King Fahd University of Petroleum and Minerals
MIS-105--- Introduction to Computer Applications
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Chapter 3:
Information from the Database: Reports and Queries

Lab Objectives:
After finishing this lab, students will be able to:
1. Describe the various types of reports available through the Report Wizard.
2. Differentiate between a query and a table
3. Use the design grid to create and modify a select query
4. Explain the use of multiple criteria rows within the design grid to implement AND and OR conditions in a query
5. Define an action query; list the different types of action queries that are available and explain how they are used to update a table.
6. Create a cross tab query

Lab Practice Problem

1. Creating Database Reports

Problem Statement

Create different reports needed in the Student database. These reports include:
 	
Report#1: A complete list for all students (Student Master List) with the contents sorter by the following fields:
  Major – primary sort (ascending)
  Last names – secondary sort (ascending)   **[Shown by Figure 3.1(b) on page 103]**
 	
Report#2: A complete list for all students with the contents grouped by Major Names:
                                        [Shown by Figure 3.1(d) on page 103]
 	
Report#3: A complete list for all students whose Majors are Undecided:

Anatomy (different sections) of a Report
Main sections include:
1. Report header – appears above the page header
2. Report footer– appears below the page footer
3. Page header – appears at the top of every page
4. Page footer - appears at the bottom of every page
5. Group header – appears at the beginning of a group of records (to identify the group)

6. Group footer – appears after the last record in a group and contains summary information about the group.
7. Detail Section – appears in the main body of a report and is printed once for every record in the underlying table.

Creating Reports Using 'Report Wizard'
   Details on pages 105, 106

Lab Practice #1: Report#1 / #2– Student Master List / Grouped by MAJOR
Follow the steps in the hands-on exercise 1 (page 107 – 114)

- Step I: Open database
- Step II: Open Report Wizard
- Step III: Preview created report
- Step IV: Modify an existing control
- Step V: Add an Unbound control
- Step VI: Change the sort order
- Step VII: View the modified report
- Step VIII: Report Properties

2. Creating Database Queries

Writing query objects for required data manipulations.

Problem Statement
Given a database named 'Our Students.mdb'. You are assigned to create query objects for displaying desirable information about students in the query's **dynaset***. In addition to this, some query objects which can update selected data in the database are also required. The details of each required query object will be provided one by one in the following.

* Dynaset:
- A dynaset corresponds to the result of a query object which looks and acts like a table but it isn't a table.
- A dynaset is a dynamic subset of a table that selects and sorts records as specifid in the query design grid**.
- A dynaset is similar to a table in appearance and like a table, it enables you to enter a new record or modify or delete an existing record. Any changes made in the dynaset are automatically reflected in the underlying table.

**Query Design Grid:
- A design grid for a query object allows you to enter the specifications for the query are entered through a graphical picture.

- A design grid allows you:
  - Select the table(s) to be included in the query result
  - Select the fields from the selected table(s) to be included in the query result
  - Write the criteria expressions to select the data for intended query operation (display/ modify/ delete etc.) in the underlying table(s)
  - Specify whether sorting is needed or not
  - And so on ….

Approaches for creating a Query object
1. Create query in Design View
- More flexible option.
- Give access to the query design grid directly.

2. Create query by using Wizard
- Just allow to do selection of tables and fields to be included in the query.
- For more detailed specifications, user ultimately switch to the design view.

Query Information Matrix
Before creating any query object in the database, it is better to document all the details of the query in a tabular form, called Query Information Matrix.

The details of the matrix are as under:

Query#		
	Query Name	
	Query Type	
	Tables Involved	
	Fields Involved	
	Criteria Needed	
	Sorting	

Query#1: Problem Statement (Select Query)
Write a select query to display a list of students with their last name, first name, social security number and the major. The list should display only those students whose major is still 'Undecided'. The list must be arranged in an ascending order of student's last names.

HandsOn 9.1
1. Create a query information matrix for the required query.

Query#1		
	Query Name	Undecided Major
	Query Type	SELECT (single table)
	Tables Involved	Students
	Fields Involved	LastName, FirstName, SSN, Major

Criteria Needed	Major="Undecided"
Sorting	LastName: Ascending

2. Use the steps defined in Step2 of Hands-on exercise 2 of the book (page 121) to complete the query.

Query#2: Problem Statement (Select Query – with Criteria)
Write a select query to display a list of students with their last name, state, major, birth date, credits completed and their financial aid status. The list should display only those students whose major is 'Business' and they are from the state Florida.

HandsOn 9.2

1. Create a query information matrix for the required query.

Query#3

Query Name	Business Students in Florida
Query Type	SELECT (single table)
Tables Involved	Students
Fields Involved	LastName, State, Major, BirthDate, Credits, FinancialAid
Criteria Needed	Major="Business" AND State="FL"
Sorting	None

2. Use the steps similar to the ones in handson 9.1 to finish the query design grid.

Query#3: Problem Statement (Select Query – with Compound Criteria)
For the previous query change the query criteria according to what follows. The list should display the students who either:
- Majoring in Engineering with fewer than 60 credits   OR
- Majoring in Communications and born on or after April 1, 1974

HandsOn 9.3

1. Create a query information matrix for the required query.

Query#3

Query Name	Compound Criteria Query
Query Type	SELECT (single table)
Tables Involved	Students
Fields Involved	LastName, State, Major, BirthDate, Credits, FinancialAid
Criteria Needed	(Major="Engineering" AND Credits<60) OR (Major="Communications" AND BirthDate>#4/1/1974#)
Sorting	None

2. Use the steps similar to the ones in handson 9.1 to finish the query design grid.

Query#4: Problem Statement (Select Query – Criteria using LIKE operator)
For the previous query change the query criteria according to what follows. The list
should display the students whose first names start with 'R' and who are not "Liberal
Arts" major.

HandsOn 9.4

1. Create a query information matrix for the required query.

Query#4		
	Query Name	Rs ouside Liberal Arts Major
	Query Type	SELECT (single table)
	Tables Involved	Students
	Fields Involved	LastName, State, Major, BirthDate, Credits, FinancialAid
	Criteria Needed	FirstName like "R*" AND Major NOT "Liberal Arts"
	Sorting	None

2. Use the steps similar to the ones in handson 9.1 to finish the query design grid.

Query#5: Problem Statement (Select Query – Sorted Results)
Find the list of the students with their last name, state, major and the name of their
universities. Sort the query with respect to university name.

HandsOn 9.5

1. Create a query information matrix for the required query.

Query#4		
	Query Name	StudentsWithUniversities
	Query Type	SELECT (multiple tables)
	Tables Involved	Students, Universities
	Fields Involved	LastName, State, Major, University Name
	Criteria Needed	None
	Sorting	UniversityName

2. Use the steps similar to the ones in handson 9.1 to finish the query design grid.

HandsOn 9.6
1. Create a query information matrix for the required query.

Query#6		
	Query Name	Student list born before day X
	Query Type	SELECT (single table)
	Tables Involved	Students
	Fields Involved	LastName, State, Major
	Criteria Needed	BirthDate < [X]
	Sorting	None

2. Use the steps similar to the ones in handson 9.1 to finish the query design grid.

Query#7: Problem Statement (Update Query)
Write a query to change the FinancialAid status to NO for all students whose major is still 'Undecided'.

HandsOn 9.9
1. Create a query information matrix for the required query.

Query#9		
	Query Name	Update FinancialAid
	Query Type	UPDATE (single table)
	Tables Involved	Students
	Fields Involved	Major, FinancialAid
	Criteria Needed	Major='Undecided'
	UpdateTo	FinancialAid=NO

2. Write a SELECT query with the criteria specified.
3. Convert the query to an UPDATE Query Type.
4. Provide the new value for FinancialAid field in the UpdateTo row.
5. Run the query and select Yes to confirm the modification of records.
6. The query will not show the results. The results can be observed by converting the query to a SELECT again and then run it.

Query#8: Problem Statement (Delete Table Query)
Write a query to delete students whose major is still Undecided.

HandsOn 9.9
1. Create a query information matrix for the required query.

Query#9

Query Name	Update FinancialAid	
Query Type	DELETE (single table)	
Tables Involved	Students	
Fields Involved	Major, FinancialAid	
Criteria Needed	Major='Undecided'	

2. Write a SELECT query with the criteria specified.
3. Convert the query to an DELETE Query Type.
4. Run the query and select Yes to confirm the deletion.
5. The query will not show the results. The results can be observed by converting the query to a SELECT again and then run it.

For Home Practice:

Query#9: Make table Query (page# 140)

Query#10: Append table Query (page# 143)

Query#11: Crosstab Query (page# 146)