Database Case 4

Hadad's Pharmacy

Problem:	Summarize and analyze data from a transaction processing system for government reporting requirements
Management Skills:	Organize Control
Access Skills:	Queries Sorting Data Reduction Reporting

Data Table: HADAD

Andrew Hadad, the owner and pharmacist of Hadad's Pharmacy in Portland, Oregon, was going through his daily mail and came across a letter he had been expecting from the state government. The letter informed him of new regulations and reporting requirements for certain categories of drugs.

The Oregon state government had begun an initiative to restrict the growing use of addictive and dangerous drugs. One of the first steps involved identifying the type and amount of these drugs sold by each pharmacy in the state. This data would then be analyzed and any regional trends identified.

The new regulations had been discussed at a recent meeting of Andrew's local chapter of the Pharmacy Guild - the state professional body for pharmacists. Most pharmacists agreed that the new controls were a good idea, but the thought of yet another record keeping chore was not attractive.

Three years ago the members of Andrew's Pharmacy Guild had each put in a personal computer with software to manage the pharmacy prescription process. When a customer wanted a prescription filled, the pharmacist entered their personal details (if a new customer) and the drug and dosage requirements prescribed by the doctor. The system produced three outputs: a sticky label to affix to the medication, a repeat prescription if required, and a detailed receipt for the customer for insurance purposes. For regular customers, the software also had the ability to check whether new medication would interact adversely with any existing medication.

The letter from the government specified that usage information was required for only six classes of drugs: sedatives, analgesics, anti-hypertensives, diuretic, anti-inflammatories and anti-depressives. At any given time, Andrew's pharmacy stocked around 100 drugs in these target groups.

The government required each pharmacy to submit a quarterly summary report indicating the usage of each drug issued in the 6 target classes during this period. Total usage of these 6 classes was also required. The government would conduct random cross checks with drug company delivery records to check the accuracy of the reporting. Severe penalties were specified for non-compliance.

The table below shows a sampling of the codes assigned to drug classes used by Andrew's pharmacy prescription program. Use this to identify the drug codes of interest to the government.

DRUG_CODE	DRUG_CLASS
B1	Steroids
B2	Diuretic
B3	Anti-hypertensives
B4	Analgesics
G7	Anti-diarrhoea
G8	Birth Control
G9	Sedatives
Q1	Anti-inflammatories
Q2	Anti-malaria
Q3	Antibiotic
Q4	Anti-depressives

ChemSoft, the firm who had provided the computerized prescription system had also attended the Pharmacy Guild's meeting. They indicated it would be a major job to change the current system to meet the government's requirements. They quoted a very high fee, and a 3 month delay before conversion would be possible. They could however immediately deliver an add-on program that would convert each quarter's prescriptions into a generic data format which could be readily used by a variety of Windows-based database packages.

For a low cost solution, ChemSoft recommended each pharmacist purchase a Windows-based database package and use it in tandem with the conversion program to perform the government's usage analysis.

The database package could also be used for other purposes. Many of the pharmacies stocked a range of gift lines, vitamins, and fashion accessories, and used a manual card system to keep track of their inventory and suppliers in these areas. Using a database to also automate this side of the business was an attractive proposition.

Andrew was sure it would not be difficult to design a database program to meet state government needs. The job could be performed on the pharmacy's personal computer on weekends when the store was closed. Andrew estimated that he only used 2 or 3 of the drugs on the target list on any given day. He also believed that some of the information required by the government would be useful for his business. For example, it would be handy to know how much he sold of each company's drugs.

One problem still bothered Andrew. Each drug company supplied medication in different tablet sizes. The strength of each tablet also varied in terms of milligram dosage. The government needed its usage statistics to be reported in milligrams (mgs). Fortunately, the pharmacy prescription system recorded both the number of tablets and their strength (in mgs) used for each prescription. To satisfy the government's requirements, it would simply be a matter of multiplying the number of tablets by strength to get total milligram usage.

Part of the data table produced by the conversion program for a quarter's of prescriptions issued by Hadad Pharmacy has been saved as an Access table called HADAD on SOLVEIT.MDB. Create a new empty database, and import this table now.

Tasks: There are six tasks in this case:

1. Design a query to filter out all of the drugs not of interest to the state government.

2. Design a summary report to present to the state government each quarter. Include only the total drug usage and the sub-total usage for each Drug Code. The report should be sorted by Drug Code. Do not include the individual prescription records.

3. Print this report.

4. Andrew would like to discover which drug companies produce the drugs he sells under each Drug Code. Design and produce a report that presents all the quarter's transactions sorted by Drug Code. Within each Drug Code sort alphabetically by Supplier. Include all appropriate fields including Drug Name and Supplier.

5. Andrew has been frustrated by the slow delivery of supplies by Roche. The Roche sales representative is coming to visit next week and Andrew will raise the subject. Andrew would like to prepare for the visit by finding out how much of Roche's products he actually uses. Create and print out a report of all the prescriptions Hadad Pharmacy dispensed where the drug was provided by Roche. He would like this list sorted by Drug Code with sub-total usages included for each class.

*6. ChemSoft has extended their pharmacy system. The new system is compatible with a number of Windows-based database packages including Access. The system is totally menu driven and the pharmacist just selects which operation is required. Menu options include, "Enter a New Customer" and "Fill Prescription". The system has four main data files: customer, drug information, inventory, and transaction records.

   The customer enters the store and gives the prescription to the pharmacist or shop assistant. The pharmacist goes to the computer and checks whether the customer is on file. If not, customer details are entered, otherwise the customer's record is located by the system. Prescription details are then entered. A check is automatically made to ensure the new drug does not interact with any medication currently being used by the customer.

   The prescription is then filled by the pharmacist, the inventory level for that drug is adjusted downwards, a sticky label is produced and a record is added to the transaction database. The transaction database is just a log of every prescription issued. A repeat script is printed if required, and a detailed customer receipt printed for insurance purposes.

Draw a data flow diagram (first-level only) describing ChemSoft's new system. Include the major processes, data files, data flows, system outputs and people involved in the system. Identify all the fields in each of the data files.

At the end of each week a number of management reports are produced. Suggest what you think these reports will be, and what fields they are likely to contain.

Information on producing data flow diagrams is contained in most information systems texts. Our reference is: *"Essentials of Management Information Systems: Transforming Business and Management", K.C. Laudon & Jane P. Laudon, 1999, Prentice-Hall.*

Time Estimates (excluding task marked *)

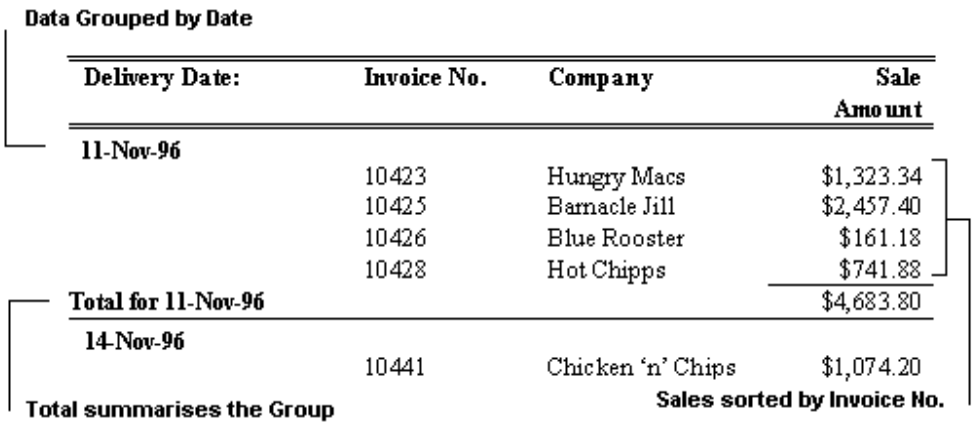
Expert: 30 minutes
Intermediate: 1.5 hours
Novice: 2.5 hours

Tutorial For Database Case 4 Using Access 97

How to Create Record Groups in Reports

For many reports, sorting the records isn't enough - you may also want to divide them into groups. A group is a collection of records that share a common characteristic such as the same Product Number or the same Zip code. In Access, a group consists of a group header, a series of detail records, and a group footer.

Grouping allows you to separate records of groups visually, and to display introductory and summary data for each group. For example, the report extract shown below groups sales by date and calculates the total amount of sales for each day.



Let's produce a report with groups using the FRIENDS database and the report (*Tute2 Repo1*) we created in the Tutorial for Case 2. We want to group the report by State to produce a listing of friends sorted alphabetically (ascending order) by state. For friends in the same state, we want to sort these alphabetically by Last Name. Before we can do this, we need to make some modifications to the existing FRIENDS table. Load the practice database FRIENDS.MDB.

1. From the FRIENDS Database Window, click on the Table object, and double click on the FRIENDS table. Add four or five new records to the table, making sure that some of the state names you enter in the State field duplicate those of existing records (see Figure 5-47). To speed up this procedure, just enter new records for the Title, Last Name, First Name, Address, City and State fields.

Figure 5-47

Table: FRIENDS

TITLE	LASTNAME	FIRSTNAME	STREET	CITY	STATE
Dr	Drucker	Peter H.	345 Warren Road	Hudson	New York
Mr	Whitney	Craig	25 Wood Lake Roa	Morris	New Jersey
Mr	Sitkin	Howard W.	Morace Street	Springvale	New Hampshire
Dr	Skalek	William F.	8 Yorkshire Place	Teatown	South Dakota
Prof	Salione	Phillip	35 Truesdale Ave	Phoenix	Arizona
Mr	Fabian	James T.	36 Palmer Court	Chicago	Illinois
Mr	Kohlman	Frank	35 Miller Drive	Milwaukee	Wisconsin
Mr	Tedesco	George R.	346 Skytop Drive	Spokane	Washington
Ms	Zito	Helen K.	64 Albany Post Rd.	Dana	Maryland
Dr	Peterson	Jack S.	54 Elmor Ave	Barston	Ohio
Dr	Nelson	Robert M.	1 Franklin Ave.	St. Louis	Missouri
Mr	Eddy	Steven	12 Hedge Street	New York	New York
Ms	Satchel	Simone	111 Eagle Ave	Green Bay	Wisconsin
Mr	Sorini	Roberto	4 Capital Court	Winslow	Arizona
Ms	Nation	Carry	90 Buzzard Rd	Tuscon	Arizona
Mr	Henderson	Henry	Seaspray Drive	Manchester	New Hampshire

Record: 12 of 16

2. Press F11 to return to the Database Window.

3. Click on the Report object, and then click and highlight the report you created in Tutorial 2 (eg: Tutorial2 Repo). Click on the Design button, to enter design view for this report.

3. Change the Record Source for the report to the FRIENDS table. To do this, choose SELECT REPORT from the EDIT menu, and then click the *Properties* toolbar button, or choose VIEW/PROPERTIES from the menu. This activates the report properties sheet.

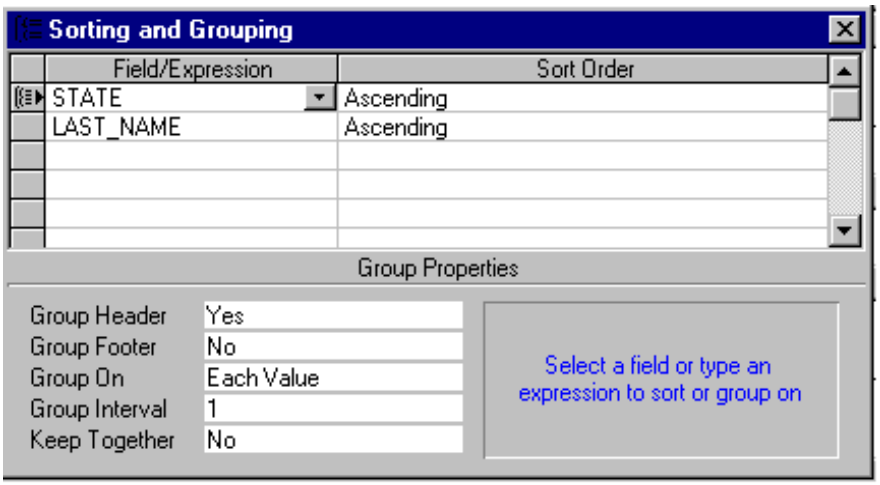
4. On the properties sheet, click the ▼ button to the right of the Record Source bar. This activates a drop down list of all tables and queries associated with the FRIENDS database. Click on the FRIENDS table to change the record source for the report.

5. Close the properties sheet by clicking on the ☒ box in the top right hand corner.

6. Click on the Sorting and Grouping toolbar button, or select VIEW/SORTING AND GROUPING from the menu.

7. Click on City in the Field/Expression column, and change the field to State, and then click on the Group Header bar and change the default to Yes. Click on the blank row in the Field/Expression column immediately under State to display a list of fields and select Last Name. Leave the Group Header for Last Name set to "No". Accept the default ascending sort order for both fields. Your screen should look similar to Figure 5-48.

Figure 5-48



8. Exit the Sorting and Grouping box by clicking on the box in the top right hand corner, and return to report design view.

You should notice that a blank *State Header* area has been added to the report design.

9. Select VIEW/FIELDLIST from the menu or click on the *FieldList* toolbar button to activate a scrollable field list for the FRIENDS table. Click and highlight the State field, and then holding down your left mouse button, drag the State field into the blank area of the State Header, and position against the left margin.

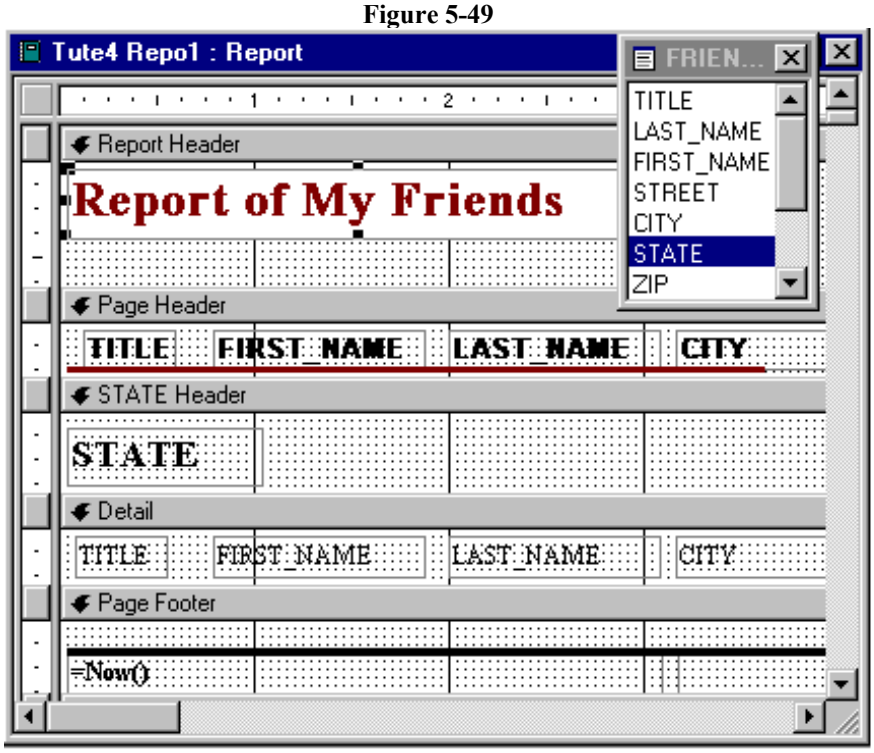
10. Double click on the State field to activate its *Properties* sheet. Scroll down the list and change the *Font Size* to 14, and the *Font Weight* to Bold type. Click on the box in the top right hand corner, and return to report design view. Your screen should look similar to Figure 5-49.

11. Select FILE/PRINT PREVIEW to see the effect that imposing a sort order has had on the report. If your report appears in Landscape orientation, select FILE/PRINT SETUP from the menu to change the orientation to Portrait mode. Send your report to print.

Your report should display the FRIENDS records grouped alphabetically by State, and within each group, ordered alphabetically by Last Name.

12. Save the report with a new name (eg: *Tute4 Repo1*) by selecting FILE/SAVE AS from the menu. Click on the *Close Window* toolbar button Close to return to report design view.

Figure 5-49



Calculating Group Summary Statistics

You may often want to ask questions about groups of data such as "How many orders did we receive this month?" or "What's the average price of all the products in our Toothpaste range?". You can perform calculations on groups of records in reports or queries. The following table shows some of the types of *functions* (calculations) you can use with Access (refer also Access Tutorial for Case 2)

Use this type of calculation	**To Find**
Sum	the total of values in a field
Avg	the average of values in a field
Min	the lowest value in a field
Max	the highest value in a field
Count	the number of values in a field (not including null values)

Let's use the Count function to count the number of friends we have in each State, and display that number at the end of each group in our report.

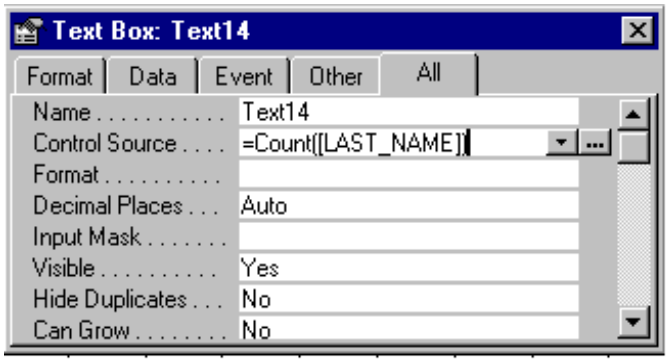
1. In report design view, click on the Sorting and Grouping toolbar button, or select VIEW/SORTING AND GROUPING from the menu.

2. Click on State in the Field/Expression column, and then click on the Footer bar and change the default to Yes.

3. Exit the Sorting and Grouping box by clicking on the box in the top right hand corner, and return to report design view. You should notice that a blank *State Footer* area has been added to the report design.

4. Select VIEW/FIELDLIST from the menu or click on the *FieldList* toolbar button to activate a scrollable field list for the FRIENDS table. Click and highlight the LastName field, and then holding down your left mouse button, drag the LastName field into the blank area of the State Footer, and position against the right margin.

Figure 5-50



5. Double click on the LastName field in the State Footer to activate its *Properties* sheet. Edit the *Control Source* bar to include the Count calculation (see Figure 5-50). Be particularly careful with the syntax here, and with the entering of round and square brackets.

Click on the box in the top right hand corner, and return to report design view.

6. Click on the Print Preview button or select FILE/PRINT PREVIEW to see the effect of this change on your report. Results should be similar to Figure 5-51. Send your report to print.

Figure 5-51

Arizona

Ms	Carry	Nation	Tuscon	
Prof	Phillip	Salione	Phoenix	
Mr	Roberto	Sorini	Winslow	
				3

Illinois

Mr	James T.	Fabian	Chicago	
				1

Maryland

Ms	Helen K.	Zito	Dana	
				1

7. Save the report with a new name (eg: *Tute4 Repo2*) by selecting FILE/SAVE AS from the menu. Press F11 to return to the Database Window.

Deleting Records In Access

To delete a record in an Access table, highlight the record row intended for deletion, and either press the *Del* key or select EDIT/DELETE. Access will ask you to confirm your action. Click OK to proceed with deletion of the record.

Tutorial For Database Case 4 Using Access 2.0

How to Create Record Groups in Reports

For many reports, sorting the records isn't enough - you may also want to divide them into groups. A group is a collection of records that share a common characteristic such as the same Product Number or the same Zip code. In Access, a group consists of a group header, a series of detail records, and a group footer.

Grouping allows you to separate records of groups visually, and to display introductory and summary data for each group. For example, the report extract shown below groups sales by date and calculates the total amount of sales for each day.

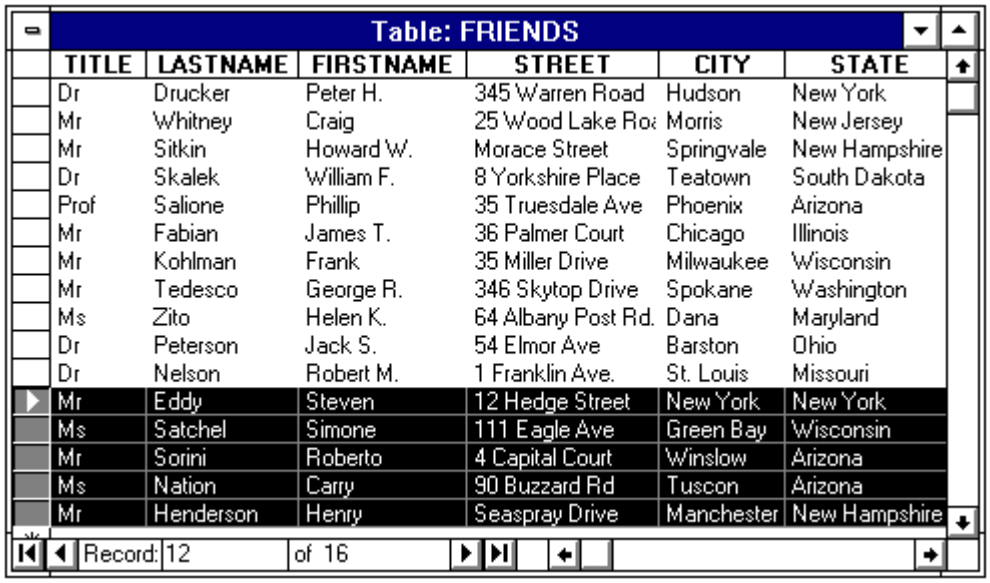
Data Grouped by Date

Delivery Date:	Invoice No.	Company	Sale Amount
11-Nov-94			
	10423	Hungry Macs	$1,323.34
	10425	Barnacle Jill	$2,457.40
	10426	Blue Rooster	$161.18
	10428	Hot Chipps	$741.88
Total for 11-Nov-94			$4,683.80
14-Nov-94			
	10441	Chicken 'n' Chips	$1,074.20

Total summarises the Group

Sales sorted by Invoice No.

Figure 5-52



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Mr	Kohlman	Frank	35 Miller Drive	Milwaukee	Wisconsin
Mr	Tedesco	George R.	346 Skytop Drive	Spokane	Washington
Ms	Zito	Helen K.	64 Albany Post Rd.	Dana	Maryland
Dr	Peterson	Jack S.	54 Elmor Ave	Barston	Ohio
Dr	Nelson	Robert M.	1 Franklin Ave.	St. Louis	Missouri
Mr	Eddy	Steven	12 Hedge Street	New York	New York
Ms	Satchel	Simone	111 Eagle Ave	Green Bay	Wisconsin
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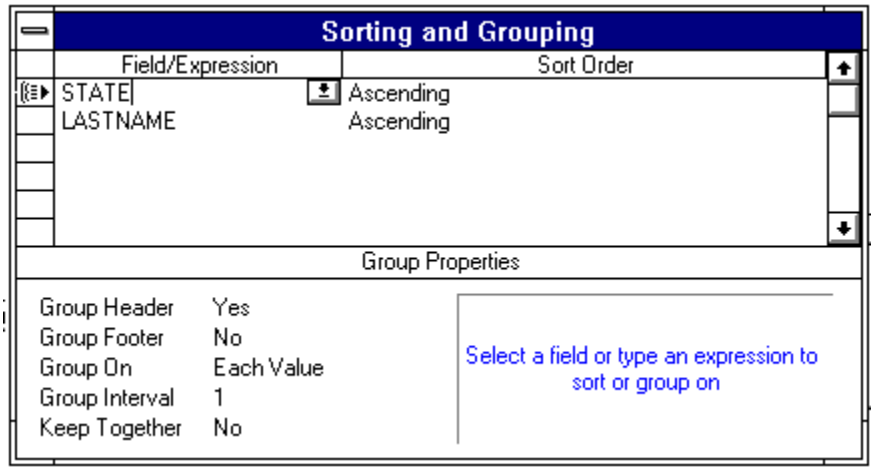
Figure 5-53



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11. Click on the Print Preview button or select FILE/PRINT PREVIEW to see the effect that imposing a sort order has had on the report. If your report appears in Landscape orientation, click on the Print Setup toolbar button, or select FILE/PRINT SETUP from the menu to change the orientation to Portrait mode. Send your report to print.

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Figure 5-54

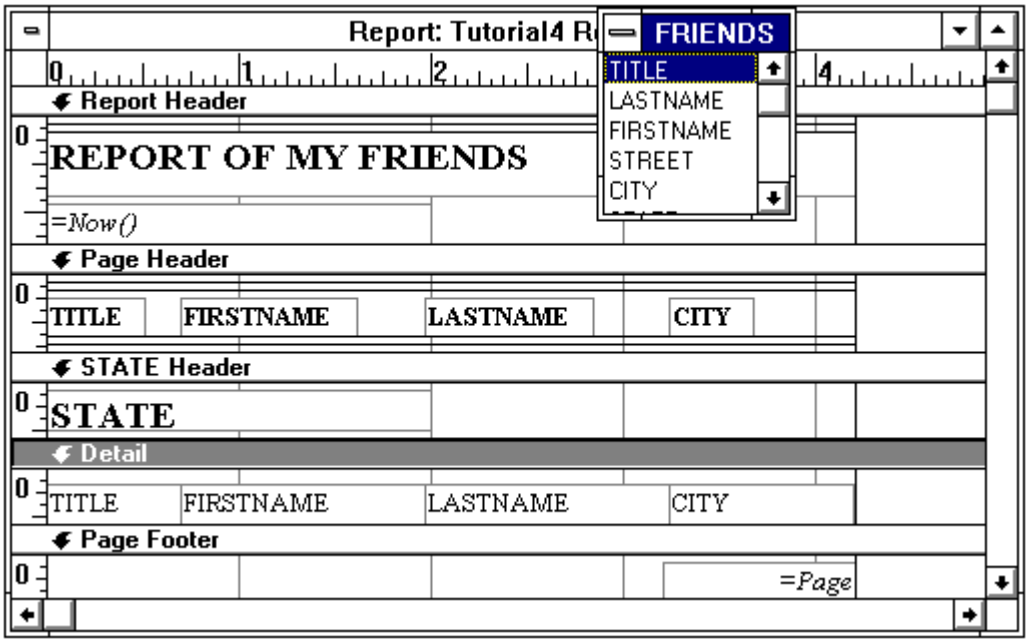

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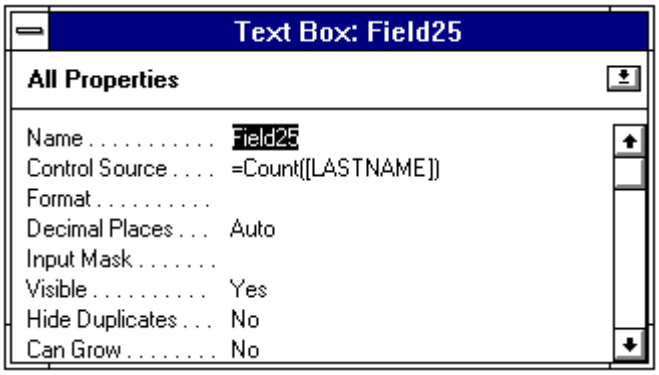
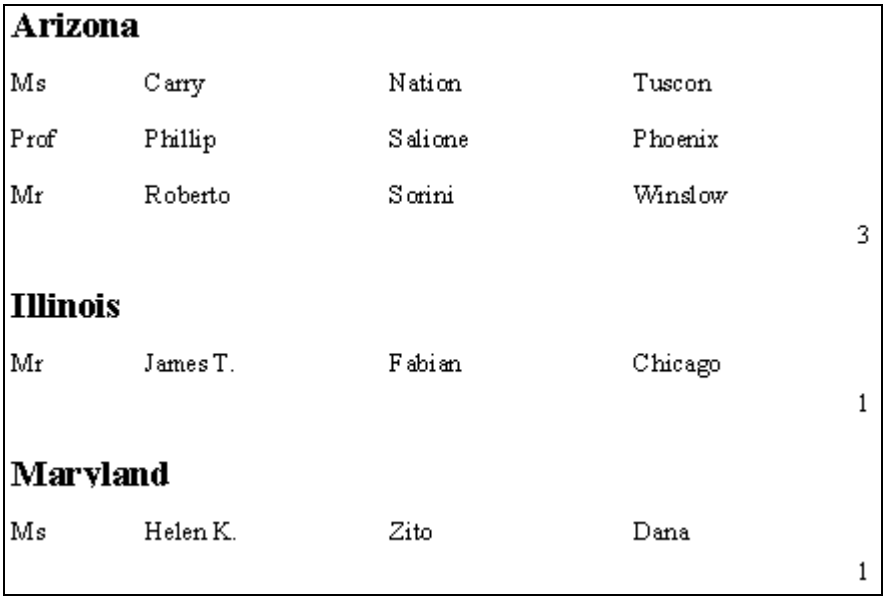
Figure 5-55



6. Click on the Print Preview button or select FILE/PRINT PREVIEW to see the effect of this change on your report. Your report results should be similar to Figure 5-56. Send your report to print.

Figure 5-56



Arizona

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Mr	Roberto	Sorini	Winslow

3

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1

Maryland

Ms	Helen K.	Zito	Dana

1

7. Save the report with a new name (eg: *Tute4 Repo2*) by selecting FILE/SAVE AS from the menu. Press F11 to return to the Database Window.

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