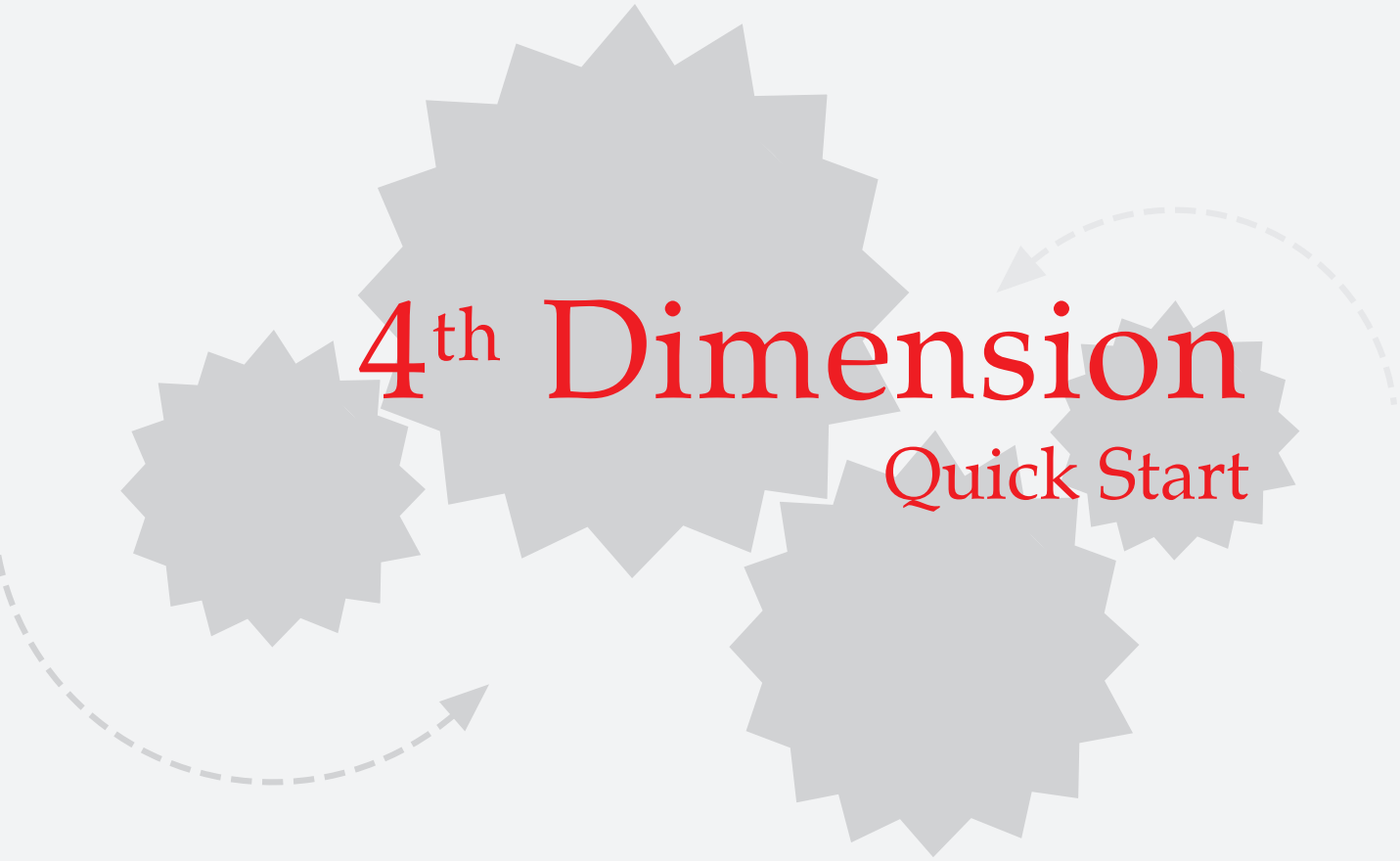


4th Dimension

Quick Start

CONTENTS

This Quick Start book introduces you to 4th Dimension. This chapter contains information about the following:

- The 4th Dimension environment,
- Understanding database concepts,
- Using the Quick Start tutorials.

ABOUT THE 4TH DIMENSION ENVIRONMENT

As an integrated database environment, 4th Dimension offers a complete solution to your database needs. You can easily manage data, perform calculations on that data, and even produce sophisticated output such as summary reports and graphs.

About 4D Server and 4th Dimension

The 4th Dimension database environment is available for both single-user and multi-user databases as the following products:

- 4th Dimension (single-user),
- 4D Server and 4D Client (multi-user).

4th Dimension is a single-user database application. In a single-user database, operations such as database design or data entry are performed by one user at a time, working on a single computer. Both the 4th Dimension application and the user's database are stored locally on the user's machine.

4D Server and 4D Client together form a multi-user database application in which database operations can be performed by several users at a time. Each user connects to a database located on a 4th Dimension server from his or her own machine, called a *client* of the server. All data entry and management is performed on the client computers. A client can be any computer that is running 4D Client.

The server stores 4D Server and any databases that have been created. Whenever a user performs an action such as entering data or generating a report, 4D Server updates the database files on the server and performs all necessary calculations. Changes made by one user are updated on the server so that all users view the most recent information. For more information about 4D Server and 4D Client, refer to the *4D Server Reference* manual, which is included when you purchase 4D Server.

About the Modules

In addition to the built-in functionality of 4th Dimension and 4D Server, several external modules are available which work with your database to extend its capabilities. These modules are part of the 4th Dimension environment and include the following:

- 4D Write, a word processing application,
- 4D Draw, an object-oriented drawing application,
- 4D Calc, a spreadsheet application,
- 4D Chart, a three-dimensional graphing application,
- 4D Backup, a database backup utility.

Since these products are modules, rather than stand-alone applications, they are designed to be used with your 4th Dimension database. For example, the 4D Write, 4D Draw, 4D Calc, and 4D Chart modules allow you to include such things as letters, drawings, budgets, and graphs in special areas called *external object* areas. These areas appear as part of your data, just like a name or any other piece of information.

You can also treat the 4D Write, 4D Draw, 4D Calc, and 4D Chart modules as if they were separate applications by using them in external windows. Your work within these windows can be independent of your database or linked to information in your database or in other modules.

About the Programming Environment

The Quick Start manual is designed to teach you the basics of 4th Dimension. As you become a more advanced user, you may want to automate certain aspects of your database.

For instance, you might want to display the age of a set of people in your database. You would not want to manually enter each person's age since, as time goes on, everyone gets older. Instead, you could calculate each person's age by subtracting his or her date of birth from the current date.

On a larger scale, you might create a sales report that you want to generate on a weekly basis. Instead of recreating the report every week, you could create a menu command that a user would choose to regenerate the report using the updated sales information.

Although relatively easy, both of these tasks may require you to use the 4th Dimension language. When you first write a script or procedure in the language, you normally execute it in interpreted mode. In *interpreted mode*, each time 4th Dimension reaches a line of code, the line is first translated into machine language and then executed.

Scripts and procedures can also be executed in *compiled mode*. In a compiled database, code is not interpreted because it is translated into machine code only once, at compilation time.

If you decide to completely customize your database—this means controlling all database operations procedurally—you will want to compile your code using 4D Compiler. Compiling a database allows you to do the following:

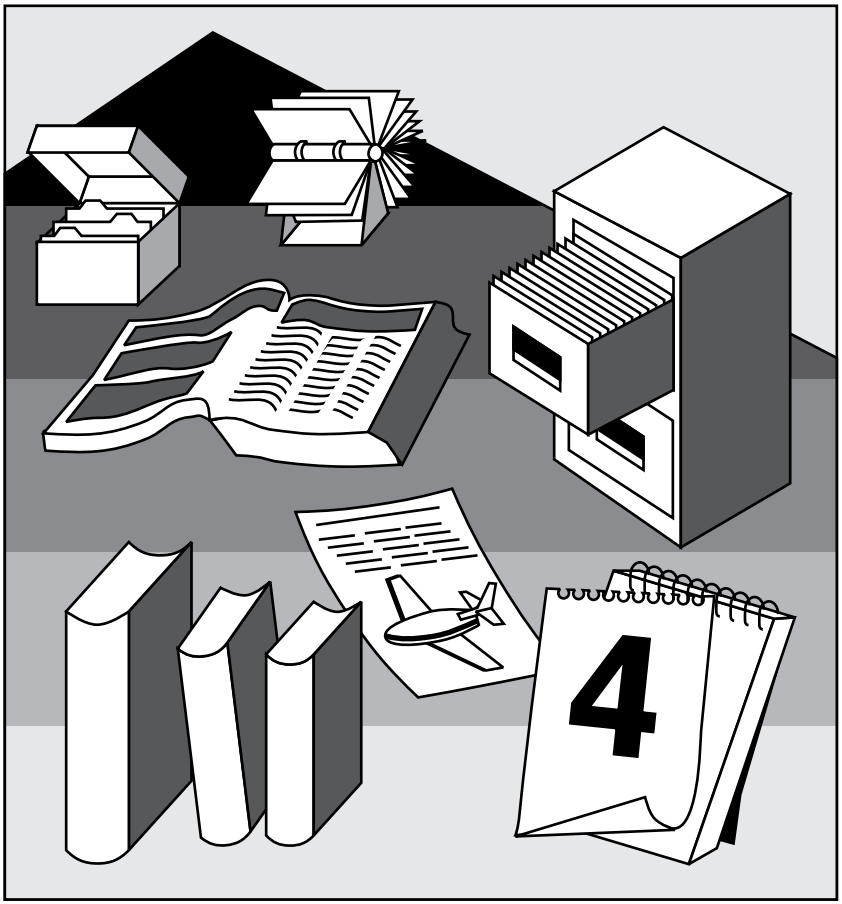
- Increase the speed of code execution,
- Merge your compiled database with 4D Runtime to create a stand-alone, double-clickable application.

For more information about the 4th Dimension language, refer to the *4th Dimension Language Reference*. For more information about compiling a database and creating a stand-alone application, refer to the 4D Compiler documentation.

ABOUT DATABASES

This section introduces a few concepts with which you will become very familiar as you learn to use 4th Dimension.

People use *databases* constantly in their homes and businesses. Recipe collections, dictionaries, indexes, checkbooks, and other sources of organized information are all databases. A telephone directory is another example of a familiar database. Its alphabetical organization allows you to quickly find the information you need.



Databases like those you can create with 4th Dimension provide many advantages over paper-and-ink databases. With 4th Dimension, you can enter and modify information quickly. You can analyze the information in different ways. You can reorganize it, look at a portion of it, or perform calculations on it.

The information in a telephone directory or in your address card file consists of names, addresses, and phone numbers. Each piece of information, such as a name, is placed in a *field*. All the information for one person makes up one *record*. All records are stored in a *file*.

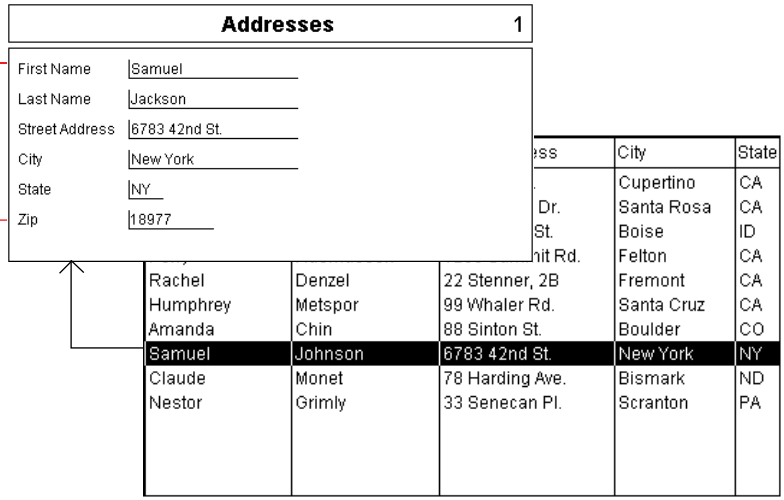
Fields

Records

First Name	Last Name	Street Address	City	State
Helene	Andrews	131 Oak Dr.	Cupertino	CA
Scott	Fritzer	31 Cypress Dr.	Santa Rosa	CA
Teresa	Gunner	45 W. Main St.	Boise	ID
Perry	Rasmussen	1298 Summit Rd.	Felton	CA
Rachel	Denzel	22 Stenner, 2B	Fremont	CA
Humphrey	Metspor	99 Whaler Rd.	Santa Cruz	CA
Amanda	Chin	88 Sinton St.	Boulder	CO
Samuel	Johnson	6783 42nd St.	New York	NY
Claude	Monet	78 Harding Ave.	Bismark	ND
Nestor	Grimly	33 Senecan Pl.	Scranton	PA

A record and its fields can be visually represented in several ways. The telephone directory shows each record as one line in a list; the card file shows each record as a separate card. The following figure shows how fields and records can be displayed in two ways.

Field labels



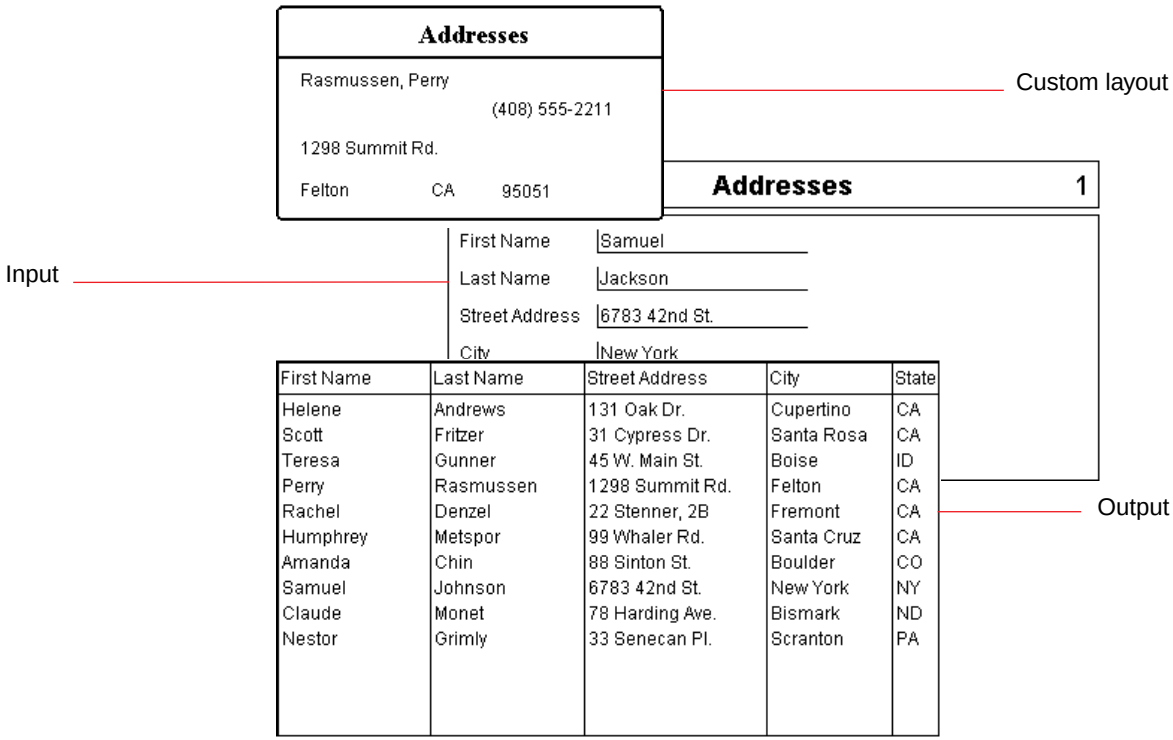
As you can see, each record has the same fields no matter how it is displayed.

The data in fields is entered and displayed in *layouts*. 4th Dimension automatically creates two layouts for your database, called Input and Output. These layouts contain all the fields in a file and are used as the

default layouts for data entry and display. On each layout, *field labels* identify the kind of information each field contains.

You can also create custom layouts containing all or some of the fields. For more information about creating layouts, see the *4th Dimension Tutorials* and *4th Dimension Design Reference*.

The following figure shows three layouts from the same database: Input, Output, and a custom layout called Address Card.



The telephone directory and card file are examples of simple database files in which all records store the same kind of information. More complex databases are made up of several files, with each file containing a different kind of information. The information in one file can be related to information in another. At the telephone company, for example, one file stores names, addresses, and telephone numbers, and another file keeps track of the telephone calls that are made from each telephone number. At the end of the month, invoices are created from the records in both files to produce telephone bills.

The concepts introduced in this section are basic to any database, including the large-capacity databases that keep track of credit card

transactions, telephone billings, invoices, financial accounts for large corporations, publicly traded stocks and bonds, sales information, inventory lists, and data for scientific projects.

You will learn more about these ideas as you work with the tutorials in your 4th Dimension package.

ABOUT THE QUICK START TUTORIALS

The five chapters in this manual are tutorials—step-by-step explanations—that show you how to use 4th Dimension to create useful databases. As you work through the tutorials, you will get a feel for the major areas of the application and how to move between them.

It should take you no more than an hour and a half to work through all the chapters. When you have finished Quick Start, you can start building your own 4th Dimension databases, or you can move immediately to the more advanced and detailed material in the *4th Dimension Tutorials*.

The Quick Start tutorials teach you how to create a 4th Dimension database, as well as how to enter and modify records. You will then learn how to use some of the special features of 4th Dimension—graphs, quick reports, and labels—to produce printed output.

You should work through the tutorials in order. The work you do in each chapter prepares the database for the work you will do in the next chapter. Each chapter begins with an estimate of how long it will take you to complete the work in that chapter. You can feel free to stop at the end of any chapter, take a break, and begin the next chapter by opening the database on which you have been working.

Every step is explained in careful detail. The tutorials are designed to be practical so that you can learn 4th Dimension concepts while you are actually using the application. You will create a database that keeps personnel records for the employees of a fictional company.

The tutorials provide specific steps for you to follow, as well as general information that explains 4th Dimension. The steps are usually accompanied by a short comment or explanation. The format for steps and explanations looks like this:

1. A numbered step tells you exactly what to do.

Following the numbered step is a separate paragraph that offers a pertinent explanation or comment.

When a numbered step asks you to type something, the characters you should type are enclosed in quotation marks:

2. Type “Garbondo” in the Last Name field.

Type exactly what is enclosed in the quotation marks, including any spaces or punctuation.

The tutorials in this book assume that you are familiar with basic Windows operations, such as selecting objects, choosing menu commands, clicking, dragging, and so on. For complete information and instructions, refer to the user guide that came with Windows.

4D Server: Unless otherwise noted, the tutorials work the same for 4th Dimension and 4D Server. However, 4D Server users should be aware that conflicts may occur if two or more people work on the Quick Start tutorials at the same time.

Conventions

All the manuals in your documentation package, including this one, use certain conventions to help you understand the material.

The following explanatory notes are used:

NOTE: Text emphasized like this provides annotations and shortcuts that will help you use 4th Dimension more productively.

4D Server: Throughout the manual, 4th Dimension and 4D Server/4D Client are referred to simply as 4th Dimension. Differences between the operation of the two products are explained in 4D Server notes which provide information about using 4D Server/4D Client. This information is provided only when the operation of 4D Server/4D Client differs from that of 4th Dimension.

Notes like this alert you to important pieces of information.

Warnings like this alert you to situations where data might be lost.

In addition, all filenames are shown in brackets in the text to help distinguish them from the names of fields, layouts, and other items. For instance, the Companies file is written as the [Companies] file.

Estimated time to complete: 15 minutes

This chapter takes you through the basic steps of creating a database. When you have finished this chapter, you will know how to do the following:

- Create a database,
- Rename a file,
- Create fields,
- Set field types and field attributes.

When you create a new 4th Dimension database, the program automatically creates a database *file*. The file image appears in the frontmost window on your screen. You will soon create *fields* for this file. In 4th Dimension, the file and its fields are the basis of the *structure* of your database.

Because 4th Dimension automatically creates the first file for you, your job is simply to rename the file and create fields within the file. 4th Dimension then uses this file definition to store and retrieve the records you create.

CREATING A 4TH DIMENSION DATABASE

In this section, you will design the database that you will be using with all the tutorials in this manual. You will begin by running 4th Dimension and creating a new database.

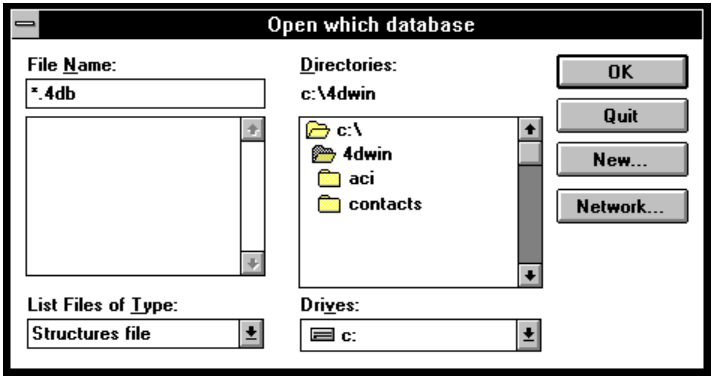
4D Server: For complete information about installing and running 4D Server, refer to the *4D Server Reference* manual.

1. Run 4th Dimension.

You can select the 4th Dimension application icon and then choose **Open** from the **File** menu. Or, you can double-click the 4th Dimension application icon.

4D Server: If you are using 4D Server, you should run 4D Server on the server computer. You will first create the database on the server and then run 4D Client on your workstation computer to continue designing the structure.

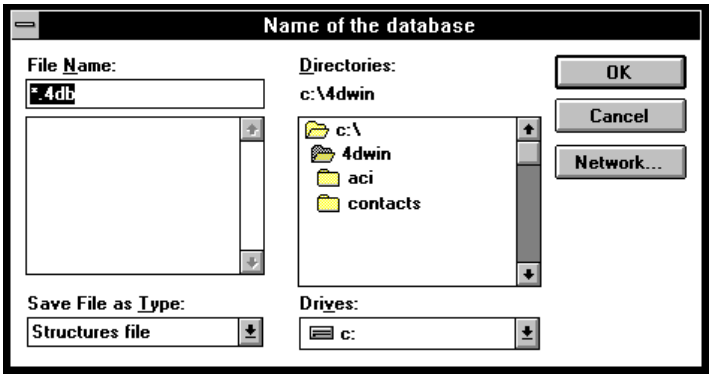
4th Dimension displays a standard Open File dialog box.



The names of the 4th Dimension sample databases you copied to your hard disk appear in the Directories area. If there are no 4th Dimension databases in the directory, the Directories area is blank and the **OK** button appears dimmed.

2. To create a new database, click the New... button.

4th Dimension displays a dialog box for you to enter the name of the new database.



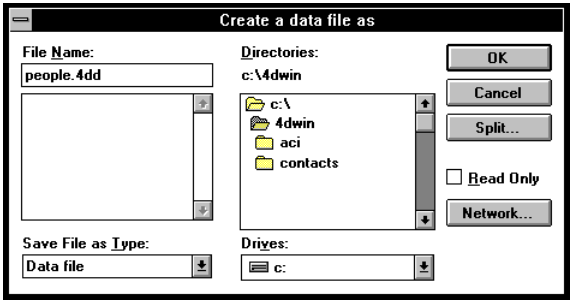
3. Type "People" in the File Name text box, followed by the suffix.4db.

PEOPLE is the name 4th Dimension will use to save your database; PEOPLE.4DB is the name of the structure file for the database.

Next you will create the data file.

4. Click OK.

A dialog box for creating a data file appears. Notice that 4th Dimension has automatically named your data file PEOPLE.4DD.



5. Click OK.

4th Dimension displays the Structure window which contains a single empty file named [File1].

4D Server: If you are using 4D Server, you will need to leave the database open on the server and run 4D Client on your client computer. Follow the directions provided in the *4D Server Reference* to run 4D Client and open the PEOPLE database you just created.

When you create a new database as you have done here, 4th Dimension

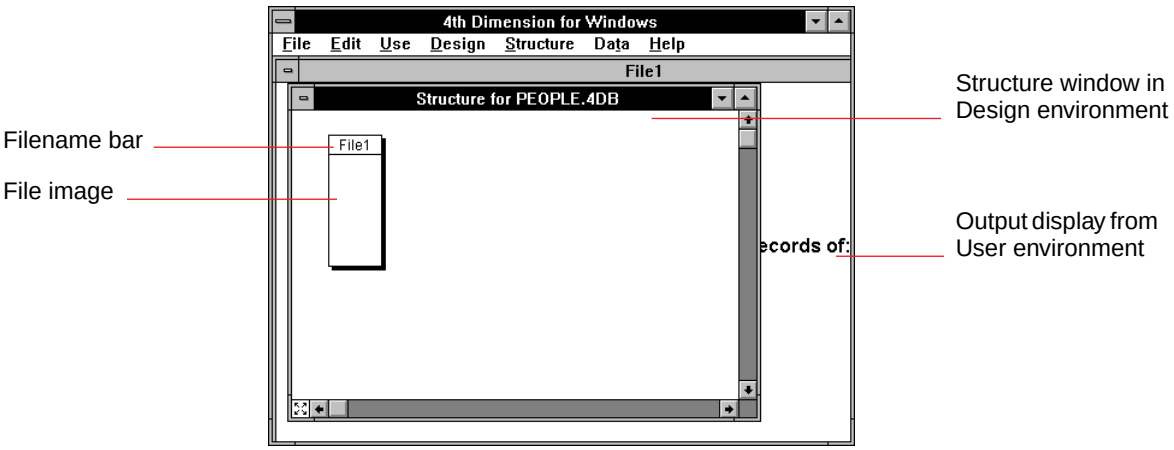
starts in the *Design* and the *User* environments simultaneously. The Structure window—part of the Design environment—is the frontmost window on the screen. This is the window in which you create the structure of your database.

As you work through the tutorials in this manual, you will become familiar with both the Design and User environments and will discover how easy it is to switch between them. For now, we will concentrate on the Design environment only.

RENAMING A FILE

When you start 4th Dimension, you see the first file image in the Structure window. This window shows the file structure of the database (the files and their relationships). Since this is a new database, there is only one file.

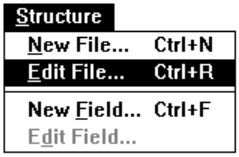
Behind the Structure window appears the output display from the User environment. If there were records in the database, you would see them displayed in this window. You will learn more about the User environment in the next chapter.



For this tutorial, assume that you have analyzed the information needs of the personnel department for your company. In this first file you will keep employee information.

The first 4th Dimension file is automatically named [File1]. You will change the filename to one that is more descriptive. Since you are going to keep track of your employees in this file, name it Employees.

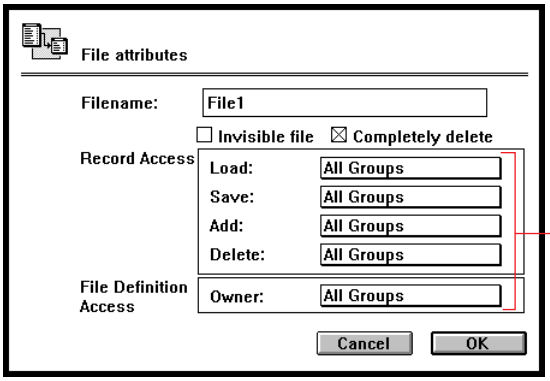
NOTE: 4th Dimension often provides default names such as [File1] and Field1. You will usually want to change these names to something more descriptive.



1. Click on [File1] in the title bar of the file image to select it.

2. Choose Edit File... from the Structure menu.

4th Dimension displays the File Attributes dialog box for you to enter the new filename.



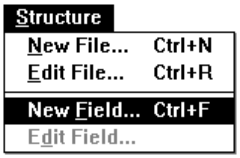
NOTE: The drop-down list boxes below the Filename text box allow you to set password access privileges for this file. You can control who has access to the file and for what purpose. You will find an introduction to using the 4th Dimension password access system in the 4th Dimension Tutorials manual.

The Filename text box is already selected, ready for you to enter the new filename.

3. Type "Employees" and click OK.

The Structure window displays the renamed file. You are now ready to create the fields for this file.

CREATING FIELDS



You want to keep track of each employee's last name, first name, start date, salary, and title. Each of these pieces of information is stored in a separate field. Your next task is to create these fields.

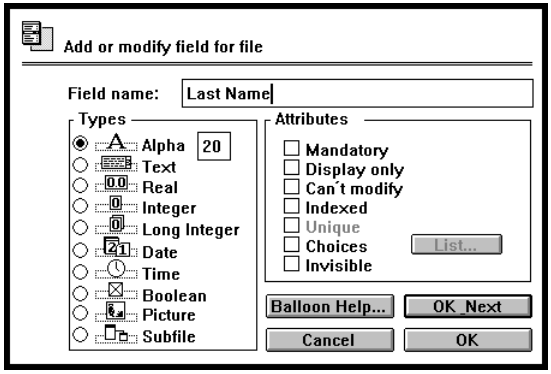
4th Dimension highlights the filename to show that it is the current file.

1. Choose New Field... from the Structure menu.

4th Dimension displays the Field dialog box. The Field name text box is highlighted, ready for you to replace Field1 with an appropriate field name.

2. Type "Last Name".

You are naming the field that will later store the last names of the employees.



As you can see, each field can be one of ten field types and can have one or more field attributes. The field type determines the kind of information you can enter into the field. The attributes determine how each field will be handled during data entry and display.

For this tutorial you will use each of the following three field types:

- **Alpha:** The Alpha field type is used for letters, numbers, and special characters—often called *alphanumeric* information. You can specify the maximum number of characters in an Alpha field, from 2 to 80 characters.
- **Real:** The Real field type is used for numbers that include decimals (real numbers).
- **Date:** The Date field type is used for dates.

You will use only the Indexed field attribute. When a field is *indexed*, 4th Dimension creates an internal file that allows you to search and sort

records very quickly. Each index takes some disk space so you won't index every field, just the ones that you are likely to use often for searching and sorting.

NOTE: For more information about field types and attributes, refer to the 4th Dimension Design Reference.

The Alpha field type is already selected for the Last Name field. However, you should change the 20 to 12. This allows you to enter up to 12 characters into this field.

3. Select the text box next to Alpha by pressing the Tab key or by clicking in the box.

4. Type "12" in the box.

5. Select the Indexed field attribute.

You will often use the Last Name field to locate and sort specific records. The Indexed attribute makes these tasks quicker.

6. Click the OK & Next button.

4th Dimension displays a Field dialog box for the second field.

7. Type "First Name", make the field type Alpha 10, and select the Indexed field attribute.

You will often use First Name together with Last Name to search and sort records.

8. Click the OK & Next button or just press the Enter key (the shortcut for OK & Next).

4th Dimension displays a third Field dialog box.

As you can see, you create fields by typing the field name in the Field Name text box and choosing the type and attributes. The **OK & Next** button accepts the field name, type, and attributes and displays the next Field dialog box. From now on, these step-by-step instructions assume that you know how to create a field.

9. Create a field named "Start Day" and make the field type Date.

The Date field type allows you to enter dates into this field and to perform calculations based on dates. For example, you can calculate how long an employee has been with the company by calculating the difference between the start day and today's date.

10. Click the OK & Next button or press the Enter key.

11. Create a field named "Salary" and make the field type Real.

The Real field type allows you to enter numbers with decimal points (such as dollars and cents) into the field and to perform calculations on the

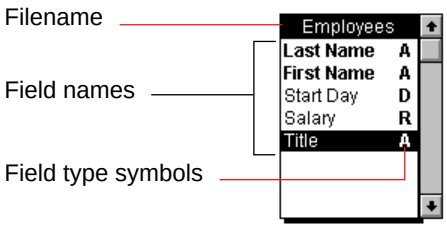
values you enter. For example, if you enter annual salary figures in the Salary field, you can calculate the monthly salaries based on the annual figure.

12. Click the OK & Next button or press the Enter key.

13. Create a field named "Title" and make the field type Alpha 12.

14. This time, click the OK button (not the OK & Next button) to return to the Structure window.

*NOTE: If you accidentally click the **OK & Next** button, click the **Cancel** button to avoid creating an unnecessary field.*



You have now created the fields you need for this file. The field names are displayed in the file image. A field type symbol (A for Alpha, R for Real, and D for Date) is displayed next to each field name. The indexed fields (Last Name and First Name) are displayed in bold type.

You can change fields at any time. You can edit the field name, change the attributes, and even change the field type. You can add a field whenever you need to; each file can have up to 511 fields.

THE NEXT STEP

You have completed the steps necessary to begin using 4th Dimension to enter and manage employee records. You have created the database structure: the file with its fields.

From this database structure, 4th Dimension automatically creates two default layouts for the file: Input and Output. In the next chapter you will start using these default layouts to enter, modify, and display information.

4th Dimension provides these layouts so that you can start using your database to keep track of information almost immediately. Keep in mind that you can modify these layouts at any time and can even create your own custom layouts. For more information, refer to the *4th Dimension Tutorials* and *4th Dimension Design Reference*.

If you want to stop working with 4th Dimension for a while, you can do so now. You do not need to make any special effort to save your work. While you are creating a database, 4th Dimension automatically saves your work. When you enter information into the records, the information is saved automatically at regular intervals.

You can quit 4th Dimension at any time by choosing **Quit** from the **File** menu. All the work you have done is saved automatically. You can open any database again by starting 4th Dimension and selecting the PEOPLE database.

Estimated time to complete: 15 minutes

You have used the Design environment to create the database structure. Based on this structure, 4th Dimension has created two default layouts for you: Input and Output. You will now work in the User environment to enter information in the fields. In addition, you will import data from another application.

The User environment allows you to manage data. You can search for records, sort records, print reports and labels, and even graph the information. The User environment provides you with all the capabilities you need to work with your data productively.

In this chapter you will learn how to do the following:

- Enter records,
- Import records from a document created in another application,
- Modify records in the input layout,
- Modify records in the output layout.

ENTERING RECORDS

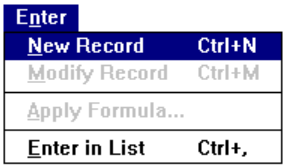
You are going to enter a few records into the database you have just created. You created your database structure in the Design environment. To enter records, you change to the User environment.

If you are returning from a break, start 4th Dimension and open the database you created in the previous chapter.

1. Choose User from the Use menu.

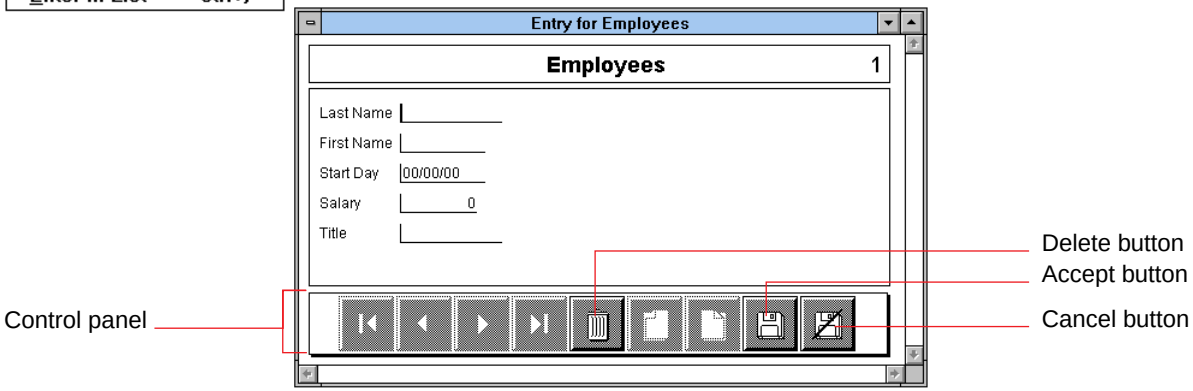
You can also switch to the User environment by clicking on the output layout to bring it to the front.

4th Dimension displays an empty file cabinet with the message "There are no records for: Employees." If there were records, they would be displayed on the screen using the output layout.



2. Choose New Record from the Enter menu.

4th Dimension displays the Input layout. Here in the User environment, you can enter or modify your data.



As you can see, the control panel on the bottom of this screen contains several buttons. Use these buttons to enter, delete, or cancel records and to move from record to record.

The blinking insertion point is already in the Last Name field, ready for your first field entry.

3. Type "Johnson" and press the Tab key.

You can use the Tab key or the Enter key on the keyboard to move from field to field. To move in reverse order, use Shift+Tab. You can also use the mouse to select any field.

4. Type "Tom" and press Tab.

From now on, this kind of instruction will be given simply as:
Enter "Tom".

5. In the Start Day field, enter "1/5/92".

Even though the field initially displays 00/00/00, you must still separate the numerals in the date using slash marks.You can also use hyphens, commas, periods, or spaces instead of slashes (*mm.dd.yy*, for example). You always use numerals to enter the date. The mm/dd/yy format is the *date entry* format.

You can later change the way the date is displayed so that the month is spelled out or abbreviated (5 Jan 1992 or January 5, 1992, for example). You will learn to change the date display format in the *4th Dimension Tutorials*.

4th Dimension accepts the entry and moves the insertion point to the next field.

NOTE: If you are using a non-U.S. version of Windows, you may need to enter the date using a different date format. For instance, Swedish systems use the date format yy/mm/dd. In that system, January 5, 1992 would be entered as 92/1/5.

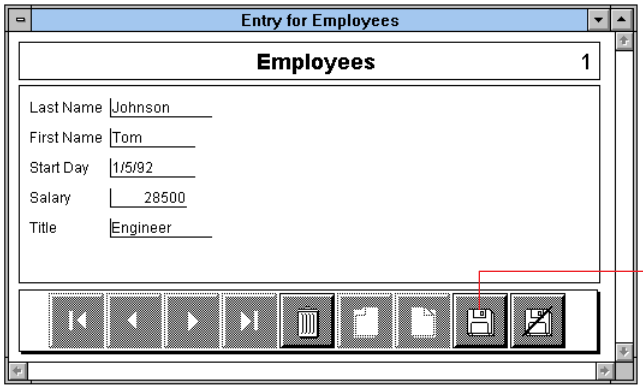
6. For Tom Johnson's salary, enter "28500".

Do not enter dollar signs or commas. When entering a Real number, you use numerals and a decimal point (and a minus sign for negative numbers). 4th Dimension accepts the entry and displays it just as you entered it.

You can also change the display format for this field so that currency signs, such as the dollar sign ($), and decimal separators are displayed. You can learn how to change the number display format in the *4th Dimension Tutorials*.

7. For the title, enter “Engineer”.

All the fields are complete.



8. Click the Accept button or press the Enter key on the numeric key pad.

4th Dimension accepts the record and displays a blank record.

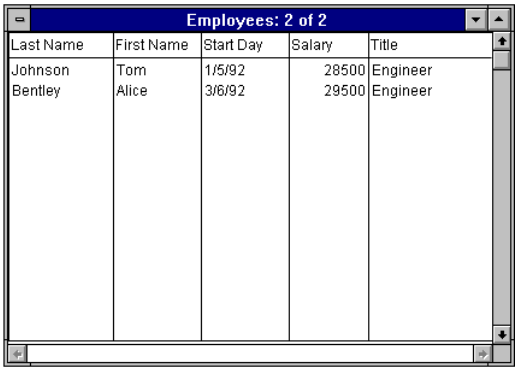
When 4th Dimension accepts a record, it stores it in the database. You can later display the record to view or modify the information. The blank layout you now see on the screen is not yet a record; it will become one when you accept the record by clicking the **Accept** button or by pressing the Enter key.

9. Enter the following information for the second record.

Last Name: “Bentley”
First Name: “Alice”
Start Day: “3/6/92”
Salary: “29500”
Title: “Engineer”

10. This time, after you click the Accept button, click the Cancel button when the blank record appears.

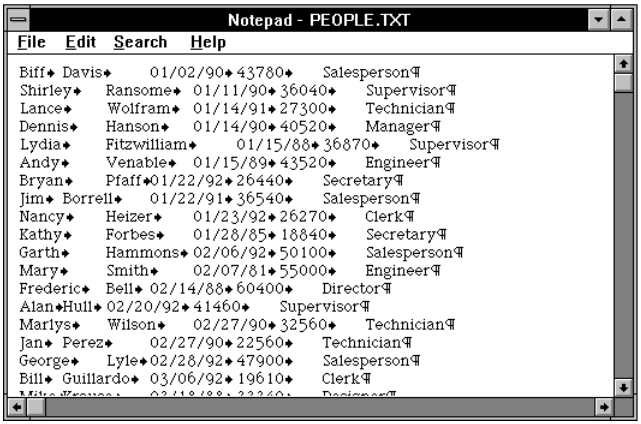
4th Dimension displays both of the records you have entered. As you can see, the output layout displays the same data you entered using a multi-line format to display the records in a list.



IMPORTING RECORDS FROM A DOCUMENT

You have entered two records into your database. To save you the time of entering a series of records, we have prepared a sample text file of practice records.

Suppose you have been keeping your personnel records in a spreadsheet. You can export your data as text from the spreadsheet and import the text file into 4th Dimension. Here is how the PEOPLE text file looks when displayed by a text editor:



The text file contains one record for each employee. Within each record, the fields are separated by tabs and the end of the record is indicated by a carriage return character. You can import text files such as this one directly into 4th Dimension.

If you open the PEOPLE text file to view its contents, be sure to close it before proceeding.

To import the text file:

1. **Choose Import Data... from the File menu.**

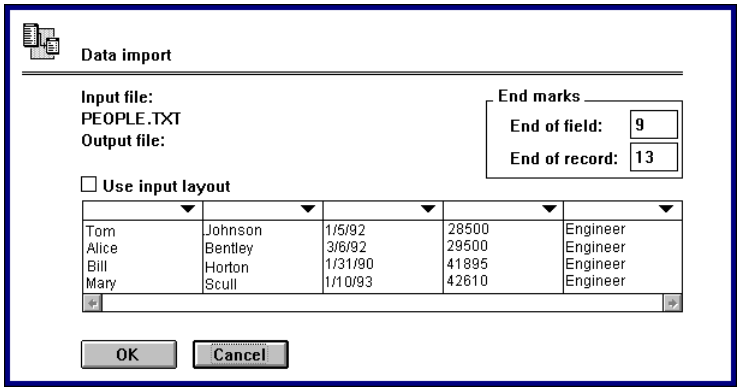
An Open File dialog box appears.

2. Choose ASCII file from the List Files of Type drop-down list box.

3. Open the PEOPLE directory and then select the PEOPLE.TXT file in the File Name area.

4. Click OK.

4th Dimension displays the Data Import dialog box. You are going to use this dialog box to import data into the [Departments] file from a text file.



In the next few steps, you will select the field names from the [Employees] file that correspond to the data you want to import from your text file. The text file you are using places the First Name field before the Last Name field and your PEOPLE database places the Last Name field before the First Name field.

Since by default 4th Dimension imports data in the order it appears in the text file, you must specify a special import order so that the data is placed in the appropriate fields. Otherwise, all employee first names would appear in the Last Name field.

The Data Import dialog box contains columns in the upper portion of the dialog box which allow you to preview the data in the text file by showing the first four lines of text. If a text file contains more than five columns of data, you can use the scroll bar at the bottom of the columns to see additional columns.

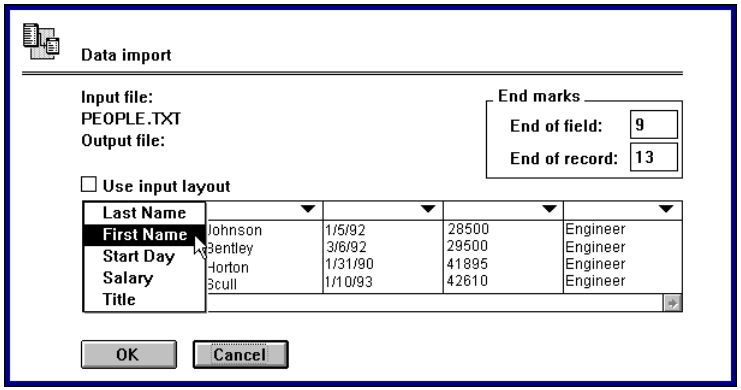
This dialog box provides a list of fields so you can select the import order. All of the fields in the [Employees] file are listed in the drop-down list boxes that appear at the top of each column. To select a field for each column of data, you choose a field name from the drop-down list boxes.

If the fields were in the same order in the text file as they are in the

database, you would not have to create a special order of fields.

To select the import order:

5. Choose First Name from the drop-down list box in the first column.



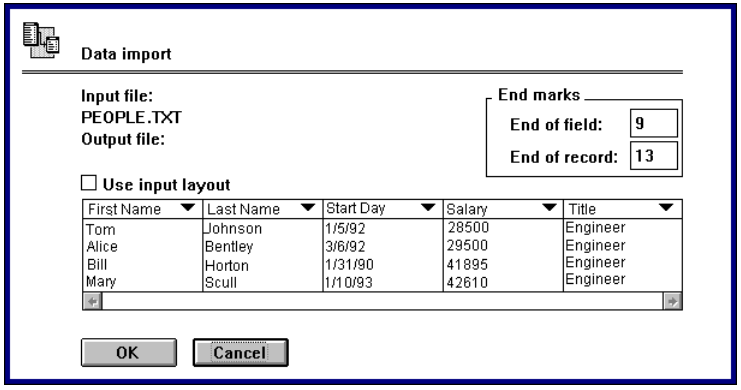
4th Dimension places "First Name" at the top of the column.

6. Choose Last Name from the drop-down list box in the second column.

4th Dimension places "Last Name" at the top of the column. You can see how you use the drop-down list boxes to choose fields that match the order of fields in the text file you are importing.

7. Choose the remaining fields that correspond to the data as it appears in the text file.

Be sure the order of fields on your screen matches the order shown below.

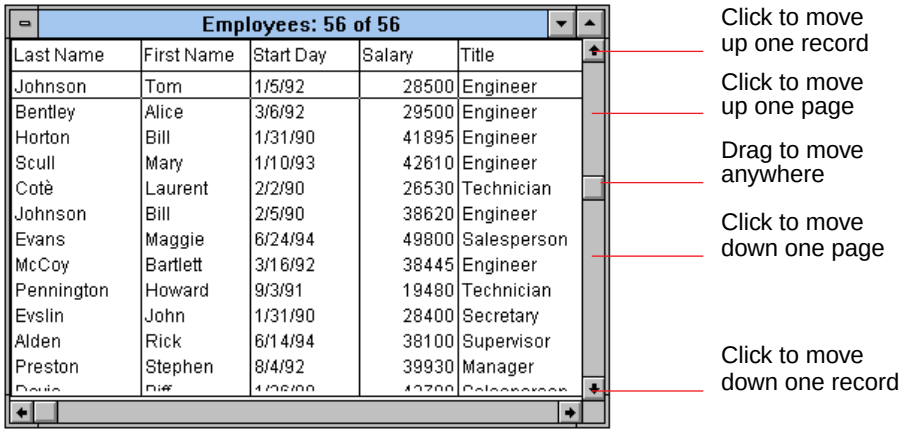


8. Click OK.

A progress indicator appears and counts the records as they are being imported into the [Employees] file.

4th Dimension quickly imports the data from the spreadsheet file. The records are added to the two records you have already entered.

Feel free to examine the records using the scroll bar on the right side of the window to move through the file.

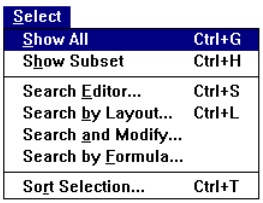


In the next section you will see how to modify records.

MODIFYING RECORDS

The records in your database will often need modification. People change their names, they leave their companies, their job titles and salaries change. In each case, the records need to be modified.

Suppose that Tom Johnson's and Alice Bentley's salaries have increased. You need to modify their records. The records that you have imported are now the only records displayed. Your first step is to display all the records, including those you just created.



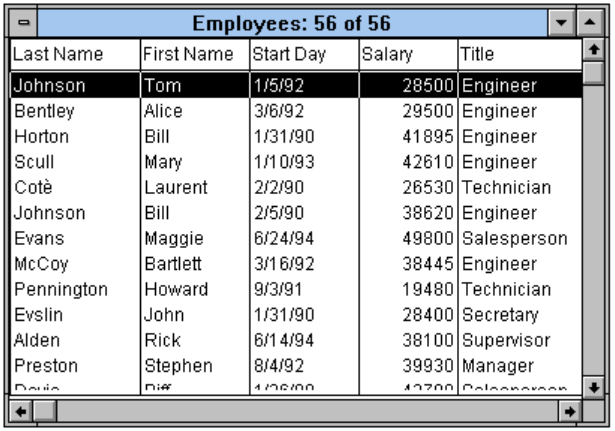
1. Choose Show All from the Select menu.

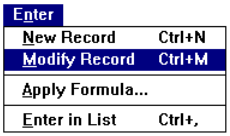
This menu command shows all the records in the current file.

2. Scroll to the top of the list.

3. Click anywhere in Tom Johnson's record to select it.

You always select a record when you want to work on it. You can select any record by clicking it.





4. Choose Modify Record from the Enter menu.

4th Dimension displays Tom Johnson's record, ready for you to modify the information. You can also double-click a record in the output layout to modify it. When you double-click a record in the output layout, the record is displayed in the input layout, ready for you to make any modifications.

5. Select the Salary field.

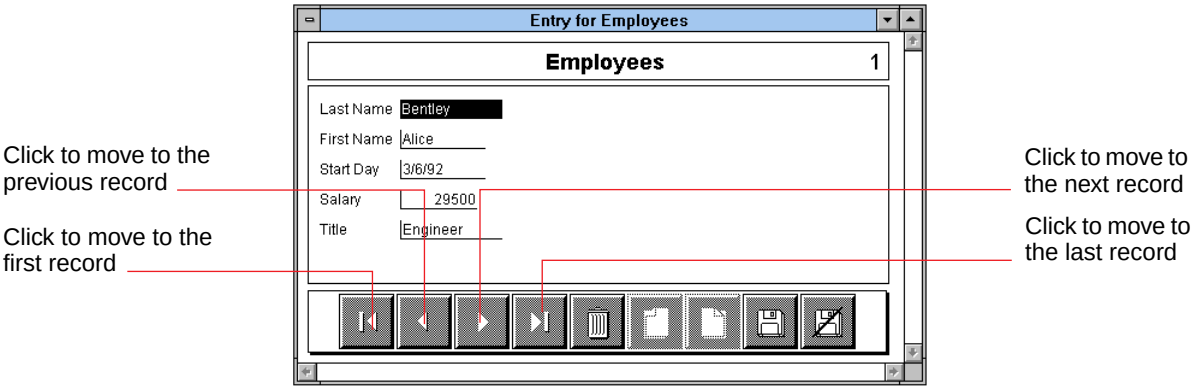
You can use the Tab key to move from field to field or you can click the Salary field with the mouse. If you click the field with the mouse, the insertion point is placed where you click. To select all the characters in the field, either drag across the characters or double-click in the field.

6. Enter "31000".

7. Since you have another record to modify, click the Next Record button in the control panel to move to the next record.

4th Dimension displays the next record. When you move to the next record, 4th Dimension accepts the changes you have made just as if you had clicked the **Accept** button and returned to the output layout. Notice

that you can use the control panel to move from record to record when you are modifying records.



8. Change Alice Bentley's salary to "31000".

You may want to practice using the control panel to move from record to record. You can see every record in the database in this manner.

9. When you have finished, click the Accept button.

4th Dimension displays the records in the output layout.

MODIFYING RECORDS IN THE LIST

You have entered and modified records using the input layout. You can also enter and modify records directly in the output layout. This is called modifying records in the list. Suppose you need to change the title for Shirley Ransome, who has received a promotion to Manager. Her record is the fourth from the top.

1. Choose Enter in List from the Enter menu.

2. Click any field in Shirley Ransome's record.

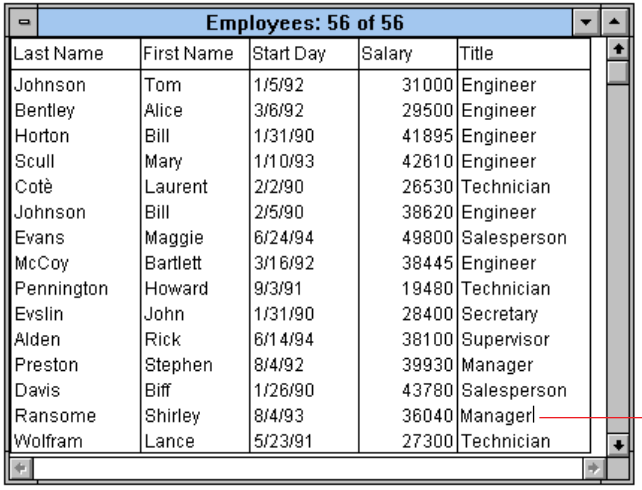
If the record is not visible, scroll down the list to see it.

Clicking once places an insertion point in the field, ready for you to modify the entry. Double-clicking selects a word in the field. You can also drag over all or part of a field entry to select the entire entry or part of the entry.

3. Press the Tab key until you have selected the Title field.

The records scroll to the left if necessary to bring hidden fields into view.

4. Type “Manager” in place of the previous title.



5. Press the Tab key to move to the next record.

Moving to another record causes 4th Dimension to accept the changed information in Shirley Ransome’s record.

You can modify any record from the list or enter a new record as long as the Enter in List menu command is in effect.

6. When you have finished making the changes you want, choose Enter in List again to uncheck it.

4th Dimension turns off the Enter in List mode. You can now modify a record only by double-clicking on it and modifying the data in the input layout.

THE NEXT STEP

In this chapter you have seen how quickly you can enter and modify records in a 4th Dimension database using either the input or output layout. You have imported records from a text file. You have also seen how to move from record to record in the layouts.

The next chapters show you how you can search for single records or groups of records, sort records into various sequences for different purposes, graph information, and print lists and quick reports.

If you want to take a break at this time, quit 4th Dimension. You can open this database again when you start working on the next chapter.

Estimated time to complete: 12 minutes

Now that your records exist, you can manipulate them in useful ways. Three of these ways involve the basic database operations: *selecting, searching,* and *sorting*.

You select a record in order to work with it. You have already selected a record and modified it. 4th Dimension allows you to select a group of records so that you can work on all of them.

Searching allows you to find a specific record or group of records among all the records in a file. You may want to view the information about a particular record. You may need to update the information for several records. Or, you may want to isolate a group of records to perform a calculation on them.

You can sort the records into different sequences depending on your current needs. If you need to print an employee list, for example, you will probably want the records to be in alphabetical order by last name and first name as in a standard telephone directory. However, if you want to compare salaries within job classifications, you will probably want the records arranged by job title.

In this chapter you will learn how to do the following:

- Select groups of records,
- Search for a specific record,
- Sort the records.

SELECTING RECORDS

The simplest method of looking for a record is browsing: scrolling through the records, looking for the ones you want.

4th Dimension allows you to select a group of records by clicking them. You can then isolate the records you have selected. The records you select do not have to be in any particular sequence; 4th Dimension allows you to create a group based on any selected records.

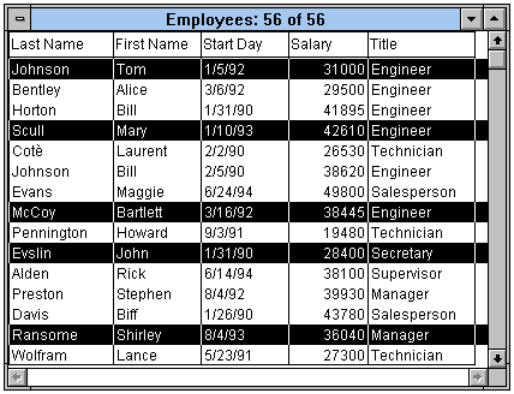
Make sure that your PEOPLE database is open.

1. Select the first record.

To select additional records, hold down the Ctrl key as you click them.

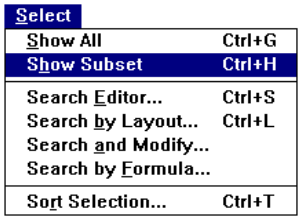
2. Ctrl+click to select three or four additional records anywhere in the list.

4th Dimension highlights the records you click.



Employees: 56 of 56

Last Name	First Name	Start Day	Salary	Title
Johnson	Tom	1/5/92	31000	Engineer
Bentley	Alice	3/6/92	29500	Engineer
Horton	Bill	1/31/90	41895	Engineer
Scull	Mary	1/10/93	42610	Engineer
Cotè	Laurent	2/2/90	26530	Technician
Johnson	Bill	2/5/90	38620	Engineer
Evans	Maggie	6/24/94	49800	Salesperson
McCoy	Bartlett	3/16/92	38445	Engineer
Pennington	Howard	9/3/91	19480	Technician
Evslin	John	1/31/90	28400	Secretary
Alden	Rick	6/14/94	38100	Supervisor
Preston	Stephen	8/4/92	39930	Manager
Davis	Biff	1/26/90	43780	Salesperson
Ransome	Shirley	8/4/93	36040	Manager
Wolfram	Lance	5/23/91	27300	Technician



3. Choose Show Subset from the Select menu.

4th Dimension isolates the records you have selected. This group is called a *selection*.

Employees: 5 of 56

Last Name	First Name	Start Day	Salary	Title
Johnson	Tom	1/5/92	31000	Engineer
Scull	Mary	1/10/93	42610	Engineer
McCoy	Bartlett	3/16/92	38445	Engineer
Evslin	John	1/31/90	28400	Secretary
Ransome	Shirley	8/4/93	36040	Manager

The idea of a selection of records is particularly important in using 4th Dimension. For now you need only know that whatever you do to the records applies only to the records in the current selection. For example, if you were to choose **Print** from the **File** menu, only these few records would be printed.

4. To show all the records again, choose Show All from the Select menu.

4th Dimension also allows you to select a range of records. A range of records consists of all the records in a sequence.

5. Click once near the top of the list to select one record.

6. Hold down the Shift key while you click a record farther down the screen.

4th Dimension selects all the records between the two clicks.

Employees: 56 of 56

Last Name	First Name	Start Day	Salary	Title
Johnson	Tom	1/5/92	31000	Engineer
Bentley	Alice	3/6/92	29500	Engineer
Horton	Bill	1/31/90	41895	Engineer
Scull	Mary	1/10/93	42610	Engineer
Cotè	Laurent	2/2/90	26530	Technician
Johnson	Bill	2/5/90	38620	Engineer
Evans	Maggie	6/24/94	49800	Salesperson
McCoy	Bartlett	3/16/92	38445	Engineer
Pennington	Howard	9/3/91	19480	Technician
Evslin	John	1/31/90	28400	Secretary
Alden	Rick	6/14/94	38100	Supervisor
Preston	Stephen	8/4/92	39930	Manager
Davis	Biff	1/26/90	43780	Salesperson
Ransome	Shirley	8/4/93	36040	Manager
Wolfram	Lance	5/23/91	27300	Technician

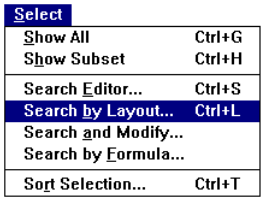
If you wanted to make this group of records into a selection, you could isolate them as you did the first group by choosing the **Show Subset** menu command.

You may want to practice selecting different groups of records and making them into a selection. Be sure to show all the records before going on to the next section.

SEARCHING FOR A SPECIFIC RECORD

4th Dimension provides automatic ways of searching. In this section you will learn how to search for a specific record.

Suppose you want to locate the record for Mary Smith to check her salary. To use the Search by Layout method, you enter information in a layout similar to the current input layout. 4th Dimension then searches for the record you want to display.



1. Choose Search by Layout... from the Select menu.

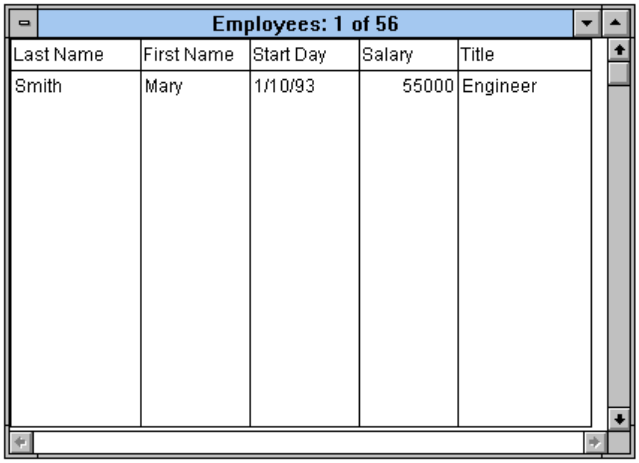
4th Dimension displays the input layout.

You can type data in any fields in the layout. In the next step, you are going to search for a specific person by typing data in the Last Name and First Name fields. Note that the cursor appears as an eye icon when it is not placed in a field to show that you are in the Search by Layout mode.

2. Type “smith” in the Last Name field and “mary” in the First Name field.

3. Click the Accept button.

You do not need to use an initial capital letter in the First Name or Last Name fields because 4th Dimension ignores case when comparing values in an Alpha field. 4th Dimension searches for all records with a last name of Smith and a first name of Mary. Mary Smith’s record appears on the screen.



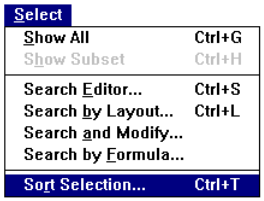
4. To view all the records again, choose Show All from the Select menu.

SORTING THE RECORDS

4th Dimension can change the order in which records are displayed based on the content of the fields. If you sort the records based on the Last Name field, for example, the records are arranged alphabetically by last name. In this case the Last Name field is called the *sort field,* the field 4th Dimension uses to sort the records.

If two or more of the employees have the same last name, you will want to give 4th Dimension a second field to determine the order of the records. This is the way the telephone book is ordered. The records are ordered alphabetically by last name and within the same last name, the records are arranged alphabetically by first name. 4th Dimension can use up to 31 sort fields so your records can be arranged exactly as you require.

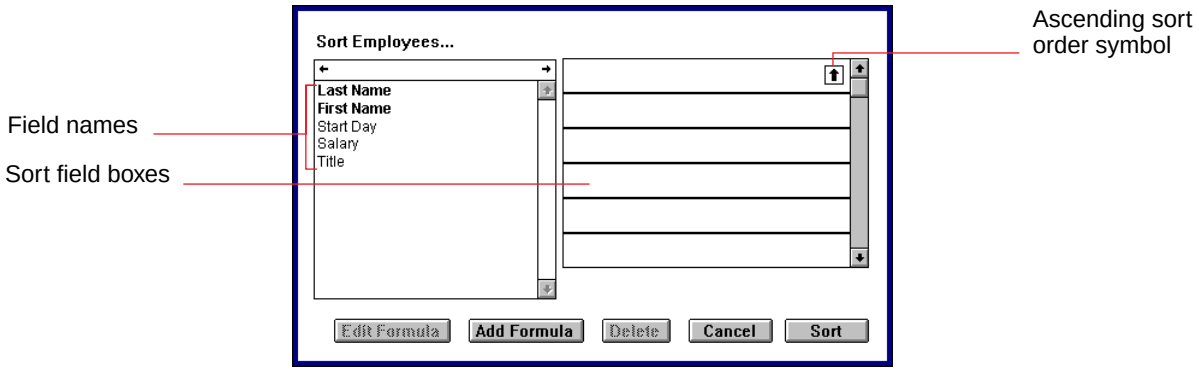
No matter how many different sort fields you use, each one can be in either ascending order or descending order. *Ascending order* is alphabetical order from *A* to *Z* and numerical order from 0 to 9. *Descending order* goes from *Z* to *A* and 9 to 0.



The information in the PEOPLE database is currently displayed in the order the records were entered. Suppose you want to arrange the records in alphabetical order by last name.

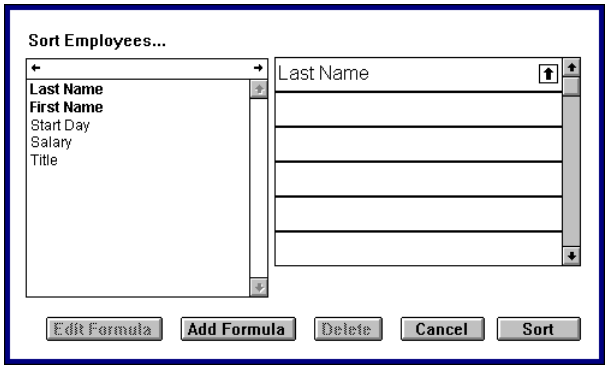
1. Choose Sort Selection... from the Select menu.

4th Dimension displays the Sort dialog box, showing a list of field names and a set of blank boxes. You will select field names from the list to establish the sort order for the records.



2. Click Last Name.

4th Dimension enters Last Name in the first Sort field box. This step instructs 4th Dimension to display the records in alphabetical order, according to the entries in the Last Name field.



Notice that both Last Name and First Name are displayed in bold type in the list of fields. The bold type indicates that the fields are indexed. When you use an indexed field to sort the records, the process is extremely rapid because 4th Dimension can order the records based on the index table. It does not have to go through each record in sequence to determine the order.

The arrow on the far right of the Sort field box points up, indicating that the sort is in ascending order.

3. Click the Sort button.

4th Dimension sorts the records and displays them in the new order.

Now suppose you want to see Mary Smith's record grouped with others containing the same job title so that you can compare her salary to theirs.

4. Choose Sort Selection... from the Select menu.

5. Click Title to enter this field in the first Sort field box.

6. Click Salary to enter this field in the second Sort field box.

7. Click the arrow ⬆ to the right of Salary in the Sort field box.

The arrow now points down to indicate that the sort is in descending order.

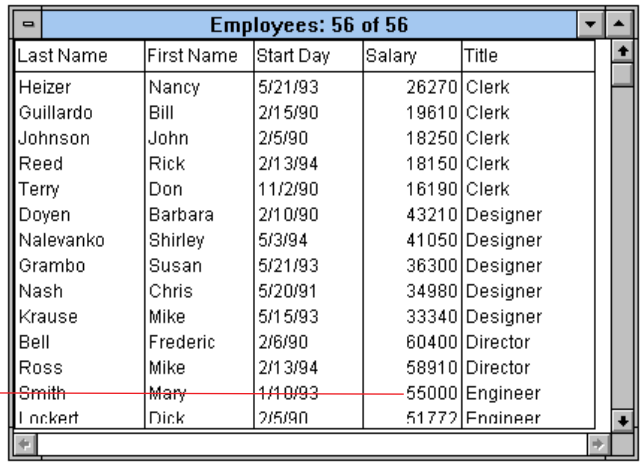
This means that the records will be sorted in ascending alphabetical order by Title (from *A* to *Z*), and within Title in descending order by Salary (from highest to lowest).

This time, when you sort, 4th Dimension will sort sequentially, going

through the records to build up the new order. Even though the sequential sort will take a short time, it will be noticeably longer than the indexed sort you performed before.

8. Click the Sort button.

4th Dimension sorts the records and displays them by title. Use the scroll bar to see the engineers' records.



Highest Engineering department salary

The records for each job title are grouped together. You can now see that Mary Smith's salary is significantly higher than the salaries of others with the same job.

THE NEXT STEP

Selecting, searching, and sorting are basic database operations that you can do easily with 4th Dimension. The *4th Dimension Tutorials* shows you how to create more complex search conditions.

Another basic database operation is printing reports of the records. In the next chapter you will see how printing works in 4th Dimension.

Estimated time to complete: 15 minutes

There are many ways to print information from a 4th Dimension database. You can print the records one at a time using the input layout. You can print them as a list using the output layout. You can create a report that prints a selection of records and provides totals and subtotals for numeric fields. The report you print can include graphs, pictures, and other graphic elements such as diagrams, borders, and different fonts and styles.

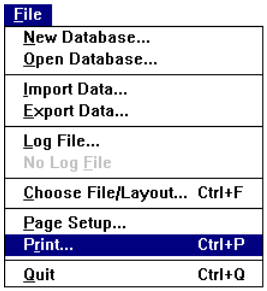
In this chapter you will look at two methods for printing information in your database. You will learn how to do the following:

- Print all the records using an output layout,
- Use the Quick Report editor to print certain fields from all the records,
- Use the Quick Report editor to create a report that calculates the total salaries for each job title.

USING A LAYOUT TO PRINT RECORDS

In this section you will learn about printing records using an output layout.

Suppose you have decided to print all your employee records. In this section, you will use your output layout for printing.



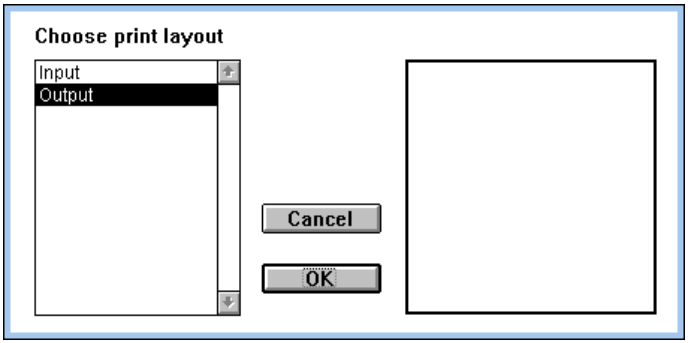
Make sure that your database is open. Start in the User environment, displaying all the records.

1. Sort the records by Last Name and First Name.

If you do not know how to sort the records, return to Chapter 3 to review the steps.

2. Choose Print... from the File menu.

4th Dimension displays the Choose Print Layout dialog box. This dialog box allows you to choose any layout for printing. The current output layout, Output, is already selected so you do not need to select a different one.



3. Click OK.

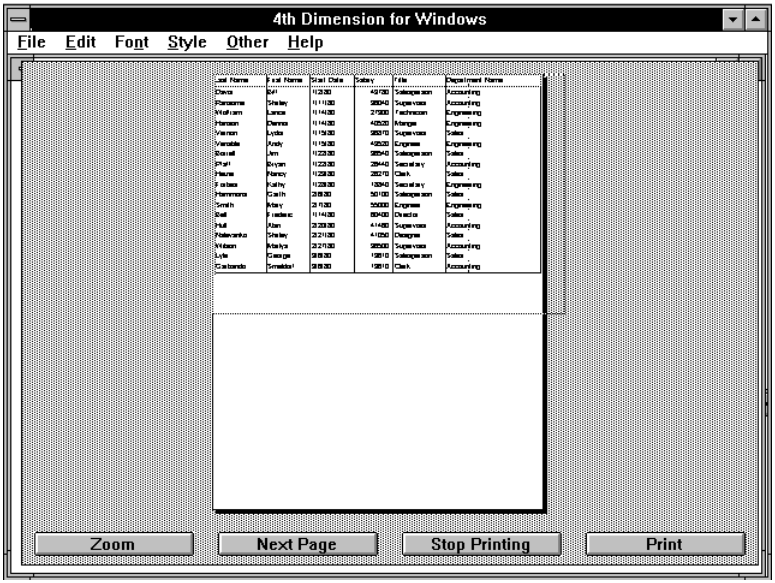
4th Dimension displays a Page Setup dialog box.

4. Click OK again.

4th Dimension displays the Print dialog box. If you have a printer connected to your computer, you can print these records. However, since these are practice records, you will probably want to preview the report on screen instead.

5. Click the Preview on Screen check box and click the Print button.

4th Dimension displays on the screen what a printout will look like.



6. Click the Zoom button to see the report close up.

The close-up shows the list of records as it would appear if it were printed.

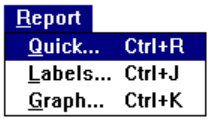
7. When you've finished, click anywhere on screen and click the Stop Printing button.

4th Dimension returns to the output display.

With this quick example, you can see that you can use any of your layouts for printing the information. If you wanted the records printed in the single-record format, you could print using your input layout.

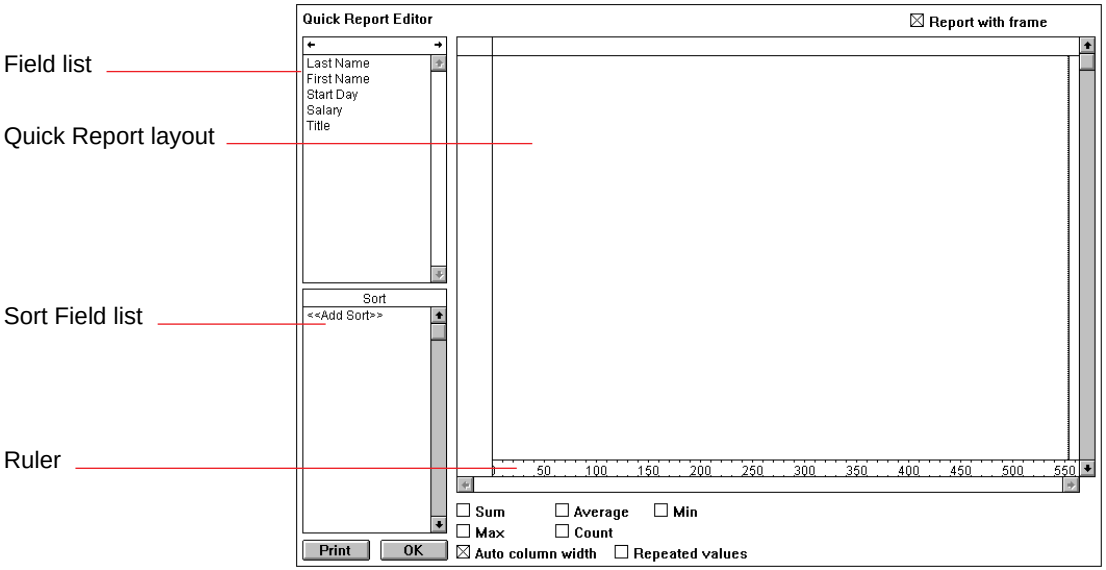
USING THE QUICK REPORT EDITOR

4th Dimension provides the Quick Report editor so that you can design and print reports quickly. Suppose you want a list of employees that includes only their names and job titles. This report will be a list similar to the one you just printed, except that you will omit some fields.



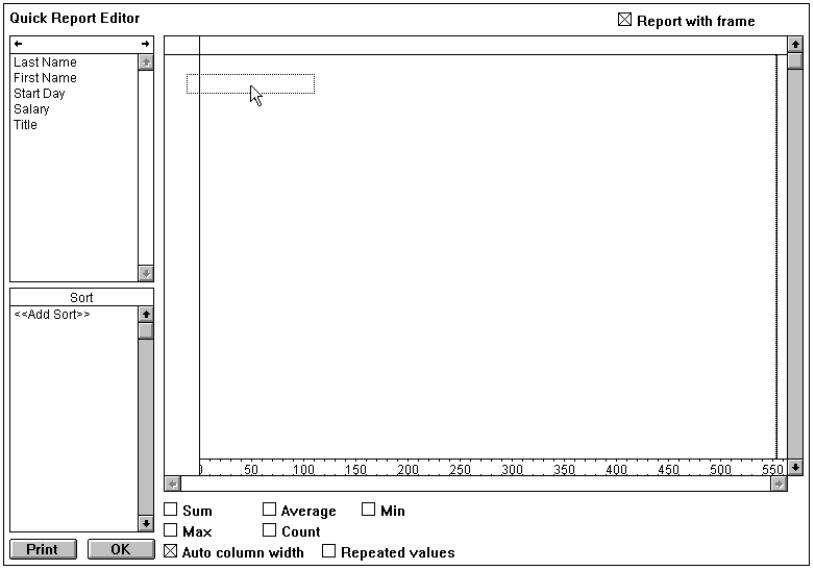
1. Choose Quick... from the Report menu.

4th Dimension displays the Quick Report editor as shown below.



In the next steps you will drag the fields you want to use from the Field list onto the Quick Report layout. As you will see, 4th Dimension automatically creates columns for the information to be printed.

2. Drag the Last Name field from the Field list into the Quick Report layout.



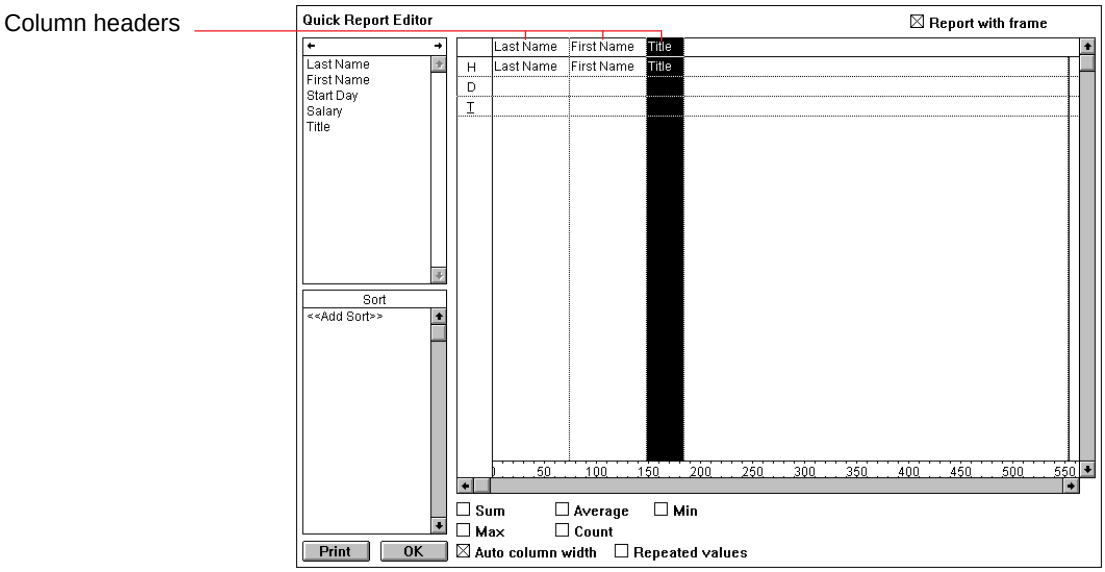
When you release the mouse button, 4th Dimension creates a column for employee last names. It also adds rows for the header (H), detail (D), and totals (T). The Header row contains the field label that will be printed at the top of each column. The Detail row contains what will be printed once for each record. The Totals row will later contain a formula to calculate a value from a field in all the records.

3. Drag the First Name field from the Field list and place it to the right of the first column in the Quick Report layout.

4th Dimension creates a second column for employee first names.

4. Drag the Title field from the Field list and place it to the right of the second column in the Quick Report layout.

4th Dimension creates a new column for the Title field.

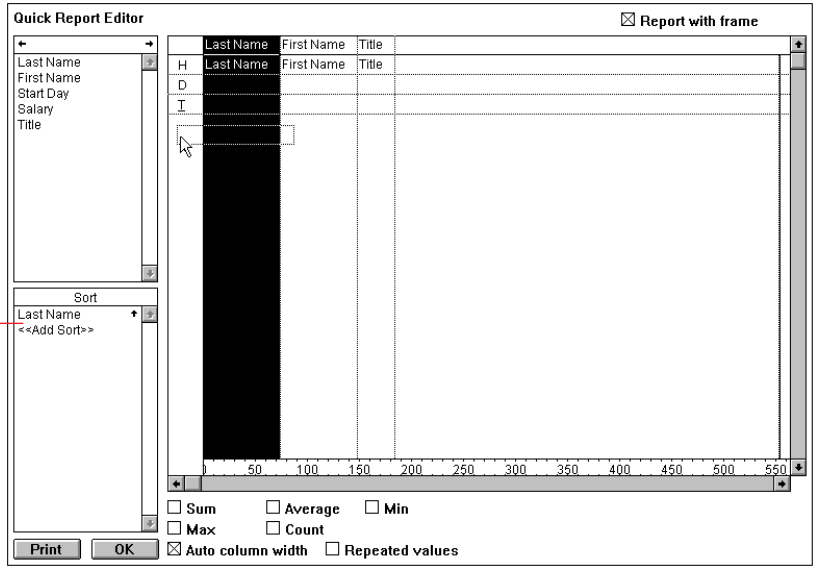


You can replace a field by dragging the new field into the column you want it to occupy. For instance, you could substitute Start Day for Title by dragging the Start Day field on top of the Title column and releasing the mouse button.You can insert and delete columns using the **Insert Column** and **Delete Column** menu commands.

You now need to establish the sort order to determine the order in which the records will be printed. You are going to use two sort fields, Last Name and First Name.

5. Drag <<Add Sort>> from the Sort Field list to the Last Name column in the Quick Report layout.

When you release the mouse button, 4th Dimension adds Last Name to the Sort Field list. This step establishes the sort order for the report.



If you make a mistake, you can remove a sort field from the list by choosing **Delete Last Sort** from the **Other** menu.

6. Drag <<Add Sort>> from the Sort list onto the First Name column in the Quick Report layout.

When you release the mouse button, 4th Dimension adds First Name to the Sort list. You have created a two-level sort. The primary sort field is Last Name and the secondary sort field is First Name. For employees with the same last name, the records will be sorted by first names.

If you did not specify a sort order for the report, the records would be printed in the order in which they appear in the output layout.

You are now ready to print your employee list.

7. Click the Print button.

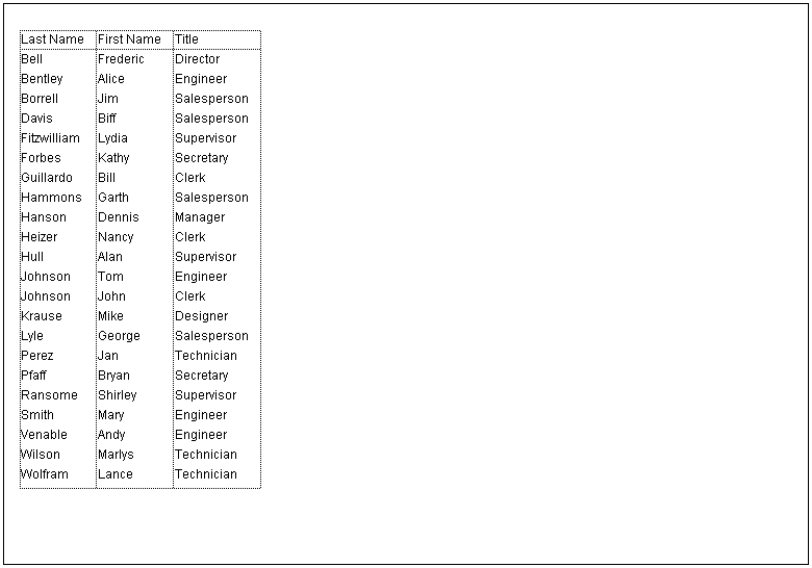
8. Check to make sure that the Preview on Screen check box is selected (unless you want to print the report on your printer).

9. Click the Print button.

4th Dimension displays the report.

10. Click the Zoom button to examine the report closely.

You have created a useful report in just a few minutes.



Last Name	First Name	Title
Bell	Frederic	Director
Bentley	Alice	Engineer
Borrell	Jim	Salesperson
Davis	Biff	Salesperson
Fitzwilliam	Lydia	Supervisor
Forbes	Kathy	Secretary
Guillardo	Bill	Clerk
Hammons	Garth	Salesperson
Hanson	Dennis	Manager
Heizer	Nancy	Clerk
Hull	Alan	Supervisor
Johnson	Tom	Engineer
Johnson	John	Clerk
Krause	Mike	Designer
Lyle	George	Salesperson
Perez	Jan	Technician
Pfaff	Bryan	Secretary
Ransome	Shirley	Supervisor
Smith	Mary	Engineer
Venable	Andy	Engineer
Wilson	Marlys	Technician
Wolfram	Lance	Technician

To prepare for the next section, you will now return to the Quick Report editor.

11. Click anywhere on the screen to return to the full-page view and then click the Stop Printing button.

4th Dimension returns to the Quick Report editor.

If you wanted to print such a report each month or each quarter, you could save this report and use it again. When the time came to print, you would simply load the report design and print it again. The printed output would reflect any changes you had made to the database in the meantime. For more information, refer to the *4th Dimension User Reference*.

Since this is a practice session, you do not need to save this design. You will modify it in the next section.

CALCULATING A TOTAL ON A REPORT

4th Dimension's Quick Report editor can calculate summary statistics such as sum, average, maximum, minimum, and count. Suppose you want to have 4th Dimension calculate a total for salaries. Your first step is to add to the report design a Salary column that will print the salary figures for each record.

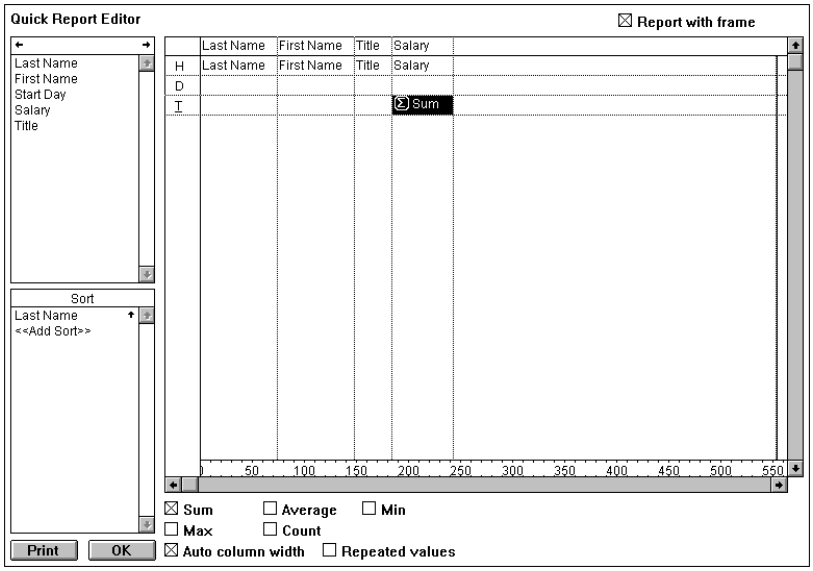
1. Drag the Salary field from the field list and place it to the right of the Title column in the Quick Report layout.

4th Dimension creates a column for salaries.

2. In the Salary column, select the cell intersected by the Totals row.

3. Click the Sum check box below the Quick Report layout.

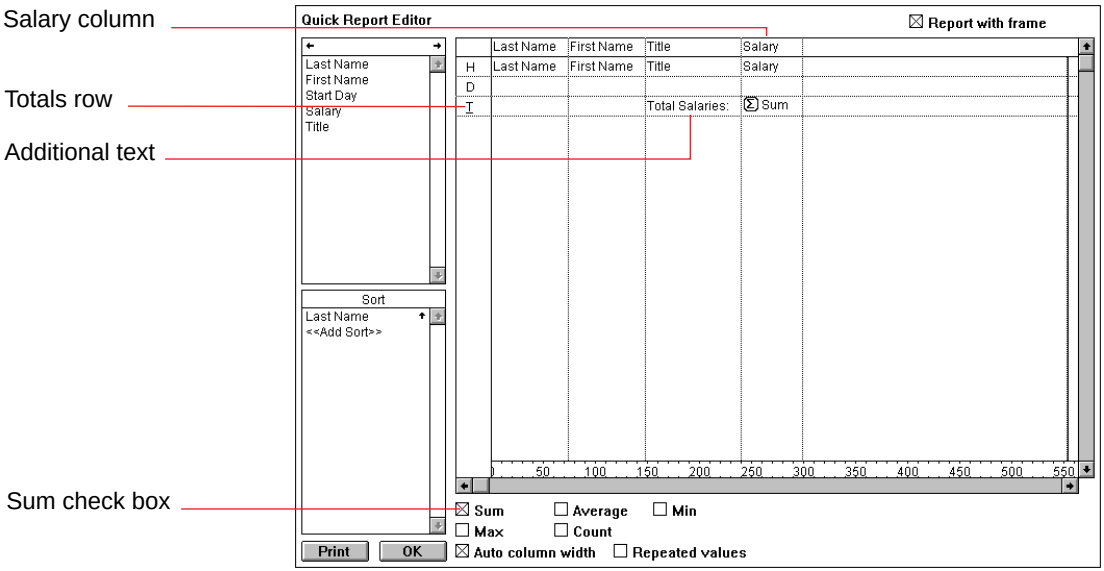
4th Dimension adds a Sum symbol to the selected cell, instructing 4th Dimension to calculate the total of all the salaries when the report is printed. The total salaries for all the records in the current selection will be printed in the Salary column.



To describe the calculated total, you can now add explanatory text. The text will be printed only once, when the total is calculated.

4. Select the cell to the left of the calculated cell you just created and click again to create an insertion point.

5. Type “Total Salaries:”



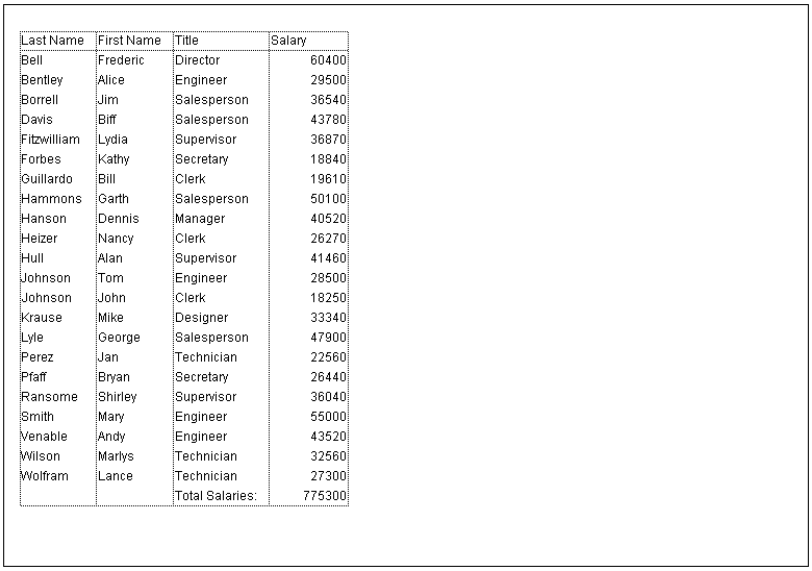
6. Print this new report.

4th Dimension prints the salary for each employee and calculates the total salaries at the end of the report.

7. Click the Next Page button to display another page.

8. Click the Zoom button to see a close-up view of the page.

The total salaries figure appears on the last page.



Last Name	First Name	Title	Salary
Bell	Frederic	Director	60400
Bentley	Alice	Engineer	29500
Borrell	Jim	Salesperson	36540
Davis	Biff	Salesperson	43780
Fitzwilliam	Lydia	Supervisor	36870
Forbes	Kathy	Secretary	18840
Guillardo	Bill	Clerk	19610
Hammons	Garth	Salesperson	50100
Hanson	Dennis	Manager	40520
Heizer	Nancy	Clerk	26270
Hull	Alan	Supervisor	41460
Johnson	Tom	Engineer	28500
Johnson	John	Clerk	18250
Krause	Mike	Designer	33340
Lyle	George	Salesperson	47900
Perez	Jan	Technician	22560
Pfaff	Bryan	Secretary	26440
Ransome	Shirley	Supervisor	36040
Smith	Mary	Engineer	55000
Venable	Andy	Engineer	43520
Wilson	Marlys	Technician	32560
Wolfram	Lance	Technician	27300
		Total Salaries:	775300

Return to the Quick Report editor by clicking anywhere on the screen and clicking the **Stop Printing** button.

9. Return to the output display by clicking OK in the Quick Report editor.

THE NEXT STEP

Printing reports is a basic way of communicating information in your records.

In the next chapter you will see how to produce labels and graphs from the same records.

Estimated time to complete: 10 minutes

The records in your database can be used for many purposes. You have seen how to print reports and calculate totals. 4th Dimension provides two more ways of printing the information from the records. In this chapter, you will learn how to do the following:

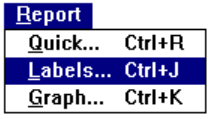
- Create labels with the Label editor,
- Graph values.

USING THE LABEL EDITOR

4th Dimension's Label editor allows you to create labels of any size so you can match the labels you are using with your printer. For example, if you are using label forms that print three labels across a sheet, you can design the labels to fit that format. If you are using label forms that print one label at a time on a narrow strip, you can design the labels to fit that format.

You can print many types of labels. Suppose you want to print a label for each employee's file directory that includes only the employee's name and start date. The 4th Dimension Label editor will create a uniform file directory label for each employee.

You can follow the steps in this tutorial even if you don't have label forms in your printer. As in the preceding chapter, you can preview the labels on the screen instead of printing them.



You start in the User environment.

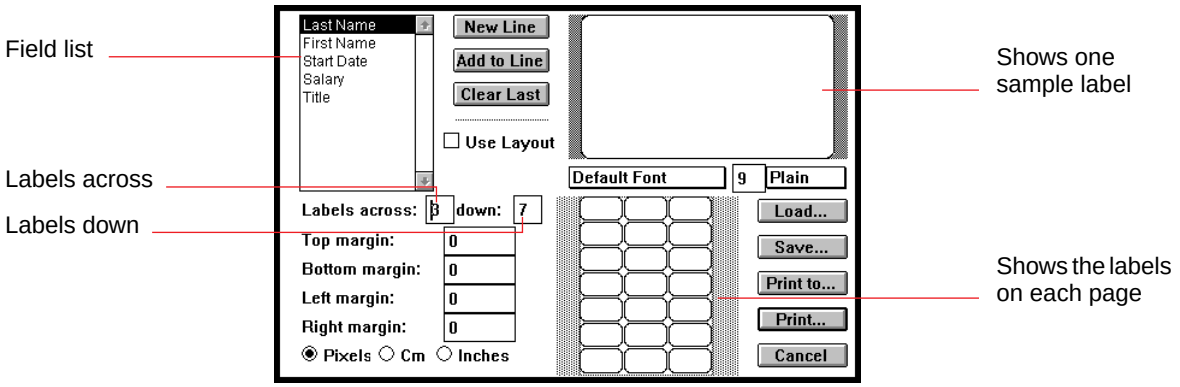
1. Choose Labels... from the Report menu.

4th Dimension displays a Page Setup dialog box. The Label editor needs to know the orientation and paper type you are using in your printer. For this procedure, assume you are using a vertical orientation with standard label paper.

2. Click OK.

4th Dimension displays the Label editor.

You need to do only three things to design your labels: set the number of labels on your page, choose the fields you want to print, and, if necessary, set the margins. This tutorial assumes that your mailing label forms are spaced 3 across and 11 down on each page.



The Label editor starts with a 3 in the Labels Across box so you need to change only the Labels Down box.

3. Enter "11" in the Labels Down box.

4th Dimension changes the full-page display to reflect the new values. The sample label changes to reflect the new size. The display lets you see exactly how labels will be printed on each page.

4. Select First Name from the Field list.

You want a standard label with each employee's first and last name on the first line. Selecting the First Name field is the first step toward placing it on the sample label.

5. Click the New Line button to the right of the Field list.

4th Dimension creates a line on the sample label and places the First Name field in it. If you make a mistake, you can clear the last line of the label by clicking the **Clear Last** button.

6. Select Last Name from the Field list.

7. This time click the Add to Line button.

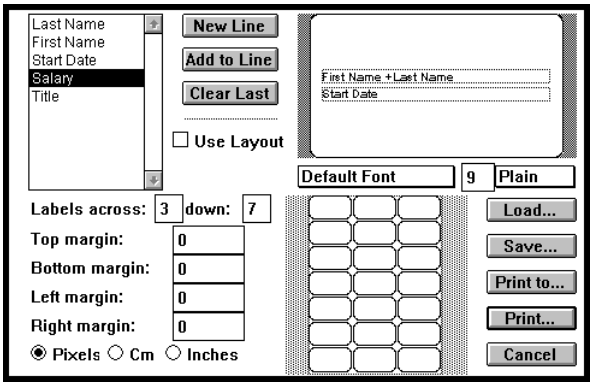
4th Dimension adds Last Name to the first line, next to the First Name field.

The **New Line** and **Add to Line** buttons are the primary buttons you use to design any label. The **New Line** button creates a line and places the

selected field on it. The **Add to Line** button adds the selected field to the last line created.

8. Select the Start Day field and click the New Line button.

4th Dimension creates a second line and places the Start Day field on it.



You can now print your labels. You can also save this label design to use later. You won't have to create it again—simply load it and then print.

9. To print your labels, click the Print button.

4th Dimension displays a Print dialog box.

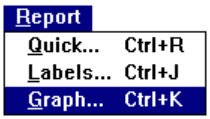
10. If you don't want to print the labels, be sure the Preview on Screen check box is selected before clicking the Print button.

11. After you have printed your labels, click the Stop Printing button to return to the output layout.

GRAPHING INFORMATION

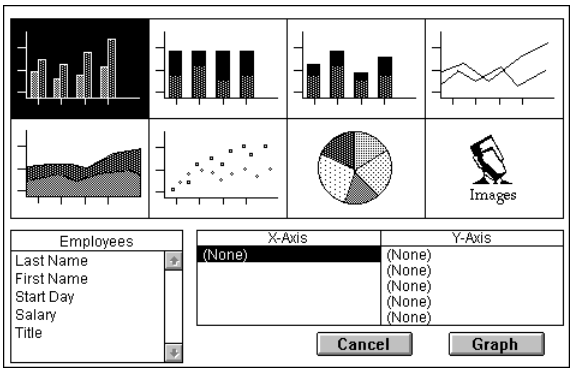
So far you have concentrated on manipulating individual records. Your lists and labels essentially reproduced the information in your database in a different form. Only when you calculated a total for salaries did you begin to make use of 4th Dimension's ability to summarize the information in the records.

Now you will see how to quickly graph the information in your database to obtain a visual summary of the data. For example, suppose you decide to graph the total salaries for each job classification. This graph will give you a good picture of how your company allocates its resources.

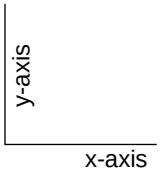


1. Choose Graph... from the Report menu.

4th Dimension displays the Graph dialog box.



Field names are listed on the lower left of the screen. You will first select the field you want to serve as the x-axis value from the list. The x-axis value is the value that will be graphed along the horizontal coordinate. You want to see the job titles along the x-axis.



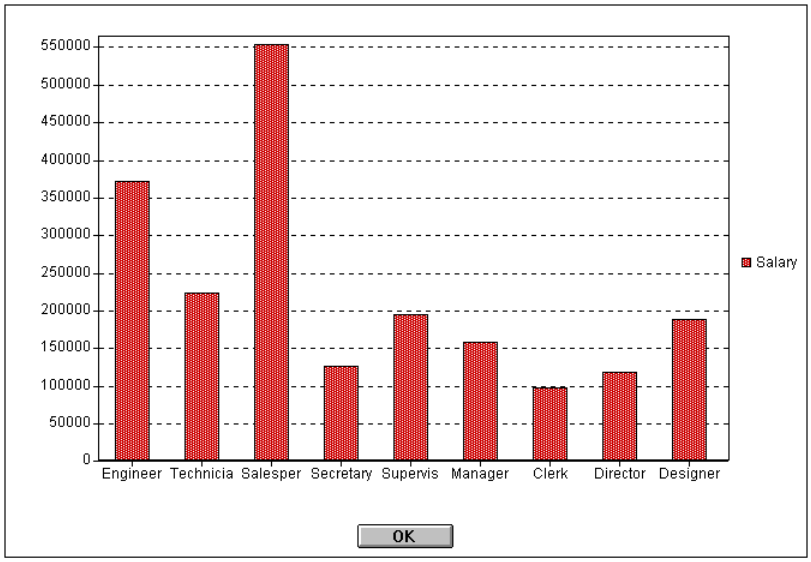
2. Click the Title field name.

4th Dimension enters Title as the x-axis value and highlights the first y-axis value. A y-axis value is a value that will be graphed along the vertical coordinate. You want to see salaries graphed vertically.

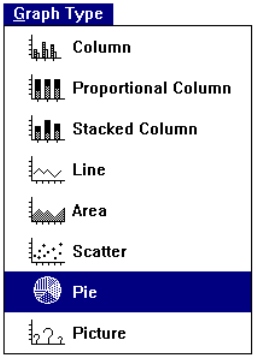
The Salary field name is the only option; the other field names are grayed out. Since Salary is the only field that contains numerical values, it is the only field that can be graphed on the y-axis.

3. Click the Salary field name and then click the Graph button.

4th Dimension creates a bar graph showing the total salaries paid for each job title.

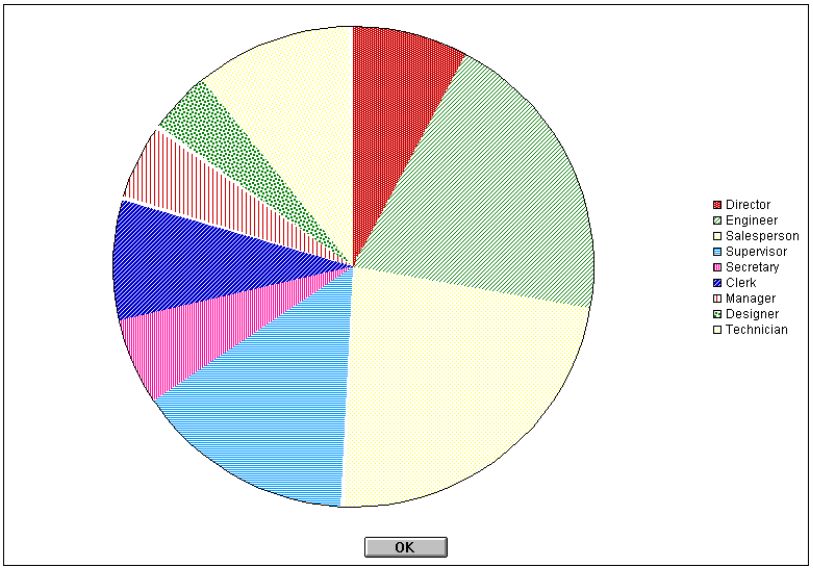


As you can see in the figure, salespeople are paid the highest total salaries. Next, you decide to display the graph in a different way to get a better grasp of the relative salary expenditures for each job title.



4. Choose Pie from the Graph Type menu.

4th Dimension displays a percentage of the total salaries for each job title.



5. Click OK to return to the output layout.

THE NEXT STEP

Congratulations! You have created a completely functional database and have practiced several of the most important tasks involved in tracking and analyzing information.

You have used the basic features of the Design and User environments to do the following:

- Create a single-file database,
- Enter and modify records,
- Select, search, and sort the records,
- Print reports from the information,
- Create file folder labels,
- Summarize the information in graphs.

If you want to learn about additional features of 4th Dimension, refer to the other books provided with the application.

For more step-by-step introductions to 4th Dimension features, work through the *4th Dimension Tutorials*. This will take you through the process of creating your own layouts and other more advanced tasks.

The *4th Dimension User Reference* provides complete information about the User environment—the environment in which you use databases and layouts to enter and manipulate data.

The *4th Dimension Design Reference* is a reference guide to the Design environment with detailed descriptions of the operations that you can perform in this environment. You should use it in conjunction with the other volumes in your documentation package.

The *4th Dimension Language Reference* is a reference guide to using the 4th Dimension language. Use this manual to learn how to customize a database using the 4th Dimension language.

The *4D Server Reference* is a reference guide to installing 4D Server and managing multi-user databases with 4D Server. This manual is included when you purchase 4D Server.

The *4th Dimension Utilities Guide* provides a guide to the utilities provided with 4th Dimension and 4D Server such as 4D Tools, Customizer Plus, and External Mover.

The *4th Dimension Glossary and Master Index* provides a glossary that

defines terms and an index to all 4th Dimension manuals.

Symbols

Numerics

A

C

D

E

F

G

I

L

M

N

T

U

Z