



Microsoft Access Training

Part I: Creating Database and Manipulating Data

Student Workbook and Evaluation

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Arab Contractors

	الاسم
	الرقم الثابت
	الشركة
	الوظيفة

Name	
ID	
Company	
Position	

Lab 1		Lab 2						Lab 3		Lab 4			Lab 5						Lab6		Lab 7	Lab 8	
A	B	A	B	C	D	E	F	A	B	A	B	C	A	B	C	D	E	F	A	B	A	A	B
5	5	5	5	5	5	5	5	10	10	5	10	5	10	10	15	20	5	5	5	5	20	5	10

Proj	Proj	Total	%
Part1	Part 2		
60	50	300	100

Chapter	01		Lab	1A
		Exploring Database		
Files Used		Lab01_Start.accdb	Grade (5)	

1. Open File **Lab01_Start.accdb** from the lab folder.
2. On the right open and close the Navigation Pane using **F11** Function key.
3. Adjust the pane wide and narrow to see all objects.
4. Click the arrow of Option Customize group.
5. You can filter by the main 6 Object type you have in Access (tables – Queriers – Forms – Reports – Macros -Modules).
6. Now select only the **tables**.
7. Now select **all access Objects** again.
8. Double click on the customers table.
9. A table is where you store the data and records of your database.
10. Use the Navigation Buttons on the bottom to:
 - go from record to record,
 - go to last and first record and
 - know how many records you have.
11. As you can see you have 96 records on the table of customers.
12. Double click the employees table, it opens in another tab view.
13. Tables are like spread sheets as they are **rows** and **columns**.
14. Double click query **qry_CustomerOrders_Qtr1_2019_UK_OnTime**.
15. It will open in another tab with the same layout.
16. This query includes only **28** records for customers of UK orders in Quarter 1 of 2019.
17. This object does not store data, but only **VIEW** data from one or two tables.
18. A query **asks questions** and send instructions to the data and sends you the **result**.
19. Double click query: **qry_CustomersBasedInLondon**.
20. This query shows all customers in London.
21. You can close any tab by clicking on the **X** icon on the tab.
22. You can also right click at any tab and choose: **Close All**.
23. Open the form: **Customer-Input**.
24. A form is another way to view or edit data in a user-friendly way more than table or query.
25. As you can see it shows only one record in the whole page at a time.
26. It also doesn't save records; it only shows records from underlying table or query.
27. Open form: **CustomerOrders_Qtr1_2019_UK_OnTime**.
28. It is another way to show data in a form like the one in table or query.
29. Open form: **Document_Create_Order**.
30. As you can see, form can be stand free and has no table behind.
31. Open Report: **rpt_AllCustomers**.
32. A report is like a form, but you cannot edit and save record like form.
33. It is only used to preview data.
34. Print preview allows you to print the report.
35. It can be based on table, but most of the time it is based on a query to filter the data that will be printed.
36. You can also see **Macros**, and **Modules**.
37. Macros are simple programing tools.
38. It provides actions to various events.
39. Opening a macro will execute the macro and do the action.
40. Double click Macro: **mcr_PrintExample**.

41. A Module is a ver advanced programing with more advanced coding options than Macros. It uses **VBA** Code.
42. If you double click the Module, it will open in the code window.
43. Notice that:
44. All Access objects have more than one view to work with.
45. For example, open table: **Customers**.
46. It opens in **Datasheet view**.
47. You can right click on the table and switch to **Design View**.
48. Or switch between views from the **Views** Group in the **Home** tab.
49. Go and review a query in Design View
50. Notice you have 3 view options for the query.
51. Notice:
 - **Data added to tables are automatically saved.**
 - **Only One data base file is allowed to open at one time.**

Chapter	01		Lab	1B
		Creating Database from template		
Files Used			Grade (5)	

Home form:

- Click on the first product.
- Then close.
- Notice the collapsed navigation pane.
- Expand the Navigation pane.
- Get the view to the default view.
- Then explore each object type.
- Explore customer table.
- This Data sheet view.
- Columns are fields.
- Rows are records.
- Represent a company.
- Select design view.
- You use to create Tables.
- Close all
- Explore query: Product Category Sales by Date.
- Explore Home Form
- The layout view enables you to see the data while editing.
- Design view make you design and manipulate objects,
But you cannot see the data only fields names and labels.
- Explore Report: Top Ten Biggest Orders.
- Notice the Ribbon that appears when you are in Print Preview.
- Explore AutoExec Macro.
- Explore Customer Order Module and VBA Code.
- You can create Macro and convert it into VBA code.
- Open Customer table and try to explore the Ribbons available.
- In Hep tab try: tell me what you want to
- This help you to reach area of the program you forget where is it.
- search for Switchboard Manager
- Explore Status Bar try Cabs Lock ,Num Lock

- Explore Relationship Diagram
- Then Close the Nortwind Database.

Chapter	02		Lab	2A
		Creating Table in Datasheet View		
Files Used		Lab02A_Start.accdb	Grade (5)	

1. Open file: **Lab02A_Start.accdb** from lab folder.
2. You will get an empty database, as the navigation pan is empty.
3. To create any access object, use the **Create** tab in the ribbon.
4. You will find **Table** Group with 3 options.
5. Click Table to open new table in datasheet view.
6. Notice the first column is called **ID**.
7. Type data in fields starting from the second column to add the first record in the table.
8. Try to close the table it will prompt you to save the table.
9. Save the table as **Employees**.
10. The new table appears on the navigation pane window.
11. Open Employees table in datasheet view again.
12. Notice that you can also add a new field, but first select its data types first by clicking the down arrows.
13. You can also select any field and change its data type from the **Field** tab in the ribbon and in the Formatting Group.
14. If you attempt to change the data type of data of any field, it changes and **validates** the data too.
15. Change the data type of **Field1** to be **Long Text** and get it back to be a **short text**.
16. You will receive a warning message of data loss.
17. From **Properties** Group Chose **Name and Caption** to change the **Filed1** Name and caption to to **FirstName** and **First Name** respectively.

Chapter	02		Lab	2B
		Creating a table Using Design view		
Files Used		Lab02A_Start.accdb	Grade (5)	

1. Continue with the same file **Lab02A_Start.accdb**.
2. If you click on the table design button you can create a table in design view.
3. Notice that you also will have **design** tab in the ribbon to help you in design.
4. It is divided in two halves: the upper half is where you define the field name, description and optionally the description.
5. In the lower half is **field property** and it changes according to the selected field.
6. Create a new table Customers as in the figure.
7. You can Define Primary key , Insert row , delete row from the **Tools** group.
8. If you delete row, you can click the undo icon to get it back.
1. Dat/Time: Valid Date and Times Only.
2. Currency: Numbers Only, Data Size Can not be changed but Currency Style
3. AutoNumber: Auto Generated Numbers (Normally starts from 1 and increment by 1).
4. Yes/No: True or False (Checkbox Control).

Chapter	02		Lab	2C
		Creating Table from Table Template		

Files Used	Lab02A_Start.accdb	Grade (5)	
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1. Continue with the same file **Lab02A_Start.accdb**
2. Create ➔ Application Parts ➔ Quick Start ➔ Contacts.
3. 1st Screen asks if this table has relationship with any other table.
4. Chose: **There is no relationship** and click create button.
5. It will create one table, 3 forms and 4 Reports for you.
6. Go and explore the objects that have been created.

Chapter	02		Lab	2D
		Working with table datasheet view		
Files Used	Lab02D_Start.accdb	Grade (5)		

1. Open **Lab02D.accdb** file from the lab folder.
2. Open table: Customers in datasheet view.
3. In sort & Filter section you can sort and filter data.
4. Chose any cell in **company Name** field and sort accending and decending.
5. Click **Remove Sort** button to stop sorting.
6. Chose any cell in **City** Field and click Filter button.
7. A menu to filter appears.
8. Notice you can also get the filter menu if you click the **down arrow** of the column.
9. Notice that you also have the sort options in the list.
10. You can choose more specific options if you click the arrow next to Text Filters (if the field is a text field or Number filter ...etc.).
11. Uncheck **select All** and select only **London** Value.
12. Only London Customers are displayed.
13. Click **Toggle filter** to remove the filter.
14. Click again to toggle back to the filter.
15. From **Records** group you can manipulate records and fields according to your selection.
16. When you try to delete a column or record a warning message appears.
17. **Save** Button save the current record, if you leave the record, it is saved automatically.
18. **New** Button Insert a new record at the bottom of the table.
19. In **Find** Group you can search and replace text.
20. In **Text Formatting** Group you can apply formatting to the text.
21. Format is applied to all the table, not like Excel.
22. Click on **B** all table becomes bold.
23. Try to increase row height, all table increased.

Chapter	02		Lab	2E
		Change Fields Properties		
Files Used	Lab02D_Start.accdb	Grade (5)		

1. Continue with the same File: **Lab02D_Start.accdb**.
2. Open Customers table in **Design View**.

3. Change the properties of the fields as follows:

Field	Data Type	Field Property	Value
Customer ID	Short Text	Field Size	5
Company Name	Short Text	Field Size	40
Contact Name	Short Text	Field Size	30
Contact Title	Short Text	Field Size	30
Address	Short Text	Field Size	60
City	Short Text	Field Size	15
Region	Short Text	Field Size	15
Postal Code	Short Text	Field Size	10
Country	Number	Field Size	Long Integer
Phone	Short Text	Field Size	24
Fax	Short Text	Field Size	24
Email	Hyperlink		
Website	Hyperlink		

4. Open **Orders** Table in Design View.
5. Notice that **order amount** field is Currency you cannot change size.
6. The first option allowed for you is Format.
7. Also **Order Date** field is Date/Time you can only change format not size.
8. The default value is the one that is added by default when you add new record.
9. You can add a function or expression for that.
10. In Default Value of Order Date type **=Date()**.
11. It adds the date of today when user enter new record.
12. Now go to datasheet view and try to add new order, notice today date is added.
13. If you click on the ellipsis button it gets you to **Expression Builder** Window.
14. You can browse the functions available in the **expression elements**.
15. Try to find the way to the **date** function to reach the same result in graphical way (as in the figure).
16. You can validate the value entered before saving.
17. It consists of two parts (**Validate Rule** and **Validate Text**).
18. You enter a Rule and what text user would see if he entered wrong value.
19. In Order Date Field add the rule in the figure to make sure no Date older than 30 days of today will be accepted.
20. Save and go to Datasheet view to test the validation.
21. The **Required** Property make the field is mandatory and not Null.
22. **Indexed** field means No Duplicate.
23. If you make the Order ID field as a primary key (Click on Key button).
24. Notice that its properties changed to be **Required** and **indexed**.
25. Press the primary key button again Both values changed to **No**.
26. Select Both **Order ID** and **Customer ID** and make them Primary key.
27. Notice this time Indexed is not set.
28. Go Manually and change the Index value for **Order ID** to be (Yes Duplicate not allowed) and for **Customer ID** (Yes Duplicate is OK).
29. Index is important as it speeds the queries specially when database grows.
30. Go and change the **Order Date** and **Order Amount** to be (indexed and duplicate is OK).
31. If you want to put a validation Rule between fields of one table, use the property sheet of the table.
32. Use the expression builder to add expression checks that **Required date** is greater than **Order Date**.
33. Go to the Datasheet View to test.

Chapter	03		Lab	3A
		Setting Primary and Secondary Keys		
Files Used		Lab03A_Start.accdb	Grade (10)	

1. Use file **Lab03A_Start.accdb**.
2. Open **Customers** Table in design view.
3. Set **Customer ID** field as a primary Key (select then click the key icon).
4. Notice that the value of **Indexed** is set to "**Yes (No Duplicates)**".
5. Save your table.
6. If you have duplicate value already in the table, the process will fail.
7. See your table in Datasheet view.
8. Get back to Design view.
9. If you want to remove the primary key just select the field and press key icon again.
10. Remove the Primary key and notice that it is not Indexed any more.
11. You can set the Primary key to many fields.
12. Select Customer ID, Company Name, City, Postal Code , Country.
13. Set them all to be Primary key.
14. Noticed that the indexed property is No for all.
15. That is because Access doesn't know which one to index.
16. Set Customer ID Indexed to Yes (No Duplicates).
17. For Company Name set Indexed to Yes (Duplicates OK).
18. Now Company Name is Secondary key used to speed Queries.
19. Do the same with City, Postal Code, Country set them as secondary keys.
20. Save and test in Datasheet view.
21. Close Customers table.
22. Open **Countries** table.
23. Set Country ID as a primary key.
24. Save and test in Datasheet View.
25. Open the Customers table and notice that it is linked with the Countries table.
26. Country field is filled with Country names.
27. Go to design view of Customers table.
28. Notice that this field is a number.
29. So why it shows text?
30. That is the lookup wizard use internal query to get that find the country using the country ID .
31. On properties in lower part click the Lookup tab and see the query in SQL.
32. Notice both **Row Source**, **Bound column** , and **Width Values**.
33. Try to Change the width of the tree fields (0cm;3cm;0cm) to (3cm;0cm;0cm) and to (0cm;0cm;3cm) and check the result is datasheet view.
34. get the value back to (0cm;3cm;0cm).
35. Notice that the bound value is the Country ID because the bound column is column 1.
36. Close all tables.
37. Go to the **Employees** table.
38. Set **Employee ID** as a Primary key.
39. Set **Last Name** and **Birth date** as secondary keys.
40. Close and test in datasheet view.

41. Close table.
42. Open the Orders table.
43. Set Order ID as Primary Key.
44. Set Customer ID, Employee ID, Order Date, Order Amount as Secondary keys.
45. Open Order Details table
46. Set both Order ID and Product ID as Secondary key.

Indexes

47. Open customers table in design view.
48. Open the Indexes window.
49. Table Design → Show/Hide → Indexes.
50. Indexes
51. You can see the indexes that is on this table and which are Primary Key.
52. You can add new index here.
53. Notice the Indexes slow the general performance of data entry.
54. It increases the reporting and query process.
55. You should have balance for your requirement.

Chapter	03		Lab	3B
Define Relationship between Tables				
Files Used	Lab03B_Start.accdb		Grade (10)	

1. Use file **Lab03B_Start.accdb**.
2. Open Relationship window.
3. Database Tools → Relationships → Relationships.
4. When you open the relationship window for the first time it will be empty.
5. But it might be relationships that have been created through lookup wizards.
6. So you must always start checking.
7. Click **All Relationship** to make see if any relationship exists.
8. Click **Add Tables** to open the Add Tables Window on the right.
9. Select All tables except Shippers and click Add Selected Tables.
10. Close Add Tables window and the navigation Pane to have more space.
11. Arrange your tables as you like and expand tables to see their fields.
12. You should see your Primary Keys and Secondary keys appear if you sat before.
13. Create Relationship between the **Country** table and **Customers** table.
14. Drag the **Country ID** from Country table to **Country** in Customers.
15. **Edit Relationship** Window pops up.
16. You have to:
 - a. Confirm the two fields that relate the two tables.
 - b. Enforce Referential Integrity.
 - c. Cascade Update related fields.
 - d. Cascade Delete Related Fields.
17. You can now click create and the relationship is created for you.
18. Close the Relationship windows and save changes.
19. Reopen the Relationship window and you will find the relation still exists.
20. To edit the relationship double click the line or right click and choose **edit relationship**.
21. Or click the Icon in the ribbon bar.
22. As you can see at the bottom of the dialog box the relationship type is: **One-To-Many**.
23. Check **Enforce Referential Integrity** and Close.

24. The validation check is now working, and the relationship is changed to show the One-To Many relationship with referential integrity enabled.
25. When you do so, Access check if all records in the **country** field in the **Customers** table (the **Many Side**) exists in **Countries** table (The **One Side**) if not the process will stop and you cannot enforce integrity relationship.
26. Create Relationship between **Customers** and **Orders** ON **Customer ID** in both sides.
27. Connect **Orders** and **Order Details** ON **Order ID** in both sides.
28. Connect **Order Details** and **Products** ON **Product ID** ON both sides.
29. Connect **Suppliers** and **Products** ON **Supplier ID**.
30. Try connecting **Employees** with **Orders** on **Employee ID**.
31. You will get an error message this time.
32. Click OK and notice that access cannot determine the relationship type this time and there is problem with the data in tables.
33. Clear the enforce referential integrity and create the relationship.
34. Close and save changes and let us go and see what the problem is.
35. Open Employees table in Design View.
36. Notice **Employee ID** field is the primary key.
37. But in Index it is (Yes Duplicate OK).
38. This means it is a secondary key not a primary.
39. Change the indexed to Yes No Duplicates.
40. Close and save the table.
41. Go back to the Relationship window and try to enforce referential integrity, it should work this time.
42. You can hide any table to be shown if you select and clicked Hide Table.

Chapter	03		Project	1
		Build Your Project Part 1 (Creating Tables)		
Files Used		Create New Database.	Grade (60)	

Build Your Project Part 1 (Creating Tables)

1. Create New Database with Name **Employees Projects**.
2. Create **tblDepartments** Table as follow:
 - a. DeptID: Field Size = 4
 - b. DeptName: Field Size = 30 - Caption = Department Name.
3. Create table **tblEmployees** as follow:
 - a. FirstName: Field Size = 40 – Caption = First Name.
 - b. Last Name: Field Size=40 – Caption = Last Name.
 - c. Gender: Lookup Field (M , F) (enter data manually)
 - d. Telephone: Field Size= 13 – Default Value = ""+2"
 - e. DeptID: Lookup Field – Caption = Department -Field Size = 4 (enable data integrity).
 - f. Salary: Decimal Place = 0
4. Create table **tblProjects** as follow:
 - a. ProjName: Caption= Project Name
 - b. Location: Looukup Field with manual values(Cairo-Alexandria-Tanta-Asuit-Aswan).
5. Create Table **tblEmployeeProjects** as Follow:
 - a. Hours: Field Size: 4

Tools Show/Hide

Field Name	Data Type
DeptID	Short Text
DeptName	Short Text

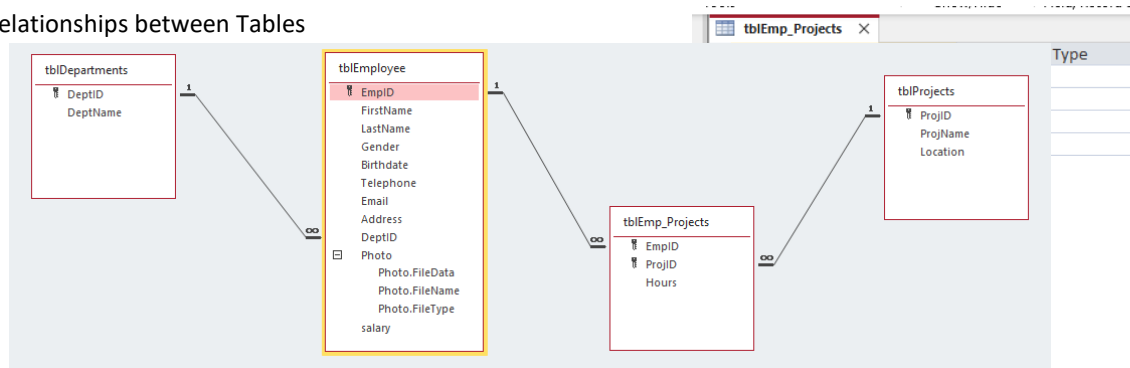
tblEmployee

Field Name	Data Type
EmpID	AutoNumber
FirstName	Short Text
LastName	Short Text
Gender	Short Text
Birthdate	Date/Time
Telephone	Short Text
Email	Hyperlink
Address	Long Text
DepartmentID	Short Text
Photo	Attachment
salary	Currency

Tools Show/Hide Field, Record

Field Name	Data Type
ProjID	AutoNumber
ProjName	Short Text
Location	Short Text

6. Create Relationships between Tables



7. Populate the tables with sample Data from the Excel File **ProjectSampleData.xls**

8. Manually add some sample data in **tblEmp_Projects** like the one in the figure.

Employee	Project	Hours
Sameh	Festival Hotel in Nev	20
SANDA	Abu Kier Metro	30
Hasan	Arafa Hotel	30
Hasan	Nursing School	50
Fatma	Arafa Hotel	20
Fatma	New Aswan Parages	10

Chapter	04		Lab	4A
		Creating Query Using Wizard		
Files Used		Lab04A_Start.accdb		Grade (5)

1. Use File **Lab04A_Start.accdb**.
2. Go to Create → Queries Group → Query Wizard
3. Chose: **Simple Query Wizard**.
4. Select table Products: Product ID, Product Name, Unit Price.
5. Chose to **show detailed Query**.
6. Name your query: **qryProducts**
7. It will show in Queries Object in Navigation Pane.
8. Close the query.
9. Create another simple query.
10. Use **Customers** table.
11. Fields: Company Name, Phone, Address, City, Region Country, Email.
12. Name your query: **qryCustomers**.

Chapter	04		Lab	4B
		Create Query using design view		
Files Used		Lab04B_Start.accdb		Grade (10)

1. Use file: **Lab04B_Start.accdb**.
2. Go to Create → Queries → Query Design
3. A query one tab open

4. From Add Table pane select table **Customers**.
5. Notice you can change the size of upper and lower pane using the separator line between them.
6. You can delete any table at any time.
7. Select Customer table.
8. Press Delete Key on the keyboard.
9. To add the table use **Add Tables** In the **Query Design** Ribbon tab.
10. Add Customers table again.
11. This Query is from type: **Select Query**.
12. You can that its type is selected on the Ribbon.
13. To add fields to the grid you can double click any field it will go to the first available column in the grid below.
14. Or
15. You can select many fields (using control key) then drag and drop them in the Grid.
16. Or
17. You can choose the field from the drop down list in the Grid
18. If you have many tables in the query, Chose table first then the field.
19. To delete a field, first select the field head and then press delete key from the keyboard.
20. Or you can select the field and then click the delete column icon on the ribbon.
21. You can **Reposition** your fields choosing them and drag them in the right place you want.
22. Now Drag the following fields to your QBE Grid (Query By Example Grid): Customer ID, Company Name, Contact Name , City , Country , Phone, Email.
23. Click **View** or Run **Button** (here both are the same) to view query result.
24. Always when you run the query observe the Number of records found, this what we call **The Record Set**.
25. Notice that the result has no sort or Criteria applied, it shows all records.

Sorting Query Result

26. Go Back to your design view.
27. Chose which record you want to sort on, and on the **Sort row** of the grid select how you want to sort (Ascending or Descending).
28. Sort by Company Name in Ascending Order.
29. Click View Button to see the result.
30. You can Chose more than one field to sort on.
31. The Sorting Order goes from the Left to Right on the Grid.
32. Now Sort City in Ascending order.
33. This way the Company Name sort first then the City.
34. Go to View to see the result.
35. What if you want to reorder the sorting, I want city first?
36. You can reposition the order.
37. Now get City Before company Name and View the result.
38. But if you want to keep the Order in the result view but reorder the result on City first then Company Name do this Trick:
 1. Add another City column before Company Name.
 2. Sort Ascending in this field
 3. Make that field not show on the result(Uncheck Show checkbox).
39. Run your query to see the result.
40. Save you query as: **qryCustomers**.

Chapter	04		Lab	4C
		Customize Query with Criteria		
Files Used		Lab04B_Start.accdb	Grade (5)	

1. Continue With file: **Lab04B_Start.accdb**
2. Open **qryCustomers** in Design View.

3. We want to see customers that live **City = London**.
4. Notice that in the grid you have a **Criteria** row.
5. In Criteria cell under City write : London.
6. Press tab key and notice it puts "" around London.
7. That is because Access evaluates that the field is text data type.
8. Run the query.
9. You got only 20 customers that lives in London.
10. Go back to Design View.
11. Now we want to see the customers from All UK.
12. Notice that Country Field is Number Data Type.
13. Names of Countries are stored in another table.
14. Delete London Criteria in City and write **1** in Country Criteria.
15. Press tab key
16. Notice this time no questions added because the field is Numeber.
17. Go to View to see the result.
18. Go Back to Design view.
19. Delete the criteria of Country.
20. Now we want see customers that their Company Name starts with letter "I".
21. To do so use **Wild Cards**.
22. In Company Name criteria write I* then press tab key
23. *** Means any number of characters.**
24. Notice that Access adds key word: **Like**.
25. Run your query.
26. Get back to Design view.
27. Delete your criteria and close query.
28. You can right click the query and paste it with different names and change criteria in each and save.

Chapter	05		Lab	5A
		Controlling Query Results with Join Types		
Files Used		Lab05A_Start.accdb	Grade (10)	

1. Use file **Lab05A_Start.accdb**.
2. Go to Create → Query Design.
3. From Add table Pane double click: tblCustomers, tblOrdeers, tblOrderdetails.
4. Notice the Joins you have created before.
5. From tblecumsters double click CompanyName field.
6. It will appear in the 1st column in the Grid.
7. Continue adding fields :
 1. tblOrders→OrderDate,ShipDate
 2. tblOrderDetails→ProductID,Quantity
8. By Default, all those Joins are Inner Joins.
9. So if you run this query it will only shows customers that have orders.
10. Click Run
11. Notice there is no customer here that do not have orders.
12. Save your query as **qryCustomerOrders**
13. Now we want to see all customers wherever they have orders or not.
14. Right click the relation line between **tblCustomers** and **tblOrders** and choose **Join Properties**.
15. Notice you have 3 options:
 1. Inner Join (default).
 2. Left Outer Join.
 3. Right Outer Join.

16. Chose Option 2.
17. Notice the Arrow point to **tblOrders** now.
18. Run query ➔ Error Message.
19. That is because you have to all path have left outer join.
20. Change the join between **tblOrders** and **tblOrderDetails** to left outer Join too.
21. Notice the Arrows that shows the direction of Join
22. Run the Query.
23. Now all customers appear whether they have orders or not.

24. Go back to Design View.
25. Get both joins to Inner Join again.
26. Run Query.
27. Only customers that have orders only show up.
28. Close and save your query.

Chapter	05		Lab	5B
		Creating Complex Queries with Multiple Criteria		
Files Used	Lab05A_Start.accdb		Grade (10)	

- 1 Continue Using file **Lab05A_Start.accdb**.
- 2 Open **qryCustomers** in Design View.
- 3 We want to show only Zip code that starts with 93.
- 4 In Criteria under Zip write:93*
- 5 Press tab key and notice that access wrote the criteria for you.
- 6 Run Query
- 7 Only Customers with zip code starts with 93 are shown.
- 8 Go Back to design view.
- 9 Delete the Criteria

OR Condition

Method 1:

- 10 We want only show customers from California of Oregon.
- 11 In State Criteria write : ca OR or and press tab key
- 12 Notice Access wrote the expression for you
- 13 Run Query.
- 14 Go Back to Design View

Method 2:

- 15 Use the or line in the Grid.
- 16 You will get the same result.
- 17 Run query.
- 18 Go back to design view.

AND Condition

- 19 We want have two Criteria State = Ca , Zip starts with 93.
- 20 Put them in the same line in Criteria
- 21 This mean AND.
- 22 Run Query.
- 23 You only got two records.

- 24 Go back to design view.
- 25 Erase all Criteria.

Using Wild Card and Like Key word

- 26 We want the company that starts with letters from A to G.
- 27 Enter the Criteria in CompanyName : Like "[a-g]*"
- 28 That means anything starts with A through G and anything after that.
- 29 If you can not see well the expression, right click the Grid and choose Zoom.
- 30 Run query.
- 31 You will get 7 companies that start with letters from A to G.
- 32 Notice we use **Like** Key word when there is no Exact match.
- 33 Go back to Design View.
- 34 Delete the Criteria, save and close.

Chapter	05		Lab	5C
		Calculating in Queries Using Expression Builder		
Files Used		Lab05C_Start.accdb	Grade (15)	

- 1 Use file: **Lab05C.accdb**.
- 2 Open **qry Order Details CALCULATION** in design view.
- 3 There are two joined tables in this query.
- 4 Run Query and notice 2796 records are shown.
- 5 Those are all records that show all orders details across all orders.
- 6 I want to calculate the total of each line.
- 7 Go Back to design view.

Using the Expression Builder

- 8 We want to build an expression that calculates the total line for each line of the query.
- 9 We want to multiply **Quantity X Unit Price X (1-Discout)**.
- 10 Click on the column next to Discount, you can start writing the expression here.
- 11 But you can right click and choose the Builder.
- 12 You can also try the short cut (**Ctrl + F2**).
- 13 You can also choose the Builder from the ribbon.
- 14 The expression Builder open.
- 15 On the top you can write the expression directly or choose from the **Expression Elements – Expression Categories – Expression Values** on the bottom to add Values.
- 16 In the **Expression Elements** you can Expand to find the functions available.
- 17 In the Middle pane **Expression Categories**, you find the Category of functions.
- 18 And in the 3rd pane you find the function you want
- 19 You can also find the Objects in your database and access them the same way .
- 20 We want to write an expression that contains 3 fields from our query.
- 21 In Expression Elements pane click the 1st line (the query you are in).
- 22 In the middle pane the fields of the query will appear.
- 23 You can select and add to your expression.
- 24 Double Click **Unit Price**.
- 25 Notice it appears in two square Brackets [].
- 26 That is because some field names might have spaces.
- 27 You can click Operators on the left pane to choose * but it is easier to write directly.
- 28 Double click to add the **Quantity** field.

- 29 Complete the expression to be like the one in the figure.
- 30 You have to enclose fields in parentheses ().
- 31 Close your expression Builder and try to run the query.
- 32 You receive an Error message.
- 33 Notice that you have two fields [Unit Price] in two tables
- 34 And that is what make the Problem
- 35 Go back to the Expression Builder and add the table name before the field with (.) Dot Notation.
- 36 Notice that the Access gave Expr1 as a column name for your new calculated field
- 37 Add Total Line as a name for your calculated field and make sure it is separated by (:) colon from the expression like in the figure.

Line Total: ([Order Details].[Unit Price]*[Quantity])*(1-[Discount])

- 38 Run your query.
- 39 You get the calculated field in each line.

Formatting the field

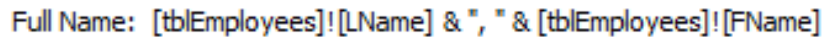
- 40 Go back to the design view.
- 41 Click on the calculated field you have created and chose properties.
- 42 You can also open the property sheet from the option on the ribbon.
- 43 In **Format** select Currency and **Decimal** = 0.
- 44 Run your query and check results.
- 45 Close your query and save.

Chapter	05		Lab	5D
		Concatenate Fields in Query		
Files Used	Lab05D_Start.accdb		Grade (20)	

- 1 Use file **Lab05D_Start.accdb**.

Method 1: Using Expression Builder

- 2 We want to show the full name of the Customer.
- 3 Open **qryCustomers**.
- 4 Run query.
- 5 Notice the Employee Name is shown because it is a lookup field.
- 6 Go back to the design view.
- 7 Right click the first cell after employeeID field in the Grid and chose Build.
- 8 We will create a calculated field using concatenation.
- 9 Write ➔ Full Name: (this is the name of the new calculated field)
- 10 Under **Expression elements** pan expand:
- 11 Customer Order.accdb ➔ tables ➔ tblEmployees.
- 12 Under **Expression Category** Double click LName.
- 13 It will appear in the Expression Builder above.
- 14 Delete <<Expr>> that appears before the field.
- 15 Notice: It is **[The name of the table] ! [Field Name]**
- 16 Type & (the concatenation Character).
- 17 Type “, “.
- 18 Type another &
- 19 Double click the FName Field.
- 20 The Final Expression should look like this:

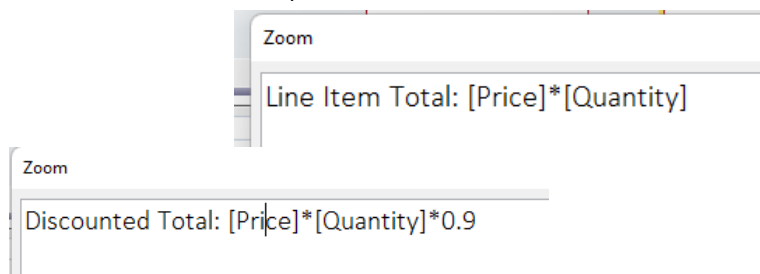


Full Name: [tblEmployees]![LName] & ", " & [tblEmployees]![FName]

- 21 Click Ok.
- 22 Right Click the new Calculated Field and Zoom.
- 23 Run Query.
- 24 You get a message Error Parameter Value
- 25 That is because we did not include the **tblEmployee** table in the query.
- 26 But you have used 2 fields from it in the expression you have built.
- 27 Go and add the **tblEmployees** to the query.
- 28 Now Run your Query.
- 29 Now you have the Last Name and Full name in the result.
- 30 Go Back to Design View.
- 31 In the Show Row uncheck EmployeeID field so it won't show in the result.
- 32 Run the query.
- 33 Now only full name appears.
- 34 Save and close the query.

Method 2: Using Zoom Window

- 35 Open **qryCustomersOrders** in design view.
- 36 We want to add some fields from **tblproducts**.
- 37 If Add Tables pan not appear → **Query Design** tab in the ribbon → Query setup group → Add Tables
- 38 Double click the **tblProducts**.
- 39 Double click the fields: **ProductName ,Price**.
- 40 Drag and Drop ProductName field just after ShipDate.
- 41 Drag Price to be after ProductName.
- 42 Run Query
- 43 Go back to Design View.
- 44 Build a new Calculated Field using Zoom this time.
- 45 Click the first blank column in the grid.
- 46 Right click and chose Zoom.
- 47 In the Zoom window write expression to calculate the Line Item Total field then press OK.
- 48 Run query.
- 49 Get Back to Design View.
- 50 Create a new Calculated Field: Discounted Total.
- 51 Run query.
- 52 Go Back to Design View.

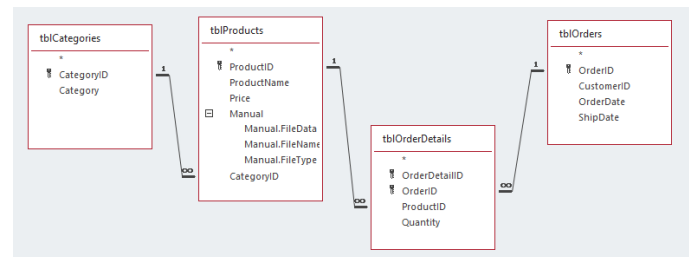


Format Field

- 53 Now let us format the new Calculated Fields we have Created.
- 54 Close the Add Tables Pane.
- 55 Go to Query Design Tab in Ribbon → Show/Hide Group → Property Sheet
- 56 This opens the property sheet window.
- 57 It always shows the property of the selected field.
- 58 Select **Line Item Total** field and in General → Format Field in property sheet select Currency.
- 59 Chose 2 Decimal Places.
- 60 Do the same format for the **Discounted Total** Field.
- 61 Close the property sheet and Run query.
- 62 Save your query and close.

Chapter	05		Lab	5E
Summarizing and Grouping Data Using Query				
Files Used	Lab05E_Start.accdb		Grade (5)	

1. Use File Lab05E_Start.accdb.
2. Go to Create → Query Design.
3. From Add Tables Pane select 4 Tables: tblProducts, tblOrders, tblOrderDetails, tblCategory.
4. Arrange the tables.
5. Select Fields : Category, Quantity ,Quantity , .
6. We need Quantity twice.



7. We want to see the SUM and AVERAGE of Quantity.
8. To do so you must show the **Total** row in the table grid at the bottom.
9. Query Design→ Show/Hide→ Totals Button.
10. Select Avg and Sum under the Quantity two fields and leave the other fields with Group By
11. Run query.
12. Go Back and format your **Quantity Average** to Standard Number with 0 Decimal.
13. Run your query again.
14. That is How many quantity you have sold for each category and what is the average of quantity for each time we sell.
15. We have summarized our Selling by Category Sum and Average.
16. Go Back to Design View.
17. We want do the same but this time by Product Name.
18. Select **ProductName** Instead of Category.
19. Run your query and see result.
20. Go Back to Design View.
21. Add Quantity Min, Quantity Max for each product.
22. Run your query.
23. Go to the Design View and Rename Column to **Sum Qty Sold , Avg Qty Sold , Max Qty Sold , Min Qty Sold**.
24. Save your query as **qryProductOrderQuantities**.
25. Close your query.

Chapter	05		Lab	5F
Using Where and Having in Grouping				
Files Used	Lab05F_Start.accdb		Grade (5)	

1. Use file: **Lab05F_Start.accdb**.
2. Create query that shows the Sum and Count of each Company Name.
3. Use the 3 tables: **Countries, Customers** and **Orders**.
4. Run your query.
5. You got **90** record in your data set.
6. It shows how much every Company sold and How many times it sold.
7. Create a calculated field **Year:Year([Order Date])**.
8. And use where condition in the Group by row to show only Year 2015.
9. Notice when you select where the field is unselected.
10. Run your Query.

11. You get
12. to get the same result but only for Year 2015.
13. You get only 82 records this time.
14. They are the companies that sold products in 2015.
15. Now I want to filter the result for UK only.
16. Add **Country** from **Country** table.
17. Add "UK" in the Criteria.
18. Run your query.
19. You receive only 24 records.
20. Go to SQL View to see the **Where** and **Having** Clause with Group By.
21. Close and save you query as: **QryCustomersAmountsInYears**.

Chapter	06		Lab	6A
		Creating Automated Requests for Criteria		
Files Used		Lab06A_Start.accdb	Grade (5)	

1. Use file: **Lab06A_Start.accdb**.
2. In Navigation Pane Copy and Paste **qryCustomers** and rename it **qryCustomersByState**.
3. Run the query it shows all customers.
4. Go to design view.
5. In the Criteria row under State write: **[Enter the State]**.
6. Run the query.
7. You will get **Enter Parameter Value** Dialogue Box.
8. Enter **OR** then press OK
9. The query runs and show only customers in the state of Origan.
10. Save your query and close it.
11. Double Click the query again and this time Enter CA
12. The query shows the results of Customers of California.

Using Wildcards

13. Duplicate **qryCustomes** again as before.
14. Name the new query **qryCustomersByName**.
15. Open in design View.
16. We want the user enter a partial company name
17. And the query display the result of this company.
18. Zoom Filed **CompanyName**
19. Enter the following Expression and press Ok:

Like "*" & [Enter Company Name (partial ok)] & "*"

20. Notice the * means any Number of Characters
21. Run query.
22. Enter Parameter: **Cat**
23. The result shows company **Bearcat Boosters**.
24. Rerun the query with parameter **fire**.
25. It will show Company: **Firebird Fire Sprinklers**.
26. Close and save your query.

Using Range Operators

27. Double click table: **tblOrders**.
28. Go to File → Save As → Save Object As

29. Save it as query **qryOrdersByDate**.
30. Close **tblOrders**.
31. Go to Design view of the new query.
32. Zoom to Criteria of **OrderDate** Field.
33. Enter the following Expression:

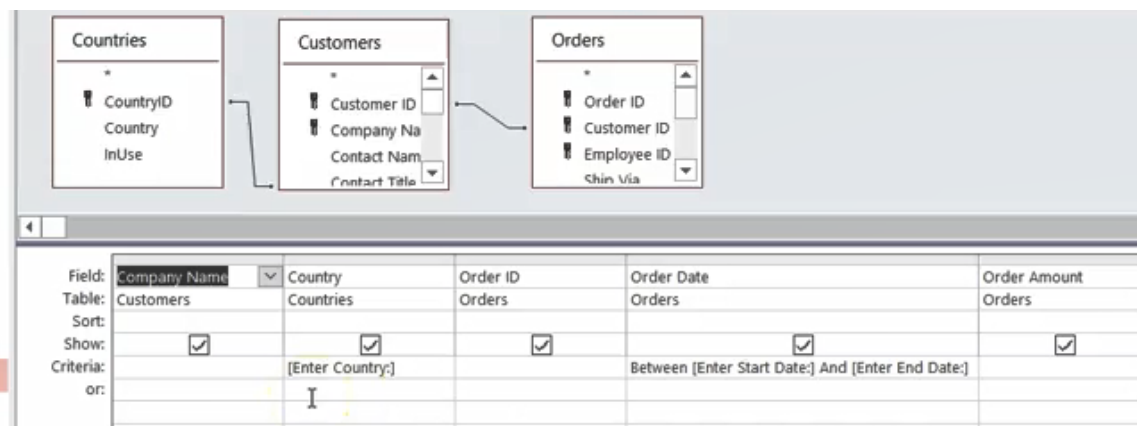
Between [Enter the start date] and [Enter the end date]

34. Remember the **Between** is inclusive.
35. That means the two dates will be included in the result.
36. Press OK and run the query.
37. Enter 1/06/2010 and 30/6/2010.
38. Results shows orders in the range you gave.
39. Save and close the query.

Chapter	06		Lab	6B
		Query with multiple parameters		
Files Used		Lab06B_Start.accdb		Grade (5)

Lab 6B: Query with multiple parameters.

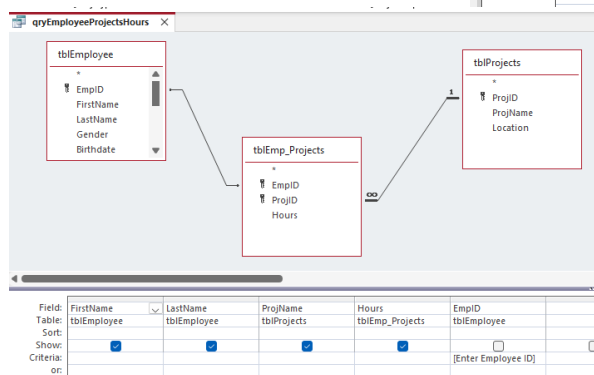
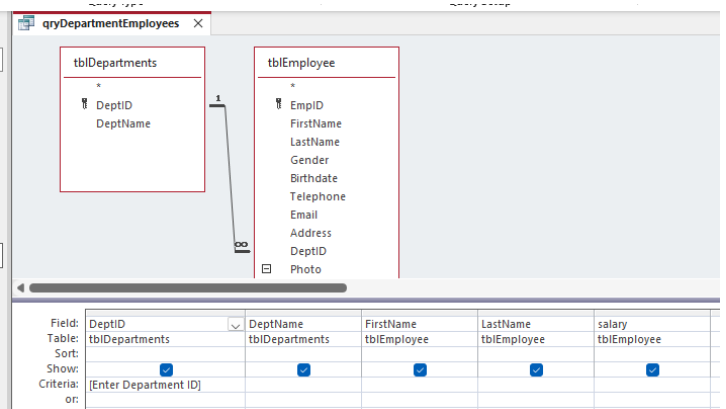
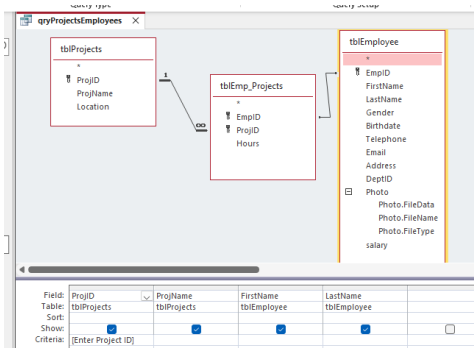
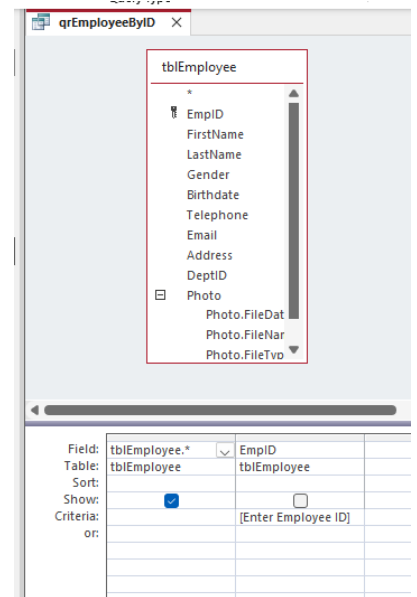
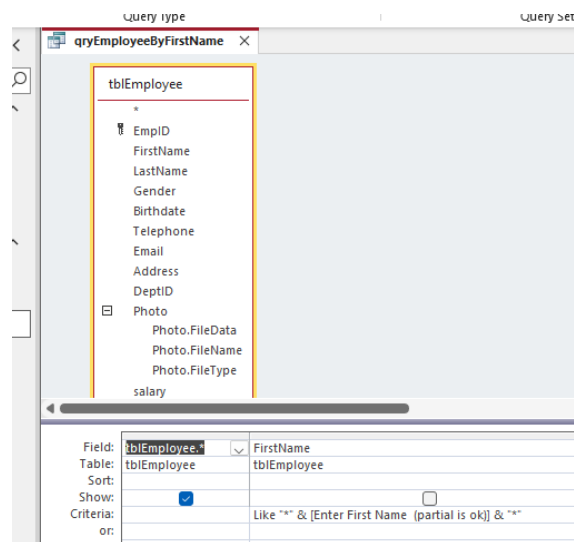
1. Use File **Lab06B_Start.accdb**.
2. Create New Query that have tables **Customers** and **Countries**.
3. Run the query you got 91 records.
4. Go back to design view.
5. Add Parameter [Enter Country] to field Country.
6. Run your Query.
7. In the input box write **UK**.
8. You receive 24 records.
9. Add another table Orders and fields like the Figure.



10. Enter another 2 Parameters for the [Enter Start Date] and [Enter End Date].
11. For Parameter enter : UK , 1/1/2015 , 31/12/2015.
12. You receive 99 records this time.
13. Save your query as **qryCustomersByCountryandDate**.

Project		Part	2
Query with multiple parameters			
Files Used	Use your own file		Grade (50)

1. Use your project file.
2. Add The following Queries and test they are working:
 - a. qryEmployeeByID.
 - b. qryEmployeeByFirstName.
 - c. qryDepartmentEmployees.
 - d. qryProjectEmployees.
 - e. qryEmployeeProjectsHours.



Chapter	07		Lab	7A
		Action Queries		
Files Used		Lab07A_Start.accdb	Grade (20)	

Make Table Query

1. Use File Lab07A_Start.accdb.
2. Go to Create → Queries → Query Design
3. Double Click to add **tblCustomers** from **Add Tables** Pane.
4. We need to add all fields to the query
5. You can either:
 - Click * in the top of the fields name or
 - Double click the table title then drag the fields to the grid.
6. Add all fields to the grid.
7. In state field criteria type **OR** and press tab.
8. Run the query.
9. Make sure it only shows customers from Oregon.
10. Go back to Design view.
11. In query design tab look at the query type group
12. Notice that **select** is shaded.
13. So, the query you are working on is from a select type.
14. Notice that all action queries have “!” Red Exclamation point before each one.
15. Note that there is also a **Crosstab** query you can select.
16. Click **Make Table** button.
17. Name the new table **tblCustomersOregon**
18. Chose current database and press OK.
19. Notice we did not have new table because we did not run the query yet.
20. Run the query and chose yes.
21. Double click the new table and check the result.
22. Close the new table.
23. Get back to your query.

1. Now we want to make another table for California Customers.
2. Create New Query as before
3. Change the Criteria to CA
4. Click Make Table.
5. Name the new table: **tblCustomerCalifornia**.
6. Click OK
7. Run the query.
8. A new table with two records added to your navigation pan
9. Go and check it then close.
10. We do not need this query anymore.
11. So close and do not save the query.

Append Query

1. We found that we need to have one table for both customers from CA and OR.
2. Go to Create → Queries → Query Design.
3. Double click on **tblCaustomersCalifornia** from Add Tables to add.
4. Double click on the table title so all fields are selected.
5. Drag all fields to the 1st cell in the Grid.
6. In Query Type Group → Append.

7. Select **tblCustomersOregon**.
8. Click OK.
9. Run Query and click yes
10. Open tblCustomersOregon table
11. You will find rows from table tblCaliforniaCustomers appended.
12. Close the table and rename it
13. **tblCustomersCaliforniaAndOregon**

Update Query

1. We want to update the wrong Zip code.
2. Open **qryCustomers** in Design view.
3. In criteria for zip enter 97045.
4. Run the query
5. As you can see you have one customer with this zip code.
6. But imagine that we have 100s of wrong entered zip code.
7. Hard to correct manually.
8. So, we will use the update query.
9. Go back to design view.
10. In Query Type Group → Update.
11. Notice a row added in the Grid **Update to:** .
12. In Update to under zip write 97046
13. Go to SQL View and see the SQL command Access wrote on behalf of you.
14. Run the Query and click yes.
15. Close your query without saving Changes.
16. Run Query **qryCustomers** and see that the 79045 has been updated to be 97046.
17. Close Query.

Delete Query

1. Open **tblCustomers**.
2. Add new record.
3. Create new query in design and add **tblCustomers**.
4. Double Click the title of the table
5. Drag all fields to the grid.
6. In Query Type click Delete.
7. Notice new Row appears Delete with word **where**.
8. Add the zip code to the Criteria of Zip field: 08821.
9. Run the query and choose Yes.
10. Close query and do not save changes.
11. Open **tblCustomers** notice the record has been deleted.
12. Close **tblCustomers**.

Chapter	08		Lab	8A
		DDL Language		
Files Used		Lab08A_Start.accdb	Grade (5)	

1. Use file: **Lab08A_Start.accdb**.
2. Create new database **Students**.

3. Create Query and change to SQL and chose data definitions.
4. Do the following:

- Create students table with ID pk, first name, last name, address, city, country, birth date
- Add column postal code
- Remove column country
- Remove table students

5. You can use data in **01 SQL-DDL Commands.txt** file.
6. Or you can Use the Queries already in the lab file.

Chapter	08		Lab	8B
		Practice SELECT Statement Basics		
Files Used		Lab08A_Start.accdb	Grade (10)	

1. Use file: **Lab08B_Start.accdb**.
2. Open **qryProductOrderQuantities**.
3. Go to Design view.
4. Notice How easy it is to Create the logic graphically.
5. In background MS Access Write the SQL Statements for you
6. We Use SQL Language to manage database.
7. Go to SQL View and see the SQL Statements Access wrote on behalf of you.
8. Let us Practice some Select Statements.
9. Use Queries already exists in the database.
10. Open in SQL Design View.
11. Review result

01 Select All

```
SELECT *
FROM tblCustomers;
```

02 Select Specific fields from table

```
02 SELECT Fields from Table x
SELECT CustomerID, CompanyName, Zip, State
FROM tblCustomers;
```

03 Select using conditions 1

```
SELECT CustomerID, CompanyName, Zip, State
FROM tblCustomers
WHERE State = "CA";
```

04 Select using conditions 2

```
SELECT ProductID, ProductName, Price
FROM tblProducts
WHERE price > 2;
```

- 05 Select using AND
- 06 Select using Between
- 07 Select using OR

```
SELECT ProductID, ProductName, Price  
FROM tblProducts  
WHERE Price >= 2 and Price <= 5;
```

```
SELECT ProductID, ProductName, Price  
FROM tblProducts  
WHERE Price Between 2 and 5;
```

```
SELECT CustomerID, CompanyName, Zip, State  
FROM tblCustomers  
WHERE State = "CA" or State = "OR";
```

08 Inner Join 1

- Use Design view to Create Relationship and query fields.
- Go now to SQL view to see how Access Created the Select statement for you.

```
SELECT tblProducts.ProductName, tblProducts.Price, tblCategories.Category  
FROM tblCategories INNER JOIN tblProducts ON tblCategories.CategoryID = tblProducts.CategoryID;
```

09 Inner Join 2

- Use Design view to Create Relationship and query fields.
- Go now to SQL view to see how Access Created the Select statement for you.

```
SELECT tblCustomers.CompanyName, tblOrders.OrderID, tblOrders.OrderDate  
FROM tblCustomers INNER JOIN tblOrders ON tblCustomers.CustomerID = tblOrders.CustomerID;
```

10 Left Outer Join

- Use Design view to Create Relationship and query fields.
- Go now to SQL view to see how Access Created the Select statement for you.

```
SELECT tblCustomers.CompanyName, tblOrders.OrderID, tblOrders.OrderDate  
FROM tblCustomers LEFT JOIN tblOrders ON tblCustomers.CustomerID = tblOrders.CustomerID;
```