Microsoft Access Training

Part I

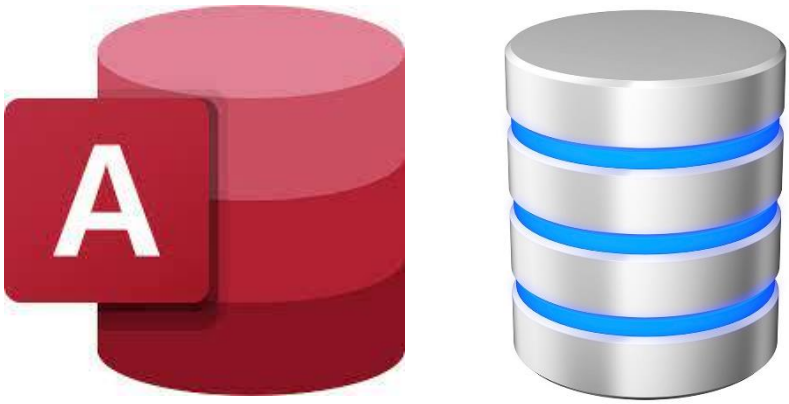

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Table of Content:

Contents

Introduction:

لما كانت قوة أى مؤسسة تكمن فى سرعة إتخاذها القرار ومواجهة تغيرات السوق والمنافسة ونقل المؤسسة من مكانة إلى أخرى أفضل عن طريق الحصول على أكبر عائد ، وتقليل التكاليف ومعرفة مواطن القوة والضعف فيها وفى البيئة التى تحيطها ، ولأن البيانات والمعلومات هى القوة الاساسية الداعمة لاتخاذ اى قرار باى مؤسسة ، ولما كانت البيانات فى حد ذاتها لا تعين على اتخاذ القرار الصحيح ، ولكن يلزم لها ان تجيب على الاسئلة المحددة والدقيقة و الدائرة فى اذهان متخذى القرار حتى يتثنى لهم الرؤية الواضحة للامور على اساس متين يعول عليه بعد إعدادها وتقديمها فى صورة تقارير ومخططات واضحة جليه.

ولما كان التعامل مع قواعد البيانات والحصول على البيانات المطلوبة بصورة دقيقة وسريعة هو أمر هام لكل من يعمل في مجال البيانات أو من أراد أن يغزو عالم قواعد البيانات ،لذا فقد كان لزاما على كل من يهتم بأى من هذه الأمور ان يتعلم مبادئ قواعد البيانات وكيف تعمل وكيفية التعامل معها ، حتى تكون أساس له في المجال الذى اختاره سواءا في تحليل البيانات أو تصميم البرامج التي تعتمد في خلفيتها على الاتصال بقواعد البيانات أو البدء فى تعلم إدارة قواعد البيانات وتصميمها.

وعليه فقد قمت باعداد هذا البرنامج التدريبى الذى يشرح للمتدرب كيف تعمل واحدة من اقوى واجمل واسهل قواعد البيانات في العالم وهى **ميكروسوفت أكسيس** .

ولق قمت باعداد هذا البرنامج التدريبى بطريقة مبسطة ومتدرجة للتدريب على تصميم وانشاء قاعدة بيانات كامله مستغلا معظم إمكانات البرنامج مع التركيز على طريقة عمل قاعدة البيانات في الخلفية واللغة التي تعمل بها حت تكتمل الصورة امام المتدرب فيتعلم أسس قواعد البيانات في اى برنامج متقدم اخر يود استكمال طريقه في هذا المجال ومعرفة الطرق السهلة البسيطة التي يتيحها برنامج الاكسيس امامه لخروج قاعدة بيانات سريعة ودقيقة للنور في وقت قياسى بالمقارنة بباقى برامج قواعد البيانات.

ولقد حرصت ان تكون التدريبات مركزو ووافيه حتى يستوعب المتدرب الفكرة مع عمل مشروع مواز يقوم المتدرب بانشائه من الصفر حتى الاكتمال فتتأكد لديه المعلومة حينما يختبرها بنفسه ويثق في قدرته على انشاء قاعده تفى بمتطلبات العمل الموكل اليه.

واننى اذ اقدم هذا العمل الى زملائى في الوطن فإننى اقصد زيادة معرفتهم وقدرتهم على التفكير العلمى السليم في الأمور ومواجهة المشاكل اليوميه بصورة منطقيه وكذلك نقل الخبرة اكتسبتها خلال أعوام عديدة في مجال التعامل مع قواعد البيانات بأشكالها المختلفة .

مهندس سعيد فوزى محمد هدى
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إدارة العطاءات
المقاولون العرب

القاهرة 21 أغسطس 2023

Part I: Creating Database and Manipulating Data

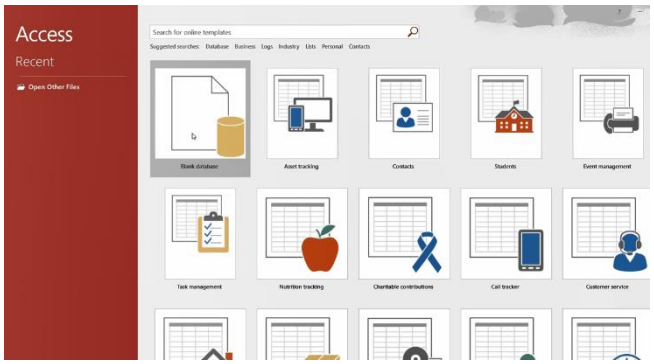
Chapter 1 Exploring MS Access Database

What is MS Access?

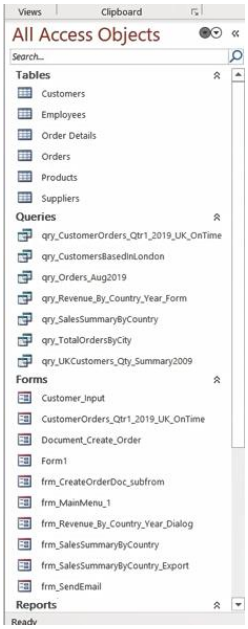
- Microsoft Access is a database management system (DBMS) from Microsoft.
- It is a member of the Microsoft 365 suite of applications, included in the Professional and higher editions or sold separately.

Creating New Database

- You can either select to create database from the template or create a blank Database.
- It asks you to save file first, that is because any object you create in a database it is saved directly to your file.

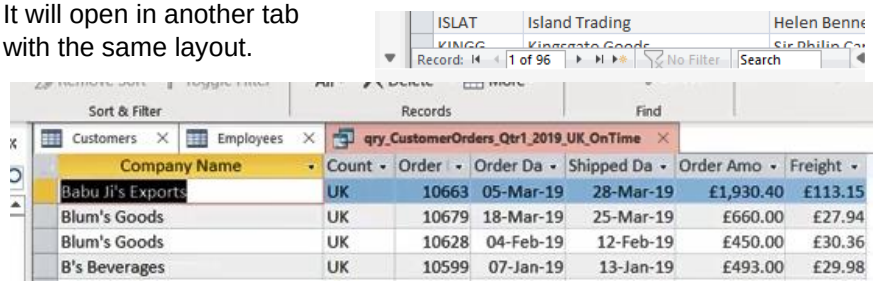


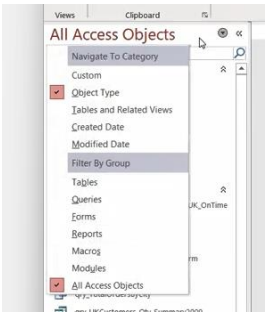
Lab 1A: Exploring Database



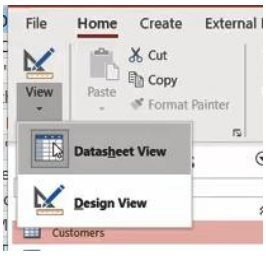
1. Open File **Lab01_Start.accdb** from the lab folder.
2. On the right open and close the Navigation Pane using **F11** Function key.
3. Adjust the pane wide and narrow to see all objects.
4. Click the arrow of Option Customize group.
5. You can filter by the main 6 Object type you have in Access (tables – 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**.

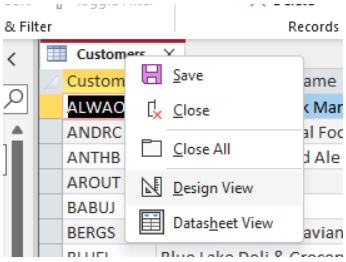
14. Double click query **qry_CustomerOrders_Qtr1_2019_UK_OnTime.**
15. It will open in another tab with the same layout.

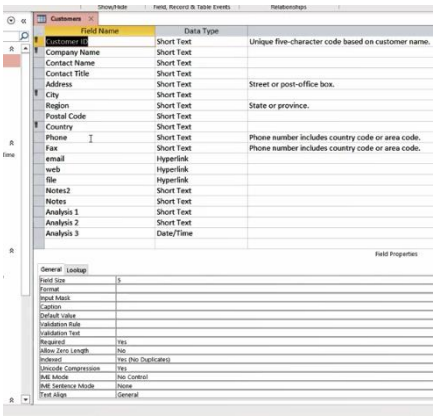




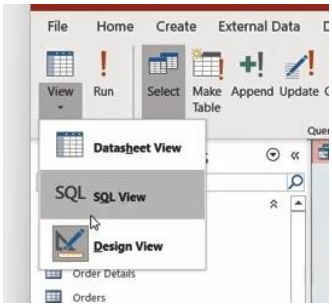
16. This query includes only **28** records for customers of UK orders in Quarter 1 of 2019.
17. This object does not store data, but only **VIEW** data from one or two tables.
18. A query **asks questions** and send instructions to the data and sends you the **result**.
19. Double click query: **qry_CustomersBasedInLondon.**
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.

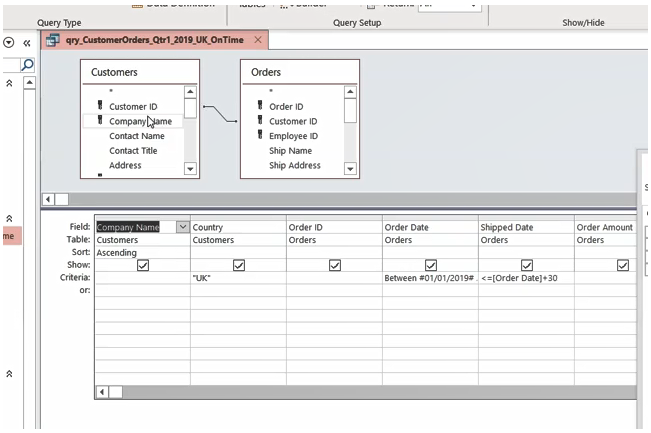






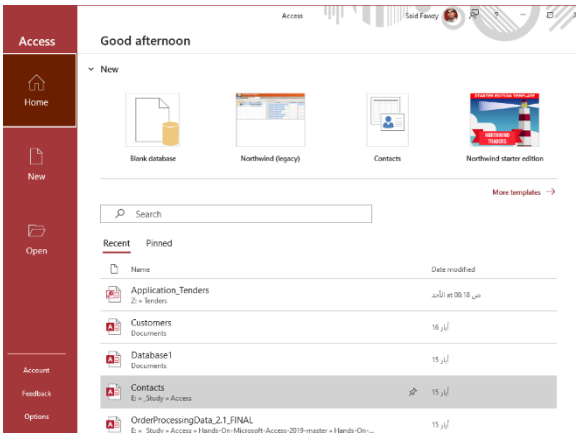
49. Go and review a query in Design View
50. Notice you have 3 view options for the query.

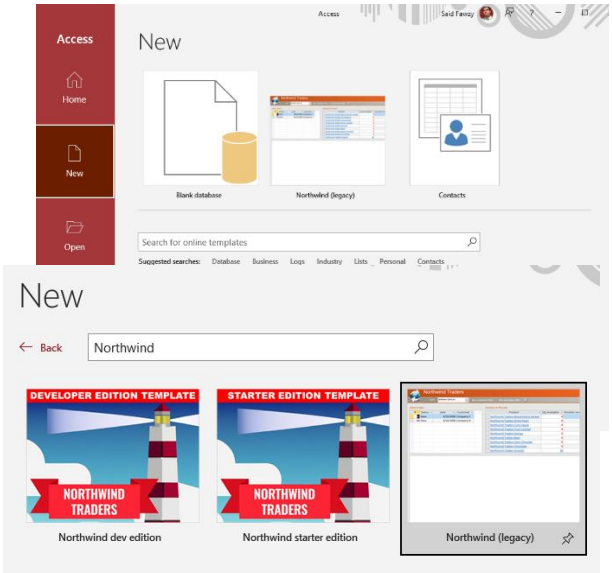




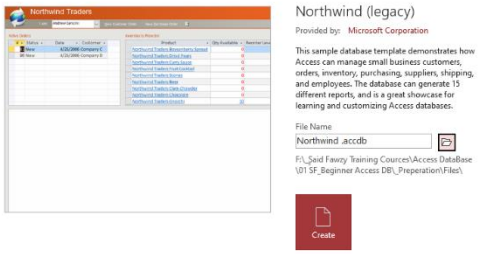
51. Notice:
    - **Data added to tables are automatically saved**.
    - **Only One data base file is allowed to open at one time**.

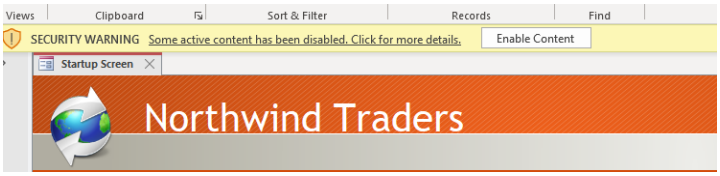
Lab 1B: Creating Database from template.



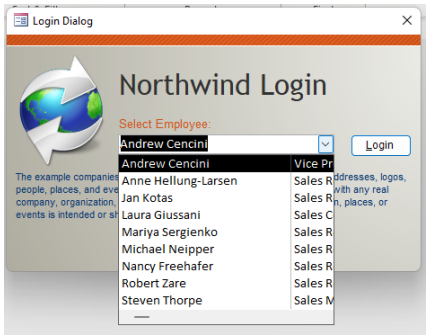



Northwind
Suggested searches:
Database
Business
Logs
Industry
Lists
Personal
Contacts

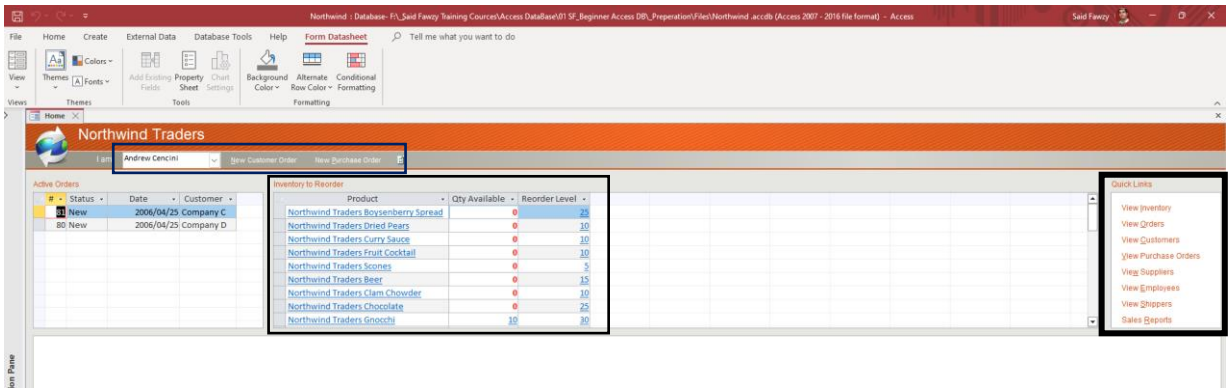

Northwind (legacy)
Provided by: Microsoft Corporation
This sample database template demonstrates how Access can manage small business customers, orders, inventory, purchasing, suppliers, shipping, and employees. The database can generate 15 different reports, and is a great showcase for learning and customizing Access databases.
File Name
Northwind .accdb
Create


Views
Clipboard
Sort & Filter
Records
Find
SECURITY WARNING
Some active content has been disabled. Click for more details.
Enable Content
Startup Screen
Northwind Traders


Home
Create
External Data
Database Tools
Help
Tell me what you want to do
Login Dialog
Northwind Login
Select Employee:
Andrew Cencini
Login

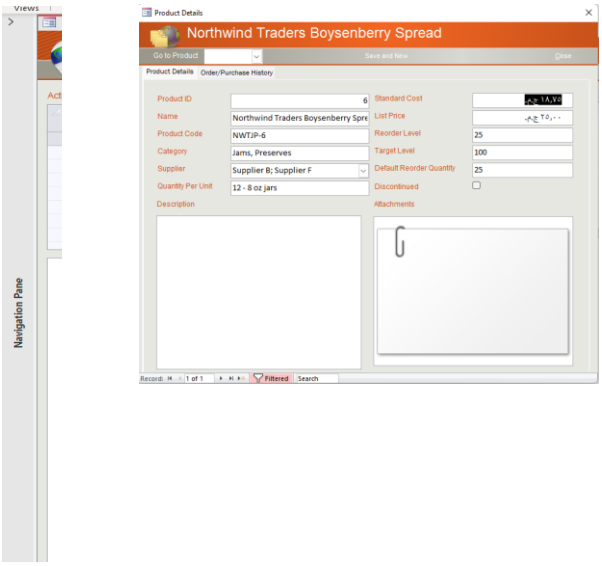

Login Dialog
Northwind Login
Select Employee:
Andrew Cencini
Login
Andrew Cencini
Anne Hellung-Larsen
Jan Kotas
Laura Giussani
Mariya Sergienko
Michael Neipper
Nancy Freehafer
Robert Zare
Steven Thorpe

Home form:

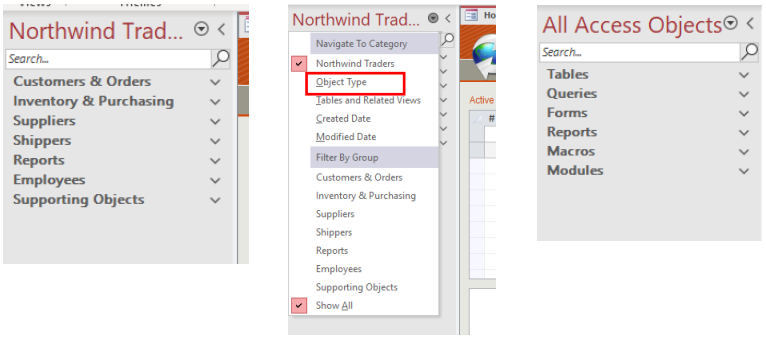

Form Datasheet
Northwind Traders
Andrew Cencini
Active Orders
Inventory to Reorder
Quick Links
Product
Qty Available
Reorder Level
Northwind Traders Boysenberry Spread
Northwind Traders Dried Pears
Northwind Traders Curry Sauce
Northwind Traders Fruit Cocktail
Northwind Traders Scones
Northwind Traders Beer
Northwind Traders Clam Chowder
Northwind Traders Chocolate
Northwind Traders Gnocchi

- Click on the first product.

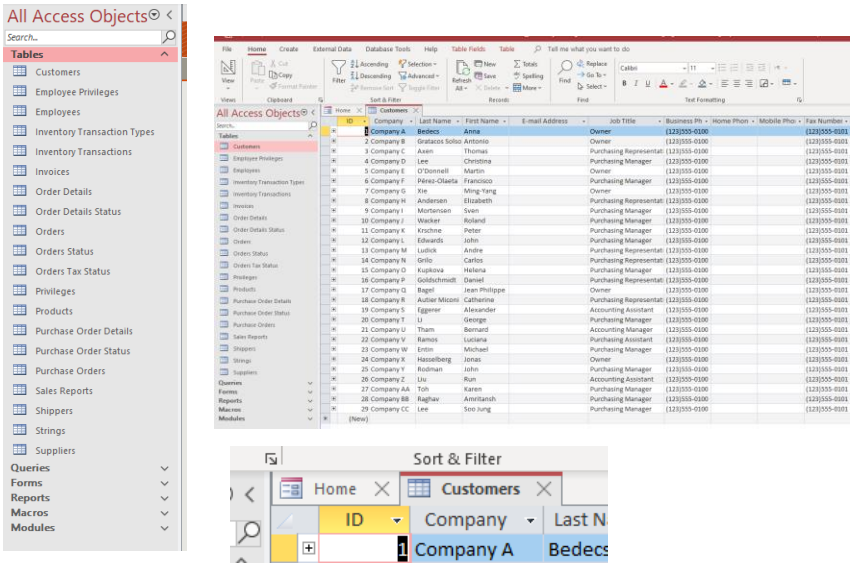
- Then close.
- Notice the collapsed navigation pane.



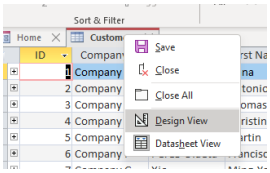
- Expand the Navigation pane.
- Get the view to the default view.
- Then explore each object type.

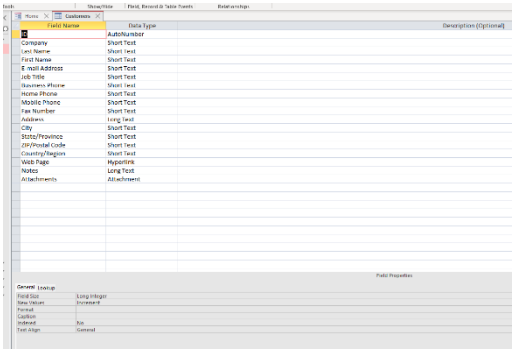


- Explore customer table.
- This Data sheet view.
- Columns are fields.
- Rows are records.
- Represent a company.

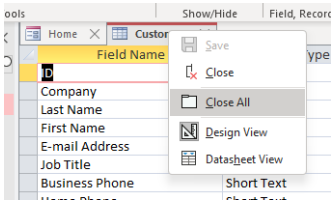


- Select design view.
- You use to create Tables.

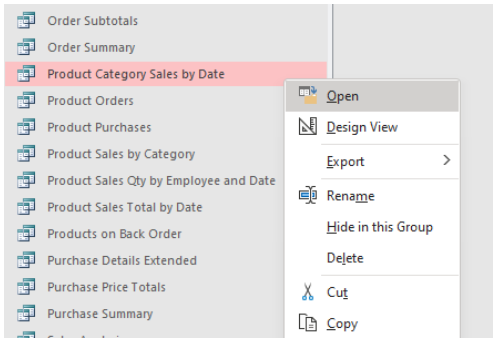


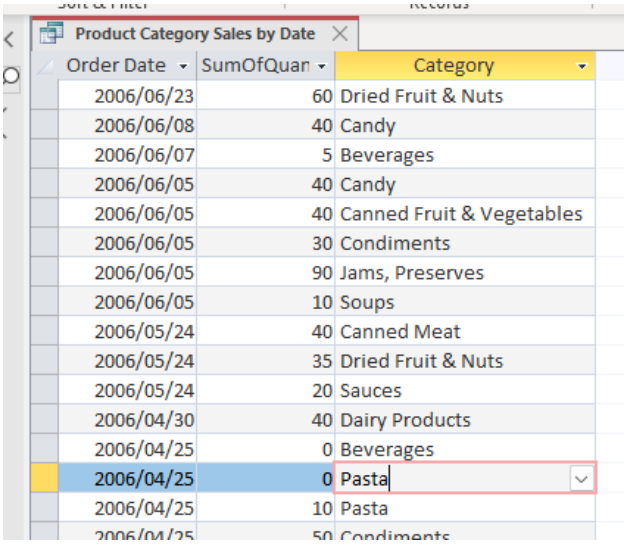


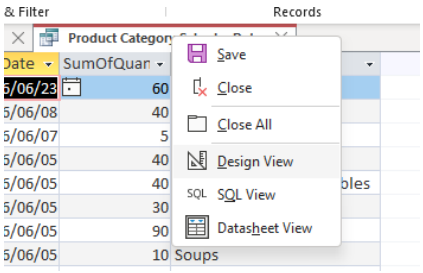
- Close all

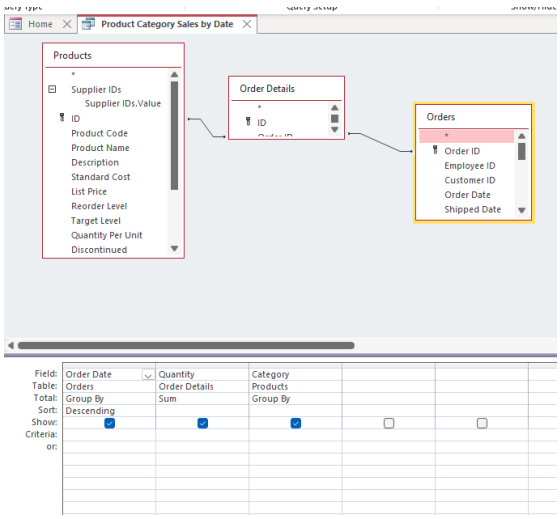


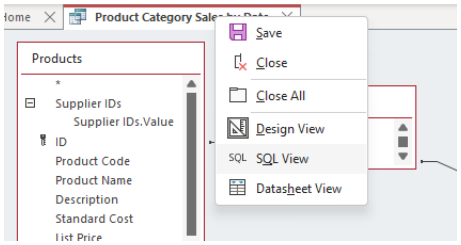
- Explore query: Product Category Sales by Date.

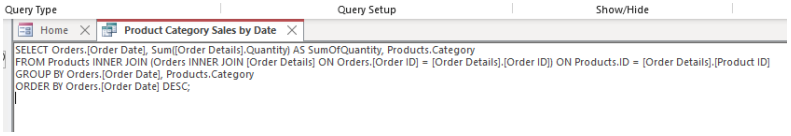


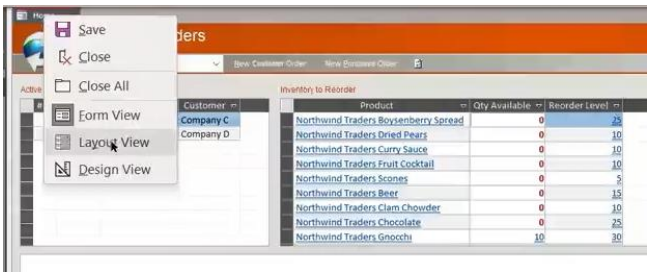




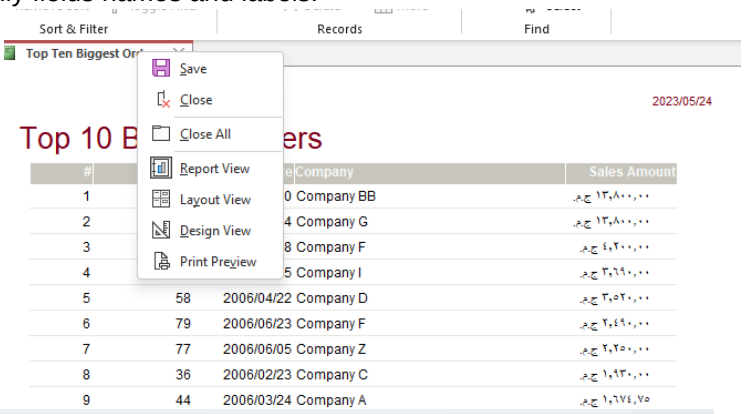


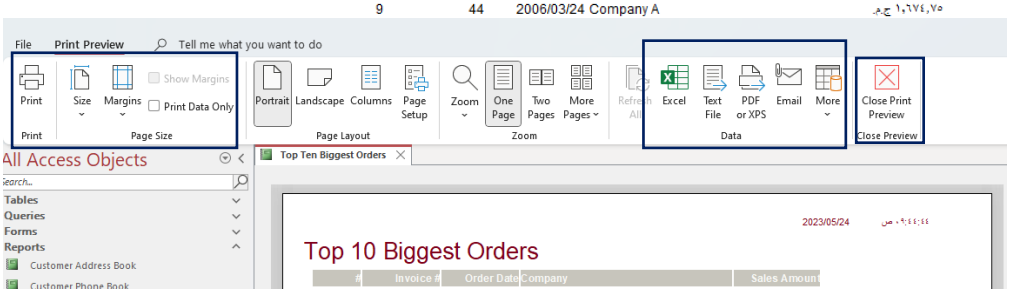




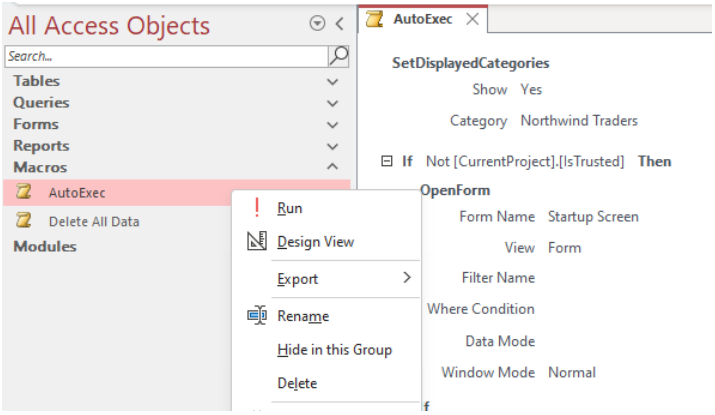


- Explore Home Form
- The layout view enables you to see the data while editing.
- Design view make you design and manipulate objects, But you cannot see the data only fields names and labels.
- Explore Report: Top Ten Biggest Orders.
- Notice the Ribbon that appears when you are in Print Preview.

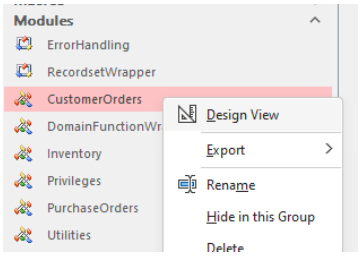


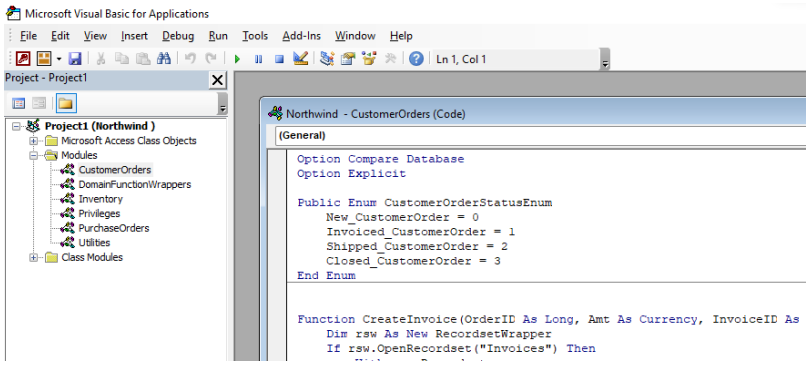


- Explore AutoExec Macro.

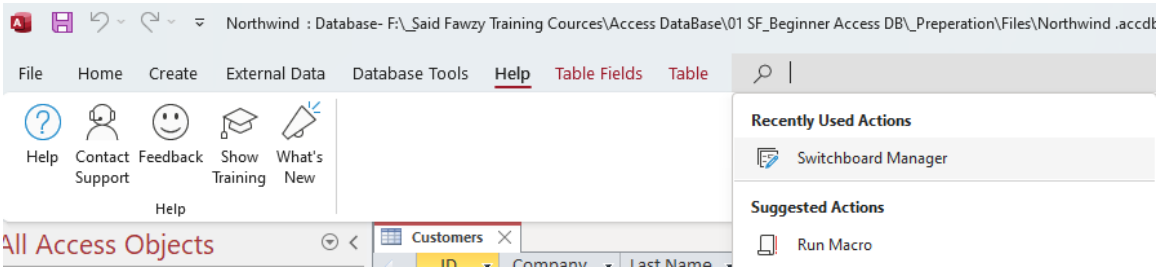


- Explore Customer Order Module and VBA Code.
- You can create Macro and convert it into VBA code.

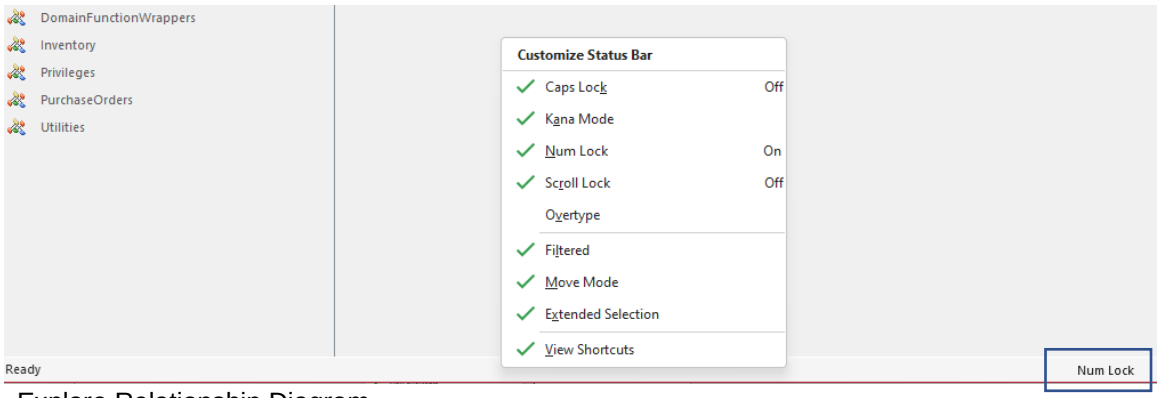




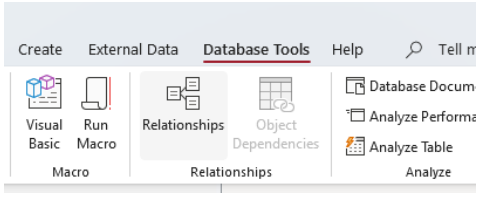
- Open Customer table and try to explore the Ribbons available.
- In Hep tab try: tell me what you want to
- This help you to reach area of the program you forget where is it.
- search for Switchboard Manager

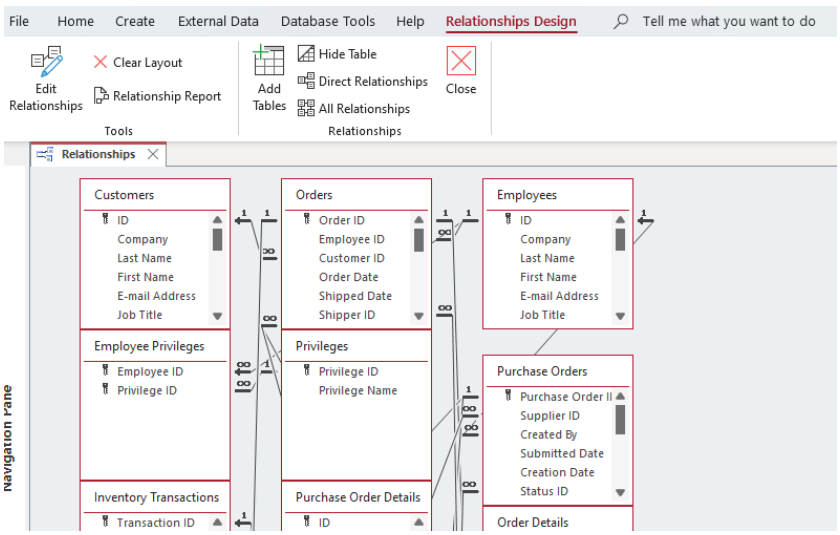


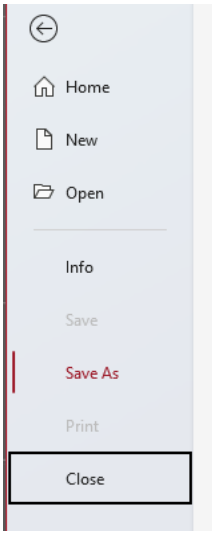
- Explore Status Bar try Cabs Lock ,Num Lock



- Explore Relationship Diagram
- Then Close the Nortwind Database.

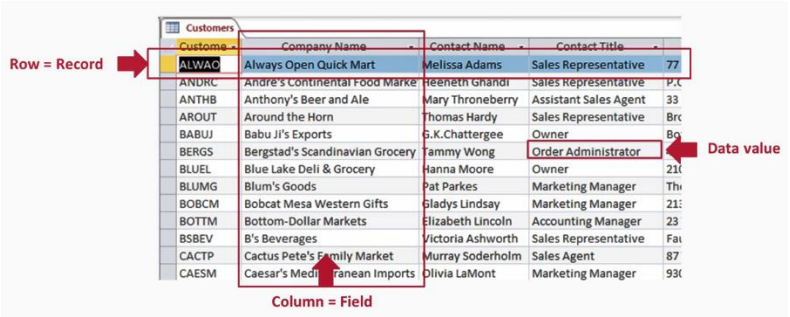




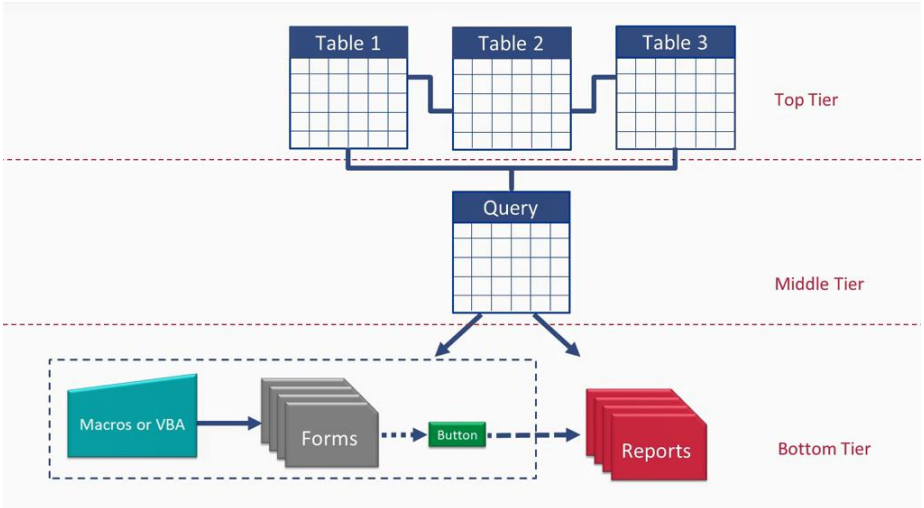


Some Access Terminology

- **Row = record**: only one record is saved in a record.
- **Column=Field**: Must be consistence for all records.
- **Domain=Data value**: is the intersect between rows and columns and have only one value.



Access Objects and the 3 tier layers of database



Chapter 2 Building Tables

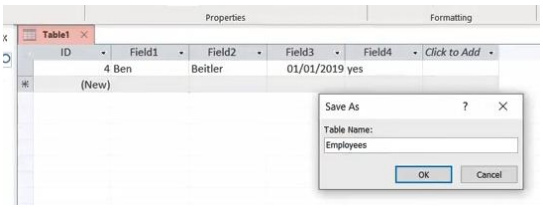
In this Chapter we will go through the different ways to create tables in MS Access, and Data types available.

We will cover:

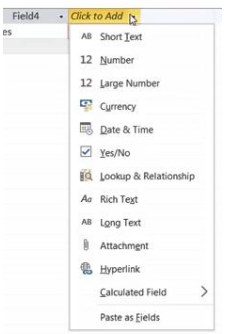
1. Create table in datasheet view (on the fly).
2. Create a table in design view mode.
3. Defining fields and data types.
4. All Data Types available in MS Access.
5. Data types Pros and Cons.
6. Creating table using template.

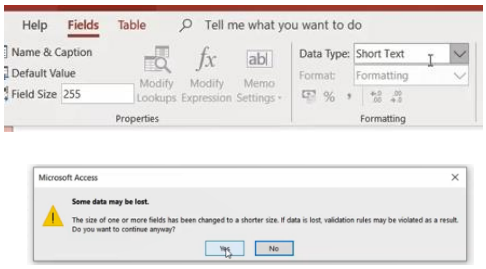
Lab 2A: Creating Table in Datasheet View

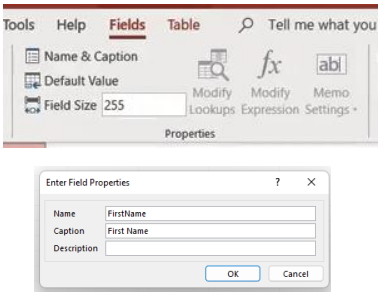
1. Open file**: Lab02A_Start.accdb** from lab folder.
2. You will get an empty database, as the navigation pan is empty.
3. To create any access object, use the **Create** tab in the ribbon.
4. You will find **Table** Group with 3 options.
5. Click Table to open new table in datasheet view.
6. Notice 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.



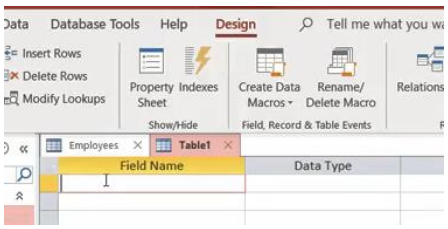
14. If you attempt to change the data type of data of any field, it changes and **validates** the data too.
15. Change the data type of **Field1** to be **Long Text** and get it back to be a **short tex**t.
16. You will receive a warning message of data loss.
17. From **Properties** Group Chose **Name and Caption** to change the **Filed1** Name and caption to to FirstName and **First Name** respectively.



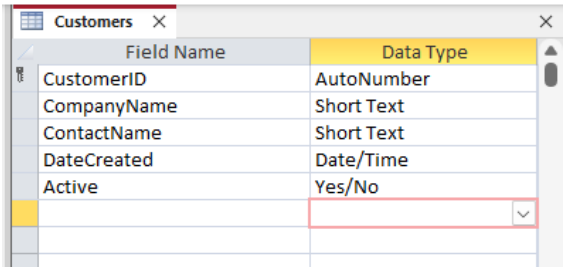


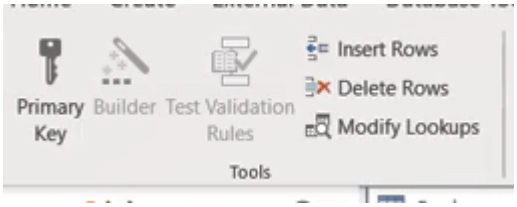


Lab 2B Creating a table Using Design view

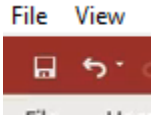


1. Continue with the same file **Lab02A_Start.accdb.**
2. If you click on the table design button you can create a table in design view.
3. Notice that you also will have **design** tab in the ribbon to help you in design.
4. It is divided in two halves: the upper half is where you define the field name, 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.



Access Data Types

We have many access data types you can use for your fields.

Text Data Types:

1. **Short Text**: Any Character alphanumeric up to 255 characters.
2. **Long Text**: Hold unlimited Number of alphanumeric Characters (comments and notes)
3. **Hyperlink**: Alphanumeric with a clickable link (Email, URLs).

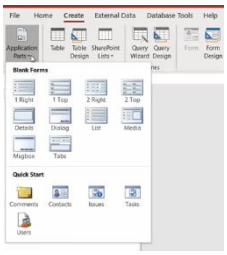
Numeric Data Types:

1. Number: Only Numbers, Data Size can be changed
2. Dat/Time: Valid Date and Times Only.
3. Currency: Numbers Only, Data Size Can not be changed but Currency Style
4. AutoNumber: Auto Generated Numbers (Normally starts from 1 and increment by 1).
5. Yes/No: True or False (Checkbox Control).

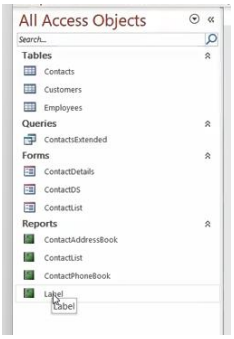
Other Data Types:

1. OLE Object: (Embedding/Linking) Excel, Word, or other Windows Application Files.
2. Attachment: To attach multiple files.
3. Calculated: An Expression to Calculate Values from other fields(in the same table only).

Lab 2C: Creating Table from Table Template



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.



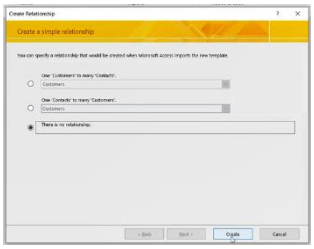
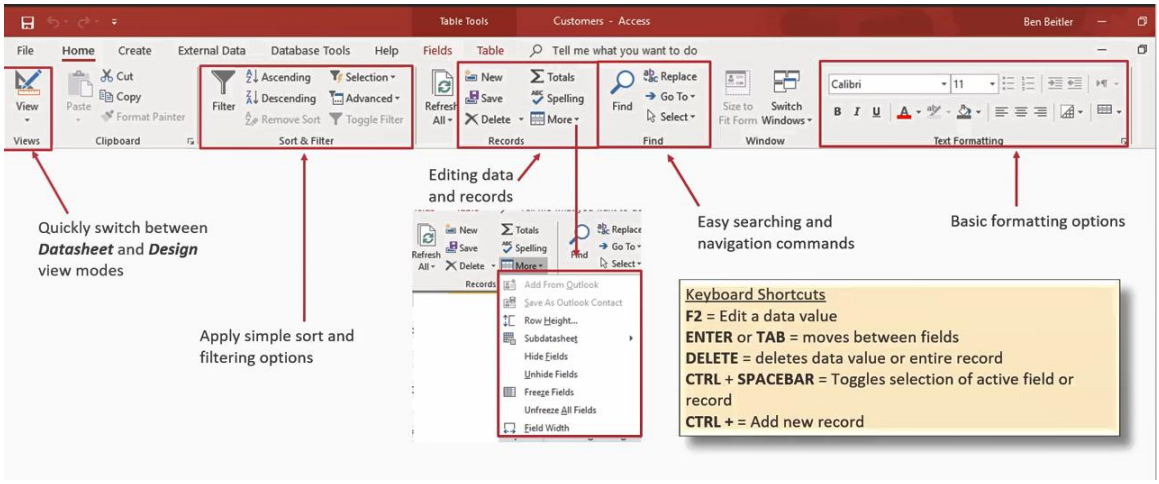
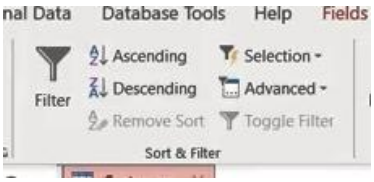


Table Datasheet view

- When you are in the table datasheet view you will have Groups in **Home** tab i.
- It allows you to work with data and records in the table.

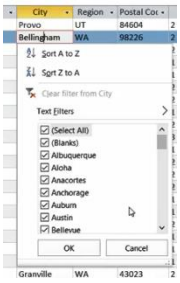


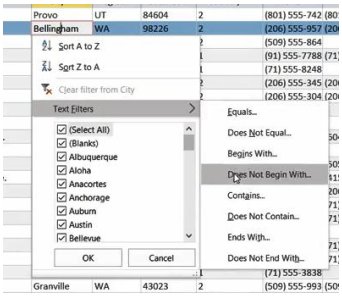
Lab 2D: Working with table datasheet view

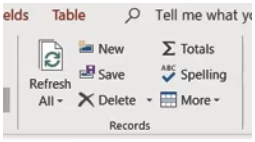


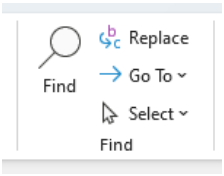
1. Open **Lab02D.accdb** file from the lab folder.
2. Open table: Customers in datasheet view.
3. In sort & Filter section you can sort and filter data.
4. Chose any cell in **company Name** field and sort accending and decending.
5. Click **Remove Sort** button to stop sorting.
6. Chose any cell in **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.









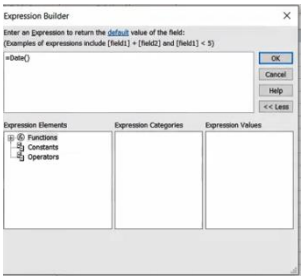
Lab 2E: Change Fields Properties

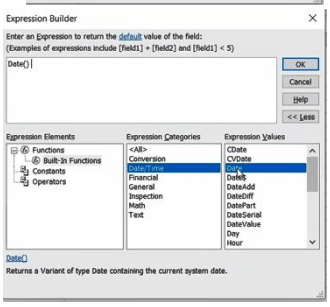
1. Continue with the same File: **Lab02D_Start.accdb**.
2. Open Customers table in **Design View**.
3. Change the properties of the fields as follows:

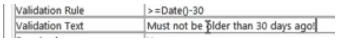
Field	Data Type	Field Property	Value
Customer ID	Short Text	Field Size	5
Company Name	Short Text	Field Size	40
Contact Name	Short Text	Field Size	30
Contact Title	Short Text	Field Size	30
Address	Short Text	Field Size	60
City	Short Text	Field Size	15
Region	Short Text	Field Size	15
Postal Code	Short 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		

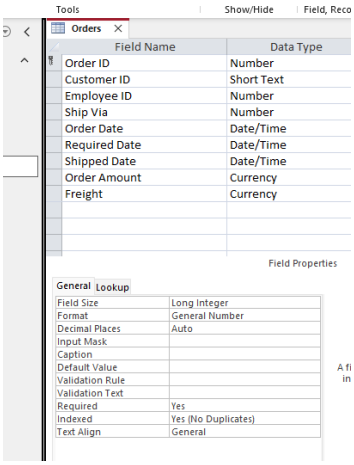
4. Open **Orders** Table in Design View.
5. Notice that **order amount** field is Currency you cannot change size.
6. The first option allowed for you is Format.
7. Also **Order Date** field is Date/Time you can only change format not size.

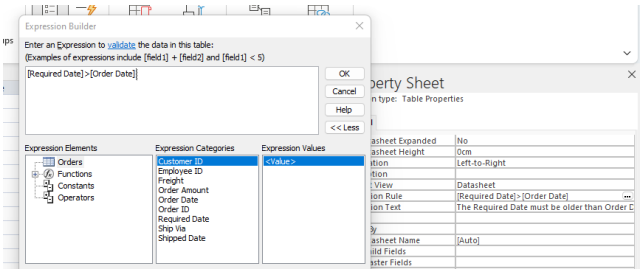
8. The default value is the one that is added by default when you add new record.
9. You can add a function or expression for that.
10. In Default Value of Order Date type **=Date().**
11. It adds the date of today when user enter new record.
12. Now go to datasheet view and try to add new order, notice 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.









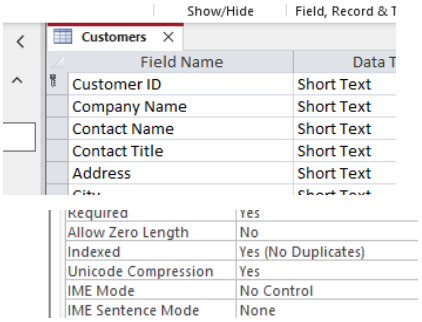


Chapter 3 Tables Relationship

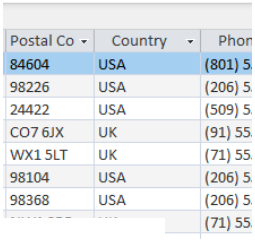
Primary Key

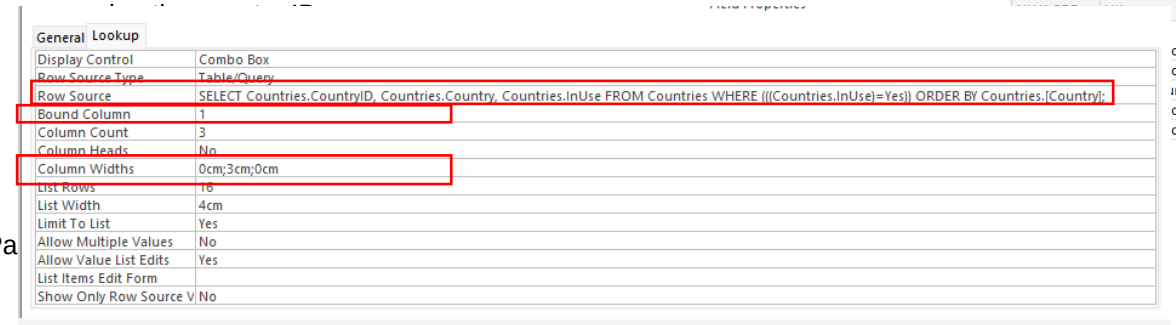
- It is a key field that contains a unique value in a table.
- Used to join the table with other tables.
- A primary Key cannot be left blank (Mandatory) (is NOT NULL).
- The secondary key is a field used to connect to other table but allow duplicate values.
- Keys are used to speed up the queries.

Lab 3A: Setting Primary and Secondary Keys



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





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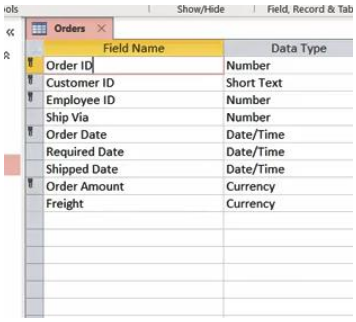
33. Try to Change the width of the tree fields (0cm;3cm;0cm) to (3cm;0cm;0cm) and to (0cm;0cm;3cm) and check the result is datasheet view.
34. get the value back to (0cm;3cm;0cm).
35. Notice that the bound value is the Country ID because the bound column is column 1.
36. Close all tables.
37. Go to the **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.

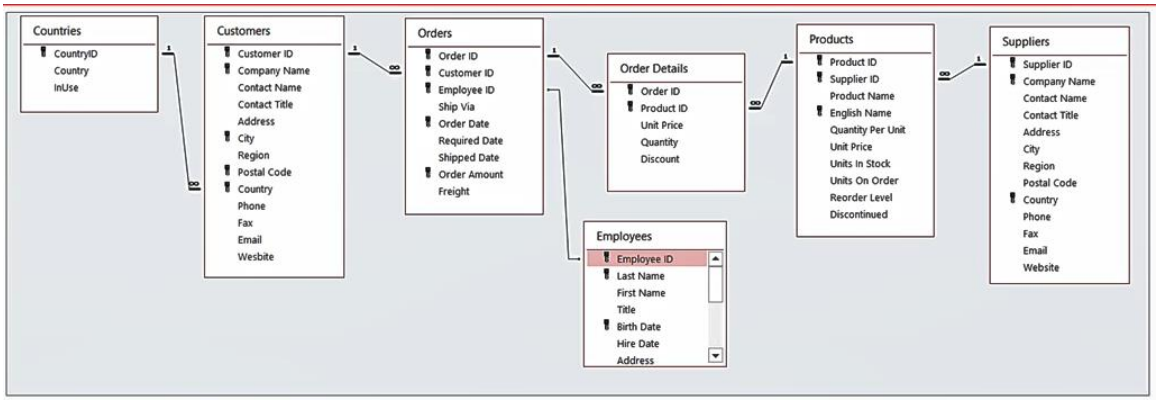


Indexes

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.

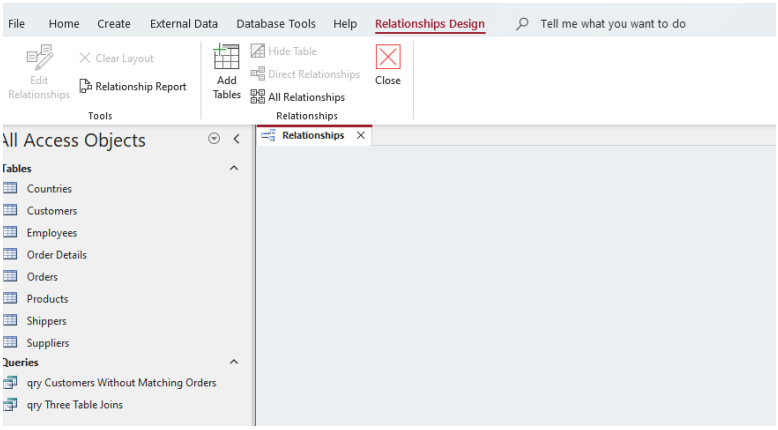
The relationship Window

- In the window of relationship, you have all tools to deal with tables relationships and data integrity in your database.
- This Window set a **PERMENANT** relationship between tables.
- That means that when you call tables in a query or a form you will find the relationship that you assigned in the relationship window.
- All rules you assigned in this window will always be maintained.
- Before you start working with relationship windows make sure all your tables are closed.

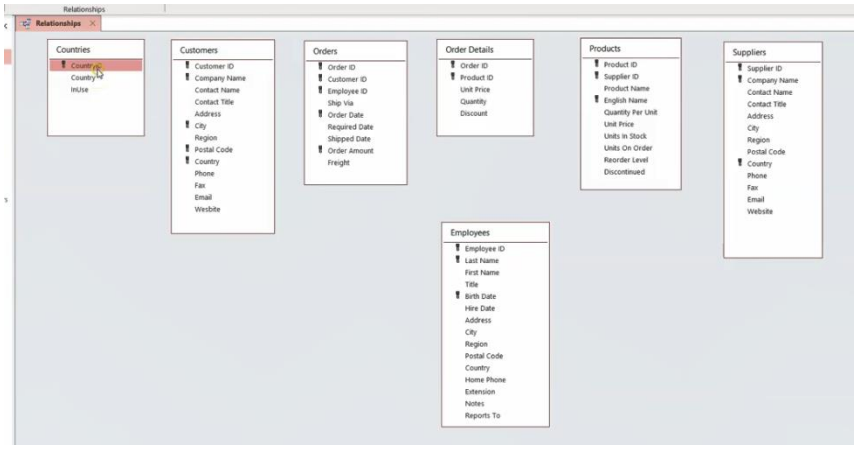


Lab 3B: Define Relationship between Tables

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.

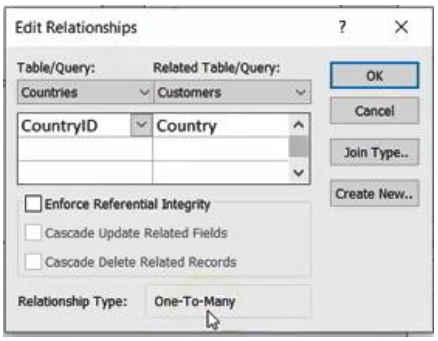


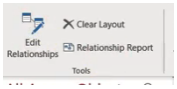
8. Click **Add Tables** to open the Add Tables Window on the right.
9. Select All tables except Shippers and click Add Selected Tables.
10. Close Add Tables window and the navigation Pane to have more space.

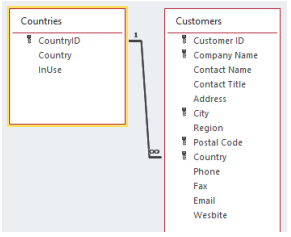


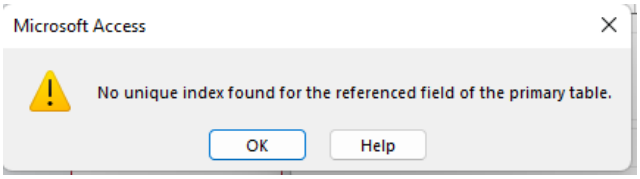
11. Arrange your tables as you like and expand tables to see their fields.
12. You should see your Primary Keys and Secondary keys appear if you sat before.
13. Create Relationship between the **Country** table and **Customers** table.
14. Drag the **Country ID** from Country table to **Country** in Customers.
15. **Edit Relationship** Window pops up.

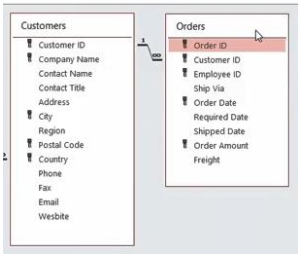
16. You have to:
    a. Confirm the two fields that relate the two tables.
    b. Enforce Referential Integrity.
    c. Cascade Update related fields.
    d. Cascade Delete Related Fields.
17. You can now click create and the relationship is created for you.
18. Close the Relationship windows and save 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.

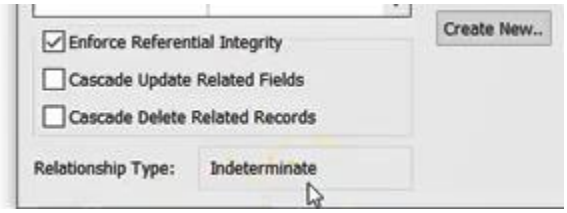




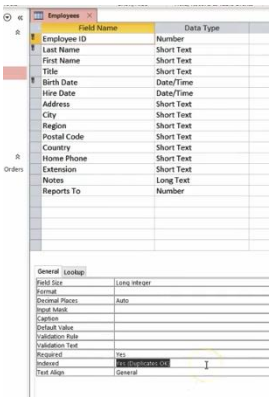




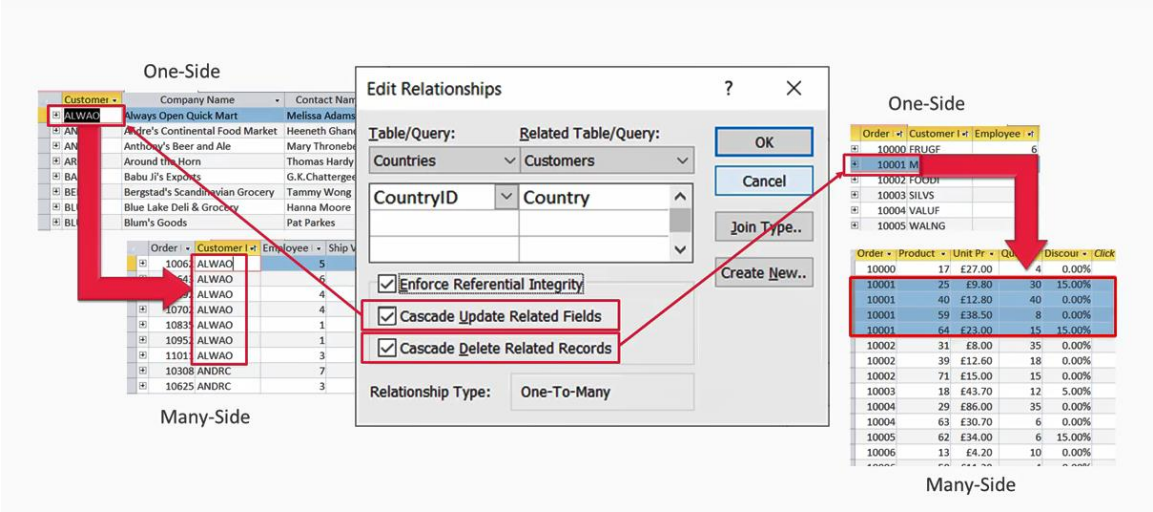




33. Clear the enforce referential integrity and create the relationship.
34. Close and save changes and let us go and see what the problem is.
35. Open Employees table in Design View.
36. Notice **Employee ID** field is the primary key.
37. But in Index it is (Yes Duplicate OK).
38. This means it is 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.



Cascade Options



Cascade Update Related Fields

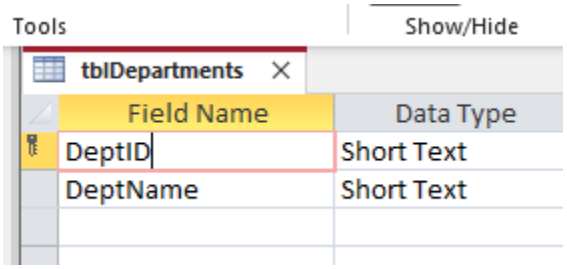
- If you update ONE side it affects the MANY Side.
- Example: If you Update Customers ID in Customers table it will be updated automatically in Orders table.

Cascade Delete Related Records

- If you Delete the ONE Side it will delete all the MANY Side
- Example if you delete the Order record all its children will be deleted from the Order details table.

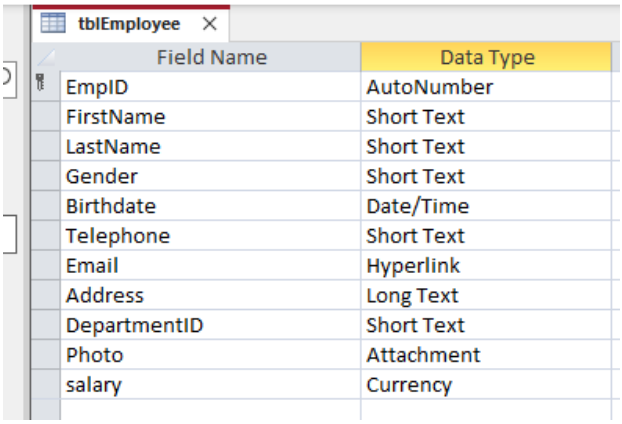
Build Your Project Par 1 (Creating Tables)

1. Create New Database with Name **Employees Projects**.
2. Create **tblDepartments** Table as follow:



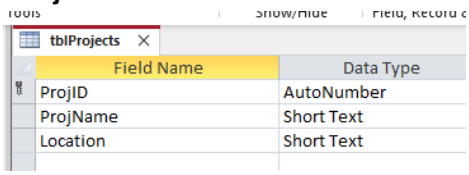
a. DeptID: Field Size = 4
b. DeptName: Field Size = 30 - Caption = Department Name

3. Create table **tblEmployees** as follow:



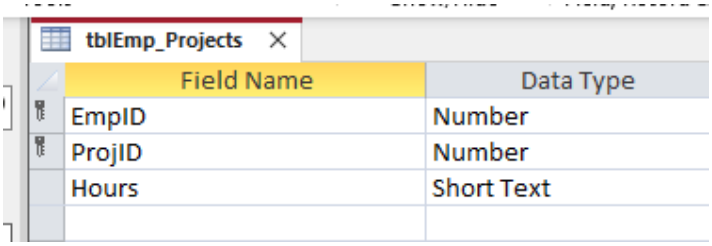
a. FirstName: Field Size = 40 – Caption = First Name.
b. Last Name: Field Size=40 – Caption = Last Name.
c. Gender: Lookup Field (M , F) (enter data manually)
d. Telephone: Field Size= 13 – Default Value = ="+2"
e. DeptID: Lookup Field – Caption = Department -Field Size = 4 (enable data integrity).
f. Salary: Decimal Place = 0

4. Create table **tblProjects** as follow:



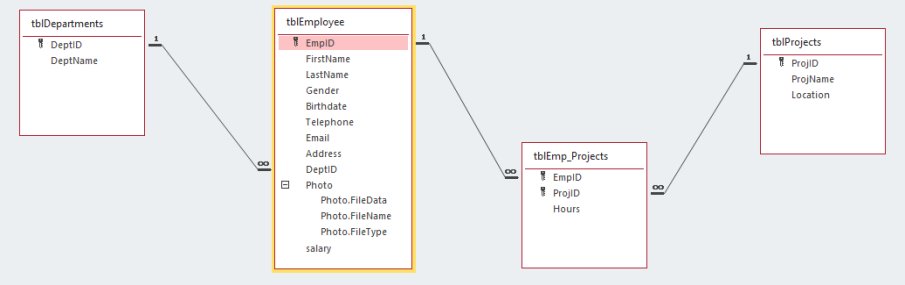
a. ProjName: Caption= Project Name
b. Location: Looukup Field with manual values(Cairo-Alexandria-Tanta-Asuit-Aswan).

5. Create Table **tblEmployeeProjects** as Follow:

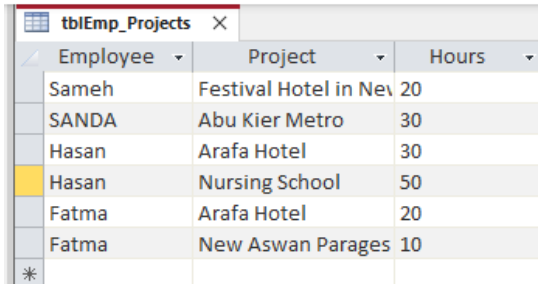


a. Hours: Field Size: 4

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.



tblEmp_Projects

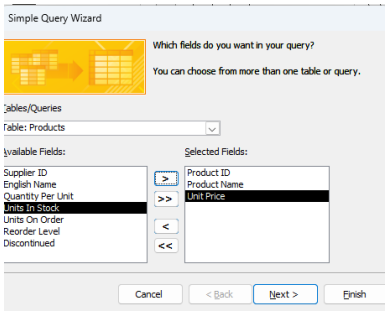
Employee	Project	Hours
Sameh	Festival Hotel in Nev	20
SANDA	Abu Kier Metro	30
Hasan	Arafa Hotel	30
Hasan	Nursing School	50
Fatma	Arafa Hotel	20
Fatma	New Aswan Parages	10

Chapter 4: Query Basics

- We usually use query to get different view of data or
- Filter the data on criteria.

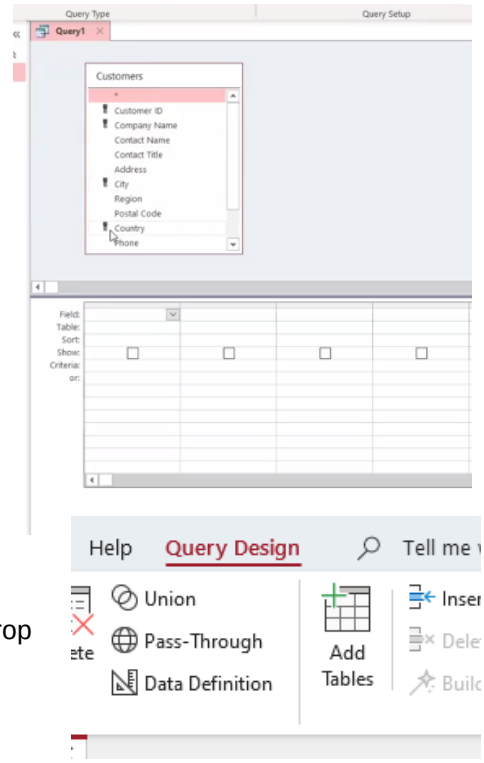
Lab 4A: Creating Query Using Wizard

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.**

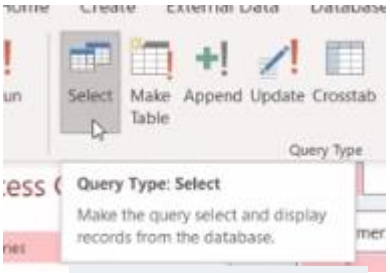


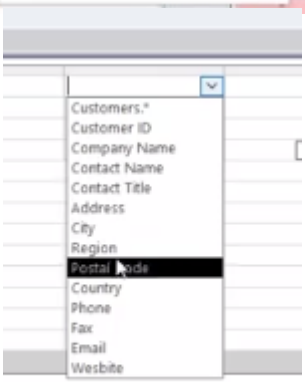
Lab 4B: Create Query using design view

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



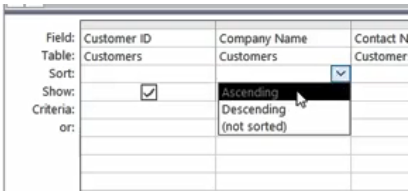
18. If you have many tables in the query, Chose table first then the field.
19. To delete a field, first select the field head and then press delete key from the keyboard.
20. Or you can select the field and then click the delete column icon on the ribbon.
21. You can **Reposition** your fields choosing 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.

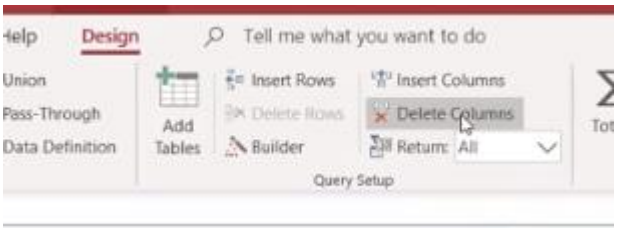




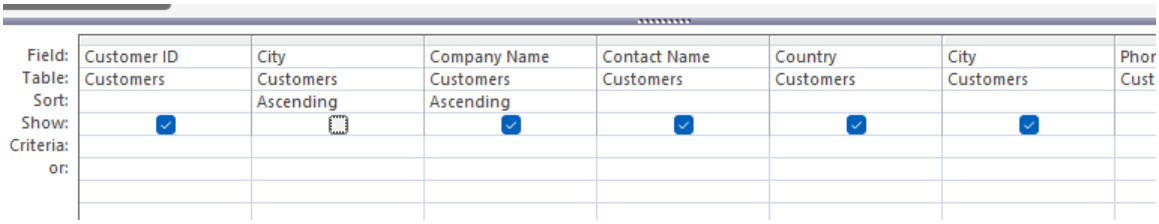
Sorting Query Result

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.





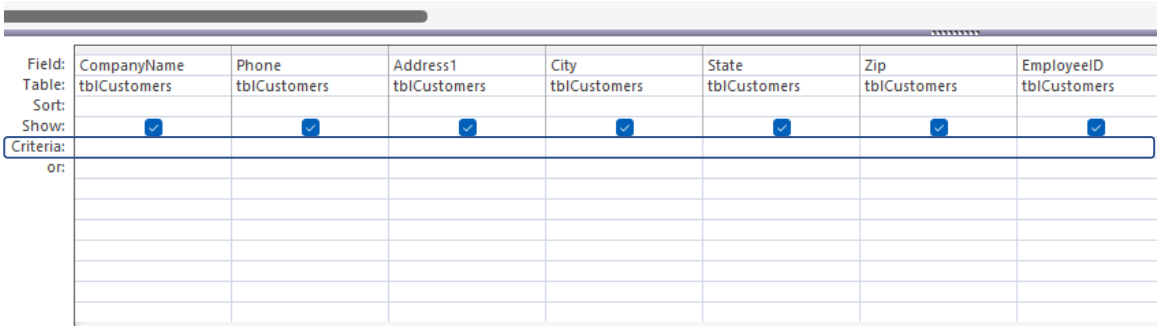
31. The Sorting Order goes from the Left to Right on the Grid.
32. Now Sort City in Ascending order.
33. This way the Company Name sort first then the City.
34. Go to View to see the result.
35. What if you want to reorder the sorting, I want city first?
36. You can reposition the order.
37. Now get 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).



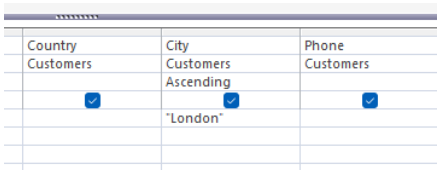
39. Run your query to see the result.
40. Save you query as: **qryCustomers**.

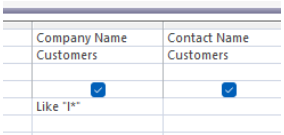
Lab 4C: Customize Query with Criteria

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.



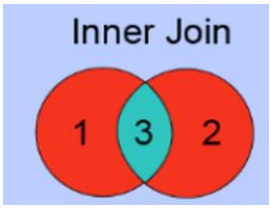
5. In Criteria cell under City write : London.
6. Press tab key and notice it puts “” around London.
7. That is because Access evaluates that the field is text data type.
8. Run the query.
9. You got only 20 customers that lives in London.
10. Go back to Design View.
11. Now we want to see the customers 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.

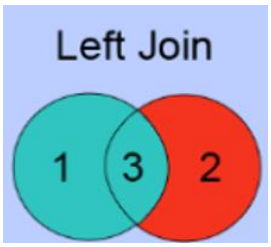


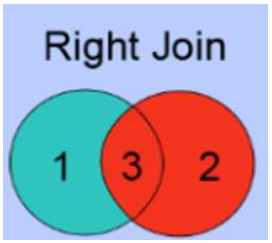


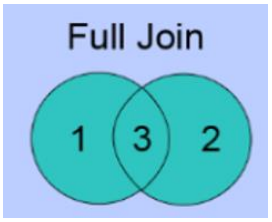
Chapter 5: Advanced Query Topics

Types of Joints







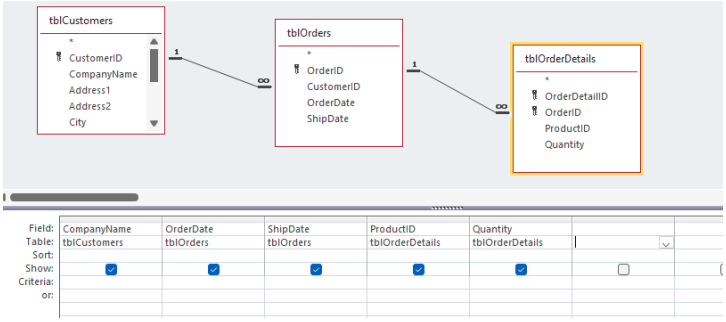


1. **Inner Join**
    1. In an inner join, we only select the data which is common in both the tables. (ie, part 3 here)
    2. To make it more precise, all the records from both the tables matching up the condition mentioned with the join are picked in this join.
2. **Left Join**
    3. n left join, we select all the data from the left table and from the right table only select the data set which matches up with the condition mentioned with the join (here area 1+3)
3. **Right Join**
    4. In right join, we select all the data from the right table and from the left table only select the data set which matches up with the condition mentioned with the join (here 3+2)
4. **Full Join**
    5. In full join, all the records form both the tables are merged and selected irrespective of the condition mentioned with the join having met or not. (Here 1+2+3)

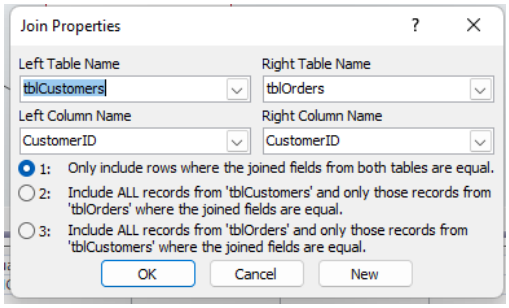
Lab 5A: Controlling Query Results with Join Types

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 tblecustomers 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

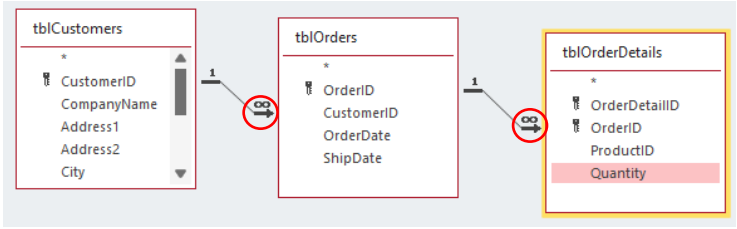
8. By Default, all those Joins are Inner Joins.
9. So if you run this query it will only shows customers that have orders.
10. Click Run
11. Notice there is no customer here that do not have orders.
12. Save your query as **qryCustomerOrders**



13. Now we want to see all customers wherever they have orders or not.
14. Right click the relation line between **tbleCustomers** 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.



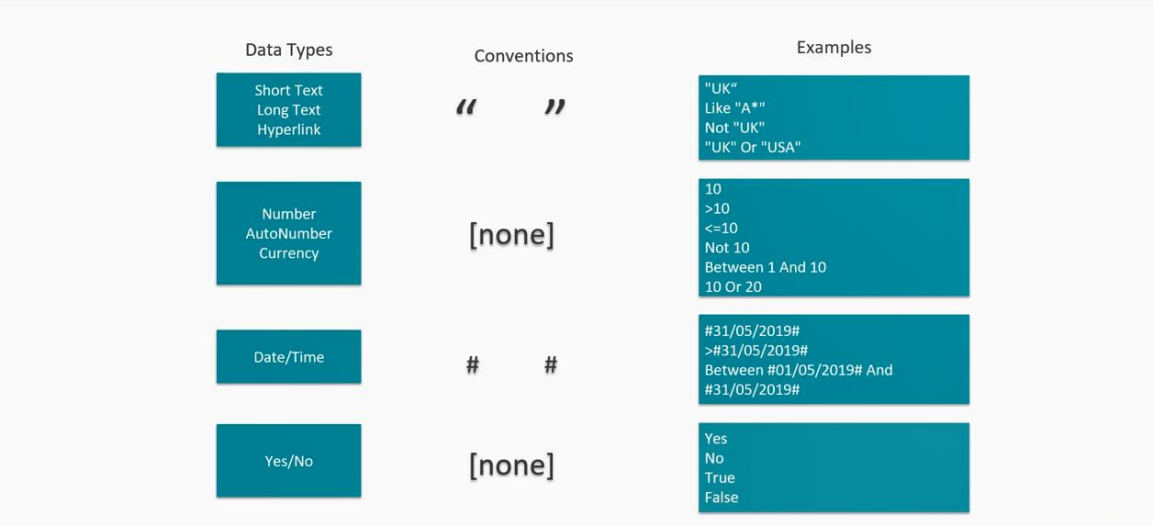
20. Change the join between **tblOrders** and **tblOrderDetails** to left outer Join too.
21. Notice the Arrows that shows the direction of Join
22. Run the Query.
23. Now all customers appear whether they have orders or not.



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.

Query Criteria

Data Types and Conventions

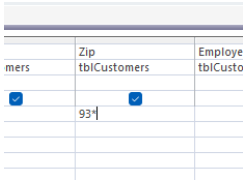


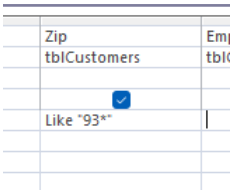
Logical Operators

Comparison Operator	Meaning	Examples
= (equal sign)	Equal to	=10 or 10
> (greater than sign)	Greater Than	>10
< (less than sign)	Less Than	<10
>= (greater than or equal to sign)	Greater Than or Equal To	>=10
<= (less than or equal to sign)	Less Than or Equal To	<=10
<> (not equal to sign) / Not	Not Equal To	<>10 or Not 10
Like	Similar/Likeness of...	Like “A*”
Between X And Y	Range of Values	Between 1 And 10
And	All Must be True	“UK” And Like “A*”
Or	At Least One Must be True	“UK” Or “USA”

Lab 5B: Creating Complex Queries with Multiple Criteria

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.

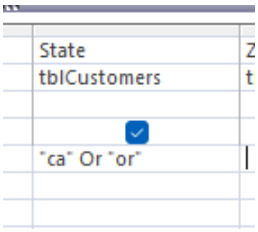




8 Go Back to design view.
9 Delete the Criteria

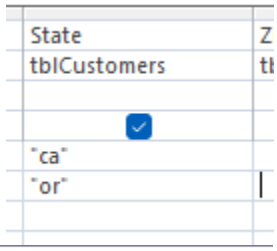
OR Condition

Method 1:



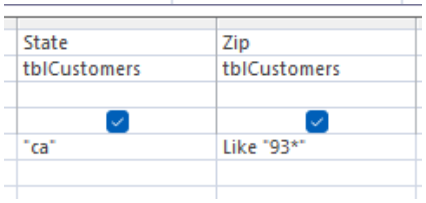
10 We want only show customers from California of Oregon.
11 In State Criteria write : ca OR or and press tab key
12 Notice Access wrote the expression for you
13 Run Query.
14 Go Back to Design View

Method 2:



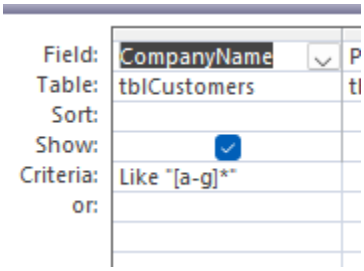
15 Use the or line in the Grid.
16 You will get the same result.
17 Run query.
18 Go back to design view.

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



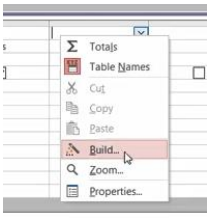
26 We want the company that starts with letters from A to G.
27 Enter the Criteria in CompanyName : Like “[a-g]*”
28 That means anything starts with A throgh G and anything afterthat.
29 If you can not see well the expression,right click the Grid and chose Zoom.
30 Run query.
31 You will get 7 companies 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.

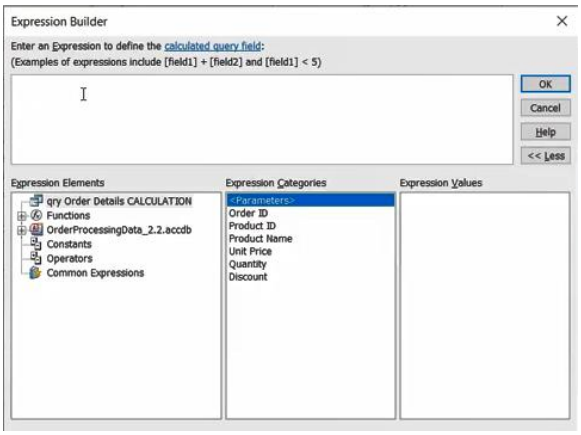
Lab 5C: Calculating in Queries Using Expression Builder

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.

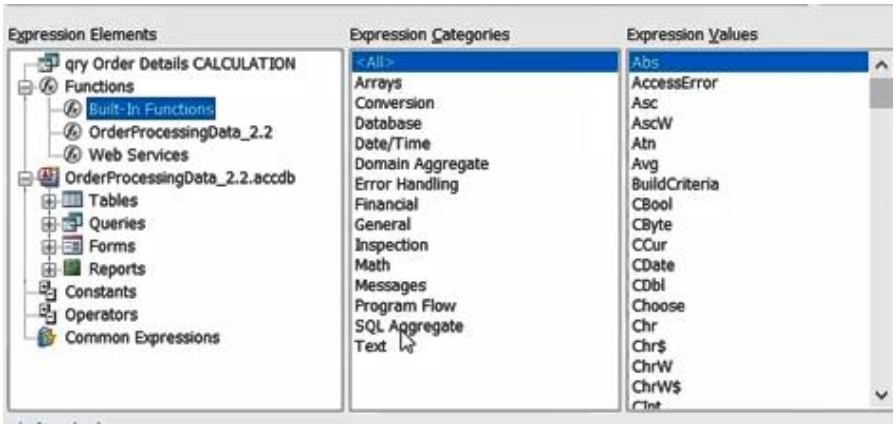
Using the Expression Builder

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-Doscount).**
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.

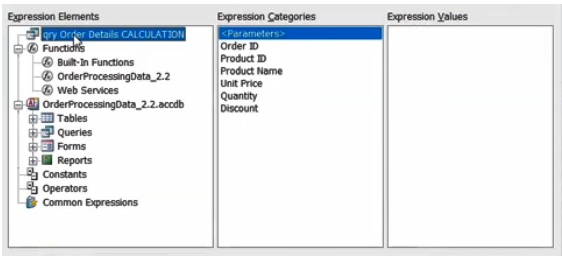




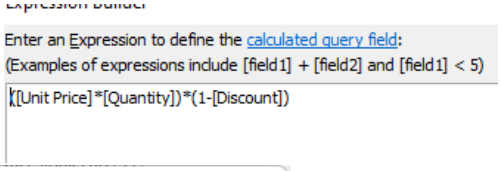
16 In the **Expression Elements** you can Expand to find the functions available.
17 In the Middle pane **Expression Categories**, you find the Category of functions.
18 And in the 3rd pane you find the function you want
19 You can also find the Objects in your database and access them the same way .

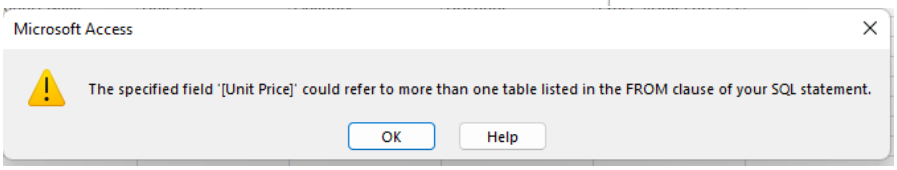


20 We want to write an expression that contains 3 fields from our query.
21 In Expression Elements pane click the 1st line (the query you are in).
22 In the middle pane the fields of the query will appear.
23 You can select and add to your expression.
24 Double Click **Unit Price**.
25 Notice it appears in two square Brackets [ ].
26 That is because some field names might have spaces.
27 You can click Operators on the left pan to chose * but it is easier to write directly.
28 Double click to add the **Quantity** field.

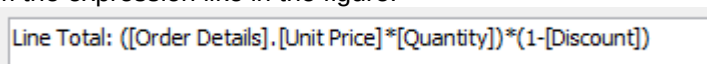


29 Complete the expression to be like the one in the figure.
30 You have to enclose fields in parentheses ( ) .
31 Close your expression Builder and try to run the query.
32 You receive an Error message.





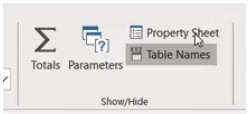
33 Notice that you have two fields [Unit Price] in two tables
34 And that is what make the Problem
35 Go back to the Expression Builder and add the table name before the field with (.) Dot Notation.
36 Notice that the Access gave Expr1 as a column name for your new calculated field
37 Add Total Line as a name for your calculated field and make sure it is separated by (:) colon from the expression like in the figure.

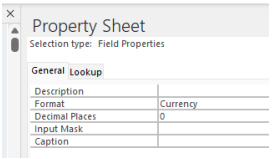


38 Run your query.
39 You get the calculated field in each line.

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.





Expression Syntax

- You use the following syntax to write your expression:

Field Name: [Object 1] operator [Object 2] (operator … [Objects …])

Examples:

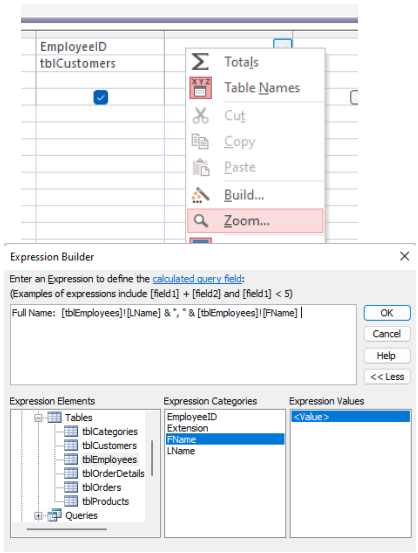
- Line Total: ([Order Details]![Unit Price]*[Quantity])*(1-[Discount])
- Days Overdue: ([Due Date])-([Invoice Date]+30)
- Total Inc VAT: ([Invoice Amount]*1.2)
- Full Name: UCase([Last Name]) & ", " & [First Name]

Lab 5D: Concatenate Fields in Query

1 Use file **Lab05D_Start.accdb.**

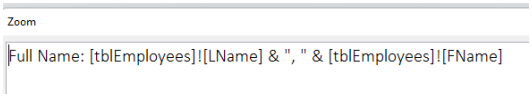
Method 1: Using Expression Builder

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:
21

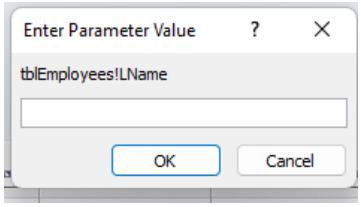



```
Full Name:  [tblEmployees]![LName] & ", " & [tblEmployees]![FName]
```

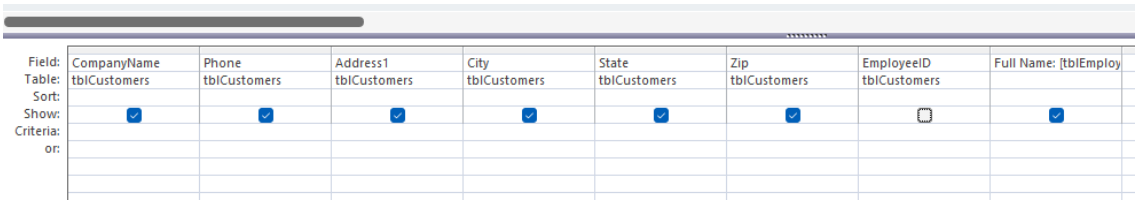
22 Click Ok.
23 Right Click the new Calculated Field and Zoom.



24 Run Query.
25 You get a message Error Parameter Value
26 That is because we did not include the **tblEmployee** table in the query.
27 But you have used 2 fields from it in the expression you have built.
28 Go and add the **tblEmployees** to the query.
29 Now Run your Query.
30 Now you have the Last Name and Full name in the result.
31 Go Back to Design View.



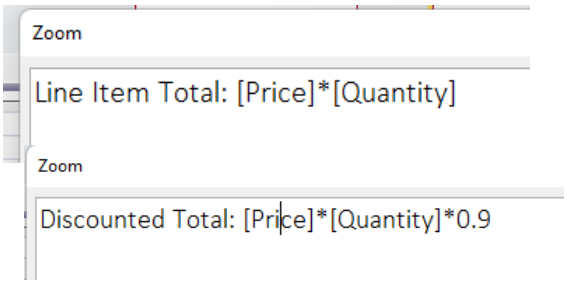
32 In the Show Row uncheck EmployeeID field so it won't show in the result.



33 Run the query.
34 Now only full name appears.
35 Save and close the query.

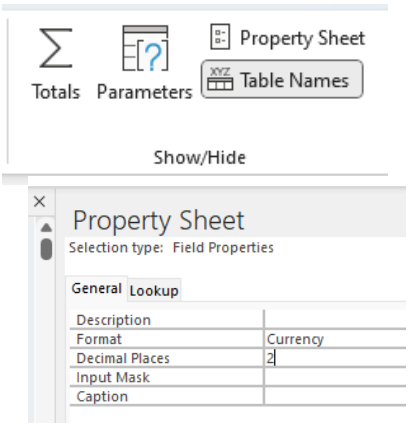
Method 2: Using Zoom Window

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



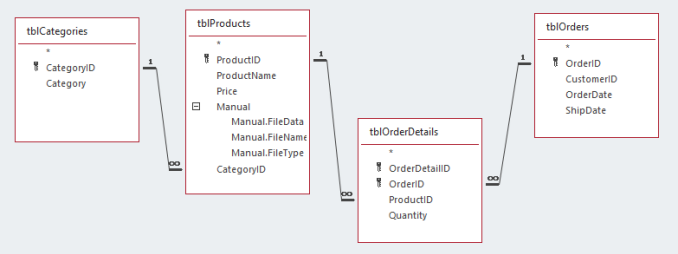
Format Field

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



Lab 5E: Summarizing and Grouping Data Using Query

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.

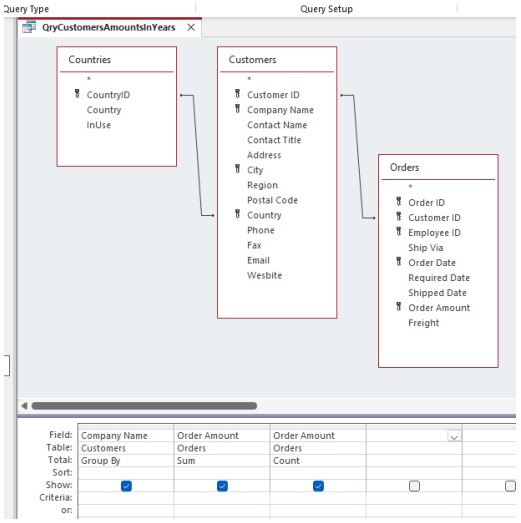
Field:	ProductName	Quantity	Quantity	OrderDate	Category
Table:	tblProducts	tblOrderDetails	tblOrderDetails	tblOrders	tblCategories
Total:	Group By	Avg	Sum	Group By	Group By
Sort:					
Show:	☑	☑	☑	☑	☑
Criteria:					
or:					

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 Qnty Sold , Min Qty Sold.**

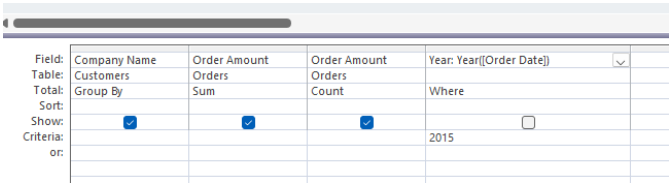
Field:	ProductName	Sum Qty Sold: Quantity	Avg Qty Sold: Quantity	Min Qty Sold: Quantity	Max Qty Sold: Quantity
Table:	tblProducts	tblOrderDetails	tblOrderDetails	tblOrderDetails	tblOrderDetails
Total:	Group By	Sum	Avg	Min	Max
Sort:					
Show:	☑	☑	☑	☑	☑
Criteria:					
or:					

24. Save your query as **qryProductOrderQuantities.**
25. Close your query.

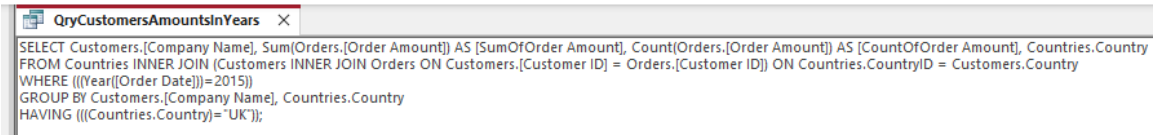
Lab 5F: Using Where and Having in Grouping



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**.

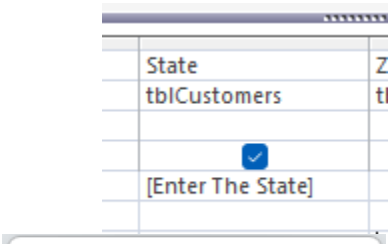
Chapter 6: Automating Queries with Parameters

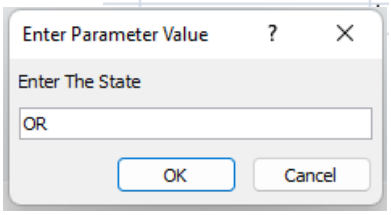
What is a Parameter Query?

- A Parameter queries allow end user to determine what result will be.

Lab 6A: Creating Automated Requests for Criteria

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.





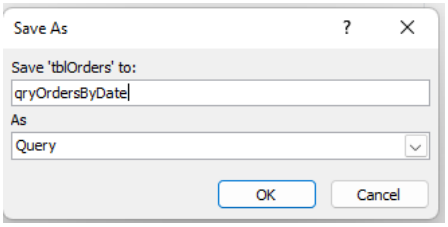
Using Wildcards

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.

Note:

- Note that you can update records in a query and the under table will be updated.
  Try to update address field for a customer in **qryCustomers** and then check the results in the original table **tblCustomers**.

Syntax for a Parameter Query

Optional operators [Your prompt here in between square brackets]

Examples:

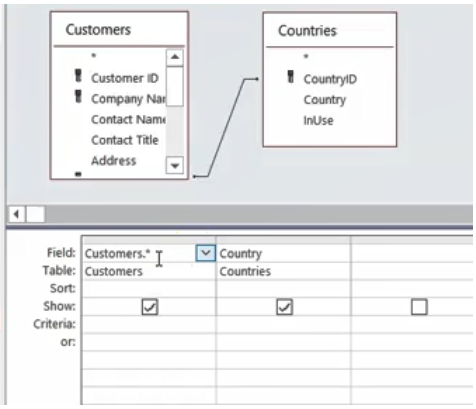
[Enter Country:]

Between [Enter Start Date:] *And* [Enter Start Date:]

>= [Enter Quantity:]

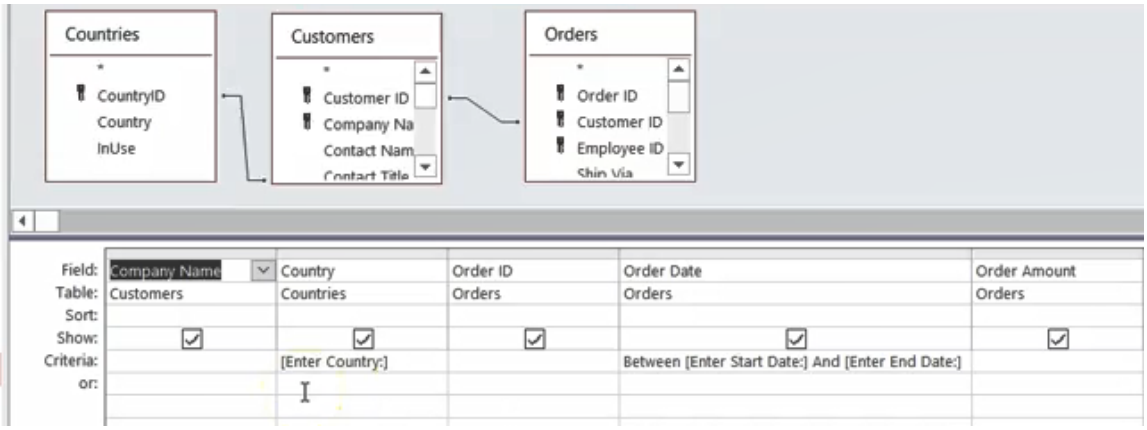
Like [Enter the first character:] (&) ("*")

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.

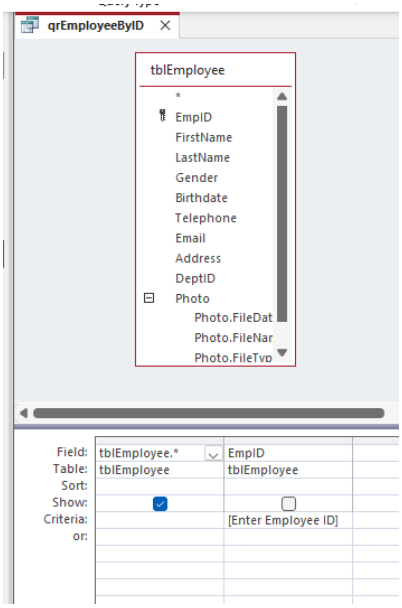
9. Add another table Orders and fields like the Figure.

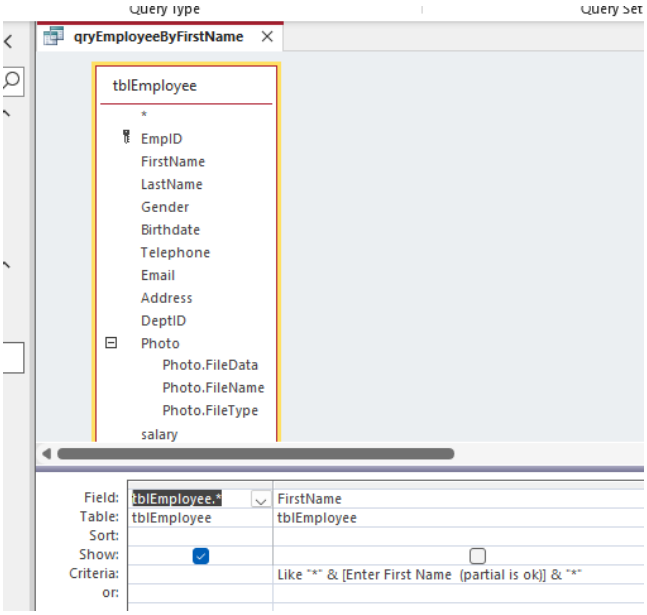


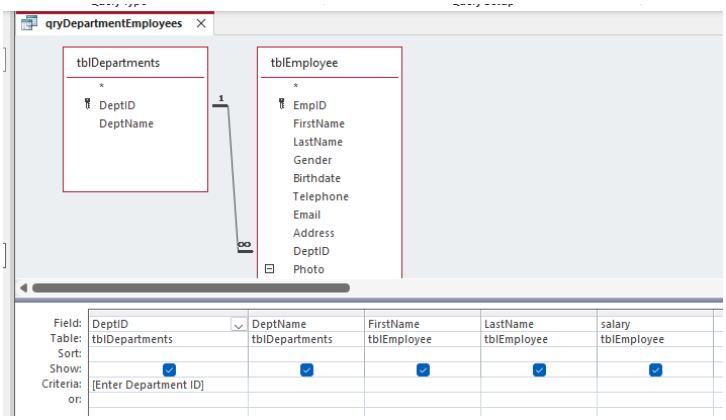
10. Enter another 2 Parameters for the [Enter Start Date] and [Enter End Date].
11. For Parameter enter : UK , 1/1/2015 , 31/12/2015.
12. You receive 99 records this time.
13. Save your query as **qryCustomersByCountryandDate.**

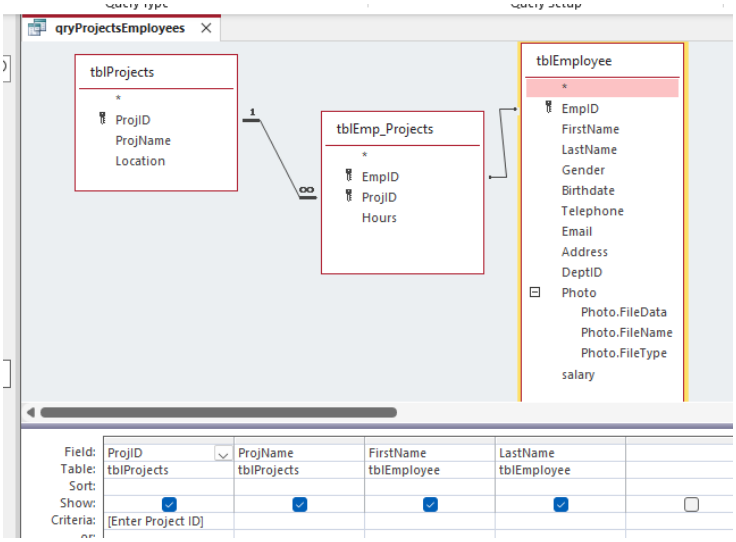
Build your Project Part 2

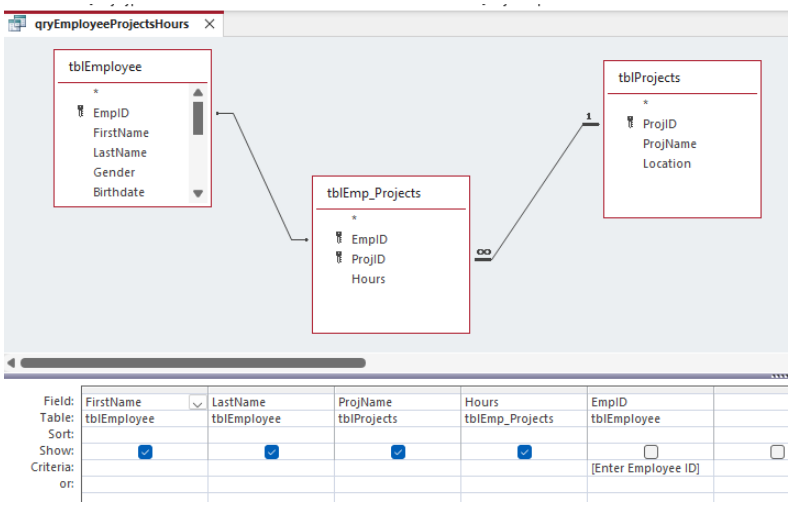
1. Use your project file.
2. Add The following Queries and test they are working:
    a. qryEmployeeByID.
    b. qryEmployeeByFirstName.
    c. qryDepartmentEmployees.
    d. qryProjectEmployees.
    e. qryEmployeeProjectsHours.






qryDepartmentEmployees
tblDepartments
*
DeptID
DeptName
tblEmployee
*
EmpID
FirstName
LastName
Gender
Birthdate
Telephone
Email
Address
DeptID
Photo
Field: DeptID DeptName FirstName LastName salary
Table: tblDepartments tblDepartments tblEmployee tblEmployee tblEmployee
Sort:
Show:
Criteria: [Enter Department ID]
or:


qryProjectsEmployees
tblProjects
*
ProjID
ProjName
Location
tblEmp_Projects
*
EmpID
ProjID
Hours
tblEmployee
*
EmpID
FirstName
LastName
Gender
Birthdate
Telephone
Email
Address
DeptID
Photo
Photo.FileData
Photo.FileName
Photo.FileType
salary
Field: ProjID ProjName FirstName LastName
Table: tblProjects tblProjects tblEmployee tblEmployee
Sort:
Show:
Criteria: [Enter Project ID]


qryEmployeeProjectsHours
tblEmployee
*
EmpID
FirstName
LastName
Gender
Birthdate
tblEmp_Projects
*
EmpID
ProjID
Hours
tblProjects
*
ProjID
ProjName
Location
Field: FirstName LastName ProjName Hours EmpID
Table: tblEmployee tblEmployee tblProjects tblEmp_Projects tblEmployee
Sort:
Show:
Criteria: [Enter Employee ID]
or:

Chapter 7: Action Queries

- All queries we have done so far are all **Select Queries**.
- Action queries are a category of query that changes the table Data.

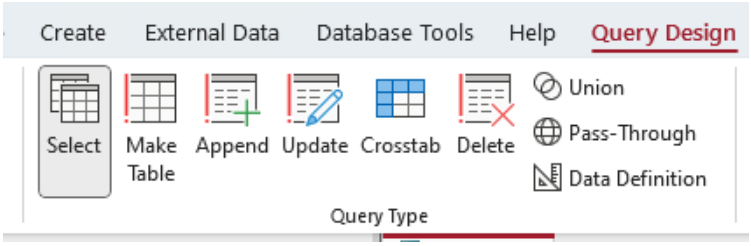
- We have:
    1. **Make table query**: they create new table.
    2. **Append Query**: Append data to a table.
    3. **Update Query**: Update Data in a table.
    4. **Delete Query**: Delete Data from a table.

⚠ **Be Careful: You cannot reverse the action of the action queries.**

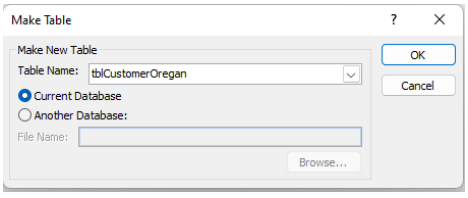
Lab 7A: Action Queries

Make Table Query

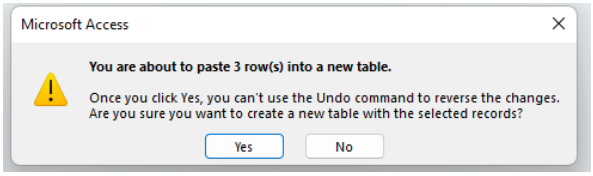
1. Use File Lab07A_Start.accdb.
2. Go to Create ➔Queries➔ Query Design
3. Double Click to add **tblCustomers** from **Add Tables** Pane.
4. We need to add all fields to the query
5. You can either:
    - Click * in the top of the fields name or
    - Double click the table title then drag the fields 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 **tbleCustomersOregon**
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.



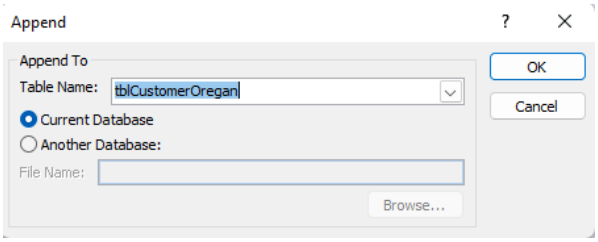
23. Get back to your query.



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.

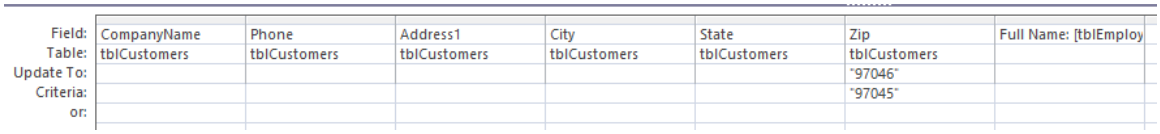
Append Query

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. **tblCustomersCalfiorniaAndOregon**



Update Query

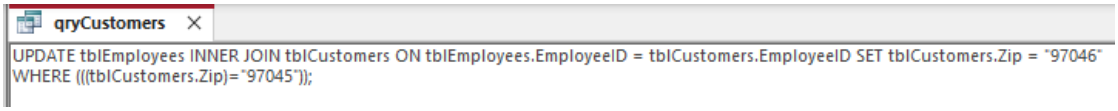
1. We want to update the wrong Zip code.
2. Open **qryCustomers** in Design view.
3. In criteria for zip enter 97045.
4. Run the query
5. As you can see you have one customer with this zip code.
6. But imagine that we have 100s of wrong entered zip code.
7. Hard to correct manually.
8. So, we will use 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



Field:	CompanyName	Phone	Address1	City	State	Zip	Full Name: [tblEmploy
Table:	tblCustomers	tblCustomers	tblCustomers	tblCustomers	tblCustomers	tblCustomers	
Update To:						"97046"	
Criteria:						"97045"	
or:							

13. Go to SQL View and see the SQl command Access wrote on behalf of you.

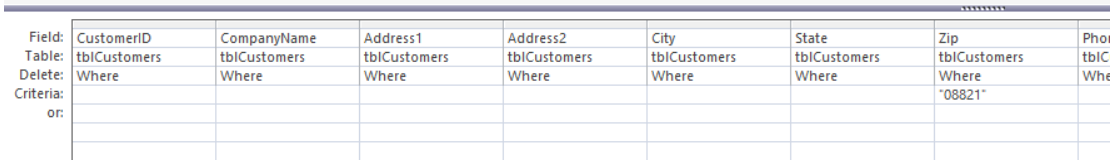
14. Run the Query and click yes.
15. Close your query without saving Changes.
16. Run Query **qyrCustomers** and see that the 79045 has been updated to be 97046.
17. Close Query.



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 8: Structured Query Language (SQL)

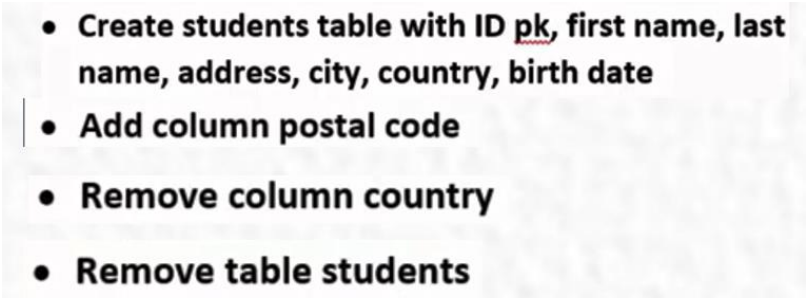
- SQL is the language we use to deal with databases.
- It has 3 main Categories:
    - **DDL** (Data Definition Language).
    - **DML** (Data Manipulation Language).
    - **DCL** i(Data Control Language).

DDL (Data Definition Language)

- They are the commands responsible for the structure of Data.
- It helps me to Create, Edit, and Delete the Data structure.
- It includes commands:
    - **CREATE**
    - **ALTER**
    - **DROP**
    - **TRUNCATE**

Lab 8A: DDL Language

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:



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

SELECT Statement

SQL- DML Commands

- Select statement is one of Data Manipulation Language (DML) of SQL.
- Select Statement is used to retrieve Data from Database

Lab 8B: Practice SELECT Statement Basics

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

```
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

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

06 Select using Between

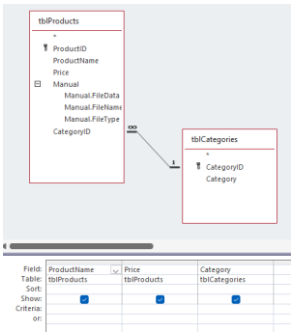
```
SELECT ProductID, ProductName, Price
FROM tblProducts
WHERE Price Between 2 and 5;
```

07 Select using OR

```
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;
```

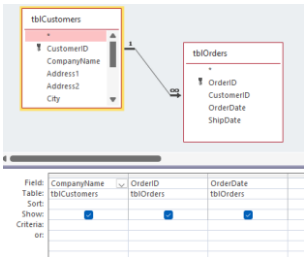
09 Inner Join 2

- 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;
```