OPCUG Share Microsoft Access Primer

STEPHANE RICHARD

What is Microsoft Access

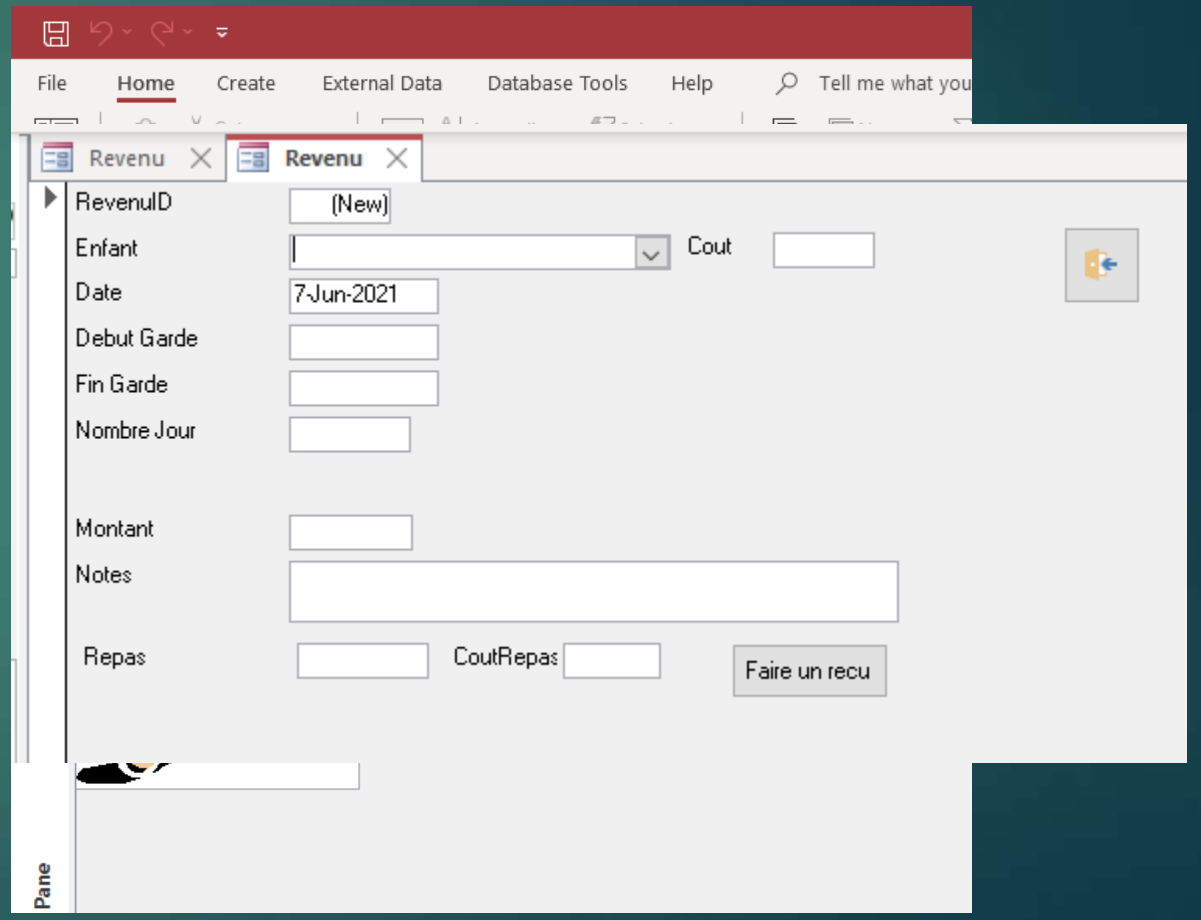
- Microsoft Access is a database management system (DBMS)
- DBMS is a software package designed to define, manipulate, retrieve and manage data in a database
- A DBMS generally manipulates the data itself, the data format, field names, record structure and file structure. It also defines rules to validate and manipulate this data
- Access has a graphical user interface and software-development tools
- It is a member of the Microsoft 365 Family or Personal Suite subscription, or sold separately
- It is supported by Visual Basic for Applications (VBA), an object-based programming language that can reference a variety of objects

Why did I start using Access

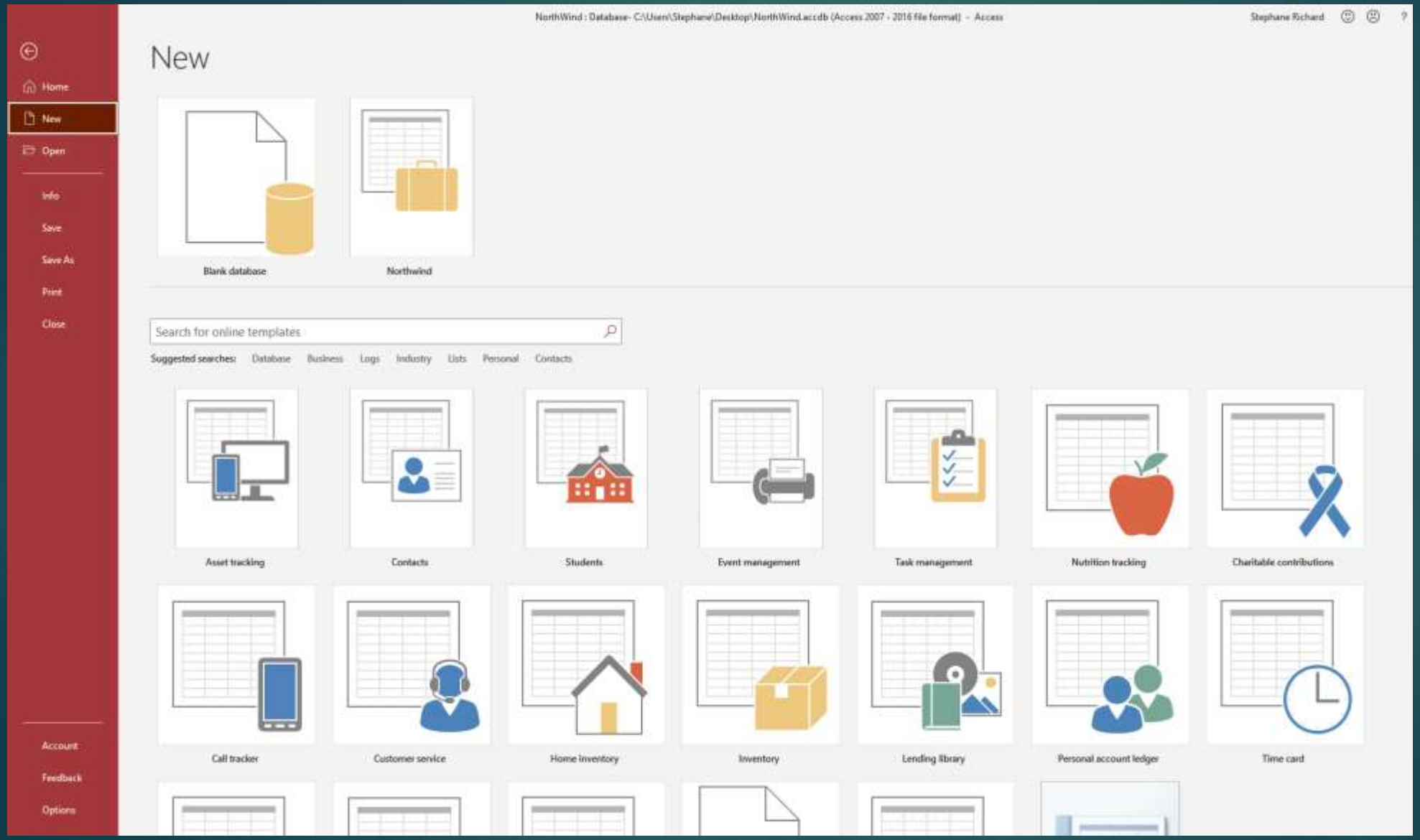
- My wife had a home daycare and for income tax purposes we needed to keep track of various types of expenses (e.g., daycare supply, food, house, vehicle, etc.) and income
- For first year of operation, we used the shoebox method – put all the receipts in a shoebox and gave it to an accountant
- For the next few years, I used a complex Excel spreadsheet with many sheets but there were problems:
  - Data entry inconsistencies
  - Adding a child or expense category was not automated – many formulas to modify or sheet to add
  - Reports and especially custom reports were not good
  - Handmade tax receipts
  - A spreadsheet for each fiscal year

Built an Access database

- Forms ensured that data was entered consistently and made navigation of the application easy
- Multiyear supported in a single database
- Easy to use, my wife was able to:
  - Enter her income and expenses
  - Generate various reports
  - Generate income tax receipts
- It required some work to design and implement the database, but the ease of use paid off over the years



Need a database – use a template or create your own



- Northwind – small business ERP
- Contacts
- Students
- Event management
- Task management
- Asset Tracking
- Bug tracking
- Inventory
- Nutrition tracking
- Marketing project management
- Project management
- Personal account ledger
- Many more

To create or edit database – need to understand Object types in Access

Icon	Name	Description
	Table	Define and store data
	Query	Define custom view (e.g., search, count, etc.) of data from one or more tables or queries
	Form	Data input or display or for control of application execution
	Report	Formatting, calculating, printing, and summarizing selected data
	Macro	Structured definition of one or more actions that you want Access to perform in response to a defined event
	Module	Custom procedures that you code using VBA

Table

- Tables contain fields or columns that store different kinds of data, such as a name or an address, and records or rows that collect all the information about a particular instance of the subject, such as all the information about a customer or employee etc.
- Each field must have a unique name and data type; and can be required or optional
- Access 2019 has 13 data types such as number, text, date/time, etc.
- You can define:
  - a primary key, one or more fields that have a unique value for each record
  - one or more indexes on each table to help retrieve your data more quickly

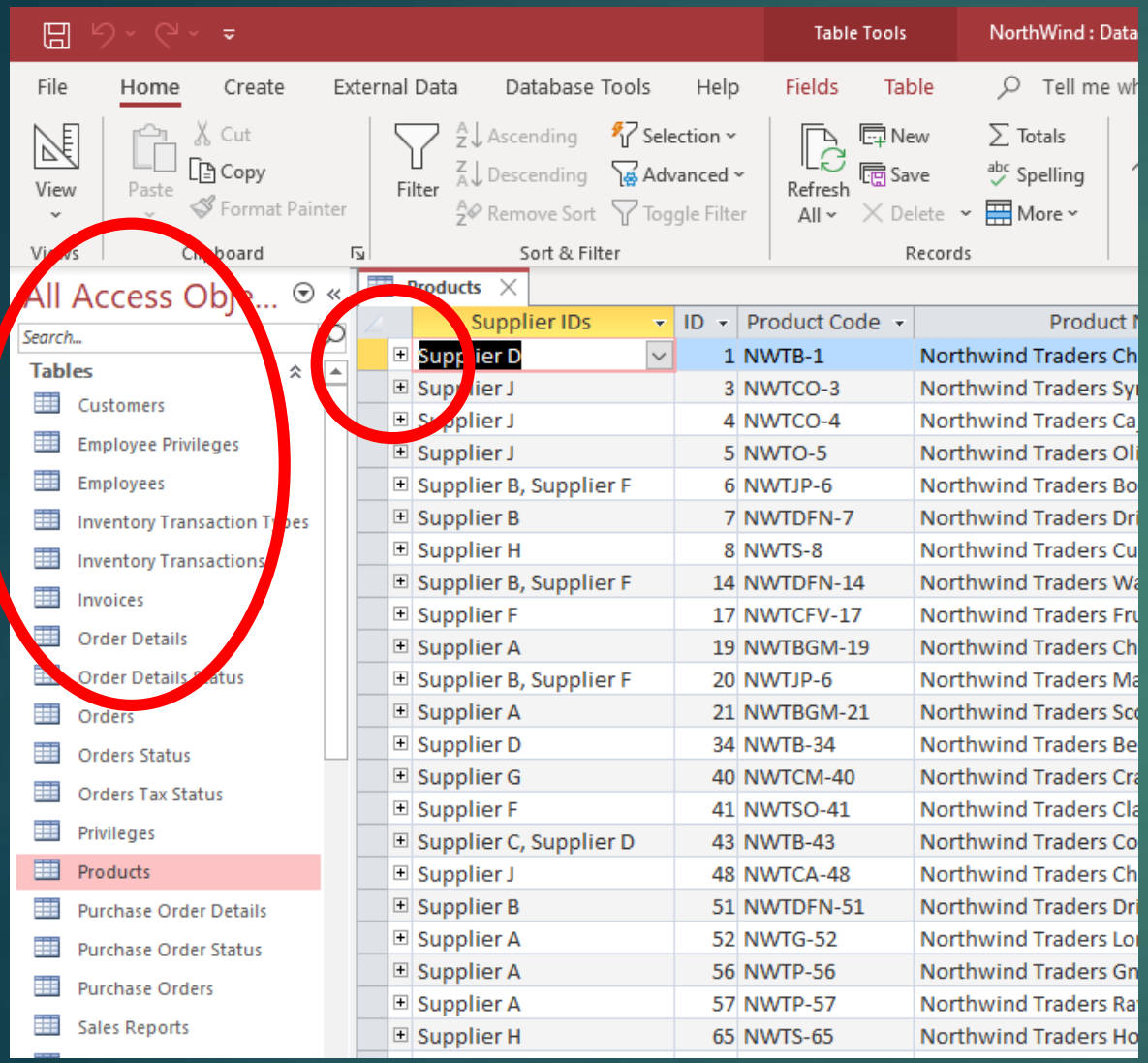


Table Tools
NorthWind : Data
File
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Create
External Data
Database Tools
Help
Fields
Table
Tell me wh
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Copy
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Ascending
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Remove Sort
Selection
Advanced
Toggle Filter
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Save
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More
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Records
All Access Obje...
Search...
Tables
Customers
Employee Privileges
Employees
Inventory Transaction Types
Inventory Transactions
Invoices
Order Details
Order Details Status
Orders
Orders Status
Orders Tax Status
Privileges
Products
Purchase Order Details
Purchase Order Status
Purchase Orders
Sales Reports
Products
Supplier IDs
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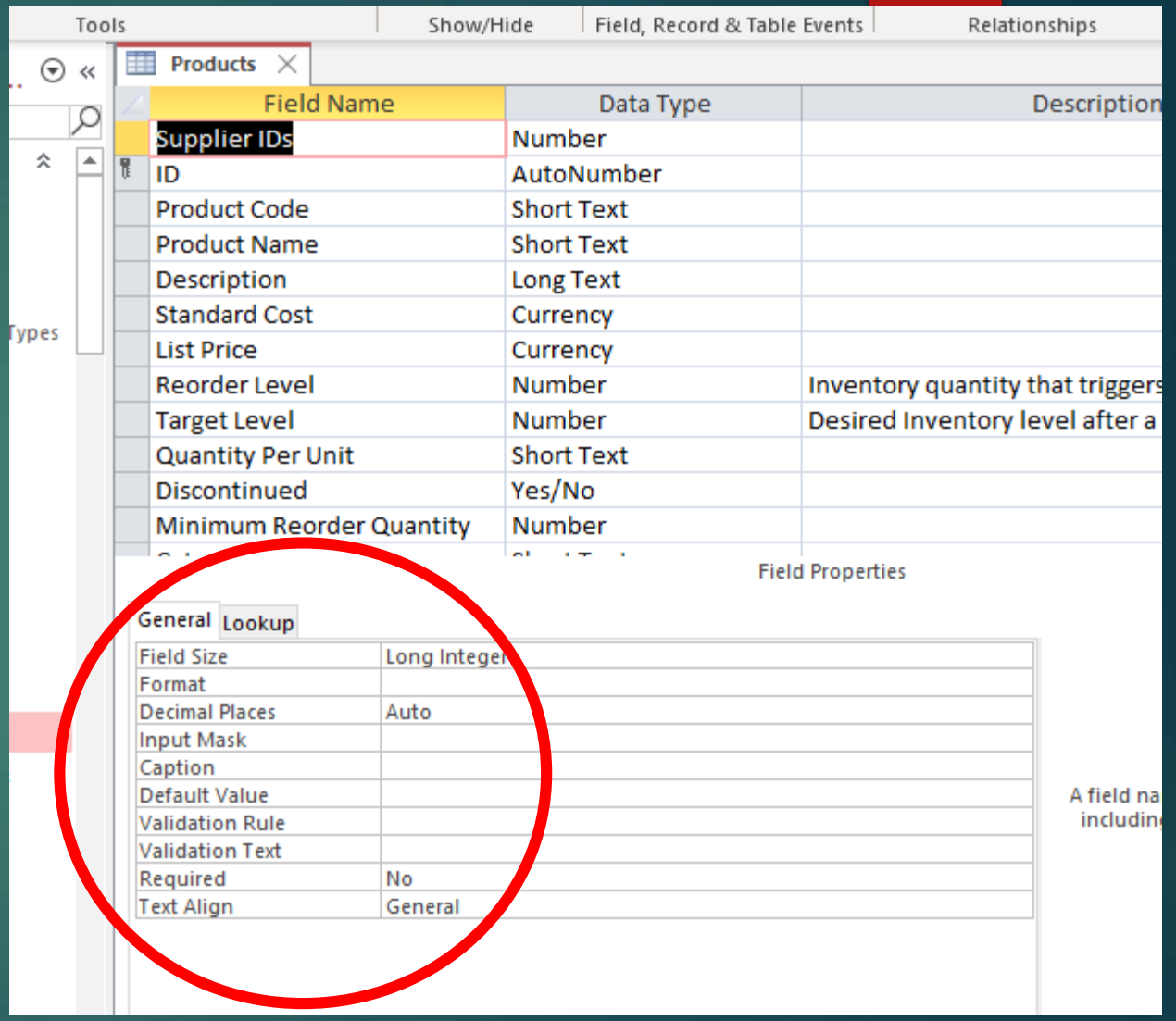
Product Code
Product N
Supplier D 1 NWTB-1 Northwind Traders Ch
Supplier J 3 NWTCO-3 Northwind Traders Sy
Supplier J 4 NWTCO-4 Northwind Traders Ca
Supplier J 5 NWTO-5 Northwind Traders Oli
Supplier B, Supplier F 6 NWTJP-6 Northwind Traders Bo
Supplier B 7 NWTDFN-7 Northwind Traders Dri
Supplier H 8 NWTS-8 Northwind Traders Cu
Supplier B, Supplier F 14 NWTDFN-14 Northwind Traders Wa
Supplier F 17 NWTCFV-17 Northwind Traders Fru
Supplier A 19 NWTBGM-19 Northwind Traders Ch
Supplier B, Supplier F 20 NWTJP-6 Northwind Traders Ma
Supplier A 21 NWTBGM-21 Northwind Traders Sc
Supplier D 34 NWTB-34 Northwind Traders Be
Supplier G 40 NWTCM-40 Northwind Traders Cra
Supplier F 41 NWTSO-41 Northwind Traders Cla
Supplier C, Supplier D 43 NWTB-43 Northwind Traders Co
Supplier J 48 NWTCA-48 Northwind Traders Ch
Supplier B 51 NWTDFN-51 Northwind Traders Dri
Supplier A 52 NWTG-52 Northwind Traders Lo
Supplier A 56 NWTP-56 Northwind Traders Gn
Supplier A 57 NWTP-57 Northwind Traders Ra
Supplier H 65 NWTS-65 Northwind Traders Ho


Tools
Show/Hide
Field, Record & Table Events
Relationships
Products
Field Name
Data Type
Description
Supplier IDs Number
ID AutoNumber
Product Code Short Text
Product Name Short Text
Description Long Text
Standard Cost Currency
List Price Currency
Reorder Level Number
Inventory quantity that triggers
Target Level Number
Desired Inventory level after a
Quantity Per Unit Short Text
Discontinued Yes/No
Minimum Reorder Quantity Number
Field Properties
General
Lookup
Field Size Long Integer
Format
Decimal Places Auto
Input Mask
Caption
Default Value
Validation Rule
Validation Text
Required No
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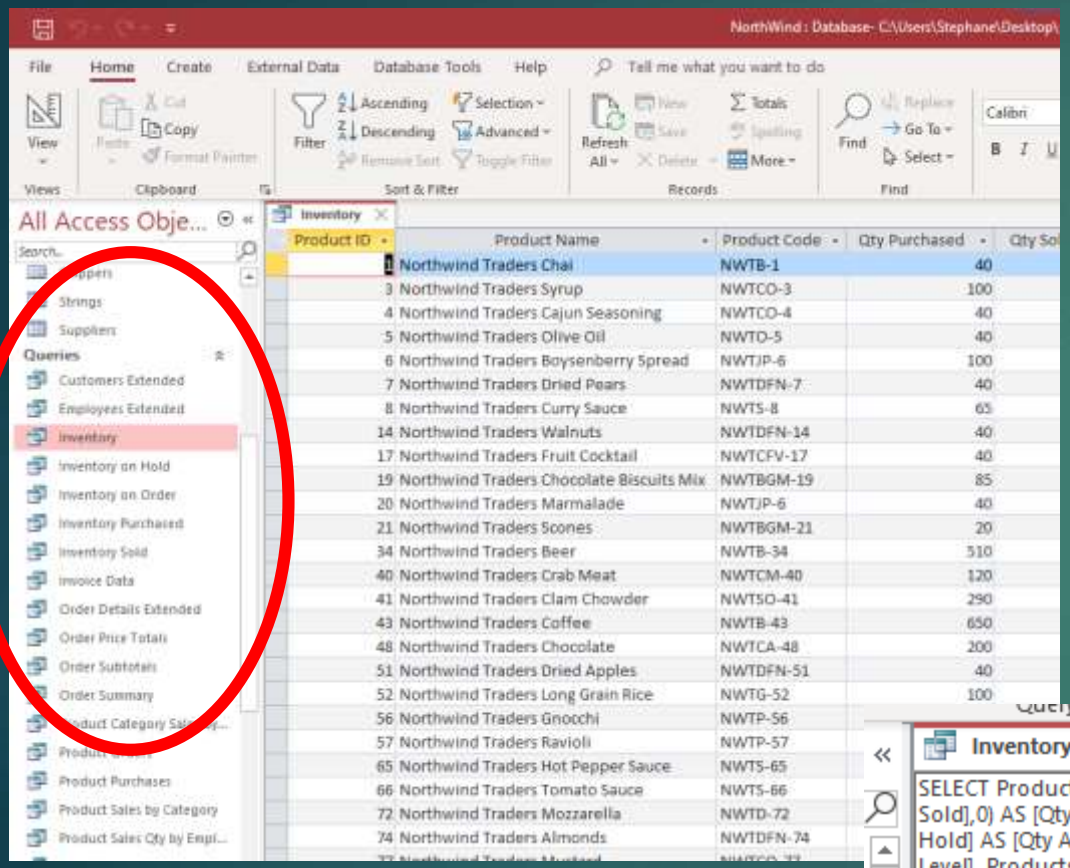
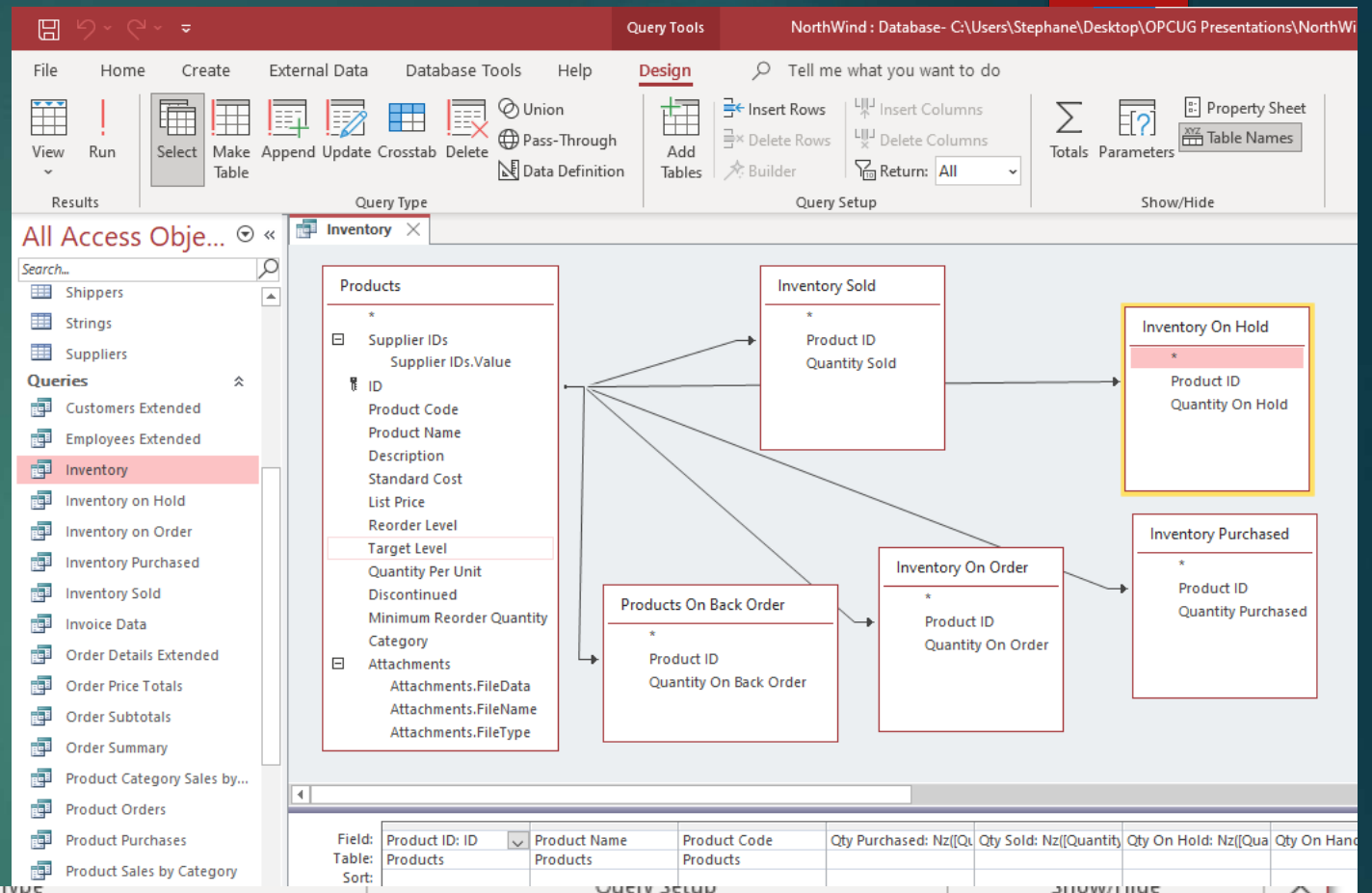
includin

Query

- Queries are a way of searching for and compiling data from one or more tables or other queries
- Running a query is like asking a detailed question of your database
- When you build a query in Access, you are defining specific search conditions to find exactly the data you want
- In Access, you can use the graphical query by example facility or you can write Structured Query Language (SQL) statements to create your queries
- You can define queries to Select, Update, Insert, or Delete data, etc.
- You can also define queries that create new tables from data in one or more existing tables


NorthWind : Database- C:\Users\Stephane\Desktop\
File Home Create External Data Database Tools Help
Tell me what you want to do
All Access Obje...
Inventory
Product ID | Product Name | Product Code | Qty Purchased
1 Northwind Traders Chai NWTB-1 40
3 Northwind Traders Syrup NWTCO-3 100
4 Northwind Traders Cajun Seasoning NWTCO-4 40
5 Northwind Traders Olive Oil NWTO-5 40
6 Northwind Traders Boysenberry Spread NWTJP-6 100
7 Northwind Traders Dried Pears NWTDFN-7 40
8 Northwind Traders Curry Sauce NWTS-8 65
14 Northwind Traders Walnuts NWTDFN-14 40
17 Northwind Traders Fruit Cocktail NWTCFV-17 40
19 Northwind Traders Chocolate Biscuits Mix NWTBGM-19 85
20 Northwind Traders Marmalade NWTJP-6 40
21 Northwind Traders Scones NWTBGM-21 20
34 Northwind Traders Beer NWTB-34 510
40 Northwind Traders Crab Meat NWTCM-40 120
41 Northwind Traders Clam Chowder NWTSO-41 290
43 Northwind Traders Coffee NWTB-43 650
48 Northwind Traders Chocolate NWTCA-48 200
51 Northwind Traders Dried Apples NWTDFN-51 40
52 Northwind Traders Long Grain Rice NWTG-52 100
56 Northwind Traders Gnocchi NWTP-56
57 Northwind Traders Ravioli NWTP-57
65 Northwind Traders Hot Pepper Sauce NWTS-65
66 Northwind Traders Tomato Sauce NWTS-66
72 Northwind Traders Mozzarella NWTD-72
74 Northwind Traders Almonds NWTDFN-74
Queries
Customers Extended
Employees Extended
Inventory
Inventory on Hold
Inventory on Order
Inventory Purchased
Inventory Sold
Invoice Data
Order Details Extended
Order Price Totals
Order Subtotals
Order Summary
Product Purchases
Product Sales by Category


Query Tools
NorthWind : Database- C:\Users\Stephane\Desktop\OPCUG Presentations\NorthWi
File Home Create External Data Database Tools Help Design
Tell me what you want to do
Select Make Table Append Update Crosstab Delete
Union Pass-Through Data Definition
Insert Rows Delete Rows Builder
Insert Columns Delete Columns Return: All
Totals Parameters Property Sheet Table Names
Results Query Type Query Setup Show/Hide
All Access Obje...
Shippers
Strings
Suppliers
Queries
Customers Extended
Employees Extended
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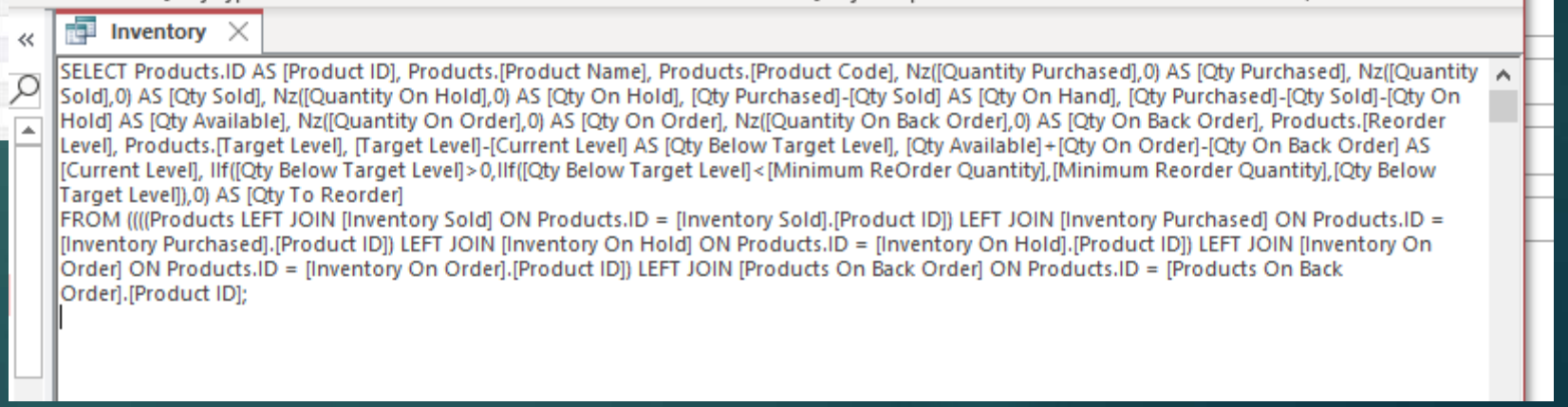
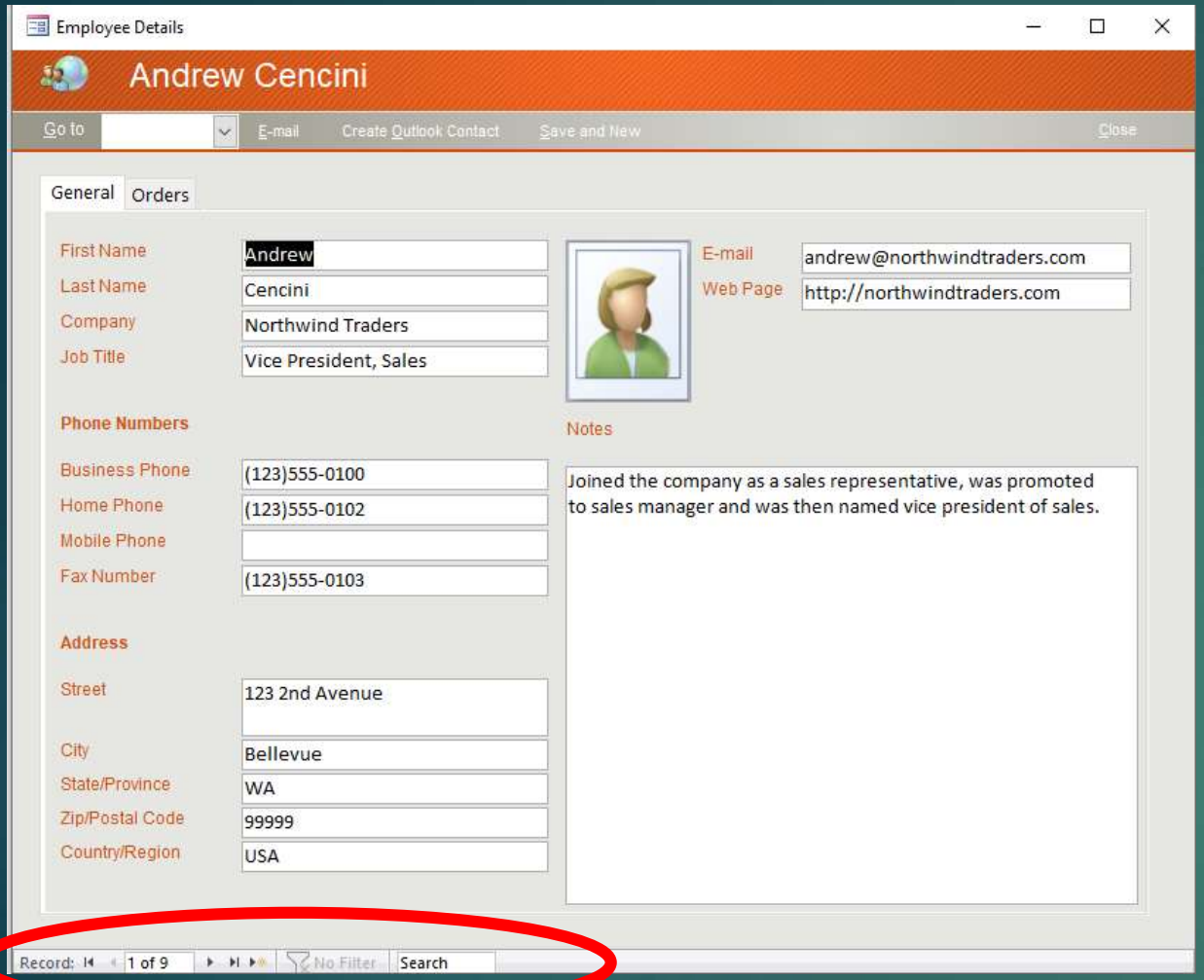
Inventory on Hold
Inventory on Order
Inventory Purchased
Inventory Sold
Invoice Data
Order Details Extended
Order Price Totals
Order Subtotals
Order Summary
Product Category Sales by...
Product Orders
Product Purchases
Product Sales by Category
Inventory
Products
Supplier IDs
Supplier IDs.Value
ID
Product Code
Product Name
Description
Standard Cost
List Price
Reorder Level
Target Level
Quantity Per Unit
Discontinued
Minimum Reorder Quantity
Category
Attachments
Attachments.FileData
Attachments.FileName
Attachments.FileType
Inventory Sold
Product ID
Quantity Sold
Inventory On Hold
Product ID
Quantity On Hold
Products On Back Order
Product ID
Quantity On Back Order
Inventory On Order
Product ID
Quantity On Order
Inventory Purchased
Product ID
Quantity Purchased
Field: Product ID: ID | Product Name | Product Code | Qty Purchased: Nz([Qu | Qty Sold: Nz([Quantity) | Qty On Hold: Nz([Qua | Qty On Hand
Table: Products | Products | Products
Sort:


Inventory
SELECT Products.ID AS [Product ID], Products.[Product Name], Products.[Product Code], Nz([Quantity Purchased],0) AS [Qty Purchased], Nz([Quantity Sold],0) AS [Qty Sold], Nz([Quantity On Hold],0) AS [Qty On Hold], [Qty Purchased]-[Qty Sold] AS [Qty On Hand], [Qty Purchased]-[Qty Sold]-[Qty On Hold] AS [Qty Available], Nz([Quantity On Order],0) AS [Qty On Order], Nz([Quantity On Back Order],0) AS [Qty On Back Order], Products.[Reorder Level], Products.[Target Level], [Target Level]-[Current Level] AS [Qty Below Target Level], [Qty Available]+[Qty On Order]-[Qty On Back Order] AS [Current Level], IIf([Qty Below Target Level]>0,IIf([Qty Below Target Level]<[Minimum ReOrder Quantity],[Minimum Reorder Quantity],[Qty Below Target Level]),0) AS [Qty To Reorder]
FROM ((((Products LEFT JOIN [Inventory Sold] ON Products.ID = [Inventory Sold].[Product ID]) LEFT JOIN [Inventory Purchased] ON Products.ID = [Inventory Purchased].[Product ID]) LEFT JOIN [Inventory On Hold] ON Products.ID = [Inventory On Hold].[Product ID]) LEFT JOIN [Inventory On Order] ON Products.ID = [Inventory On Order].[Product ID]) LEFT JOIN [Products On Back Order] ON Products.ID = [Products On Back Order].[Product ID];

Form

- Forms are used for entering, modifying, and viewing records
- Forms can also be used to control the application
- Forms are used to customize the presentation of data that your application extracts from queries or tables
- The reason forms are used so often is that they are an easy way to guide people toward entering data correctly
- When you enter information into a form in Access, the data goes exactly where the database designer wants it to go in one or more related tables
- Form are made of controls – Access has 22 controls such has label, text box, drop down box, list box, check box, sub form, graph, etc.


Employee Details
Andrew Cencini
Go to
E-mail
Create Outlook Contact
Save and New
Close
General
Orders
First Name
Andrew
Last Name
Cencini
Company
Northwind Traders
Job Title
Vice President, Sales
E-mail
andrew@northwindtraders.com
Web Page
http://northwindtraders.com
Phone Numbers
Business Phone
(123)555-0100
Home Phone
(123)555-0102
Mobile Phone
Fax Number
(123)555-0103
Notes
Joined the company as a sales representative, was promoted to sales manager and was then named vice president of sales.
Address
Street
123 2nd Avenue
City
Bellevue
State/Province
WA
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99999
Country/Region
USA
Record: 1 of 9
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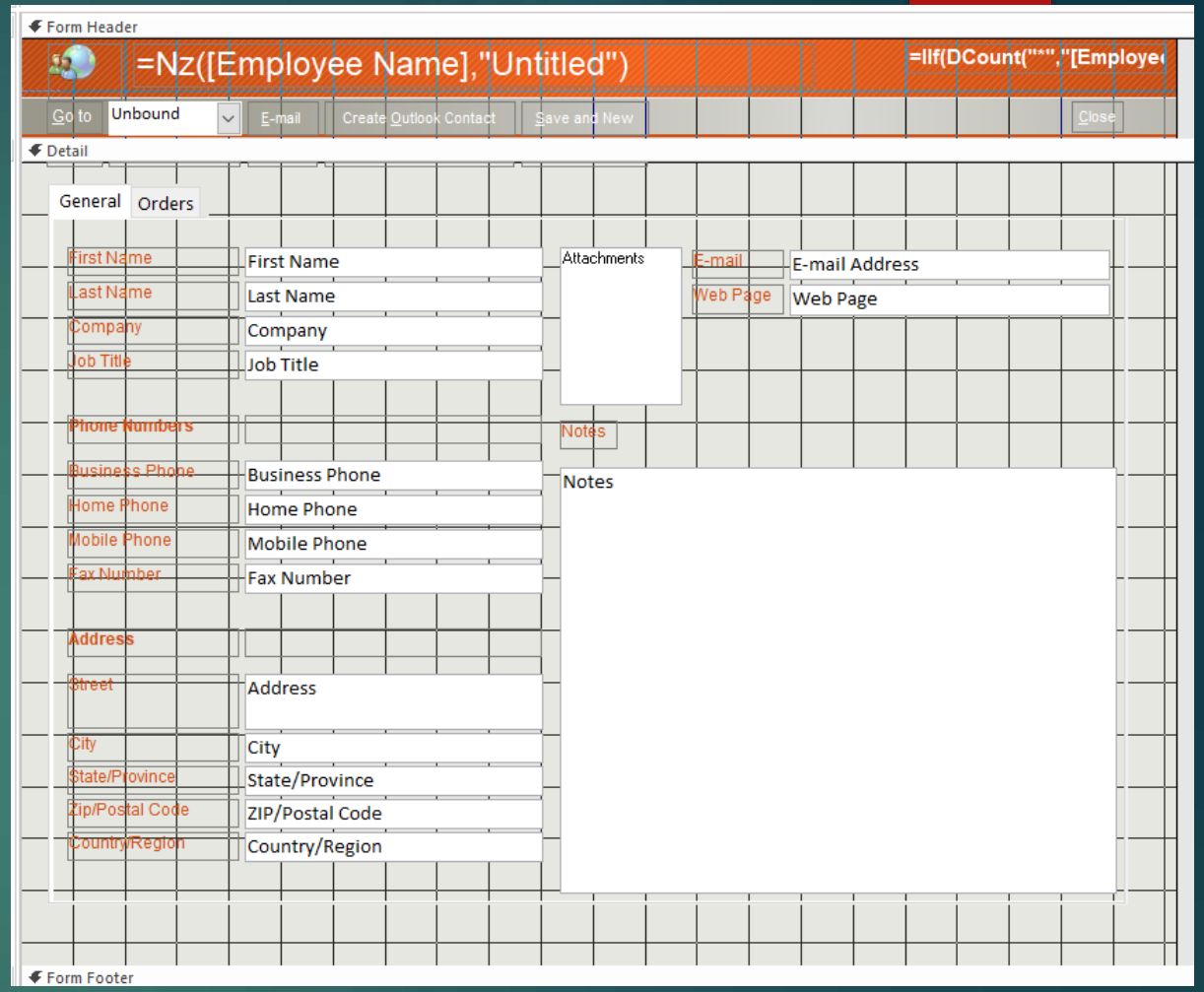
Form Header
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Job Title
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Web Page
Web Page
Phone Numbers
Notes
Business Phone
Business Phone
Home Phone
Home Phone
Mobile Phone
Mobile Phone
Fax Number
Fax Number
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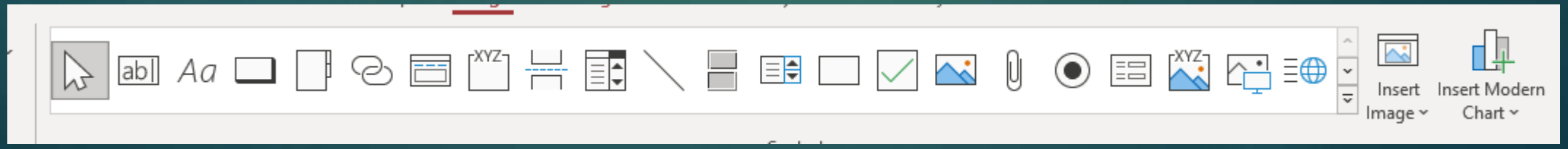
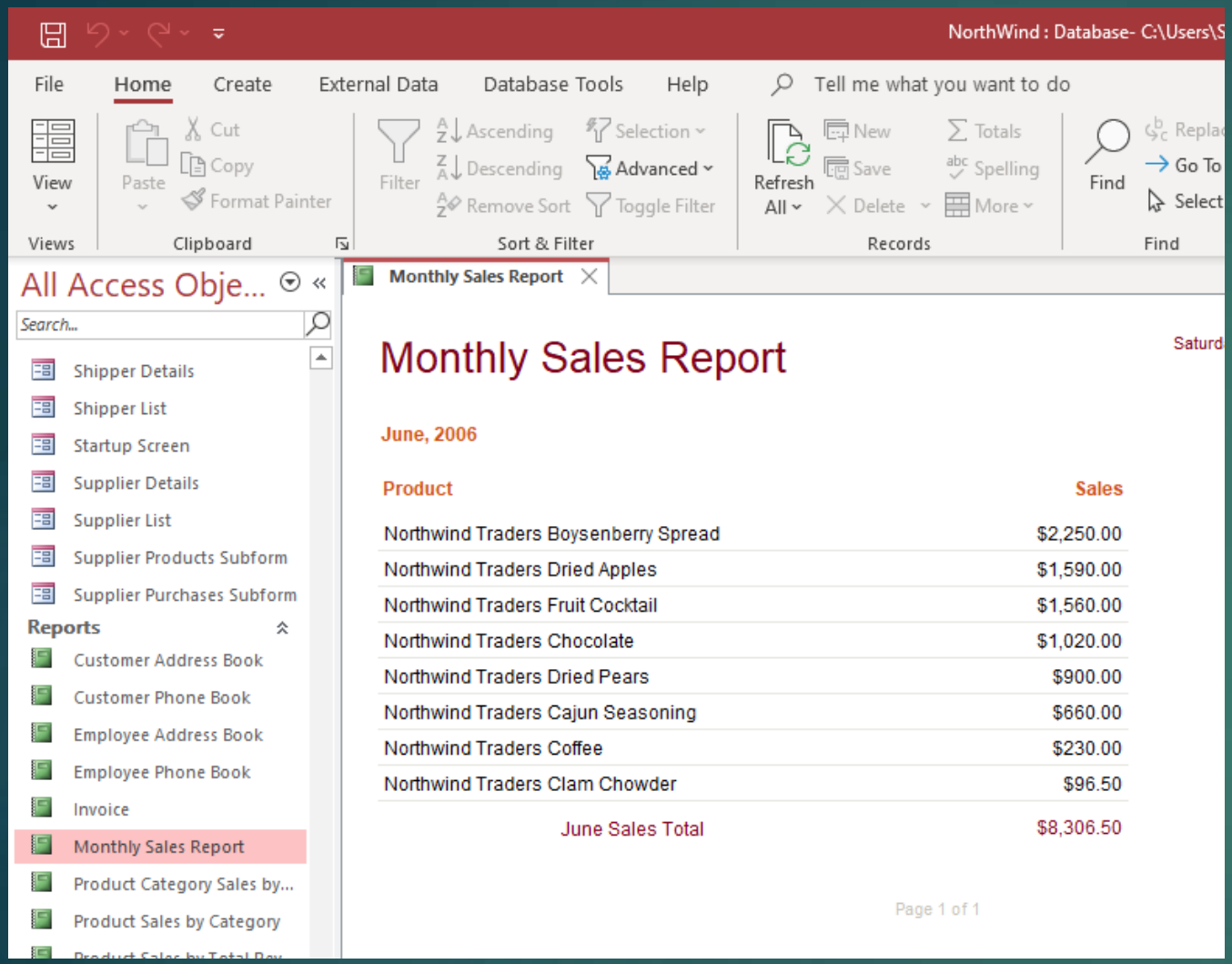
Zip/Postal Code
ZIP/Postal Code
Country/Region
Country/Region
Form Footer


Insert Image
Insert Modern Chart

Report

- You can view a report on your screen before you print it or export to PDF, Word, Excel and many more other format
- If forms are for input purposes, then reports are for output
- Anything you plan to print deserves a report, whether it is a list of names and addresses, a financial summary for a period, or a set of mailing labels
- Reports are useful because they allow you to present components of your database in an easy-to-read format
- You can even customize a report's appearance to make it visually appealing
- Access offers you the ability to create a report from any table or query


NorthWind : Database- C:\Users\S
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Tell me what you want to do
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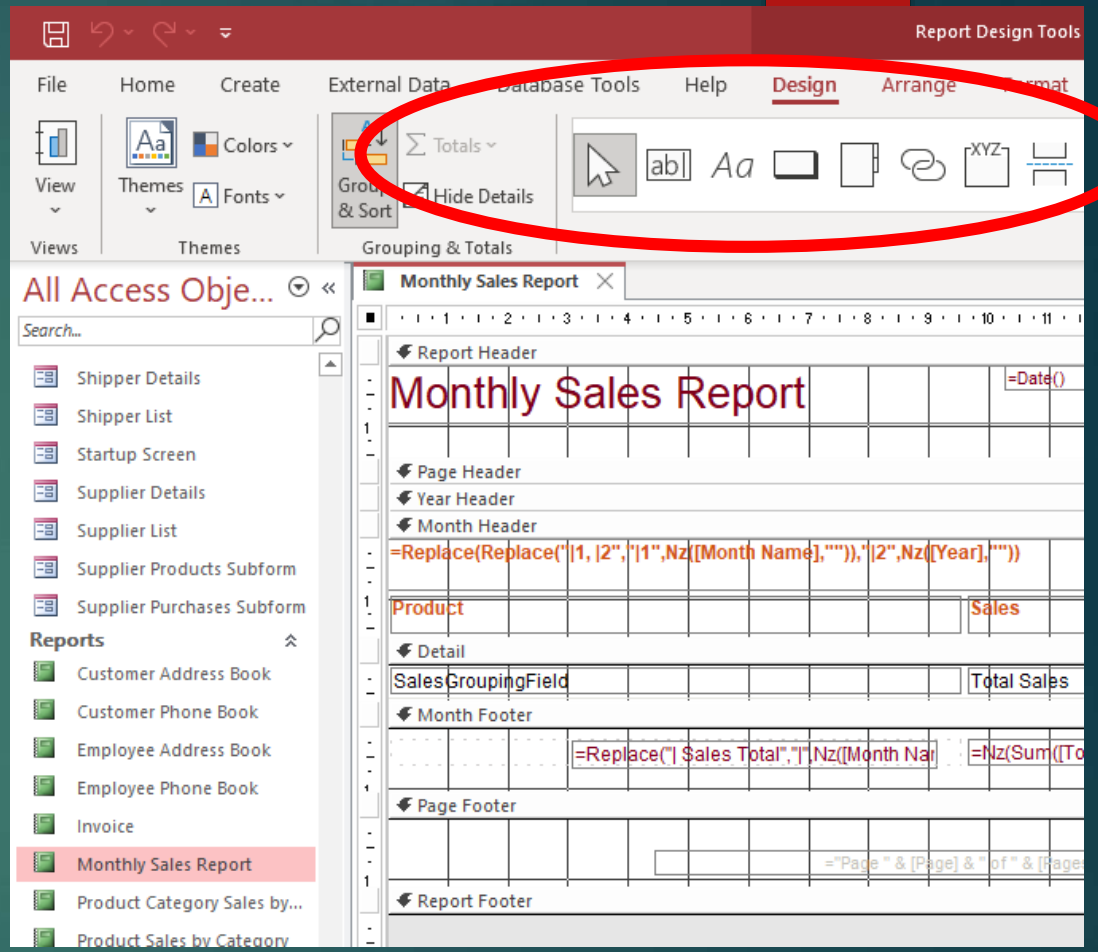
All Access Obje...
Search...
Shipper Details
Shipper List
Startup Screen
Supplier Details
Supplier List
Supplier Products Subform
Supplier Purchases Subform
Reports
Customer Address Book
Customer Phone Book
Employee Address Book
Employee Phone Book
Invoice
Monthly Sales Report
Product Category Sales by...
Product Sales by Category
Monthly Sales Report
Monthly Sales Report
June, 2006
Product
Sales
Northwind Traders Boysenberry Spread $2,250.00
Northwind Traders Dried Apples $1,590.00
Northwind Traders Fruit Cocktail $1,560.00
Northwind Traders Chocolate $1,020.00
Northwind Traders Dried Pears $900.00
Northwind Traders Cajun Seasoning $660.00
Northwind Traders Coffee $230.00
Northwind Traders Clam Chowder $96.50
June Sales Total $8,306.50
Page 1 of 1


Report Design Tools
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Colors
Fonts
Totals
Hide Details
& Sort
Views
Themes
Grouping & Totals
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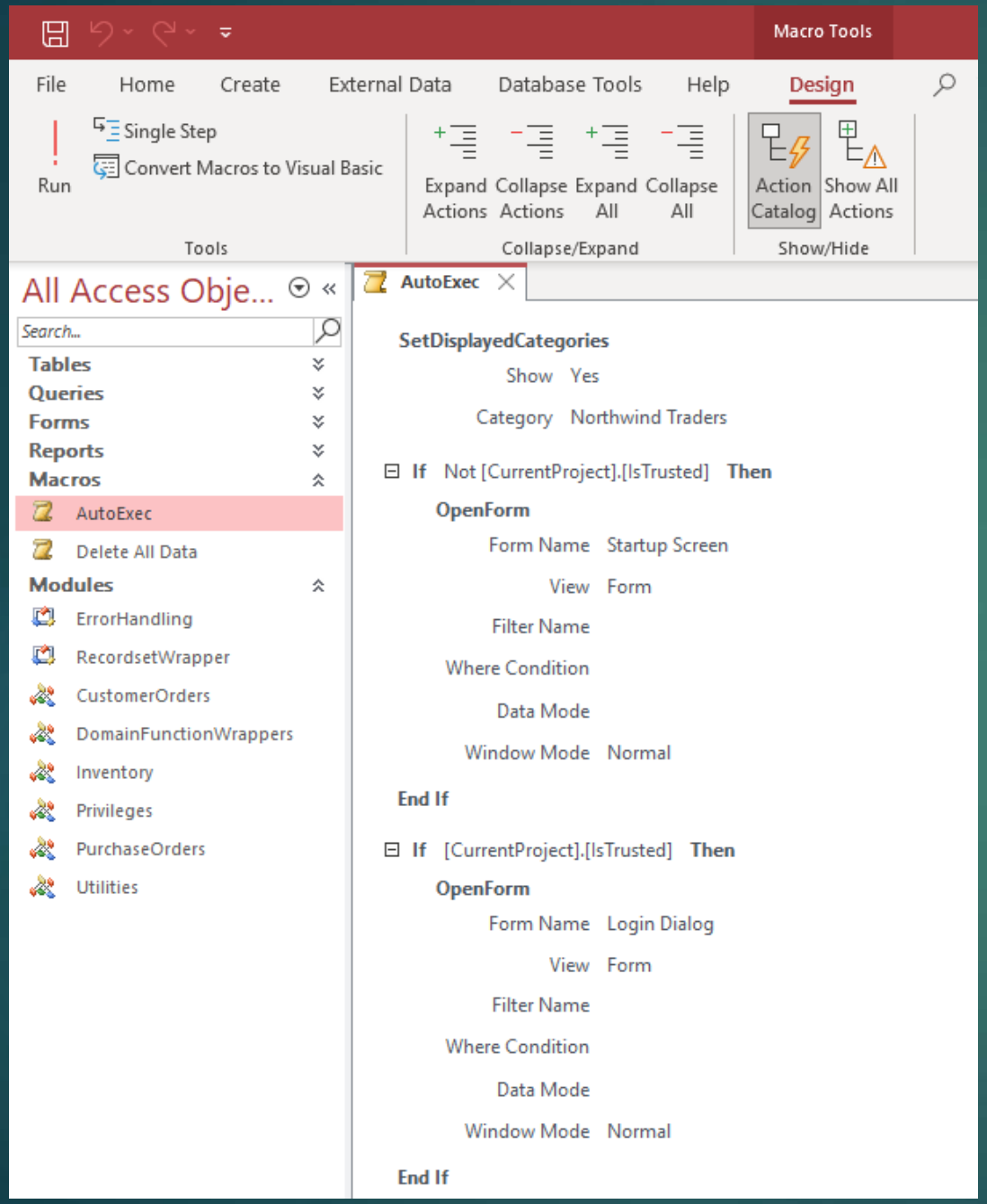
Shipper List
Startup Screen
Supplier Details
Supplier List
Supplier Products Subform
Supplier Purchases Subform
Reports
Customer Address Book
Customer Phone Book
Employee Address Book
Employee Phone Book
Invoice
Monthly Sales Report
Product Category Sales by...
Product Sales by Category
Monthly Sales Report
Report Header
Monthly Sales Report
=Date()
Page Header
Year Header
Month Header
=Replace(Replace("|1, |2","|1",Nz([Month Name],"")),"|2",Nz([Year],""))
Product
Sales
Detail
SalesGroupingField
Total Sales
Month Footer
=Replace("| Sales Total","|",Nz([Month Nar
=Nz(Sum([To
Page Footer
="Page " & [Page] & " of " & [Page
Report Footer

Macro

- For example, to create a button which opens a report, you could use a macro which will fire OpenReport action
- You can include simple conditions in macros to specify when one or more actions in the macro should be performed or skipped
- You can use macros to open and execute queries, to open tables, or to print or view reports
- You can also run other macros or Visual Basic procedures from within a macro
- Data macros can be attached directly to table events such as inserting new records, editing existing records, or deleting records


Macro Tools
File
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Create
External Data
Database Tools
Help
Design
Run
Single Step
Convert Macros to Visual Basic
Tools
Expand Actions
Collapse Actions
Expand All
Collapse All
Collapse/Expand
Action Catalog
Show All Actions
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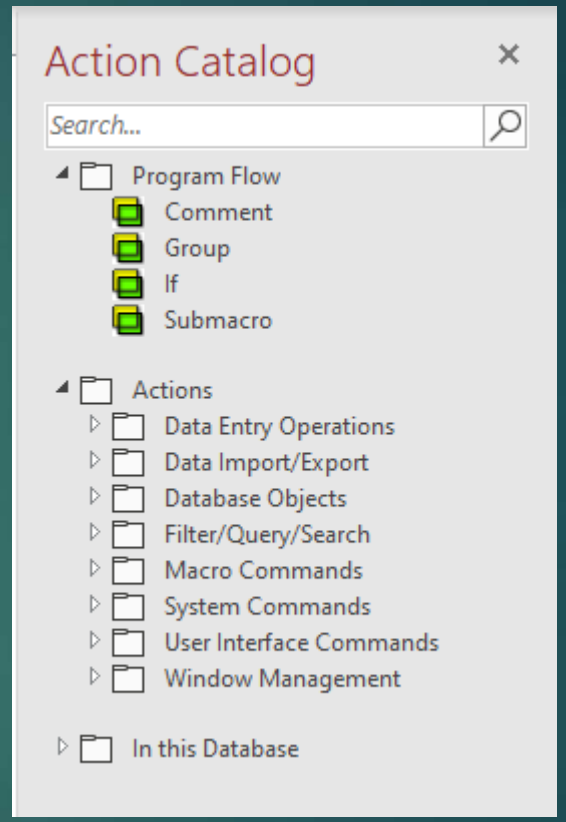
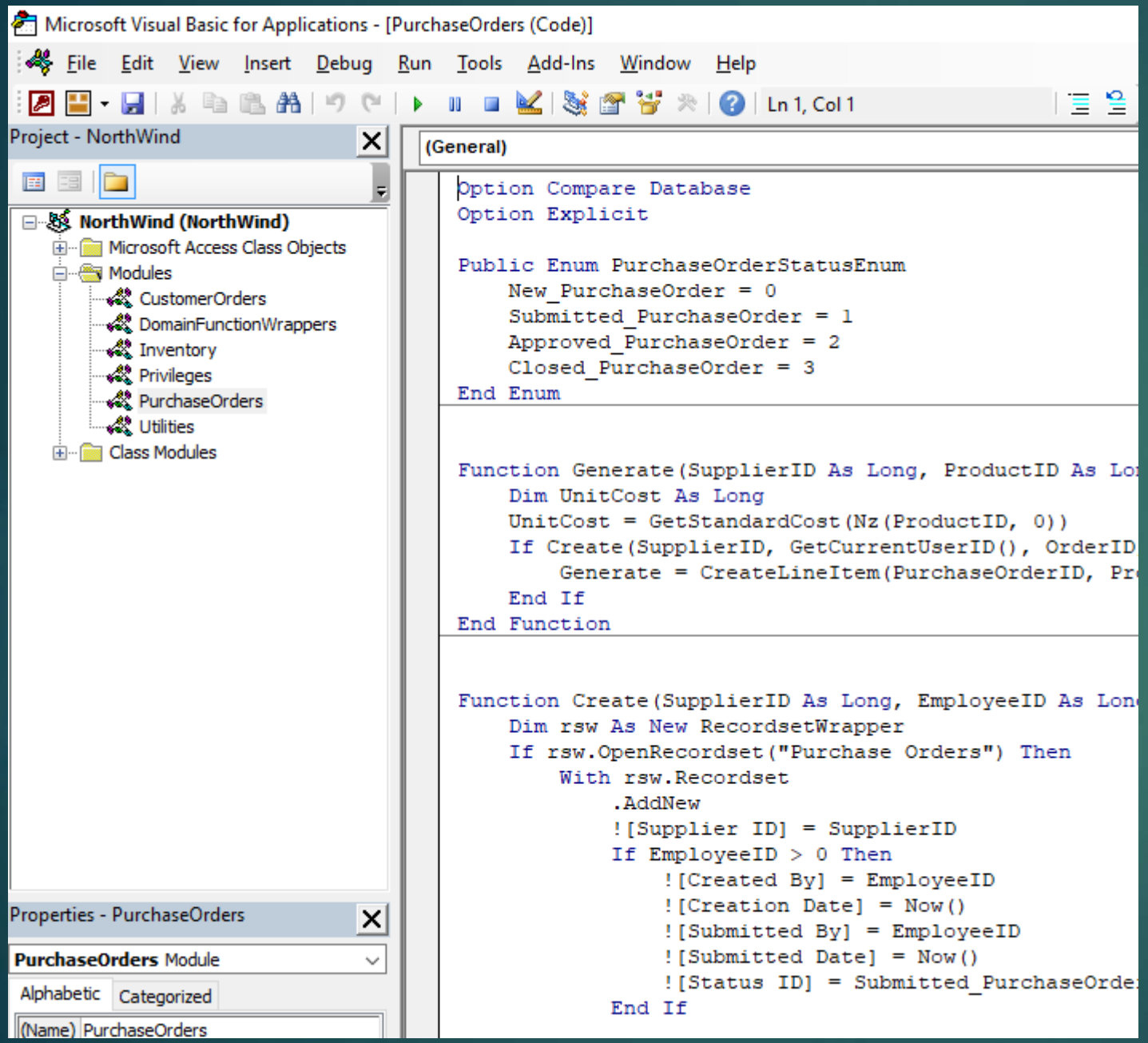
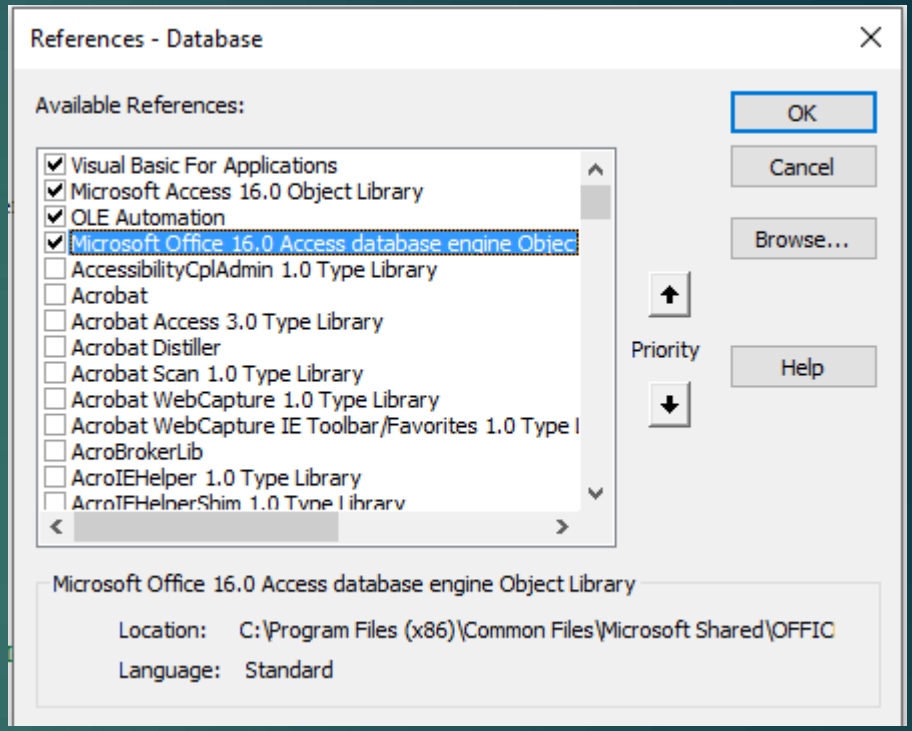
ErrorHandling
RecordsetWrapper
CustomerOrders
DomainFunctionWrappers
Inventory
Privileges
PurchaseOrders
Utilities
AutoExec
SetDisplayedCategories
Show Yes
Category Northwind Traders
If Not [CurrentProject].[IsTrusted] Then
OpenForm
Form Name Startup Screen
View Form
Filter Name
Where Condition
Data Mode
Window Mode Normal
End If
If [CurrentProject].[IsTrusted] Then
OpenForm
Form Name Login Dialog
View Form
Filter Name
Where Condition
Data Mode
Window Mode Normal
End If


Action Catalog
Search...
Program Flow
Comment
Group
If
Submacro
Actions
Data Entry Operations
Data Import/Export
Database Objects
Filter/Query/Search
Macro Commands
System Commands
User Interface Commands
Window Management
In this Database

Module

- Modules provide a more discrete flow of actions and allow you to trap errors
- Everything that can be done in a macro can also be done in a module, but you don't get the macro interface that prompts you what is needed for each action
- Modules are far more powerful and are essential if you plan to write code with error handling or use object libraries such as the Excel objects
- Modules can be standalone objects containing functions that can be called from anywhere in your application, or they can be directly associated with a form or a report to respond to events on the associated form or report


Microsoft Visual Basic for Applications - [PurchaseOrders (Code)]
File Edit View Insert Debug Run Tools Add-Ins Window Help
Ln 1, Col 1
Project - NorthWind
NorthWind (NorthWind)
Microsoft Access Class Objects
Modules
CustomerOrders
DomainFunctionWrappers
Inventory
Privileges
PurchaseOrders
Utilities
Class Modules
Properties - PurchaseOrders
PurchaseOrders Module
Alphabetic
Categorized
(Name) PurchaseOrders
(General)
Option Compare Database
Option Explicit
Public Enum PurchaseOrderStatusEnum
New_PurchaseOrder = 0
Submitted_PurchaseOrder = 1
Approved_PurchaseOrder = 2
Closed_PurchaseOrder = 3
End Enum
Function Generate(SupplierID As Long, ProductID As Lo
Dim UnitCost As Long
UnitCost = GetStandardCost(Nz(ProductID, 0))
If Create(SupplierID, GetCurrentUserID(), OrderID
Generate = CreateLineItem(PurchaseOrderID, Pr
End If
End Function
Function Create(SupplierID As Long, EmployeeID As Lon
Dim rsw As New RecordsetWrapper
If rsw.OpenRecordset("Purchase Orders") Then
With rsw.Recordset
.AddNew
![Supplier ID] = SupplierID
If EmployeeID > 0 Then
![Created By] = EmployeeID
![Creation Date] = Now()
![Submitted By] = EmployeeID
![Submitted Date] = Now()
![Status ID] = Submitted_PurchaseOrde
End If


References - Database
Available References:
Visual Basic For Applications
Microsoft Access 16.0 Object Library
OLE Automation
Microsoft Office 16.0 Access database engine Objec
AccessibilityCplAdmin 1.0 Type Library
Acrobat
Acrobat Access 3.0 Type Library
Acrobat Distiller
Acrobat Scan 1.0 Type Library
Acrobat WebCapture 1.0 Type Library
Acrobat WebCapture IE Toolbar/Favorites 1.0 Type
AcroBrokerLib
AcroIEHelper 1.0 Type Library
OK
Cancel
Browse...
Priority
Help
Microsoft Office 16.0 Access database engine Object Library
Location: C:\Program Files (x86)\Common Files\Microsoft Shared\OFFIC
Language: Standard

Zoom Survey

- Using the Zoom survey buttons, indicate if you would be interested to get more detailed presentations on each of the Access object?