Unlock the Power Within Your Data

IDEA 10

IDEA Tutorial

IDEA
Data Analysis Software

CA401

IDEA

Tutorial

IDEA 10

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CA401 IDEA Tutorial

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Section 1

Introduction

Welcome to the IDEA Tutorial.

IDEA (originally an acronym for Interactive Data Extraction and Analysis) provides auditors, accountants, and systems and financial professionals with the ability to display, read, analyze, manipulate, sample, and extract data from data files from almost any source - mainframe to personal computers, including reports printed to a file. IDEA extends your reach by providing unique functions and features not found in generic software.

This tutorial covers the functionality of IDEA and IDEA Server.

Throughout the tutorial, the above products are referred to solely as IDEA unless otherwise specified. In addition, the images used throughout this tutorial may not necessarily reflect what you see on your screen depending on the edition of IDEA you are using.

Additional Resources

There is extensive online help available for all modules, including step-by-step walk-throughs of tasks. In order to view the online help, you require Microsoft Internet Explorer 9.0 or higher. You may also visit the CaseWare Analytics website at www.casewareanalytics.com for additional information such as tips and hints, frequently asked questions (FAQs), and technical information.

Feedback

Your feedback is important to us. Send your documentation-related comments to IDEAdocumentation@caseware.com.

Section 2

IDEA Overview

IDEA combines considerable analysis power with an extremely user-friendly Windows environment. This versatile tool is useful for any type of file interrogation and allows users to:

- Import data from a wide range of file types.

- Create custom views of data and reports.

- Perform analyses of data, including calculation of comprehensive statistics, gap detection, duplicate detection, summaries, and aging.

- Perform calculations.

- Select samples using several sampling techniques.

- Match or compare different files.

- Create pivot tables for multi-dimensional analysis.

- Automatically generate a complete history that documents the analysis.

- Record, create, and edit macros with IDEAScript (a customizable VBA-compatible scripting tool) and Visual Script.

- Conduct exception testing of unusual or inconsistent items using simple or complex criteria.

IDEA has built-in @Functions for arithmetic, text, time, and date criteria, including many financial @Functions. These @Functions perform operations such as date, arithmetic, financial and statistical calculations, and text searches.

Desktop Projects

Desktop projects are stored either locally on your computer or on a shared network location (for instance, a Managed project in IDEA Server Only Mode). If Desktop projects are stored on a network drive, you must have permission to write to the network drive.

You can create the following two types of Desktop projects:

Project	Description
Managed	Within C:\Users\Your USERID\Documents\My IDEA Documents\IDEA Projects. **Note:** This is the default location. The location for Managed project may be set to a local or network user-defined folder. Can be linked to IDEA Server projects
External	Outside C:\Users\Your USERID\Documents\My IDEA Documents\IDEA Projects Can be linked to IDEA Server projects Can point to pre-IDEA Version Nine Working Folders

When you first launch IDEA, you have access to two default Managed projects: Samples and Tutorial. The Samples and Tutorial projects contain all the files required to complete the exercises in this guide, the *Report Reader Tutorial*, and the *Advanced Statistical Methods Case Study*. The files are also used in the Language Browser examples.

IDEA Server Projects

While an IDEA Server project is identical in function to a Desktop project, there are several key differences between the two:

- Location: The location of an IDEA Server project is determined by the IDEA Task Management Server.

- Creation: An IDEA Server project can only be created by an IDEA Server Team Leader.

- Access: A basic user simply has rights to access projects to which they have been assigned by an IDEA Server Team Leader.

The Association Between Desktop and IDEA Server Projects

When linking Desktop and IDEA Server projects, keep the following information in mind:

- When connecting to IDEA Server, the IDEA Server project that becomes active will become linked to the active Desktop project. From then on, every time you work in that Desktop project, IDEA will automatically connect to its associated IDEA Server project.

- If you change your Desktop project, the connection will change to the IDEA Server project associated with it, if a connection was previously made.

- If you have a Desktop project and its associated IDEA Server project open and you change the IDEA Server project through the Project Properties dialog box, the IDEA Server project you link to will become associated with the current Desktop project.

- Associations between Desktop projects and IDEA Server projects will always remain as defined unless you manually change the association through the Project Properties dialog box.

- You can have one IDEA Server project associated with several Desktop projects, however, you cannot have one Desktop project associated with several IDEA Server projects.
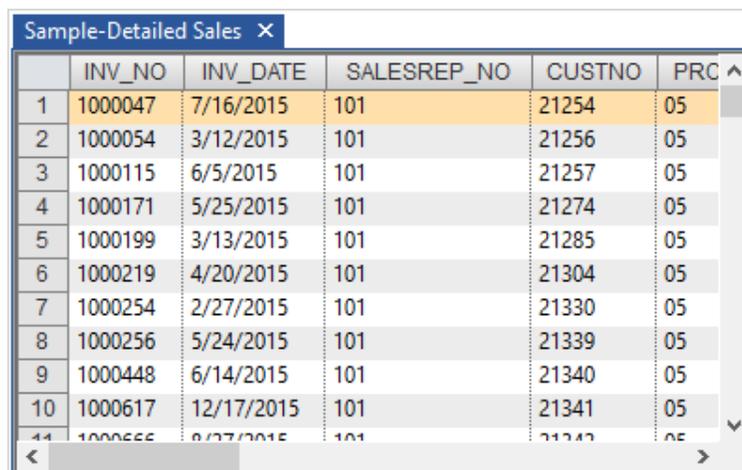
Section 3

IDEA Windows and Toolbars

IDEA uses the following primary windows:

- **Database window**
- **Properties window**
- **File Explorer window**
- **Library window**
- **Fly-Out windows**
- **IDEAScript window**
- **Dashboard window**

Database Window

The Database window lets you view the fields contained within a database. Although multiple databases may be open at one time, each database is opened in a separate Database window and the name of the active database is displayed on the IDEA title bar.

Properties Window

Each database has several properties associated with it that are accessed from the Properties window.

These properties are:

Property	Description
Data	Used to view the data in the file in a spreadsheet-like format with field names as column headings and record numbers as row numbers.
History	Used to view the history of all operations performed on the file. Each database has its own separate History.
Field Statistics	Used to view the statistics for Numeric, Date, and Time fields in the active database.
Control Total	Used to display the sum of a selected Numeric field for reconciliation purposes.
Criteria	Used to isolate records that satisfy entered criteria.
Results	Used to view the Results output for certain tasks.
Indices	Used to switch between created index orders, delete index orders, re-generate index orders, and remove all applied index orders from the active database.
Comments	Used to add comments to the active database. It is also used by IDEA to display warning messages related to the active database.
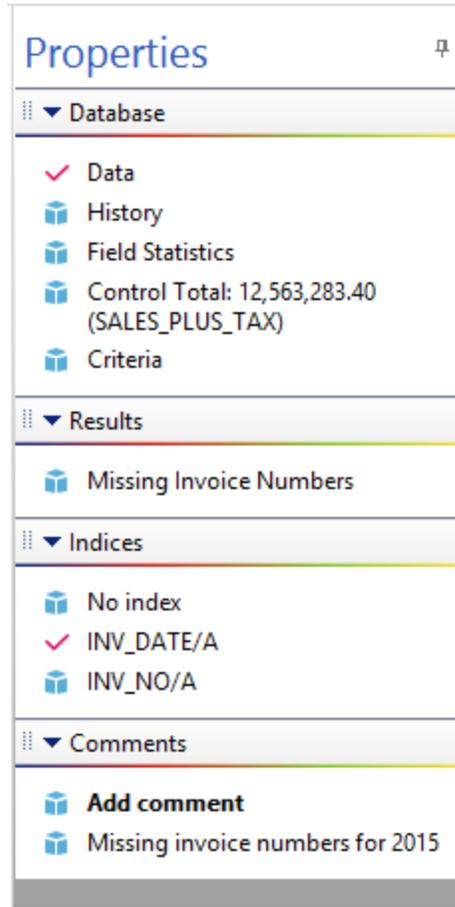
File Explorer Window

The File Explorer window displays all of the IDEA databases in a project in a tree or a sorted view. If you have access to IDEA Server, the File Explorer window becomes a horizontal or vertical split screen between Desktop Project and IDEA Server Project.

The File Explorer window can be resized to show the full details of a database, including the database name, the number of records, the size, the date the database was last modified, and the date the database was created.

The File Explorer also has a toolbar from where you perform such actions as creating a sub-folder, changing the display from sorted to tree view, refreshing the list of databases, and renaming, flagging, or deleting databases.

Library Window

In IDEA, a Library is a repository of files. Each Library in IDEA contains Library groups in which you can organize the files associated to the project.

When a project is created, IDEA creates Library sub-folders that let you organize all associated project files. The Library window in IDEA displays these sub-folders as system Library groups and lists the files contained in the groups. The groups in the Library are Custom Functions, Equations, Exports, Import Definitions, Macros, Other, Results, Source Files, and Visualization.

For each file in the Library, you can view the file size and the date the file was last modified.

From the Library window, you can perform such actions as creating custom Library groups, deleting files, running macros, and copying files to another Library.
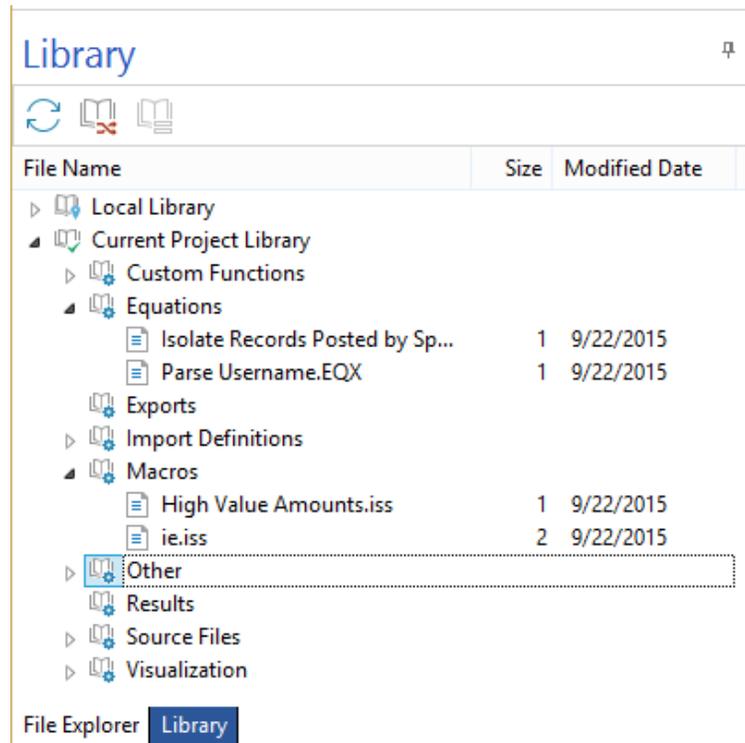
There are three separate libraries available in IDEA:

Library	Description
Corporate Library	The Corporate Library is a repository of files on IDEA Server compiled by IDEA Server Team Leaders. The Corporate Library contains the standard system Library groups. Team Leaders can add files to these system Library groups or create new custom Library groups. Users that are connected to IDEA Server can copy files from the Corporate Library to their current Desktop project. **Note:** The Corporate Library is only displayed if you are connected to IDEA Server.
Local Library	The Local Library is a repository of files on your local drive that you use to share files with all your Desktop projects. The Local Library is always available when you access IDEA. The Local Library folder is created when you install IDEA and can be found at C:\Users\YOUR USERID\Documents\My IDEA Documents.
Current Project Library	The Current Project Library displays the associated files for the active Desktop project. If the Desktop project is linked to an IDEA Server project, the associated server files for the linked IDEA Server project are also displayed.

Fly-out Windows

The following fly-out windows are available as tabs at the base of the application window:

Fly-out Windows	Description
Running Tasks	The Running Tasks fly-out window provides you with the progress information for a particular task that is running.
Search Results	IDEA displays the results of a search in the Search Results fly-out window. Within this window, new searches overwrite old ones. From the right-click menu in the Search Results window, you can re-run the search (as is or make refinements) or print the results. You may sort the results by double-clicking any of the columns within the Search Results window. A directional arrow appears in the field header to indicate the sort order (ascending or descending). IDEA Server allows multiple users to be searching the same database simultaneously without the risk of overwriting another user's search results.

The fly-out windows can be pinned down by clicking the push pin icon in the upper-right corner of the window.

IDEAScript Window

IDEA includes a development tool known as IDEAScript for creating macros to extend the functionality of IDEA. An IDEAScript can be recorded, written from scratch, or a combination of both. The IDEAScript code is generated or written in the IDEAScript window. This window has a toolbar providing access to a number of commonly used options and tools to assist with writing, editing, and debugging IDEAScript macros.

You can also create macros using Visual Script. Visual Script is used to visually create, edit, and maintain macros in IDEA. In essence, Visual Script is the visual representation of IDEAScript. The benefit of Visual Script is that it lets you automate tasks that you perform repeatedly without writing any code or programming. If required, you can then convert your Visual Script macros into IDEAScript macros. For more information on Visual Script, see the IDEA online Help.

Dashboard Window

The Dashboard window lets you view and modify generated or custom built dashboards. Dashboards are a visual representation of your data, in the form of field statistics and interactive charts and tables, that can provide valuable insights.
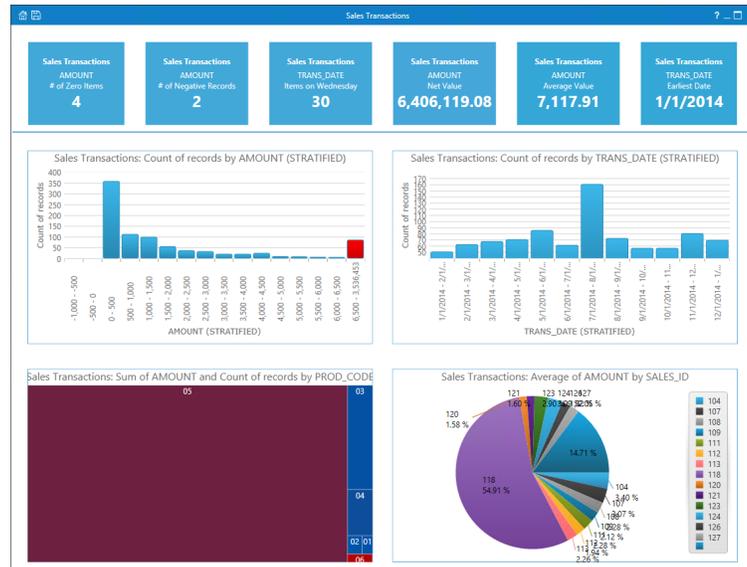
Dashboards consist of three main sections:

Section	Description
Dashboard title bar	The Dashboard toolbar displays the dashboard name and contains commands that let you: • exit the Dashboard window • save the dashboard • access online help • minimize and maximize the window
Field Statistic Panels	The field statistic panels are the first row of panels in the dashboard. You can only add or modify field statistics information in these panels. Charts cannot be added to these panels. Whether generated or manually added, each field statistic panel displays the field statistic value for the selected field within the specified database.
Chart Panels	Chart panels appear below the row of field statistic panels. Chart panels can display treemaps, bar, column, and pie charts. Within chart panels, depending on the chart, you can display a chart caption, x and y axis titles, and a legend. You can also modify charts.

Section 4

Using IDEA

The exercises in this section are meant as an introduction for new users and a refresher for existing users. Each exercise has an objective to indicate what you will achieve in that area upon completion. The tutorial exercises should be completed sequentially as tests are often carried out on the results of previous exercises.

For more information on using IDEA:

- access the Help system in the software
- visit the CaseWare Analytics Support Portal
- attend one of the many training courses

Accessing IDEA

To access the IDEA application from Windows.

1. From the Windows **Start** screen, click the arrow in the bottom-left corner.
2. In the **Apps** view, scroll to the **IDEA** group and click **IDEA**.

   By default, the Managed project is set to Samples. You can use the databases in this Managed project to test IDEA features.

Selecting a Project

To set a Managed project. One Managed project will be used to complete all exercises in this section.

1. On the **Home** tab, in the **Projects** group, click **Select**.
2. Under the **Managed Projects** tab, select **Tutorial**.
3. Click **OK**.

   The Samples project is closed and Tutorial is now the active project. The File Explorer is now empty. The Status bar on the bottom left corner of the application window now displays Managed Project: Tutorial.

Connecting to IDEA Server

To connect to IDEA Server. As IDEA Server is a client-server application, the IDEA databases reside and the tasks run on the server. Hence, you must connect to the server to access the databases and analyze the data. See The Association Between IDEA Working Folders and IDEA Server Projects.

1. On the **Home** tab, in the **IDEA Server** group, click **Select Server**.

   The Select Server dialog box appears. A list of available IDEA Server machines appears. If the list is empty you can add a server.

2. If required, add a server.

   a. Click **Servers…**.

   The Add/Remove Servers dialog box appears.

   b. Click **Add**.

   The Add IDEA Server dialog box appears.

   c. In the **Name** field, enter the name of the IDEA Server machine.

   d. Accept or modify the default **Authentication Port**.

   e. Click **OK**.

   f. In the Add/Remove Servers dialog box, click **Close**.

3. From the **Select a server** drop-down list, select the appropriate server.

4. Click **OK**.

Importing a Microsoft Access File

To import a Microsoft Access file and generate field statistics for the newly imported database.

1. On the **Home** tab, in the **Import** group, click **Desktop**.

   The Import Assistant appears.

2. From the list of available formats, select **Microsoft Access**.

3. Click the **Browse** button adjacent to the **File name** field to select the Microsoft Access database you want to import.

4. Select **Customer.accdb**.

5. Click **Open**.

6. In the Import Assistant, click **Next**.

   The Microsoft Access® dialog box appears.

7. From the **Select tables** list, select **Database1**.

   If you import a Microsoft Access file that contains more than one table, you may simultaneously import multiple tables by selecting the

associated check boxes. However, any options you select in the Character Field Options section are applied to all imported tables.

8. In the **Character Field Options** section, leave the **Scan records for field length** check box selected.

   All Character fields are imported with a length of 255 characters unless IDEA determines the length is shorter.

9. Accept the default value in the **Scan only** field. Ten thousand records will be scanned to determine the maximum field length.

10. Accept the default **Output file name (Customer)**.
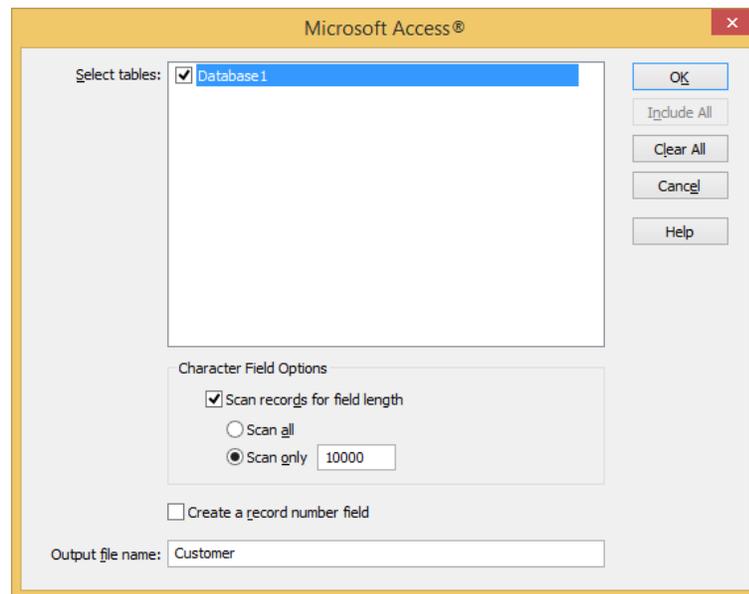
11. Click **OK**.

    When the file is imported, the database name takes the format Filename-Tablename. In this case, the file you imported becomes an IDEA database called Customer-Database1.

Formatting the Data

To change the column formatting for selected fields and to sequence the records.

1. Ensure that **Customer-Database1** is the active database with the **Data** property selected in the **Properties** window.

2. Move the cursor to the column separator between the first two field names. Click the column separator and reduce the width of the **CUST_ NO** field to fit the data.

3. Hover the cursor over the first field header.

   The tooltip displays the field type and the field length.

4. Sequence the **CREDIT_LIM** field in ascending order by double-clicking the column header.

   A directional arrow pointing upwards appears in the CREDIT_LIM column header to indicate the field has been indexed in ascending order. Also, note how the index is displayed in the Indices area of the Properties window.

5. In the **Indices** area of the **Properties** window, click **No index** to return to the original record sequence.

6. In the Database window, right-click the **CUST_NO** field name to display a list of commonly used tasks and functions.

7. Select **Column Settings…**.

   The Column Settings dialog box appears.

8. For the **CUST_NO** field, set the **Text color** to blue, the **Background color** to light gray, and change the **Font** to bold.
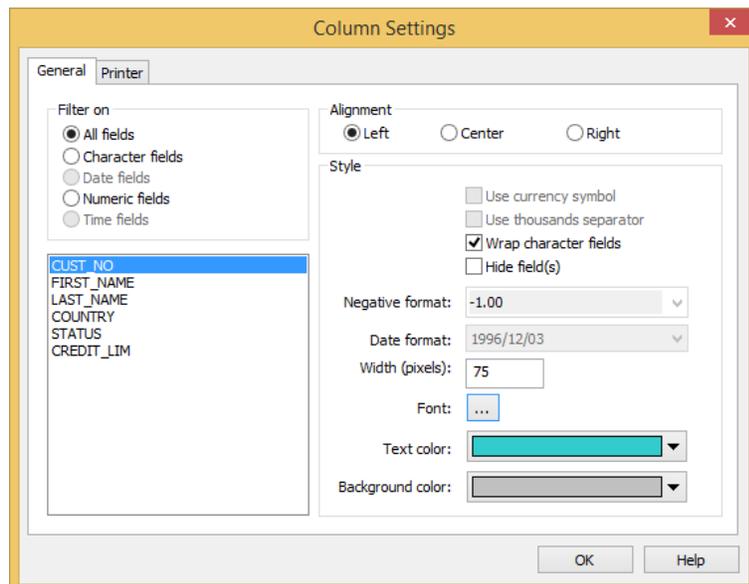
9. For the **CREDIT_LIM** field, set the **Text color** to purple and the **Background color** to light gray. Select the **Use currency symbol** and **Use thousands separator** check boxes.
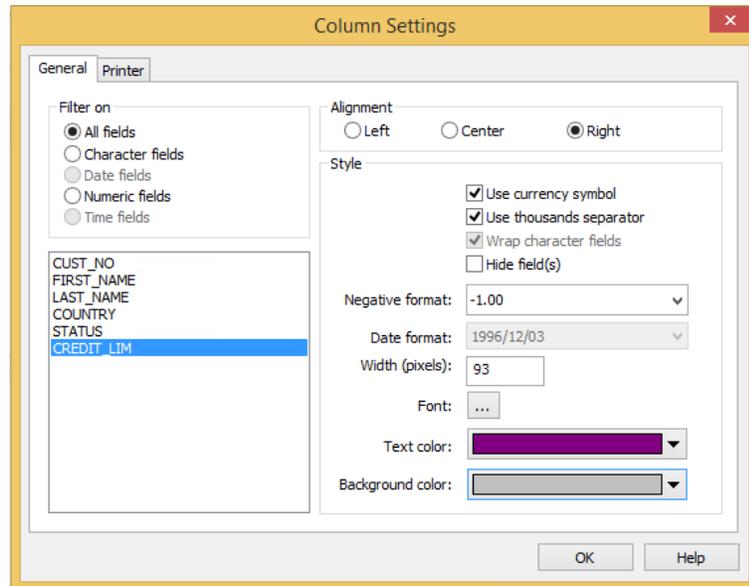
10. Click **OK** to exit the Column Settings dialog box.

   Note that the formatting changes have been applied to the database.

11. Re-order the fields by moving the **CREDIT_LIM** field after the **CUST_ NO** field. Click the **CREDIT_LIM** column header to select it, and then click it again and hold down the mouse button to display the drag icon. Drag the column towards the **CUST_NO** field. Note the red line indicating the drag position. Drop the column to the right of the **CUST_ NO** field.

   When you modify a view, IDEA saves the settings with the database. These settings remain active until you modify or reset them. Any child databases created from this database, inherit the settings.

12. On the **View** tab, in the **Views** group, click **Reset** to remove the format changes.

Viewing the Field Statistics

To view the field statistics for the Numeric fields in the active database.

1. Ensure that **Customer-Database1** is the active database and the **Data** property is selected in the **Properties** window.

2. In the **Properties** window, click **Field Statistics**.

3. Click **Yes** to generate field statistics for all fields.

By default, the Field Statistics window displays the statistics for Numeric fields. In this case, field statistics appear for the CREDIT_ LIM field, the only Numeric field in the database.

4. Study the field statistics for the **CREDIT_LIM** field.

5. In the **Maximum Value** field, click the value to view the record with the maximum value.

6. The Maximum Value of CREDIT_LIM dialog box appears, displaying the record from the database that constitutes the maximum value.

   You may save or print the record.
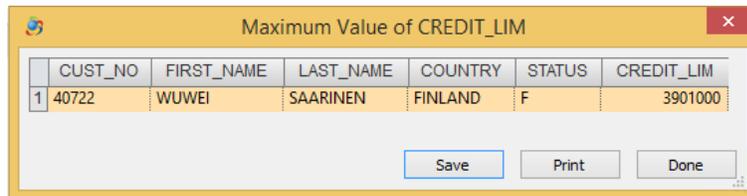
7. Click **Done**.

8. In the **Database** area of the **Properties** window, click **Data** to return to viewing the database.

Selecting a Random Record Sample

To select a random sample of records for testing.

1. On the **Analysis** tab, in the **Sample** group, click **Random**.

2. In the **Number of records to select** field, enter **10**.

3. Accept the **Random number seed** value provided by IDEA.

   IDEA uses the random number seed to start the algorithm for calculating the random numbers. If a sample needs to be extended, then entering the same random number seed but with a larger sample size produces the same original selection plus the required additional records.

4. Accept the default values in the **Starting record number to select** and the **Ending record number to select** fields.

   IDEA sets the defaults as the first and last records; in this case 1 and 341.

5. Leave the **Allow duplicate records** check box unselected.

6. In the **File name** field, enter **Sample of Customers**.

7. Click **Fields**.

   The Fields dialog box appears. Note that by default, IDEA selects all fields from the database to extract to the Sample of Customers database.

8. Click **OK**.

9. In the Random Record Sampling dialog box, click **OK**.

10. View the output database and note the additional field (SAM_RECNO) that IDEA has added to the database as the right-most column. This contains the corresponding record numbers from the original database (Customer-Database1). Note that the database appears as a child database to its parent database (Customer-Database1) in the File Explorer window.

11. To close the **Sample of Customers** database, right-click the **Sample of Customers** tab and select **Close**.

Extracting Records

To extract records of customers with high credit limits.

1. On the **Analysis** tab, in the **Extract** group, click **Direct**.

2. In the first row of the **File Name** column, replace the default file name with **Large Credit Limits**.

3. Enter the equation **CREDIT_LIM >= 30000**.

4. Click **OK** to start the extraction.

   The output database, Large Credit Limits, appears in the Database window. It contains 61 records.

5. Right-click the **Large Credit Limits** tab at the top of the Database window, and select **Close**.

6. Close the **Customer-Database1** database.

Importing a Text File

To import the sales file that has been provided in Fixed Length text format.

1. On the **Home** tab, in the **Import** group, click **Desktop**.

   The Import Assistant appears.

2. From the list of available formats, select **Text**.

3. Click the **Browse** button adjacent to the **File name** field.

The Select File dialog box appears. It defaults to the Source Files Library group in the active project.

4. Select **sales.txt**.

5. Click **Open**.

6. In the Import Assistant, click **Next**.

   Once you have selected the data file, the Import Assistant analyzes the data file and tries to determine its type. IDEA correctly identifies the format as Fixed Length.
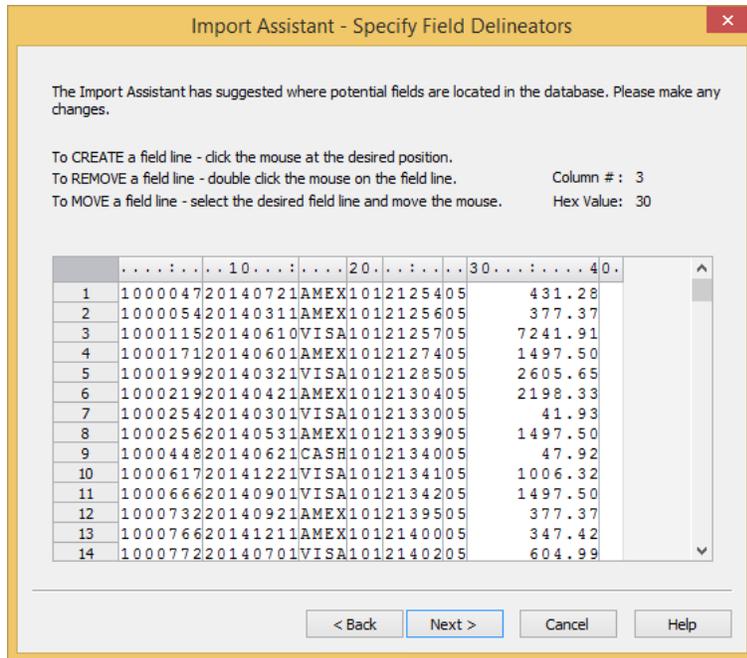
7. Click **Next**.

   In the Specify Record Length screen, IDEA correctly identifies the length of each record, which is 42 bytes (characters), including the record delimiters. IDEA automatically excludes the record delimiters from the import.

8. Inspect the file in the preview. Scroll through the records and check that the columns of data (fields) line up. Click **Next**.

   In the Specify Field Delineators screen, you can identify the start and end positions of each field within the records. The Import Assistant inserts lines for a best fit based on the pattern of data within the records.It is usual to obtain a record definition for Fixed Length files.

9. Modify the line positions of the field delineators according to the following record definition. Note that Type is C (Character), D (Date), or N (Numeric):

Name	Type	Start	Len	Other	Desc
INV_NO	C	1	7		Invoice Number
TRANS_ DATE	D	8	8	YYYYMMDD (mask)	Transaction Date
PAY_TYPE	C	16	4		Payment Method
SALES_ID	C	20	3		Salesperson ID
CUST_NO	C	23	5		Customer Number
PROD_ CODE	C	28	2		Product Code
AMOUNT	N	30	11	2 decimal places	Transaction Amount

10. Click **Next**.

11. In the Field Details screen, you must enter the details for each field, including identifying which fields or areas you do not want to import. Use the information in the record definition that was provided in the previous step to complete the details for each field.
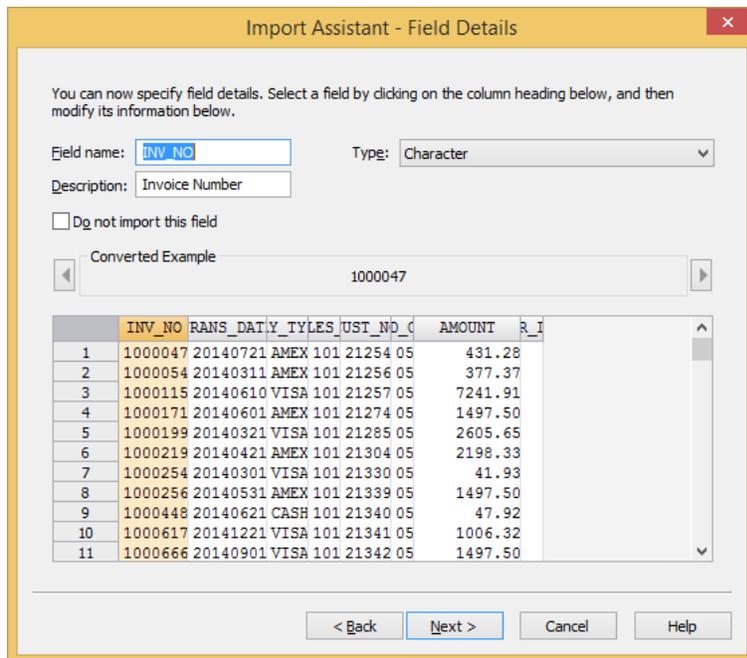

12. Once you have defined all the fields, click **Next**.

13. In the Create Field screen, you can add Virtual, Editable, Boolean, or Multistate fields to the file you are importing. For the purposes of this exercise, do not create any fields. Click **Next**.

14. In the Import Criteria screen, you can enter an equation to filter the data that is to be imported into IDEA. For the purpose of this exercise, do not enter an equation. All records in the sales.txt file are required for subsequent exercises in this tutorial. Click **Next**.

15. In the Specify IDEA File Name screen, which is the final step in the import process, you must specify the import options and name the resulting database.

   a. Accept the option to import the file (rather than link to the file). IDEA runs faster when you import rather than link to a file.

   b. Select the **Generate field statistics** check box. The field statistics can be used for reconciliation.

   c. Accept the default value in the **Save record definition as field**. IDEA automatically saves the record definition as sales.rdf/.rdm in the Library. You can use this record definition later to import similar data files or modify the existing record definition.

   d. In the **Database** name field, enter **Sales Transactions**.
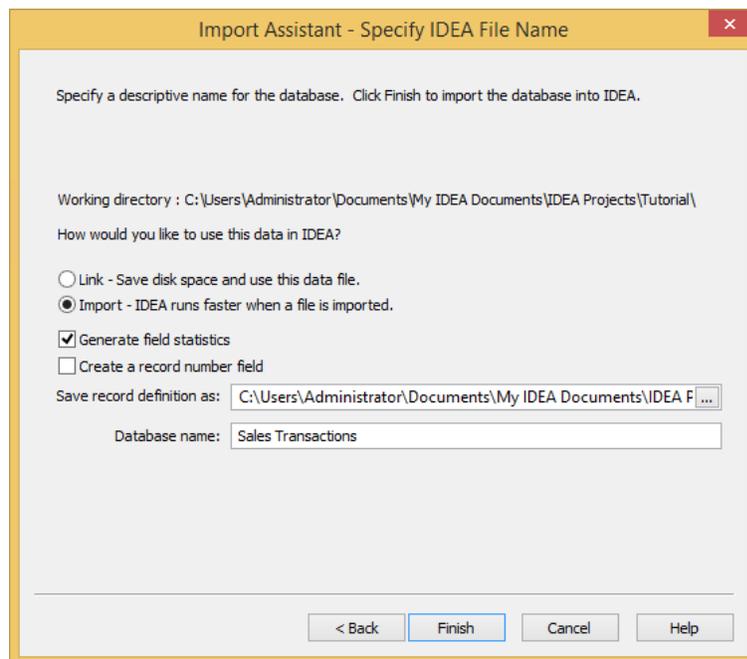
15. Click **Finish**.

    IDEA imports the file into the project, and then opens and displays it in the Database window.

16. In the **Properties** window, click **Control Total**.

17. Select the **AMOUNT** field, and then click **OK**.

The control total of 6,406,119.08 appears next to the Control Total link in the Properties window. Auditors should reconcile this amount to the total sales from an outside source for the period before commencing audit testing.

Discovering Insights from Data

To use the Discover task in the Visualization feature to gain insights into data.

1. Ensure **Sales Transactions** is the active database and the **Data** property is selected in the **Properties** window.

2. On the **Analysis** tab, in the **Visualization** group, click **Discover**.

   When the Discover analysis is complete, the generated dashboard displays selected field statistics as well as graphs and charts of the data. These statistics and charts can be changed if you wish.
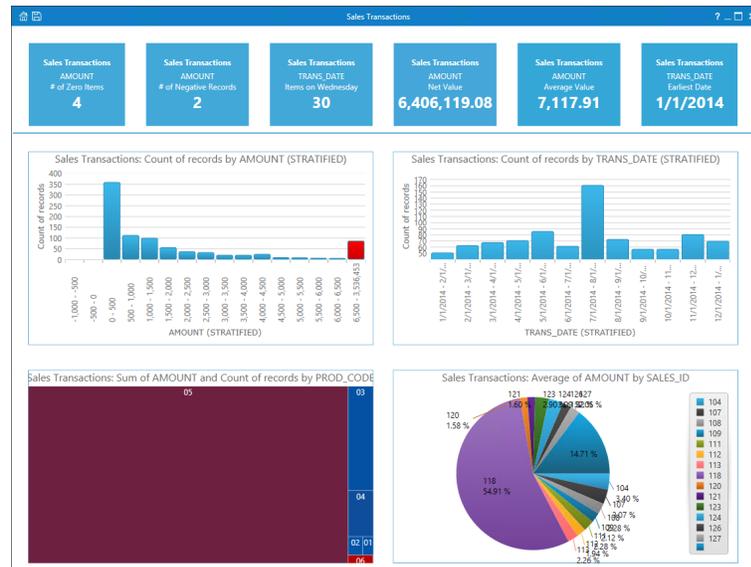
3. From the dashboard title bar, click **Save**.

   The Save dialog box appears.

4. In the **File name** field, enter **Sales Transactions** and click **Save.**

   The field statistic panels at the top of the dashboard display the most relevant field statistics for the Sales Transactions database.

   Review the four charts in the bottom of the Dashboard. There are two column charts, a treemap and a pie chart showing information about the Sales Transactions database.

   - In the first column chart, you can see that the data is the count of records for AMOUNT stratified into $500.00 bands. The final column, shown in red, represents outlier data points. So the majority of the transactions are for amounts between 0 and 500 dollars.

- The second column chart shows the number of records stratified by the month of the transaction date. The busiest month is July. The quietest month is January.
- The Treemap represents two different things. The size of each node represents a count of the number of transactions for a given product code. The color indicates the relative value of the underlying transactions. Blue is a low value, purple is moderate and red is high. This treemap shows that product code 05 makes up the vast majority of all transactions (834/900) and represents a moderate amount of revenue (2,272,186.70). Product code 06 has only three transactions, but represents 3,790,308.66 in sales.
- The Pie chart indicates the percentage of the average sales amount for each Salesrep. Almost 55% are associated with sales rep 118.

You are now going to modify the information in the dashboard.

Clearing Information in a Field Statistic Panel

1. Place your cursor in the first field statistic panel on the left.

   The Properties button appears in the panel toolbar at the top right of the panel.

2. Click the **Properties** button.

   The Field Statistic Properties dialog box appears.

3. Click **Clear** and then click **Save**.

Editing Information in a Chart Panel

1. Place your cursor in the Pie chart panel to display the panel toolbar in the upper right corner.

2. Click the **Properties** button.

   The Chart Properties dialog box appears. From this dialog box you can change the chart type as well as modify the properties.
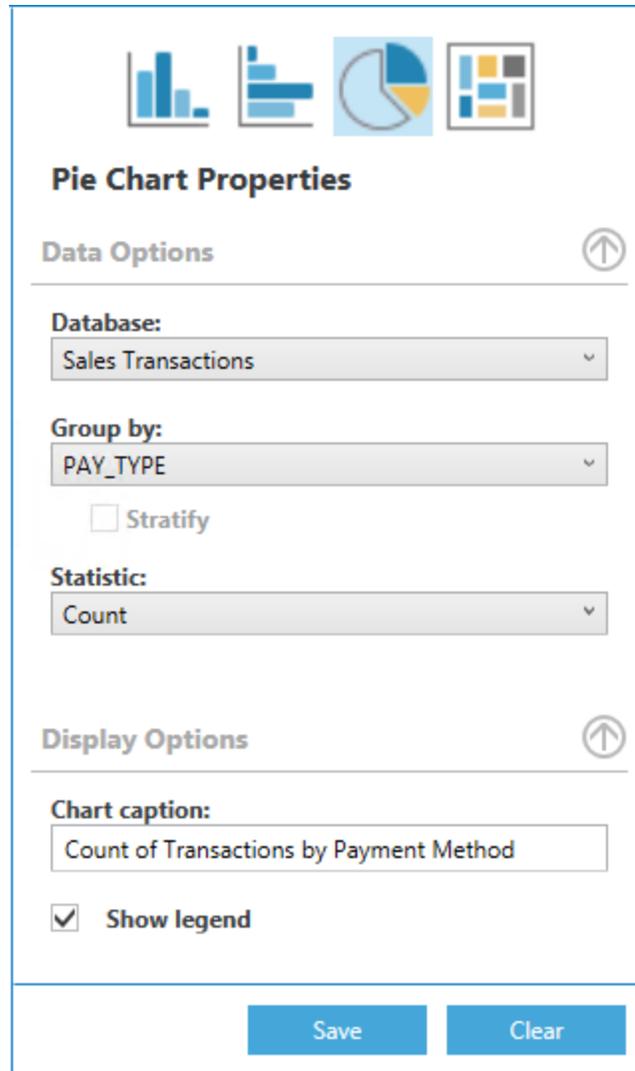
3. From the **Group by** drop-down list, select **PAY_TYPE**.

4. From the **Statistic** drop-down list, select **Count**.

   Note that as you modify the properties, the chart automatically updates. Also note that the chart caption also automatically updates. You can modify the chart caption to a custom title.

5. In the **Chart caption** field, enter **Count of Transactions by Payment Method**.

6. Accept the default selection of the **Show Legend** check box.

7. Click **Save**.

The modified panel is added to the dashboard.

8. Save and close the dashboard.

Using a Treemap to Visualize your Data

To use the Visualize task in the Visualization feature to create a treemap.

1. On the **Analysis** tab, in the **Visualization** group, click **Visualize**.

The Select a Dashboard window appears.

2. Click **New Dashboard**.

The Chart Properties dialog box appears.

3. In the Properties pane on the right, click the **Treemap** button.

Since the Sales Transactions database was the active database, it appears automatically in the Database field.

4. From the **Group by** drop-down list, select **CUST_NO**.

5. From the **Color by** drop-down list, select **Sum**.

6. From the **Field to Sum** drop-down list, select **AMOUNT**.

7. Accept the default selection of **Count** for the **Size by** field.

8. In the **Chart caption** field, enter **Customer Purchases**.
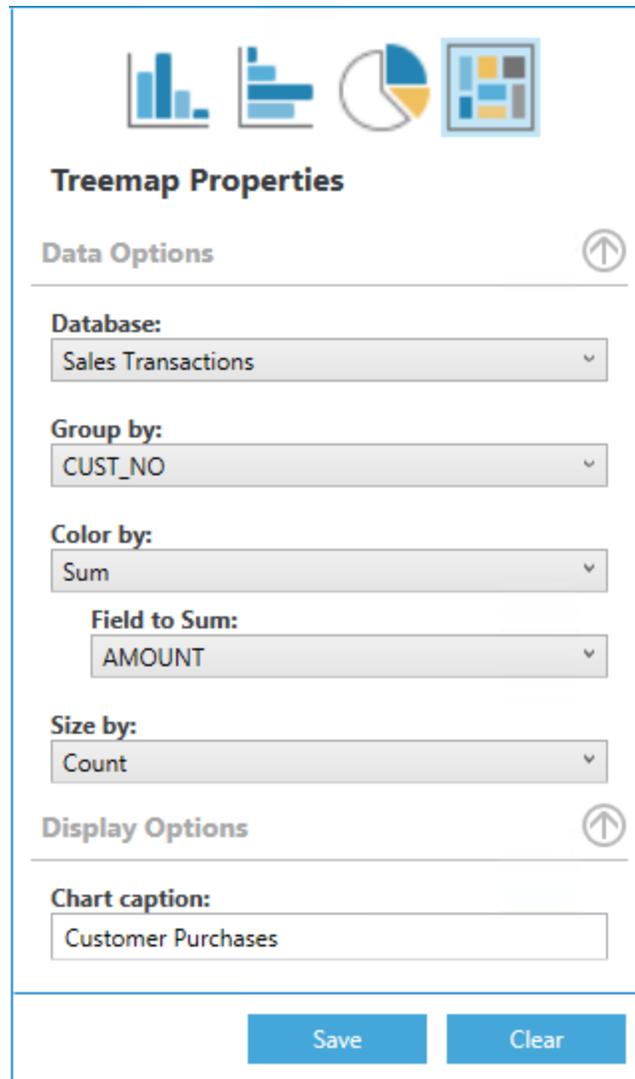
9. Click **Save**.

The Select a Layout page appears.

10. Do one of the following to display the chart panel layout you want to use in your dashboard:

- Click the **Next** and **Previous** buttons to scroll through the available layouts.
- Click the appropriate layout option button.

11. Display the option with a single panel and click **Select** or double-click the layout image.

   The Dashboard window appears. The newly created chart is displayed in the chart panel.

12. From the Dashboard title bar, click the **Save** button to save this new dashboard as **Customer Purchases**.

   The Treemap display a series of nodes, each of which represents a customer. The larger the node, the more transactions that customer has made. The sum of a customer's transactions influences the color; therefore, the one red square indicates both a relatively large number of transactions as well as a significantly higher sum of transaction amounts compared to the other customers.

13. Hover your cursor over the red node to display the node information.

   The node information includes the field from which categories are created, the category name, and the size and color values.
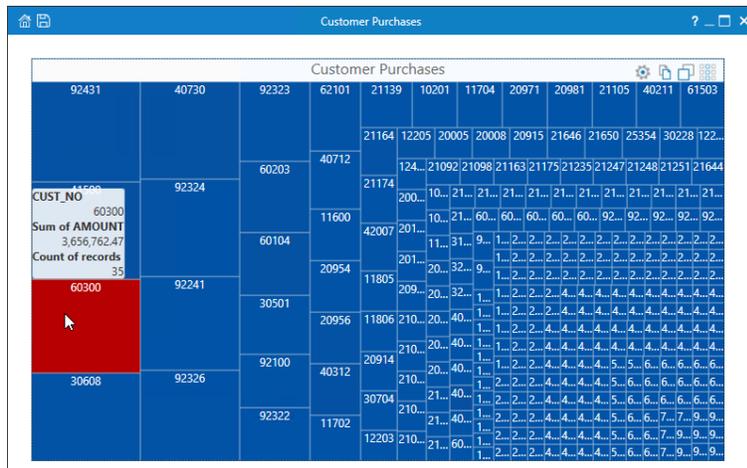
14. Click the red square to display the underlying records.

15. Close the dashboard window.

Opening a Previously Saved Dashboard

1. On the **Analysis** tab, in the **Visualization** group, click **Visualize**.

   The Select a Dashboard window appears. A list of saved dashboard appears. You can edit the name and description for a dashboard from this window.

2. Hover you cursor over the **Customer Purchases** dashboard in the list and click the associated **Edit** button.

   The Name and Description fields are now editable.

3. In the Name field, enter **2014 Customer Purchases**.

4. In the Description field, enter **Customer purchases for 2014**.

5. Click the associated **Save** button.

   You can click the associated Discard button to return to the previous name and description.

6. From the list of available dashboard, double-click the dashboard you want to open.

Summarizing the Data

To total the sales transactions by customer to produce a list of outstanding balances as well as to identify the number of active accounts and the number of transactions per account.

1. On the **Analysis** tab, in the **Categorize** group, click **Summarization**.

   The Summarization dialog box appears.

2. Select the **CUST_NO** field as the field to summarize and the **AMOUNT** field as the field to total.

3. Click **Fields**.

   The Fields dialog box appears. Note that no fields are selected. This stops unnecessary information from being included in the summarized database.

4. Click **OK** to return to the Summarization dialog box.

5. Select the **Use Quick Summarization** check box.

   The Use Quick Summarization check box may be selected as a faster means to summarize your database. However, Quick Summarization may only be used if the database has no more than 4,000 unique keys. In addition, Quick Summarization lets you select only one field to summarize.

   Note that when Quick Summarization is used, Sum in the Statistics to include section is selected by default and the entire section grayed out.

6. Accept the **Create database** check box selection.

   The output database for this task will be joined to Customer-Database1 in a later exercise. Note that as with most tasks in IDEA, you may apply a criterion to the task, for example, to only summarize transactions for a specified period. As with all other tasks where you can apply a criterion, if you apply the criterion to the database using the Criteria link in the Properties window, the criterion equation appears in the Criteria text box on the task dialog box. However, you may enter a new criterion or modify an existing one using the Equation Editor.

7. In the **File name** field, enter **Summarized Transactions**.

8. Click **OK**.

9. View the output database. Also note the number of records (303) on the Status bar.

Stratifying the Data

To stratify outstanding balances to gain a profile of the number and value of accounts within bands.

1. Ensure that **Summarized Transactions** is the active database and the **Data** property is selected in the **Properties** window.

2. In the **Properties** window, click **Field Statistics**.

3. Click **Yes** to generate the statistics.

4. View the numeric statistics for the **AMOUNT_SUM** field.

5. In the **Properties** window, click **Data**.

6. Right-click any record in the Database window, and then select **Show Field Stats…**.

7. From the list of available statistics for Numeric fields, select the **Net value**, **Absolute value**, **Minimum value**, and **Maximum value** statistics.

8. Click **OK**.

    The selected statistics appear in a yellow band at the top of the Database window.

9. Adjust the column widths, including the record number/statistic name column to view the full statistic names and totals. Move the cursor over the rows and note the tooltips displaying the statistic names.

Sales Transactions ✕	Summarized Transactions ✕		
	CUST_NO	NO_OF_RECS	AMOUNT_SUM
Absolute value		900	6,406,119.08
Maximum value		37	3,656,762.47
Minimum value		1	0.00
Net value		900	6,406,119.08

10. Right-click any record in the database, and select **Show Field Stats…**, and then click **Clear All**.

11. Click **OK** to remove the **Show Field Stats** yellow band from the database.

12. On the **Analysis** tab, in the **Categorize** group, click **Stratification**.

    The Stratification dialog box appears.

13. From the **Field to stratify** list, select **AMOUNT_SUM**.

14. From the **Fields to total on** list, select **NO_OF_RECS**.

15. Change the **Increment** to **5,000.00**.

16. Click in the **< Upper Limit** text box of the first row.

17. Click the second row of the spreadsheet area.

18. Highlight the next three rows of the spreadsheet area to take the range to **25,000.00**.

19. Change the **Increment** to **25,000.00**.

20. Highlight the next seven rows of the spreadsheet area (to row 12).

21. Ensure the **Create result** check box is selected.

22. In the **Result name** field, enter **Numeric Stratification**.

23. Click **OK**.

The Results output for the Summarized Transactions database becomes active and appears as a link in the Results area of the Properties window.

Note that there are 219 accounts in the first band (greater than or equal to 0 and less than 5,000.00).

24. On the **File** tab, in the **Print** group, click **Print Preview**.

25. Adjust the magnification to view the report (for example, 100%).

26. Close the Print Preview window to return to the Results output.

Viewing the Results Graph

To create a custom graph depicting the results of the Stratification task.

1. Ensure that **Summarized Transactions** is the active database and **Numeric Stratification** is selected in the **Results** area of the **Properties** window.

2. From the Results toolbar, click the **Alternates between displaying the results in a customizable graph and grid** button to graph the results.

3. From the Chart toolbar, click the **Gallery** button and select each chart type in turn to view the options available.

   As you select the different chart types, notice that the icon for the Gallery button on the chart toolbar changes to depict the type of chart selected.

4. Re-select the bar graph option.

5. From the Chart toolbar, click the **Properties** button.

6. Click the **Y Axis** tab.

7. Ensure the **Show Gridlines** check box is selected, and then click **OK**.

8. Place your cursor over stratum 6 in the graph and note that its color is solid and its X- and Y-axes values (stratum number and total amount) appear in a tooltip.

9. Click the stratum **6** bar, and then select **Display Records** to view the accounts making up the summary amount.
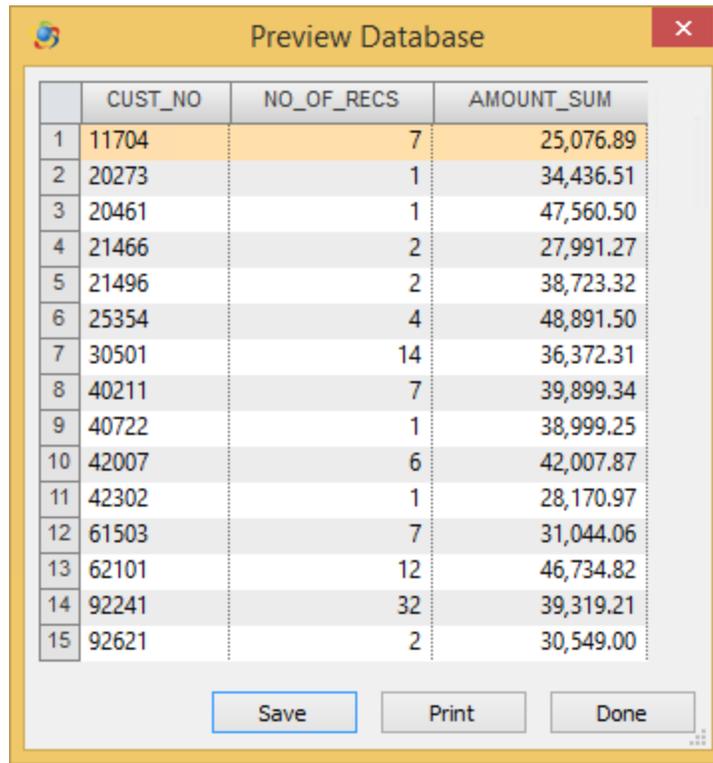
	CUST_NO	NO_OF_RECS	AMOUNT_SUM
1	11704	7	25,076.89
2	20273	1	34,436.51
3	20461	1	47,560.50
4	21466	2	27,991.27
5	21496	2	38,723.32
6	25354	4	48,891.50
7	30501	14	36,372.31
8	40211	7	39,899.34
9	40722	1	38,999.25
10	42007	6	42,007.87
11	42302	1	28,170.97
12	61503	7	31,044.06
13	62101	12	46,734.82
14	92241	32	39,319.21
15	92621	2	30,549.00

10. Click **Done**.

11. From the Results toolbar, click the **Alternates between displaying the results in a customizable graph and grid** button to return to the viewing the stratification Results output grid.

12. In the **Properties** window, click **Data** to return to the **Summarized Transactions** database.

13. Close all open databases.

Creating a Pivot Table

To profile the Sales Transactions database in a table format and to create multiple summarizations in a table by calculating the sum, the average, or the count of items.

1. Open the **Sales Transactions** database.

2. On the **Analysis** tab, in the **Categorize** group, click **Pivot Table**.

   The Pivot Table dialog box appears.

3. In the **Result name** field, enter **Sales Transactions Pivot Table**, and then click **OK**.

4. In the Pivot Table Field List dialog box, click **PAY_TYPE** and drag it

onto the row header field displaying **Drop Row Fields Here**. Click **PROD_CODE** and drag it onto the column header field displaying **Drop Column Fields Here**. Click **AMOUNT** and drag it onto the **Drop Data Items Here** area. Click **Close**.

If the data is too wide for the field, IDEA displays the values as pound signs (#). Click and drag the column separators to widen the fields in order to view the actual values.

You have just profiled the Sales Transactions database by payment type and product code with the sum of the amount for each combination of them.
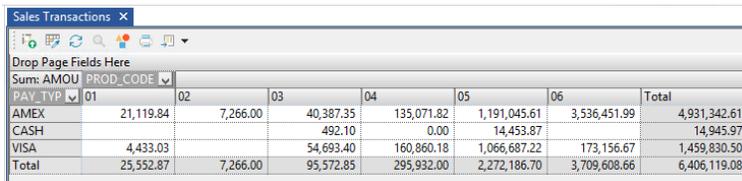
Sum: AMOU PROD_CODE							
PAY_TYP	01	02	03	04	05	06	Total
AMEX	21,119.84	7,266.00	40,387.35	135,071.82	1,191,045.61	3,536,451.99	4,931,342.61
CASH			492.10	0.00	14,453.87		14,945.97
VISA	4,433.03		54,693.40	160,860.18	1,066,687.22	173,156.67	1,459,830.50
Total	25,552.87	7,266.00	95,572.85	295,932.00	2,272,186.70	3,709,608.66	6,406,119.08

5. Right-click one of the product code column headers to access a right-click menu. This menu provides options to hide the totals or to reverse the order of the product code display. Select and deselect the menu options and make note of the changes.

6. Right-click any record in the table to display the Pivot Table Field dialog box.

7. In the **Summarize by** list, click **Count** and then click **OK**.

8. To view the records for the four sales of Product Code 02 that were paid using American Express (AMEX), select the footer total for Product Code 02 and then click the **View the records that make up a selected value in the Data Area** button on the Pivot Table toolbar.

Preview Database
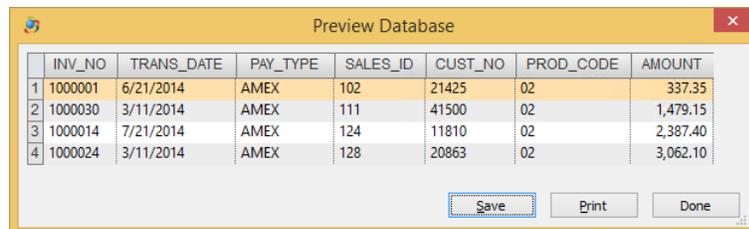
	INV_NO	TRANS_DATE	PAY_TYPE	SALES_ID	CUST_NO	PROD_CODE	AMOUNT
1	1000001	6/21/2014	AMEX	102	21425	02	337.35
2	1000030	3/11/2014	AMEX	111	41500	02	1,479.15
3	1000014	7/21/2014	AMEX	124	11810	02	2,387.40
4	1000024	3/11/2014	AMEX	128	20863	02	3,062.10

9. Click **Done**.

10. The IDEA Pivot Table lets you have multiple fields in the row, the column, or in the data area. From the Pivot Table toolbar, click the **Opens the Pivot Table Field List dialog box** button to access the Pivot Table Field List dialog box. Add the **SALES_ID** field to the column area, placing it to the left of the **PROD_CODE** field. Click **Close**.

11. Now, display only the sales of product codes **02** and **04**, but have the sales ID as the primary focus. Click the drop-down arrow in the **PROD_**

CODE field header and select only the check boxes for product codes 02 and 04.

12. Note that you can collapse or expand the detail of each salesman by clicking the plus or minus symbols next to the salesman number. To collapse all, right-click the SALES_ID field in the column area and then select Collapse all.

13. In the Properties window, click Data.

14. Close the Sales Transactions database.

Joining Databases

To join two databases together.

1. Open the Summarized Transactions database.

   The common key by which the databases are to be joined is the customer number field in each database. The data type of this key field must be the same, but the field lengths may vary.

2. On the Analysis tab, in the Relate group, click Join.

   The Join Databases dialog box appears with Summarized Transactions listed as the primary database.

3. Click Fields for the primary database.

   The Fields dialog box appears. Note that all fields are selected for the output database.

4. Click OK to close the Fields dialog box.

5. Click Select to select the secondary database.

6. Select the Customer-Database1 database, and then click OK.

7. In the File name box, enter Customer Balances.

8. Click Match to specify the common match key.

9. Click the first row in the Primary column and select CUST_NO from the list of fields.

   Note the Order column and accept the default, Ascending.

10. Click the first row in the Secondary column, and then select CUST_NO from the list of fields.

11. Click OK.

12. Select the **All records in both files** option.
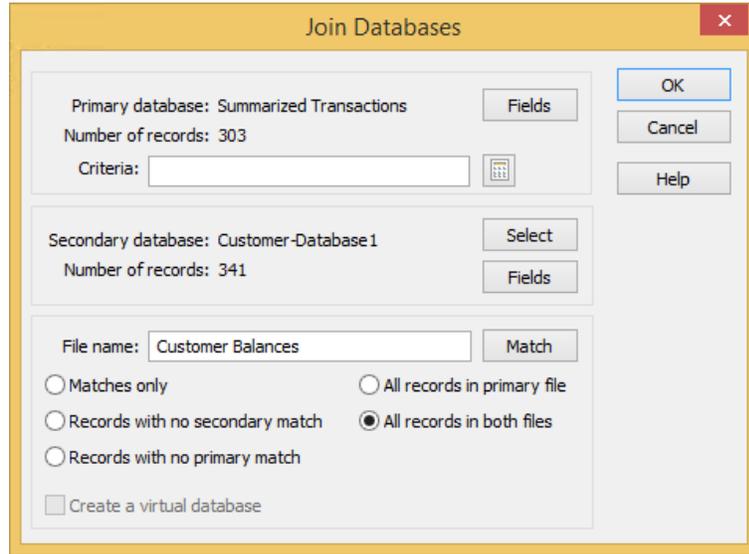
13. Click **OK** to join the selected databases.

14. View the output database, **Customer Balances**. It contains 351 records.

Reviewing the History

To view the History maintained by IDEA to check what has been done.

1. Ensure that **Customer Balances** is the active database and the **Data** property is selected in the **Properties** window.

2. In the **Properties** window, click **History**.

3. Expand out and examine each section of the History log.

4. Locate the last section, which contains the details of how the databases were joined.

   Note the following:
   - Number of records: 351 (matched sales to customers)
   - Unmatched primary records: 10 (sales to customers not in the Customer-Database1 database)
   - Unmatched secondary records: 48 (customers with no sales in the period)

5. Examine the **IDEAScript code** section of the **Join Databases** history.

   This can be used to re-perform or automate the audit tests.

6. Collapse the History for the **Join Databases** task.

Using Display All Records Containing

To find all unmatched records or all occurrences of a particular instance of data.

1. Ensure that **Customer Balances** is the active database and the **Data** property is selected in the **Properties** window.

2. Locate record **9**. Note that there is no value in the **CUST_NO1** field for this record (a sale for which there is no match in the Customer-Database1 database).

3. Right-click the blank record **9** for the **CUST_NO1** field, and then select **Display all records containing ""**.

   The Display All Records Containing... dialog box appears.

4. Click **OK**.

   IDEA applies the criterion CUST_NO1 == "" to the database and displays it beside the Criteria link in the Properties window.

Note that there are 10 records that meet the specified criterion. This is the number of transactions for which there are no records in the Customer-Database1 database.

5. Right-click the **Criteria** link in the **Properties** window, and then select **Clear**.

   The criterion is removed from the database and all records are displayed.

6. Repeat the process to identify all customers with no sales in the period using the criterion **AMOUNT_SUM==0.00**.

   There are 49 records. These are the accounts with no outstanding balances.

7. Clear the criterion to return to viewing all records in the Customer Balances database.

Appending a Virtual Field

To append a Virtual (calculated) field to calculate a new credit limit and to identify the accounts where the new credit limit has been exceeded.

1. Ensure that **Customer Balances** is the active database and the **Data** property is selected in the **Properties** window.

2. On the **Data** tab, in the **Fields** group, click **Append**.

3. Enter the following details:
   - Field name: NEW_LIMIT
   - Field type: Virtual Numeric
   - Length: Not applicable for Numeric fields
   - Number of decimals: 2
   - Parameter: CREDIT_LIM * 1.1

- Description: Updated Credit Limit

4. Click **OK** to append the NEW_LIMIT field.

5. Scroll completely to the right in the database and note that the NEW_LIMIT field has been added as the last field in the database.

The color of data in Virtual fields is determined by the color set in the Database Grid tab of the IDEA Options dialog box. The IDEA Options dialog box is accessible from the File tab.

Performing a Record Extraction

To perform an extraction to identify accounts where the new credit limit has been exceeded.

1. Ensure that **Customer Balances** is the active database and the **Data** property is selected in the **Properties** window.

2. On the **Analysis** tab, in the **Extract** group, click **Direct**.

3. In the **File Name** column, replace the default file name with **Exceeded Credit Limits**.

4. Click the **Equation Editor** button , and then enter the equation **AMOUNT_SUM > NEW_LIMIT**.

5. From the Equation Editor toolbar, click the **Validate and Exit** button to return to the Direct Extraction dialog box.
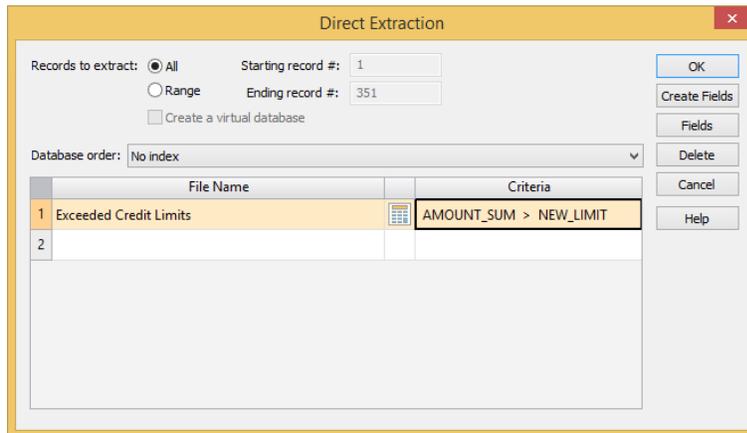
6. Click **OK**.

7. View the output database of 11 records (including sales to unauthorized customers).

8. Close all open databases.

Identifying Duplicate Invoices

To test the validity of invoices and to test for duplicate invoice numbers.

1. Open the **Sales Transactions** database.

2. On the **Analysis** tab, click **Duplicate Key** and then click **Detection**.

   The Duplicate Key Detection dialog box appears.

3. Accept the default selection of the **Output Duplicate Records** option.

4. In the **File name** field, enter **Duplicate Invoices**.

5. Click **Key**.

   The Define Key dialog box appears.

6. In the **Field** column, select **INV_NO** and leave the direction as **Ascending**.

7. Click **OK** to return to the Duplicate Key Detection dialog box.
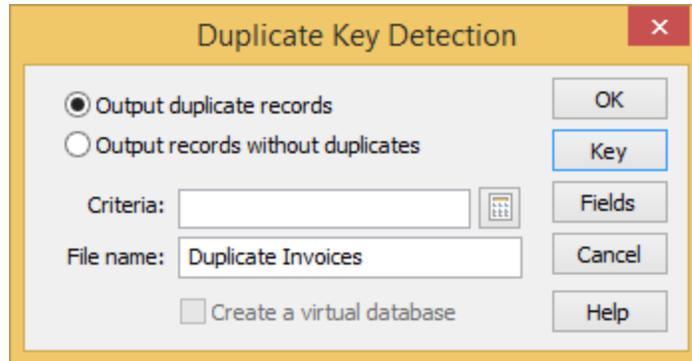
8. Click **OK** to run the task.

9. View the output database of four transactions with two pairs of duplicate invoice numbers (1000097 and 1000350), which should be investigated.

10. Close all open databases.

Identifying Similar Records

To identify similar records in Character fields.

1. Open the **Customer-Database1** database.

2. On the **Analysis** tab, in the **Explore** group, click **Duplicate Key** and then click **Fuzzy**.

    The Fuzzy Duplicate dialog box appears.

3. Accept all default values in the **Output** and **Settings** sections.

4. Click **Key**.

    The Define Fuzzy Match Key dialog box appears.

5. From the **Character fields** list, select **LAST_NAME** and click **ADD>>**.
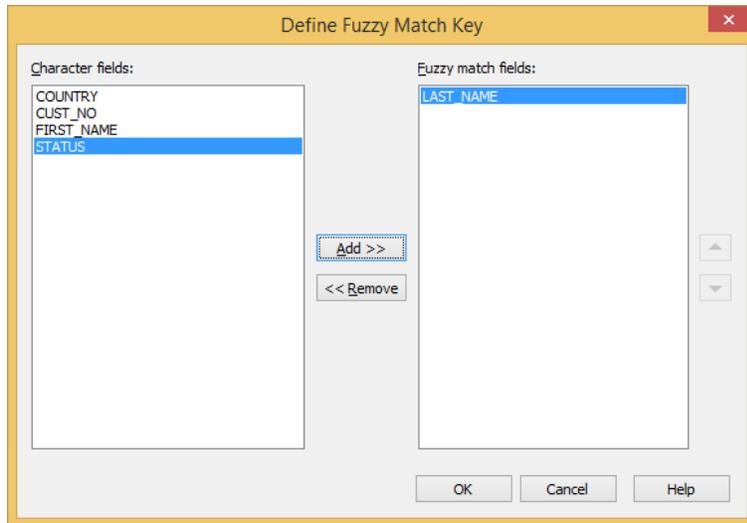
6. Click **OK**. You are returned to the Fuzzy Duplicate dialog box.

7. In the **File name** field, enter **Fuzzy Duplicates - Customer**.
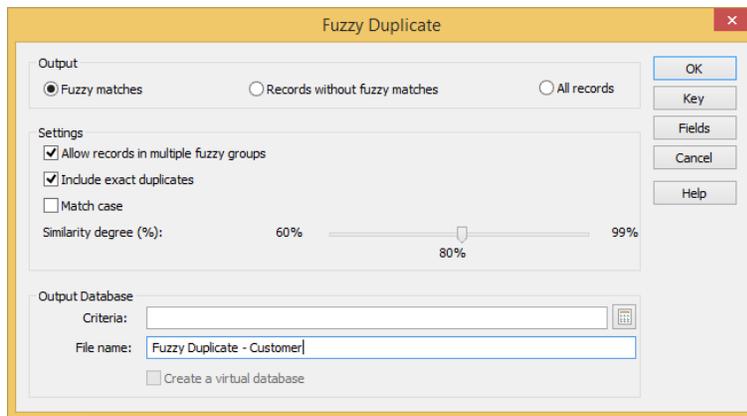
8. Click **OK**.

9. View the resultant database of 47 records. Four new fields are added to the output database:

Field	Description
GROUP_ID	The group identification number assigned to a fuzzy group. The GROUP_ID is assigned to all records within the fuzzy group.
GROUP_ NAME	The name of the fuzzy group. The fuzzy group name is taken from the record that has the largest amount of fuzzy matches. This record is known as the group core.

Field	Description
SIMILARITY_ DEGREE	The degree of similarity computed between the record in the fuzzy match field and the associated group core. The value ranges between 0 and 1, where 0 indicates no relationship and 1 indicates an exact duplicate.
RECORD_ NUM	The row number of the record in the parent database.

Rerun the task to remove the exact duplicates and adjust the similarity degree.

10. On the **Analysis** tab, in the **Tasks** group, click **Re-run**.

11. In the **Settings** section, clear the **Include exact duplicates** check box.

12. In the File name field, enter **Fuzzy Duplicate - Customer No Duplicates**.
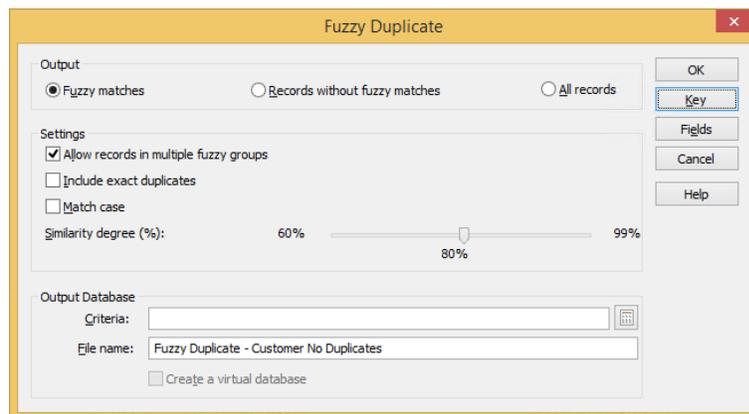
13. Click **OK**.

14. View the output database of eight records and observe the values in the SIMILARITY_DEGREE field. Records with a value of 1.0000 are the group core names and subsequent fuzzy matches to this value are compared to this record. Entries with a match value of less than 80% are not reflected in this output.

15. Re-run the task again and reduce the value of the **Similarity degree (%)** slider bar to **70%**.

The output database should have 35 records.

16. Close all open databases.

**Identifying Gaps in
an Invoice Number
Sequence**

*To test for completeness and to test for gaps in the invoice number
sequence.*

1. Open the **Sales Transactions** database.

2. On the **Analysis** tab, in the **Explore** group, click **Gap Detection**.

    The Gap Detection dialog box appears.

3. From the **Field to use** drop-down list, select **INV_NO**.

4. In the **Character** section, accept the default mask (NNNNNNN).

5. In the **Output** section, ensure the **Create result** check box is selected.

6. In the **Result name** field, enter **Missing Invoice Numbers**.
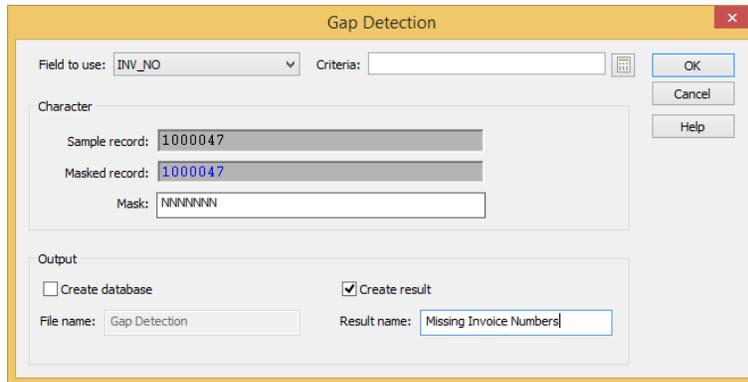
7. Click **OK**.

    The Results output Missing Invoice Numbers becomes active.

Performing a Key Value Extraction

To manually select records based on key values and extract them to a separate database.

1. Ensure that **Sales Transactions** is the active database and the **Data** property is selected in the **Properties** window.

2. On the **Analysis** tab, in the **Extract** group, click **Key Value**.

   The Key Value Extraction dialog box appears.

3. Click the **Browse** button adjacent to the **Existing keys** drop-down list.

   The Define Key dialog box appears.

4. Create the key **PAY_TYPE/A + PROD_CODE/A** and then click **OK**.
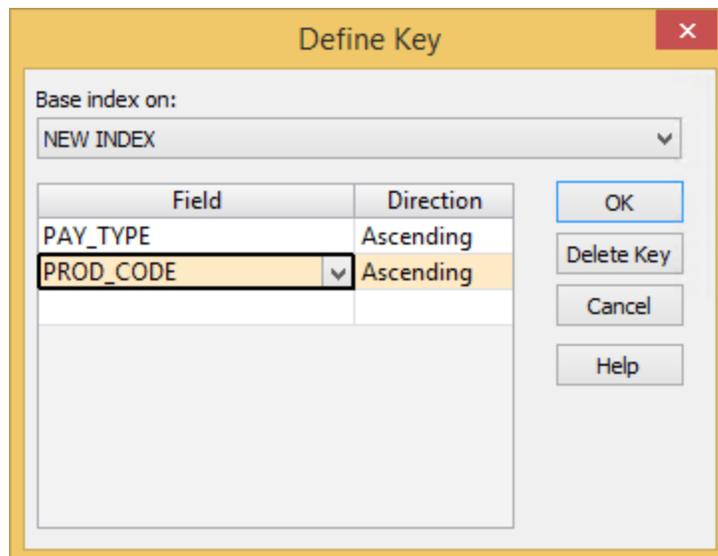
All of the different PAY_TYPE/A + PROD_CODE/A values are now listed and selected in the lower part of the Key Value Extraction dialog box.

5. In the **Groups Found** section, click **Clear All** and then select only the **VISA** payments for product codes **05** and **06**.

6. Optionally, you can enter criteria. Since the objective is to extract all of the sales transactions that were paid using VISA for product codes 05 and 06, leave the **Criteria** field empty.

7. Accept the default selection of the **Create a separate database for each unique key** check box. Note that you could have decided to put all the resulting records in one database.

8. Click **OK**.

In the File Explorer window, IDEA has created two new child databases under the Sales Transactions parent database: KeyVal=VISA + 05 and KeyVal=VISA + 06.
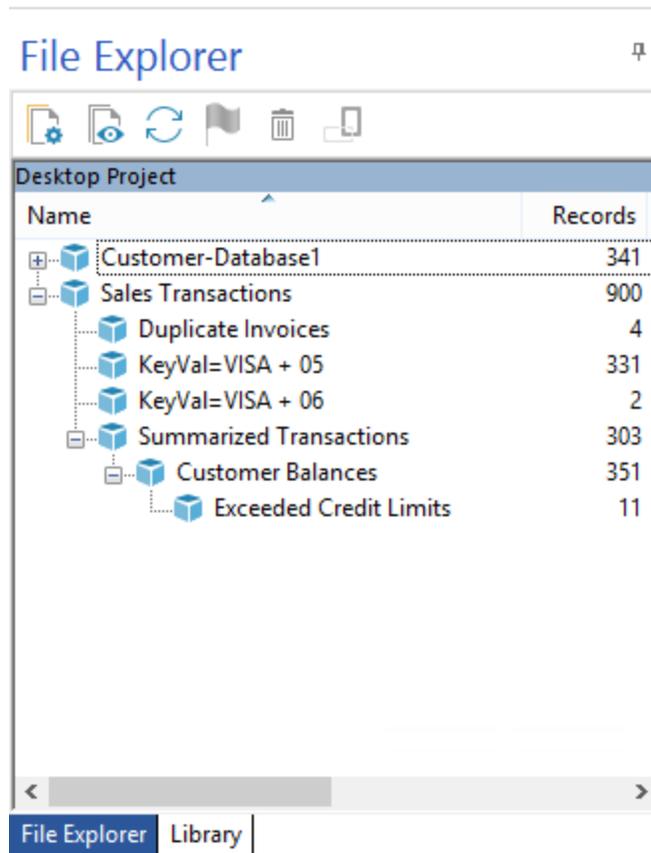
9. Close all open databases.

10. In the File Explorer window, right-click the two new child databases and select **Rename**. Name the databases **Visa Payments for Product Code 05** and **Visa Payments for Product Code 06**.

Performing a Record Extraction Using an @Function

To carry out a more advanced exception test in order to identify all transactions processed on a Sunday.

1. Open the **Sales Transactions** database.

2. On the **Analysis** tab, in the **Extract** group, click **Direct**.

3. In the **File Name** column, replace the default file name with **Sunday Transactions**.

4. Create the following equation:

@Dow(TRANS_DATE) = 1
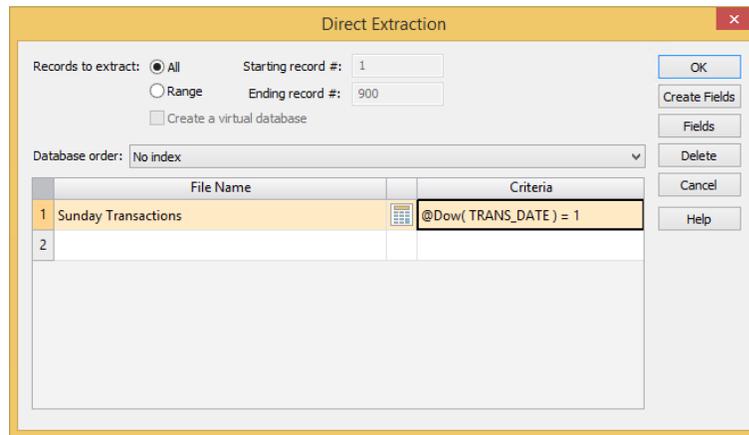
5. Click **OK** to perform the extraction.

6. View the output database and its History. There should be 90 Sunday transactions.

7. Close the **Sunday Transactions** database.

Designing a Report

To select and format the data to be displayed and printed.

1. Ensure that **Sales Transactions** is the active database and the **Data** property is selected in the **Properties** window.

2. On the **File** tab, click **Print** and then click **Create Report** to create a report using the view settings.

The Report Assistant appears.

3. Select the **Create new report** option and the **Allow headings to span multiple lines** check box. Click **Next**.

4. In the Headings screen, select each field (one at a time) and enter a short but descriptive name in the **Text** field. This text is used for field names. Accept the default alignment selections. Click **Next**.

5. In the Define Breaks screen, define a report break on the **CUST_ NO/A + TRANS_DATE/D** key. Click **Next**.
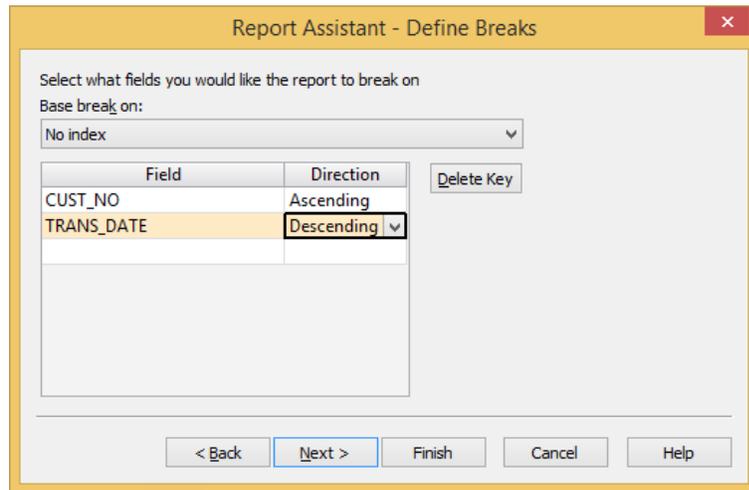
> IDEA displays the records in the report in the order of the index. IDEA displays the index description in the Indices area of the Properties window once you have completed the report.

6. In the Report Breaks screen, create a break and total the **AMOUNT** field for each customer number (**CUST_NO**). Select the following options: **Count records in break**, **Show break line**, **Show leading break**. Set the break spacing to **3 lines**. Total the **AMOUNT** field. Select the **Show shading** and **Use currency symbol** options. Click **Next**.
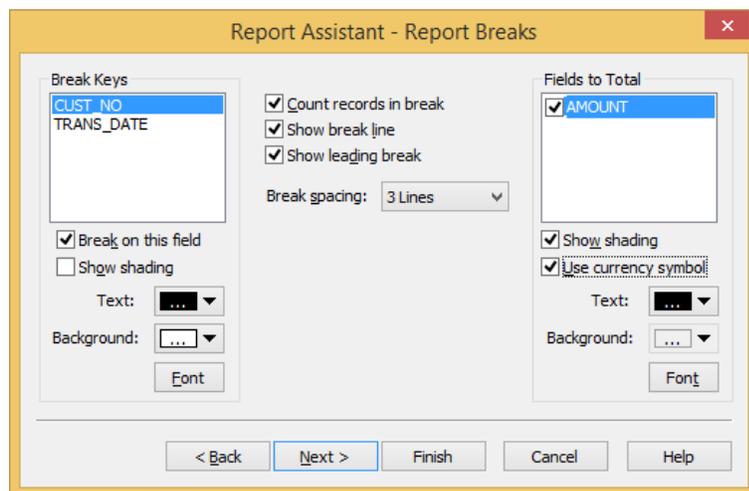
7. In the Grand Totals screen, create grand totals for the **AMOUNT** field, set the font style to bold, and then click **Next**.

8. In the Header/Footer screen, enter/select the following information, and then click **Finish**.

- Print cover page: Select this check box.
- Title: Sales Transactions
- Comments: Sequenced by customer number and date.
- Prepared by: Enter your name or initials.
- Header: Enter the name of your organization.
- Footer: Enter the name of your department.
- Date/Time: Accept the defaults unless you have particular preferences.

> 📝 The options you have selected affect how the report is printed. The name entered into the Prepared by field appears on reports accessed via the Print Preview of a Results output.

9. Click **Yes** to preview the report.

10. From the Print Preview toolbar, click **1-2 Pages** to toggle between a single page and two pages.

11. From the Print Preview toolbar, click **Zoom In** to view the report in detail. (There are two levels of zoom.)

12. Check that all settings, including field widths, are correct.

> 📝 If you wish to print the view, click the Print button on the Print Preview window. All of the settings selected for the report (break totals, field headings, totals, and cover page information) are saved with the view. Every time you create a report, you must save the view in order to save the report settings.

13. From the Print Preview toolbar, click **Close** to close the Print Preview window.

Creating an Action Field

🎯 *To produce an action when you click on a value in a specified field.*

1. Open the **Customer-Database1** database.

2. Right-click any record in the **CUST_NO** field and select **Define Action Field…**.

   The Define Action Field dialog box appears.

3. Ensure that the **Create Action Link to display extraction preview** option is selected.

4. Click the **Browse** button and select the **Summarized Transactions** database. Click **OK** to close the Select Database window.

5. Click **Look-up Fields**.

   The Fields Not Found dialog box appears.

6. Click **OK**.

   The Look-up Fields dialog box appears.

7. Ensure that the **CUST_NO** field is selected, and then click **OK** to return to the Define Action Field dialog box.
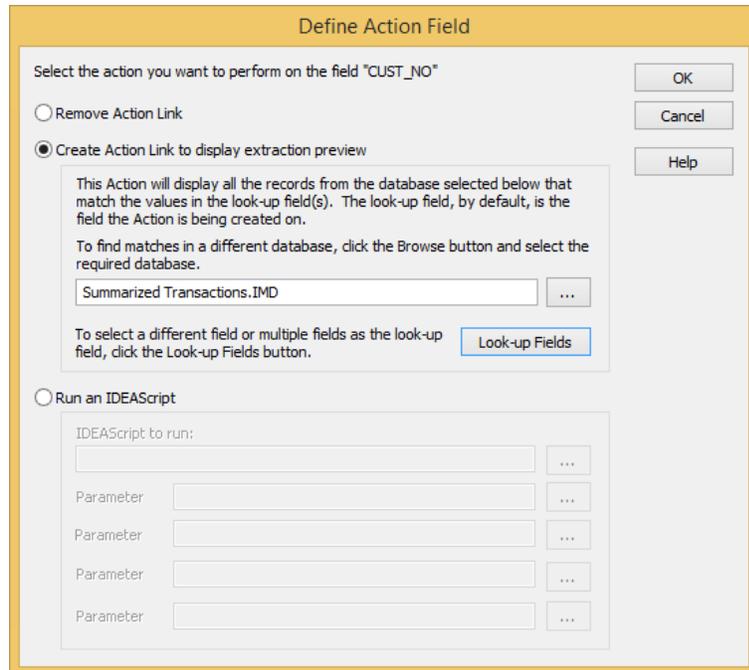
8. Click **OK** in the Define Action Field dialog box to create the Action Field link.

    The Customer-Database1 database now has a link (in blue and underlined) to the Summarized Transactions database.

9. In the **CUST_NO** field, click the first record to display the Extraction Preview window. The transactions total for customer number 10000 is displayed.
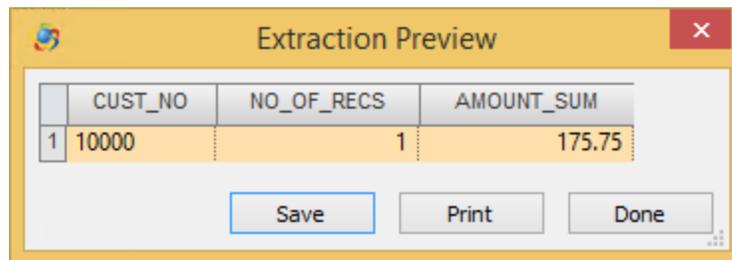
10. Click **Done**.

Appendix I

Housekeeping

As with all computer systems, housekeeping (including backing up data and deleting unwanted files) is extremely important when working with IDEA.

For file management maintenance, such as deleting, copying, or moving databases and files, it is recommended to use the File Explorer or Library features. Using Windows Explorer to manage files is not recommended.

Backing Up and Restoring Data Files

You may want to back up files for a variety of reasons, such as, to transfer files to another computer; to back up according to risk/criticality of data or because of disk space restrictions.

IDEA uses a single compound file with the file name extension *.imd (Unicode versions of IDEA use the file name extension *.idm) to store all the information associated with a file, such as the data, the schema, History, comments, indices, and reports.

IDEA stores each of these files in its project. However, the view files, equation files, definition files, and any text files created are not stored within the compound file.

The following list outlines the file type, the location and file name extensions (ASCII and Unicode).In order to backup IDEA Server project files, please contact your IDEA Server Administrator:

File Type	Location	ASCII File Extension	Unicode File Extension
Data and Related Files	Managed or External project	.imd	.idm
Views	Library	.vw2	.vwm
Equations	Library	.eqx	.eqm
Custom Functions	Library	.ideafunc	.ideafunc
Record Definitions	Library	.rdf	.rdm
Report Reader Templates	Library	.jpm	.jpm
Project Information	Managed or External project	.inf	.inf

File Type	Location	ASCII File Extension	Unicode File Extension
IDEAScript Macros	Library	.iss	.ism
Compiled IDEAScript	Library	.exe	.exe
Visual Script Macros	Library	.vscript	.vscript
External Variable Files	Managed or External project	.evars	.evars
Dashboard Files	Library	.idash	.idash

Use Windows Explorer or any other backup facility to back up the required file.

Deleting Databases

Deleting databases that are no longer used lets you maximize disk space and clean up your project. If you attempt to delete a parent database, you can choose to delete the associated child database or break the parent-child relationship and only delete the parent. When you break the parent-child relationship, the orphaned child databases become top-level databases.

Note that databases must be closed before you attempt to delete them.

To delete the active database:

1. On the **File** tab, in the **Database** group, click **Delete Database**.

2. Click **Yes** to confirm the delete request.

To delete all or selected databases:

1. Ensure all databases are closed.

2. From the **File Explorer** toolbar, click the File Display button and then click Expand All to expand out all nodes in the File Explorer window.

3. Select the databases you want to delete.

4. From the **File Explorer** toolbar, click the **Delete** button.

5. Click **Yes** to confirm the delete request.

Deleting Other Files

Use the Library to delete other files, such as record definitions, views, and equations.

To delete associated project files:

1. Click the **Library** tab.

   The Library window appears.

2. Expand the appropriate Library group node.

3. Right-click on a file and select **Delete**.

4. Click **Yes** to confirm the delete request.

Copying Data Files

Use the Copy To command in the File Explorer window to copy IDEA databases to other projects. The Copy To command in the Library window lets you copy files to other Library groups or projects.

To copy one or more selected databases to another project folder:

1. In the File Explorer window, right-click on the database you want to copy.

2. Select **Copy To…**.

3. Navigate to and select the required folder.

4. Click **OK**.

To copy one or more selected files to another Library:

1. In the Library window, expand the required Library group, and right-click on the file you want to copy.

2. Select **Copy To** and then select **Local Library** or **Corporate Library** (if available).

   The file is copied to the same Library group in selected Library.

To copy one or more selected files to another project:

1. In the Library window, expand the required Library group, and right-click on the file you want to copy.

2. Select **Copy To** and then select **Another Project…**.

   The Copy File dialog box appears.

3. To copy to an External project, do the following:

   a. Select the **External project** option.

   b. Click the **Browse** button adjacent to the **External project** field.

   c. Navigate to and select the appropriate folder.

   d. Click **OK** to return to the Copy File dialog box.

4. To copy to a Managed project, do the following:

   a. Select the **Managed project** option.

   b. Click the **Browse** button adjacent to the **Project** field.

   c. Navigate to and select the appropriate project.

   d. Click **OK** to return to the Copy File dialog box.

   e. From the Group drop-down list, select the group into which you want the file copied.

5. Click **OK**.

Moving Data Files

Use the Move To command in the File Explorer window to move IDEA databases to other projects or locations.

To move one or more selected databases to another project folder:

1. In the **File Explorer** window, right-click over the name of the database you want to move.

2. Select **Move To…**.

3. Navigate to and select the required folder.

4. Click **OK**.

Refreshing the File Explorer

You can update the IDEA File Explorer one of two ways:

- Press F5.

- From the **File Explorer** toolbar, click the **Refresh List** button.

Appendix II

@Functions

IDEA provides @Functions for performing operations such as date arithmetic, financial and statistical calculations as well as text searches.

The @Functions are accessed through the Equation Editor. Quick help including the syntax, description, and an example of use for each of the @Functions is available when the @Function is highlighted. Additional and detailed help is provided in the Equation Editor Help system accessed through the Help button on the Equation Editor toolbar.

> You can also create custom functions. For more information, see the IDEA online Help.

Take a look at the definitions below to become familiar with each @Function:

@Function	Description
@Abs	Returns the absolute value of a numeric expression.
@Afternoon	Returns 0 if time is in the AM and 1 if time falls in the PM and -1 for an invalid time.
@Age	Calculates the number of days between two dates.
@AgeDateTime	Returns the number of seconds between two dates and times.
@AgeTime	Returns the number of seconds between two times.
@AllTrim	Removes all leading and trailing spaces.
@Ascii	Provides the ASCII value of a character. (Not available in Unicode versions of IDEA.)
@Between	Determines if a numeric expression falls within a specific range.
@BetweenDate	Returns a number indicating whether a date value falls within a specified range (1) or not (0).

@Function	Description
@BetweenTime	Returns a number indicating whether a time value falls within a specified range (1) or not (0).
@Bit	Identifies a bit value.
@BitAnd	Masks out unwanted bits.
@BitOr	Sets required bit.
@Chr	Provides the character equivalent of a specified ASCII code. (Not available in Unicode versions of IDEA.)
@CompareNoCase	Ignores uppercase letters when comparing expressions.
@CompIf	Determines if a record satisfies multiple criteria.
@Ctod	Converts character dates to IDEA Date format.
@Ctot	Converts a Character field containing time values stored as a string to a Time field with a Time format (HH:MM:SS).
@CurForm	Converts numeric value into a formatted text.
@CurVal	Converts formatted Character fields to Numeric fields.
@Date	Returns the present date.
@Day	Returns the day in a date expression.
@DaysToD	Converts a number of days since Jan. 1, 1900 to date format.
@Db	Calculates the fixed declining-balance depreciation for a specified period.
@Ddb	Calculates double declining-balance depreciation.
@Delete	Deletes a specified number of characters from a string.
@Dow	Returns the day of the week.
@Dtoc	Converts date expressions to character.
@DToDays	Reveals the number of days between Jan. 1, 1900 and a specified date.
@Dtoj	Converts dates to Julian format.

@Function	Description
@Exp	Calculates the exponent of a numeric expression.
@FieldStatistics	Returns the numeric value for a specified field statistic.
@FindOneOf	Finds the position of the first matching character in 2 strings.
@FinYear	Returns the financial year for a given date based on the year end.
@Format12HourClock	Returns a string representing time formatted as HH:MM:SS TT.
@Fv	Calculates the future value of an investment.
@GetAt	Returns the character that appears in a specified numeric position.
@GetNextValue	Returns the next value in the selected field.
@GetPreviousValue	Returns the previous value in the selected field.
@Hours	Returns the hours portion of a given time.
@If	Allows a choice of two results based on the evaluation of a condition.
@Insert	Inserts a string into an existing string.
@Int	Returns the integer portion of a numeric value.
@Ipmt	Calculates the interest payment for a given period.
@Irr	Calculates internal rate of return.
@IsBlank	Tests if a Character field is blank.
@IsFieldDataValid	Returns a 1 if the data in the field is valid, or a 0 if the data is invalid.
@Isin	Returns the starting position of a string within another string (case sensitive).
@Isini	Returns the starting position of a string within another string (NOT case sensitive).
@Jtod	Converts Julian dates to IDEA Date format.
@JustLetters	Returns a string with all the numeric characters removed.
@JustNumbers	Returns all the numbers (leading and trailing).

@Function	Description
@JustNumbersLeading	Returns the leading numbers.
@JustNumbersTrailing	Returns the trailing numbers.
@LastDayofMonth	Returns the last day for any given month and year combination.
@Left	Returns the specified left-most characters in a string.
@Len	Returns the length of a string, including any trailing spaces.
@List	Determines which criteria in a list of values is met by an expression.
@Log	Calculates natural logarithms.
@Log10	Calculates logarithm 10x.
@Lower	Converts all characters in a string to lowercase.
@Ltrim	Removes leading spaces from a string.
@Match	Determines which criteria in a list of values is met by an expression.
@Max	Returns the greater value of two numeric expressions.
@Mid	Extracts a portion of text from within a string.
@Min	Returns the smallest value of two numeric expressions.
@Minutes	Returns the minutes portion of a given time.
@Mirr	Calculates modified internal rate of return.
@Month	Returns the month in a date expression.
@NoMatch	Determines if an expression meets none of the criteria in a list of values.
@Npv	Calculates the net present value of an investment.
@Ntod	Converts a numeric expression into an IDEA Date format.
@Ntot	Converts a Numeric field containing time stored as seconds to a Time field with a Time format (HH:MM:SS).
@Pmt	Calculates a loan payment.

@Function	Description
@Ppmt	Returns the principal amount of a loan payment.
@Precno	Returns the physical record number.
@Proper	Capitalizes the first letter of each word in a string.
@Pv	Returns the present value of an investment.
@Qtr	Returns 1-4 representing the quarter a given date falls in based on the specified year end.
@Random	Generates a random number.
@Rate	Calculates the interest rate of an investment/loan.
@Recno	Returns the logical record number (index sensitive).
@RegExpr	Matches character expressions using a complex set of rules. (Not available in Unicode versions of IDEA.)
@Remove	Eliminates all instances of a specified character.
@Repeat	Repeats the first character of a string a specified number of times.
@Replace	Replaces a string or substring with another.
@Reverse	Reverses the order of characters in a string.
@Right	Isolates the specified right-most characters in a string.
@Round	Rounds to the nearest integer.
@Seconds	Returns the seconds portion of a given time.
@Seed	Sets the random number seed.
@SimilarPhrase	Measures the similarity between two specified phrases or Character fields.
@SimilarWord	Measures the similarity between two strings (either single words or character expressions) or Character fields.
@SimpleSplit	Extracts a segment of a character string that resides between the specified xth occurrence of a specified start character (or character sting) and the specified end character (or character string).
@Sln	Returns the straight-line depreciation of an asset.

@Function	Description
@Soundex	Returns the sound code for a word. (Not available in Unicode versions of IDEA.)
@SoundsLike	Determines whether two words are phonetically alike. (Not available in Unicode versions of IDEA.)
@SpacesToOne	Strips spaces leaving only one space between words in a string.
@SpanExcluding	Returns the characters in a string that appear before any characters in a specified string.
@SpanIncluding	Returns the characters at the beginning of a string that match any character of a specified string.
@Split	Breaks a character string into segments separated by characters, such as spaces or commas, and returns a specified segment.
@Sqrt	Calculates a square root.
@Str	Converts numeric expressions to strings.
@Stratum	Groups records by interval.
@Strip	Removes all spaces, punctuation and control characters.
@StripAccent	Removes an accent from an accented character.
@Syd	Returns the sum-of-years digit depreciation for an asset.
@Time	Returns the present time.
@Trim	Removes trailing spaces.
@Ttoc	Converts a time or number into a string with the HH:MM:SS format.
@Tton	Converts a Time field that has values stored in Time format (HH:MM:SS) to a Numeric field with the time value converted into seconds. This is the reverse of @Ntot.
@Upper	Converts all characters in a string to uppercase.
@Val	Converts a character expression to numeric.
@Workday	Returns 1 if a given date falls between Monday-Friday and 0 if the date falls on a Saturday or Sunday.
@Year	Returns the year in a date expression.