

Creating Tables and Reports in MS Access

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Microsoft Access is a powerful database management system that allows users to store, manage, and analyze data efficiently. Two fundamental tasks in Access are creating tables (to store data) and creating reports (to present data). Let's explore both processes in detail with examples.

Part 1: Creating Tables in MS Access

Tables are the foundation of any Access database, storing all your data in rows (records) and columns (fields).

Steps to Create a Table:

1. Open Access and create a new database or open an existing one
2. Go to the "Create" tab in the ribbon
3. Click "Table" in the Tables group
4. Switch to Design View (right-click the table tab and select "Design View")
5. Define your fields:
 - Enter field names

- Select appropriate data types
 - Add descriptions (optional)
6. Set a Primary Key (right-click a field and select "Primary Key")
 7. Save the table (Ctrl+S or click the Save button)

Example: Creating an "Employees" Table

Let's create a table to store employee information:

1. Field Name: EmployeeID
 - Data Type: AutoNumber
 - Description: Unique identifier for each employee
 - Set as Primary Key
2. Field Name: FirstName
 - Data Type: Short Text
 - Description: Employee's first name
3. Field Name: LastName
 - Data Type: Short Text
 - Description: Employee's last name
4. Field Name: HireDate
 - Data Type: Date/Time
 - Description: Date employee was hired

5. Field Name: Department

- Data Type: Short Text
- Description: Employee's department

6. Field Name: Salary

- Data Type: Currency
- Description: Annual salary

7. Field Name: IsActive

- Data Type: Yes/No
- Description: Whether employee is currently employed

Advanced Table Features:

- Field Properties: You can set properties like:
 - Field Size (for text fields)
 - Format (how data is displayed)
 - Input Mask (data entry patterns)
 - Validation Rule (data constraints)
 - Default Value (automatic values)
- Indexing: Create indexes on frequently searched fields to improve performance
- Relationships: Link tables together using primary and foreign keys

Part 2: Creating Reports in MS Access

Reports allow you to present your data in a formatted, printable layout. They can include grouping, sorting, calculations, and professional formatting.

Steps to Create a Report:

1. Open your database and go to the "Create" tab
2. Select "Report" in the Reports group (several options available):
 - Report: Basic report from selected table/query
 - Report Design: Blank report in design view
 - Blank Report: Start with blank layout
 - Report Wizard: Guided report creation
3. Select the data source (table or query)
4. Design the layout :
 - Add fields from the Field List
 - Add labels, images, and other controls
 - Apply formatting
5. Add grouping and sorting (if needed)
6. Add calculations (totals, averages, etc.)
7. Save the report

Example: Creating an "Employee Directory" Report

Let's create a report showing all employees grouped by department:

1. Using the Report Wizard :

- Select the "Employees" table as data source
- Select fields: FirstName, LastName, Department, HireDate, Salary
- Choose to group by "Department"
- Sort by "LastName" then "FirstName"
- Select "Stepped" layout and "Portrait" orientation
- Choose a professional style (e.g., "Office")
- Name the report "EmployeeDirectory"

2. Customizing in Design View:

- Right - click the report and select "Design View"
- Adjust column widths for better fit
- Add a title: "Company Employee Directory"
- Format the Department header to stand out (bold, background color)
- Add a calculated field for "Years of Service":
 - Add a text box to the Detail section
 - Set Control Source to:

```
`=DateDiff("yyyy",[HireDate],Date())`
```

- Add label "Years of Service"
- Add summary statistics:
 - Right-click Salary field, select "Total" → "Avg"
 - This adds a department salary average to each group footer
- Add grand totals at the end of the report

Advanced Report Features:

- Conditional Formatting: Change appearance based on values (e.g., highlight salaries above a certain amount)
- Subreports: Embed one report within another
- Parameters: Create prompts for user input when running the report
- Graphs and Charts: Visualize data within your report
- Custom Code: Use VBA to add advanced functionality

Practical Example: Complete Database Solution

Let's walk through a complete example of creating a simple customer order database with tables and reports.

1. Create Tables:

Customers Table:

- CustomerID (AutoNumber, Primary Key)
- CompanyName (Short Text)
- ContactName (Short Text)

- Phone (Short Text)
- Email (Short Text)

Products Table:

- ProductID (AutoNumber, Primary Key)
- ProductName (Short Text)
- Category (Short Text)
- UnitPrice (Currency)
- InStock (Yes/No)

Orders Table:

- OrderID (AutoNumber, Primary Key)
- CustomerID (Number, relates to Customers table)
- OrderDate (Date/Time)
- ShippedDate (Date/Time)
- Status (Short Text)

OrderDetails Table:

- OrderDetailID (AutoNumber, Primary Key)
- OrderID (Number, relates to Orders table)
- ProductID (Number, relates to Products table)
- Quantity (Number)
- UnitPrice (Currency)
- Discount (Number)

2. Create Relationships:

- Establish one-to-many relationships between:

- Customers and Orders
- Orders and OrderDetails
- Products and OrderDetails

3. Create an Order Summary Report:

1. Create a query that joins all four tables to show complete order information
2. Use the Report Wizard to create a report based on this query
3. Group by OrderID to show all items for each order together
4. Add calculations:
 - Line Total: $\text{Quantity} \times \text{UnitPrice} \times (1 - \text{Discount})$
 - Order Subtotal: Sum of all line totals
 - Tax: $\text{Subtotal} \times 0.08$ (assuming 8% tax)
 - Order Total: $\text{Subtotal} + \text{Tax}$
5. Format professionally:
 - Add company logo
 - Use consistent fonts and colors
 - Add page numbers and date printed
6. Save as "OrderInvoice"

4. Create Sales by Product Report:

1. Create a query that summarizes sales by product
2. Create a blank report in Design View
3. Add grouping by Product Category then by Product Name

4. Include fields:
 - Product Category
 - Product Name
 - Total Quantity Sold (Sum of Quantity)
 - Total Sales (Sum of Line Totals)
5. Add charts to visualize sales distribution
6. Save as "SalesByProduct"

Tips for Effective Tables and Reports:

For Tables:

- Choose appropriate data types for each field
- Use meaningful field names without spaces
- Set primary keys for all tables
- Establish proper relationships between tables
- Add validation rules to ensure data integrity

For Reports:

- Design with the end-user in mind
- Include sufficient white space
- Use consistent formatting
- Group related information together
- Add summary statistics where helpful
- Test printing before finalizing

By following these guidelines and examples, you can create effective tables to store your data and professional reports to

present your data in MS Access. Remember that Access offers many advanced features, so continue exploring to create more sophisticated database solutions.