

## L E A R N I N G   G U I D E

Monarch Standard edition

Monarch Professional edition



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# Monarch<sup>TM</sup> V10

***Transforms any report into live data on your PC!***

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### **Acknowledgments**

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Monarch was developed by Math Strategies of Greensboro, North Carolina using Microsoft C++, the Microsoft Foundation Class Libraries, Microsoft C#, the Microsoft .NET Framework, the Microsoft Jet engine, the Objective Grid spreadsheet control, the ChartFX charting DLL, the DynaZip file archiving DLL and the ICSharpCode SharpZipLib library.

Printed in the United States of America  
Seventeenth Printing  
September 2008

## Preface

# Using the Monarch Documentation

The Monarch documentation consists of this Learning Guide and the Monarch help file.

### **Monarch Learning Guide**

The *Monarch Learning Guide* contains a short introduction to Monarch along with a series of lessons designed to quickly acquaint you with the program. The lessons are divided into several sections, The Report Window, The Table Window, The Summary Window, Advanced Topics, and Monarch Professional. Each of the first three sections describes a major area of Monarch. First-time users will be well rewarded for the time spent working through these sections. The Advanced Topics section should be tackled after you become familiar with the basic concepts of Monarch, as this section will leverage what you learned in the previous sections. The Monarch Professional section deals with features found only in Monarch Pro. Each lesson should take from 20 to 30 minutes to complete.

### **Monarch Help File**

The Monarch help file provides detailed information and step-by-step instructions for performing numerous tasks in Monarch. It also includes information on automating Monarch operations, preparing files for input to Monarch, and technical specifications. To access the help file, double-click on the MAIN.chm file in the Monarch Program folder (C:\Program Files\Monarch\Program) or, to access it while within Monarch, press F1 or select Help, Help Topics (ALT, H, H) from the main menu.

**Note:** For information on features not covered in the *Monarch Learning Guide*, consult the Monarch help file.

## Monarch Training

Datawatch provides Monarch training courses to help anyone in your organization rapidly improve his or her Monarch proficiency skills. Available in locations around the country, these training classes are designed for all levels of expertise. Whether you are just getting started and need the basics, or you would like to hone your skills and learn new ways to use Monarch, Datawatch is ready to help you reach new levels of Monarch proficiency. Our objective is to help Monarch users succeed as quickly as possible.

Taught by Datawatch's seasoned staff of Monarch experts, the training courses guide you through all aspects of Monarch's features and capabilities, including tips and techniques on effective, time-saving shortcuts. There is also a lab session at the end of class where you can bring in your own files and receive individual instruction and suggestions for using Monarch to meet your specific requirements.

Monarch onsite training and personal web-based training courses are also available.

For additional information on Monarch training, go to the Datawatch Web site – [www.datawatch.com](http://www.datawatch.com) – and point to the Services link at the top of the page, then select Product Training from the drop-down menu. In North America, you may also call the Training Department directly at 1-800-445-3311, or you may e-mail them at **training@datawatch.com**.

## Monarch Model Building Service

Datawatch provides a model building service for its Monarch customers. Free up your time and let the Monarch experts create your models for you. Datawatch's highly trained team of Monarch experts will work with you one on one to create a model that meets your specifications and satisfaction.

Are you puzzled by a really complex report? Datawatch's Monarch professionals will be happy to create your Monarch models for you. When you view your new Monarch model, you will be able to learn from the experts by viewing the way they have trapped your report, created calculated fields and filters, defined summaries, created charts, and more. Best of all, this is all done from your own report.

To learn more about the Monarch Model Building Service, including pricing, please go to the Datawatch Web site – [www.Datawatch.com](http://www.Datawatch.com) – point to the Support link, then select the Model Building option. You will also be able to view testimonials about our services and download the forms that you need to begin your Monarch model building service with Datawatch.

You may also contact us in North America by calling 978-441-2200 and asking for the Monarch Model Building Service.



# Table of Contents

CHAPTER 1	
<b>Introducing Monarch</b>	<b>1</b>

CHAPTER 2	
<b>Monarch Lessons</b>	<b>7</b>

## Part I - The Report Window

LESSON 1	
<b>Working in the Report Window</b>	<b>15</b>

LESSON 2	
<b>Extracting Data from a Report</b>	<b>31</b>

LESSON 3	
<b>Reports with Multiple Sort Levels</b>	<b>55</b>

LESSON 4	
<b>Special Data Extraction Techniques</b>	<b>79</b>

## Part II - The Table Window

LESSON 5	
<b>Working in the Table Window</b>	<b>111</b>

LESSON 6	
<b>Printing, Copying and Exporting</b>	<b>125</b>

LESSON 7	
<b>Sorting the Table</b>	<b>141</b>

LESSON 8	
<b>Record Selection Filters .....</b>	<b>149</b>
LESSON 9	
<b>Calculated Fields .....</b>	<b>161</b>

## **Part III - The Summary Window**

LESSON 10	
<b>Summaries .....</b>	<b>173</b>
LESSON 11	
<b>Advanced Summary Capabilities .....</b>	<b>195</b>
LESSON 12	
<b>Charting Summary Data .....</b>	<b>215</b>

## **Part IV - Advanced Topics**

LESSON 13	
<b>Working with Multiple Instances of a Report .....</b>	<b>239</b>
LESSON 14	
<b>Extracting Multiple Line Fields .....</b>	<b>253</b>

## **Part V - Monarch Professional**

LESSON 15	
<b>Importing Data from HTML and External Databases .....</b>	<b>277</b>
LESSON 16	
<b>Performing Lookups from an External Database .....</b>	<b>295</b>
LESSON 17	
<b>Working with PDF and XPS Files .....</b>	<b>315</b>
<b>Index .....</b>	<b>329</b>

## C H A P T E R   1

# Introducing Monarch

## What is Monarch?

Monarch is a data access tool that lets you view, print, analyze and extract data from existing computer reports. Any report used in your organization can be accessed via Monarch.

When a computer generates a report, it creates a report file that contains all the characters and control codes required by a printer to produce the actual report printout.

Monarch reads that same report file, but instead of producing a hardcopy printout with words and numbers frozen on the page, Monarch creates a softcopy of the report on screen, with live data you can work with.

## Reads any report

Monarch reads report files created within any computing environment. These files are commonly known as print files or spool files, but are also referred to as text files (TXT), formatted text files, PRN files, PDF files and SDF files.

In most organizations, Monarch users access report files across a network or via terminal emulation software. If you're unfamiliar with this process, ask your PC manager or IT manager for help. If your PC is not connected to a host computer, the IT staff can generally supply report files on the network or CD-ROM.

Monarch Pro can read a wide variety of input files, such as delimited text, HTML, MS-Excel, MS-Access, dBase, PDF, XPS and others. Monarch Pro is also able to connect to OLE DB and ODBC sources.

## Functional Overview

Monarch provides three distinct views of report data, each with its own window. When you load a report file, a softcopy of the report is displayed in the Report window.

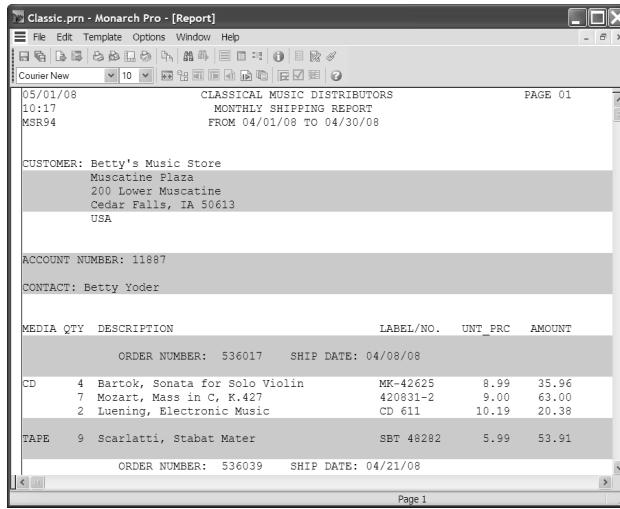


Figure 1. The Report window.

Data extracted from the report displays in the Table window.

	Report Date	Order Number	Ship Date	Account Number	Contact	Customer
1	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
2	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
3	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
4	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
5	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
6	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
7	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
8	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
9	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
10	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
11	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
12	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
13	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
14	5/1/2008	536029	4/14/2008	17959	Marvin Mabry	Big Shanty Music
15	5/1/2008	536029	4/14/2008	17959	Marvin Mabry	Big Shanty Music
16	5/1/2008	536029	4/14/2008	17959	Marvin Mabry	Big Shanty Music
17	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
18	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
19	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
20	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
21	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
22	5/1/2008	536012	4/1/2008	18635	Alain Lebon	Musique du Monde
23	5/1/2008	536012	4/11/2008	18635	Alain Lebon	Musique du Monde

Figure 2. The Table window.

User-defined summaries which analyze report data are displayed in the Summary window. The summary window includes a charting facility to graphically display the summarized data.

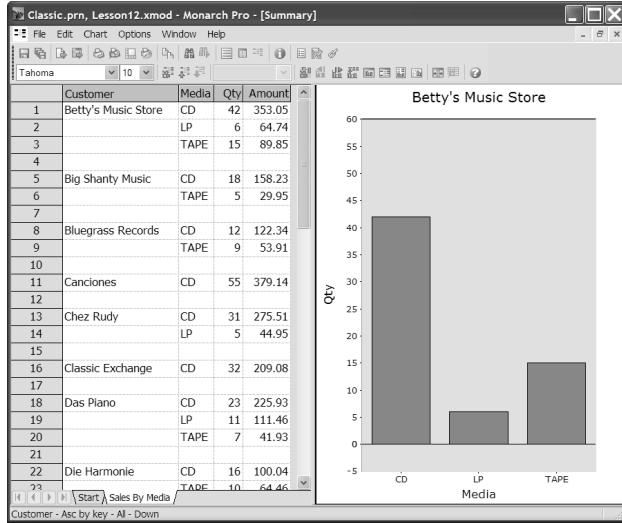


Figure 3. The Summary window.

You can view multiple windows at one time. The Toolbar from the active window appears at the top of the parent window.

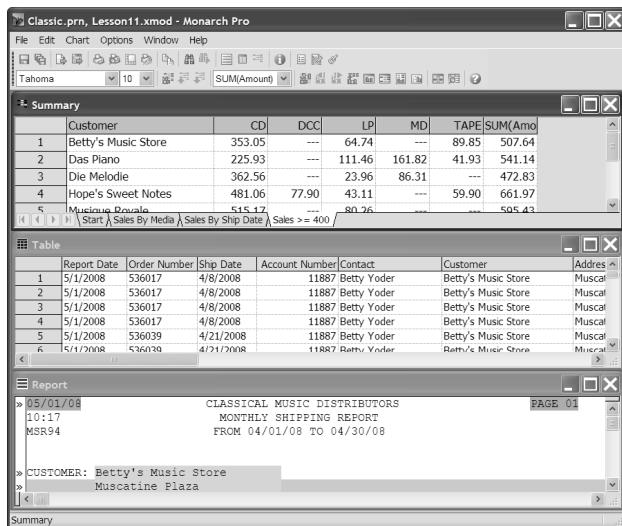


Figure 4. A tiled window display.

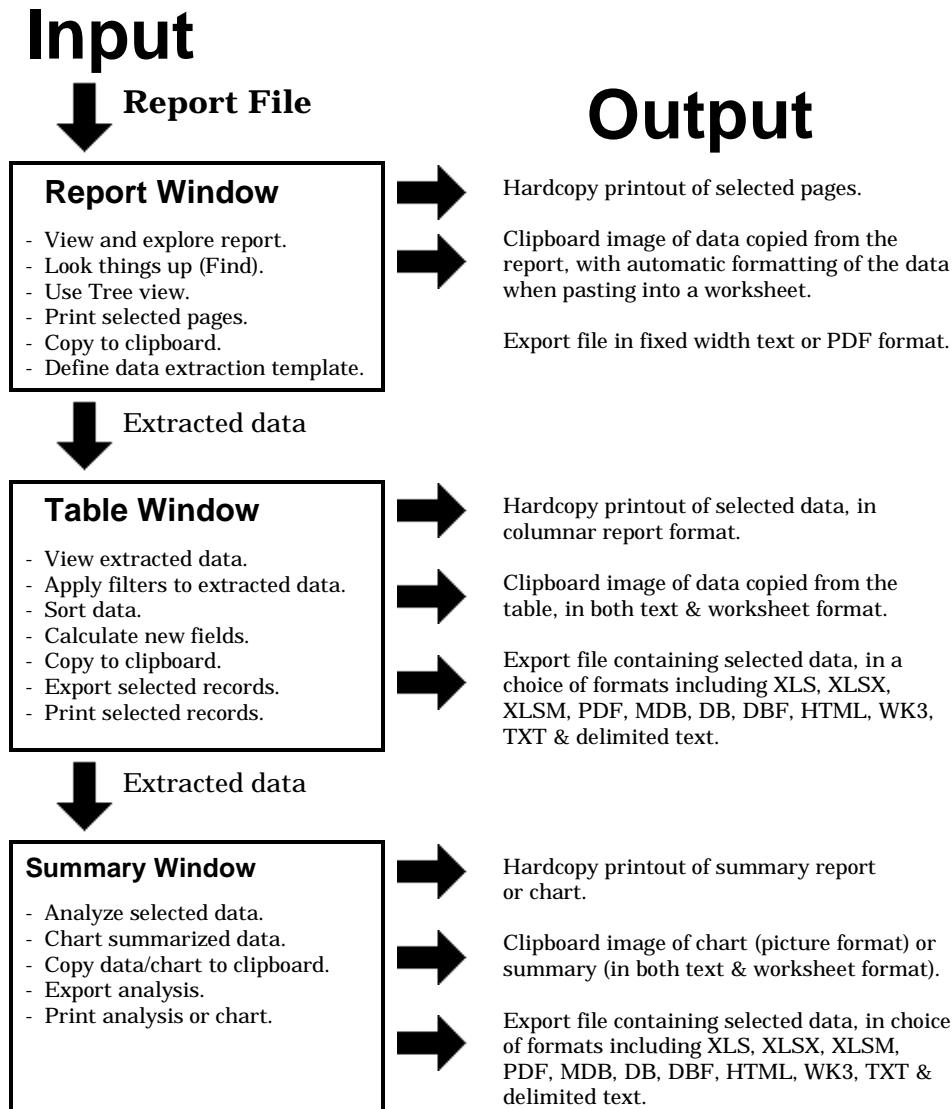


Figure 5. Monarch flow chart.

Figure 5 shows how report data flows through Monarch. A Monarch session begins when you load a report file into the Report window. As the session unfolds, you can produce a variety of outputs from each window. The lessons in this guide correspond to the flow chart. You'll learn how to bring a report into Monarch, and you will progress step-by-step through the tasks performed in each window.

## Monarch Professional Edition

Monarch is available in a Standard edition that reads report files only, and a Professional edition that reads report files and also reads data from database files and OLE DB/ODBC databases. Both the Standard and Professional editions provide the same report extraction, data manipulation, analysis, and transformation capabilities; the differences between the two include the Professional's ability to access data from additional sources, to share user-defined functions and to link and share information from other models.

With the professional edition, you can access data from XLS and OpenXML XLSX files, XLSM files, PDF files, XPS, DBF, DB, MDB, HTML, delimited text files, and any OLE DB or ODBC compliant data source, such as SQL Server, Oracle and DB2 database management systems.

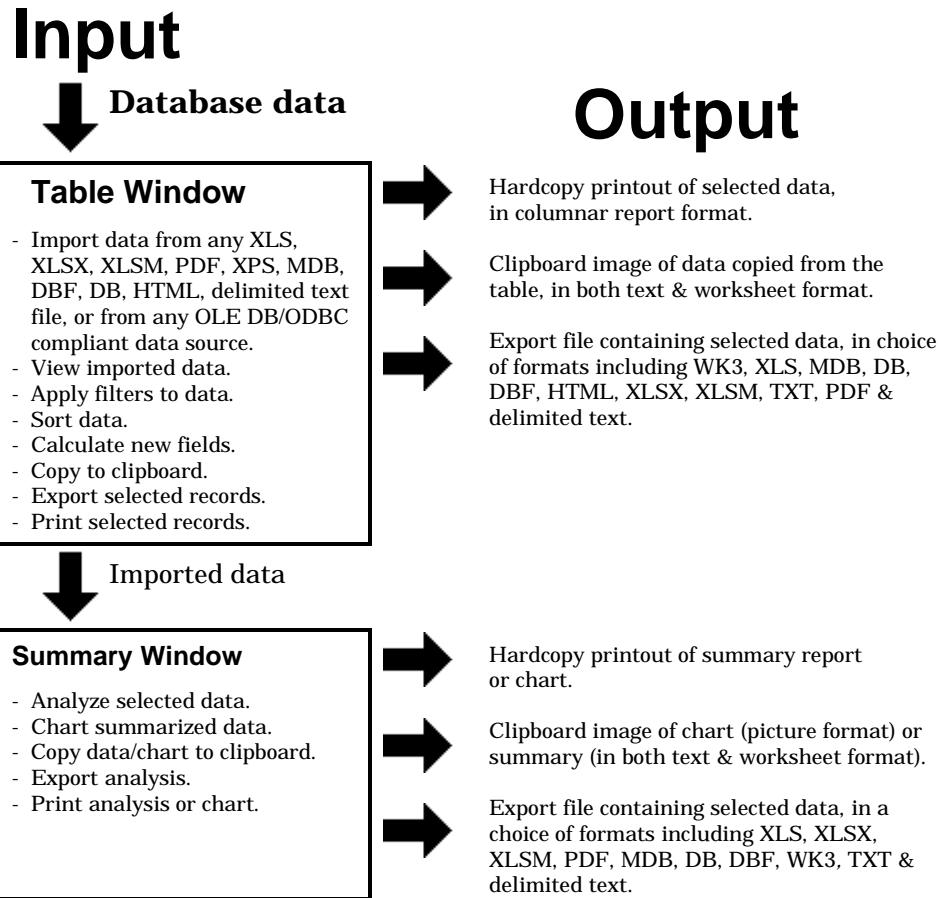


Figure 6. Monarch Professional flow chart showing data imported from a database.

Figure 6 shows how data imported from a database flows through Monarch Professional. You may begin a Monarch Professional session either by opening a report file, an HTML file, a PDF file, a XPS file, a XLSX or XLSM file, or a delimited text file, or by importing data from an external database, such as an MDB file or an OLE DB/ODBC data source. When importing data from a database, you can use all of Monarch's Table window and Summary window capabilities to manipulate, transform, and analyze the data.

With the Professional edition, you can even combine data extracted from report files with database data through a mechanism called an external lookup.

These additional capabilities of Monarch Professional are described in detail in Lessons 15, 16 and 17.

## C H A P T E R   2

## Monarch Lessons

These lessons are designed to quickly acquaint you with basic program operations. For additional material not covered in the Learning Guide, consult the Monarch help file by selecting Help, Help Topics from the Monarch menu bar.

- ❑ *Lesson 1 - Working in the Report Window* shows you how to load a report file, navigate the report on screen, look up information in the report, copy selected data to other applications and print selected pages from the report.
- ❑ *Lesson 2 - Extracting Data from a Report* shows you how to create a template to extract data from a simple columnar report, view the data in the Table window and save the template to a Monarch model file.
- ❑ *Lesson 3 - Reports with Multiple Sort Levels* shows you how to extract data from a multi-level report, configure the Tree view, and export from the Report window.
- ❑ *Lesson 4 - Special Data Extraction Techniques* deals with special problems caused by address blocks and fields that run together in a report.
- ❑ *Lesson 5 - Working in the Table Window* shows you how to navigate the database table, look up information in the table, move and hide fields and modify field properties.
- ❑ *Lesson 6 - Copying, Printing and Exporting* shows you how to copy table data to another application, print the table and export table data to a file.
- ❑ *Lesson 7 - Sorting the Table* shows you how to sort the table, create multiple sort definitions, select a sort definition and save sort definitions.

- ❑ *Lesson 8 - Record Selection Filters* shows you how to use a filter to select records based upon any field values, create multiple filters, utilize value-based filters, select an active filter and save filter definitions.
- ❑ *Lesson 9 - Calculated Fields* shows you how to create calculated fields to add information to the table database.
- ❑ *Lesson 10 - Summaries* teaches you how to create a summary report from your Monarch data, specify summary design preferences, and create quick summaries.
- ❑ *Lesson 11 – Advanced Summary Capabilities* shows you how to reveal even more information about your data via Monarch's advanced summary features.
- ❑ *Lesson 12 - Charting Summary Data* shows you how to create charts to represent the data in a summary. This lesson also covers copying a chart to another application and printing charts.
- ❑ *Lesson 13 - Working with Multiple Instances of a Report* shows you how to load and extract data from a series of reports. This lesson also covers special calculated field functions related to multiple reports and using a summary to analyze data from a series of reports.
- ❑ *Lesson 14 - Extracting Multiple Line Fields* shows you how to extract a multiple line text block from a report. It also introduces memo fields - used to hold the contents of a multiple line field - and covers exporting and printing memo fields.
- ❑ *Lesson 15 – Importing Data from HTML and External Databases* shows you how Monarch Professional can be used to access data from HTML and databases.
- ❑ *Lesson 16 – Performing Lookups from an External Database* shows you how to use Monarch Professional to perform a lookup into an external database to import additional fields that relate to the information in your Monarch session.
- ❑ *Lesson 17 – Working with PDF and XPS Files* shows you how to import PDF files into Monarch, customize the PDF import options, and export to PDF files. It also shows you how to import XPS files.

## Before You Begin

Throughout the lessons we make the following assumptions:

- Monarch is properly installed and the Monarch program item is available when you start Windows.
- The lesson files are installed and Monarch's default Report, Model and Project folders are configured to point to the lesson files (the Setup program automatically assigns these defaults the first time you install the product).
- You are using the Windows XP operating system. **Note:** If you use a different OS, some slight deviations from the steps listed in the lessons will occur (e.g., the default paths, the appearance of screens and other minor differences), but you can effectively complete the lessons on all versions of Windows that Monarch 10 supports.

## Installing the Lesson Files

The Monarch Setup program gives you the option of installing the lesson files. If, when installing Monarch, you chose not to install the lessons files, you will need to re-run the Setup program to install them now. To install the lessons:

1. Insert the Monarch CD in your CD-ROM drive.
2. Select the Run command from the Windows Start menu.
3. Type **d:\monarch\setup** ("d" being the location of your CD-ROM drive) in the Command Line box, then press ENTER.

Follow the on screen instructions. When the setup options screen displays, ensure that the Lessons check box is selected. The Setup program will install the lesson files in the appropriate folders under your Monarch program folder. When the installation is complete, the Setup program will return control to Windows.

## Setting Folder Defaults

Several file and folder defaults are established during installation and are used in the lessons. These include the default Report and PRF file folder, Model file folder and Project file folder, as well as the default Input file extension. If you have changed any of these defaults since installing the product, you will need to load Monarch and reset each default to its original state.

**Note:** If you have not changed any of the default folders, you may skip this section and proceed to Lesson 1.

To change the file and folder defaults:

1. Select the Monarch program item from the Windows Start menu.

The splash screen displays, then the main Monarch window is opened.

2. Select Options, Folders (ALT, O, F).

The Folders dialog displays.

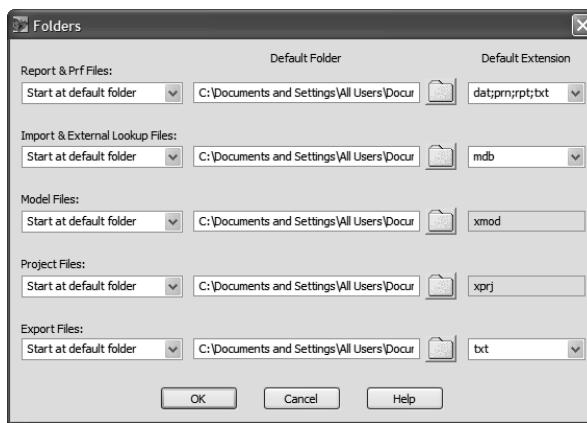


Figure 7. The Folders dialog.

3. In the Report & PRF Files box, type **C:\Documents and Settings\All Users\Documents\Monarch\Reports**, then select **dat;prn;rpt;txt** as the Default Extension option. **Note:** You can also browse to **Shared Documents\Monarch\Reports** or **Public Documents\Monarch\Reports** on Windows Vista.
4. In the Import & External Lookup Files box, type **C:\Documents and Settings\All Users\Documents\Monarch\Data**, then select **\*** as the Default Extension option.
5. In the Model Files box, type **C:\Documents and Settings\All Users\Documents\Monarch\Models**.

6. In the Project Files box, type **C:\Documents and Settings\All Users\Documents\Monarch\Projects**.
7. In the Export Files box, type **C:\Documents and Settings\All Users\Documents\Monarch\Export**, then select \* as the Default Extension option.

**Note:** If your Documents and Settings or Users folder is on a drive other than C, substitute the appropriate drive in steps 3 - 7.

8. Choose OK to close the dialog, then select File, Exit (ALT, F, X).

Now you are ready to begin the lessons.



# Part I

## The Report Window



## LESSON 1

# Working in the Report Window

In this lesson you will learn how to launch Monarch and work in the Report window. Lesson topics include:

- Starting a Monarch session.
- Opening a report file.
- Adjusting the display.
- Moving around in a report.
- Using the Go to page.
- Finding information in a report.
- Using bookmarks.
- Copying data from a report.
- Printing data from a report.

Most computer applications produce reports as *output*. Monarch is unusual because it uses reports as *input*. A Monarch session begins when you open an existing report. The report displays in the Report window.

The Report window gives you a scrollable view of your report. You can move around, look things up, copy data to other applications, and print selected pages on your local or network printer. In this lesson you will learn the basics of these operations. In later lessons you will learn how to *extract* data from reports.

## Starting a Monarch Session

1. Select the Monarch item from the Windows Start menu.

You'll see the splash screen and the Monarch window will open to a full screen.

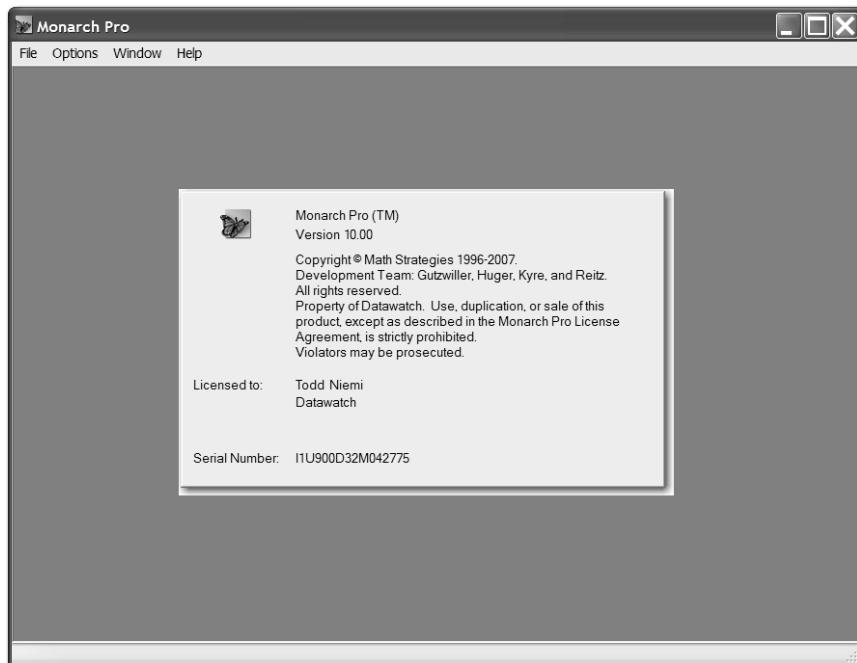


Figure 1-1. The Monarch main window and splash screen.

## Opening a Report File

To begin working with Monarch you open a *report file*. We use the term report file to describe any computer report stored on disk. These files are often referred to as print files, spool files, TXT files, PRN files, SDF files, PDF files and formatted or fixed width text files.

We have provided several report files for use with these lessons. For Lesson 1, we will open a report called Classic.prn.

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**Note:** Monarch opens a report as a “read-only” file. Monarch can write a new file with data extracted from the report, but the original report remains safe because it cannot be altered.

---

Let's open the report file.

1. Select File, Open Report (ALT, F, R) from the Monarch menu.

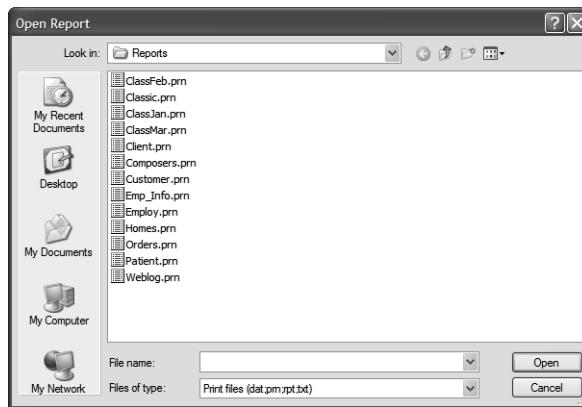


Figure 1-2. The Open Report dialog.

The Open Report dialog appears. The Files list displays all the files in the Reports folder with a DAT, PRN, RPT or TXT extension. If you don't see a list of files, make sure you are viewing the Monarch Reports folder, and the file type is set to Print Files (dat;prn;rpt;txt) as shown in Figure 1-2. (This lesson assumes you have installed the lessons as described in *Before You Begin*, on page 9.)

2. Select Classic.prn, then choose Open.

Monarch displays a *softcopy* of the report in the Report window. The report shows customer shipments for a distributor of classical music recordings.

## The Report Window

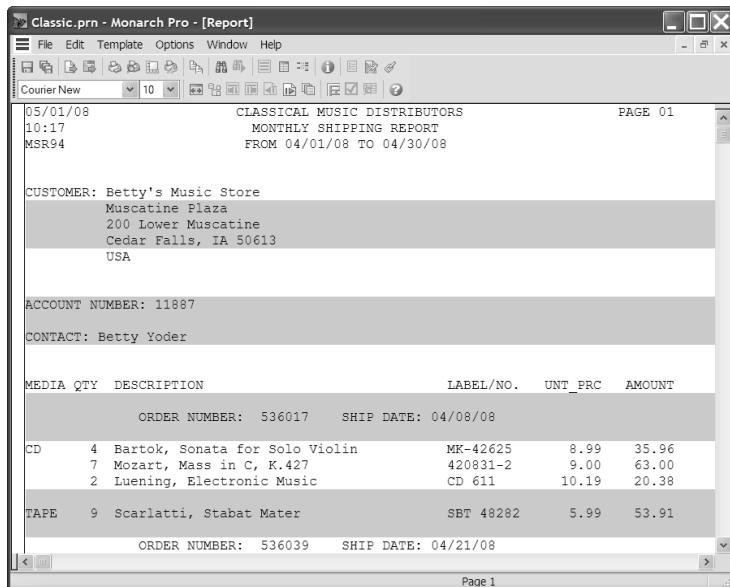


Figure 1-3. Viewing a report.

Though the softcopy report looks just like its hardcopy cousin, you can use Monarch to zoom, scroll, page, jump, and quickly find information within it. These tasks would be a lot more difficult to carry out with a hardcopy report. Let's look at some of the benefits of viewing and exploring a softcopy report on screen.

### Adjusting the Display

Because Monarch operates in a graphical environment, you can adjust the display to enhance readability and suit your own visual preferences. For example, because many people are accustomed to working with reports printed on green bar paper, Monarch displays green bar on screen by default (see Figure 1-3). (Green bar helps your eyes track across sparse columns in a wide report.) If you prefer not to display green bar, however, you can easily remove it.

1. To remove green bar shading, select Options, Report colors from the main menu to display the Report Colors dialog, click the Show Greenbar check box to clear it, then click OK.

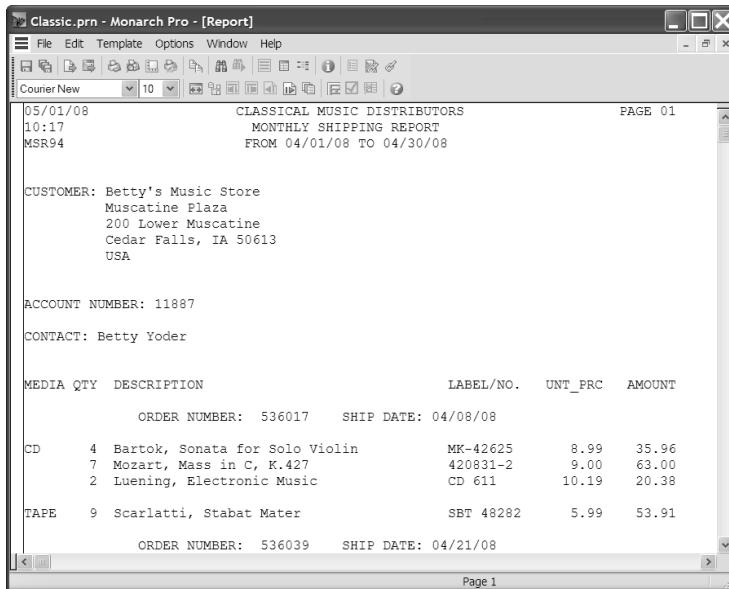


Figure 1-4. The report displayed without green bar shading.

**Note:** For the remainder of this Learning Guide, we will not use the green bar feature. If you want to reapply green bar shading to the report, however, simply select the Show Greenbar check box in the Report Colors dialog.

Monarch also allows you to change the font used to display reports on screen. To do so:

1. Click the drop-down button on the Toolbar's font selection box.



Figure 1-5. Changing font styles.

Only non-proportional fonts with fixed letter spacing are available because report columns might appear misaligned if proportionally-spaced characters were used. At a minimum, the font list should include the Courier and Fixedsys fonts from Windows.

2. Select the Courier New font from the list. **Note:** If the Courier New font is not available, select one of the other fonts.

The font style is changed throughout the entire report.

You may also change font size in order to zoom in or zoom out. Experiment with the font size until you find the size you like best.

1. Click the drop-down button on the Toolbar's font size box.

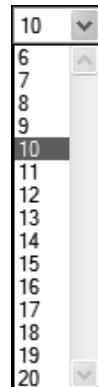


Figure 1-6. Changing font sizes.

All of the font sizes that are available for the selected font are displayed.

2. To zoom in (display larger characters but see less data on screen), select a larger font size. To zoom out (view more data on screen), select a smaller font size.

Available font sizes vary depending upon the font style selected. If the size you want is not available, use the font list on the Toolbar to select another font. You can let Monarch select the font size for you using the Size Font To Display Width command. This command selects the font size that matches the report width to the display width, allowing you to view the entire width of the report on screen.

3. To select a font size to match the report width to the display width, select Edit, Size Font To Display Width (ALT, E, S) or click the Size Font to Display Width button

If the report is too wide to fit on screen even at the smallest available font size, Monarch will select the smallest font size to fit as much of the report width as possible in the available display area.

**Note:** For the remainder of this lesson we'll use the 10 point Courier New (or PrestigeFixed) font. If these aren't your current font and font size settings, change them via the corresponding boxes.

## Moving Around in a Report

It can be a tedious chore to dig through page after page of a big hardcopy printout. With softcopy reports on screen, however, your computer does most of the work for you. Monarch lets you move around with just a few clicks of your mouse.

Like most Windows applications, Monarch provides a vertical scroll bar to help you scroll through a report. You can scroll through the report by pressing the up or down arrow on the scroll bar or by clicking and dragging the slider with your mouse. As you drag the slider, a tooltip window displays the current page of the report. To display a particular report page, drag the slider until the tooltip displays the desired page number.

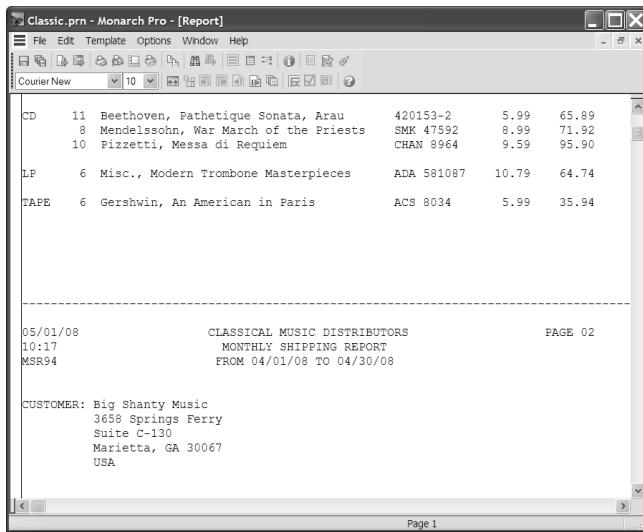


Figure 1-7. Scrolling the report.

To move up or down one full screen at a time, click on the scroll bar above or below the slider. To move one report page up or down, press the Previous Page button or the Next Page button . A dotted line indicates page breaks. Monarch relies on page break characters in the report file to determine where breaks belong. If breaks are not explicitly defined in the report file, Monarch breaks pages after a fixed number of lines.

To move left or right, press the left or right arrows on the horizontal scroll bar, or drag the slider with your mouse.

## Using the Go to Page

Monarch includes a Go to Page, which you can use to quickly jump from one page to another, regardless of the number of pages between them.

To use the Go to Page:

1. Select Edit, Go to Page (ALT, E, G) from the Report window menu or click the Go to Page icon .

The Go to Page dialog displays.

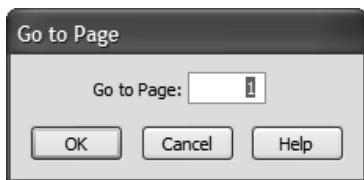


Figure 1-8. The Go to Page dialog.

2. Enter the desired page (e.g., 15) then click OK. Monarch displays the specified page in the Report window.
3. Press CTRL+HOME to return to the top of the report.

## Finding Information in a Report

It's not always easy to find information buried deep in a hardcopy report. If you're looking for a particular invoice in a report that is sorted by customer number, you may be out of luck. Fortunately, Monarch can search reports at lightning speed to find whatever you want. Suppose you want to find all references to the composer, Mozart:

1. Select Edit, Find (ALT, E, F) or click the Find button .

The Find in Report dialog displays.

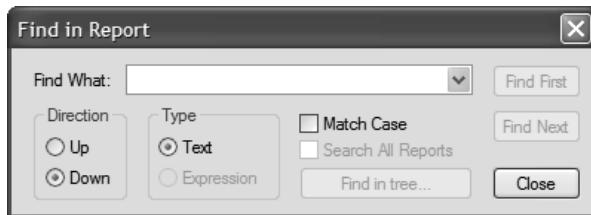


Figure 1-9. The Find in Report dialog.

2. Type **Mozart** in the Find What box.
3. Choose Find First. The first occurrence of Mozart in the report will be highlighted.
4. To find the next occurrence of Mozart, choose Find Next.

---

**Note:** You can search backward or forward in the report by selecting the Up or Down radio buttons in the dialog. You can make searches case-sensitive by selecting Match Case.

---

5. Close the dialog by clicking the Close button.

After you have closed the Find dialog, you can continue searching for Mozart in the report.

6. Click the Find Next button  to find additional occurrences of Mozart.

## Using Bookmarks

Monarch allows you to set bookmarks within a session that can be used to navigate quickly between certain lines or sections of a report. You can even annotate bookmarks. **Note:** Though bookmarks aren't saved in model files, they are saved in project files. When exporting to a PDF file while in Report view, any bookmark comments will be displayed as comments within the PDF file.

Let's set bookmarks for Spinning Records and Musique Royale.

1. Use the Find feature to locate Spinning Records.
2. Click in the left hand margin next to CUSTOMER to highlight that line, then press CTRL+F2 to bookmark it (or right-click and select Turn Bookmark On/Off from the context menu). The Bookmark Comment dialog displays. With this dialog you can add a comment to a bookmark. Let's try doing this.
3. Type whatever text you'd like (e.g., **This is a bookmark comment**), then click the OK button. Note that a blue highlight has appeared in the left hand margin next to the highlighted line of text.
4. Place your mouse pointer over the blue highlight in the left margin. The text you typed is displayed.
5. Use the Find feature again to locate Musique Royale, then repeat steps 2 and 3 to bookmark it. **Note:** You can click the OK button on the Bookmark Comment dialog without entering a comment if you prefer. To prevent the Bookmark Comment dialog from displaying, clear the "Prompt for comment when adding bookmarks" check box.
6. Press F2 to move to Spinning Records, then press F2 again to move back to Musique Royale. When you want to remove the bookmark, simply highlight the line containing the bookmark, then select CTRL+F2 to remove it (or you can right-click on the line and select Turn Bookmark On/Off from the context menu).

## Copying Data from a Report

Monarch makes it easy to transfer report data to other applications. Just copy and paste! When you copy data from a report, Monarch creates both a text image and a worksheet image (with separate columns and cells) in the clipboard.

Let's copy a customer's name and address into your word processor. You might use this feature if you wanted to insert the address into a letter.

1. Press CTRL+HOME to go to the first page of the report, then click at the beginning of the customer's name and drag diagonally down to the right to highlight the entire address, as in Figure 1-10.

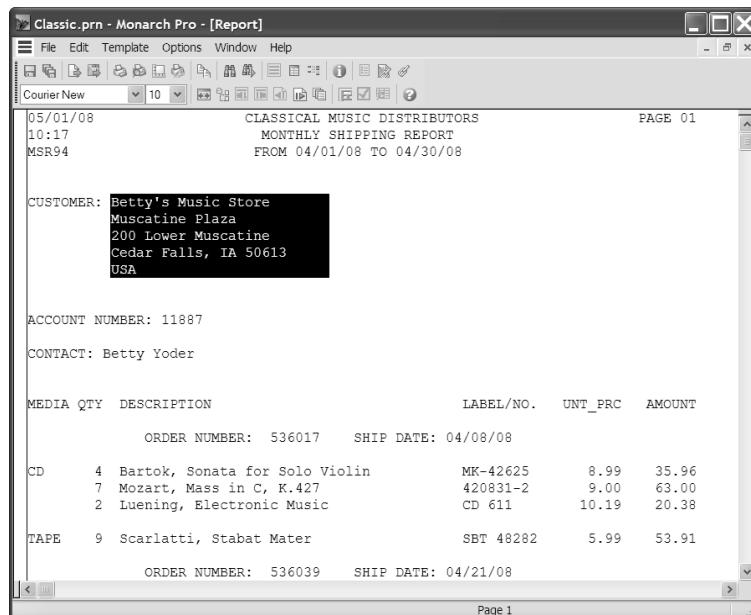


Figure 1-10. Copying an address.

2. Click the Copy button .
3. Launch your word processor. (If you don't have a word processor, just follow along in the book.)
4. Position the cursor where you want the address to appear and use your word processor's Paste command to insert the address into the document.

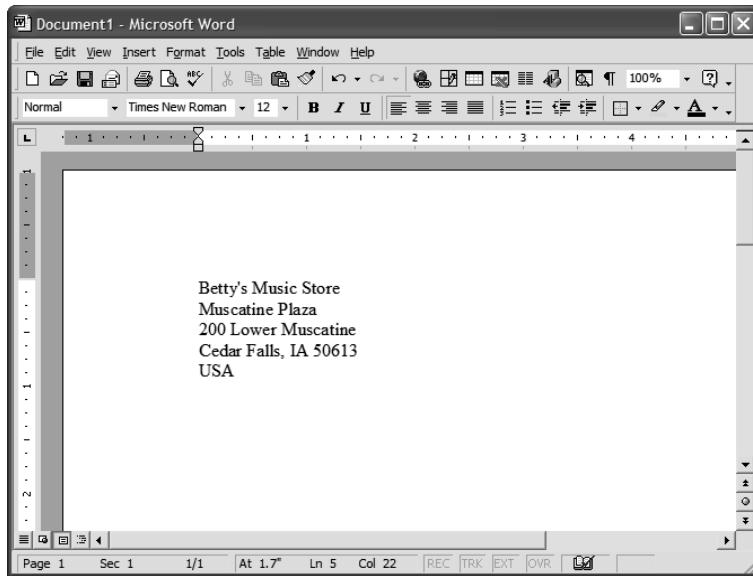


Figure 1-11. Pasting to a word processor.

If you were going to keep this document, you would save it before returning to Monarch. (You don't need to save it for this lesson.)

5. Exit your word processor without saving the document.

So far we've seen plain-vanilla copy and paste operations. Now, we'll copy data into a spreadsheet and learn about Monarch's powerful *smartcopy* feature. Monarch uses special parsing and recognition technology to automatically separate columnar data into individual spreadsheet cells. Then, it automatically assigns the appropriate format to each cell (either character, numeric or date). We'll copy several lines of detail information into your spreadsheet.

1. Select the first three *detail* lines from the report, as shown in Figure 1-12. There are two alternative methods to select this block of text: a) click down on the first character in the block, then drag across diagonally to select the block; b) click and drag in the line selection area (i.e., the vertical area at the left edge of the Report window).

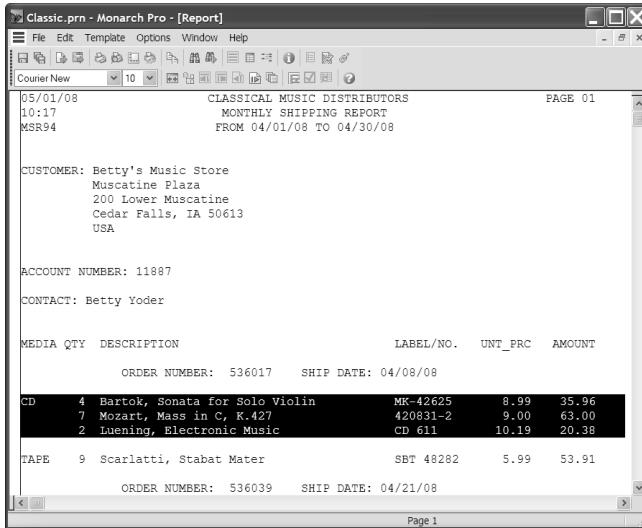


Figure 1-12. Copying detail lines.

2. Click the Copy button .
3. Launch your spreadsheet. (If you don't have a spreadsheet, just follow along in the book.)
4. Position the cell pointer where you want the data to appear and use your spreadsheet's Paste command to paste the data. For some spreadsheet applications, you may need to use the Paste Special command.

1	CD	4 Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96		
2		7 Mozart, Mass in C, K.427	420831-2	9	63		
3		2 Luening, Electronic Music	CD 611	10.19	20.38		

Figure 1-13. Pasting to a spreadsheet.

5. Adjust column widths and cell formats in your spreadsheet as necessary.
6. Exit your spreadsheet without saving.

---

**Note:** Copy and paste operations are best suited for “quick and dirty” data transfer jobs. For more robust data transfer, use Monarch’s data extraction and export capabilities, as described in later lessons.

---

## Printing from a Report

Monarch lets you print from the Report window. You can print a block of text, a page or series of pages, or the entire report.

Let’s print a single page from the report. We’ll begin with Print Preview to see how the page will look before producing the actual printout.

- ◆ Select File, Print Preview (ALT, F, V) or click the Print Preview icon .

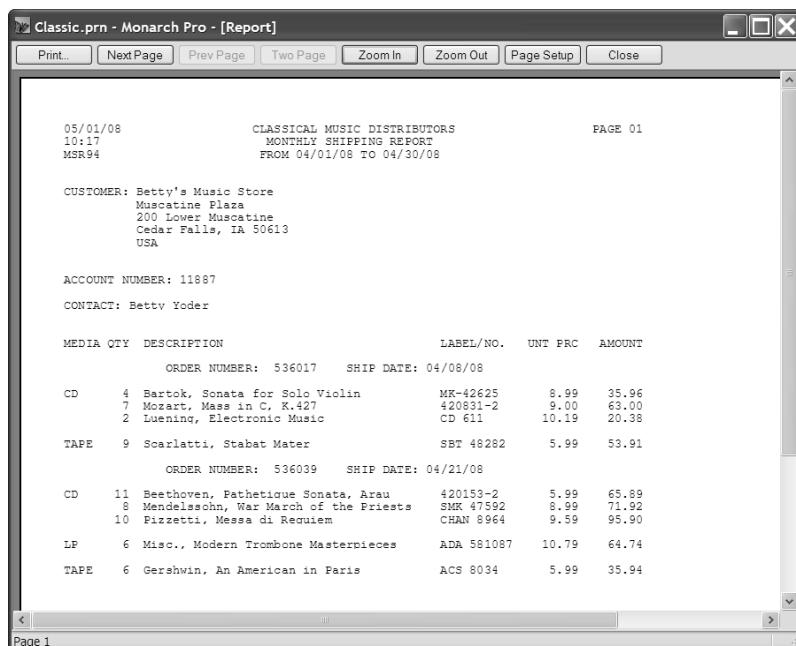


Figure 1-14. The Print Preview window (zoomed in).

Examine the Print Preview window to see if your settings for font size, margins, and page orientation are appropriate to produce satisfactory output. If not, you can change the settings until everything looks just right. We’ll change settings in a minute, but first, we’ll see how the Print Preview window works.

1. Click on the report displayed in the Preview window to zoom in or out. (Or use the Zoom buttons on the Toolbar.)

---

**Note:** Windows sometimes substitutes proportional fonts in the Preview window when zooming in or out, causing report columns to appear misaligned. Columns will align correctly in the actual printout.

---

2. Click the One/Two Page button to toggle between a one-page and a two-page view.
3. Click the Next Page or Previous Page buttons to move forward or back.
4. Click the Close button to return to the Report window.

Now, we'll adjust our page orientation, margins, and font settings. (On many printers, the CLASSIC report prints nicely with a portrait page orientation, half inch margins, and a 9 point font. You may need to experiment to find the right settings for your printer.)

1. Select File, Print Setup (ALT, F, T), or click the Print Setup icon , and confirm that page orientation is set to portrait. Then, choose OK to close the Print Setup dialog.

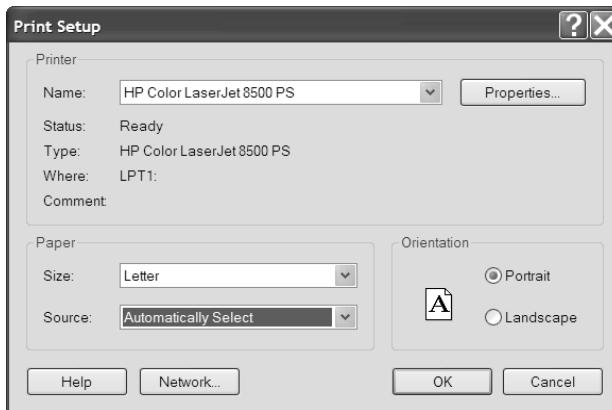


Figure 1-15. The Print Setup dialog.

2. Select File, Page Setup (ALT, F, G), or click the Page Setup icon , and adjust the margin settings as necessary for your printer. Then, close the Page Setup dialog.

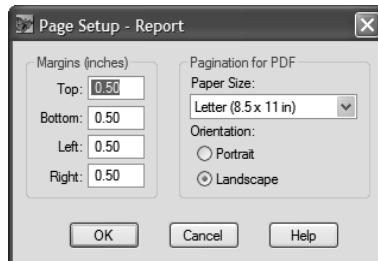


Figure 1-16. The Page Setup dialog.

3. Click the drop-down button on the Toolbar's font size box. Choose a new font size as necessary for your printer.
4. After making the changes, select File, Print Preview (ALT, F, V) to again preview the results. Fine tune the settings if necessary.
5. When satisfied, select the Print button. You can also print without first previewing by selecting File, Print (ALT, F, P) from the Monarch menu. We'll print page 5.

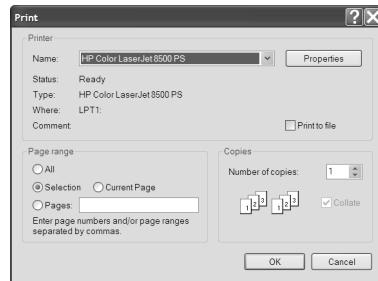


Figure 1-17. The Print dialog.

6. Select the Pages radio button, then type **5** in the Pages box.
7. Choose OK to print.

The selected page will be printed. Monarch prints report pages as composed in the report file. Because Monarch adopts pagination from the report file, you must be careful to select an appropriate font size and margin settings to ensure that the full report image will fit on each page. Any lines that do not fit will be carried over to a subsequent page. Any columns that do not fit will be truncated.

This completes Lesson 1. If you plan to do Lesson 2 later, you may close Monarch by selecting File, Exit from the main menu or by pressing ALT+F4. If you plan to go on to Lesson 2 now, you may leave Monarch open, but close the report by selecting File, Close Report from the menu.

## Summary

In this lesson you learned how to launch Monarch and open a report file in the Report window. You explored the report on screen, copied data to another application, and produced a hardcopy on your local or network printer. For further reading, see the following sections of the Monarch help file.

### Chapter 1 - Report Window

- Working with Reports
- Viewing Reports
- Searching Reports
- Copying Report Data
- Printing Report Data

In the next lesson you will learn how to define templates to extract data from a report.

## LESSON 2

## Extracting Data from a Report

In Lesson 1 you learned how to use the Report window to explore a report on screen. While this is very useful, Monarch goes much further in giving you access to the data buried in your reports. By defining *data extraction templates*, you can extract the data from your reports, then analyze it or export it using the Table and Summary windows (discussed in later lessons).

In this lesson you will learn how to extract data from a simple columnar report. The lesson topics include:

- What is a data extraction template?
- Creating a detail template.
- Displaying data in the Table window.
- Saving your work.

### Starting the Lesson

To get started, we'll load Monarch and open the sample report file for this lesson.

1. Select the Monarch program item from the Windows Start menu. The main window appears.
2. Select File, Open Report (ALT, F, R). The Open Report dialog displays.
3. Select Employ.prn, then choose Open. The Employ.prn report displays in the Report window.

FIRSTNAME	LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
Stephen	McPherson	410 Market St	Boston	MA	02115	06/14/92
Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/94
Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	05/17/85
Arnold	Finnley	207 Anglewood Rd	Littleton	MA	01460	05/25/81
William	Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/83
Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/87
Robert	Tracy	23 Mountain View	Maynard	MA	01754	12/12/87
Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02146	07/24/95
Doug	Williams	9 Lawrence St	Burlington	MA	01803	02/26/90
Francis	Lavois	PO Box 1752	Burlington	MA	01803	10/26/93
William	Connely	248 Washington St	Jamaica Plain	MA	02130	03/12/90
Andrew	Bass	44 South Park St	Fitchburg	MA	01420	03/18/89
Howard	Loniere	472 North Vincent	Revere	MA	02151	04/30/89
Abe	Carver	101 Mayflower St	Sudbury	MA	01776	04/04/91
Don	Craig	1899 Abilene St	Burlington	MA	01803	08/14/94
David	Banning	100 Catherine Ave	Burlington	MA	01803	12/18/93
Kelly	Rosenberg	31 Belvedere Dr	Fitchburg	MA	01420	09/02/87
Joshua	Fallon	160th Ct W	Sudbury	MA	01776	01/05/95
Gwen	Davies	22 Punta Del Este	Sudbury	MA	01776	10/23/83
Oliver	Davies	8 George Dr	Westboro	MA	01581	02/28/85
Paula	Mendleson	89 Lincoln St	Boston	MA	02135	07/18/85
Marlena	Evans	799 51 St. NE	Lowell	MA	01853	06/04/90

Figure 2-1. Employ.prn report.

Employ.prn is a simple columnar report listing employee information for a fictional company. The report contains a single line of detail information about each employee.

---

**Note:** You may need to change your font style and/or font size so that your screen displays the same amount of data as shown in Figure 2-1.

---

To extract data from the report, you define a *data extraction template*.

## What is a Data Extraction Template?

Imagine taking a piece of cardboard and cutting holes in it at certain locations. If you place this imaginary cardboard template on a printed report, you will see only the information that shows through the holes. Monarch uses electronic templates to extract information from your report files in a similar manner. If your report is sorted on several levels, you define a separate template for each sort level.

The Employ.prn report has a simple structure, so extracting information from it is relatively easy. Each line in the report will become a record containing information about a single employee. Header lines at the top of each page are thrown away. You can extract all the important information by creating a single *detail template*.

## Creating a Detail Template

A detail template extracts data from the *lowest level* in a report, in this case, the employee data. To create a detail template, you begin by selecting a sample of the detail information (any line or group of lines that contains a single instance of the employee information). In the Employ.prn report, all of the information for each employee fits on a single line, so we'll select a single sample line. The sample is used to identify other detail lines and to define the fields to extract.

To select a sample line, you highlight the line by clicking in the *line selection area* to the left of the line. (The line selection area is the thin vertical area at the left edge of the Report window.)

1. Click in the line selection area to the left of the line containing "Stephen McPherson".

---

**Note:** We could have selected any detail line as our sample. This time we used the first detail line.

---

2. Select Template, New Template (ALT, T, N).

Monarch splits the Report window between the Template Definition dialog (at the top) and the report (at the bottom). The selected sample line is copied into the Sample box at the bottom of the Template Definition dialog.

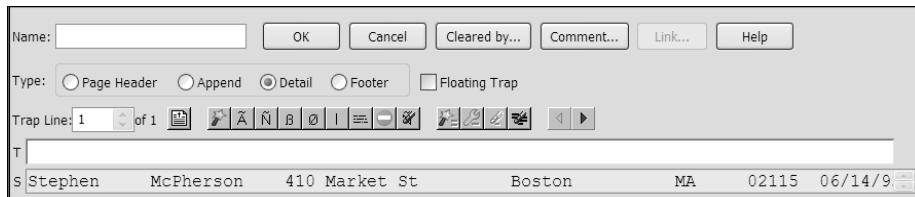


Figure 2-2. The Template Definition dialog.

## Trapping the Detail Lines

We'll use the sample line to identify all of the other detail lines throughout the report. To do this, we'll use a process called "trapping". By setting a trap you tell Monarch which lines to capture and which to ignore.

A *detail trap* identifies common features shared by all of the detail lines throughout the report, but not shared by other lines in the report, such as page header lines, lines containing labels, or lines from higher sort levels. A proper detail trap will capture only those lines we want while ignoring lines from headers and other sort levels.

In the Employ.prn report, we need to look for features that differentiate our employee information lines from the title, date, and field name lines at the top of each page. Specifically, we need to look for characters - letters, numbers, punctuation, etc. - that always appear at the same position in the detail lines, but do not appear in any other lines.

---

**Note:** In this lesson, we will illustrate the trapping process by making some common mistakes and revising the trap until it captures only the detail lines. Once you start building your own templates, you will find that you are usually successful on the first attempt.

---

### Using the Alpha Trap Character

Let's take a moment to inspect the detail lines in the report. We can see that all detail lines share many characteristics. For example, each detail line contains the name of a city starting at the same column position.

MAYNARD CORPORATION ACTIVE EMPLOYEE REPORT				
STREET	CITY	STATE	ZIP	HIREDATE
410 Market St	Boston	MA	02115	06/14/92
624 Holiday Hill	Burlington	MA	01803	11/20/94
1615 Del Terrace	Concord	MA	01742	05/17/85
207 Anglewood Rd	Littleton	MA	01460	05/25/81
5 Dixwell Blvd	Lexington	MA	02173	01/30/83
91 Belmont Dr	Maynard	MA	01754	10/11/87
23 Mountain View	Maynard	MA	01754	12/12/87
888 Centre Park Rd	Brookline	MA	02146	07/24/95
9 Lawrence St	Burlington	MA	01803	02/26/90
PO Box 1752	Burlington	MA	01803	10/26/93
248 Washington St	Jamaica Plain	MA	02130	03/12/90
44 South Park St	Fitchburg	MA	01420	03/18/89
472 North Vincent	Revere	MA	02151	04/30/89

Figure 2-3. Identifying common features.

Let's trap every line in the report with a letter in the first CITY column. To create this trap, we'll enter a special trap character in the appropriate column position on the Trap line (above the Sample box).

1. Click in the Trap line above the "B" in "Boston" (see Figure 2-4).

Note that the status bar at the bottom of the window shows the current cursor position. The cursor should be at column position 48. If the cursor is not positioned correctly, you can use the left and right arrow keys to move it.

2. Click the Alpha Trap button  An "A" appears on the trap line. This is a wildcard character indicating that only those lines with a letter in column 48 will be trapped.

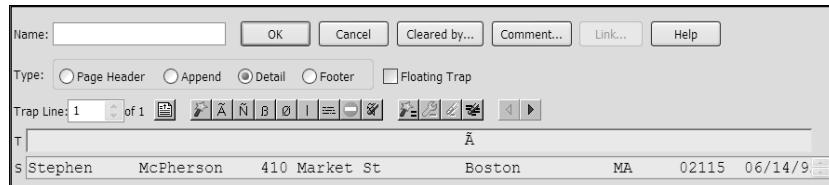


Figure 2-4. Entering an alpha trap character.

Notice that the color of the trap line changes from white to yellow. This indicates a "match" between the trap character and the associated character in the sample line.

The results of our trap are indicated in the report in two ways. First, a chevron character (») appears in the line selection area to the left of each line that is selected by the trap. Second, all trapped lines in the report are highlighted in gray.

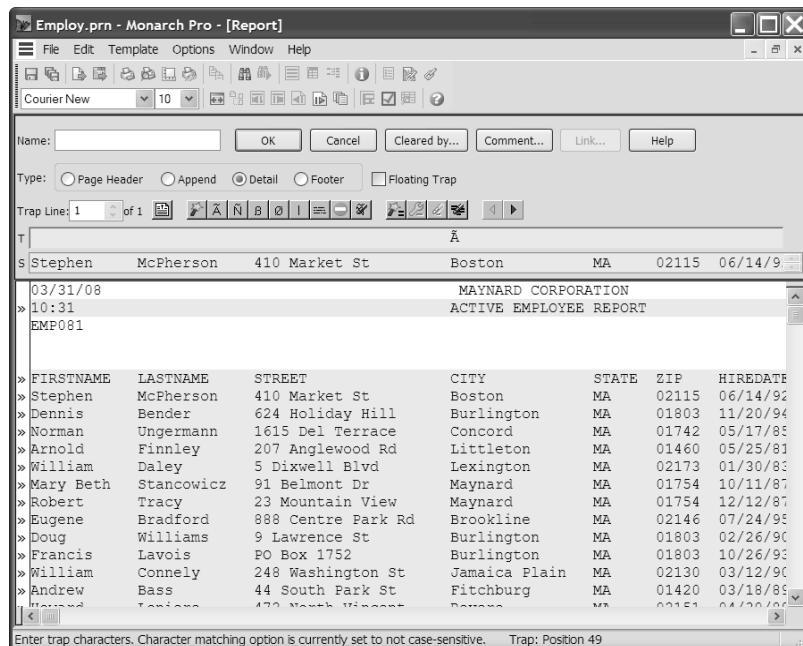


Figure 2-5. Results of first trapping attempt.

By scrolling through the report, it appears that our first try has indeed trapped all of the employee detail lines. However, this trap is also capturing lines that we don't want – e.g., the "ACTIVE EMPLOYEE REPORT" title at the top of each page and the line containing the column names. These lines are captured because they also have an alphabetic character in column 48.

## Using a Numeric Trap Character

Let's try another approach. This time we'll use a trap that looks for a number in the first position of the STREET column.

1. Click the Reset Trap button  to clear the previous trap character.
2. Click in the Trap line above the "4" in "410 Market Street". The cursor should be at column position 26, as shown on the status bar.
3. Click the Numeric Trap button . An "N" appears on the trap line. This trap selects only those lines with a number in column position 26.

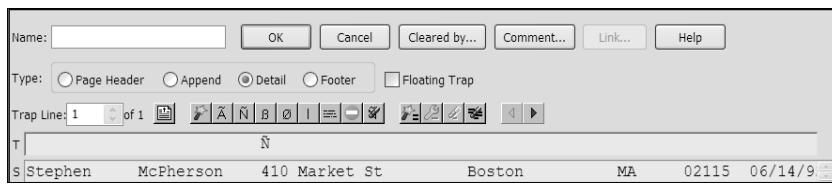


Figure 2-6. Trapping a numeric character.

This trap has been more successful (see Figure 2-7). We now have the employee detail lines captured, but not the extraneous lines at the top of each page. There is just one problem. At least one of the employee lines is not highlighted because its street address starts with a letter rather than a number. Since we are trapping specifically for a number in this column position, the line is ignored.

FIRSTNAME	LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
» Stephen	McPherson	410 Market St	Boston	MA	02115	06/14/92
» Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/94
» Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	05/17/85
» Arnold	Finnley	207 Angiewood Rd	Littleton	MA	01460	05/25/81
» William	Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/83
» Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/87
» Robert	Tracy	23 Mountain View	Maynard	MA	01754	12/12/87
» Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02146	07/24/95
» Doug	Williams	9 Lawrence St	Burlington	MA	01803	02/26/90
» Francis	Lavois	PO Box 1752	Burlington	MA	01803	10/26/91
» William	Connely	248 Washington St	Jamaica Plain	MA	02130	03/12/90
» Andrew	Bass	44 South Park St	Fitchburg	MA	01420	03/18/85
» Howard	Tannenbaum	470 North Washington	Danvers	MA	01923	04/01/97

Figure 2-7. Results of second trapping attempt.

## Using Multiple Trap Characters

The previous examples were designed to illustrate some of the common mistakes that can be made during the trapping process. In the first example, we trapped more lines than we wanted. In the second example, our trap missed some detail lines.

Let's try one more trap. This time we'll use two trap characters to look for a number in the last position of the ZIP column, immediately followed by a blank.

1. Click the Reset Trap button  to clear the previous trap character.
2. Click in the Trap line above the "5" in "02115". The cursor should be at column position 75.
3. Click the Numeric Trap button  An "Ñ" appears on the trap line.
4. Click the Blank Trap button  A "β" appears in column 76. This trap character looks for a blank in the designated column position.

By combining these trap characters, only those lines are trapped where a number appears in column 75 and a blank appears in column 76.

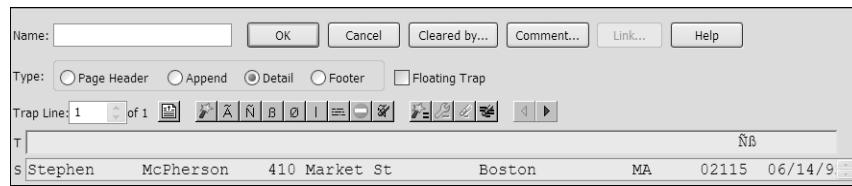


Figure 2-8. Using multiple trap characters.

As you can see in Figure 2-9, we've now successfully trapped all of the employee detail lines and none of the other lines.

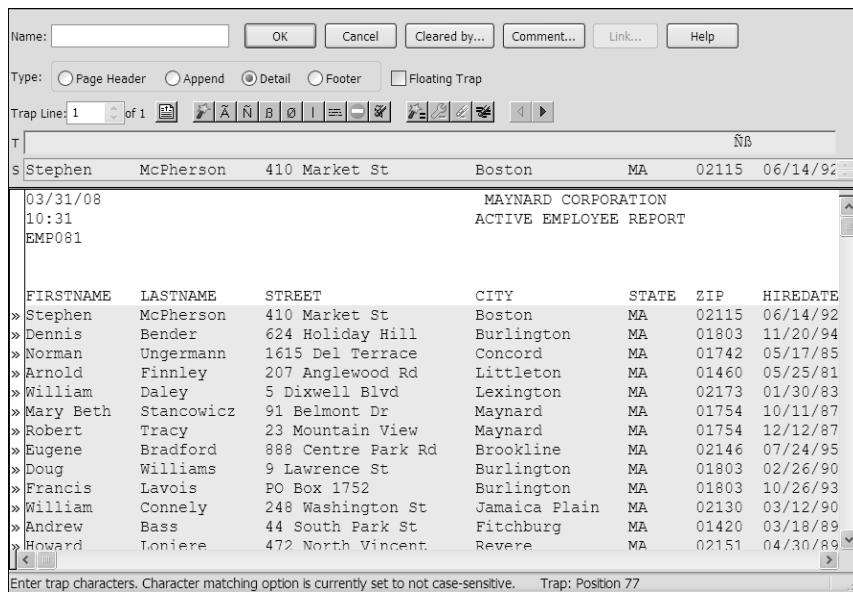


Figure 2-9. Results of third trapping attempt.

## Highlighting Fields

After you are satisfied that the trap is working to capture all of the detail lines, and no other lines, you're ready to highlight the fields that you want to extract.

Monarch includes a special button that automatically highlights fields in your template. You can use this capability as a jump start when highlighting fields in your templates, but you should not rely upon this feature exclusively, as Monarch cannot predict which fields you might want to extract and which you want to leave out, nor can it deal with subtleties of report design that allow fields to wrap onto multiple lines or abut one another. This lesson teaches you how to manually highlight fields.

Let's start by highlighting the LASTNAME field.

1. Click down in the Sample box at the beginning of the name "McPherson", then drag right to highlight the entire name.



Figure 2-10. Highlighting a field.

---

**Using the Keyboard to Highlight Fields:** The keyboard provides a more precise method of highlighting fields, since you can easily adjust the field length by a single character at-a-time. To use the keyboard method, press TAB until the focus is on the Sample box, then use the arrow keys to move the cursor to the first character of the field. Press INSERT, then use the RIGHT ARROW to extend the highlight all the way to the end of the field. Press ENTER to complete the field definition.

---

The gray highlight now appears only on the LASTNAME field, not on the entire detail line. This shows you exactly the information you've trapped, in this case, only the LASTNAME field on each line.

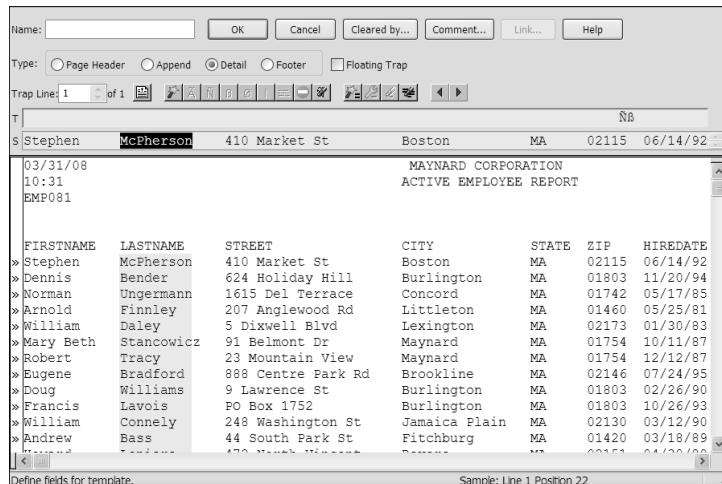


Figure 2-11. Testing a field definition.

Note that the sixth name in the list, "Stancowicz", has not been entirely highlighted. When we highlighted the LASTNAME field, we did not extend the field highlight far enough to the right to capture longer names. Let's redefine the field to accommodate this name.

2. Click down in the Sample box at the beginning of the name "McPherson", then drag right until the highlight leaves just one space before "410 Market Street".

Note that the field is now long enough to accommodate all of the names.



Figure 2-12. Extending the field highlight.

Let's define several more fields.

3. Use either the mouse or the keyboard to highlight the FIRSTNAME, STREET, CITY, STATE, ZIP, and HIREDATE fields. Each field highlight should be long enough to allow for long field values but not so long that you extend the highlight into another field's data, as in Figure 2-13.

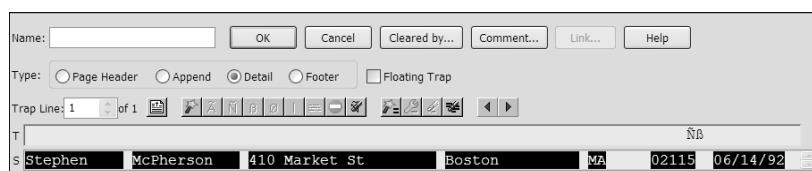


Figure 2-13. Highlighting all of the desired fields.

**Note:** If you make a mistake, place the cursor anywhere in the incorrect field and click the Reset Field button , then re-define the field. (To delete all of the fields, use the Reset All Fields button .

4. View the results of your field definitions.

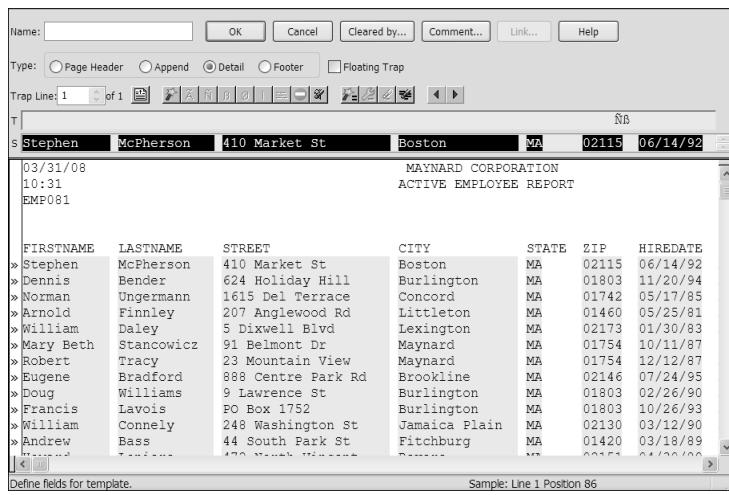


Figure 2-14. Results of highlighting multiple fields.

## Verifying Field Boundaries

Although you could scroll through the report to ensure that each field highlight is long enough to capture all of the data, this method becomes tedious when you are working with large reports. Therefore, a field verification feature is provided that reads the entire report and verifies that your fields are properly defined.

When you activate the field verification feature, Monarch scans the entire report and examines the field boundaries. If any characters are found immediately adjacent to a field, Monarch will highlight the field to alert you that the field definition may be too short to accommodate a field value or that the field may be defined at the wrong location.

---

**Note:** If multiple reports are loaded, Verify automatically scans through all of them. When Verify is started it always starts at the first page of the current report, and will continue to report verify hits from that and other reports until it has cycled through all of the reports, thereby completing a full pass. The verification will start over from the top of the current report and re-scan for verify hits (but with any ignores still in effect). Upon reaching the end of a pass without ever having stopped on a verify hit, the "Start Over" button is grayed, leaving the user no choice but to press "Close". In this way the user can clearly see when they have succeeded in making a complete "clean" pass through the report(s).

---

Let's verify that our field boundaries are correct.

1. Select Template, Verify (ALT, T, V) or click the Verify button .

A progress dialog displays the current status of the Verify operation. When the verify operation is complete, "Verify completed with no stops" displays at the top of the Verify dialog. This indicates that our fields are properly defined.

2. Click the Close button to remove the Verify dialog.

**Note:** For additional information on verifying field boundaries, see the next chapter.

## Naming Fields

When you are satisfied that the field definitions are correct, you can name each field. Monarch automatically assigns default field names to each field that you highlight, using the prefix "eg\_" and the sample data from the first record encountered.

You can keep the default names or assign new names that are more meaningful.

1. Click on "Stephen" in the sample edit box, then Press F2 or click the Field Properties button .

The Field Properties dialog displays.

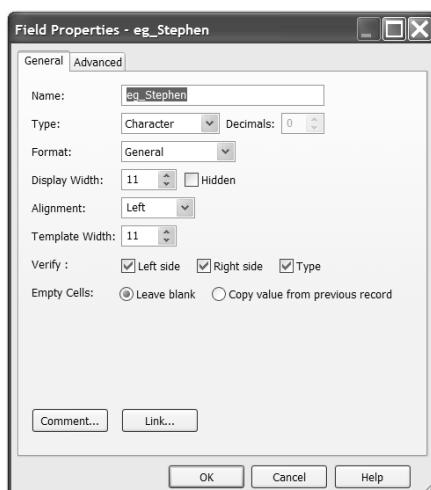


Figure 2-15. The Field Properties dialog.

The Field Properties dialog displays the sample field value for the selected field along with the current field name.

2. Type **First Name** in the Name box, then press ENTER or Click OK to accept the new field name.

3. Repeat steps 1 and 2 for each of the remaining fields, using the following names: **Last Name**, **Street**, **City**, **State**, **Postal Code** and **Hire Date**.

---

**Field Naming Rules:** Field names may be up to 62 characters in length and may contain uppercase and lowercase characters, spaces and punctuation except for period (.), exclamation point (!), accent grave (`) and brackets ([ ]). Names may begin with any character, except for a space or an underscore (\_). If a name is entered with leading spaces, the name is accepted but the leading spaces are ignored.

---

## Naming the Template

When you are satisfied with the trap and field definitions, it's time to name the template and apply it to the report. Our detail template extracts employee detail information, so we'll name the template "Employee Detail".

1. Type **Employee Detail** in the Name box at the top of the Template Definition dialog.

---

**Template Naming Rules:** Template names follow the same naming conventions that apply to field names, except that template names may be up to 31 characters in length.

---

2. Click the OK button next to the Name box.

## Displaying Data in the Table Window

Congratulations. You have successfully created a template that extracts selected data about each employee. You can view the extracted data in the Table window.

1. Select Window, Table (ALT, W, T) or click the Table window button  on the toolbar.

The extracted data appears in the Table window.

	First Name	Last Name	Street	City	State	Postal Code	Hire Date
1	Stephen	McPherson	410 Market St	Boston	MA	02115	6/14/1992
2	Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/1994
3	Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	5/17/1985
4	Arnold	Finnley	207 Anglewood Rd	Littletown	MA	01460	5/25/1981
5	William	Daley	5 Dixwell Blvd	Lexington	MA	02173	1/30/1983
6	Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/1987
7	Robert	Tracy	23 Mountain View	Maynard	MA	01754	12/12/1987
8	Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02146	7/24/1995
9	Doug	Williams	9 Lawrence St	Burlington	MA	01803	2/26/1990
10	Francis	Lavois	PO Box 1752	Burlington	MA	01803	10/26/1993
11	William	Connely	248 Washington St	Jamaica Plain	MA	02130	3/12/1990
12	Andrew	Bass	44 South Park St	Fitchburg	MA	01420	3/18/1989
13	Howard	Loniere	472 North Vincent	Revere	MA	02151	4/30/1989
14	Abe	Carver	101 Mayflower St	Sudbury	MA	01776	4/4/1991
15	Don	Craig	1899 Alilene St	Burlington	MA	01803	8/14/1994
16	David	Banning	100 Catherine Ave	Burlington	MA	01803	12/18/1993
17	Kelly	Rosenberg	31 Belvedere Dr	Fitchburg	MA	01420	9/2/1987
18	Joshua	Fallon	160th Ct W	Sudbury	MA	01776	1/5/1995
19	Gwen	Davies	22 Punta Del Este	Sudbury	MA	01776	10/23/1983
20	Oliver	Davies	8 George Dr	Westboro	MA	01581	2/28/1985
21	Paula	Mendleson	89 Lincoln St	Boston	MA	02135	7/18/1985
22	Mariene	Evans	799 51 St. NE	Lowell	MA	01853	6/4/1990
23	Elizabeth	Woodruff	364 East Main	Sudbury	MA	01776	6/23/1993

Figure 2-16. Table window displaying extracted report data.

**Note:** If any of the columns are truncated, click the Autosize Column Widths button to fully display them.

Let's tile the windows so that we can see how the report data is extracted.

## 2. Select Window, Tile Horizontal (ALT, W, H).

Figure 2-17 shows how records and fields are created from the report data. Each detail line in the report is used to create a database record and each field extracted from the report is used to create a database field.

	FIRSTNAME	LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
1	Stephen	McPherson	410 Market St	Boston	MA	02115	06/14/1992
2	Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/1994
3	Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	5/17/1985
4	Arnold	Finnley	207 Anglewood Rd	Littletown	MA	01460	5/25/1981
5	William	Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/1983
6	Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/1987
7	Robert	Tracy	23 Mountain View	Maynard	MA	01754	12/12/1987
8	Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02146	7/24/1995
9	Doug	Williams	9 Lawrence St	Burlington	MA	01803	2/26/1990

Figure 2-17. Split Window view of table and report.

In later lessons we'll return to explore the Table window. But for now, it's enough to see the end result of our data extraction template.

## Saving Your Work

After you have created a data extraction template for a report, you can save it in a Monarch *model* file. A model file saves all of the templates and definitions that you have applied to a report during a Monarch session. Models save work by allowing you to apply the same templates and definitions to a periodic report every time it is generated.

Let's save a model file to see how this works.

1. Select File, Save Model As (ALT, F, A). The Save Model As dialog displays.
2. Type **Employ** in the File Name box, then choose Save. (The XMOD extension will be added automatically.)
3. Select File, Close All (ALT, F, C) to close the Employ report and model.

Now let's load the same report with our new model file.

4. Select File, Open Report (ALT, F, R), select Employ.prn, then choose Open. The Employ.prn report displays in the Report window.
5. Select File, Open Model (ALT, F, M), select Employ.xmod, then choose Open. The Report window is updated to reflect the effects of the template.

FIRSTNAME	LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
» Stephen	McPherson	410 Market St	Boston	MA	02115	06/14/92
» Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/94
» Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	05/17/85
» Arnold	Finnley	207 Angiewood Rd	Littleton	MA	01460	05/25/81
» William	Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/83
» Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/87
» Robert	Tracy	23 Mountain View	Maynard	MA	01754	12/12/87
» Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02146	07/24/95
» Doug	Williams	9 Lawrence St	Burlington	MA	01803	02/26/90
» Francis	Lavois	PO Box 1752	Burlington	MA	01803	10/26/93
» William	Connely	248 Washington St	Jamaica Plain	MA	02130	03/12/90
» Andrew	Bass	44 South Park St	Fitchburg	MA	01420	03/18/89
» Howard	Loniere	472 North Vincent	Revere	MA	02151	04/30/89
» Abe	Carver	101 Mayflower St	Sudbury	MA	01776	04/04/91
» Don	Craig	1899 Abilene St	Burlington	MA	01803	08/14/94
» David	Banning	100 Catherine Ave	Burlington	MA	01803	12/18/93
» Kelly	Rosenberg	31 Belvedere Dr	Fitchburg	MA	01420	09/02/87
» Joshua	Fallon	160th Ct W	Sudbury	MA	01776	01/05/95
» Gwen	Davies	22 Punta Del Este	Sudbury	MA	01776	10/23/83
» Oliver	Davies	8 George Dr	Westboro	MA	01581	02/28/85
» Paula	Mendleson	89 Lincoln St	Boston	MA	02135	07/18/85
» Marlena	Evans	799 51 St. NE	Lowell	MA	01853	06/04/90
» Elizabeth	Woodruff	364 East Main	Sudbury	MA	01776	06/23/93

Figure 2-18. Loading the Employ report and model file.

6. Select File, Close All (ALT, F, C) to close the Employ.prn report and model.

## Using the Auto-Define Trap Feature

Now that we've seen how Monarch allows you to manually create traps to extract data from a report, let's turn our attention to the auto-define trap feature. Introduced in Monarch 10, this new feature allows you to automatically define traps.

One way we can explore just how effective this tool can be is to use it on the report we were just working with. By using the Employ.prn report, we'll be able to compare the auto-define trapping process with the manual trapping procedure we just performed.

There are three important things to consider when using the auto-define trap feature: 1) when selecting your sample line (step 2 below), it is important to select a line that best represents the bulk of the lines in the report, since Monarch will trap all the lines whose formatting matches your sample line; 2) after you have pressed the Auto-Define Trap button (step 4 below), be sure to examine more than just one or two pages of the report. If you fail to do so, you may overlook lines of the report that you wanted to capture, but which Monarch failed to trap due to some anomaly in them; 3) any lines that you leave unchecked (see step 6 below) in the Auto-Define Trap dialog will *not* be trapped by Monarch, so be sure to select the check boxes of *all* the lines you want trapped.

1. Select File, Open Report (ALT, F, R), select Employ.prn, then choose Open. The Employ.prn report displays in the Report window.

The screenshot shows a software application window titled "Employ.prn - Monarch Pro - [Report]". The menu bar includes File, Edit, Template, Options, Window, and Help. The toolbar below has icons for file operations like Open, Save, Print, and Zoom. The font is set to "Courier New" and the font size to "10". The report header reads "03/31/08", "10:31", "MAYNARD CORPORATION", and "ACTIVE EMPLOYEE REPORT". The footer says "EMP081" and "Page 1". The main content is a table with columns: FIRSTNAME, LASTNAME, STREET, CITY, STATE, ZIP, and HIREDATE. The data rows list employees like Stephen McPherson, Dennis Bender, Norman Ungermann, Arnold Finnley, William Daley, Mary Beth Stancowicz, Robert Tracy, Eugene Bradford, Doug Williams, Francis Lavois, William Connely, Andrew Bass, Howard Loniere, Abe Carver, Don Craig, David Banning, Kelly Rosenberg, Joshua Fallon, Gwen Davies, Oliver Davies, Paula Mendleson, and Marlene Evans, along with their respective addresses and hire dates.

FIRSTNAME	LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
Stephen	McPherson	410 Market St	Boston	MA	02115	06/14/92
Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/94
Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	05/17/85
Arnold	Finnley	207 Anglewood Rd	Littleton	MA	01460	05/25/81
William	Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/83
Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/87
Robert	Tracy	23 Mountain View	Maynard	MA	01751	12/12/87
Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02144	07/24/95
Doug	Williams	9 Lawrence St	Burlington	MA	01803	02/26/90
Francis	Lavois	PO Box 1752	Burlington	MA	01803	10/26/93
William	Connely	248 Washington St	Jamaica Plain	MA	02130	03/12/90
Andrew	Bass	44 South Park St	Fitchburg	MA	01420	03/18/89
Howard	Loniere	472 North Vincent	Revere	MA	02151	04/30/89
Abe	Carver	101 Mayflower St	Sudbury	MA	01771	04/04/91
Don	Craig	1899 Abilene St	Burlington	MA	01803	08/14/94
David	Banning	100 Catherine Ave	Burlington	MA	01803	12/18/93
Kelly	Rosenberg	31 Belvedere Dr	Fitchburg	MA	01420	09/02/87
Joshua	Fallon	160th Ct W	Sudbury	MA	01776	01/05/95
Gwen	Davies	22 Punta Del Este	Sudbury	MA	01776	10/23/83
Oliver	Davies	8 George Dr	Westboro	MA	01581	02/28/85
Paula	Mendleson	89 Lincoln St	Boston	MA	02135	07/18/85
Marlene	Evans	799 51 St. NE	Lowell	MA	01853	06/04/90

Figure 2-19. The Employ.prn report.

2. Click in the line selection area to the left of the detail line (e.g., the one containing "Stephen McPherson").

The screenshot shows the same software application window as Figure 2-19. The report content is identical, but the first row (Stephen McPherson) now has a vertical selection bar on its left side, indicating it is selected. The rest of the report, including the header, footer, and other employee records, remains the same.

FIRSTNAME	LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
Stephen	McPherson	410 Market St	Boston	MA	02115	06/14/92
Dennis	Bender	624 Holiday Hill	Burlington	MA	01803	11/20/94
Norman	Ungermann	1615 Del Terrace	Concord	MA	01742	05/17/85
Arnold	Finnley	207 Anglewood Rd	Littleton	MA	01460	05/25/81
William	Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/83
Mary Beth	Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/87
Robert	Tracy	23 Mountain View	Maynard	MA	01751	12/12/87
Eugene	Bradford	888 Centre Park Rd	Brookline	MA	02144	07/24/95
Doug	Williams	9 Lawrence St	Burlington	MA	01803	02/26/90
Francis	Lavois	PO Box 1752	Burlington	MA	01803	10/26/93
William	Connely	248 Washington St	Jamaica Plain	MA	02130	03/12/90
Andrew	Bass	44 South Park St	Fitchburg	MA	01420	03/18/89
Howard	Loniere	472 North Vincent	Revere	MA	02151	04/30/89
Abe	Carver	101 Mayflower St	Sudbury	MA	01771	04/04/91
Don	Craig	1899 Abilene St	Burlington	MA	01803	08/14/94
David	Banning	100 Catherine Ave	Burlington	MA	01803	12/18/93
Kelly	Rosenberg	31 Belvedere Dr	Fitchburg	MA	01420	09/02/87
Joshua	Fallon	160th Ct W	Sudbury	MA	01776	01/05/95
Gwen	Davies	22 Punta Del Este	Sudbury	MA	01776	10/23/83
Oliver	Davies	8 George Dr	Westboro	MA	01581	02/28/85
Paula	Mendleson	89 Lincoln St	Boston	MA	02135	07/18/85
Marlene	Evans	799 51 St. NE	Lowell	MA	01853	06/04/90

Figure 2-20. Selecting the detail line.

3. Select Template, New Template (ALT, T, N) to display the Template Definition dialog.

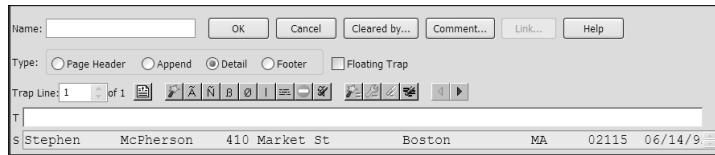


Figure 2-21. The Template Definition dialog.

4. Click the Auto-Define Trap button on the toolbar. The Auto-Define Trap dialog displays.

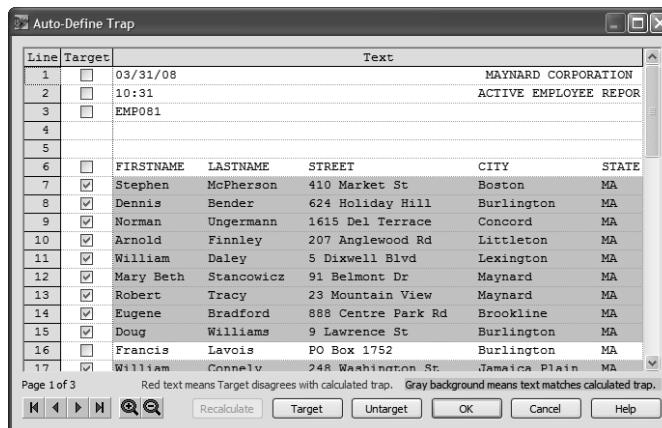


Figure 2-22. The Auto-Define Trap dialog.

5. Scroll down to view the highlighted lines. Note that Monarch has analyzed the detail line we selected as our sample, and has selected all the other lines in the report that have the same format.

Line	Target	Text			
35	<input checked="" type="checkbox"/>	Don	Kincaid	9 Nye Rd	Burlington MA
36	<input checked="" type="checkbox"/>	Joseph	Manfretti	24 Collin Ave	Carlisle MA
37	<input checked="" type="checkbox"/>	Jeff	Aldridge	153 Parker Ave	Medford MA
38	<input checked="" type="checkbox"/>	Maggie	Horton	2399 Cypress Rd	Sudbury MA
39	<input checked="" type="checkbox"/>	Anne	Bartholemew	943 Boulton St	Brookfield MA
40	<input checked="" type="checkbox"/>	George	Bayliss	27 Lenbrook Lane	Sudbury MA
41	<input checked="" type="checkbox"/>	Anna	Brady	99 Spruce Place	Maynard MA
42	<input checked="" type="checkbox"/>	Chris	Kositchek	99 Bingham Dr	Sudbury MA
43	<input checked="" type="checkbox"/>	Rae Ann	Howard	845 Richland Ln	Concord MA
44	<input checked="" type="checkbox"/>	Julie	Williams	12 Horizon Hill Dr	Andover MA
45	<input checked="" type="checkbox"/>	Alice	Horton	8 Daniels Place, N	West Boylston MA
46	<input checked="" type="checkbox"/>	Lynn	Hubbard	24 Bristol Dr	Sudbury MA
47	<input checked="" type="checkbox"/>	Martin	Valesquez	14 King St	Concord MA
48	<input checked="" type="checkbox"/>	George	Ingles	137 Newton St	Chelsea MA
49	<input checked="" type="checkbox"/>	Norma	Curtis	28 Herbert Rd	Boston MA
50	<input checked="" type="checkbox"/>	James	Condon	9 Oak Valley Dr	Sudbury MA

Page 1 of 3 Red text means Target disagrees with calculated trap. Gray background means text matches calculated trap.

[Navigation Buttons] [Recalculate] [Target] [Untarget] [OK] [Cancel] [Help]

Figure 2-23. Viewing the automatically trapped lines.

Note, however, that the auto-define trap feature has failed to select *all* of the detail lines.

Line	Target	Text			
15	<input checked="" type="checkbox"/>	Doug	Williams	9 Lawrence St	Burlington MA
16	<input type="checkbox"/>	Francis	Lavois	PO Box 1752	Burlington MA
17	<input checked="" type="checkbox"/>	William	Connely	248 Washington St	Jamaica Plain MA
18	<input checked="" type="checkbox"/>	Andrew	Bass	44 South Park St	Fitchburg MA
19	<input checked="" type="checkbox"/>	Howard	Loniere	472 North Vincent	Revere MA
20	<input checked="" type="checkbox"/>	Abe	Carver	101 Mayflower St	Sudbury MA
21	<input checked="" type="checkbox"/>	Don	Craig	1899 Abilene St	Burlington MA
22	<input checked="" type="checkbox"/>	David	Banning	100 Catherine Ave	Burlington MA
23	<input checked="" type="checkbox"/>	Kelly	Rosenberg	31 Belvedere Dr	Fitchburg MA
24	<input checked="" type="checkbox"/>	Joshua	Fallon	160th Ct W	Sudbury MA
25	<input checked="" type="checkbox"/>	Gwen	Davies	22 Punta Del Este	Sudbury MA
26	<input checked="" type="checkbox"/>	Oliver	Davies	8 George Dr	Westboro MA
27	<input checked="" type="checkbox"/>	Paula	Mendleson	89 Lincoln St	Boston MA
28	<input checked="" type="checkbox"/>	Marlena	Evans	799 51 St. NE	Lowell MA
29	<input checked="" type="checkbox"/>	Elizabeth	Woodruff	364 East Main	Sudbury MA
30	<input type="checkbox"/>	Wayne	Sedlinski	PO Box 149	Lowell MA
31	<input checked="" type="checkbox"/>	George	Miller	13 Scenic Dr.	Millbury MA

Page 1 of 3 Red text means Target disagrees with calculated trap. Gray background means text matches calculated trap.

[Navigation Buttons] [Recalculate] [Target] [Untarget] [OK] [Cancel] [Help]

Figure 2-24. Viewing detail lines that haven't been trapped.

This is because, while the detail line we selected as our sample contained a street address that begins with a number (e.g., “410 Market Street”), a few of the street addresses in Employ.prn begin with a letter, as in “PO Box 1752”. When comparing the sample line with all the detail lines in the report, the auto-define trap feature opted not to trap any lines with such a discrepancy.

Note that on the first page of the report there are two detail lines which weren't trapped. We obviously want these detail lines to be trapped, however, as well as any that may exist on other pages of the report. Fortunately, the Auto-Define Trap dialog provides an easy way to ensure that they are selected.

- Select the check boxes for the two detail lines whose street addresses are PO box numbers (see rows 16 and 30). Note that the text color for these two detail lines changes from black to red. This is simply to notify us that the lines don't perfectly match the sample detail line.

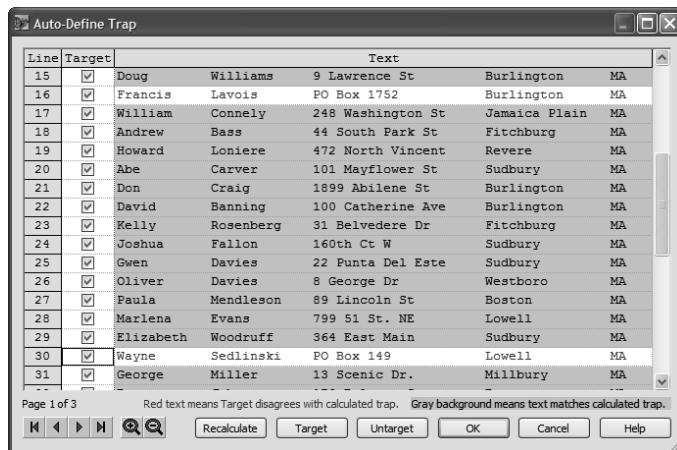


Figure 2-25. Selecting the additional detail lines.

- Click the Recalculate button. This tells Monarch to additionally trap any lines that match the format of the newly selected ones. The additional detail lines we selected are now highlighted.

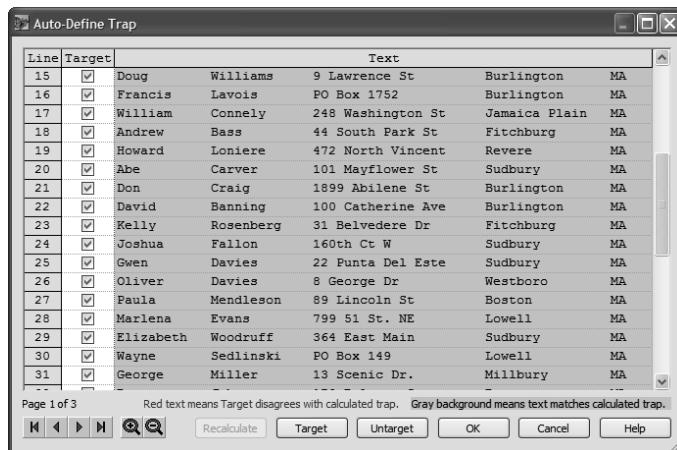


Figure 2-26. Viewing the result of the recalculation.

Though we could check the other pages of the report for detail lines which haven't been trapped, let's see if the detail lines we've selected are sufficient.

8. Click the OK button to close the dialog, then scroll down to make sure that all of the detail lines have been successfully trapped.

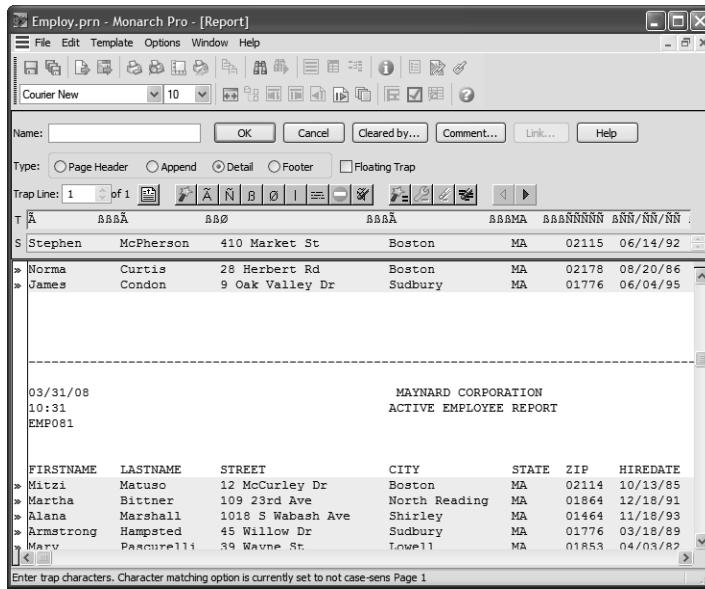


Figure 2-27. Scrolling the report to make sure all the detail lines have been trapped.

Note that all of the detail lines are now highlighted in the report.

## Using the Auto-Define Fields Button

Though we could now manually highlight and name the fields we want to extract, as we did earlier in this lesson, let's try using the Template Definition dialog's Auto-Define Fields feature, which allows us to automatically highlight fields in the template. It uses Monarch's built-in parsing and data recognition capabilities to determine where fields begin and end.

**Note:** While Monarch's auto-define trap feature is a powerful and effective tool, it's important that you don't come to rely on it exclusively. Monarch cannot predict which fields you want to extract and which fields you don't, nor can it deal with the subtleties of report design that allow fields to wrap onto multiple lines or to abut one another.

1. Click the Auto-Define Fields  button on the toolbar.

Note that the fields in the sample line are now highlighted.



Figure 2-28. Viewing the result of auto-define fields.

Rather than taking the time to name these fields, let's let Monarch assign default names to them.

2. In the name field enter **Auto**, then click the OK button to close the Template Definition dialog.
3. Click the Table window button .

	eg_Stephe	eg_McPherson	eg_410 Market St	eg_Boston	eg_02	eg_06/14/92	e	eg_Data Processing	eg_37800
1	Stephen	McPherson	410 Market St	Boston	02115	6/14/1992	M	Data Processing	37800.00
2	Dennis	Bender	624 Holiday Hill	Burlington	01803	11/20/1994	M	Shipping	47400.00
3	Norman	Ungermann	1615 Del Terrace	Concord	01742	5/17/1985	M	Marketing	33500.00
4	Arnold	Finnley	207 Anglewood Rd	Littleton	01460	5/25/1981	M	Shipping	39500.00
5	William	Daley	5 Dixwell Blvd	Lexington	02173	1/30/1983	M	Accounting	39600.00
6	Mary Beth	Stancowicz	91 Belmont Dr	Maynard	01754	10/11/1987	F	Accounting	42600.00
7	Robert	Tracy	23 Mountain View	Maynard	01754	12/12/1987	M	Data Processing	38800.00
8	Eugene	Bradford	888 Centre Park Rd	Brookline	02146	7/24/1995	M	Marketing	62300.00
9	Doug	Williams	9 Lawrence St	Burlington	01803	2/26/1990	M	Data Processing	52200.00
10	Francis	Lavois	PO Box 1752	Burlington	01803	10/26/1993	M	Data Processing	40500.00
11	William	Connely	248 Washington St	Jamaica Plain	02130	3/12/1990	M	Marketing	53000.00
12	Andrew	Bass	44 South Park St	Fitchburg	01420	3/18/1989	M	Data Processing	43400.00
13	Howard	Loniere	472 North Vincent	Revere	02151	4/30/1989	M	Shipping	40250.00
14	Abe	Carver	101 Mayflower St	Sudbury	01776	4/4/1991	M	Shipping	25500.00
15	Don	Craig	1899 Abilene St	Burlington	01803	8/14/1994	M	Production	37100.00
16	David	Banning	100 Catherine Ave	Burlington	01803	12/18/1993	M	Marketing	65500.00
17	Kelly	Rosenberg	31 Belvedere Dr	Fitchburg	01420	9/2/1987	F	Accounting	41300.00
18	Joshua	Fallon	160th Ct W	Sudbury	01776	1/5/1995	M	Marketing	63300.00
19	Gwen	Davies	22 Punta Del Este	Sudbury	01776	10/23/1983	F	Production	32900.00
20	Oliver	Davies	8 George Dr	Westboro	01581	2/28/1985	M	Production	28700.00
21	Paula	Mendleson	89 Lincoln St	Boston	02135	7/18/1985	F	Marketing	48040.00
22	Marlena	Evans	799 51 St. NE	Lowell	01853	6/4/1990	F	Data Processing	44100.00
23	Elizabeth	Woodruff	364 East Main	Sudbury	01776	6/23/1993	F	Accounting	48500.00
24	Wayne	Sedlinski	PO Box 149	Lowell	01853	4/12/1991	M	Shipping	39400.00

Figure 2-29. Viewing the trapped fields in the Table window.

As you can see, the Auto-Define Trap and Auto-Define Field features can be very effective, particularly when used in conjunction with one another. In the next lesson we'll use the auto-define field feature again, this time to help us extract fields from a more complex report.

4. Select File, Exit (ALT, F, X). **Note:** Select "No" if prompted to save any changes.

## Summary

In this lesson you learned how to create a data extraction template to extract data from a simple columnar report. You employed Monarch's special trap characters to select all of the detail lines throughout the report and you defined the fields to extract. You also used the auto-define trap feature to quickly and easily create traps. For further reading, see the following sections of the Monarch help file.

### Chapter 1 - Report Window

#### Creating Data Extraction Templates

##### Overview

##### Creating a Template

##### Using the Auto-Define Trap Feature

##### Using the Auto-Define Field Feature

##### Verifying Field Boundaries

In the next lesson you will learn how to extract data from a more complex report, one that includes multiple sort levels and a page header.



## LESSON 3

## Reports with Multiple Sort Levels

In Lesson 2 you learned how to extract data from a simple columnar report. In this lesson, you will work with a report that is organized with multiple sort levels. The lesson topics include:

- Creating a detail template.
- Creating append templates.
- Defining a page header template.
- Verifying field boundaries.
- Naming fields.
- How records are assembled.
- Saving your work.
- Configuring the Tree View
- Exporting from the Report Window

### Starting the Lesson

To get started, load Monarch and open the Classic.prn report.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open. The Classic.prn report displays in the Report window.

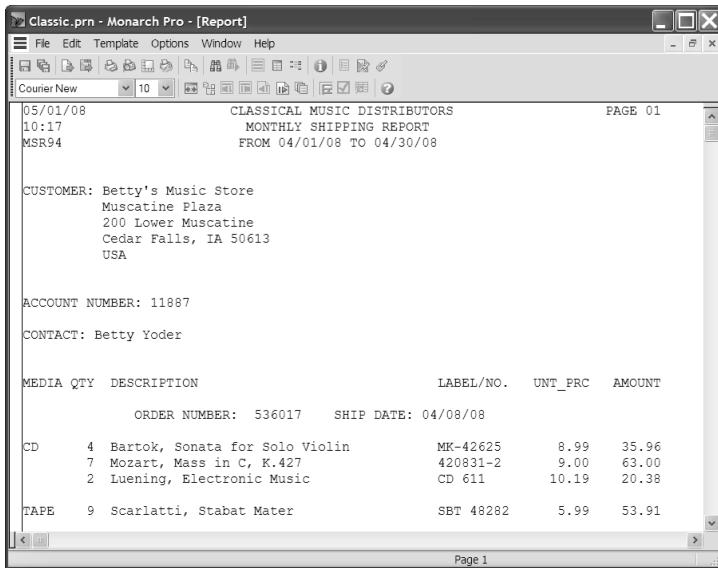


Figure 3-1. The Classic.prn report.

Classic.prn is a monthly shipment report for a distributor of classical music recordings. Like many reports, Classic.prn is organized with multiple sort levels. The entire report is sorted by customer. Within each customer, orders are sorted by ship date. Within each order, shipments are itemized on detail lines. In addition, three header lines appear at the top of each page.

In this lesson, Monarch will draw data out of each level in the report based on templates that you define. You will start by defining a detail template, just as you did in Lesson 2. Then you'll define an append template to extract fields from each sort level and a page header template to extract fields from the page header. Fields from the append templates and the page header template will be appended to fields from the detail template to produce database records.

## Creating the Detail Template

The detail template extracts data from the lowest level in the report, which in this case are the lines representing individual shipments. To create the detail template, we'll use the same procedure learned in Lesson 2. First, we'll select a sample detail line, then we'll use the sample to identify the other detail lines and to highlight the fields to extract.

1. Click in the line selection area to the left of the line containing "Bartok, Sonata for Solo Violin". Depending on the font size you are using, you may need to scroll the report to see this line.

2. Select Template, New Template (ALT, T, N) or right-click on the highlighted line and select New Template.

The Template Definition dialog displays and the sample line is copied into its Sample box.



Figure 3-2. The Template Definition dialog.

## Trapping the Detail Lines

In Lesson 2, we used the numeric and blank trap characters to trap the detail lines in our employee report. This time, we'll employ an additional trap character that traps any non-blank character.

1. Click in the Trap line above the number "4". The cursor should be at column position 9, as shown on the status bar. If the cursor is not positioned correctly, you can use the left or right arrow key to move it to the correct position.
2. Click the Numeric Trap button . "Ñ" appears in the trap line, representing any number in the designated column position.
3. Click the Blank Trap button twice. "ÑÑ" appears adjacent to the first trap character, representing a blank in each column.
4. Click the Non-blank Trap button . "Ø" appears in the trap line, representing any non-blank character.

By combining these trap characters (see Figure 3-3), we're telling Monarch to "trap only those lines with a number in column 9, followed by two blank characters in columns 10 and 11, followed by a non-blank character in column 12."



Figure 3-3. Trapping the detail lines.

5. Scroll through the report to ensure that the trap captured all of the detail lines and no other lines.

The report should appear as shown in Figure 3-4.



The screenshot shows a software interface for defining a trap. At the top, there are buttons for 'Name:' (with a text input field), 'OK', 'Cancel', 'Cleared by...', 'Comment...', 'Link...', and 'Help'. Below this, a 'Type:' section has a radio button for 'Detail' selected. A 'Trap Line' field shows '1 of 1' with a dropdown arrow. To the right of the dropdown are several icons: a document, a magnifying glass, a 'T' for text, a 'B' for bold, a 'D' for underline, a 'W' for italic, a 'Z' for strikethrough, and a 'X' for clear. The main area displays a list of music items:

MEDIA	QTY	DESCRIPTION	LABEL/NO.	UNT_PRC	AMOUNT
ORDER NUMBER: 536017 SHIP DATE: 04/08/08					
» CD	4	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96
»	7	Mozart, Mass in C, K.427	420831-2	9.00	63.00
»	2	Luening, Electronic Music	CD 611	10.19	20.38
» TAPE 9 Scarlatti, Stabat Mater SBT 48282 5.99 53.91					
ORDER NUMBER: 536039 SHIP DATE: 04/21/08					
» CD	11	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89
»	8	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92
»	10	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90
» LP 6 Misc., Modern Trombone Masterpieces ADA 581087 10.79 64.74					

At the bottom right of the dialog is a 'Page 1' indicator.

Figure 3-4. Results of the detail trap.

**Note:** If you made any mistakes when entering the trap characters, you can highlight the incorrect trap characters and press DELETE to remove them, then enter the appropriate trap characters. To delete all trap characters, click the Reset Trap button .

## Highlighting the Detail Fields

After you're satisfied that the trap is working to capture all of the detail lines, but no other lines, you're ready to highlight the fields that you want to extract.

In Lesson 2 we were introduced to the Auto-Define Fields button. Let's use it to highlight the fields for our detail template.

1. Click the Auto-Define Fields button .

Each field that is found in the detail template is highlighted.



This screenshot is identical to Figure 3-4, but the fields in the detail template are now highlighted with a yellow background. The highlighted fields include the 'MEDIA', 'QTY', 'DESCRIPTION', 'LABEL/NO.', 'UNT\_PRC', and 'AMOUNT' columns from the table above.

Figure 3-5. Results of the Auto-Define Fields button.

---

**Note:** Remember, you should not rely upon the Auto-Define Fields button exclusively, as Monarch cannot predict which fields you might want to extract and which you want to leave out, nor can it deal with subtleties of report design that allow fields to wrap onto multiple lines or abut one another.

---

2. Type **Line Item Detail** in the Name box, then click the OK button to accept the template definition.

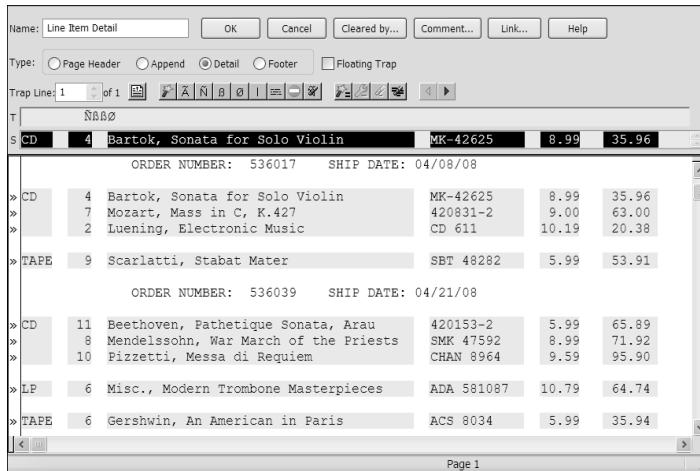


Figure 3-6. The completed detail template.

## Creating Append Templates

In the Classic.prn report, orders are sorted by order number. Also at this sort level is the ship date. We'll create an append template to extract these two fields and an additional append template to extract the account number and contact fields that appear at the next higher level.

The procedure for extracting fields from each sort level is the same as for extracting detail fields. First, we'll select a sample, then we'll trap the other occurrences of the sort level throughout the report, then we'll highlight the fields we want to extract.

1. Press CTRL+HOME to return to the top of the report.
2. Select the line containing "ORDER NUMBER". This line is indented and appears below the line containing the field names.
3. Select Template, New Template (ALT, T, N).

The Template Definition dialog is opened and the sample line is copied into its Sample box.

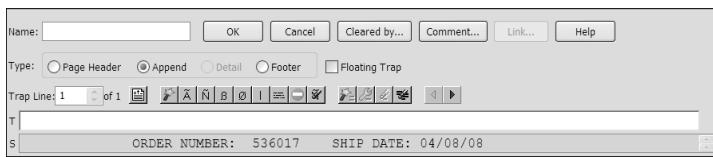


Figure 3-7. The selected ORDER NUMBER line.

Note that Monarch has automatically assigned Append as the template type by selecting the Append radio button. When you create a new template, Monarch assigns it a template type of Detail unless a detail template already exists. Each additional template is initially created as an append template. You may change the template type by clicking one of the available template type buttons. You may create one detail template, one page header template, up to twenty append and footer templates. **Note:** The total number of all append and footer templates cannot exceed twenty. For each footer template used, there is one less append template available. For example, if you create three footer templates, then only seventeen appends can be used.

## Trapping the Ship Date Lines

We'll use an *exact match* trap to capture all lines representing the order number level. An exact match trap looks for an exact match of a character or series of characters. We'll use the two colons that appear at the end of the ORDER NUMBER: and SHIP DATE: labels.

4. Click in the Trap line above the colon following "ORDER NUMBER" in the Sample line. The cursor should be in position 27, as shown on the status bar.
5. Type a colon (:) in the trap line directly above the colon in the Sample box.
6. Move the cursor to position 49 in the Trap line.
7. Type another colon (:) in the trap line.
8. Highlight the ORDER NUMBER and SHIP DATE fields (as shown in Figure 3-8).

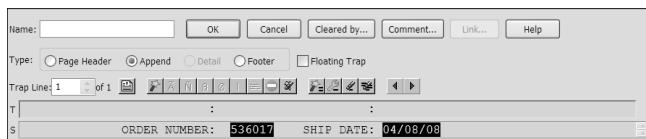


Figure 3-8. Highlighting the ORDER NUMBER and SHIP DATE fields.

Scroll through the report to see the results. Note that on the fourth page of the report the RETURN AUTHORIZATION and RECEIVED fields have been

highlighted (see Figure 3-9). We don't want to capture these fields, so we need to edit our template definition.

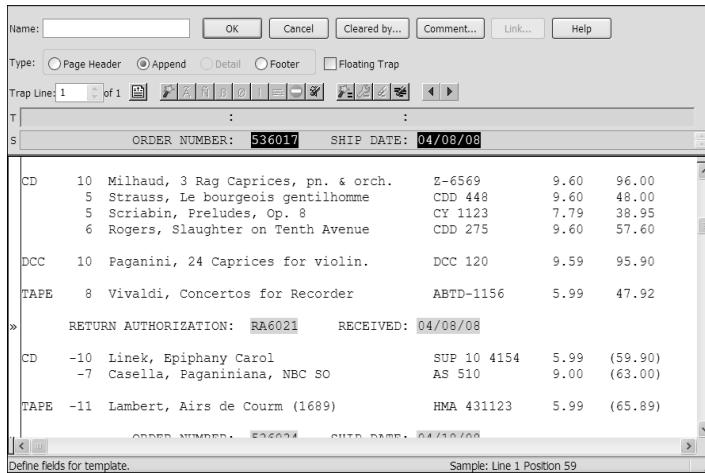


Figure 3-9. Viewing the result of the highlights.

9. In the Trap line, place the cursor directly above the “5” that begins the order number (536017) in the Sample line, then click the Numeric trap button .
10. Note that the RETURN AUTHORIZATION and RECEIVED fields are no longer highlighted on page 4 of the report.

We can now safely save our template.

11. Type **Order Number Level** in the Name box, then click the OK button to accept the template definition.

The fields trapped by the append template we just created can be easily distinguished from those trapped by the detail template due to the different color that Monarch assigns them.

## Trapping the Account Number and Contact Lines

1. Press CTRL+HOME to return to the top of the report.

Note that the Account Number and Contact fields are on different lines. To capture both fields, we'll select a multiple line sample.

2. Click down in the line selection area to the left of “ACCOUNT NUMBER”, and drag down two lines to highlight the “CONTACT” line.
3. Select Template, New Template (ALT, T, N).

The three lines are displayed in the Template Definition dialog.

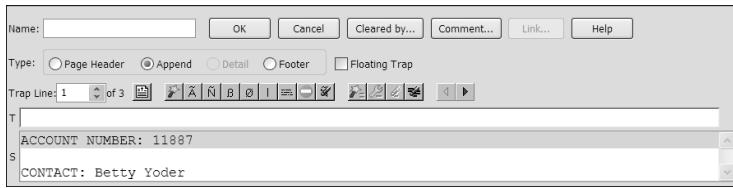


Figure 3-10. Template Definition dialog showing the sample lines.

For a multiple line sample, you need to indicate which of the sample lines to trap on. Generally, you will be able to trap on the first line by identifying features unique to that line. Occasionally, however, there will be no unique features that identify the first line. If it is impossible to trap on line 1, use the Trap Line box to indicate another line that has unique features. (The Trap Line box is located in the row of buttons in the middle of the Template Definition dialog.) In this lesson we'll trap on the first line of the sample, so you won't need to adjust this setting.

Note that an "ACCOUNT NUMBER" label always precedes the account number field. Let's use this specific sequence of characters as an exact match trap.

4. Type **account number** at the beginning of the trap line. By default, Monarch traps are *not* case-sensitive, so you can enter the text in either uppercase or lowercase characters. **Note:** You can specify "case-sensitive" as the default case setting for traps by selecting Options, Input (ALT, O, I) from the main menu to display the Input Options dialog, then selecting the "Traps are case-sensitive" check box.
5. Highlight the Account Number and Contact fields (as shown in Figure 3-11) or click the Auto-Define Fields button . **Note:** The Account Number field should accommodate five digits and the Contact field should be long enough to account for long names. (You can scroll the report before you highlight the Contact field to see how long the Contact names are.).

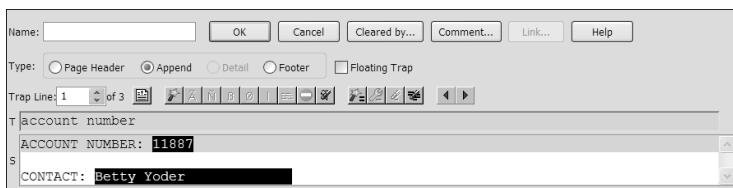


Figure 3-11. Highlighting the account number and contact fields.

Monarch highlights the fields in the report. You may need to scroll the report to see the results.

6. Type **Account Number Level** in the Name box, then click the OK button to accept the template definition.

Note that Monarch has assigned the same color to the fields trapped by the Account Number Level template as to those trapped by the Order Number Level template. This is because they are both *append* templates.

## Defining a Page Header Template

Page headers often include useful information, such as the report date. In the Classic.prn report, the page header includes the report date and the page number. Let's extract these two fields.

1. Press CTRL+HOME to scroll to the top of the report.
2. Select the first line of the report as the sample line.
3. Select Template, New Template (ALT, T, N).

The sample line displays in the Template Definition dialog.

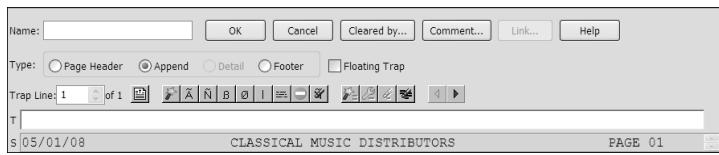


Figure 3-12. The sample line from the page header.

4. Click the Page Header radio button to specify Page Header as the template type.

## Trapping the Page Header

Most reports have a form feed character (ASCII 12, HEX 0C) embedded at the page break. Monarch can use this character to identify the beginning of a page header, so you normally do not need to set a trap to capture the page headers. However, if your reports do not include the form feed character, you will need to use a trap to capture the page headers. If you are unsure about your report's internal structure, you should play it safe and create a trap. That's what we'll do for this lesson.

1. Click the Numeric Trap button  twice, then type a forward slash (/) in the Trap line. This trap will capture the first line of each page header (where the date is represented in MM/DD/YY format).
2. Highlight the report date and the page number as shown in Figure 3-13.

**Note:** The Auto-Define Fields button will not work to capture the report date field due to the logic it uses to distinguish fields from labels, headings and other static text that appears in reports. Any text that does not change throughout the report is considered a label, even if that text looks like, and in this case is, a field.



Figure 3-13. Highlighting the page header fields.

The page header fields in the report are highlighted.

3. Click the OK button to accept the template definition.

Since you did not name the template, a default name is assigned for you. For detail and page header templates the default names are Detail and Page Header, respectively. For append and footer templates, the default names are Append *n*, and Footer *n*, where *n* is incremented for each new append or footer template.

Note in the report that Monarch has highlighted the fields trapped by the page header template with a unique color in order to distinguish them from those trapped by the detail and append templates.

## Verifying Field Boundaries

In this lesson, you have defined your fields without examining the entire report to identify the maximum length for each field. In most cases you will make the right guess about field length, but why leave it to chance? The Verify command scans the entire report and examines each field to make sure it's long enough to capture all the data.

When you perform a verify operation, Monarch scans the entire report to ensure that all fields are placed in the correct location and are the correct length and data type. If any non-blank characters are found immediately adjacent to a field boundary, Monarch will alert you that the field may be too short or defined at the wrong location by displaying the Verify dialog (see Figure 3-14). Then you can decide whether the field is correctly defined or needs to be redefined.

When a right boundary hit occurs, plus and minus buttons appear in the Verify dialog to the right of the Continue button. Pressing the plus button will expand the offending field by one character on its right side. Pressing the minus button will shrink the field by one character on its right side.

Likewise, when a left boundary hit occurs, the plus and minus buttons are shown to the left of the Continue button. Pressing the plus button will expand the offending field by one character on its left side. Pressing the minus button will shrink the field by one character on its left side.

When using the plus or minus buttons the results of the expanding or shrinking are immediately reflected in the report view and in the template editor (if it's up). The plus and minus buttons are grayed as necessary so that a field cannot be shrunk to zero width, nor can it be expanded to the point where it overlaps another field from the same template.

Verify also detects data type failures. A data type failure occurs when a numeric field cannot be converted to a valid number or when a date field cannot be converted to a valid date.

The Verify dialog displays the status of a verify operation. If the verify operation is suspended to allow corrections, the Verify dialog allows you to continue after the corrections are made.

Let's verify that the fields are properly defined.

1. Select Template, Verify (ALT, T, V) or click the Verify button 

A progress dialog displays the percentage of the report that has been verified. If Monarch successfully verifies all fields, "Verify completed with no stops" displays on the Verify dialog. If Monarch finds a field with characters adjacent to its boundaries, it will stop and highlight the field. You must then decide if the field should be redefined to include the adjacent characters.

The Classic.prn report contains several field boundaries that are not clear on page 1 of the report. Had you manually painted these fields, you might have painted the QTY field with only two characters, which would result in you missing several negative field values on page 4 (see Figure 3-14). You may also have missed the corresponding parentheses denoting negative values in the Amount field. Verify will report these problems.

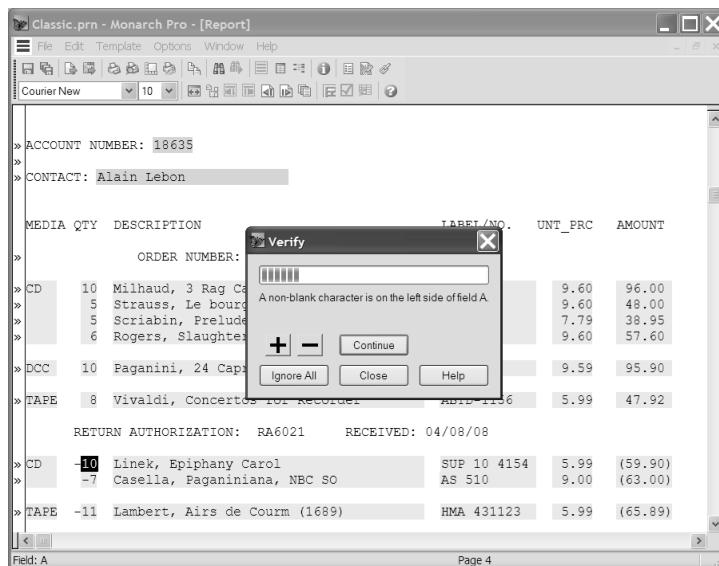


Figure 3-14. Example of a field failing the Verify operation.

If Verify reports a field boundary problem you may correct it immediately. To modify a field boundary:

1. Click the plus or minus sign button on the Verify dialog to increase or decrease the highlighted field. Each click of the plus or minus button increases or decreases the field by one space.

The Report window immediately displays the changes to the field.

2. When you have finished editing the field, click the Continue button to see if any additional fields need editing.
3. When you are done verifying the fields, click the Close button on the Verify dialog.

## Naming Fields

In the previous lesson, we named our fields immediately after highlighting them, while the Template Definition dialog was still displayed. In this lesson, we let Monarch assign default field names for all fields. Now that we have completed our template definition, we can go back and name all of the fields.

Monarch provides two methods we can use to name our fields: we can display the Template Definition dialog for each template, naming each template's fields in a separate step, or we can use Monarch's Field List dialog to name all of the fields at one time. You've already seen how you can name fields in the Template Definition dialog (by double-clicking each field highlight), so now let's see how the Field List dialog works.

1. Select Edit, Field List (ALT, E, L) from the main menu or click the Field list button . The Field List dialog displays, which shows the properties for all fields you have created.

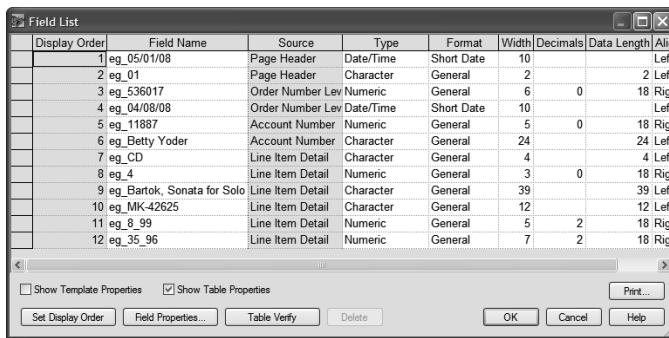


Figure 3-15. Field List dialog displays names and properties for all fields.

Notice that each field has been assigned a default field name, based upon the order in which you created the fields.

The reason that the field names appear out of order is due to the fact that this dialog initially displays fields in the order in which they will appear in the Table window, which is based upon the hierarchy of templates that you created.

You can re-order the fields based upon any field property by clicking on the appropriate column title at the top of the dialog. We'll sort the fields based upon the template that they were extracted from, as this is the most useful order for naming fields.

2. Click on the Source column title at the top of the Source column.

Monarch sorts the fields based upon the template names (i.e., the source of each field).

Display Order	Field Name	Source	Type	Format	Width	Decimals	Data Length	Align
5	eg_11887	Account Number	Numeric	General	5	0	18	Rig
6	eg_Betty_Yoder	Account Number	Character	General	24		24	Left
12	eg_35_96	Line Item Detail	Numeric	General	7	2	18	Rig
8	eg_4	Line Item Detail	Numeric	General	3	0	18	Rig
11	eg_8_99	Line Item Detail	Numeric	General	5	2	18	Rig
9	eg_Bartok_Sonata_for_Solo	Line Item Detail	Character	General	39		39	Left
7	eg_CD	Line Item Detail	Character	General	4		4	Left
10	eg_MK-42625	Line Item Detail	Character	General	12		12	Left
4	eg_04/08/08	Order Number Lev	Date/Time	Short Date	10			Left
3	eg_536017	Order Number Lev	Numeric	General	6	0	18	Rig
2	eg_01	Page Header	Character	General	2		2	Left
1	eg_05/01/08	Page Header	Date/Time	Short Date	10			Left

Figure 3-16. Sorting the fields according to the template in which they were defined.

Let's replace some of the default names in the Field Name column.

3. In the Field Name column, highlight the second field name (i.e., eg\_Betty\_Yoder) and type **Contact**, then press the down arrow on the keyboard to move to the next field name.
4. Rename the remaining fields using the following field names:

**Media**  
**Quantity**  
**Description**  
**Label Number**  
**Unit Price**  
**Amount**  
**Order Number**  
**Ship Date**  
**Report Date**  
**Page**

5. Choose OK to close the Field List dialog.

---

**Field naming hints:** When using the Field List dialog to name fields, inspect the Line and Column properties to determine the location within a template where each field resides. You may also move the Field List dialog around on screen to view the underlying report which may help you determine appropriate field names from the labels that appear in the report.

---

## How Records are Assembled

Monarch generates one record for each detail line extracted from the report. The detail line contains the data that changes most often in the report and is usually the report's lowest sort level. The append templates add, or append, information from higher sort levels. In this lesson we extracted fields from four levels in the report; the detail level, two sort levels and the page header. Figure 3-17 illustrates how a single record is built from the templates we defined.

The diagram illustrates the assembly of a report record across four levels:

- Page Header:** Contains timestamp (05/01/01), date (10:17), and file identifier (MSR94).
- Append Level (1):** Contains the company name (CLASSICAL MUSIC DISTRIBUTORS), report type (MONTHLY SHIPPING REPORT), and date range (FROM 04/01/01 TO 04/30/01).
- Append Level (2):** Contains customer details (CUSTOMER: Betty's Music Store, address: Muscatine Plaza, 200 Lower Muscatine, Cedar Falls, IA 50613, USA).
- Detail:** Contains account number (ACCOUNT NUMBER: 11887) and contact person (CONTACT: Betty Yoder).

The detail section is further divided into two orders:

MEDIA QTY	DESCRIPTION	LABEL/NO.	UNT_PRC	AMOUNT
CD 4	Mozart, Mass in C, K.427 Bartok, Sonata for Solo Violin Luening, Electronic Music	MK-42625 420831-2 CD 611	8.99 9.00 10.19	35.96 63.00 20.38
TAPE 9	Scarlatti, Stabat Mater	SBT 48282	5.99	53.91
CD 11	Beethoven, Pathetique Sonata, Arau Mendelssohn, War March of the Priests Pizzetti, Messa di Requiem	420153-2 SMK 47592 CHAN 8964	5.99 8.99 9.59	65.89 71.92 95.90
	ORDER NUMBER: 536017 SHIP DATE: 04/06/01			
	ORDER NUMBER: 536039 SHIP DATE: 04/21/01			

Below the table, the extracted data is summarized:

05/01/01	Betty's Music Store	Betty Yoder	04/06/01	CD 4	Mozart, Mass in C, K.427	MK-42625	8.99	35.96
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Annotations below the table identify the levels:

- Page Header Append Level
- Append Level
- Append Level
- Detail

Figure 3-17. Assembly of a record.

Let's open the Table window to see the records created by our templates.

1. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.

The extracted data appears in the Table window.

	Report Date	Page	Order Number	Ship Date	Account Number	Contact	Media	Quantity	Description
1	5/1/2008	01	536017	4/8/2008	11887	Betty Yoder	CD	4	Bartok
2	5/1/2008	01	536017	4/8/2008	11887	Betty Yoder		7	Mozart
3	5/1/2008	01	536017	4/8/2008	11887	Betty Yoder		2	Luenin
4	5/1/2008	01	536017	4/8/2008	11887	Betty Yoder	TAPE	9	Scaria
5	5/1/2008	01	536039	4/21/2008	11887	Betty Yoder	CD	11	Beethc
6	5/1/2008	01	536039	4/21/2008	11887	Betty Yoder		8	Mende
7	5/1/2008	01	536039	4/21/2008	11887	Betty Yoder		10	Pizzett
8	5/1/2008	01	536039	4/21/2008	11887	Betty Yoder	LP	6	Misc.,
9	5/1/2008	01	536039	4/21/2008	11887	Betty Yoder	TAPE	6	Gershv
10	5/1/2008	02	536016	4/5/2008	17959	Marvin Mabry	CD	6	Stravir
11	5/1/2008	02	536016	4/5/2008	17959	Marvin Mabry		1	Schub
12	5/1/2008	02	536016	4/5/2008	17959	Marvin Mabry		3	Mozar
13	5/1/2008	02	536016	4/5/2008	17959	Marvin Mabry		6	Schoei
14	5/1/2008	02	536029	4/14/2008	17959	Marvin Mabry	CD	2	Shostz
15	5/1/2008	02	536029	4/14/2008	17959	Marvin Mabry	MD	9	Balakir
16	5/1/2008	02	536029	4/14/2008	17959	Marvin Mabry	TAPE	5	Holst,
17	5/1/2008	03	536020	4/8/2008	10929	Roberto Gil	CD	3	Faure,
18	5/1/2008	03	536020	4/8/2008	10929	Roberto Gil		3	Taken
19	5/1/2008	03	536020	4/8/2008	10929	Roberto Gil		6	Messiz
20	5/1/2008	03	536020	4/8/2008	10929	Roberto Gil	MD	8	Straus
21	5/1/2008	03	536020	4/8/2008	10929	Roberto Gil	TAPE	9	Schurr
22	5/1/2008	04	536012	4/1/2008	18635	Alain Lebon	CD	10	Milhau

Figure 3-18. Extracted data displayed in the Table window (with column widths autosized).

## Configuring the Tree View

Now that we've successfully extracted data from the Classic.prn report, let's try using Monarch's Tree View feature. Available when viewing the Report window, the Tree view displays a hierarchy of field values within one or more reports, thereby allowing you to quickly and easily explore a report and zero in on the information you are interested in. By exploring the tree you can get a bird's eye view of your report data. When you find the information you are interested in, you simply click on the field value to jump to the corresponding page in the report.

Initially, the tree is empty. Let's build the Tree view so that we can see firsthand how helpful it can be.

1. Click the Report window button to return to Report view, then select Edit, Tree Definition (ALT, E, D) from the main menu. The Tree Definition dialog displays.

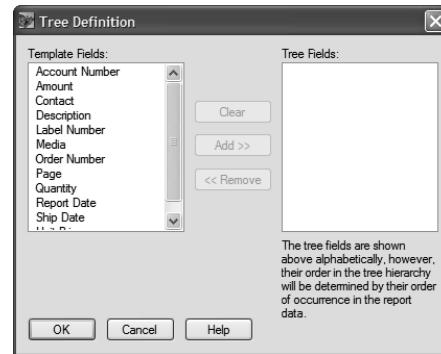


Figure 3-19. The Tree Definition dialog.

In the Template Fields list are the fields we defined earlier. We can use up to five of these fields to build our tree.

2. Select the Account Number field, then click the Add button. The Account Number field is removed from the Template Fields list and added to the Tree Fields list.
3. Select the Order Number field and click the Add button. The Order Number field is added to the Tree Fields list.
4. Select the Description field and click the Add button to add it to the Tree Fields list.

Note that the fields are listed in alphabetical order in the Tree Fields list (see Figure 3-20). Their order in the actual tree view hierarchy will be determined by their order in the report data, as we'll see shortly.

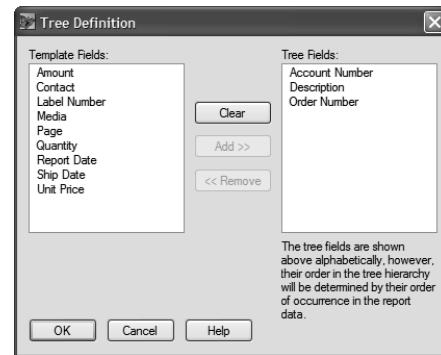


Figure 3-20. Viewing the Tree Fields list.

Now that we've configured the tree definition, let's see how the Tree view displays in the Report window.

5. Click the OK button to close the Tree Definition dialog, then select Options, Tree (ALT, O, R) from the main menu.

Monarch displays the Tree view on the left side of the Report window.

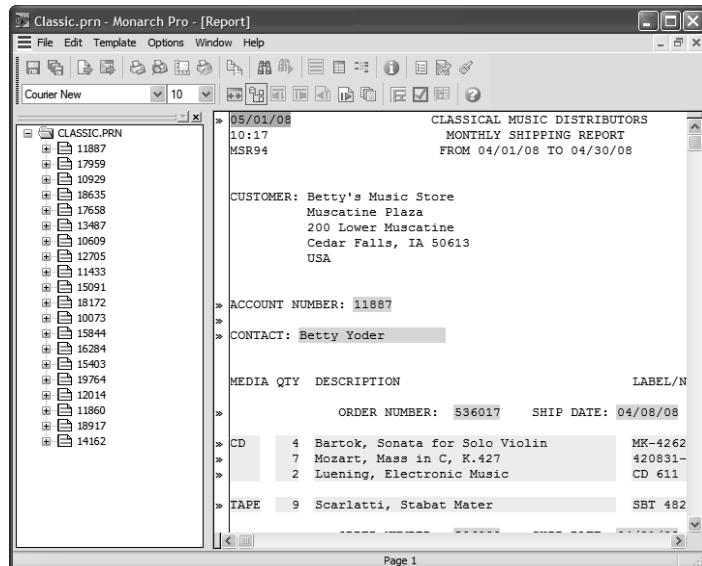


Figure 3-21. Displaying the Tree View.

## Navigating within Tree View

Monarch provides two modes of navigation within the Tree view, *passive* navigation and *active* navigation. Passive navigation involves expanding or collapsing branches to view underlying items without updating the Report view display. Active navigation involves highlighting a branch in the tree. Whenever a branch is highlighted, the Report view is automatically updated to display the corresponding page in the report.

Typically, you will use a combination of passive and active navigation in Tree view, e.g., you would click on the plus sign to the left of a branch to expand it (passive navigation), then, when you have found an item of interest to you, you would click the item to display the corresponding page of the report (active navigation).

Let's perform both modes of navigation within Tree view.

## Passive Navigation

First, let's try passive navigation within Tree view.

1. Click the plus sign next to the first account number (i.e., 11887) displayed in the tree, then expand all the underlying branches by clicking their plus signs. Note that the two order numbers for the account are nested beneath it.

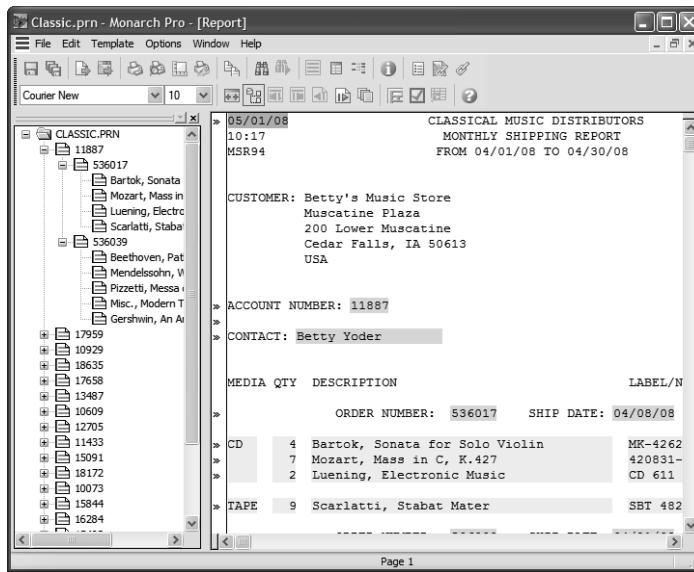


Figure 3-22. Using passive navigation in Tree view.

Note that nothing in the Report view has been highlighted.

## Active Navigation

Now let's give active navigation a try so that we can see how it differs from passive navigation.

2. Scroll down to the bottom of the Tree view pane and click the plus sign next to the last account number (i.e., 14162), then click on order number 536015 (click on the number itself, not the adjacent plus sign).

Note that the report page (page 19) containing the corresponding data displays in Report view, and the data itself is highlighted.

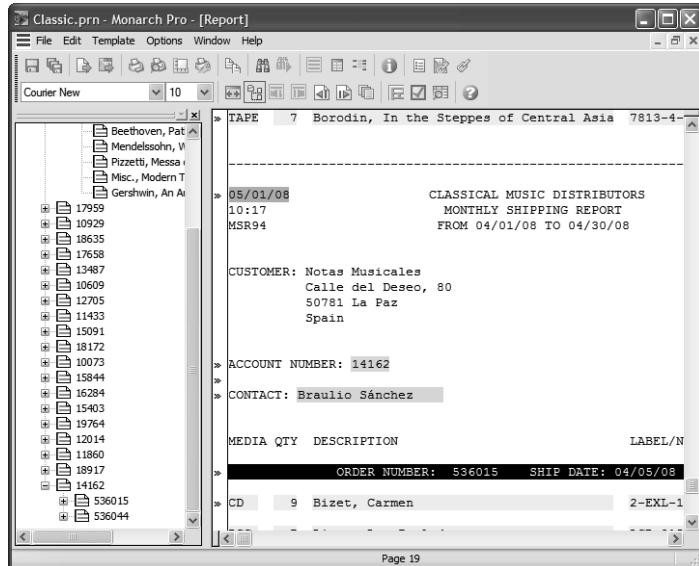


Figure 3-23. Using active navigation in Tree view.

3. Expand the 536015 order number branch (either double-click it or click the plus sign) of the tree to reveal the individual line items, then select the second one (i.e., Liszt, Les Preludes). Note that the corresponding line in the Report view is highlighted.

Now that we've been introduced to the Tree view, and examined the differences between active and passive navigation within it, let's turn to exporting data from the Report window. **Note:** The Monarch help file contains additional information on the Tree View. Refer to *Using Tree View* in the *Chapter 1 – Report Window* portion of the help file for more information.

## Exporting from the Report Window

Monarch Version 10 also allows you to export data from the Report window. Unlike the Table and Summary windows, which allow exports to numerous file formats, the Report window only allows exports to a .txt, PDF or PRF file. When exporting to a PDF or PRF file, if you have configured the Tree view, the tree definition will provide the bookmarks in the PDF or PRF file.

Let's try exporting the data we've extracted from the Classic.prn file to a PDF file. Since we have configured the Tree view, we'll get to see how the tree definition provides the bookmarks in the PDF file.

1. Select File, Export to display the General screen of the Export wizard. The Export wizard will step us through the process of exporting data from Monarch.



Figure 3-24. The General screen of the Export wizard.

2. Click the Next button to display the Export wizard's File Info screen.

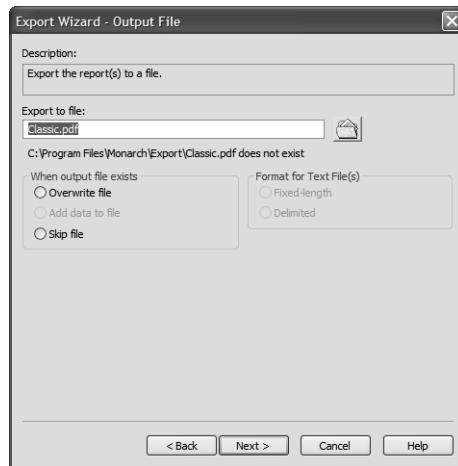


Figure 3-25. The File Info screen.

Note that Classic.pdf displays in the Save As field. We'll use this default name for the PDF file.

3. Under "When output file exists" select the Overwrite file option, then click the Next button to display the PDF Security dialog.



Figure 3-26. The PDF Security dialog.

Let's choose to password protect the PDF file.

- Under Open Password select the Apply check box, then click the Change Open Password button. The Change PDF Export Open Password dialog displays.



Figure 3-27. The Change PDF Export Open Password dialog.

- Enter the password of your choice in the Enter Password and Confirm fields, then click OK. **Note:** If we wanted to, we could specify that the password we provided will be applied to all PDF file exports by clicking the adjacent check box.
- Click the Run button. Monarch displays a progress dialog. When the export is done, Export(s) Completed displays at the top of the progress dialog.
- Click the OK button, then navigate to the default export location (typically, C:\Documents and Settings\All Users\Documents\Monarch\Exports), then double-click on the Classic.pdf file. A Password dialog displays.
- Enter the password you specified in step 5, then click OK.

Your PDF file viewer launches and displays the Classic.pdf file.

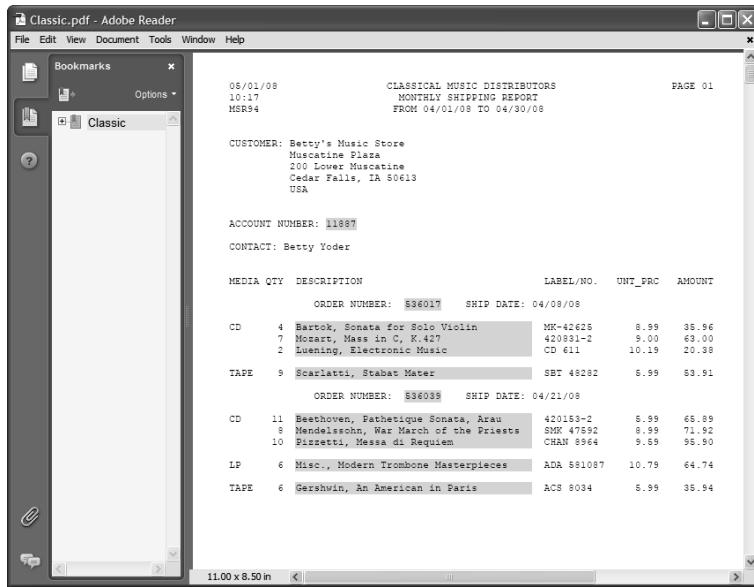


Figure 3-28. Viewing the Classic.pdf file.

9. Expand the Classic branch of the tree. Note that the tree definition we created earlier has been used to create the bookmarks for the PDF file.

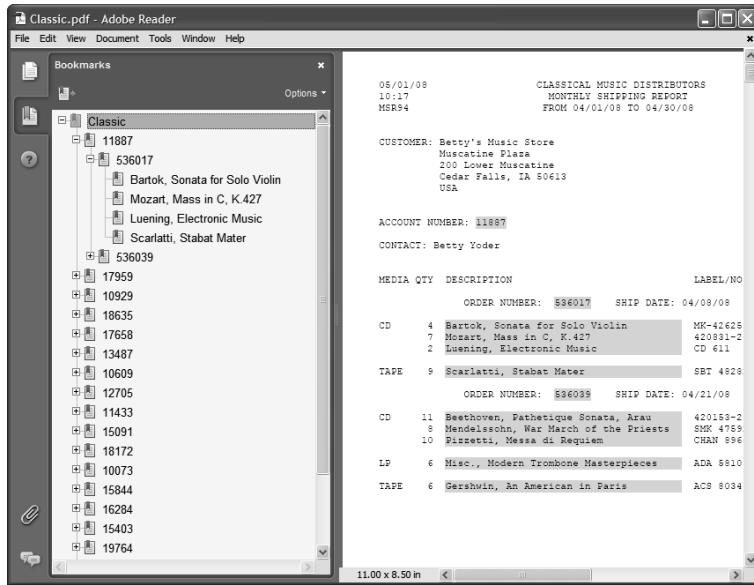


Figure 3-29. Viewing the bookmarks.

10. Select File, Exit to close your PDF file viewer.

## Saving Your Work

You have completed Lesson 3. We recommend that you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Classic** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X).

## Summary

In this lesson you learned how to extract data from each level in a multi-level report. You created a detail template, two append templates and a page header template. You also learned how to configure the Tree view and to export from the Report window. For further reading, see the following sections of the Monarch help file.

[Chapter 1 - Report Window](#)

[Creating Data Extraction Templates](#)

[Creating a Template](#)

[Creating a Page Header Template](#)

[Verifying Field Boundaries](#)

In the next lesson you'll learn about a special technique to extract address blocks from a report.

## LESSON 4

# Special Data Extraction Techniques

In Lesson 3 we created a database table using a report with multiple sort levels, but we didn't extract the customer information from the highest sort level. In this lesson, we'll use Monarch's address block feature to extract the customer names and addresses. We'll also familiarize ourselves with Monarch's floating trap and multi-column region trapping features. The lesson topics include:

- Special problems with addresses.
- Extracting an address block.
- Using the address block feature.
- Saving your work.
- Using the floating trap.
- Using the multi-column region trapping feature.

## Starting the Lesson

To get started, we'll load the Classic report and Lesson4 model file.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.

The Classic.prn report displays in the Report window.

3. Select File, Open Model (ALT, F, M), select Lesson4.xmod, then choose Open.

The Lesson 4 model file contains the same data extraction templates that you created during Lesson 3.

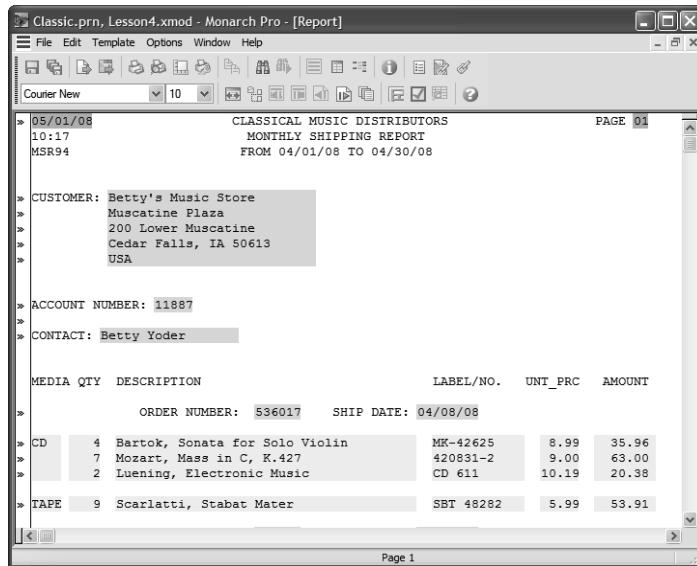


Figure 4-1. The Classic report with the Lesson 4 model.

The customer name and address, account number and contact name are all at the same sort level in the report. Generally, we define one append template for each sort level. But we need to use a special technique to extract the address fields, and that technique requires a separate template.

## Special Problems with Addresses

Most of the information in reports is contained in fields that are easily located for extraction. But addresses present special problems. Some may contain three lines, while others have as many as six or seven. And fields containing state, province and postal code information are not found at a fixed position on the lines they occupy. Monarch provides a specialized feature in the Table window to solve these data extraction problems easily.

To extract the address fields, Monarch provides the Address Block feature in the Table window. The Address Block is capable of taking a block of text and extracting and categorizing the address information contained within it.

## Extracting an Address Block

The procedure for extracting the address fields is similar to extracting other fields. First, we'll select a sample address block, then we'll set a trap to capture all other address blocks throughout the report, and finally, we'll highlight the address fields to extract.

Let's start by selecting a sample address block from the report.

1. Click in the line selection area to the left of the line containing "CUSTOMER" and the first line of the address (i.e., Betty's Music Store).
2. Select Template, New Template (ALT, T, N).

The first line of the address block is copied into the Template Definition dialog.

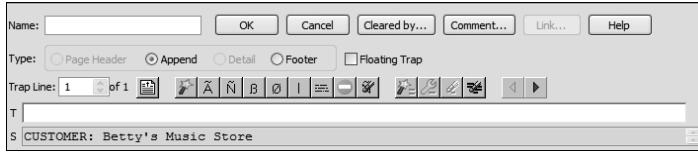


Figure 4-2. First line of the address block in the Template Definition dialog.

3. Type **customer** in the trap line above CUSTOMER in the sample line.
4. Highlight the field in the sample line, making sure you allow plenty of space for long address lines throughout the report.

**Using the mouse:** Click in the Sample box at the first character of the first address field, then drag right to highlight the field as shown below.

**Using the keyboard:** Press TAB until the focus is on the Sample box. Use the arrow keys to move the cursor to the first character of the line, and then press INSERT and use the right arrow to highlight the address block. Press ENTER to complete the address block definition.

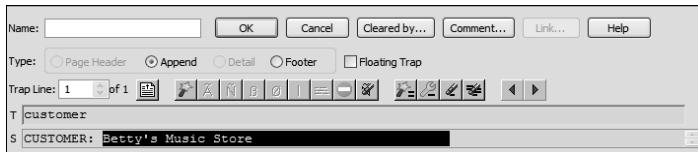


Figure 4-3. Trapping first line for address block.

5. In order to capture the whole address block, regardless of the number of lines, we need to use the advanced field options available in Monarch. To do this, double-click on the highlighted field to display the Field Properties dialog.

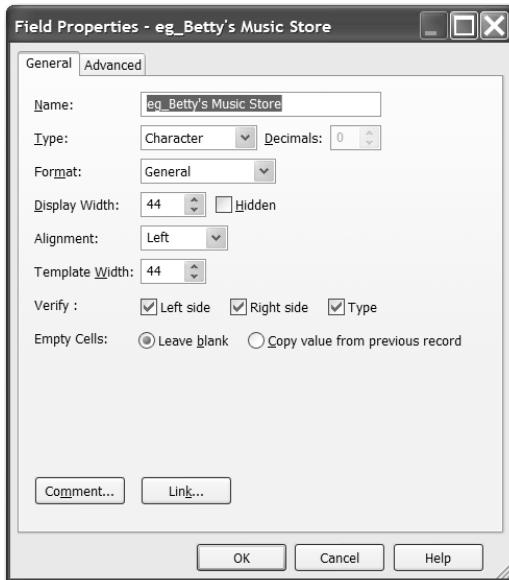


Figure 4-4. Field Properties dialog.

6. Choose the Advanced tab, then under the End Field On heading select the Blank Field Values radio button to terminate the field when a blank line or a series of blank lines is encountered. It is important to note that Monarch does not require the entire line to be blank, only the column positions occupied by the field.
7. Enter the number of blank field values required to terminate the field, which in this case is 1.
8. Return to the General tab, change the Name to **Customer Full**, and change the field's Type setting to Memo.
9. Click OK.

The address fields in the report are highlighted. Scroll through enough of the report to satisfy yourself that all instances of the address have been captured.

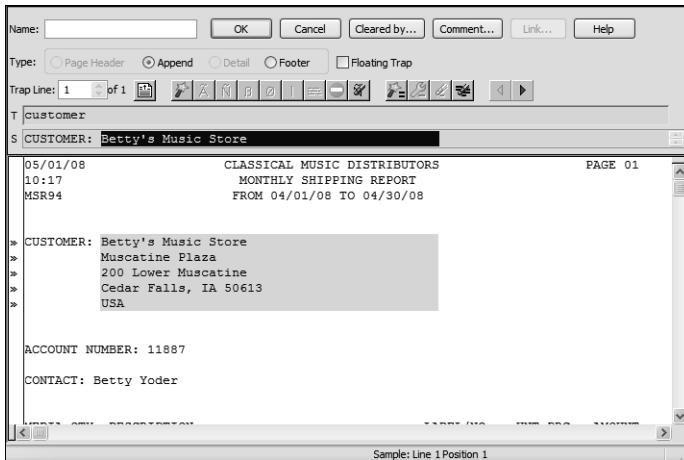


Figure 4-5. Viewing the trapped address block.

Note that this has correctly captured all of the addresses, even though some have four lines and some have five. This is the advantage of using the Advanced Field properties.

10. Type **Customer Level** in the Name box, then click the OK button to accept the template.

## Using the Address Block Feature

When you open the Table window, you will see that the field has been extracted and is displayed using standard memo field behavior.

Now we can use the address block feature to extract the data from the block of text we have extracted.

1. Select Window, Table (ALT, W, T) from the menu or click the Table window button on the toolbar.
2. Select Data, Address Blocks (ALT, D, A) from the menu to display the Address Blocks dialog, then click the New button.

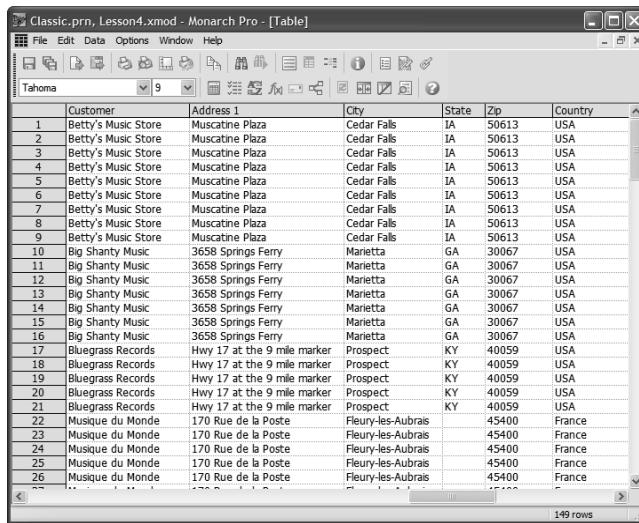
The Address Block wizard opens and displays the Name and Postal Code Formats screen.

3. Enter **Address** in the Name field, then click the Next button to view the Input Fields screen.
4. In the Available Fields list select Customer Full, click the Add button (ALT, A) to add the field to the Selected Fields list, then click the Next button to view the Output Fields screen.

5. Select the Address Line 1 check box and enter **Customer** in the Output Field Name box.
6. Select Address Lines 2 and 3, City, Region, Postal Code, and Country, and name the fields as follows:

Address 1  
 Address 2  
 City  
 State  
 Zip  
 Country

7. Click the Finish button after all the fields have been named, then press OK in the Address Blocks dialog.
8. When the Table window reappears, scroll right to display the address fields.



The screenshot shows the Monarch Pro Table window titled "Classic.prn, Lesson4.xmod - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, and Help. Below the menu is a toolbar with various icons. The main area is a grid table with the following columns: Customer, Address 1, City, State, Zip, and Country. The table contains 149 rows of data. The first few rows are as follows:

	Customer	Address 1	City	State	Zip	Country
1	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
2	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
3	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
4	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
5	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
6	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
7	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
8	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
9	Betty's Music Store	Muscatine Plaza	Cedar Falls	IA	50613	USA
10	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
11	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
12	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
13	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
14	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
15	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
16	Big Shanty Music	3658 Springs Ferry	Marietta	GA	30067	USA
17	Bluegrass Records	Hwy 17 at the 9 mile marker	Prospect	KY	40059	USA
18	Bluegrass Records	Hwy 17 at the 9 mile marker	Prospect	KY	40059	USA
19	Bluegrass Records	Hwy 17 at the 9 mile marker	Prospect	KY	40059	USA
20	Bluegrass Records	Hwy 17 at the 9 mile marker	Prospect	KY	40059	USA
21	Bluegrass Records	Hwy 17 at the 9 mile marker	Prospect	KY	40059	USA
22	Musique du Monde	170 Rue de la Poste	Fleur-les-Aubrais		45400	France
23	Musique du Monde	170 Rue de la Poste	Fleur-les-Aubrais		45400	France
24	Musique du Monde	170 Rue de la Poste	Fleur-les-Aubrais		45400	France
25	Musique du Monde	170 Rue de la Poste	Fleur-les-Aubrais		45400	France
26	Musique du Monde	170 Rue de la Poste	Fleur-les-Aubrais		45400	France

Figure 4-6. Extracted addresses in the Table window (column widths adjusted to show all seven address fields).

Note that Monarch has extracted all the information contained in the original address block and categorized it correctly into the defined fields.

The final step is to hide the original field we used to extract the address block information, Customer Full.

9. Select Edit, Hide/Display Fields (ALT, E, H) from the menu or click the Hide/Display Fields icon  to view the Hide/Display Fields dialog.
10. Select the Customer Full field in the Displayed Fields list, then click the Hide button. Note that it now appears in the Hidden Fields list.
11. Click OK to close the Hide/Display Fields dialog, and examine the table. As you can see, the Customer Full field is no longer visible.

We will cover hiding fields more thoroughly in the next lesson. As you can see from the table, the Address block is a simple to use but powerful feature, capable of extracting information from addresses around the world.

## Saving Your Work

You have completed the section on extracting data from addresses. We recommend that you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Classic** in the File Name box, then choose Save.
3. Choose Yes to overwrite the existing model.
4. Select File, Close All (ALT, F, C) to close the report and model files.

## Using the Floating Trap

In addition to the address block feature, Monarch has another special data extraction feature called the floating trap. Let's take a few moments to learn about this powerful feature.

In many reports particular fields of data, such as names and addresses, occur in consistent locations (i.e., they begin at the same horizontal position throughout the report). For example, in the following report, note how all of the first names begin at the same horizontal position, as do all of the last names, streets, cities, etc.

FIRSTNAME		LASTNAME	STREET	CITY	STATE	ZIP	HIREDATE
Stephen		McPherson	410 Market St	Boston	MA	02115	06/14/92
Dennis		Bender	624 Holiday Hill	Burlington	MA	01803	11/20/94
Norman		Ungermann	1615 Del Terrace	Concord	MA	01742	05/17/85
Arnold		Finley	207 Anglewood Rd	Littleton	MA	01460	05/25/81
William		Daley	5 Dixwell Blvd	Lexington	MA	02173	01/30/83
Mary Beth		Stancowicz	91 Belmont Dr	Maynard	MA	01754	10/11/87
Robert		Tracy	23 Mountain View	Maynard	MA	01754	12/12/87
Eugene		Bradford	888 Centre Park Rd	Brookline	MA	02146	07/24/95
Doug		Williams	9 Lawrence St	Burlington	MA	01803	02/26/90
Francis		Lavois	PO Box 1752	Burlington	MA	01803	10/26/93
William		Connely	248 Washington St	Jamaica Plain	MA	02130	03/12/90
Andrew		Bass	44 South Park St	Fitchburg	MA	01420	03/18/89
Howard		Loniere	472 North Vincent	Revere	MA	02151	04/30/89
Abe		Carver	101 Mayflower St	Sudbury	MA	01776	04/04/91
Don		Craig	1899 Abilene St	Burlington	MA	01803	08/14/94
David		Banning	100 Catherine Ave	Burlington	MA	01803	12/18/93
Kelly		Rosenberg	31 Belvedere Dr	Fitchburg	MA	01420	09/02/87
Joshua		Fallon	160th Ct W	Sudbury	MA	01776	01/05/95
Gwen		Davies	22 Punta Del Este	Sudbury	MA	01776	10/23/83
Oliver		Davies	8 George Dr	Westboro	MA	01581	02/28/85
Paula		Mendleson	89 Lincoln St	Boston	MA	02135	07/18/85

Figure 4-7. A report showing consistent data placement, as is typical of many reports.

Because of the consistent placement of data within the report, defining a trap to capture each occurrence of any one of these fields would be quite easy. With some reports, however, a standard trap won't work because data placement within them is irregular rather than consistent. In the following report, for example, note how the occurrences of the date/time field ("[23/Aug/2008...") begin at different horizontal positions.

[23/Aug/2008:01:13:40 -0400]	"GET / HTTP/1.0"	200	5810	"wys...
[23/Aug/2008:01:13:43 -0400]	"GET /images/pin.gif HTTP/1.0"			
[23/Aug/2008:01:13:43 -0400]	"GET /images/BannerLogo.gif HT...			
[23/Aug/2008:01:13:43 -0400]	"GET /images/current.gif HTTP/...			
[23/Aug/2008:01:13:43 -0400]	"GET /img/xdot.gif HTTP/1.0"	2		
[23/Aug/2008:01:13:43 -0400]	"GET /images/find.gif HTTP/1.0			
[23/Aug/2008:01:13:44 -0400]	"GET /images/newdiscuss.gif HT...			
[23/Aug/2008:01:13:45 -0400]	"GET /images/spot.gif HTTP/1.0			
[23/Aug/2008:01:14:14 -0400]	"GET /search/index.html HTTP/1...			
[23/Aug/2008:01:14:45 -0400]	"GET /express/search_1.htm HTTP/...			
[23/Aug/2008:01:14:51 -0400]	"GET /express/125x30_snpcom.gif			
[23/Aug/2008:01:14:49 -0400]	"GET /img/anim_thumbtrack.gif HT...			
[23/Aug/2008:01:18:16 -0400]	"GET /express/search_1.htm HTTP/1.0"	2		
[23/Aug/2008:01:18:22 -0400]	"GET /img/anim_thumbtrack.gif HT...			
[23/Aug/2008:01:19:41 -0400]	"GET /robots.txt HTTP/1.0"	404	204	"y400.inktomi.com - [23/Aug/2008:01:19:42 -0400]" GET / HTTP/1.0 200 5810 "-" "Slurp
[23/Aug/2008:01:19:42 -0400]	"GET / HTTP/1.0"	200	5810	"- " "Slurp
[23/Aug/2008:01:25:29 -0400]	"GET /PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - [23/Aug/2008:01:25:29 -0400]" GE...			
[23/Aug/2008:01:25:35 -0400]	"GET /PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - [23/Aug/2008:01:25:35 -0400]" GE...			
[23/Aug/2008:01:25:38 -0400]	"GET /PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - [23/Aug/2008:01:25:38 -0400]" GE...			
[23/Aug/2008:01:25:38 -0400]	"GET /PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - [23/Aug/2008:01:25:38 -0400]" GE...			
[23/Aug/2008:01:25:38 -0400]	"GET /PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - [23/Aug/2008:01:25:38 -0400]" GE...			
[23/Aug/2008:01:25:39 -0400]	"GET /PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - [23/Aug/2008:01:25:39 -0400]" GE...			
[23/Aug/2008:01:26:01 -0400]	"GET /partner/ctw00014.gif HT...			
[23/Aug/2008:01:28:43 -0400]	"GET /img/anim_thumbtrack.gif HTTP/1.1"	2		

Figure 4-8. A report showing inconsistent placement of the date/time data.

In reports such as this, a standard trap will not work. Fortunately, Monarch includes a special trap called the floating trap, which can successfully extract data from many log files, reports and HTML files (HTML available in Monarch Pro only) in which the data placement is not rigidly fixed.

## Using the Floating Trap to Capture Lines

To familiarize ourselves with the floating trap, let's open the above report and create a floating trap to capture the date/time fields it contains.

1. Select File, Open Report (ALT, F, R) from the main menu to display the Open Report dialog.
2. Double-click on the Weblog.prn report (or select the Weblog.prn, then click the Open button). Monarch displays the Weblog.prn report in the Report window.

```

ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:40 -0400] "GET / HTTP/1.0" 200 5810 "wys"
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/pin.gif HTTP/1.0"
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/BannerLogo.gif HT
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/current.gif HTTP/
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /img/xdot.gif HTTP/1.0" 2
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/find.gif HTTP/1.0
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:44 -0400] "GET /images/newdiscuss.gif HT
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:45 -0400] "GET /images/spot.gif HTTP/1.0
ezvl-30ppp187.epix.net - - [23/Aug/2008:01:14:14 -0400] "GET /search/index.html HTTP/1
AC855931.upt.acl.com - - [23/Aug/2008:01:14:45 -0400] "GET /express/search_1.htm HTTP/
AC855931.upt.acl.com - - [23/Aug/2008:01:14:51 -0400] "GET /express/125x30_smpon.gif
AC855931.upt.acl.com - - [23/Aug/2008:01:14:49 -0400] "GET /img/anim_thumbback.gif HT
202.112.36.196 - - [23/Aug/2008:01:18:16 -0400] "GET /express/search_1.htm HTTP/1.0" 2
202.112.36.196 - - [23/Aug/2008:01:18:23 -0400] "GET /img/anim_thumbback.gif HTTP/1.0"
y400.inktomi.com - - [23/Aug/2008:01:19:41 -0400] "GET /robots.txt HTTP/1.0" 404 204 "
y400.inktomi.com - - [23/Aug/2008:01:19:41 -0400] "GET / HTTP/1.0" 200 5810 "" "Slurp
PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:26 -0400] "GE
PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:29 -0400] "GE
PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:35 -0400] "GE
PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:36 -0400] "GE
PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:37 -0400] "GE
PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:39 -0400] "GE
cf2-adapter3.isu.net.sa - - [23/Aug/2008:01:26:01 -0400] "GET /partner/ctw00014.gif HT
61.129.49.88 - - [23/Aug/2008:01:28:43 -0400] "GET /img/anim_thumbback.gif HTTP/1.1" 2

```

Figure 4-9. The Weblog.prn report.

3. Click in the line selection area to highlight the first detail line in the report, as in Figure 4-10.

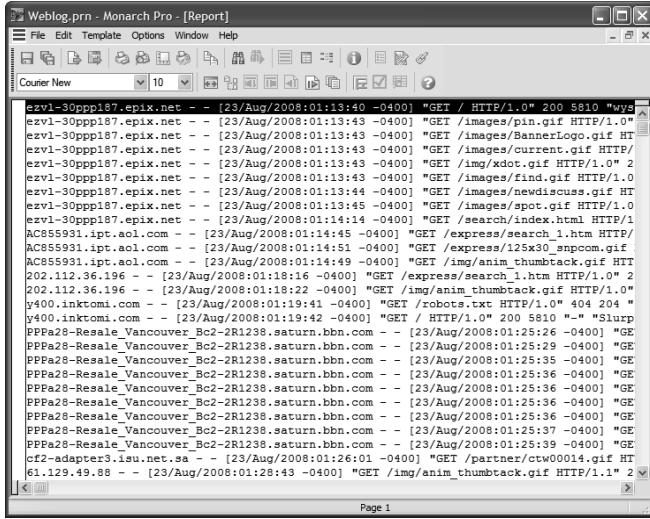


Figure 4-10. Highlighting the first detail line in the report.

4. Select Template, New Template from the menu to display the Template Definition dialog.

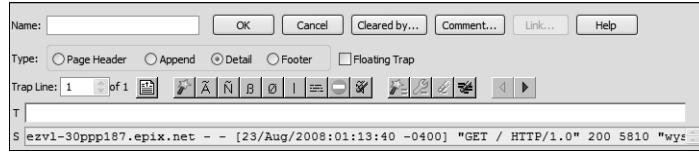


Figure 4-11. The Template Definition dialog.

5. In the Trap box enter a left bracket directly above the left bracket in the Sample Edit box (i.e., at horizontal position 28), as in the following illustration.

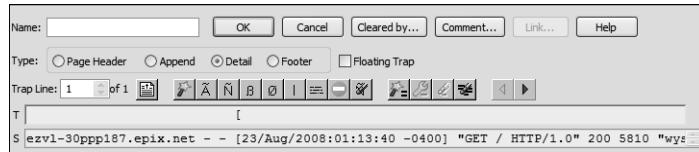


Figure 4-12. Entering a left bracket in the Trap box.

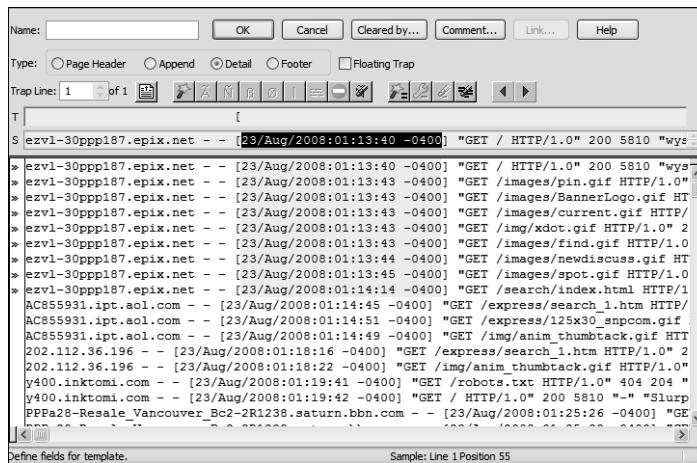
Note how the background color of the Trap box changes from white to yellow. This indicates that the trap correctly matches a portion of the sample in the Sample Edit box. (This feature provides a convenient visual clue that a trap "works".)

6. In the Sample Edit box, highlight the date/time field.



*Figure 4-13. Highlighting the date/time field.*

7. Scroll down through the report and preview the template to see if the date/time fields will be captured properly. Notice that only *some* of the date/time fields (12 of 916, to be exact) will be successfully captured. This is because with a standard trap, for fields in a report to be captured properly, they must begin at the same horizontal position that the character in the Trap box does. In this report, only 12 of the 916 fields begin at the correct horizontal position, so only those 12 will be captured.



*Figure 4-14. Previewing the template*

Now that we see why a standard trap won't work with a report that contains data in random locations, let's see how the floating trap would handle this situation.

8. Select the Floating Trap check box on the Template Definition dialog toolbar.
  9. Scroll down through the report once again. Notice that all of the date/time fields are now highlighted, indicating that they will be successfully captured.

The floating trap works by looking across the lines to find the trap characters horizontally, rather than vertically, as in a standard trap. The trap then uses the characters to decide when fields can possibly start and finish. The field we have chosen to trap has a fixed width, but we will explore fields that

have variable widths later on in the lesson. In this example, we have only defined that the field should begin after the bracket character, but we could define a close bracket to dictate where the field ends.

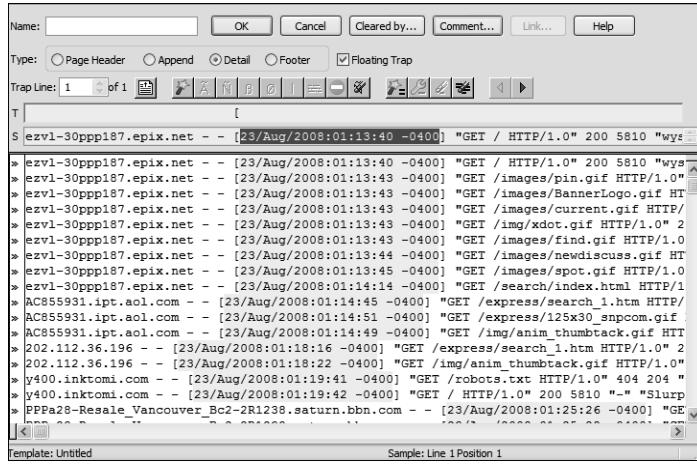


Figure 4-15. Previewing the template again. Note that all of the date/time fields are now highlighted.

- Double-click on the highlighted date/time field in the Sample Edit box to display the Field Properties dialog.

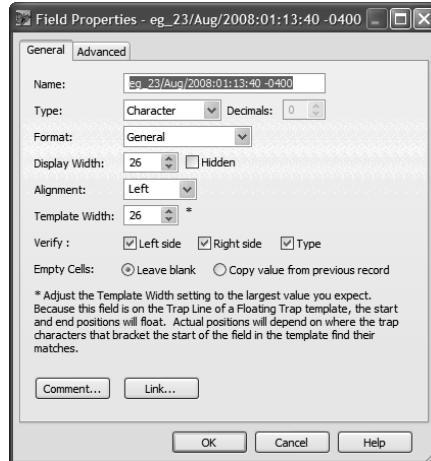


Figure 4-16. The Field Properties dialog.

- In the Name field, enter **Date/Time** to name the field, then click the OK button to close the Field Properties dialog.
- On the Template Definition dialog, type **Date/Time** in the Name field to name the template, then click the OK button. Monarch closes the Template Definition dialog and returns to the Report window.

13. Click on the Table window button  to view the Date/Time information in the Table window. Note that all 916 date/time fields within the report have been successfully extracted.

	Date/Time
890	23/Aug/2008:12:42:28 -0400
891	23/Aug/2008:12:44:41 -0400
892	23/Aug/2008:12:45:53 -0400
893	23/Aug/2008:12:48:58 -0400
894	23/Aug/2008:12:49:36 -0400
895	23/Aug/2008:12:49:37 -0400
896	23/Aug/2008:12:49:37 -0400
897	23/Aug/2008:12:49:51 -0400
898	23/Aug/2008:12:54:16 -0400
899	23/Aug/2008:12:54:17 -0400
900	23/Aug/2008:12:54:18 -0400
901	23/Aug/2008:13:03:38 -0400
902	23/Aug/2008:13:03:38 -0400
903	23/Aug/2008:13:03:38 -0400
904	23/Aug/2008:13:03:38 -0400
905	23/Aug/2008:13:03:39 -0400
906	23/Aug/2008:13:03:37 -0400
907	23/Aug/2008:13:03:41 -0400
908	23/Aug/2008:13:03:41 -0400
909	23/Aug/2008:13:04:11 -0400
910	23/Aug/2008:13:04:12 -0400
911	23/Aug/2008:13:03:36 -0400
912	23/Aug/2008:13:04:50 -0400
913	23/Aug/2008:13:05:07 -0400
914	23/Aug/2008:13:10:41 -0400
915	23/Aug/2008:13:10:44 -0400
916	23/Aug/2008:13:10:47 -0400

Figure 4-17. Viewing the Date/Time table (scrolled to the bottom).

Now that we've seen how the floating trap can define lines where the trap character appears, let's explore another one of its capabilities.

## Using the Floating Trap to Define Fields

In addition to defining lines that contain the trap character, the floating trap can be used to define the width of variable length fields. If we return to our Weblog.prn report, we can see how this works.

1. Select Window, Report from the menu (or click the Report window button  on the toolbar) to view Weblog.prn in the Report window.
2. Select Template, Templates (ALT, T, T) from the menu bar (or click the Templates icon  on the toolbar), then click the Edit button in the Templates dialog.

We now want to extract the data from the first field, which has a variable width. In order to do this, we can use a trap character to tell Monarch where the field begins and ends. Since this field is left justified, we only need to be concerned with where the field ends.

3. Position the cursor in the trap line at position 23, click the Blank Trap button , then highlight the text in the Sample line from position 1 through position 22, as in Figure 4-18.

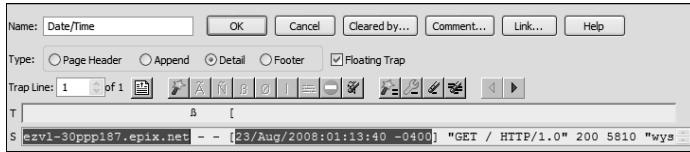


Figure 4-18. Floating Trap with the blank trap added.

Note the results in the Report window portion of the dialog.

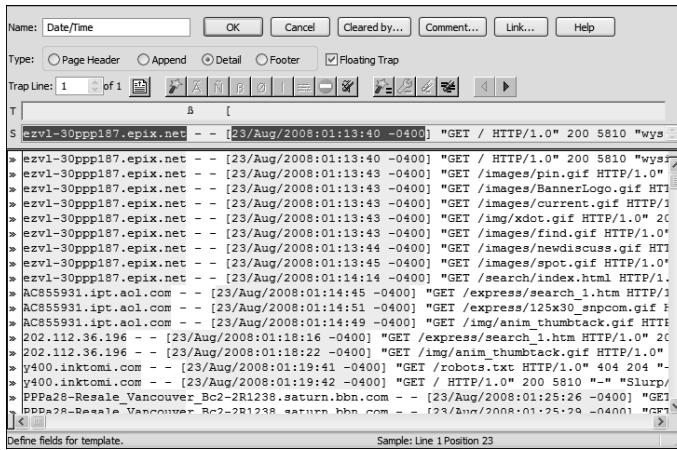


Figure 4-19. Floating trap with variable width fields.

As you can see, the fields have been highlighted and the highlighting has shrunk to accommodate any fields shorter than the fields we originally selected. There are some longer fields, however (e.g., "PPPa28-Resale\_Vancouver"), in which the field is wider than the highlighting. This would result in an incomplete extraction of data. In order to rectify this, we need to manually specify the length of this field.

4. To do so, double-click on the field you highlighted to bring up the Field properties dialog. Here we need to adjust the template and display widths to accommodate longer data than we can define visually.
5. Enter **60** for the Display and Template widths.

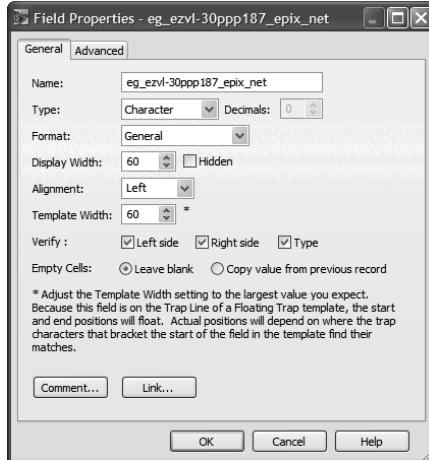


Figure 4-20. Specifying the Display and Template widths.

6. Press OK to accept the sizes, then view the result.

Note that all of the data is now trapped correctly.

```

Name: Date/Time          OK Cancel Cleared by... Comment... Link... Help
Type:  Page Header  Append  Detail  Footer  Floating Trap
Trap Line: 1 of 1
T [ ] S
S ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:40 -0400] "GET / HTTP/1.0" 200 5810 "wys
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:40 -0400] "GET /images/pin.gif HTTP/1.0"
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/BannerLogo.gif HTTP/1
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/current.gif HTTP/1
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /img/xdct.gif HTTP/1.0" 20
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/find.gif HTTP/1.0"
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:43 -0400] "GET /images/newdiscuss.gif HTT
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:13:45 -0400] "GET /images/spot.gif HTTP/1.0"
>ezvl-30ppp187.epix.net - - [23/Aug/2008:01:14:14 -0400] "GET /search/index.htm HTTP/1.
>AC855931.ipt.aol.com - - [23/Aug/2008:01:14:45 -0400] "GET /express/search_1.htm HTTP/1
>AC855931.ipt.aol.com - - [23/Aug/2008:01:14:51 -0400] "GET /express/125x30_snpcom.gif HT
>AC855931.ipt.aol.com - - [23/Aug/2008:01:14:49 -0400] "GET /img/anim_thumback.gif HTT
202.112.36.196 - - [23/Aug/2008:01:18:16 -0400] "GET /express/search_1.htm HTTP/1.0" 20
202.112.36.196 - - [23/Aug/2008:01:18:22 -0400] "GET /img/anim_thumback.gif HTTP/1.0"
y400.inktomi.com - - [23/Aug/2008:01:19:41 -0400] "GET /robots.txt HTTP/1.0" 404 204 -
y400.inktomi.com - - [23/Aug/2008:01:19:42 -0400] "GET / HTTP/1.0" 200 5810 "-" "Slurp/
>PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:26 -0400] "GET
>PPFa28-Resale_Vancouver_Bc2-2R1238.saturn.bbn.com - - [23/Aug/2008:01:25:29 -0400] "GET
]

```

Figure 4-21. Viewing the finished floating trap.

7. Click the Cancel button to return to the Report window, then select File, Close All to reset the Monarch session (select No when prompted to save changes to the model).

## Using the Multi-Column Region (MCR) Trapping Feature

When working with Monarch you may occasionally encounter a report that has a layout similar to that of a newspaper, i.e., one with multiple, adjacent columns of data on each page. For example, the following report contains a list of composers, numbered 1 through 90, and the list is broken into three columns, each containing thirty names.

Number	Name	Number	Name	Number	Name
1	PACHELBEL, J.	1	MOZART, W.A.	31	WEEELKES, T.
2	GRIEG, E.	2	GERSHWIN, G.	32	GINASTERA, A.
3	HOLST, G.	3	CHOPIN, F.	33	BRIDGE, F.
4	ORFF, C.	4	MUSORGSKY, M.	34	BYRD, W.
5	SCHUMANN, R.	5	RACHMANINOV, S.	35	SWEELINCK, J.P.
6	LISZT, F.	6	BRIAN, H.	36	MACHAUT, G.d
7	BACH, J.S.	7	SOR, F.	37	LUZZASCHI, L.
8	PAGANINI, N.	8	RHEINBERGER, J.G.	38	DES PREZ, J.
9	HANDEL, G.F.	9	ANGELO, G.	39	BIBER, H.I.
10	BERLIOZ, H.	10	ENESCO, G.	40	BRITTEN, B.
11	SAINTE-SAENS, C.	11	MOMPOU, F.	41	DAVIES, P.M.
12	SHOSTAKOVICH, D.	12	ISAAC, H.	42	RAVEL, M.
13	RIMSKY-KORSAKOV, N.	13	HINDEMITH, P.	43	ADAMS, J.
14	BEETHOVEN, L.v	14	SOLER, P.A.	44	JANEQUIN, C.
15	BERNSTEIN, L.	15	CARULLI, F.	45	RAMEAU, J.P.
16	TCHAIKOVSKY, P.I.	16	SCEVIOLY, G.	46	VERDI, G.
17	WAGNER, R.	17	SESSIONS, R.	47	BOCCHERINI, L.
18	BRASZ, J.	18	PRINSERICKA, K.	48	JOHNSON, S.
19	DURST, A.	19	NOWAK, L.	49	HARRISON, L.
20	SIBELIUS, J.	20	MUFFAT, G.	50	MARCELLO, A.
21	ALCAR, E.	21	LOTTI, A.	51	KINLOCH, W.
22	MAHLER, G.	22	PARTCH, H.	52	THOMSON, V.
23	STRAVINSKY, I.	23	FALLA, M.d	53	CILEA, F.
24	DEBUSSY, C.	24	PUCCINI, G.	54	KODALY, Z.
25	STRAINS, J.T.	25	WITMER, A.	55	RYGGR, M.

Figure 4-22. Viewing a report with multiple columns.

To handle such reports, Monarch includes a multi-column region (MCR) trapping feature which you can use to trap the data in multiple columns via only one template.

Extracting data via the MCR trapping feature consists of three simple steps: 1) first, you define the multi-column region via the Multi-Column Region Definition dialog; 2) second, you create a template to extract the desired data from the report; 3) third, you specify the vertical boundaries (i.e., beginning and ending points) for the columns.

Let's open a multi-column report and extract data from it via the MCR trapping feature.

### Defining the Multi-Column Region

1. Select File, Open Report (ALT, F, R), select Composers.prn, then choose Open.

The Composers.prn report displays in the Report window.

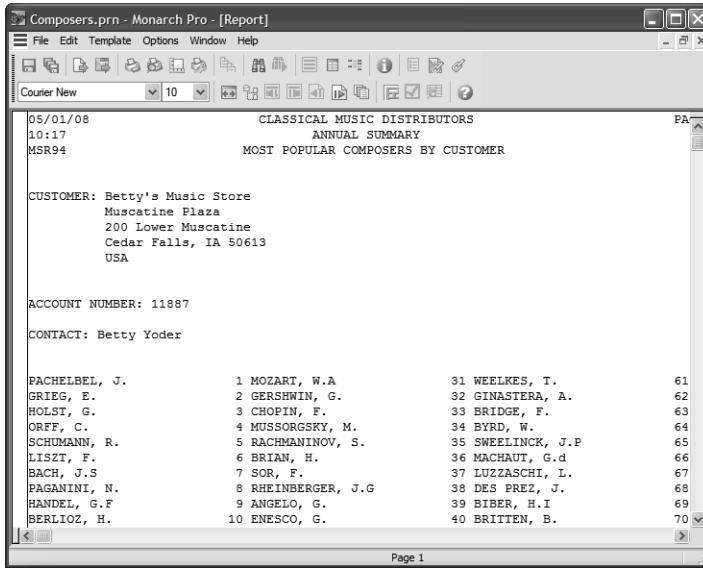


Figure 4-23. The Composers Multi Column report.

As you can see, this report contains the same list of composers we saw a moment ago. Composers.prn lists the names of ninety composers, arranged in three columns of thirty names, and ranked in order of popularity (1 being the most popular, 90 being the least popular) for each customer.

Now that our multi-column report is open, let's define the multi-column region.

2. Select Template, Multi-Column Region (ALT, T, M) from the menu bar.

The Multi-Column Region (MCR) Definition dialog appears between the Monarch toolbar and the top of the Report window.

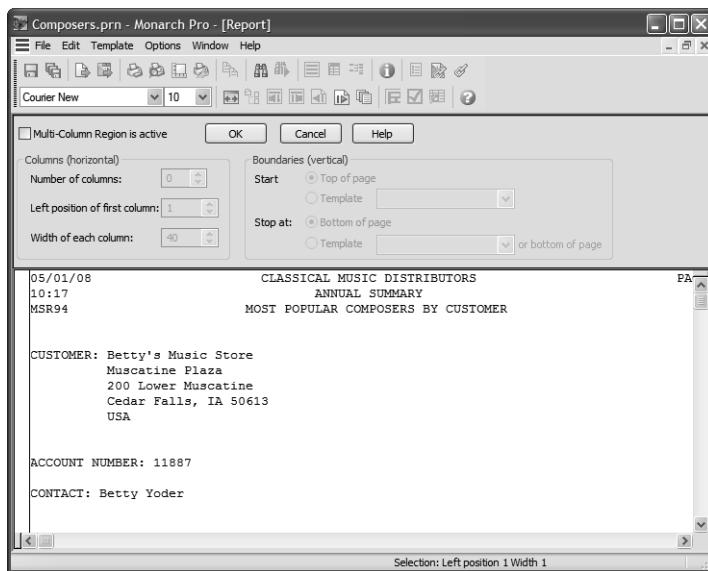


Figure 4-24. Viewing the Multi-Column Region Definition dialog.

3. Select the “Multi-Column Region is active” check box to activate the dialog.

Now we need to examine the report to determine the number of columns we want the multi-column region to contain. This number should obviously equal the number of columns in the report which, in this case, is three.

4. Enter **3** in the Number of Columns box.

A series of red, vertical broken lines – or column indicators – appears over the report to indicate where the columns currently are. The number of columns you specified determines the number of column indicators that appear. Since we entered **3** in the Number of Columns box, three column indicators have appeared, as displayed in Figure 4-25. **Note:** To view the rightmost column indicator, you may need to enlarge the Monarch window or select a smaller font size.

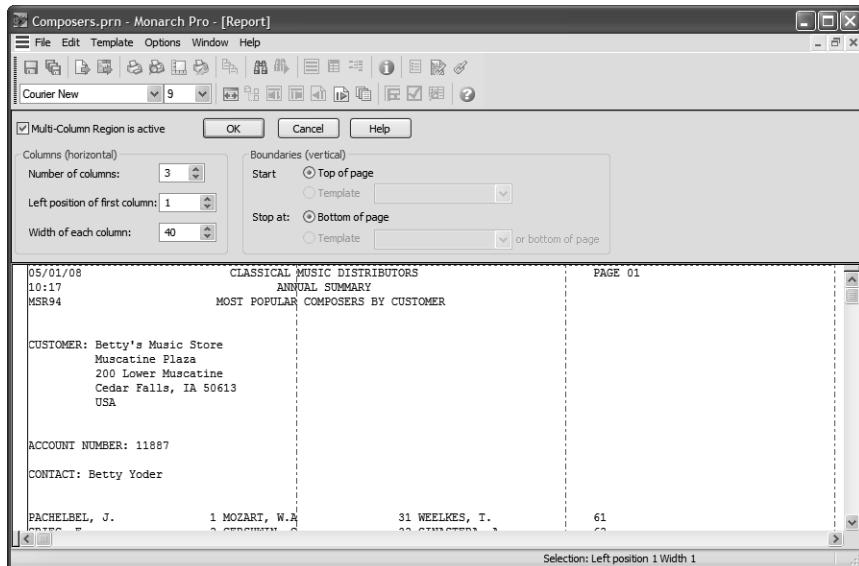


Figure 4-25. Viewing the column indicators.

Next, we need to specify a left margin for the leftmost column, i.e., to specify the position where we want the leftmost column to begin. Since the text in the leftmost column begins at the left edge of the report, the current setting of 1 is the one we want, so we can leave it as is. **Note:** If the text in the leftmost column began one space in from the left edge of the report, then we would enter 2 in the Left Position of First Column box. If the text began two spaces in from the edge of the report, we would enter 3 and so on.

Now we need to adjust the width of the column indicators to match the width of the data columns in the report.

5. In the Width of Each Column box enter **29**.

The column indicators move to the left to reflect the change to the column width. Note that all three columns of composer names and ranking numbers now fall within the column indicators (scroll down to see this, if necessary).

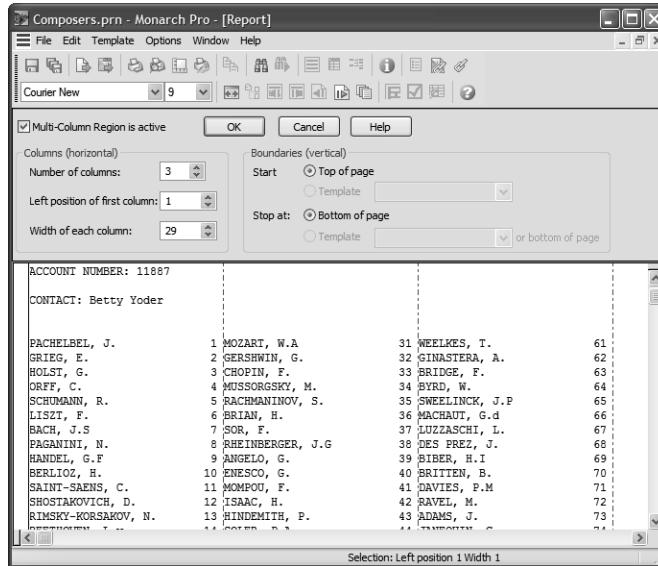


Figure 4-26. Viewing the adjusted column indicators.

- Click the OK button to accept the current MCR settings and close the dialog.

The Report window displays. Note that the column indicators are still displayed on the Report window.

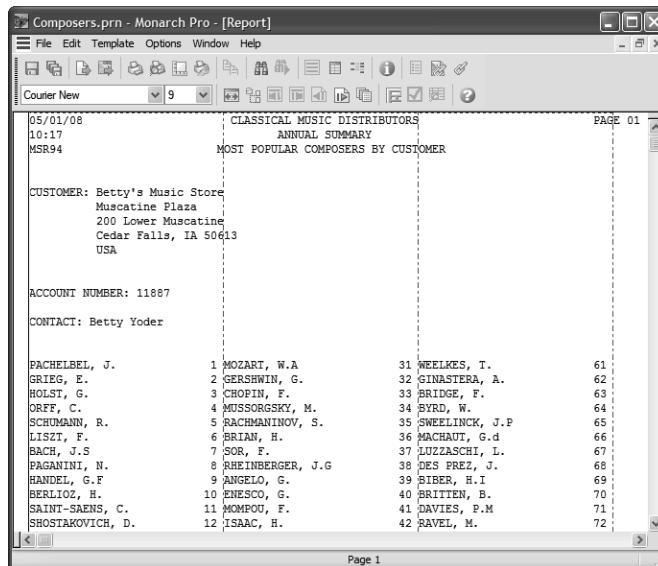


Figure 4-27. Viewing the column indicators in the Report window.

Now that we have determined the necessary number of columns, and have specified their width and the starting position of the leftmost column, we're ready to define a template to extract the data.

## Creating a Template to Trap the Data

The process of trapping data in a multi-column region report is the same as that for any other report. The first step is to select a template sample.

1. Click in the line selection area to select the top line of composers names (i.e., the one beginning with "PACHELBEL, J."), as in Figure 4-28.

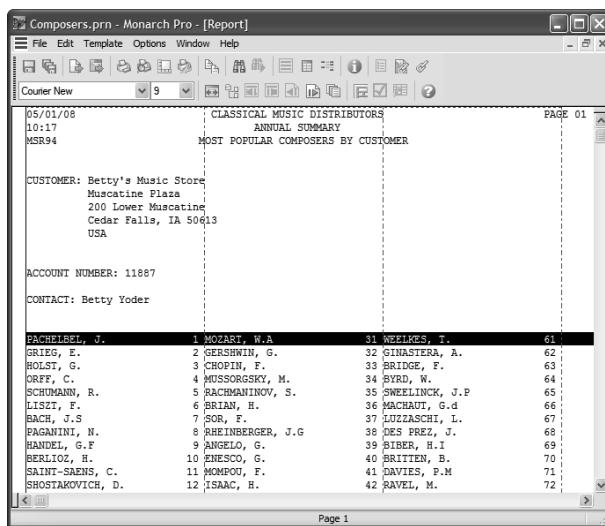


Figure 4-28. Selecting the top line of composers.

2. Select Template, New Template (ALT, T, N) to display the Template Definition dialog.

Monarch splits the Report window between the Template Definition dialog, at the top, and the report, at the bottom. The selected detail lines are displayed in the Sample Edit box at the bottom of the dialog.

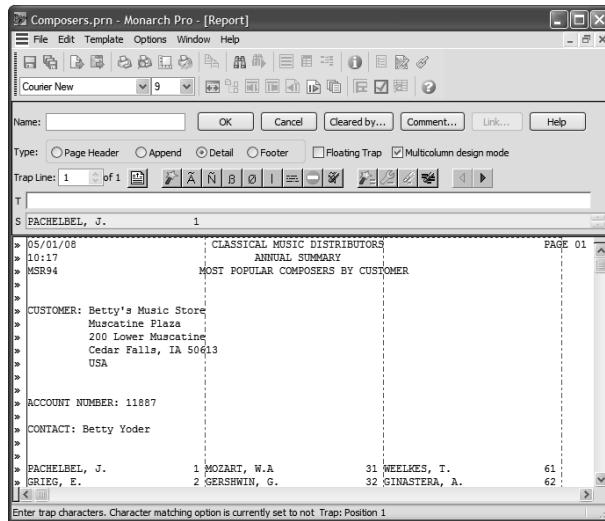


Figure 4-29. Viewing the template sample.

Note that the Multicolumn Design Mode check box is selected. In addition, note that of the three composers included in the first line of composer names (i.e., the line that we selected in step 1 as the template sample), only “PACHELBEL, J.” is displayed in the Sample line; “MOZART, W.A.” and “WHEELKES, T.” are not displayed. This is because, based upon the MCR settings we’ve specified, Monarch now considers the three columns as one. If you were to uncheck the Multicolumn Design Mode check box, all three names would appear in the Sample line.

3. In the Trap Line box, place the cursor above the “P” of Pachelbel in the Sample Edit box, then click the Non-Blank Trap button .
4. In the Trap Line box, place the cursor above the “1” in the Sample Edit box, then click the Numeric trap button .

Notice that the columns of composer names are now highlighted in the report window, and that nothing else is highlighted.

Name:		OK	Cancel	Cleared by...	Comment...	Link...	Help						
Type:	<input type="radio"/> Page Header <input type="radio"/> Append <input checked="" type="radio"/> Detail <input type="radio"/> Footer <input type="checkbox"/> Floating Trap <input checked="" type="checkbox"/> Multicolumn design mode												
Trap Line:	1 of 1												
T	Ø	N											
S	PACHELBEL, J.	1											
ACCOUNT NUMBER: 11887													
CONTACT: Betty Yoder													
► PACHELBEL, J. 1 MOZART, W.A. 31 WEELES, T. 61 ► GRIEG, E. 2 GERSHWIN, G. 32 GINASTERA, A. 62 ► HOLST, G. 3 CHOPIN, F. 33 BRIDGE, F. 63 ► ORFF, C. 4 MUSSORGSKY, M. 34 BYRD, W. 64 ► SCHUMANN, R. 5 RACHMANINOV, S. 35 SWELINCK, J.P. 65 ► LISZT, F. 6 BRIAN, H. 36 MACHAUT, G.d 66 ► BACH, J.S. 7 SOR, F. 37 LUZZASCHI, L. 67 ► PAGANINI, N. 8 RHEINBERGER, J.G. 38 DES FREZ, J. 68 ► HANDEL, G.F. 9 ANGELO, G. 39 BIBER, H.I. 69 ► BERLIOZ, H. 10 ENESCO, G. 40 BRITTEN, B. 70 ► SAINT-SAENS, C. 11 MOMPOU, F. 41 DAVIES, P.M. 71 ► SHOSTAKOVICH, D. 12 ISAAC, H. 42 RAVEL, M. 72 ► RIMSKY-KORSAKOV, N. 13 HINDEMITH, P. 43 ADAMS, J. 73 ► BEETHOVEN, L.v 14 SOLER, P.A. 44 JANEQUIN, C. 74													

Figure 4-30. Viewing the results of the non-blank and numeric traps.

5. In the Sample edit box, highlight the composer name and then highlight the number “1”.

**Note:** When highlighting the composer's name, extend the highlight well beyond the end of the name, as some of the composers names are longer than the one in the Sample Edit box. Likewise, when highlighting the number “1”, be sure to begin the highlight at least one space before the number, as the numbers extend into the double digits. See Figure 4-31 for an example of how you should highlight the fields.

Name:		OK	Cancel	Cleared by...	Comment...	Link...	Help						
Type:	<input type="radio"/> Page Header <input type="radio"/> Append <input checked="" type="radio"/> Detail <input type="radio"/> Footer <input type="checkbox"/> Floating Trap <input checked="" type="checkbox"/> Multicolumn design mode												
Trap Line:	1 of 1												
T	Ø	N											
S	PACHELBEL, J.	1											
ACCOUNT NUMBER: 11887													
CONTACT: Betty Yoder													
► PACHELBEL, J. 1 MOZART, W.A. 31 WEELES, T. 61 ► GRIEG, E. 2 GERSHWIN, G. 32 GINASTERA, A. 62 ► HOLST, G. 3 CHOPIN, F. 33 BRIDGE, F. 63 ► ORFF, C. 4 MUSSORGSKY, M. 34 BYRD, W. 64 ► SCHUMANN, R. 5 RACHMANINOV, S. 35 SWELINCK, J.P. 65 ► LISZT, F. 6 BRIAN, H. 36 MACHAUT, G.d 66 ► BACH, J.S. 7 SOR, F. 37 LUZZASCHI, L. 67 ► PAGANINI, N. 8 RHEINBERGER, J.G. 38 DES FREZ, J. 68 ► HANDEL, G.F. 9 ANGELO, G. 39 BIBER, H.I. 69 ► BERLIOZ, H. 10 ENESCO, G. 40 BRITTEN, B. 70 ► SAINT-SAENS, C. 11 MOMPOU, F. 41 DAVIES, P.M. 71 ► SHOSTAKOVICH, D. 12 ISAAC, H. 42 RAVEL, M. 72 ► RIMSKY-KORSAKOV, N. 13 HINDEMITH, P. 43 ADAMS, J. 73 ► BEETHOVEN, L.v 14 SOLER, P.A. 44 JANEQUIN, C. 74													

Figure 4-31. Highlighting the fields.

6. Double-click on the composer name in the Sample Edit box, type **Composer** in the Name field on the General tab, then choose OK.

7. Double-click on the number “1” in the Sample Edit box, type **Rank** in the Name field on the General tab, then choose OK.
8. In the Template Definition dialog’s Name field type **Composers**, then click the OK button.

Monarch redisplays the Report window. Note that the composer names and rank numbers are successfully highlighted.

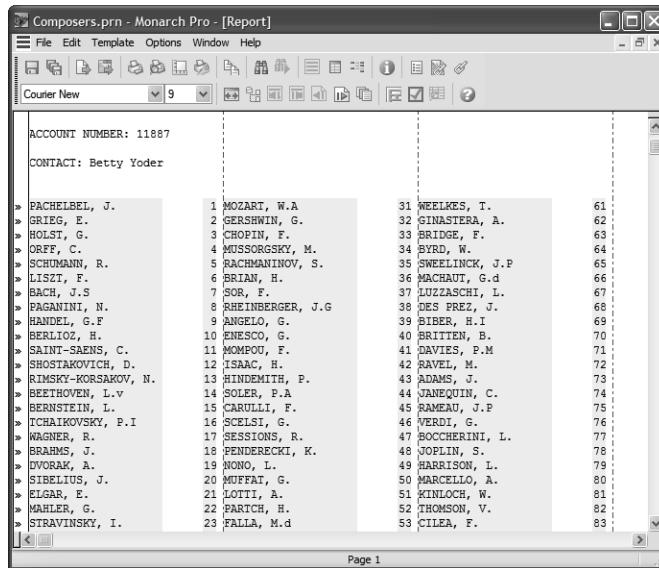


Figure 4-32. Viewing the results of the Composers template in the Report window.

Now let's create an append template to extract the CONTACT data from the report. This template will also help us with specifying our vertical boundaries for the MCR.

9. Click in the line selection area to highlight the first CONTACT line (i.e., the line containing “CONTACT: Betty Yoder”).

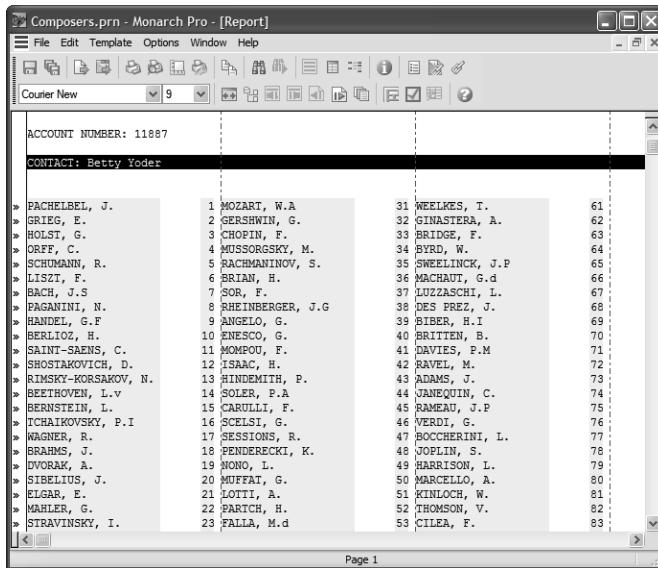


Figure 4-33. Selecting the template sample.

#### 10. Select Template, New Template (ALT, T, N) from the menu.

Monarch displays the Template Definition dialog. The selected template sample is displayed in the Sample edit box at the bottom of the dialog.

#### 11. Type **contact** in the Trap line above "CONTACT" in the Sample line, then highlight "Betty Yoder" in the Sample line. **Note:** Be sure to extend the highlight well beyond the end of the last name, as in Figure 4-34.

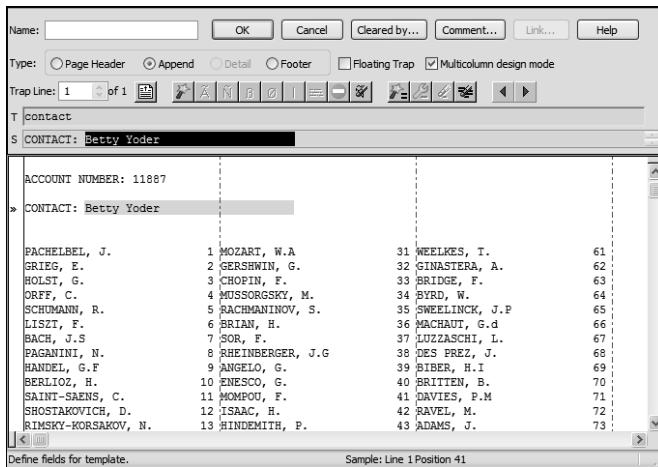


Figure 4-34. Highlighting the Contact field.

- 12 Let's name the contact field. To do so, double-click on "Betty Yoder" in the Sample Edit line to display the Field Properties dialog, type **Contact** in the Name field, then click the OK button.
13. Type **Contact** in the Template Definition dialog's Name field to name the template, then click the OK button.

If we wanted to, we could now create additional append templates to capture more information from the report, such as the CUSTOMER and ACCOUNT NUMBER fields. Instead, let's move on and learn how to specify vertical boundaries for the MCR. **Note:** As an example of a model file that contains additional append templates, Monarch includes a Composers.xmod file in the Monarch Models folder.

## Specifying Vertical Boundaries for the MCR

So far we have configured the column indicators to the correct width and have created a detail template that extracts the composer's names and rank numbers from the report. We also created a Contact append template, which will be helpful to us when specifying vertical boundaries for the multi-column region. (**Note:** When we specify vertical boundaries for the MCR, we specify the top and bottom boundaries for the columns within it.) Let's see how this is done.

1. Press CTRL+HOME to scroll to the top of the report.
2. Select Template, Multi-Column Region (ALT, T, M) to display the Multi-Column Region Definition dialog.
3. Under the Boundaries (vertical) heading, select the Start, Template option, then select "Contact" from the Template drop-down list.

A horizontal broken line appears at the top of the composer columns, just below the CONTACT line. This line indicates the top boundary of the multi-column region. Everything *above* this line will be *excluded* from the MCR.

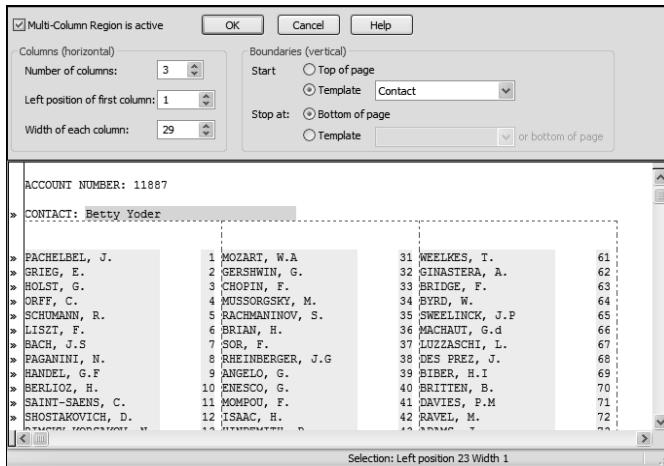


Figure 4-35. Viewing the top boundary of the MCR (just below the CONTACT line).

4. Scroll down through the report to locate the bottom boundary of the multi-column region.

Under the Boundaries (vertical) heading on the Multi-Column Region Definition dialog, note that the current bottom boundary setting for the MCR is "Stop at Bottom of Page". Notice that the bottom boundary of the MCR occurs just after the end of the columns on page 1, and before the beginning of page 2, as specified by the current bottom boundary setting. This boundary will suit our purposes as is, so we don't need to adjust it.

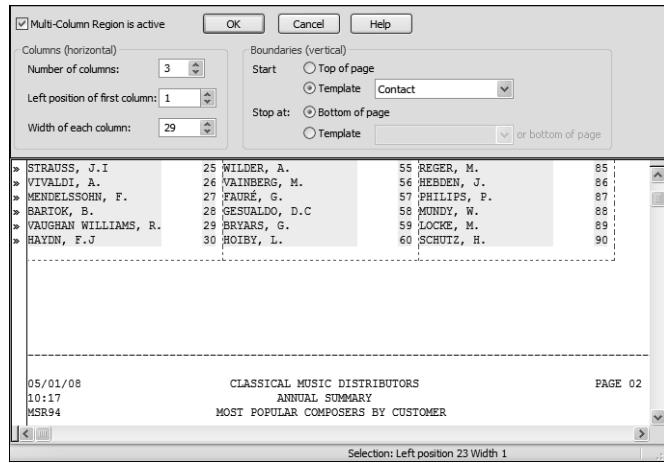


Figure 4-36. Viewing the bottom boundary of the MCR.

Now that you've seen how helpful templates can be when specifying the top and bottom boundary settings of the MCR, keep this in mind, as you can create blank traps solely for this purpose.

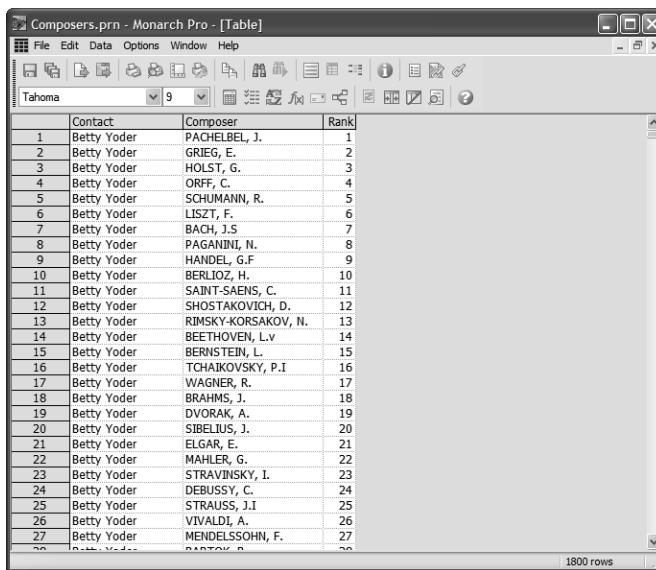
- Click the OK button to save the current MCR settings.

Monarch redisplays the Report window.

Let's view the trapped data in the Table window.

- Select Window, Table (ALT, W, T) from the menu or click the Table window button .

Monarch displays the extracted data in the Table window.



	Contact	Composer	Rank
1	Betty Yoder	PACHELBEL, J.	1
2	Betty Yoder	GRIEG, E.	2
3	Betty Yoder	HOLST, G.	3
4	Betty Yoder	ORFF, C.	4
5	Betty Yoder	SCHUMANN, R.	5
6	Betty Yoder	LISZT, F.	6
7	Betty Yoder	BACH, J.S	7
8	Betty Yoder	PAGANINI, N.	8
9	Betty Yoder	HANDEL, G.F	9
10	Betty Yoder	BERLIOZ, H.	10
11	Betty Yoder	SAINT-SAENS, C.	11
12	Betty Yoder	SHOSTAKOVICH, D.	12
13	Betty Yoder	RIMSKY-KORSAKOV, N.	13
14	Betty Yoder	BEETHOVEN, L.V	14
15	Betty Yoder	BERNSTEIN, L.	15
16	Betty Yoder	TCHAIKOVSKY, P.I	16
17	Betty Yoder	WAGNER, R.	17
18	Betty Yoder	BRAHMS, J.	18
19	Betty Yoder	DVORAK, A.	19
20	Betty Yoder	SIBELIUS, J.	20
21	Betty Yoder	ELGAR, E.	21
22	Betty Yoder	MAHLER, G.	22
23	Betty Yoder	STRAVINSKY, I.	23
24	Betty Yoder	DEBUSSY, C.	24
25	Betty Yoder	STRAUSS, J.I	25
26	Betty Yoder	VIVALDI, A.	26
27	Betty Yoder	MENDELSSOHN, F.	27

Figure 4-37. Viewing the extracted data in the Table window (column widths adjusted to show column names).

## Saving Your Work

You have completed the section on using the MCR feature to extract data from multi-column reports. You may save your work in a Monarch model file. To do so:

- Select File, Save Model As (ALT, F, A).
- Type an appropriate name (e.g., **MultiColumn**) in the File Name box, then choose Save.
- Select File, Exit (ALT, F, X) to end the Monarch session.

## Summary

In this lesson you learned how to use the address block to capture fields from address blocks that contain a varying number of lines. You also learned how to use the floating trap to extract data from irregularly formatted reports and to define the width of fields. Lastly, you learned how to extract data from multi-column reports using the MCR trapping feature. This lesson concludes our exploration of the Report window. For further reading, see the following sections of the Monarch help file:

Chapter 1 - Report Window

Creating Data Extraction Templates

Creating a Template

Capturing Address Blocks with Varying Lines

Using the Floating Trap

Using the Multi-column Region Trapping Feature

The next five lessons are devoted to the Table window, where you can explore and manipulate the report data and export it to other applications.



# Part II

## The Table Window



## LESSON 5

## Working in the Table Window

In this lesson you will learn how to work in the Table window. The lesson topics include:

- Naming fields.
- Assigning a field type.
- Format adjustments.

This lesson assumes you are familiar with opening and viewing report files and creating data extraction templates. Before you begin this lesson, we recommend that you complete Lessons 1, 2 and 3.

### The Table Window

When Monarch extracts data from a report, the data is placed in a database table which you can view and manipulate in the Table window. You can filter and sort the data, and export it to popular PC applications. You can also use the Table window in cooperation with the Summary window to analyze the data.

This lesson will show you the basics of navigating and working in the Table window. Later lessons describe how to use Monarch's built-in expressions to calculate new fields, create filters, and create sort definitions in the Table window.

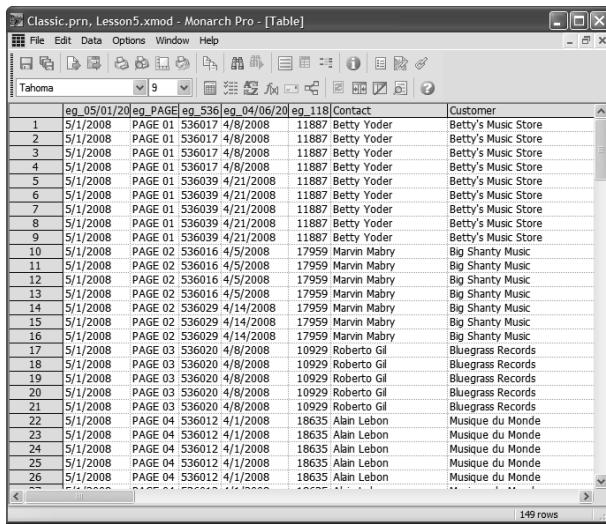
### Starting the Lesson

To get started, we'll open Classic.prn and Lesson5.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson5.xmod, then choose Open.

4. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.

Monarch generates a database table based on the Classic report and the Lesson 5 model. The resulting database displays in the Table window.



The screenshot shows the Monarch Table window titled "Classic.prn, Lesson5.xmod - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, and Help. Below the menu is a toolbar with various icons. The main area is a grid table with 149 rows. The columns are labeled eg\_05/01/20, eg\_PAGE1, eg\_5361, eg\_04/06/20, eg\_118, Contact, and Customer. The Contact column contains names like Betty Yoder, Marvin Mabry, and Roberto Gil, while the Customer column lists store names like Betty's Music Store, Big Shanty Music, and Bluegrass Records. The bottom right corner of the table grid indicates "149 rows".

Figure 5-1. The Monarch Table window.

## Naming Fields

Monarch automatically assigns default field names to each field that you highlight, using the prefix "eg\_" and the sample data from the first record encountered. You can keep the default names, or you can assign new names that are more meaningful.

For this lesson we've named all but the first five fields to reduce the amount of repetitive work you have to do within the lesson. To name the first field:

1. Double-click any cell in the first field (column).

The Field Properties dialog displays.

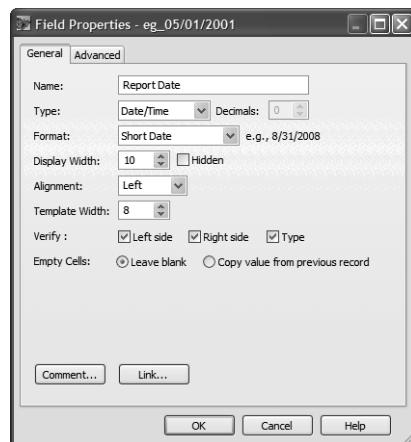


Figure 5-2. The Field Properties dialog.

2. Type **Report Date** in the Name box.

**Note:** Field names may be up to 62 characters in length and may contain uppercase and lowercase characters, spaces and punctuation except for period (.), exclamation point (!), accent grave (`) and brackets ([ ]). Names may begin with any character, except for a space or an underscore (\_). If a name is entered with leading spaces, the name is accepted but the leading spaces are ignored.

3. Choose OK.

The field name "Report Date" appears at the top of the first column.

4. Repeat steps 1 through 3 to name the second field, using **Page** as the name.

## Quick Naming

If you have a lot of fields to name, you may find the Field List dialog more efficient.

1. Select Edit, Field List (ALT, E, L) from the menu or click the Field List icon

The Field List dialog displays

2. In the Field Name column, highlight the field named **eg\_536017**, type **Order Number**, then press the down arrow on your keyboard to move to the next field name.
3. Type **Ship Date** to name this field, then press the down arrow to move to the next field name.

- Type **Account Number** to name this field, then click the OK button to apply the new field names to the table.

### Naming Tip

Sometimes the contents of the fields can be obscure, making identification and naming difficult. For example, it's not immediately obvious that 5/1/2008 is the report date – it could just as easily be the ship date. Here's a way to make naming easier:

- ◆ Select Window, Tile Horizontal (ALT, W, H).

Both the Table and the Report windows appear (see Figure 5-3).

The screenshot shows the Monarch Pro application window titled "Classic.prn, Lesson5.xmod - Monarch Pro". The window is split horizontally. The top half contains the "Table" view, which displays a grid of data with columns: Report Date, Page, Order Number, Ship Date, Account Number, Contact, and Customer. The data shows 10 rows of entries, all with Report Date 5/1/2008, Page 01, Order Number 536017, Ship Date 4/8/2008, Account Number 11887, Contact Betty Yoder, and Customer Betty's Music S. The bottom half contains the "Report" view, which shows a report header: "CLASSICAL MUSIC DISTRIBUTORS", "MONTHLY SHIPPING REPORT", "PAGE 01", "FROM 04/01/08 TO 04/30/08", and a customer detail section: "CUSTOMER: Betty's Music Store", "Muscataine Plaza", "200 Lower Muscataine", "Cedar Falls, IA 50613", "USA".

Figure 5-3. Comparing values in the Table and Report windows.

By comparing values in the two windows, you can often identify the fields quite easily. In the example cited above, with both windows open you can see that "5/1/2008" in the Table window corresponds to the report date in the upper left corner of the report (05/01/08).

Note that when you select a field, Monarch displays the field name, field type and the template name and type on the status bar at the bottom of the window.

## Assigning the Field Type

When Monarch builds a database table, it automatically assigns a field type to each field based on the first instance of that field in the report. If Monarch finds a number when it first extracts a field, it assigns *numeric* format, etc. Usually, the first instance of a field is representative of other instances, but when it is not, you must manually override the assigned format to assign the proper format.

In our lesson, Monarch has made an incorrect format assignment. An examination of records 28, 29, and 30 reveals “null” entries in the Order Number field. Monarch provides an easy way to investigate the source of this problem. By synchronizing the Table and Report windows, you can see where any field value was extracted from in the original report.

## Displaying the Source of a Record

To find where the fields in record 28 came from, we'll use the Display Source of Record button:

1. Scroll down in the Table until row 28 is visible.
2. Click anywhere on record (row) 28.
3. Click the Display Source of Record button  or press CTRL-F5.

The Report window scrolls to correspond with record 28 in the table. The line from which the detail fields were extracted is highlighted (see Figure 5-4).

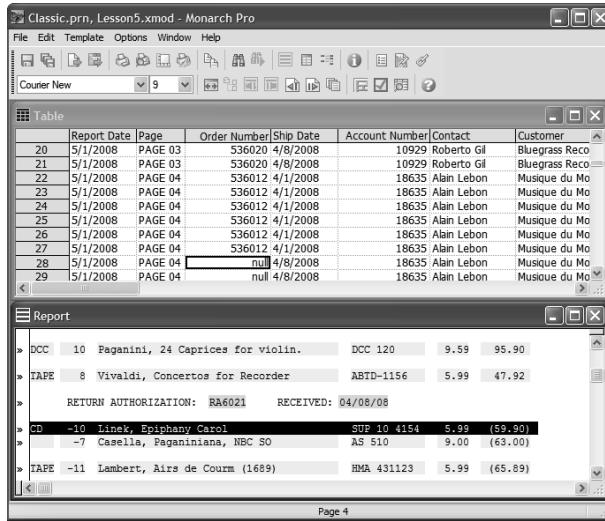


Figure 5-4.

When we examine this particular order in the Report window, we see that the Order Number field contains a Return Authorization code, which begins with the letters "RA".

Now, let's examine the properties of the Order Number field in the Table window.

- Double-click on record 28 in the Order Number field which contains the value "null".

The Field Properties dialog displays.

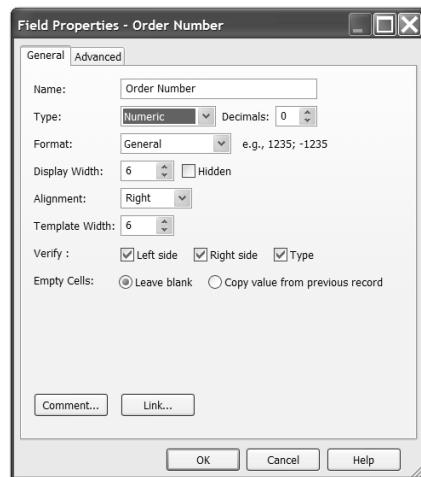


Figure 5-5

Note that a field type of “Numeric” was assigned to this field because the first instance of the field contained only numbers. Since we have discovered that a later instance includes the characters “RA”, we must override the automatic assignment and specify a “Character” field type. To do so:

5. Click the down-arrow on the Type box and select Character as the new field type, then click OK.
6. Scroll back to row 28 to confirm that the field values are displayed.

The Order Number fields on lines 28, 29, and 30 now show the correct values (see Figure 5-6).

	Report Date	Page	Order Number	Ship Date	Account Number	Contact	Customer
22	5/1/2008	PAGE 04	536012	4/1/2008	18635	Alain Lebon	Musique du Mo
23	5/1/2008	PAGE 04	536012	4/1/2008	18635	Alain Lebon	Musique du Mo
24	5/1/2008	PAGE 04	536012	4/1/2008	18635	Alain Lebon	Musique du Mo
25	5/1/2008	PAGE 04	536012	4/1/2008	18635	Alain Lebon	Musique du Mo
26	5/1/2008	PAGE 04	536012	4/1/2008	18635	Alain Lebon	Musique du Mo
27	5/1/2008	PAGE 04	536012	4/1/2008	18635	Alain Lebon	Musique du Mo
28	5/1/2008	PAGE 04	RA6021	4/8/2008	18635	Alain Lebon	Musique du Mo
29	5/1/2008	PAGE 04	RA6021	4/8/2008	18635	Alain Lebon	Musique du Mo
30	5/1/2008	PAGE 04	RA6021	4/8/2008	18635	Alain Lebon	Musique du Mo
31	5/1/2008	PAGE 04	536034	4/18/2008	18635	Alain Lebon	Musique du Mo

Figure 5-6. Viewing the correct values in rows 28-30.

## Format Adjustments

As we've seen, Monarch automatically formats the data as it builds the database table. The column width is also set for each field in order to display the widest field value. You can override these automatic assignments, and you can make several other format adjustments, as discussed in the next few sections.

You will learn how to:

- Fill empty cells
- Change field widths
- Move fields
- Hide fields

### Filling Empty Cells

Sometimes the report data includes “assumed dittos.” An example would be the list shown in the Report window of Figure 5-7.

The screenshot shows the Monarch Pro application window with two main panes. The top pane is titled 'Table' and displays a list of media items with columns for Record Number, Media, Quantity, Description, Label Number, Unit Price, and Amount. The bottom pane is titled 'Report' and shows a formatted version of the same data, including an order header and detailed item descriptions.

	Media	Quantity	Description	Label Number	Unit Pr	Amount
1	CD	4	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96
2		7	Mozart, Mass in C, K.427	420831-2	9.00	63.00
3		2	Luening, Electronic Music	CD 611	10.19	20.38
4	TAPE	9	Scarlatti, Stabat Mater	SBT 48282	5.99	53.91
5	CD	11	Beethoven, Pathétique Sonata, Arau	420153-2	5.99	65.89
6		8	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92
7		10	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90
8	LP	6	Misc., Modern Trombone Masterpieces	ADA 581087	10.79	64.74
9	TAPE	6	Gershwin, An American in Paris	ACS 8034	5.99	35.94
10	CD	6	Stravinsky, Dumbarton Oaks Concerto	SMCD 5120	8.99	53.94

MEDIA QTY	DESCRIPTION	LABEL/NO.	UNIT_PRC	AMOUNT
ORDER NUMBER: 536017 SHIP DATE: 04/08/08				
CD	4 Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96
	7 Mozart, Mass in C, K.427	420831-2	9.00	63.00
	2 Luening, Electronic Music	CD 611	10.19	20.38
TAPE	9 Scarlatti, Stabat Mater	SBT 48282	5.99	53.91
ORDER NUMBER: 536017 SHIP DATE: 04/08/08				

Figure 5-7.

In this list, the media identifier “CD” obviously applies to the first three entries in the list, rather than just the first entry, even though it is only shown explicitly next to the first entry. When these entries appear in the table (records 1 - 3 in the Table window of Figure 5-7), the “CD” is still missing from two of the entries.

Monarch has an easy solution to this:

1. Scroll to the right until the Media field is visible (to do so, use the Table window’s scroll bar) as in Figure 5-7, then double-click any cell in the Media field.

The Field Properties dialog displays.

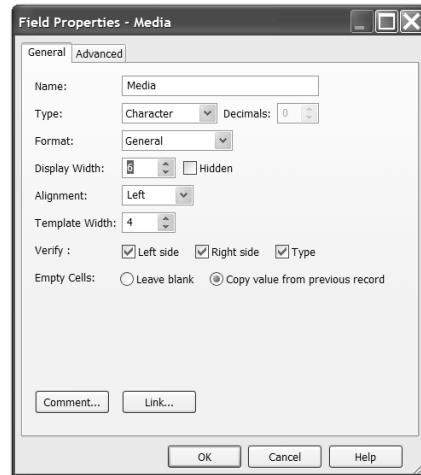


Figure 5-8

2. Change the current Empty Cells setting by selecting “Copy value from previous record”, then click OK.

Monarch fills in the blank cells in that field (see Figure 5-9).

	Media	Quantity	Description	Label Number	Unit P	Amount
1	CD	4	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96
2	CD	7	Mozart, Mass in C, K.427	420831-2	9.00	63.00
3	CD	2	Luening, Electronic Music	CD 611	10.19	20.38
4	TAPE	9	Scarlatti, Stabat Mater	SBT 48282	5.99	53.91
5	CD	11	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89
6	CD	8	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92
7	CD	10	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90
8	LP	6	Misc., Modern Trombone Masterpieces	ADA 581087	10.79	64.74

Figure 5-9.

## Adjusting Field Widths

If you examine the beginning of the table (line 1, scrolled all the way left), you will note that the Order Number and Account Number columns are not wide enough to display the entire field name (see Figure 5-10). Even though the field values are not truncated, you may want to widen the columns.

	Report Date	Page	Order Nu	Ship Date	Account N	Contact	Customer
1	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
2	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
3	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
4	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
5	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
6	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
7	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
8	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
9	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
10	5/1/2008	PAGE 02	536016	4/5/2008	17959	Marvin Mabry	B Shantv Music

Figure 5-10.

To adjust the column width:

1. Double-click on any cell in the Order Number field.

The Field Properties dialog displays (see Figure 5-8).

2. Enter **12** in the Display Width box or use the spin arrows to increase the value, then choose OK.

You can do this even faster using the mouse:

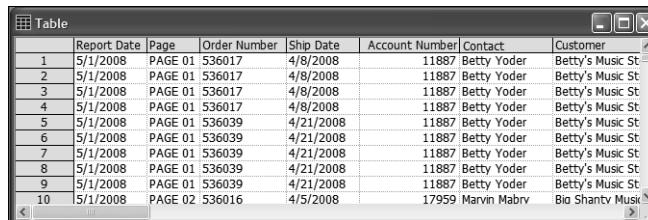
1. Move the mouse pointer to the right edge of the Order Number field title. The mouse pointer will become a resizing handle.
2. Click down and drag left or right to resize the field.

For the Account Number field, we'll use Monarch's Autosize Column Widths feature to adjust the field width.

1. Click on any cell in the Account Number field, then select Edit, Autosize Column Widths (ALT, E, A) from the menu or click the Autosize Column Widths icon .

The field is resized to match its widest field value or the field name, whichever is wider.

The table now looks like Figure 5-11.



	Report Date	Page	Order Number	Ship Date	Account Number	Contact	Customer
1	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music St
2	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music St
3	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music St
4	5/1/2008	PAGE 01	536017	4/8/2008	11887	Betty Yoder	Betty's Music St
5	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music St
6	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music St
7	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music St
8	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music St
9	5/1/2008	PAGE 01	536039	4/21/2008	11887	Betty Yoder	Betty's Music St
10	5/1/2008	PAGE 02	536016	4/5/2008	17959	Marvin Mabry	Bio Shanty Mus

Figure 5-11.

If you reduce the width of a character field or a date field to less than the length of a field value, the field value is truncated on screen. If you reduce the width of a numeric field to less than the width of a field value, the field value displays as number signs (####).

**Note:** The column width setting affects only the appearance of the data on screen and in printed output. It does *not* affect the underlying data.

## Moving Fields

The order of fields in the table is purely a function of their order in the report file. Therefore, you may frequently want to rearrange the order of your data in the table.

You can rearrange the order of fields in the table via the Move Fields dialog, the Field List dialog, or by dragging and dropping fields in the Table window. To move a single field, position the cell pointer anywhere in the field. To move a range of fields, click down anywhere in the first field and drag left or right to select the desired range. Let's move the Order Number and Ship Date fields to the right of the Account Number field.

1. Select the Order Number and Ship Date fields by clicking down on the Order Number field and dragging the pointer right to the Ship Date field. Both fields should be highlighted.
2. Select Edit, Move fields (ALT, E, M).

The Move Fields dialog displays.



Figure 5-12. The Move Fields dialog.

Make sure the "Move" range lists the fields you want to move.

3. Click on the Account Number field in the table. (Use the horizontal scroll bar to find the field, if necessary.) On the Move Fields dialog, note that the "Left of" and "Right of" options now refer to the Account Number field.
4. Click the "Right of" radio button to specify that you want the Order Number and Ship Date Fields to be moved to the right of the Account Number field, then choose OK.

The table now looks like Figure 5-13.

	Report Date	Page	Account Number	Order Number	Ship Date	Contact	Customer
1	5/1/2008	PAGE 01	11887 536017	4/8/2008	Betty Yoder	Betty's Music St	
2	5/1/2008	PAGE 01	11887 536017	4/8/2008	Betty Yoder	Betty's Music St	
3	5/1/2008	PAGE 01	11887 536017	4/8/2008	Betty Yoder	Betty's Music St	
4	5/1/2008	PAGE 01	11887 536017	4/8/2008	Betty Yoder	Betty's Music St	
5	5/1/2008	PAGE 01	11887 536039	4/21/2008	Betty Yoder	Betty's Music St	
6	5/1/2008	PAGE 01	11887 536039	4/21/2008	Betty Yoder	Betty's Music St	
7	5/1/2008	PAGE 01	11887 536039	4/21/2008	Betty Yoder	Betty's Music St	
8	5/1/2008	PAGE 01	11887 536039	4/21/2008	Betty Yoder	Betty's Music St	
9	5/1/2008	PAGE 01	11887 536039	4/21/2008	Betty Yoder	Betty's Music St	
10	5/1/2008	PAGE 02	17959 536016	4/5/2008	Marvin Mabry	Bio Shanty Musik	

Figure 5-13. Viewing the moved Order Number and Ship Date fields.

You can also move fields using the Windows drag and drop method. Let's use the drag and drop method to move the Contact and Customer fields to the left of the Account Number field.

1. Select the Contact and Customer fields by clicking down on the Contact field title and dragging the pointer right to the Customer field title. Both fields should be highlighted.
2. Click down on the Contact field title and drag left. As you drag you will see a red vertical line appear between the fields. This line indicates where the fields will be inserted when you release the mouse button. When the red vertical line appears between the Page and Account Number fields, release the mouse button.

The Contact and Customer fields are inserted to the left of the Account Number field.

The table now looks like Figure 5-14.

	Report Date	Page	Contact	Customer	Account Number	Order Number
1	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536017
2	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536017
3	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536017
4	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536017
5	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536039
6	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536039
7	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536039
8	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536039
9	5/1/2008	PAGE 01	Betty Yoder	Betty's Music Store	11887	536039
10	5/1/2008	PAGE 02	Marvin Mabry	Bio Shantv Music	17959	536016

Figure 5-14.

## Hiding Fields

Frequently you may want some data hidden from view but not deleted from the table. **Note:** Hidden table fields are not available for export and copy operations (see Lesson 6).

For example, the Report Date and Page fields contain useful information, but you may not want them visible while working with data from the other fields. Let's hide these fields. To do so:

1. Select Edit, Field List (ALT, E, L) or click the Field List icon .

The Field List dialog displays.

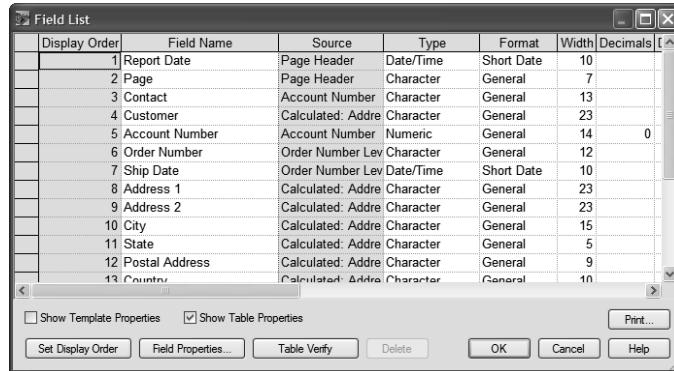


Figure 5-15.

The Field List dialog includes a column for each field property. The rightmost column includes a series of check boxes that you can use to hide or re-display fields.

2. Click on the Hide check box for the Report Date field. (**Note:** You may have to scroll right to view the check box.) A check mark appears in the box.
3. Click on the Hide check box for the Page field, then choose OK.

The selected fields are now hidden (see Figure 5-16).

	Contact	Customer	Account Number	Order Number	Ship Date	Address 1
1	Betty Yoder	Betty's Music Store	11887 536017	4/8/2008	Muscatine	
2	Betty Yoder	Betty's Music Store	11887 536017	4/8/2008	Muscatine	
3	Betty Yoder	Betty's Music Store	11887 536017	4/8/2008	Muscatine	
4	Betty Yoder	Betty's Music Store	11887 536017	4/8/2008	Muscatine	
5	Betty Yoder	Betty's Music Store	11887 536039	4/21/2008	Muscatine	
6	Betty Yoder	Betty's Music Store	11887 536039	4/21/2008	Muscatine	
7	Betty Yoder	Betty's Music Store	11887 536039	4/21/2008	Muscatine	
8	Betty Yoder	Betty's Music Store	11887 536039	4/21/2008	Muscatine	
9	Betty Yoder	Betty's Music Store	11887 536039	4/21/2008	Muscatine	
10	Marvin Mabry	Bio Shanty Music	17959 536016	4/5/2008	3658 Spr	

Figure 5-16.

## Saving Your Work

You have completed Lesson 5. We recommend that you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Classic** in the File Name box, then choose Save.
3. Choose Yes to replace the existing model.
4. Select File, Exit (ALT, F, X).

## Summary

In this lesson we modified some characteristics of the table and adjusted Monarch's automatic formatting to more closely fit our needs for this table. For further reading, see the following sections of the Monarch help file:

Chapter 2 - Table Window

Viewing the Table

Searching the Table

Working with Fields

Many other operations are possible within the Table window, including filtering, sorting, exporting, copying, and printing. The next few lessons will cover these subjects.

## LESSON 6

# Printing, Copying and Exporting

In this lesson, you will learn how to print, copy, and export data from the Table window. The methods described in this lesson also apply to data in the Summary window. The lesson topics include:

- Printing table data.
- Copying data to other applications.
- Exporting data to a file.
- Adding data to an existing file.

This lesson assumes you are familiar with importing and viewing report files, creating data extraction templates and working in the Table window.

## Starting the Lesson

To start the lesson, load Monarch and open Classic.prn and Lesson6.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson6.xmod, then choose Open.
4. Select Window, Table (ALT, W, T) or click the Table window button  on the toolbar to open the Table window.

The Table window displays the records created from the Classic report and the Lesson 6 model. For this lesson, we've extracted most of the detail fields and a single field from the highest sort level in the report.

	Customer	Media	Quantity	Description	Unit Price
1	Betty's Music Store	CD	4	Bartok, Sonata for Solo Violin	8.99
2	Betty's Music Store	CD	7	Mozart, Mass in C, K.427	9.00
3	Betty's Music Store	CD	2	Luening, Electronic Music	10.19
4	Betty's Music Store	TAPE	9	Scarlatti, Stabat Mater	5.99
5	Betty's Music Store	CD	11	Beethoven, Pathetique Sonata, Arau	5.99
6	Betty's Music Store	CD	8	Mendelssohn, War March of the Priests	8.99
7	Betty's Music Store	CD	10	Pizzetti, Messa di Requiem	9.59
8	Betty's Music Store	LP	6	Misc., Modern Trombone Masterpieces	10.79
9	Betty's Music Store	TAPE	6	Gershwin, An American in Paris	5.99
10	Big Shanty Music	CD	6	Stravinsky, Dumbarton Oaks Concerto	8.99
11	Big Shanty Music	CD	1	Schubert, Sonata in e, D.564	9.00
12	Big Shanty Music	CD	3	Mozart, Symphony No.23 in D	8.99
13	Big Shanty Music	CD	6	Schoenberg, Ode to Napoleon	9.59
14	Big Shanty Music	CD	2	Shostakovich, 24 Preludes for piano.	5.29
15	Big Shanty Music	MD	9	Balakirev, Symphony no. 1	9.59
16	Big Shanty Music	TAPE	5	Holst, St. Paul's Suite for Orch.	5.99
17	Bluegrass Records	CD	3	Faure, 28 Songs, Stulzmann	17.98
18	Bluegrass Records	CD	3	Takemitsu, Music of Takemitsu	3.60
19	Bluegrass Records	CD	6	Messiaen, Quatuor pour la fin de temps	9.60
20	Bluegrass Records	MD	8	Strauss, Ein Heldenleben, Op.40	8.99
21	Bluegrass Records	TAPE	9	Schumann, Manfred Overture, Bav SO	5.99
22	Musique du Monde	CD	10	Milhaud, 3 Rude Caprices, on. & orch.	9.60

Figure 6-1. Extracted data displayed in the Table window.

## Printing Table Data

The database table is usually much wider than the report as Monarch combines fields from various levels in the report to create each row of the table. When Monarch prints data from the table, it prints as many fields as will fit across the page. If all of the fields will not fit on a single page, the remaining fields are wrapped to the next page. The amount of information that will fit on each page is determined by several factors:

- The font size has a dramatic affect on the amount of data that fits on each page. To fit all the fields across the page, you may need to select a small font size.
- The Paper orientation setting specifies the direction that text will print. For wide tables, set the paper orientation to Landscape to print the text sideways on the page.
- Margins affect how close text is allowed to print to the edge of the page. You can use the margins to make small adjustments to the amount of text that will fit on each page.

Monarch lets you print just the data you need. You can print the entire table or any selection from the table. Let's print the records for a single customer, Betty's Music Store.

## Adjusting the Font Size

Monarch uses the same font and font size for both displaying and printing. Let's select a smaller font size to ensure that all of the fields fit across the page.

1. Click the down arrow on the toolbar's Font Size box and select 8.

If the 8 point size is not available for the current font, use the toolbar's Font box to select a different font.

## Page Setup Options

Several page setup options are provided that you can use to establish margins, add a page header to each page, print column titles and row numbers, and print the grid lines that you see on-screen.

To edit the page setup options, we'll use the Page Setup dialog.

1. Select File, Page Setup (ALT, F, G) or click the Page Setup icon .

The Page Setup dialog displays.

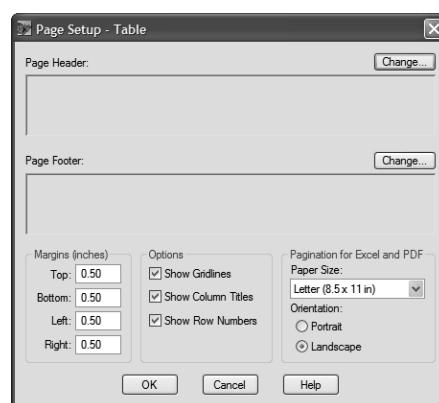


Figure 6-2. The Page Setup dialog.

The dialog displays the current margin settings and print options.

2. Click the Show Row Numbers box to turn off the row numbers in our printout.

### Creating a Page Header

Monarch allows you to add a descriptive title to the top of each printed page via the Page Header dialog.

3. At the top of the Page Setup dialog, click the Change button to display the Page Header dialog.

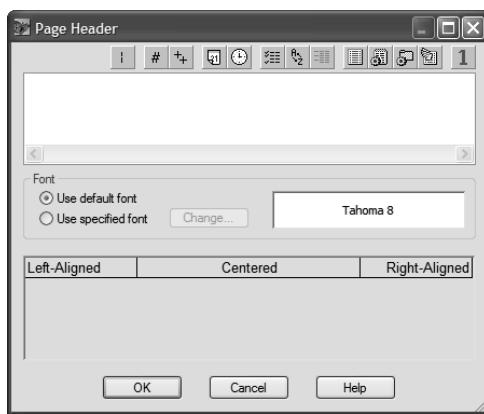


Figure 6-3. The Page Header dialog.

The Page Header dialog provides several functions that you can use to align text and dynamically add information to the page header, including page numbers, the print date and time, the names of the active filter and sort, as well as the First Value of any field in the table. **Note:** Refer to the *Page Header/Footer* topic in the Monarch help file for a complete list of the available functions.

1. Click in the Page Header box at the top of the dialog. **Note:** The Page Header box accepts up to three lines of text.

5. Click the Date button , then click the Alignment Character button .
6. Type **Classical Music Distributors**, then click the Alignment Character button .
7. Type **Page** followed by a space, then click the Page Number button .
8. Press ENTER to move the cursor to the second line of the Page Header.
9. Type **Report:** followed by a space, then click the Report File Name button .
10. Press ENTER to move the cursor to the third line of the Page Header.
11. Type **Model:** followed by a space, then click the Model File Name button .
12. Choose OK to close the Page Header dialog, then click OK to close the Page Setup dialog.

Here is an example of how the page header might appear on your printout.

04/14/2008                    Classical Music Distributors                    Page 1  
Report: Classic.prn  
Model: Lesson6.xmod

## Selecting and Printing the Data

Now let's select the data for Betty's Music Store.

1. Click down on the row selector to the left of record 1, then drag down until records 1 through 9 are selected.

This highlights all of the records for Betty's Music Store.

Before printing, let's use the Print Preview feature to preview the effect of the font and print settings.

2. Select File, Print Preview (ALT, F, V) or click the Print Preview icon  to open the Print Preview window.

The Print Preview window displays.

The screenshot shows a Windows application window titled "Classic.prn, Lesson6.xmod - Monarch Pro - [Table]". The window has a toolbar with buttons for Print..., Next Page, Prev Page, Two Page, Zoom In, Zoom Out, Page Setup, and Close. The main area displays a table with the following data:

Customer	Media	Quantity	Description	Unit Price	Amount
Betty's Music Store	CD	4	Bartok, Sonata for Solo Violin	8.99	35.96
Betty's Music Store	CD	7	Mozart, Mass in C, K.427	9.00	63.00
Betty's Music Store	CD	2	Luening, Electronic Music	10.19	20.38
Betty's Music Store	TAPE	9	Scarlatti, Stabat Mater	5.99	53.91
Betty's Music Store	CD	11	Beethoven, Pathetique Sonata, Arau	5.99	65.89
Betty's Music Store	CD	8	Mendelssohn, War March of the Priests	8.99	71.92
Betty's Music Store	CD	10	Pizzetti, Messa di Requiem	9.59	95.90
Betty's Music Store	LP	6	Misc., Modern Trombone Masterpieces	10.79	64.74
Betty's Music Store	TAPE	6	Gershwin, An American in Paris	5.99	35.94

Figure 6-4. The Print Preview window (zoomed in).

Examine the Print Preview window to see if your settings for font size, margins, page orientation and page header are appropriate to produce satisfactory output. If not, you can change the settings until everything looks just right. For now let's see how the Print Preview window works.

3. Click on the table displayed in the Preview window to zoom in or out. (Or use the Zoom In and Zoom Out buttons on the toolbar.)

---

**Note:** Windows sometimes substitutes fonts in the Preview window causing columns to appear misaligned. Columns will align correctly in the actual printout.

---

When viewing more than a single page, you can use the One/Two Page button on the Toolbar to toggle between a one-page and a two-page view or the Next Page and Prev Page buttons to move forward or back a page at a time.

4. Click the Close button to return to the Table window.

Finally, let's print the table selection.

5. Select File, Print (ALT, F, P) to open the Print dialog.

The Print dialog displays.

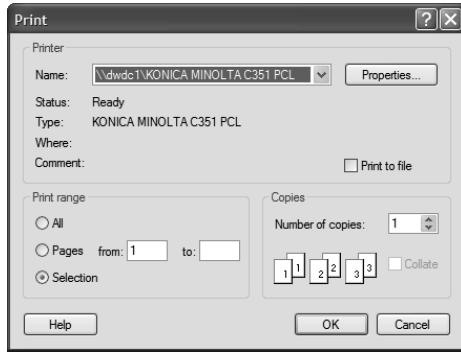


Figure 6-5. The Print dialog.

The Selection button is already selected because you have a selection highlighted in the table. You can print the current selection or click the All button to print the entire table.

6. Choose OK to print the current selection.

The records for Betty's Music Store are printed.

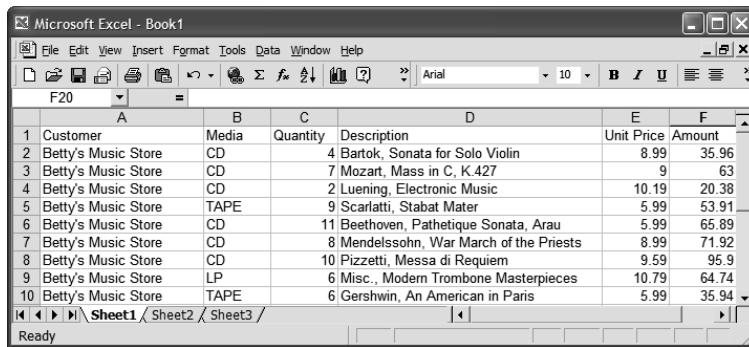
## Copying Data to Other Applications

You can use the Windows clipboard to copy table data to other applications. When you copy data to the clipboard, Monarch creates both a text image and a worksheet image (with separate rows and columns). When you subsequently paste the data to another application, the application selects the format it needs.

Let's copy the records for Betty's Music Store to your spreadsheet.

1. If the first 9 records in the table aren't still selected, select them by clicking down on the row selector to the left of record 1, then dragging down to record 9.
2. Click the Copy button 
3. Launch your spreadsheet. (If you don't have a spreadsheet, just follow along in the book.)

4. Position the cell pointer where you want the data to appear and use your spreadsheet's Paste command to paste the data. For some spreadsheet applications, you may need to use the Paste Special command.



The screenshot shows a Microsoft Excel window titled "Microsoft Excel - Book1". The table has the following data:

	A	B	C	D	E	F
1	Customer	Media	Quantity	Description	Unit Price	Amount
2	Betty's Music Store	CD	4	Bartok, Sonata for Solo Violin	8.99	35.96
3	Betty's Music Store	CD	7	Mozart, Mass in C, K.427	9	63
4	Betty's Music Store	CD	2	Luening, Electronic Music	10.19	20.38
5	Betty's Music Store	TAPE	9	Scarlatti, Stabat Mater	5.99	53.91
6	Betty's Music Store	CD	11	Beethoven, Pathetique Sonata, Arau	5.99	65.89
7	Betty's Music Store	CD	8	Mendelssohn, War March of the Priests	8.99	71.92
8	Betty's Music Store	CD	10	Pizzetti, Messa di Requiem	9.59	95.9
9	Betty's Music Store	LP	6	Misc., Modern Trombone Masterpieces	10.79	64.74
10	Betty's Music Store	TAPE	6	Gershwin, An American in Paris	5.99	35.94

Figure 6-6. Pasting to a spreadsheet.

5. Adjust column widths and cell formats in your spreadsheet as necessary.

---

**Note:** Monarch does not set the column widths automatically because this might alter an existing worksheet's column widths when the data is pasted. If the spreadsheet that you are pasting into is empty, you may prefer to export the data using the File, Export Table or File, Export Summary command. When data is exported, the column widths are set appropriately for the data.

6. Exit your spreadsheet without saving.

## Exporting Data to a File

You can export the table (or a summary) to a number of popular file formats. Most applications either use one of the supported formats as their native file format or are able to import one or more of these formats. When exporting data, Monarch determines which format to use based upon the file extension you provide. **Note:** The Monarch help file contains a complete list of the supported file formats.

Let's export the records for Big Shanty Music to an XLS file, then examine it in your spreadsheet. (**Note:** When you export data, Monarch exports all the data in the Table window or Summary window; it does not allow you to export only a portion of it, with the exception of hidden summary columns when exporting to Excel with formatting enabled, which are then exported as hidden columns to Excel.) To export only the data for Big Shanty Music, we'll start by applying a filter to display only those records, then we'll export the table. (**Note:** Filters are discussed in detail in Lesson 8).

1. Select Data, Filters (ALT, D, F) or click the Filters button .

The Filters dialog displays.

2. Select the Big Shanty Music filter, then choose OK to apply the filter to the table.

The Table window displays only the records for Big Shanty Music.

3. Select File, Export or click the Export Wizard icon .

The Export Wizard opens, displaying the General screen.



Figure 6-7. The General screen of the Export Wizard.

4. If the Add This Job to Project Exports check box is selected, click in the check box to deselect it, then click the Next button. (**Note:** Refer to the *Chapter 8 - Project Files, Creating Project Exports* portion of the help file for information on project exports.).

The Table View screen of the Export wizard displays. Note that the Big Shanty Music filter will be applied to the table during export.



Figure 6-8. The Table View screen of the Export Wizard.

5. Click Next to display the Output File screen of the Export wizard.

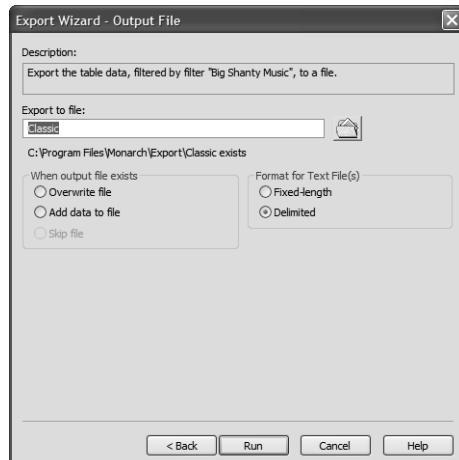


Figure 6-9. The Output File screen.

6. Type **Music.xls** in the Export to File box.

---

**Note:** Most file types are available in multiple versions. For example, the Microsoft Excel (xls) format is available in Excel 3.0, 4.0, 5.0/95, and 97+ formats. Each file type is initially set to the latest version supported. To view or modify the version for each supported file type, select Options, Export and Clipboard from the menu.

7. Select Overwrite File under the “When output file exists” heading, then click the Next button.

The Table Info screen displays.

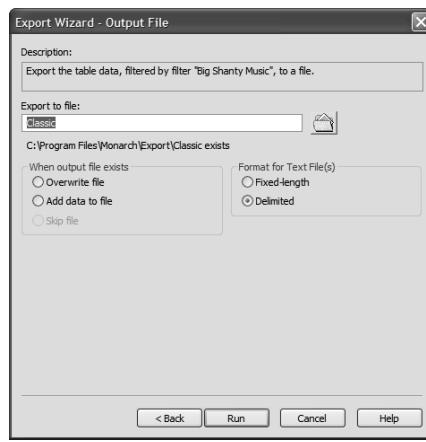


Figure 6-10. Viewing the Table Info screen.

If we wanted to we could change the default name of the table by entering a new name in the Table Name box, but let's stick with the default name.

8. Click the Run button.

A progress dialog displays, indicating the progress of the export operation, including the percent complete and the number of records exported. When Monarch has finished exporting the table data, “Export(s) Completed” displays at the top of the progress dialog.

9. Click the OK button to close the dialog and return to the Table window.

We can now view the exported table in Excel.

10. Launch Excel. (If you don't have Excel, just follow along in the book.)
11. Navigate to the Monarch Export folder (C:\Documents and Settings\All Users\Documents\Monarch\Export) and double-click on the Music.xls file.

	A	B	C	D	E	F
1	Customer	Media	Quantity	Description	Unit Price	Amount
2	Big Shanty Music	CD	6	Stravinsky, Dumbarton Oaks Concerto	8.99	53.94
3	Big Shanty Music	CD	1	Schubert, Sonata in e, D.566	9.00	9.00
4	Big Shanty Music	CD	3	Mozart, Symphony No.23 in D	8.99	26.97
5	Big Shanty Music	CD	6	Schoenberg, Ode to Napoleon	9.59	57.54
6	Big Shanty Music	CD	2	Shostakovich, 24 Preludes for piano.	5.39	10.78
7	Big Shanty Music	MD	9	Balakirev, Symphony no. 1	9.59	86.31
8	Big Shanty Music	TAPE	5	Holst, St. Paul's Suite for Orch.	5.99	29.95

Figure 6-11. Viewing the exported table data.

12. Exit your spreadsheet.

## Adding Data to an Existing File

When exporting to an existing file, you can append data to a table in the file, add a new table to the file or replace an existing table in the file.

Let's export the records for Bluegrass Records to the Music.xls file we created in the previous section. We'll add the records as a new table in the XLS file. The new table will be displayed as a separate worksheet.

1. Select Data, Filters (ALT, D, F) or click the Filters button

The Filters dialog displays.

2. Select the Bluegrass Records filter, then choose OK to apply the filter to the table.

The Table window displays only those records for Bluegrass Records.

3. Select File, Export or click the Export Wizard icon

The Export wizard displays (see Figure 6-7).

4. Click the Next button to advance to the Table View screen, then click Next again. The Output File screen displays.
5. Click the Folder icon next to the Export to File field to display the Export Table dialog.
6. From the Files of Type drop-down list, select the Microsoft Excel (xls) option.

A list of all of the xls files in the Monarch Export folder displays.

7. Select the Music.xls file, then click the Save button.
8. Under the When Output File Exists heading select the “Add Data to File” option, then click the Next button.

---

**Note:** If the “Add Data to the Existing File” option is grayed, this indicates that the file type you are exporting to does not support adding data. For information on which file formats and versions support adding data, see the section entitled *Chapter 2 - Table Window, Exporting Table Data*, in the Monarch help file.

---

The Table Info screen displays.

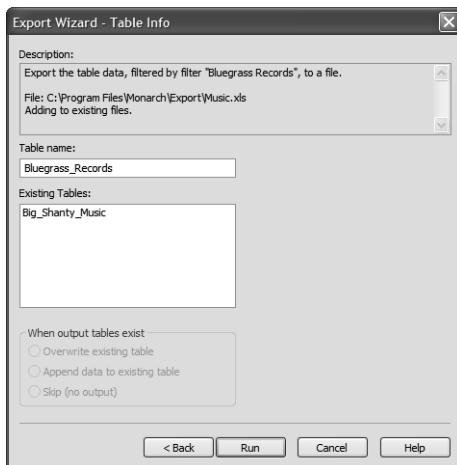


Figure 6-12. The Table Info screen.

Note that Monarch has specified a default name of Bluegrass\_Records for our export table. Though we could choose to rename it, let's use the default name.

9. Click the Run button.

Monarch displays a progress dialog, indicating the progress of the export operation.

10. When the export operation is complete, click OK to close the progress dialog.
11. Launch Excel (if you don't have Excel, just follow along in the book), open the Music.xls file, and select the Bluegrass\_Records worksheet.

	A	B	C	D	E	F	G	H	I
1	Customer	Media	Quantity	Description	Unit Price	Amount			
2	Bluegrass Records	CD	3	Faure, 28 Songs, Stulzmann	17.98	53.94			
3	Bluegrass Records	CD	3	Takemitsu, Music of Takemitsu	3.60	10.80			
4	Bluegrass Records	CD	6	Messiaen, Quatuor pour la fin de temps	9.60	57.60			
5	Bluegrass Records	MD	8	Strauss, Ein Heldenleben, Op.40	8.99	71.92			
6	Bluegrass Records	TAPE	9	Schumann, Manfred Overture, Bav SO	5.99	53.91			
7									
8									
9									
10									

Figure 6-13. Music.xls file with separate worksheet tabs for Big Shanty Music and Bluegrass Records.

12. Exit your spreadsheet.

## Saving Your Work

You have completed Lesson 6. You can save the page header and print options that you established in the first part of this lesson to a model file.

1. Select Data, Filters (ALT, D, F) or click the Filters button .

The Filters dialog displays.

2. Select No Filter, then choose OK to restore all the records to the Table window.
3. Select File, Save Model As (ALT, F, A).
4. Type **Export** in the File Name box, then choose Save.
5. Select File, Exit (ALT, F, X).

## Summary

In this lesson you printed data from Monarch's Table window, used the Windows clipboard to copy data to another application and exported the table data to a file. These procedures can also be used to print, copy and export data from the Summary window, which we'll discuss in Lesson 10. For further reading, see the following sections of the Monarch help file:

Chapter 2 - Table Window  
Copying Table Data  
Printing Table Data  
Exporting Table Data

In the next lesson you'll learn how to sort the table data.



## LESSON 7

## Sorting the Table

In this lesson you will learn how to sort data in the Table window. The lesson topics include:

- Sorting the table.
- Creating a sort definition.
- Sorting on multiple fields.
- Duplicating a sort order definition.
- Restoring the original sort order.
- Saving your work.

This lesson assumes you are familiar with importing and viewing report files, and working in the Table window.

## Sorting the Table

When you extract data from a report file, the information is arranged in the Table window in the order that it appears in the report. But you may want to view, print or export the data in another order. Sorting allows you to re-order the table to suit your needs.

To sort the data in the Table window, you create a *sort order definition*, which specifies the parameters for sorting. The sort order definition includes the fields to sort on, the sort order for each field (ascending or descending), and the hierarchy for the sort. You can create multiple sort order definitions and switch between them to see different views of your data.

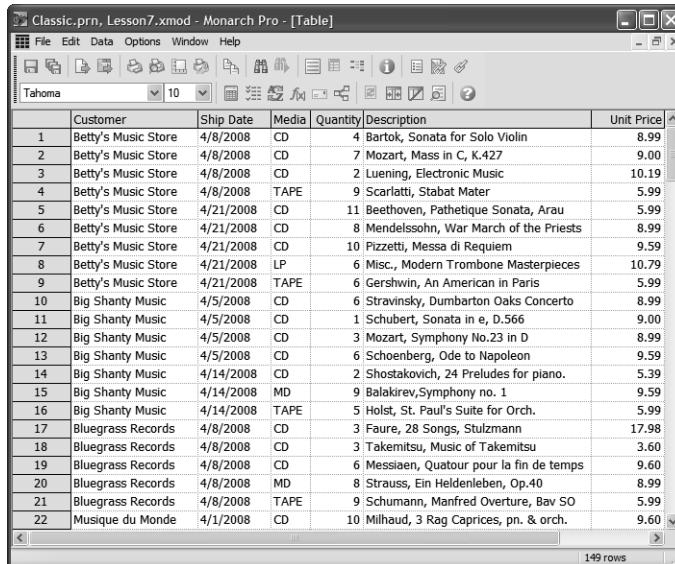
## Starting the Lesson

To start the lesson, load Monarch and open the Classic.prn and Lesson7.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson7.xmod, then choose Open.
4. Select Window, Table (ALT, W, T) or click the Table window button  on the toolbar.

The Table window displays the records created from the Classic report and the Lesson 7 model. For this lesson, we've extracted all of the detail fields and a single field from each sort level in the report.

**Note:** If the Table window font size is still set at 8, you may want to enlarge it to 9 or 10.



The screenshot shows the Monarch Pro Table window titled "Classic.prn, Lesson7.xmod - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, and Help. Below the menu is a toolbar with various icons. The main area is a grid table with the following columns: Customer, Ship Date, Media, Quantity, Description, and Unit Price. The table contains 22 rows of data, with row numbers 1 through 22 listed on the left. The data includes purchases from various stores like Betty's Music Store, Big Shanty Music, and Bluegrass Records, with descriptions of the items purchased and their unit prices.

	Customer	Ship Date	Media	Quantity	Description	Unit Price
1	Betty's Music Store	4/8/2008	CD	4	Bartok, Sonata for Solo Violin	8.99
2	Betty's Music Store	4/8/2008	CD	7	Mozart, Mass in C, K.427	9.00
3	Betty's Music Store	4/8/2008	CD	2	Luening, Electronic Music	10.19
4	Betty's Music Store	4/8/2008	TAPE	9	Scarlatti, Stabat Mater	5.99
5	Betty's Music Store	4/21/2008	CD	11	Beethoven, Pathetique Sonata, Arau	5.99
6	Betty's Music Store	4/21/2008	CD	8	Mendelssohn, War March of the Priests	8.99
7	Betty's Music Store	4/21/2008	CD	10	Pizzetti, Messa di Requiem	9.59
8	Betty's Music Store	4/21/2008	LP	6	Misc., Modern Trombone Masterpieces	10.79
9	Betty's Music Store	4/21/2008	TAPE	6	Gershwin, An American in Paris	5.99
10	Big Shanty Music	4/5/2008	CD	6	Stravinsky, Dumbarton Oaks Concerto	8.99
11	Big Shanty Music	4/5/2008	CD	1	Schubert, Sonata in e, D.566	9.00
12	Big Shanty Music	4/5/2008	CD	3	Mozart, Symphony No.23 in D	8.99
13	Big Shanty Music	4/5/2008	CD	6	Schoenberg, Ode to Napoleon	9.59
14	Big Shanty Music	4/14/2008	CD	2	Shostakovich, 24 Preludes for piano.	5.39
15	Big Shanty Music	4/14/2008	MD	9	Bakakev,Symphony no. 1	9.59
16	Big Shanty Music	4/14/2008	TAPE	5	Holst, St. Paul's Suite for Orch.	5.99
17	Bluegrass Records	4/8/2008	CD	3	Fauré, 28 Songs, Stulzmann	17.98
18	Bluegrass Records	4/8/2008	CD	3	Takemitsu, Music of Takemitsu	3.60
19	Bluegrass Records	4/8/2008	CD	6	Messiaen, Quatour pour la fin de temps	9.60
20	Bluegrass Records	4/8/2008	MD	8	Strauss, Ein Heldenleben, Op.40	8.99
21	Bluegrass Records	4/8/2008	TAPE	9	Schumann, Manfred Overture, Bav SO	5.99
22	Musique du Monde	4/1/2008	CD	10	Milhaud, 3 Rag Caprices, pn. & orch.	9.60

Figure 7-1. Extracted data displayed in the Table window.

## Creating a Sort Order Definition

The Classic report is sorted by Customer and Ship Date. When the report data is extracted and assembled as records in the Table window, the records appear in the same order. This is evident in Figure 7-1. Records for Betty's Music Store appear first, then records for Big Shanty Music, and so on. Within each customer, the records are sorted by ship dates. While this sort order is useful, you may want to view the data in another order. Let's sort the table based on the Description field.

To sort the table, you use the Sort Order Definition dialog to create a sort definition. You reach this dialog through the Sort Orders dialog.

1. Select Data, Sorts (ALT, D, S) or click the Sort Orders button .

The Sort Orders dialog displays.

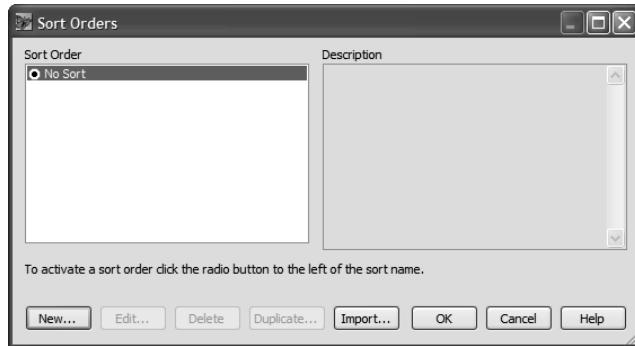


Figure 7-2. The Sort Orders dialog.

From this dialog you can create multiple sort definitions and switch between them to see different views of the table.

2. Choose New to create a new sort definition.

The Sort Order Definition dialog displays.

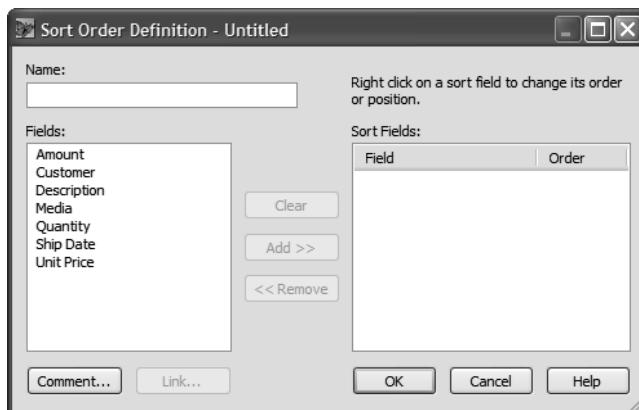


Figure 7-3. Sort Order Definition dialog.

The Fields box displays the fields from the table. The Sort Fields box displays the fields used in the sort definition, from highest sort level to lowest. To add a field to the definition, select the field from the Fields box, then click Add >>. To remove a field, select the field from the Sort Fields box, then click << Remove.

3. Select the Description field from the Fields box, then click the Add button.

The Description field appears in the Sort Fields box. When a field is added to the Sort Fields box, its initial sort order is Ascending. To change the sort order of a field, you right-click on the field to display a context menu, then select Change Order from the menu. Since we want to sort the field values in ascending order, we'll leave the sort order as it appears.

4. Type **Product Description** in the Name box.

**Note:** Sort definition names may be up to 31 characters in length and may contain uppercase and lowercase characters, spaces and punctuation except for period (.), exclamation point (!), accent grave (`) and brackets ([ ]). Names may begin with any character, except for spaces. If a name is entered with leading spaces, the name is accepted but the leading spaces are ignored.

5. Choose OK to accept the sort definition.

The Sort Orders dialog reappears with the new sort order name highlighted.

6. Choose OK in the Sort Orders dialog.

The data in the Table window has been re-arranged according to the Product Description sort order.

	Customer	Ship Date	Media	Quantity	Description	Unit Price
1	The Glass Harmonica	4/22/2008	CD	8	Argento, Postcard from Morocco	20.38
2	The Glass Harmonica	4/22/2008	DCC	1	Bach, Chorale Preludes, Biggs	9.59
3	The Glass Harmonica	4/22/2008	CD	1	Bach, Fantasia in G for Organ	6.59
4	Spinning Records	4/28/2008	CD	9	Bach, Sonatas & Partitas for violin.	9.60
5	Big Shanty Music	4/14/2008	MD	9	Balakirev, Symphony no. 1	9.59
6	Hope's Sweet Notes	4/14/2008	DCC	10	Barber, Adagio for Strings, NZSO	7.79
7	Reiner's Symphonic S	4/28/2008	TAPE	2	Barber, Essay no. 3 for Orch.	5.39
8	Notas Musicales	4/27/2008	TAPE	2	Bartok, 4 Dirges, piano., Hagopian	5.39
9	Betty's Music Store	4/8/2008	CD	4	Bartok, Sonata for Solo Violin	8.99
10	Die Harmonie	4/18/2008	CD	3	Baur, 3 Toccatas for Accordion	7.79
11	Hope's Sweet Notes	4/15/2008	CD	8	Beethoven, 3rd Sym, Karajan, Berlin	9.00
12	Betty's Music Store	4/21/2008	CD	11	Beethoven, Pathetic Sonata, Arau	5.99
13	Musique Royale	4/19/2008	LP	6	Bernstein, West Side Story	8.99
14	Notas Musicales	4/5/2008	CD	9	Bizet, Carmen	10.78
15	Spinning Records	4/28/2008	TAPE	6	Bliss, Masks for Piano	5.99
16	The King's Place	4/21/2008	TAPE	7	Borddin, In the Steppes of Central Asia	3.59
17	Mo Town Tunes	4/1/2008	CD	6	Brahms, Chorale Preludes for Organ	9.59
18	Spinning Records	4/4/2008	CD	4	Brahms, Sonata for 2 pianos	7.79
19	Hope's Sweet Notes	4/14/2008	TAPE	5	Britten, War Requiem	11.98
20	The Record Store	4/20/2008	CD	3	Bruch, Concerto in d, violin.	7.79
21	Musique Royale	4/13/2008	CD	6	Cage, Music of Changes	8.99
22	Musique du Monde	4/8/2008	CD	-7	Casella, Paganiniiana, NBC SO	9.00

Figure 7-4. Table window sorted by the Description field values.

## Sorting on Multiple Fields

In the previous section, we sorted the table on a single field. Monarch also lets you sort on multiple fields. Let's sort the table again, this time on two fields, Media (in ascending order) and Amount (in descending order).

1. Select Data, Sorts (ALT, D, S) or click the Sort Orders button .

The Sort Orders dialog displays (see Figure 7-2).

2. Choose New.

The Sort Order Definition dialog displays (see Figure 7-3).

3. Select the Media field from the Fields box, then choose Add >>.
4. Select the Amount field from the Fields box, then choose Add >>.

Let's change the sort order of the Amount field to sort the values in descending order (largest values to smallest value).

5. Right-click on the Amount field, then select Change Order from the context menu.
6. Type **Descending Sales By Media** in the Name box.

If you don't provide a name, Monarch will attempt to name the sort definition using the name of the first sort field you specified, in this case, Media. If this name is already in use by another sort definition, you will be prompted to enter a name.

7. Choose OK to accept the sort definition.

The Sort Orders dialog reappears with the new sort definition name highlighted.

8. Choose OK to close the Sort Orders dialog.

The data in the Table window is sorted, first by Media, then by Amount. The Amount field values for each media type are sorted in descending order.

9. Scroll right until both the Media and Amount fields are visible.

	Ship Date	Media	Quantity	Description	Unit Price	Amount
1	4/14/2008	CD	8	Misc., The Art of Perlman, Itzhak, vn.	38.40	307.20
2	4/22/2008	CD	8	Argento, Postcard from Morocco	20.38	163.04
3	4/7/2008	CD	4	Glass, Einstein on the Beach	35.95	143.80
4	4/12/2008	CD	9	Puccini, Madame Butterfly (opera)	15.58	140.22
5	4/19/2008	CD	7	Haydn, Paris Symphonies	17.98	125.86
6	4/28/2008	CD	9	MacDowell, Sonata tragica in g	11.98	107.82
7	4/28/2008	CD	11	Misc., Nova Schola Gregoriana	9.59	105.49
8	4/5/2008	CD	9	Bizet, Carmen	10.78	97.02
9	4/1/2008	CD	10	Milhaud, 3 Rag Caprices, pn. & orch.	9.60	96.00
10	4/21/2008	CD	10	Pizzetti, Messa di Requiem	9.59	95.90
11	4/19/2008	CD	10	Ives, Robert Browning Overture	9.57	95.70
12	4/28/2008	CD	9	Bach, Sonatas & Partitas for violin.	9.60	86.40
13	4/18/2008	CD	4	Monteverdi, L'Orfeo	21.58	86.32
14	4/24/2008	CD	9	Hakim, Suite for Harpsichord	9.59	86.31
15	4/24/2008	CD	9	Janacek, Jealousy Overture	9.59	86.31
16	4/13/2008	CD	9	Koday, Marosszek Dances	9.58	86.22
17	4/22/2008	CD	11	Debussey, Preludes for Piano	7.79	85.69
18	4/25/2008	CD	9	Granados, Capricho Espanol, piano.	8.99	80.91
19	4/28/2008	CD	10	Gibbons, Instrumental & Vocal Music	7.79	77.90
20	4/24/2008	CD	10	Schumann, Frauenliebe und leben	7.79	77.90
21	4/15/2008	CD	8	Beethoven, 3rd Sym, Karajan, Berlin	9.00	72.00
22	4/21/2008	CD	8	Mendelssohn, War March of the Priests	8.99	71.92

Figure 7-5. Table window sorted by Media and Amount.

## Duplicating a Sort Order Definition

When creating several similar sort orders, you can save time by using the first sort order definition as the starting point for subsequent definitions. Monarch makes this process easy. Let's duplicate the "Descending Sales By Media" sort order definition to create a new definition that sorts both fields in ascending order.

1. Select Data, Sorts (ALT, D, S) or click the Sort Orders icon .

The Sort Orders dialog displays.

2. Select the “Descending Sales By Media” sort order, then click the Duplicate button.

The Sort Order Definition dialog displays and is populated with the “Descending Sales By Media” definition, except for the name. Monarch requires that all sort order names be unique, so you must enter a new name for the new sort order.

3. Right-click on the Amount field, then select Change Order from the context menu.
4. Type **Ascending Sales By Media** in the Name box, then choose OK to accept the new sort order definition.

The Sort Order dialog reappears with the new sort definition name highlighted.

5. Choose OK to apply the new sort definition.

## Restoring the Original Record Order

You can turn off sorting and restore the original record order by selecting the “No Sort” option in the Sort Orders dialog.

1. Select Data, Sorts (ALT, D, S) or click the Sort Orders button .

The Sort Orders dialog displays.

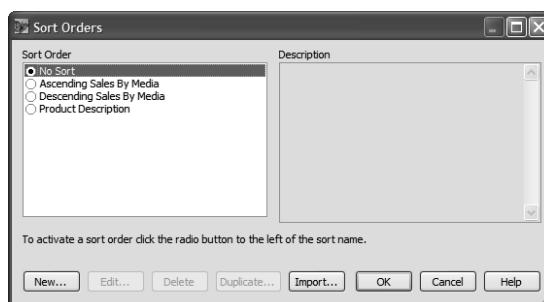


Figure 7-6. Choosing the No Sort option.

2. Select No Sort to disable all sort definitions, then choose OK.

The Table data is re-displayed in its original order.

## Saving Your Work

You have completed Lesson 7. We recommend you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Sort** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X).

The model contains each sort definition along with other information about your Monarch session. Each model can hold an unlimited number of sort definitions.

## Summary

In this lesson you used Monarch's sorting capability to change the order that data appears in the Table window. For further reading, see the following section of the Monarch help file:

Chapter 2 - Table Window  
Sorting the Table

In the next lesson, you'll learn about record selection filters, which you can use to display a subset of the table.

**L E S S O N   8**

# Record Selection Filters

In this lesson you will learn how to use a filter to display a subset of the table data. The lesson topics include:

- What is a filter?
- Creating a filter expression.
- Testing a filter expression.
- Using functions.
- Restoring the original table data.
- Working with value-based filters.

This lesson assumes you are familiar with opening reports, creating a data extraction template, and working in Monarch's Table window.

## What is a Filter?

Record selection filters provide a means of selecting specific records and filtering out the rest. You can use a filter to explore data by limiting the available records to only those that match your specifications. And you can create multiple filters and switch between them to see different views of your data.

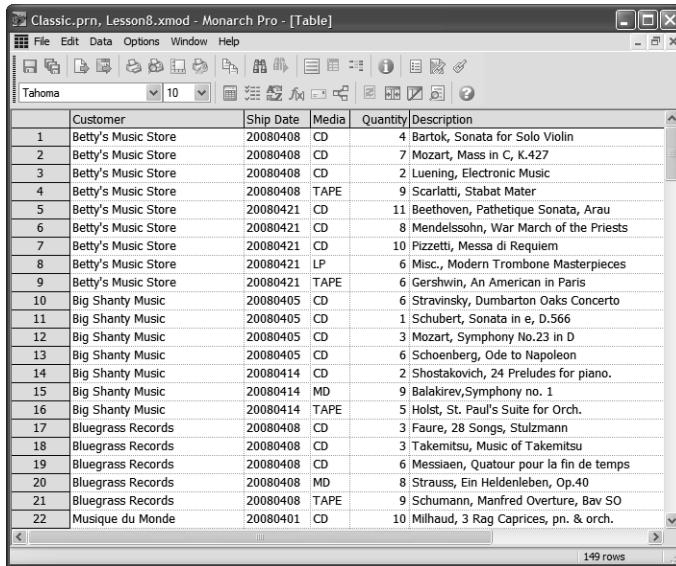
## Starting the Lesson

To start the lesson, load Monarch and open Classic.prn and Lesson8.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson8.xmod, then choose Open.

- Select Window, Table (ALT, W, T) or click the Table window button  on the toolbar.

The Table window displays the records created from the Classic report and the Lesson 8 model.



The screenshot shows the Monarch Pro Table window titled "Classic.prn, Lesson8.xmod - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, Help. Below the menu is a toolbar with various icons. The main area is a grid table with columns: Customer, Ship Date, Media, Quantity, and Description. The table contains 149 rows of data. The data includes transactions for customers like Betty's Music Store, Big Shanty Music, Bluegrass Records, and Musique du Monde, across media types CD, LP, and TAPE, with quantities ranging from 1 to 10 and descriptions of various classical pieces.

Figure 8-1. Extracted data displayed in the Table window.

The table in Figure 8-1 lists transactions for a distributor of classical music recordings. Transactions are included for each customer and are broken down by media types, including CDs, LPs, and Tapes. In all there are 149 records in the table.

By applying a filter, you can select only those records that interest you and filter out the rest. Let's use a filter to view only the records for a particular customer, Fandangos Records.

## Creating a Filter Expression

To filter the table data, you use the Filter Definition dialog to create a filter expression. You reach this dialog through the Filters dialog.

- Select Data, Filters (ALT, D, F) or click the Filters button .

The Filters dialog displays.



Figure 8-2. The Filters dialog.

From this dialog you can create multiple filters and switch between them to see different views of the table.

2. Choose New to create a new filter.

The Filter Style dialog displays.



Figure 8-3. The Filter Style dialog.

With this dialog, we can specify whether we want to create a formula-based filter or a value-based one. For now, let's create a formula-based one. (We'll create a value-based one later on in this lesson.)

3. Click OK to display the Filter Definition dialog.

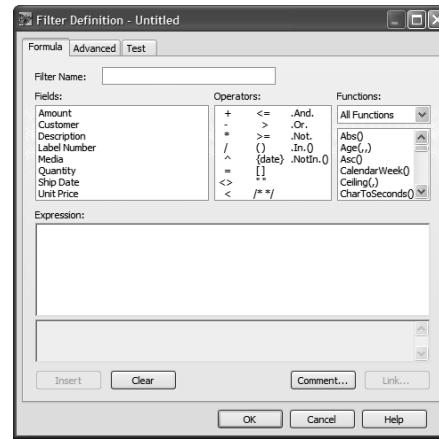


Figure 8-4. The Filter Definition dialog.

To define a filter, you build a filter expression that tells Monarch which records to use. The filter expression appears in the Expression box near the middle of the dialog. Several list boxes display the field names from the table, arithmetic and logical operators, and functions, all of which you can use in your filter expressions.

To display only transactions for Fandangos Records, we'll use this expression:

Customer="Fandangos Records"

To build this expression, you could type the expression as it appears above, or you could build it by inserting components from the list boxes. Let's start by inserting the Customer field.

4. Click on the Customer field in the Fields box, then click the Insert button.

The Customer field is inserted in the Expression box. **Note:** Double-clicking an item inserts it automatically.

5. Double-click the equal sign (=) in the Operators box.

The equal sign is added to the expression.

6. Double-click the pair of quotes (" ") in the Operators box.

When you insert quotes or parentheses in a filter expression, the edit cursor is automatically positioned between them.

7. Type **Fandangos Records**.

Now we can use the Test feature that is common to both Filters and Calculated fields to test our expression before saving it.

8. Click the Test tab

The fields involved in the expression are shown, together with a test value, which is taken from the first record in the report. We would expect the filter to give a value of False for "Betty's Music Store", which is the current test value.

9. Click the Test button.

In the box to the right of the Test button, the text "Formula expression evaluates to FALSE" appears, which is what we would expect.

The filter expression is complete. Now let's assign a name and apply the filter.

10. Click the Formula tab, type **Fandangos Records** in the Filter Name box, then choose OK.

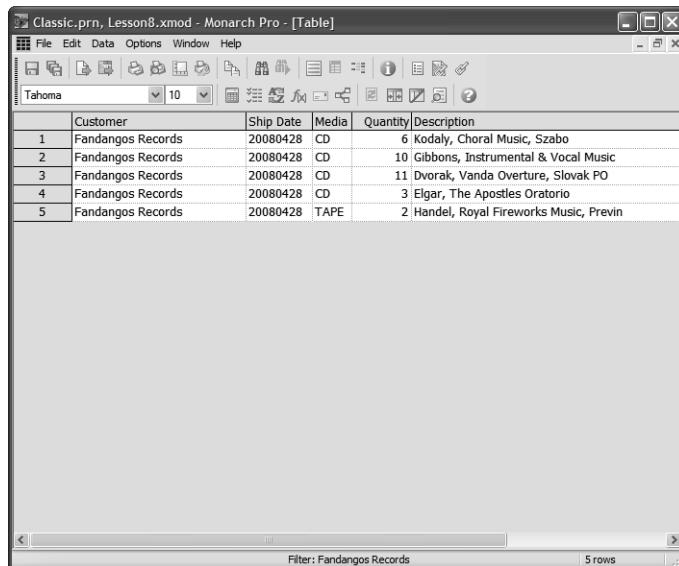
**Note:** Filter definition names may be up to 31 characters in length and may contain uppercase and lowercase characters, spaces and punctuation except for period (.), exclamation point (!), accent grave (`) and brackets ([ ]). Names may begin with any character, except for spaces. If a name is entered with leading spaces, the name is accepted but the leading spaces are ignored.

11. Choose OK to accept the filter definition.

The Filters dialog reappears with the new filter name highlighted.

12. Choose OK in the Filters dialog to apply the filter.

The table is re-displayed using only the transactions for Fandangos Records (see Figure 8-5).



A screenshot of the Monarch Pro Table window titled "Classic.prn, Lesson8.xmod - Monarch Pro - [Table]". The window shows a grid of transaction data. The columns are labeled "Customer", "Ship Date", "Media", "Quantity", and "Description". There are five rows of data, all filtered to show transactions from "Fandangos Records".

	Customer	Ship Date	Media	Quantity	Description
1	Fandangos Records	20080428	CD	6	Kodaly, Choral Music, Szabo
2	Fandangos Records	20080428	CD	10	Gibbons, Instrumental & Vocal Music
3	Fandangos Records	20080428	CD	11	Dvorak, Vanda Overture, Slovak PO
4	Fandangos Records	20080428	CD	3	Elgar, The Apostles Oratorio
5	Fandangos Records	20080428	TAPE	2	Handel, Royal Fireworks Music, Previn

Figure 8-5. The Table window showing transactions for Fandangos Records.

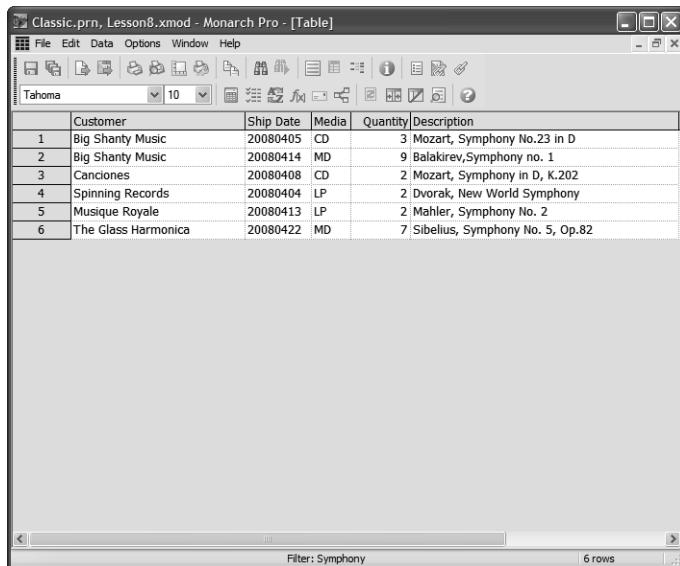
**Note:** The Monarch help file contains additional information on filter expressions, including the creation of compound ones. For more information refer to *Chapter 2 – Table Window, Calculated Fields, Creating Expressions*.

## Using Functions

Monarch provides a host of database functions you can use in your filter expressions. For example, to display only shipments of symphony recordings, you can use the expression:

```
Instr("Symphony", [Description])>0
```

The Instr() function searches a field for the occurrence of a string. In the above example, the expression returns only those records where the word "Symphony" appears anywhere in the Description field (the brackets surrounding the Description field name are required, as this field name is longer than 10 characters).



The screenshot shows the Monarch Pro Table Window interface. The window title is "Classic.prn, Lesson8.xmod - Monarch Pro - [Table]". The menu bar includes File, Edit, Data, Options, Window, and Help. The toolbar contains various icons for file operations like Open, Save, Print, and Filter. The main area displays a table with the following columns: Customer, Ship Date, Media, Quantity, and Description. There are six rows of data, each representing a different customer and their shipment details. A filter bar at the bottom of the table indicates "Filter: Symphony" and shows "6 rows".

	Customer	Ship Date	Media	Quantity	Description
1	Big Shanty Music	20080405	CD	3	Mozart, Symphony No.23 in D
2	Big Shanty Music	20080414	MD	9	Balakirev,Symphony no. 1
3	Canciones	20080408	CD	2	Mozart, Symphony in D, K.202
4	Spinning Records	20080404	LP	2	Dvorak, New World Symphony
5	Musique Royale	20080413	LP	2	Mahler, Symphony No. 2
6	The Glass Harmonica	20080422	MD	7	Sibelius, Symphony No. 5, Op.82

Figure 8-6. Using a filter to display Symphony recordings.

Monarch supports over 70 database functions. The Monarch help file contains detailed information about each function, including examples of their use in filter expressions. Refer to *Chapter 2 – Table Window, Functions* in the Monarch help file for more information. In addition, Monarch includes user-defined functions, whereby you can create your own functions to provide an easy way to store and use complex expressions that you develop. These can even be shared easily, if you and your co-workers use Monarch Pro. For detailed information on user-defined functions, refer to *Chapter 2 – Table Window, Configuring a User-Defined Function* in the Monarch help file.

## Restoring the Original Data

You can turn off filtering and re-display all of the table data by selecting the No Filter option in the Filters dialog.

1. Select Data, Filter (ALT, D, F) or click the Filters button .

The Filters dialog displays.

2. Select No Filter to disable all filters, then choose OK.

The Table window displays all of the original data.

## Working with Value-Based Filters

Now that we have all of the original data displayed again, let's see how we can manipulate it using a new filter type introduced in Monarch 10, i.e., value-based filters. This new type of filter provides an easy to use alternative to traditional formula-based filters.

A value-based filter consists of a specified field along with a set of one or more specific field values. The basic idea is that the value-based filter will pass any rows where the field's value matches any of the specified values. For example, one might specify "City" as the field, and values of "London", "Paris", "New York", and "Chelmsford". The filter would then pass any rows where the City value was one of those four cities.

The Classic.prn report currently displayed contains sales information of works by various composers. Let's assume that you want to compare the sales of the works by three composers, Bach, Beethoven and Mozart. You can easily do this using a value-based filter.

1. Select Data, Filters (ALT, D, F) or click the Filters button .

The Filters Dialog displays.

2. Click New to display the Filter Style dialog, select Value-based, then click OK.

The Filter Definition dialog opens and displays the Field Values tab.

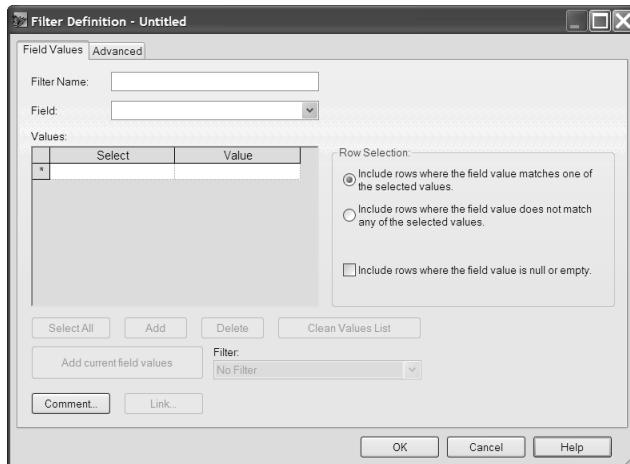


Figure 8-7. The Field Values tab.

The first step is to specify the field we want to filter against. The Description field lists the composer and title of each item sold, so this is the field we need to specify.

### 3. From the Field drop-down list select Description.

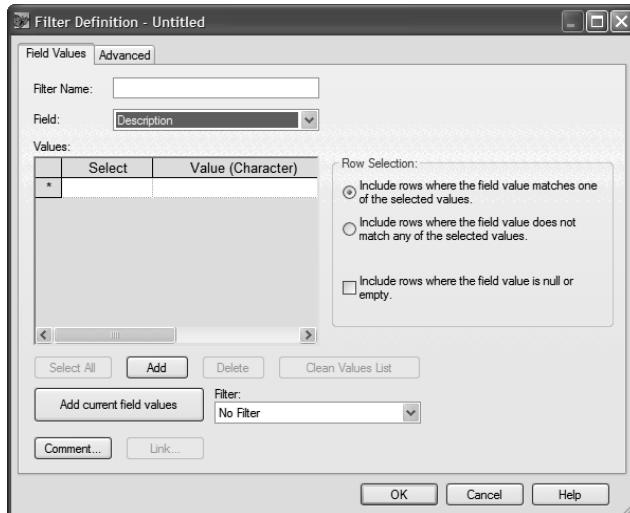


Figure 8-8. Selecting the Description field.

There are a number of ways we could populate the Values grid. One easy way is to add all the current field values to it. Let's try doing that.

### 4. Click the Add Current Field Values button.

Monarch populates the Values grid with the Description field values.

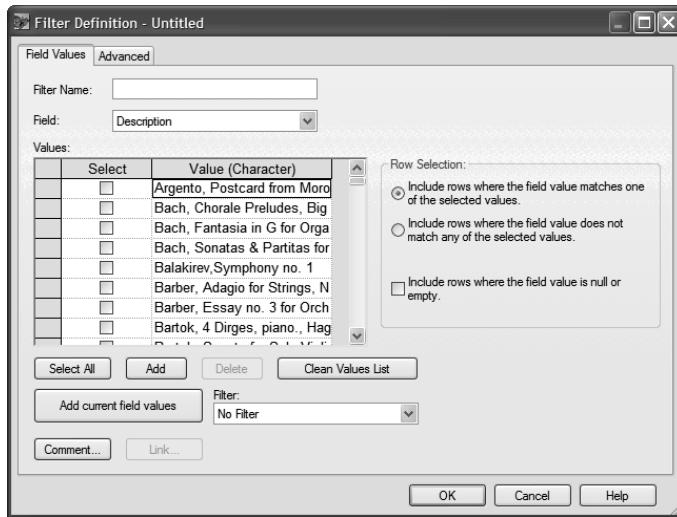


Figure 8-9. Viewing the Description field values.

5. Scroll down in the Values grid and select the check boxes for all the Bach, Beethoven and Mozart fields.

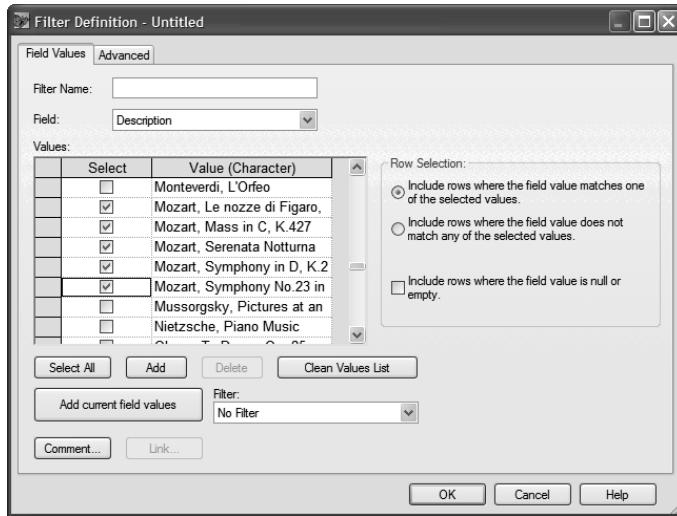
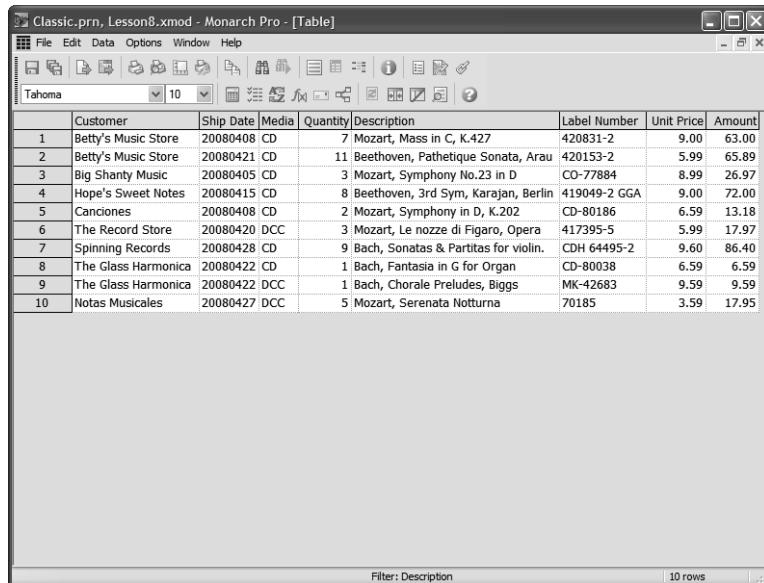


Figure 8-10. Selecting the desired values.

6. Click OK to close the Filter Definition dialog, then click OK to close the Filters dialog.

Monarch applies the filter and redisplays the table. Note that only the Description fields we selected are displayed.



The screenshot shows the Monarch Pro application window titled "Classic.prn, Lesson8.xmod - Monarch Pro - [Table]". The menu bar includes File, Edit, Data, Options, Window, and Help. The toolbar contains various icons for file operations like Open, Save, Print, and Filter. The main area displays a table with the following data:

	Customer	Ship Date	Media	Quantity	Description	Label Number	Unit Price	Amount
1	Betty's Music Store	20080408	CD	7	Mozart, Mass in C, K.427	420831-2	9.00	63.00
2	Betty's Music Store	20080421	CD	11	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89
3	Big Shanty Musi	20080405	CD	3	Mozart, Symphony No.23 D	CO-77884	8.99	26.97
4	Hope's Sweet Notes	20080415	CD	8	Beethoven, 3rd Sym, Karajan, Berlin	419049-2 GGA	9.00	72.00
5	Canciones	20080408	CD	2	Mozart, Symphony in D, K.202	CD-80186	6.59	13.18
6	The Record Store	20080420	DCC	3	Mozart, Le nozze di Figaro, Opera	417395-5	5.99	17.97
7	Spinning Records	20080428	CD	9	Bach, Sonatas & Partitas for violin.	CDH 64495-2	9.60	86.40
8	The Glass Harmonica	20080422	CD	1	Bach, Fantasia in G for Organ	CD-80038	6.59	6.59
9	The Glass Harmonica	20080422	DCC	1	Bach, Chorale Preludes, Biggs	MK-42683	9.59	9.59
10	Notas Musicales	20080427	DCC	5	Mozart, Serenata Notturna	70185	3.59	17.95

At the bottom of the window, there is a status bar with "Filter: Description" and "10 rows".

Figure 8-11. Viewing the filtered table (column widths auto-sized).

The Field Values tab contains options which allow you to alter the behavior of a value-based filter in many powerful ways. For example, if the data type of the field you've selected is Character or Memo, then in the values you specify for matching, you can include wildcard characters (e.g., "\*" and "?"). For a thorough exploration of value-based filters, refer to the Monarch help file.

## Saving Your Work

You have completed Lesson 8. We recommend you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Filter** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X).

The model contains each filter definition along with other information about your Monarch session. Each model can hold multiple filters, limited only by Monarch's internal table size (refer to *Appendix D - Technical Specifications* of the Monarch help file for details).

## Summary

In this lesson you used a variety of filters to explore the data in the Table window. For further reading, see the following sections of the Monarch help file:

- Chapter 2 - Table Window
- Filters
  - Overview
  - Creating a Formula-Based Filter
  - Creating a Value-Based Filter
  - Creating Expressions
  - Using Filters in Auditing
  - Using a Filter to Improve Performance When Building Models
- Functions
  - Function Syntax Rules
  - Function Reference
  - Configuring a User-Defined Function

In the next lesson, you'll learn about calculated fields, which you can use to derive new information from the table data.



**L E S S O N   9**

## Calculated Fields

In this lesson, you will learn how to calculate new fields from the data in the Table window. The lesson topics include:

- What is a calculated field?
- Creating a calculated field.
- Making comparisons.
- Hiding and deleting calculated fields.
- Saving your work.

This lesson assumes you are familiar with opening reports, creating a data extraction template, and working in the Monarch's Table window.

### What is a Calculated Field?

A calculated field is a field whose value is derived from other fields in the same record. Calculated fields can be used to perform a variety of tasks, including arithmetical computations, concatenating character fields, and extracting information from a field. You can create and save multiple calculated fields. Once a calculated field is created, you can use it in filter, sort and summary definitions and copy, print and export it along with other fields.

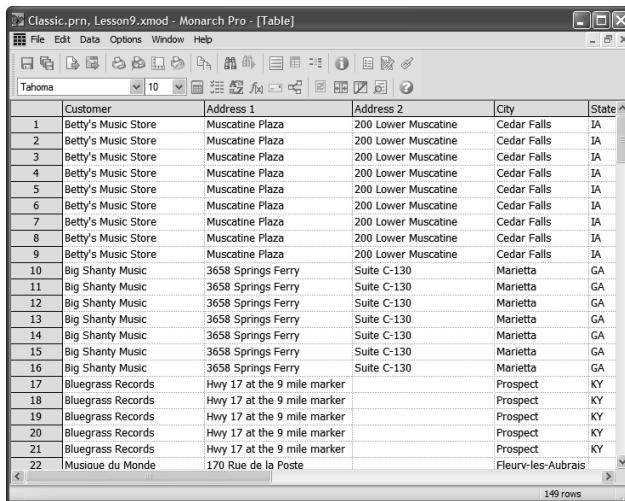
### Starting the Lesson

To start the lesson, we'll load Monarch and open Classic.prn and Lesson9.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson9.xmod, then choose Open.

- Select Window, Table (ALT, W, T) or click the Table window button  on the toolbar.

The Table window displays the records created from the Classic report and the Lesson 9 model.



The screenshot shows the Monarch Pro Table window titled "Classic.prn, Lesson9.xmod - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, Help. The toolbar below has icons for New, Open, Save, Print, and others. The main area displays a grid of data with columns: Customer, Address 1, Address 2, City, and State. The data consists of 22 rows, each representing a transaction. Row 1: Betty's Music Store, Muscatine Plaza, 200 Lower Muscatine, Cedar Falls, IA. Row 22: Musique du Monde, 170 Rue de la Poste, Fleur-les-Aubrais, Prospect, KY. A status bar at the bottom right indicates "149 rows".

Figure 9-1. Extracted data displayed in the Table window.

The table in Figure 9-1 lists transactions for a distributor of classical music recordings. We've extracted the detail information for each transaction along with the customer name and address.

By creating calculated fields we can derive new information from the table data. For example, we can create a new field that calculates a 20% discount for all transactions. Let's give this a try.

## Creating a Calculated Field

To define a calculated field, you use the Field Properties dialog to create a calculated field expression. You access this dialog through the Calculated Field Style dialog.

- Select Data, Calculated Fields (ALT, D, C) or click the Calculated Fields button .

The Calculated Fields dialog displays.

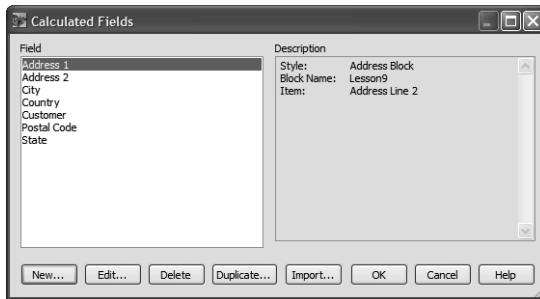


Figure 9-2. The Calculated Fields dialog.

From this dialog you can create, edit or delete calculated fields.

2. Choose New to create a new calculated field.

The Calculated Field Style dialog displays.

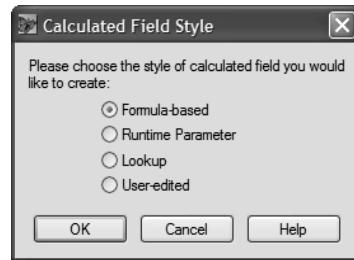


Figure 9-3. The Calculated Field Style dialog.

This dialog provides four calculated field style (or type) options:

**Formula-based** – To create a formula-based calculated field, you create a calculated field expression. A calculated field expression is a formula that returns a value to a calculated field.

**Runtime Parameter** – Runtime parameter calculated fields are very much like formula-based ones. The major difference between them is that runtime parameter calculated fields do not contain a formula, just a simple string, number or date value. The user is prompted to supply values for each runtime parameter when the model is loaded.

**Lookup** – A lookup calculated field provides a convenient "table lookup" where the value of a designated input field is checked against a lookup table. They can be useful in avoiding the long and complicated IF statements that can occur in formula-based calculated fields.

**User-edited** – A special form of calculated field in which the user may enter text to annotate rows in the table or to enter corrections for bad data.

**Note:** For more detailed information on calculated fields, refer to *Chapter 2 - Table Window, Calculated Fields* of the Monarch help file.

3. Click the OK button to specify a formula-based calculated field.

The Field Properties dialog displays.

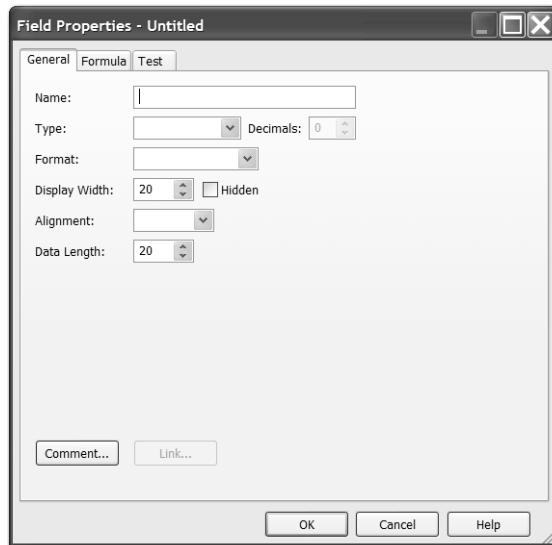


Figure 9-4. The Field Properties dialog.

4. Type **Discount** in the Name box.

**Note:** Field names may be up to 62 characters in length and may contain uppercase and lowercase characters, spaces and punctuation except for period (.), exclamation point (!), accent grave (`) and brackets ([ ]). Names may begin with any character, except for a space or an underscore (\_). If a name is entered with leading spaces, the name is accepted but the leading spaces are ignored.

Since this expression will result in a numeric value, we need to set the appropriate formatting for the field.

5. From the Type drop-down list, select Numeric.
6. Enter **2** in the Decimals box.
7. Select the Formula tab.

To define a calculated field, you build a calculated field expression that returns a value to the field. The calculated field expression appears in the Expression box near the bottom of the Formula tab. Several list boxes display the field names from the table, arithmetic and logical operators, and functions that you can use in your calculated field expressions.

To calculate a 20% discount for all transactions, we'll use the expression,

Amount\*0.2

To build this expression, you could type the expression as it appears above, or you could build it by inserting components from the list boxes. Let's start by inserting the Amount field.

8. Click on the Amount field in the Fields box, then click the Insert button.

The Amount field is inserted in the Expression box. Double-clicking an item inserts it automatically.

9. Double-click the multiplication sign (\*) in the Operators box.

The multiplication sign is added to the expression.

10. Type **0.2**

The calculated field expression is now complete.

If we wanted to, we could test the calculated field by using the Test tab, as we did previously in the Filters lesson. In this case, however, the test would show the resulting value of the calculated field, rather than whether it evaluates to True or False, as is the case with Filters.

11. Choose OK to accept the calculated field definition.

The Calculated Fields dialog reappears with the new field name (Discount) displayed in its list of fields.

12. Choose OK in the Calculated Fields dialog to add the field to the table.

The new field is added to the end (far right) of the table. Scroll right until the Discount field is visible.

	Description	Label Number	Unit Price	Amount	Discount
1	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96	7.19
2	Mozart, Mass in C, K.427	420831-2	9.00	63.00	12.60
3	Luening, Electronic Music	CD 611	10.19	20.38	4.08
4	Scarlatti, Stabat Mater	SBT 48282	5.99	53.91	10.78
5	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89	13.18
6	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92	14.38
7	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90	19.18
8	Misc., Modern Trombones Masterpieces	ADA 581087	10.79	64.74	12.95
9	Gershwin, An American in Paris	ACS 8034	5.99	35.94	7.19
10	Stravinsky, Dumbarton Oaks Concerto	SMCD 5120	8.99	53.94	10.79
11	Schubert, Sonata in e, D.566	AS-325	9.00	9.00	1.80
12	Mozart, Symphony No.23 in D	CO-77884	8.99	26.97	5.39
13	Schoenberg, Ode to Napoleon	CHAN 9116	9.59	57.54	11.51
14	Shostakovich, 24 Preludes for piano.	CDA 66620	5.39	10.78	2.16
15	Balakirev, Symphony no. 1	ENTPD 4110	9.59	86.31	17.26
16	Holst, St. Paul's Suite for Orch.	CBT-1020	5.99	29.95	5.99
17	Faure, 28 Songs, Stulzmann	RCA 61429-2	17.98	53.94	10.79
18	Takemitsu, Music of Takemitsu	SMK 53473	3.60	10.80	2.16
19	Messiaen, Quatour pour la fin de temps	CDC 54935	9.60	57.60	11.52
20	Strauss, Ein Heldenleben, Op.40	SMMD-5036	8.99	71.92	14.38
21	Schumann, Manfred Overture, Bav SO	SBT 48270	5.99	53.91	10.78
22	Milhaud, 3 Raa Caprices. on. & orch.	Z-6569	9.60	96.00	19.20

Figure 9-5. Table window with Discount calculated field.

## Making Comparisons

In the previous section we created a calculated field using a simple arithmetical expression. Monarch lets you create more complex expressions involving comparisons. Lets use this feature to calculate a discount only for sales amounts of 75 or more. Rather than create a new calculated field, we'll edit the existing field to apply our new discount strategy.

1. Double-click anywhere in the Discount field, then select the Formula tab on the Field Properties dialog.

To apply the discount only for sales amounts of 75 or more, we'll use the IF() function in our calculated field expression:

If(Amount>=75,Amount\*0.2,0)

In plain English this expression reads, "If the Amount field contains a value of 75 or greater, use the first expression (Amount\*0.2) to calculate a discount, otherwise, use the second expression (0) to show no discount."

2. Click the Clear button then enter the calculated field expression so that it reads as shown above (see also Figure 9-6).



Figure 9-6. The modified Discount calculated field definition.

3. Choose OK to accept the new calculated field definition.

The field is re-calculated to show a discount only for transactions with an amount of 75 or more.

	Description	Label Number	Unit Price	Amount	Discount
1	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96	0.00
2	Mozart, Mass in C, K.427	420831-2	9.00	63.00	0.00
3	Luening, Electronic Music	CD 611	10.19	20.38	0.00
4	Scarlatti, Stabat Mater	SBT 48282	5.99	53.91	0.00
5	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89	0.00
6	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92	0.00
7	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90	19.18
8	Misc., Modern Trombone Masterpieces	ADA 581087	10.79	64.74	0.00
9	Gershwin, An American in Paris	ACS 8034	5.99	35.94	0.00
10	Stravinsky, Dumbarton Oaks Concerto	SMCD 5120	8.99	53.94	0.00
11	Schubert, Sonata in e, D.566	AS-325	9.00	9.00	0.00
12	Mozart, Symphony No.23 in D	CO-77884	8.99	26.97	0.00
13	Schoenberg, Ode to Napoleon	CHAN 9116	9.59	57.54	0.00
14	Shostakovich, 24 Preludes for piano.	CDA 66620	5.39	10.78	0.00
15	Balakirev, Symphony no. 1	ENTPD 4110	9.59	86.31	17.26
16	Holst, St. Paul's Suite for Orch.	CBT-1020	5.99	29.95	0.00
17	Faure, 28 Songs, Stulzmann	RCA 61429-2	17.98	53.94	0.00
18	Takemitsu, Music of Takemitsu	SMK 53473	3.60	10.80	0.00
19	Messiaen, Quatuor pour la fin de temps	CDC 54935	9.60	57.60	0.00
20	Strauss, Ein Heldenleben, Op.40	SMMD-5036	8.99	71.92	0.00
21	Schumann, Manfred Overture, Bav SO	SBT 48270	5.99	53.91	0.00
22	Milhaud, 3 Rds Caprices, dn. & orch.	Z-6569	9.60	96.00	19.20

Figure 9-7. Updated Discount field.

Now let's use another Monarch feature to suppress the zero values so that our discount values will appear more prominent.

4. Select Options, View (ALT, O, V) to display the View Options dialog.

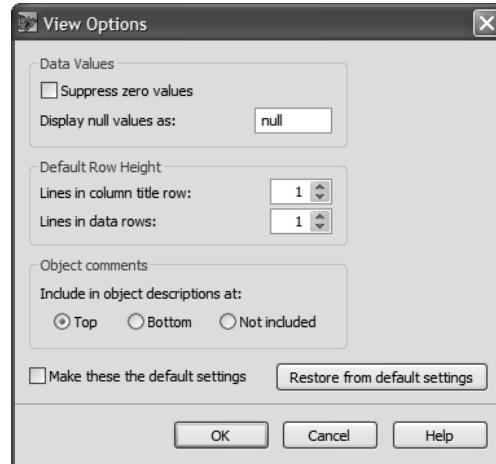


Figure 9-8. View Options dialog.

This dialog includes several options that control the way data appears in Monarch.

5. Select the Suppress zero values option (a check mark should appear in the box).
6. Choose OK to close the dialog and apply its settings to the table data.

The table displays with zero values suppressed.

 A screenshot of the Monarch Pro interface showing a table titled 'Classic.prn, Lesson9.xmod - Monarch Pro - [Table]'. The table has columns: Description, Label Number, Unit Price, Amount, and Discount. The 'Amount' column shows values like 35.96, 63.00, 20.38, etc., with some cells being empty or having zero values. The 'Discount' column shows values like 19.18, 17.26, 19.20, etc. The table has 22 rows. The interface includes a toolbar with various icons and a menu bar with File, Edit, Data, Options, Window, and Help.
 

	Description	Label Number	Unit Price	Amount	Discount
1	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96	
2	Mozart, Mass in C, K427	420831-2	9.00	63.00	
3	Luening, Electronic Music	CD 611	10.19	20.38	
4	Scarlatti, Stabat Mater	SBT 42828	5.99	53.91	
5	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89	
6	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92	
7	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90	19.18
8	Misc., Modern Trombone Masterpieces	ADA 581087	10.79	64.74	
9	Gershwin, An American in Paris	ACS 8034	5.99	35.94	
10	Stravinsky, Dumbarton Oaks Concerto	SMCD 5120	8.99	53.94	
11	Schubert, Sonata in e, D.566	AS-325	9.00	9.00	
12	Mozart, Symphony No.23 in D	CO-77884	8.99	26.97	
13	Schoenberg, Ode to Napoleon	CHAN 9116	9.59	57.54	
14	Shostakovich, 24 Preludes for piano.	CDA 66620	5.39	10.78	
15	Balakirev, Symphony no. 1	ENTPD 4110	9.59	86.31	17.26
16	Holst, St. Paul's Suite for Orch.	CBT-1020	5.99	29.95	
17	Faure, 28 Songs, Stulzmann	RCA 61429-2	17.98	53.94	
18	Takemitsu, Music of Takemitsu	SMK 53473	3.60	10.80	
19	Messiaen, Quatuor pour la fin de temps	CDC 54935	9.60	57.60	
20	Strauss, Ein Heldenleben, Op.40	SMMD-5036	8.99	71.92	
21	Schumann, Manfred Overture, Bav SO	SBT 48270	5.99	53.91	
22	Milhaud, 3 Rds Caprices. on. & orch.	Z-6569	9.60	96.00	19.20

Figure 9-9. Zero values suppressed.

## Hiding and Deleting Calculated Fields

You can temporarily turn off the display of a calculated field by hiding it. But Monarch will still re-calculate the hidden field as you make other changes to the table. If your calculated field expression is computationally intensive, this can slow down the display of the table.

Of course, you can get rid of a calculated field altogether by deleting it. When you delete a calculated field, the field is removed from the table and the calculated field definition is deleted.

To delete a calculated field, open the Calculated Fields dialog, highlight the field name and choose Delete. But be careful to select the correct field name; Monarch has no undo facility if you press OK, but you can press Cancel to reverse the change.

## Saving Your Work

You have completed Lesson 9. We recommend you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Calculated Fields** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X) or, if you want to immediately go on to Lesson 10, select File, Close All (ALT, F, C).

The model contains each calculated field definition along with other information about your Monarch session.

## Summary

In this lesson you created several calculated fields to add new information to the table and to extract information from existing fields. For further reading, see the following sections of the Monarch help file:

Chapter 2 - Table Window  
Calculated Fields  
Functions

This lesson concludes our exploration of the Table window. In the next lesson we'll take a look at the Summary window, where you can perform a variety of analyses on your report data.

# Part III

## The Summary Window



**L E S S O N   1 0**

# Summaries

In this lesson, you will learn how to use the Summary window to analyze data from the table. The lesson topics include:

- What is a summary?
- Creating a summary.
- Suppressing duplicate values.
- Adding subtotals and blank lines.
- Measure calculations.
- Adding item fields.
- Collapsing and expanding a summary.
- Specifying summary design preferences.
- Creating a quick summary.
- Copying, printing, and exporting summaries.

This lesson assumes that you are familiar with importing and viewing report files, creating data extraction templates and working in the Table window.

## What is a Summary?

A summary tabulates information for selected fields and presents the results in a one or two dimensional matrix. For example, the summaries shown on the next page show sales totals for a fictional distributor of classical music recordings, first broken out by customer, then by media.

	Customer	Amount
1	Betty's Music Store	20.38
2	Betty's Music Store	35.94
3	Betty's Music Store	35.96
4	Betty's Music Store	53.91
5	Betty's Music Store	63.00
6	Betty's Music Store	64.74
7	Betty's Music Store	65.89
8	Betty's Music Store	71.92
9	Betty's Music Store	95.90
10	Big Shanty Music	9.00
11	Big Shanty Music	10.78
12	Big Shanty Music	26.97
13	Big Shanty Music	29.95
14	Big Shanty Music	53.94
15	Big Shanty Music	57.54
16	Big Shanty Music	86.31
17	Bluegrass Records	10.80
18	Bluegrass Records	53.91
19	Bluegrass Records	53.94
20	Bluegrass Records	57.60
21	Bluegrass Records	71.92

Figure 10-1. Sales by customer.

	Media	Amount
1	CD	5403.11
2	DCC	286.44
3	LP	475.57
4	MD	579.05
5	TAPE	612.01
6	Total	7356.18

Figure 10-2. Sales by media type.

The summaries shown above tabulate information about a single *key field*. In the first summary the key field is the Customer field and in the second summary the key field is the Media field. The field that is tabulated (or summed) is called a *measure*. In both of the summaries shown above, the Amount field is used as the measure.

Although only a single key field and a single measure are required, a summary may be quite complex, including multiple key fields and measures. Each measure can be used to calculate a variety of information about your data, including the sum total, average, percent of total, minimum, maximum, standard deviation, and variance. Monarch also provides a *count* function that can be used as a measure. Rather than performing a calculation on a selected measure, the count function counts the number of records for each key.

For example, the summary in Figure 10-3 includes both the Customers and Media fields as key fields, and the count function and Amount field as measures. Separate Amount calculations are used to break out total sales versus average sales.

	Customer	Media	count	Amount	AVG(Amount)
1	Betty's Music Store	CD	6	353.05	58.84
2		LP	1	64.74	64.74
3		TAPE	2	89.85	44.93
4					
5	Big Shanty Music	CD	5	158.23	31.65
6		MD	1	86.31	86.31
7		TAPE	1	29.95	29.95
8					
9	Bluegrass Records	CD	3	122.34	40.78
10		MD	1	71.92	71.92
11		TAPE	1	53.91	53.91
12					
13	Canciones	CD	9	379.14	42.13
14					
15	Chez Rudy	CD	7	275.51	39.36
16		LP	1	44.95	44.95
17					
18	Classic Exchange	CD	5	209.08	41.82

Figure 10-3. Sales broken out by customer and media type. The count column displays the number of transactions and the Amount and AVG(Amount) columns display the total sales and average sales (partial summary shown).

A summary can also include *item fields* that expand the summary to show individual transactions. Item fields provide an advantage over viewing individual transactions in the Table window because you can use the summary to break out subtotals.

The summary in Figure 10-4 includes the Customer and Media fields as key fields and the Quantity and Description fields as item fields. This summary displays individual transactions for each media type within each customer. Subtotals are generated for each customer.

	Customer	Media	Quantity	Description	Amount
1	Betty's Music Store	CD	2	Luening, Electronic Music	20.38
2		CD	4	Bartok, Sonata for Solo Violin	35.96
3		CD	7	Mozart, Mass in C, K.427	63.00
4		CD	8	Mendelssohn, War March of the Priests	71.92
5		CD	10	Pizzetti, Messa di Requiem	95.90
6		CD	11	Beethoven, Pathetique Sonata, Arau	65.89
7		LP	6	Misc., Modern Trombone Masterpieces	64.74
8		TAPE	6	Gershwin, An American in Paris	35.94
9		TAPE	9	Scarlatti, Stabat Mater	53.91
10					
11	Big Shanty Music	CD	1	Schubert, Sonata in e, D.566	9.00
12		CD	2	Shostakovich, 24 Preludes for piano.	10.78
13		CD	3	Mozart, Symphony No.23 in D	26.97
14		CD	6	Schoenberg, Ode to Napoleon	57.54
15		CD	6	Stravinsky, Dumbarton Oaks Concerto	53.94
16		MD	9	Balakirev, Symphony no. 1	86.31
17		TAPE	5	Holst, St. Paul's Suite for Orch.	29.95
18					

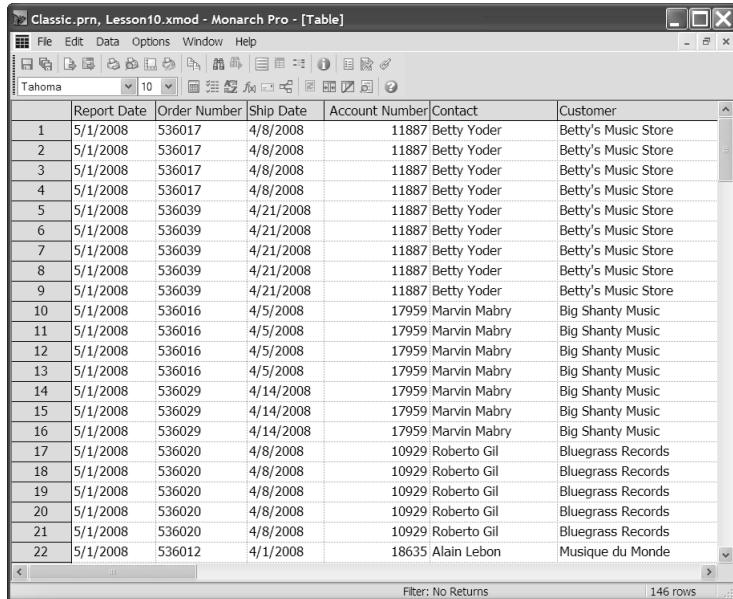
Figure 10-4. Item fields are used to display individual transactions (partial summary shown).

## Starting the Lesson

To start the lesson, load Monarch and open Classic.prn and Lesson10.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson10.xmod, then choose Open.
4. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.

The Table window displays the records created from the Classic report and the Lesson 10 model.



	Report Date	Order Number	Ship Date	Account Number	Contact	Customer
1	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
2	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
3	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
4	5/1/2008	536017	4/8/2008	11887	Betty Yoder	Betty's Music Store
5	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
6	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
7	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
8	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
9	5/1/2008	536039	4/21/2008	11887	Betty Yoder	Betty's Music Store
10	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
11	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
12	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
13	5/1/2008	536016	4/5/2008	17959	Marvin Mabry	Big Shanty Music
14	5/1/2008	536029	4/14/2008	17959	Marvin Mabry	Big Shanty Music
15	5/1/2008	536029	4/14/2008	17959	Marvin Mabry	Big Shanty Music
16	5/1/2008	536029	4/14/2008	17959	Marvin Mabry	Big Shanty Music
17	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
18	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
19	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
20	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
21	5/1/2008	536020	4/8/2008	10929	Roberto Gil	Bluegrass Records
22	5/1/2008	536012	4/1/2008	18635	Alain Lebon	Musique du Monde

Figure 10-5. Extracted data displayed in the Table window.

By creating summaries we can analyze the data to reveal trends and relationships that would otherwise remain buried. Let's create a simple summary that tabulates sales quantities and totals for each media type (CDs, LPs, Tapes, etc.) within each customer.

## Creating a Summary

To create a summary, you select *key fields* and *measures*.

- ❑ Key fields are used to define the summary matrix. For example, the summary in Figure 10-1 uses the Customer field as the key field. Monarch examines the field and creates a list of all unique values found within the field (e.g., Betty's Music Store, Big Shanty Music, etc.), then uses these values to create the summary matrix.
- ❑ Measures are numeric fields that are summed for each unique key field value. For example, in Figure 10-1 the Amount field is broken down into separate totals for each customer. Monarch also provides a count function that can be used as a measure. Rather than calculating a result for a specific field, the count function simply counts the number of records that match each for each key field value (for example, there might be 10 records for Betty's Music Store and 8 for Big Shanty Music, etc).

Let's begin by creating a summary that displays sales broken out by customer and media type. We'll use the Customer and Media fields as the key fields and the Amount field as the measure.

1. Select Window, Summary (ALT, W, S) or click the Summary window button  on the toolbar. The Summary Start Page displays.
2. Click New Summary – Complete. The Summary Definition dialog displays. Note that it contains three tabs: General, Fields and Chart.

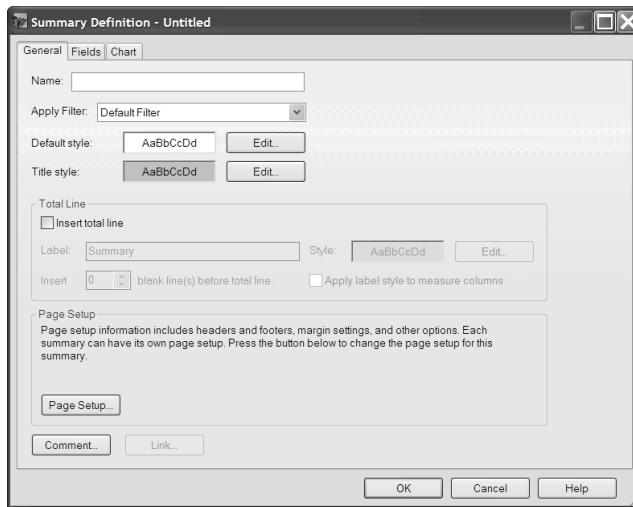


Figure 10-6. The Summary Definition dialog.

## Adding Key Fields and Measures

Let's get right to adding key fields and measures by clicking on the Fields tab (we'll come back to the General tab shortly). The Fields tab displays a list of the fields that are available for use in a summary definition. This list includes all the fields available in the Table window except for memo fields. To add a field to the summary definition, you select the field from the Table Field box, then click the appropriate button (Key, Item, or Measure) to add the field to the corresponding box at the right. Our summary requires the Customer and Media fields as key fields, so let's select those fields.

3. On the Fields tab, select the Customer field from the Table Field box, then click the Key button (or double-click on the Customer field).
4. Select the Media field from the Table Field box, then click the Key button (or double-click on the Media field).

The Customer and Media fields are added to the Key Field box. Several properties are assigned to each field, as you can see from the entries in the Key Field box. For now, we'll accept these default properties. (We'll explore the properties for Key fields, Item fields and Measures later in this lesson and in the next lesson.)

The next step is to select the measures that we want to include in our summary definition. Since we want our summary to tabulate sales totals, we'll select the Amount field as a measure.

5. Select the Amount field from the Table Field box, then click the Measure button (or double-click on the Amount field).

The Fields tab should now look like it does in Figure 10-7.

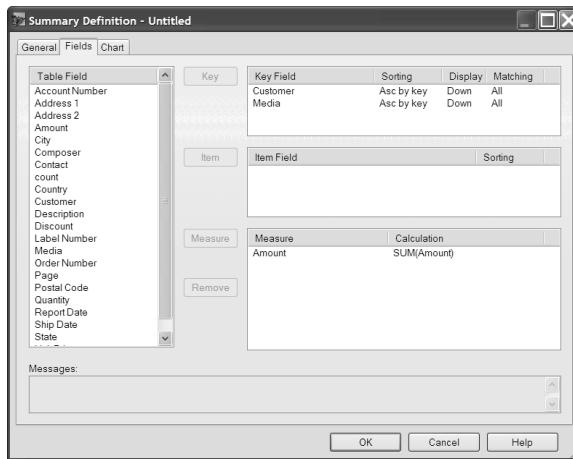


Figure 10-7. The Fields tab.

6. Click on the General tab. (**Note:** We won't concern ourselves with the Chart tab at this point, as Lesson 12 is devoted to charting summary data.)

## Selecting a Filter to Apply when Building the Summary

When you create a summary definition, you may assign a filter to limit the records available to the summary. The Apply Filter box on the General tab provides several filtering options.

- You may select a filter to apply when building the summary. The filter you select is applied to the data only for the purpose of building the summary; it is not applied to the Table window and it does not limit the data available to other summaries. When building and displaying the summary, the filter overrides any filter that you may have applied in the Table window; it is not applied along with the active table filter.
- You may select No Filter. The No Filter option turns off filtering for the summary. The summary is built using all records. This option, like the previous option, overrides any filter that you may have applied in the Table window.
- You may select Default Filter. The Default Filter option applies the filter that is currently applied to the Table window. This option uses only the records that are available to the Table window at the time the summary is built. If you switch the filter that is applied to the Table window or modify its definition, the summary is recalculated to reflect the changes.

We want to use all records to build our summary, so we'll select the No filter option to turn off filtering for this summary.

7. On the General tab, click the drop-down button on the Apply Filter box, then select the No Filter option from the drop-down list.

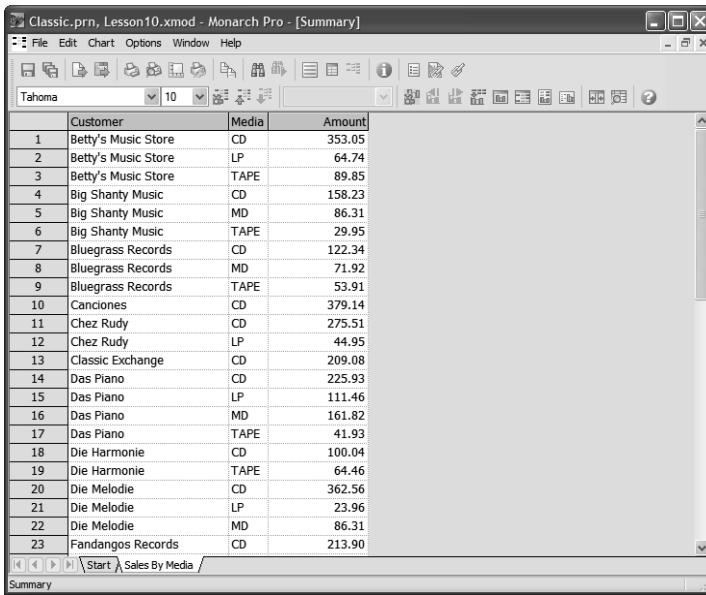
## Naming and Displaying the Summary

8. Type **Sales By Media** in the Name box, then choose OK to accept the summary definition.

The Summaries dialog reappears, with the new summary name highlighted.

9. Choose OK to display the summary.

Monarch builds the Summary and displays it in the Summary window.



The screenshot shows a Windows application window titled "Classic.prn, Lesson10.xmod - Monarch Pro - [Summary]". The menu bar includes File, Edit, Chart, Options, Window, and Help. The toolbar contains various icons for file operations. The main area displays a table with three columns: Customer, Media, and Amount. The table lists 23 rows of sales data. The bottom of the window shows navigation buttons (Back, Forward, Start) and a status bar with "Summary".

	Customer	Media	Amount
1	Betty's Music Store	CD	353.05
2	Betty's Music Store	LP	64.74
3	Betty's Music Store	TAPE	89.85
4	Big Shanty Music	CD	158.23
5	Big Shanty Music	MD	86.31
6	Big Shanty Music	TAPE	29.95
7	Bluegrass Records	CD	122.34
8	Bluegrass Records	MD	71.92
9	Bluegrass Records	TAPE	53.91
10	Canciones	CD	379.14
11	Chez Rudy	CD	275.51
12	Chez Rudy	LP	44.95
13	Classic Exchange	CD	209.08
14	Das Piano	CD	225.93
15	Das Piano	LP	111.46
16	Das Piano	MD	161.82
17	Das Piano	TAPE	41.93
18	Die Harmonie	CD	100.04
19	Die Harmonie	TAPE	64.46
20	Die Melodie	CD	362.56
21	Die Melodie	LP	23.96
22	Die Melodie	MD	86.31
23	Fandangos Records	CD	213.90

Figure 10-8. Summary showing total sales for each customer broken out by media type.

The resulting summary breaks out sales totals for each media type within each customer. Grand totals are displayed along the bottom row.

This summary provides some interesting information about the music distribution business. We can see that sales of classical music recordings are dominated by compact disks (CDs). Sales of LPs and Tapes, once the dominant media types, have dwindled and sales of digital compact cassettes (DCC) and mini disks (MD) have not gained much momentum, at least in the classical music market.

## Suppressing Duplicate Values

Most report writers include a facility to suppress duplicate values for selected fields. Suppressing duplicate values reduces the amount of visual clutter in a report and helps to emphasize details. Monarch also includes this facility, allowing you to suppress duplicate values for any key field in a summary (except for the rightmost key field, which never contains duplicate values).

Let's suppress duplicate values for the Customer key field.

1. Double-click on the Customer column to display the Key Field dialog. Alternatively, you may right-click on the column and select the Properties command from the pop-up menu.

The Key Field dialog includes several tabs that organize key field properties into logical groups. The Display tab includes key field properties that determine how the key field is displayed, including an option to suppress duplicate values.

2. Click the Display tab.
3. Under the “Key Values” heading, select the Suppress Duplicate Values check box, then click OK.

The summary is rebuilt, removing the duplicate customer names.

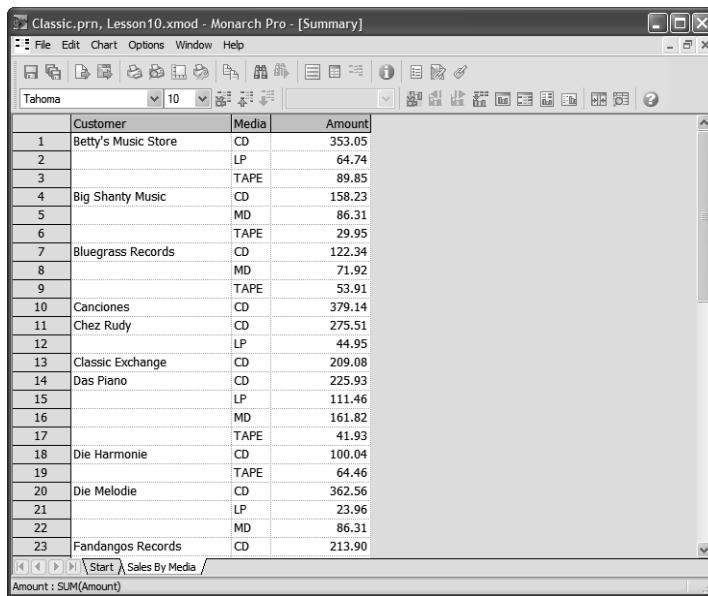


Figure 10-9. Duplicate values removed from the Customer column.

## Adding Subtotals and Blank Lines

You can add subtotals and blank lines to a summary after each logical group of information. Subtotal lines and blank lines are added whenever the value of the selected key field changes. To illustrate this, let's add subtotals for each customer and add blank lines to separate each customer group.

1. Double-click on the Customer column to display the Key Field dialog.

Note that the Display tab is already selected.

2. Under the “After each key value change” heading, select the Insert Subtotal Line check box.

3. If the “Include key value in subtotal label on” check box is selected, clear it.
4. Enter **1** in the “Insert *n* blank line(s) after each key value change” field, then click OK.

The summary is rebuilt, adding a subtotal line and a blank line directly underneath each customer group.

The screenshot shows a software application window titled "Classic.prn, Lesson10.xmod - Monarch Pro - [Summary]". The interface includes a toolbar at the top with various icons, a menu bar with "File", "Edit", "Chart", "Options", "Window", and "Help", and a status bar at the bottom with navigation buttons and the text "Amount : SUM(Amount)".

	Customer	Media	Amount
1	Betty's Music Store	CD	353.05
2		LP	64.74
3		TAPE	89.85
4	Subtotal		507.64
5			
6	Big Shanty Music	CD	158.23
7		MD	86.31
8		TAPE	29.95
9	Subtotal		274.49
10			
11	Bluegrass Records	CD	122.34
12		MD	71.92
13		TAPE	53.91
14	Subtotal		248.17
15			
16	Canciones	CD	379.14
17	Subtotal		379.14
18			
19	Chez Rudy	CD	275.51
20		LP	44.95
21	Subtotal		320.46
22			
23	Classic Exchange	CD	209.08

Figure 10-10. Subtotals are displayed for each customer. Blank lines separate each customer group.

## Measure Calculations

Our summary report breaks out sales totals for each media type and each customer. While this is useful, you may want to perform other analyses on the data. Monarch supports several calculations you can perform when building a summary.

For each measure you include in your summary definition, you can calculate the total, average, percent of total, minimum or maximum value, standard deviation or variance. To perform multiple calculations, you add multiple copies of a measure to the summary definition, one for each calculation you want to perform. In addition to the measure calculations, a count function is included that you can use to tabulate the number of records matching each set of key field values and a special ratio calculation option that divides subtotals for one field by subtotals for another field.

Let's edit the summary definition to add the percent of total sales calculation for the Amount measure.

1. Right-click on the Sales By Media tab at the bottom of the summary window (the tabs appear immediately above the horizontal scroll bar).
2. Select the Properties command from the context menu.

The Summary Definition dialog for Sales By Media displays.

3. Click the Fields tab and select the Amount field from the Table Field list.
4. Click the Measure button to add a second copy of the Amount field to the Measure box.
5. Right-click on the new Amount field entry in the Measure box.
6. Select the Properties command from the pop-up context menu.

The Measure dialog displays.

7. Select the Calculation tab at the top of the dialog.

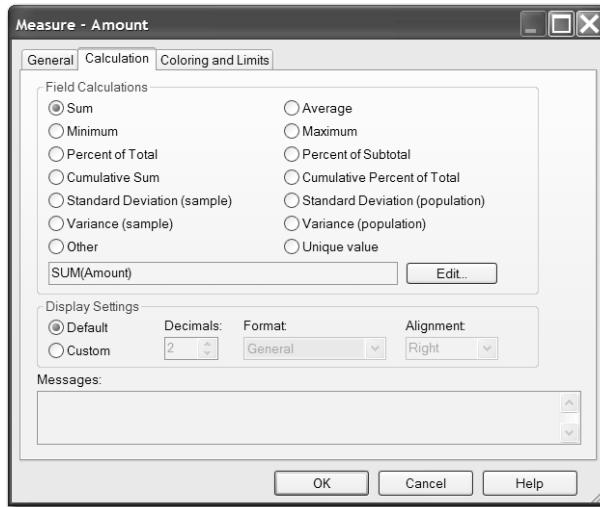


Figure 10-11. The Measure dialog's Calculation tab.

8. Under Field Calculations, select the Percent of Total radio button.
9. Under Display Settings, specify a Decimals setting of 1.
10. Select the General tab.

Note that PCT(Amount) is suggested as the column title. Let's modify this title to read %Amount.

11. Click on the Use Default Title check box to deselect this option (the check mark should be removed).

When the Use Default Title option is unselected, the Title box becomes available.

12. Type **%Amount** in the Title box.
13. Choose OK to return to the Summary Definition dialog.
14. Choose OK in the Summary Definition dialog to rebuild the summary with the new %Amount measure.

	Customer	Media	Amount	%Amount
1	Betty's Music Store	CD	353.05	4.8%
2		LP	64.74	0.9%
3		TAPE	89.85	1.2%
4	Subtotal		507.64	6.9%
5				
6	Big Shanty Music	CD	158.23	2.2%
7		MD	86.31	1.2%
8		TAPE	29.95	0.4%
9	Subtotal		274.49	3.7%
10				
11	Bluegrass Records	CD	122.34	1.7%
12		MD	71.92	1.0%
13		TAPE	53.91	0.7%
14	Subtotal		248.17	3.4%
15				
16	Canciones	CD	379.14	5.2%
17	Subtotal		379.14	5.2%
18				
19	Chez Rudy	CD	275.51	3.7%
20		LP	44.95	0.6%
21	Subtotal		320.46	4.4%
22				
23	Classic Exchange	CD	209.08	2.8%

Figure 10-12. Summary with Percent of Total calculation.

## Adding Item Fields

Item fields are optional fields that you can use to expand a summary to show individual transactions. Item fields provide an advantage over viewing individual transactions in the Table window because you can use the summary to break out subtotals.

Let's add the Quantity and Description fields to our summary definition as item fields.

1. Right-click on the Sales By Media tab and select the Properties command from the context menu.

The Summary Definition dialog for Sales By Media displays.

2. On the Fields tab, select the Quantity field from the Table Field list, then click the Item button.
3. Select the Description field from the Table Field list, then click the Item button.

The Quantity and Description fields are added to the Item Field box.

4. Choose OK to accept the modified summary definition.

Monarch rebuilds the summary and displays the item fields.

## Collapsing and Expanding a Summary

Expanding or collapsing (referred to as drilling down or drilling up) a summary provides a quick way of exploring summary data.

**Collapsing** (drilling up) reduces the level of detail in the summary, revealing higher level information. To collapse a summary, Monarch removes the rightmost key field from the summary, then re-calculates and re-displays the summary.

**Expanding** (drilling down) restores the previously removed key fields to the summary display. When item fields are included as part of the summary definition, you view the item fields by drilling down the *itemized level*.

Let's start by drilling up to hide the item fields we added to our summary definition.

1. Select Edit, Drill Up (ALT, E, U) or click the Drill Up button .

The item fields are removed, restoring the summary to its initial state.

2. Click the Drill Up button  again.

Monarch further collapses the summary by removing the rightmost key field; in this case, the Media field. The collapsed version of the summary displays sales totals broken out only by customer.

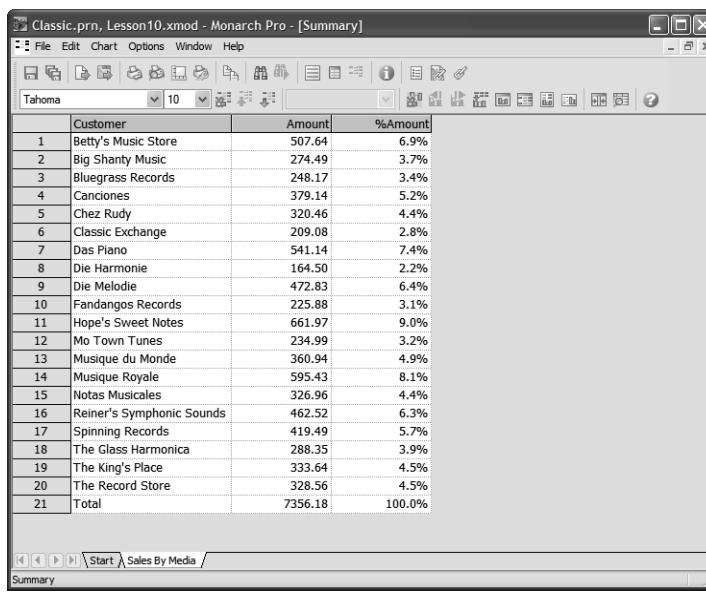


Figure 10-13. After drilling up twice, the summary breaks out totals only by customer.

3. Select Drill Down (ALT, E, W) or click the Drill Down button .

The summary is restored to its original state. Let's expand the summary even further to once again view the item fields we added.

4. Click the Drill Down button  again.

The summary is expanded to display the item fields. At this *itemized level*, each line in the summary corresponds to an individual transaction from the Classic report.

	Customer	Media	Quantity	Description	Amount	%Amount
1	Betty's Music Store	CD	2	Luening, Electronic Music	20.38	0.3%
2		CD	4	Bartok, Sonata for Solo Violin	35.96	0.5%
3		CD	7	Mozart, Mass in C, K.427	63.00	0.9%
4		CD	8	Mendelssohn, War March of the Priests	71.92	1.0%
5		CD	10	Pizzetti, Messa di Requiem	95.90	1.3%
6		CD	11	Beethoven, Pathetique Sonata, Arau	65.89	0.9%
7		LP	6	Misc., Modern Trombone Masterpieces	64.74	0.9%
8		TAPE	6	Gershwin, An American in Paris	35.94	0.5%
9		TAPE	9	Scarlatti, Stabat Mater	53.91	0.7%
10	Subtotal				507.64	6.9%
11						
12	Big Shanty Music	CD	1	Schubert, Sonata in e, D.566	9.00	0.1%
13		CD	2	Shostakovich, 24 Preludes for piano.	10.78	0.1%
14		CD	3	Mozart, Symphony No.23 in D	26.97	0.4%
15		CD	6	Schoenberg, Ode to Napoleon	57.54	0.8%
16		CD	6	Stravinsky, Dumbarton Oaks Concerto	53.94	0.7%
17		MD	9	Balakirev, Symphony no. 1	86.31	1.2%
18		TAPE	5	Holst, St. Paul's Suite for Orch.	29.95	0.4%
19	Subtotal				274.49	3.7%

Figure 10-14. Completely expanded, the summary displays individual transactions (partial summary shown).

## Specifying Summary Design Preferences

Monarch includes a Summary Design Preferences wizard, which minimizes the amount of tweaking you need to do to summaries, and makes it easy for you to provide a uniform look to them. It enables you to specify design preferences that will be applied to any new complete summaries, and to any keys, items and measures that you add to existing summaries, such as the current one.

Let's explore some of the features of the Summary Design Preferences wizard.

1. Select the Start tab at the bottom of the Summary Start page, then select Design Preferences. The Start Screen of the Summary Design Preferences wizard displays.

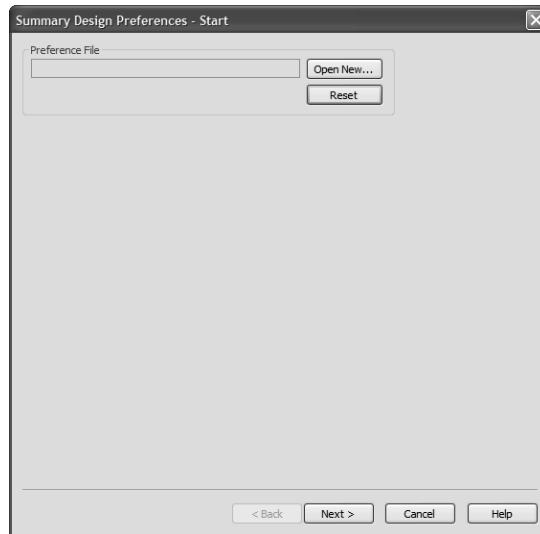


Figure 10-15. The Start screen of the Summary Design Preferences wizard.

2. Click the Next button to display the General screen.

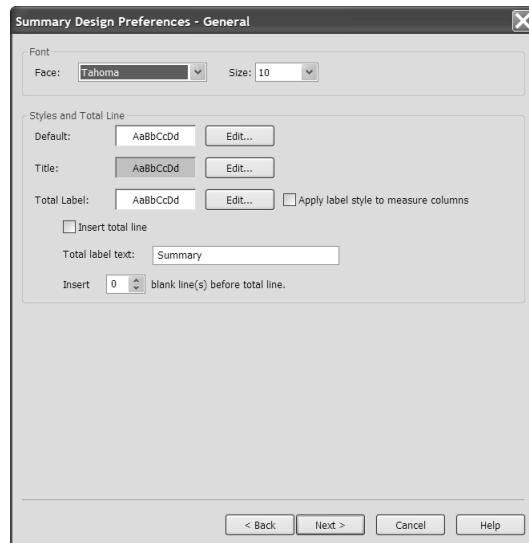


Figure 10-16. The General screen.

With this screen we can specify a default font type and size, as well as default styles for various parts of the summary, such as the title row and the total label.

Let's make a few changes to the default settings to see how they affect subsequent summaries.

3. Click the Edit button to the right of the Title option. The Color Properties dialog for the Title Row displays.

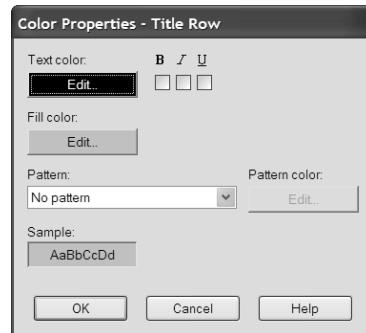


Figure 10-17. The Color Properties dialog.

4. Select the Bold (**B**) check box. By doing so, we're telling Monarch to bold the text in the title row of the summary. Note that the Sample field displays what the title row text will look like when bolded.

Though we could also change the text and fill colors, and specify a pattern and pattern color, let's specify some design preferences for a different part of the summary instead.

5. Click OK to close the Color Properties dialog.
6. Click the Edit button to the right of the Total Label option. The Color Properties dialog for the Total Label displays.
7. Select the Bold (**B**), Italics (*I*) and Underline (U) check boxes, then click OK to return to the General screen.
8. Select the Insert Total Line check box, enter **Total** in the Total Label Text field, then click the Next button to display the Keys screen.

With this screen we could specify default style preferences for the key fields in summaries.

9. Click the Next button to display the Items screen.

With this screen we could specify default style preferences for the item fields in summaries.

10. Click the Next button to display the Measures screen.

With this screen we could specify default style preferences for the measures in summaries.

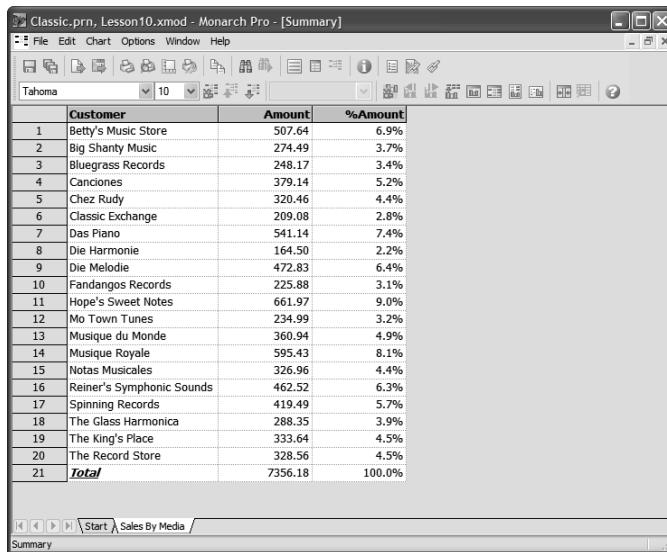
11. Click the Next button to display the Save and Apply screen.

12. Click the Save As button, then in the dialog that displays, use the Save In drop-down list to specify the location where you want to save the summary design preferences file (e.g., C:\Documents and Settings\All Users\Documents\Monarch\Models).
13. Enter a name for the summary design preferences file in the File Name field, then click the Save button.
14. Select the Additionally Apply Preferences To check box, then choose Sales By Media from the adjacent drop-down list. **Note:** If we wanted to, we could select the All Summaries option instead to apply the design preferences to all summaries, i.e., to all existing summaries, and to all subsequent ones.
15. Click the Finish button to close the wizard.

Now let's see how our summary design preferences have affected the Sales By Media summary.

16. Select the Sales By Media tab at the bottom of the Summary Start page. Monarch displays the summary we created earlier.

17. Click the Drill Up button  twice to collapse the summary.



	Customer	Amount	%Amount
1	Betty's Music Store	507.64	6.9%
2	Big Shanty Music	274.49	3.7%
3	Bluegrass Records	248.17	3.4%
4	Canciones	379.14	5.2%
5	Chez Rudy	320.46	4.4%
6	Classic Exchange	209.08	2.8%
7	Das Piano	541.14	7.4%
8	Die Harmonie	164.50	2.2%
9	Die Melodie	472.83	6.4%
10	Fandangos Records	225.88	3.1%
11	Hope's Sweet Notes	661.97	9.0%
12	Mo Town Tunes	234.99	3.2%
13	Musique du Monde	360.94	4.9%
14	Musique Royale	595.43	8.1%
15	Notas Musicales	326.96	4.4%
16	Reiner's Symphonic Sounds	462.52	6.3%
17	Spinning Records	419.49	5.7%
18	The Glass Harmonica	288.35	3.9%
19	The King's Place	333.64	4.5%
20	The Record Store	328.56	4.5%
21	<b>Total</b>	<b>7356.18</b>	<b>100.0%</b>

Figure 10-18. The Sales By Media summary with the design preferences applied to it.

Note that, as we specified in our summary design preferences, the text in the title row (i.e., all of the column titles) has been bolded, and the total label text has been bolded, italicized and underlined.

## Creating a Quick Summary

Another of Monarch's convenient summary capabilities is its quick summary design feature, which enables you to quickly and easily create a simple summary, i.e., a summary with no more than one primary and secondary key, and no more than one measure. Let's see how this works.

1. Click the Start tab to display the Summary Start page, then select the New Summary – Quick option.

Monarch displays the Quick Summary Design dialog.

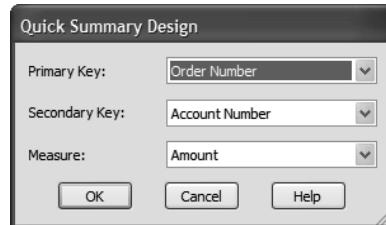


Figure 10-19. The Quick Summary Design dialog.

2. From the Primary Key list, select Account Number.
3. From the Secondary Key list, select Order Number.
4. From the Measure list, select Amount, then click OK.

Monarch builds the new quick summary and displays it in the Summary window. Note that the summary design preferences we specified earlier have been applied to this summary also.

	Account Number	Order Number	Amount
15	14162	536015	226.31
16	14162	536044	100.65
17	15091	536033	320.46
18	15403	536014	91.62
19	15403	536047	327.87
20	15844	536037	186.45
21	15844	536043	142.11
22	16284	536022	194.12
23	16284	536040	257.62
24	16284	536048	10.78
25	17658	536045	225.88
26	17959	536016	147.45
27	17959	536029	127.04
28	18172	536046	541.14
29	18635	536012	384.37
30	18635	536034	165.36
31	18917	536023	104.17
32	18917	536026	105.49
33	18917	536038	123.98
34	19764	536019	161.78
35	19764	536024	80.26
36	19764	536036	353.39
37	<b>Total</b>		7544.97

Figure 10-20. The quick summary (scrolled down to view summary design preferences)

## Copying, Printing, and Exporting Summaries

You can copy summary data to other applications, export the summary to a file or print it. You perform these operations in the Summary window the same way you perform them in the Table window. (For a review of these procedures, refer to *Lesson 6 - Printing, Copying and Exporting*.) When exporting summaries, however, note that, in addition to exporting a summary, you can choose to export *all* summaries. To do so, when on the General screen of the Export wizard, select the All Summaries option from the drop-down list next to the Summary radio button.

## Saving Your Work

You have completed Lesson 10. We recommend you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Summary** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X) or, if you want to immediately go on to Lesson 11, select File, Close All (ALT, F, C).

The model contains each summary definition along with other information about your Monarch session.

## Summary

In this lesson you created a summary to analyze the report data. You also specified some summary design preferences, and you utilized the quick summary design feature. For further reading, see the following sections of the Monarch help file:

Chapter 3 - Summary Window

Creating Summaries

Viewing Summaries

Exporting Summary Data

In the next lesson you'll learn how to create more advanced summaries.



## LESSON 11

# Advanced Summary Capabilities

In the previous lesson you learned how to define a summary report using Monarch's Summary window. In this lesson, you'll continue your tour of the Summary window and learn how to create more advanced summary reports to reveal more information about your data. The lesson topics include:

- Displaying key field values across.
- Sorting a summary.
- Creating a top 10 analysis.
- Specifying key field values.

This lesson assumes that you have completed lesson 10 and are familiar with the process of creating a summary definition.

## Starting the Lesson

To start the lesson, we'll load Monarch and open Classic.prn and Lesson11.xmod.

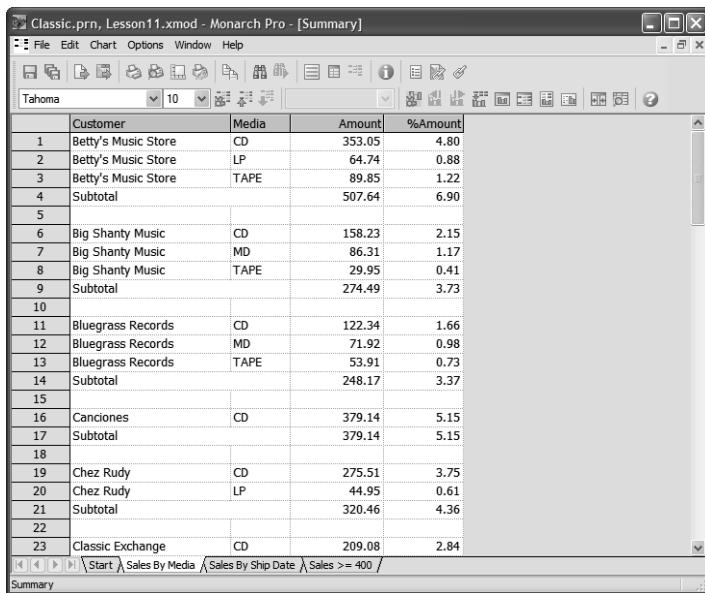
1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson11.xmod, then choose Open.
4. Select Window, Table (ALT, W, T) or click the Table window button  on the toolbar.

The Table window displays the records created from the Classic report and the Lesson 11 model.

5. Select Window, Summary (ALT, W, S) or click the Summary window button  on the toolbar.

The Summary Start page displays. Note that across the bottom of the Summary window are tabs to several summaries that break out information about a fictional music distributor, Classical Music Distributors.

- At the bottom of the Summary window, select the Sales by Media tab.



The screenshot shows a software application window titled "Classic.prn, Lesson11.xmod - Monarch Pro - [Summary]". The window contains a table with four columns: Customer, Media, Amount, and %Amount. The table lists sales data for various customers across different media types (CD, LP, TAPE). Subtotals are shown for each customer and for all media types combined. The table has 23 rows, numbered 1 through 23. The "Customer" column includes entries like "Betty's Music Store", "Big Shanty Music", "Bluegrass Records", "Canciones", "Chez Rudy", and "Classic Exchange". The "Media" column shows "CD", "LP", and "TAPE". The "Amount" column lists monetary values such as 353.05, 64.74, 89.85, etc. The "%Amount" column shows percentages like 4.80, 0.88, 1.22, etc. At the bottom of the table, there are navigation buttons for "Start", "Sales By Media", "Sales By Ship Date", and "Sales >= 400".

	Customer	Media	Amount	%Amount
1	Betty's Music Store	CD	353.05	4.80
2	Betty's Music Store	LP	64.74	0.88
3	Betty's Music Store	TAPE	89.85	1.22
4	Subtotal		507.64	6.90
5				
6	Big Shanty Music	CD	158.23	2.15
7	Big Shanty Music	MD	86.31	1.17
8	Big Shanty Music	TAPE	29.95	0.41
9	Subtotal		274.49	3.73
10				
11	Bluegrass Records	CD	122.34	1.66
12	Bluegrass Records	MD	71.92	0.98
13	Bluegrass Records	TAPE	53.91	0.73
14	Subtotal		248.17	3.37
15				
16	Canciones	CD	379.14	5.15
17	Subtotal		379.14	5.15
18				
19	Chez Rudy	CD	275.51	3.75
20	Chez Rudy	LP	44.95	0.61
21	Subtotal		320.46	4.36
22				
23	Classic Exchange	CD	209.08	2.84

Figure 11-1. Summary window displaying Sales by Media summary.

## Displaying Key Field Values Across

When more than one key field is included in a summary report, the values for the first key field are repeated (see the values for the Customer field in the preceding illustration). This can sometimes make for a crowded feel and does not offer the most efficient method of displaying data.

While you could suppress duplicate values to provide a cleaner summary display, the summary still requires a large number of rows on screen. With only 20 customers represented in our summary, the summary extends 95 rows, or about two pages.

To provide a more compact summary display, Monarch allows you to display the values for the rightmost *key* field (in this case, Media) across the top of the summary, creating a two dimensional matrix. This format, sometimes referred to as a crosstab summary, allows for quick comparisons of multiple data groups.

For summaries like the one we've created this format provides an ideal solution, since it displays the entire summary matrix on screen at one time. Let's see how this works.

1. Right-click anywhere on the Media column, then select Properties from the menu (or double-click on the Media column).

The Key Field dialog displays.

2. Click on the Display tab at the top of the dialog.
3. Under the Key Values heading select the Across (row) radio button, then choose OK.

The summary is rebuilt with the Media values spread across the top row.

	Customer	CD	DCC	LP	MD	TAPE
1	Betty's Music Store	353.05	(Null)	64.74	(Null)	89.85
2	Big Shanty Music	158.23	(Null)	(Null)	86.31	29.95
3	Bluegrass Records	122.34	(Null)	(Null)	71.92	53.91
4	Canciones	379.14	(Null)	(Null)	(Null)	(Null)
5	Chez Rudy	275.51	(Null)	44.95	(Null)	(Null)
6	Classic Exchange	209.08	(Null)	(Null)	(Null)	(Null)
7	Das Piano	225.93	(Null)	111.46	161.82	41.93
8	Die Harmonie	100.04	(Null)	(Null)	(Null)	64.46
9	Die Melodie	362.56	(Null)	23.96	86.31	(Null)
10	Fandangos Records	213.90	(Null)	(Null)	(Null)	11.98
11	Hope's Sweet Notes	481.06	77.90	43.11	(Null)	59.90
12	Mo Town Tunes	211.03	(Null)	(Null)	(Null)	23.96
13	Musique du Monde	283.01	95.90	(Null)	(Null)	-17.97
14	Musique Royale	515.17	(Null)	80.26	(Null)	(Null)
15	Notas Musicales	168.94	85.08	62.16	(Null)	10.78
16	Reiner's Symphonic Sounds	361.29	(Null)	32.95	(Null)	68.28
17	Spinning Records	317.66	(Null)	11.98	(Null)	89.85
18	The Glass Harmonica	211.56	9.59	(Null)	67.20	(Null)
19	The King's Place	203.02	(Null)	(Null)	105.49	25.13
20	The Record Store	250.59	17.97	(Null)	(Null)	60.00
21	Summary	5403.11	286.44	475.57	579.05	612.01

Figure 11-2. Summary with customer values displayed down and media values displayed across.

## Displaying Null Values

For some media type, such as DCC (Digital Compact Cassette) and LP (Long Play albums), no sales have been made to certain customers. For example, see the "(Null)" strings in the DCC column for the first ten customers. In this case, it would be incorrect to display a zero value in the summary report, since zero might suggest that some amount of sales were made to this customer.

For example, consider the case where a customer places an order for several digital compact cassettes and in the same period returns several previously purchased digital compact cassettes. If the total purchase price of the returned media equals the price of the new media, the value for this customer would be zero, indicating a net purchase of zero. However, if the customer never placed any orders for digital compact cassettes, a zero would not be appropriate. In this case, the value of “(Null)” indicates that no sales or returns have been recorded for this media type.

By default, Monarch displays null values as the string “(Null)”, but you can specify another string, or a blank string, to represent null values if you like. You might find the string “(Null)” a bit distracting when you’re viewing this type of summary report, so let’s change the default string to something else.

1. Select Options, View (ALT, O, V) from the Monarch menu.

The View Options dialog appears. From this dialog you can set several options that affect the way data is displayed on screen in Monarch.

2. Click in the “Display null values as” edit box and change the string to “---” (three dashes) or any other string you like – even a blank string – then choose OK.

The summary is redisplayed using the string you specified.

	Customer	CD	DCC	LP	MD	TAPE
1	Betty's Music Store	353.05	---	64.74	---	89.85
2	Big Shanty Music	158.23	---	---	86.31	29.95
3	Bluegrass Records	122.34	---	---	71.92	53.91
4	Canciones	379.14	---	---	---	---
5	Chez Rudy	275.51	---	44.95	---	---
6	Classic Exchange	209.08	---	---	---	---
7	Das Piano	225.93	---	111.46	161.82	41.93
8	Die Harmonie	100.04	---	---	---	64.46
9	Die Melodie	362.56	---	23.96	86.31	---
10	Fandangos Records	213.90	---	---	---	11.98
11	Hope's Sweet Notes	481.06	77.90	43.11	---	59.90
12	Mo Town Tunes	211.03	---	---	---	23.96
13	Musique du Monde	283.01	95.90	---	---	-17.97
14	Musique Royale	515.17	---	80.26	---	---
15	Notas Musicales	168.94	85.08	62.16	---	10.78
16	Reiner's Symphonic Sounds	361.29	---	32.95	---	68.28
17	Spinning Records	317.66	---	11.98	---	89.85
18	The Glass Harmonica	211.56	9.59	---	67.20	---
19	The King's Place	203.02	---	---	105.49	25.13
20	The Record Store	250.59	17.97	---	---	60.00
21	Summary	5403.11	286.44	475.57	579.05	612.01

Figure 11-3. Null values represented by a series of dashes.

## Freezing Panes

When you spread key values across the top of the summary matrix, the summary often becomes wider than the display width, especially if you are using a 640x480 display. And scrolling right to view more information often removes the most important information from the display, i.e., the highest level key fields, in this case the Customer field. To prevent columns from scrolling off screen, you can use Monarch's Freeze Panes command. Let's freeze the Customer column, then scroll right to view the rest of the summary columns.

1. Click on the first cell in the CD column to position the cell pointer in this cell
2. Select Window, Freeze Panes (ALT, W, F) to freeze the Customer column.

The freeze Panes command acts just like the same named command in Microsoft Excel; it locks all rows above the cell pointer and all columns to the left of the cell pointer so that they remain on screen when you scroll the rest of the summary. (Note that this command also works in the Table window, and if you export to Excel with the Monarch V9 engine with formatting enabled, this will be maintained in the resulting Excel file.)

3. Click on the arrow at the right edge of the horizontal scroll bar to scroll right.

Note that the Customer column remains visible while you scroll.

4. Use the arrow at the left edge of the scroll bar to scroll back to the left.
5. Select Window, Unfreeze Panes (ALT, W, F) to unfreeze the Customer column.

## Adjusting Column Widths

Sometimes you can avoid scrolling altogether by reducing the column widths in a summary so that all of the information fits on screen. When Monarch builds a summary, it sets the column widths wide enough to handle large numbers, such as 1,000,000.00. If the resulting columns are wider than you need to display your summary data, you can adjust them to fit more columns on screen.

The column widths in our crosstab summary are wider than we need them to be. Let's adjust the column widths so that everything fits on screen.

---

**Column Widths for Across Keys:** All of the columns generated from an across key field (in this case the CD, DCC, LP, MD, and TAPE) columns are based on the column width of the Measure. To set the column widths, either use the mouse as described in the following procedure or double-click on the measure (the last column of the summary) and use the Measure dialog to change the width of the measure. All columns related to the key field will snap to the width assigned to the measure.

---

1. Scroll right and double-click anywhere on the measure, i.e., the SUM(Amount) column.

The Measure dialog displays.

2. Click the General tab at the top of the dialog.
3. Set the column Width setting to **8**, then choose OK.

---

**Note:** You can also use the mouse to set column widths. Using the mouse is less precise than using the dialog, however, requiring you to estimate the column width. To use the mouse to set a column width, position the mouse cursor at the right edge of the column title. The mouse cursor changes to a resizing handle. Click down and drag left or right until the column title is the desired width.

---

The Summary should appear as shown in Figure 11-4.

	Customer	CD	DCC	LP	MD	TAPE	SUM(Amt)
1	Betty's Music Store	353.05	---	64.74	---	89.85	507.64
2	Big Shanty Music	158.23	---	---	86.31	29.95	274.49
3	Bluegrass Records	122.34	---	---	71.92	53.91	248.17
4	Canciones	379.14	---	---	---	---	379.14
5	Chez Rudy	275.51	---	44.95	---	---	320.46
6	Classic Exchange	209.08	---	---	---	---	209.08
7	Das Plane	225.93	---	111.46	161.82	41.93	541.14
8	Die Harmonie	100.04	---	---	---	64.46	164.50
9	Die Melodie	362.56	---	23.96	86.31	---	472.83
10	Fandango Records	213.90	---	---	---	11.98	225.88
11	Hope's Sweet Notes	481.06	77.90	43.11	---	59.90	661.97
12	Mo Town Tunes	211.03	---	---	---	23.96	234.99
13	Musique du Monde	283.01	95.90	---	---	-17.97	360.94
14	Musique Royale	515.17	---	80.26	---	---	595.43
15	Notas Musicales	168.94	85.08	62.16	---	10.78	326.96
16	Reiner's Symphonic Sounds	361.29	---	32.95	---	68.28	462.52
17	Spinning Records	317.66	---	11.98	---	89.85	419.49
18	The Glass Harmonica	211.56	9.59	---	67.20	---	288.35
19	The King's Place	203.02	---	---	105.49	25.13	333.64
20	The Record Store	250.59	17.97	---	---	60.00	328.56
21	Summary	5403.11	286.44	475.57	579.05	612.01	7356.18

Figure 11-4. Crosstab summary after column width adjustments.

## Viewing Multiple Measures

You may have noticed that our summary displays only a single measure calculation, even though it displayed two measures when we started this lesson (see the Amount and %Amount columns in Figure 11-1).

When you elect to display values for a key field across the top of the summary, Monarch forms a two-dimensional matrix that displays a single measure at a time by default. To display results for a different measure, you can select it from the Measure drop-down list on the Summary window toolbar. This list displays the names for all measures included in the summary definition. When you select a measure from this list, the summary is redisplayed to show the results calculated for that field.

Let's switch from viewing total sale amounts to sale amounts represented as a percent of total.

1. Click the drop-down arrow on the toolbar's Measures list box. This box currently displays "SUM(Amount)".
2. Select "%Amount" from the list of available measures.

The summary is re-displayed to show media sales as a percent of total sales (note that the Summary line at the bottom of the summary displays percents represented by each media type across all customers and the rightmost column represents percents represented by each customer across all media types).

Customer	CD	DCC	LP	MD	TAPE	%Amount
1 Betty's Music Store	4.80	---	0.88	---	1.22	6.90
2 Big Shanty Music	2.15	---	---	1.17	0.41	3.73
3 Bluegrass Records	1.66	---	---	0.98	0.73	3.37
4 Canciones	5.15	---	---	---	---	5.15
5 Chez Rudy	3.75	---	0.61	---	---	4.36
6 Classic Exchange	2.84	---	---	---	---	2.84
7 Das Piano	3.07	---	1.52	2.20	0.57	7.36
8 Die Harmonie	1.36	---	---	---	0.88	2.24
9 Die Melodie	4.93	---	0.33	1.17	---	6.43
10 Fandangos Records	2.91	---	---	---	0.16	3.07
11 Hope's Sweet Notes	6.54	1.06	0.59	---	0.81	9.00
12 Mo Town Tunes	2.87	---	---	---	0.33	3.19
13 Musique du Monde	3.85	1.30	---	---	-0.24	4.91
14 Musique Royale	7.00	---	1.09	---	---	8.09
15 Notes Musicales	2.30	1.16	0.85	---	0.15	4.44
16 Reiner's Symphonic Sounds	4.91	---	0.45	---	0.93	6.29
17 Spinning Records	4.32	---	0.16	---	1.22	5.70
18 The Glass Harmonica	2.88	0.13	---	0.91	---	3.92
19 The King's Place	2.76	---	---	1.43	0.34	4.54
20 The Record Store	3.41	0.24	---	---	0.82	4.47
21 Summary	73.45	3.89	6.46	7.87	8.32	100.00

Start \ Sales By Media \ Sales By Ship Date \ Sales >= 400 /  
Summary

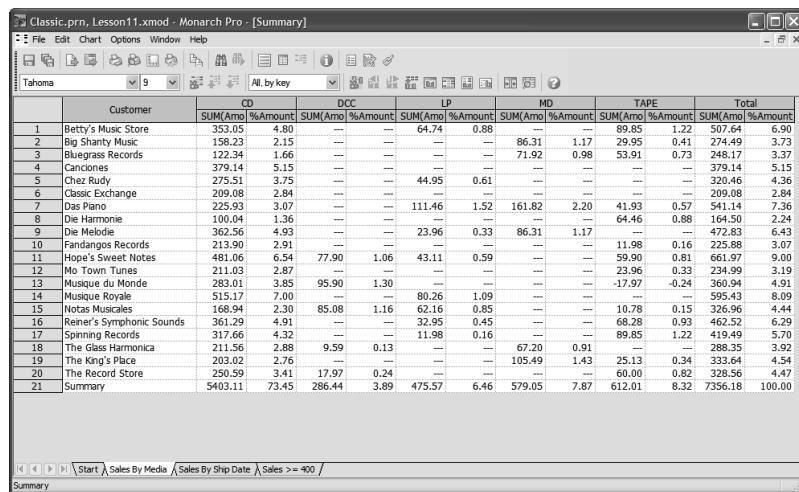
Figure 11-5. Viewing the %Amount measure.

## Displaying Multiple Measures in Across Key Summaries

Monarch V10 now allows you to display multiple measures in across key summaries. Let's try doing this.

1. Click the drop-down arrow on the toolbar's Measures list box and select "All, by Key".

Monarch displays both of the measures grouped by key. **Note:** Choose a smaller font size and auto-size the column widths in order to display all of the data in the summary window (see Figure 11-6).



The screenshot shows a software application window titled "Classic-prn, Lesson11.xmod - Monarch Pro - [Summary]". The window contains a table with data grouped by "Customer". The columns represent different measures: CD, DCC, LP, MD, TAPE, and Total. The "Customer" column lists various music stores. The "CD" column has values like 353.05, 158.23, etc. The "DCC" column has values like 4.80, 2.15, etc. The "LP" column has values like 64.74, 86.31, etc. The "MD" column has values like 0.88, 1.17, etc. The "TAPE" column has values like 89.85, 53.91, etc. The "Total" column has values like 1.22, 0.41, etc. The "Customer" column also includes a "Summary" row at the bottom with a value of 5403.11.

	Customer	CD	DCC	LP	MD	TAPE	Total
		SUM(Amt) %Amount					
1	Betty's Music Store	353.05	4.80	—	64.74	0.88	1.22
2	Big Shanty Music	158.23	2.15	—	—	86.31	0.41
3	Bluegrass Records	122.34	1.66	—	—	71.92	0.98
4	Canciones	379.14	5.15	—	—	—	0.73
5	Chez Rudy	275.51	3.75	—	44.95	0.61	—
6	Classic Exchange	209.08	2.84	—	—	—	—
7	Das Piano	225.93	3.07	—	111.46	1.52	161.82
8	Die Harmonie	100.04	1.36	—	—	—	64.46
9	Die Melodie	362.56	4.93	—	23.96	0.33	86.31
10	Fandangos Records	213.90	2.91	—	—	1.17	—
11	Hoe's Sweet Notes	401.65	6.41	77.90	1.06	43.11	0.59
12	Hot Rod Tunes	211.03	2.87	—	—	—	—
13	Musique du Monde	283.01	3.85	95.90	1.30	—	—
14	Musique Royale	515.17	7.00	—	—	—	—
15	Notas Musicales	168.94	2.30	85.08	1.16	62.16	0.85
16	Reiner's Symphonic Sounds	361.29	4.91	—	—	32.95	0.45
17	Spinning Records	317.66	4.32	—	—	11.98	0.16
18	The Glass Harmonica	211.56	2.88	9.59	0.13	—	67.20
19	The King's Place	203.02	2.76	—	—	—	105.49
20	The Record Store	250.59	3.41	17.97	0.24	—	—
21	Summary	5403.11	73.45	286.44	3.89	475.57	6.46
		579.05		7.87	612.01	8.32	7356.18
							100.00

Figure 11-6. Displaying both measures grouped by key.

We can also choose to view all of the measures grouped by measure.

2. Click the drop-down arrow on the toolbar's Measures list box and select "All, by Measure".

Monarch displays both measures grouped by measure. **Note:** Choose a smaller font size and auto-size the column widths in order to display all of the data as in Figure 11-7.

	Customer	SUM(Amount)					%Amount							
		CD	DCC	LP	MD	TAPE	Total	CD	DCC	LP	MD	TAPE	Total	
1	Betty's Music Store	353.05	—	64.74	—	89.65	507.64	4.80	—	0.88	—	1.22	6.90	
2	Big Shanty Music	158.23	—	—	86.31	29.95	274.49	2.15	—	—	1.17	0.41	3.73	
3	Bluegrass Records	122.34	—	—	—	71.92	53.91	248.17	1.66	—	—	0.98	0.73	3.37
4	Canciones	379.14	—	—	—	—	379.14	5.15	—	—	—	—	5.15	
5	Chet Rudy	275.51	—	44.95	—	—	320.46	3.75	—	0.61	—	—	4.36	
6	Classic Exchange	209.08	—	—	—	—	209.08	2.84	—	—	—	—	2.84	
7	Das Piano	225.93	—	111.46	161.82	41.93	541.14	3.07	—	1.52	2.20	0.57	7.36	
8	Die Harmonie	100.04	—	—	—	64.46	164.50	1.36	—	—	0.88	—	2.24	
9	Die Melodie	362.56	—	23.96	86.31	—	472.83	4.93	—	0.33	1.17	—	6.43	
10	Panorama Records	213.90	—	—	—	11.98	225.88	2.91	—	—	—	0.16	3.07	
11	Parrot's Song Notes	46.46	—	77.90	43.11	—	59.90	2.47	—	1.06	0.59	—	0.61	9.00
12	Mo Town Tunes	211.03	—	—	—	23.56	234.99	2.87	—	—	—	0.33	3.19	
13	Musiques du Monde	283.01	95.90	—	—	—	-17.57	360.04	3.85	1.30	—	—	-0.24	4.91
14	Musique Royale	515.17	80.26	—	—	595.43	7.00	—	—	1.09	—	—	8.09	
15	Notas Musicales	168.94	85.08	62.16	—	10.78	326.96	2.30	1.16	0.85	—	0.15	4.44	
16	Reiner's Symphonic Sounds	361.29	—	32.95	—	68.28	462.52	4.91	—	0.45	—	0.93	6.29	
17	Spinning Records	317.66	—	11.98	—	89.85	419.49	4.32	—	0.16	—	1.22	5.70	
18	The Glass Harmonica	211.56	9.59	—	67.20	—	288.35	2.88	0.13	—	0.91	—	3.92	
19	The King's Place	203.02	—	—	105.49	25.13	333.64	2.76	—	—	1.43	0.34	4.54	
20	The Record Store	250.59	17.97	—	—	60.00	328.56	3.41	0.24	—	—	0.82	4.47	
21	Summary	5403.11	286.44	475.57	579.05	612.01	7356.18	73.45	3.89	6.46	7.87	8.32	100.00	

Figure 11-7. Displaying both measures grouped by measure.

Let's return to our across key summary with only one measure.

- Click the drop-down arrow on the toolbar's Measures list box and select "%Amount".

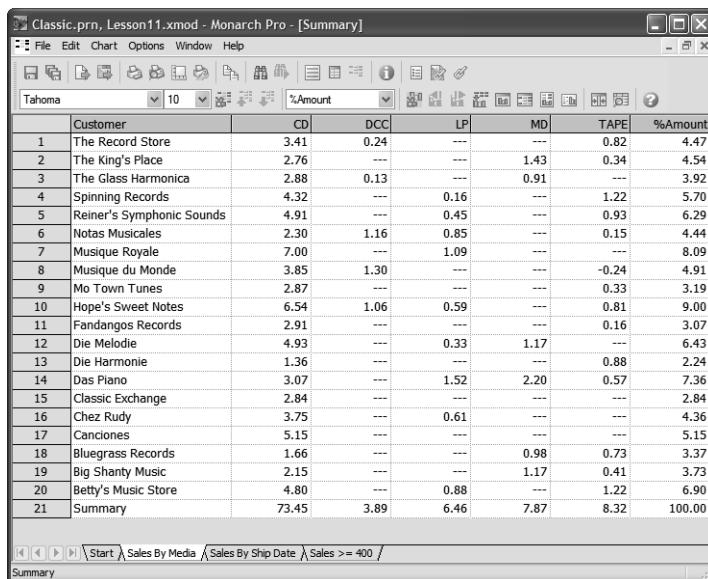
## Sorting a Summary

When you define a summary, Monarch initially displays the key field values in ascending alphabetical order. You can see this in the summary in Figure 11-5. Here the Customer values are displayed starting with Betty's Music Store, proceeding to The Record Store. The same holds true for the values of the Media field (CD, DCC, LP, MD, TAPE).

If the initial display order is not what you want, you can modify the order for any key field using the Key Field dialog. Let's change the sort order for the Customer key field to sort the customer field values in descending order.

- Double-click on the Customer column to display the Key field dialog (click the Autosize Column Widths icon if the Customer column isn't visible).
- Click on the Sorting tab at the top of the dialog.
- Under the Direction heading, select the Descending radio button, then choose OK.

After a brief pause, the summary is redisplayed sorted in descending order by customer.



The screenshot shows the Monarch Pro interface with a summary table. The table has columns for Customer, CD, DCC, LP, MD, TAPE, and %Amount. The rows list various customers with their sales figures. The table is sorted by the %Amount column in descending order, with 'The Record Store' at the top having the highest value of 4.47%.

Customer	CD	DCC	LP	MD	TAPE	%Amount
1 The Record Store	3.41	0.24	---	---	0.82	4.47
2 The King's Place	2.76	---	---	1.43	0.34	4.54
3 The Glass Harmonica	2.88	0.13	---	0.91	---	3.92
4 Spinning Records	4.32	---	0.16	---	1.22	5.70
5 Reiner's Symphonic Sounds	4.91	---	0.45	---	0.93	6.29
6 Notas Musicales	2.30	1.16	0.85	---	0.15	4.44
7 Musique Royale	7.00	---	1.09	---	---	8.09
8 Musique du Monde	3.85	1.30	---	---	-0.24	4.91
9 Mo Town Tunes	2.87	---	---	---	0.33	3.19
10 Hope's Sweet Notes	6.54	1.06	0.59	---	0.81	9.00
11 Fandangos Records	2.91	---	---	---	0.16	3.07
12 Die Melodie	4.93	---	0.33	1.17	---	6.43
13 Die Harmonie	1.36	---	---	---	0.88	2.24
14 Das Piano	3.07	---	1.52	2.20	0.57	7.36
15 Classic Exchange	2.84	---	---	---	---	2.84
16 Chez Rudy	3.75	---	0.61	---	---	4.36
17 Canciones	5.15	---	---	---	---	5.15
18 Bluegrass Records	1.66	---	---	0.98	0.73	3.37
19 Big Shanty Music	2.15	---	---	1.17	0.41	3.73
20 Betty's Music Store	4.80	---	0.88	---	1.22	6.90
21 Summary	73.45	3.89	6.46	7.87	8.32	100.00

Figure 11-8. Sorting a key field.

## Sorting by Measure Values

Monarch can also sort a summary based upon the values of a measure. Let's use this feature to sort our customers from largest to smallest. First, we'll select the SUM(Amount) measure calculation to show sales totals for each customer.

1. Click the drop-down arrow on the toolbar's Measures list box. This box currently displays "%Amount".
2. Select "SUM(Amount)" from the list of available measures.

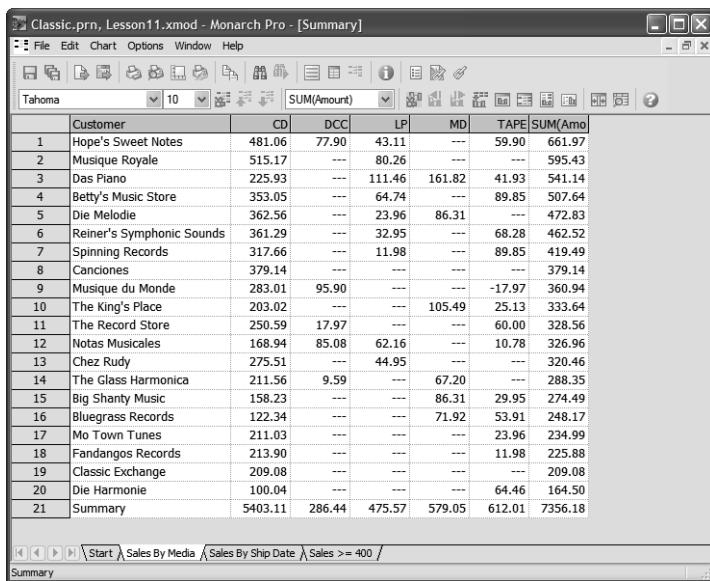
Now we'll sort the Customer key field values based upon the values of the SUM(Amount) field. This has the affect of ranking customers by sales totals. We'll sort in descending order to rank customer sales from largest to smallest.

3. Double-click on the Customer column to display the Key Field dialog.
4. Click on the Sorting tab at the top of the dialog.
5. Under the Sort By heading, select the Measure radio button.

The SUM(Amount) field is already selected as the measure to sort on and the Descending option is already selected as the sort order, so we'll leave these options unchanged.

6. Choose OK.

After a brief pause, the summary is redisplayed with customers sorted in descending order by sales totals. Note that Hope's Sweet Notes appears first because it has the largest total sales amount of any customer (661.97), followed by Musique Royale with a sales total of 595.43, and so on.



The screenshot shows a window titled "Classic.prn, Lesson11.xmod - Monarch Pro - [Summary]". The window contains a table of customer sales data. The columns are Customer, CD, DCC, LP, MD, TAPE, and SUM(Amd). The rows list various customers with their respective sales figures. The table is sorted by the SUM(Amd) column in descending order. The last row is a summary row labeled "Summary". Below the table, there is a navigation bar with icons for back, forward, start, sales by media, sales by ship date, and sales >= 400, followed by a "Summary" button.

Customer	CD	DCC	LP	MD	TAPE	SUM(Amd)
1 Hope's Sweet Notes	481.06	77.90	43.11	---	59.90	661.97
2 Musique Royale	515.17	---	80.26	---	---	595.43
3 Das Piano	225.93	---	111.46	161.82	41.93	541.14
4 Betty's Music Store	353.05	---	64.74	---	89.85	507.64
5 Die Melodie	362.56	---	23.96	86.31	---	472.83
6 Reiner's Symphonic Sounds	361.29	---	32.95	---	68.28	462.52
7 Spinning Records	317.66	---	11.98	---	89.85	419.49
8 Canciones	379.14	---	---	---	---	379.14
9 Musique du Monde	283.01	95.90	---	---	-17.97	360.94
10 The King's Place	203.02	---	---	105.49	25.13	333.64
11 The Record Store	250.59	17.97	---	---	60.00	328.56
12 Notas Musicales	168.94	85.08	62.16	---	10.78	326.96
13 Chez Rudy	275.51	---	44.95	---	---	320.46
14 The Glass Harmonica	211.56	9.59	---	67.20	---	288.35
15 Big Shanty Music	158.23	---	---	86.31	29.95	274.49
16 Bluegrass Records	122.34	---	---	71.92	53.91	248.17
17 Mo Town Tunes	211.03	---	---	---	23.96	234.99
18 Fandangos Records	213.90	---	---	---	11.98	225.88
19 Classic Exchange	209.08	---	---	---	---	209.08
20 Die Harmonie	100.04	---	---	---	64.46	164.50
21 Summary	5403.11	286.44	475.57	579.05	612.01	7356.18

Figure 11-9. Sorting a key field based upon the values of a measure.

Let's also sort the Media field values in the same manner. The result should show the media type with the largest overall sales first, followed by the second largest in terms of sales, etc.

7. Double-click on any cell in any of the Media type columns (any cell in the CD column, for example).

The Key Field dialog displays.

8. Click on the Sorting tab at the top of the dialog.
9. Select the Measure radio button under the Sort By heading.

The SUM(Amount) field is already selected as the measure to sort on, but the sort order is set to Ascending. We'll change this to Descending in order to display the media type with the largest sales first.

10. Select the Descending radio button under the Direction heading, then choose OK.

After a brief pause, the summary is redisplayed with customers sorted in descending order by sales totals and Media types also sorted in descending order by sales totals.

Customer	CD	TAPE	MD	LP	DCC	SUM(Amo)
1 Hope's Sweet Notes	481.06	59.90	---	43.11	77.90	661.97
2 Musique Royale	515.17	---	---	80.26	---	595.43
3 Das Piano	225.93	41.93	161.82	111.46	---	541.14
4 Betty's Music Store	353.05	89.85	---	64.74	---	507.64
5 Die Melodie	362.56	---	86.31	23.96	---	472.83
6 Reiner's Symphonic Sounds	361.29	68.28	---	32.95	---	462.52
7 Spinning Records	317.66	89.85	---	11.98	---	419.49
8 Canciones	379.14	---	---	---	---	379.14
9 Musique du Monde	283.01	-17.97	---	---	95.90	360.94
10 The King's Place	203.02	25.13	105.49	---	---	333.64
11 The Record Store	250.59	60.00	---	---	17.97	328.56
12 Notas Musicales	168.94	10.78	---	62.16	85.08	326.96
13 Chez Rudy	275.51	---	---	44.95	---	320.46
14 The Glass Harmonica	211.56	---	67.20	---	9.59	288.35
15 Big Shanty Music	158.23	29.95	86.31	---	---	274.49
16 Bluegrass Records	122.34	53.91	71.92	---	---	248.17
17 Mo Town Tunes	211.03	23.96	---	---	---	234.99
18 Fandangos Records	213.90	11.98	---	---	---	225.88
19 Classic Exchange	209.08	---	---	---	---	209.08
20 Die Harmonie	100.04	64.46	---	---	---	164.50
21 Summary	5403.11	612.01	579.05	475.57	286.44	7356.18

Figure 11-10. Sorting both Customers and Media types by sales totals.

Note that CD appears first because it has the largest total sales amount across all customers (5403.11), followed by TAPE with a sales total of 612.01, and so on. The sales totals appear in the Summary row at the bottom of the summary report.

## Restoring the Key Field Direction

So far, we've shown how to create a crosstab summary that displays the values for a single key field across the top row, forming a 2 dimensional matrix. This format is useful for displaying a lot of information, but it may not be ideal for all summary reports. With Monarch you can switch between this format and a more traditional report format, choosing the appropriate format for your data and viewing requirements. Let's reset the Media field to display its values down rather than across.

1. Double-click anywhere on the CD column to display the Key Field dialog.
2. Click on the Display tab at the top of the dialog.
3. Under the Key Values heading, select the Down radio button.
4. Choose OK to redisplay the Media field values down.

Now let's suppress duplicate values in the Customer column to give a summary report a nicer look.

5. Double-click anywhere on the Customer column to display the Key Field dialog.

6. Click on the Display tab, select the Suppress Duplicate Values check box under the Key Values heading, then choose OK.

The summary is redisplayed suppressing duplicate customer names.

	Customer	Media	Amount	%Amount
1	Hope's Sweet Notes	CD	481.06	6.54
2		DCC	77.90	1.06
3		TAPE	59.90	0.81
4		LP	43.11	0.59
5	Subtotal		661.97	9.00
6				
7	Musique Royale	CD	515.17	7.00
8		LP	80.26	1.09
9	Subtotal		595.43	8.09
10				
11	Das Piano	CD	225.93	3.07
12		MD	161.82	2.20
13		LP	111.46	1.52
14		TAPE	41.93	0.57
15	Subtotal		541.14	7.36
16				
17	Betty's Music Store	CD	353.05	4.80
18		TAPE	89.85	1.22
19		LP	64.74	0.88
20	Subtotal		507.64	6.90
21				
22	Die Melodie	CD	362.56	4.93

Figure 11-11. Restoring the summary to a more traditional display format.

Notice that the summary is still sorted in the same manner, with customer groups sorted in descending order by sales amounts (entire summary groups are sorted based upon the subtotal values for each group). Within each customer, the media types are also sorted in descending order by sales. And in this format (with no key field displayed across), the summary can display both the SUM(Amount) and PCT(Amount) measure calculations at the same time.

## Top *n* Analysis

Top *n* analysis, typically referred to as *Top 10 Analysis*, is a common tool provided by data analysis applications. You can create a top *n* analysis or bottom *n* analysis of your summary data by first sorting the data in the appropriate order and then by selecting the first *n* values, whether *n* is 10, 3 or some other number. These values then represent either the top *n* or the bottom *n* analysis. Let's see how this works.

We'll create a top 3 analysis from our sales summary that shows the top three customers in terms of sales. All other customers will be represented using a single summary label, "All Others". To create our top 3 analysis, we start by sorting the customers in descending order by sales totals. This places the top performing customers at the top of the summary display. We've already applied this sort in our previous discussion on sorting. Next, we need to indicate that we want to see only the first three customers (the three customers with the largest sales totals).

1. Double-click on the Customer field to Display the Key Field dialog.
2. Select the Matching tab at the top of the dialog.
3. Select the First *n* Values option and enter **3** in its spin box, then choose OK.

The summary is rebuilt to show only the top three customers. All other customers are grouped together and represented by the "All Others" label.

	Customer	Media	Amount	%Amount
1	Hope's Sweet Notes	CD	481.06	6.54
2		DCC	77.90	1.06
3		TAPE	59.90	0.81
4		LP	43.11	0.59
5	Subtotal		661.97	9.00
6				
7	Musique Royale	CD	515.17	7.00
8		LP	80.26	1.09
9	Subtotal		595.43	8.09
10				
11	Das Piano	CD	225.93	3.07
12		MD	161.82	2.20
13		LP	111.46	1.52
14		TAPE	41.93	0.57
15	Subtotal		541.14	7.36
16				
17	All Others	CD	4180.95	56.84
18		TAPE	510.18	6.94
19		MD	417.23	5.67
20		LP	240.74	3.27
21		DCC	208.54	2.83
22	Subtotal		5557.64	75.55

Figure 11-12. A top 3 analysis showing the top performing customers in terms of total sales.

You can easily modify this summary to show the bottom 3 customers in terms of sales totals by sorting the customer key field in ascending order. Likewise, you can increase or decrease the number of customers that you explicitly break out for analysis by increasing or decreasing the value in the Customer field's First *n* Values option.

A top *n* analysis can be defined at any level in the summary. Within each customer you can define a top 3 analysis of each media type by sorting the media type in descending order and then selecting the First *n* Values option for the Media key field and entering the desired number in its spin box.

## Specifying Key Field Values

While performing a top *n* analysis is useful when you want to determine which items (customers, salespeople, etc) are the top performers, sometimes you already know which items you want to look at, whether they are the top performers or otherwise. For example, suppose you want to focus on just the digital media types (compact disks, digital compact cassettes and mini disks). You could do this by creating a filter in the Table window with the filter expression:

`Media="CD".Or.Media="DCC".Or.Media="MD"`

You could also write this expression as: `Media.In("CD", "DCC", "MD")`

By applying the filter to the summary definition, the summary would display information about only the digital media types. However, Monarch provides an easier, and in some cases more powerful, method of achieving this result. For each key field, you can define a list of all values you want to use when building the summary. Further, you can accumulate all values not in your list as a single key value (a feature not available if you use a filter). To demonstrate how this works, lets create a list of values to use for the Media field.

1. Double-click on any cell in the Media column to display the Key Field dialog.
2. Click on the Matching tab at the top of the dialog.
3. Click the Specified Values option.
4. Click the Edit Values button.

The Edit Values dialog displays. This dialog lists all unique values found within the Media field (CD, DCC, LP, MD, and TAPE).

5. Select CD from the Key Values list, then click the Add button to add this value to the Specified or Upper Limit Values list.
6. Repeat step 5 to add the DCC and MD values to the Specified or Upper Limit Values list.
7. Choose OK to close this dialog and return to the Key Field dialog.

The selected values appear in the Key Field dialog's Specified Values list.

Let's accumulate the old media types (LP and TAPE) under a separate heading.

8. Clear the Discard check box under the Unmatched Values heading.
9. Type **Other** in the Label box below, then choose OK.

Monarch rebuilds the summary using only the selected media types. The two media types not specified (LP and TAPE) are combined under the label **Other**.

	Customer	Media	Amount	%Amount
1	Hope's Sweet Notes	CD	481.06	6.54
2		DCC	77.90	1.06
3		Other	103.01	1.40
4	Subtotal		661.97	9.00
5				
6	Musique Royale	CD	515.17	7.00
7		Other	80.26	1.09
8	Subtotal		595.43	8.09
9				
10	Das Piano	CD	225.93	3.07
11		MD	161.82	2.20
12		Other	153.39	2.09
13	Subtotal		541.14	7.36
14				
15	All Others	CD	4180.95	56.84
16		MD	417.23	5.67
17		DCC	208.54	2.83
18		Other	750.92	10.21
19	Subtotal		5557.64	75.55
20				
21	Summary		7356.18	100.00

Media - Desc by calc - Specified - Down

Figure 11-13. Using specified values to break out each digital media type versus all other media types.

## Sorting by Key Field Values

Once you have specified key field values, you can sort the summary data by either the specified values themselves (i.e., their names) or by their order in the Specified or Upper Limit Values list on the Matching tab. To do so, select the Key Field radio button on the Sorting tab and choose either the Field Value option (to order the data by the field value names) or the Position in Specified Values List option (to order the data by their position in the Specified or Upper Limit Values list). **Note:** The Position in Specified Values List option is not available if the Specified Values option (on the Matching tab) has not been chosen.

## Upper Limit Values

While the Specified Values option lets you select the exact values you want to use in your summary, sometimes you want to group values into ranges, such as weekly or monthly periods. This capability is provided via the Upper Limit Values option. This option lets you define an upper limit for each range of values. An example of this can be seen in the Sales by Ship Date summary.

1. Click on the Sales By Ship Date summary tab at the bottom of the Summary window.

The Sales by Ship Date summary displays. This summary breaks out sales for all customers across four weekly periods during the month of April, 2008. We created this summary by using the dates 04/07/2008, 04/14/2008, 04/21/2008, and 04/28/2008 to define the ending dates for each weekly period.

	Customer	4/7/2008	4/14/2008	4/21/2008	4/28/2008	SUM(Amount)
1	Betty's Music Store	173.25	---	334.39	---	507.64
2	Big Shanty Music	147.45	127.04	---	---	274.49
3	Bluegrass Records	---	248.17	---	---	248.17
4	Canciones	61.10	170.07	147.97	---	379.14
5	Chez Rudy	---	---	320.46	---	320.46
6	Classic Exchange	---	---	209.08	---	209.08
7	Das Piano	---	---	---	541.14	541.14
8	Die Harmonie	---	---	164.50	---	164.50
9	Die Melodie	---	65.89	---	406.94	472.83
10	Fandangos Records	---	---	225.88	---	225.88
11	Hope's Sweet Notes	---	510.90	151.07	---	661.97
12	Mo Town Tunes	234.99	---	---	---	234.99
13	Musique du Monde	384.37	-188.79	165.36	---	360.94
14	Musique Royale	161.78	80.26	353.39	---	595.43
15	Notas Musicales	226.31	---	---	100.65	326.96
16	Reiner's Symphonic Sounds	---	194.12	---	268.40	462.52
17	Spinning Records	91.62	---	---	327.87	419.49
18	The Glass Harmonica	---	---	---	288.35	288.35
19	The King's Place	---	209.66	123.98	---	333.64
20	The Record Store	---	---	186.45	142.11	328.56
21	Summary	1480.87	1417.32	2156.65	2301.34	7356.18

Figure 11-14. Using upper limit values to break out ship dates into weekly periods.

## Summary Limit Values

Another way to analyze summary data is to set a limit against a measure. This feature works somewhat like a filter that is applied after the summary is built. For example, the Sales  $\geq 400$  summary displays only those customers for which totals sales exceed 399.00.

1. Click on the Sales  $\geq 400$  summary tab at the bottom of the Summary window.

The Sales  $\geq 400$  summary displays. This summary breaks out only those customers for which total sales are at least 400.00 (there are seven such customers). All other customers are grouped together under an “All Others” label.

To create this summary you simply double-click on the Customer field, select the Matching tab on the Key Field dialog, choose the Measure radio button, then select the Measure Limit radio button, choose the SUM(Amount) field, the “ $\geq$ ” operator, and enter 400 in the adjacent field.

	Customer	CD	DCC	LP	MD	TAPE	SUM(Amo)
1	Betty's Music Store	353.05	---	64.74	---	89.85	507.64
2	Das Piano	225.93	---	111.46	161.82	41.93	541.14
3	Die Melodie	362.56	---	23.96	86.31	---	472.83
4	Hope's Sweet Notes	481.06	77.90	43.11	---	59.90	661.97
5	Musique Royale	515.17	---	80.26	---	---	595.43
6	Reiner's Symphonic Sounds	361.29	---	32.95	---	68.28	462.52
7	Spinning Records	317.66	---	11.98	---	89.85	419.49
8	All Others	2786.39	208.54	107.11	330.92	262.20	3695.16
9	Summary	5403.11	286.44	475.57	579.05	612.01	7356.18

Figure 11-15. Using Summary Limit Values to break out large customers.

## Saving Your Work

You have completed Lesson 11. We recommend you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Advanced Summary** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X) or, if you plan to go on to Lesson 12 now, select File, Close All (ALT, F, C) instead.

The model contains each summary definition along with other information about your Monarch session.

## Summary

In this lesson you learned about many of the advanced features of Monarch's Summary window. For further reading, see the following sections of the Monarch help file:

Chapter 3 - Summary Window

Creating Summaries

Viewing Summaries

In the next lesson you'll learn how to create charts to represent the data in a summary.



## LESSON 12

## Charting Summary Data

In this lesson you will learn how to create charts to represent summary data. The lesson topics include:

- How Monarch creates charts.
- Displaying charts.
- Navigating a series of charts.
- Displaying more information on each chart.
- Changing a chart's type and display options.
- Adding a title to a chart.
- Specifying chart colors and fonts.
- Copying a chart to another application.
- Printing a chart.

### How Monarch Creates Charts

To create charts with most spreadsheet and charting packages, you are asked to manually select the chart data range and legends and you are given control over other settings, such as scale increments. In Monarch these settings are determined automatically, based upon the available summary data. The difference in approach is due to the nature of a Monarch summary. A summary, unlike a spreadsheet, has a dynamic size. If you apply a filter to the summary, or if the summary is re-built based upon a new instance of a report, the summary data set may shrink or grow in size. As a result, any chart data range, legends or scale increments that you defined would need to be re-defined to accommodate the new data.

By automatically selecting these chart properties each time the summary is built, this ensures that the charts match the available data set and saves you the annoyance of re-defining chart properties each time there is a change to the summary data.

Monarch also recognizes that not every summary can be represented with a single chart. Depending upon the number of key fields and measures available, it will create either a single chart representing all of the summary data or a series of charts, with each chart representing a logical subset of the summary data.

For a simple summary that includes one key field and one measure, Monarch will create a single chart to represent all of the data in the summary. An example of this type of summary is shown in Figure 12-1. The summary includes a single key field (CUSTOMER) and a single measure (AMOUNT). The entire summary can be represented on a single chart. This *bar chart* includes a series of bars, with each bar representing the sales amount for a single customer. (If the available display area is too small to accommodate the entire chart, a scroll bar is included with the chart.)

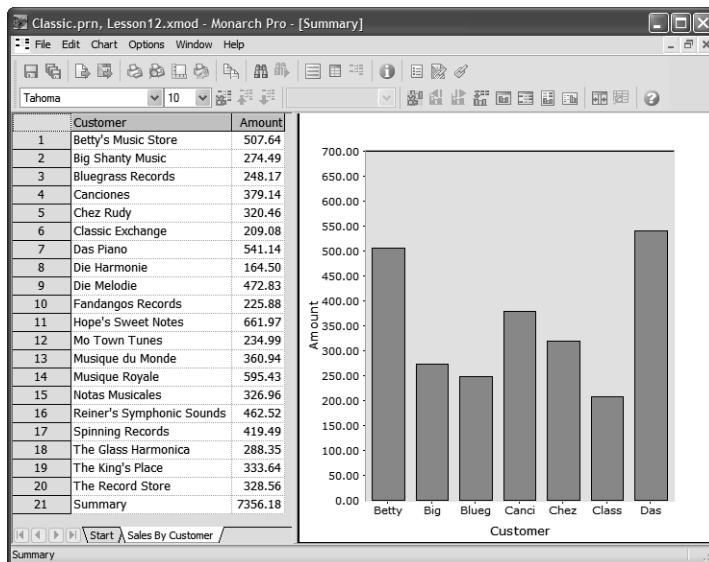


Figure 12-1. Summary with associated chart.

For more complex summaries – those with multiple key fields and/or multiple measures – a series of charts is created, with each chart representing a logical subset of the summary data. For example, the summary shown in Figure 12-2 displays sales broken out by media type (CD, LP, TAPE,) for each of 20 customers (Betty's Music Store, Big Shanty Music, Bluegrass Records, etc.). For this summary, Monarch creates a series of charts; one chart for each customer.

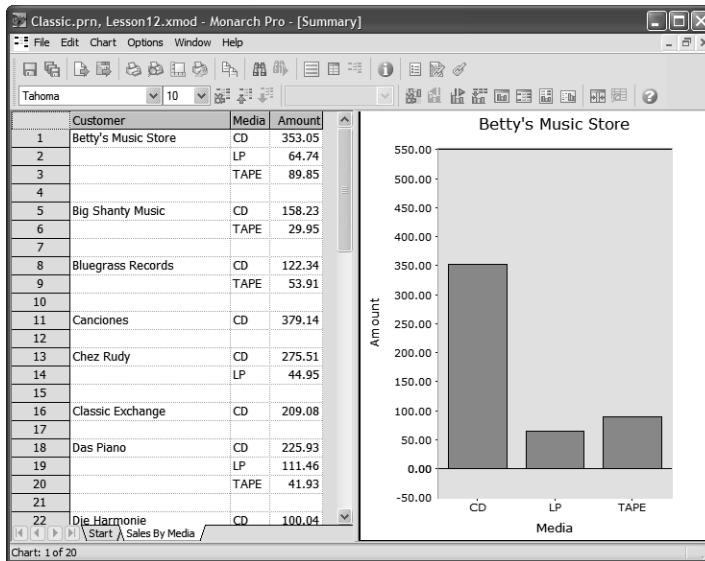


Figure 12-2. Summary with two key fields produces multiple charts (1st of a series of charts shown).

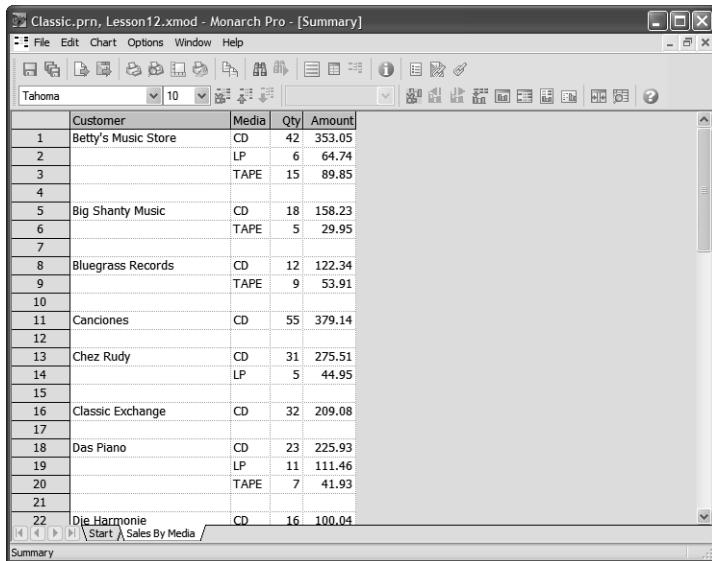
When multiple charts are created, the number of charts is reported in the status bar at the bottom of the window. In Figure 12-2, the status bar indicates that Monarch has created a total of 20 charts, one for each customer.

## Starting the Lesson

To start the lesson, load Monarch and open Classic.prn and Lesson12.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Classic.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson12.xmod, then choose Open.
4. Select Window, Summary (ALT, W, S) or click the Summary window button  on the toolbar.

Monarch builds and displays the Sales By Media summary. This summary displays sales quantities and amounts for a fictional music distributor broken out by customer and media type. Duplicate customer names have been suppressed and blank lines have been added to separate each customer group.



The screenshot shows a software application window titled "Classic.prn, Lesson12.xmod - Monarch Pro - [Summary]". The window has a menu bar with File, Edit, Chart, Options, Window, and Help. Below the menu is a toolbar with various icons. The main area contains a table with the following data:

	Customer	Media	Qty	Amount
1	Betty's Music Store	CD	42	353.05
2		LP	6	64.74
3		TAPE	15	89.85
4				
5	Big Shanty Music	CD	18	158.23
6		TAPE	5	29.95
7				
8	Bluegrass Records	CD	12	122.34
9		TAPE	9	53.91
10				
11	Canciones	CD	55	379.14
12				
13	Chez Rudy	CD	31	275.51
14		LP	5	44.95
15				
16	Classic Exchange	CD	32	209.08
17				
18	Das Piano	CD	23	225.93
19		LP	11	111.46
20		TAPE	7	41.93
21				
22	Dia Harmonie	CD	16	100.04

Figure 12-3. Summary displaying sales quantities and amounts by customer and media type.

## Displaying Charts

Since Monarch automatically selects the chart data range, legend text and scale increments, all that you need to do to create and display a chart is to select a chart display option. There are several chart display options:

**Show Chart on Bottom** - This option splits the Summary window horizontally, with the summary on top and the chart on the bottom.

**Show Chart on Right** - This option splits the Summary window vertically, with the summary on the left and the chart on the right.

**Maximize Chart** - The Maximize Chart option maximizes the chart to fill the entire Summary window.

**Maximize Summary** - The Maximize Summary option maximizes the summary to fill the entire Summary window (the chart is not shown).

1. Select Window, Show Chart on Right (ALT, W, G) or click the Show Chart on Right button .

Monarch splits the summary window into side by side panes, with the summary displayed on the left and the chart on the right.

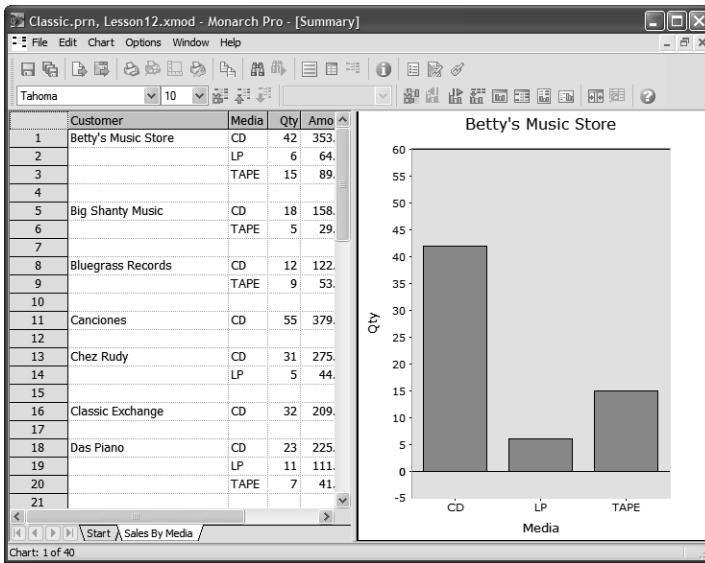


Figure 12-4. Summary window split vertically with the summary on the left and a chart on the right.

## Navigating a Series of Charts

Depending upon the number of key fields and measures used in the summary, Monarch will create either a one dimensional series of charts or a two dimensional series of charts. For example, the summary in Figure 12-5 will produce a one dimensional series of charts, with a single QTY chart for each customer.



Figure 12-5. A summary with a single measure produces a one dimensional series of charts.

Summaries that use more than a single measure produce a two dimensional series of charts, with a new series added for each additional measure. By adding a second measure to the summary shown above, Monarch will produce twice the number of charts, arranging them in a two dimensional series.

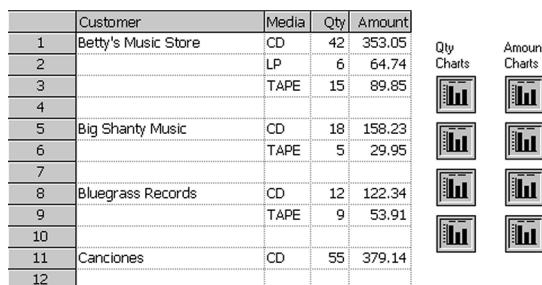


Figure 12-6. Each additional measure adds another series of charts.

In the case of a summary with only a single key field, like the one shown in Figure 12-1, each series includes only a single chart. However, for summaries with multiple key fields, each measure generates a series of charts, as is the case in Figure 12-4, where there are 20 charts per series, one for each customer.

Navigating a series of charts, whether it is a one dimensional series or a two dimensional series, is simple. A Previous Chart button and a Next Chart button are provided on the Toolbar. To view the next chart, click the Next Chart button . To view the previous chart, click the Previous Chart button . For a two dimensional series, like that shown in Figure 12-6, Monarch navigates across, then down. In other words, by pressing the Next Chart button, you'll see the Qty chart, then the Amount chart, for each customer.

Let's see how this works.

1. Select Chart, Next Chart (ALT, C, N) or click the Next Chart button .

The Amount chart for Betty's Music Store appears.

2. Click the Next Chart button again.

Now the Qty chart for Big Shanty Music appears. The next chart will be the Amount chart for Big Shanty Music.

3. Click the Next Chart button again.

Monarch displays the expected chart.

Using the Previous Chart and Next Chart buttons, you can navigate through a series of charts to display any chart you are interested in. But suppose there are 400 charts instead of 40. Using the Next or Previous Chart button to locate a specific chart could quickly become tedious. Fortunately, Monarch provides a quick way to locate and display the chart you are interested in.

## Locating a Specific Chart

Let's say we're interested in viewing the chart representing sales quantities for Spinning Records. You could click the Next Chart button 29 more times to view the chart, or you can use the Display Chart For Selected Data command to jump directly to the chart. This command displays the chart corresponding to the data you select.

1. Scroll down in the summary to display the information for Spinning Records.
2. Click on any cell in the Qty column adjacent to Spinning Records. (You may even click in the blank row immediately below the Spinning Records group.)
3. Select Edit, Display Chart For Selected Data (ALT, E, Y) or click the Display Chart For Selected Data button .

The Qty chart for Spinning Records appears.

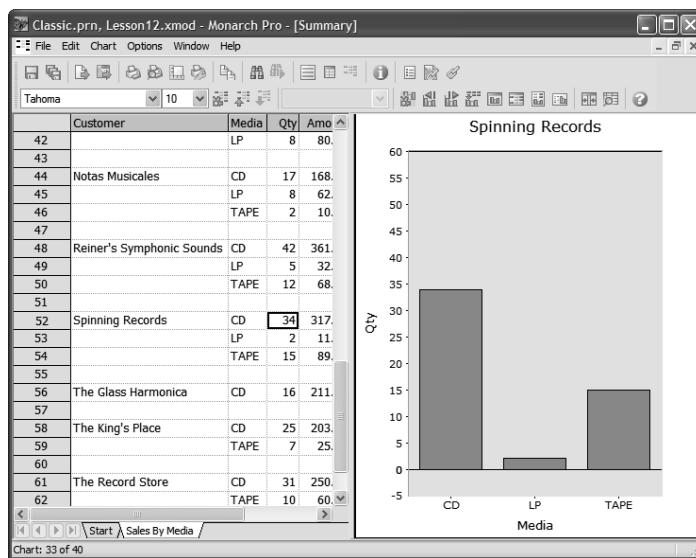


Figure 12-7. Displaying a chart for selected data.

From here you may resume manually navigating the series of charts using the Previous Chart or Next Chart buttons or move the cell pointer to another location in the summary and use Display Chart For Selected Data again to display the corresponding chart.

## Displaying More Information on Each Chart

As we've seen, when more than one key field or measure is used in a summary, Monarch creates a series of charts, each representing a logical subset of the summary data. When multiple key fields and multiple measures are available, a potentially large number of charts may result.

Initially, each chart includes information about a single key field (the rightmost key field) and a single measure. You may reduce the number of charts created by displaying more information on each chart. With Monarch you do this by *clustering*, including more key field information or more measure information on each chart.

The Sales by Media summary that we are using for this lesson is an example of a summary that includes multiple key fields and multiple measures. Customer and Media are the key fields and Qty and Amount are the measures. Monarch initially produces a total of 40 charts for this summary, since there are 20 unique values of the Customer field and 2 measures. By clustering key fields, we could reduce the number of charts to only two. By clustering measures, we could reduce the number of charts to 20. Let's experiment with each cluster option.

1. Select Chart, Chart Properties (ALT, C, P) or click the Chart Properties button .

The Summary Definition dialog appears, displaying the Chart tab.

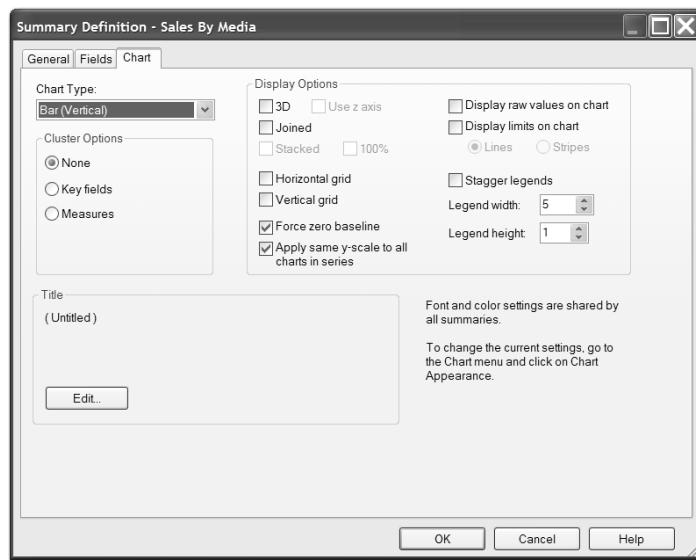


Figure 12-8. The Summary Definition dialog.

This tab is used to select the chart type, display options and cluster options. The available cluster options are None, Key Fields, and Measures.

2. Under Cluster Options, select the Key Fields radio button.
3. Set the Legend Width to **11** and the Legend Height to **2**. This will allow enough room to display the customer names. Names longer than 11 characters will wrap to the second line.
4. Choose OK.

The chart is redisplayed with key fields clustered. Each bar on the chart still represents a media type (CD, LP, and TAPE), but now the chart includes a cluster of bars for each customer.

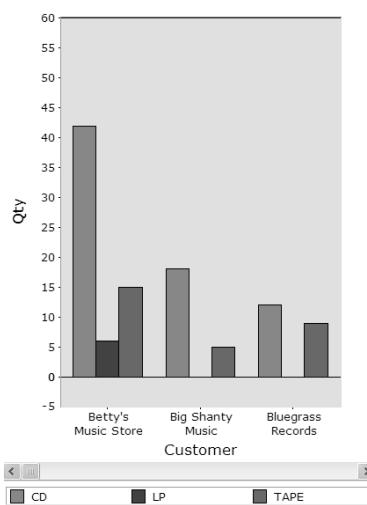


Figure 12-9. Clustering key fields.

Note that the status bar now indicates that only two charts are available. The first chart represents the Qty values from the summary and the second chart represents the Amount values. Now let's try clustering the Measures.

5. Select Chart, Chart Properties (ALT, C, P) or click the Chart Properties button .

The Summary Definition dialog appears.

6. On the Chart tab under the Cluster Options heading, select the Measures option.
7. Set the Legend Width back to **5** (you may leave the Legend Height set at **2**), then choose OK.

Monarch recreates the series of charts. Now each chart includes both the Qty and Amount values for a single customer. Since there are 20 customers in the summary, there should be 20 charts. A quick check of the status bar confirms this.

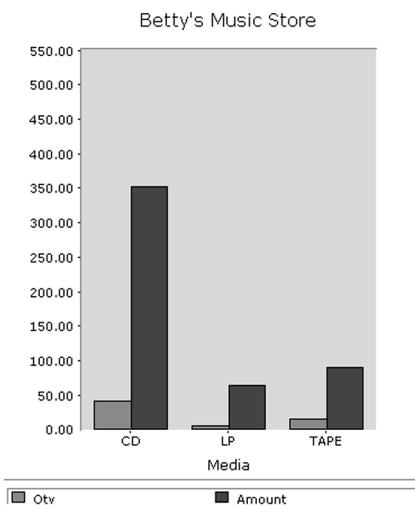


Figure 12-10. Clustering measures.

Although we were able to reduce the number of charts from 40 to 2 by clustering key fields and from 40 to 20 by clustering measures, it's important to note that not all charts make sense. Since Qty and Amount are not on the same scale - one represents sales in dollars and the other represents sales in units - it doesn't make sense to use the Measures cluster option to group these values onto the same chart. However, if your measures represented forecasted sales versus actual sales, clustering the measures would provide an easy and convenient method to compare the values. Since this doesn't make sense for our data, let's reset the cluster option to None.

8. Select Chart, Chart Properties (ALT, C, P) or click the Chart Properties button .

The Summary Definition dialog displays.

9. On the Chart tab select the None option under the Cluster Options heading, then choose OK.

The original series of charts is restored.

## Changing Chart Type and Display Options

Monarch supports six chart types: Area, Horizontal Bar, Vertical Bar, Line, Point, and Pie. The default chart type is Vertical Bar. You change the chart type using the Summary Definition dialog.

1. Select Chart, Chart Properties (ALT, C, P) or click the Chart Properties button .

The Summary Definition dialog displays.

The Chart Type box displays the current chart type - Bar (Vertical). The drop-down list includes Area, Bar (Horizontal), Bar (Vertical), Line, Pie and Point.

2. Click the drop-down button on the Chart Type box.
3. Select Pie from the drop-down list, then choose OK.

The chart is redisplayed as a Pie chart.

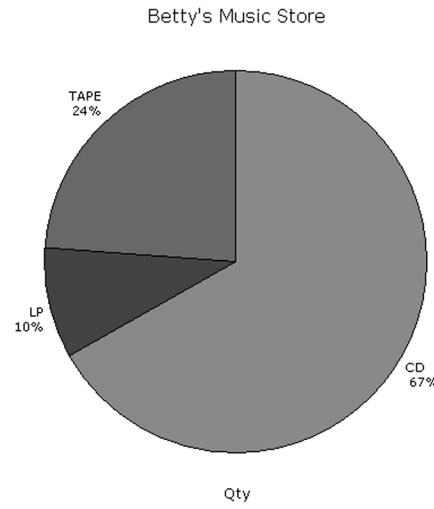


Figure 12-11. Viewing the pie chart.

4. Repeat steps 1 - 3 to experiment with the other chart types. When you are finished, change the chart type back to Bar (Vertical), the chart type we will use for the remainder of this lesson.

## Chart Display Options

Monarch includes a host of useful chart display options, including 3D affects, grids and more. Chart display options affect the way the chart appears on screen and the way the chart prints. Let's display our bar chart in three dimensional perspective and with a horizontal grid.

1. Click the Chart Properties button  to display the Summary Definition dialog.
2. On the Chart tab under the Display Options heading, select the 3D check box.
3. Select the Horizontal Grid check box, then choose OK.

The chart is redisplayed in 3D perspective with a horizontal grid.

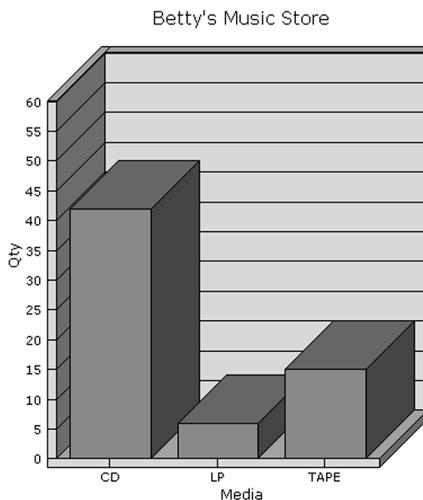


Figure 12-12. 3D bar chart with horizontal grid.

Other display options are useful when the Key Fields or Measures cluster option is active.

1. Click the Chart Properties button  to display the Summary Definition dialog.
2. On the Chart tab under Cluster Options select the Key Fields option.
3. Set the Legend Width to **11** to accommodate the customer names, then choose OK.

The chart is redisplayed with key fields clustered.

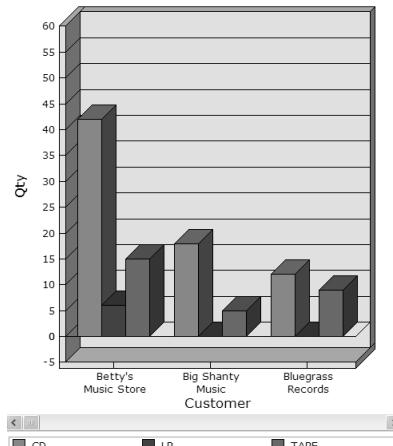


Figure 12-13. Chart with key fields clustered and legends staggered.

The *Stacked*, *100%* and *Use Z Axis* options let you arrange the bars in a stack or spread the bars along the z-axis. Let's experiment with each setting.

1. Click the Chart Properties button .
2. On the Chart tab under Display Options, select the Stacked check box, then choose OK.

Monarch stacks the bars to form a single bar for each customer.

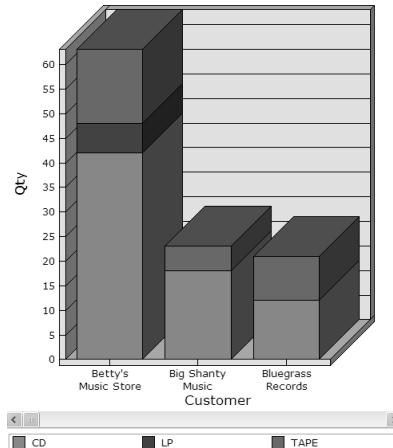


Figure 12-14. Stacked bars.

Each stacked bar represents the total quantity sold to each customer. The stacks are divided into colored segments representing each media type.

Stacked bars are useful for comparing totals as well as for comparing individual elements.

A variant of the Stacked Bar is called the 100% Stacked Bar. The 100% Stacked Bar represents each segment of the bar as a percent of total.

1. Click the Chart Properties button .
2. On the Chart tab under Display Options select the 100% check box, then choose OK.

The chart displays using 100% Stacked Bars.

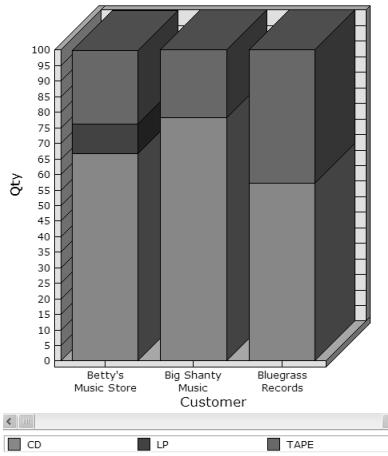


Figure 12-15. 100% Stacked bars.

Since each bar segment represents a percent of total, all segments of each bar added together always total 100%. Therefore all bars will be the same height. (This will not be the case when the summary contains negative values; any negative value will decrease the overall height of its bar by applying a negative percent.)

The final display option that we'll explore allows you to spread the chart elements [bars] along the z-axis. This display option is not available for stacked bars, so first we'll restore the side-by-side layout.

1. Click the Chart Properties button  to display the Summary Definition dialog.
2. Uncheck the Stacked display option.
3. Select the Use Z Axis display option, then choose OK.
4. Select Window, Maximize Chart (ALT, W, A).

Monarch spreads the bars from each group along the z-axis.

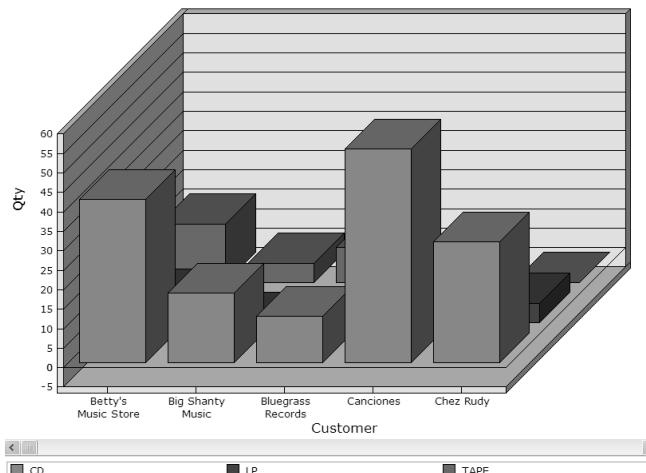


Figure 12-16. Using the z-axis (chart maximized).

Before moving on, let's restore the side-by-side format.

1. Click the Chart Properties button .
  2. Uncheck the Use Z-Axis display option, then choose OK.
- The original side-by-side format is restored.

## Adding a Title to a Chart

The Chart Title dialog can be used to add a title of up to three lines to your charts. If a series of charts exists for a summary, all charts in the series share the same title.

Let's add an appropriate chart title for our series of charts.

1. Select Chart, Chart Title (ALT, C, T).

The Chart Title dialog displays.



Figure 12-17. The Chart Title dialog.

The Chart Title dialog includes a three line box for the chart title text. Special formatting functions let you align text and dynamically add information to the title, including the chart number, the print date and time,

the name of the underlying summary and more. **Note:** For a complete list of the available formatting functions, consult the *Chart Title dialog* topic in the Monarch help file.

2. Click in the Chart Title box.
3. Type **Classical Music Distributors** as the first title line.
4. Press ENTER to move the cursor to the second line of the Chart Title box.
5. Type **Key Fields:** followed by a space, then click the X-Axis Fields button .
6. Press ENTER to move the cursor to the third line of the Chart Title box.
7. Type **Measures:** followed by a space, click the Y-Axis Fields button , then choose OK.

The title is added to the chart.

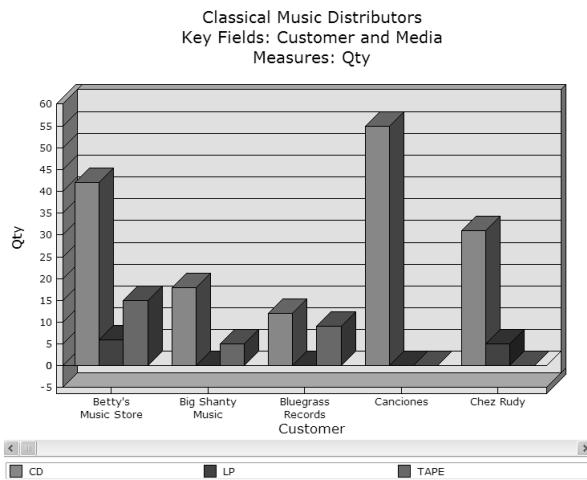


Figure 12-18. Adding a title to a chart.

## Specifying Chart Colors and Fonts

The Chart Appearance dialog can be used to specify colors and fonts for various parts of a chart. Let's use it to change the appearance of our chart.

### Specifying Chart Colors

1. Select Chart, Chart Appearance from the menu (or right-click on the chart and select Chart Appearance from the context menu).

The Chart Appearance dialog displays.

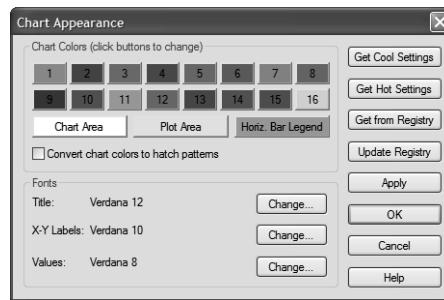


Figure 12-19. The Chart Appearance dialog.

2. Click the Chart Area button to display the Color dialog. Note that the current color of the chart area (i.e., white) is indicated by the selected color cube in the lower right hand corner of the Basic Colors grid.

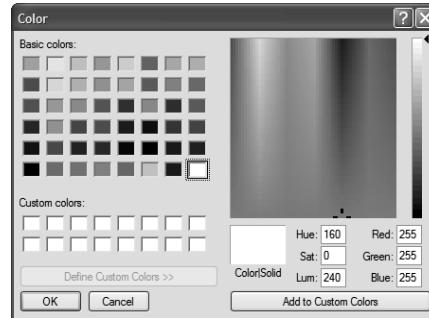


Figure 12-20. The Color dialog.

3. In the top row of colors, select the second cube from the left (i.e., the yellow one), then click the OK button.

In the Chart Appearance dialog, note that the Chart Area button is now yellow.

4. On the right hand side of the dialog, click the Apply button to apply the color to the chart area.

Note that the area around the chart is now yellow.

5. Click the Plot Area button to display the Color dialog. Note that the current color of the chart's plot area (i.e., light gray) isn't one of the basic colors. Let's add the current plot area color to the custom colors so that we can easily restore it.
6. Click the Add to Custom Colors button to add the current plot area color to the Custom Colors grid.
7. On the Basic Colors grid, in the second row down from the top select the leftmost cube (i.e., the red one), then click the OK button.

Note that the Plot Area button is now red.

8. On the right hand side of the dialog, click the Apply button to apply the color to the plot area of the chart.

Note that the plot area of the chart is now red.

If you were viewing a horizontal bar chart, you could also specify a color for the horizontal bar legend by clicking the Horizontal Bar Legend button and selecting a color from the Color dialog.

Let's return our chart to its default colors.

9. Click the Chart Area button, and in the Color dialog, select the white cube in the lower right hand corner of the Basic Colors grid, then click the OK button.
10. Click the Plot Area button, and in the Color dialog, select the light gray cube in the Custom Colors grid, then click the OK button.
11. Click the Apply button to restore the default chart colors.

## Specifying Chart Fonts

In addition to allowing you to specify the chart colors, the Chart Appearance dialog lets you to choose chart fonts. Let's modify the chart's current fonts.

Under the Fonts heading, note that the current font name and font size of the chart's title, X-Y labels, and values are listed.

1. Click the Change button that corresponds to the Title setting.

The Font dialog displays.

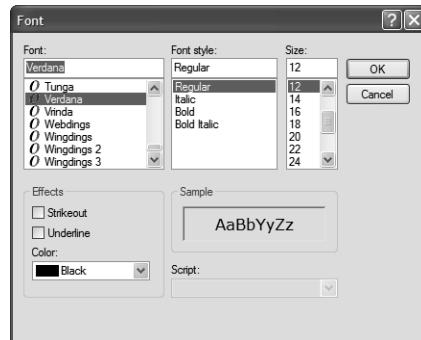


Figure 12-21. The Font dialog.

2. Select Bold from the Font Style list, 14 from the Size list, and Blue from the Color drop-down list, then click OK.
3. Click the Apply button on the Chart Appearance dialog.

Note that the chart's title font is altered according to the specified settings.

Using this same method, we could also alter the font of the X-Y labels and the chart values. For now, though, let's restore our font settings.

4. Restore the chart title's previous font settings by clicking the corresponding Change button and specifying the appropriate settings (Verdana, Regular, 12, Black) in the Font dialog, then choosing OK.

## Copying a Chart to Another Application

You can use the Windows clipboard to copy a chart to another application, such as a word processor or a slide presentation package.

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**Important Note:** When you copy a chart to the clipboard, Monarch copies only that portion of the chart that is visible on screen. For large charts, first maximize the chart display by selecting Window, Maximize Chart (ALT, W, A) from the menu.

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Let's copy the current chart into your word processor.

1. Select Chart, Copy Chart (ALT, C, C), or click on the chart and click the  Copy button.
2. Launch your word processor. (If you don't have a Windows-based word processor, just follow along in the book.)
3. Position the cursor where you want the chart to appear and use your word processor's Paste command to insert the chart into your document.

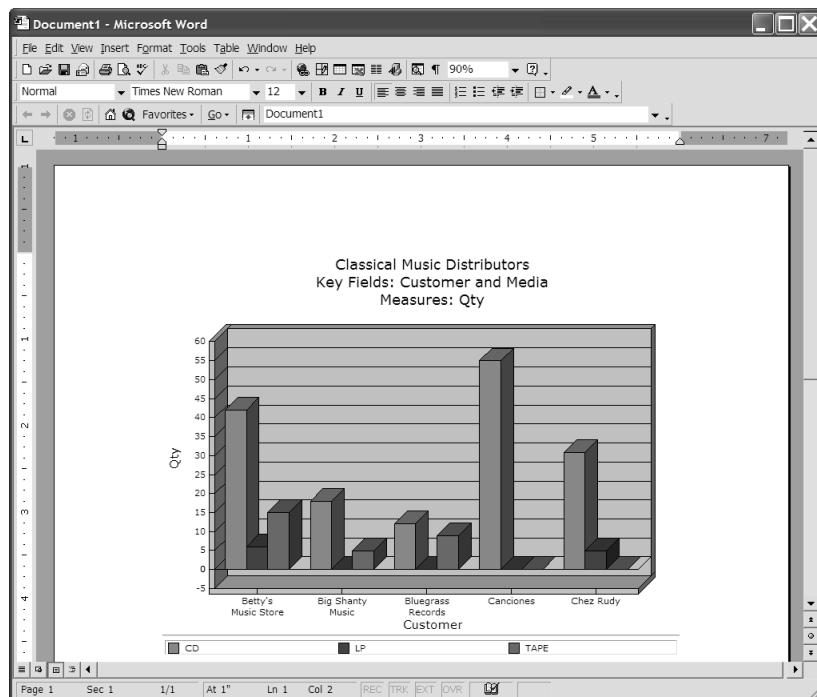


Figure 12-22. Pasting a chart to a word processor.

If you were going to keep this document, you would then save it before returning to Monarch. (You don't need to do so for this lesson.)

4. Exit your word processor without saving.

## Printing a Chart

When you print a chart, the entire chart is printed, not just that portion visible on screen. If a chart is too large to fit on a single printed page, Monarch will break the chart across two or more pages.

Let's print our chart. Since the chart extends horizontally beyond the limits of the screen, we'll start by setting the paper orientation to Landscape to ensure that we get as much of the chart on each page as possible. For Horizontal Bar charts, which extend in the vertical direction, Portrait orientation would be a better choice.

1. Select File, Print Setup (ALT, F, T).

The Print Setup dialog displays.

2. Select the Landscape orientation option, then choose OK.

If you have a color printer or a black and white printer that converts colors to gray-scale well, you can print the chart as a color image, otherwise you may want to convert chart colors to hatch patterns. For this lesson, we'll convert the chart colors to hatch patterns before printing.

3. Select Chart, Chart Appearance from the Summary window menu.

The Chart Appearance dialog displays.

4. Select the Convert Chart Colors to Hatch Patterns check box, then choose OK to close the dialog.

The chart is redisplayed using hatch patterns.

5. Select File, Print (ALT, F, P) to print the chart.

Monarch prints the chart.

## Saving Your Work

You have completed Lesson 12. We recommend you save your work in a Monarch model file.

1. Select File, Save Model As (ALT, F, A).
2. Type **Charts** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X).

## Summary

In this lesson you learned how Monarch creates charts from your summary data. You also learned how to modify chart properties, add a title to a chart, specify chart colors and fonts, and copy and print charts.

For further reading, see the following sections of the Monarch help file:

Chapter 3 - Summary Window  
Charting Summary Data

Congratulations. You have completed Monarch basic training. The next five lessons deal with advanced Monarch topics. If you had little difficulty up to now, you should forge ahead.

Even if you struggled a little with the previous lessons, don't despair. The advanced topics aren't actually more difficult, they merely address product capabilities that fall outside of normal everyday usage. If you don't feel ready to tackle five more lessons at this point, take a break and come back to them later, or just follow along in the book to gain a better understanding of Monarch's full capabilities.

# Part IV

# Advanced Topics



## LESSON 13

## Working with Multiple Instances of a Report

In the previous lessons, we've worked with only one report at a time. In this lesson you will learn how to open and analyze data from multiple reports.

The lesson topics include:

- Analyzing data from a series of reports.
- Opening multiple instances of a report.
- Extracting data.
- Working in the Table window.
- Creating a summary to analyze data from multiple reports.

### Analyzing Data from a Series of Reports

In most organizations, reports are run on a regular basis; typically weekly or monthly. Each *instance* of a report contains information about a specific period of time.

In addition to producing a new report each week or month, some organizations produce a separate report for each department, division or region. For example, a retailer might divide its market into four distinct regions; Northeast, Central, South and West. A monthly sales report is generated for each region.

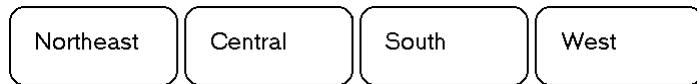


Figure 13-1. Each report includes information for a specific region.

Each instance of the report contains useful sales information for a single region, but does not tell you how a particular product is selling nationally. For that you need to analyze data from all four regions. With Monarch you can open all four regional reports and create a summary showing sales of the product within each region with a grand total for all four regions. The resulting summary might look like Figure 13-2.

	PRODUCT	REGION	AMOUNT
1	M17 Mtn Bike	Central	94266
2		Northeast	94954
3		South	83782
4		West	100937
5	Total		373939

Figure 13-2. Comparing product sales across four regions.

By analyzing data from all four regional sales reports, you can compare sales results for each region. Since each sales report is generated on a monthly basis, our analysis compares sales for only a single month. We can add another dimension by opening several monthly sales reports for each region. Figure 13-3 compares sales results by region broken out by month for a three month period.

	PRODUCT	REGION	19960501	19960601	19960701	Total
1	M17 Mtn Bike	Central	94266	92924	93943	281133
2		Northeast	94954	96322	93452	284728
3		South	83782	85625	86883	256290
4		West	100937	97349	99750	298036
5	Total		373939	372220	374028	1120187

Figure 13-3. Comparing product sales across four regions for a three month period.

To create this summary, we opened a total of 12 reports - 3 monthly reports for each of 4 regions (see Figure 13-4).

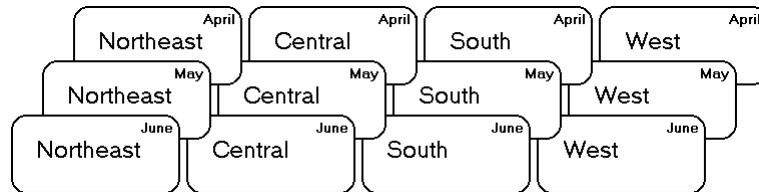


Figure 13-4. Each report contains information for a specific region and time period.

As we've seen, each report contains only a piece of the overall puzzle. But taken together, these same reports can reveal a wealth of information about your business.

## Starting the Lesson

In the previous lessons you've become familiar with the Classic.prn report. Classic.prn is a periodic report produced on a monthly basis; each report contains shipments of classical music recordings for a single month. For this lesson we've provided three instances of the Classic report representing shipments for the months of January, February and March.

## Opening Multiple Instances of a Report

The procedure for opening multiple instances of a report is similar to that required to open a single report.

Let's start by opening the January shipping report.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select ClassJan.prn, then choose Open.

January's shipping report displays in the Report window.

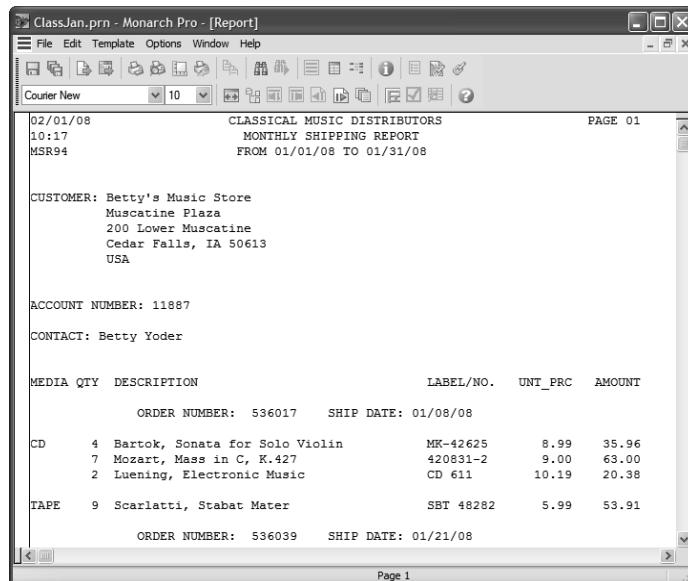
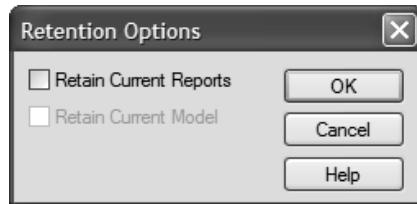


Figure 13-5. Classical Music Distributors January shipping report.

Next we'll open the February shipping report.

3. Select File, Open Report (ALT, F, R), select ClassFeb.prn, then choose Open.

For each additional report you open, Monarch displays the Retention Options dialog. This dialog prompts you to discard or retain any currently open reports and model parameters before opening the new report.



*Figure 13-6. The Retention Options dialog.*

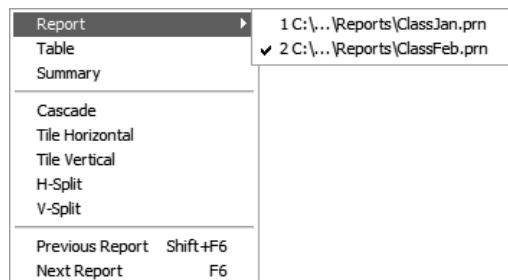
To replace the existing report and model with a new report, you would leave the Retain Current Reports and Retain Current Model check boxes unchecked. Since we want to open a new report without closing the currently open report, we'll choose to retain the current reports.

4. Select Retain Current Reports, then choose OK.

The February shipping report replaces the January report in the Report window. Note that Monarch does not create a separate window to display each report. Instead, all open reports are viewed in one Report window, with a single report displayed at a time. When two or more reports are open at the same time, Monarch displays the most recently opened report. You can select another report to view using the Window, Report menu.

5. Select Window, Report (ALT, W, R).

A pop-up list appears containing the names of all open reports.



*Figure 13-7. Viewing the Report pop-up list.*

So far we have opened two reports, so the list contains two entries; ClassJan.prn and ClassFeb.prn. ClassFeb.prn was the last report opened, so that report is currently displayed in the Report window.

6. Select ClassJan.prn to view the January shipping report.

Now let's open the March shipping report.

7. Select File, Open Report (ALT, F, R), select ClassMar.prn, then choose Open.

This time the Retain Current Reports check box is already selected.



Figure 13-8. The Retention Options dialog retains your previous settings.

By preserving your most recent dialog settings, Monarch saves you a step each time you open a new instance of the report.

8. Choose OK.

The March shipping report is opened and displayed in the Report window.

**Note:** You can open multiple reports from the same folder quickly by using Ctrl+Select and Shift+Select in the Open Report dialog.

## Extracting Data

When you load a model file or create a new model, Monarch applies the model parameters to all open reports. Data extracted from each report is concatenated in the Table window.

---

**Important:** Although you can open multiple report files at the same time, Monarch allows you to open only a single model file. The model file is automatically applied to *all* open reports, therefore the reports must have the same format. For example, although the shipping reports used in this lesson all contain different data, they all share the same structure. You cannot extract data from two different types of reports at the same time.

---

1. Select File, Open Model (ALT, F, M), select Lesson13.xmod, then choose Open.

Monarch applies the model to the March shipping report and updates the Report view.

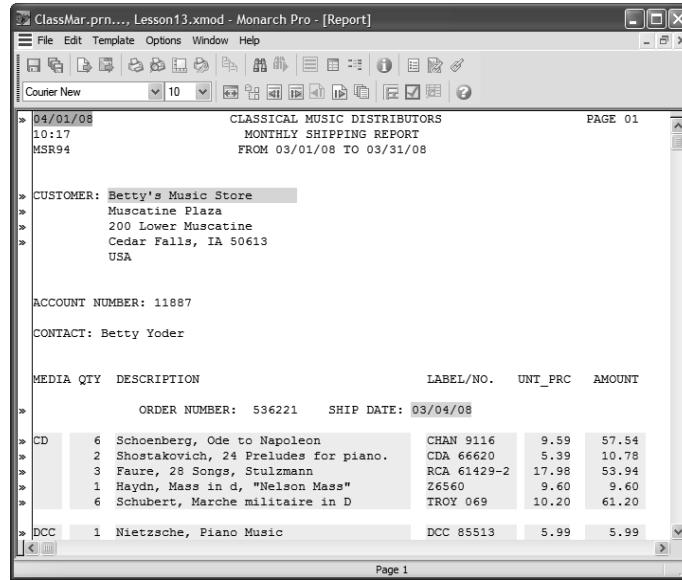


Figure 13-9. The Lesson 13 model applied to the March shipping report.

Even though Monarch displays only one report at a time, it always applies the model parameters to *all* open reports. Data extracted from each report is concatenated in the Table window to form a single database.

## 2. Select Window, Table or click the Table window button on the toolbar.

The Table window appears, including records extracted from all three shipping reports.

Report Date	Customer	Ship Date	Media	Quantity	Description
93	3/1/2008	Big Shanty Music	2/4/2008	CD	1 Schubert, Sonata in e, D.566
94	3/1/2008	Big Shanty Music	2/4/2008	CD	3 Mozart, Symphony No.23 in D
95	3/1/2008	Big Shanty Music	2/4/2008	CD	6 Schoenberg, Ode to Napoleon
96	3/1/2008	Big Shanty Music	2/13/2008	CD	2 Shostakovich, 24 Preludes for piano
97	3/1/2008	Big Shanty Music	2/13/2008	MD	9 Balakirev, Symphony no. 1
98	3/1/2008	Big Shanty Music	2/13/2008	TAPE	5 Holst, St. Paul's Suite for Orch.
99	3/1/2008	Musique du Monde	2/1/2008	CD	7 Sibelius, Tapiola, Op.112, Ashkei
100	3/1/2008	Musique du Monde	2/1/2008	CD	8 Argento, Postcard from Morocco
101	3/1/2008	Musique du Monde	2/1/2008	CD	1 Bach, Fantasia in G for Organ
102	3/1/2008	Musique du Monde	2/1/2008	LP	2 Desprez, Missa de Beata Virgine
103	3/1/2008	Musique du Monde	2/17/2008	CD	2 Reich, Music for Pieces of Wood
104	3/1/2008	Musique du Monde	2/17/2008	CD	4 Glass, Einstein on the Beach
105	3/1/2008	Musique du Monde	2/17/2008	CD	6 Cage, Music of Changes
106	3/1/2008	Musique du Monde	2/17/2008	TAPE	5 Holst, St. Paul's Suite for Orch.
107	3/1/2008	Fandangos Records	2/4/2008	DCC	-6 Beethoven, Pathetique Sonata, A
108	3/1/2008	Fandangos Records	2/27/2008	CD	7 Chopin, 4 Scherzos for piano
109	3/1/2008	Fandangos Records	2/27/2008	CD	3 Saller, Falstaff, Opera in 3 acts
110	3/1/2008	Fandangos Records	2/27/2008	CD	4 Brahms, Sonata for 2 pianos
111	3/1/2008	Fandangos Records	2/27/2008	TAPE	4 Tartini, Conci. in G, fl & strns, Galv
112	3/1/2008	Hope's Sweet Notes	2/13/2008	CD	10 Krenek, Jonny spielt auf, V. St. O
113	3/1/2008	Hope's Sweet Notes	2/13/2008	CD	8 Misc., The Art of Perlman, Itzhak
114	3/1/2008	Hope's Sweet Notes	2/13/2008	DCC	10 Barber, Adagio for Strings, NZSC
115	3/1/2008	Hope's Sweet Notes	2/13/2008	TAPE	5 Britten, War Requiem

Figure 13-10. The Table window includes data from all open reports.

## Working in the Table Window

Working with data from multiple reports is virtually the same as working with data from a single report. You can view, sort, filter, export and print the data just as though it were extracted from a single report. There are, however, a few differences that should be examined.

### Sorting

Initially, the data is arranged in the order that the report files were opened. Since we opened the January report first, the January records appear first in the table followed by February and then March. This initial order has no particular relevance. In fact, it may not be desirable at all. By arranging the records this way, Monarch may be violating the natural sort order of the reports. For example, each of our shipping reports is sorted by customer and then by ship date. By concatenating the records from all three reports, we've added a higher sort level. Now the data is sorted by period (month) and then, within period, by customer and ship date. Let's restore the original sort order found in the reports.

1. Select Data, Sorts (ALT, D, S) or click the Sort Orders button .

The Sort Orders dialog displays.

2. Choose New to create a new sort order definition.

The Sort Order Definition dialog displays.

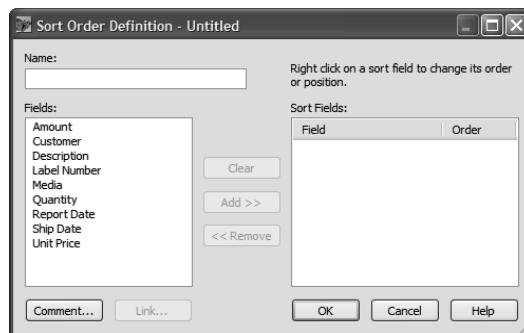


Figure 13-11. The Sort Order Definition dialog.

3. Select the Customer field from the Fields box, then click the Add button.
4. Select the Ship Date field from the Fields box, then click the Add button.
5. Type **Original Sort Order** in the Name box, then choose OK to accept the sort definition.

The Sort Orders dialog reappears with the new sort order name highlighted.

6. Choose OK to apply the sort order to the table.

The table is rebuilt, sorted by customer and then by ship date.

The screenshot shows a window titled "ClassMar.prn..., Lesson13.xmd - Monarch Pro - [Table]". The table has columns: Report Date, Customer, Ship Date, Media, and Quantity/Description. The data is sorted by Customer (Betty's Music Store, Big Shanty Music) and then by Ship Date. The first 272 rows are visible. The bottom status bar shows "Ship Date - Date/Time - Append (Order Number Level)" and "Sort: Original Sort Order".

	Report Date	Customer	Ship Date	Media	Quantity/Description
1	2/1/2008	Betty's Music Store	1/8/2008	CD	4 Bartok, Sonata for Solo Violin
2	2/1/2008	Betty's Music Store	1/8/2008	CD	7 Mozart, Mass in C, K.427
3	2/1/2008	Betty's Music Store	1/8/2008	CD	2 Luening, Electronic Music
4	2/1/2008	Betty's Music Store	1/8/2008	TAPE	9 Scarlett, Stabat Mater
5	2/1/2008	Betty's Music Store	1/21/2008	CD	11 Beethoven, Pathetique Sonata, A
6	2/1/2008	Betty's Music Store	1/21/2008	CD	8 Mendelssohn, War March of the
7	2/1/2008	Betty's Music Store	1/21/2008	CD	10 Pizzetti, Messa di Requiem
8	2/1/2008	Betty's Music Store	1/21/2008	LP	6 Misc., Modern Trombone Master
9	2/1/2008	Betty's Music Store	1/21/2008	TAPE	6 Gershwin, An American in Paris
10	4/1/2008	Betty's Music Store	3/4/2008	CD	6 Schoenberg, Ode to Napoleon
11	4/1/2008	Betty's Music Store	3/4/2008	CD	2 Shostakovich, 24 Preludes for piano
12	4/1/2008	Betty's Music Store	3/4/2008	CD	3 Faure, 28 Songs, Stutzmann
13	4/1/2008	Betty's Music Store	3/4/2008	CD	1 Haydn, Mass in d, "Nelson Mass"
14	4/1/2008	Betty's Music Store	3/4/2008	CD	6 Schubert, Marche militaire in D
15	4/1/2008	Betty's Music Store	3/4/2008	DCC	1 Nietzsche, Piano Music
16	4/1/2008	Betty's Music Store	3/4/2008	TAPE	2 Handel, Royal Fireworks Music, F
17	4/1/2008	Betty's Music Store	3/4/2008	TAPE	5 Britten, War Requiem
18	3/1/2008	Big Shanty Music	2/4/2008	CD	6 Stravinsky, Dumbarton Oaks Concerto
19	3/1/2008	Big Shanty Music	2/4/2008	CD	1 Schubert, Sonata in e, D.566
20	3/1/2008	Big Shanty Music	2/4/2008	CD	3 Mozart, Symphony No.23 in D
21	3/1/2008	Big Shanty Music	2/4/2008	CD	6 Schoenberg, Ode to Napoleon
22	3/1/2008	Big Shanty Music	2/13/2008	CD	2 Shostakovich, 24 Preludes for piano
23	3/1/2008	Big Shanty Music	2/13/2008	MD	9 Balakirev, Symphony no. 1

Figure 13-12. Sorting by Customer then Ship Date.

By using Customer as the first sort field, Monarch groups all the records from each customer together, regardless of which report each record was extracted from (note the highlighted ship dates for Betty's Music Store which range from January 8th through March 4th - spanning all three reports).

## Identifying the Source of Each Record

There are times when you will need to know which report each record is extracted from. You may want to apply a filter that excludes some or all of the records from one or more reports or create a summary that generates subtotals broken out by period. In either case, Monarch will need to be able to identify the source report for each record.

Sometimes this information is available within the reports. In our shipping reports, each page header contains the date the report was printed. By extracting this information as a field, you can easily identify the source of each record.

02/01/01 10:17 MSR94	CLASSICAL MUSIC DISTRIBUTORS MONTHLY SHIPPING REPORT FROM 01/01/01 TO 01/31/01	PAGE 01
03/01/01 10:17 MSR94	CLASSICAL MUSIC DISTRIBUTORS MONTHLY SHIPPING REPORT FROM 02/01/01 TO 02/28/01	PAGE 01
04/01/01 10:17 MSR94	CLASSICAL MUSIC DISTRIBUTORS MONTHLY SHIPPING REPORT FROM 03/01/01 TO 03/31/01	PAGE 01
CUSTOMER: Betty's Music Store Muscatine Plaza 200 Lower Muscatine Cedar Falls, IA 50613	Report Date   Customer   Ship Date   Media	
ACCOUNT NUMBER: 11867	45 02/01/2001 Classics and Jazz 01/18/2001 CD	
CONTACT: Betty Yoder	46 02/01/2001 Classics and Jazz 01/18/2001 CD	
MEDIA QTY DESCRIPTION	47 02/01/2001 Classics and Jazz 01/18/2001 CD	
ORDER NUMBER: 536221 SH	48 03/01/2001 Classics and Jazz 02/01/2001 CD	
CD	49 03/01/2001 Classics and Jazz 02/01/2001 CD	
6 Schoenberg, Ode to Napoleon	50 03/01/2001 Classics and Jazz 02/01/2001 CD	
2 Shostakovich, 24 Preludes for	51 03/01/2001 Classics and Jazz 02/01/2001 LP	
3 Faure, 28 Songs, Stulzmann	52 03/01/2001 Classics and Jazz 02/17/2001 CD	
1 Haydn, Mass in d, Nelson Mass	53 03/01/2001 Classics and Jazz 02/17/2001 CD	
	54 03/01/2001 Classics and Jazz 02/17/2001 CD	
	55 03/01/2001 Classics and Jazz 02/17/2001 TAPR	
	56 04/01/2001 Classics and Jazz 03/01/2001 CD	
	57 04/01/2001 Classics and Jazz 03/01/2001 CD	
	58 04/01/2001 Classics and Jazz 03/01/2001 CD	
	59 04/01/2001 Classics and Jazz 03/01/2001 CD	
	60 04/01/2001 Classics and Jazz 03/01/2001 CD	

Figure 13-13. The report run date is included in the page header.

For reports that lack a run date or other unique identifying information, Monarch provides a pair of functions - File() and ID() - that you can use to identify the source of each record.

## The File() Function

The File() function returns the path and filename of the report file from which each record was extracted. For example, for records extracted from the Classjan.prn file, the File() function would return the value "C:\Reports\Classjan.prn", assuming that Classjan.prn is located in the \Reports folder on drive C.

Let's create a calculated field using the File() function.

1. Select Data, Calculated Fields (ALT, D, C) or click the Calculated Fields button .

The Calculated Fields dialog displays.

2. Choose New to create a new calculated field.

The Calculated Field Style dialog displays.

3. Selected the Formula-based radio button, then press OK.

The Field Properties dialog displays.

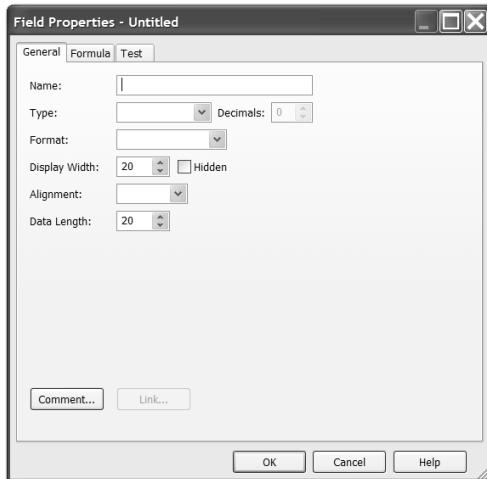


Figure 13-14. The Field Properties dialog.

4. In the Name box type **Filename**.
5. From the Type drop-down list select Character.
6. Enter **60** in both the Display Width box and the Data Length box, then select the Formula tab.
7. Select the File() function from the Functions list, then choose Insert (or double-click on the File function).

The File() function is inserted into the Expression box.

8. Choose OK to close the Field Properties dialog, then choose OK on the Calculated Fields dialog.

The new field is added to the end of the table. To view the field, scroll to the right by clicking twice in the horizontal scroll bar to the right of the slider.

For each record, the Filename field returns the entire path and filename of the report from which the record was extracted. Let's use another function to reduce the field values to only the file name.

1. Double-click anywhere on the Filename field.

The Field Properties dialog displays.

2. Enter **12** in both the Display Width box and the Data Length box.
3. Select the Formula tab, then click the Clear button.
4. Type the following expression in the Expression box:

```
Rsplit(File(),2,"\",1)
```

This expression separates the path from the filename and returns the filename by itself.

5. Choose OK to accept the new field definition.

Now the Filename field displays only the name of each report file.

	Description	Label Number	Unit Price	Amount	Filename
1	Bartok, Sonata for Solo Violin	MK-42625	8.99	35.96	ClassJan.prn
2	Mozart, Mass in C, K.427	420831-2	9.00	63.00	ClassJan.prn
3	Lueming, Electronic Music	CD 611	10.19	20.38	ClassJan.prn
4	Scarlatti, Stabat Mater	SBT 48282	5.99	53.91	ClassJan.prn
5	Beethoven, Pathetique Sonata, Arau	420153-2	5.99	65.89	ClassJan.prn
6	Mendelssohn, War March of the Priests	SMK 47592	8.99	71.92	ClassJan.prn
7	Pizzetti, Messa di Requiem	CHAN 8964	9.59	95.90	ClassJan.prn
8	Misc., Modern Trombone Masterpieces	ADA 581087	10.79	64.74	ClassJan.prn
9	Gershwin, An American in Paris	ACS 8034	5.99	35.94	ClassJan.prn
10	Schoenberg, Ode to Napoleon	CHAN 9116	9.59	57.54	ClassMar.prn
11	Shostakovich, 24 Preludes for piano.	CDA 66620	5.39	10.78	ClassMar.prn
12	Faure, 28 Songs, Stulzmann	RCA 61429-2	17.98	53.94	ClassMar.prn
13	Haydn, Mass in d, "Nelson Mass"	Z6560	9.60	9.60	ClassMar.prn
14	Schubert, Marche militaire in D	TROY 069	10.20	61.20	ClassMar.prn
15	Nietzsche, Piano Music	DCC 85513	5.99	5.99	ClassMar.prn
16	Handel, Royal Fireworks Music, Previn	4XG-60276	5.99	11.98	ClassMar.prn
17	Britten, War Requiem	2-DBTD 2032	11.98	59.90	ClassMar.prn
18	Stravinsky, Dumbarton Oaks Concerto	SMCD 5120	8.99	53.94	ClassFeb.prn
19	Schubert, Sonata in e, D.566	AS-325	9.00	9.00	ClassFeb.prn
20	Mozart, Symphony No.23 in D	CO-77884	8.99	26.97	ClassFeb.prn
21	Schoenberg, Ode to Napoleon	CHAN 9116	9.59	57.54	ClassFeb.prn
22	Shostakovich, 24 Preludes for piano.	CDA 66620	5.39	10.78	ClassFeb.prn
23	Balakirev, Symphony no. 1	ENTPD 4110	9.59	86.31	ClassFeb.prn

Figure 13-15. The Filename field, excluding the path.

## The ID() Function

The ID function assigns a numeric designation to each report at the time the report is opened. The first report opened is assigned 1, the second 2 and so on. If a report is subsequently closed, the list of designations is collapsed to fill any gap in the assigned numbers. Let's create another calculated field using this function.

1. Select Data, Calculated Fields (ALT, D, C) or click the Calculated Fields button .

The Calculated Fields dialog displays.

2. Choose New to create a new calculated field.

The Calculated Field Style dialog displays.

3. Selected the Formula-based radio button, then press OK.

The Field Properties dialog displays.

4. Type **File ID** in the Name box, then select Numeric from the Type drop-down list.
  5. Select the Formula tab.
  6. Select the ID() function from the Functions list, then choose Insert.
  7. Click OK to close the Field Properties dialog, then choose OK to close the Calculated Fields dialog.

The File ID field displays.

ClassMar.prn..., Lesson13.xmod - Monarch Pro - [Table]

The screenshot shows the Monarch Pro application window. The title bar reads "ClassMar.prn..., Lesson13.xmod - Monarch Pro - [Table]". Below the title bar is a toolbar with icons for file operations like Open, Save, Print, and Database management. The main area displays a table with the following data:

	Label Number	Unit Price	Amount	Filename	File ID
1	MK-42625	8.99	35.96	ClassJan.prn	1
2	420831-2	9.00	63.00	ClassJan.prn	1
3	CD 611	10.19	20.38	ClassJan.prn	1
4	SBT 48282	5.99	53.91	ClassJan.prn	1
5	420153-2	5.99	65.89	ClassJan.prn	1
6	SMK 47592	8.99	71.92	ClassJan.prn	1
7	CHAN 8964	9.59	95.90	ClassJan.prn	1
8	ADA 581087	10.79	64.74	ClassJan.prn	1
9	ACS 8034	5.99	35.94	ClassJan.prn	1
10	CHAN 9116	9.59	57.54	ClassMar.prn	3
11	CDA 66620	5.39	10.78	ClassMar.prn	3
12	RCA 61429-2	17.98	53.94	ClassMar.prn	3
13	Z6560	9.60	9.60	ClassMar.prn	3
14	TROY 069	10.20	61.20	ClassMar.prn	3
15	DCC 85513	5.99	5.99	ClassMar.prn	3
16	4XG-60276	5.99	11.98	ClassMar.prn	3
17	2-DBTD 2032	11.98	59.90	ClassMar.prn	3
18	SMCD 5120	8.99	53.94	ClassFeb.prn	2
19	AS-325	9.00	9.00	ClassFeb.prn	2
20	CO-77884	8.99	26.97	ClassFeb.prn	2
21	CHAN 9116	9.59	57.54	ClassFeb.prn	2
22	CDA 66620	5.39	10.78	ClassFeb.prn	2
23	ENTPD 4110	9.59	86.31	ClassFeb.prn	2

File ID - Numeric - Calculated: Formula-based

Sort: Original Sort Order

272 rows

*Figure 13-16. The Filename and File ID fields.*

Since ClassJan.prn was the first report we opened, it is assigned 1, ClassFeb.prn was the second, so it is assigned 2 and ClassMar.prn is assigned 3. By opening the reports in another order we could change the designations. You can use the ID function to order records in the table or in a summary based upon the order in which you open the files, rather than alphabetically by file name.

## Creating a Summary to Analyze Data from Multiple Reports

The Summary window provides a powerful tool for analyzing information from multiple reports. Since Monarch summarizes data from all open reports, it's easy to draw comparisons, perform roll-ups and spot trends in the data.

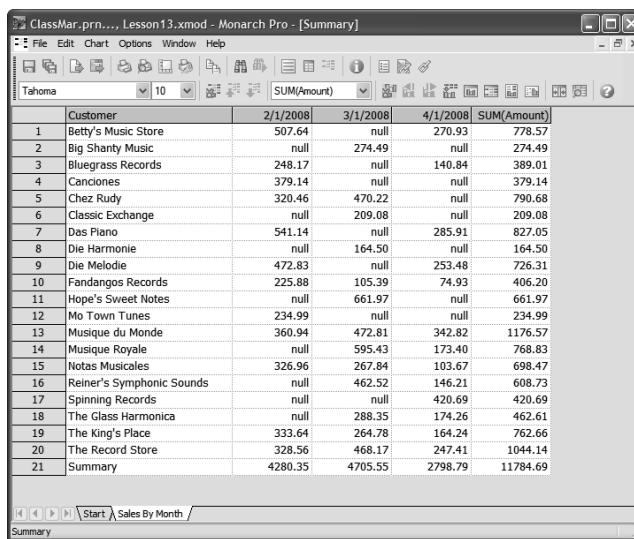
For this lesson we've included a summary definition - Sales By Month - that generates sales totals for each customer broken out by month. Let's build the Sales By Month summary.

1. Select Window, Summary (ALT, W, S) or click the Summary window button .

The Summary window displays.

2. Click on the Sales By Month summary tab.

The Sales By Month summary is built and displayed.



The screenshot shows the Monarch Pro [Summary] window with the title "ClassMar.prn..., Lesson13.xmod - Monarch Pro - [Summary]". The window contains a table with data for 21 customers. The columns are labeled "Customer", "2/1/2008", "3/1/2008", "4/1/2008", and "SUM(Amount)". The last row is a summary row labeled "Summary". The bottom status bar shows "Start \ Sales By Month / Summary".

Customer	2/1/2008	3/1/2008	4/1/2008	SUM(Amount)
1 Betty's Music Store	507.64	null	270.93	778.57
2 Big Shanty Music	null	274.49	null	274.49
3 Bluegrass Records	248.17	null	140.84	389.01
4 Canciones	379.14	null	null	379.14
5 Chez Rudy	320.46	470.22	null	790.68
6 Classic Exchange	null	209.08	null	209.08
7 Das Piano	541.14	null	285.91	827.05
8 Die Harmonie	null	164.50	null	164.50
9 Die Melodie	472.83	null	253.48	726.31
10 Fandangos Records	225.88	105.39	74.93	406.20
11 Hope's Sweet Notes	null	661.97	null	661.97
12 Mo Town Tunes	234.99	null	null	234.99
13 Musique du Monde	360.94	472.81	342.82	1176.57
14 Musique Royale	null	595.43	173.40	768.83
15 Notas Musicales	326.96	267.84	103.67	698.47
16 Reiner's Symphonic Sounds	null	462.52	146.21	608.73
17 Spinning Records	null	null	420.69	420.69
18 The Glass Harmonica	null	288.35	174.26	462.61
19 The King's Place	333.64	264.78	164.24	762.66
20 The Record Store	328.56	468.17	247.41	1044.14
Summary	4280.35	4705.55	2798.79	11784.69

Figure 13-17. Summary showing sales for each customer for three monthly periods.

This summary shows sales for each customer broken out by period. The rightmost column shows the total sales for each customer for the entire three month period and the bottom row shows the total sales for all customers for each month.

You could use this same model with a single instance of the shipping report or with any number of instances of the report. You could also roll forward a single month by closing the January report and opening the April report. The summary would then show subtotals for February through April.

## Saving Your Work to a Model File

You have completed Lesson 13. We recommend you save your work in a Monarch model file. The model file can be used with the same reports or with future instances of the report to reproduce the summary analysis.

1. Select File, Save Model As (ALT, F, A).

The Save Model As dialog displays.

2. Type **Q1** in the Name box, then choose Save.
3. Select File, Exit (ALT, F, X).

## Summary

In this lesson you learned how to extract and analyze data from multiple instances of a report.

For further reading, see the following sections of the Monarch help file:

Chapter 1 - Report Window

Working with Reports

Opening Multiple Instances of a Report

Closing Reports

Chapter 2 - Table Window

Functions

In the next lesson you'll learn what multiple line fields are, and how to extract them from reports and work with them in Monarch.

## L E S S O N   1 4

## Extracting Multiple Line Fields

In many reports, the majority of fields are *single line* fields - character, numeric and date fields that occupy space on a single line. But some reports contain large fields that span multiple lines. These *multiple line* fields are variously known as comment fields, description fields, memo fields, text blocks or word wrapped fields. In this lesson you'll learn how to extract a multiple line field from a report and work with it in Monarch.

### Starting the Lesson

To get started, load Monarch and open Homes.prn and Lesson14.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Homes.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson14.xmod, then choose Open.

The report and model are displayed in the Report window.

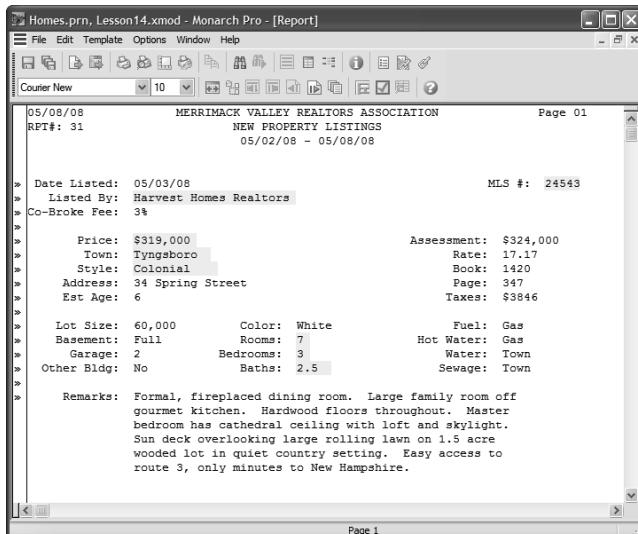


Figure 14-1. The Homes real estate report contains new property listings.

Homes.prn is a weekly real estate report describing properties that were offered for sale during the previous week. For each property, the report includes the address, style, price, listing broker and numerous other points of interest to prospective buyers. Chief among these is a description of the property provided by the listing broker. The Remarks field is typical of multiple line fields found in many reports. Each instance of the field contains several lines of descriptive text - some of the descriptions are only a few lines long and several are as many as nine lines.

The Lesson 14 model contains a detail template that captures several fields from each property listing. The first line of the multiple line Remarks field is included in the template, but that field is not yet captured. We'll capture the Remarks field together to illustrate how to capture a multiple line field.

4. Select Template, Templates (ALT, T, T) or click the Templates button .

The Templates dialog displays.

5. Select the Detail template, then click the Edit button.

The Template Definition dialog appears, which displays several lines of the detail template (the detail template contains a total of 16 lines).

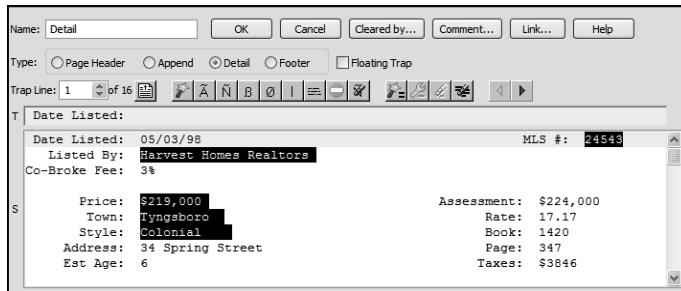


Figure 14-2. The Template Definition dialog displays several template sample lines.

We can scroll the template sample to view the remaining sample lines. The last line of the template contains the beginning of the Remarks field. Let's scroll down until that line is displayed.

6. Scroll down in the Template Definition dialog until the Remarks field is visible, as in Figure 14-3.



Figure 14-3. The last template sample line represents the beginning of the Remarks field.

Let's also scroll the report to display the first instance of the Remarks field. Having this field displayed on screen will provide valuable feedback during the capture process.

7. Use the Report window's vertical scroll bar (the lower of the two vertical scroll bars that are visible on screen) to scroll down so that the Remarks field is fully visible on screen, as shown in Figure 14-4.

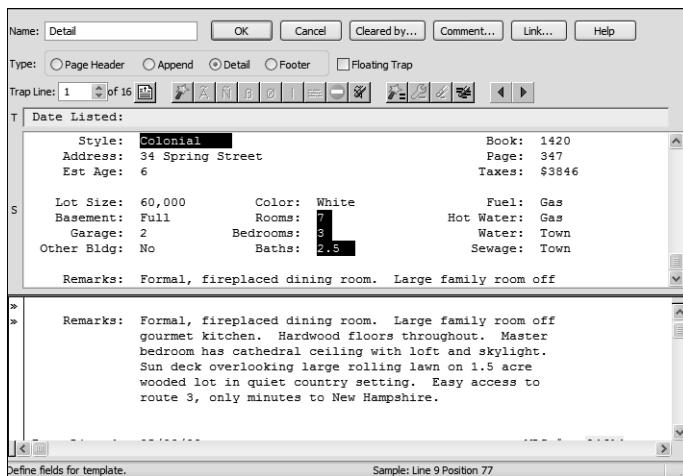


Figure 14-4. Displaying the multiple line Remarks field in the Report window to provide feedback.

Now we're ready to capture the multiple line Remarks field.

## Capturing a Multiple Line Field

To capture a multiple line field, you tell Monarch where the field begins and ends. Typically, locating the beginning of a multiple line field is easy - most multiple line fields begin at an absolute offset from the first line of the template. Locating the end of a multiple line field is sometimes more difficult. Since the number of lines in the field often varies, you can't tell Monarch how big the field is in absolute terms. Instead, you must describe some characteristic that is common to the end of the field. For example, the field may end when a blank line is reached or when another field is encountered. Monarch includes these and several more options that you can use to indicate where your multiple line field ends.

Start by highlighting the first line of the field.

1. In the Sample Edit box, use the mouse or the keyboard to highlight *only* the first line of the Remarks field. Highlight column positions 16 through 78. (The column position will be displayed in the Status bar when you click down in the Template Definition dialog.)

**Using the mouse:** Click down in the Sample box at column position 16, then drag right to position 78 to highlight the field.

**Using the keyboard:** Click in the Sample box to display the cursor. Use the arrow keys to move the cursor to the first character in the field (column 16), then press INSERT and use the right arrow to highlight the field (to column 78). Press ENTER to complete the field definition.

The field highlight should look like that shown in Figure 14-5.

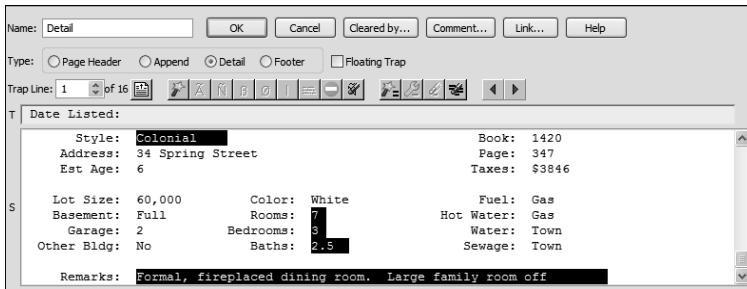


Figure 14-5. The last template sample line represents the beginning of the Remarks field.

Note that the first line of the field in the report is now highlighted.

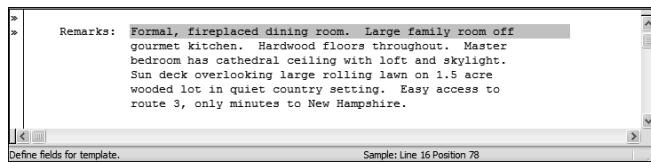


Figure 14-6. Highlighting the first line of a multiple line field indicates its horizontal size.

You might be wondering why we highlighted only the first line of the field. Why not highlight the entire field? For a multiple line field we must indicate the horizontal size of the field and the vertical size. The horizontal size is indicated by highlighting the first line of the field. But the vertical size cannot be indicated by highlighting multiple lines because the number of lines occupied by each instance of the field varies. What would be correct for the first instance of the field would be incorrect for the others. To indicate the vertical size of a multiple line field, we must tell Monarch where the field begins and where it ends. To do this, we'll use the Field Properties dialog.

2. Double-click on the field highlight in the Template Definition dialog or click the Field Properties button .

The Field Properties dialog appears. Initially, the General tab displays the sample field value for the selected field along with the current field name. The Field Properties dialog also contains an Advanced tab, which includes options for defining a multiple line field.

3. Click the Advanced tab.

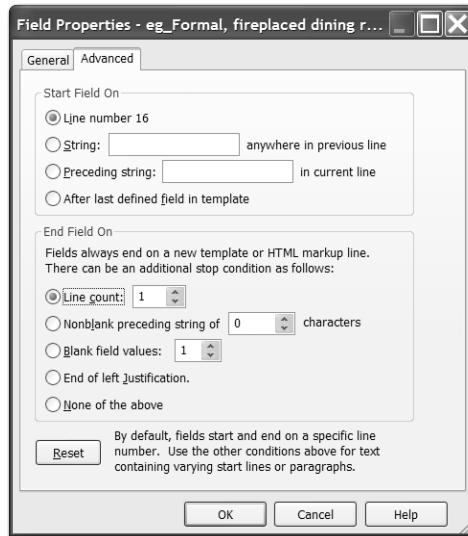


Figure 14-7. The Advanced tab.

The Advanced tab includes options for indicating the beginning and ending locations of the field. Let's begin by examining each of the Start Field On options. These options tell Monarch how to locate the beginning of a multiple line field. The Start Field On options are:

**Line Number** – The Line Number option indicates that the first line of the field begins at an absolute offset from the top of the template. The line number represented by this setting is determined by the position of the field highlight in the template sample. Since we painted the first line of the Remarks field at line number 16, this option displays as Line Number 16.

**Note:** The Line Number option is almost always the correct choice for indicating the beginning of a multiple line field. The only time the Line Number option would not be the correct choice is when the multiple line field begins after another multiple line field. In this case, the first multiple line field, if it contains a varying number of lines, would cause the beginning position of the second multiple line field to vary (see Figure 14-8). Only then would you need to employ one of the other Start Field On options.

**String** – The String option indicates that the first line of the field begins on the next line down from (i.e., the line below) a line containing a string. This option is particularly useful when trapping HTML data. To use this option, enter the string in the adjacent box.

**Preceding String** – The Preceding String option indicates that the first line of the field begins to the right of a string, such as a label. To use this option, you simply enter the string in the adjacent box. Figure 14-8 shows a

modified version of the Homes report where the Remarks field falls after another multiple line field, the Directions field. Here the Line number option would not work because the varying length of the Directions field would cause the beginning of the Remarks field to bob up and down. In this case the preceding string option could be used by entering the label "Remarks:" (without the quotation marks).

Lot Size:	60,000	Color:	White	Fuel:	Gas
Basement:	Full	Rooms:	7	Hot Water:	Gas
Garage:	2	Bedrooms:	3	Water:	Town
Other Bldg:	No	Baths:	2.5	Sewage:	Town
Directions:	Take route 3 north to exit 34 (Sutton road). At end of ramp take a left. At first set of lights, take a right onto Spring street. 2nd white house on left.				
Remarks:	Formal, fireplaced dining room. Large family room off gourmet kitchen. Hardwood floors throughout. Master bedroom has cathedral ceiling with loft and skylight. Sun deck overlooking large rolling lawn on 1.5 acre wooded lot in quiet country setting. Easy access to route 3, only minutes to New Hampshire.				
Date Listed:	05/04/01	MLS #:	24775		
Listed By:	Terrace Realtors				
Co-Broke Fee:	3%				
Price:	\$119,900	Assessment:	\$122,500		
Town:	Tewksbury	Rate:	16.35		
Style:	Ranch	Book:	1934		
Address:	105 Jason Street	Page:	57		
Est Age:	17	Taxes:	\$2003		
Lot Size:	42,000	Color:	Blue	Fuel:	Oil
Basement:	Full	Rooms:	6	Hot Water:	Oil
Garage:	1	Bedrooms:	3	Water:	Municipal
Other Bldg:	No	Baths:	1.5	Sewage:	Town
Directions:	Take route 495 to exit 38 (route 38). South on 38 to first set of lights. Right onto Taylor Drive. After approximately 2 miles, you'll cross a set of railroad tracks. After railroad tracks take your first left onto Jason Street. Look for Northstar Real estate sign on left.				
Remarks:	Top north Tewksbury neighborhood. Center isle kitchen with deck off dining room. Cathedral ceilings in family room and master bedroom. Updated heating, plumbing and electrical system. Full acre quiet country setting within minutes of routes 495 and 93.				

Variable length  
Directions field  
appears before  
Remarks field.

Figure 14-8. Offset of Remarks field varies due to preceding multiple line Directions field.

**After Last Defined Field in Template** – The After Last Defined Field option indicates that the first line of the field begins two lines below a previous multiple line field. Figure 14-9 is an excerpt from Figure 14-8, except this time there is no identifying label next to the Remarks field. In this case, you could use the After Last Defined Field option to indicate that the Remarks field begins immediately after the Directions field (to do this you must also capture the Directions field so Monarch will know where it ends).

Lot Size:	60,000	Color:	White	Fuel:	Gas
Basement:	Full	Rooms:	7	Hot Water:	Gas
Garage:	2	Bedrooms:	3	Water:	Town
Other Bldg:	No	Baths:	2.5	Sewage:	Town
Take route 3 north to exit 34 (Sutton road). At end of ramp take a left. At first set of lights, take a right onto Spring street. 2nd white house on left.					
Formal, fireplaced dining room. Large family room off gourmet kitchen. Hardwood floors throughout. Master bedroom has cathedral ceiling with loft and skylight. Sun deck overlooking large rolling lawn on 1.5 acre wooded lot in quiet country setting. Easy access to route 3, only minutes to New Hampshire.					

No label exists for Remarks field.

Figure 14-9. Use After Last Defined Field If no label exists to mark the beginning of the second multiple line field.

Since the Remarks field always begins on the same line in the template (line number 16), we'll use the Line Number option to indicate where the field starts. Line Number is the default option, so it's already selected.

Next, we need to indicate where the multiple line field ends. To do this, we'll select an End Field On option. The End Field On options tell Monarch how to locate the end of a multiple line field. Let's examine each option.

**Line Count** – The Line Count option terminates a multiple line field after a fixed number of lines. This option should be used only when every instance of the field has the same number of lines. This won't do for our Remarks field, as each instance contains a different number of lines.

**Nonblank Preceding String** – The Nonblank Preceding String option terminates a multiple line field when any nonblank character appears within a specified number of columns to the left of the field. Typically, the character is part of a label that appears to the left of a subsequent field. As an example, let's suppose our fictitious Directions field appeared immediately after the Remarks field rather than before (see Figure 14-10). With no blank line to separate the fields, it is difficult to know where the Remarks field ends. But there is a label, "Directions:", preceding the first line of the Directions field. We can use this label to terminate the Remarks field by selecting the Nonblank Preceding String option and specifying 3 or more columns. Monarch will look for any nonblank character in these columns, terminating the field when it encounters the colon (:) in the "Directions:" label.

Lot Size:	60,000	Color:	White	Fuel:	Gas
Basement:	Full	Rooms:	7	Hot Water:	Gas
Garage:	2	Bedrooms:	3	Water:	Town
Other Bldg:	No	Baths:	2.5	Sewage:	Town
Remarks: Formal, fireplaced dining room. Large family room off gourmet kitchen. Hardwood floors throughout. Master bedroom has cathedral ceiling with loft and skylight. Sun deck overlooking large rolling lawn on 1.5 acre wooded lot in quiet country setting. Easy access to route 3, only minutes to New Hampshire.					
Directions: Take route 3 north to exit 34 (Sutton road). At end of ramp take a left. At first set of lights, take a right onto Spring street. 2nd white house on left.					
Date Listed:	05/04/01	MLS #:	24775		
Listed By:	Donna Hill, Terrace Realtors			Co-Broke Fee:	\$K
Price:	\$119,900	Assessment:	\$122,500		
Town:	Tewksbury	Rate:	16.35		
Style:	Ranch	Book:	1934		
Address:	105 Jason Street	Page:	57		
Est Age:	17	Taxes:	\$2003		
Lot Size:	42,000	Color:	Blue	Fuel:	Oil
Basement:	Full	Rooms:	6	Hot Water:	Oil
Garage:	1	Bedrooms:	3	Water:	Municipal
Other Bldg:	No	Baths:	1.5	Sewage:	Town
Remarks: Top north Tewksbury neighborhood. Center Isle kitchen with deck off dining room. Cathedral ceilings in family room and master bedroom. Updated heating, plumbing and electrical systems. Full acre quiet country setting within minutes of routes 495 and 93.					
Directions: Take route 495 to exit 38 (route 38). South on 38 to first set of lights. Right onto Taylor Drive. After approximately 2 miles, you'll cross a set of railroad tracks. After railroad tracks take your first left onto Jason Street. Look for Northstar Real estate sign on left.					

←  
Remarks field  
runs into  
Directions field.

Figure 14-10. Use Nonblank Preceding String to terminate a field when another field's label is encountered.

The Nonblank Preceding String option cannot be used to indicate the end of the Remarks field in the report that we are using for this lesson because there is no label in an appropriate position near the end of the Remarks field.

**Blank Field Values** – The Blank Field Values option terminates a multiple line field when Monarch encounters a single blank line or a pair of blank lines. Monarch does not require the entire line to be blank, only the column positions immediately under the field. Since our Remarks field is always followed by a blank line, this option is a good choice.

In the case of a large text block containing multiple paragraphs, like the one shown in Figure 14-11, you would indicate 2 blank lines - to prevent Monarch from terminating the field when it encounters the blank line that falls between the first and second paragraphs. Note that using two blank lines to terminate a multiple line field is possible only when the entire text block is followed by at least two blank lines, as is the case in our example below.

Lot Size:	65,000	Color:	White	Fuel:	Gas
Basement:	Full	Rooms:	8	Hot Water:	Gas
Garage:	3	Bedrooms:	4	Water:	Town
Other Bldg:	No	Baths:	2.5	Sewage:	Town
<p><b>Remarks:</b> Jerome Bailey Foster designed Williamsburg colonial in impeccable condition. Brick floored foyer, gourmet kitchen with breakfast nook overlooking gardens, 1st floor den, 3 season porch, fireplaced master suite with Jacuzzi bath and walk-in closets, fireplaced recreation room, walk-up attic suitable for expansion, heated in-ground pool. Separate pool house with sauna. Located in Nashoba Hills with convenient access to all major routes.</p> <p>Note: Valley Real Estate will be holding a reservations-only open house on August 17th, 1995 from 11:30am to 4:00pm. Brokers with prospective clients are asked to make their reservations no later than August 10th. Refreshments and a buffet lunch will be served.</p>					

Figure 14-11. Example of a multi-paragraph text block with a single blank line between paragraphs.

**End of Left Justification** – This option terminates a multiple line field when Monarch encounters a line with a blank in the first column position of the field or any nonblank character in the column immediately preceding the field. Either condition indicates that left justification within the field has ended. This option is useful for capturing left aligned text blocks. However, if the text block contains a blank line, such as that found between paragraphs, Monarch will consider the blank line an end to left justification and will therefore terminate the field. Although this option could be used to terminate the Remarks field, the Blank Fields option is preferable as it better describes the way that the field is actually terminated.

**None of the Above** – This option terminates a multiple line field only when Monarch encounters another template, including another instance of the template in which the multiple line field resides. Monarch will also terminate a multiple line field after it extends two pages. The field will be terminated on the second page where the page break character (ASCII 12) is encountered. This prevents a field from continuing without end if the selected End Field On action is not appropriate to end the field.

This option should be used only when none of the other End Field On options are suitable. By employing the minimum actions, you might capture more data than is actually occupied by the field.

---

**Note:** The minimum actions described above are always enforced by Monarch, even when the None of the Above option is not selected. Select this option *only* when none of the other options would apply.

---

From our review of each of the End Field On options, we find that either the Blank Field Values option or the End of Left Justification option will properly terminate the field. We recommend using the Blank Field Values option in such cases, since it is more descriptive of how the field ends.

- Select the Blank Field Values option to indicate to Monarch that the field will end when a blank line is encountered.

Let's also name the field Remarks.

- Click the General tab and type **Remarks** in the Name box.
- Select OK to accept your selections and close the dialog.

The Field Properties dialog is removed. Let's check the field definition to ensure that we captured the field properly.

Note that Monarch has correctly highlighted the first instance of the Remarks field.

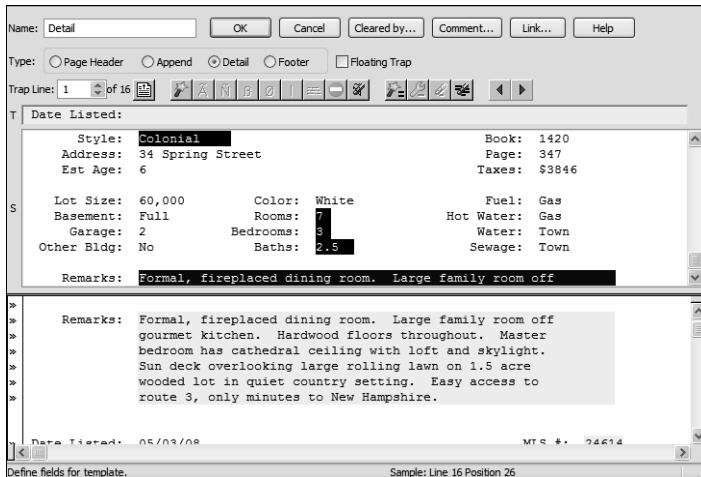


Figure 14-12. Testing the multiple line field definition.

- Click the OK button to close the Template Definition dialog and accept the multiple line field definition.

Let's double check the field definition by inspecting several more instances of the multiple line field.

- Scroll down in the report to the next Remarks field.

Note that the second instance of the Remarks field is also correctly highlighted.

Lot Size:	20,000	Color:	Gray	Fuel:	Gas
Basement:	Full	Rooms:	6	Hot Water:	Elec
Garage:	1	Bedrooms:	3	Water:	Municipal
Other Bldg:	No	Baths:	1.5	Sewage:	Septic
Remarks: Large bright eat-in kitchen, hardwood floors, fireplaced family room, 1/2 acre level lot. Well maintained, zoned light industrial, close to routes 3 and 495 and schools. All appliances stay.					

Figure 14-13. Double checking the multiple line field definition.

9. Continue to scroll down in the report until you are satisfied that each instance of the Remarks field has been captured properly.

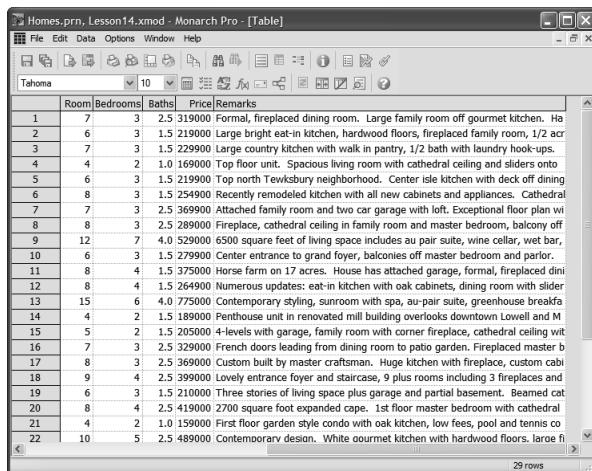
## Displaying a Multiple Line Field in the Table Window

Now that we are satisfied that the multiple line field is captured properly, we'll extract the field and display it in the Table window.

1. Select Window, Table (ALT, W, T) or choose the Table window button  from the toolbar.

The Table window appears. The Remarks field displays at the far right.

2. Click once in the body of the horizontal scroll bar to display the Remarks field.



	Room	BedRooms	Baths	Price	Remarks
1	7	3	2.5	319000	Formal, fireplaced dining room. Large family room off gourmet kitchen. Ha
2	6	3	1.5	219000	Large bright eat-in kitchen, hardwood floors, fireplaced family room, 1/2 acr
3	7	3	1.5	229900	Large country kitchen with walk in pantry, 1/2 bath with laundry hook-ups.
4	4	2	1.0	169000	Top floor unit. Spacious living room with cathedral ceiling and sliders onto
5	6	3	1.5	219900	Top north Tewksbury neighborhood. Center island kitchen with deck off dining
6	8	3	1.5	254900	Recently remodeled kitchen with all new cabinets and appliances. Cathedral
7	7	3	2.5	369900	Attached family room and two car garage with loft. Exceptional floor plan wi
8	8	3	2.5	289000	Fireplace, cathedral ceiling in family room and master bedroom, balcony off
9	12	7	4.0	529000	6500 square feet of living space includes au pair suite, wine cellar, wet bar,
10	6	3	1.5	279900	Center entrance to grand foyer, balconies off master bedroom and parlor.
11	8	4	1.5	375000	Horse farm on 17 acres. House has attached garage, formal, fireplaced dini
12	8	4	1.5	264900	Numerous updates: eat-in kitchen with oak cabinets, dining room with slider
13	15	6	4.0	775000	Contemporary styling, sunroom with spa, au-pair suite, greenhouse breakfa
14	4	2	1.5	189000	Penthouse unit in renovated mill building overlooks downtown Lowell and M
15	5	2	1.5	205000	4-levels with garage, family room with corner fireplace, cathedral ceiling wit
16	7	3	2.5	329000	French doors leading from dining room to patio garden. Fireplaced master b
17	8	3	2.5	369000	Custom built by master craftsman. Huge kitchen with fireplace, custom cabi
18	9	4	2.5	399000	Lovely entrance foyer and staircase, 9 plus rooms including 3 fireplaces and
19	6	3	1.5	210000	Three stories of living space plus garage and partial basement. Beamed cat
20	8	4	2.5	419000	2700 square foot expanded cape. 1st floor master bedroom with cathedral
21	4	2	1.0	159000	First floor garden style condo with oak kitchen, low fees, pool and tennis co
22	10	5	2.5	489000	Contemporary design. White gourmet kitchen with hardwood floors, large fi

Figure 14-14. Displaying the Remarks field in the Table window.

The initial field type assigned to the Remarks field is character with a data length of 254 - the maximum data length for a character field. The column width is set to the field's template width, which in this case is 62 characters.

These default settings are appropriate for multiple line fields that extract a small amount of data (i.e., when the largest field value is less than the 254 character maximum for a character field). But for multiple line fields that extract large blocks of text, such as our Remarks field, the 254 character limit will cause some of the field values to be truncated and the display settings don't let us see very much of each field value on screen.

## Memo Fields

To accommodate multiple line fields that contain more than 254 characters Monarch includes support for memo fields, which can handle up to 65536 characters (64KB).

Let's change the field type of the Remarks field to Memo.

1. Double-click any cell in the Remarks field.

The Field Properties dialog appears.

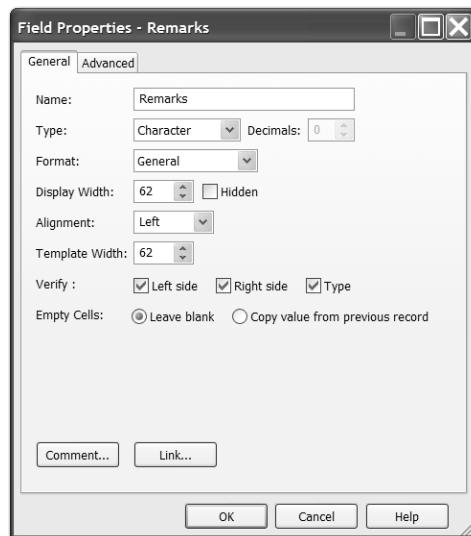


Figure 14-15. The Field Properties dialog.

2. Click the down arrow on the Type box and select Memo.
3. Choose OK to close the Field Properties dialog.

The Remarks field is redisplayed as a memo field.

## Viewing Memo Fields

To view more information for each memo field, Monarch lets you adjust the height of each row. Let's try doing this.

4. In the left hand side of the Table window, click on the border between rows 1 and 2, then drag down to expand the height of the rows to at least six lines.

The screenshot shows a software application window titled "Homes.prn, Lesson14.xmod - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, and Help. Below the menu is a toolbar with various icons. The main area is a table with the following columns: Room, Bedrooms, Baths, Price, and Remarks. There are four rows of data:

Room	Bedrooms	Baths	Price	Remarks
1	7	3	2.5	319000 Formal, fireplaced dining room. Large family room off gourmet kitchen. Hardwood floors throughout. Master bedroom has cathedral ceiling with loft and skylight. Sun deck overlooking large rolling lawn on 1.5 acre wooded lot in quiet country setting. Easy access to route 3, only minutes to New Hampshire.
2	6	3	1.5	219000 Large bright eat-in kitchen, hardwood floors, fireplaced family room, 1/2 acre level lot. Well maintained, zoned light industrial, close to routes 3 and 495 and schools. All appliances stay.
3	7	3	1.5	229900 Large country kitchen with walk in pantry, 1/2 bath with laundry hook-ups. Located in a well established neighborhood with a 1/4 acre private yard. Walking distance to commuter train, schools and town center. No W/D or Refrigerator. Motivated seller.
4	4	2	1.0	169000 Top floor unit. Spacious living room with cathedral ceiling and sliders onto deck. Attic space can be converted to loft above living room. Fully applianced eat-in kitchen, private laundry and storage. Near New Hampshire border.

A scroll bar on the right side of the table indicates there are 29 rows of data. The "Remarks" field for the fourth row is currently expanded, showing more than one line of text.

*Figure 14-16. Expanding row heights to view more information.*

Even using a row height of 6 lines, we still may not be able to see all of the text in some of the Remarks fields. To view more information we could increase the width of the field, but this may still not allow us to view the entire contents of each cell. Though we could adjust the row height again (Monarch allows a maximum row height of 12 lines), let's try something new instead. Let's give Monarch's Show Field Contents feature a try, which displays the entire contents of a cell.

5. Select Window, Show Field Contents (ALT, W, W).

Monarch opens a small window at the top of the display. This window, called the Field Contents window, displays the entire contents of the selected table cell. Initially the window height is only a few lines, but you can increase the height to show more lines and you can scroll within the window to view the entire contents of a cell.

6. Position the mouse cursor on the border between the Field Contents window and the Table window.

The mouse pointer should become a resizing handle (a pair of horizontal bars with an up facing arrow and a down facing arrow).

7. Click down on the border, then drag down to expand the Field Contents window so that it is at least 6 lines tall.

8. Release the mouse button to drop the border in place.

Realtor	Remarks	MLS Number
1 Harvest Homes Realtors	Formal, fireplaced dining room. Large family room off gourmet kitchen. Hardwood floors throughout. Master bedroom has cathedral ceiling with loft and skylight. Sun deck overlooking large rolling lawn on 1.5 acre wooded lot in quiet country setting. Easy access to route 3, only minutes to New Hampshire.	24543
2 Northran Real Estate	Large bright eat-in kitchen, hardwood floors, fireplaced family room, 1/2 acre level lot. Well maintained, zoned light industrial, close to routes 3 and 495 and schools. All appliances stay.	24614
3 J. Miller Realty	Large country kitchen with walk in pantry, 1/2 bath with laundry hook-ups. Located in a well established neighborhood with a 1/4 acre private yard. Walking distance to commuter train, schools and town center. No W/D or Refrigerator. Motivated seller.	24737
4 J&J Realty	Top floor unit. Spacious living room with cathedral ceiling and sliders onto deck. Attic space can be converted to loft above living room. Fully applianced eat-in	24739

Figure 14-17. The Field Contents window displays the entire contents of the selected cell.

As you move the cell pointer from cell to cell in the Table window, the Field Contents window will display the contents of the selected cell. You can try this by using the Down arrow key on the keyboard to scroll through the Remarks field cells.

9. Press the Down arrow several times to view the entire contents of each of the Remarks field cells.

## Using Memo Fields

Monarch does not allow a memo field to be used in a sort or summary definition. If you intend to include the field in a sort or summary definition you must leave the field type set to Character, or on rare occasions, change it to Numeric or Date. In addition, there are differences in the way a memo field is exported and printed versus a character, numeric or date field. These differences may or may not provide the result you expected or wanted. We'll touch on the export and print issues later in this lesson.

### Using Memo Fields in Calculated Field and Filter Expressions

As stated above, you cannot use a memo field in a sort or summary definition. However, you can use a memo field as part of a calculated field expression. By creating a calculated field you can extract a subset of the memo field that you can then use in a sort or summary definition.

You can also use a memo field in a filter expression. We'll illustrate this using the Remarks field. Let's suppose the Real Estate agent has a client interested in purchasing a new home and, among the client's other criteria, she wants a home with a fireplace. Some of the property descriptions mention a fireplace and others do not. You could manually review all of the Remarks cells in the table to find the ones that mention a fireplace, but this is a tedious process, especially if there are hundreds of homes for sale.

To find out which homes have a fireplace you can create a filter that will search the entire Remarks field and return only those records where a fireplace is mentioned.

1. Select Data, Filters (ALT, D, F) or click the Filters button .

The Filters dialog appears.

2. Choose New to create a new filter.

The Filter Style dialog displays.

3. Select Formula-based then click OK.

The Filter Definition dialog appears.

4. Type **Homes with a Fireplace** in the Filter Name box.

5. Type **Instr("fireplace",Remarks)>0** in the Expression box.

The Instr() function will return the character position of the word "fireplace" in the Remarks field. By setting the filter to >0, we are capturing all cases where it appears anywhere in the description text.

6. Choose OK, then choose OK in the Filters dialog.

Monarch applies the filter, which returns 19 records. That may still be more property descriptions than you want to read through, so let's narrow the choices by adding to the filter definition. While we're already supposing, let's further suppose that the client refuses to live in any town other than Tewksbury.

7. Click the Filters button , then select Edit on the Filters dialog to edit the filter definition.

The Filter Definition dialog appears.

8. Add **.And.Town="Tewksbury"** to the filter expression.

The entire expression should now read:

**Instr("fireplace",Remarks)>0.And.Town="Tewksbury"**

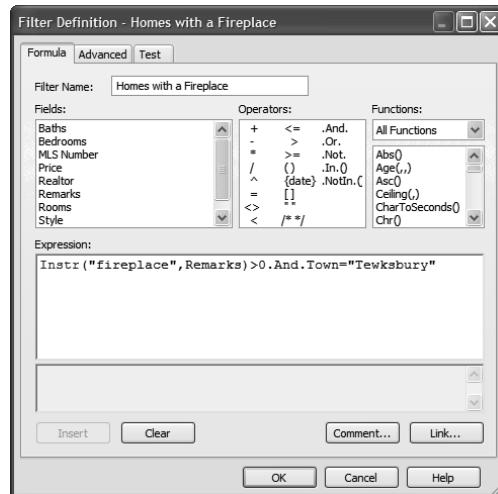


Figure 14-18. Viewing the edited filter expression.

9. Choose OK, then choose OK in the Filters dialog.

This time Monarch returns only three records representing homes with fireplaces in the town of Tewksbury. Let's use the Display Source of Record feature to browse the original descriptions in the report.

10. Click on any cell in the first row of the table.

11. Select Edit, Display Source Of Record (ALT, E, D) or click the Display Source Of Record button .

Monarch displays the associated property listing in the Report window.

The report window shows a property record with the following details:

- Address:** 2 Stevens Street
- City:** Tewksbury
- State:** MA
- Zip:** 01876
- MLS #:** 25047
- Date Listed:** 05/08/08
- Listed By:** Newell Properties
- Co-Broke Fee:** 3%
- Price:** \$329,000
- Assessment:** \$319,000
- Lot Size:** 30,000
- Color:** White/Brick
- Fuel:** Gas
- Basement:** Full
- Rooms:** 7
- Hot Water:** Gas
- Garage:** 2
- Bedrooms:** 3
- Water:** Municipal
- Other Bldg:** No
- Baths:** 2.5
- Sewage:** Town

The **Remarks** field contains the following multi-line text:

```

bedroom. Central air. Condo fees include in-ground
pool, tennis courts, basketball, clubhouse facilities.
Close to routes 3 and 495.

Date Listed: 05/08/08
Listed By: Newell Properties
Co-Broke Fee: 3%
Price: $329,000
Assessment: $319,000
Lot Size: 30,000
Color: White/Brick
Fuel: Gas
Basement: Full
Rooms: 7
Hot Water: Gas
Garage: 2
Bedrooms: 3
Water: Municipal
Other Bldg: No
Baths: 2.5
Sewage: Town

Remarks: French doors leading from dining room to patio garden.
Fireplaced master bedroom with private deck. Exquisite
master bath with cathedral ceiling and skylight.
Finished basement with recreation room, wet bar and
Jacuzzi. Located in private neighborhood with tennis
courts and lake access.
  
```

Figure 14-19. Displaying the source of a multiple line field.

12. Click the Table window button  on the toolbar to switch back to the Table window.

You may repeat steps 10 - 12 to view each of the other property listings. In step 10, click any cell in the second row to display the second listing or any cell in the third row to view the third listing.

## Exporting Memo Fields

Now that you have found three homes that meet your criteria, you might want to extract this information to a text file or print it. We'll start by exporting the table to a text file.

1. While viewing the Table window select File, Export (ALT, F, E).

The Export Wizard appears, displaying the General screen.

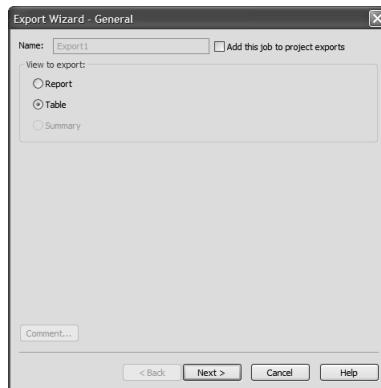


Figure 14-20. The General screen of the Export wizard.

2. Click the Next button.

The Table View screen of the Export wizard displays.

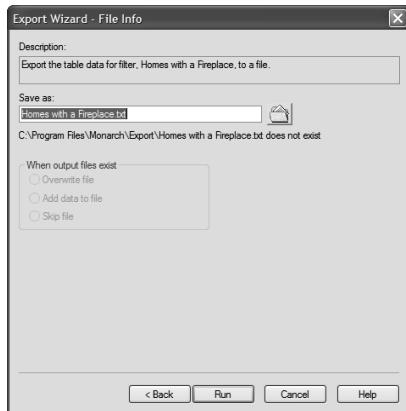


Figure 14-21. The Table View screen.

Note that under the Filtering heading, the filter currently applied to the table – “Homes with A Fireplace” – is displayed.

3. Click the Next button to display the Output File screen.
4. In the Export to File field enter **Homes with a Fireplace.txt**.
5. Click the Run button.

Monarch displays a Results dialog when the export is complete.

Let's examine the file using the Windows WordPad utility.

6. Select the WordPad item from the Windows start menu.
7. Select File, Open (ALT, F, O) from the menu to display the Open dialog.
8. Navigate to the Monarch \Export folder. This folder is typically C:\Documents and Settings\All Users\Documents\Monarch\Export, but it may be another folder if you changed the default folder settings for Monarch. **Note:** To view the default folder settings select Options, Folders (ALT, O, F) from the Monarch menu.
9. Select Text Documents (\*.txt) from the Files of Type drop-down list.
10. Select **Homes with a Fireplace.txt**, then choose Open.

WordPad displays the text file.

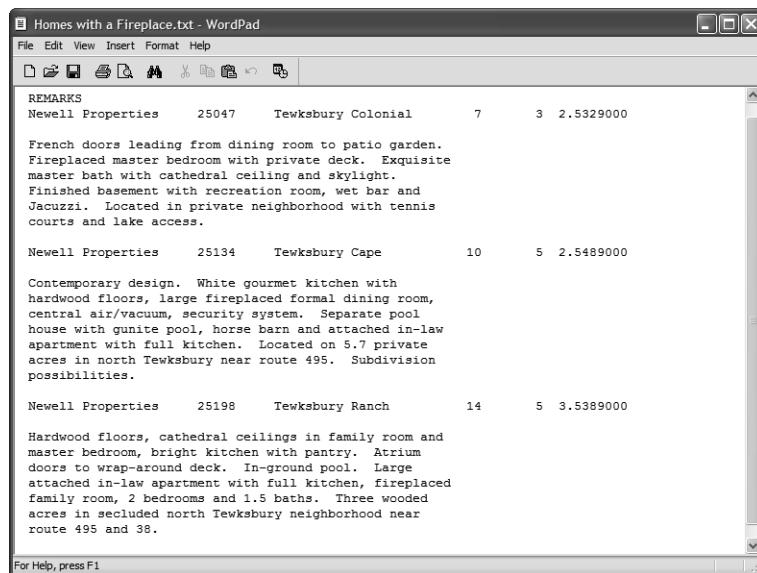


Figure 14-22. Viewing the export file in WordPad.

When Monarch exports a memo field to a text file it starts the memo field on its own line. The field appears in the export file in the same format as it appeared in the original report. By filtering and exporting the extracted data, we were able to create a personalized subset of the original report.

Monarch handles other export formats differently, according to their capabilities. For example, the XLS format cannot accept a field larger than 255 characters, so Monarch accommodates this file type by exporting a memo field as a character field. If the field contains more data than the export file type can hold, Monarch exports the maximum for that file type, then truncates the rest. When exporting to DBF, DB, or MDB formats, Monarch exports separate memo files along with the database file. For more information about exporting fields to each supported export file type, refer to the Monarch help file, *Chapter 2 - Table Window, Exporting Table Data*.

11. Select File, Exit (ALT, F, X) to quit WordPad.

## Printing Memo Fields

When you print a memo field, Monarch treats the field as though it were a character field; it prints only that portion of the field that is visible in the Table window. This results in a print image that reflects the data you see on screen. To print the entire contents of a memo field, you can export the table to a text file, and then use a text editor or a word processor to print the file.

## Saving Your Work

You have completed Lesson 14. We recommend you save your work to a Monarch model file.

1. Select File, Save Model As (ALT, F, A).

The Save Model As dialog displays.

2. Type **Homes** in the File Name box, then choose Save.
3. Select File, Exit (ALT, F, X).

## Summary

In this lesson you learned how to extract a multiple line field from a report. You also learned how to set the field type to Memo and how Monarch exports and prints memo fields.

For further reading, see the following sections of the Monarch help file:

Chapter 1 - Report Window

    Creating Data Extraction Templates

    Capturing a Multiple Line Field

Chapter 2 - Table Window

    Working with Fields

    Changing a Field's Type

    Exporting table data

        Text File Export Rules

        Delimited Text File Export Rules

        Database File Export Rules

        Spreadsheet File Export Rules



# Part V

# Monarch Professional



**L E S S O N   1 5**

# Importing Data from HTML and External Databases

This lesson and the one that follows deal with capabilities found in the professional edition of Monarch, referred to as Monarch Pro. Monarch Pro extends Monarch's data access capabilities to include data from external data sources, such as MS-Excel, MS-Access, dBASE, and Paradox files, ODBC data sources, delimited text files. It also enables you to import PDF, XPS and HTML files.

In this lesson you will learn how to import data from an external data source to begin a Monarch session. You will also learn how to import HTML into Monarch Pro. The lesson topics include:

- Accessing database data with Monarch Pro.
- Importing data from an external database.
- Adjusting fields.
- Storing import parameters in a model file.
- Storing import parameters in a project file.
- Importing data from an HTML file.

## Accessing Database Data with Monarch Pro

For most of its history, Monarch has been the leading report mining tool, allowing access to data buried in computer generated reports. Monarch transforms static report data into live data that you can explore, analyze, and export to other applications. While its ability to re-deploy data locked inside reports has been the major factor distinguishing Monarch technology from other data access technologies, Monarch also includes powerful data manipulation, analysis, and transformation tools that potentially make it valuable for use with other data sources. Until the release of Monarch Pro, however, Monarch could not access any data source other than report files.

Monarch V10 is available in a standard edition that reads report files only and a professional edition (Monarch Pro) that reads report files and also reads data from database files, spreadsheet files, delimited text files, HTML, ODBC databases, PDF and XPS files. Both the standard and professional editions provide the same report extraction, data manipulation, analysis, and transformation capabilities; the only difference lies in the professional edition's ability to access data from additional sources.

Using Monarch you can access data only from report files. Using Monarch Pro you can access data in report files, plus you can access data from: delimited text files and HTML; PDF files; XPS files; database files, including dBase, Paradox, MS-Excel, and MS-Access files; OLE DB and ODBC compatible data sources, such as SQL Server, Oracle, DB2, and others.

## Importing Data from an External Database

To illustrate Monarch Pro's database import capability, we'll import data from an MS-Access database file called Employ.mdb. This file contains information about the employees of a fictitious company. We'll use Monarch to open the file and import data from its Employee Roster database table.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Database (ALT, F, D).

The Database wizard opens, displaying the Data Source screen. This screen allows you to select the data source, either a data file from a local or network drive or an OLE DB/ODBC data source, such as a SQL Server, Oracle, or other OLE DB/ODBC compatible database server.

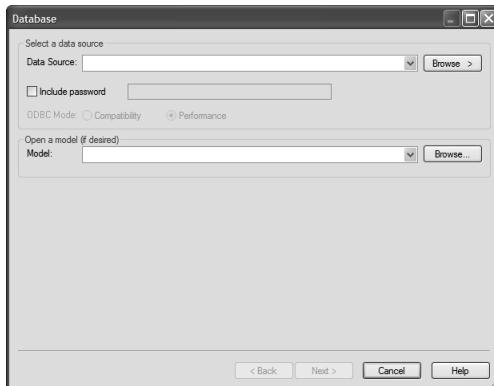


Figure 15-1. Data Source Screen of Monarch Pro's Database wizard.

The first wizard screen, shown in Figure 15-1, prompts you for the database where your data resides. From this screen, you can browse to locate a

database or select a previously used database from the Data Source drop-down list. Let's use the browse button to open Employ.mdb.

3. Click the Browse button to the right of the Data Source field and select "Local or network file" to indicate the data source type. This option refers to files that you can access locally via the standard Windows File Open dialog. The Select File dialog displays.

The Select File dialog appears. You use this dialog to select the database or spreadsheet file that holds the data you wish to import.

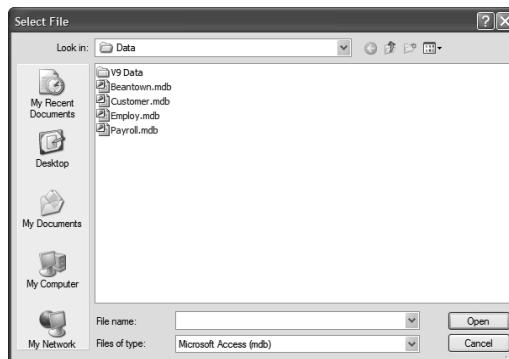


Figure 15-2. Use the Select File dialog to open a local database or spreadsheet file.

Monarch Pro can import data from the following local file formats:

File Format	Versions	Extension
MS-Access	1.0, 1.1, 2.0, 3.0, 4.0 (Access 2000 format), 2007	MDB
MS-Excel	3.0, 4.0, 5.0, 8.0	XLS
MS-Excel	2007	XLSX, XLSM
dBASE	III, IV, 5.0	DBF
Paradox	3.X, 4.X, 5.X, 7.X (requires Paradox 7 installed)	DB
Lotus	WKS, WK1, WK3, WK4	WKx
Delimited text files		CSV, TAB, ASC
HTML		HTM, HTML, ASP
PDF files	1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6	PDF
XPS	1.0	XPS

If you wanted to import from an OLE DB compatible database (and you have the driver installed), you would select the “OLEDB connection” option, then use the Data Link Wizard to make the connection to your database, or select the Data Link File to use an existing data link file to use as your connection information. Note that OLE DB is usually faster than ODBC, so if you have a choice of connections to your database, then choose OLE DB. If you have existing projects and models that use ODBC, then you may want to change the connection method to benefit from enhanced performance.

If you wanted to import data from an ODBC compatible database, you would select the “ODBC connection” option, then use the Select a DSN dialog that displays to select the ODBC data source name (DSN) that connects to your ODBC data source. Monarch Pro can import data from ODBC data sources for which you have established an ODBC Data Source Name definition (referred to as a DSN). Monarch does not create a DSN for you; you must create a DSN using the Windows Control Panel ODBC Data Sources applet or a similar utility.

4. Select the Employ.mdb file from the Monarch \Data folder (typically C:\Documents and Settings\All Users\Documents\Monarch\Data).
5. Click the Open button to open the data source.

Monarch displays the path to the Employ.mdb file in the Open Database wizard’s Data Source box.

---

**Note:** This screen also includes an Open Model button which you can use to open a model file to apply to the database. Applying a model to a database is similar to applying a model to a report. The model holds parameters that indicate which fields to extract from the database, along with field properties for each field and filter, sort, calculated field, and summary definitions. Later in this lesson, we’ll show you how to save a model that includes import parameters and how to use the model in a subsequent Monarch session.

---

6. Click the Next button to advance to the next wizard screen.

The wizard’s Tables and Queries screen appears. This screen displays all of the database tables and queries that are available within the selected database. Tables are represented with a small icon image that looks like a data table. The icon for queries looks like a pair of eyeglasses. The list does not include system tables or queries, which hold information about the database structure.

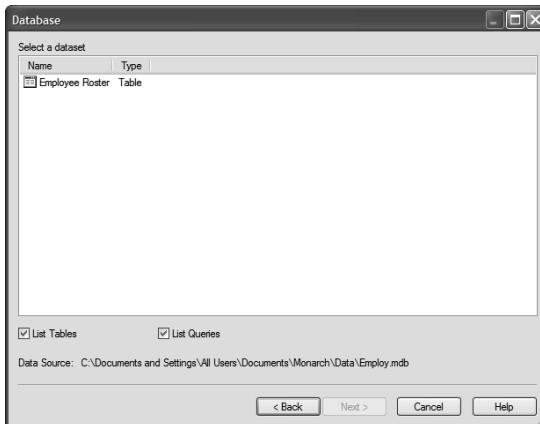


Figure 15-3. Use this screen to select the database table or query from which the data will be imported.

Our sample Employ.mdb database file holds only a single database table, called Employee Roster, which is already selected.

7. Click the Next button to advance to the next wizard screen.

The wizard's Sample Data screen appears. This screen displays a preview of the table that has been chosen for importing. (**Note:** When importing from a delimited text file, this page also provides controls for specifying parameters.)

Department	Last Name	First Name	Employee ID	Hire Date
Accounting	Aldridge	Jeff	15932784	10/13/1995
Accounting	Daley	William	1597300	7/20/1993
Accounting	George	William	1596792	6/4/2005
Accounting	Gluck	Anna	1593309	3/12/2000
Accounting	Jacobson	Doug	1601562	10/26/1998
Accounting	Marshall	Alana	1598264	11/18/2003
Accounting	Martins	Wayne	1594566	4/12/2001
Accounting	Poretsky	Teresa	1588940	1/4/1996
Accounting	Rosenberg	Kelly	1590228	9/2/1997
Accounting	Russo	Paula	1594568	1/5/1993
Accounting	Snowicz	Mary Beth	1593559	10/11/1997
Accounting	Woodruff	Elizabeth	1600325	6/23/2003
Data Processing	Bass	Andrew	1593211	3/18/1999
Data Processing	Bittner	Herb	1597596	3/18/2005
Data Processing	Bittner	Martha	1604193	12/18/2001

Figure 15-4. The Sample Data screen provides a preview of the table.

**Note:** If you wanted to apply a filter to the data, you could do so by selecting the Apply Filter check box, clicking the Change button, and then specifying a filter via the Source Filter dialog.

8. Click the Next button to advance to the next wizard screen.

The wizard's Import Columns screen appears. This screen lists the names of the database columns that are available in the selected table or query.

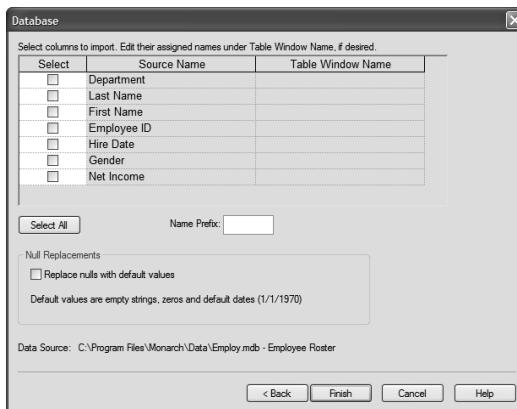


Figure 15-5. The Import Columns screen includes all available database columns that you can import to Monarch.

We'll import all of the database columns.

9. Click the Select All button to select all of the available columns.

Default names, taken from the source column names, are assigned to the import columns and are displayed under the Table Window Name heading. These are the names that will be assigned to the columns when you import them into Monarch.

---

**Note:** You can manually edit the import column names by clicking on them. You can also add a name prefix to one or more of the import column names. To do so, however, you must enter the prefix in the Name Prefix box *before* selecting any of the columns to import. After specifying the prefix, you can then either click the Select All button or select individual columns via their check boxes. The names for the columns you chose to import will then be displayed, preceded by the name prefix (e.g., if you specified a Name Prefix of "Test", for example, the import column name for the "Department" source column would be "TestDepartment").

---

10. Click the Finish button.

Monarch opens its Table window and populates it with data imported from the Employ.mdb file's Employee Roster table.

The screenshot shows the Monarch Pro software interface with the title bar "Employ.mdb - Monarch Pro - [Table]". The main area is a grid-based table with the following columns: Department, Last Name, First Name, Employee ID, Hire Date, and Net Income. The table contains approximately 22 rows of employee data. The "Hire Date" column is formatted with dates like "10/13/1985" and "1/30/1983". The "Net Income" column has values ranging from 42380 to 40560. The "Gender" column (labeled as "G" in the table header) contains values "M" and "F". The bottom status bar indicates "Department - Character - Database: Department" and "100 rows".

	Department	Last Name	First Name	Employee ID	Hire Date	G	Net Income
1	Accounting	Aldridge	Jeff	1592784	10/13/1985	M	42900
2	Accounting	Daley	William	1587390	1/30/1983	M	38480
3	Accounting	Georges	William	1596792	6/4/1995	M	38480
4	Accounting	Gluck	Anna	1593309	3/12/1990	F	42380
5	Accounting	Jacobson	Doug	1601562	10/26/1988	M	50050
6	Accounting	Marshall	Alana	1598264	1/18/1993	F	22750
7	Accounting	Martins	Wayne	1594566	4/12/1991	M	42900
8	Accounting	Poretsky	Teresa	1588940	1/4/1986	F	40690
9	Accounting	Rosenberg	Kelly	1590228	9/2/1987	F	40690
10	Accounting	Russe	Paul	1586498	1/5/1983	F	22750
11	Accounting	Stancovicz	Mary Beth	1593599	10/11/1987	F	42380
12	Accounting	Woodruff	Elizabeth	1600325	6/23/1993	F	50050
13	Data Processing	Bass	Andrew	1593211	3/18/1988	M	43420
14	Data Processing	Bittner	Herb	1597596	3/18/1995	M	34450
15	Data Processing	Bittner	Martha	1604193	12/18/1991	F	61490
16	Data Processing	Condon	James	1597266	6/4/1995	M	61490
17	Data Processing	Condon	Robert	1590086	2/28/1985	F	43420
18	Data Processing	Curtis	Neil	1599507	8/14/1992	M	61490
19	Data Processing	Evans	Marlene	1592913	6/4/1990	F	44330
20	Data Processing	Finn	Arnold	1594470	2/24/1991	M	40560
21	Data Processing	Horton	Alice	1598482	9/30/1987	F	38350
22	Data Processing	Howard	Rae Ann	1588939	1/4/1986	F	40560

Figure 15-6. Monarch's Table window is populated with the data imported from Employ.mdb – Employee Roster.

**Note:** The Table window may be initially populated using data extracted from report files or using data imported from an external database. You cannot draw data from both sources at the same time to populate the table. If you start a Monarch session by opening a report file, you will not be allowed to import data from an external database in that Monarch session. Conversely, if you start a Monarch session by importing data from an external database, you will not be allowed to open any report files in that Monarch session. These two means of initially populating Monarch's Table window are mutually exclusive.

## Adjusting Fields

Once you have imported data into the Table window, you can sort, filter, and export the data, create new calculated fields, and use the data in the Summary window where you can create summary reports that perform analyses on the data. In short, you can do anything with imported data that you can do with data extracted from a report file.

Typically, the first thing that you'll want to do when importing data is to inspect each field to ensure that its column width, type and other properties are set correctly. For instance, column widths for imported field are set according to the data in each column, without regard for the width of the column title. You can see an example of this in Figure 15-6, where the Gender column's values ("M" or "F") cause this column's width to be set to just one character.

While you could inspect each column to determine if the appropriate width is established, a quicker way to deal with this situation is to use the Autosize Column Widths command to set appropriate widths for all columns in one operation. Let's use the Autosize command to set column widths for our imported data.

1. Click down on any cell in the first column (Department) and drag right to extend the cell pointer to the Net Income column.
2. Select Edit, Autosize Column Widths (ALT, E, A).

Each column is resized according to the column's data and its column title. Note that the widths for the Employee ID column and the Gender column have been modified to match the width of the column title, as these titles are longer than the data held by each column.

	Department	Last Name	First Name	Employee ID	Hire Date	Gender	Net Income
1	Accounting	Aldridge	Jeff	1592784	10/13/1985	M	42900
2	Accounting	Daley	William	1587390	1/30/1983	M	38480
3	Accounting	Georges	William	1596792	6/4/1995	M	38480
4	Accounting	Gluck	Anna	1593309	3/12/1990	F	42380
5	Accounting	Jacobsen	Doug	1601562	10/26/1984	M	50050
6	Accounting	Marshall	Alana	1598264	11/18/1993	F	22750
7	Accounting	Martins	Wayne	1594566	4/12/1991	M	42900
8	Accounting	Poretsky	Teresa	1588940	1/4/1986	F	40690
9	Accounting	Rosenberg	Kelly	1590228	9/2/1987	F	40690
10	Accounting	Russe	Paula	1586498	1/5/1983	F	22750
11	Accounting	Stancowicz	Mary Beth	1593599	10/11/1987	F	42380
12	Accounting	Woodruff	Elizabeth	1600325	6/23/1993	F	50050
13	Data Processing	Bass	Andrew	1593211	3/18/1989	M	43420
14	Data Processing	Bittner	Herb	1597596	3/18/1995	M	34450
15	Data Processing	Bittner	Martha	1604193	12/18/1991	F	61490
16	Data Processing	Condon	James	1597266	6/4/1995	M	61490
17	Data Processing	Condon	Roberta	1590086	2/28/1985	F	43420
18	Data Processing	Curtis	Neil	1599507	8/14/1992	M	61490
19	Data Processing	Evans	Marlena	1592913	6/4/1990	F	44330
20	Data Processing	Finn	Arnold	1594470	2/24/1991	M	40560
21	Data Processing	Horton	Alice	1598482	9/30/1987	F	38350
22	Data Processing	Howard	Rae Ann	1588939	1/4/1986	F	40560

Figure 15-7. Column widths adjusted to fully display column titles.

After adjusting the column widths, you should briefly inspect each field to ensure that Monarch has established the appropriate field type, either character, numeric, date, or memo. When importing data, Monarch sets the type for each field according to its type in the source database. However, only a subset of the field types available in many database applications is supported, so it maps subtypes to the corresponding base type.

For example, MS-Access supports several numeric field types, including Byte, Integer, Long Integer, Single, Double, etc. Monarch supports only Numeric, with General, Thousands, Currency, Percentage and Time Span formats that determine how a number is represented on screen. When you import a numeric field from an MDB file, Monarch will always set the field type to Numeric and will assign to it a format type of General.

You should inspect each numeric field to ensure that its type and other properties are set appropriately. The Net Income field is the only numeric field in our imported data set. Let's inspect this field's properties.

3. Double-click on the Net Income field to display the Field Properties dialog.

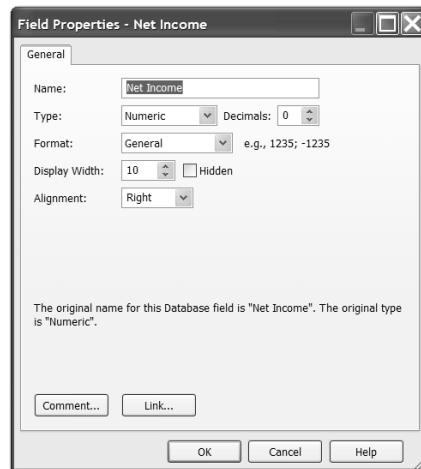


Figure 15-8. Field properties for the Net Income field.

Note that the field type is set to Monarch's basic Numeric type (e.g., General) and that the decimals setting is set to zero. Let's change the field format to Thousands and the decimals to 2.

4. Click the down arrow on the Format list to display the available field formats.

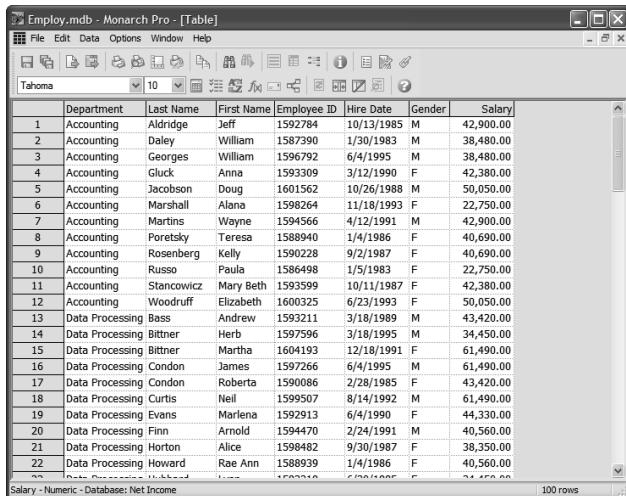
Note that Monarch displays only numeric field formats. For fields imported from a database, Monarch does not allow you to change the base field type (from Numeric to Character for example).

5. Select Thousands as the new field format.
6. Change the Decimals setting to **2**.

While we're here, let's change the name of this field to something more intuitive.

7. Change the field name to **Salary**.
8. Click the OK button to accept the changes to the field properties.

The Table is updated to reflect the changes.



The screenshot shows a window titled "Employ.mdb - Monarch Pro - [Table]". The window has a menu bar with File, Edit, Data, Options, Window, and Help. Below the menu is a toolbar with various icons. The main area is a grid table with columns labeled Department, Last Name, First Name, Employee ID, Hire Date, Gender, and Salary. The table contains 22 rows of data. At the bottom of the table, there is a status bar with the text "Salary - Numeric - Database: Net Income" and "100 rows".

	Department	Last Name	First Name	Employee ID	Hire Date	Gender	Salary
1	Accounting	Aldridge	Jeff	1592784	10/13/1985	M	42,900.00
2	Accounting	Daley	William	1587390	1/30/1983	M	38,480.00
3	Accounting	Georges	William	1596792	6/4/1995	M	38,480.00
4	Accounting	Gluck	Anna	1593309	3/12/1990	F	42,380.00
5	Accounting	Jacobson	Doug	1601562	10/26/1988	M	50,050.00
6	Accounting	Marshall	Alana	1598264	11/18/1993	F	22,750.00
7	Accounting	Martins	Wayne	1594566	4/12/1991	M	42,900.00
8	Accounting	Poretsky	Teresa	1588940	1/4/1986	F	40,690.00
9	Accounting	Rosenberg	Kelly	1590228	9/2/1987	F	40,690.00
10	Accounting	Russo	Paula	1586498	1/5/1983	F	22,750.00
11	Accounting	Stancowicz	Mary Beth	1593599	10/11/1987	F	42,380.00
12	Accounting	Woodruff	Elizabeth	1600325	6/23/1993	F	50,050.00
13	Data Processing	Bass	Andrew	1593211	3/18/1989	M	43,420.00
14	Data Processing	Bittner	Herb	1597596	3/18/1995	M	34,450.00
15	Data Processing	Bittner	Martha	1604193	12/18/1991	F	61,490.00
16	Data Processing	Condon	James	1597266	6/4/1995	M	61,490.00
17	Data Processing	Condon	Roberta	1590086	2/28/1985	F	43,420.00
18	Data Processing	Curtis	Neil	1599507	8/14/1992	M	61,490.00
19	Data Processing	Evans	Marlena	1592913	6/4/1990	F	44,330.00
20	Data Processing	Finn	Arnold	1594470	2/24/1991	M	40,560.00
21	Data Processing	Horton	Alice	1598482	9/30/1987	F	38,350.00
22	Data Processing	Howard	Rae Ann	1588939	1/4/1986	F	40,560.00

Figure 15-9. Salary field adjusted.

## Storing Import Parameters in a Model File

After making adjustments to the imported fields, it's a good idea to save your changes to a Monarch model file. The model file records the original name for each imported field, along with the Monarch field name and properties you assigned. By applying the model the next time you import data from the same database, Monarch preserves the work you did in this session. Let's save a model file and then reload the session using the model.

1. Select File, Save Model As (ALT, F, A).

The Save Model As dialog appears.

2. Type **Import** in the File name box, then click the Save button to save the model file.
3. Select File, Exit to exit the Monarch session.

A message dialog displays, prompting you to save the project. Let's save the project.

4. Click the Yes button to display the Save Project As dialog.
5. In the File Name field type **Lesson15**, then click Save.

Monarch saves the project file and closes.

## Opening the Model File

Now let's restart Monarch and import the data along with the model file.

6. Launch Monarch by selecting the Monarch item from the Windows Start menu.
7. Select File, Open Database (ALT, F, D).

The Database wizard appears.

8. Click the down arrow on the Data Source list to display a list of recently opened databases.
9. Select the Employ.mdb file from the list.

Now we'll open the model file to apply its parameters to the database.

10. Click the Model Browse button to display the Open Model dialog.
11. Select Import.xmod from the list of model files, then click the Open button.
12. Click the Next button to display the wizard's Tables and Queries screen.

Note that on the Tables and Queries screen the Employee Roster table is already selected (since this is the only table available).

13. Click the Next button to advance to the Sample Data screen.

This screen displays the columns in the Employ.mdb file.

14. Click the Next button to advance to the Import Columns screen.

Monarch applies the model parameters to the Import Columns screen. Note, for example, that in the Table Window Name column "Salary" has been assigned to the "Net Income" source field in the Source Name column).

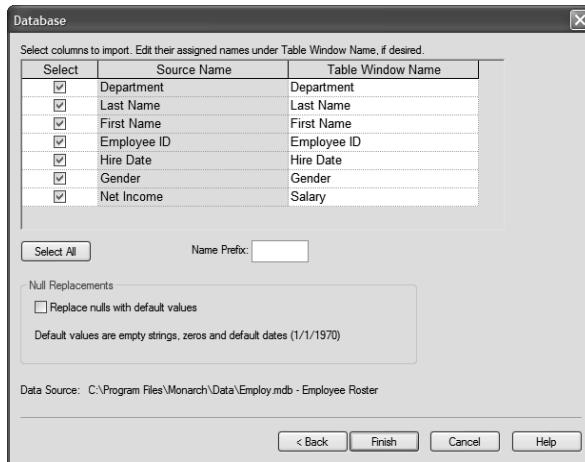


Figure 15-10. The Import Columns screen displays the effects of the Import model.

15. Click the Finish button to import the data and apply the model to it.

Monarch displays the imported data in its Table window (as in Figure 15-9).

16. Select File, Close All.

17. Choose No when prompted to save the project.

## Storing Import Parameters in a Project File

A project file can be used to save time when importing data and opening a model file (for detailed information on project files, see the Monarch help file, *Chapter 8 - Project Files*). The project file stores a reference to the data source, in this case the Employ.mdb file, along with a reference to the associated model file (Import.xmod).

---

**Note:** If you plan to use Monarch to frequently access data in external databases, you should use project files to store import parameters rather than model files, as project files store additional information that model files cannot, such as database connection information, import filters, etc.

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## Opening the Project File

Let's open the project file we recently saved (Lesson15.xprj) to see the advantages that projects provide over model files.

1. Choose File, Open Project (ALT, F, P) to display the Open Project dialog.
2. Select the Lesson15.xprj file, then choose Open.

Monarch opens the Employ.mdb file, applies the Import model to it and imports the data. The data displays in the Table window and you're ready to begin your Monarch session (see Figure 15-9).

3. Select File, Close All (ALT, F, C).

Creating a project file saved us several steps versus stepping through the Open Database wizard. To streamline the process further you could create an icon to launch Monarch and load the project automatically. See *Chapter 8 - Project Files, Launching a Project File from the Windows Desktop* in the Monarch help file for details on this procedure.

## Importing Data from an HTML File

One of the features that separates Monarch Pro from Monarch is its ability to utilize HTML files. With Monarch Pro you can import an HTML file and then create templates to extract data from it just as you would with a typical report.

When you import an HTML file, Monarch Pro parses it into a "Monarch friendly" format and adds markup which you may find helpful when trapping fields.

**Note:** Monarch Pro is best suited to work with dynamically generated HTML pages, such as those resulting from database queries.

Let's explore Monarch Pro's HTML capabilities.

1. Select File, Open Report (ALT, F, R) to display the Open Report dialog.
2. From the Files of type drop-down list, select HTML files (htm;html;asp).
3. Select the Airlines.htm file, then click the Open button.

Monarch Pro parses the HTML file and displays it in the Report window. Note the markup that Monarch Pro has added (e.g., "<Table-00..."). This markup can be used when trapping fields.

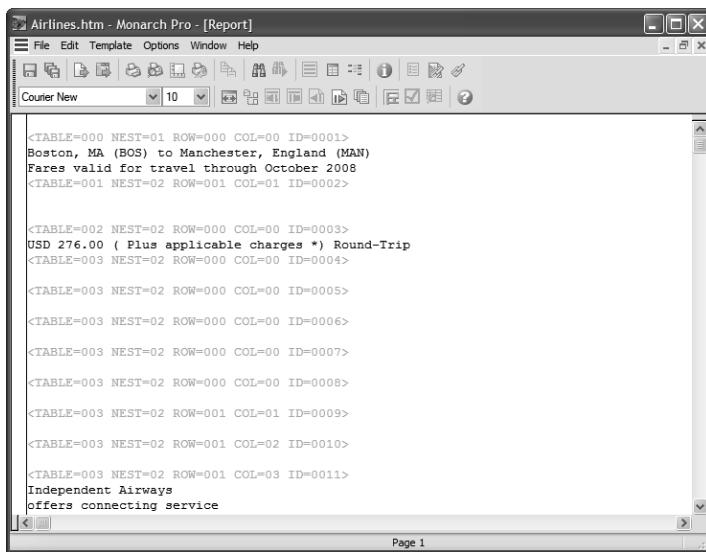


Figure 15-11. Viewing the Airlines.htm file.

Airlines.htm is a list of flights from Boston, MA to Manchester, England. It contains information such as the price of the flights, the airline providing them, and their earliest and latest travel and return dates.

Let's scroll down the report and look for an appropriate line with which to create a detail template. (Remember, a detail template is used for extracting information from the lowest report level.)

Notice that for each flight listed, the Latest Return information is the last given. This should do for our detail template, so let's begin by trapping the Latest Return information.

4. Locate one of the Latest Return lines in the report, and in the line selection area to the left of it, click and drag so that the Latest Return line, and the two lines below it, are highlighted.

**Note:** You can easily locate the Latest Return information via the Find in Report dialog by selecting the Edit, Find (ALT, E, F) menu option.

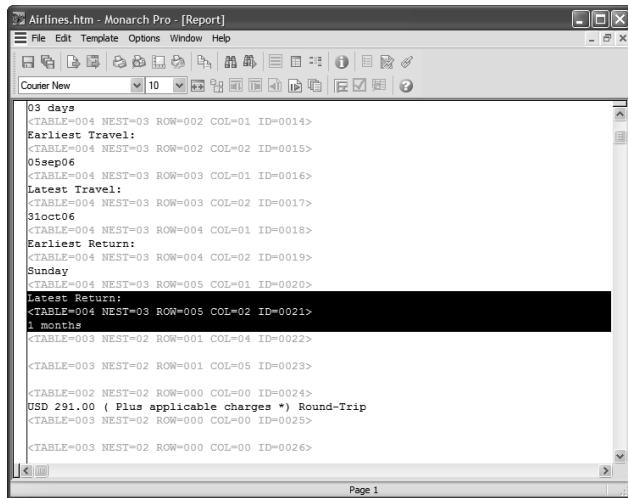


Figure 15-12. Highlighting the Latest Return information.

5. Select Template, New Template (ALT, T, N) to display the Template Definition dialog.
6. In the Trap box, type **latest return:** directly above its occurrence in the Sample box, then highlight the latest return information (e.g., "1 months") in the Sample box.

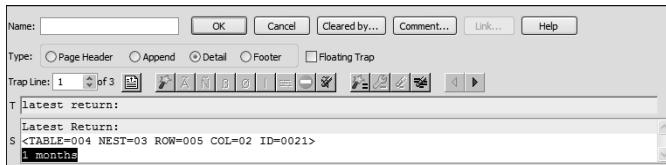


Figure 15-13. Specifying trap characters and highlighting a field.

7. Double-click on the highlighted field in the Sample box to display the Field Properties dialog.

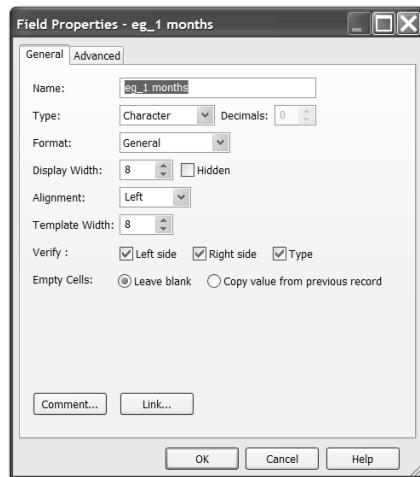


Figure 15-14. The Field Properties dialog.

8. Type **Latest Return** in the Name field, then click OK to close the Field Properties dialog.
9. Type **Latest Return** in the Name field on the Template Definition dialog, then click OK.

The Template Definition dialog closes and the Report window displays. Scroll down the report and note that all instances of the Latest Return information are now highlighted.

Now that we've defined our detail template, let's define some append templates to capture additional information from the HTML file.

10. Scroll down the report till you come to one of the price lines (e.g., USD 276.00), then click in the line selection area to highlight it.
11. Select Template, New Template to display the Template Definition dialog.
12. In the Trap box, type **USD** directly above its occurrence in the Sample box, then highlight the price in the Sample box.

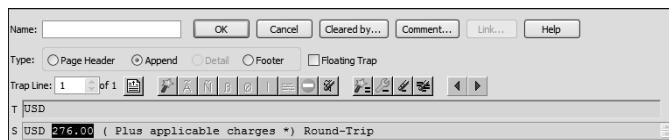


Figure 15-15. Trapping the Price field.

13. Double-click on the highlighted field in the Sample Line box to display the Field Properties dialog.

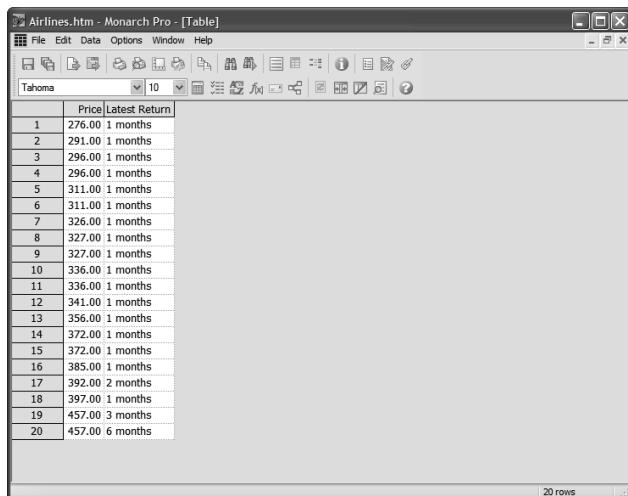
14. Type **Price** in the Name field, then click OK to close the Field Properties dialog.
15. Type **Price** in the Name field on the Template Definition dialog, then click OK.

The Template Definition dialog closes and the Report window displays. Scroll down the report and note that all instances of the flight price information are highlighted.

Let's see how the information we've trapped will look in the Table window.

16. Select Window, Table or click on the Table window button .

Monarch displays the two fields we've trapped as columns in the Table window. **Note:** To view the entire heading of the Latest Returns column, click on any cell in the column, then select the Edit, Autosize Column Widths option.



	Price	Latest Return
1	276.00	1 months
2	291.00	1 months
3	296.00	1 months
4	296.00	1 months
5	311.00	1 months
6	311.00	1 months
7	326.00	1 months
8	327.00	1 months
9	327.00	1 months
10	336.00	1 months
11	336.00	1 months
12	341.00	1 months
13	356.00	1 months
14	372.00	1 months
15	372.00	1 months
16	385.00	1 months
17	392.00	2 months
18	397.00	1 months
19	457.00	3 months
20	457.00	6 months

Figure 15-16. Viewing the fields in the Table window.

17. Click on the Report window button  to return to the Report window.
18. Using the same techniques that we used to trap the Latest Return and Price fields, try trapping some of the other fields in the HTML file (e.g., Earliest Return, Earliest Travel, Latest Travel, etc.).

When you've finished trapping as many fields as you want to, view them in the Table window to see how successful you were. If you want to save your work to a model, select File, Save Model As from the menu, enter a name for the model in the File name field, then click OK.

## Summary

In this lesson you learned how to import data from a database using Monarch Pro, how to use model files with imported data and how to use a project file to streamline the import process. You also learned how effective Monarch Pro can be at extracting data from HTML files.

For further reading, see the following sections of the Monarch help file:

Chapter 4 - Accessing Database Data with Monarch  
Importing Data from an External Database

Chapter 8 - Project Files  
Using project Files to Import Data

## LESSON 16

# Performing Lookups from an External Database

In this lesson we'll discuss external lookups, which allow you to add columns from an external database to the Monarch table. The lesson topics include:

- What is an external lookup?
- Creating an external lookup from a report.
- Storing lookup parameters in a model file.
- Creating a lookup from two different reports.
- Creating a lookup from two external databases.

## What is an external lookup?

An external lookup (in technical terms, a *left outer join*) combines information from two or more tables into a single table. External lookups are both powerful and easy to use. In Monarch, a lookup can be used to link two or more database sources together or to link a report to one or more database sources.

As an example, consider the tables on the following page. The first table lists employees in the Marketing department of a fictional company. This table includes each employee's name and the city where he or she lives. The second table lists employee compensation. Both tables share a common column, called Emp\_ID, designating a unique ID assigned to each employee. From the Marketing table, you could create a lookup, based upon the Emp\_ID column, to the Compensation table to find the salary and bonus for each employee in the Marketing department.

<b>Marketing table</b>				
<b>Emp_ID</b>	<b>Dept</b>	<b>Lastname</b>	<b>Firstname</b>	<b>City</b>
1597429	Marketing	April	Anne	Worcester
1607768	Marketing	Banning	David	Burlington
1593642	Marketing	Bartholemew	Anne	Brookfield
1605798	Marketing	Bradford	Eugene	Brookline
1588509	Marketing	Carlson	Stephen	Boston

<b>Compensation table</b>		
<b>Emp_ID</b>	<b>Salary</b>	<b>Bonus</b>
1587390	38,480.00	200.00
1588509	49,452.00	5,000.00
1593642	42,640.00	4,000.00
1596792	38,480.00	200.00
1597429	55,900.00	5,000.00
1604375	48,620.00	500.00
1605798	67,990.00	8,500.00
1607768	72,150.00	10,000.00

Figure 16-1. Marketing and Compensation tables with common Emp\_ID column.

To link data from two tables, you start by defining a lookup between the tables. A lookup connects the tables based upon one or more columns that appear in both tables. These columns, referred to as *link columns*, must include at least some values that are common to both tables. In our example, the Emp\_ID column would be suitable as a link column, as it contains values that are common to both the Marketing table and the Compensation table.

To link these two tables, you would start with the Marketing table, then create a lookup to the Compensation table on the Emp\_ID column. Then you select the Salary and Bonus columns to add to the Marketing table. The resulting table is shown in Figure 16-2.

<b>Marketing table</b>						
<b>Emp_ID</b>	<b>Dept</b>	<b>Lastname</b>	<b>Firstname</b>	<b>City</b>	<b>Salary</b>	<b>Bonus</b>
1597429	Marketing	April	Anne	Worcester	55,900.00	5,000.00
1607768	Marketing	Banning	David	Burlington	72,150.00	10,000.00
1593642	Marketing	Bartholemew	Anne	Brookfield	42,640.00	4,000.00
1605798	Marketing	Bradford	Eugene	Brookline	67,990.00	8,500.00
1588509	Marketing	Carlson	Stephen	Boston	49,452.00	5,000.00

Figure 16-2. Marketing Employees table with Salary and Bonus columns linked from Compensation table.

Note that only those records from the Compensation table that have corresponding Emp\_ID values in the Marketing table are included in the resulting table. Since the lookup was initiated from the Marketing table, only the records that appear in the Marketing table are included. Records in the Compensation table that have no corresponding Emp\_ID values in the Marketing table are ignored.

This behavior is unique to a lookup. In other types of joins, records from both tables are combined, with the resulting table having at least one record for each record in the contributing tables. Monarch doesn't support these types of joins, so no new records are added when joining data in Monarch.

## Creating an External Lookup from a Report

To illustrate Monarch Pro's database linking capability, we'll provide a simple example that starts with a slightly modified version of our familiar Classic report file, this one called Orders.prn. We'll apply a model file to extract data from the report into the Table window, then we'll create a lookup to an external database to add several columns to the table.

To get started, open Monarch and load Orders.prn and Lesson16.xmod.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R), select Orders.prn, then choose Open.

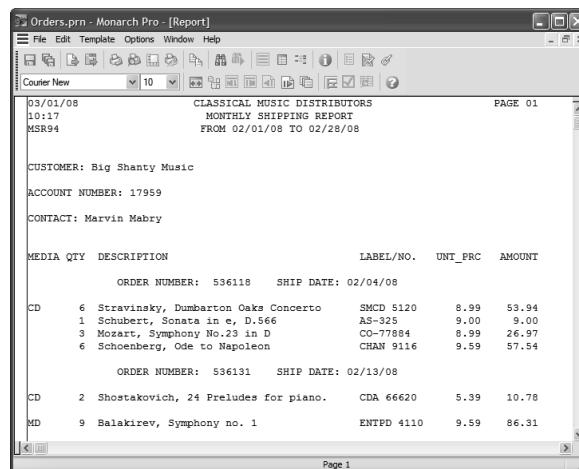
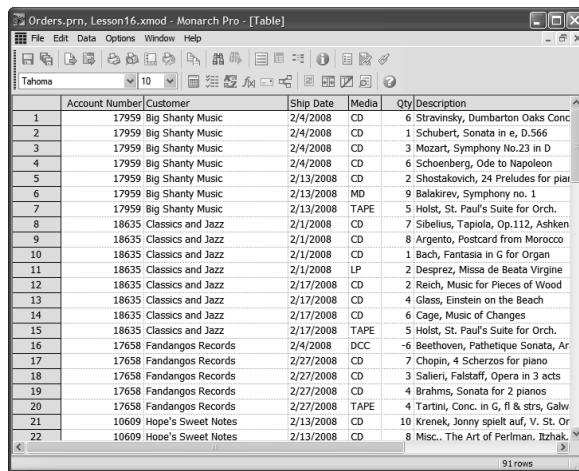


Figure 16-3. The Orders.prn report does not include customer address information.

Orders.prn is a modified version of Classic.prn. Since you're familiar with Classic.prn, you'll notice that we've removed the address information below each customer name. For the sake of this lesson, let's imagine that this report is always produced using only the customer name and that the customer addresses reside in a corporate database. After extracting data from the report using a standard Monarch model file, we'll use a lookup to retrieve the customer addresses from the database.

3. Select File, Open Model (ALT, F, M), select Lesson16.xmod, then choose Open.
4. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.



	Account Number	Customer	Ship Date	Media	Qty	Description
1	17959	Big Shanty Music	2/4/2008	CD	6	Stravinsky, Dumbarton Oaks Conc
2	17959	Big Shanty Music	2/4/2008	CD	1	Schubert, Sonata in e, D.566
3	17959	Big Shanty Music	2/4/2008	CD	3	Mozart, Symphony No.23 in D
4	17959	Big Shanty Music	2/4/2008	CD	6	Schoenberg, Ode to Napoleon
5	17959	Big Shanty Music	2/13/2008	CD	2	Shostakovich, 24 Preludes for piano
6	17959	Big Shanty Music	2/13/2008	MD	9	Balakirev, Symphony no. 1
7	17959	Big Shanty Music	2/13/2008	TAPE	5	Holst, St. Paul's Suite for Orch.
8	18635	Classics and Jazz	2/1/2008	CD	7	Sibelius, Tapiola, Op.112, Ashkenazi
9	18635	Classics and Jazz	2/1/2008	CD	8	Arcangelo, Postcard from Morocco
10	18635	Classics and Jazz	2/1/2008	CD	1	Bach, Fantasia in G for Organ
11	18635	Classics and Jazz	2/1/2008	LP	2	Desprez, Missa de Beata Virgine
12	18635	Classics and Jazz	2/17/2008	CD	2	Reich, Music for Pieces of Wood
13	18635	Classics and Jazz	2/17/2008	CD	4	Glass, Einstein on the Beach
14	18635	Classics and Jazz	2/17/2008	CD	6	Cage, Music of Changes
15	18635	Classics and Jazz	2/17/2008	TAPE	5	Holst, St. Paul's Suite for Orch.
16	17658	Fandangos Records	2/4/2008	DCC	-6	Beethoven, Pathetique Sonata, Argerich
17	17658	Fandangos Records	2/27/2008	CD	7	Chopin, 4 Scherzos for piano
18	17658	Fandangos Records	2/27/2008	CD	3	Salleri, Falstaff, Opera in 3 acts
19	17658	Fandangos Records	2/27/2008	CD	4	Brahms, Sonata for 2 pianos
20	17658	Fandangos Records	2/27/2008	TAPE	4	Tartini, Conc. in G, fl & str, Galway
21	10609	Hope's Sweet Notes	2/13/2008	CD	10	Krenek, Jonny spielt auf, V. St. Orlowsky
22	10609	Hope's Sweet Notes	2/13/2008	CD	8	Misc., The Art of Perlman, Itzhak

Figure 16-4. Extracted Report data displayed in Monarch's Table window.

The Table window includes all of the columns that we've extracted from the report including each customer's name and account number. We'll use the Account Number column to link to the Customer.mdb database, which holds the customer addresses.

5. Select Data, External Lookups from the menu, then click New on the External Lookups dialog (ALT, D, E, N).

The External Lookup wizard appears, displaying the Data Source screen. This wizard is similar to the Open Database wizard that we used in Lesson 15.

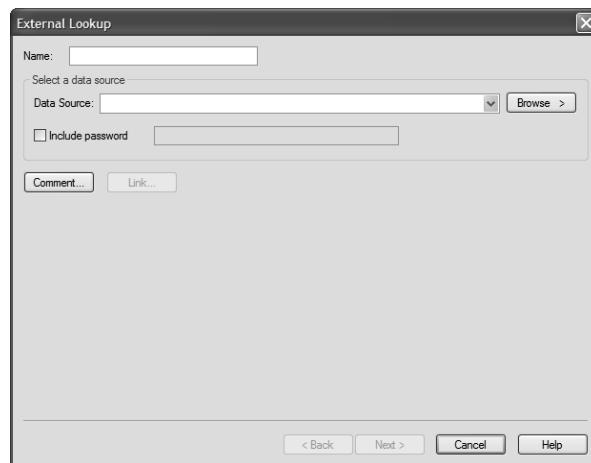


Figure 16-5. The Data Source screen of the External Lookup wizard.

The first wizard screen prompts you for the database to join to.

6. Click the Data Source Browse button and select the “Local or network file” option to indicate the data source type.

The Select File dialog appears.

7. Select the Customer.mdb file from the Monarch \Data folder (typically C:\Documents and Settings\All Users\Documents\Monarch\Data).
8. Click the Open button to select the data source.

Monarch displays the path to the Customer.mdb file in the External Lookup wizard’s Data Source box.

9. Click the Next button to advance to the next wizard screen.

The wizard’s Tables and Queries screen appears. This screen displays all of the database tables and queries that are available within the selected database. Tables are represented with a small icon image that looks like a data table. The icon for queries looks like a pair of eyeglasses. The list does not include system tables or queries which hold information about the database structure.

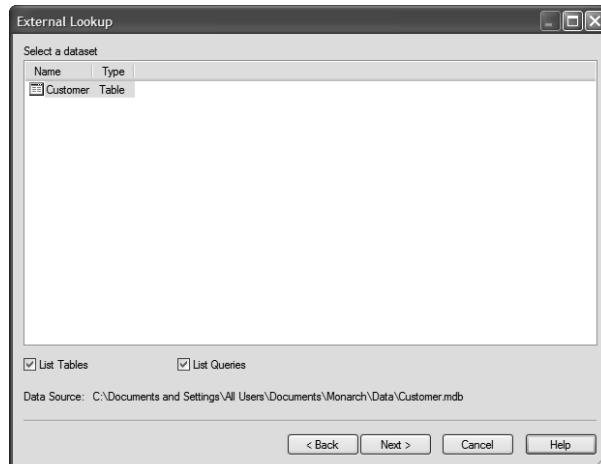


Figure 16-6. The Tables and Queries screen. Use this screen to select the database table or query from which the data will be imported.

Our sample Customer.mdb database file holds only a single database table, called Customer, which is already selected.

10. Click the Next button to advance to the next wizard screen.

The wizard's Sample Data screen appears. This screen displays a sample of the table data. (**Note:** When importing from a delimited text file, the Sample Data screen allows you to specify parameters for it, such as a delimiter character.)

Sample data:		<input type="radio"/> All columns	<input type="radio"/> Selected columns
Acct_Num	Address 1	Address 2	City
11887.000000	Muscaticle Plaza	200 Lower Muscaticle	Cedar Falls
17959.000000	3658 Springs Ferry	Suite C-130	Manetta
10929.000000	Hwy 17 at the 9 mile marke		Prospect
18635.000000	170 Rue de la Poste		Fleur-les-Aubrais
17658.000000	555 Elisabeth		San Antonio
13487.000000	Einkaufszentrum am Petrus	General-Schwarz-Straße 23	Bremen
10609.000000	800 East Danforth		Hope
12705.000000	Paseo de las Palmeras		Montevideo
11433.000000	57 Market Street		Cork
15091.000000	1 Rue du Rivage		Tombaine
18172.000000	Goldgasse 6		Wiesbaden
10073.000000	1709 Arbor Parkway		Ypsalirity
15844.000000	Jacob Obrechtstraat 22a		Amsterdam
16284.000000	363 Park St.		Chicago
15403.000000	12 Duke Street	Estover	Plvmorlth

Figure 16-7. The Sample Data screen.

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**Note:** If we wanted to apply an import filter to the data, we could do so by selecting the Apply Filter check box, clicking the Change button, and then specifying a filter via the Source Filter dialog.

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11. Click the Next button to advance to the next wizard screen.

The wizard's Link Columns screen appears. We'll use this screen to establish an external lookup between the external database and the Monarch.

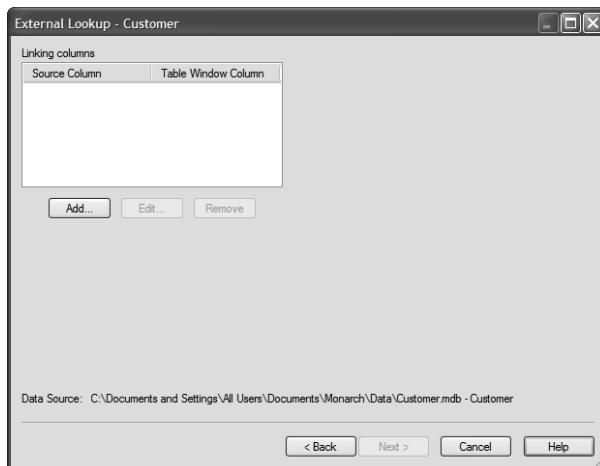


Figure 16-8. The Link Columns screen. Use this screen to link the Monarch table and the external database.

12. Click the Add button to specify the columns to use in the external lookup.

The Select Columns to Link dialog displays (see Figure 16-9).

13. Select **Acct\_Num** from the Source Column drop-down list.

14. Select **Account Number** from the Table Window Column drop-down list.

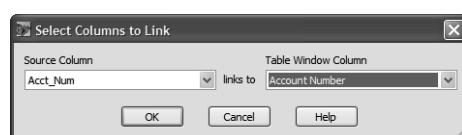
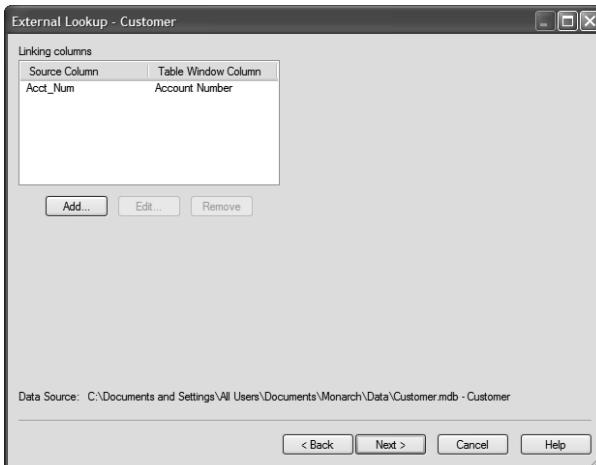


Figure 16-9. The Select Columns to Link dialog.

The Acct\_Num and Account Number columns are actually the same column. Each column holds the unique account number assigned to each customer. The column names are not required to be the same, but they must be of the same type (character, numeric, or date), and they must contain matching values that can be used to create a relationship between the two tables.

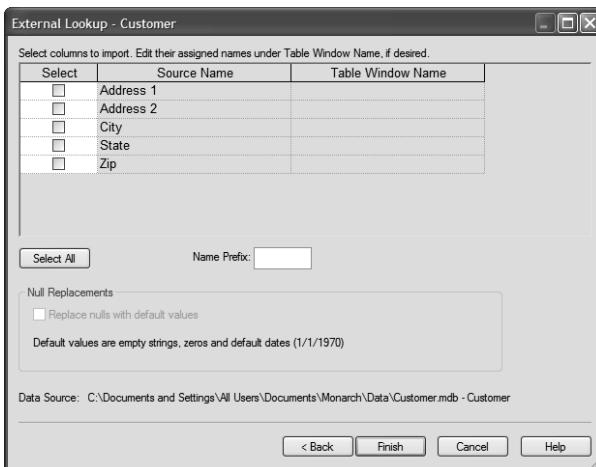
15. Click the OK button to close the dialog.

The selected columns are displayed in the Linking Columns list.



*Figure 16-10. Columns used to form an external lookup do not need to have the same name.*

16. Click the Next button to advance to the wizard's Import Columns screen.



*Figure 16-11. The Import Columns screen includes all available database columns that can be imported into Monarch.*

Use this screen to select the columns to import into Monarch (i.e., the linked columns). This screen lists the names of all columns that are available in the selected database table or view, except for those columns you used to define the lookup. Since we want to import the entire address for each customer, we'll use the Select All button to select all of the available columns.

17. Click the Select All button to import all columns.

Default names, taken from the source columns, are assigned to the import columns and are displayed under the Table Window Name heading. These are the names that will be assigned to the columns when you import them into Monarch.

**Note:** You can manually edit the import column names by clicking on them. You can also add a name prefix to one or more of the import column names. To do so, however, you must enter the prefix in the Name Prefix box *before* selecting any of the columns to import. After specifying the prefix, you can then either click the Select All button or select individual columns via their check boxes. The names for the columns you chose to import will then be displayed, preceded by the name prefix (e.g., if you specified a Name Prefix of "Test", for example, the import column name for the "Address 1" source column would be "TestAddress 1").

18. Click the Finish button to apply the wizard settings and close the wizard, then click the OK button on the External Lookups dialog.

Monarch links the external database table to the Monarch table, adding the selected columns to the table window as linked columns.

19. Scroll right to view the linked columns.

	Amount	Address 1	Address 2	City	State	Zip
1	53.94	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
2	9.00	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
3	26.97	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
4	57.54	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
5	10.78	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
6	86.31	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
7	29.95	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
8	41.93	170 Rue de la Poste		Fleury-les-Aubrais		45400
9	163.04	170 Rue de la Poste		Fleury-les-Aubrais		45400
10	6.59	170 Rue de la Poste		Fleury-les-Aubrais		45400
11	15.58	170 Rue de la Poste		Fleury-les-Aubrais		45400
12	17.98	170 Rue de la Poste		Fleury-les-Aubrais		45400
13	143.80	170 Rue de la Poste		Fleury-les-Aubrais		45400
14	53.94	170 Rue de la Poste		Fleury-les-Aubrais		45400
15	29.95	170 Rue de la Poste		Fleury-les-Aubrais		45400
16	-35.94	555 Elisabeth		San Antonio	TX	78250
17	37.73	555 Elisabeth		San Antonio	TX	78250
18	48.48	555 Elisabeth		San Antonio	TX	78250
19	31.16	555 Elisabeth		San Antonio	TX	78250
20	23.96	555 Elisabeth		San Antonio	TX	78250
21	65.90	800 East Danforth		Hope	AR	71801
22	307.20	800 East Danforth		Hope	AR	71801

Figure 16-12. The customer address columns are added to each record in the Monarch table (column widths have been autosized).

You can use linked fields just like any other fields in Monarch. Linked fields can be used in filter, sort, calculated field, and summary definitions and can be printed or exported along with fields that you extract from a report.

## Storing Lookup Parameters in a Model File

Lookup parameters can be saved in a Monarch model file along with other information about your Monarch session. When you load the model file, the lookup parameters are used to re-establish the lookup with the external database.

Storing lookup parameters in a model file is easy. You simply save the model file. That's all there is to it. The model file records the name of the lookup database along with the fields used to establish the lookup and the fields you linked to the Monarch table. By applying the model in a future Monarch session, Monarch preserves the work you did in this session. Let's save a model file and then reload the session using the model.

1. Select File, Save Model As (ALT, F, A).

The Save Model As dialog appears.

2. Type **Lookup** in the file name box, then click the Save button to save the model file.
3. Select File, Close All (ALT, F, C) to end the current Monarch session.

## Opening the Model File

Now let's load the report and model file.

4. Select File, Open Report (ALT, F, R), select Orders.prn, then choose Open.
5. Select File, Open Model (ALT, F, M), select the Lookup.xmod model file, then choose Open.
6. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.

Monarch uses the model to extract fields from the report file, then opens the Customer.mdb file and establishes the lookup to the Customer Addresses table, importing the address fields into the table (see Figure 16-12).

7. Select File, Close All (ALT, F, C) to close the report and model.

## Creating a Lookup from Two Different Reports

While Monarch's linking capability is very useful if you happen to have access to a database that includes the information you need, what if your data resides in two different reports? You may have already guessed the answer. Using Monarch's export capability you can create a database file from one

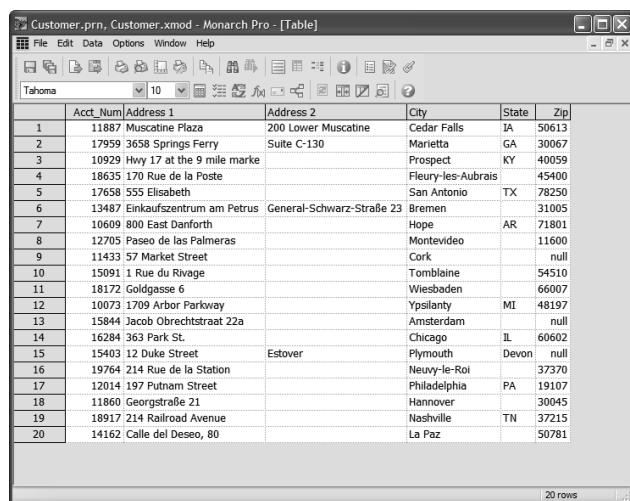
report, start a new Monarch session to extract data from the second report, and then create a lookup to the exported database file. While this involves a two-pass approach, it's relatively easy to do.

Let's imagine that we don't have access to the database of customer address information that we used in the previous example. Instead, we have the Orders.prn report and another report, called Customer.prn, that lists all of our customers. Let's use Monarch to link information from these two reports.

## Using a Report to Create a Lookup File

We'll start by opening the Customer report, applying a model to extract the customer address and account number fields, and exporting these fields to a database file. We'll use this file as a lookup file which we'll link to the Orders.prn report.

1. Select File, Open Report (ALT, F, R), select Customer.prn, then choose Open.
2. Select File, Open Model (ALT, F, M), select Customer.xmod, then choose Open.
3. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.



The screenshot shows the Monarch Pro Table window titled "Customer.prn, Customer.xmod - Monarch Pro - [Table]". The window displays a grid of data with columns: Acct\_Num, Address 1, Address 2, City, State, and Zip. The data consists of 20 rows of customer information. The "Address 1" column contains various street addresses, and the "Address 2" column contains suite numbers like "Suite C-130". The "City" column includes names like Cedar Falls, Marietta, Prospect, and Fleur-les-Aubrais. The "State" column includes IA, GA, KY, TX, AR, and IL. The "Zip" column includes 50613, 30067, 40059, 45400, 78250, 31005, 71801, 11600, null, 54510, 66007, 48197, null, 60602, null, 37370, 19107, 30045, 37215, and 50781. The "Acct\_Num" column lists numbers from 1 to 20.

Figure 16-13. Customer address fields extracted from report.

The Table window includes all of the columns that we've extracted from the report including each customer's name, account number, and address. Now we'll export the table to a database file.

4. Select File, Export.

The Export wizard's General screen displays.

5. Click the Next button.

The Export wizard's Table View screen displays.

6. Click the Next button to display the Output File screen. Type **Lesson16.mdb** in the Save as box, then click the Next button

The Table Info screen displays. Use this screen to name the database table where the customer's addresses will be stored.

7. Type **Customer Addresses** in the Table Name field, then click the Run button.

A progress dialog displays. Monarch displays "Export(s) Completed" at the top of the dialog when the export is finished.

8. Click OK to close the progress dialog.

## Linking to the Lookup File

Now that the first report has been exported to a database file, it's time to load the second report and link to it.

1. Select File, Close All (ALT, F, C) to reset the Monarch session.
2. Select File, Open Report (ALT, F, R), select Orders.prn, then choose Open.
3. Select File, Open Model (ALT, F, M), select Lesson16.xmod, then choose Open.
4. Select Window, Table (ALT, W, T) or choose the Table window button  on the toolbar.

	Account Number	Customer	Ship Date	Media	Qty	Description
1	17959	Big Shanty Music	2/4/2008	CD	6	Britten, Pumbleton Ode; Concerto
2	17959	Big Shanty Music	2/4/2008	CD	1	Schubert, Sonata in e, D.566
3	17959	Big Shanty Music	2/4/2008	CD	3	Mozart, Symphony No.23 in D
4	17959	Big Shanty Music	2/4/2008	CD	6	Schoenberg, Ode to Napoleon
5	17959	Big Shanty Music	2/13/2008	CD	2	Shostakovich, 24 Preludes for piano
6	17959	Big Shanty Music	2/13/2008	MD	9	Babikov, Symphony no. 1
7	17959	Big Shanty Music	2/13/2008	TAPE	5	Holst, St. Paul's Suite for Orch.
8	18635	Classica and Jazz	2/1/2008	CD	7	Sibelius, Tapiola, Op.112, Ashkenaz
9	18635	Classica and Jazz	2/1/2008	CD	8	Argento, Postcard from Morocco
10	18635	Classica and Jazz	2/1/2008	CD	1	Bach, Fantasia in G for Organ
11	18635	Classica and Jazz	2/1/2008	LP	2	Dvorak, Massalini, Beethoven, Virgine
12	18635	Classica and Jazz	2/17/2008	CD	2	Gershwin, Music for Pictures of Wood
13	18635	Classica and Jazz	2/17/2008	CD	4	Glass, Einstein on the Beach
14	18635	Classica and Jazz	2/17/2008	CD	6	Cage, Music of Changes
15	18635	Classica and Jazz	2/17/2008	TAPE	5	Holst, St. Paul's Suite for Orch.
16	17658	Fandangos Records	2/4/2008	DCC	6	Beethoven, Pathetique Sonata, Arc
17	17658	Fandangos Records	2/27/2008	CD	7	Chopin, 4 Scherzo for piano
18	17658	Fandangos Records	2/27/2008	CD	3	Salek, Falstaff, Opera in 3 acts
19	17658	Fandangos Records	2/27/2008	CD	4	Brahms, Sonata for 2 pianos
20	17658	Fandangos Records	2/27/2008	TAPE	4	Tartini, Concerto G, fl & str, Galway
21	10609	Hope's Sweet Notes	2/13/2008	CD	10	Krenek, Jonny spielt auf, V. St. Orc
22	10609	Hope's Sweet Notes	2/13/2008	CD	8	Prokofiev, Lieutenant Kijinsky, Izhak, v
23	10609	Hope's Sweet Notes	2/13/2008	DCC	10	Britten, Adagio for Strings, NZSO
24	10609	Hope's Sweet Notes	2/13/2008	TAPE	5	Britten, War Requiem
25	10609	Hope's Sweet Notes	2/14/2008	CD	9	Beethoven, 3rd Sym, Karajan, Berlin
26	10609	Hope's Sweet Notes	2/14/2008	CD	4	Stravinsky, Pulcinella, Bernstein, NY

Figure 16-14. Orders.prn report data to be linked with data exported from Customer.prn.

Now we're ready to link to the database file we created and pull in the address information for each customer.

5. Select Data, External Lookups (ALT, D, E) to display the External Lookups dialog.
6. Click the New button to display the External Lookup wizard.
7. Click the Browse button and select the "Local or Network File" option to display the Select File dialog.
8. Select the Lesson16.mdb file from the Monarch \Export folder, then click the Open button.

Monarch displays the path to the Lesson16.mdb file in the wizard's Data Source box.

9. Click the Next button to advance to the wizard's Tables and Queries screen.

The Customer Addresses table is already selected.

10. Click the Next button to advance to the wizard's Sample Data screen.
11. Click the Next button to advance to the wizard's Link Columns screen.
12. Click the Add button to display the Select Columns to Link dialog.
13. Select Acct\_Num from the Source Column drop-down list.
14. Select Account Number from the Table Window Column drop-down list.
15. Click the OK button to close the dialog.

The selected columns are displayed in the Linking Columns list.

16. Click the Next button to advance to the Import Columns screen.
17. Click the Select All button to import all columns, click the Finish button to apply the wizard settings, then click the OK button to close the External Lookups dialog.

Monarch links the Customer Addresses table to the Monarch table, adding the address columns to the table window as linked columns (you may need to scroll to the right to view the address columns).

	Amount	Address 1	Address 2	City	State	Zip
1	53.94	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
2	9.00	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
3	26.97	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
4	57.54	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
5	10.78	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
6	86.31	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
7	29.95	3658 Springs Ferry	Suite C-130	Marietta	GA	30067
8	41.93	170 Rue de la Poste		Fleury-les-Aubrais		45400
9	163.04	170 Rue de la Poste		Fleury-les-Aubrais		45400
10	6.59	170 Rue de la Poste		Fleury-les-Aubrais		45400
11	15.58	170 Rue de la Poste		Fleury-les-Aubrais		45400
12	17.98	170 Rue de la Poste		Fleury-les-Aubrais		45400
13	143.80	170 Rue de la Poste		Fleury-les-Aubrais		45400
14	53.94	170 Rue de la Poste		Fleury-les-Aubrais		45400
15	29.95	170 Rue de la Poste		Fleury-les-Aubrais		45400
16	-35.94	555 Elisabeth		San Antonio	TX	78250
17	37.73	555 Elisabeth		San Antonio	TX	78250
18	48.48	555 Elisabeth		San Antonio	TX	78250
19	31.16	555 Elisabeth		San Antonio	TX	78250
20	23.96	555 Elisabeth		San Antonio	TX	78250
21	65.99	800 East Danforth		Hope	AR	71801
22	307.20	800 East Danforth		Hope	AR	71801

Figure 16-15. Customer addresses linked to Orders.prm report data (column widths autosized).

We started with two disparate reports and ended with data from both reports linked together in the Table window.

18. Select File, Close All to reset the Monarch session (select No when prompted to save changes to the model).

## Creating a Lookup from Two External Databases

In the previous sections, we demonstrated how you can link data from an external database to data extracted from a report. This is useful when a single report doesn't include all of the data you need. But you can also use Monarch Pro to combine data from two databases, without ever loading a report file.

To see how this process works, let's return to the example from the beginning of this lesson. In that example, we showed how you could link fields from an employee compensation table to an employee roster table.

The employee roster table is called Marketing since it stores information only about employees in the Marketing department. The employee compensation table is called Compensation. This table stores salary and bonus information for all employees for the entire company.

## Importing Database Data

We'll start by importing data from the Marketing table. This table resides in the Beantown.mdb file (the name of our fictional company is Bean Town Investments). The compensation table resides in a file called Payroll.mdb. We'll create a lookup to this table in order to add the Salary and Bonus field for each employee.

1. Select File, Open Database (ALT, F, D).

The Open Database wizard appears.

2. Click the Data Source Browse button and select the "Local or Network File" option.

The Select File dialog appears.

3. Select the Beantown.mdb file from the Monarch \Data folder (typically C:\Documents and Settings\All Users\Documents\Monarch\Data).

4. Click the Open button to open the data source.

Monarch displays the path to the Beantown.mdb file in the Open Database wizard's Data Source box.

5. Click the Next button to advance to the wizard's Tables and Queries screen.

This screen displays all of the database tables and queries that are available within the selected database.

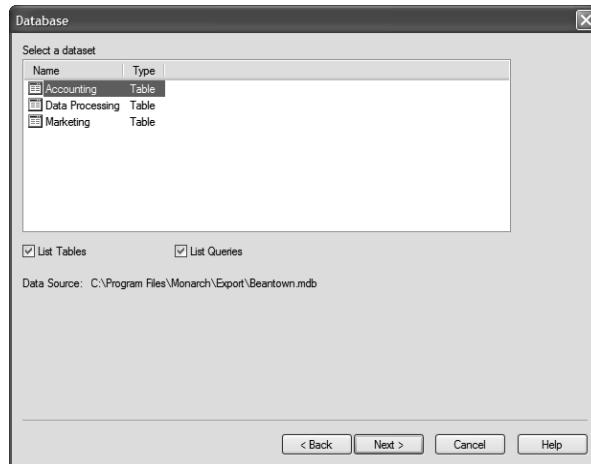


Figure 16-16. Beantown.mdb database tables.

6. Select the Marketing table from the list of available tables.
  7. Click the Next button to advance to the wizard's Sample Data screen.
  8. Click the Next button to advance to the wizard's Import Columns screen.
- This screen lists the names of the database columns that are available in the selected Marketing table.
9. Click the Select All button to select all of the available columns.
  10. Click the Finish button to apply the wizard settings.

Monarch opens its Table window and populates it with data imported from the Beantown.mdb file's Marketing table.

	Department	Last Name	First Name	Emp_ID	Hire Date	Gender
1	Marketing	April	Anne	1597429	10/23/1983	F
2	Marketing	Banning	David	1607768	12/18/1993	M
3	Marketing	Bartholemew	Anne	1593642	11/18/1983	F
4	Marketing	Bradford	Eugene	1605798	7/24/1995	M
5	Marketing	Carlson	Stephen	1588509	3/4/1985	M
6	Marketing	Carpenter	Rae Ann	1588699	6/30/1985	F
7	Marketing	Chandler	Liz	1588291	5/4/1984	F
8	Marketing	Cohen	Danny	1595028	12/1/1987	M
9	Marketing	Connelly	William	1593726	3/12/1990	M
10	Marketing	Desmarais	Jeff	1593219	4/4/1991	M
11	Marketing	Fallon	Joshua	1596297	1/5/1995	M
12	Marketing	Hampsted	Armstrong	1593898	3/18/1989	M
13	Marketing	Hendrickson	Robert	1589538	9/2/1986	M
14	Marketing	Hill	Francis	1606310	9/30/1987	F
15	Marketing	Horgan	Maggie	1598135	2/28/1994	F
16	Marketing	Ingle	George	1589165	5/2/1986	M
17	Marketing	Leiberman	Teresa	1590496	7/3/1987	F
18	Marketing	Manfretti	Joseph	1598740	8/23/1989	M
19	Marketing	Marshall	Alex	1597890	10/23/1983	M
20	Marketing	Mendleson	Paula	1593345	7/18/1985	F
21	Marketing	Palentier	Joshua	1593374	7/18/1985	M
22	Marketing	Pappas	Julie	1598131	8/20/1986	F

Figure 16-17. Monarch's Table window is populated with the data imported from Beantown.mdb, Marketing.

## Linking Database Data

Now we'll link to the Compensation table to add the salary and bonus information for each employee.

1. Select Data, External Lookups, New (ALT, D, E, N).

The External Lookup wizard appears (see Figure 16-5).

2. Click the Data Source Browse button and select the "Local or Network File" option.

The Select File dialog appears.

3. Select the Payroll.mdb file from the Monarch \Data folder, then click the Open button.

Monarch displays the path to the Payroll.mdb file in the wizard's Data Source box.

4. Click the Next button to advance to the wizard's Tables and Queries screen.

This screen displays all of the database tables and queries that are available within the selected database. The Compensation table is the only table available, so it is already selected.

5. Click the Next button to advance to the wizard's Sample Data screen.
6. Click the Next button to advance to the wizard's Link Columns screen (see Figure 16-18).

Monarch automatically links the two Emp\_ID columns and adds them to the Linking Columns list.

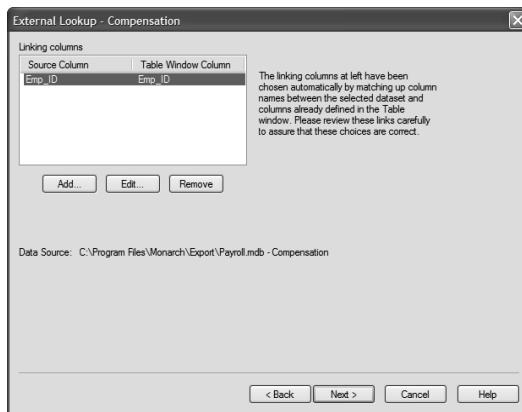


Figure 16-18. Emp\_ID fields are used to form the join relationship.

7. Click the Next button to advance to the wizard's Import Columns screen.

8. Click the Select All button to import both the Salary and Bonus fields.
9. Click the Finish button to apply the wizard settings, then Click the OK button to close the External Lookups dialog.

Monarch links the external database table to the Monarch table, adding the selected columns to the table window as linked columns.

The screenshot shows a software application window titled "Beantown.mdb - Monarch Pro - [Table]". The menu bar includes File, Edit, Data, Options, Window, and Help. The toolbar contains various icons for file operations like Open, Save, Print, and Database. The main area displays a table with 26 rows of data. The columns are labeled: Department, Last Name, First Name, Emp\_ID, Hire Date, Gender, Salary, and Bonus. The data represents employees from the Marketing department, with their names, hire dates, genders, and calculated salary and bonus values.

	Department	Last Name	First Name	Emp_ID	Hire Date	Gender	Salary	Bonus
1	Marketing	April	Ann	1597429	10/23/1983	F	55900	8400
2	Marketing	Banning	David	1607768	12/18/1993	M	72150	10800
3	Marketing	Bartholemew	Anne	1593642	11/18/1983	F	42640	6400
4	Marketing	Bradford	Eugene	1605798	7/24/1995	M	67990	10200
5	Marketing	Carlson	Stephen	1588509	3/4/1985	M	49452	7400
6	Marketing	Carpenter	Rae Ann	1598699	6/30/1985	F	69290	10400
7	Marketing	Chandler	Liz	1588291	5/4/1984	F	63570	9500
8	Marketing	Cohen	Danny	1595028	12/12/1987	M	43940	6600
9	Marketing	Connelly	William	1593726	3/12/1990	M	55900	8400
10	Marketing	Desmarais	Jeff	1593219	4/4/1991	M	30550	4600
11	Marketing	Fallon	Joshua	1596297	1/5/1995	M	69290	10400
12	Marketing	Hampsted	Armstrong	1593898	3/18/1989	M	58240	8700
13	Marketing	Hendrickson	Robert	1589538	9/2/1986	M	47775	7200
14	Marketing	Hill	Francis	1606310	9/30/1987	F	72150	10800
15	Marketing	Horgan	Maggie	1598135	2/28/1994	F	61100	9200
16	Marketing	Ingles	George	1589165	5/2/1986	M	42510	6400
17	Marketing	Leiberman	Teresa	1590496	7/3/1987	F	49725	7500
18	Marketing	Manfretti	Joseph	1598740	8/23/1989	M	47775	7200
19	Marketing	Marshal	Alex	1597890	10/23/1983	M	58240	8700
20	Marketing	Mendelson	Paula	1593345	7/18/1985	F	49452	7400
21	Marketing	Poletner	Joshua	1593374	7/18/1985	M	49725	7500
22	Marketing	Pappas	Iulie	1598131	8/20/1986	F	67990	10200

Figure 16-19. Salary and Bonus information is added to each record in the Monarch table.

10. Select File, Save Model As (ALT, F, A).
11. Type **Compensation** in the File name box, then click the Save button to save the model file.
12. Select File, Exit (ALT, F, X). **Note:** If prompted to save changes to the project file, select "No".

The model file stores the lookup parameters along with the import parameters. However, the model file does not store the name of the import database. To restore the session use the Open Database wizard to select the Beantown.mdb file and the Compensation model on the Data Source screen, click the Next button three times, then click the wizard's Finish button to display the Table window.

Note that on the Tables and Queries screen you may select any of the three employee roster tables (Accounting, Data Processing, or Marketing). The model will work equally well regardless of which table you select. That's why the data source is not stored in the model file; the model can be used with any compatible data source. This is similar to how models store information about a report. The report name is not stored in the model so that the model can be used with multiple reports (as long as the reports all have a compatible format).

## Summary

In this lesson you learned how Monarch links data from an external database to add columns to the Monarch Table window. You also learned how lookup parameters are stored in a model file and how to use a lookup to link data from two different reports.

For further reading, see the following sections of the Monarch help file:

Chapter 4 - Accessing Database Data with Monarch  
Performing Lookups

Chapter 8 - Project Files



## LESSON 17

# Working with PDF and XPS Files

In this lesson we'll explore Monarch's ability to utilize PDF and XPS files. The lesson topics include:

- Importing a PDF file into Monarch.
- Customizing the PDF import options.
- Exporting to a PDF file.
- Importing XPS files.

## Importing a PDF File into Monarch

Monarch Pro Version 8 introduced the ability to convert PDF files into ANSI text so that they can be utilized like any normal text report in Monarch. You can then create data extraction templates to extract information in exactly the same way as you would approach a text report file.

PDF is an open standard, so there are thousands of different applications that create PDF files using many different techniques. This has the side effect of having PDF files that may look identical on screen, but are structurally very different internally.

Monarch uses very sophisticated techniques to analyze and reformat the data, in order to produce the best possible "Monarch-friendly" results to enable accurate trapping after importing the data.

However, there may be some badly formatted and unusual PDF files that do not convert accurately enough to trap easily in Monarch. Files that do not convert perfectly, however, may still be processed very effectively by Monarch via features such as the floating trap and calculated fields.

Let's begin this lesson by importing a PDF file into Monarch.

1. Select the Monarch item from the Windows Start menu.
2. Select File, Open Report (ALT, F, R) to display the Open Report dialog.

- Select the PDF files (pdf) option from the Files of Type drop-down list, select the Classic.pdf file, then click the Open button.

Monarch opens the PDF Import Options dialog, which displays a sample of the PDF file's data.

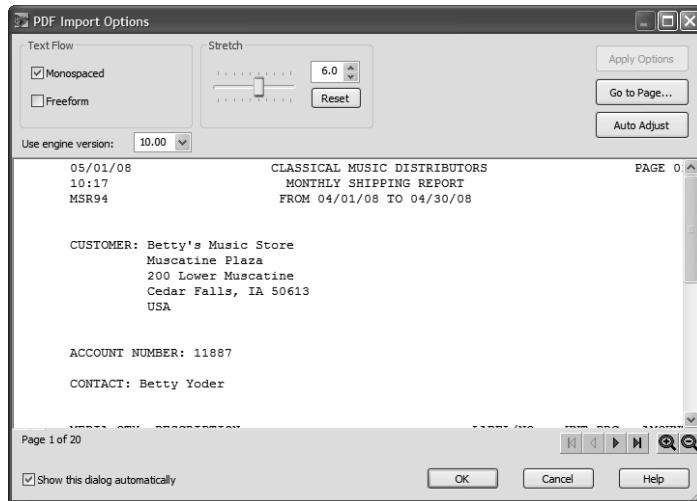


Figure 17-1. The PDF Import Options dialog.

Let's enlarge the dialog so that we can view more of the PDF file's data.

- Click on the lower right corner of the dialog and drag down and to the right until the dialog is the desired size.

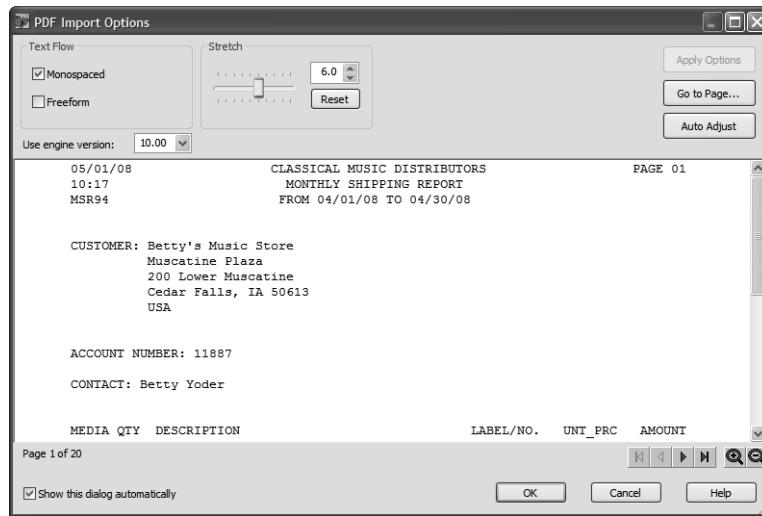


Figure 17-2. Viewing the enlarged dialog.

As we can see, Classic.pdf is a PDF version of the Classic.prn report, which we are already familiar with.

When opening a PDF, Monarch performs an analysis of the file to try and determine the optimum method of transforming the data accurately. In most cases, Monarch's auto-detection routines will produce the best results, but under certain conditions, adjustments to the PDF import options may be necessary. For example, the following conditions may require the PDF import options to be adjusted:

- The PDF contains tables with tightly compacted columns.
- The PDF contains multiple font sizes and the data of interest is in a smaller font than most of the other text in the PDF, thereby causing the auto-calculated font size to be too large.
- Mixed mono- and variable-spaced fonts exist in the PDF where the data of interest uses monospaced fonts.
- Mixed freeform and tabular data exist in the PDF.

Let's examine more closely the PDF import options, and how adjusting them will affect the data transformation.

### Stretch Option

The stretch option governs how much spacing is used during the conversion process. When Monarch analyzes the PDF file, it tries to match the spacing as far as possible to the original document, but there are many factors that can make it necessary to introduce more spacing into the conversion than appears to exist in the original PDF file. Such factors can include hidden data in the PDF, i.e., data which is not visible on screen but still exists within the PDF file itself. This can be the result of columns that truncate the data, for example. At first glance, it is not apparent that any data is missing, but Monarch will convert all the data in the PDF file, not just what might be visible in a PDF viewing application. In this case, in order to try and maintain a proper column justification, Monarch will have to recalculate and pad the spacing, as the original column spacing would not be enough to hold the data safely.

In general, Monarch's behavior is to use a larger amount of spacing (i.e., a higher stretch value) than in the original document. This can make the document look like it is stretched wider than the original PDF, but Monarch errs on the side of caution, so that columns do not run into each other in the current document. This is also done so that if a later iteration of the same report (or a similar one) contains wider data values, the model will still "work" with it.

If you know your reports well, then you can decrease the stretch value to make the reports look more presentable by avoiding horizontal scrolling or very small font sizes in the Report Window.

### **Monospaced option**

Monospaced refers to the fact that a monospaced font was used in the PDF. The Monarch Report window uses monospaced fonts, which are fonts in which each character has the same width. For example, in a monospaced font, the “o” and “i” characters would have the same width (i.e., they would take up the same amount of horizontal space on a line). Other terms for monospaced are fixed-width and non-proportional. (**Note:** The opposite of monospacing is proportional spacing, in which different characters have different widths, e.g., in a proportionally spaced font, the letter “o” would be wider than the letter “i”).

Note that the Monospaced option is already selected on the dialog. When you import a PDF file into Monarch, Monarch tries to detect when monospaced fonts are used and optimizes the conversion accordingly. In some cases, Monarch may not detect that monospaced fonts were used for the PDF file. When this failure occurs, it is usually due to a mix of monospaced and proportional fonts existing in the same PDF file. If you know that the PDF file uses monospaced fonts, and the Monospaced option is not selected during the import analysis, you can select this setting to force Monarch to optimize for monospaced fonts.

While proportionally spaced fonts look more appealing, monospaced fonts are superior for tabular data because the uniform width of each character makes alignment of columns easier.

**Note:** In general, PDF files generated using monospaced fonts will convert more successfully, so if you are trying to optimize your PDF producing application for Monarch, then use monospaced fonts. Some of the more common ones are: Andale Mono, Anonymous, Crystal, Bitstream Vera Sans Mono, Courier, Courier New, Elronet Monospace, Everson Mono Latin 6, Fixedsys, Lucida Sans Typewriter, Lucida Console, and PrestigeFixed.

### **Freeform option**

The Freeform option tries to optimize text that is more freeform than columnar or grouped columnar. A columnar document is a simple table format, where grouped columnar might be something similar to one of the Monarch sample reports such as Betty’s Music Store (classic.pdf).

A typical document that might benefit from using this setting would be an academic report that is 95% text, but which contains a few tables you want to extract.

**Note:** This setting will sometimes work effectively on columnar documents when the default settings are not producing a good result.

Let's see how Monarch has handled the conversion of the Classic PDF file.

5. Click the OK button to import the PDF file into Monarch.

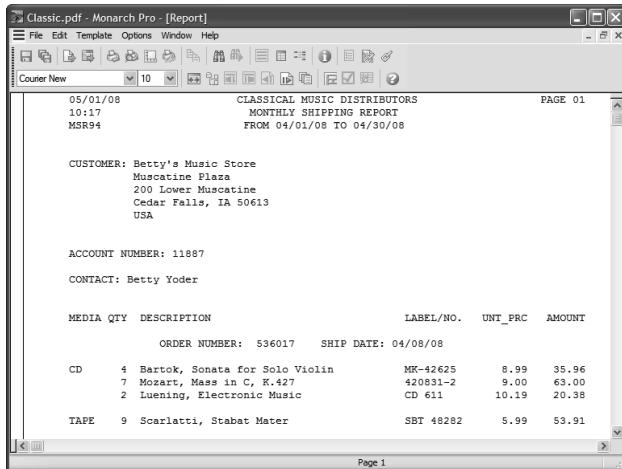


Figure 17-3. Viewing the Classic.pdf in Monarch.

If we wanted to, we could now select a template sample and begin creating templates to extract the PDF file's data. Since we've done plenty of this already, let's try importing a PDF file into Monarch that will require us to modify the PDF import options.

6. Select File, Close All (ALT, F, C) to close the Classic.pdf.

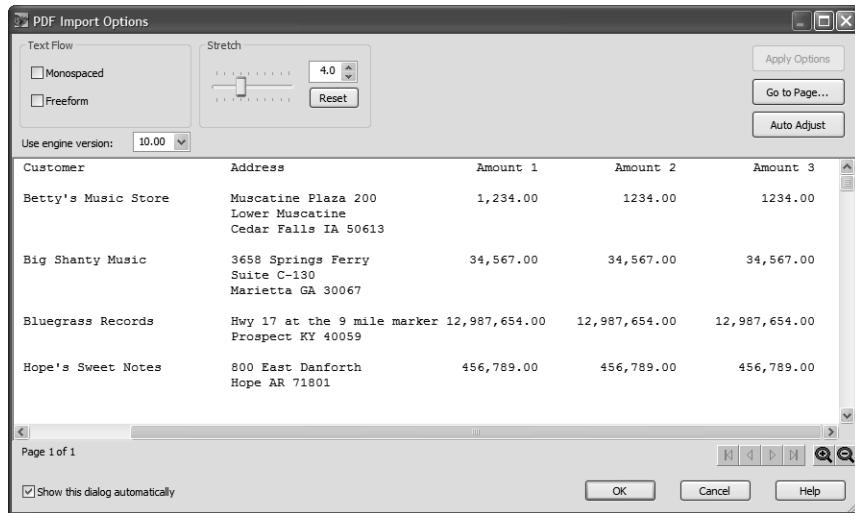
## Customizing the PDF Import Options

Let's begin by selecting another PDF file to import into Monarch.

1. Select File, Open Report (ALT, F, R), select the CustomerSummary.pdf via the Open Report dialog, then click Open.

Monarch opens the PDF Import Options dialog and displays a sample of the PDF file's data. Let's enlarge the dialog so that we can view more of the sample data.

2. Click and drag the lower right corner of the dialog down and to the right until the dialog is the desired size.



*Figure 17-4. Viewing the resized dialog.*

Notice that for Bluegrass Records, the value in the Amount 1 column begins one space too far to the right, so that it doesn't line up properly with the Amount 1 values for the other three customers.

Let's assume that we know the font used to generate this PDF was Tahoma, which is a proportional font. A quick visual investigation tells us this is not a freeform document, but is more of a columnar report. Let's try adjusting the Stretch setting to see if this improves the conversion.

3. In the Stretch box enter **7.0**, then click the Apply Options button.

Monarch applies the stretch setting and refreshes the sample page. Note that the Amount 1 value for Bluegrass Records now lines up correctly with the Amount 1 values of the other customers.

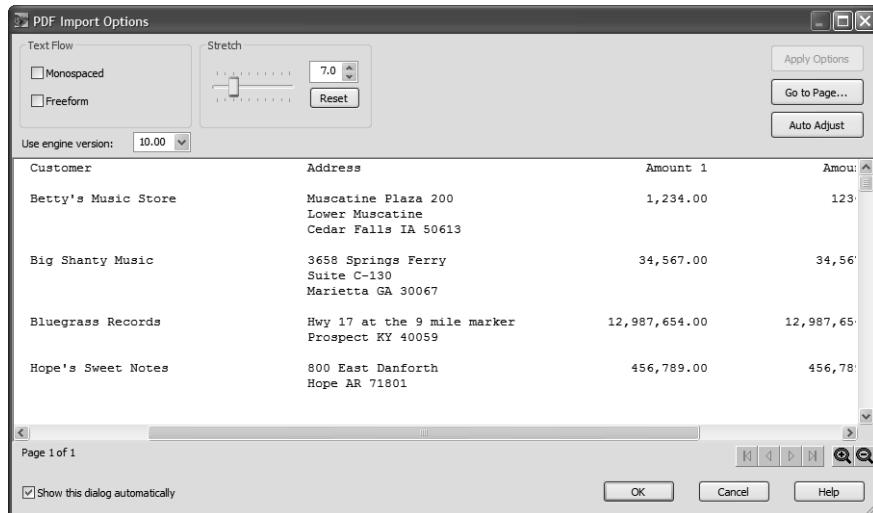


Figure 17-5. Viewing the refreshed sample page.

If we wanted to, we could now import the PDF file's data into Monarch and define templates to extract it. Since we've done plenty of this already, let's attempt something we haven't done yet instead.

Another of Monarch's PDF capabilities is its ability to export extracted report data to PDF files. Let's see how easy this is to do.

4. Click the Cancel button to close the PDF Import Options dialog.

## Exporting to a PDF File

Let's begin by opening a report we're familiar with, Classic.prn.

1. Select File, Open Report (ALT, F, R) to display the Open Report dialog, select Print Files from the Files of Type drop-down list, then select Classic.prn and click the Open button.

Monarch displays the Classic.prn report in the Report window. Now let's apply a model with which to extract the report's data.

2. Select File, Open Model (ALT, F, M) to display the Open Model dialog, then select Classic.xmod and click the Open button.

Monarch applies the model to the report in the Report window.

3. Click the Table window button to view the extracted data in the Table window.

Now we're ready to export the data as a PDF file.

4. Select File, Export (ALT, F, E) to display the General screen of the Export wizard.
5. Click the Next button to display the Table View screen.
6. Click the Next button to display the Output File screen.
7. In the Export to File field type **.pdf** after “Classic” so that the full name reads “Classic.pdf”.

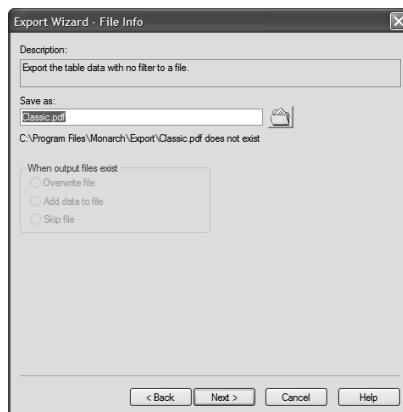


Figure 17-6. Naming the PDF export.

8. Click the Next button, leave the PDF Security Settings empty and click the Run button to execute the export operation.

When the export operation has completed, Monarch displays “Export(s) completed” in the Results dialog.

9. Click the OK button to close the dialog.
10. Navigate to the Monarch Exports folder (C:\Documents and Settings\All Users\Documents\Monarch\Export) and open the Classic.pdf we just generated.

Contact	Customer	Account Number	Order Number	Ship Date	Address 1	Address 2
1 Betty Yoder	Betty's Music Store	11887536017	4/6/2006	Muscotne Plaza	200 Lower Muscatine	
2 Betty Yoder	Betty's Music Store	11887536017	4/6/2006	Muscotne Plaza	200 Lower Muscatine	
3 Betty Yoder	Betty's Music Store	11887536017	4/6/2006	Muscotne Plaza	200 Lower Muscatine	
4 Betty Yoder	Betty's Music Store	11887536017	4/6/2006	Muscotne Plaza	200 Lower Muscatine	
5 Betty Yoder	Betty's Music Store	11887536019	4/21/2006	Muscotne Plaza	200 Lower Muscatine	
6 Betty Yoder	Betty's Music Store	11887536019	4/21/2006	Muscotne Plaza	200 Lower Muscatine	
7 Betty Yoder	Betty's Music Store	11887536019	4/21/2006	Muscotne Plaza	200 Lower Muscatine	
8 Betty Yoder	Betty's Music Store	11887536019	4/21/2006	Muscotne Plaza	200 Lower Muscatine	
9 Betty Yoder	Betty's Music Store	11887536019	4/21/2006	Muscotne Plaza	200 Lower Muscatine	
10 Marvin Baby	Big Shunty Music	17959536016	4/5/2006	3658 Springs Ferry	Suite C-130	
11 Marvin Baby	Big Shunty Music	17959536016	4/5/2006	3658 Springs Ferry	Suite C-130	
12 Marvin Baby	Big Shunty Music	17959536016	4/5/2006	3658 Springs Ferry	Suite C-130	
13 Marvin Baby	Big Shunty Music	17959536016	4/5/2006	3658 Springs Ferry	Suite C-130	
14 Marvin Baby	Big Shunty Music	17959536029	4/14/2006	3658 Springs Ferry	Suite C-130	
15 Marvin Baby	Big Shunty Music	17959536029	4/14/2006	3658 Springs Ferry	Suite C-130	
16 Marvin Baby	Big Shunty Music	17959536029	4/14/2006	3658 Springs Ferry	Suite C-130	
17 Roberto Gil	Bluegrass Records	10929536020	4/9/2006	May 17 at the 3 mile marke		
18 Roberto Gil	Bluegrass Records	10929536020	4/9/2006	May 17 at the 3 mile marke		
19 Roberto Gil	Bluegrass Records	10929536020	4/9/2006	May 17 at the 3 mile marke		
20 Roberto Gil	Bluegrass Records	10929536020	4/9/2006	May 17 at the 3 mile marke		
21 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
22 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
23 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
24 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
25 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
26 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
27 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
28 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
29 Alain Lebon	Music du Monde	1863536012	4/1/2006	170 Rue de la Poste		
30 Alain Lebon	Music du Monde	1863536021	4/9/2006	170 Rue de la Poste		
31 Alain Lebon	Music du Monde	1863536034	4/18/2006	170 Rue de la Poste		
32 Alain Lebon	Music du Monde	1863536034	4/18/2006	170 Rue de la Poste		
33 Alain Lebon	Music du Monde	1863536034	4/18/2006	170 Rue de la Poste		
34 Alain Lebon	Music du Monde	1863536034	4/18/2006	170 Rue de la Poste		
35 Loral Sampson	Fandangos Records	17658536045	4/28/2006	555 Elsabeth		

Figure 17-7. Viewing Classic.pdf.

Note that not all of the columns were exported to the PDF file. Because PDF is a page-oriented format, the width of the PDF file is dictated by Monarch's Page Setup settings. Let's look at the current Page Setup settings to see if we can alter them so that more of the columns will be exported.

11. Within Monarch select File, Page Setup (ALT, F, G) to display the Page Setup dialog.
12. Under the Pagination for Excel and PDF heading specify a Paper Size setting of "A3 (297 x 420 mm)" and an Orientation setting of "Landscape".

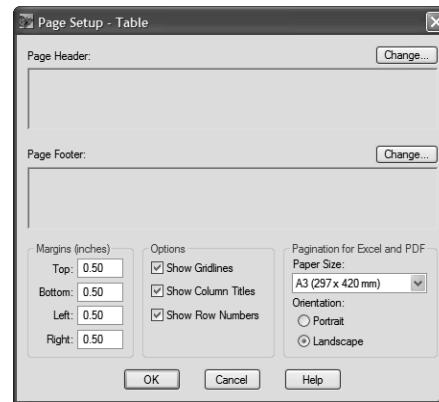


Figure 17-8. Changing the default Page Setup settings.

13. Click the OK button to close the dialog.

Let's see how the new settings will affect the PDF file export.

14. Repeat steps 4 to 10 above to export the data and view the Classic.pdf file. **Note:** Make sure you close the original Classic.pdf export file before doing so. Also, when repeating step 7, select "Overwrite File" when prompted to specify a "When output files exist" option.

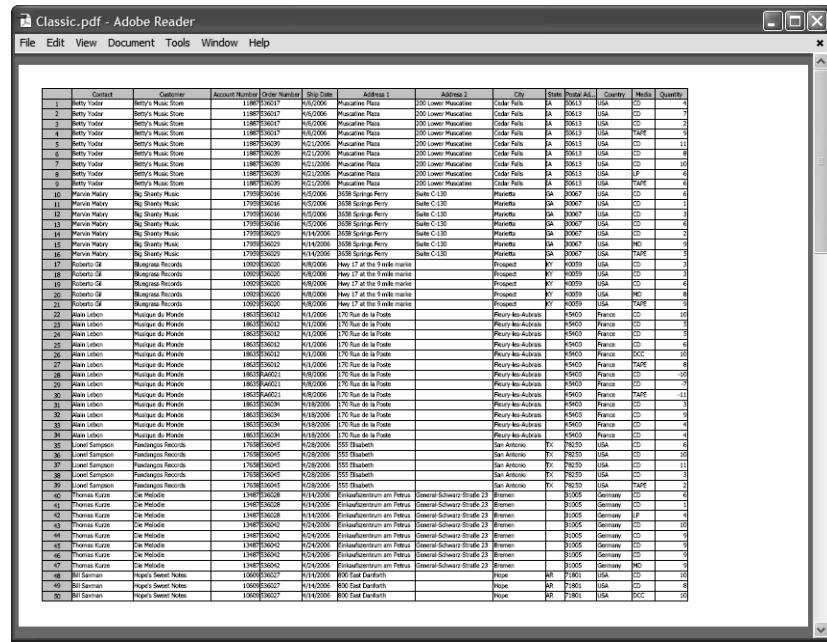


Figure 17-9. Viewing the Classic.pdf a second time.

Note that the Classic.pdf now includes more of the table's columns.

If necessary, there are other ways we could modify the PDF export. For example, we could use the Field List dialog (ALT, E, L) to hide in the table any columns we don't need to export. That way, only the essential columns would appear in the PDF file.

## Importing XPS Files

A new feature to Monarch V10 is the ability to import XPS files. Let's give this a try.

1. Select File, Close All (ALT, F, C) to close the Classic.pdf.
2. Select File, Open Report (ALT, F, R) to display the Open Report dialog.

3. Select the XPS files (xps) option from the Files of Type drop-down list, select the Classic.xps file, then click the Open button.

Monarch displays the XPS Import Options dialog, which displays a sample of the XPS file's data.

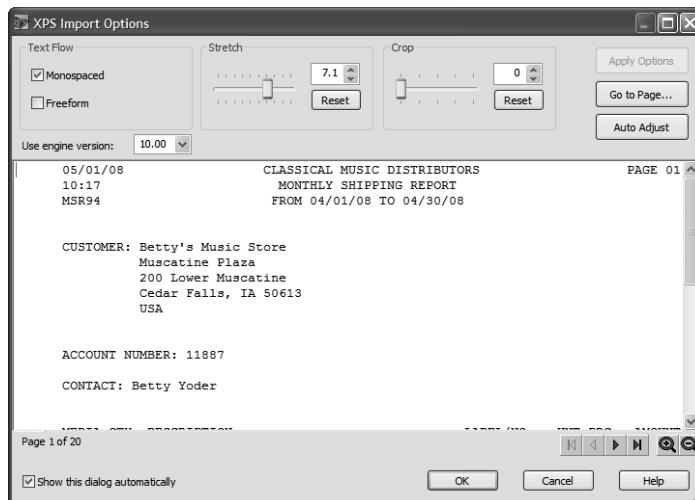


Figure 17-10. The XPS Import Options dialog.

As you can see, the XPS Import Options dialog is very similar to the PDF Import Options one we saw earlier. It contains options which allow you to customize the import of XPS files.

4. Click the OK button to import the XPS file into Monarch.

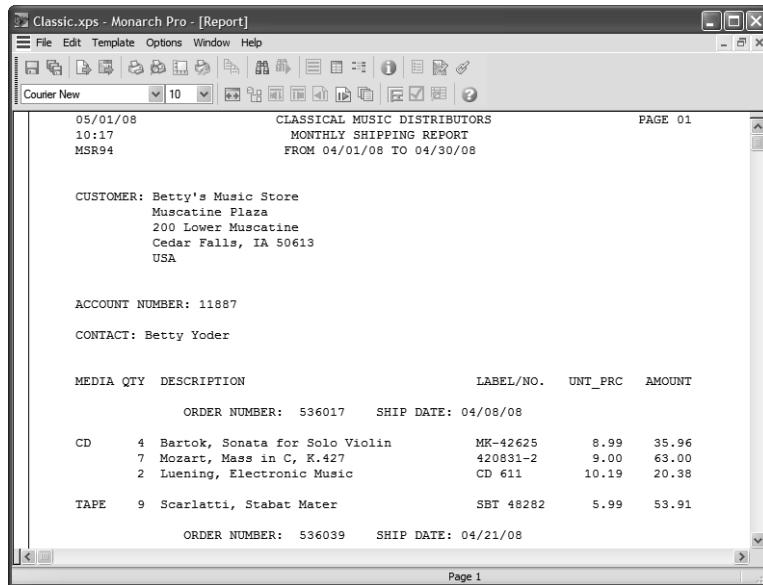


Figure 17-11. Viewing the Classic.xps.

You can now either select a template sample and begin creating templates to extract the XPS file's data or you may select File, Close All (ALT, F, C) to close the Classic.xps.

## Summary

In this lesson you were introduced to Monarch's PDF and XPS handling capabilities. You learned how to import a PDF file into Monarch, how the PDF import options can affect the PDF conversion process, and how to export extracted data to a PDF file. You also learned how to import XPS files into Monarch.

For further reading, see the following sections of the Monarch help file:  
Chapter 5 – Working with PDF and XPS Files

## Conclusion

Congratulations! You have completed the lessons in the Monarch Learning Guide. We hope you have found them to be a helpful introduction to Monarch's capabilities.

For additional information not covered in the Learning Guide, we suggest you thoroughly explore Monarch's help system. To do so select Help, Help Topics (ALT, H, H) from the main menu. You may also click the Help button on any dialog within Monarch to access context-sensitive help.

We also encourage you to visit the online Monarch discussion forum. To do so go to the Datawatch Discussion Forums home page ([www.monarchforums.com](http://www.monarchforums.com)), then select the Monarch forum.

In addition, Datawatch's Technical Support department provides free technical assistance to registered Monarch owners. Refer to the "Appendix E - Contacting Technical Support" section of the Monarch help file for more information.



# Index

## A

Address Blocks

extracting, 81

using, 83

Alpha Trap, 34

Append Templates, 59

Auto-define fields button, 51, 58

Automatically sizing fonts, 20

## B

Blank Trap, 37, 57, 91, 100

Bookmarks

PDF files, 74, 77

reports, 23

## C

Calculated fields

creating, 162

definition of, 161

deleting, 169

formula-based, 163

hiding, 169

lookup, 163

making comparisons, 166

runtime parameter, 163

Calculated fields (continued)

user-edited, 163

Charts

adding a title, 229

chart types, 225

copying, 233

creating, 215

display options, 226

displaying, 218

locating a specific chart, 221

navigating, 219

printing, 234

specifying colors and fonts,  
231

Copy

chart, 233

from a chart, 233

from the Summary window,  
192

Summary window, 192

Creating

append templates, 59

calculated fields, 162

charts, 215

**Creating (continued)**

- detail templates, 33, 56
- external lookups, 297
- filters, 150
- page header templates, 63
- summaries, 177

**Customizing PDF import options, 319****D**

- Detail template, 33, 56**
- Display Source Of Record, 115**

**E****Exporting**

- appending, 136
- from the Report window, 74
- from the Summary Window, 192
- memo fields, 270
- setting default folder, 11
- to PDF files, 321

**External Lookups**

- creating, 297
- definition of, 295
- filtering, 281

**External Lookups (continued)**

- from a report, 297
- linking databases, 308
- linking reports, 304

**F****Field List**

- naming fields with, 68

**Fields**

- adjusting width, 119
- advanced properties, 258
- assigning type, 115
- capturing multiple lines, 256
- displaying multiple lines, 264
- fill empty cells, 117
- hiding, 122
- highlighting using the keyboard, 39
- memo, 265
- moving, 120
- naming, 42
- naming via the field list dialog, 68
- verifying, 64
- verifying with multiple reports, 41

**F**ilters

- creating, 150
- definition of, 149
- disabling, 155
- naming rules, 153
- no filter, 155
- using expressions, 267
- using in a Summary, 179

**F**ind

- Bookmark, 23
- the source of a record, 115

**F**loating trap

- using, 85, 87, 91

**F**olders

- defaults, 9

**F**onts

- automatically sizing, 20
- changing size, 19
- non-proportional (fixed or monospaced), 19
- proportional, 19
- selecting, 19

**F**unctions, 154**G**

- Green bar
  - removing, 18

**H**

- Highlighting
  - fields using the keyboard, 39

**H**TML, 289**I**

- Importing
  - database data, 309
  - editing column names, 282
  - file formats, 279
  - HTML, 289
  - ODBC, 280
  - opening a database, 278
  - PDF files into Monarch, 315
  - storing import parameters, 286

**I**nstalling

- lesson files, 9

**L**

- Linking
  - columns, 301
  - reports, 304

**Lookups**

- creating, 297
- definition of, 295
- filtering, 301
- from a report, 305
- linking databases, 311
- linking reports, 305
- storing parameters, 304

**M****Memo fields**, 265, 270, 272**Model files**

- saving, 45
- setting default location, 10

**Monarch**

- Professional, 5
- Standard, 4

**Moving**

- around in reports, 20
- fields, 120

**Multi-Column Region (MCR)**

- creating, 94
- definition of, 94
- specifying vertical boundaries, 104

**N****Naming**

- fields, 42
- fields via the Field List dialog, 68
- Summaries, 179

**Non-blank trap**, 57**Numeric Trap**, 36**O****Opening**

- a single report, 16
- databases, 278
- HTML files, 289
- multiple reports, 241
- PDF files, 315
- project file, 288

**P****Page****Go To**, 21**Page Header**

- defining a print header, 128
- defining a template, 63

**Page Setup**

- Options, 127
- Report Window, 28

**PDF files**

- bookmarks, 74, 77
- exporting, 321
- importing, 315
- opening, 315
- security, 76

**Print**

- chart, 234
- control characters, 63
- Summary window, 192

**Printing**

- charts, 234
- defining a Page Header, 128
- from the Report Window, 27
- from the Summary window, 192
- from the Table Window, 126
- memo fields, 272
- page setup in Report Window, 28
- Page Setup Options, 127
- preview, 27

**Project Files**

- opening, 288
- setting default folder, 11
- storing import parameters in, 288

**R****Report Window**

- copying from, 24
- exporting from, 74
- zooming, 20

**Reports**

- analyzing data from a series, 239
- copying data from, 24
- moving around in, 21

**Reports (continued)**

- opening, 16
- opening multiple instances, 241
- using to create a lookup file, 304

**Rules**

- for naming fields, 42
- for naming filters, 153
- for naming sorts, 144
- for naming templates, 43

**S****Saving**

- Model files, 45

**Sorts**

- adding a field, 144
- changing order, 144
- creating, 143
- definition of, 141
- disabling, 147
- duplicating, 146
- in a summary, 203
- naming rules, 144
- on multiple fields, 145
- removing a field, 144

**Summaries**

adding blank lines, 181  
adding item fields, 185  
adding key fields, 178  
adding measures, 178  
adding subtotals, 181  
adjusting column widths, 199  
applying a filter, 179  
calculations, 183  
creating, 177  
crosstab, 196  
definition of, 173  
design preferences, 187  
displaying, 179  
displaying null values, 197  
drilling, 186  
freezing panes, 199  
item fields, 185  
key fields, 177  
measures, 177  
naming, 179  
quick, 191  
sorting, 203  
specifying Key Field values, 209  
specifying Summary Limit Values, 211

**Summaries (continued)**

specifying Upper Limit Values, 211  
suppressing duplicate values, 180  
*Top n Analysis*, 207  
using multiple reports, 251  
viewing multiple measures, 201

**T****Templates**

append, 59  
auto-define fields, 51, 58  
changing type, 60  
creating, 33  
definition of, 32  
detail, 33, 56  
highlighting fields, 38  
multiple line, 239  
naming, 43  
page header, 63  
sample line, 33  
verifying field boundaries, 64

***Top n Analysis*, 207**

**T**raps

alpha, 34  
blank, 37, 57, 91, 100  
combining characters, 37  
detail, 33, 57  
floating, 85, 87, 91  
multiple characters, 37  
non-blank, 57  
numeric, 36  
resetting, 36

Tree view, 70

**U**

User-edited calculated fields,  
163

**V**

Verifying  
fields, 64  
using multiple reports, 41

**W**

Width  
columns, 44  
fields, 119  
fonts, 20  
multi-column regions, 97  
templates, 92

**X**

XPS files, 324

## **NOTES**

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## **NOTES**

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