



# Introduction to Databases

Database Management System (DBMS) provides....

... efficient, reliable, convenient, and safe  
multi-user storage of and access to massive  
amounts of persistent data.

- Massive - terabytes
- Persistent
- Safe - hardware, software, power, users
- Multi-user - concurrency control
- Convenient < Physical data independence  
high-level query languages declarative
- Efficient - thousands of queries/updates per second.
- Reliable - 99.99999%

- Database applications may be programmed via “frameworks”
- DBMS may run in conjunction with “middleware”
- Data-intensive applications may not use DBMS at all

DBMS itself

## Key concepts

- Data model

Set of records, XML, graph

- Schema versus data

↳ Types

↳ Variables

- Data definition language (DDL)

Set up schema

- Data manipulation or query language (DML)

Querying and modifying

## Key people

- DBMS implementer

*Builds system*

- Database designer

*Establishes schema*

- Database application developer

*Programs that operate on database*

- Database administrator

*Loads data, keeps running smoothly*

Whether you know it or not,  
you're using a database every day

*Hour.*

