

# Section 3



## Accounts Payable Audit and Fraud Investigation

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### 3.1 Introduction

What are the risks associated with Accounts Payable that could be addressed by computer-assisted audit procedures? And what tests can help address those risks? This section summarizes the business and audit risks that arise in the context of Accounts Payable and the potential tests that can be used to address those risks.

#### 3.1.1 Potential Risks

The following table identifies the key risks, explains the business and audit implication of each risk and the audit objectives that could be addressed by audit tests.

	<b>RISK</b>	<b>IMPLICATIONS</b>	<b>AUDIT OBJECTIVES</b>
1	Payments are made to unauthorized suppliers.	Unauthorized suppliers could represent former suppliers that supplied goods or services of unacceptable quality and should have been removed from the list of suppliers; or they could be fictitious suppliers set up by dishonest personnel to receive automated payments. Payments made to unauthorized suppliers could therefore represent either error or fraud.	Existence, Validity
2	Payments are made to individuals or employees.	Payments made to individuals or employees could represent a diversion of company payments, indicating fraud.	Existence, Validity
3	Unauthorized premiums are given to suppliers.	Unauthorized premiums may represent overpayments to suppliers in return for kickbacks.	Existence, Validity
4	Invoices are paid late.	Delays in processing Accounts Payable approvals can result in a loss of available discounts for timely remittances and understatement of liabilities for a specific period.	Cut-off, Completeness
5	Invoices are paid on irregular dates.	Irregular payments may reflect processing errors or fraud.	Existence, Validity
6	Invoices are processed twice.	Duplicate payments can result from the failure to cancel documents to prevent re-use or processing errors in Accounts Payable such as restoring a backup file twice.	Existence, Validity

	<b>RISK</b>	<b>IMPLICATIONS</b>	<b>AUDIT OBJECTIVES</b>
7	Payments are made in a way to be undetected by audits.	Perpetrators of fraud may arrange payments to avoid detection. For example, large amounts may be split into several smaller payments to coincide with a perpetrator's transaction approval limits or avoid limit checks on large payments.	Existence, Validity
8	Items (e.g., purchase orders, checks) are missing.	Since Accounts Payable are often not authorized for payment until there is a three-way match of purchase order, receiving document and supplier invoice, missing documents could result in Accounts Payable being understated.	Completeness

### 3.1.2 Potential Tests

The following audit tests are suggested when auditing an Accounts Payable system. However, the exact tests carried out for a client will depend upon the system used and the data available. Common tests include:

#### Mechanical Accuracy and Valuation

- Total the file. It often pays to separate debits and credits.
- Revalue foreign payables, if applicable.
- Check transaction totals to the balance on each account.

#### Analysis

- Stratify the size of payments and extract any exceptionally high payments.
- Analyze payment days and identify suppliers with favorable payment terms.
- If the computer system captures the approving authority for a transaction, examine the value distribution for each manager.

#### Exception Tests - Existence and Validity

- Identify payments to unauthorized suppliers by matching the payments and authorized suppliers list.
- Search payments file for payees without suffixes such as "Inc", "Ltd", or "Co" in their name to identify payments to individuals.
- Test for large discounts.
- Test for duplicated invoices using value and supplier code as the key fields for one test and purchase order number for another. The second processing of invoices can be used to establish a value on the Profit/Loss (P/L) to make a fraudulent payment. (This will also pick up accidental duplication.)

- Identify payments made on Sundays or other days/dates that are not valid.
- Examine to see if amounts are being approved at or just below break points in authority level by a value distribution across the whole ledger. If approval authority is not directly available, perform subsidiary analysis by types of supplier or approving department (i.e., marketing).
- Look for split invoices to enable approval to be kept by an individual. Extract all invoices within 90% of an approved limit (preferably for a suspected manager or department) and search for all invoices from that supplier. Sort by approving manager, department and date to identify possible split invoices or summarize payments by invoice number to determine how many partial payments have been made for each invoice.
- Tests for total payments in year exceeding previous years by more than 25%.
- Test for large one-off payments to suppliers.
- Using the first five or six characters of the name, match supplier names against a list of employee surnames from a payroll or personnel file.
- Test for similar supplier names.
- Test for incomplete or unusual supplier details.

### **Gaps and Duplicates**

- Test for missing items or gaps in the check number sequence.

## **3.2 Intentionally Left Blank**

### 3.3 Obtaining the Data

The following data files will be used for this exercise:

- Accounts Payable History for the year Jan 1, 2018 – Dec 31, 2018
- Supplier Master File



When conducting fraud investigations it is important to obtain the required data without alerting the person(s) or departments under suspicion. Therefore, although our general advice is to always request the data from the client and to avoid accessing the client's computer system to obtain data, it may be necessary to take a copy of the data files (or system) or to extract data yourself or with the assistance of the software suppliers. Alternatively, if the data you wish to investigate is available on a standard printout, arrange for the printout to be "printed" or spooled to file and use the Report Reader module in IDEA to read the required data into IDEA for testing.

In this instance, the Accounts Payable system was an Oracle database system running under UNIX. Assistance was available to determine what data was available and to write an SQL query to extract the payments history in ASCII Delimited format, a simple format to import into IDEA.

The Authorized Suppliers information is available on a Microsoft Excel worksheet. Therefore, this is also requested.

#### 3.3.1 Requesting Data Files for Audit Purposes

The following data has been supplied from the Accounts Payable system in ASCII Delimited format as AP\_PAYMENTS\_2018.txt:

FIELD	FORMAT
Supplier Number	C 8
Payee	C 20
Invoice Number	C 12
Invoice Date	D YYYYMMDD
Amount	N 8,2
Check Number	N 8,2
Payment Date	D YYYYMMDD
Payment Authorization Initials	C 5



In the record definitions, **C** refers to Character, **N** to Numeric and **D** to Date. **C 4** means a character field of length 4. **N 8,2** is an 8-digit number with 2 decimal places.

The following Authorized Suppliers data is supplied in the **Supplier.xls** file:

FIELD	FORMAT
Supplier Number	C 4
Supplier Name	C 30
Supplier Address 1	C 25
Supplier Address 2	C 25
Supplier Address 3	C 25
Zip Code	C 8
Previous Year's Total Payments	N 8,2

Data is required for the following period: Jan 1, 2015– Dec 31, 2018. Please supply a record layout for the ASCII Delimited file.

Please also supply the following control totals for reconciliation purposes:

- Total payments for the year 2018.
- Total discount for the year 2018.
- Number of payment transactions for the year 2018.
- Number of authorized suppliers.

### 3.4 Audit Program

From the available/possible tests, the audit manager decides on the appropriate tests and prepares the following Audit Program for you to complete.

#### 3.4.1 Audit Objective

To identify payments which are suspicious or may be invalid.

	AUDITING PROCEDURES	ASSERTIONS	WORK DONE BY (INITIALS)	EXTENT OF TESTING
1	Obtain the data files from the client and load onto the PC. Load IDEA and create a project for Accounts Payable for <b>Bright IDEAs Inc.</b>			
2	Import the data and agree the total of Accounts Payable: a) Import the Accounts Payable transactions, b) Import the Authorized Suppliers details, c) Compute field statistics to verify that the data has been imported correctly, d) Select a control total field for each database, and e) Use Discover to identify trends within the data.	Completeness Completeness		
3	Analyze the profile of the number and value of payments by numeric band to identify any unusual trends and to determine high value amounts for extractions.			
4	Identify high and unusual amounts.			
5	Identify further unusual payments from previous analyses including: a) "CASH" in Payee name, b) Round sum amounts, c) Payments authorized by HMV, and d) Payments made on a Sunday.			
6	Test for duplicate payments and vendors/payees.			
7	Test for completeness by testing for gaps in the check number sequence.			
8	Identify working days on which no payments were processed.			
9	Analyze payment terms and ensure that the payment policy for <b>Bright IDEAs Inc.</b> has been followed.			
10	Test the validity of payments to authorized suppliers.			
11	Analyze payments by supplier to identify significant changes from the previous year's total.			





## Exercise 3A: Audit Setup

### Objective:

To be able to load data, run IDEA and create a project for the investigation audit within IDEA.

### Exercise Description:

This exercise covers copying data into a folder, loading IDEA, creating a project, and entering client properties that will be printed on all reports.

### IDEA Functionality Covered:

- Creating a project
- Entering project properties

### Required Data Files:

The following data files are provided with this workbook:

- **AP\_PAYMENTS\_2018.txt** - Accounts Payable history file
- **Supplier.xls** - Authorized Suppliers Microsoft Excel worksheet

## Accessing IDEA

1. From the Windows **Start** menu (e.g., Windows 10), navigate to and expand the **IDEA** folder.
2. Click **IDEA**.

## Creating the Accounts Payable Project

To facilitate housekeeping, it is recommended that a separate project be used for each audit/ investigation.

All information relating to the audit, including data files, equations, views/report definitions, templates, etc. may be stored as part of the project.

This exercise will explain how to create a project and enter project information that will be printed on all reports. Note that once a project is set, it remains the active project until changed.

**Note:** As we discussed during a class meeting, it is a best practice to have a common folder structure for your projects, but for each project to have a specific folder and a unique IDEA project. In the case of IDEA, that means that we won't be using the AR project for this assignment, rather we'll create a new AP specific project.



1. On the **Home** tab, in the **Projects** group, click **Create**.
2. Select the **Managed project** option and name the project **Accounts Payable**.

The 'Create Project' dialog box shows the 'Managed project' option selected. The 'Project name' field contains 'Accounts Payable'. There are buttons for 'OK', 'Cancel', and 'Help'. The 'External project' option is unselected, and its 'Folder name' field is empty.

3. Click **OK**.  
**Accounts Payable** becomes the active project, closing any previously active projects.
4. On the **Home** tab, in the **Projects** group, click **Properties** to change the project properties.
5. In the **Project Properties** dialog box, enter the following:
  - **Report name:** Accounts Payable Investigation
  - **Report period:** Jan 1, 2018 - Dec 31, 2018

The project properties are stored in a file called **Client.inf** in the project folder.

## Loading Data

The following data files are provided with the workbook and are required for the **Account Payable** project.

- **AP\_PAYMENTS\_2018.txt** - Accounts Payable history file
- **Supplier\_2018.xls** - Authorized Suppliers Microsoft Excel worksheet

Use either of the following methods to add the required data files to the project:

- Use IDEA to add the data files to the project:
  1. In IDEA, click the **Library** tab.
  2. From the **Current Project Library**, right-click **Source Files** and click **Add File...**
  3. Navigate to and select the required files.
- Use Windows Explorer to manually copy the data files to the project:

**C:\Users\[UserID]\My IDEA Documents\IDEA Projects\Accounts Payable\Source Files.ILB**

This is the default location within a project to store any source files.

**MGS Note:** Remember, at this point it will be helpful to know the location of your IDEA folder. To find it, you can go to the Word file in Blackboard called: "Find the default IDEA folder" and follow the instructions in that document to find IDEA's default folder location before going any further.



## Exercise 3B: Importing the Accounts Payable and Authorized Suppliers Data Files

### Objective:

To import the data files for testing.

### Exercise Description:

You will use the **Import Assistant** to import the Accounts Payable Transactions file, **AP\_PAYMENTS\_2018.txt**, into IDEA. The Import Assistant can determine the file format, in this case it is an ASCII Delimited format.

The Authorized Suppliers data, **Supplier\_2018.xls**, is provided as a Microsoft Excel worksheet. This will be imported directly into IDEA.

### IDEA Functionality Covered:

- Import an ASCII Delimited file
- Import a Microsoft Excel worksheet

## Importing the Accounts Payable Data

You have been provided with an ASCII Delimited file: **AP\_PAYMENTS\_2018.txt**

Review the following record definition for **ACCPAY2018.txt**.

FIELD NAME	TYPE	START	LEN	DEC	DESCRIPTION
SUPPNO	Character	1	9		Supplier Number
PAYEE	Character	10	17		Payee
INVOICE	Character	27	12		Invoice Number
INV_DATE	Date	39	8		Invoice Date
AMOUNT	Numeric	47	15	2	Amount
CHECK	Numeric	71	6	0	Check Number
PAY_DATE	Date	77	8		Payment Date
AUTH	Character	85	7		Payment Authorization Initials

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

Once loaded, the Import Assistant guides you through the process of importing the data.

2. Select **Text** and click the **Browse** button (  ) adjacent to the **File name** field.

The Select File dialog box appears. The Source Files.ILB folder for the active project is displayed by default.



3. Select the **AP\_PAYMENTS\_2018.txt** file.
4. Click **Open**. The file path is added to the Import Assistant.
5. Click **Next**.
6. Once the data file has been selected, the Import Assistant will try to determine the data file type. The following screen will be displayed. The **Delimited** format is correctly identified. Click **Next** to proceed.

Import Assistant - File Type

The Import Assistant has examined the file and has determined that it is a delimited file.  
If this is not correct, please select the correct file type.

☒ Delimited
 ☐ UTF-8 source file

☐ Fixed Length

☐ EBCDIC Fixed Length

Options

	.....10.....20.....30.....40.....50.....60
1	W007Matt Cash Co87 9-972015040983516. 7970121820150409 V
2	W007I M A Crook97 2089.29J2015061114 432.1970139120150 6
3	M100M Cash IncUP-7 64092015100375000 70177420151008HNV
4	M100The Cash Co Inc 78456654220151101 59096.84701875201 5
5	W007F O R CASH97 3 PMP201511274580.6 870194520151127V S
6	M100Crooks IncPI76 832015021021632.22 70104620150212H. M
7	C202Matt Cash51726 201503066242.747 0111720150306HNV
8	M100CashonlyUY-937 1201504282792.72 70127020150501HV
9	W007CASH & COLD356 222015052225242.2 70134120150523HV
10	M100Cash IncCS - 7 17 -97201509157500 070172820150917V S
11	W007Crooks R Us97 2085.29J2015101771 409.7870182520151 0
12	M100Co Cash IncT53 5220151019750007 0184920151022V.S.T
13	M025Luke Hair51498 2015021050067.31 70102720150212HV

< Back Next > Cancel Help

**MGS Note:** If you don't see anything there, check to make sure that All File (\*.\*) is selected as file type.



7. The Import Assistant will try to determine the field separators and text encapsulators (if any) for the file. Accept the defaults and click **Next** to proceed.

Import Assistant - Specify Field Separator and Text Encapsulator

Please inspect the file displayed in the preview and make changes, if required, in the options below.

Field Separator  
 Delimited files use a special character to separate fields. Please inspect the file below and, if required, change the Field Separator selected.

☐ Comma
 ☐ Colon
 ☐ Semicolon
 ☒ Tab
 ☐ Space
 ☐ Other

Text encapsulator: " Header lines to ignore: 0

☐ First visible row is field names

1	W007	Matt Cash Co	879-97	20150409	83516.79	701218	20
2	W007	I M A Crook	97 2089.29J	20150611	14432.19	701391	20
3	M100	M Cash Inc	UP-76409	20151003	75000	701774	20
4	M100	The Cash Co Inc	784566542	20151101	59096.84	701875	20
5	W007	F O R CASH	97 3 PMP	20151127	4580.68	701945	20
6	M100	Crooks Inc	PI7683	20150210	21632.22	701046	20
7	C202	Matt Cash	51726	20150306	6242.74	701117	20
8	M100	Cashonly	UY-9371	20150428	2792.72	701270	20
9	W007	CASH & CO	LD35622	20150522	25242.2	701341	20
10	M100	Cash Inc	CS - 717 -97	20150915	75000	701728	20
11	W007	Crooks R Us	97 2085.29J	20151017	71409.78	701825	20

< >



8. The Import Assistant - Field Details screen is used to define each field's name and details in turn, including identifying which fields or areas should not be included.

**Import Assistant - Field Details**

You can now specify field details. Select a field by clicking on the column heading below, and then modify its information below.

Field name:  Type:

Description:

☐ Do not import this field

Converted Example:

	CHAR1	CHAR2	CHAR3	NUM4	NUM5	NUM6	
1	W007	Matt Cash Co	879-97	20150409	83516.79		7
2	W007	I M A Crook	97 2089.29J	20150611	14432.19		7
3	M100	M Cash Inc	UP-76409	20151003	75000		7
4	M100	The Cash Co Inc	784566542	20151101	59096.84		7
5	W007	F O R CASH	97 3 PMP	20151127	4580.68		7
6	M100	Crooks Inc	PI7683	20150210	21632.22		7
7	C202	Matt Cash	51726	20150306	6242.74		7
8	M100	Cashonly	UY-9371	20150428	2792.72		7
9	W007	CASH & CO	LD35622	20150522	25242.2		7
10	M100	Cash Inc	CS - 717 -97	20150915	75000		7

< Back **Next >** Cancel Help

You will use the following record layout to identify each field.

FIELD NAME	TYPE	START	LEN	DEC	DATE MASK	DESCRIPTION
SUPPNO	Character	1	9			Supplier Number
PAYEE	Character	10	17			Payee
INVOICE	Character	27	12			Invoice Number
INV_DATE	Date	39	8		YYYYMMDD	Invoice Date
AMOUNT	Numeric	47	15	2		Amount
CHECK	Numeric	71	6	0		Check Number
PAY_DATE	Date	77	8		YYYYMMDD	Payment Date
AUTH	Character	85	7			Payment Authorization Initials



9. To identify each field using the record layout above:
- Select the field in the data area. The active column will be highlighted.

- Define each **Field name** and **Type**. If required, define **Number of decimals** and **Date Mask**. You can also optionally define the **Description**.

For the INV\_DATE and PAY\_DATE fields you must supply a Date Mask. The mask represents the actual format of the ASCII source data. You specify the source data format using the letters Y, M, and D and type any spaces or special characters to exactly mimic the source date format of YYYYMMDD.

- For the **NUM6** field, select the **Do not import this field** option.

**Import Assistant - Field Details**

You can now specify field details. Select a field by clicking on the column heading below, and then modify its information below.

Field name:  Type:

Description:  Number of decimals:

☒ Do not import this field ☐ Implied decimals

Converted Example

	INVOICE	INV_DATE	AMOUNT	NUM6	CHECK	PAY_DATE	AUTH
1	879-97	20150409	83516.79		701218	20150409	V.S.T
2	97 2089.29J	20150611	14432.19		701391	20150611	HV
3	UP-76409	20151003	75000		701774	20151008	HMV
4	784566542	20151101	59096.84		701875	20151101	V.S.T
5	97 3 PMP	20151127	4580.68		701945	20151127	VST
6	PI7683	20150210	21632.22		701046	20150212	H.M.V.
7	51726	20150306	6242.74		701117	20150306	HMV
8	UY-9371	20150428	2792.72		701270	20150501	HV
9	LD35622	20150522	25242.2		701341	20150523	HV
10	CS - 717 -97	20150915	75000		701728	20150917	VST

< Back Next > Cancel Help

10. Click **Next** to continue.

The Import Assistant - Create Fields screen appears. **Create Fields** allows you to add **Virtual**, **Editable**, or **Multistate** fields to the imported file. This can be done during the import or at any time while using IDEA. For this exercise, no fields will be added.

11. Click **Next**.

The Import Assistant - Import Criteria screen appears. On this screen, you can create an equation to specify the data that is imported. For this exercise, do not enter an equation.

12. Click **Next**.

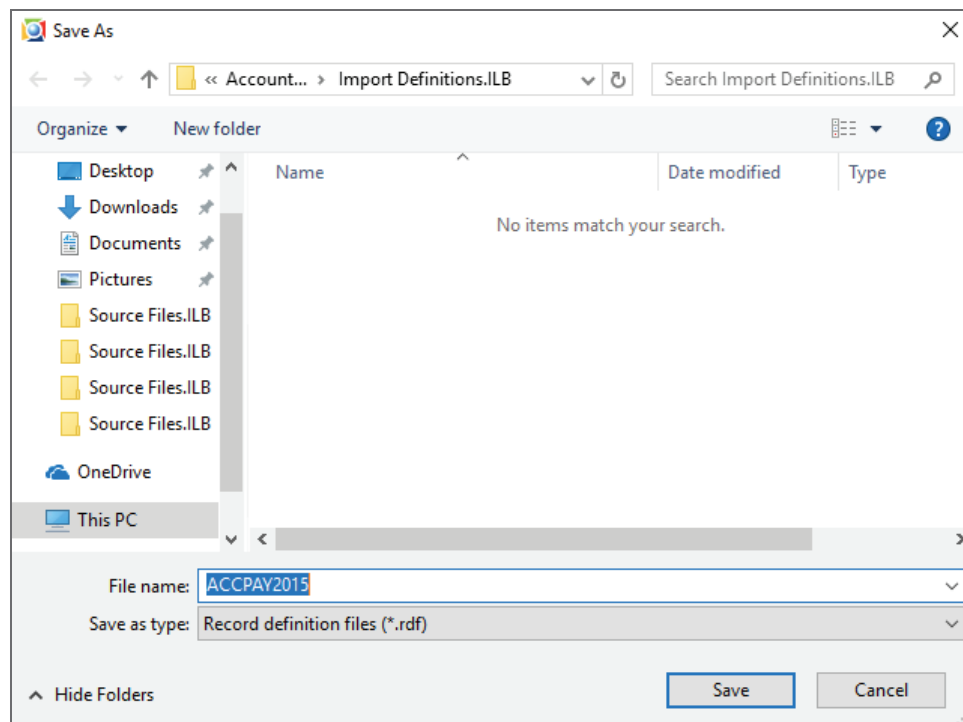
The Import Assistant - Specify IDEA File Name screen appears. In this final screen, you can specify the import options, save the record definition created using the **Import Assistant** for re-use in future audits, to specify the resultant IDEA database name.

## 13. Specify the import options:

- Leave the option to **Import** the database (rather than linking to the database) as IDEA will run faster when a file is imported rather than linked.
- Select **Generate field statistics** on import.
- Save the record definition. Click the **Browse** button and accept the default folder and definition name:

MGS Note: It might be the [...] button and not the Browse button.

C:\Documents and Settings\[UserID]\My Documents\IDEA\Accounts Payable\Import Definitions.ILB\ACCPAY2015.rdf



- Click **Save** to continue (the definition will be saved with an **.rdf** file extension).

14. In the **Database name** box, enter **Accounts Payable**, click **Finish**.





The data will be imported into the project, opened, and displayed in the Database window.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT
1	W007	Matt Cash Co	879-97	4/9/2015	83,516.79
2	W007	I M A Crook	97 2089.29J	6/11/2015	14,432.19
3	M100	M Cash Inc	UP-76409	10/3/2015	75,000.00
4	M100	The Cash Co Inc	784566542	11/1/2015	59,096.84
5	W007	F O R CASH	97 3 PMP	11/27/2015	4,580.68
6	M100	Crooks Inc	PI7683	2/10/2015	21,632.22
7	C202	Matt Cash	51726	3/6/2015	6,242.74
8	M100	Cashonly	UY-9371	4/28/2015	2,792.72
9	W007	CASH & CO	LD35622	5/22/2015	25,242.20
10	M100	Cash Inc	CS - 717 -97	9/15/2015	75,000.00
11	W007	Crooks R Us	97 2085.29J	10/17/2015	71,409.78
12	M100	Co Cash Inc	T5352	10/19/2015	75,000.00
13	M025	Luke Hair	51498	2/10/2015	50,067.31
14	C202	CASH INC	13597	2/16/2015	9,764.18

## Differences Between Importing and Linking to a Data File

Each IDEA import or link results in an IDEA master database (<filename>.imd) being created in the project folder.

However, in both cases, an IDEA database file (<filename>.imd) is created that stores all the information about the database. **Importing** results in a copy of the data being included in the IDEA database file.

If the option to **Link** to the database is selected, the original data is not included in the database file. The advantage of linking is that it can save disk space since the IDEA database file is smaller than it would be if the source data had been copied. However, both the source data file and the IDEA database file must be stored because IDEA must have access to the source data file to obtain the data needed to perform analytical functions.

Testing will be faster on imported data files.

Housekeeping is simplified when data is imported as there is only one file to backup/restore/copy/move, and it is stored in the project folder.

It is recommended that the **Import** option be used provided you have sufficient disk space.

## Importing the Authorized Suppliers Microsoft Excel Worksheet

The Authorized supplier's information is provided as a Microsoft Excel worksheet: **Supplier.xls**. IDEA will directly import a Microsoft Excel worksheet.



IDEA imports multiple worksheets at one time, producing a separate IDEA database for each.

To import the Microsoft Excel file:

1. On the **Home** tab, in the **Import** group, click **Desktop**.
2. Select **Microsoft Excel** and click the **Browse** button to navigate to and select the file.
3. In the **Select File** dialog box, select **Supplier.xls** and click **Open**.
4. Click **Next**.
5. The Import Assistant will display a preview of the data and a list of any worksheets defined within the file. Select the **Address** worksheet in the **Select sheets to import** box.
6. Select the **First row is field names** option. In the **Output file name** box, delete the default name and enter **Authorized Supplier**.

Microsoft Excel®

Select sheets to import:

☒ Address

☒ First row is field names

☐ Import empty numeric cells as 0

OK

Include All

Clear All

Cancel

Help

Preview:

	SUPPNO	SUPPNAME	ADDRESS1	ADDRESS2	ADDRESS ^
1	A128	Ivan Aker	149 1 AVE.	OTTAWA	ONTARIO
2	B008	Denise Bent	43-191 67 AVE.	OTTAWA	ONTARIO
3	B010	Carter Bout	869 KENSIGN...	TORONTO	ONTARIO
4	C202	Cash Inc	3124 TOWER ...	OTTAWA	ONTARIO
5	D014	William Ditt	151 MAGNUS ...	OTTAWA	ONTARIO
6	D025	Nellie Dunn	957 QUEEN ST.	OTTAWA	ONTARIO

Input file name: C:\Users\Administrator\Documents\My IDEA Documents\IDEA Project ...

Output file name: Authorized Supplier

7. Click **OK**.



IDEA will name the new database with the prefix that has been supplied during the import followed by the name of the worksheet. For this example, the new database will be called **Authorized Supplier-Address**.



The Authorized Supplier - Address database will be imported, opened, and selected as the active database.

CaseWare IDEA - Authorized Supplier-Address

File Home Data Analysis View Macros SmartAnalyzer

Project Overview Create Select Archive Properties Desktop IDEA Server Import Export Save As Send Using E-mail Project Administration Select Server CaseWare

File Explorer

Desktop Project

Name	Records
Accounts Paya...	999
Authorized Sup...	48

Accounts Payable Authorized Supplier-Address

	SUPPNO	SUPPNAME	ADDRESS1	ADDRESS2
1	A128	Ivan Aker	149 1 AVE.	OTTAWA
2	B008	Denise Bent	43-191 67 AVE.	OTTAWA
3	B010	Carter Bout	869 KENSINGTON AVE.	TORONTO
4	C202	Cash Inc	3124 TOWER ST.	OTTAWA
5	D014	William Ditt	151 MAGNUS AVE.	OTTAWA
6	D025	Nellie Dunn	957 QUEEN ST.	OTTAWA
7	F123	Wanda Farr	599 23 E AVE.	OTTAWA
8	F128	Fixes	533 DOMINIC ST.	OTTAWA
9	F130	Farmer	455 39 E AVE.	OTTAWA
10	G010	Polly Gunn	141 58 ST.	OTTAWA
11	G020	P Green	72-930 QUEEN ST.	EDMONTON
12	H014	Linda Hand	140 11 AVE.	OTTAWA
13	H025	Luke Hair	19-956 MAIN ST.	OTTAWA
14	K001	O Kay Yahs	635 59 AVE.	OTTAWA
15	M014	Cary S Matic	67 62 S AVE.	OTTAWA

Properties

Database

- ✓ Data
- History
- Field Statistics
- Control Total
- Criteria

Results

Indices

- ✓ No index

Comments

Add comment

Managed Project: Accounts Payable Not connected to IDEA Server Number of Records: 48 Disk Space: 14.67 GB



## Exercise 3C: Verifying that the Data Files Have Been Correctly Imported

### Objective:

Ensure that the data is complete and agrees to the supplied control totals.

### Exercise Description:

View the **Field Statistics** for the Numeric fields in the **Accounts Payable** and **Authorized Suppliers-Address** databases.

The statistics will be used for:

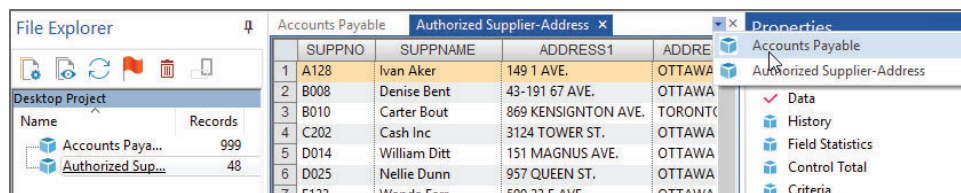
- Agreeing totals
- Getting a general understanding of the ranges of values in the database
- Testing the period of the file for completeness and cut-off
- Highlighting potential errors/areas of weakness to focus subsequent investigations

### IDEA Functionality Covered:

- Field Statistics for both Numeric and Date fields
- Control Totals

## Generating Field Statistics

1. Select the **Accounts Payable** database as the active database either by double-clicking on the file name in the **File Explorer** or selecting the open file list from the drop-down icon on the data sheet.





2. From the **Properties** window, click the **Field Statistics**. Field statistics will be displayed. Note that the following totals are automatically provided for reconciliation purposes. Ensure that your database totals agree.

Accounts Payable x Authorized Supplier-Address			
Field Type	Numeric Statistics	AMOUNT	CHECK
Numeric	Net Value		
Character	Absolute Value		
Date	# of Records	999	999
Time	# of Zero Items	2	0
Numeric Fields	Positive Value		
<input checked="" type="checkbox"/> AMOUNT	Negative Value	0.00	0
<input checked="" type="checkbox"/> CHECK	# of Positive Records	997	999
	# of Negative Records	0	0
	# of Data Errors	0	0
	# of Valid Values	999	999
	Average Value		
	Minimum Value		
	Maximum Value		
	Record # of Min	223	821
	Record # of Max	386	655
	Sample Std Dev	29,205.27	288.30
	Sample Variance	852,947,835.69	83,114.56
	Pop Std Dev	29,190.65	288.15
	Pop Variance	852,094,034.05	83,031.37
	Pop Skewness	0.858981	0.002004
	Pop Kurtosis	0.616718	-1.478402

3. From the **Field Type** list, click **Character** and study the information. Note the **# of Blanks** for **SUPPNO** and **PAYEE**.

Accounts Payable x Authorized Supplier-Address

Field Type

Numeric

Character

Date

Time

Character Fields

☒ SUPPNO

☒ PAYEE

☒ INVOICE

☒ AUTH

Character Statistics

SUPPNO

PAYEE

INVOICE

AUTH

▶ # of Blanks

# of Categories



You can view the following field statistics for all Character fields in the database:

Field Statistic	Description
# of Blanks	Identifies the total number of empty records in the Character field. This is useful in testing for availability or missing items that can be an indicator of fraud or incompleteness. Records with blank supplier numbers, invoice numbers, purchase order numbers, or missing authorizer should be examined for completeness. Not all Character fields are expected to have data in each record. For example, it may be reasonable for a memo or description field to contain no information.
# of Categories	Essentially summarizes the values in the Character field and displays the number of unique keys within it. For example, the # of Categories for SUPPNO indicates there are 49 unique supplier numbers. The fact that the number of unique supplier numbers differs from the payee name would indicate that there may be instances of duplicate supplier numbers with different payee names and/or vice versa.

4. From the **Field Type** list, click **Date** and study the information. Note the **Earliest Date** and **Latest Date** statistics.

Accounts Payable x Authorized Supplier-Address	
Field Type	Date Statistics
Numeric	INV_DATE
Character	PAY_DATE
Date	# of Valid Values
Time	# of Zero Items
Date Fields	# of Records
<input checked="" type="checkbox"/> INV_DATE	# of Data Errors
<input checked="" type="checkbox"/> PAY_DATE	Earliest Date
	Latest Date
	Record # of Earliest
	Record # of Latest
	Most Common Day
	Most Common Month
	Items in January
	Items in February

**Field: AMOUNT**

STATISTIC	VALUE	COMMENT
Net Value		Total payments
Average Value		
Minimum Value		
Maximum Value		
# of Records		
# of Zero Items		These are unexpected and should be extracted and investigated.
# of Positive Records		
# of Negative Records		

**Field: CHECK**

STATISTIC	VALUE	COMMENT
# of Zero Items	0	No missing check numbers
Minimum Value	701,001	First check number in sequence
Maximum Value	702,001	Last check number in sequence

**Field: SUPPNO**

STATISTIC	VALUE	COMMENT
# of Blanks		One missing supplier number
# of Categories		The number of unique supplier numbers

**Field: PAYEE**

STATISTIC	VALUE	COMMENT
# of Blanks	1	One missing supplier name
# of Categories	84	The number of unique payee names

**Field: INVOICE**

STATISTIC	VALUE	COMMENT
# of Blanks		No missing invoice entries
# of Categories		The number of unique invoice numbers

**Field: AUTH**

STATISTIC	VALUE	COMMENT
# of Blanks		No missing authorization entries
# of Categories		The number of unique authorizers

**Field: INV\_DATE**

STATISTIC	VALUE	COMMENT
# of Zero Items		No missing invoice dates
Earliest Date		
Latest Date		

**Field: PAY\_DATE**

STATISTIC	VALUE	COMMENT
# of Zero Items		No missing payment dates or unpaid invoices in the database
Earliest Date		
Latest Date		

- Export the field statistics to PDF for all fields to keep for proof of reconciliation. From the toolbar, click the **Export** button ( ). Name the file **AP Field Statistics**.
- From the **Properties** window, click **Data** to return to viewing the data.
- In the Database window, click the **Authorized Suppliers-Address** tab name to make it the active database.
- View the Field Statistics for the **TOT\_PREV\_YR** (previous year's total) field in the **Authorized Suppliers-Address** database. If prompted to create field statistics, click **Yes**. Note that the following totals have been provided with the data file for reconciliation purposes. Ensure that your totals agree.

**Field: TOT\_PREV\_YR**

STATISTIC	VALUE
Net Value	
Average Value	
Minimum Value	
Maximum Value	
# of Records	
# of Zero Items	





STATISTIC	VALUE
# of Positive Records	
# of Negative Records	

9. Export the field statistics to PDF for all fields to keep for proof of reconciliation. From the toolbar, click the **Export** button. Name the file **Supplier Field Statistics**.
10. From the **Properties** window, click **Data** to return to viewing the data.

### Setting the Control Amount for Each Data File

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.
2. From the **Properties** window, click **Control Total** and select **AMOUNT** as the control field.
3. Click **OK**.

According to the client, the control total amount of **34,145,300.89** should be displayed.

4. Select the **Authorized Supplier-Address** database as the active database.
5. Select the **TOT\_PREV\_YR** field as the control amount field.
6. Click **OK**.

According to the client, a total of **30,202,660.57** should be displayed.

7. Close the **Authorized Supplier-Address** database.

### Conclusion

We have proved the footings for the client's data files.



## Exercise 3D: Identifying Trends, Patterns, Duplicates, and Outliers with Discover

### Objective:

Run the Discover task to analyze the current database and present any results on a dashboard for further analysis.

### Exercise Description:

In this exercise, you will be able to analyze the Accounts Payable database to look for patterns, duplicates, and outliers. You will also learn how to build a dashboard to display the type of information you wish to present.

- Examine dashboard results from Discover
- Drill down through the charts and field statistics to view the detail transactions
- Modify the chart and field statistics properties to customize the results view
- Copy a chart to the clipboard to use in 3<sup>rd</sup> party applications

### Dashboard Features

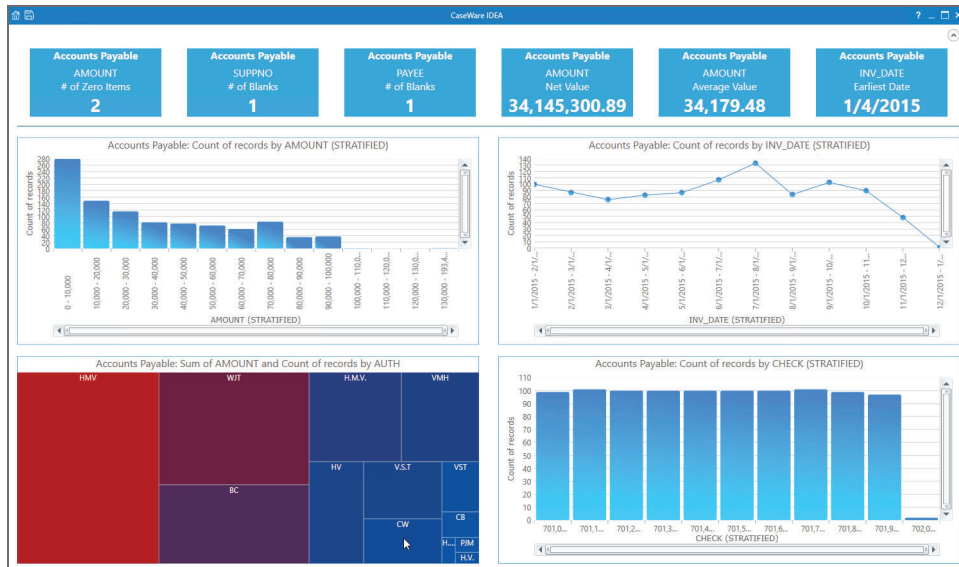
**Discover** is a data profiling task that analyzes the active database and provides insights into the data through dashboards. The dashboard consists of four charts and six field statistics. Using a proprietary technology, Analytic Intelligence, **Discover** displays results in the dashboard that can help in identifying trends and outliers within the database. **Discover** can be used as a starting point for interrogating the data to determine areas of focus.

### Running the Discover Task on the Accounts Payable Database

1. Ensure the **Accounts Payable** database 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**.



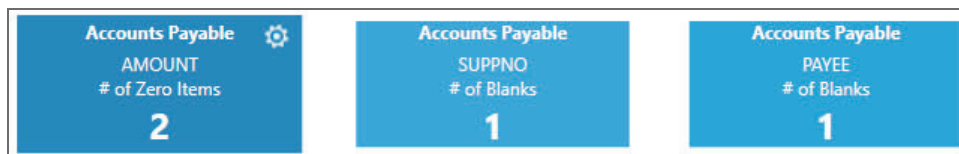
An window appears indicating that the Discover task is initializing. Once initialization is complete, the Dashboard window appears containing field statistic and chart panels.



Once a field statistic is generated and displayed in a field statistic panel, you can click on that panel to drill down to the underlying data (if applicable). Not all field statistics are available for drill down, such as NetValue and Average Value that compute all records in the database.

- Position your cursor in the **# of Zero Items** field statistic panel.

Note that a **Properties** button becomes visible in the top right corner. If the panel color changes, this indicates that you can click on the panel and drill down to underlying data.



- Click in the **# of Zero Items** field statistic panel to drill down to the underlying data.

SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AUTH
F123	Dick Tate	3522SDUF	3/10/2015	0		701,211 4/6/2015	HMV
T008	Tim Table	261231FF	6/29/2015	0		701,527 7/27/2015	H.M.V.

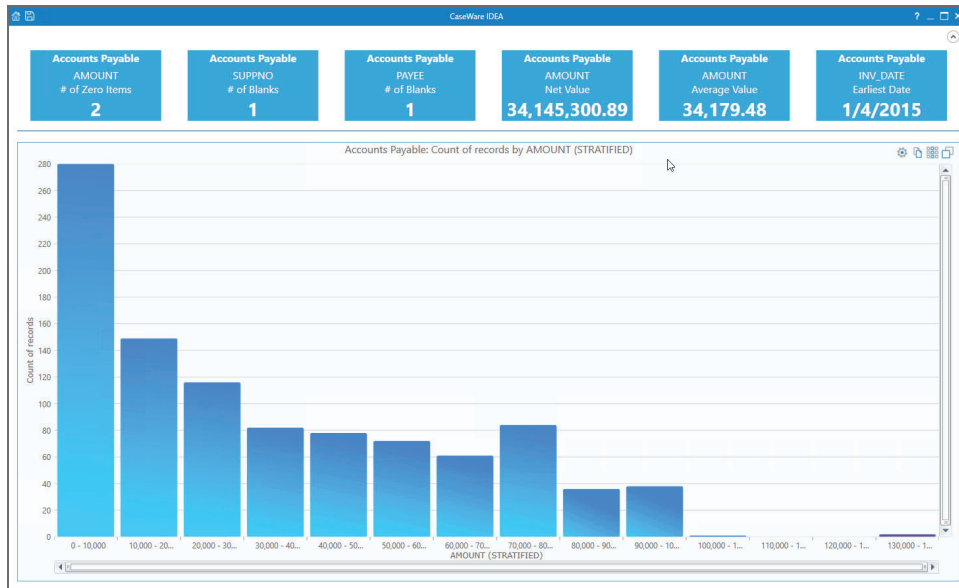
- Click the **Restore** button ( ) to exit the drill down window and return to the dashboard.
- Click on each field statistic panel to drill down to the underlying data.

Chart panels can display treemaps, scatter, bar, column, line, and pie charts. Chart panels have a **Maximize/Restore** toggle button that lets you expand

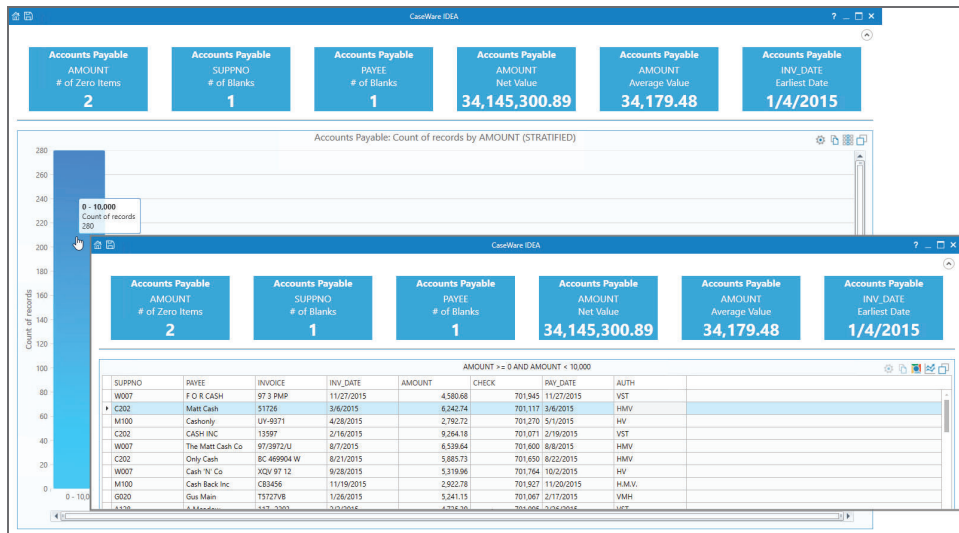


the selected panel to its maximum size or restore it back to its original size. In a maximized state, you can only see the selected panel in the dashboard. The other panels are hidden. The larger panel display lets you focus on the associated chart information within the panel. You can then restore the panel to its original size and view the other panels in the dashboard.

- Position your cursor in the **Accounts Payable: Count of records by AMOUNT (STRATIFIED)** chart. From the panel toolbar, click the **Maximize** button ( ).



- Click a bar on the chart to drill down to the underlying data.



- Click the **Chart View** button ( ) to exit the drill down data and return to the chart.
- Click the **Restore** button to exit the maximized chart view.



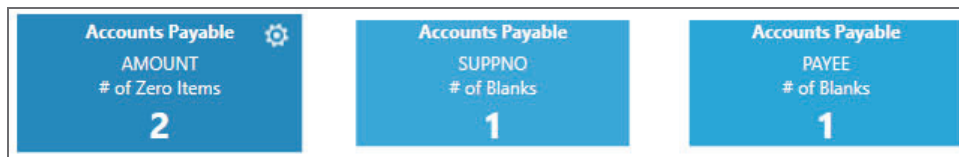
## Modifying Charts and Field Statistic Panels

Although the Discover task is designed to analyze the active database and automatically create a dashboard displaying insights from the data, it is possible to edit the Chart and Field Statistic panels once the Dashboard window has been created and save it as a template. This option gives you the ability to design a dashboard that displays information you want to view.

### Modifying Field Statistic Panels

1. Position your cursor in the **# of Zero Items** field statistic panel.

Note that a **Properties** icon becomes visible in the top right corner.



2. Click the **Properties** button (⚙️).

The Field Statistic Properties dialog box appears.

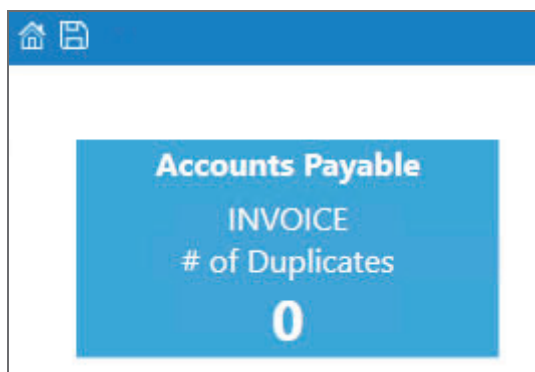
3. From the **Field** drop-down list, select **INVOICE**.

Note the field statistic values for **# of Duplicates** and **# of Unique Values** are not displayed by default.

4. Click the **Calculate** button associated with **# of Duplicates**.
5. Click **Save**.

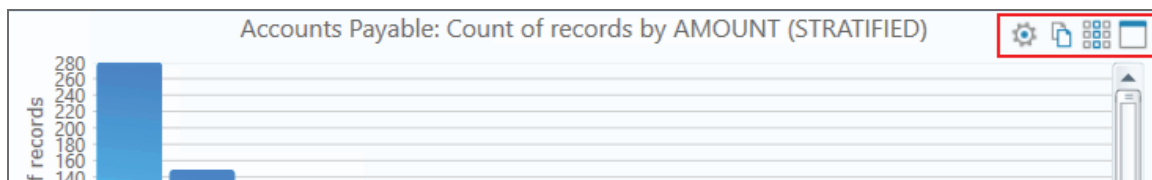


The field statistic panel is updated on the dashboard.



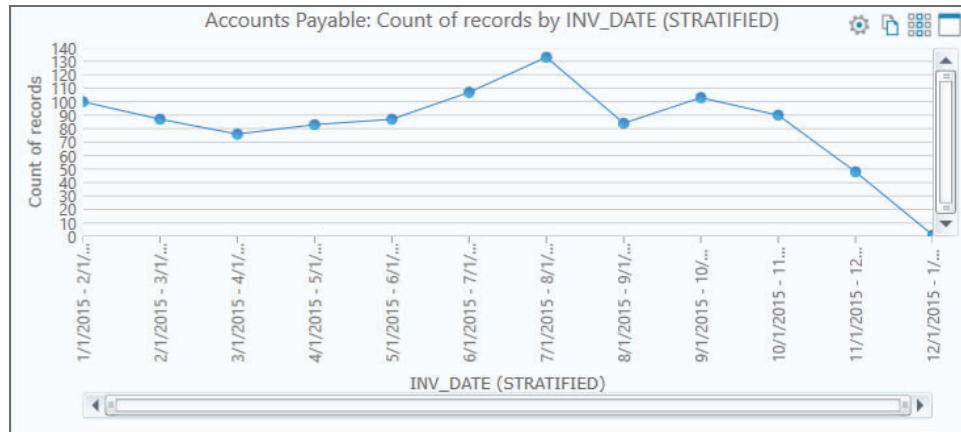
## Modifying Chart Panels

When you position your cursor in a chart panel, the panel toolbar is displayed in the top right corner.

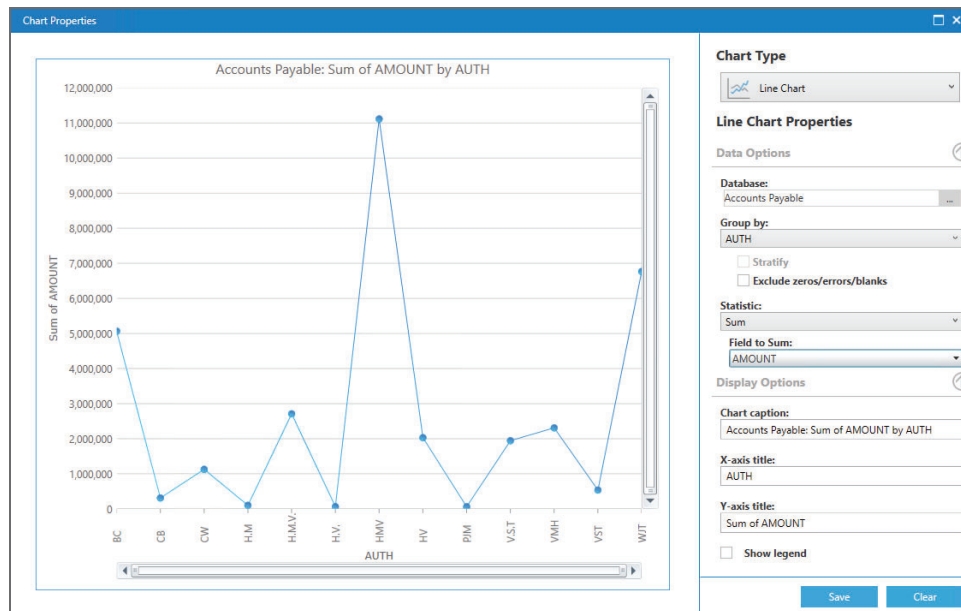


Button	Name	Description
	Properties	Modify chart properties.
	Copy to Clipboard	Copy the image of a chart to the Windows Clipboard.
	Grid View/Chart View toggle	Toggle between displaying data as a chart or a table.
	Maximize/Restore toggle	Toggle between maximizing a chart to full size or restoring it to its original size.

1. Position your cursor in the **Accounts Payable: Count of records by INV\_DATE (STRATIFIED)** chart to display the panel toolbar.



- Click the **Properties** button (⚙️).  
The Chart Properties dialog box appears.
- From the **Group by** drop-down list, select **AUTH**.
- From the **Statistic** drop-down list, select **Sum**.
- From the **Field to Sum** drop-down list, select **AMOUNT**.



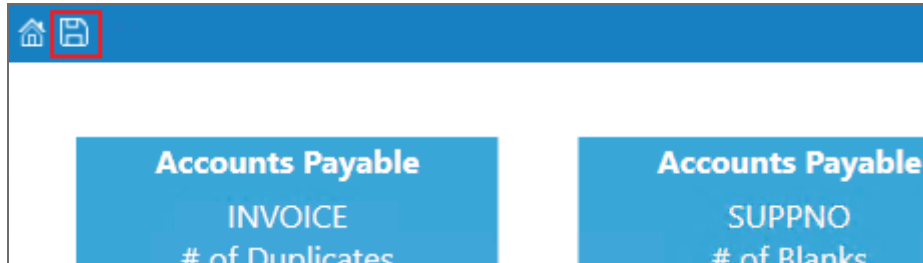
- Click **Save**.



## Saving the Dashboard

The dashboard displays the edits you made to the field statistic and chart panels. You can now save the dashboard.


1. From the Dashboard window title bar, click the **Save** button (  ).



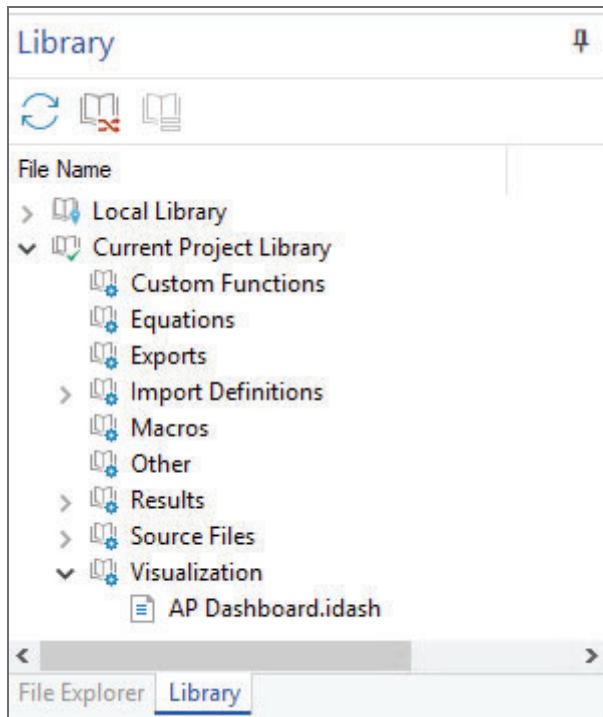
The Save dialog box appears.

2. In the **File name** field, enter **AP Dashboard** and click **Save**.

The dashboard is saved as an .idash file in the Visualization.ILB sub-folder in the active project. You can access the file from the Library window in IDEA.

3. Click the **Library** tab to display the Library window.
4. From the Library toolbar, click the **Refresh** button (  ).

The saved dashboard now appears under the Visualization Library group.







## Exercise 3E: Analyzing the Profile of Payments

### Objective:

Gain a profile of the number and value of payments by numeric bands to identify any unusual trends and to determine the high-value transactions for extractions.

### Exercise Description:

In this exercise, you will stratify the payment amounts in suitable bands from the minimum to the maximum payment amounts.

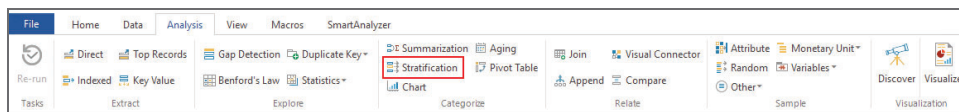
- Examine the resultant stratification report
- Identify potential invoice and payment splitting below authorization levels
- Chart the data and then print or save the chart
- Drill down through any chart sector to display its composite payments

### IDEA Functionality Covered:

- Plan for running a **Stratification** task
- Enter the parameters for the **Stratification** task
- Chart the results view analysis
- Drill down on result and chart sectors
- Save a chart

## Stratifying the Payment Amounts

1. Ensure **Accounts Payable** is the active database and the **Data** property is selected in the **Properties** window.
2. View the **Field Statistics** for the **AMOUNT** field to determine the minimum and maximum values of the population.
3. From the **Properties** window, click **Data** to return to viewing the data.
4. On the **Analysis** tab, in the **Categorize** group, click **Stratification**.



The Stratification dialog box appears.

5. In the **Fields to stratify**, select **AMOUNT**.
6. In the **Fields to total on** box, select **AMOUNT**.
7. Confirm the increment is set to **\$10,000** (this may be changed when required).



8. Click the first row of the spreadsheet area which will fill with 0 - 10000. Click and drag down to row 10. The bands will automatically fill with the increment.
9. Change the increment to **\$50,000** and complete the final two bands as listed below.

>= LOWER LIMIT	< UPPER LIMIT	COMMENTS
0	10,000	
10,000	20,000	
20,000	30,000	
40,000	50,000	
50,000	60,000	
60,000	70,000	
70,000	80,000	
80,000	90,000	
90,000	100,000	
100,000	150,000	Increment change to 50,000 bands
150,000	200,000	

10. Do not select the **Create Database** option.

Stratification

Group by: don't group Increment: 50,000.00

Field to stratify:

- SUPPNO
- PAYEE
- INVOICE
- INV\_DATE
- AMOUNT
- CHECK
- PAY\_DATE
- AUTH

Fields to total on:

- ☒ AMOUNT
- ☐ CHECK

	>= Lower Limit	< Upper Limit
1	0.00	10,000.00
2	10,000.00	20,000.00
3	20,000.00	30,000.00
4	30,000.00	40,000.00
5	40,000.00	50,000.00
6	50,000.00	60,000.00
7	60,000.00	70,000.00
8	70,000.00	80,000.00
9	80,000.00	90,000.00
10	90,000.00	100,000.00
11	100,000.00	150,000.00
12	150,000.00	200,000.00
13		
14		
15		

Criteria:

☐ Create database ☐ Include stratum intervals

☐ Create a virtual database ☒ Create result

File name: Stratification Result name: Stratification

OK Cut off Fields Insert Remove Cancel Help

11. Click **OK**.



12. The results of the **Stratification** are displayed in a new **Stratification Results** output of the Database window. Inspect the **Stratification Results** output for the **AMOUNT** field.

Accounts Payable x

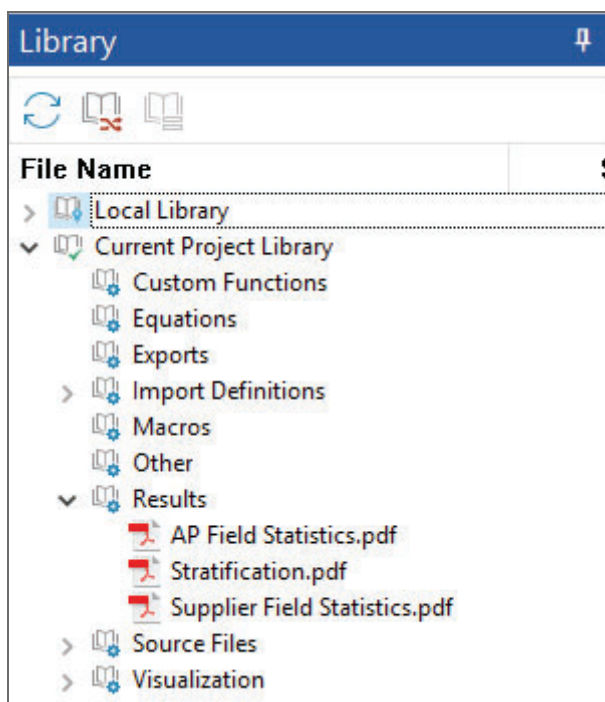
Totaled on: AMOUNT

Stratum #	>= L Limit	< U Limit	# Records	(%) # Records	AMOUNT	(%) AMOUNT
1	0.00	10,000.00				
2	10,000.00	20,000.00				
3	20,000.00	30,000.00				
4	30,000.00	40,000.00				
5	40,000.00	50,000.00				
6	50,000.00	60,000.00				
7	60,000.00	70,000.00				
8	70,000.00	80,000.00				
9	80,000.00	90,000.00				
10	90,000.00	100,000.00				
11	100,000.00	150,000.00				
12	150,000.00	200,000.00				
		Lower limit excepti...	0	0.00	0.00	0.00
		Upper limit excepti...	0	0.00	0.00	0.00
		Totals:				



13. To export the **Stratification** Results output as a report, from the Results output toolbar, click the **Export** button ( ). Name the file **Stratification** and click **Save**.

The exported file is saved in the Results Library group of the active project.



14. Double-click the file to open it.

Thursday, July 19, 2018 CaseWare IDEA

### Stratification

Prepared by: Report name: Accounts Payable Investigation  
 Input file name: Accounts Payable Period: Jan 1, 2015 - Dec 31, 2015

Stratified on: AMOUNT Number of stratum: 12

Stratum #	>= Lower Limit	< Upper Limit	# Records	%	AMOUNT	%
1	0.00	10,000.00				
2	10,000.00	20,000.00				
3	20,000.00	30,000.00				
4	30,000.00	40,000.00				
5	40,000.00	50,000.00				
6	50,000.00	60,000.00				
7	60,000.00	70,000.00				

15. To see the **Stratification** results in a graphical format, click the **View the result chart** button ( ).

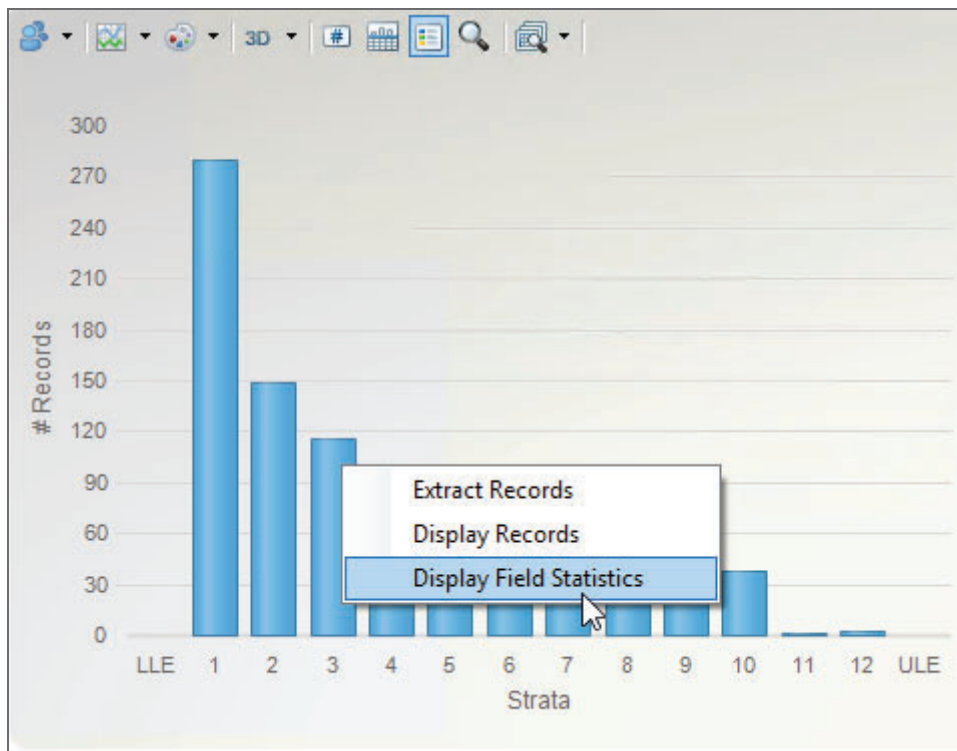
You can use the graphing toolbar to adjust the graph properties including the type of graph, the colors of the graph objects, as well as the graph labels and legends. The graph can be displayed in 2-dimensions or 3-dimensions. Select



**3D/2D** to select the preferred view. To return to the **Results** output, click the **View the result chart** button again.



16. Field statistic information is available for each stratum in the result. To view the **Field Statistics** for a stratum, left-click on the stratum to highlight it. Then select **Display Field Statistics**.





Display Field Statistics			
Field Type	Numeric Statistics	AMOUNT	CHECK
Numeric	Net Value	2,257,164.61	104,527,688
Character	Absolute Value	2,257,164.61	104,527,688
Date	# of Records	149	149
Time	# of Zero Items	0	0
Numeric Fields			
<input checked="" type="checkbox"/> AMOUNT	Positive Value	2,257,164.61	104,527,688
<input checked="" type="checkbox"/> CHECK	Negative Value	0.00	0
	# of Positive Records	149	149
	# of Negative Records	0	0
	# of Data Errors	0	0

17. You can also drill down to see the detail records that comprise any strata. Click any strata in the chart to highlight it, and then select **Display Records**.

Preview Database						
	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHE ^
1	M100	Crooks Inc	PI7683	2/10/2015	21,632.22	701
2	W007	CASH & CO	LD35622	5/22/2015	25,242.20	701
3	M014	Linda Hand	GR132 97	1/11/2015	26,340.30	701
4	P009	P Green	566701T	1/17/2015	29,990.31	701
5	B008	A Raid	3501050	1/29/2015	22,880.98	701
6	D025	Denise Bent	81345	2/28/2015	21,668.00	701
7	G020	Gus Main	T5740VB	2/28/2015	27,273.46	701
8	N001	Mike Atsil	AZ357	3/13/2015	23,294.64	701
9	T010	Wanda Farr	10047 A	3/21/2015	23,563.96	701
10	T005	Ri Pent	PPN98812	3/30/2015	20,284.39	701
11	T009	Truckstop	97 2061.29J	6/5/2015	29,339.05	701
12	A128	A Meadow	117- 2358	6/22/2015	27,891.77	701 v

Any of the above-mentioned **Results** outputs can be saved by clicking the **Save** button to create a new database.



As the Chief Financial Officer has informed you that the maximum payment value that can be authorized without his approval is \$80,000, this is likely to indicate that invoices and/or payments are being split to circumvent this limit.

If you want to redo your **Stratification** task, perhaps to change some of the stratum ranges, you do not have to start the **Stratification** task over again. If the **Results** output is active, and you have not done any other analysis on the database, you can re-run the last result simply by clicking **Re-Run** task on the **Analysis** tab. This will re-open the analysis dialog box that created the current **Results** output. In this case, it will re-open the **Stratification** dialog box previously used settings still in place.

**Stratification**

Group by: don't group Increment: 50,000.00

Field to stratify:

- SUPPNO
- PAYEE
- INVOICE
- INV\_DATE
- AMOUNT**
- CHECK
- PAY\_DATE
- AUTH

Fields to total on:

- ☒ AMOUNT
- ☐ CHECK

	>= Lower Limit	< Upper Limit
1	0.00	10,000.00
2	10,000.00	20,000.00
3	20,000.00	30,000.00
4	30,000.00	40,000.00
5	40,000.00	50,000.00
6	50,000.00	60,000.00
7	60,000.00	70,000.00
8	70,000.00	80,000.00
9	80,000.00	90,000.00
10	90,000.00	100,000.00
11	100,000.00	150,000.00
12	150,000.00	200,000.00
13		
14		
15		

Criteria:

☐ Create database ☐ Include stratum intervals

☐ Create a virtual database ☒ Create result

File name: Stratification Result name: Stratification1

OK Cut off Fields Insert Remove Cancel Help

- Return to the **Results** output by clicking the **Cancel** button.



## Exercise 3F: Identifying High and Unusual Payments

### Objective:

- To identify all high value items for testing.
- To identify items which do not appear to match the profile for payments.

### Exercise Description:

From the **Stratification** analysis, we identified that there was an unusually high number of payments between \$70,000 - \$80,000 and that there were 3 payments greater than \$100,000. These will be extracted for investigation.


### IDEA Functionality Covered:

- Extract data with a specified criterion
- Use the Equation Editor

Using the **Accounts Payable** database, extract all high and unusual payments as follows:

1. Select the **Accounts Payable** database as the active database with the **Data** property selected in the **Properties** window.
2. Select the **Direct Extraction** task by clicking on the relevant button on the **Analysis** tab.

The **Direct Extraction** dialog box appears.

3. In the **File Name** field, enter **Unusual and High Payments**.
4. Click the **Equation Editor** button (  ) and enter the following equation:

**AMOUNT >= 70000 .AND. AMOUNT < 80000 .OR. AMOUNT > 100000**



- **AMOUNT >= 70000 .AND. AMOUNT < 80000** will identify the unusually large number of payments between \$70,000 - \$80,000.
- **AMOUNT > 100000** will identify high value payments.

5. Once the equation has been entered, check the syntax by clicking the **Validate** button.
6. Click the **Validate and Exit** button.





7. In the **Records to extract** area, accept the default selection for the **All** option to extract the records from the whole database.

Direct Extraction

Records to extract: ☒ All ☐ Range ☐ Create a virtual database

Starting record #: 1

Ending record #: 999

Database order: No index

	File Name	Criteria
1	Unusual and High Payments	AMOUNT >= 70000 .AND. AMOUN
2		

Buttons: OK, Create Fields, Fields, Delete, Cancel, Help

8. Click **OK** to run the extraction.

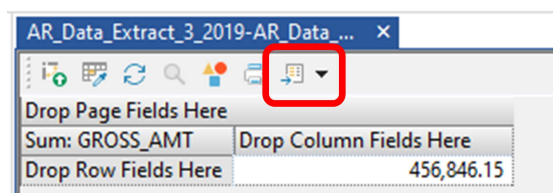
There should be **87** records totaling **\$6,850,932.26**.



There are several large values and round sum payments to Supplier M100. Note the different variants of the payee name, especially the occurrence of "Cash" within the name.

**Additional Step for MGS:** - Create a Pivot Table to summarize payment amount by authorizer, using the Unusual and High Payments database. Pivot tables in IDEA are similar those in spreadsheet softwares.

1. Open the unusual and high payments database.
2. On the Analysis tab, in the Categorize group, click Pivot Table.
3. A prompt will require labeling the Pivot Table results. Enter Authorization of unusual and high payments. An empty Pivot Table framework appears.
4. From the Pivot Table Field List dialog box, highlight the *AUTH* field name and drag it to the "Drop ROW Fields Here" area.
5. Highlight the *AMOUNT* field from the Pivot Table Field List dialog box and drag it to the "Drop Data Items Here" area.
6. Close the Pivot Table Field List dialog box.
7. From the Pivot Table toolbar, click the Send to Excel button to send the Pivot Table results to Excel (The button is hard to see, so I've included a picture. Enter the location you want to save the Excel file, and click Save.



9. Close the **Unusual and High Payments** database.

**MGS Note:** Make sure that you have answered question #8 within the Assignment Word document before you move on to the next exercise.



## Exercise 3G: Identifying Exceptional Transactions

### Objective:

To identify any unusual transactions.

### Exercise Description:

From the previous test, further investigation will be required and the following extractions will be carried out:

- All payments with the **PAYEE** name containing "CASH"
- All round sum payments
- All payments authorized by **HMV**
- All payments made on a Sunday

In addition, a digital analysis of the amount field will be performed using the **Benford's Law** task.

### IDEA Functionality Covered:

- Performing multiple extractions with a single pass through the database
- Using several @Functions in equations
- Finding help on the syntax of @Functions
- Using the **Benford's Law** task

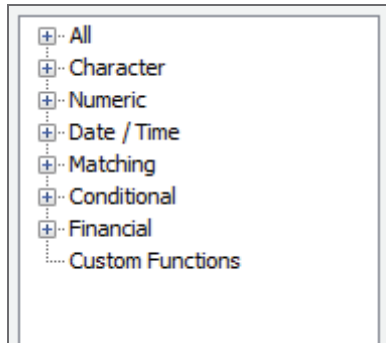
### Payments with "CASH" in the Payee Name

1. Using the **Accounts Payable** database, from the **Analysis** tab, in the **Extract** group, click **Direct**.
2. Change the file name to **CASH in PAYEE Name**.



- Click the **Equation Editor** button.

The middle panel in the Equation Editor lists the @Functions. The required equation is built using the following @Functions:



@Isini("text", field)	Used to search for text within a Character field. This @Function is NOT case sensitive.
@Strip(field)	Used to remove punctuation and spaces from the text

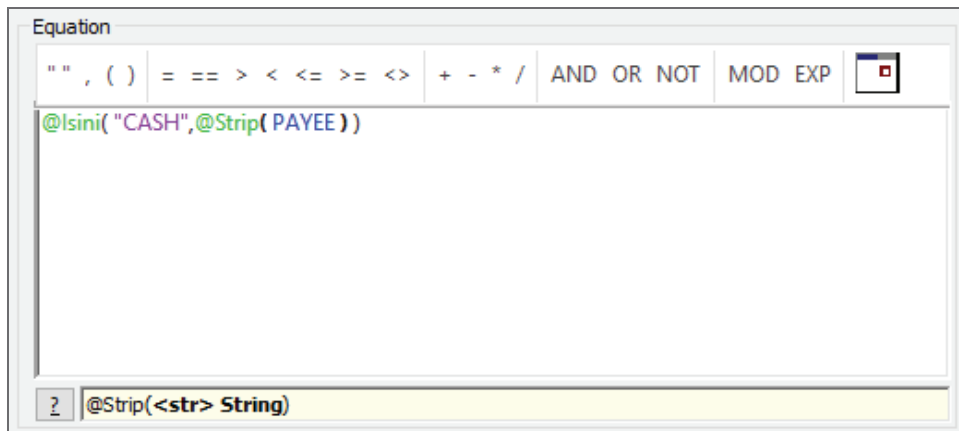
- The following equation will be used for the extraction:

**@Isini("CASH",@Strip(PAYEE))**



This activity can also be done using the IDEA Search task.

When you select the required **@Function**, IDEA inserts the **@Function** name and brackets (i.e., **@Isini()**) with the cursor inserted within the brackets.



- From the toolbar, click **Validate and Exit** button ( ) to check the syntax and exit the **Equation Editor**. Do not run the extraction yet.

## Round Sum Payments

- Click on the second extraction line in the **Direct Extraction** dialog box and note that a default name is supplied for a second extraction.



2. Change the file name to **Round Sum Amounts**.
3. Click the **Equation Editor** button.
4. Extract all round sum 1000s in the **AMOUNT** field using the following equation:

**AMOUNT % 1000 = 0**

Select the **MOD** button to insert the **%** symbol into the equation. This equation will return items where the remainder when dividing by 1000 is 0 (zero).



% is used in IDEA, as with many other programming languages, as the modulus symbol, not the percentage symbol.

5. From the toolbar, click **Validate and Exit** button to check the syntax and exit the **Equation Editor**. Again, do not run the extraction yet.

### Payments Authorized by Manager HMM

1. Click on the third extraction line in the **Direct Extraction** dialog box and note that the default name is supplied for a third extraction.
2. Change the file name to **Authorized by HMM**.
3. Click the **Equation Editor** button.
4. Extract all payments authorized by HMM using the following equation:

**@Upper(@Strip(AUTH)) = "HMM"**



- **@Upper(field)** converts the contents of a Character field to uppercase.
- **@Strip(field)** removes spaces and punctuation from the field.

5. From the toolbar, click **Validate and Exit** button to check the syntax and exit the **Equation Editor**. Again, do not run the extraction yet.

### Test for Payments Processed on a Sunday

1. Click on the fourth extraction line in the **Direct Extraction** dialog box and note that a default name is supplied for a fourth extraction.
2. Change the file name to **Sunday Payments**.
3. Click the **Equation Editor** button.



4. Enter the following equation:

**@Dow(PAY\_DATE) = 1**

Use @Dow as follows:

<b>@Dow</b> (date field)	Used to return the day of the week where: 1 = Sunday 2 = Monday etc.
--------------------------	--

5. From the toolbar, click **Validate and Exit** button to check the syntax and exit the **Equation Editor**.

The Direct Extraction dialog box is shown with the following settings:

- Records to extract: ☒ All, Starting record #: 1, Ending record #: 999
- ☐ Range
- ☐ Create a virtual database
- Database order: No index

	File Name	Criteria
1	CASH in PAYEE Name	@Isini( "CASH",@Strip( PAYEE ) )
2	Round Sum Amounts	AMOUNT % 1000 = 0
3	Authorized by HMV	@Upper(@Strip( AUTH )) = "HMV"
4	Sunday Payments	@Dow( PAY_DATE ) = 1
5		

Buttons on the right: OK, Create Fields, Fields, Delete, Cancel, Help.

6. Click **OK** to run all four extractions with a single pass through the database, potentially saving considerable time on large databases.

View the resultant databases in turn, recording and checking your results against the solution provided.



Note that the **CASH in PAYEE** name database is the active database. Other databases must be opened from the **File Explorer**.

The screenshot shows the IDEA File Explorer on the left and the Accounts Payable table on the right. The File Explorer shows a tree structure with databases: Accounts Payable (999 records), Authorized by HMV (399 records), CASH in PAYEE Name (20 records), Round Sum Amounts (7 records), Sunday Payments (77 records), Unusual and High Pay... (87 records), and Authorized Supplier-Address (18 records). The Accounts Payable table is open, showing columns: SUPPNO, PAYEE, INVOICE, INV\_DATE, and AMOUNT. The table contains 20 rows of data. A red arrow points from the 'CASH in PAYEE Name' database in the File Explorer to the 'CASH in PAYEE Name' tab in the Accounts Payable table.

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT
1	W007	Matt Cash Co	879-97	4/9/2015	83,516.79
2	M100	M Cash Inc	UP-76409	10/3/2015	75,000.00
3	M100	The Cash Co Inc	784566542	11/1/2015	59,096.84
4	W007	F O R CASH	97 3 PMP	11/27/2015	4,580.68
5	C202	Matt Cash	51726	3/6/2015	6,242.74
6	M100	Cashonly	UY-9371	4/28/2015	2,792.72
7	W007	CASH & CO	LD35622	5/22/2015	25,242.20
8	M100	Cash Inc	CS - 717 -97	9/15/2015	75,000.00
9	M100	Co Cash Inc	T5352	10/19/2015	75,000.00
10	C202	CASH INC	13597	2/16/2015	9,264.18
11	W007	Cash Inc	AB 3265 M	3/19/2015	104,112.83
12	W007	The Matt Cash Co	97/3972/U	8/7/2015	6,539.64
13	C202	Only Cash	BC 469904 W	8/21/2015	5,885.73
14	W007	Cash 'N' Co	XQV 97 12	9/28/2015	5,319.96
15	W007	Mr Cash Co	22 31 97	10/12/2015	75,000.00
16	M100	Cash Back Inc	CB3456	11/19/2015	2,922.78
17	C202	F O R Cash Only	MHY 1458	7/18/2015	30,850.11
18	M100	Matt Cash & Co	In879-97	6/26/2015	190,071.38
19	C202	Co	LD35610	10/5/2015	13,867.72
20	C202	Cash 'N' Co	OO P 643	8/31/2015	49,033.14

**Note from MGS:** To complete the table asked for by question 9 of the assignment, you will need to activate, and then generate field statistics for each of the four recently extracted files (see arrow pointing to File Explorer panel).

7. Close all databases.

### 3.5 Applying Benford's Law to Identify Exceptional Items

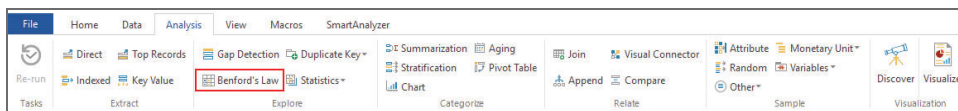
Frank Benford was a physicist at GE Research Laboratories in the 1920's. He determined that the first pages of the log table books were used more than the back pages. The first pages contain lots of numbers with low first digits. The first digit is the left-most digit in a number.

Benford collected data from 20 lists of numbers totaling 20,229 observations. He found that the first digit of 1 occurred 31 percent of the time. Using integral calculus, he calculated the expected digit frequencies that are now known as "Benford's Law." It took Frank Benford six years to perform his analysis and develop his law of expected digit frequencies.

The Benford's Law task in IDEA can provide a valuable reasonableness test for large data sets. IDEA only tests items with numbers over 10.00. Number sets with less than 4-digits tend to have more skewed distributions and do not conform as well to Benford's Law. Positive and negative numbers are analyzed separately because abnormal behavior patterns for positive numbers are very different from those for negative numbers.

To run a Benford's Law analysis on the **Accounts Payable** database:

1. On the **Analysis** tab, in the **Explore** group, click **Benford's Law**.



- In the **Benford's Law** dialog box, select the **AMOUNT** field as the field to analyze. Accept the other default options to **Include Values** that are positive, **Show boundaries**, **Mean absolute deviation** and perform all seven **Analysis Types** (First Digit, First Two Digits, First Three Digits, Second Digit, Last Two Digits, Second Order and Summation). Clear the **Suspicious** check boxes.

Benford's Law

Field to analyze: **AMOUNT**

Include Values:  
☒ Positive  
☐ Negative

Options:  
☒ Show boundaries  
☒ Mean absolute deviation

Result:  
☒ Create result

Analysis:

Test:		Create database:	
<input checked="" type="checkbox"/> First digit:	-	<input checked="" type="checkbox"/> Benford First Digit	
<input checked="" type="checkbox"/> First two digits:	-	<input checked="" type="checkbox"/> Benford First Two Digits	<input type="checkbox"/> Suspicious
<input checked="" type="checkbox"/> First three digits:	-	<input checked="" type="checkbox"/> Benford First Three Digits	
<input checked="" type="checkbox"/> Second digit:	-	<input checked="" type="checkbox"/> Benford Second Digit	
<input checked="" type="checkbox"/> Last two digits:	-	<input checked="" type="checkbox"/> Benford Last Two Digits	<input type="checkbox"/> Suspicious
<input checked="" type="checkbox"/> Second order:	-	<input checked="" type="checkbox"/> Benford Second Order	<input type="checkbox"/> Suspicious
<input checked="" type="checkbox"/> Summation:	-	<input checked="" type="checkbox"/> Benford Summation	<input type="checkbox"/> Suspicious

☐ Create a virtual database

Buttons: OK, Advanced..., Cancel, Help

- Click **OK** to perform the analyses.  
The **Benford** results become active. Other databases must be opened from the File Explorer window.
- From the File Explorer, open the **Benford First Digit** database.
- On the **Analysis** tab, in the **Categorize** group, click **Chart** to graph the data.  
The **Chart** dialog box appears.
- In the **Y field(s)** list box, select **ACTUAL**.
- In the **X axis title** field, enter **Digit Sequence**.
- In the **Y axis title** field, enter **Count**.



9. In the **Chart title** field, enter **AMOUNT - First Digit - Positive**.

**Chart**

X field: DIGITS

Y field(s): ☐ DIGITS ☐ DIFFERENCE  
☐ EXPECTED ☐ MAD\_RESULT  
☐ LOWERBOUND  
☐ UPPERBOUND  
☒ ACTUAL

Type: Bar

Legend: Do not show

☒ 3D chart  
☐ Show grid lines  
☒ Make a snapshot of the data

X axis title: Digit Sequence

Y axis title: Count

Chart title: AMOUNT - First Digit - Positive

Criteria:

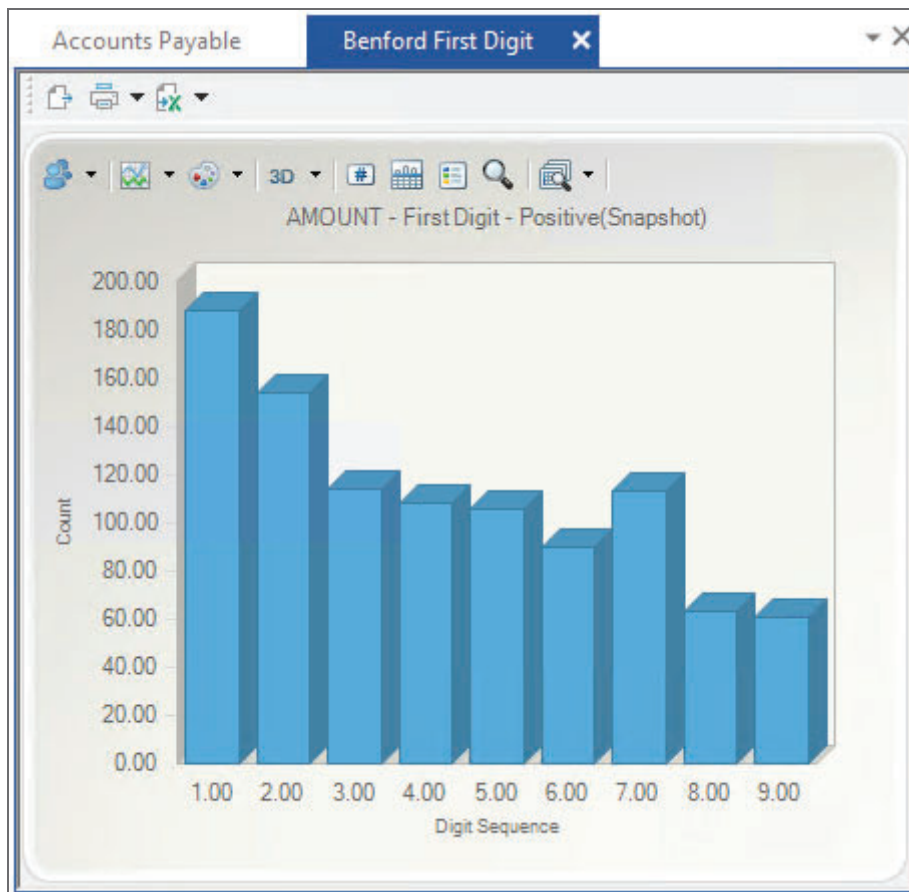
Result name: Chart Data

OK Cancel Help

10. Click **OK**.

The **Chart Data Results** output becomes active.

The first digit graph shows a spike in the digit 7 results.





The **First Digit** test is the test of first digit proportions. The first digit of a number is the left-most digit in the number. Zero can never be a first digit. This is a high-level test. Analysts will not usually spot anything unusual unless it is blatant. This is a test of goodness-of-fit to see if the first digit actual proportions conform to Benford's Law. The **First Digit** test is an overall test of reasonableness. The upper and lower bounds are merely guidelines for the auditor. The **First Digit** graph could show a high level of conformity, but the data set could still contain errors or biases.

11. From the **Properties** window, click **Data** to return to the **Benford's First Digit** database that was created as part of this analysis.

The **DIFFERENCE** field shows the difference between the expected occurrences of the digits and the actual occurrences of the digits. When the **DIFFERENCE** field is indexed (double-click the field name) in descending order, the digit 7 results show the largest positive difference (positive spike).

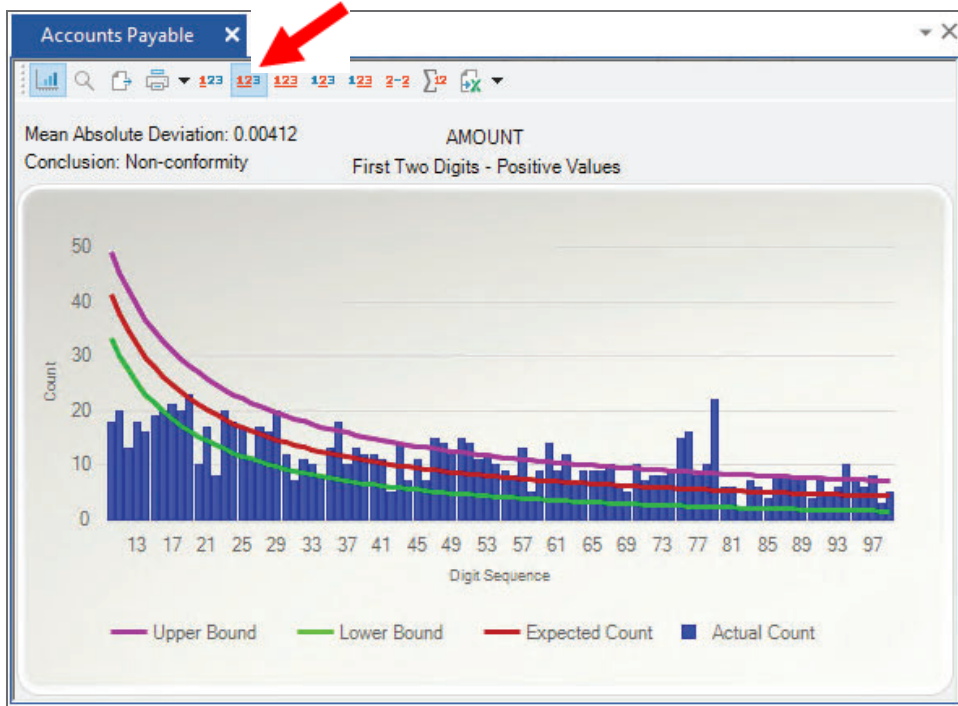
Accounts Payable		Benford First Digit			
	UPPERBOUND	ACTUAL	DIFFERENCE	MAD_RESULT	MAD_C
1	67.15	113		0.03215	Non-con
2	89.70	106		0.03215	Non-con
3	76.71	90		0.03215	Non-con
4	53.99	61		0.03215	Non-con
5	59.81	63		0.03215	Non-con
6	108.38	108		0.03215	Non-con
7	137.69	114		0.03215	Non-con
8	190.65	154		0.03215	Non-con
9	318.25	188		0.03215	Non-con

This result warrants further investigation as the Chief Financial Officer has indicated that any items over \$80,000.00 require additional approval. This spike could be indicating an abnormal level of items being processed just below the additional approval level.

12. Close the **Benford First Digit** database.
13. To view the Benford's Law analysis result again, open the **Accounts Payable** database and select **Benford** in the **Results** area of the **Properties** window.
14. To view the **First Two Digit** graph, click on the button on the **Results** toolbar.

**Note from MGS:** The arrow on the picture below shows you were to click to get to the two digit graph.

The 79, 76, and 75 two-digit combination spikes are clearly visible in this graph.



The **First Two Digit** test is a more focused test. The first two-digit numbers are the left-most two digits. There are 90 possible two-digit combinations ranging from 10 to 99. This test is performed to find anomalies in the data that are not apparent from either the **First Digit** test or the **Second Digit** test when viewed on their own. A spike occurs where the actual proportion exceeds the expected proportion as predicted by **Benford's Law**. Positive spikes (above the Benford's curve) represent excessive duplication. One of the objectives of this test is to look for spikes that conform to internal thresholds, such as authorization limits.

15. Look at the transactions that comprise the 79 two-digit combination by clicking on the graph and selecting **Display Records** to drill down to the transactions.

Notice the number of transactions just under the \$80,000 approval limit.

Preview Database ×

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AUTH
1	C202	Cary S Matic	CS - 589 -97	3/24/2015	79,217.47	701241	4/18/2015	H.M.V.
2	M025	Luke Hair	51505	1/26/2015	79,500.00	701073	2/19/2015	H.M.V.
3	F128	Ern Payed	82 95 1	2/17/2015	79,826.53	701148	3/15/2015	WJT
4	P007	Nellie Dunn	000511CJW	2/28/2015	7,988.72	701179	3/28/2015	WJT
5	T004	Richmond	IN/1151/97	3/9/2015	79,839.54	701207	4/3/2015	WJT
6	N001	Mike Atsil	AZ362	4/24/2015	79,910.95	701346	5/19/2015	HV

**Note from MGS:** Only the first six transactions are shown here as an example, but there are more than six actual transactions.

Preview Database

	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT ▼	CHECK	PAY_DATE	AUTH
1	K001	Jackie Tupp	917356	3/24/2015	79,990.86	701262	4/21/2015	H.M.V.
2	N001	Mike Atsil	AZ362	4/24/2015	79,910.95	701346	5/19/2015	HV
3	M014	Kurt N Upp	123513	7/18/2015	79,902.90	701628	8/15/2015	HMV
4	R007	Peter Rabbitt	KG0385	9/18/2015	79,901.01	701820	10/17/2015	BC
5	T006	Round Table	BUR1355-G	3/29/2015	79,839.65	701260	4/27/2015	H.M.V.
6	T004	Richmond	IN/1151/97	3/9/2015	79,839.54	701207	4/3/2015	WJT

**Note from MGS:** Only the first six transactions after sorting on Amount in descending order are shown here as an example. There are, in reality more than six transactions.

While not displayed in the workbook, 16 transactions make up the 76 two-digit combination, of which 10 are between 76,000 and 77,000. Of these 10 transactions, HMV authorized 7 transactions.

Of the 15 transactions in the 75 two-digit combination, 13 are between 75,000 and 76,000. Like before HMV authorized 6 of the 13 transactions. In addition, there are 5 transactions for exactly 75,000. Out of these 5 transactions, 4 were payments to companies with "Cash" in the payee name. Each of these 4 transactions was paid within a few days of their invoice date, clearly a violation of company policy.

16. Open the **Benford First Two Digits** database that was created as part of the analysis. Index the **DIFFERENCE** field in descending order.

Notice the large positive differences (positive spikes) in the first two-digit combinations of 79, 76, and 75. These were the underlying cause of the spike in digit 7 results in the **First Digit** graph.

	DIGITS	EXPECTED	LOWERBOUND	UPPERBOUND	ACTUAL	DIFFERENCE
1	79	5.45	2.37	8.53		16.55
2	76	5.66	2.52	8.80		10.34
3	75	5.74	2.58	8.89		9.26
4	60	7.16	3.66	10.66		6.84
5	50	8.57	4.77	12.38		6.43
6	36	11.86	7.43	16.30		6.14
7	47	9.12	5.20	13.04		5.88
8	51	8.41	4.63	12.18		5.59
9	57	7.53	3.95	11.11		5.47
10	94	4.58	1.74	7.42		5.42
11	29	14.68	9.77	19.59		5.32
12	62	6.93	3.48	10.37		5.07
13	48	8.93	5.05	12.81		5.07
14	78	5.52	2.42	8.61		4.48
15	43	9.95	5.87	14.04		4.05
16	53	8.09	4.39	11.80		3.91
17	70	6.14	2.88	9.40		3.86
18	67	6.41	3.09	9.74		3.59
19	97	4.44	1.64	7.24		3.56

Due to the size of this data set, several transactions were identified for further investigation using just the **First Digit** and **First Two Digit** analysis. In larger data sets, a finer filter of transactions is necessary.



Where there are 90 possible two-digit combinations, there are 900 possible three-digit combinations from 100 to 999. The **First Three Digits** test is a highly focused test that will give the analyst relatively smaller sections due to abnormal duplication and allow for a more narrowly focused analysis. This test is also valuable to look for spikes just below internal and psychological thresholds such as authorization limits. To make the most effective use of this test, the source data set should normally exceed 10,000 records.

17. Open the **Benford First Three Digits** database that was created as part of the analysis. Index the **DIFFERENCE** field in descending order.

Accounts Payable Benford First Two Digits Benford First Three Digits ×						
	DIGITS	EXPECTED	LOWERBOUND	UPPERBOUND	ACTUAL	DIFFERENCE ▼
1	750	0.58	0.00	1.72	6	5.42
2	807	0.54	0.00	1.64	5	4.46
3	769	0.56	0.00	1.69	5	4.44
4	511	0.85	0.00	2.18	5	4.15
5	187	2.31	0.23	4.39	6	3.69
6	962	0.45	0.00	1.48	4	3.55
7	799	0.54	0.00	1.65	4	3.46
8	798	0.54	0.00	1.65	4	3.46
9	533	0.81	0.00	2.13	4	3.19
10	492	0.88	0.00	2.24	4	3.12
11	469	0.92	0.00	2.31	4	3.08
12	377	1.15	0.00	2.67	4	2.85
13	186	2.32	0.24	4.40	5	2.68
14	299	1.45	0.00	3.13	4	2.55
15	940	0.46	0.00	1.50	3	2.54
16	296	1.46	0.00	3.15	4	2.54
17	922	0.47	0.00	1.52	3	2.53
18	295	1.47	0.00	3.16	4	2.53
19	899	0.48	0.00	1.54	3	2.52

The "750" digit combination has the largest negative difference (positive spike).

18. Close all databases.

## 3.6 Data-based Conditions for Benford's Law

### 3.6.1 Geometrical Series

The mathematical pre-condition for the examination of a data supply based on Benford's Law is that the data supply is based on a geometrical series (i.e., it is presented as Benford Set). This condition is rarely met. Experience shows; however, that data must only partially meet this condition, i.e., the constant increase, percentage-wise of an element compared to the predecessor must only be met partially. Otherwise, this would mean that no number may occur twice which is quite improbable in the case of business data supplies, however, the pre-condition is that there is at least a 'geometrical tendency'.

### 3.6.2 Description of the Same Object

The data must describe the same phenomenon. Examples are:

- The population of cities
- The surface of lakes
- The height of mountains
- The market value of companies quoted on the New York Stock Exchange
- The daily sales volume of companies quoted on the New York Stock Exchange
- The sales figures of companies

### 3.6.3 Unlimited Data Space (Non-Existence of Minima and Maxima)

The data must not be limited by artificial minima and maxima. A limitation to exclusively positive numbers (excluding 0) is permissible if the figures to be analyzed do not move within a certain, limited range. This applies, for example, to price data (e.g., the price of a case of beer will generally always range between 15 and 20 dollars) or fluctuations in temperature between night and day.

### 3.6.4 No Systematic Data Structure

The data must not consist of numbers following a pre-defined system, such as account numbers, telephone numbers and social security numbers. Such numbers show numerical patterns that refer to the intentions of the producer of the number system rather than to the actual object size, represented by the number (e.g., a telephone number starting with a 9 does not mean that this person possesses a bigger telephone).

Basically, data complies best with Benford's Law if it meets the rules mentioned above, namely that the data consists of large numbers with more than 4 digits and the analysis is based on a sufficiently large data supply. A large data supply is necessary to come as close to the expected numerical frequencies as possible. For example, the expected frequency of the digit 9 in any data supply is 0.0457. If the data supply consists of only 100 numbers,



the numbers which have a 9 as their first digit may be 5% of the data supply. Thus, in the case of a small data supply, there may be an over-proportional deviation from Benford's Law. In large data supplies, the numerical distribution is increasingly closer to the expected frequencies.

If the data supply has, or just roughly has, the characteristics mentioned above it can be analyzed based on Benford's Law. However, the results of the Benford analyses are not interpretable based on Benford's Law. As stated before, the expected frequencies according to Benford's Law often represent, in the practical use, nothing more than a type of benchmark for the observed frequencies. Since the observed frequencies will only be compared with the legality discovered by Benford, not interpreted accordingly, it is not necessary that all conditions mentioned above be met.

In fact, the analysis results will help the auditor interpret the personal expectation of the auditor, without including the reference value according to Benford in the argumentation. If, for example, the personal expectation of the user is that the starting digit 4 must occur twice as often in the analyzed data than the starting digit 2, the results of the analyzed values must not be compared with the expected frequencies according to Benford but with the individual expectation of the user.

The application of Digital Analysis and the Benford Module is also permissible in the framework of Data Mining when certain distinctive facts in a data supply are measured against the personal expectations of the user and interpreted according to them. In this case it is not necessary for the data that is to be analyzed, to create a Benford Set in a strict sense. In fact, it is permissible under these circumstances to analyze the numerical distribution of the leading digits of each data quantity and to interpret it independent of Benford's Law.



## Exercise 3H: Test for Duplicate Payments and Records

### Objective:

To test for duplicate payments and records.

### Exercise Description:

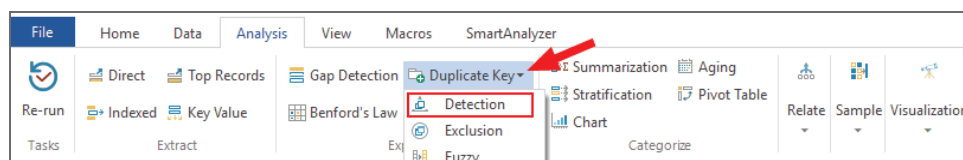
The Chief Financial Officer, Mr. Cuthbert is concerned that there are many more payments to certain suppliers compared to previous years. He is concerned that certain suppliers may be paid more than once for invoices, or that invoices are being resubmitted. He has asked you to test for duplicate payments. In addition to the duplicate payments being made to suppliers, Mr. Cuthbert is interested to know if there are any duplicate payments made to suppliers with slightly different names.

### IDEA Functionality Covered:

- Select fields to test for duplicates
- Specify a key (or sequence order)
- Test for duplicates
- Use **Duplicate Key Detection** task to check for supplier numbers with multiple payee names
- Use **Duplicate Key Exclusion** task to test for supplier numbers with multiple payee names
- Use Fuzzy Duplicate task to check for multiple supplier names that look similar

### Test for Duplicate Transactions

1. Open the **Accounts Payable** database.
2. On the **Analysis** tab, in the **Explore** group, click **Duplicate Key** and then click **Detection**.



3. There are two options for duplicate testing: **Output duplicate records** or **Output records without duplicates**. For this test, select **Output duplicate records** to get a database containing any records that are duplicated.

Consider which field or fields should be tested for duplication (a maximum of 8 fields may be selected). In this case, duplicate payments are likely to be identified by payments of the same amount to the same supplier; therefore, these fields will be specified in the key.



4. Click **Key** and select the following fields:

- **SUPPNO** — Ascending
- **AMOUNT** — Descending

The 'Define Key' dialog box shows the 'Base index on:' dropdown set to 'NEW INDEX'. Below it is a table with two columns: 'Field' and 'Direction'. The first row has 'SUPPNO' in the Field column and 'Ascending' in the Direction column. The second row has 'AMOUNT' in the Field column and 'Descending' in the Direction column. To the right of the table are four buttons: 'OK', 'Delete Key', 'Cancel', and 'Help'. The 'OK' button is highlighted with a blue border.

Field	Direction
SUPPNO	Ascending
AMOUNT	Descending

5. Click **OK** in the **Define Key** dialog box.
6. Do not specify criteria (i.e., only payments for a specified range of dates) for the test.
7. In the **File name** field, enter **Duplicate Payments**.

The 'Duplicate Key Detection' dialog box has two radio buttons: 'Output duplicate records' (selected) and 'Output records without duplicates'. Below these is a 'Criteria:' label followed by an empty text box and a small icon. Below that is a 'File name:' label followed by a text box containing 'Duplicate Payments'. At the bottom is a checkbox labeled 'Create a virtual database'. To the right are five buttons: 'OK', 'Key' (highlighted with a blue border), 'Fields', 'Cancel', and 'Help'.

8. Click **OK** in the **Duplicate Key Detection** dialog box to run the test.
9. View the resultant database of duplicates payments.

Although the supplier number and amount are the same, other information in the record is different. These will all require a follow-up to determine if they are genuine duplicates.

Note the different invoice number patterns and that all payments to supplier one are made within a few days of the invoice date.



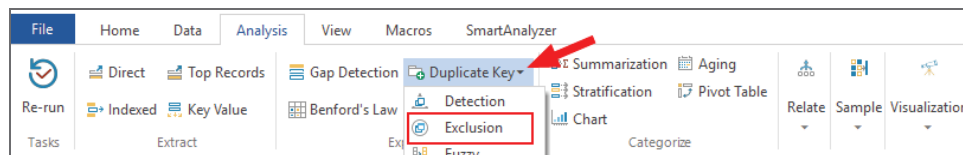
Other possible tests include testing for:

- Duplicate supplier invoice numbers (i.e., test for the same supplier number and invoice number)
- Duplicate purchase order numbers (unless this is validated in the system)

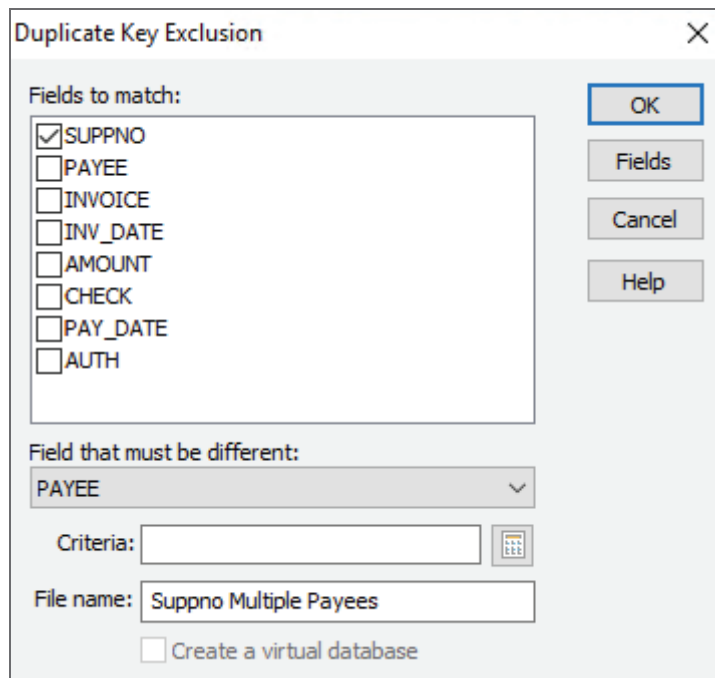
10. Close the **Duplicate Payments** database.

### Test for Supplier Numbers with Multiple Payee Names

1. Open the **Accounts Payable** database.
2. On the **Analysis** tab, in the **Explore** group, click **Duplicate Key** and then click **Exclusion**.



3. In the **Duplicate Key Exclusion** dialog box, enter the following settings:
  - **Fields to match:** SUPPNO
  - **Field that must be different:** PAYEE
  - **File name:** Suppno Multiple Payees



4. Click **OK** to perform the test.



There are **121** records where the same supplier number has different payee names. These records total **\$4,552,803.13**.

5. Close the **Suppno Multiple Payees** database.

### Test for Payments to Suppliers with Similar Naming Conventions

Perform a **Fuzzy Duplicate** task to test for multiple payee names that look similar. The Fuzzy Duplicate task identifies records within a Character field that look similar but are not exact. It identifies possible false negative records that may not get detected by a **Duplicate Key Detection** or **Duplicate Key Exclusion** task.

The Fuzzy Duplicate task can be used to look for items that are similar due to:

- Data entry errors (e.g., "Compny" instead of "Company")
- Inconsistencies in recording information (e.g., "John Smith" vs. "Johnathan Smith")
- Fraud (e.g., similar address, first names, and last names)

How similar items are when the task is executed depends on the similarity degree, which can be assigned by the user.

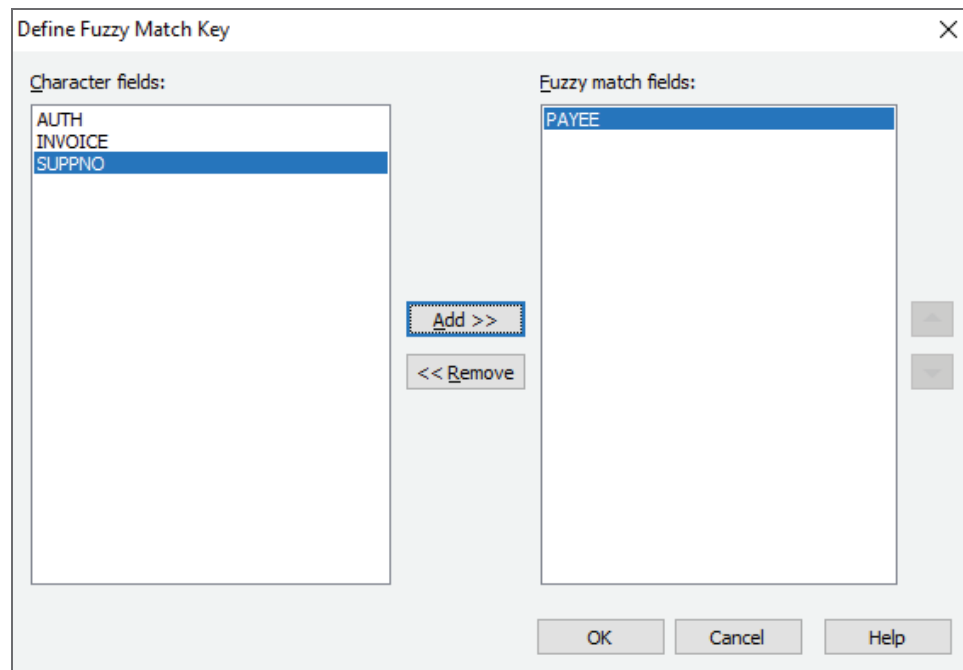
1. Open the **Accounts Payable** database.
2. On the **Analysis** tab, in the **Explore** group, click **Duplicate Key** and then click **Fuzzy**.
3. There are three fuzzy output options. Select **Fuzzy matches** to have IDEA identify transactions that are similar.

Consider which field or fields should be tested for fuzzy duplication. You can select a maximum of three fields. In this case, duplicate payments may be identified by payments to the same payee that have been entered into the system with different spelling.

4. Click **Key** to access the **Define Fuzzy Match Key** dialog box.



5. From the **Character fields** list, select **PAYEE** and click **Add**.



6. In the **Define Fuzzy Match Key** dialog box, click **OK**.
7. In the **Settings** section, clear all check box options.
- The **Allow records in multiple fuzzy groups** option assigns a record to more than one fuzzy group, based on the similarity degree that is set.
  - The **Include exact duplicates** option looks for exact duplicates in addition to similar records in the fuzzy groups.
  - The **Match case** option treats uppercase and lowercase characters as different characters. If the check box is cleared, then upper and lower case characters are viewed as identical.



8. Accept the default **Similarity degree(%)** setting (80%).

The similarity degree slider bar is adjusted according to how similar you want the records to be. The range is from 60% to 99%. If the slider is moved all the way to the right (99%), the more similar the records will be in the fuzzy group. Conversely, if the slider is moved all the way to the left (60%), the larger the fuzzy groups will be, because they will contain records that are less similar.

9. In the **Fuzzy Duplicate** dialog box, click **OK**.

There are 6 records identified as having similar payee names.

Accounts Payable												
Fuzzy Duplicate												
	GROUP_ID	GROUP_NAME	SIMILARITY_DEGREE	RECORD_NUM	PAYEE	SUPPNO	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AUTH
1	1	CASH INC	1.0000	14	CASH INC	C202	13597	2/16/2015	9,264.18	701071	2/19/2015	VST
2	1	CASH INC	1.0000	10	Cash Inc	M100	CS - 717 - 97	9/15/2015	75,000.00	701728	9/17/2015	VST
3	2	Matt Cash & Co	1.0000	23	Matt Cash & Co	M100	In879-97	6/26/2015	190,071.38	701443	6/30/2015	HMV
4	2	Matt Cash & Co	0.8571	1	Matt Cash Co	W007	879-97	4/9/2015	83,516.79	701218	4/9/2015	V.S.T
5	3	Co Cash Inc	1.0000	12	Co Cash Inc	M100	T5352	10/19/2015	75,000.00	701849	10/22/2015	V.S.T
6	3	Co Cash Inc	0.8182	3	M Cash Inc	M100	UP-76409	10/3/2015	75,000.00	701774	10/8/2015	HMV

A fuzzy group is a cluster of records that are similar to each other, based on the degree of similarity defined in the **Fuzzy Duplicate** task. A record can be similar to many records and; therefore, be included in more than one fuzzy group. This is illustrated after the Fuzzy Duplicate task is performed, where two fields that are created called **GROUP\_ID** and **GROUP\_NAME**. The **GROUP\_ID** is the number that represents each group of similar records. Each group is given a name, which is the payee name in each record that represents the core group.

The **SIMILARITY\_DEGREE** is the value representing the degree of similarity between each payee and it's related group. In this task, the values can range from 1 (exact duplicate) to 80% similarity.



For this test, the payee "Matt Cash & Co" appears twice, yet is spelled differently. The invoice number for each instance appears to be the same, but is not 100% identical.

PAYEE	SUPPNO	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_DATE	AUTH
CASH INC	C202	13597	2/16/2015	9,264.18	701071	2/19/2015	VST
Cash Inc	M100	CS - 717 -97	9/15/2015	75,000.00	701728	9/17/2015	VST
Matt Cash & Co	M100	In879-97	6/26/2015	190,071.38	701443	6/30/2015	HMV
Matt Cash Co	W007	879-97	4/9/2015	83,516.79	701218	4/9/2015	V.S.T
Co Cash Inc	M100	T5352	10/19/2015	75,000.00	701849	10/22/2015	V.S.T
M Cash Inc	M100	UP-76409	10/3/2015	75,000.00	701774	10/8/2015	HMV

10. Close the **Fuzzy Duplicate** database.





## Exercise 3I: Searching for Gaps in the Check Number Sequence

### Objective:

Test for completeness.

### Exercise Description:

An auditor looking at the Bank Reconciliation is concerned that not all the checks have been recorded on the system. Test for missing check numbers in the sequence.

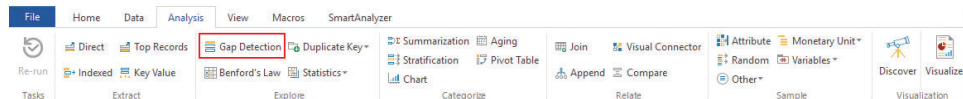
The **Gap Detection** task is used to test for missing items in a numeric list.

### IDEA Functionality Covered:

- Rules for testing for missing items
- **Gap Detection** task
- Where to view the results
- How to export or print results

To test for missing items in a numeric list:

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window. The field **CHECK** contains the check number.
2. It is possible to test for gaps in Numeric or Date fields or in a numeric sequence within a Character field. To view a field's format within a database, double-click the field within the Database window to display the **Field Manipulation** dialog box.
3. View the format of the **CHECK** field and note that its field type is Numeric. Click **Cancel** to close the **Field Manipulation** dialog box.
4. On the **Analysis** tab, in the **Explore** group, click **Gap Detection**.





5. From the **Field to use** drop-down list, select **CHECK** to test for gaps.

The screenshot shows the 'Gap Detection' dialog box. At the top, 'Field to use' is set to 'CHECK' and 'Criteria' is an empty text box. Below this is the 'Numeric' section with three options: 'All' (selected), 'Range', and 'Gap increment'. The 'Starting key value' is 701,001 and the 'Ending key value' is 702,001. The 'Gap increment' is 1. At the bottom is the 'Output' section with 'Create database' (unchecked) and 'Create result' (checked). The 'File name' is 'Gap Detection' and the 'Result name' is 'Gap Detection'. There are 'OK', 'Cancel', and 'Help' buttons on the right.

You can specify a **Criteria** for the test (i.e., only checks issued for a date range); however, for this exercise, leave it empty.

6. Test the whole range of check numbers by accepting the default selection of the **All** option.



The value in the Starting key value and Ending key value boxes are provided from the minimum and maximum values held in the Field Statistics.

7. Accept the **Gap Increment** of **1**. If required, this option can be modified.
8. Click **OK**.



9. The **Gap Detection** Results output appears in the Database window. To view missing checks, click the + sign located on the left side of the check sequence.

Accounts Payable x Authorized Supplier-Address Unusual and high payments CASH in PAYEE Name Authorized by HMV Benford First Three Digits			
Key Value			
	From: INVOICE	To: INVOICE	Number
+ 217 **Z	231 **Z	15	
+ 233 **Z	247 **Z	15	
+ 249 **Z	262 **Z	14	
+ 264 **Z	268 **Z	5	
+ 271 **Z	275 **Z	5	
+ 277 **Z	288 **Z	12	
+ 290 **Z	296 **Z	7	
+ 298 **Z	311 **Z	14	
+ 313 **Z	316 **Z	4	
+ 318 **Z	329 **Z	12	
+ 331 **Z	338 **Z	8	
+ 340 **Z	341 **Z	2	
+ 343 **Z	357 **Z	15	
+ 359 **Z	362 **Z	4	
Total number of items detected			132
Total number of gaps detected			14

**MGS NOTE:** The above is an example of the the invoice gap detection, not the check gap detection. This is just an example and does not provide the answer for the assignment.

The results are saved in the IDEA database file. You can export the Results output to PDF or Microsoft Excel.



10. From the toolbar, click the **Export to Excel** button ( ). Name the file **Accounts Payable**, accept the default file type and location, and click **Save**.
11. From the toolbar, click the **Print** drop-down arrow ( ) and then click the **Print Preview** button ( ) to view the report.
12. Close the Print Preview window by clicking the "X" in the top right corner.
13. From the **Properties** window, click **Data** to return to viewing the database.

**MGS NOTE:** You ***do not*** need to export to Excel, or print the output of the gap detection test. You only need to do what is asked for within the assignment sheet.



## Exercise 3J: Searching for Gaps in the Check Date Sequence

**MGS NOTE: We are skipping this exercise, you may perform it on your own if you like, but it is not part of the assignment.**

### Objective:

Test for days on which there have been no payments.

### Exercise Description:

The auditors have been informed that a check payment run is processed each day. Therefore, a test should be performed to identify days on which no payments are made.

The **Gap Detection** task is used to test for missing items in a date range.

### IDEA Functionality Covered:

- Gap Detection task
- Entering holiday dates for exclusion
- Where to view the results
- How to export or print results

To test for missing items in a date range:

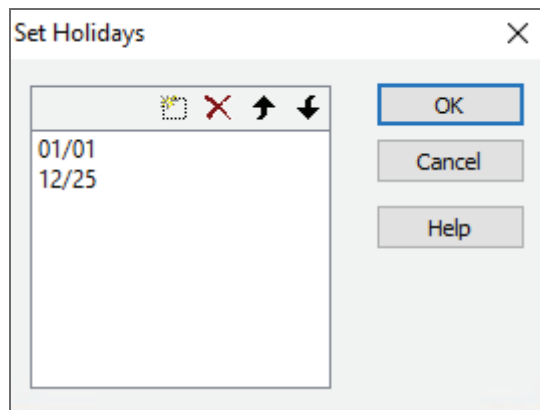
1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.  
The field **PAY\_DATE** contains the check payment date.
2. On the **Analysis** tab, in the **Explore** group, click **Gap Detection**.
3. Select the **PAY\_DATE** field to test for gaps.
4. Select the **Ignore weekends** option.
5. Select the **Ignore holidays** option.
6. Set the holiday dates to be ignored by clicking the **Set Holidays** button.
7. To add a new date, from the toolbar, click the **New** button ( ) and then click the **Browse** button ( ) to access the calendar control. Navigate to and select the required holiday dates to add to the list.

The following dates are suggested:

- **January 1, 2018**
- **December 25, 2018**

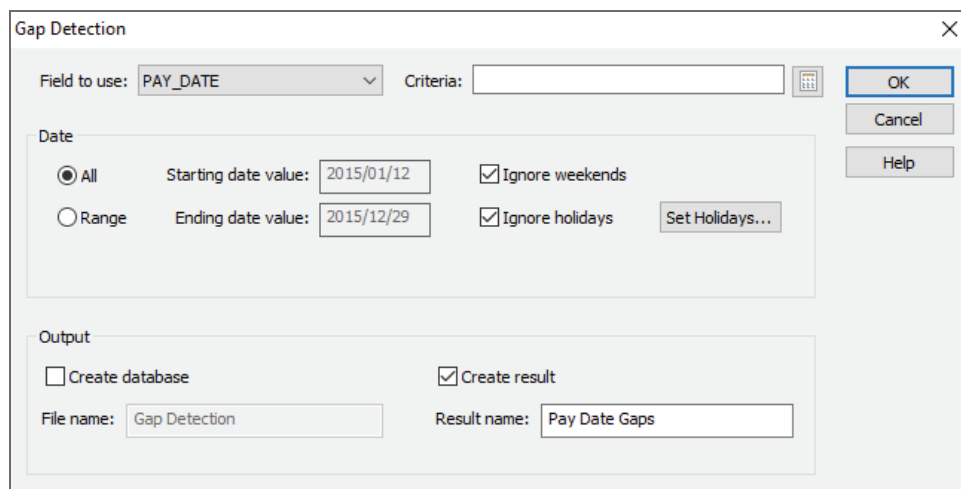


However, please enter additional dates or modify these dates if preferred.



**MGS NOTE: We are skipping this exercise, you may perform it on your own if you like, but it is not part of the assignment.**

8. Click **OK** to return to the **Gap Detection** dialog box.
9. In the **Result name** box, enter **Pay Date Gaps**.



You can specify a **Criteria** for the test (i.e., only checks issued for a date range); however, for this exercise, leave it empty.

10. Test the whole range of check payment dates by accepting the default **All**.



The values in the **Starting date value** and **Ending date value** boxes are provided from the Earliest date and Latest date held in the field statistics.

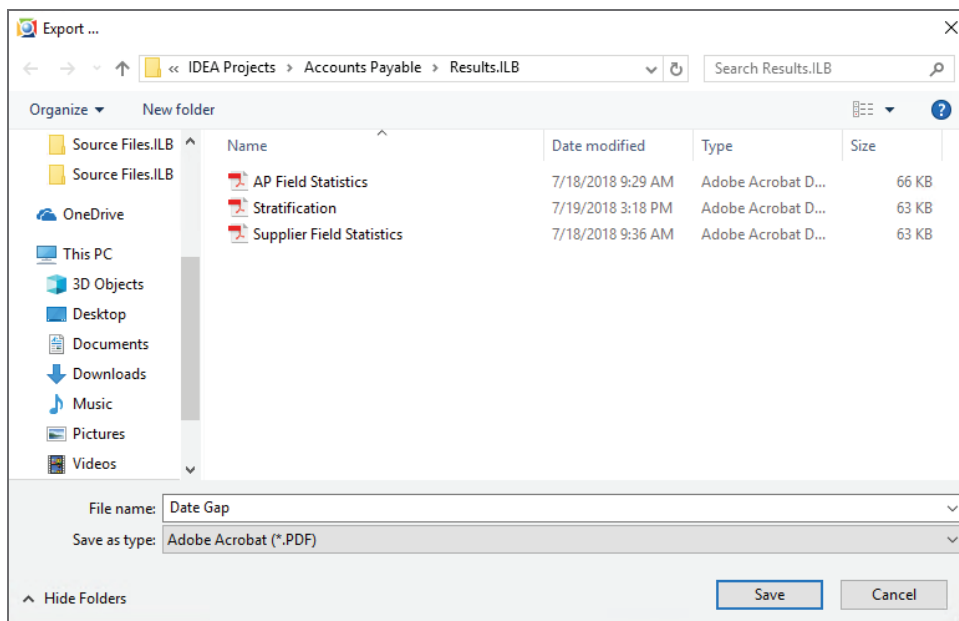
11. Click **OK**.



The **Pay Date Gaps** Results output of the Database window becomes active and displays the results.

	From: PAY_DATE	To: PAY_DATE	Number
+	1/13/2015	1/14/2015	2
+	1/16/2015	1/30/2015	11
+	2/4/2015	2/4/2015	1
+	2/11/2015	2/11/2015	1
+	2/13/2015	2/13/2015	1
+	2/18/2015	2/18/2015	1
+	2/20/2015	2/20/2015	1
+	2/25/2015	2/25/2015	1
+	2/27/2015	2/27/2015	1
+	3/2/2015	3/2/2015	1
+	3/4/2015	3/4/2015	1

12. Save the result as a **PDF** file by clicking the **Export** button and name the file **Date Gap**.



The **Date Gap.PDF** file can be viewed, printed, or emailed.

There are **62** gaps in the sequence. However, there are **85** days on which no payments have been made.

The results are saved with the database.

**MGS NOTE: We are skipping this exercise, you may perform it on your own if you like, but it is not part of the assignment.**



The results may be printed either by clicking the **Print** button on the toolbar or through the **Print Preview** option.

13. Click the **Print Preview** button on the toolbar and view the report.
14. Close the Print Preview window. From the **Properties** window, click **Data** to and return to the database.

**MGS NOTE: We are skipping this exercise, you may perform it on your own if you like, but it is not part of the assignment.**





## Exercise 3K: Analyzing Payment Days to Identify Favorable Terms to Suppliers

### Objective:

To analyze payment terms and ensure that **Bright IDEAs Inc.'s** policy on payment is being strictly adhered to.

### Exercise Description:

It is suspected that certain suppliers are rewarding staff for prompt payment of invoices. The number of days between payment and invoice will be calculated and then analyzed.

### IDEA Functionality Covered:

- Appending a Virtual field:
  - Using the **@Age** function to calculate the number of days between dates
  - Using the **@Between** function to test for a number between a range
- Indexing a database

### Calculating the Number of Days for Payment

1. Ensure the **Accounts Payable** database is the active database and the **Data** property is selected in the **Properties** window.
2. Double-click in the Database window to load the **Field Manipulation** dialog box.
3. Click **Append** to add the following Virtual field:
  - **Field Name:** PAY\_DAYS
  - **Field Type:** Virtual Numeric
  - **Field Length:** Do not enter
  - **Decimals:** 0
  - **Description:** Number of days to pay invoice
4. Click in the **Parameter** cell to load the Equation Editor and enter the following equation: **@Age(PAY\_DATE , INV\_DATE)**.



**@Age(Date1,Date2)** calculates the number of days between the specified dates (fields or date constants). Enter the later date first to report a positive number of days as a difference.



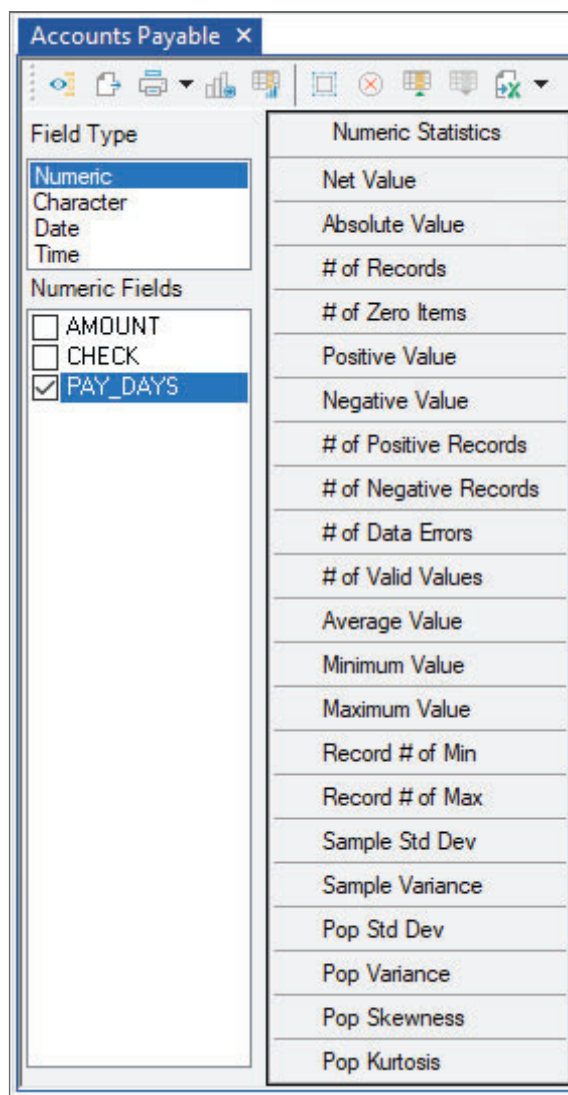
5. From the toolbar, click the **Validate and Exit** button (  ), returning to the **Field Manipulation** dialog box.

Field Manipulation

	Field Name	Type	Len	Dec	Parameter	Description
2	PAYEE	Character	17			Payee
3	INVOICE	Character	12			Invoice Number
4	INV_DATE	Date	8		YYYYMMDD	Invoice Date
5	AMOUNT	Numeric	4	2		Amount
6	CHECK	Numeric	4	0		Check Number
7	PAY_DATE	Date	8		YYYYMMDD	Payment Date
8	AUTH	Character	6			Payment Authorization Initials
9	PAY_DAYS	Virtual Numeric	0		@Age( PAY_DATE , INV_DATE )	Number of days to pay invoice

OK Append Delete Print Copy Cancel Help

6. Click **OK** to append the Virtual field.
7. Click **Yes** to continue.
8. View the results in the new **PAY\_DAYS** field. It will be the right-most column in the database.  
The color of this field (the default color is teal) indicates that the field is a calculated field and not an original imported field.
9. From the **Properties** windows, click the **Field Statistics** to view the statistics for the **PAY\_DAYS** field. When prompted, calculate the statistics for all fields.



**MGS NOTE:** This is an example of the what the Pay\_Days field statistics looks like, without the actual statistical values.

10. From the **Properties** window, click **Data** to return to the database.

### Extracting all Payments Outside the Policy Range

Extract all payments made outside the company's stated policy of 25 - 35 days.

1. On the **Analysis** tab, in the **Extract** group, click **Direct**.
2. In the **File name** field, enter **Payment Days Outside Policy Range**.
3. Click the **Equation Editor** button.

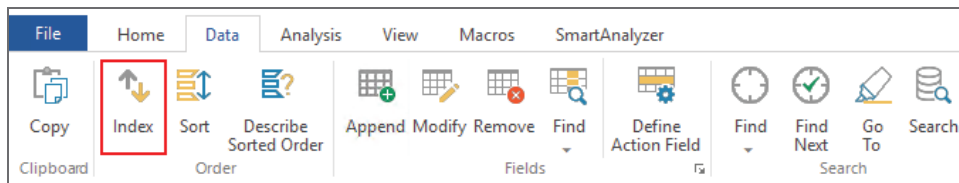
The **Equation Editor** appears and is used to enter the required equation.

4. Enter the expression **.NOT. @Between(PAY\_DAYS,25,35)**.

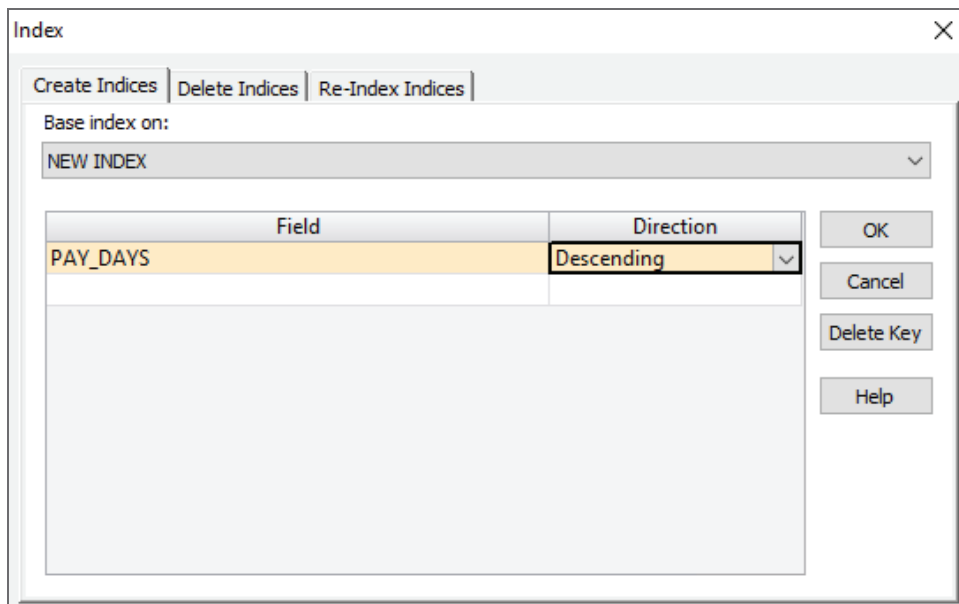


- **@Between(VALUE,MIN,MAX)** - tests for VALUE between (and including) MIN and MAX.
- **.NOT.** - reverses an expression, items where VALUE is not between MIN and MAX.

- From the toolbar, click the **Validate and Exit** button to check the syntax and exit the **Equation Editor**.
- In the **Records to extract** area, accept the default selection of the **All** option to extract the records from the whole database.
- Click **OK** to run the extraction.
- Double-click on the **PAY\_DAYS** field name to sequence in ascending order. Double-click again to index in descending order. The index order will be displayed in the **Indices** area on the **Properties** window. Alternatively, from the **Data** tab, in the **Order** group, click **Index**.



- Specify the index order as **PAY\_DAYS /Descending**.



- Close the **Payment days outside policy range** database.



## Conclusion

Several early payments have been authorized by **HMV** and **VST** to suppliers **M100**, **C202** and **W007**. The relationship between authorizers **HMV** and **VST** and these suppliers should be investigated. Late payments may also be investigated.



## Exercise 3L: Payments to Unauthorized Suppliers

### Objective:

To test the validity of payments to authorized suppliers.

### Exercise Description:

It is suspected that there are payments to unauthorized suppliers.

The transactions will be matched to the **Authorized Supplier-Address** database using the **Join Databases** task in IDEA. The **History** log will specify the number of unmatched records (i.e., a payment for which there is no match in the supplier's database).

### IDEA Functionality Covered:

- Matching databases using the **Join Databases** task
- Selecting the correct primary database for joining
- Determining the number of matched or unmatched transactions
- Using the **@IsBlank()** function

The common key by which the databases are to be joined is the **SUPPNO** field in each database. Verify that the field is the same type in each database.

### Verifying a Common Key

1. Ensure **Accounts Payable** is the active database and the **Data** property is selected in the **Properties** window.
2. Double-click over the Database window to open the **Field Manipulation** dialog box and to display the field layout.

	Field Name	Type	Len	Dec	Parameter	Description
1	SUPPNO	Character	4			Supplier Number
2	PAYEE	Character	17			Payee
3	INVOICE	Character	12			Invoice Number
4	INV_DATE	Date	8		YYYYMMDD	Invoice Date
5	AMOUNT	Numeric	4	2		Amount
6	CHECK	Numeric	4	0		Check Number
7	PAY_DATE	Date	8		YYYYMMDD	Payment Date
8	AUTH	Character	6			Payment Authorization Initials
9	PAY_DAYS	Virtual Numeric		0	@Aqe( PAY_DATE , INV_DATE )	Number of days to pay invoice

Note that the field **SUPPNO** is a **Character** field.

3. Click **Cancel**.
4. Open the **Authorized Supplier-Address** database.



- Double-click over the Database window to open the **Field Manipulation** dialog and to display the field layout.

	Field Name	Type	Len	Dec	Parameter	Description
1	SUPPNO	Character	7			
2	SUPPNAME	Character	18			
3	ADDRESS1	Character	21			
4	ADDRESS2	Character	9			
5	ADDRESS3	Character	7			
6	ZIP_CODE	Character	8			
7	TOT_PREV_YR	Numeric	4	2		

Note that the field **SUPPNO** is a **Character** field.

- Click **Cancel**.

## Joining the Databases

- Make **Accounts Payable** the active database.
- On the **Analysis** tab, in the **Relate** group, click **Join**.

The **Join Databases** dialog box appears with the details of the **Primary database** in the top section.



It is possible to enter Criteria for the Primary database (i.e., only a range of suppliers), if required. Do not enter criteria for this test.

- To specify the **Secondary database**, click **Select**. The **Select Database** dialog box appears. Select the **Authorized Suppliers-Address** database and then click **OK**.
- Change the **File name** in the lower section of the **Join Databases** dialog box to **Supplier Verification**.
- To specify the common match key, click **Match** to display the **Match Key Fields** dialog box.
- Click the **Primary** text box and select **SUPPNO** from the list of fields. Note the **Order** text box and accept the default, **Ascending**. Click the **Secondary** text box and select **SUPPNO** from the list of fields. Click **OK**.
- There are five join options at the bottom of the screen. Select the **All records in primary file** option.



All records in primary file is selected as:

- There are multiple payments for each supplier.
- The risk is that payments are to unauthorized suppliers, so we are not interested in suppliers with no payments (the **All records in both files** option).



The **Join Databases** dialog box should appear as in the screen below.

The "Join Databases" dialog box is a window with a title bar containing the text "Join Databases" and a close button (X). It contains three main sections. The first section is for the "Primary database", showing "Accounts Payable" with 999 records, a "Criteria" text box, and a "Fields" button. The second section is for the "Secondary database", showing "Authorized Supplier-Address" with 48 records, a "Select" button, and a "Fields" button. The third section is for the "File name", showing "Supplier Verification" and a "Match" button. Below these are four radio button options: "Matches only", "All records in primary file" (which is selected), "Records with no secondary match", and "All records in both files". At the bottom is a checkbox labeled "Create a virtual database". On the right side of the dialog are three buttons: "OK", "Cancel", and "Help".

Join Databases

Primary database: Accounts Payable  
Number of records: 999  
Criteria:   
Fields

Secondary database: Authorized Supplier-Address  
Number of records: 48  
Select  
Fields

File name:  Match

☐ Matches only ☒ All records in primary file  
☐ Records with no secondary match ☐ All records in both files  
☐ Records with no primary match  
☐ Create a virtual database

OK  
Cancel  
Help

8. Click the **OK** button to join the selected databases. View the resultant database.





9. From the **Properties** window, click **History** and then locate and expand the section for the **Join Databases** task.

Accounts Payable Supplier Verification		
Export to [Icons] Filter		
Database	Date	User
+ Control Total Field Changed	7/25/2018 3:21:00 PM	
+ Join Databases	7/25/2018 3:21:00 PM	
File name: C:\Users\... \Documents\My IDEA Documents\IDEA Projects\Accounts Payable\Supplier Verification.IDM		
Number of records:	999	
Control field:	AMOUNT	
Control total:	34,145,300.89	
Unmatched primary recs:		
Join primary file: C:\Users\... \Documents\My IDEA Documents\IDEA Projects\Accounts Payable\Accounts Payable.IDM		
Number of records:	999	
Join secondary file: C:\Users\... \Documents\My IDEA Documents\IDEA Projects\Accounts Payable\Authorized Supplier-Address.IDM		
Number of records:	48	
Type of join:	All records in primary file	
Key used:	SUPPNO/A - SUPPNO/A	

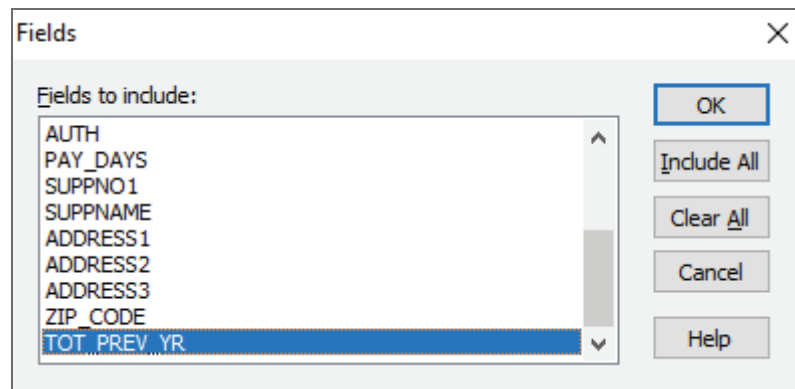
There are **999** records in the file some of which are unmatched Primary records - these are payments to unauthorized suppliers.

Reconcile the control totals for **AMOUNT** and **TOT\_PREV\_YR**. For the **AMOUNT** field, we have already reconciled based on the above history. However, to perform this reconciliation for the **TOT\_PREV\_YR** we will have to summarize on **SUPPNO** by following the steps below.

10. On the **Analysis** tab, in the **Categorize** group, click **Summarization**.
11. Select **SUPPNO** on **Fields to summarize**.
12. Do not select any fields under **Numeric field to total**.



13. Click **Fields** and select **TOT\_PREV\_YR** as a field to be included. Click **OK**.

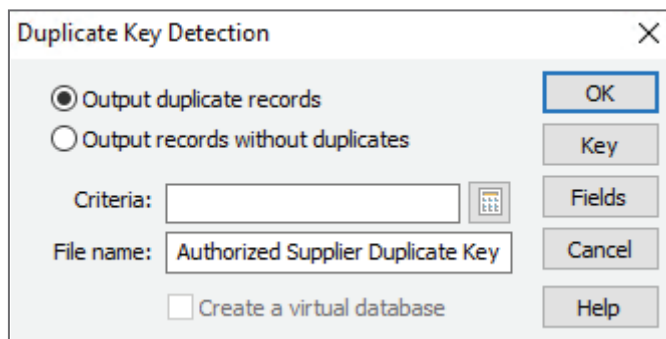


14. Name the output database **Supplier Analysis - Control Total** and then click **OK** to run the task.

**MGS Note:** Fill-in the table associated with Question 14b now, and then come back and continue with the following steps.

The control total does not reconcile to the original control total. Analysis is required to determine why we have this difference.

15. Make **Authorized Supplier - Address** the active database.
16. On the **Analysis** tab, in the **Explore** group, click **Duplicate Key** and then **Detection**.
17. Accept the default selection of the **Output Duplicate Records** option and enter the file name **Authorized Supplier Duplicate Key**.





18. Click **Key** and use the **SUPPNO** field, as this was the field used during the Join Databases task. Click **OK**.

The 'Define Key' dialog box shows 'Base index on:' set to 'NEW INDEX'. Below, a table lists the field 'SUPPNO' with a direction of 'Ascending'. Buttons for 'OK', 'Delete Key', 'Cancel', and 'Help' are on the right.

Field	Direction
SUPPNO	Ascending

19. Click **OK** to run the Duplicate Key Detection task.

Two suppliers have been assigned the same **Supplier Number** which means that the **SUPPNO** was not a unique key. One of these suppliers has an amount of 482,264.46, which reconciles to the difference identified above. As the key was not unique, IDEA dropped this supplier during the join. Inquiries should be submitted to the management of client as to which supplier is the correct one. We should communicate this weakness in managing supplier numbers to the client; as the supplier number should be unique.

Supplier Verification		Supplier Analysis - Control Total		Authorized Supplier Duplicate Key		
	SUPPNO	SUPPNAME	ADDRESS1	ADDRESS2	ADDRESS3	ZIP
1		The Matt Cash Co	1596 1 N AVE.	OTTAWA	ONTARIO	N8V
2		Witch Products	543 28 ST.	OTTAWA	ONTARIO	L3W

The client has informed the audit team that the Witch Products supplier had a balance in previous years, but in the current year they do not have a balance, as they are no longer in business. Therefore, the Witch Products account should be ignored for this and other analyses. However, the auditor will need follow-up to corroborate the client's explanation.

20. Close all databases.
21. Open the **Supplier Verification** database.
22. Extract all unmatched records using methods explained in earlier exercises and using the following equation: **@IsBlank(SUPPNO1)**.

**MGS NOTE:** We use SUPPNO1 because it is the supplier number from the secondary file of the join we did. The file is the list of authorized suppliers, so having a blank here indicates that the supplier number from the payments file is not found on the authorized supplier file.



23. Name the extraction database file, **Payments to Unauthorized Suppliers**.

Supplier Verification		Payments to Unauthorized Suppliers x					
	SUPPNO	PAYEE	INVOICE	INV_DATE	AMOUNT	CHECK	PAY_D
1		Truckstop	97 2064.29J	6/25/2015	16,318.97	701528	7/21/201
2		M Cash Inc	UP-76409	10/3/2015		701774	10/8/201
3		The Cash Co Inc	784566542	11/1/2015		701875	11/1/201
4		Crooks Inc	PI7683	2/10/2015		701046	2/12/201
5		Cashonly	UY-9371	4/28/2015		701270	5/1/2015
6		Cash Inc	CS - 717 -97	9/15/2015		701728	9/17/201
7		Co Cash Inc	T5352	10/19/2015		701849	10/22/20
8		Cash Back Inc	CB3456	11/19/2015		701927	11/20/20
9		Matt Cash & Co	In879-97	6/26/2015		701443	6/30/201

24. Close the **Payments to Unauthorized Suppliers** database.



## Exercise 3M: Analyzing Payments by Supplier

### Objective:

To analyze payments by supplier to identify large movements.

### Exercise Description:

Using the **Supplier Verification** database, summarize (or total) the **AMOUNT** field for each Supplier (i.e., **SUPPNO**). Then identify suppliers where the total payments have either increased or decreased by over 25% in the past year. Create Editable fields to mark items for investigation and to add comments.

### IDEA Functionality Covered:

- Summarizing data
- Using the **@Abs()** function
- Adding and using Editable fields

To analyze the payments by supplier:

1. Ensure **Supplier Verification** is the active database and the **Data** property is selected in the **Properties** window.
2. On the **Analysis** tab, in the **Categorize** group, click **Summarization**.
3. Consider whether **Quick Summarization** should be used.  
The **Use Quick Summarization** option can be used as there is only one field in the key (i.e., **SUPPNO**). For this exercise, we will not use this option.
4. In the **Fields to summarize** area, select the **SUPPNO** field.
5. In the **Numeric fields to total** box, select the **AMOUNT** field. Do **not** select the **TOT\_PREV\_YR** field to total; this will be selected as additional information.
6. Click **Fields** and select the following additional fields to be included: **PAYEE**, **SUPPNAME**, **TOT\_PREV\_YR**.
7. Click **OK** on the **Fields** dialog box.
8. Accept the option to **Create database**, but do **not** select **Create result** (i.e., report). Do not enter any **Criteria** for the test.
9. Enter the **File name** for the output database as **Payments by Supplier** and then click **OK**.
10. View the resultant database and note the **NO\_OF\_RECS** field (i.e., number of payments per supplier).



11. Sequence the database in descending **AMOUNT\_SUM** order. Increase the column width if necessary by dragging the column title delimiter.

Supplier Verification		Payments by Supplier			
	SUPPNO	NO_OF_RECS	AMOUNT_SUM	PAYEE	SUPPNAME
1	M025	52	2,134,298.41	Luke Hair	A Meadow
2	F130	41	1,264,972.82	Farmer	Farmer
3	K001	25	1,192,028.35	Joyce Tick	O Kay Yahs
4	M014	25	1,074,984.65	Linda Hand	Cary S Matic
5	M020	26	1,005,562.50	Luke Hair	Miles Long
6	T005	32	1,004,562.91	Read I.M.	Honor Toze
7	W007	24	956,356.92	Matt Cash Co	The Matt Cash Co
8	P007	30	955,858.59	Nellie Dunn	Mandy Pumps
9	R008	32	940,403.86	Phillippa Pail	IM Right
10	P010	19	920,543.59	Penny Cillin	Ri Pent
11	C003	17	814,505.16	Matt Cash	Cash Co

There should be **49** records totaling **\$34,145,300.89**.

12. Extract all suppliers where the total payments have increased or decreased by over 25% during the past year. Select the **Direct Extraction** task and change the file name to **Large Movements**. Use the following extraction equation:

**@Abs(AMOUNT\_SUM - TOT\_PREV\_YR) \* 100 / TOT\_PREV\_YR > 25**

13. Click the **Validate and Exit** button.



**@Abs()** ignores the negative sign. Therefore, **@Abs(expression) > 25** will identify both increase and decrease greater than 25%.

When testing items, it is often useful to manually mark items as correct/incorrect or to add comments to the database. Although the original data cannot be modified, it is possible to append **Editable** fields to the database.

14. In the **Direct Extraction** dialog box, click **Create Fields**. Add the following fields:

NAME	TYPE	LEN	DEC	PARAMETER	DESCRIPTION
TEST	Multistate	1		-1	Yes, No, N/A
COMMENT	Editable Character	100		" "	Additional Comments

	Field Name	Type	Len	Dec	Parameter	Description
1	TEST	Multistate	1		-1	Yes, No, N/A
2	COMMENT	Editable Charac...	100		" "	Additional Comments
3						





15. Click **OK** in the **Create Fields** dialog box. Click **OK** in the **Direct Extraction** dialog box.

Supplier Verification		Payments by Supplier		Large Movements				
	SUPPNO	NO_OF_RECS	AMOUNT_SUM	PAYEE	SUPPNAME	TOT_PREV_YR	TEST	COMMENT
1	F123	24	761,424.36	Dick Tate	Wanda Farr	234,102.71	<input type="checkbox"/>	
2	F130	41	1,264,972.82	Farmer	Farmer	704,603.56	<input type="checkbox"/>	
3	M014	25	1,074,984.65	Linda Hand	Cary S Matic	695,843.17	<input type="checkbox"/>	
4	M020	26	1,005,562.50	Luke Hair	Miles Long	718,320.63	<input type="checkbox"/>	
5	M025	52	2,134,298.41	Luke Hair	A Meadow	1,217,309.35	<input type="checkbox"/>	
6	M130	17	602,187.22	Microcomputers	Maurice Mynah	992,725.50	<input type="checkbox"/>	
7	N001	17	488,891.02	Mike Atsil	Noah Lott	898,954.20	<input type="checkbox"/>	
8	R008	32	940,403.86	Phillippa Pail	IM Right	473,958.65	<input type="checkbox"/>	
9	R010	16	583,172.77	Phillippa Pail	Ronnie Biggs	451,188.84	<input type="checkbox"/>	
10	R025	16	586,829.24	Ray	Ray	823,889.61	<input type="checkbox"/>	
11	T005	32	1,004,562.91	Read I.M.	Honor Toze	455,140.82	<input type="checkbox"/>	
12	T010	16	443,156.54	Wanda Farr	Truckstop	758,325.88	<input type="checkbox"/>	
13	W007	24	956,356.92	Matt Cash Co	The Matt Cash Co	1,397,587.06	<input type="checkbox"/>	
14	W020	12	283,957.46	Witch Products	Wite Wash	603,677.11	<input type="checkbox"/>	

- There should be **14** suppliers whose turnover is **more than 25%** different to the previous year.
- The **TEST** and **COMMENT** fields are empty. However, these are Editable fields.
- Further to investigation, it is discovered that the following suppliers may need investigation: **F123** and **F130**.

The following do not require further investigation: **M025**, **R025**, and **W007**.

16. Click in the **TEST** field for each of these suppliers and note how the entry changes from empty, to a check mark to an "x" to finally a question mark.
17. For suppliers **F123** and **F130**, enter **Investigate reason for large increase in payments** as a comment.

Supplier Verification		Payments by Supplier		Large Movements				
	SUPPNO	NO_OF_RECS	AMOUNT_SUM	PAYEE	SUPPNAME	TOT_PREV_YR	TEST	COMMENT
1	F123	24	761,424.36	Dick Tate	Wanda Farr	234,102.71	✗	Investigate reason for large increase in payments
2	F130	41	1,264,972.82	Farmer	Farmer	704,603.56	✗	
3	M014	25	1,074,984.65	Linda Hand	Cary S Matic	695,843.17	☐	
4	M020	26	1,005,562.50	Luke Hair	Miles Long	718,320.63	✓	
5	M025	52	2,134,298.41	Luke Hair	A Meadow	1,217,309.35	☐	
6	M130	17	602,187.22	Microcomputers	Maurice Mynah	992,725.50	☐	
7	N001	17	488,891.02	Mike Atsil	Noah Lott	898,954.20	✓	
8	R008	32	940,403.86	Phillippa Pail	IM Right	473,958.65	☐	
9	R010	16	583,172.77	Phillippa Pail	Ronnie Biggs	451,188.84	?	
10	R025	16	586,829.24	Ray	Ray	823,889.61	☐	
11	T005	32	1,004,562.91	Read I.M.	Honor Toze	455,140.82	☐	
12	T010	16	443,156.54	Wanda Farr	Truckstop	758,325.88	☐	
13	W007	24	956,356.92	Matt Cash Co	The Matt Cash Co	1,397,587.06	☐	
14	W020	12	283,957.46	Witch Products	Wite Wash	603,677.11	☐	

**MGS NOTE:**  
 "x" means you will investigate,  
 "check-mark" means you will not investigate,  
 and "?" means you are unsure.

18. View the **History** log and confirm that all modifications are recorded.
19. Close all databases.

