Relational Database Management

Basic Database Concepts and Relational Models.

WHAT IS A DATABASE?

- A database is a structured collection of data organized for efficient storage, retrieval, and management, often using tables with rows and columns, similar to a spreadsheet.
- A library catalog or customer database are examples, and SQL (Structured Query Language) is used to interact with relational databases.

Example: Library Catalog Database

```
CREATE TABLE Books(
    book_id SERIAL NOT NULL PRIMARY KEY,
    book_title VARCHAR(100) NOT NULL,
    book_author VARCHAR(100) NOT NULL,
    book_publication_year INT(50) NOT NULL
    );
```

WHY ARE DATABASES IMPORTANT?

Databases are essential for a business’s growth in numerous ways:

- Organization: Databases provide a structured and organized way to store and manage large amounts of data, making it easier to find, retrieve, and manipulate information
- Efficiency: Databases are designed for efficient data retrieval and manipulation. Databases efficiently store and retrieve related information.
- Security: Databases offer robust security features to protect sensitive data from unauthorized access, misuse, and corruption.
- Data integrity: Maintains accuracy and consistency across records
- Scalability: Allow data system to grow with increasing data volumes

Source: astera.com