

## 3. Relational Model and Relational Algebra

### Contents

- Fundamental Concepts of the Relational Model
- Integrity Constraints
- Translation ER schema  $\longrightarrow$  Relational Database Schema
- Relational Algebra
- Modification of the Database

### Overview

- Relational Model was introduced in 1970 by E.F. Codd (at IBM).
- Nice features: Simple and uniform data structures – *relations* – and solid theoretical foundation (important for query processing and optimization)
- Relational Model is basis for most DBMSs, e.g., Oracle, Microsoft SQL Server, IBM DB2, Sybase, PostgreSQL, MySQL, . . .
- Typically used in conceptual design: either directly (creating tables using SQL DDL) or derived from a given Entity-Relationship schema.