

Summary: This database illustrates a moderately complex database that has evolved over a number of years from one originally written in Fortran and running under DOS.

Database Name: Shord – Shop Order Control System

Company Size: 30 personnel in one location

Company Product: drilled circuit boards

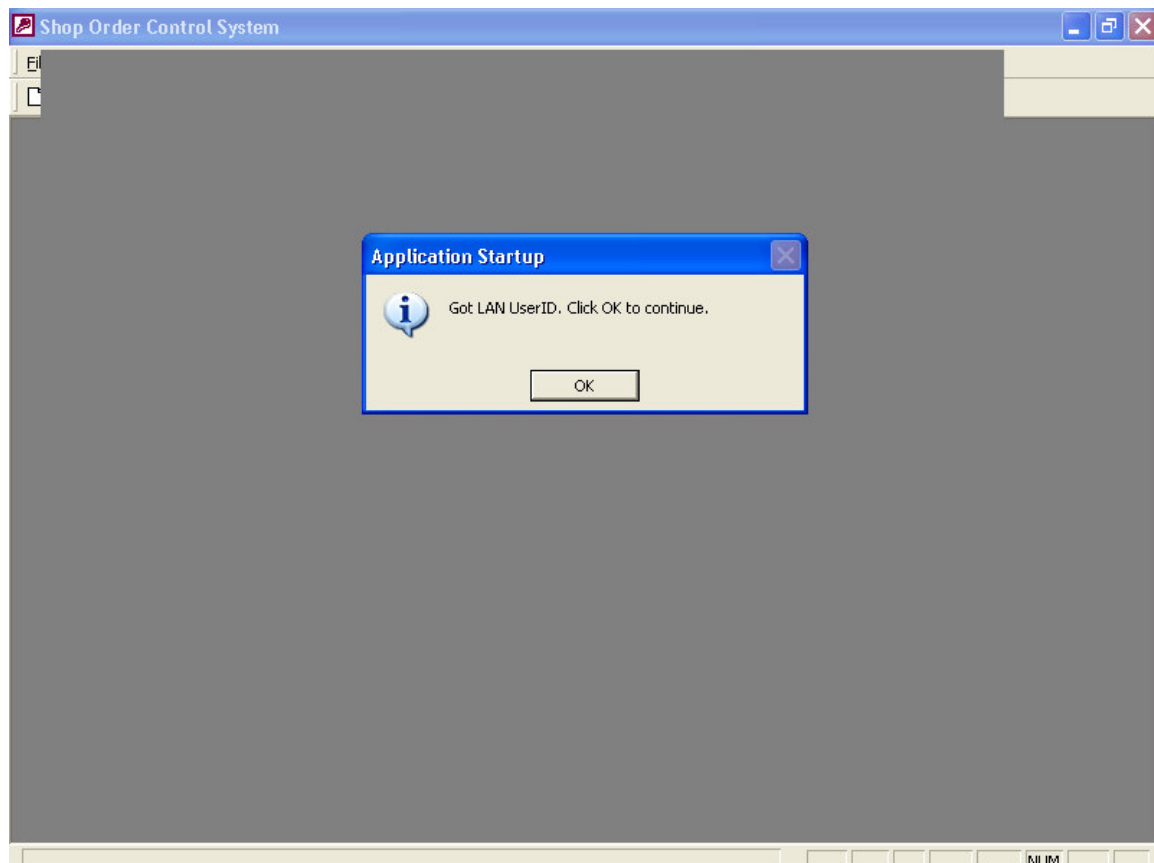
Business Objective: Save personnel and calendar time by quickly providing accurate data on customer jobs and enabling minimum data entry on repeat/similar jobs.

History: This database was originally written by the customer in Fortran in the 1980s, converted to Borland Paradox (DOS) by us in 1993, then to Access 2000 in early 2000. New features were added in 2001.

IT Environment: A Novell Server based network with approximately 12 PCX workstations running Windows 98 and Windows 2000. There are approximately 3 users of this database using 3 separate PC workstations.

Development Time: Total time for what is shown here was 425 hours. The initial version took 200 hours for the conversion (including data cleanup) over a 4 month (part time) period with an additional 85 hours over a 7 month period for additional editing, error corrections and data cleanup. A subsequent upgrade took 140 hours over a 6 month period.

Notes: Conversion effort included data cleanup because the Access DB had more edits than the Paradox DB did. However, the data cleanup was done on an as needed basis. Thus, there are a couple of buttons on the Main Menu for data cleanup as shown below.



When the User clicks on their Desktop icon for this DB, the AutoExec macro starts VBA code that automatically checks for and validates the Novell UserID. There is no User signin. If the Novell UserID is not in the list of valid UserIDs then the process terminates immediately.

The screenshot shows the 'Shop Order Control System - [MAIN MENU]' window. The title bar includes 'File', 'Edit', 'View', 'Insert', 'Format', 'Records', 'Tools', 'Window', and 'Help'. The main area has a green background with a teal header box containing 'Sample Company One, Inc.' and a blue box below it with 'Shop Order Control System'. A 'MAIN MENU' button is centered. Below it is a 'UserID:' label followed by a text box containing 'JMH'. A vertical column of buttons includes 'Customers' (with a dashed border), 'Parts', 'Shop Orders', 'Codes', 'Quit to Access', and 'Exit'. To the left of this column is a 'Data Cleanup' box containing 'Parts' and 'Shop Orders' buttons, and a 'System Parameters' button below it. To the right are 'Custom Querys' and 'UserIDs' buttons. At the bottom left is 'Version: 2.99 07/13/01 4:14:13 pm' and at the bottom right is the database path 'D:\PCPossWebDB\Shord\Shord.mdb'. A status bar at the bottom shows 'Form View' and a 'NUM' field.

The Main Menu shows the three main data areas: Customers, Parts, and Shop Orders. But this Main Menu is only for "SuperUsers". A SuperUser can modify (Validation) Codes, System Parameters, setup/modify Custom Queries, and UserID/Passwords. The Main Menu display shown below is for a "normal" user: no Admin and only View Codes.

This screenshot shows the 'Shop Order Control System - [MAIN MENU]' window for a user with the 'VIEWONLY' UserID. The layout is similar to the first screenshot, but the 'Data Cleanup' box and 'System Parameters' button are absent. The vertical column of buttons includes 'Customers' (dashed border), 'Parts', 'Shop Orders', 'View Codes', and 'Exit'. The title bar, header, version information, and database path remain the same. The status bar at the bottom shows 'Form View' and a 'NUM' field.

Shop Order Control System - [Customers Menu]

File Edit View Insert Format Records Tools Window Help

Sample Company One, Inc.

Shop Order Control System

Customers Menu

Add

Select a Customer: **All**

Select a Part: **All**

Select a Shop Order: **All**

or . . . **Select a Query:** **Edit**

For Customers:

☐ All
☒ Active
☐ Inactive

Change
Delete
List

☒ By Name
☐ By Number

Return to the Main Menu

Form View NUM

These figures show the Customers Menu and the Customer data maintenance form.

Shop Order Control System - [Customers]

File Edit View Insert Format Records Tools Window Help

Customers Changes

Print This **Close**

Customer No.: 2150 **Name:** CopperMade **Inactive?** ☐ **Account No.:** 02-0002000 **Last Changed:** 4/6/2003 8:30:51 PM JMH

Title: Mr. **Last Name:** Smithson **First:** Jim

Address: 34010 South Lake Rd **City:** Willoughby **State:** OH **Zip:** 44094

Phone: (440) 551-7201 **FAX:** (440) 551-7212 **E-Mail:** **Web Site:**

Payment Terms: Net 30 Days **Default Ship Via:** Cust **Comment:**

Shop Orders Open Shop Orders Closed Parts Other Addresses

| Order No. | Status | Part No. | Cust.P.O.No. | Order Rcvd | Due | Closed | Returned | Price | per | |
|-----------|---------|----------|--------------|------------|----------|--------|----------|--------|-----|------|
| 15743 | On-Hold | 18890 | 20313 | 01/23/02 | 01/29/02 | | | \$0.00 | | Edit |
| 16063 | | 18898 | 20136 | 06/03/02 | 06/10/02 | | | \$0.00 | | Edit |
| 16064 | | 18945 | 20135 | 06/03/02 | 06/10/02 | | | \$0.00 | | Edit |
| 16065 | | 15054 | 20137 | 06/03/02 | 06/17/02 | | | \$0.00 | | Edit |
| 16070 | | 8861 | 20138 | 06/05/02 | 06/12/02 | | | \$0.00 | | Edit |
| 16075 | | 14401 | 20139 | 06/06/02 | 06/13/02 | | | \$0.00 | | Edit |
| 16076 | | 15207 | 20140 | 06/07/02 | 06/14/02 | | | \$0.00 | | Edit |
| 16077 | | 18288 | 20144 | 06/07/02 | 06/14/02 | | | \$0.00 | | Edit |
| 16078 | | 18870 | 20142 | 06/07/02 | 06/14/02 | | | \$0.00 | | Edit |

Record: 1 of 12

Record: 1 of 1 (Filtered)

Form View NUM

Shop Order Control System - [Parts Menu]

File Edit View Insert Format Records Tools Window Help

Sample Company One, Inc.

Shop Order Control System

Parts Menu

Add

For Customers:

☐ All
☒ Active
☐ Inactive

For Parts:

☒ All
☐ Active
☐ Inactive

Select a Customer: **All** **Change**

Select a Part: **All** **Delete**

Select a Shop Order: **All**

or . . . Select a Query: **Edit**

Part selection range: Start: End: **Clear**

List

Labels

Sort List by:

☐ Part Program No.
☐ Customer by Part Program No.
☒ Customer by Job No. and Rev.
☐ Customer by Job Name, No., and Rev.

Label Selection:

☒ Envelope ☒ Layout
☒ Checkpiece ☒ Job Card

Return to the Main Menu

Form View

These figures show the Parts Menu and the Parts data maintenance form.

Shop Order Control System - [Parts]

File Edit View Insert Format Records Tools Window Help

Parts Changes

Part: **Board Type:** **Non Plated Thru Hole PCB** **Part Inactive?** ☐

Customer: **2150** **Customer Inactive?** ☐

Job ID: **Job Name:** **Job No.:** **Rev.:**

Date Initially Ordered: **Programmed By:** **Machine Type:**

Material: **Weight:** **Type:** **Thickness:** **Backup:** **Overlay:**

Panel Size X: **by Y:** **Panel Pin Loc:** **Parts per Panel:**

No. Drill Sizes: **Drill Stack Ht:** **No. Hits:** **Note: these values will eventually be replaced by the Operations Details**

No. Rtr Sizes: **Rout Stack Ht:** **Rout Dist.:**

Price: **By:**

Print Part Info **Print This** **Close**

Last Changed: 7/2/2001 4:41:01 PM Jmh

Operations **Part Notes** **Shop Orders Open** **Shop Orders Closed**

| Op.No. | Operation | Prog.No. | Mach. Type | Not in Totals | No. Tools | No. Hits | Rout Dist. | Stack Height | Cycle Time | Last Rev | Add New |
|--------|-----------|----------|------------|--------------------------|-----------|----------|------------|--------------|------------|-----------|----------------|
| 1 | Drill | 01164 | DRL | <input type="checkbox"/> | 2 | 1064 | 0 | 4 | | 1/25/2002 | Details Delete |

1 Operations **Totals:** 2 1064 0 **for 1 Operations**

Record: of 1

Record: of 1759 (Filtered)

Form View

Shop Order Control System - [Shop Orders Menu]

File Edit View Insert Format Records Tools Window Help

Sample Company One, Inc.

Shop Order Control System

Shop Orders Menu

Add

For Customers:

☐ All
☒ Active
☐ Inactive

For Shop Orders:

☒ All
☐ Open
☐ Closed

Select a Customer: [All] Change

Select a Customer PO: [*] All Delete

Select a Part: [All] List

Select a Shop Order: [All] Status

or . . . Select a Query: [Edit] Travelers Packing Lists

Shop Order selection range: Start: [] End: [] Clear

Sort by: ☒ Customer ☐ Shop Order Number

Return to the Main Menu

Form View NUM

These figures show the Shop order Menu and the Shop Order data maintenance form.

Shop Order Control System - [Shop Orders]

File Edit View Insert Format Records Tools Window Help

M5 Sans Serif 8 B I U

Shop Orders Changes Change Closed Shop Order Packing List Traveler Print This Close

Order No.: 2 Customer: CopperMade 2150 Customer Inactive? Last Changed: 4/6/2003 8:33:50 PM JMH

Customer PO: 15985 Date Order Rcvd: 9/19/1990 Date Due: []

Ship To: 34010 South Lake Rd Willoughby OH 44094 Other ShipTo Ship Via: Cust

Part: 18550 Job ID: MK-5/SLOTS, Name: A1 DEVICES, No: ISOPGMR, Rev: E View Part Panel Qty: 8

DATES: Layout: [] Material: [] Routed: [] Date Closed: 09/25/90 Price: \$0.000

Programmed: [] Drilled: [] Returned: [] Order Status: Shipped per: []

Programming: 0 Not Required, Use Existing Program

Instructions: []

Checkpiece Reqd: [x] Number of Checkpieces: 1

Instructions: []

Material Reqd: [x] Matl Supplied By: MCD

Instructions: []

Drilling Reqd: [] Routing Reqd: []

Special Instructions: []

Record: 1 of 4202 (Filtered)

Form View FLTR NUM

Shop Order Control System - [Travelers]

File Edit View Tools Window Help

Fit Close

| | | | | | |
|--|------------------------|-------------------------|---------------------------------|------------------------|-------------------------|
| 2 | | Date Received: 05/15/03 | 2 | | Date Received: 05/15/03 |
| Date Due: | | | Date Due: | | |
| Customer: CopperPlate | Part Name: A1 D BNC BS | | Customer: CopperPlate | Part Name: A1 D BNC BS | |
| P.O. Number: 15965 | Part Number: ISO POMR | | P.O. Number: 15965 | Part Number: ISO POMR | |
| Customer ID: MK55SL0 TB | Revision: E | | Customer ID: MK55SL0 TB | Revision: E | |
| Non Plated Thru Hole PCB | | | Non Plated Thru Hole PCB | | |
| PROGRAMMING Part Program: 18550 | | | DRILLING: Not Required. | | |
| Not Required, Use Existing Program | | | Drill: 1 Checkpieces | | |
| | | | Parts/Pr: 4 | | |
| CHECKPIECE 1 Checkpieces | | | ROUTING: Not Required. | | |
| 6.000 x 5.0000 | | | Parts/Pr: 4 | | |
| Drilled: ___/___/___ by: ___ | | | | | |
| Pinned at 4.000 inches | | | Approved: ___/___/___ by: ___ | | |
| MATERIAL: Supplied by: MCP | | | PART NOTES: | | |
| 3 Panels, 6.000 x 5.000 x 0.062, VD, F R-4 | | | T07 RFB (.020) No Tilling Drill | | |
| 4 High Block, Pin at 4.000 inches | | | | | |
| Vendor: _____ | | | Mini Scrap Run: ___/___/___ | | |
| Lot No: _____ | | | Sheared: ___/___/___ by: ___ | | |
| Stock Size: _____ | | | Pin Date: ___/___/___ by: ___ | | |
| 03:34 PM 05-Apr-2003 Sunday | | | | | |

Page: 14 1 NUM

Ready

Top figure is the first page of a Traveler. Bottom figure shows the "System Parameters" used throughout the DB.

Shop Order Control System - [MAIN MENU]

File Edit View Tools Window Help

System Parameters

This is entered once and is used on Reports and Forms:

Company Name: Sample Company One, Inc. Division Name: A Division of Sample Enterprises, Inc.

Company Address: 1234 Nort Middlefield Road City: Cleveland State: Ohio Zip: 44124-4453

Phone: (440) 442-8571 FAX: (440) 442-8572 www: sampleco.com Email: Sales@sampleco.com

This sets the default choice on the Customers, Parts, and Shop Orders Menus:

☐ All Customers
☒ Active Customers Only
☐ Inactive Customers Only

☐ All Parts
☐ Active Parts only
☐ Inactive Parts only

☒ All Shop Orders
☐ Open Shop Orders Only
☐ Closed Shop Orders Only

This sets the default choice for lists on the Customers, Parts, and Shop Orders Menus:

Sort Parts List by:

☐ Part Program No.
☐ Customer by Part Program No.
☒ Customer by Job No. and Rev.
☐ Customer by Job Name, No., and Rev.

Sort Shop Orders by:

☒ Customer
☐ Shop Order Number

These control the new Customer, Part, and Shop Order Numbers on Adds:

Customer Number Increment: 0 Part Number Increment: 1 Shop Order Number Increment: 1

Note: setting the Customer Number Increment = zero will result in the User having to enter it for New Customers.

This is automatically set to the directory the .mdb is in:

DB DIR: D:\PCPoss\WebDB\Shord Change Root DIR Root Drive (C, G, etc.): D

S is pointing to: C:\Documents and Settings\Server\XP400\My Doc

Form View NUM

Shop Order Control System - [MAIN MENU]

File Edit View Insert Format Records Tools Window Help

UserIDPWs

SuperUser gets everything
Admin User gets Codes and Custom Querys Menus
View Only User gets only View buttons (was Change)
No Deletes User does not see Delete buttons

Add New Print

| UserID | PW | Super User | Admin User | View Only | No Deletes | Change Shop Orders | |
|--------|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------|
| ADMIN | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Delete |
| CHGSOS | password | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |
| DD | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Delete |
| JHZ | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Delete |
| JIMPAV | password | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |
| JMH | Jack | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |
| JOHNY | echo | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |
| KathyB | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |
| KMG | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |
| LouD | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Delete |

Record: 1 of 13

Exit

Version: 2.99 07/13/01 4:14:13 pm D:\PCPossWebDB\Shord\Shord.mdb

Form View NUM

Top figure shows the UserID/Password maintenance form available only to SuperUsers.

Shop Order Control System - [Custom Querys Menu]

File Edit View Insert Format Records Tools Window Help

Sample Company One, Inc.

Shop Order Control System

Custom Querys Menu

Data Types

Select a Data Type:

Select a Custom Query:

Edit Custom Query(s)

See How Many Records can be Found

Return to the Main Menu

Form View NUM

These figures illustrate User Definable Ad Hoc Queries. No need for a programmer to write or modify code (although they may require phone support for the actual SQL statement). These Queries can be used on the Customer, Parts, and Orders Menu as needed and defined by the User. However, only a SuperUser can define these Queries.

Shop Order Control System - [Custom Querys Menu]

File Edit View Insert Format Records Tools Window Help

Sample Company One, Inc.

Shop Order Control System

Custom Querys Menu

Data Types

Select a Data Type:

Select a Custom Query:

| Query Data Title | Query SQLSpec | Query DateTime |
|---|---|---------------------|
| Parts - With Job Name = | [Customer Job Name] like "Hartman" | 4/6/2003 8:36:13 PM |
| Parts - With Job name 'Channel Prod' | [Customer Job Name] like "Channel Prod" | 11/22/2000 1:07:38 |
| Parts - With Machine Type = | [Machine Type] like "RTR" | 1/15/2002 5:54:08 F |
| Parts - With Matl Type 'FR-4' | [Matl Type] like "POLI" | 6/28/2001 1:47:50 F |
| Parts - With Overlay N= EQ Plus and Tool Type = | [Overlay] not like "EQ Plus" and [Tool Type] like " | 7/2/2001 4:26:24 PM |
| Parts - With Overlay Type 'Foil' | [Overlay Type] like "Foil" | 6/28/2001 5:16:11 F |
| Parts - With Programmed By = | [Programmed By] like "RCA" | 6/26/2001 5:20:26 F |
| Shop Orders - After 1 Jan 2000 | [Date Order Received] >= #1/1/2000# | 6/21/2001 5:16:05 F |
| Shop Orders - Cancelled Orders | [Order Status] = 'Cancelled' | 3/30/2000 5:31:05 F |
| Shop Orders - Date Recv >= | [Date Order Received] >= #3/1/2001# | 4/2/2002 4:29:26 PM |
| Shop Orders - For August 1998 | [Date Order Received] >= #8/1/1998# and [Date | 3/28/2000 2:11:00 F |

Main menu

Form View

Shop Order Control System - [Custom Queries]

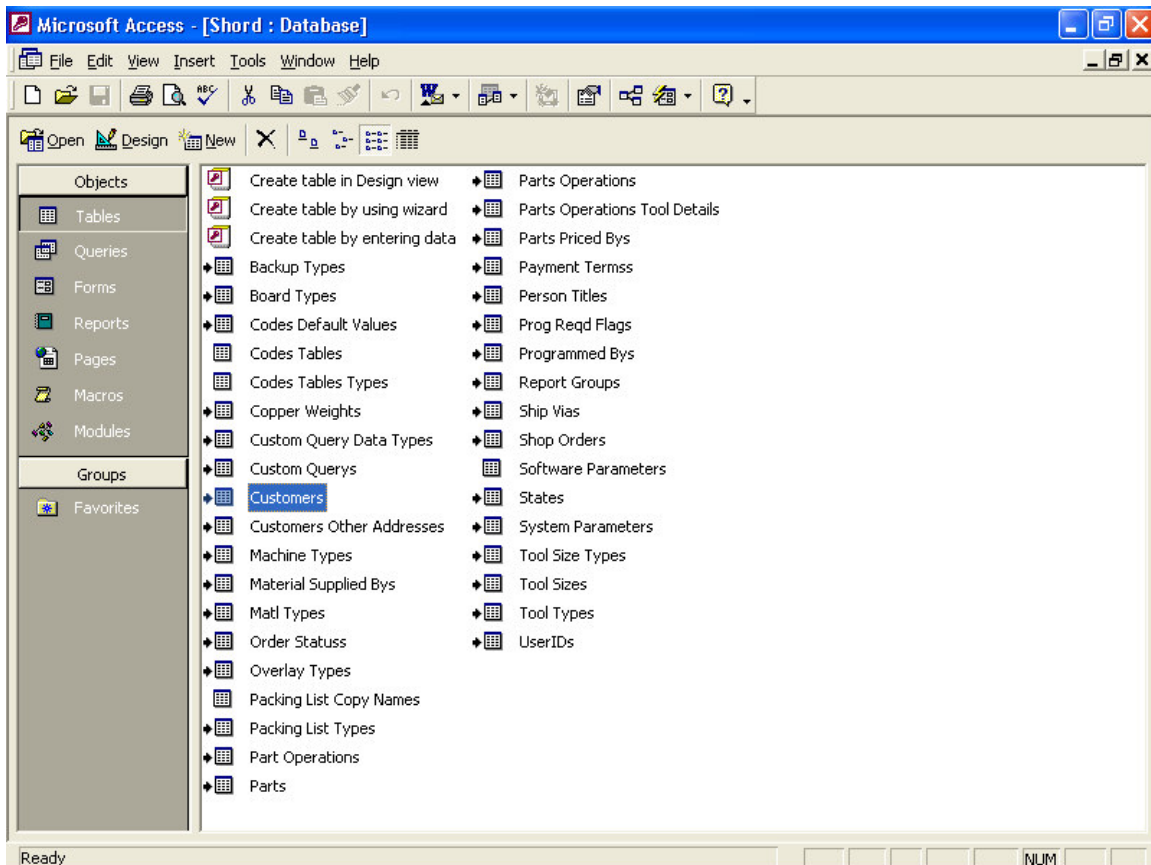
File Edit View Insert Format Records Tools Window Help

Custom Queries Changes

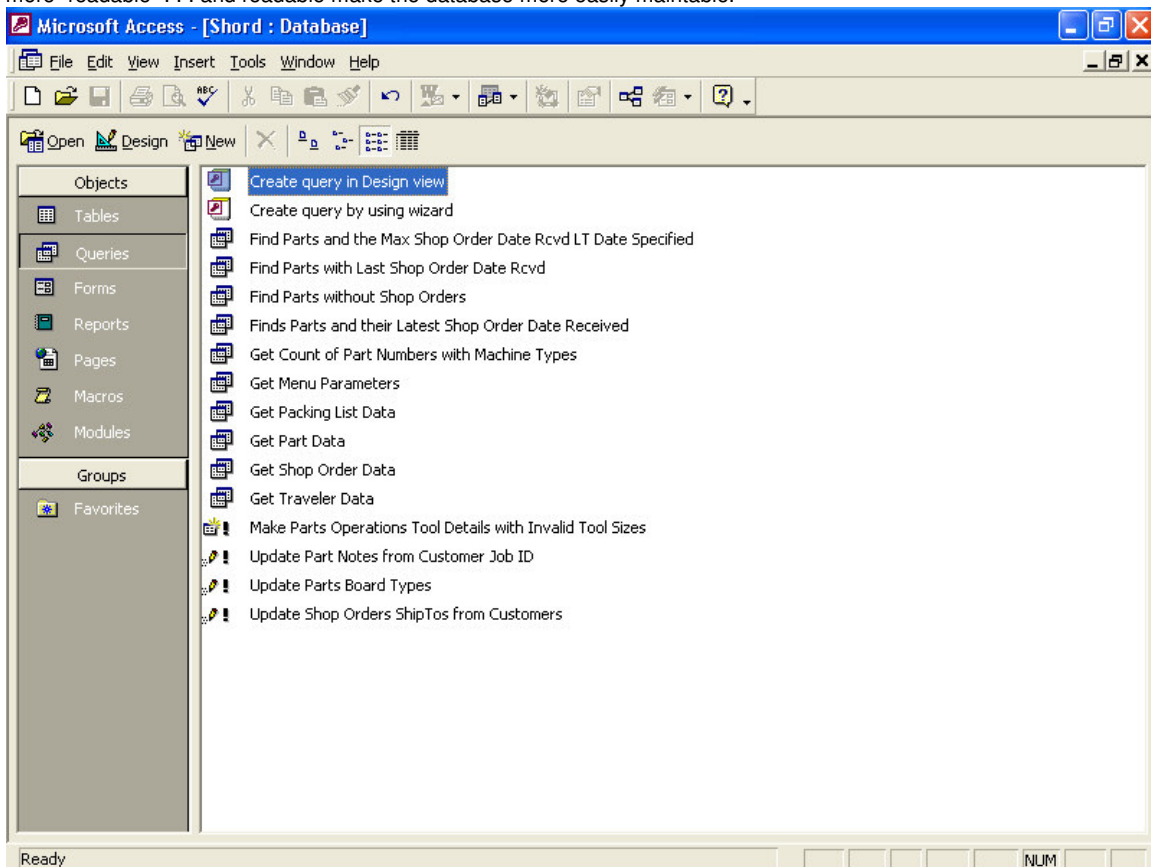
| Data Type: | Title: | Last Changed DateTime: | By Who: |
|---------------------------------------|----------------------------------|---------------------------------------|---------|
| Customers | Customers that start with M | 4/6/2003 8:02:05 PM | JMH |
| SQLSpec: [Customer Name] like "m" | | <input type="button" value="Delete"/> | |
| Customers | Customers that start with Z | 11/20/2001 4:25:12 PM | Jmh |
| SQLSpec: [Customer Name] like "z" | | <input type="button" value="Delete"/> | |
| Customers | Special Demo's R | 11/20/2001 4:25:12 PM | Jmh |
| SQLSpec: [Customer Name] like "R" | | <input type="button" value="Delete"/> | |
| Parts | Board Type = PARTS | 4/2/2002 3:36:17 PM | Jmh |
| SQLSpec: [Board Type] like "Part" | | <input type="button" value="Delete"/> | |
| Parts | Initial Date after 12/31/99 - | 10/17/2001 12:10:40 PM | Jmh |
| SQLSpec: [Date Initial] >= #12/31/99# | | <input type="button" value="Delete"/> | |
| Parts | Initially Ordered after 1/1/2000 | 4/13/2000 1:30:51 PM | JMH |
| SQLSpec: [Date Initial] >= #1/1/2000# | | <input type="button" value="Delete"/> | |
| Parts | P/N >= 17750 | 7/26/2000 1:21:13 PM | Jmh |
| SQLSpec: [Part Number] >= 17750 | | <input type="button" value="Delete"/> | |
| Parts | | | |

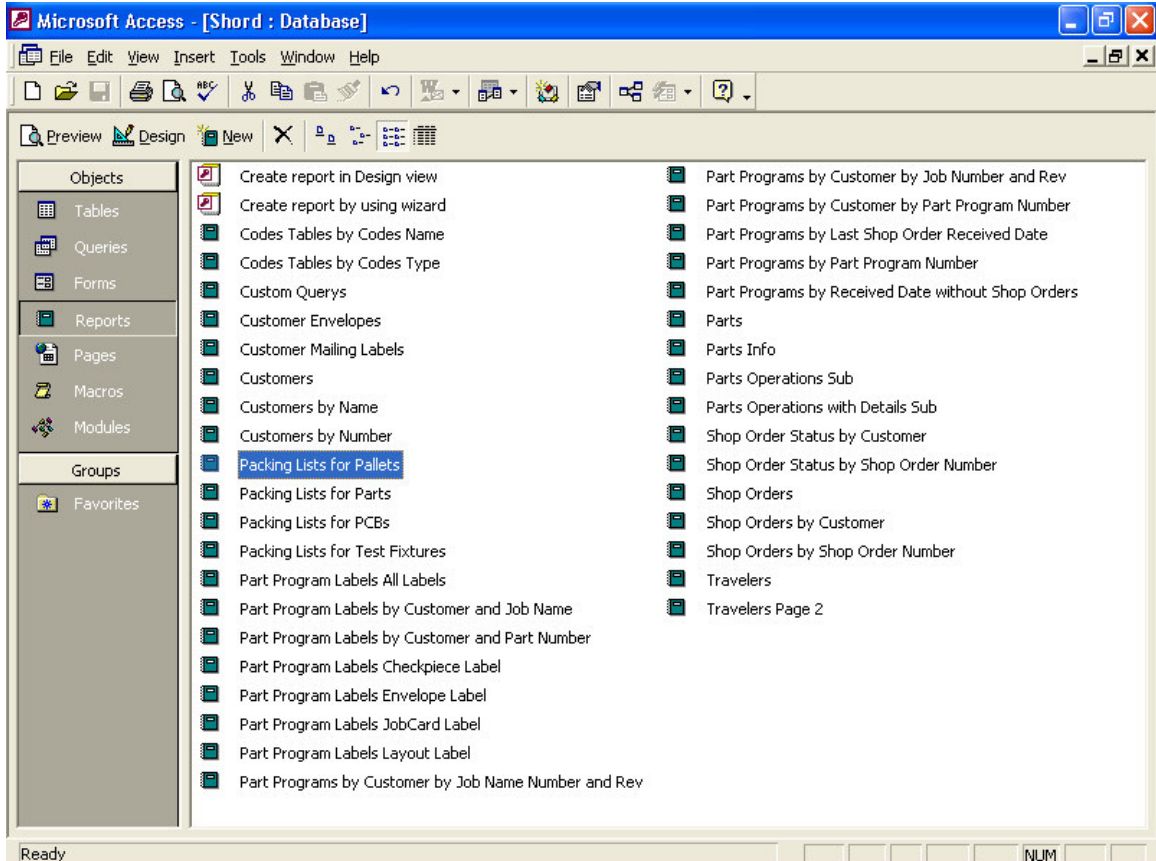
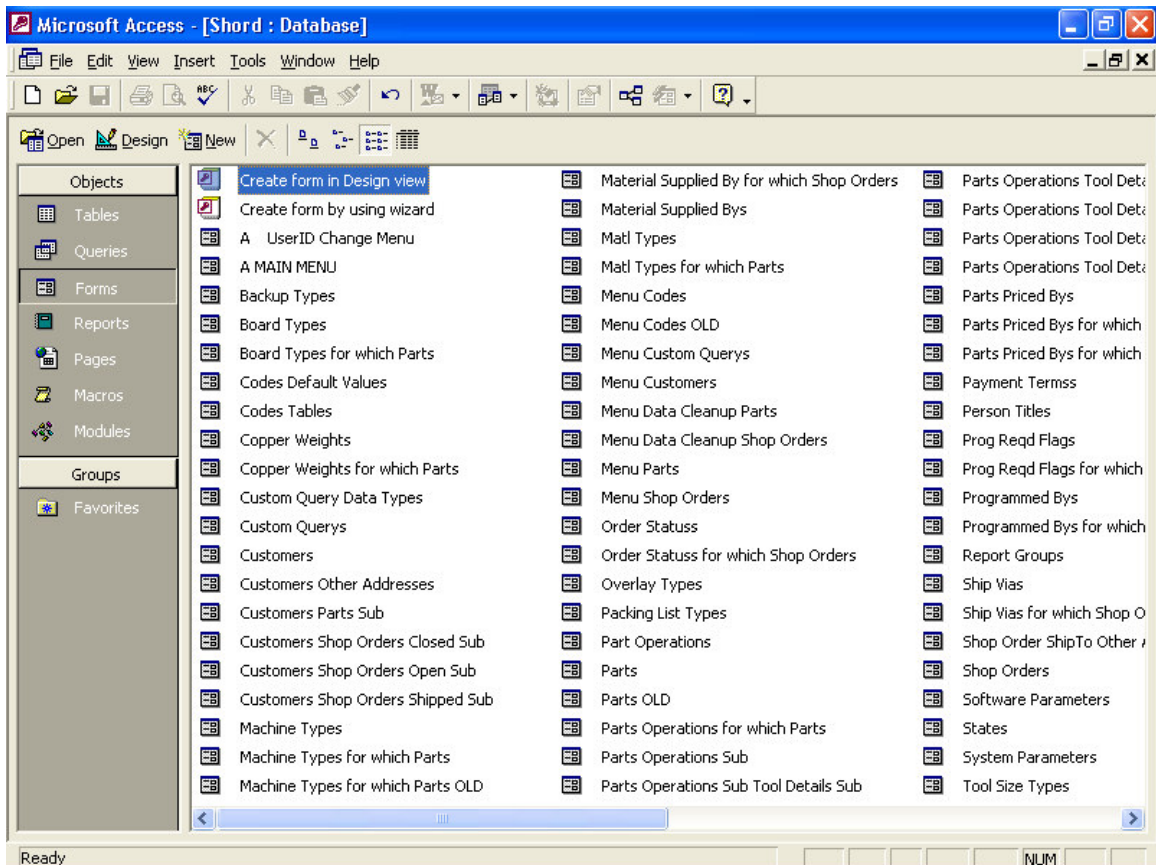
Record: 1 of 25

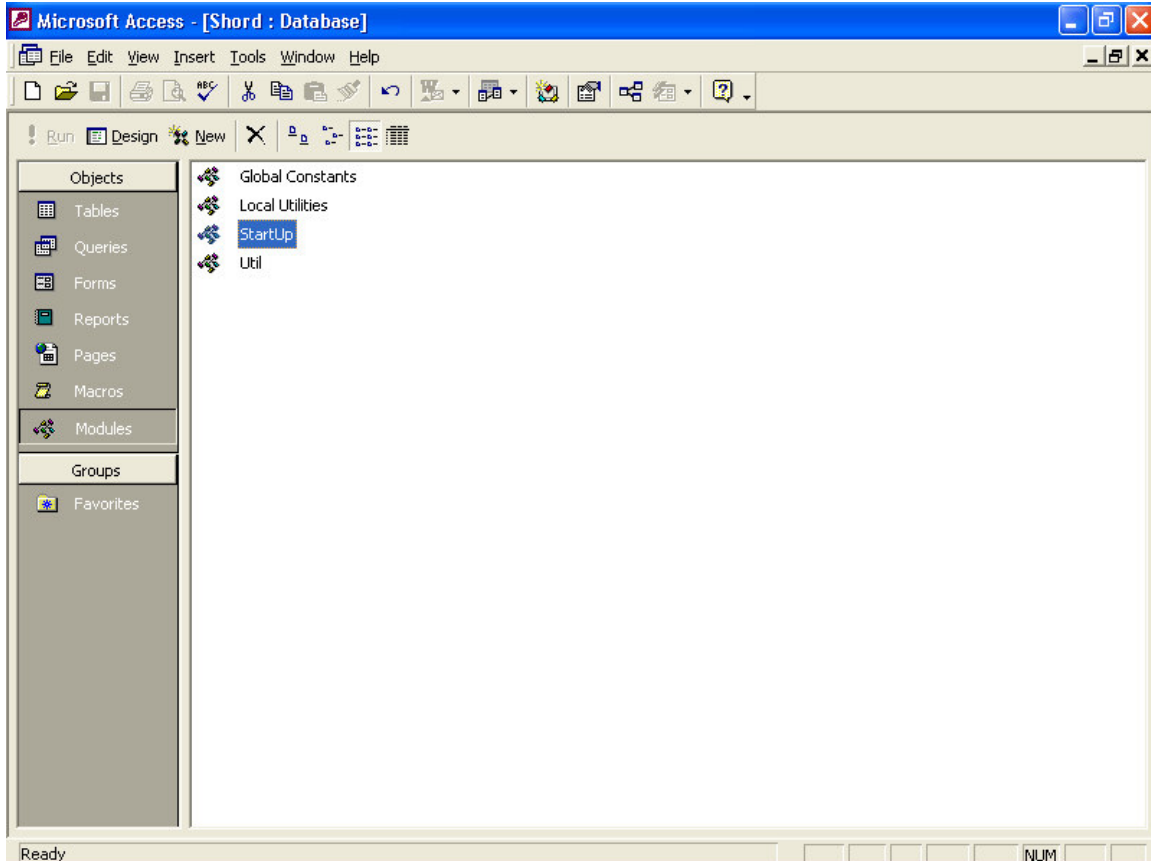
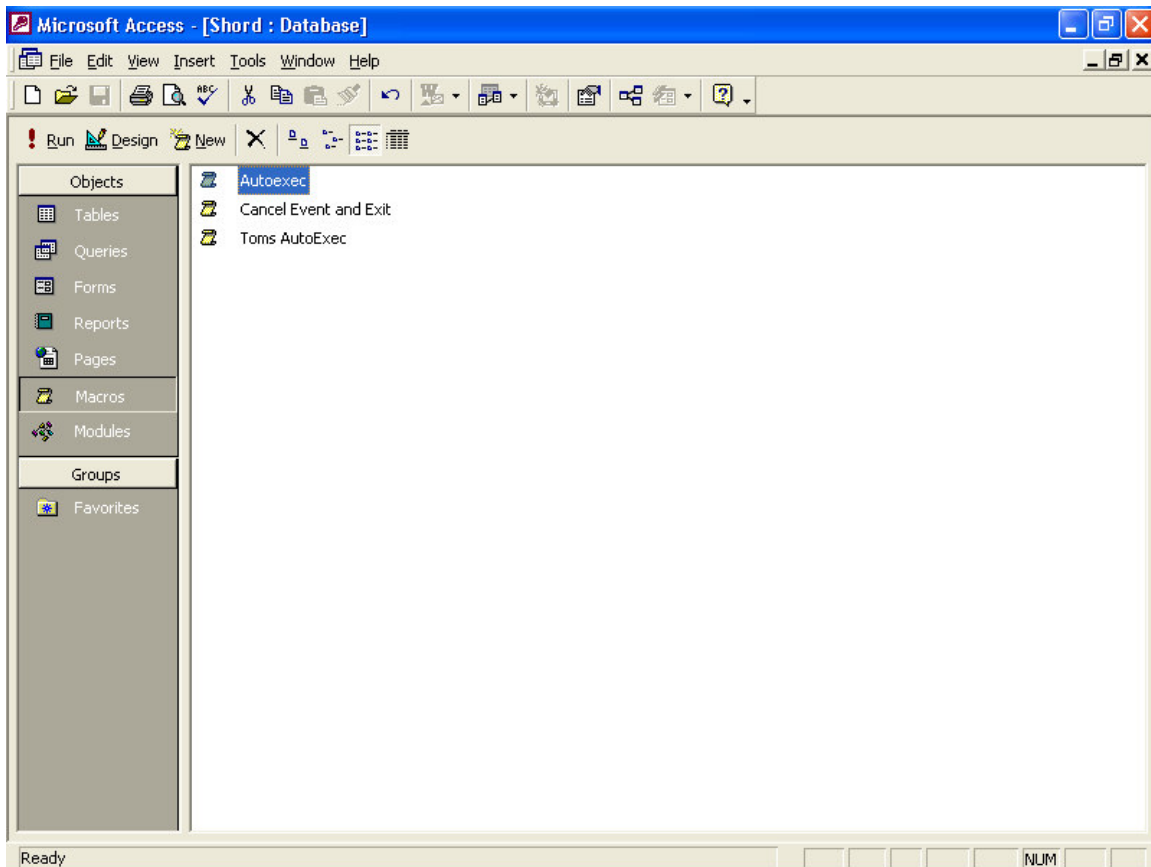
Form View

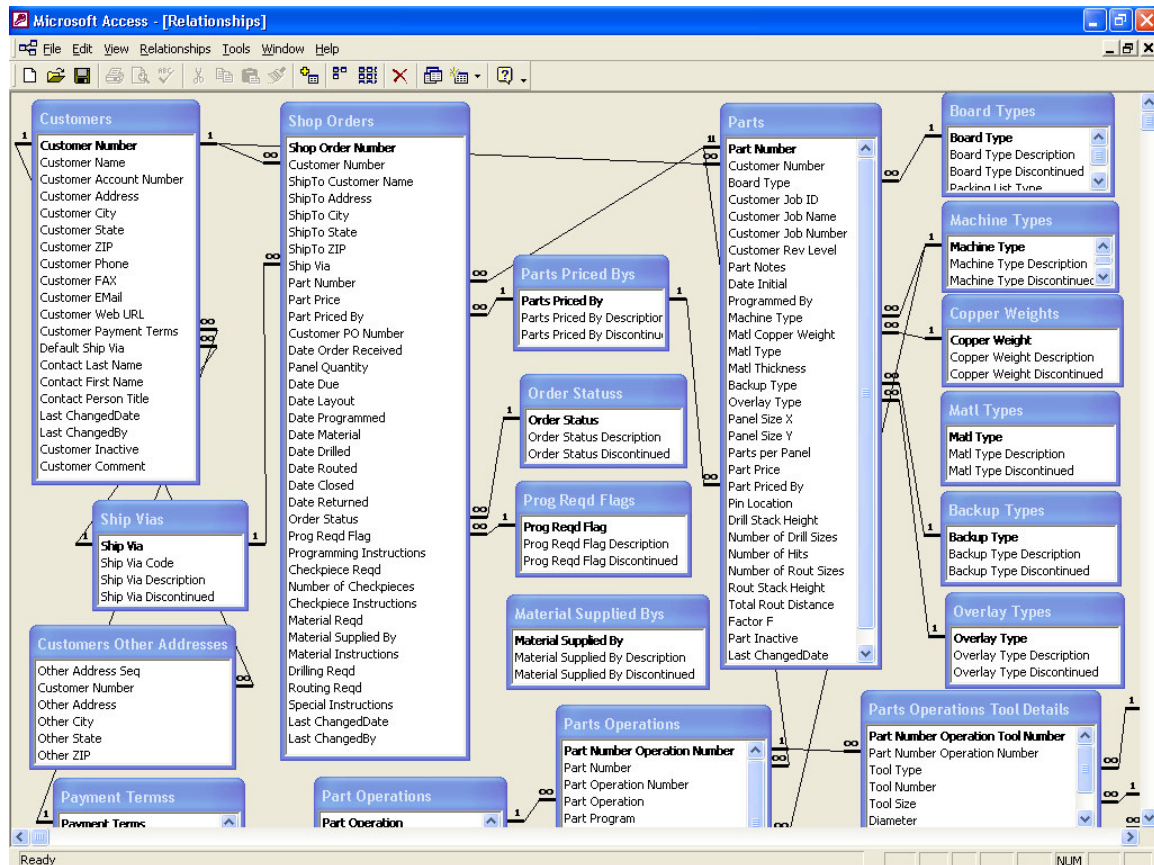


These figures show the different objects in the Shord database. Notice the “plain English” names used; these names are different than the conventions Microsoft uses (and so many others) but they are used by us because they make the DB more “readable” . . . and readable make the database more easily maintainable.









The above figure illustrates the table relationships of this database application.