

Chapter 15

Query-by-Example Transparencies

Chapter 15 - Objectives

- u **The main features of Query -By-Example (QBE).**
- u **The types of queries provided by the Microsoft Access DBMS QBE facility.**
- u **How to use QBE to build queries to select fields and records in single or multiple tables with calculations**
- u **How to use advanced QBE facilities including parameter, find matched, find unmatched, crosstab, and autolookup queries.**
- u **How to use QBE action queries to change the content of tables.**

Query-by-Example (QBE)

- u **Visual approach for accessing information in a database through use of query templates.**
- u **Example values are entered into template to represent what access to database is to achieve, such as the answer to a query.**
- u **Originally developed by IBM in 1970s and has proved so popular that QBE (or similar) is now provided by most DBMSs.**

4

Query-by-Example (QBE)

- u **Allows user to**
 - **Ask questions about data in one or more tables.**
 - **Specify the fields we want in the answer.**
 - **Select records according to specific or non-specific criteria.**
 - **Perform calculations on the data in tables.**
 - **Insert and delete records.**
 - **Modify values of fields.**
 - **Create new fields and tables.**

5

Building Select Queries using QBE

- u A select query retrieves data from one or more tables and displays the results in a *datasheet*, which displays data in columns and rows, similar to a spreadsheet.
- u We can build a select query using the graphical Query-By-Example (QBE) tool. We use a mouse to select, drag, or manipulate objects in the window to define an example of the records we want to see.

10

Building Select Queries using QBE

Property_for_Rent field list

(a)

QBE grid

Selected fields/columns

```
SELECT PROPERTY_FOR_RENT.Pro, PROPERTY_FOR_RENT.City,
PROPERTY_FOR_RENT.Type, PROPERTY_FOR_RENT.Rent
FROM PROPERTY_FOR_RENT;
```

Datasheet

Pro	City	Type	Rent
PG10	Aberdeen	House	950
PG16	Glasgow	Flat	450
PG21	Glasgow	House	900
PG36	Glasgow	Flat	375
PG4	Glasgow	Flat	350
PL54	London	Flat	400

Record: 1 of 6

11

Building Select Queries using QBE

QBE grid

Field:	Pno	City	Type	Rent
Table:	PROPERTY_FOR	PROPERTY_FOR	PROPERTY_FOR	PROPERTY_FOR
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		"Glasgow"		Between 350 And 450
or:				

(a)

Criteria on same row so combined using And operator

Criteria using And operator

Query1 : Select Query

	Pno	City	Type	Rent	
PG4	Glasgow	Flat	350	5 Records	
PG36	Glasgow	Flat	375	6 that satisfy	
PG16	Glasgow	Flat	450	7 criteria	

Datasheet

Record: 1 of 3

13

Building Select Queries using Access SQL

```
SELECT PROPERTY_FOR_RENT.Pno, PROPERTY_FOR_RENT.City, PROPERTY_FOR_RENT.Type,
PROPERTY_FOR_RENT.Rent
FROM PROPERTY_FOR_RENT
WHERE (((PROPERTY_FOR_RENT.City)="Glasgow") AND ((PROPERTY_FOR_RENT.Rent) Between
350 And 450));
```

14

Building Select Queries using QBE

QBE grid

(a)

Criteria on different rows so combined using Or operator

Criteria on same row so combined using And operator

Datasheet

Records that satisfy criteria

Pno	City	Type	Rent
PA14	Aberdeen	House	650
PG4	Glasgow	Flat	350
PG36	Glasgow	Flat	375
PG16	Glasgow	Flat	450

15

Creating Multi-table Queries using QBE

Owner field list

Join-line representing 1:M relationship

Property_for_Rent field list

(a)

Owner fields/columns

Property_for_Rent fields/columns

Datasheet

FName	LName	Pno	City
Tina	Murphy	PG4	Glasgow
Joe	Keogh	PA14	Aberdeen
Carol	Farel	PLM4	London
Carol	Farel	PG21	Glasgow
Tony	Shaw	PG36	Glasgow
Tony	Shaw	PG16	Glasgow

17

Creating Multi-table Queries using Access SQL

```
SELECT OWNER.FName, OWNER.LName,
PROPERTY_FOR_RENT.Pno, PROPERTY_FOR_RENT.City
FROM OWNER INNER JOIN PROPERTY_FOR_RENT ON
OWNER.Ono = PROPERTY_FOR_RENT.Ono;
```

18

Using Advanced Queries - Parameter Query

(a)

Field Name	Table	Pno	City
OWNER	OWNER	PROPERTY_FOR_RENT	PROPERTY_FOR_RENT

Enter Owner's First Name: Enter Owner's Last Name:

Expression to create prompt for FName Expression to create prompt for LName

(b)

Enter Parameter Value

Enter Owner's First Name: Enter Parameter Value

Enter Owner's Last Name:

OK Cancel

(c)

Query1 : Select Query

FName	LName	Pno	City
Carol	Farrell	PLB4	London
Carol	Farrell	PG21	Glasgow

Record: 1 of 2

Records that satisfy criteria

23

Using Advanced Queries - Parameter Query

```
SELECT OWNER.FName, OWNER.LName, PROPERTY_FOR_RENT.Pno,
PROPERTY_FOR_RENT.City
FROM OWNER INNER JOIN PROPERTY_FOR_RENT ON OWNER.Ono =
PROPERTY_FOR_RENT.Ono
WHERE (((OWNER.FName)=[Enter Owner's First Name]) AND
((OWNER.LName)=[Enter owner's Last name]));
```

24

Using Advanced Queries - Select Query (for comparison)

(a)

Field: **Total** Table: **PROPERTY_FOR_RENT** Expression: **Count** Show: ☒ Criteria: **Glasgow**

Annotations:

- Expression to rename Pro field to Total
- Show box turned off
- Group By on selected fields
- Count on Pro field renamed Total
- Criterion for properties in Glasgow

FName	LName	Area	Total
Ann	Beech	Beardsden	5
Ann	Beech	City Centre	12
Ann	Beech	Hyndland	36
Ann	Beech	Patrick	14
Ann	Beech	Pollockshaws	6
David	Ford	Beardsden	5
David	Ford	City Centre	19
David	Ford	Hyndland	12
David	Ford	Patrick	22
David	Ford	Pollockshaws	2

Records: 34 of 38

25

Using Advanced Queries - Select Query (for comparison)

```
SELECT STAFF.FName, STAFF.LName, PROPERTY_FOR_RENT.Area,
Count(PROPERTY_FOR_RENT.Pno) AS Total
FROM STAFF INNER JOIN PROPERTY_FOR_RENT ON STAFF.Sno = PROPERTY_FOR_RENT.Sno
WHERE (((PROPERTY_FOR_RENT.City)="Glasgow"))
GROUP BY STAFF.FName, STAFF.LName, PROPERTY_FOR_RENT.Area,
PROPERTY_FOR_RENT.City;
```

26

Using Advanced Queries - Crosstab Query

Value field supplies values for columns

Field: FName, LName, Area, Total Pno, City
Table: STAFF, STAFF, PROPERTY_FOR_RENT, PROPERTY_FOR_RENT, PROPERTY_FOR_RENT
Total: Group By, Group By, Group By, Count, Group By
Crosstab row: Row Heading, Row Heading, Column Heading, Value, Row Heading
Sort: Row Heading, Row Heading, Column Heading, Value, Row Heading
Criteria: "Glasgow"

(a)

Row Heading fields/columns

Column Heading field/columns

Criterion for properties in Glasgow

Query1 : Crosstab Query

FName	LName	Bearsden	City Centre	Hyndland	Partick	Pollockshaws
Ann	Beech	5	12	36	14	6
David	Ford	5	19	12	22	2

Record: 1 of 2

27

Using Advanced Queries - Crosstab Query

```

TRANSFORM Count(PROPERTY_FOR_RENT.Pno) AS Total
SELECT STAFF.FName, STAFF.LName
FROM STAFF INNER JOIN PROPERTY_FOR_RENT ON STAFF.Sno = PROPERTY_FOR_RENT.Sno
WHERE (((PROPERTY_FOR_RENT.City)="Glasgow"))
GROUP BY STAFF.FName, STAFF.LName, PROPERTY_FOR_RENT.City
PIVOT PROPERTY_FOR_RENT.Area;

```

28

Using Advanced Queries - Find Matched Query

Shown in full as SQL SELECT statement (in bold) of part (c)

Field	Table	Sort	Show	Criteria	or
FName	OWNER	Ascending	<input checked="" type="checkbox"/>	in (SELECT (FName) FROM	
LName	OWNER	Ascending	<input checked="" type="checkbox"/>	in (SELECT (LName) FROM	
Ono	OWNER		<input checked="" type="checkbox"/>	in (SELECT (Ono) FROM	
Address	OWNER		<input checked="" type="checkbox"/>	in (SELECT (Address) FROM	
Tel_No	OWNER		<input checked="" type="checkbox"/>	in (SELECT (Tel_No) FROM	

(a)

Fields used to identify duplicate values

FName	LName	Ono	Address	Tel_No
Carl	Farril	C087	6 Achray St, Glasgow G32 9DX	0141-357-7419
Carl	Farril	C087	6 Achray St, Glasgow G32 9DX	0141-357-7419

Records: 1 of 2

Duplicate records

29

Using Advanced Queries - Find Matched Query

```
SELECT DISTINCTROW OWNER.FName, OWNER.LName, OWNER.Ono, OWNER.Address,
OWNER.Tel_No
FROM OWNER
WHERE (((OWNER.FName) In (SELECT [FName] FROM [OWNER] As Tmp GROUP BY
[FName],[LName] HAVING Count(*)>1 And [LName] = [OWNER].[LName]))))
ORDER BY OWNER.FName, OWNER.LName;
```

30

Using Advanced Queries - Find Unmatched Query

(a)

Field: Rno, FName, LName, Tel_No, Rno
 Table: RENTER, RENTER, RENTER, RENTER, VIEWING
 Sort:
 Show: ☒ ☒ ☒ ☒ ☐
 Criteria: ☒ ☒ ☒ ☒ Is Null
 or:

Selected fields

Criterion

Show box turned off

RENTER Without Matching VIEWING : Select Query

Rno	FName	LName	Tel No
274	Mike	Ritchie	01475-392178

Record: 1 of 1

Renter record without related record(s) in Viewing table

31

Using Advanced Queries - Find Unmatched Query

```
SELECT DISTINCTROW RENTER.Rno, RENTER.FName, RENTER.LName,  
RENTER.Tel_No  
FROM RENTER LEFT JOIN VIEWING ON RENTER.Rno = VIEWING.Rno  
WHERE (((VIEWING.Rno) Is Null));
```

32

32

Using Advanced Queries - Autolookup Query

Field Table: Select

Field	Table
Pno	PROPERTY_FOR
Street	PROPERTY_FOR
City	PROPERTY_FOR
Sno	PROPERTY_FOR
Fname	STAFF
LName	STAFF

Sno field (foreign key) in Property_for_Rent table

Selected Property_for_Rent fields

Selected Staff fields

Query1 - Select Query

	Pno	Street	City	Sno	Fname	LName
	PA14	15 Hothead	Aberdeen	SA9	Mary	Howe
	PL94	6 Argyll St	London	SL41	Julia	Lee
	PG4	6 Lawrence St	Glasgow	SG14	David	Ford
	PG35	2 Manor Rd	Glasgow	SG37	Ann	Beach
	PG21	18 Dale Rd	Glasgow	SG37	Ann	Beach
	PG16	6 Nowar Dr	Glasgow	SG14	David	Ford
	PG97	25 Muir Drive	Glasgow	SG37	Ann	Beach

Record: 7 of 7

User enters values for new property

User enters staff number 'S637'

Access automatically fills in values associated with staff number 'S637'

33

Using Advanced Queries - Autolookup Query

```
SELECT PROPERTY_FOR_RENT.Pno, PROPERTY_FOR_RENT.Street,
PROPERTY_FOR_RENT.City, PROPERTY_FOR_RENT.Sno,
STAFF.FName, STAFF.LName
FROM STAFF INNER JOIN PROPERTY_FOR_RENT ON
STAFF.Sno = PROPERTY_FOR_RENT.Sno;
```

34

Changing Content of Tables - Make-Table Action Query

Make Table

Make New Table

Table Name: STAFFOUT

Location of new table: ☒ Current database ☐ Another database

Make-table table grid

Field Name Sort Show Create or

Sno FName LName Position Salary

STAFF

Selected fields of Staff table

Microsoft Access

You are about to paste 5 rows() into a new table. Do you wish to use the Undo command to reverse the change? Are you sure you want to create a new table with the selected records?

If Yes

Staff out datasheet

Record: 21 of 21

Selected columns copied from Staff table

Sno	FName	LName	Position	Salary
SG27	John	White	Manager	30000
SG27	Ann	Deach	Sry Asst	12000
SG18	Cecil	Faird	Deputy	9000
SG5	Mary	Hows	Assistant	9000
SG5	Susan	Brand	Manager	24000
SL41	Julie	Low	Assistant	9000

35

Changing Content of Tables - Make-Table Action Query

```
SELECT STAFF.Sno, STAFF.FName, STAFF.LName,
STAFF.Position, STAFF.Salary INTO STAFFCUT
FROM STAFF;
```

36

Changing Content of Tables - Delete Action Query

Target table for deletion: Delete QBE grid

Field Table: PROPERTY_FOR_RENT, Delete Criteria: * * *

Criterion for properties in Glasgow

Microsoft Access

You are about to delete 4 row(s) from the specified table.
Once you click Yes, you can't use the Undo command to reverse the changes.
Are you sure you want to delete the selected row(s)?

If Yes: Yes No

Property_for_Rent datasheet minus deleted records (properties in Glasgow)

PROPERTY FOR RENT Table

Prop	Street	Area	City	Postcode	Type	Rooms
P017	16 Hillhead	Doo	Abendee	AB7 5BJ	House	5
P034	5 Argyle St	Kilburn	London	EN2	Flat	4

Records: 1 of 2

PROPERTY FOR RENT Table

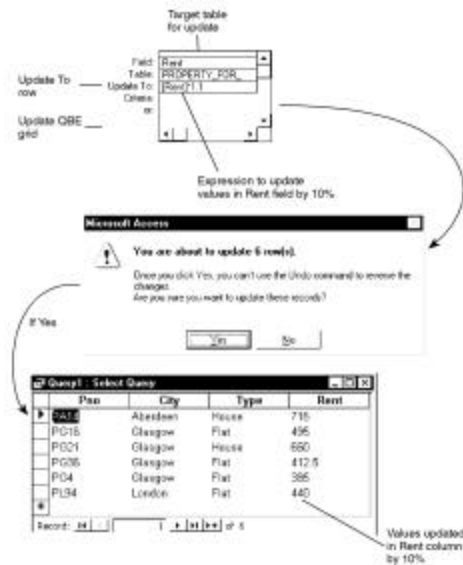
Sno	FName	Date	Comment
C002	PA14	24/05/98	no small
C002	PA14	14/05/98	no dining room

Records: 2 of 2

If referential integrity is set to Cascade Delete Related records

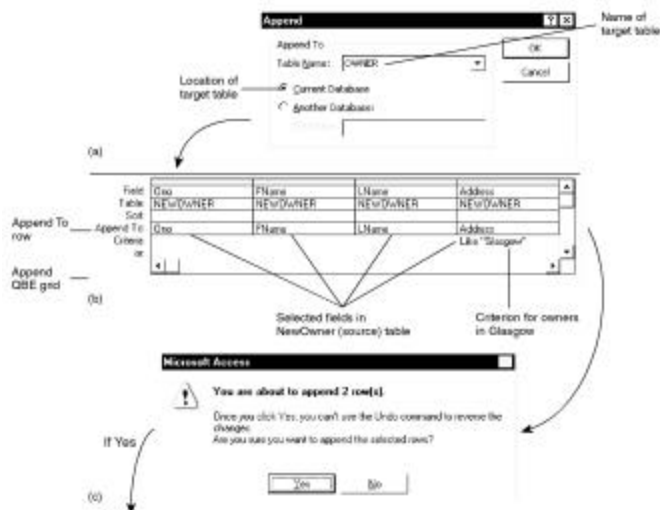
37

Changing Content of Tables - Update Action Query



39

Changing Content of Tables - Append Action Query (part of)



41

Changing Content of Tables - Append Action Query

NEWOWNER : Table

Ono	FName	LName	Address
CO110	Brenda	Brown	220 Merry Dr, Blanchory, Aberdeen AB2 6DH
CO121	Anne	McGregor	34 Jordanhill Av, Jordanhill, Glasgow G10 7GH
CO123	Robin	Plevin	6 Dove Gr, Strathbungo, Glasgow G33
CO125	Annet	Rogers	1 Birdly Rd, City Centre, Edinburgh, EH9 9R4

Record: 1 of 4

OWNER : Table

Ono	FName	LName	Address	Tel No
CO121	Anne	McGregor	34 Jordanhill Av, Jordanhill, Glasgow G10 7GH	
CO123	Robin	Plevin	6 Dove Gr, Strathbungo, Glasgow G33	
CO40	Tina	Murphy	63 Well St, Shawlands, Glasgow G42	0141-943-1720
CO45	Joe	Keogh	2 Fergus Dr, Blanchory, Aberdeen AB2 7SX	01224-861212
CO87	Carol	Farrel	6 Achray St, Glasgow G32 9DX	0141-357-7419
CO93	Tony	Shaw	12 Park Pl, Hillhead, Glasgow G4 6GR	0141-225-7025

Record: 1 of 6

(d)

42

Changing Content of Tables - AppendAction Query

```
INSERT INTO OWNER (Ono, FName, LName, Address)
SELECT NEWOWNER.Ono, NEWOWNER.FName,
NEWOWNER.LName, NEWOWNER.Address
FROM NEWOWNER
WHERE (((NEWOWNER.Address) Like "Glasgow"));
```

43