

Designing a Database That Works

Good Design Today • Better Information Tomorrow

A solid database design turns data into answers, insights, and better decisions.

1. Start with the End in Mind



Know what you want the database to do and what reports you need.

2. Design for Tomorrow



Build with flexibility so your database can grow without major rebuilding.

3. Document Everything



Good notes today prevent confusion and mistakes tomorrow.

4. Test Before You Trust



Test forms, queries, reports, and data. Find bugs now—not later.

5. Good Data In, Good Information Out



Garbage in, garbage out. Quality data = quality results.

Good Database Design

- ☒ Plan it
- ☒ Design it
- ☒ Document it
- ☒ Test it
- ☒ Use it

Get good results!

RELATIONAL DATABASE EXAMPLE

Customers

- CustomerID (PK)
- CustomerName
- Address
- City
- Phone
- Email

Orders

- OrderID (PK)
- OrderDate
- CustomerID (FK)
- EmployeeID (FK)
- Total

1 to ∞

Order Details

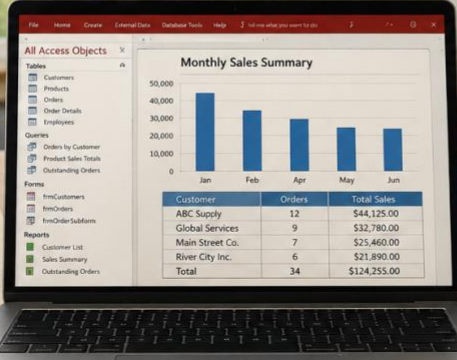
- OrderID (FK)
- ProductID (FK)
- Quantity
- UnitPrice

1 to ∞

PK = Primary Key
FK = Foreign Key

Database Design Checklist

- ☒ Define purpose and goals
- ☒ Identify data and relationships
- ☒ Create tables and keys
- ☒ Design forms for data entry
- ☒ Build queries for information
- ☒ Create reports for results
- ☒ Document everything
- ☒ Test thoroughly





DATABASE DESIGN
Principles and Practices

MICROSOFT ACCESS IN ACTION

DATA MODELING
A Practical Approach

The best databases don't happen by accident. They're designed.

Good Design → Good Data → Good Information → Better Decisions

Three Easy Ways to Build Your First Database

One of the nicest features of Microsoft Access is that you don't have to be a programmer to build a useful database. Whether you're organizing customers, keeping track of a collection, managing club memberships, or maintaining student records, Access offers several ways to get started.

The three most common approaches are:

- Start with a built-in template.
- Import an existing Excel spreadsheet.
- Build a database from scratch.

Each approach has its advantages.

Option 1: Start with a Template

If you're new to Access, templates are your best friend.

Microsoft includes a variety of ready-made databases designed for common tasks such as tracking students, contacts, inventory, projects, events, and assets. Instead of spending hours designing tables and forms, you can begin entering information almost immediately.

Templates also provide an excellent way to learn database design. I often recommend opening one simply to see how Microsoft organized the tables, forms, queries, and reports. It's like looking under the hood of a well-designed automobile.

Many of these templates also introduce you to **relational databases** by linking two or more tables together through common fields. Once you understand those relationships, you begin to appreciate the real power of Access.

Option 2: Import an Excel Spreadsheet

Many people already have valuable information stored in Excel.

Rather than retyping everything, Access can import an existing spreadsheet and convert it into a database table in just a few minutes. That's one of the quickest ways to begin using Access while preserving work you've already done.

One word of caution, however.

Programmers have long lived by the expression:

Garbage In, Garbage Out (GIGO).

Before importing a spreadsheet, make sure the columns are organized consistently, headings are accurate, and data is stored in the proper format. A little cleanup beforehand can save hours of frustration afterward.

Option 3: Build It Yourself

Sooner or later, most Access users want to design a database from scratch.

That's where the real fun begins.

Start by creating the first table and defining the fields you want to store. Decide whether each field contains text, numbers, dates, currency, or other types of information. Thoughtful planning at this stage makes every future form, query, and report easier to build.

Once the first table is complete, Access can automatically generate simple forms for entering data and reports for printing it. Those automatically generated objects can later be customized as your database grows.

Think in Tables, Not Spreadsheets

One of the biggest adjustments for new database designers is learning not to store everything in one giant table.

Instead, divide information into logical groups.

For example, an order-entry database might contain separate tables for:

- Customers
- Products
- Orders
- Employees

Those tables are connected through common fields, allowing information to be combined whenever needed while avoiding unnecessary duplication.

This approach, known as a **relational database**, is one of the reasons Access remains such a powerful business tool.

The Secret Isn't the Software

Many people believe successful databases are created by mastering every Access menu and command.

In my experience, that's backwards.

The best database designers spend far more time planning than clicking.

They think carefully about what information needs to be stored, how it relates to other information, and what reports the finished database should produce. Once those decisions have been made, the software becomes much easier to use.

Good databases aren't built by accident.

They're built by design.