IT Fundamentals

CHAPTER 7:

DATABASE FUNDAMENTALS

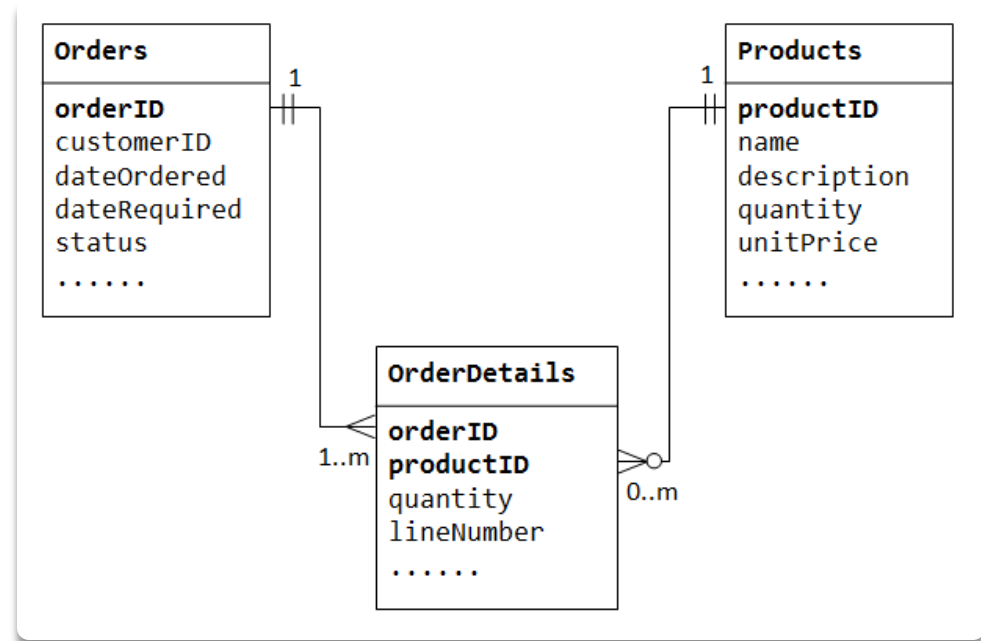# When to Use Databases

- Multiple concurrent users
- Scalability
- Speed
- Variety of data
- Number of records
- Data persistence
- Security

Relational Databases
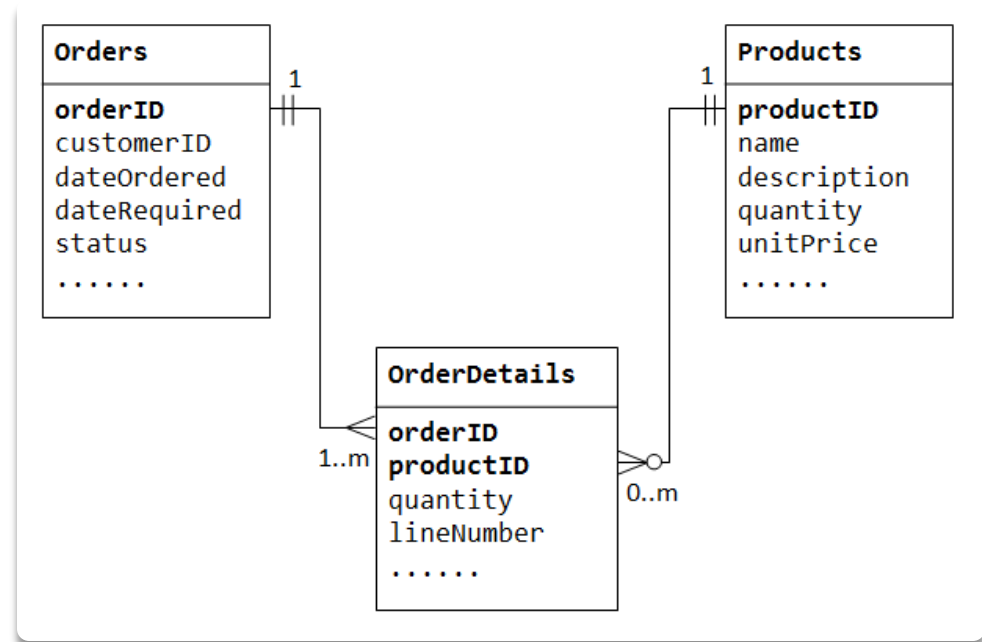
- Managed by a relational database management system (RDBMS)

- Schema
    - Logical schema
    - Physical schema

Orders

orderID
customerID
dateOrdered
dateRequired
status
......

Products

productID
name
description
quantity
unitPrice
......

OrderDetails

orderID
productID
quantity
lineNumber
......

Relational Database Components

- Tables
- Fields
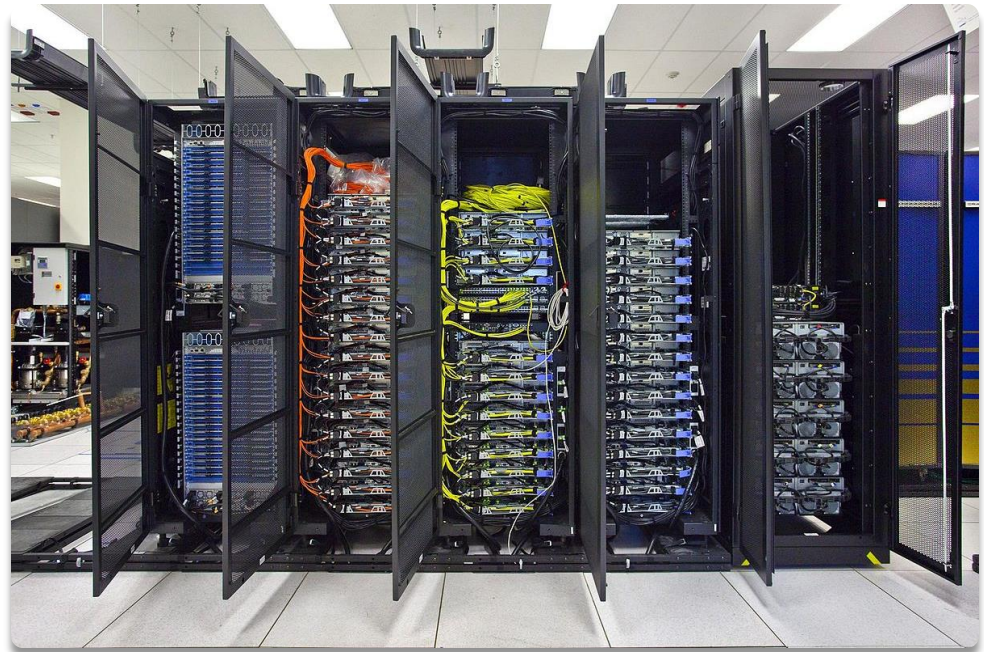- Records
- Forms
- Queries
- Reports
- Macros and modules

Non-relational databases

- Managed by a database management system (DBMS)

- Hold non-structured (or unstructured) or semi-structured data

- Document databases

- Key/value databases

row key	columns …			
jbellis	name	email	address	state
	jonathan	jb@ds.com	123 main	TX
dhutch	name	email	address	state
	daria	dh@ds.com	45 2nd St.	CA
egilmore	name	email		
	eric	eg@ds.com		

Working with Databases

- Manual access

- Direct access

- Programmatic access

- User interface and utility access

- Database permissions

Creating and Managing a Relational Database

- ▶ Commands
  - ▶ Create
  - ▶ Alter
- ▶ Importing data
  - ▶ Load command
- ▶ Removing databases and tables
  - ▶ Drop command

Manipulating Data

- Commands
  - Insert

  - Update

  - Delete

  - Select

Backing Up Databases

- Database dump

- Backup

Chapter 7: Database Fundamentals

- Explain database concepts and the purpose of a database
  - Usage of database
    - Create
    - Import/input
    - Query
    - Reports
  - Flat file vs. database
    - Multiple concurrent users
    - Scalability
    - Speed
    - Variety of data
  - Records
  - Storage
    - Data persistence
- Compare and contrast various database structures
  - Structured vs. semi-structured vs. non-structured
  - Relational databases
    - Schema
    - Tables
      - Rows/records
    - Fields/columns
      - Primary key
      - Foreign key
    - Constraints
  - Non-relational databases
    - Key/value databases
    - Document databases
- Summarize methods used to interface with databases
  - Relational methods
    - Data manipulation
      - Select
      - Insert
      - Delete
      - Update
    - Data definition
      - Create
      - Alter
      - Drop
      - Permissions
  - Database access methods
    - Direct/manual access
    - Programmatic access
    - User interface/utility access
    - Query/report builders
  - Export/import
    - Database dump
    - Backup