Lecture 2 - Introduction to Modelling

Relational Databases — set of valuable features
- strict data modelling
- controlled redundancy
- data normalization
- data consistency & integrity constrains
- SQL: simple & powerful query language
- Transactions
  - ACID: Atomicity, Consistency, Isolation, Durability
- effective and secure data sharing
- backup and recovery

Data Model — an abstract model that describes how data is represented, accessed and reasoned about
- data model theory — a formal description of how data may be structured and accessed, and is independent of a specific software and hardware
- data model instance/schema — applies a data model theory to create an instance for some application

- Structure
  - data structures are used to create databases representing the modeled objects
- Integrity
  - rules expressing the constraints placed on these data structures to ensure structural integrity
- Manipulation
  - operators that can be applied to the data structures, to update and query the data contained in the database

A general data model is the generalization of conventional data model theories.

Schema - describes a particular senario/instance using the capabilities and expressiveness of the chosen data model