A THO... SLSA 0
FLH 20 FAWN L HART... TECH 0
GCT 18 GARY C TROK... TECH 0
GTJ 0 GARY T. JUST... TECH 0 I
Retrieved record 166
S#EMP#.FILE
S#EMP#2222.FILE
S#EMPTMS.FILE
S#LINE#A.FILE
S#LINE.FILE
S#NEW91.FILE
S#NEW92.FILE
S#ORD##A.FILE
S#ORD#.FILE
S#ORDCUS.FILE
S#PRJALL.FILE
S#PRJATM.FILE
Cool - The employee file


Create New Data Source
What name do you want to give your data source?
1. time stuff
Select a driver for the type of database you want to access:
2. Client Access ODBC Driver (32-bit)
Click Connect and enter any information requested by the driver:
3. Connect... S1021D1M
Select a default table for your data source (optional):
4. S#EMP#
Save my user ID and password
Power Word User
Query Wizard - Choose Columns
What columns of data do you want to include in your query?
Available tables and columns:
S#EMP#
S#EMP#2222
S#EMPTMS
S#LINE
S#LINE#A
S#NEW91
S#NEW92
Columns in your query:
EMPCOD
EMP##
ENAME
ETYPE
ELOCAT
ESTAT
EAP2V#
EBUNIT
Preview of data in selected column:
Preview Now
< Back
Next >
Cancel


Microsoft Query
File Edit View Format Table Criteria Records Window Help
Query 1 from time stuff
S#EMP#
*
EAP2V#
EBUNIT
ELOCAT
EMP##
EMPCOD
I can actually change data on the AS/400!
EMPCO EMP## ENAME ETYPE ELOCA ESTA1 EAP2V# EBUNI1
*SP 0 SUPPORT (FOR SCHE SPRT 0 I
*TC 0 TECH SERV (FOR SCH SPRT 0 I
-NO 0 **** NO EMPLOYEE RE VEND 0 I
AKT 0 ALAN K TOPE ADMN 0 I ADM
BMD 10 BARBARA M DAVENPC SPRT 6 5080 DST
CJE 5 CHRIS J ELEKONICH (S SPRT 0 5084 CNS
CMS 0 CONCORD MANAGEME VEND 0 I
DDD
DKL
EAJ
EEW
EJM
EPS
FAT
FLH 20 FAWN L HARTMAN TECH 0 5136 DST
GCT 18 GARY C TROKNYA TECH 0 5102 DST
GTJ 0 GARY T. JUSTEN TECH 0 I
JCW 0 JEFF C WILLIAMS TECH 6 I 5126
JEB 0 JEFFREY E. BEAUMAN TECH 0 I
JFC 4 JOHN F CRISMAN MNGR 0 5078 ITG
JHG 0 JACK H GOLDBERG TECH 6 I 5127
JLW 19 JODI L WAGONER SPRT 0 I 5161
Record: 1
Select View Criteria to show/edit criteria limiting records shown


My Computer
AKTion Local
IBM AS400 Client
AS400 Configurator
AS/400 Operations Navigator
File Edit View Options Help
0 minutes old
Primary Environment
S1021d1m: Database
AS/400 Systems
S1021d1m
Basic Operations
Job Management
System Configuration
Network
Security
Users and Groups
Database
Libraries
Explore
Open
Create Shortcut
New Library
Select Libraries to Display
Properties
Backup
Application Development
Name
Description
Libraries
AS/400 Libraries
ODBC Data ...
AS/400 Data Sources
This is just too easy




# "Normal" Security

- Level 30, maybe Level 40
- Passwords for sure
  - All object? *No*
  - Command lines (probably not)
- Application security at menu level
  - No one on a green screen can get past this. (probably true unless they have a command line)

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# Application Administration

- Part of Operations Navigator
- Host based solution for restricting PC Programs
- Can restrict Op Nav and CA
- Must be at V4R3 or higher
- Stored on 400 by user profile
- Build in to Client Access

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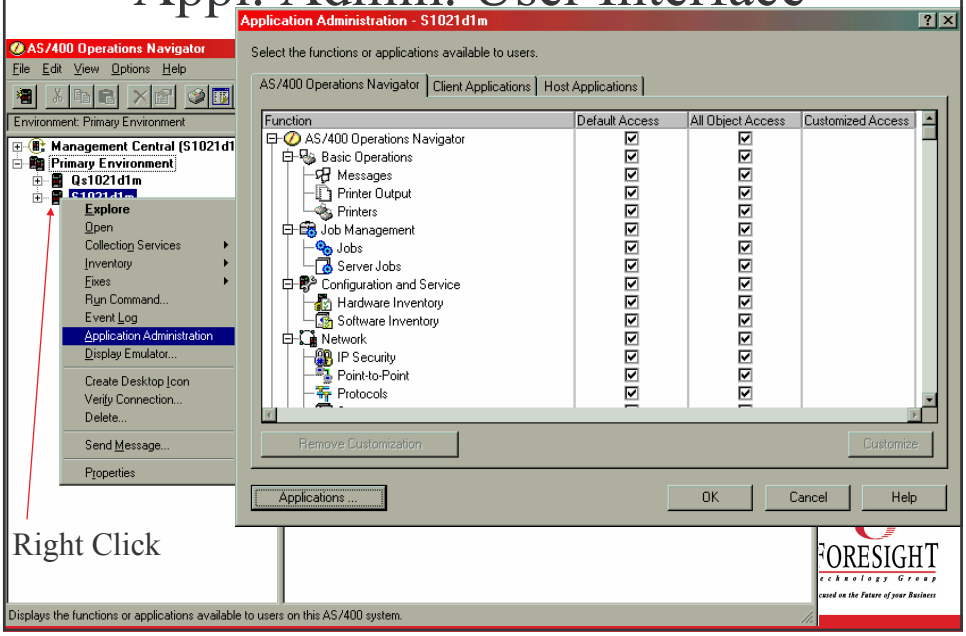
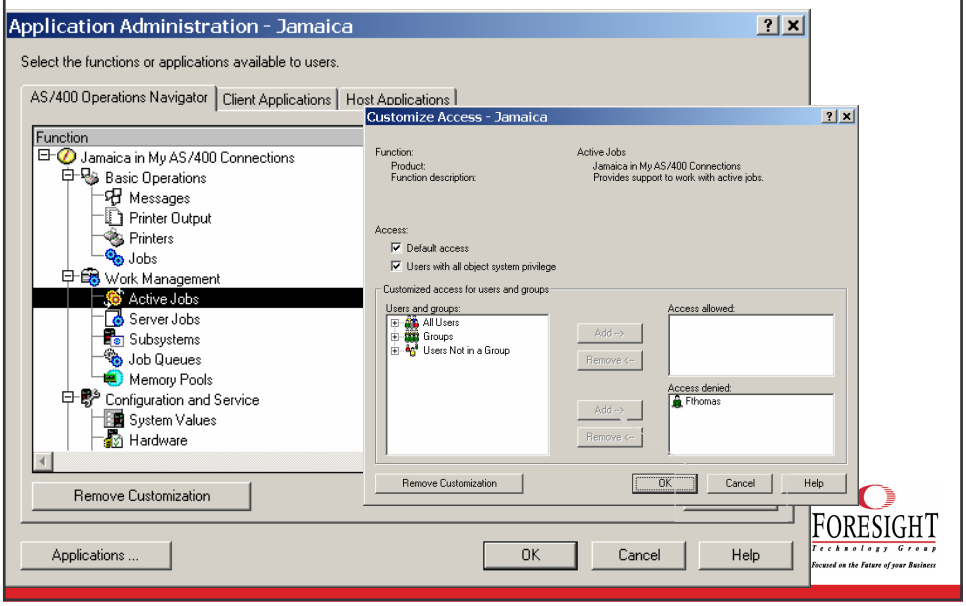
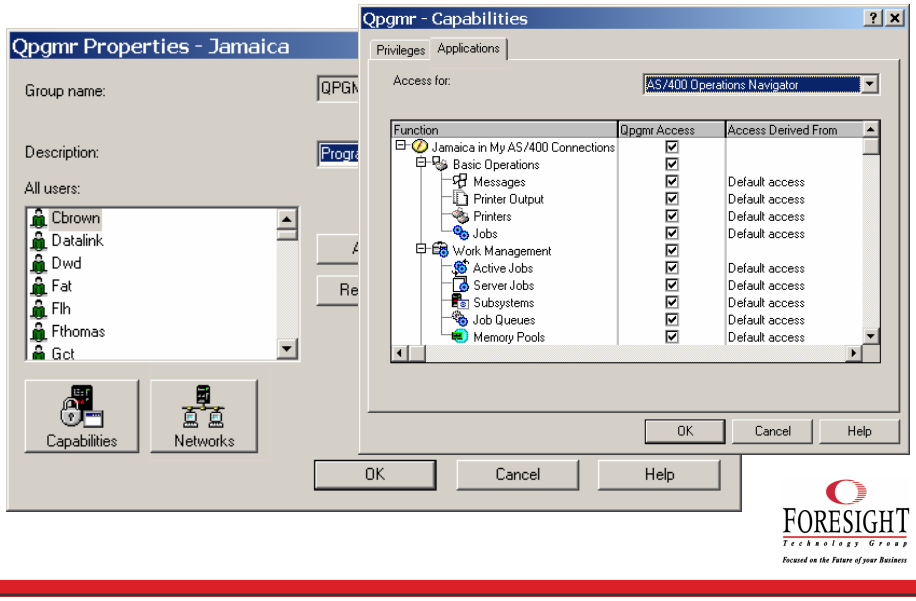
# Appl. Admin. User Interface



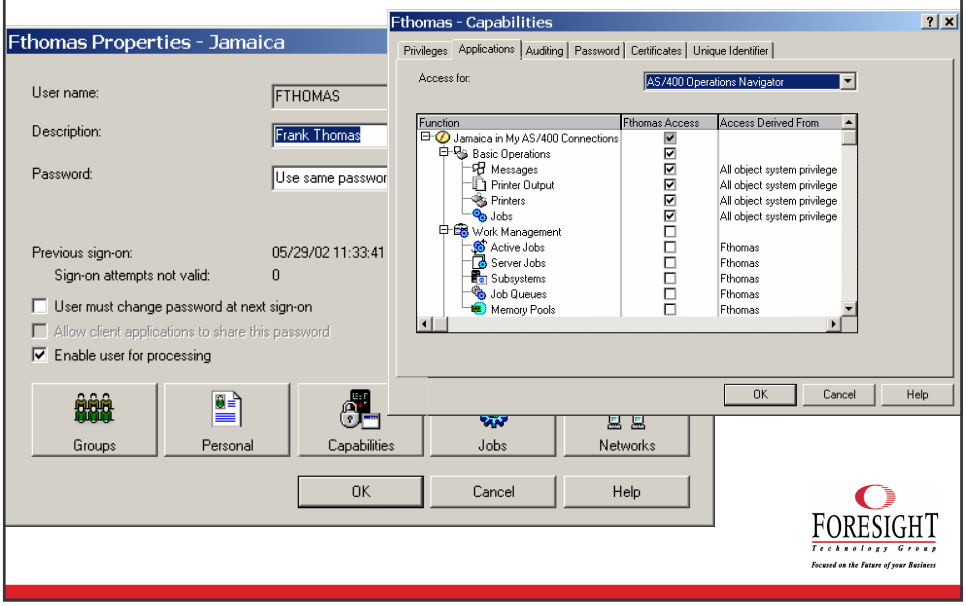
# Appl. Admin. User Interface




# Change from Group



# Change by User

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# Application only access

- Use AS/400 Object security to secure your data so that it can only be access by your applications.
- Then open up access to your data as needed.
- This is accomplished by:
  - Object ownership, Authorization List, Setting Adopt Owner Authority on Programs

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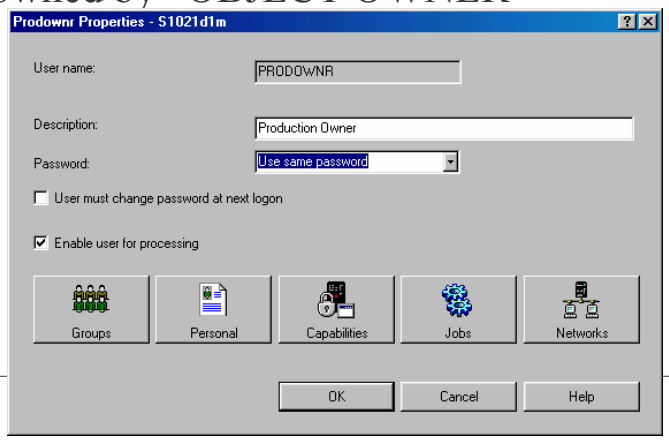
# Object Owner

- All Objects are changed so that they are owned by “OBJECT OWNER”

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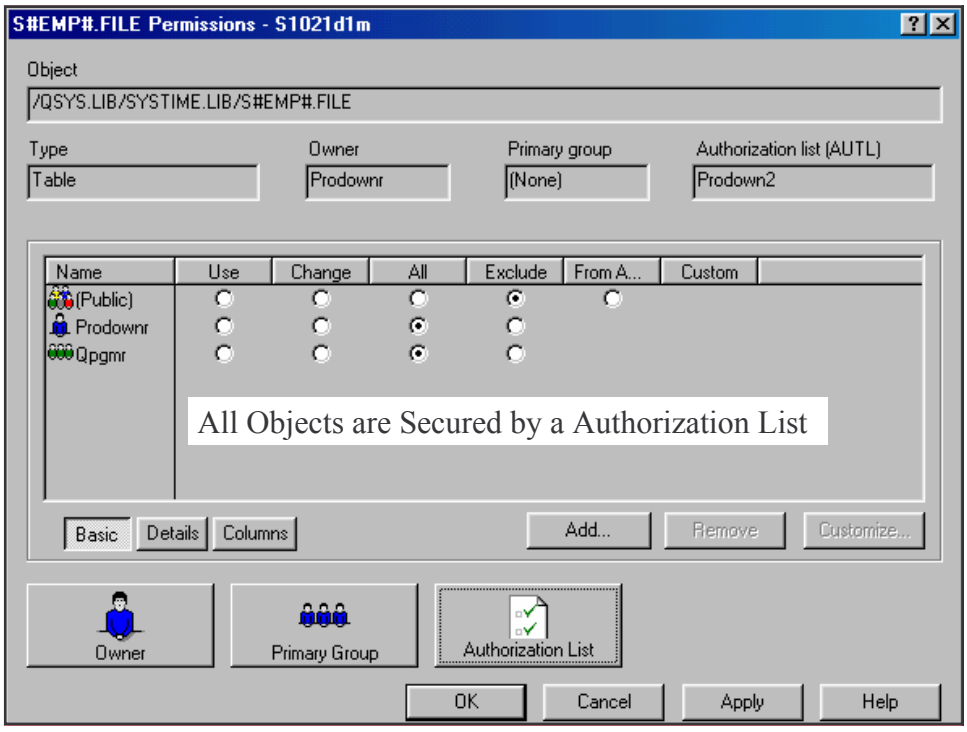
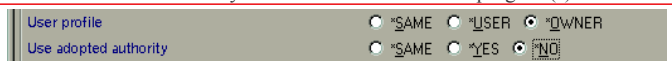


# CHGPGM

This is the default, it does not add owner authority but keeps it if it is higher in the stack
Use this on all other programs

This adds owner authority. You use this on the initial program(s)




Use this if you only want owner authority on this one job step

Use this if you want to stop adopt authority at this level

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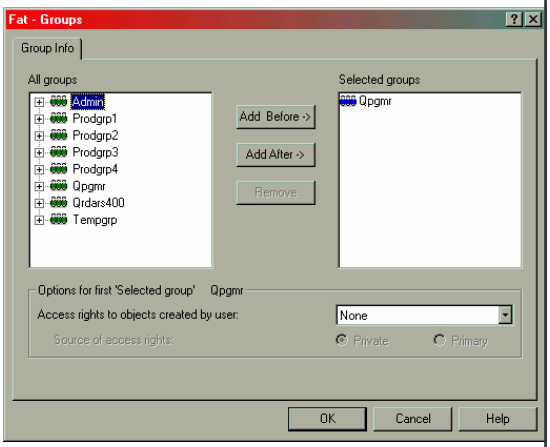
# User to Groups

- User1 → Group 1
- User2 → Group 2
- UserB → Group 2
- User3 → Group 3
- UserC → Group 3
- UserD → Group 3
- User4 → Group 4




A user can be in more than 1 group if you have applications to secure with different users.

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# Authorization List

| | |
|---|---|
| Athlist1 (Programs) | *Public = Exclude |
| | Group 2 = Use |
| | Group 3 = Use |
| | Group 4 = All |

| | |
|---|---|
| Athlist 2 (Data) | *Public = Exclude |
| | *Group 2 = Exclude* |
| | Group 3 = Use |
| | Group 4 = All |

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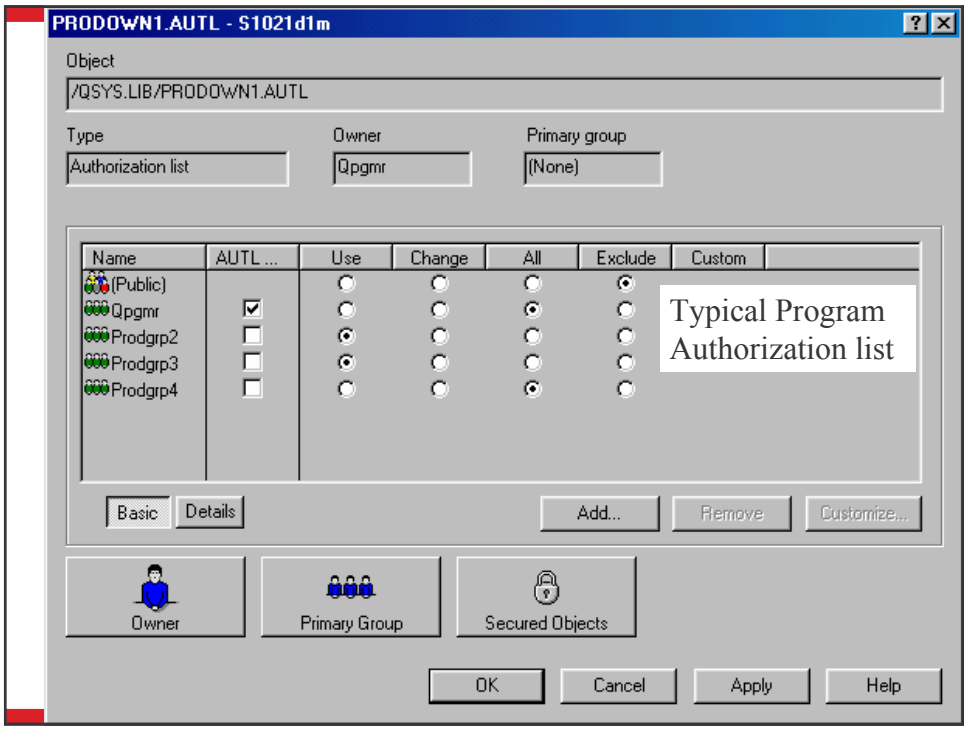

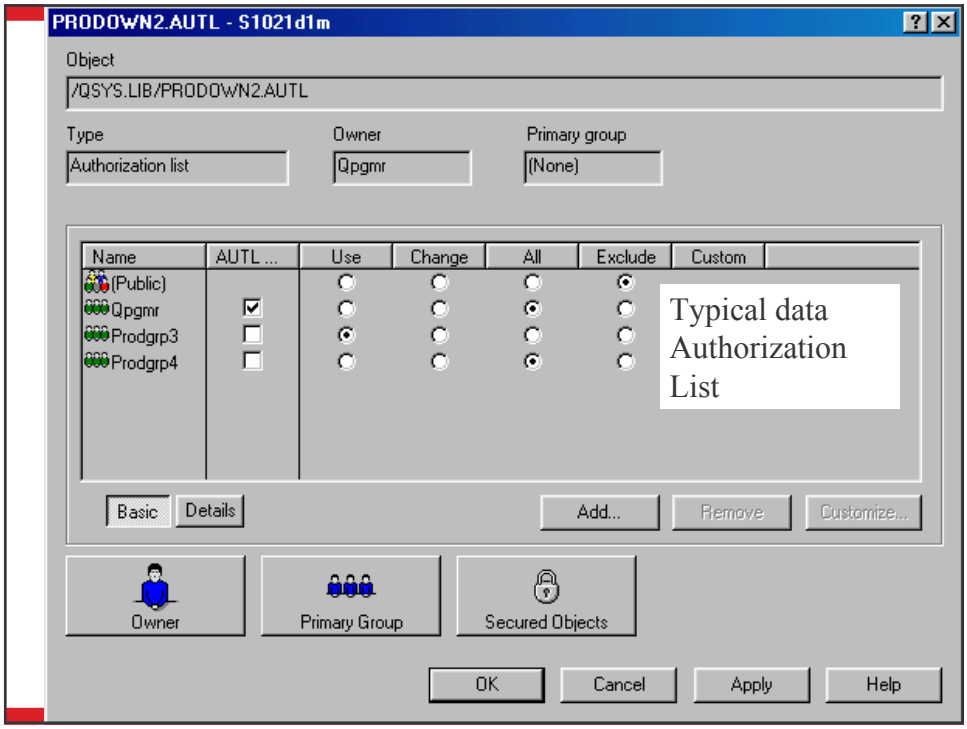


# AOA

- All Objects owned by PRODOWNR
- All programs have the Adopt keyword set.
- Program objects Secured by Authorization List 1
- Data objects Secured by Authorization List 2

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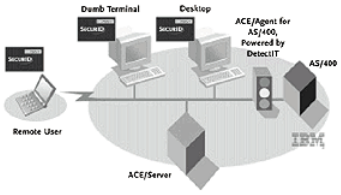
# Authentication

- Who is it?
  - How can you be sure that the person signing on is the person you expect.
- Digital Certificates
  - Sounds good but?
- Authentication Server
  - Very strong if you can afford it

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# Virus Protection

**Prevent and Control Viruses**

We'll give you the good news first. The good news is that AS/400 object-based architecture makes it technically unlikely that a virus will harm your AS/400. The bad news is that AS/400 object-based architecture doesn't prevent viruses from spreading among connected PCs on you network. To prevent and control viruses:

1. Control Creation of New Objects
2. Creation Control Authority to Root Directory
3. Install and Run Virus Scan Software
4. Stage Movement of New Objects Using Temporary Folder
5. Educate Your Users about Viruses and Software

For more information on controlling viruses, check out the IBM Antivirus Web site.

**http://www.as400.ibm.com/tstudio/secure1/Sdex_fr.htm**
**http://www.symantec.com/nav/fs_nav5-95nt.html**
**http://www.mcafee.com/**

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# Foresight Technology Group


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