Chapter 1

Transforming Raw Data into Usable Information

In This Chapter

▶ Outlining the major features of Crystal Reports 10

▶ Discussing the four editions

▶ Viewing an existing report

*C*omputers can store and process enormous amounts of data, and with the relentless advance of technology, those capabilities will soon become even more mind-boggling. Even now, the major challenge of getting value from computer systems is not to make them more powerful but to harness the power they already have — in a way that delivers useful information to people.

Megabytes or gigabytes of raw data are neither meaningful nor useful to people. Instead, we need organized information, distilled and focused on answering specific questions. In businesses and enterprises of all kinds, organizing and presenting information has traditionally been the job of documents called *reports*. These documents generally consist of multiple pages that can include text, numbers, charts, maps, and illustrations. The best reports convey the facts needed to make the best decisions, unobscured by a clutter of data irrelevant to the task at hand.

Crystal Reports has been a leading report-writing application package for more than a decade — and is by far the most commonly used report writer in the world. Many people have been using Crystal Reports unknowingly for years because it has been integrated with other applications and not specifically identified by name.

Major Features of Crystal Reports 10

Crystal Reports 10 includes all the features that made Crystal Reports 9 a worldwide best-seller, plus exciting new features that save you time and effort as you develop your reports. Crystal Reports 10 is tightly integrated, so all the individual components of the system work together seamlessly to support the creation, modification, distribution, and viewing of reports. The tight integration extends beyond Crystal Reports 10 to Crystal Enterprise 10, making the sharing of reports across large enterprises not just feasible, but downright convenient.

Data Explorer and Report Experts provide highly intuitive visual tools that step you through the process of creating a report. Features such as the Crystal Repository (which now can be shared across the enterprise) and report templates allow users throughout the organization to reuse components or entire reports. There is never any need to reinvent the wheel. If a component in the Repository or a report template comes close to meeting your requirements but doesn't meet them exactly, you can make minor modifications and have a usable report quickly — a vast improvement over creating an equivalent component or report from scratch.

Formatting a report

The primary job of a report writer such as Crystal Reports is to take data from a database and put it into a pleasing, logical, and understandable format for viewing by users. With Crystal Reports, you are well equipped to give your reports the appearance you want — without having to become a formatting guru.

Crystal Reports offers both absolute and conditional formatting:

- ✔ *Absolute formatting* enables you to put text, titles, charts, maps, columns of figures, cross-tabs, and graphics pretty much anywhere you want on the screen. You can handle preprinted forms. You can optimize for screen display or for printing on paper. This is close to the ultimate freedom in report creation — but not quite.

- ✔ *Conditional formatting* takes you one step further toward the ultimate: Using it, you can change the format of the data you're displaying in response to the content of the data itself. With conditional formatting, every time the data in a report changes, a formula that you include in the report can make the appearance of the report change accordingly.

One especially useful feature of Crystal Reports 10 — carried over from version 9 — is the report alert. Suppose that a value being displayed crosses a critical threshold that requires immediate action on the part of the report's target audience. When that threshold has been crossed, not only is its value displayed, but also a report alert dialog box pops up that can't be ignored.

Format Painter is a new feature of Crystal Reports 10. It saves you a lot of work if you have numerous objects in a report that all require the same formatting. You simply format the first of those objects and then — with one click — "clone" that formatting onto another object.

Another labor-saving feature is the Template Expert, which enables you to create and save a report template for later use. Imagine how much time you'll save if you have to quickly format multiple reports with a common look.

Enhancing a report with formulas and custom functions

Did I mention that conditional formatting makes use of formulas to change the format of a report? Well, you can use formulas for far more than that. A formula is like a little computer program that can do computations or other manipulations of data before displaying the result. This makes Crystal Reports more than merely a report writer that puts your data in a nice format. By using formulas, you can make it select specific records (or groups of records) and display them the way you want, controlling that process by declaring and using variables in your formulas. All the common flow-control structures (`If-Then-Else`, `Select Case`, `For`, `While Do`, and `Do While`) are available.

After you create a useful formula that you might want to use again later, you can save it as a custom function. Custom functions are added to the standard functions that come with Crystal Reports, keeping them available in one place.

Getting visual with charts and maps

Crystal Reports has excellent capabilities for the graphical display of data. All the most commonly used chart types are available, so you can display your data in the most meaningful way. If you have geographical data, Crystal Reports can display it in maps that show countries, regions, provinces, or cities. A variety of methods are available to associate values with specific regions, including colors, symbols of various sorts, and even charts.

Displaying a report

Crystal Reports is designed for distribution in today's highly connected business environment. You can build reports that are optimized for viewing by people at any computer attached to your organization's local area network. You can also put a report on the Web, for viewing by anyone who has a Web connection and a browser. Of course, you can also distribute your reports the

old-fashioned way, printing them on paper and putting them on the target readers' desks.

Distributing a report

You can get your report into the hands of its intended recipients in many ways — print it and deliver it by hand, fax it directly from your computer to a fax machine anywhere in the world, or export the report to a file.

If you choose the latter approach, Crystal Reports supports many output file formats, including HTML for viewing over the Web. At least one of these formats is bound to be readable by the people in your audience. The one caveat here is that if you export a report to any format other than the Crystal Reports native format (`.rpt`), you may lose some of the report's formatting in the process. You can even export directly to an application such as Microsoft Word or Lotus Domino. In such a case, Crystal Reports launches the target application and opens your report in it.

A major new distribution mechanism in Crystal 10 is the Business Views feature (actually a component of Crystal Enterprise, a companion product to Crystal Reports that enables users on client machines to view, schedule, and keep track of published reports). As discussed in Chapter 17, Business Views offer a new data-abstraction layer that simplifies the process of connecting to enterprise data sources. At that layer, you can combine data from multiple data sources of different kinds into a single data source.

Supplying Crystal Reports with data

As important as the output formats of a report are, the inputs to the report are equally important. Crystal Reports shines in this area too. It accepts data from a wide variety of data sources, including both personal computer databases such as Microsoft Access and enterprise-wide client/server databases such as Oracle, IBM's DB2, and Microsoft's SQL Server. In fact, Crystal Reports can accept data from any ODBC-compliant database or any data source that complies with Microsoft's OLE DB standard. Essentially, if your data exists in a commonly used modern data source, Crystal Reports can use it.

The Four Editions of Crystal Reports 10

Crystal Reports 10 comes in four editions that differ in their target audiences and their capabilities. The four editions are the Standard Edition, the Professional Edition, the Developer Edition, and the Advanced Edition.

The Standard Edition

The Standard Edition of Crystal Reports 10 is the least capable of the four, but that is not to say that it is deficient in any way. It is designed to be used by business professionals rather than information technology professionals. The Standard Edition contains nearly all the functionality I cover in this book. Rather than try to enumerate the features it contains, I'll save a lot of space by listing the few things it doesn't do:

- ✔ It won't create reports designed to be displayed on the Web. If you intend to develop reports for display on the Web, you need at least the Professional Edition.

- ✔ It won't integrate reports into application programs. Because the target audience for the Standard Edition consists of people who are not typically programmers, application integration tools would be more confusing than useful.

- ✔ It won't support XML or OLAP (discussed in Chapter 14), and it doesn't include the Repository (covered in Chapter 18).

- ✔ It doesn't include native drivers for client/server databases such as Oracle, DB2, Hyperion Essbase, and SQL Server. If you want to draw data from those databases, use ODBC or move up to the Professional Edition.

The Professional Edition

The Professional Edition is aimed at IT and MIS professionals, such as database administrators, report designers, and systems analysts. It's the product you need to publish reports on the Web. It also gives you more flexibility in using SQL than the Standard Edition does. The Professional Edition also allows you to draw data from client/server databases. The Repository is available in the Professional Edition and above.

The Developer Edition

The Developer Edition is for guru-class, heavy-duty application developers. It is designed to be used by programmers who want to incorporate reports in the applications they develop.

The Developer Edition has all the capability of the Standard and Professional Editions — plus the tools you need to take full control of the underlying functions of Crystal Reports. The Developer Edition is what you would use to create enterprise-wide applications that incorporate reports.

The Advanced Edition

The Advanced Edition is targeted at people who want to develop Enterprise Web applications using Java, COM, or .NET. It has essentially the same functionality as the Developer Edition, but it also has a license structure that accommodates more simultaneous users. People who receive Crystal Reports .NET as a part of Visual Studio .NET may want to upgrade to the Advanced Edition of Crystal Reports 10 when they're ready to deploy their applications on the Web.

Viewing a Report

The majority of this book tells you how to create a new report from data in a database file, using Crystal Reports. It also tells you how to modify a report so you can create a new report (similar to, but distinct from, the existing one). These are concerns of the report designer. But what if you just want to *view* a report that has already been designed?

The world has many more people viewing reports than creating such reports. You may be one of the former. No problem. Before I launch into telling you how to create reports in subsequent chapters of this book, I briefly describe the simple process of viewing reports that already exist.

Reading a printed report

Reading a report that you had Crystal Reports print on paper is the simplest (but also the most limited) way to get the information you want. It doesn't take a lot of technical sophistication to read text and view charts and maps on a sheet of paper. People were doing so long before computers came along.

For some kinds of information, however, printed reports are not as valuable as those you can view online. Printed reports are not updated when the database from which they were derived is updated. They may contain obsolete — thus misleading — information. This is a factor you must always bear in mind when basing decisions on printed reports.

Viewing a report with Crystal Reports

As you might expect, you can do more than just create or modify a report with Crystal Reports software — you can also view an existing report. This has some major advantages over reading a printed report, provided you have Crystal Reports software installed on your computer (but you knew that):

✔ **The report is connected to the source database while the report is being viewed.** That's an obvious advantage. If the data in the database has changed since the last time you viewed it, you can refresh the report before you view it again by pulling current information from the database. Crystal Reports automatically checks the database to see whether it has been updated since the last time your report was run. If so, it asks whether you want to refresh the report with current data.

✔ **You can use the drill-down capability of Crystal Reports to selectively view the detail underlying summary reports.** This enables you to get an overview of the subject by viewing the summary, and then drill down into the specific parts that interest you for more detail. (For more on drill-down, see Chapter 6.)

✔ **Viewing a "live" report gives you access to the way Crystal Reports uses hyperlinks.** You can follow a hyperlink from one part of a report to another part, from one report to another report on the same computer, or from one report to a report on another computer on your network.

✔ **You can view reports that include color graphics or text that uses font colors other than black.** For the many people who don't have high-speed color printers, this provides a way to access the full richness of a report's contents.

To view an existing report on a computer that has Crystal Reports installed on it, follow these steps:

1. **Launch Crystal Reports from your computer's Start menu.**

   Crystal Reports appears, displaying the Welcome to Crystal Reports dialog box, as shown in Figure 1-1. You can choose to create a new report or open an existing report. The dialog box lists several existing reports that may be on your system, or gives you the option of looking at more report files if you don't see the one you want in the list.

Figure 1-1:
The
Welcome
to Crystal
Reports
dialog box
offers
several
options.

2. Select the report that you want to view and click OK.

If you don't see the report you want, click More Files, click OK, and use the Open dialog box to select any report available on the system.
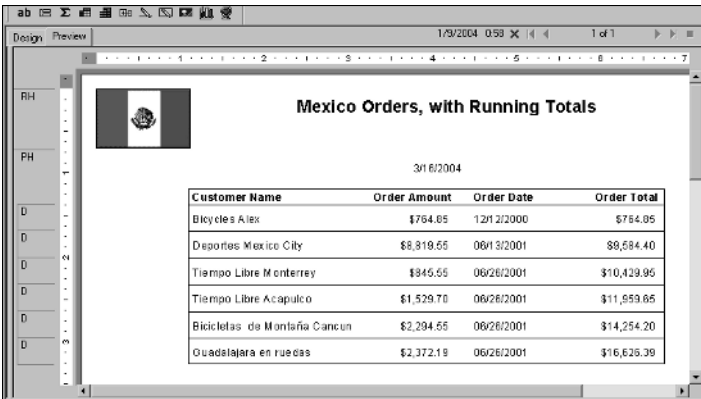
Crystal Reports retrieves and displays the report, as shown in Figure 1-2.

3. Move through the report.

Scroll around the report, and move back and forth among its pages. You can drill down into any summary report that supports drilldown. If the report contains hyperlinks, you can follow them to other locations in the report or in other reports

4. When you are finished viewing the report, choose File⇨Close to close it.

Figure 1-2:
Crystal
Reports
report
develop-
ment envi-
ronment,
with a
report
displayed.

Viewing a report on your local area network or the Web

The Crystal Enterprise Web Desktop can display your reports to thousands of users on your local area network, or millions of users on the World Wide Web. Whether your users are on a local area network that's directly connected to a server running the administrative part of Crystal Enterprise, or on a remote connection via the Web, they can use the Crystal Enterprise Web Desktop to access the reports they need. The user interface is a standard Web browser, such as Internet Explorer or Netscape.