Database Practical 3 1999-2000

Objectives To create select, parameter, crosstab, and groups / totals queries.

(a) Open **Explore My Computer,** and find the **e:** drive. Open the **OFFICE2000_1\PFiles\MSOffice\Office\Samples** directory on the **e:** drive and copy ***all*** the files with names beginning **Nwind** to the **d:\docs** directory. This provides you with a copy of the example database **(Northwind)** supplied with *Access*, which you can alter if you wish (unlike the original on the e: drive, which is write protected). Work with this copy during the practical.

(b) Open **Access.** From the **Help**, read
*Working with Queries => **Queries: What they are and how they work*** Then go to *Working with Queries => Creating and Modifying Queries => **Create a Query***
You should read through the information about **select, parameter** and **crosstab** queries (the types you will meet in this practical) discussed under **Learn about the different types of queries I can create.** You should also try to understand the general idea behind each of the different types of **action queries.** (You are not required to read through the deeper levels of help on the various types of query.)

(c) Open your **Northwind** database and open the table **Order Details.** Scroll round it to see what it contains. Your first queries will be based on this table. Close the table.

(d) Read how to create a select query in *Working with Queries => Creating Select Queries => **Create a select query without a wizard***
Choose **Queries** in the **Database** window, then click the icon **Create a query in Design view.** In the **Show Table** dialogue box choose the single table **Order Details** and **Add** it to the query window. Add the fields **OrderID** and **UnitPrice** to the query. ***This is (the start of) the basic procedure for creating queries, and you should use it for each of the queries in this practical, choosing appropriate tables and fields to add in each case***
Sort by the **OrderID** in **Ascending** order and view the datasheet. Sort also by the **UnitPrice** in **Ascending** order. **Save** your query, then inspect the datasheet produced by it. Which field takes precedence in the sorting? Where is it in the QBE grid? Don't print a copy of this datasheet since it is very large. However, you should print copies of any reasonably sized query datasheets that you produce, to go in your practical file! In section (l) you will learn how to print copies of the matching QBE grids to go with your datasheets.
You should view the datasheet each time you add something to the query design and check that it is doing what you expected. It is easier to spot errors in the design by being methodical in this way.

(e) Now follow the bullet points below to create a ***new*** select query, which only shows (at first in their original, unsorted order) those **Unit Prices** from orders with a **ShipCity** of **Aachen, Barcelona** or **Caracas.** You will find that records in the **Order Details** table do not contain the **ShipCity** information. This information is stored in the **Orders** table. The two tables are *related* by the numeric field **OrderID**

- Add the **Orders** table to the query as well as the **Order Details** table; note that the relationship between these two tables, which is part of the structure of the Northwind database, is used automatically.
- Add the fields **ShipCity,** then **OrderID** and **UnitPrice.**
- Use criteria on the **ShipCity** field to select the records for your query. [Try using 3 criteria rows for the three alternative cities. What happens if you close the query – saving it first – and reopen it?]
- Change to **Datasheet** view to see the effect!
- Sort this query by **ShipCity,** then **OrderID** and **UnitPrice.**

(f) Find *Working with Queries => Creating Crosstab and Parameter Queries => Parameter Queries* - ***read the two topics under this heading.*** Make a copy of the query in (e); the **right-button, Copy, Paste** procedure is perhaps the easiest way, but you will have to supply a *different* name for the copy. Modify the copy to retrieve the (same three fields of) the records for a **ShipCity** *of the user's choice*, using a parameter query.

(g) Find *Working with Queries => Creating Crosstab and Parameter Queries => Crosstab Queries* - ***read the first three topics under this heading.*** Queries can be based on other queries as well as tables. Follow the bullet points below to create a **crosstab** query based on your query in (e). Your new query will show how many different products are included in each order for Aachen, Barcelona, Caracas.

- Click the icon **Create a query in Design view.**
- Change the View to **Queries** and select your previous query.
- Add all three fields to the QBE grid.
- From the **Query** menu choose **Crosstab Query.** (***Think*** before you complain to a demonstrator!)
- In the **Crosstab** row of the QBE grid choose **Column Heading** for **ShipCity,** and **Row Heading** for **OrderID.** (In each of these cases, the **Total** row should remain as **Group By.**)
- Similarly for **UnitPrice** choose **Value** in the **Crosstab** row, and set the **Total** row to **Count.** This is the query you need.
- Some of the available alternatives to **Count** (e.g. **Avg**) make sense for **Unit Price;** try them!

You should compare the datasheets of your crosstab query and the query from (e) it was based on, to see what the crosstab query does.

(h) Read *Working with Data* => ***Ways to work with data in a query's datasheet.*** If you are not happy with the layout of your query datasheet, change it. Note that you can also change the margins and page orientation via the **File, Page Setup** menu when the query datasheet is open.

(i) This section takes you through the (bulleted) stages needed to create an example **Groups and Totals** query. (In the next section, you are asked to create two more.) You should inspect the datasheet view of your developing query after each stage.

- Use **Create query in Design view** to start your query off. Add the **Orders** table. Add the **ShipVia** field to the QBE grid, and **Sort** it **Ascending.** How many records does this retrieve (in the datasheet view)?
- Use the **View** menu, **Totals** command to add the Totals row to the QBE grid. The Totals row should display **Group By.** How many rows are displayed in the datasheet now? (You should get one row for each of the shippers ie for each value of **ShipVia.**)
- Add the **OrderID** field to the QBE grid. The **Totals** row for **OrderID** should display **Group By.** How many rows are displayed in the datasheet now? (Explanation: you are grouping by the primary key, whose values are, of course, different for each row in the original table!)
- Change the **Totals** row for the **OrderID** field to **Count.** Inspect the datasheet again. Since **OrderID** has no missing values (how do I know?), you have counted the number of records for each **ShipVia** group.
- Investigate what other options are available in the Totals row droplist.

(j) Create two new Groups/Totals queries to show:

- Within each **ShipVia** company, a count of the number of orders for each **EmployeeID.** (Use the **Orders** table.)
- For each **CustomerID,** the sum of the quantity of products supplied, sorted in descending order of (sum of) quantity. (Use the **Orders** and **Order Details** tables.)

(k) Create a new query and add the **Products** table to the Design view. Add the fields **ProductName, QuantityPerUnit, UnitPrice** to the QBE grid. Instead of adding another field at the top of the next column of the grid, type **0.6*[UnitPrice]** in the ***Field*** cell. (This is the standard way of adding a calculated field to a query.) Inspect the datasheet view to find the prices displayed in pounds (approximately) as well as in dollars. Go back to design view and alter the default name (**Expr1:**) supplied by *Access* for this calculated field to something more suitable. If you find the display format messy, a right-click in the relevant column in design view will give access to **Properties** as it did in Practical 2 for forms.

(l) You should print out your QBE grids using the **Print Screen** key to capture the screen when the query is open in Design view. This copies the screen to the Windows clipboard. You can now paste all the screen dumps into a (single) *Word* document and print them all. This record of the design views will complement the datasheet views of your queries in your practical file.

(m) If you have any time to spare, try out the **Find**  toolbar button, visible e.g. when you have a table such as Order Details open in datasheet view. Also try out the two sort buttons  on the toolbar, and the group of three concerned with Filters. Read *Working with Data* => ***Ways to work with data in a table's datasheet*** to find out about using these buttons.

(n) ***Before signing off your practical,*** the demonstrator may ask to see some of your queries (either view), and may ask you to do a simple **Sort** or **Find.**

(o) You should also investigate the Northwind database further. Look particularly at the *design* of tables, forms and queries. You are warned that this is a sophisticated example, and in places uses techniques that will not be covered in the course. In spite of this, you may find it worthwhile to look at how Northwind exploits each of the database techniques as they are covered in the practicals.