

Introduction: Overview of Database Systems

COMP 3380 - Databases: Concepts and Usage

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What is a Database?

- ❖ A **database (DB)** is an organized collection of related data, usually stored on disk
- ❖ A DB typically models some real-world enterprise (e.g., a university)
 - Entities - such as students (e.g., Adam), courses (e.g., comp3380)
 - Relationships - such as students' enrolment in courses (e.g., Adam is taking comp3380)

What is a DBMS?

- ❖ A **database management system (DBMS)** is a software package designed to store & manage the DB
- ❖ A **database system** consists of (i) a DB & (ii) a DBMS
- ❖ DBMS is used to:
 - define a database
 - construct the database (i.e., store the data on some storage medium; provide loading, backup, & recovery)
 - manipulate a database (e.g., modify & query a DB)
 - share a database (e.g., control access, permit concurrent access, maintain integrity)
 - support additional data management functions

What is a DBMS?

- ❖ DBMS provides an environment that is both *convenient* and *efficient* to use
- ❖ Applications:
 - Banking - all transactions
 - Airlines - reservations, schedules
 - Universities - registration, grades
 - Sales - customers, products, purchases
 - Manufacturing - production, inventory, orders, supply chain
 - Human resources - employee records, salaries, tax deductions